

# Final Independent External Peer Review Report

## Central and Southern Florida Project, Kissimmee River Restoration, Kissimmee River, Florida, Post Authorization Change Limited Reevaluation Report

Prepared by  
Battelle Memorial Institute

Prepared for  
Department of the Army  
U.S. Army Corps of Engineers  
Ecosystem Restoration Planning Center of Expertise  
Wilmington District

Contract No. W912HQ-10-D-0002  
Task Order: 0001

October 13, 2010





**Final Independent External Peer Review Report  
Central and Southern Florida Project, Kissimmee River Restoration,  
Kissimmee River, Florida,  
Post Authorization Change Limited Reevaluation Report**

**by**

**Battelle  
505 King Avenue  
Columbus, OH 43201**

**for**

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INDEPENDENT EXTERNAL PEER REVIEW REPORT  
for the**

**Central and Southern Florida Project, Kissimmee River Restoration,  
Kissimmee River, Florida,  
Post Authorization Change Limited Reevaluation Report**

**EXECUTIVE SUMMARY**

The Kissimmee River Restoration (KRR) is a major environmental restoration project located in central Florida. The goal of the project is to restore or significantly improve over 36,000 acres of wetlands located within the 40 square mile Kissimmee River Basin. As part of the Central & Southern Florida Project the river was channelized in the 1960's as a flood risk management measure. While the channelization achieved its intended goal, it also significantly altered the natural ecosystem. The KRR project will greatly improve the natural ecosystem without eliminating the flood risk management benefits. KRR and the Kissimmee Headwaters Revitalization Project (KHRP) were jointly authorized by Section 101(8) of the Water Resources Development Act of 1992 (Public Law 112-580). Both projects are referred to collectively as the Kissimmee River Restoration, and for the purposes of this report are inseparable components of the same project.

There have been no changes in project purpose, design, scope, location, benefits, environmental impacts or social impacts. There has, however, been a significant increase in total project cost. Total project costs, after being adjusted for inflation, are projected to exceed the 20% allowance provided by Section 902 of the Water Resources Development Act of 1986 (33 U.S.C. 2280). A Post Authorization Change Report is required, and has been prepared. This Limited Re-evaluation Report (LRR) is the object of the required IEPR. Costs have increased primarily due to real estate acquisition costs. Real estate prices in Florida have increased much faster than the prescribed civil works inflation rate.

Completion of the KRR is necessary to achieve full ecological benefits of restoration. Much of the restoration work to date has been to support an eventual rehydration and restoration of the river and floodplain ecosystem. A recent analysis indicates that a full 77% of the ecological benefits have yet to be realized. Completing the project is an extremely cost-effective use of restoration dollars.

USACE is conducting an Independent External Peer Review (IEPR) of the Kissimmee River LRR. Battelle, as a 501(c)(3) non-profit science and technology organization with experience in establishing and administering peer review panels for USACE, was engaged to coordinate the IEPR of the Kissimmee River LRR. Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analyses. The IEPR was external to the agency and conducted following USACE and Office of Management and Budget (OMB) guidance described in USACE (2010a), USACE (2007), and OMB (2004). This final report describes the

IEPR process, describes the panel members and their selection, and summarizes the Final Panel Comments of the IEPR Panel (the Panel).

Four panel members were selected for the IEPR from more than 13 identified candidates. Based on the technical content of the Kissimmee River LRR and the overall scope of the project, the final panel members were selected for their technical expertise in the following key areas: water resources planning, restoration ecology, economics, and design and construction cost engineering. Although the Panel was disclosed to USACE, Battelle made the final decision on selecting the Panel.

The Panel received electronic versions of the Kissimmee River LRR review and supplemental documents, along with a charge that solicited comments on specific sections of the document to be reviewed. The Kissimmee River LRR review document was 142 pages in length. The charge was prepared by Battelle to assist the USACE in the development of the charge questions that were to guide the peer review, according to guidance provided in USACE (2010a) and OMB (2004). USACE was given the opportunity to provide comments and revisions, and subsequently approved the final charge questions.

The USACE Project Delivery Team (PDT) briefed the Panel and Battelle during a kick-off meeting held via teleconference prior to the start of the review. Other than this teleconference, there was no direct communication between the Panel and USACE during the peer review process. The Panel produced more than 200 individual comments in response to the 49 charge questions.

IEPR panel members reviewed the Kissimmee River LRR documents individually. The panel members then met via teleconference with Battelle to review key technical comments, discuss charge questions for which there were conflicting responses, and reach agreement on the Final Panel Comments to be provided to USACE. Each Final Panel Comment was documented using a four-part format consisting of: (1) a comment statement; (2) the basis for the comment; (3) the significance of the comment (high, medium, or low); and (4) recommendations on how to resolve the comment. Overall, 15 Final Panel Comments were identified and documented. Of these, 6 were identified as having high significance, 7 had medium significance, and 2 had low significance.

Table ES-1 summarizes the Final Panel Comments by level of significance. Detailed information on each comment is contained in Appendix A of this report.

**Table ES-1. Overview of 15 Final Panel Comments Identified by the Kissimmee River LRR IEPR Panel**

<b>Significance – High</b>	
1	Increases in construction cost are not sufficiently described in the report to support the request for additional funds.
2	The justifications for post-construction monitoring costs and cost overruns are not sufficiently described in the report to support the request for additional monitoring funds.
3	The justifications for real estate cost overruns are not sufficiently described in the report to support the request for additional funds.
4	Increases in preconstruction, engineering, and design (PED) costs are not sufficiently described in the report to support the request for additional funds.
5	The economic analyses and 902 Limit Calculations are based on an uncertified cost estimate and do not include contingencies based on a cost risk analysis or cost escalation through construction completion.
6	Information on soils and their relationship to the hydrologic regime needs to be included because soil subsidence could have implications for project success.
<b>Significance – Medium</b>	
7	A concise explanation of the relationship between the sequencing of construction events and the production of environmental benefits is not provided.
8	Additional detail is needed in Appendix E pertaining to the costs and impacts to HU and flood protection from the SFWMD work that is being requested for consideration as work-in-kind services.
9	The calculations of HUs lack appropriate detail and there are currently more realistic and ecologically appropriate ways to evaluate hydrologic regime improvements, water quality conditions, and habitat increases.
10	Most of the restoration monitoring and evaluation is focused on the floodplain and channel, while offsite effects of phosphorus loading to Lake Okeechobee, a major justification of the original project, receive little discussion.
11	The purpose of the LRR and the project description and history are not clearly presented.
12	The goal of maintaining the existing level of flood protection should be considered as a project constraint.
13	Several ecological factors are not discussed thus making the report incomplete
<b>Significance – Low</b>	
14	The underlying assumptions on restoration have not been provided to illustrate the relationship between restoration targets and a return to “historic” conditions.
15	More details on the project’s construction history should be included to provide context for the reader.

The Panel agreed on its “assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used” (USACE, 2010a; p. D-4) in the Kissimmee River LRR document. In particular, the Panel thought that the Kissimmee

River LRR document (specifically Section 3.1) did not provide sufficient justification for the need for an additional \$344 million in authorized costs. The first four Final Panel Comments focus on the need for detailed analyses relating to actual project cost increases in construction costs, post-construction monitoring costs, real estate costs, and PED costs. The following statements summarize the Panel's findings, which are described in more detail in the Final Panel Comments (see Appendix A).

**Economics:** The Kissimmee River LRR addresses a variety of cost overruns, and highlights the role unexpected increases in real estate and construction cost indices may have played. The primary shortcoming of the report, from an economic perspective, is the lack of detail linking actual outlays to the period during which the real estate and construction indices grew unexpectedly quickly. Furthermore, there is insufficient detail concerning the initial cost projections, making it difficult to assess accurately the contribution of unexpected phenomena to deviations of actual costs from the initial cost projections. The overall impression is that additional economic information is needed to support the request for additional funds.

**Engineering:** The Kissimmee River LRR appears to have focused on the ecological benefits of the project and on using the work performed to date to present a compelling reason for continuation of the project. However, this was at the expense of the cost presentation, which is the primary reason for the report. The report did not provide adequate justification for cost overruns, other than in very simple terms, and gave an incomplete cost estimate. Therefore, a proper review could not be conducted of the cost overruns, the costs associated with the project that formed the basis of the 902 Limit Calculation, and the justification for additional finds.

