



**DEPARTMENT OF THE ARMY**  
U.S. ARMY ENGINEER DIVISION, GREAT LAKES AND OHIO RIVER  
CORPS OF ENGINEERS  
550 MAIN STREET  
CINCINNATI, OH 45202

CELRD-PDS-R

1 MAR 2013

MEMORANDUM FOR Commander, U.S. Army Engineer District, Louisville, Attention, Amy Babey (CELRL-PM-P), Louisville District, U.S. Army Corps of Engineers, 600 Dr. Martin Luther King Jr. Place, Louisville, Kentucky 40202

SUBJECT: Review Plan for the White River, Anderson, IN Section 205 Approval Memorandum

1. The attached Review Plan (RP) for the White River, Anderson, IN was distributed for review to the Great Lakes and Ohio River Division (LRD) for approval in accordance with EC 1165-2-214 "Civil Works Review Policy" on 31 Jan 2013.
2. The White River, Anderson, IN Section 205 Continuing Authorities Program (CAP) Project is located in Anderson, Indiana. The project is a single-purpose Flood Risk Management project initiated to address flooding problems in the city of Anderson. The City of Anderson, the project's local sponsor, is located in east central Indiana in Madison County, approximately 31 miles northeast of Indianapolis. The city, which has a population of 56,000, lies along both banks of the White River, a tributary of the Wabash River.
3. The study area is on the right bank of the White River and protected by an existing levee that was completed in 1936. The levee is approximately 4,300 feet long, with an average elevation of approximately 843 feet (NGVD 29), and protects over 140 structures. Since the completion of the levee, there have been six flood events in which floodwaters exceeded the lowest point on the levee, resulting in flooding damages to the city. Average annual damages were estimated at \$377,000. Four levee modification alternatives were considered to address these flooding issues, as well as multiple non-structural measures. The National Economic Development (NED) and locally supported plan involves reconstructing approximately 3,260 linear feet of existing levee by adding earthen embankment to increase the cross sectional area and height. A realignment and extension of the levee at the upstream end will add approximately 1,500 feet to the line of protection. Approximately 417 linear feet of low concrete I-wall will be constructed immediately upstream of the 8th Street bridge. The total length of the protection will be 5,180 feet. The plan also includes a flood warning system. This alternative is anticipated to result in an over 90% reduction in average annual damages, at an estimated cost of \$6.3 million.
4. Section 205 of the Flood Control Act of 1948, as amended, authorizes USACE to study, design and construct flood risk management projects. It is a CAP Project which focuses on water resource related projects of relatively smaller scope, cost and complexity. Traditional USACE civil works projects are of wider scope and complexity and are specifically authorized by Congress. The Continuing Authorities Program is a delegated authority to plan, design, and

construct certain types of water resource and environmental restoration projects without specific Congressional authorization.

5. The Detailed Project Report was approved by the Great Lakes and Ohio River Division in March of 2002. An Environmental Assessment (EA) was prepared and Finding of No Significant Impact (FONSI) signed in April of 2002. Following the completion of the DPR, plans and specifications commenced but were delayed for many years due to funding issues. In 2008, the Sponsor obtained additional non-Federal funds and a PPA was executed on 19 September 2008. Plans and specifications were completed in June 2010 and underwent Internal Technical Review (now DQC). Additionally, since more than five years had passed, an EA was prepared and circulated for public comment. The EA and FONSI were approved on 3 October 2012. With the plans and specifications complete, the Louisville District requested work-in-kind credit for the borrow material that would be used as part of the levee construction. Following thorough review by the Vertical Team, an alternative approach for the Sponsor to achieve crediting was pursued. Additionally, a draft decision document update report was completed in July 2010 and forwarded to the MSC in support of the crediting approach. Another delay ensued as a result of lack of non-Federal funding in conjunction with all Federal funds being rescinded in FY11. Non-Federal and Federal funds were received in both FY12 and FY13 to finalize the design and award the construction contract. Since the project was already in the implementation phase and the PPA was executed on 19 September 2008, the requirement for a Type I Independent External Peer Review (IEPR) does not apply. The Type II IEPR – Safety Assurance Review (SAR) comments have been reviewed and addressed by the Louisville District and is currently under review by LRD.

