INDEPENDENT EXTERNAL PEER REVIEW INTERIM REPORT
for
INDIANAPOLIS, WHITE RIVER (NORTH), INDIANA FLOOD DAMAGE REDUCTION PROJECT
95% DESIGN REVIEW

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The views, opinions, and/or findings contained in this report are those of the author and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentation

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1.0 INTRODUCTION

1.1 Background

The Indianapolis, White River (North), IN project is located in northern Indianapolis, Indiana, and consists of construction of floodwall, earthen levee and appurtenant flood risk management features along a 3 1/2-mile reach of the White River. Because of funding constraints, the Corps of Engineers is constructing the project alignment in sections. Construction contracts are completed for two sections, Phases 3A and 3C. In FY 2012 funds became available to issue a bid solicitation for award of a construction contract to complete a portion of the remaining project. The levee portion of the remaining section, "Phase 3B", will be located in Indianapolis, Indiana along the east bank of the White River. The Phase 3B Levee project consists of 3,507 lineal feet of earthen levee, two submersible pump stations, and a gate well structure. The design documents for the Phase 3B Levee project include approximately 120 sheets of plans and approximately 450 pages of specifications. The following are further details regarding the design of each significant project feature:

The earthen levee will be constructed to a maximum height of approximately 13 feet above existing grade. The embankment will have a 12-foot wide crown, with 3 horizontal to 1 vertical side slopes. It will be constructed on a subgrade consisting of silty to sandy clay, with occasional stone and cobbles. Prior to placement of the levee embankment, the construction contractor will scarify the existing surface, to remove all topsoil or other unsuitable materials, and excavate an inspection trench. Following preparation of the subgrade, the contractor will construct the earthen levee by placement of suitable borrow materials, in 8-inch maximum successive horizontal layers, compacted to at least 95 percent laboratory maximum density.

1.2 Purpose of the Independent External Peer Review

The purpose of an IEPR/SAR, in general, is to strengthen the USACE's safety assurance as outlined in Water Resources Development Act (WRDA) 2007, Section 2035 (Type II). Independent, objective, external peer review is regarded as a critical element in ensuring the reliability of scientific and engineering analysis.

The SAR is one part of a three part quality improvement process instituted by the USACE in the Engineer Circular, EC 1165-2-209, Civil Works Review Policy. The EC outlines three levels of review: District Quality Control, Agency Technical Review, and Independent External Peer Review (Both Type I and II IEPR/SAR). The EC states that SAR shall include a review of the design and construction activities prior to the initiation of physical construction and periodically thereafter until construction activities are completed on a regular schedule sufficient to inform the Chief of Engineers on the adequacy, appropriateness, and acceptability of the design and construction activities for the purpose of assuring public health, safety and welfare.

The objective of this work is to assess, analyze, interpret, and evaluate design criteria through a process known as Type II Independent External Peer Review (IEPR)/Safety Assurance Review (SAR) for Phase 3B of the the White River Flood Damage Reduction Project during the design phase of the project in accordance with the Water Resources Development Act (WRDA) 2007 (Public Law 110-114), Section 2035.

1.3 Scope of Work

A detailed scope of services requested by the USACE, dated 10 May 2012 and revised 24 August 2012, was transmitted to KSWA. Based on the size of the project and discussions with the USACE Risk Management Center, KSWA recommended revisions to the scope of services. A summary of the tasks approved by USACE via acceptance of our proposal (dated September 24, 2012) and ultimately conducted is outlined below.

> Task 2 – IEPR Review Panel: KSWA identified an expert reviewer in the discipline of geotechnical engineering. Identification and selection of the reviewer was conducted as outlined in Section 2.1.

Task 3 – Orientation Briefing: KSWA participated in an on-site orientation briefing conducted by USACE.

Task 4 – Monthly Email Updates: A monthly project progress report was submitted with the invoicing each month via email.

Task 5 – Peer Review of the Design Phase: the selected expert reviewer evaluated/reviewed design phase documents, as listed in Section 1.4, in accordance with the General Charge Guidance provided by USACE (Appendix A). The IEPR Design review comments were entered in DrChecks. USACE reviewed the expert reviewer comments and provided their responses in DrChecks. All comments were satisfactorily closed by KSWA.

Task 6 – Peer Review of the Construction Phase: This peer review is to be conducted as some point after the initiation of construction, as deemed appropriate by USACE but likely around the 50% completion mark.

Task 7 – Prepare Interim Project Review Reports: KSWA is to prepare a report project review report for each review conducted, in this case one report for the design phase review and one report for the construction phase review. These reports will focus on answering the general charge questions (Appendix A).

These revisions were a direct result of our meeting with USACE RMC on September 20, 2012. These recommended revisions to the scope have been discussed in detail with RMC and have been deemed acceptable to RMC. Task 1 - Communications Plan, Task 6 - Peer Review of the 95% Construction Phase and Task 8 - Final IEPR Report were deemed not necessary due to smaller scope of the overall project and were omitted from the Scope of Work.

1.4 Project Documents Reviewed

The IEPR panel reviewed the following documents which were provided by the USACE in whole or in part;

- White River Flood Damage Reduction Project - Plans and Specifications.
- White River Flood Damage Reduction Project – Design Analysis, Volume 1.
- White River Flood Damage Reduction Project – Construction Review Plan.
- Geotechnical Laboratory Data Provided at request of Reviewer

1.5 Key USACE Personnel in IEPR/SAR Process

Key USACE personnel were involved in the IEPR/SAR Process by providing responses to all questions, comments and observations as needed. These individuals included:

Contracting Officer's Representative (COR) – Gerard Edelen, P.E.

USACE Project Engineer – Daniel Corrigan, P.E.

USACE Geotechnical and Dam Safety Section - Kurt J. Schaefer, P.E.

2.0 INDEPENDENT EXTERNAL PEER REVIEW PROCESS

The following sections describe the methodology followed in selecting the independent external peer reviewers, and in planning and conducting the IEPR. The IEPR was conducted following procedures described in the USACE's guidance documents cited in Section 1.0 and as outlined in the Task Order as follows:

- EC 1165-2-209, Civil Works Review Policy, 31 January 2010;
- ER 1110-1-12, Engineering and Design Quality Management, 21 July 2006;
- Army Regulation 15–1, Committee Management, 27 November 1992 (Federal Advisory Committee Act Requirements);
- National Academy of Sciences, Background Information and Confidential Conflict Of Interest Disclosure, BI/COI FORM 3, Current Edition.

2.1 Identification and Selection of Independent External Peer Reviewers

K. S. Ware and Associates, L.L.C. (KSWA), in the course of preparing for the IEPR Contract, identified and established subcontractual relationships with several engineering firms as team members, all with the required areas of expertise. Within each of these team members, specific, highly qualified engineers were identified using personal contacts within each of the member companies; from these contacts an extensive database of engineers of all disciplines was established.

For this White River Flood Damage Reduction Project, KSWA selected candidates from within our firm or those contracted with us. The candidates were screened for their technical expertise, potential conflicts of interest (COI), previous performance on similar reviews, and availability to meet the project schedule. The selected reviewer came from KSWA.

The areas of technical expertise of the selected IEPR external peer reviewer was geotechnical which corresponded to the technical content of the White River Flood Damage Reduction Project review materials. KSWA evaluated the credentials of the peer reviewer according to the overall scope of the White River Flood Damage Reduction Project, focusing on these key areas of expertise. Participation in previous USACE technical review committees and engineering projects was considered. Resumes of the selected reviewer is provided in Appendix B.

The peer reviewers were screened for the following potential exclusion criteria or COIs:

- Involvement in any part of work related to the White River Flood Damage Reduction Project or any other part of the White River Levee system.
- Involvement in the conceptual or actual design of the White River Flood Damage Reduction Project or related projects.
- Involvement with paid or unpaid expert testimony related to the White River Flood Damage Reduction Project or related projects.
- Financial or litigation association with the USACE, White River Flood Damage Reduction Project A/E, their engineering teams, subcontractors or construction contractors.
- Current or previous employment or affiliation with members of the White River Flood Damage Reduction Project and currently working on White River Levee related projects.
- Past, current or future interests or involvements (financial or otherwise) related to White River Levee.
- Current personal involvement with other USACE projects including that of authoring any manuals or guidance documents for the USACE.
- Current firm involvement with other USACE projects, specifically projects/contracts with the Louisville District.
- Previous employment by the USACE as a direct employee or contractor (either as an individual or as a member of a firm), notably if those projects/contracts are with the Louisville District.