**Environmental:** The Kissimmee River LRR uses habitat units (HUs) as a way of calculating the environmental benefits of the project. Advances in the field of ecosystem restoration, and more recently the "expectations" for progress of the Kissimmee River project, are not sufficiently acknowledged or used to justify project benefits. Floodplain soil and potential phosphorus loading are not discussed or evaluated. These and other environmental information are needed to justify the argument that most of the benefits will be forthcoming when the KHRP is implemented.

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## **LIST OF ACRONYMS**

ATR	Agency Technical Review
CE/ICA	cost effectiveness/incremental cost analysis
COI	conflict of interest
DrChecks	Design Review and Checking System
EIS	Environmental Impact Statement
ERDC	Engineer Research and Development Center
HU	habitat unit
IGE	Independent Government Estimate
KHRP	Kissimmee Headwaters Revitalization Project
KRR	Kissimmee River Restoration
LCA	Louisiana Coastal Area
LEERD	Lands, Easements, Right-of-way, Relocations, and Disposal
LRR	Limited Reevaluation Report
MCACES	Micro-Computer Aided Cost Estimating System
NTP	Notice to Proceed
OMB	Office of Management and Budget
P	phosphorus
PED	preconstruction, engineering, and design
PDT	project delivery team
SFWMD	South Florida Water Management District
STAs	stormwater treatment areas
TPCS	Total Project Cost Summary
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
WRDA	Water Resources Development Act

## 1. INTRODUCTION

The Kissimmee River Restoration (KRR) is a major environmental restoration project located in central Florida. The goal of the project is to restore or significantly improve over 36,000 acres of wetlands located within the 40 square mile Kissimmee River Basin. As part of the Central & Southern Florida Project the river was channelized in the 1960's as a flood risk management measure. While the channelization achieved its intended goal, it also significantly altered the natural ecosystem. The KRR project will greatly improve the natural ecosystem without eliminating the flood risk management benefits. KRR and the Kissimmee Headwaters Revitalization Project (KHRP) were jointly authorized by Section 101(8) of the Water Resources Development Act of 1992 (Public Law 112-580). Both projects are referred to collectively as the Kissimmee River Restoration and for the purposes of this report are inseparable components of the same project.

There have been no changes in project purpose, design, scope, location, benefits, environmental impacts or social impacts. There has, however, been a significant increase in total project cost. Total project costs, after being adjusted for inflation, are projected to exceed the 20% allowance provided by Section 902 of the Water Resources Development Act of 1986 (33 U.S.C. 2280). A Post Authorization Change Report is required, and has been prepared. This Limited Re-evaluation Report (LRR) is the object of the required IEPR. Costs have increased primarily due to real estate acquisition costs. Real estate prices in Florida have increased much faster than the prescribed civil works inflation rate.

Completion of the KRR is necessary to achieve full ecological benefits of restoration. Much of the restoration work to date has been to support an eventual rehydration and restoration of the river and floodplain ecosystem. A recent analysis indicates that a full 77% of the ecological benefits have yet to be realized. Completing the project is an extremely cost-effective use of restoration dollars.

The objective of the work described here was to conduct an Independent External Peer Review (IEPR) of the Kissimmee River LRR in accordance with procedures described in the Department of the Army, U.S. Army Corps of Engineers Engineer Circular *Civil Works Review Policy* (EC No. 1165-2-209) (USACE, 2010a), USACE CECW-CP memorandum *Peer Review Process* (USACE, 2007), and Office of Management and Budget (OMB) bulletin *Final Information Quality Bulletin for Peer Review* (OMB, 2004). Battelle, as a 501(c)(3) non-profit science and technology organization with experience in establishing and administering peer review panels, was engaged to coordinate the IEPR of the Kissimmee River LRR. Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analyses.

This final report details the IEPR process, describes the IEPR panel members and their selection, and summarizes the Final Panel Comments of the IEPR Panel on the existing environmental, economic, and engineering analyses contained in the Kissimmee River LRR. Detailed information on the Final Panel Comments is provided in Appendix A.

## **2. PURPOSE OF THE IEPR**

To ensure that USACE documents are supported by the best scientific and technical information, USACE has implemented a peer review process that uses IEPR to complement the Agency Technical Review, as described in USACE (2010a) and USACE (2007).

In general, the purpose of peer review is to strengthen the quality and credibility of the USACE decision documents in support of its Civil Works program. IEPR provides an independent assessment of the economic, engineering, and environmental analysis of the project study. In particular, the IEPR addresses the technical soundness of the project study's assumptions, methods, analyses, and calculations and identifies the need for additional data or analyses to make a good decision regarding implementation of alternatives and recommendations.

In this case, the IEPR of the Kissimmee River LRR was conducted and managed using contract support from Battelle, which is an Outside Eligible Organization under Section 501(c)(3) of the U.S. Internal Revenue Code with experience conducting IEPRs for USACE.

## **3. METHODS**

This section describes the method followed in selecting the members for the IEPR Panel (the Panel) and in planning and conducting the IEPR. The IEPR was conducted following procedures described by USACE (2010a) and in accordance with USACE (2007) and OMB (2004) guidance. Supplemental guidance on evaluation for conflicts of interest was obtained from the *Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports* (The National Academies, 2003).

### **3.1 Planning and Schedule**

After receiving the notice to proceed (NTP), Battelle held a kick-off meeting with USACE to review the preliminary/suggested schedule, discuss the IEPR process, and address any questions regarding the scope (e.g., clarify expertise areas needed for panel members). Any revisions to the schedule were submitted as part of the final Work Plan.

Table 1 defines the schedule followed in executing the IEPR. Due dates for milestones and deliverables are based on the NTP date of June 7, 2010. Note that the work items listed in Task 7 occur after the submission of this report. Battelle will enter the 15 Final Panel Comments developed by the Panel into USACE's Design Review and Checking System (DrChecks), a Web-based software system for documenting and sharing comments on reports and design documents, so that USACE can review and respond to them. USACE will provide responses (Evaluator Responses) to the Final Panel Comments, and the Panel will respond (BackCheck Responses) to the Evaluator Responses. All USACE and Panel responses will be documented by Battelle.

**Table 1. Kissimmee River LRR IEPR Schedule**

TASK	ACTION	DUE DATE
1	<b>Notice to Proceed (NTP)</b>	6/7/2010
	<b>Review documents available</b>	6/17/2010
	<b>End of Period of Performance</b>	1/11/2011
	*Battelle submits draft Work Plan	7/1/2010
	USACE provides comments on draft Work Plan	7/9/2010
2	Teleconference (if necessary)	7/9/2010
	*Battelle submits final Work Plan	7/14/2010
	questionnaire	6/25/2010
3	USACE provides comments on COI	6/29/2010
	*Battelle submits list of selected panel members	7/15/2010
	USACE provides comments on selected panel members	7/20/2010
4	Battelle completes subcontracts for panel members	8/3/2010
	*Battelle submits draft Charge (combine with draft Work Plan – Task 1)	7/1/2010
	USACE provides comments on draft Charge	7/9/2010
	*Battelle submits final Charge (combined with final Work Plan – Task 1)	7/14/2010
5	USACE approves final Charge	7/15/2010
	USACE/Battelle kick-off meeting	6/14/2010
	Review documents sent to panel members	8/19/2010
	USACE/Battelle/Panel kick-off meeting	8/23/2010
6	Panel members complete their review	9/7/2010
	Convene panel review teleconference	9/16/2010
	Panel members provide draft Final Panel Comments (FPCs) to Battelle	9/24/2010
7**	*Battelle submits final IEPR report to USACE	10/13/2010
7**	Battelle inputs Final Panel Comments to DrChecks; Battelle provides Final Panel Comment response template to USACE	10/15/2010
	USACE provides draft responses and clarifying questions to Battelle	10/27/2010
	Comment/Response teleconference between Battelle, Panel, and USACE to discuss FPCs, draft responses, and clarifying questions	11/9/2010
	USACE inputs final Evaluator responses in DrChecks	11/24/2010
	Battelle inputs BackCheck responses in DrChecks	12/10/2010
	*Battelle submits pdf printout of DrChecks to USACE	12/13/2010
	Project Closeout	2/25/2011

\*Deliverable

\*\*Task occurs after the submission of this report.