6. The Review Plan (RP) is the key to ensuring credibility and accountability for the White River, Anderson, IN Section 205 Project through the definition of scope and level of peer review for the decision document. Additionally, this RP is the basis for compliance with the Information Quality Act requirement to ensure and maximize the quality, objectivity, utility and integrity of information provided in this report to be disseminated by the agency.

7. The USACE LRD Review Management Organization (RMO) has reviewed the attached RP and concurs that it describes the scope of review for work phases and addresses all appropriate levels of review consistent with the requirements described in EC 1165-2-214.

8. I concur with the recommendations of the RMO and approve the enclosed RP for the White River, Anderson, IN Section 205 Project and endorse the Project Update Report.

9. The District is requested to post the RP to its website. Prior to posting, the names of all individuals identified in the RP should be removed.

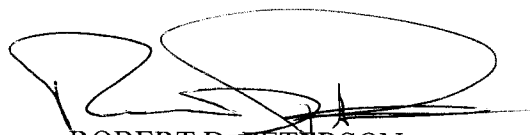
CELRD-PDS-R

SUBJECT: Review Plan for White River, Anderson, IN Section 205 Project

10. If you have any questions or need additional information, please contact Mrs. Adrienne Gordon, P.E., PMP, CELRD-PDS-R, at (513) 684-6055.

Encl

1. Review Plan

A handwritten signature in black ink, appearing to read 'ROBERT D. PETERSON', with a large, stylized flourish extending to the right.

ROBERT D. PETERSON

Colonel, USA

Acting Commander

**IMPLEMENTATION PHASE DOCUMENT REVIEW PLAN**  
**USING THE PROGRAMMATIC REVIEW PLAN MODEL**  
for  
**Continuing Authorities Program**  
**Section 103 and 205 Projects**

*White River, Anderson, IN*  
Section 205 Project

*Louisville District*

**MSC Approval Date: 1 Mar 2013**  
**Last Revision Date:**



**US Army Corps  
of Engineers ®**

**IMPLEMENTATION DOCUMENT REVIEW PLAN  
USING THE PROGRAMMATIC REVIEW PLAN MODEL**

**White River, Anderson, IN  
Section 205 Project**

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## 1. PURPOSE AND REQUIREMENTS

**Purpose.** This Review Plan defines the scope and level of peer review in accordance with EC 1165-2-214, for the White River, Anderson, IN, Section 205 project life cycle, including the previously completed decision document and the design and implementation of the project.

Section 205 of the Flood Control Act of 1948, as amended, authorizes USACE to study, design and construct flood risk management projects. It is a Continuing Authorities Program (CAP) which focuses on water resource related projects of relatively smaller scope, cost and complexity. Traditional USACE civil works projects are of wider scope and complexity and are specifically authorized by Congress. The Continuing Authorities Program is a delegated authority to plan, design, and construct certain types of water resource and environmental restoration projects without specific Congressional authorization.

Additional Information on this program can be found in Engineering Regulation 1105-2-100, Planning Guidance Notebook, Appendix F.

- a. **Applicability.** This review plan is based on the model Programmatic Review Plan for Section 103 and 205 project decision documents, which is applicable to projects that do not require an EIS. If an EIS is required, the model Programmatic Review Plan is not applicable and a study specific review plan must be prepared by the home district, coordinated with the appropriate Planning Center of Expertise (PCX) and approved by the home Major Subordinate Command (MSC) in accordance with EC 1165-2-214.

Applicability of the model Programmatic Review Plan for a specific project is determined by the home MSC. If the MSC determines that the model plan is applicable for a specific study, the MSC Commander may approve the plan (including exclusion from IEPR if warranted) without additional coordination with a PCX or Headquarters, USACE. The initial decision as to the applicability of the model plan should be made no later than the Federal Interest Determination (FID) milestone (as defined in Appendix F of ER 1105-2-100, F-10.e.1) during the feasibility phase of the project. A review plan for the project will subsequently be developed and approved prior to execution of the Feasibility Cost Sharing Agreement (FCSA) for the study. In addition, per EC 1165-2-214, the home district and MSC should assess at the Alternatives Formulation Briefing (AFB) whether the initial decision on Type I IEPR is still valid based on new information. If the decision on Type I IEPR has changed, the District and MSC should begin coordination with the appropriate PCX immediately.