- Pending, current or future financial interests in White River Flood Damage Reduction Project related contracts/awards from the USACE.
- Any publicly documented statement (including, for example, advocating for or discouraging against) related to White River Flood Damage Reduction Project.

In selecting the final peer reviewer, KSWA pursued experts who were not conflicted by the above COI and who met the criteria and experience factors described in Section 2.2 of this report and outlined in Task 2 of the Task Order. The selected peer reviewer provided a statement indicating willingness to participate and absence of a COI. The reviewer completed a NAS COI form which KSWA in turn submitted to the USACE for approval (Appendix C).

2.2 Biographical Information on the External Peer Reviewers

A potential peer review candidate was identified as described in Section 2.1, above. The IEPR peer reviewer met the following minimum requirements:

- Registered professional engineer in their discipline
- College Degree in their discipline
- Level 3 Reviewers (minimum 15 years experience, recognized experts) with relevant dam and levee experience and experience in failure mode analysis and risk assessment of large complex systems with emphasis on dam and levee safety issues.

The peer reviewers also was required to have specific technical experience in the areas summarized in Table 1, below.

Table 1 – Required Technical Experience, White River Flood Damage Reduction Project

Discipline	Required Experience
Geotechnical Engineer	• Experience in the field of geotechnical engineering, analysis, design, and construction of embankment dams and levees. • Experience soil mechanics, retaining wall design, seepage and piping, slope stability evaluations, erosion protection design, and earthwork construction.

The final peer reviewer was determined by KSWA (Table 2) based on their specific experience in the areas of expertise specified in the scope of work.

Table 2 – Final List of Peer Reviewers

Discipline/Name	Affiliation	Location	Education	P.E. or P.G.	Years of Experience
Geotechnical Engineer					
John Godfrey	KSWA	Nashville, TN	BSCE, MSGE.	X	32

The selected peer reviewer was found to have met the requirements shown in Table 1. He is a Level 3 Peer Reviewers with more than 15 years experience and is a licensed professional engineers. A summary of the credentials of the peer reviewer selected for the IEPR panel is presented below. A resume for the reviewer, including more detailed biographical information, is included in Appendix B. No conflicts of interests were found, as shown on the National Academies of Science, Conflict of Interest (NAS COI) disclosure documents included in Appendix C.

John D. Godfrey, Jr., P.E. serves as a Senior Geotechnical Engineer and Project Manager for KSWA. Mr. Godfrey has over 32 years of experience in Geotechnical and Construction Materials engineering. Mr. Godfrey is responsible for all aspects of preparing geotechnical reports, foundation design, project oversight, slope failure analysis, remedial recommendations and design, karst studies, hydrogeologic and groundwater studies, field observations of various aspects of construction including foundations, fill placement, and material failure analysis and providing engineering support to associate engineers and technicians. Mr. Godfrey has expertise in the latest AASHTO LRFD geotechnical design procedures. Responsibility also includes providing technical review/evaluation of geotechnical and technical reports for the Nashville, Knoxville and Jacksonville offices. Mr. Godfrey's project experience includes low- to high-rise commercial and industrial buildings, communication and radio towers, airport runways, taxiways, and aprons, ground and elevated water storage tanks, tunnels, earthen dams, landfills, water and waste-water treatment plants, water and sewer lines, pump stations, amusement park rides, super-speedways, parking lots and private, local and state bridges and roadways.

Mr. Godfrey was Lead Field Inspector for inspection of 15 different levee flood protection systems located throughout Indiana, Illinois, and Kentucky. Elements of the inspection of each system include evaluating: the performance of each system during high water events, maintenance of each system, the performance and effectiveness of erosion control measures, functionality of pumping systems, and integrity of the embankments and structures. This work was performed under a contract with the USACE, Louisville District. Other key projects include:

- Wolf Creek Dam Seepage Investigation and Mitigation – Jamestown, Kentucky
- Center Hill Dam Seepage Remediation – DeKalb County, Tennessee
- Oak Hill Reservoir Slope Failure Study for Metro Water Services – Davidson County, Tennessee
- Herbert Hoover Dike Culvert Replacements IEPR - USACE Jacksonville District
- Interim Level of Protection for the Bird's Point New Madrid Floodway System, Missouri

2.3 Schedule of Events

Table 3 defines the schedule that was followed in the execution of the IEPR. Task 3, Orientation Briefing, was delayed by 5 days due to scheduling conflicts and the closing of one comment was delayed by several days due to issues with resolution of the comment, but all other due dates, including that for the completion of this report and this phase of the project, were met.

Table 3 – Schedule of Events

Task #	Action/Activity	Due Dates
2	Submit list of final IEPR expert reviewers	11/22/12
	Approval of Reviewers	11/26/12
3	Orientation Briefing	11/29/12
5	95% Plans & Specs Review Complete *	12/7/12
	Comment Review Conference Call	12/13/12
	Plans & Specs Review Comments Closed in DrChecks	12/17/12
7	Submit IEPR Report on 95% Plans and Specs	1/6/13

2.4 USACE Site Orientation Briefing

On November 26, 2012, the USACE provided the materials outlined in Section 1.4 so that the peer reviewer would have the opportunity to review some of the materials prior to the Site Visit. On December 4, 2012, the USACE conducted a half day meeting at the USACE project site, attended by the KSWA Team, to tour and discuss the project. During this site visit, KSWA and the external peer reviewers were provided an overview of the project, as well as a tour of the project site. This enabled the external peer reviewers and the USACE personnel to interact and engage in technical conversations on the particulars of the project. During and following the tour, the USACE asked for and answered any further questions on the project.

2.5 Execution of the Peer Review

A charge for the peer review, which contained three specific questions to be answered in regard to the White River Flood Damage Reduction project, was given to the IEPR panel by the USACE. The charge included general guidance for the reviewer on conduct of a Type II IEPR SAR (as shown in Appendix A of this report).

The peer reviewer was also provided electronic versions of the Design Analysis (Volume 1) and the 95 percent complete plans and specifications as outlined in Section 1.4. The IEPR panel was instructed to respond to the charge questions using a Comment Form.

2.6 Review of Individual Panel Comments

In response to the charge questions and the related evaluation factors, a total of 7 individual design review comments were received from the IEPR panel member. KSWA reviewed and entered the comments considered appropriate and related to the charge into DrChecks. As a result of the review, a total of 7 comments were presented in DrChecks. All comments are included in Appendix D.

The USACE Team evaluated and reviewed the IEPR comments in DrChecks and provided responses in DrChecks. All responses “concurred” with the IEPR panel comments. The KSWA Team reviewed the content of the USACE responses and had one further question via backcheck for USACE which was entered into DrChecks. USACE responded to that final comment/backcheck with “concur” and all comments were satisfactorily closed.

2.7 IEPR Comment Review Teleconference

The purpose of the Comment Review Teleconference is to provide a forum for a discussion and resolution (if possible) of specific comments. The USACE presented their responses to the KSWA IEPR external peer reviewers and based on the nature of those responses ("concurred") it was determined that a Comment Review Teleconference would not be required.

2.8 General Charge for the IEPR

The KSWA Project Manager specifically requested that the expert reviewer answer the General Charge questions not only during the review process, tailoring their comments to reflect the charge, but at the conclusion of the review.

The Charge Questions for the Design Review and their answers are:

A. For the Design Phase Review of Indianapolis, White River (North), Indiana Project, Phase 3B Levee, which has a formal decision document entitled "General Reevaluation Report (September 1996)," 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?

   Geotechnical Reviewer: Yes.