### **3.2 Identification and Selection of IEPR Panel Members**

The candidates for the Panel were evaluated based on their technical expertise in the following key areas: water resources planning, restoration ecology, economics, and design and construction cost engineering. These areas correspond to the technical content of the Kissimmee River LRR and overall scope of the KRR project.

To identify candidate panel members, Battelle reviewed experts in Battelle's Peer Reviewer Database, sought recommendations from colleagues, contacted former panel members, and conducted targeted Internet searches. Battelle initially identified more than 13 candidates for the Panel, evaluated their technical expertise, and inquired about potential conflicts of interest. Of these, Battelle chose seven of the most qualified candidates and confirmed their interest and availability. Of the seven candidates, four were proposed for the final Panel and three were proposed as backup reviewers. Information about the candidate panel members, including brief biographical information, highest level of education attained, and years of experience, was provided to USACE for feedback. Battelle made the final selection of panel members according to the selection criteria described in the Work Plan.

The four proposed primary reviewers constituted the final Panel. The remaining candidates were not proposed for a variety of reasons, including lack of availability, disclosed conflicts of interest, or lack of the precise technical expertise required.

The candidates were screened for the following potential exclusion criteria or conflicts of interest.<sup>1</sup> Participation in previous USACE technical peer review committees and other technical review panel experience was also considered.

- Involvement by you or your firm<sup>2</sup> in the Central and Southern Florida Project, Kissimmee River Restoration Post Authorization Change Draft Limited Reevaluation Report.
- Involvement by you or your firm<sup>2</sup> in ecosystem restoration in the Kissimmee Chain of Lakes, Lake Kissimmee, and the Kissimmee River, including the Upper and Lower Kissimmee River Basins.
- Involvement by you or your firm<sup>2</sup> in the Central and Southern Florida Project Kissimmee River Restoration Post Authorization Change Draft Limited Reevaluation Report related projects.
- Current employment by USACE.

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<sup>1</sup> Battelle evaluated whether scientists in universities and consulting firms that are receiving USACE-funding have sufficient independence from USACE to be appropriate peer reviewers. See OMB (2004, p. 18), "...when a scientist is awarded a government research grant through an investigator-initiated, peer-reviewed competition, there generally should be no question as to that scientist's ability to offer independent scientific advice to the agency on other projects. This contrasts, for example, to a situation in which a scientist has a consulting or contractual arrangement with the agency or office sponsoring a peer review. Likewise, when the agency and a researcher work together (e.g., through a cooperative agreement) to design or implement a study, there is less independence from the agency. Furthermore, if a scientist has repeatedly served as a reviewer for the same agency, some may question whether that scientist is sufficiently independent from the agency to be employed as a peer reviewer on agency-sponsored projects."

<sup>2</sup> Includes any joint ventures in which your firm is involved

- Involvement with paid or unpaid expert testimony related to the Central and Southern Florida Project, Kissimmee River Restoration Post Authorization Change Draft Limited Reevaluation Report.
- Current or previous employment or affiliation with members of the cooperating agencies or local sponsors, including United States Fish and Wildlife Service, South Florida Water Management District, or Florida Department of Environmental Protection (for pay or pro bono).
- Past, current or future interests or involvements (financial or otherwise) by you, your spouse or children related to Lake Kissimmee and the Kissimmee River, including the Upper and Lower Kissimmee River Basins, and Kissimmee Chain of Lakes region.
- Current personal involvement with other USACE projects, including whether involvement was to author any manuals or guidance documents for USACE. If yes, provide titles of documents or description of project, dates, and location (USACE district, division, Headquarters, Engineer Research and Development Center [ERDC], etc.), and position/role. Please highlight and discuss in greater detail any projects that are specifically with the Jacksonville District.
- Current firm<sup>2</sup> involvement with other USACE projects, specifically those projects/contracts that are with the Jacksonville District. If yes, provide title/description, dates, and location (USACE district, division, Headquarters, ERDC, etc.), and position/role.
- Any previous employment by the USACE as a direct employee or contractor (either as an individual or through your firm<sup>2</sup>) within the last 10 years, notably if those projects/contracts are with the Jacksonville District. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.
- Previous experience conducting technical peer reviews. If yes, please highlight and discuss any technical reviews concerning ecosystem restoration and include the client/agency and duration of review (approximate dates).
- Pending, current or future financial interests in Central and Southern Florida Project, Kissimmee River Restoration Post Authorization Change Draft Limited Reevaluation Report. related contracts/awards from USACE.
- A significant portion (i.e., greater than 50%) of personal or firm<sup>2</sup> revenues within the last 3 years came from USACE contracts.
- Any publicly documented statement (including, for example, advocating for or discouraging against) related to Central and Southern Florida Project, Kissimmee River Restoration Post Authorization Change Draft Limited Reevaluation Report.
- Participation in relevant prior Federal studies relevant to this project and/or the Central and Southern Florida Project, Kissimmee River Restoration Post Authorization Change Draft Limited Reevaluation Report including:
  - Final Integrated Feasibility Report and Environmental Impact Statement (EIS) (March 1992)

- Kissimmee River Headwaters Revitalization Project Integrated Project Modification Report and Supplement to the Final Environmental Impact Statement (April 1996)
- Participation in prior non-Federal studies relevant to this project and/or Central and Southern Florida, Project Kissimmee River Restoration Post Authorization Change Draft Limited Reevaluation Report.
- Is there any past, present or future activity, relationship or interest (financial or otherwise) that could make it appear that you would be unable to provide unbiased services on this project? If so, please describe:

In selecting the final members of the Panel from the list of candidates, Battelle chose experts who best fit the expertise areas and had no conflicts of interest. The four final reviewers were either affiliated with academic institutions or consulting companies or were independent engineering consultants. Battelle established subcontracts with the panel members when they indicated their willingness to participate and confirmed the absence of conflicts of interest through a signed Conflict of Interest form. Although the Panel was disclosed to USACE, Battelle made the final decision on selecting the Panel. Section 4 of this report provides names and biographical information on the panel members.

Prior to beginning their review and within 14 days of their subcontracts being finalized, all members of the Panel attended a kick-off meeting via a teleconference planned and facilitated by Battelle in order to review the IEPR process, the schedule, communication, and other pertinent information for the Panel.

### **3.3 Preparation of the Charge and Conduct of the IEPR**

Battelle drafted a preliminary charge document, including specific charge questions and discussion points. The charge was prepared by Battelle to assist the USACE in the development of the charge questions that will guide the peer review, according to guidance provided in USACE (2010a) and OMB (2004). The draft charge was submitted to the USACE for evaluation as part of the draft Work Plan. USACE provided comments and revisions to the draft charge, which were used to produce the final charge. The final charge was submitted to USACE for approval. In addition to a list of 49 charge questions/discussion points, the final charge included general guidance for the Panel on the conduct of the peer review (provided in Appendix B of this final report).

Battelle planned and facilitated a final kick-off meeting via teleconference during which USACE presented project details to the Panel. Before the meeting, the IEPR Panel received an electronic version of the Kissimmee River LRR documents and the final charge. A full list of the documents reviewed by the Panel is provided in Appendix B of this report. The Panel was instructed to address the charge questions/discussion points within a comment-response form provided by Battelle.

### **3.4 Review of Individual Comments**

The Panel produced approximately 200 individual comments in response to the charge questions/discussion points. Battelle reviewed the comments to identify overall recurring

themes, areas of potential conflict, and other overall impressions. As a result of the review, Battelle was able to summarize the 200 comments into a preliminary list of 13 overall comments and discussion points. Each panel member's individual comments were shared with the full Panel in a merged individual comments table.

### **3.5 IEPR Panel Teleconference**

Battelle facilitated a 4-hour teleconference with the Panel so that the panel experts, many of whom are from diverse scientific backgrounds, could exchange technical information. The main goal of the teleconference was to identify which issues should be carried forward as Final Panel Comments in the IEPR report and decide which panel member should serve as the lead author for the development of each Final Panel Comment. This information exchange ensured that the final IEPR report would accurately represent the Panel's assessment of the project, including any conflicting opinions. The Panel engaged in a thorough discussion of the overall positive and negative comments, added any missing issues of high-level importance to the findings, and merged any related individual comments. In addition, Battelle confirmed each Final Panel Comment's level of significance to the Panel.