### b. References

- (1) Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 Dec 2012
- (2) Director of Civil Works' Policy Memorandum #1, Jan 19, 2011
- (3) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2010
- (4) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- (5) ER 1105-2-100, Planning Guidance Notebook, Appendix F, Continuing Authorities Program, Amendment #2, 31 Jan 2007
- (6) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007

- c. **Requirements.** This programmatic 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). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-214) and ensuring that planning models and analysis are compliant with Corps policy, theoretically sound, computationally accurate, transparent, described to address any limitations of the model or its use, and documented in study reports (per EC 1105-2-412).

## 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 Type II IEPR is the Risk Management Center. The MSC will coordinate and approve the review plan. The Louisville District will post the approved review plan on its public website. A copy of the approved review plan (and any updates) will be provided to the FRM-PCX to keep the PCX apprised of requirements and review schedules.

## 3. STUDY INFORMATION

- a. **Decision Document.** A Feasibility Study was conducted in cooperation between the Louisville District of the Corps of Engineers and the local project sponsor to address flooding issues in the city of Anderson, Indiana. This project was authorized under Section 205 of the Flood Control Act of 1948. The Detailed Project Report was completed in December of 2001. An Environmental Assessment (EA) was prepared and Finding of No Significant Impact (FONSI) signed in April of 2002. The Detailed Project Report was approved by the MSC in March of 2002.

Following the completion of the DPR, plans and specifications commenced but were delayed for many years due to funding issues. In 2008, the Sponsor obtained additional non-Federal funds and a PPA was executed on 19 September 2008. Plans and specs were completed in June 2010 and underwent Internal Technical Review (now DQC). Additionally, since more than five years had passed, an EA was prepared and circulated for public comment. The EA and FONSI were approved on 3 October 2012.

With the plans and specs complete, the Corps requested work-in-kind credit for the borrow material that would be used as part of the levee construction. The specifics of the credit will be discussed in Section 3 (d) below. Additionally, a draft decision document update report was completed in July 2010 and forwarded to the MSC as accompaniment to the credit discussion. Another delay ensued as a result of lack of non-Federal funding and all Federal funds were rescinded in FY11.

- b. **Study/Project Description.** The White River, Anderson, Indiana Section 205 project is a single-purpose Flood Risk Management project initiated to address flooding problems in the city of Anderson. The city of Anderson, the local sponsor for the project, is located in east central Indiana, in Madison County, along Interstate 69, approximately 31 miles northeast of Indianapolis. The city, which has a population of approximately 56,000, lies along both banks of the White River, a tributary of the Wabash River. The study area, which is on the right bank of the White River, is

protected by an existing levee that was completed in 1936. The levee is approximately 4,300 feet long, with an average elevation of approximately 843 feet (NGVD 29), and protects over 140 structures. Since the completion of the levee, there have been six flood events in which floodwaters exceeded the lowest point on the levee, resulting in flooding damages to the city. Average annual damages were estimated at \$377,000.

Four levee modification alternatives were considered to address these flooding issues, as well as multiple non-structural measures. The National Economic Development (NED) and locally supported plan involves reconstructing approximately 3,260 linear feet of existing levee by adding earthen embankment to increase the cross sectional area and height. A realignment and extension of the levee at the upstream end will add approximately 1,500 feet to the line of protection. Approximately 417 linear feet of low concrete I-wall will be constructed immediately upstream of the 8th Street bridge. The total length of the protection will be 5,180 feet. The plan also includes a flood warning system. This alternative is anticipated to result in an over 90% reduction in average annual damages, at an estimated cost of \$6.3 million.

- c. **Factors Affecting the Scope and Level of Review.** The White River, Anderson, Indiana project will not likely have significant economic, environmental, or social effects to the nation, as both the scope of the project and size of the study area are fairly small. The approved Detailed Project Report additionally did not contain any influential, controversial, precedent-setting or novel scientific information, models, or methodologies, and adhered to approved Corps policy and guidance in all aspects of the analysis. It is unlikely also to have any significant interagency interest.