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

   Geotechnical Reviewer: Yes.

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

   Geotechnical Reviewer: Yes.

More detail on the findings and conclusions is discussed in Section 3.0, below. A "Certification of Independent External Review" is included in Appendix E.

3.0 SUMMARY

3.1 Findings

A summary of the overall observations/conclusions from the design review are included in the following Sections.

3.1.1 Summary of Comments Related to the Charge

The reviewer had a total of seven comments that related directly to the charge, once the KSWA Project Manager and QA Manager reviewed the comments. These comments are summarized below.

- The geotechnical reviewer commented that he did not see where settlement analysis had been addressed per EM 1110-2-1913, Table 1-1, Major and Minor Requirements, note 6 and Section 6-10.

  USACE concurred and responded that settlement analyses were performed for the levee during a previous design phase. The geotechnical reviewer responded with a question asking if these analyses should be included in the most recent Design Analysis document and USACE concurred, stating that they would be incorporated as applicable.

- The geotechnical reviewer commented on the varying soil materials near elevation 710 and how some borings indicate sands and gravel at or near that elevation and asked if a seepage berm had been considered in lieu of the toe drain as that would eliminate the need for a pump station.

  USACE concurred and responded that berms were discussed but were found to not be the best solution for this project since it would add significant right of way requirements to a very “real estate sensitive” project. It would also necessitate the removal of additional trees and vegetation which is a critical issue in the community.

- The geotechnical reviewer commented on the Levee Slope and Seepage Analysis, noting that the analyses were performed on sections with 8 and 10 foot clay layers beneath the embankment and that the soil types and thicknesses vary across the levee alignment according to the borings. He then asked if consideration was given to the slope stability and seepage analysis for areas where there was less than 8 or 10 feet of clay present.

  USACE responded affirmatively and commented that some areas analized for seepage indicated a toe drain might not be required, however, due to the possibly varying subsurface conditions, a toe drain was designed for the entire project length.

- For the Plans, Detail C-600, the reviewer asked for clarification of their intent based on the wording of a note on the bottom of the page, if the intent was to “remove all evidence of the existing levee below the new embankment.”

  USACE responded that the old levee would be removed to elevation 710, but if at that elevation there are portions of the old levee that are “unsuitable”, they will be removed as per the specifications.

- With regard to the Plans, Detail C705, the reviewer asked if Frost protection had been considered where the outfall pipes cross the levee per EM 1110-2-1913 Table 8.1. USACE responded that it had been considered.

- The geotechnical reviewer commented on the Plans, Detail C706, asking, with regard to the Drainage Structure through Levee near Station 20+00, if consideration of embankment loading and settlement had been addressed at outlined in EM 1110-2-2902. USACE responded that it had been addressed.

- The geotechnical reviewer commented on the specifications (31 71 00) page 4, 3.5 Grubbing for Phase 3B where it states “"...removed to a depth not less than 18 inches below the original surface level of the ground" and noted that EM 1110-2-1913 Chapter 7, 7.2 indicates "Roots or other intrusions over 38.1 mm (1-1/2 in.) in diameter within the levee foundation area should be removed to a depth of 0.91 m (3 ft) below natural

ground surface". The reviewer then asked if this should be added to this section of specifications. USACE responded that it would be added for clarity.

3.2 Conclusions

The IEPR process was used to review the unique site features, the assumptions made and conditions that formed the basis for the concept design, all in accordance with the General Charge. Although there were several comments, questions and observations posted during the review, all concerns were addressed in a satisfactory manner. The design assumptions made during the decision document phase remain valid, and the project features adequately address redundancy, resiliency and robustness.

APPENDIX A -
General Charge Guidance

General Charge Guidance

For a Type II - IEPR, the design and construction phases, the Safety Assurance Review should focus on unique site features and changes from the assumptions made and conditions that formed the basis for the concept design. The expert reviewers shall address the numbered questions listed below. For each of the below questions, in each of the below paragraphs, the reviewer shall address each of the following evaluation factors:

- Is the direction of the project appropriate?
- Has USACE overlooked any critical items?
- Does the reviewer have any other observations to add?

For the Design Phase Review of Indianapolis, White River (North), Indiana Project, Phase 3B Levee, which has a formal decision document entitled "General Reevaluation Report (September 1996)," 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?

APPENDIX B
REVIEWER RESUMES

Education	BS, Civil Engineering Tech., 1979, Western Ky. University, Bowling Green, KY ME, Geotechnical Engineering, 1988, Vanderbilt University, Nashville, TN
Registrations	Registered Engineer in Tennessee (00100425), Kentucky (16201), Georgia (PE019157), North Carolina (034192), Alabama (24505), and Mississippi (17435)
Professional Affiliations	American Society of Civil Engineers
Publications	J. Godfrey, L.M., R.M., "Case History – Remediation of Portland City Lake Dam, Tennessee", Association of State Dam Safety Officials, 1996. J. Godfrey, L.M., R.M., "Foundation Remedies for Residential Construction over Karst Limestone in Nashville, Tennessee", 6th Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst, 1996. J. Godfrey, "LRFD Implementation – Kennedy Interchange", 29th Southeastern Transportation Geotechnical Engineering Conference, 2007.

Mr. Godfrey serves as a Senior Geotechnical Engineer and Project Manager. Mr. Godfrey has over 30 years of experience in Geotechnical and Construction Materials engineering. Mr. Godfrey is responsible for all aspects of preparing geotechnical reports; foundation design; retaining wall design; project oversight; slope stability analysis, remedial recommendations and design; karst studies; hydrogeologic and groundwater studies; seepage analysis (foundation and embankment); settlement analysis; erosion control measures; field observations of various aspects of construction including foundations; fill placement; and material failure analysis and providing engineering support to associate engineers and technicians. Mr. Godfrey has expertise in the latest AASHTO LRFD geotechnical design procedures and USACE Levee Safety Program. Responsibility also includes providing technical review/evaluation of geotechnical and technical reports for the Nashville, Bowling Green, Knoxville and Jacksonville offices. Mr. Godfrey's project experience includes low- to high-rise commercial and industrial buildings, communication and radio towers, airport runways, taxiways, and aprons, ground and elevated water storage tanks, tunnels, earthen dams, levees, landfills, water and waste-water treatment plants, water and sewer lines, pump stations, amusement park rides, super-speedways, parking lots and private, local and State bridges and roadways. Mr. Godfrey's representative projects include:

Independent External Peer Review (IEPR) of Herbert Hoover Dike (HHD) Culvert Replacements Project, Lake Okeechobee, Florida - United States Army Corps of Engineers (Jacksonville District): Expert Geotechnical Reviewer for the Independent External Peer Review (IEPR) of Herbert Hoover Dike (HHD) Culvert Replacements Project. Mr. Godfrey was responsible for the Geotechnical Expert Review on the design of culvert replacements at Culverts 1, 1A 3, 4A, 11, and 16. Culverts 1, 1A and 3 will have pile foundations and Culverts 4A, 11 and 16 will have soil foundations. The culverts are either two barrel or three barrel. The methodology for replacing culverts is to remove the existing culverts and replace them with water control structures that provide the same operational function. Each water control structure was designed to meet current dam safety criteria and design criteria for outlet works in accordance with EM 1110-2-2400. During construction temporary cofferdams will be placed at both ends of the culvert so the site can be dewatered for the removal of the existing culvert. The operational function of the culvert during construction will be provided via the use of the existing water control structures and system that serve the adjacent landside properties. Once the existing culvert is removed, the foundation of the new water control structure would be prepared to minimize future seepage and piping around and below the structure. A cutoff feature will be constructed beneath the water control structure to intercept and cutoff existing seepage paths. The new water control structure would then be constructed and the HHD embankment would be restored to the authorized embankment height. The temporary cofferdams would be removed and the new water control structure would resume full operational function. As the Geotechnical Expert Reviewer for this project, Mr. Godfrey reviewed the Design Documentation Report, two sets of Pre-Final Plans and Specifications (one for Culverts 1, 1A and 3 and a second set for culverts 3, 4A, 11, and 16) and the Hydraulics Report. Mr. Godfrey conducted his review in accordance with and then answered the General Charge for the Project.