The Panel also discussed responses to two specific charge questions where there appeared to be disagreement among panel members. The conflicting comments were resolved based on the professional judgment of the Panel, and all sets of comments were determined not to be conflicting. Each comment was either incorporated into a Final Panel Comment, determined to be consistent with other Final Panel Comments already developed, or determined to be a non-significant issue.

At the end of these discussions, the Panel identified 15 comments and discussion points that should be brought forward as Final Panel Comments.

### **3.6 Preparation of Final Panel Comments**

Following the teleconference, Battelle prepared a summary memorandum for the Panel documenting each Final Panel Comment (organized by level of significance). The memorandum provided the following detailed guidance on the approach and format to be used to develop the Final Panel Comments for the Kissimmee River LRR:

- Lead Responsibility: For each Final Panel Comment, one Panel member was identified as the lead author responsible for coordinating the development of the Final Panel Comment and submitting it to Battelle. Battelle modified lead assignments at the direction of the Panel. To assist each lead in the development of the Final Panel Comments, Battelle distributed the merged individual comments table, a summary detailing each draft final comment statement, an example Final Panel Comment following the four-part structure described below, and templates for the preparation of each Final Panel Comment.
- Directive to the Lead: Each lead was encouraged to communicate directly with other IEPR panel members as needed and to contribute to a particular Final Panel Comment. If a significant comment was identified that was not covered by one of the original Final Panel Comments, the appropriate lead was instructed to draft a new Final Panel Comment.

- Format for Final Comments: Each Final Panel Comment was presented as part of a four-part structure:
  1. Comment Statement (succinct summary statement of concern)
  2. Basis for Comment (details regarding the concern)
  3. Significance (high, medium, low; see description below)
  4. Recommendation for Resolution (see description below).
- Criteria for Significance: The following were used as criteria for assigning a significance level to each Final Panel Comment:
  1. High: Describes a fundamental problem with the project that could affect the recommendation or justification of the project
  2. Medium: Affects the completeness or understanding of the reports/project
  3. Low: Affects the technical quality of the reports but will not affect the recommendation of the project.
- Guidance for Developing the Recommendation: The recommendation was to include specific actions that the USACE should consider to resolve the Final Panel Comment (e.g., suggestions on how and where to incorporate data into the analysis, how and where to address insufficiencies, areas where additional documentation is needed).

At the end of this process, 15 Final Panel Comments were prepared and assembled. Battelle reviewed and edited the Final Panel Comments for clarity, consistency with the comment statement, and adherence to guidance on the Panel's overall charge, which included ensuring that there were no comments regarding either the appropriateness of the selected alternative or USACE policy. There was no direct communication between the Panel and USACE during the preparation of the Final Panel Comments. The Final Panel Comments are presented in Appendix A of this report.

#### **4. PANEL DESCRIPTION**

Candidates for the Panel were identified using Battelle's Peer Reviewer Database, targeted Internet searches using key words (e.g., technical area, geographic region), searches of websites of universities or other compiled expert sites, and referrals. Battelle prepared a draft list of primary and backup candidate panel members (who were screened for availability, technical background, and conflicts of interest), and provided it to USACE for feedback. Battelle made the final selection of panel members.

An overview of the credentials of the final four primary members of the Panel and their qualifications in relation to the technical evaluation criteria is presented in Table 2. More detailed biographical information regarding each panel member and his or her area of technical expertise is presented in the text that follows the table.

**Table 2. Kissimmee River LRR IEPR Panel: Technical Criteria and Areas of Expertise**

	Schlebusch	Pugh	Brinson	Mullen
<b>Design and Construction Cost Engineering (one expert needed)</b>	X			
Professional Engineer with a minimum of 10 years demonstrated experience in design/construction cost engineering	X			
Familiar with large, complex Civil Works projects with high public and interagency interests	X			
Demonstrated experience in performing cost engineering/construction management, preferably with knowledge of riverine floodplain ecosystem restoration	X			
Familiar with similar projects across the US and the related cost engineering	X			
Experience in associated contracting procedures	X			
Experience in total cost growth analysis	X			
Experience in cost risk analysis	X			
Familiar with construction and industry practices used in Florida and/or Southeastern US	X			
<b>Water Resources Planning (one expert needed)</b>		X		
Expert with a minimum of 10 years demonstrated experience in coastal engineering		X		
Familiar with large, complex Civil Works projects with high public and interagency interests		X		
Preferable experience in riverine restoration to achieve ecological benefits		X		
Preferable knowledge of the Kissimmee River, FL		X		
Experienced in plan formulation process		X		
Familiar with evaluation of alternative plans for ecosystem restoration projects		X		
Familiar with USACE standards and procedures required		X		
Degree in planning or related field		X		
<b>Restoration Ecology (one expert needed)</b>			X	
Expert with a minimum of 10 years demonstrated experience in biology and with NEPA			X	
Familiar with large, complex Civil Works projects with high public and interagency interests			X	
Particular knowledge of ecosystem restoration			X	
Experience in riverine wetland and riparian ecology, preferably in subtropical regions			X	
M.S. degree or higher in biology or ecology			X	

	Schlebusch	Pugh	Brinson	Mullen
<b>Economics (one expert needed)</b>				X
Expert from academia, public agency, or consulting firm with a minimum of 10 years demonstrated experience in economic studies				X
Familiar with large, complex Civil Works projects with high public and interagency interests				X
Able to evaluate the appropriateness of cost effectiveness and incremental cost analysis (CE/ICA) as applied to dollar costs and ecosystem restoration benefits				X
Preferably familiar with USACE tool for CE/ICA, called IWR-Planning Suite				X
Degree in economics or related field				X

***Steven Pugh***

**Role:** This panel member was chosen primarily for his water resources planning experience and expertise.

**Affiliation:** Independent consultant

Mr. Pugh is an independent consultant specializing in planning, with a focus on aquatic ecosystem restoration in tidal and non-tidal environments. He earned his B.S. in natural resources management from the University of Maryland in 1997. He has more than 17 years experience in planning and/or evaluating ecosystem restoration projects or watershed studies and has been actively involved in every phase of tidal wetland and river restoration from planning to monitoring and adaptive management. Mr. Pugh was employed by USACE Baltimore District as a Civil Works planner (1999-2007) and participated in the various phases of planning, including the evaluation of alternative plans, for nearly 50 ecosystem restoration projects. He is familiar with large, complex civil works projects with high public and interagency interests, such as the Chesapeake Bay Marshlands Restoration Study and Demonstration project which evaluated restoring up to 20,000 acres of wetlands. He has also served on USACE IEPR panels as planner for Louisiana Coastal Area (LCA) Restoration Medium Diversion at White Ditch and C-111 Spreader Canal Project Benefit Evaluation Methodology. Mr. Pugh is experienced in riverine restoration to achieve ecological benefits, having led numerous watershed or river restoration efforts throughout the Chesapeake Bay area such as the Middle Potomac River Restoration study. He has knowledge of the Kissimmee River, Florida through site visits, tours, and while traveling with the Chief of Engineers Environmental Advisory Board for public meetings and related conferences. He is experienced in the plan formulation process, participating in various phases of planning, and in the evaluation of alternative plans for the USACE Baltimore District. In addition, Mr. Pugh is a graduate of the Planning Associates Program (2003) and served as an instructor for the Planning for Ecosystem Restoration (PROSPECT) course. He is knowledgeable in the evaluation of alternative plans for ecosystem restoration projects due to his service with USACE as planner and ecologist, and has remained current with USACE standards and procedures by staying actively involved with USACE's Ecosystem Restoration mission through contract work with IWR (PROSPECT instructor) and consulting activities.