As the project will involve modification of an existing levee however, significant life safety risks are present as non-performance by or a failure of the project could lead to flooding of a higher velocity and a subsequent higher risk to human life than in the project's absence. For this reason efforts must be taken in both design and construction to address and minimize these risks, by producing a project that is resilient, robust, and offers sufficient redundancy. Towards that end Type II IEPR was performed on design and will be performed on construction activities. This is likely to be the most challenging aspect of the project going forward. Additionally, construction of the levee may require relocation of utilities and temporary closures of three roads. There is no known landowner or general public opposition to the project.

- d. **In-Kind Contributions.** Following execution of the 2008 PPA, the City of Anderson identified potential work that may be afforded credit under EC 1165-2-208. This credit would be in-kind contributions for Construction services and materials, specifically approximately 80,000 cubic yards of borrow material to increase the elevation of the existing levee and to construct an extension to the existing levee. Earthen material for the levee would be obtained from a borrow site located seven miles south of the levee site. Following one year of discussion within USACE, it was determined that borrow material cannot be afforded credit. Rather, it is to be considered as a LERRD item only. Additional sources of credit were considered, including the slip-lining of pipes through the levee. However, it was determined that there was not enough evidence through video documentation of the pipes to justify the slip lining. As such, credit was not afforded.

### 3. DISTRICT QUALITY CONTROL (DQC)

All implementation documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering



work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC.

An Independent Technical Review (ITR) was performed on the decision document and all related work products during the feasibility phase, as well as the work products completed during the Pre-Engineering and Design phase. ATR was conducted on the Detailed Project Report in September of 2002. A second, implementation phase ITR was conducted in May of 2010. This ITR serves as the completed DQC for the project. The certification memorandum for DQC is included as Attachment 4.

**4. AGENCY TECHNICAL REVIEW (ATR)**

ATR is mandatory for all decision and implementation documents (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published 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. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. For this project only, the ATR team lead will be from outside the home District but within the MSC. The completion of the DPR and the LRR preceded the commencement of ATR for decision documents. At the time of these reports, ITR was the means for ensuring technical compliance with established policies.

In light of the current guidance and the update of the project plans and specifications, the final design plans and specifications have undergone ATR review in July 2012. Since this CAP 205 project has life safety considerations and will undergo a Type II IEPR, the RMC will serve as the RMO. The ATR team was identified through coordination with the PDT and the MSC.

**a. Products to Undergo ATR.** ATR was performed on the final plans and specifications. Even though the project design has not changed significantly from the original design prepared in 2002 which underwent ITR, the plans and specifications underwent an ATR review by four team members outside the home District.

**b. Required ATR Team Expertise.**

ATR Team Members/Disciplines	Expertise Required
ATR Lead/Civil Engineering	The ATR lead should be a senior professional preferably with experience in preparing Section 205 decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. Typically, the ATR lead will also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc). The ATR Lead will be from outside the home District but within the MSC.

Hydraulic Engineering	The hydraulic engineering reviewer will be an expert in the field of hydraulics and hydrology and have a thorough understanding of open channel dynamics and/or computer modeling techniques that will be used such as HEC-RAS.
Structural Engineering	The structural engineering reviewer will be an expert in the field of structure components, efficiencies, and applicability and have a thorough understanding of the policy related to the structural components.
Geotechnical Engineering	The geotechnical engineering reviewer will be an expert in the field of soils and stability and have a thorough understanding of policy related to construction and excavation in varying soil types.

c. **Documentation of ATR.** DrChecks review software was used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments were 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 included 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 1110-2-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team prepared 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 was certified when all ATR concerns were resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepared 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 was completed prior to the District Commander signing the final report. The project Statement of Technical Review is included in Attachment 5.

## **5. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)**

IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-214, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- Type I IEPR. 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 would typically cover the entire decision document or action and 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.

For Section 103 and 205 decision documents prepared under the model Programmatic Review Plan, Type I IEPR may or may not be required.

- Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), is managed outside the USACE and is 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.

For Section 103 and 205 decision documents prepared under the model Programmatic Review Plan, Type II IEPR may or may not be anticipated to be required in the design and implementation phase.

a. **Decision on IEPR.** It is the policy of USACE that Section 205 project decision documents should undergo Type I IEPR unless ALL of the following criteria are met:

- Federal action is not justified by life safety or failure of the project would not pose a significant threat to human life;
- Life safety consequences and risk of non-performance of a project are not greater than under existing conditions;
- There is no request by the Governor of an affected state for a peer review by independent experts;
- The project does not require an EIS;
- The project/study is not likely to involve significant public dispute as to the size, nature, or effects of the project;
- The project/study is not likely to involve significant public dispute as to the economic or environmental cost or benefit of the project;
- The information in the decision document or anticipated project design is not likely to be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices;
- The project design is not anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule; and
- There are no other circumstances where the Chief of Engineers or Director of Civil Works determines Type I IEPR is warranted.