Independent External Peer Review (IEPR) of Canton Dam Safety Assurance Project, Canton, Oklahoma - United States Army Corps of Engineers (Tulsa District): Expert Geotechnical Reviewer for the Independent External Peer Review (IEPR) of Canton Dam Safety Assurance Project. Mr. Godfrey was responsible for the Geotechnical Expert Review on the design of Canton Dam which, as originally constructed in 1948, is an earthen embankment with authorized purposes of flood control, water supply, and irrigation. The crest length is 15,140 feet at elevation 1648, msl. In 2001, the U.S. Army Corps of Engineers, Tulsa District, completed a Dam Safety Assurance Program Evaluation for Canton Lake which identified deficiencies that are now being corrected. A fuse-gated auxiliary spillway and channel currently under construction are designed to increase discharge capacity. The Fusegate Hydraulic System, weir, intake port, conduit, wet well, upstream and downstream aprons are in the design phase. The Fusegate Hydraulic System will be comprised of a set of 9, 32 feet tall and 53.10 feet wide independent units made of concrete placed side by side on the spillway weir to form a watertight barrier. When a flood of a specified magnitude occurs, the units start to overturn in a designed sequence with the uplift pressure generated in the chamber. A concrete weir approximately 35 feet deep and 70 feet long provides the foundation for the fusegates. An inlet port in the channel upstream of the gates allows water to flow through a conduit into the wet well tower. The wet well tower accommodates all the intake wells of each Fusegate. To accommodate excavation of the new channel, a portion of highway 58-A was taken out of service and demolished. A contract to construct a new bridge over the channel is underway. As the Geotechnical Expert Reviewer for this project, Mr. Godfrey prepared a Critical Items List, and reviewed the Interim and Final Design Documentation Reports and Plans and Specifications for the design of the hydraulic structures discussed above and seepage control measures. Concurrently, Mr. Godfrey reviewed construction documentation for the new bridge over the channel. Mr. Godfrey conducted his reviews in accordance with and then answered the General Charge for the Design and Contruction Review portions of the project.

Independent External Peer Review (IEPR) of Birds Point – New Madrid Floodway Project, Sikeston, Missouri - United States Army Corps of Engineers (Memphis District): Expert Geotechnical Reviewer for the Independent External Peer Review (IEPR), Safety Assurance Review (SAR) of Birds Point – New Madrid Floodway Letter Report: Interim Level of Protection Project. Mr. Godfrey was responsible for the Geotechnical Expert Review to assess, analyze, interpret, and evaluate design/engineering and construction criteria through an IEPR – SAR for the Interim Level of Protection of the Bird's Point – New Madrid Floodway during design phase of the project in accordance with the Water Resources Development Act (WRDA) 2007 (Public Law 110-114), Section 2035. The Birds Point-New Madrid Floodway is a component of the Mississippi River and Tributaries (MR&T) Project and is located on the right descending bank of the Mississippi River in Mississippi and New Madrid Counties, Missouri, just below the confluence of the Ohio and Mississippi Rivers. The Floodway is located in southeastern Missouri, approximately 15 miles east of Sikeston, Missouri and about 145 miles north of Memphis, Tennessee. The drainage area of the Mississippi River Basin at the confluence is about 917,340 square miles.

The Birds Point-New Madrid Floodway is about 33 miles long and 10 miles wide. Its area comprises about 205 square miles of alluvial valley land and is enclosed by Mississippi River project levees, except for a 1,500-foot authorized but not constructed closure at the lower end. This opening provides a drainage outlet and allows flood backwaters to enter. The Mississippi River project levees enclosing the Floodway are the lower portion of the Upper St. Francis Levee (Floodway Frontline Levee) which forms the eastern boundary, and the Birds Point-New Madrid Levee (Floodway Setback Levee) which forms the western boundary.

Following the operation of the Birds Point-New Madrid Floodway in May, 2011, the Commander, Mississippi Valley Division, issued a memorandum directing the Memphis District to implement make safe and stability operations based on a target elevation (stage) of 51 feet on the Cairo gage to provide a stable base for flood fight operation and subsequent reset operation by 30 November 2011. Based on previous physical model studies and the design of the operation plan, a stage of 51 feet is required to safely pass 550,000 cfs of the total Mississippi River Project Design Flood (PDF) discharge of 2,360,000 cfs. However, at that stage the level of protection for the Floodway is minimal as compared to the pre-operation level of protection. At the MVM Commander's request, the levee elevation was evaluated to determine the maximum elevation feasible so as to provide interim protection to the Floodway without placing undue risk on the remaining MR&T system components.

As the Geotechnical Expert Reviewer for this project, Mr. Godfrey prepared a Critical Items List and analyzed the adequacy and acceptability of engineering methods, models, data and analyses used for the Interim Level of Protection for the Birds Point-New Madrid Floodway system. Mr. Godfrey conducted his review in accordance with and then answered the specific technical questions as well as provided a broad technical (engineering) evaluation of the overall project.

Independent External Peer Review (IEPR) of Herbert Hoover Dike (HHD) Seepage Management Test Facility Project, Lake Okeechobee, Florida - United States Army Corps of Engineers (Jacksonville District): Expert Geotechnical Reviewer for the Independent External Peer Review (IEPR) of Herbert Hoover Dike (HHD) Seepage Management Test Facility Project. Mr. Godfrey was responsible for the Geotechnical Expert Review on the design of Herbert Hoover Dike Rehabilitation Project, Seepage Management Test Facility, Sites 1 and 2 Plans and Specifications and Design Document Report, Technical Specifications, Geotechnical Design Section, Geotechnical Appendix, Inspection Reports, Geotechnical Design and subsurface data, Structural Design and the Alternative Rehabilitation Plan Pilot Test Letter Report for Herbert Hoover Dike, Florida.

Herbert Hoover Dike (HHD) is an earthen embankment system located along the perimeter of Lake Okeechobee, a large (724 square mile surface area) freshwater lake in south Florida. The lake is located about 30 miles west of the Atlantic Ocean and 60 miles east of the Gulf of Mexico. The lake and surrounding drainage area encompass approximately 5,600 square miles. The dike was constructed primarily to provide local flood protection. Components of the embankment system have been built intermittently since the early 1900's.

Due to the ongoing emergency repairs to the embankment, including an increase in frequency of those occurrences, the Jacksonville District prepared a Major Rehabilitation Evaluation Report (MRR) in 2000 that analyzed the integrity of the existing dike system. The report covered the overall condition of the dike, but due to the size of the project the recommended solutions were prioritized specific for Reach 1. Subsequently, a similar effort was initiated for Reaches 2 and 3. The related report was the Major Rehabilitation Evaluation Report for Reaches 2 and 3 (MRR 2 and 3).

During the completion of the MRR for Reaches 2 and 3, the document underwent review by the Risk Management Center (RMC) and external panel of experts in August 2010. This review is called the QCC review. The panel confirmed the findings of the Jacksonville District. In addition the QCC panel recommended, "A more thorough design of downstream filter and collection alternatives that, at a minimum, include a wide trench/drain and a biopolymer trench. RMC recommends that these alternatives be brought to a level of design and cost estimate so that they are comparable with the cutoff wall alternative. SAJ and RMC also propose that several test sections of alternative risk reduction measures be constructed in Reaches 2 and 3 to determine if more cost-effective measures than a cutoff wall can be successfully constructed." In addition, it was decided that additional real estate outside the existing Federal rights-of-way could not be acquired to the extent needed for a comprehensive solution to reduce risks for the HHD. As a result of that decision, the Jacksonville District was tasked to explore least-cost alternatives within the footprint of the federal rights-of-ways (ROW) that would reduce the risk of failure from seepage and piping. This pilot test will be constructed to test of the cost and constructability of the seepage collection system only.