***Mark Brinson***

**Role:** This panel member was chosen primarily for his restoration ecology experience and expertise.

**Affiliation:** East Carolina University

Dr. Brinson is a professor in the Department of Biology at East Carolina University specializing in the study of ecosystem ecology. He teaches graduate and undergraduate courses in restoration ecology, wetland ecology and management, and ecosystems ecology. He earned his Ph.D. in botany/ecosystem ecology from the University of Florida in 1973, and holds a Senior Ecologist certification with the Ecological Society of America. He has more than 30 years of experience as a wetland ecologist, with research experience in the relationship of hydrology and hydroperiod to wetland ecosystem structure and function, classification and assessment of wetlands, and the effects of rising sea level on coastal wetlands. Dr. Brinson has conducted research and published numerous peer reviewed articles on wetland evaluation, assessment, and restoration approaches for riparian ecosystems. His experience in subtropical wetland ecology includes serving on a

committee responsible for developing a Hydrogeomorphic guidebook for riverine wetlands in the southeastern U.S. Dr. Brinson's experience with large complex, civil works projects includes serving on a review committee for the mitigation of a large phosphate mine in North Carolina. He continues to work with the North Carolina Ecosystem Enhancement Program on approaches to evaluate the ecological condition of ecosystems related to restoration. He has served as a consultant for the U.S. Fish and Wildlife Service on the synthesis riparian and wetland ecosystem research, and chaired the National Research Council committee on Riparian Zones. Additionally, Dr. Brinson has provided testimony before U.S. Senate and House committees on the identification of wetlands, and has served as president of the Society of Wetland Scientists and he received the society's Merit Award in 1998.

***Jeffrey Mullen***

**Role:** This panel member was chosen primarily for his economics experience and expertise.

**Affiliation:** University of Georgia

Dr. Mullen is an associate professor in the Department of Agricultural and Applied Economics at the University of Georgia, specializing in water resource, natural resource, and environmental economics. He earned his Ph.D. in Agricultural and Applied Economics/Natural Resource Economics from Virginia Polytechnic Institute and State University in 1999. He has more than 18 years experience conducting numerous studies in the field of environmental and natural resources economics and has taught graduate courses in environmental and natural resource economics and econometrics. He is familiar with large, complex civil works projects with high public and interagency interests, and has served on USACE IEPR panels as an economist for both the Lock and Dam 22 Fish Passage Project, Hannibal, Missouri and Aquatic Ecosystem Restoration Project, Mountain Park Dam, Mountain Park, Georgia. Dr. Mullen is exceptionally qualified to evaluate the appropriateness of cost effectiveness/incremental cost analysis (CE/ICA) applied to dollar costs and ecosystem restoration. In addition to the experience described above, he has taught theory and application of the techniques used by USACE to estimate National Economic Development, Environment Quality, Regional Economic Development, and Other Social Effects benefits, as well as CE/ICA. He has detailed knowledge of USACE benefit and cost calculations for ecosystem restoration, agricultural production, urban flood damage, transportation, and recreation. In addition, both IEPRs that Dr. Mullen participated in required the extensive application of CE/ICA. He has detailed knowledge of the IWR Planning Suite, the USACE tool for CE/ICA, utilizing the program in his Water Resource Economics course to illustrate the complexity of water management decisions and incremental cost analysis. He has coauthored numerous peer-reviewed articles concerning economic analyses and impacts relating to municipal, wastewater, irrigation, and water impoundment projects and has been a contributing author to numerous publications concerning environmental economics and evaluation, economic modeling, and price analysis. His textbook, *Water Resource Economics*, (Routledge Press) is forthcoming. Dr Mullen is the President of the Southern Natural Resource Economics Committee and a member of the American Agricultural Economics Association.

### **Marc Schlebusch**

**Role:** This panel member was chosen primarily for his design and construction cost engineering experience and expertise.

**Affiliation:** CDM, Inc.

Mr. Schlebusch is a cost engineer for CDM, Inc., specializing in cost estimates, construction schedules, and project controls for complex projects. He earned his M.S. in environmental engineering from the University of Iowa in 2007. He has more than 12 years of experience in civil engineering and is a licensed professional engineer in Kansas and Missouri. He is familiar with large, high visibility, complex civil works projects, having provided cost estimating support for such projects as LCA Ecosystem Restoration, Convent/Blind River Diversion Project and the Central City Project in Ft. Worth, Texas. Mr. Schlebusch has extensive experience performing cost engineering and construction management for all phases of ecosystem restoration, having prepared Micro-Computer Aided Cost Estimating System (MCACES) MII cost estimates for USACE projects with values from \$1M to more than \$100M including feasibility, design, and construction level estimates. Projects include ecosystem restoration, floodwall demolition and construction, pedestrian bridge and trail construction, and hazardous site remediation. He is familiar with similar projects across the United States, as well as the related cost engineering associated with such studies. He is familiar with the construction industry and practices used in wetland restoration and is experienced in the associated contracting procedures and various contracting mechanisms utilized by the USACE. Mr. Schlebusch was the Cost Engineer for the Central City, Trinity River Feasibility Study and EIS (USACE Fort Worth District), (Section F, Project 3). He prepared a project cost estimate using MCACES MII software and project schedule in Microsoft Project format in support of a cost and schedule risk analysis CSRA and conducted market studies to support Monte Carlo (Crystal Ball) contingency calculations. The estimate consisted of large volumes of earthwork, installation of floodgates, and construction of river walkways, and had a total value of \$681.7M. Mr. Schlebusch is experienced in cost growth analysis, having developed risk registers for projects to identify potential areas where cost growth may occur and to determine the relative cost impact of potential scope revisions. He is experienced in the cost risk analysis of projects, completing the cost risk analysis for the Central City Project in Ft. Worth, Texas and for the LCA Ecosystem Restoration, Convent/Blind River Diversion. He is experienced with construction and industry practices used in Florida and/or the southeastern United States having worked on LCA Ecosystem Restoration, Convent/Blind River Diversion and Lake Pontchartrain and Vicinity Hurricane Protection Projects in New Orleans, Louisiana. Mr. Schlebusch is a member of the Association for the Advancement of Cost Engineering.

## **5. SUMMARY OF FINAL PANEL COMMENTS**

The Panel agreed on its “assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used” (USACE, 2010a; p. D-4) in the Kissimmee River LRR document. In particular, the Panel thought that the Kissimmee River LRR document (specifically Section 3.1) did not provide sufficient justification for the need for an additional \$344 million in authorized costs. The first four Final Panel Comments focus on the need for detailed analyses relating to actual project cost increases in construction costs, post-construction monitoring costs, real estate costs, and PED costs. The following

statements summarize the Panel's findings, which are described in more detail in the Final Panel Comments (see Appendix A).

**Economics:** The Kissimmee River LRR addresses a variety of cost overruns, and highlights the role unexpected increases in real estate and construction cost indices may have played. The primary shortcoming of the report, from an economic perspective, is the lack of detail linking actual outlays to the period during which the real estate and construction indices grew unexpectedly quickly. Furthermore, there is insufficient detail concerning the initial cost projections, making it difficult to assess accurately the contribution of unexpected phenomena to deviations of actual costs from the initial cost projections. The overall impression is that additional economic information is needed to support the request for additional funds.

**Engineering:** The Kissimmee River LRR appears to have focused on the ecological benefits of the project and on using the work performed to date to present a compelling reason for continuation of the project. However, this was at the expense of the cost presentation, which is the primary reason for the report. The report did not provide adequate justification for cost overruns, other than in very simple terms, and gave an incomplete cost estimate. Therefore, a proper review could not be conducted of the cost overruns, the costs associated with the project that formed the basis of the 902 Limit Calculation, and the justification for additional finds.

**Environmental:** The Kissimmee River LRR uses habitat units (HUs) as a way of calculating the environmental benefits of the project. Advances in the field of ecosystem restoration, and more recently the "expectations" for progress of the Kissimmee River project, are not sufficiently acknowledged or used to justify project benefits. Floodplain soil and potential phosphorus loading are not discussed or evaluated. These and other environmental information are needed to justify the argument that most of the benefits will be forthcoming when the KHRP is implemented.

Table 3 lists the 15 Final Panel Comment statements by level of significance.