Further, if Type I IEPR will not be performed:

- Risks of non-performance and residual flooding must be fully disclosed in the decision document and in a public forum prior to final approval of the decision document;
- The non-Federal sponsor must develop a Floodplain Management Plan, including a risk management plan and flood response plan (and evacuation plan if appropriate for the conditions), during the feasibility phase; and
- The non-Federal sponsor must explicitly acknowledge the risks and responsibilities in writing in a letter or other document (such as the Floodplain Management Plan) submitted to the Corps of Engineers along with the final decision document.

The decision on whether the above criteria are met (and a Type I IEPR exclusion is appropriate) is the responsibility of the MSC Commander. Additional factors the MSC Commander might consider include in deciding if an exclusion is appropriate include, but are not limited to: Hydrograph / period of flooding, warning time, depth of flooding, velocity of flooding, nature of area protected, and population protected.

The project decision document (DPR) was completed in December 2001 and approved by the MSC in March 2002. A Project Partnership agreement (PPA) was executed in 2008 which initiated the implementation phase of the project. Since the project is in the design and implementation phase, a

Type I IEPR is not required. Additionally, the non-Federal sponsor has maintained a flood response and evacuation plan in the City of Anderson and will be responsible for the maintenance of the levee system following construction, including understanding the risks of non-performance and residual flooding, in accordance with the OMRR&R manual.

A Type II IEPR was conducted on this project. The Type II IEPR was managed by the RMC, with input and endorsement from LRD as the MSC. The Type II IEPR scope of work and charge outlined below was reviewed and approved by the MSC and RMC.

The objective of the review was to assess, analyze, interpret, and evaluate design/engineering and construction criteria through a process known as Type II Independent External Peer Review (IEPR) Safety Assurance Review (SAR) for the Anderson, White River, Indiana Project during design and construction phases of the project in accordance with the Water Resources Development Act (WRDA) 2007 (Public Law 110-114), Section 2035. The review shall focus on answering the following general questions for each phase of the project:

For the Design Phase Review of Anderson, White River, Indiana Project, which has a formal decision document entitled “Detailed Project Report Section 205 (December 2001),” the SAR shall focus on unique features and changes from the assumptions made and conditions that formed the basis for the design during the decision document phase. The SAR shall address the following questions:

1. Do the design assumptions made during the decision document phase for hazards remain valid through the completion of design as additional knowledge is gained and the state-of-the-art evolves?

2. Do the project features adequately address redundancy, resiliency, or robustness with an emphasis on interfaces between structures, materials, members, and project phases?

(1) Redundancy. The use of multiple lines of defense that are linked to potential failure modes. The most vulnerable failure modes need the greatest redundancy.

(2) Resilience. The use of enhancements to improve the ability of the system to sustain loads greater than the design load to achieve gradual failure modes over some duration rather than sudden failure modes.

(3) Robustness. The use of more conservative assumptions to increase capacity to compensate for greater degrees of uncertainty and risk.

3. Do the project features and/or components effectively work as a system?

For the Construction Phase Review of Anderson, White River, Indiana Project, the SAR shall address the numbered questions below.

1. Do the assumptions made during design remain valid through construction as additional knowledge is gained and the state-of-the-art evolves? (Final DDR, CO QMPs, site visits, and other similar appropriate documents will be provided to expert reviewers for this assessment.)

2. Will the project monitoring adequately reveal any deviations from the assumptions made for performance?

One (1), Level #3 engineer will conduct the Type II IEPR. The reviewer shall have experience in the field of geotechnical engineering, analysis, design, and construction of embankment dams and levees. The engineer shall have experience in soil mechanics, retaining wall design, seepage & piping, slope stability evaluations, erosion protection design, and earthwork construction. The engineer shall have experience in the design and construction of hydraulic structures for civil works projects including floodwalls. The engineer shall be experienced in the design and construction of T-wall and I-wall floodwall design. The engineer shall be experienced in the design and construction of deep sheet-pile walls. The reviewer shall not make a recommendation on whether a particular alternative should be implemented, as the Chief of Engineers is ultimately responsible for the final decision on USACE work products.