Mr. Godfrey conducted his review in accordance with and then answered the General Charge for the Project:

Independent External Peer Review (IEPR) of East Branch Dam - Safety Assurance Project, Wilcox, Pennsylvania - United States Army Corps of Engineers (Pittsburg District): K.S. Ware and Associates, LLC (KSWA) Quality Assurance Reviewer for the Independent External Peer Review (IEPR) of the East Branch Dam Safety Assurance Project. Mr. Godfrey was responsible for KSWA's Quality Assurance review of the IEPR Safety Assurance Review (SAR) for the East Branch Dam Safety Design Project in accordance with the Water Resources Development Act (WRDA) 2007 (Public Law 110-114), Section 2035. For the East Branch Dam project, the review included: cutoff wall design and construction; soil improvement (e.g., deep soil mixing), including various methods of cutoff wall construction and relevant equipment capabilities; subsurface investigations; soil mechanics; seepage and piping; slope stability; earthwork construction; seepage, settlement, stability, deformation problems associated with embankments constructed on weathered and jointed rock, alluvial soils, glacial outwash, and colluviums; risk-based dam safety analysis and risk reduction measures.

Mr. Godfrey conducted his QA review in accordance with the General Charge for the Design Review portion of the project. Mr. Godfrey ensured that all comments made by the review team were not duplicates, did not conflict and that were appropriate to the charge. He assisted the KSWA team leader in consolidating duplicate comments and determining which, if any, comments did not address the charge.

United States Army Corps of Engineers (Louisville District) Periodic Inspections of Levee Systems – Various Locations throughout Indiana, Illinois, and Kentucky: Lead Field Inspector for inspection of 15 different levee flood protection systems located throughout Indiana, Illinois, and Kentucky. Elements of the inspection of each system include evaluating: the performance of each system during high water events, maintenance of each system, the performance and effectiveness of erosion control measures, the performance and effectiveness of foundation underseepage and embankment seepage control measures, functionality of pumping systems, and integrity of the embankments and structures. Evaluation of levee systems was per the USACE Levee Safety Program and USACE design and engineering manuals.

Wolf Creek Dam Seepage Investigation and Mitigation – Jamestown, Kentucky: Senior Geotechnical Engineer for exploratory drilling and pressure testing of more than 2,500 feet of HQ coring advanced through the base of the concrete dam from within the grouting gallery. The project includes logging the core in accordance with USACE guidelines and pressure testing the borings in ten foot intervals to determine Lugeon values for each interval.

Center Hill Dam Seepage Remediation – DeKalb County, Tennessee: Project Manager for the analysis and design of slope configurations yielding factors of safety greater than 1.5 for cuts and fills along the working platforms. Cuts and fills ranged in height from 25 to over 300 feet. In addition, Mr. Godfrey was responsible for review of construction drawings for rock cuts and fills as well as development of recommendations for stabilization of rock cuts and soil nailing where sinkholes, or "cutters", were encountered. Mr. Godfrey also managed quality control testing associated with the placement of soil fill, concrete, and grout.

Clarksville Waste Water Treatment Plant and Levee Remediation – Clarksville, Tennessee: Project Manager for the analysis and design of new waste water treatment facility structures and levee repair and upgrades after historic May, 2010 flood inundated the property. The Clarksville WWTP property is located along the alluvial plain of the Red River. Senior geotechnical engineer for exploratory drilling of up to 15 new structures and about 0.5 miles of earthen levee. Analysis and evaluation of structures included slope stability; deep foundations including mat foundations, driven H-piles and micro piles; settlement and downdrag; liquefaction; and lateral squeeze. The earthen levee and levee foundation was analyzed for foundation underseepage, embankment seepage stability and structural integrity and provided recommendations. All analysis of levee was per USACE design and engineering manuals. Laboratory testing included moistures, atterbergs, grain size analysis, consolidation testing and cu tri-axial testing.

Oak Hill Reservoir Slope Failure Study for Metro Water Services – Davidson County, Tennessee: Senior Geotechnical Engineer for geotechnical study to evaluation and provide recommendations regarding the stabilization of the North slope where slope failures had occurred within colluvial soils. The landslides probably occurred as a result of the flooding rains which south Nashville and the surrounding communities had on May 1 and 2, 2010. Work included lab and field testing and slope stability analysis and recommendations. Also, as lead geotechnical engineer, Mr. Godfrey provided recommendations of continued monitoring of potential slope movement with inclinometers.

Red River - Bank Failure Analysis and Recommendations, City of Clarksville, Tennessee: Senior Geotechnical Engineer and supervised drilling services on land and from a barge in the Red River. The study was requested for evaluation and recommendations regarding the stabilization of the river bank alluvial soils where slope failures were occurring. Also, the cities newly installed, treated waste water outflow pipe was located along the river bank. Work included lab and field testing and slope stability and recommendations for stabilization.

US17/SR404 Back River Bridge and Approach Reconstruction, Savannah, Georgia: Senior Geotechnical Engineer and supervised drilling services for the proposed bridge approach and ramps along marsh lands of the Back River. The study included drilling and sampling and field vane shear testing to evaluate the very soft to soft alluvial marsh soils for support of earthen embankments ranging in heights from about 6 to 25 feet. Portions of the ramps were also utilized as levees against storm surges. The analysis included settlement, slope stability, erosion protection, and embankment construction analysis and recommendations. Provided recommendations regarding the

stabilization of the foundation alluvial soils and embankment stability. Laboratory testing included moistures, atterbergs, grain size analysis, consolidation testing and cu tri-axial testing.

Portland City Dam Seepage Remediation – Portland, Tennessee: Senior geotechnical engineer for the analysis of the Portland City Dam seepage remediation. Several large seepage boils were present downstream of the earthen dam. Further, the dam was constructed upon alluvial soils and karstic limestone bedrock. Conventional drilling and air-track drilling was performed and piezometers installed to evaluate the seepage condition through the dam embankment and foundation materials. Dye tracing determined connections between the reservoir and the seepage boils through the embankment and bedrock. Mr. Godfrey provided recommendations for seepage control and monitored grouting operations of the embankment and karstic bedrock. Stability analysis of the embankment was performed and recommendations for stabilization of the embankment were provided.

Ohio River Bridges, Kennedy Interchange – Louisville, Kentucky: Senior Geotechnical Engineer for geotechnical investigation, evaluation and recommendations for design and construction of 33 bridges and 3 retaining walls for relocation of Kennedy Interchange located in Louisville, Kentucky for the Kentucky Transportation Cabinet. Project involved widening existing bridges and construction of new bridges along Interstates 65, 64 and 71. Analysis and evaluation included slope stability; deep foundations including driven H-piles, drilled piers and auger cast piles; settlement and downdrag; liquefaction; and lateral squeeze. All analysis of design and evaluation was per AASHTO LRFD specifications and design procedures, 4th Edition, 2007 with 2008 interims.

Cumberland River Pedestrian Bridge – Nashville, Tennessee: Senior Geotechnical Engineer for the geotechnical assessment and development of foundation recommendations for a 745 foot pedestrian suspension bridge across the Cumberland River in Nashville, Tennessee. To complete the assessment, Mr. Godfrey designed an angled drilling approach that included advancing two borings at an inclination of 45 degrees more than 180 feet from the top of a bluff along the river bank to the proposed pier location. The angled drilling approach resulted in a cost savings of nearly $50,000 when compared to the alternate approach of drilling at the pier locations from a barge.

Tinnin Road Pavement and Slope Failure – Nashville, Tennessee: Senior Geotechnical Engineer for the geotechnical assessment and development of remedial recommendations for a 900 foot section of Tinnin road in North Davidson County, Tennessee. The road is located on the side of a steep slope approximately 50 feet above a creek. Various types of stabilization methods were considered to increase the apparent strength of the soils. The repair methods considered included secant pile walls, soil nails and excavate and replace.

Three Nature Centers for Shelby Bottoms Greenway, Beaman Park and Belles Bend Park, Metropolitan Board of Parks and Recreation – Davidson County, Tennessee: Senior geotechnical engineer for geotechnical investigation, evaluation and recommendations for design and construction of Three Nature Centers. Analysis, evaluation and recommendations for shallow and deep foundations including driven timber piles; settlement and downdrag; and construction.