**Table 3. Overview of 15 Final Panel Comments Identified by Kissimmee River LRR IEPR Panel**

<b>Significance – High</b>	
1	Increases in construction cost are not sufficiently described in the report to support the request for additional funds.
2	The justifications for post-construction monitoring costs and cost overruns are not sufficiently described in the report to support the request for additional monitoring funds.
3	The justifications for real estate cost overruns are not sufficiently described in the report to support the request for additional funds.
4	Increases in preconstruction, engineering, and design (PED) costs are not sufficiently described in the report to support the request for additional funds.
5	The economic analyses and 902 Limit Calculations are based on an uncertified cost estimate and do not include contingencies based on a cost risk analysis or cost escalation through construction completion.
6	Information on soils and their relationship to the hydrologic regime needs to be included because soil subsidence could have implications for project success.
<b>Significance – Medium</b>	
7	A concise explanation of the relationship between the sequencing of construction events and the production of environmental benefits is not provided.
8	Additional detail is needed in Appendix E pertaining to the costs and impacts to HU and flood protection from the SFWMD work that is being requested for consideration as work-in-kind services.
9	The calculations of HUs lack appropriate detail and there are currently more realistic and ecologically appropriate ways to evaluate hydrologic regime improvements, water quality conditions, and habitat increases.
10	Most of the restoration monitoring and evaluation is focused on the floodplain and channel, while offsite effects of phosphorus loading to Lake Okeechobee, a major justification of the original project, receive little discussion.
11	The purpose of the LRR and the project description and history are not clearly presented.
12	The goal of maintaining the existing level of flood protection should be considered as a project constraint.
13	Several ecological factors are not discussed thus making the report incomplete
<b>Significance – Low</b>	
14	The underlying assumptions on restoration have not been provided to illustrate the relationship between restoration targets and a return to “historic” conditions.
15	More details on the project’s construction history should be included to provide context for the reader.

## 6. REFERENCES

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## **APPENDIX A**

**Final Panel Comments**

**on the**

**Kissimmee River LRR**

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**Final Panel Comment 1:**

**Increases in construction cost are not sufficiently described in the report to support the request for additional funds.**

**Basis for Comment:**

The Kissimmee River Restoration (KRR) Project has experienced a significant increase in costs. Other than in very general terms, Section 3.1 does not support or justify the request for an additional \$344 million in authorized costs. A detailed analysis relating to actual project cost increases is needed to provide sufficient justification for additional funds. This Final Panel Comment focuses on the increase in construction costs.

According to Figure 3-1 on page 3-1, construction cost increases account for 38% of the total increase in the project cost. The KRR Limited Reevaluation Report (LRR) states that costs of construction and construction materials have increased faster than the general pace of inflation. To support the cost increase, the report presents the Rider Levett Bucknall (RLB) National Construction Cost Index from October 2002 to October 2007 in Figure 3-3. The general pace of inflation was not presented in contrast to construction cost inflation.

There are many other indices that could have been presented in addition to the RLB National Construction Cost Index including, but not limited to, the U.S. Army Corps of Engineers (USACE) Civil Works Construction Cost Index System (CWCCIS), the American City and County Cost Index, and the Engineering News Record (ENR) cost index. Local construction cost increases and local pressures (e.g., other infrastructure projects competing with resources and driving up costs) resulting in potential increases in construction costs need to be considered in support of the increase of construction costs.

Figure 3-3 illustrates an acceleration of the RLB National Construction Cost Index beginning in the second quarter of fiscal year 2004 (FY04). The steep incline of the construction cost index continues through the first quarter (Q1) FY07. Costs continued to climb, as reflected in the CWCCIS, at this higher rate through Q3 of FY08 (USACE, 2010b). Since that time, however, the index retracted and then, in Q3 of FY09, began to increase at a rate comparable to pre-FY04 levels. Based on the discussion in Appendix C, Contracts 1, 2A, 2B, 3, 4A, 4B, 4C, 5, 7, and 14B were all completed prior to the acceleration in the growth of construction costs (i.e., Q1 of FY04). In other words, these contracts should not have contributed to the significant change in project costs through unanticipated inflationary conditions. Based on Table 3-5, these contracts account for 41% of the spending through 2008. The remaining 59% of the spending through 2008 occurred from 2004 to 2008. Additionally, Contracts 2B1, 9, 10, 11A, 12, 12A, 15, and 18 are scheduled to be or have been awarded after economic conditions retracted in Q4 of FY08.

Section 3.1.2 does not include a discussion with regard to the construction sequence and schedule. Construction and/or contracting delays due to design, re-design, field issues, or funding issues could result in construction start delays and increased costs.

The majority of the work appears to be associated with earthwork (degrading levees, backfill of canals, dredging) as opposed to civil construction (construction of spillways, bridges, and other work requiring concrete, steel, riprap). Earthwork would primarily be impacted by the volatility of gasoline and diesel prices. The KRR LRR does not assess the impact on construction costs by the increase in construction material costs as opposed to the increase in earthwork costs.

**Significance – High:**

The extent to which an increase in construction costs has resulted in cost increases of the project needs to be sufficiently shown to justify the substantial increase in authorized costs.

**Recommendations for Resolution:**

To resolve these concerns, the report would need to include the following:

1. A discussion of other construction cost indices to corroborate the general justification. Cost indices, in graph format, from 1992 through 2010 should be presented to account for the economic retraction in 2009.
2. A general inflation rate to provide a basis for the statement “Costs of construction and construction materials have increased faster than the general pace of inflation over the past several years.” This statement is outdated and should also be revised to consider the economic retraction in 2009.
3. A discussion of the difference in cost increases from 1992 to 2003, as opposed to cost increases from 2004 through 2008, the period of accelerated construction cost increases.
4. A discussion of local construction cost increases, including local pressures on construction costs, in addition to the national trends.
5. Original engineer’s estimates for the contracts with a comparison to the incurred costs to show that inflation is responsible for 38% of the increase in project costs. This may be presented in addition to the Contract Scopes in Appendix C or as a separate appendix.
6. In Section 3.1.2, a comparison of material costs (concrete, steel, riprap) associated with the project as opposed to costs associated with earthwork (degrading levees, backfill of canals, dredging).
7. In Section 3.1, a chart similar to Figure 3-4 that illustrates the start and termination of contracts since the beginning of the project (1992), along with cumulative costs.
8. In Section 3.1.2, a discussion about impacts to overall project schedule, if any, as a result of construction and/or contracting delays due to design, inadequate funding, or other factors that may also result in construction cost overruns.

**Literature Cited:**

USACE (2010b). Civil Works Construction Cost Index System (CWCCIS). U.S. Army Corps of Engineers, Washington, DC. Engineer Manual 1110-2-1304.

<b>Final Panel Comment 2:</b>
<b>The justifications for post-construction monitoring costs and cost overruns are not sufficiently described in the report to support the request for additional monitoring funds.</b>
<b>Basis for Comment:</b>
The KRR Project has experienced a significant increase in costs. Other than in very general terms, Section 3.1 does not support or justify the request for an additional \$344 million in authorized costs. A detailed analysis relating to actual project cost increases is needed to provide sufficient justification for additional funds. This Final Panel Comment focuses on the increase in post-construction monitoring costs and cost overruns.
The costs for post-construction project monitoring activities have not been clearly delineated in the report. “Restoration Monitoring and Research” costs are provided with one line in the cost estimate table (Table 3-3). Section 3.1.3 is general and provides more of an overview of the monitoring process but does not include detailed information regarding increases in post-construction monitoring costs.
The Kissimmee River Feasibility Report (USACE, 1992) states, “ <i>A five-year (or until major effects stabilize), post-construction evaluation phase should follow, and include all ecosystem components incorporated in preconstruction monitoring. Corps involvement will be limited to monitoring before and during construction that is necessary to support decisions about further design modifications that could be made to improve the project.</i> ” Notice this statement explicitly does not mention post-construction monitoring as a responsibility of USACE, yet approximately \$42 million of the requested additional \$344 million is attributed to post-construction monitoring.
<b>Significance – High:</b>
The report does not provide sufficient information regarding the proposed post-construction monitoring activities and associated cost overruns to support the request for additional monitoring funds.
<b>Recommendations for Resolution:</b>
To resolve these concerns, the report would need to include the following:
<ol style="list-style-type: none"> <li>1. A description of all proposed post-construction monitoring activities with their costs either in the body of the report or in Appendix B.</li> <li>2. A description of the projected cost increases of the monitoring activities from the original authorization to the current post-authorization change request.</li> <li>3. Documentation of USACE’s responsibility to provide funds for “post-construction” monitoring.</li> </ol>

#### **Literature Cited:**

USACE (1992). Central and Southern Florida Project Environmental Restoration of the Kissimmee River, Florida. Final Integrated Feasibility Report and Environmental Impact Statement.