There will be one (1) design phase review at the 95% completion level of the Plans and Specs and one (1) construction phase review after the midpoint of construction but prior to completion. The construction phase review shall be coordinated with the construction schedule to observe major elements of the project, such as the I-wall construction and earth levee construction.

- b. Products to Undergo Type I IEPR.** None
- c. Required Type I IEPR Panel Expertise.** Not Applicable.
- d. Documentation of Type I IEPR.** Not applicable.

## **7. POLICY AND LEGAL COMPLIANCE REVIEW**

All implementation documents and updates to decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

The decision document was submitted and approved with a Planning Chief's Certification and a legal certification in 2002. The final design plans contain an engineering certification and BCOE certification in accordance with ER 415-1-11.

## **8. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION**

All decision documents shall be coordinated with the Cost Engineering DX, located in the Walla Walla District. For decision documents prepared under the model Programmatic Review Plan, Regional cost personnel that are pre-certified by the DX will conduct the cost engineering ATR. The DX will provide the Cost Engineering DX certification. The RMO will coordinate with the Cost Engineering DX on the selection of the cost engineering ATR team member. The decision document was completed in 2001 and

approved by the MSC in March 2002. Additional certification of the cost estimate is not required.

## 9. MODEL REVIEW

The approval of planning models under EC 1105-2-412 is not required for CAP projects. MSC Commanders are responsible for assuring models for all planning activities are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Therefore, the use of a certified/approved planning model is highly recommended should be used whenever appropriate. Planning models are defined 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 selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

- a. **Planning Models.** The following planning models were used in the development of the decision document updates:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Model Status
Example: HEC-FDA 1.2.4 (Flood Damage Analysis)	The Hydrologic Engineering Center’s Flood Damage Reduction Analysis (HEC-FDA) program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate and compare the future without- and with-project plans along the Wild River near River City to aid in the selection of a recommended plan to manage flood risk.	Approved

**b. Engineering Models.** The following engineering models were used in the development of the decision document:

<b>Model Name and Version</b>	<b>Brief Description of the Model and How It Will Be Applied in the Study</b>	<b>Model Status</b>
HEC-FFA 3.1	The Hydrologic Engineering Center's Flood Frequency Analysis program was used to develop frequency discharge relationships for the White River at Anderson. to evaluate the future without- and with-project conditions along the Wild	Approved
RAM Advanse 9.5.0	RAM Advanse, developed by Bentley Systems, is a structure analysis model.	Approved
HEC-24.6	The HEC-2 computer model, also developed by the Hydrologic Engineering Center, was used to develop a calibrated rating curve based on the frequency flows generated by HEC-FFA. Additionally, a modified 1978 Flood Insurance Study (FIS) HEC-2 model developed by Clyde E. Williams and Associates was used to compute water surface elevations for all flood events.	Approved
HEC-IFH 2.01	The Hydrologic Engineering Center's Interior Flood Hydrology program was used to analyze the proposed levee modification and to determine the size of pump, if any, required to remove interior drainage during high water conditions on the White River.	Approved
CWALSHT - Program #X0031, version date 9 Nov 2007	CWALSHT is a Corps developed program used to evaluate sheet pile walls.	Approved
Geostudio 2007 7.16	Geostudio, developed by Geo-Slope International, is a suite of eight programs used to model structural stability and performance. For this study the SLOPE/W and SEEP/W components were used to model slope stability and water seepage.	Approved

## 10. REVIEW SCHEDULES AND COSTS

**a. ATR Schedule and Cost.** ATR of plans and specifications commenced on 27 July 2012 and completed on 15 January 2013. The cost for ATR was \$20,000.



**b. Type II IEPR Schedule and Cost.** The Anderson Flood Damage Reduction Project was begun in 1997 with a Preliminary Assessment of flooding problems to determine if upgrades to the existing levee would be economically feasible. A cost-shared Feasibility Study was completed in 2001 recommending increasing the existing levee cross sectional area and height, and extending the levee system with additional earth levee and concrete I-wall. The project proceeded to plans and specifications and a District Quality Control review was completed in 2002. A BCOE review was conducted in late 2003 and then repeated in 2004. Construction funds for the project were not allocated, so the project was dormant until 2008/2009.