East Park and Coleman Park Community Centers, Metropolitan Board of Parks and Recreation – Nashville, Tennessee: Senior geotechnical engineer for geotechnical investigation, evaluation and recommendations for design and construction of East Park and Coleman Park Community Centers. Analysis, evaluation and recommendations for shallow foundations; indoor pools; settlement; seismic; pavements; and construction.

Metro Water Services 8th Avenue Reservoir Stability and Seepage Monitoring – Nashville, Tennessee: Project manager overseeing the monitoring of slope and reservoir wall stability along with hydraulic seepage from the reservoir. Measurements to the nearest 1/1000th of an inch are collected bi weekly to identify potentially catastrophic movement in the reservoir walls and/or supporting slope and piezometer data is collected and analyzed bi-weekly to evaluate potential seepage from the reservoir.

Whites Creek Pumping Station Improvements – Nashville, Tennessee: Senior geotechnical engineer for geotechnical investigation, evaluation and recommendations for design and construction of a new 16 MGD (approximate) wet-pit/dry-pit pumping station, a new force main consisting of 36-inch and 30-inch pipe to parallel the existing 30-inch and 36-inch pipes, respectively, between the Whites Creek Pumping Station and WCWWTP, abandoning and/or replacing the existing 24-inch force main, and a 40 ft by 25 ft Influent structure constructed as part

of the improvements at WCWWTP improvements. Mr. Godfrey provided analysis and evaluation along with recommendations for shallow and deep foundations, settlement and construction.

Whites Creek Waste Water Treatment Plant - Chlorine Contact Tank Improvements – Nashville, Tennessee: Senior geotechnical engineer for evaluation of subsurface materials for additions to Chlorine Contact Tanks. Provided general recommendations for shallow foundations; settlement; and construction.

K.R. Harrington WTP Sludge Disposal Investigation – Nashville, Tennessee: Senior Geotechnical engineer for geotechnical investigation to determine the general subsurface profile at the site; the extent and consistency of the existing sludge; and address concerns relating to the containment and stability of the on-site sludge disposal area. The depth, consistency and extent of the sludge disposal area were identified. A slope stability analysis was performed to determine the stability of the banks along the Stones River which contain the sludge material. Inclinometers were also installed along the banks of the Stone River and monitored for potential slope movement.

Omohundro and West Park Storm Water Equalization Basins – Nashville, Tennessee: Senior project manager for geotechnical investigation, evaluation and recommendations for site preparation and foundation designs equalization basins. Analysis, evaluation and recommendations for shallow and deep foundations including driven H-piles; settlement and downdrag; and construction.

Harpeth River Greenway, Metropolitan Board of Parks and Recreation – Davidson County, Tennessee: Senior geotechnical engineer for geotechnical investigation, evaluation and recommendations for design and construction of pedestrian bridges along the proposed Harpeth River Greenway project. Analysis, evaluation and recommendations for shallow and deep foundations including driven H-piles; settlement and downdrag; and construction.

APPENDIX C
NAS COI FORMS

BI/COI FORM 3

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

National Academy of Sciences
National Academy of Engineering
Institute of Medicine
National Research Council

BACKGROUND INFORMATION AND CONFIDENTIAL CONFLICT OF INTEREST DISCLOSURE

For General Scientific and Technical Studies and Assistance

NAME: JOHN GODFREY, JR., P.E. TELEPHONE: 615-255-9702

ADDRESS: KSWA - 54 LINDSLEY AVE.

NASHVILLE, TN 37210

EMAIL ADDRESS: jgodfrey@kswarellc.com

CURRENT EMPLOYER: KS WARE & ASSOCIATES, LLC

NAS/NAE/IOM/NRC COMMITTEE: _____

There are two parts to this form, Part I Background Information, and Part II Confidential Conflict of Interest Disclosure. Complete both parts, **sign** and **date** this form on the last page, and return the form to the responsible staff officer for *The National Academies* project and committee activity to which this form applies. **Retain a copy for your records**.

PART I **BACKGROUND INFORMATION**

INSTRUCTIONS

Please provide the information requested below regarding **relevant** organizational affiliations, government service, public statements and positions, research support, and additional information (if any). Information is "relevant" if it is related to -- and might

reasonably be of interest to others concerning -- your knowledge, experience, and personal perspectives regarding the subject matter and issues to be addressed by the committee activity for which this form is being prepared. If some or all of the requested information is contained in your curriculum vitae, you may if you prefer simply attach your CV to this form, supplemented by additional responses or comments below as necessary.

I. ORGANIZATIONAL AFFILIATIONS. Report your relevant business relationships (as an employee, owner, officer, director, consultant, etc.) and your relevant remunerated or volunteer non-business relationships (e.g., professional organizations, trade associations, public interest or civic groups, etc.).

Senior Geotechnical Engineer (employee) for KS Ware & Associates, LLC

Member - American Society of Civil Engineers (ASCE)

Member - American Society of Highway Engineers (ASHE)

Member - Society of American Military Engineers (SAME)

Member - Geo-Institute (Subgroup of ASCE)

II. GOVERNMENT SERVICE. Report your relevant service (full-time or part-time) with federal, state, or local government in the United States (including elected or appointed positions, employment, advisory board memberships, military service, etc.).

NONE

III. RESEARCH SUPPORT. Report relevant information regarding both public and private sources of research support (other than your present employer), including sources of funding, equipment, facilities, etc.

NONE

IV. PUBLIC STATEMENTS AND POSITIONS. List your relevant articles, testimony, speeches, etc., by date, title, and publication (if any) in which they appeared, or provide relevant representative examples if numerous. Provide a brief description of relevant positions of any organizations or groups with which you are closely identified or associated.

"Case History-Remediation of Portland City Lake Dam, Tennessee", Proceeding of Association of State Dam Safety Officials, Southeastern RegionalConference, Nashville, Tennessee, June 1996.

"Foundation Remedies for Residential Construction over Karst Limestone in Nashville, Tennessee", 6th Multidisciplinary Conference on Sinkholes and the Environmental Impacts of Karst, Springfield, Missouri, April, 1997.

"LRFD Implementation - Kennedy Interchange",Annual Southeastern Transportation Geotechnical Engineering Conference, Bowling Green, Kentucky,October, 2007.

"Automated Laboratory Data Collection and Database Management", Annual Southeastern Transportation Geotechnical Engineering Conference, Wilmington, North Carolina, November, 2009.

"A ROCK STRESS RELEASE FAILURE AND QUARRY FLOODING ATTRIBUTED TO THE MAY 2010 NASHVILLE FLOOD", Geohazards Impacting Transportation in the Appalachian Region, 11th Annual Technical Forum, Chattanooga, TN, August, 2011

V. ADDITIONAL INFORMATION. If there are relevant aspects of your background or present circumstances not addressed above that might reasonably be construed by others as affecting your judgment in matters within the assigned task of the committee or panel on which you have been invited to serve, and therefore might constitute an actual or potential source of bias, please describe them briefly.

NONE

PART II **CONFIDENTIAL CONFLICT OF INTEREST DISCLOSURE**

INSTRUCTIONS

It is essential that the work of committees of the institution used in the development of reports not be compromised by any significant conflict of interest. For this purpose, **the term "conflict of interest" means any financial or other interest which conflicts with the service of the individual because it (1) could significantly impair the individual's objectivity or (2) could create an unfair competitive advantage for any person or organization.** Except for those situations in which the institution determines that a conflict of interest is unavoidable and promptly and publicly discloses the conflict of interest, no individual can be appointed to serve (or continue to serve) on a committee of the institution used in the development of reports if the individual has a conflict of interest that is relevant to the functions to be performed.

The term "conflict of interest" means something more than individual bias. There must be an *interest,* ordinarily financial, that could be directly affected by the work of the committee.