**Final Panel Comment 3:**

**The justifications for real estate cost overruns are not sufficiently described in the report to support the request for additional funds.**

**Basis for Comment:**

The KRR Project has experienced a significant increase in costs. Other than in very general terms, Section 3.1 does not support or justify the request for an additional \$344 million in authorized costs. A detailed analysis relating to actual project cost increases is needed to provide sufficient justification for additional funds. This Final Panel Comment focuses on the increase in real estate cost overruns.

The report lays much of the reason for the project cost overrun on unanticipated, rapid increases in real estate prices and time. However, the report does not sufficiently document which real estate costs were incurred during the period of unusually rapid growth, nor does it document what the projected escalation in real estate costs were at the time of the original authorization. The point is that, in some years, projected real estate escalation may have exceeded actual real estate price growth rates, which could significantly mitigate the cost impact of the unanticipated, rapid rise in actual prices during the 2004-2008 period.

To demonstrate the rapid increase in real estate prices, Figure 3-2 includes a curve labeled “average Florida real estate prices,” while one of the vertical axes is labeled “average property price.” It is unclear whether this average price represents average price per acre, average price per parcel, or some other unit.

Furthermore, the line in Figure 3-2 representing “1992 Real Estate Valuation” does not appear to have an escalation factor incorporated. As such, assuming the “average Florida real estate price” curve and the “1992 Real Estate Valuation” line are measured in the same units, the difference between these two values reflects the actual real estate inflation rate; The Panel’s interest, however, is in the difference between the actual real estate inflation rate and the projected escalation of real estate costs.

Additionally, neither Figure 3-2 nor any accompanying tables or text indicate what was actually paid for acquired land over time, and how that compares to projected real estate expenditures over time. To accurately assess the impact of the unanticipated, rapid rise in real estate prices on project costs, information on the timing and value of real estate expenditures is needed.

There is also a significant discrepancy between Figure 3-2 and Table 3-5 with respect to the timing of land acquisition. Figure 3-2 illustrates that approximately 72,000 acres were acquired from the date of authorization to 1999; Table 3-5 says there were no real estate expenditures prior to the year 2000 and the total expenditures through 2008 only totaled \$58.8 million. According to Table 3-1, \$282.2 million has been presumably spent on Lands, Easements, Right-of-way, Relocations, and Disposal (LERRDs) already acquired but awaiting certification. A note at the bottom of Table 3-3 explains that these costs have been spent by the South Florida Water Management District (SFWMD); however they have not yet been certified by the

USACE and therefore can only be classified as remaining costs until certification. This apparent contradiction must be clarified within the report.

The increase in real estate costs is also driven in part by the 17,000 acre (nearly 20%) increase in land required for title or easement acquisition. The report does not sufficiently address the impacts that increasing the required land had on the cost overrun or illustrate where these additional acres are located.

The timing of LERRD certifications is another issue. About 13% of the Total Estimated LERRDs have been certified to date; more than 60% have been acquired but not certified. The report should indicate when lands that are LERRD-certified were acquired, and where those lands are located. Similarly, the location of acquired but yet-to-be-certified lands would provide a greater understanding of the real estate cost concerns.

According to Table 3-1, the total LERRDs acquired (to be certified) currently under negotiations and to be acquired total \$392 million. Table 3-2 also presents \$392.4 million as a remaining cost. The September 2009 cost estimate reports a contract cost for Lands and Damages of \$355.8 million without contingencies and \$392.4 million including contingencies. However, as discussed above, \$282.2 million has been spent on LERRDs already acquired but awaiting certification. Although classified as a remaining cost, one would expect LERRDs already acquired to be a completed cost and therefore no contingency would be applied. The costs presented in the KRR LRR are not sufficiently transparent to deduce if contingency is being appropriately applied.

There is little detail in how the remaining costs for land to be acquired were derived. The notes at the bottom of Table 3-1 indicate that the costs for LERRDs currently under negotiation and LERRDs to be acquired (\$110 million) were based on historical knowledge and a contingency of 50% to 60%. However, the October 2009 Independent Government Estimate (IGE) cost estimate references a May 2009 study by Hansler Bealyer. The October 2009 IGE cost estimate also presents the following costs, without contingency, under Real Estate Cost: Lands Acquired - \$282.2 million, Lands Currently under Negotiations - \$42.5 million, and Lands to be Acquired - \$28 million.

#### **Significance – High:**

Complete justification of real estate cost overruns is essential for making an informed, appropriate decision about the authorization of additional project funds.

#### **Recommendations for Resolution:**

To resolve these concerns, the report would need to include the following:

1. A comparison (graphically or in a table) of the projected (at the time of authorization) cumulative real estate costs over time to the actual real estate expenditures over time. This would be similar to Figure 3-4, but would address real estate costs in the years since project authorization to the present.
2. A comparison (graphically or in a table) of the projected real estate escalation factor to the actual real estate inflation rate over time.
3. A unit of measure to clarify what the vertical axis currently labeled “Average Property Price” in Figure 3-2 represents.

4. An indication of the number of acres acquired per year that are currently LERRD certified. That is, how many of the 16,000 acres acquired in 1994 have been certified, etc.?
5. A parcel map indicating which properties have been acquired, the year they were acquired, and whether they have been LERRD certified.
6. A map indicating the change from the projected acreage required for acquisition to the actual acreage required. More detail is needed on the cost impact of the additional acreage required to meet project goals.
7. More detail in Section 3.1.1 regarding the cost of LERRDs to be certified being classified as remaining costs. The classification of costs incurred as remaining costs has significant implications for the 902 Limit Calculation.
8. A correction to the discrepancy in reported costs for Land and Damages reported in the KRR LRR, the September 2009 cost estimate, and the October 2009 IGE cost estimate.
9. The cost estimate for Lands and Damages under Project Remaining in Appendix B should be presented similar to Table 3-1, and proper consideration should be given to the application of contingency for each block of LERRDs.
10. A basis for the contingency for remaining real estate acquisition costs, which should include a cost risk analysis prepared in accordance with USACE guidance. If a cost risk analysis has been conducted, include the contingencies generated in the KRR LRR. If a cost risk analysis has not been conducted, do so, and include the contingencies generated in the KRR LRR.
11. A correction to (or removal of) the reference to Table 3-4. The last sentence of Section 3.1.1 states that Table 3-4 provides a summary of original and current estimated real estate costs. Table 3-4 provides total costs and does not break out real estate costs.

**Final Panel Comment 4:**

**Increases in preconstruction, engineering, and design (PED) costs are not sufficiently described in the report to support the request for additional funds.**

**Basis for Comment:**

The KRR Project has experienced a significant increase in costs. Other than in very general terms, Section 3.1 does not support or justify the request for an additional \$344 million in authorized costs. A detailed analysis relating to actual project cost increases is needed to provide sufficient justification for additional funds. This Final Panel Comment focuses on the increase in PED costs.

PED is the phase during which the design is finalized, the plans and specifications are prepared, and the construction contract is prepared for advertising. According to Figure 3-1, PED, including monitoring, accounts for 23% of the increase in project costs. Based on Table 3-2, PED for work completed is nearly 62% of construction costs. For reference, the USACE assumes a maximum of 26.5% of construction costs for PED in preparation of the Total Project Cost Summary for a project. The May 2009 and September 2009 cost estimates assume PED costs will be on the order of 12% of construction costs. The October 2009 cost estimate assumes PED costs will be on the order of 15% of construction costs.

A high percentage of PED costs may be a result of extenuating circumstances, pre-design investigation results that changed design criteria, poorly conceived projects resulting in excessive re-design, a result of contracting issues requiring re-bid of projects, or a combination of these factors. Section 3.1 does not provide any discussion for the reasons PED costs are significantly higher than typical ranges assumed for similar work.

**Significance – High:**

The extent to which an increase in PED costs has resulted in cost increases of the project needs to be sufficiently shown to justify the substantial increase in authorized costs.