In 2010 with limited funding another District Quality Control, cost estimate, and BCOE review was completed in 2010 in preparation for advertising the project. Funding once again was an issue and the project was put on hold. No SAR was completed because of limited funding and uncertainty to actually awarding a contract.

In 2012 the project was revived and the specifications were updated and the plans were checked to current conditions in the field. Very limited funds were available to complete this update and cost estimate. Essentially this project was viewed as being completed and Ready To Advertise. Now that construction funding is in place, the project has undergone another BCOE review after an update to the specifications.

The Type II IEPR on the plans and specifications was completed in January 2013 and will be conducted once during construction, as outlined in Section 6a. The Type II IEPR is expected to cost approximately \$40,000.

**c. Model Review Schedule and Cost.** Only approved models will be used for this project.

## **11. PUBLIC PARTICIPATION**

Throughout the feasibility study, meetings have been held with the City Engineer. Local officials involved fully support the recommended plan. The study underwent a public review and comment period of thirty days in accordance with the Intergovernmental Review of Federal Programs (EO 12372) and received no negative comments. Copies of the Environmental Assessment, fully describing the recommended plan and its impacts, were made available to agencies, public officials, and interested individuals. Public responses to the Environmental Assessment are documented in Appendix H of the Detailed Project Report. None of the responses opposed the recommended levee. A subsequent EA was issued for public comment in 2010. Comments were received from the U.S. Fish and Wildlife Service (USFWS) and various tribes. The USFWS comments were standard recommendations for time periods of work and using best management practices. There were no project specific comments. None of the tribes expressed concerns about the project. A public meeting was held to discuss real estate issues relating to the project construction on March 16, 2010. Additional public coordination will occur throughout the construction phase. State and Federal resource agencies may be invited to participate in the study covered by this review plan as partner agencies or as technical members of the PDT, as appropriate. Agencies with regulatory review responsibilities will be contacted for coordination as required by applicable laws and procedures.

Since so much time has elapsed since the original public and agency coordination, additional coordination has been and will be conducted. The Louisville District has held numerous meetings with

the local sponsor to reaffirm their interest in the project. The District also conducted a public meeting on 10 January 2012 with approximately 200 residents in attendance. The residents were overwhelmingly in support of the project. As part of the updates to the environmental documentation, a revised environmental assessment will be circulated to the appropriate resource agencies and to the general public for review and comment. Additionally, each of the permits previously obtained will be updated with the appropriate agency.

## **12. REVIEW PLAN APPROVAL AND UPDATES**

The home MSC Commander is responsible for approving this review plan and ensuring that use of the Model Programmatic Review Plan is appropriate for the specific project covered by the plan. 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 7. 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. Significant changes may result in the MSC Commander determining that use of the Model Programmatic Review Plan is no longer appropriate. In these cases, a project specific review plan will be prepared and approved in accordance with EC 1165-2-214 and Director of Civil Works' Policy Memorandum #1. The latest version of the review plan, along with the Commanders' approval memorandum, will be posted on the home district's webpage.

## **13. REVIEW PLAN POINTS OF CONTACT**

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

- Lester Washington, Project Manager, (502) 315-6894
- Amy Babey, Chief Plan Formulation Section, Planning Branch, (502) 315-6880
- Roger Zemba, PE, Senior Regional Engineer, Great Lakes and Ohio River, Engineering Division, (513) 684-3018

**ATTACHMENT 1: PDT TEAM ROSTER**

<b>Team Member</b>	<b>Area of Expertise</b>	<b>Contact Information</b>
	Local Sponsor	(765) 648-6302
	Project Manager	(502) 315-6894
	Project Engineer	(502) 315-6434
	Real Estate	(502) 315-6945
	Cost Engineer	(502) 315-6387
	H&H Engineer	(502) 315-6459
	Structural Engineer	(502) 315-6388