Conflict of interest requirements are *objective* and *prophylactic.* They are not an assessment of one's actual behavior or character, one's ability to act objectively despite the conflicting interest, or one's relative insensitivity to particular dollar amounts of specific assets because of one's personal wealth. Conflict of interest requirements are objective standards designed to eliminate certain specific, potentially compromising situations from arising, and thereby to protect the individual, the other members of the committee, the institution, and the public interest. The individual, the committee, and the institution should not be placed in a situation where others could reasonably question, and perhaps discount or dismiss, the work of the committee simply because of the existence of conflicting interests.

The term "conflict of interest" applies only to *current interests.* It does not apply to past interests that have expired, no longer exist, and cannot reasonably affect current behavior. Nor does it apply to possible interests that may arise in the future but do not currently exist, because such future interests are inherently speculative and uncertain. For example, a pending formal or informal application for a particular job is a current interest, but the mere possibility that one might apply for such a job in the future is <u>not</u> a current interest.

The term "conflict of interest" applies not only to the personal interests of the individual but also to the *interests of others* with whom the individual has substantial common financial interests if these interests are relevant to the functions to be performed. Thus, in assessing an individual's potential conflicts of interest, consideration must be given not only to the interests of the individual but also to the interests of the individual's spouse and minor children, the individual's employer, the individual's business partners, and others with whom the individual has substantial common financial interests. Consideration must also be given to the interests of those for whom one is acting in a

fiduciary or similar capacity (e.g., being an officer or director of a corporation, whether profit or nonprofit, or serving as a trustee).

Much of the work of this institution involves scientific and technical studies and assistance for sponsors across a broad range of activities. Such activities may include, for example: defining research needs, priorities, opportunities and agendas; assessing technology development issues and opportunities; addressing questions of human health promotion and assessment; providing scientific and technical assistance and supporting services for government agency program development; assessing the state of scientific or technical knowledge on particular subjects and in particular fields; providing international and foreign country science and technology assessments, studies and assistance. Such activities frequently address scientific, technical, and policy issues that are sufficiently broad in scope that they do not implicate specific financial interests or conflict of interest concerns.

However, where such activities address more specific issues having significant financial implications -- e.g., funding telescope A versus telescope B, government development or evaluation of a specific proprietary technology, promotion or endorsement of a specific form of medical treatment or medical device, connecting foreign research facilities to specific commercial interests, making recommendations to sponsors regarding specific contract or grant awards, etc. -- careful consideration must be given to possible conflict of interest issues with respect to the appointment of members of committees that will be used by the institution in the development of reports to be provided by the institution to sponsoring agencies.

The overriding objective of the conflict of interest inquiry in each case is to identify whether there are interests – primarily financial in nature – that conflict with the committee service of the individual because they could impair the individual's objectivity or could create an unfair competitive advantage for any person or organization. The fundamental question in each case is does the individual, or others with whom the individual has substantial common financial interests, have identifiable interests that could be directly affected by the outcome of the project activities of the committee on which the individual has been invited to serve? For projects involving advice regarding awards of contracts, grants, fellowships, etc., this institution is also guided by the principle that an individual should not participate in any decision regarding the award of a contract or grant or any other substantial economic benefit to the individual or to others with whom the individual has substantial common financial interests or a substantial personal or professional relationship.

The application of these concepts to specific scientific and technical studies and assistance projects must necessarily be addressed in each case on the basis of the particular facts and circumstances involved. The questions set forth below are designed to elicit information from you concerning possible conflicts of interest that are relevant to the functions to be performed by the particular committee on which you have been invited to serve.

1. FINANCIAL INTERESTS. (a) Taking into account stocks, bonds, and other financial instruments and investments including partnerships (but excluding broadly diversified mutual funds and any investment or financial interests valued at less than $10,000), do you or, to the best of your knowledge others with whom you have substantial common financial interests, have financial investments that could be affected, either directly or by a direct effect on the business enterprise or activities underlying the investments, by the outcome of the project activities of the committee on which you have been invited to serve?

(b) Taking into account real estate and other tangible property interests, as well as intellectual property (patents, copyrights, etc.) interests, do you or, to the best of your knowledge others with whom you have substantial common financial interests, have property interests that could be directly affected by the outcome of the project activities of the committee on which you have been invited to serve?

(c) Could your employment or self-employment (or the employment or self-employment of your spouse), or the financial interests of your employer or clients (or the financial interests of your spouse's employer or clients) be directly affected by the outcome of the project activities of the committee on which you have been invited to serve?

(d) Taking into account research funding and other research support (e.g., equipment, facilities, industry partnerships, research assistants and other research personnel, etc.), could your current research funding and support (or that of your close research colleagues and collaborators) be directly affected by the outcome of the project activities of the committee on which you have been invited to serve?

(e) Could your service on the committee on which you have been invited to serve create a specific financial or commercial competitive advantage for you or others with whom you have substantial common financial interests?

If the answer to all of the above questions under FINANCIAL INTERESTS is either "no" or "not applicable," check here __X__ (NO).

If the answer to any of the above questions under FINANCIAL INTERESTS is "yes," check here ____ (YES), and briefly describe the circumstances on the last page of this form.

2. OTHER INTERESTS. (a) Is the central purpose of the project for which this disclosure form is being prepared a critical review and evaluation of your own work or that of your employer?

(b) Do you have any existing professional obligations (e.g., as an officer of a scientific or engineering society) that effectively require you to publicly defend a previously established position on an issue that is relevant to the functions to be performed in this committee activity?

(c) To the best of your knowledge, will your participation in this committee activity enable you to obtain access to a competitor's or potential competitor's confidential proprietary information?

(d) If you are or have ever been a U.S. Government employee (either civilian or military), to the best of your knowledge are there any federal conflict of interest restrictions that may be applicable to your service in connection with this committee activity?

(e) If you are a U.S. Government employee, are you currently employed by a federal agency that is sponsoring this project? If you are not a U.S. Government employee, are you an employee of any other sponsor (e.g., a private foundation) of this project?

(f) If the committee activity for which this form is being prepared involves reviews of specific applications and proposals for contract, grant, fellowship, etc. awards to be made by sponsors, do you or others with whom you have substantial common financial interests, or a familial or substantial professional relationship, have an interest in receiving or being considered for awards that are currently the subject of the review being conducted by this committee?

(g) If the committee activity for which this form is being prepared involves developing requests for proposals, work statements, and/or specifications, etc., are you interested in seeking an award under the program for which the committee on which you have been invited to serve is developing the request for proposals, work statement, and/or specifications -- or, are you employed in any capacity by, or do you have a financial interest in or other economic relationship with, any person or organization that to the best of your knowledge is interested in seeking an award under this program?

If the answer to all of the above questions under OTHER INTERESTS is either "no" or "not applicable," check here _X__ (NO).

If the answer to any of the above questions under OTHER INTERESTS is "yes," check here ____ (YES), and briefly describe the circumstances on the last page of this form.

EXPLANATION OF "YES" RESPONSES:

During your period of service in connection with the activity for which this form is being completed, any changes in the information reported, or any new information, which needs to be reported, should be reported promptly by written or electronic communication to the responsible staff officer.

YOUR SIGNATURE _____ DATE 11/20/12

Reviewed by: _____ Executive Director Date 11/21/12

APPENDIX D
KSWA COMMENTS AND USACE RESPONSES

Public/SBU/FOUO | AGENCY: USACE-ProjNet

ProjNet Report

Comment Report: User's Comments (Submitted/Impacted) by Heidi Wilbarger
Project: Indy North 3B Levee Type 2 IEPR **Review**: 95% Submittal (*00001*)
(sorted by Discipline , ID)

Displaying 7 comments for the criteria specified in this report.

Id	Discipline	DocType	Spec	Sheet	Detail
4938120	Geotechnical	Design Analysis	n/a	n/a	n/a

Comment Classification: For Official Use Only (FOUO)

(Document Reference: Volume 1)
Settlement - I did not see any comments regarding a settlement analysis or where settlement was addressed. Manual EM 1110-2-1913, Table 1-1, Major and Minor Requirements, note 6 indicates that a settlement analysis is part of these requirements for levee design. Also, Section 6-10 of this manual indicates settlement should be analysed where compressible soils are present such ain some areas of this site.