**ATTACHMENT 2: DQC TEAM ROSTER**

<b>Team Member</b>	<b>Area of Expertise</b>	<b>Contact Information</b>
	Geotechnical Engineer	(502) 315-6441
	Structural Engineer	(502) 315-6299
	H&H Engineer	(502) 315-6380
	Civil Engineer	(502) 315-6360

**ATTACHMENT 3: ATR TEAM ROSTER**

<b>Team Member</b>	<b>Area of Expertise</b>	<b>Contact Information</b>
	ATR Lead/Civil Engineer	(304) 399-5934
	Geotechnical Engineer	(901) 544-3291
	H&H Engineer	(206) 764-3542
	Structural Engineer	(304) 399-5217

**ATTACHMENT 4: DISTRICT QUALITY CONTROL**



**DEPARTMENT OF THE ARMY**  
 U.S. ARMY ENGINEER DISTRICT, LOUISVILLE  
 CORPS OF ENGINEERS  
 P.O. BOX 59  
 LOUISVILLE, KENTUCKY 40201-0059

<http://www.lrl.usace.army.mil>

**COMPLETION OF INDEPENDENT TECHNICAL REVIEW**

The District has completed the plans and specifications for the **Anderson Flood Damage Reduction Project**, Anderson, Indiana. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project, as defined in the Quality Control Plan. During the independent technical review, 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 of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing Corps policy. The design was accomplished by a District team from Louisville District, and the independent technical review was accomplished by an independent District team from Louisville District/Great Lakes and Ohio River Division.

**Design Team**

Signature	Date	Signature	Date
	7/7/2010		7/7/2010
Team Leader, Civil		Structural Engineering	
	7/7/2010		7/7/2010
Geotechnical Engineering		Structural Engineering	

**Independent Technical Review Team**

Signature	Date	Signature	Date
	7/8/10		7-9-2010
Team Leader, CELRL-ED-		CELRL-ED-D-S	
	7/8/10		
CELRL-ED-T-G			

**ATTACHMENT 5: STATEMENT OF TECHNICAL REVIEW FOR PLANS AND SPECIFICATIONS**





**ANDERSON, INDIANA FLOOD DAMAGE REDUCTION PROJECT**

**COMPLETION OF AGENCY TECHNICAL REVIEW**

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

1. The Design Documentation Report (DDR) was not organized in accordance with ER 1110-2-1150, was not up to date, and was missing information. The design team updated the DDR, and the PE-A added the required information and reformatted the DDR to resolve the comments of the ATR.
2. Concern was expressed regarding how overflow floods are handled, including what resilient features are included. The design team added narratives to the DDR to explain how overflow floods are handled and explain the resilient features.

As noted above, all concerns resulting from the ATR have been fully resolved.

/S/

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Chief, Engineering Division  
Louisville District

2/4/2013

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Date

**ATTACHMENT 6: 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
CAP	Continuing Authorities Program	O&M	Operation and maintenance
CSDR	Coastal Storm Damage Reduction	OMB	Office and Management and Budget
DPR	Detailed Project Report	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DQC	District Quality Control/Quality Assurance	OEO	Outside Eligible Organization
DX	Directory of Expertise	OSE	Other Social Effects
EA	Environmental Assessment	PCX	Planning Center of Expertise
EC	Engineer Circular	PDT	Project Delivery Team
EIS	Environmental Impact Statement	PAC	Post Authorization Change
EO	Executive Order	PMP	Project Management Plan
ER	Ecosystem Restoration	PL	Public Law
FDR	Flood Damage Reduction	QMP	Quality Management Plan
FEMA	Federal Emergency Management Agency	QA	Quality Assurance
FRM	Flood Risk Management	QC	Quality Control
FSM	Feasibility Scoping Meeting	RED	Regional Economic Development
GRR	General Reevaluation Report	RMC	Risk Management Center
Home District/MS	The District or MSC responsible for the preparation of the CAP project.	RMO	Review Management Organization
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RTS	Regional Technical Specialist
IEPR	Independent External Peer Review	SAR	Safety Assurance Review
ITR	Independent Technical Review	USACE	U.S. Army Corps of Engineers
LRR	Limited Reevaluation Report	WRDA	Water Resources Development Act
MSC	Major Subordinate Command		

**ATTACHMENT 7: REVIEW PLAN REVISIONS**

<b>Revision Date</b>	<b>Description of Change</b>	<b>Page / Paragraph Number</b>