Submitted By: Heidi Wilbarger (615-255-9702). Submitted On: Dec 07 2012

1-0	Evaluation **Concurred** Yes, settlement analyses were performed for the levee during a previous design phase. Submitted By: Kurt Schaefer (502-315-6441) Submitted On: Dec 13 2012
1-1	Backcheck Recommendation **Open Comment** Should this be included in the most recent Design Analysis document? Submitted By: Heidi Wilbarger (615-255-9702) Submitted On: 13-Dec-12
2-0	Evaluation **Concurred** The settlement analyses will be incorporated as applicable. Submitted By: Kurt Schaefer (502-315-6441) Submitted On: Dec 20 2012
2-1	Backcheck Recommendation **Close Comment** Closed without comment. Submitted By: Heidi Wilbarger (615-255-9702) Submitted On: 02-Jan-13
	Current Comment Status: **Comment Closed**

Id	Discipline	DocType	Spec	Sheet	Detail
4938125	Geotechnical	Design Analysis	Section 4 Geotechnial Engineering - 4.7	n/a	n/a

Comment Classification: For Official Use Only (FOUO)

(Document Reference: Volume 1)
Section 4.7 Toe Drain - Test borings across the levee section indicated varing soil materials at or near elevation 710. Some of the borings (AD 14E and AD 215) indicated sands and gravel at or near this elevation. Did you considered a seepage berm in lieu of the toe drain? A seepage berm would eliminate the need for a pump station.

Submitted By: Heidi Wilbarger (615-255-9702). Submitted On: Dec 07 2012

1-0	Evaluation **Concurred** Berms were discussed but are not the best solution for this project.A seepage berm would add significant right of way requirements to this very "real estate sensitive" project. Although this portion of the project has available building room, a seepage berm would necessitate the removal of additional trees and vegetation, which is a critical issue in the community. Submitted By: Kurt Schaefer (502-315-6441) Submitted On: Dec 13 2012
1-1	Backcheck Recommendation **Close Comment** Closed without comment. Submitted By: Heidi Wilbarger (615-255-9702) Submitted On: 13-Dec-12
	Current Comment Status: **Comment Closed**

Id	Discipline	DocType	Spec	Sheet	Detail
4938128	Geotechnical	Design Analysis	Appendix C Geotechnical Calculations	n/a	n/a

Comment Classification: For Official Use Only (FOUO)

(Document Reference: Volume 1)
Levee Slope Stability and Seepage Analysis - These analysis were performed on sections with 8 and 10 foot clay layers beneath the embankment. The soil types and thicknesses vary across the levee alignment according to the borings, ranging from clays and sands at or near elevation 710. Was consideration given to the slope stability and seepage analysis for areas where there was less than 8 or 10 feet of clay present?

Submitted By: Heidi Wilbarger (615-255-9702). Submitted On: Dec 07 2012

1-0	Evaluation **Concurred** Yes. As discussed in the on-site meeting, some areas analized for seepage indicated a toe drain might not be required. However due to the possibly varying subsurface conditions, a toe drain was designed for the entire project length. Submitted By: Kurt Schaefer (502-315-6441) Submitted On: Dec 13 2012
1-1	Backcheck Recommendation **Close Comment** Closed without comment. Submitted By: Heidi Wilbarger (615-255-9702) Submitted On: 13-Dec-12
	Current Comment Status: **Comment Closed**

Id	Discipline	DocType	Spec	Sheet	Detail
4938131	Geotechnical	Plans	n/a	n/a	C-600

Comment Classification: For Official Use Only (FOUO)

Profile Sta 0+00 to Sta 23+20 - For clarification, should the note at the bottom of the page read "All remnants of the existing levee should be removed below the proposed embankment to minimum EL 710." Is it your intent to remove all evidence of the existing levee below the new embankment?

Submitted By: Heidi Wilbarger (615-255-9702). Submitted On: Dec 07 2012

1-0	Evaluation **Concurred** The existing levee will be removed to elevation 710. Then the new levee will be constructed. If at elevation 710 there are portions of the old levee under the new levee which are unsuitable, they will be removed as per the specifications. Submitted By: Kurt Schaefer (502-315-6441) Submitted On: Dec 13 2012
1-1	Backcheck Recommendation **Close Comment** Closed without comment. Submitted By: Heidi Wilbarger (615-255-9702) Submitted On: 13-Dec-12
	Current Comment Status: **Comment Closed**

Id	Discipline	DocType	Spec	Sheet	Detail
4938133	Geotechnical	Plans	n/a	n/a	C705

Comment Classification: For Official Use Only (FOUO)

Levee Pump Station Outfall Crossing - Has frost protection been considered where the outfall pipes cross the levee per EM 1110-2-1913 Table 8.1?

Submitted By: Heidi Wilbarger (615-255-9702). Submitted On: Dec 07 2012

1-0	Evaluation **Concurred** Yes. Submitted By: Kurt Schaefer (502-315-6441) Submitted On: Dec 13 2012
1-1	Backcheck Recommendation **Close Comment** Closed without comment. Submitted By: Heidi Wilbarger (615-255-9702) Submitted On: 13-Dec-12
	Current Comment Status: **Comment Closed**

Id	Discipline	DocType	Spec	Sheet	Detail
4938135	Geotechnical	Plans	n/a	n/a	C706

Comment Classification: For Official Use Only (FOUO)

Drainage Structure through Levee near Station 20+00 - Has consideration of embankment loading and settlement been addressed as outlined in EM 1110-2-2902?

Submitted By: Heidi Wilbarger (615-255-9702). Submitted On: Dec 07 2012

1-0	Evaluation **Concurred** Yes Submitted By: Kurt Schaefer (502-315-6441) Submitted On: Dec 13 2012
1-1	Backcheck Recommendation **Close Comment** Closed without comment. Submitted By: Heidi Wilbarger (615-255-9702) Submitted On: 13-Dec-12
	Current Comment Status: **Comment Closed**

Id	Discipline	DocType	Spec	Sheet	Detail
4938138	Geotechnical	Specifications	31 71 00	n/a	n/a

Comment Classification: For Official Use Only (FOUO)

Pg 4 - 3.5 Grubbing - For Phase 3B Only - Specification indicates "...removed to a depth not less than 18 inches below the original surface level of the ground". EM 1110-2-1913 Chapter 7, 7.2 indicates "Roots or other intrusions over 38.1 mm (1-1/2 in.) in diameter within the levee foundation area should be removed to a depth of 0.91 m (3 ft) below natural ground surface". Should this be added to this section of specifications?

Submitted By: Heidi Wilbarger (615-255-9702). Submitted On: Dec 07 2012

1-0	Evaluation **Concurred** This will be added to the specifications for clarity. Submitted By: Kurt Schaefer (502-315-6441) Submitted On: Dec 13 2012
1-1	Backcheck Recommendation **Close Comment** Closed without comment. Submitted By: Heidi Wilbarger (615-255-9702) Submitted On: 13-Dec-12
	Current Comment Status: **Comment Closed**

Report Complete

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APPENDIX E
CERTIFICATION OF INDEPENDENT EXTERNAL REVIEW

Certification of Independent External Peer Review

I John Godfrey Jr., PE have performed an independent review of the Indianapolis, White River (North), Indiana Flood Damage Reduction Project in accordance with the following national and international standards and regulations.

1. EC 1165-2-209 Civil Works Review Policy
2. ER 1110-2-1150 Engineering and Design for Civil Works Projects
3. EM 1110-2-1902 Slope Stability
4. EM 1110-2-1901 Seepage Analysis and Control for Dams
5. EM 1110-2-1913 Design and Construction of Levees

I have also entered all findings into the DrChecks[SM] system and presented all findings to the appropriate personnel associated with the Design Submittals and Construction.

Signature: John Godfrey Jr

Discipline: Geotechnical

Date: 4 January 2013

6. EM 1110-1-1904 Settlement Analysis
7. EM 1110-2-2902 Conduits, Culverts and Pipes