**Recommendations for Resolution:**

To resolve these concerns, the report would need to include the following:

1. A detailed discussion of PED cost increases in Section 3.1.
2. A discussion of the concise reasons for PED being nearly 62% of construction costs for work completed through 2008, including a short discussion regarding anticipated PED costs going forward.
3. A discussion of incurred-to-date PED costs and a corresponding adjustment of the assumptions for PED in the cost estimate for remaining work.

**Final Panel Comment 5:**

**The economic analyses and 902 Limit Calculations are based on an uncertified cost estimate and do not include contingencies based on a cost risk analysis or cost escalation through construction completion.**

**Basis for Comment:**

The cost estimate for the remaining work is critical for the determination of the 902 Limit Calculation and justification for the authorized project cost increase. There are significant discrepancies between the costs presented in the text and appendices; the cost estimate submitted with the Kissimmee River LRR; and with cost estimates submitted subsequently (as described below). The numerical presentation of costs within the text and appendices is confusing. Costs are presented in various formats, including millions of dollars, to the dollar, and rounded to the nearest hundred thousand dollars.

The cost estimate provided in Appendix B of the Kissimmee River LRR report had a preparation date of May 2009, whereas Figure 3-4 references a September 2009 cost estimate and Table 3-2 references October 2009 price levels.

The May 2009 cost estimate did not match values presented in the report text and Appendix D. At the request of the Panel, the September 2009 cost estimate was later provided by the USACE for review, in addition to an October 2009 certified IGE. The October 2009 cost estimate provided with the Kissimmee River LRR and September 2009 cost estimates do not include a cost risk analysis, Total Project Cost Summary (TPCS), or project schedule. The Kissimmee River LRR stated that these items would be completed after Agency Technical Review. Considering an IGE cost estimate preparation date of October 2009 and the Kissimmee River LRR report date of May 2010, it would seem that these items could have been completed before IEPR review and included in the Kissimmee River LRR. Because these items were not completed for the IEPR, a thorough assessment of the adequacy of the complete cost estimate could not be conducted.

According to ER 1110-2-1150 (USACE, 1999), the baseline cost estimate is the fully funded project cost estimate with the appropriate contingencies and escalation through project completion. ER 1105-2-100 (USACE, 2000) requires using a formal cost risk analysis to determine contingency amounts for decision documents requiring Congressional authorization for projects exceeding \$40 million. In addition, the baseline estimate is required to be prepared in accordance with ER 1110-2-1302 (USACE, 2008a).

The May 2009 and September 2009 cost estimates as presented do not provide enough detail to determine that the significant construction costs have been adequately identified, described, and supported. The October 2009 cost estimate provided supplemental to the Kissimmee River LRR does include greater detail to support the cost estimate, but the construction cost for remaining work, not including contingency, is \$63 million less than the costs presented in the September 2009 estimate. Other discrepancies include a decrease in real estate costs, not including contingency, from \$355.8 million to \$352.7 million; an increase in PED costs from 12% of construction costs to 15%; and an increase in construction management costs from 10% of construction costs to 11%. These changes call into question the credibility of the costs

presented in the Kissimmee River LRR and the 902 Limit Calculation. These changes will alter the 902 Limit Calculation presented in Appendix F and Appendix G. In addition, the cost used in the 902 Limit Calculation is not the current project cost inflated through construction. It may also be appropriate to inflate monitoring costs beyond construction completion as those costs are incurred for a minimum of five years post construction. The cost presented may include escalation already; if that is indeed the case, then appropriate notes should be included in the cost estimate and within the text explaining this.

The real estate costs used in the 902 Limit Calculation only include costs for certified LERRDs. However, the SFWMD has acquired to date an additional \$282.2 million of uncertified LERRDs. Because these LERRDs are not certified, they are shown as remaining costs and not used to determine the current project cost estimate at current levels. This is an apparent contradiction that potentially has an impact on the 902 Limit Calculation because currently only \$58.8 million is considered as part of the project completed cost escalation exercise in Appendix F.

#### **Significance – High:**

The cost risk analysis and TPCS form the basis for the total remaining costs and completion of the 902 Limit Calculation; therefore, a completed cost estimate following the appropriate USACE guidance is critical for a thorough assessment of the project and the request for an increase in the authorized project cost.

#### **Recommendations for Resolution:**

To resolve these concerns, the report would need to include the following:

1. A certified cost estimate including contingency determined from a cost risk analysis, a completed project schedule, and a completed TPCS table. The cost estimate needs to be prepared in accordance with ETL 1110-2-573 (USACE, 2008b) and ER 1110-2-1302 (USACE, 2008a).
2. An update to the tables, figures, and appendices with the certified IGE cost estimate, including the contingency based on a cost risk analysis, and escalation determined according to the TPCS table. Based on changes to the cost estimate as described above, the additional request amount may increase or decrease. Costs presented in tables in the body of the text, Appendix B, Appendix D, Appendix F, and Appendix G should be back checked to ensure consistency in cost presentation.
3. An explanation or reconciliation of how costs incurred by the SFWMD for LERRDs not certified are applied, or not applied, in the 902 Limit Calculation in Appendix F Table F-2 and Table F-4.
4. An assurance that no contingency is applied to LERRDs not certified but already acquired by the SFWMD.
5. Corrections to Table 3-5 and the 902 Limit Calculation Tables in Appendix F. Values for 2008 project costs in Table 3-5 do not correspond to values for 2008 in Appendix F.
6. A correction to Appendix F, Table F-2. The balance to complete presented in Table F-2 does not match the cost estimate.
7. A correction to Appendix F, Table F-1. The reference to Table P-3 in Line 3 should be

**Table F-2.**

8. Corrections to Appendix F, Table F-3 and Table F-4. Notes should be added citing the year and month of the USACE CWCCIS for construction costs and the Consumer Price Index for real estate costs used in determining inflation values.
9. A correction to Appendix F, Table F-3. The Panel recommends escalating from July 1991 (the price level date cited in Section 3) for the original feasibility study cost estimate.
10. Corrections to Appendices F and G. According to Appendix G of ER 1105-2-100 (USACE, 2000), the cost presented on Line 1b of Table F-1 is the current project cost estimate including inflation through the construction period (use value from TPCS). Line 1b from Table F-1 should be the same as the cost in Section 4 of Appendix G. Table F-1 had a cost of \$636 million whereas Appendix G, Section 4 lists \$987 million. The value used in this instance should be the final cost estimate considering inflation.
11. A discussion in Appendix G, Section 6 on the cost indices used in Appendix F, including month/year of cost indices.
12. The addition of a more detailed explanation for the changes in costs in Appendix G, Section 8. A summary of Section 3.1 based on changes to that section recommended by the IEPR is recommended.
13. The addition of a tabular presentation by contract in Appendix G, Section 10, including a general description of each contract; whether completed (year completed), in process, or scheduled; and an estimated value of each contract.
14. The use of consistent numerical presentations between all tables and appendices.

**Literature Cited:**

USACE (1999). Engineering and Design for Civil Works Projects. U.S. Army Corps of Engineers, Washington, DC. ER 1110-2-1150. August 31.

USACE (2000). Planning Guidance Notebook. U.S. Army Corps of Engineers, Washington, DC. ER 1105-2-100. April 22.

USACE (2008a). Civil Works Cost Engineering. U.S. Army Corps of Engineers, Washington, DC. ER 1110-2-1302. September 15.

USACE (2008b). Construction Cost Estimating Guide for Civil Works. U.S. Army Corps of Engineers, Washington, DC. ETL 1110-2-573. September 30.

**Final Panel Comment 6:**

**Information on soils and their relationship to the hydrologic regime needs to be included because soil subsidence could have implications for project success.**

**Basis for Comment:**

Three properties are commonly used to define wetlands: hydrology, soils, and plants. While the charge to the Panel is not to determine whether the Kissimmee River floodplain is a wetland or not, these three properties are still fundamental to evaluating environmental status and change during restoration. Completely absent from Table 4-1 is any reference to soils. This is significant because it is impossible to determine from the report whether (1) organic soils originally existed on the floodplain and (2) if they did, whether the channelization and drainage may have resulted in their partial oxidation and subsidence (loss of elevation). If subsidence occurred after channelization, then a re-establishment of hydrology to historic flows and stages would cause deeper flooding than the expected targeted restoration outcome. Deeper flooding would affect the outcome of the projected vegetation maps (Figure 4-2) that are being used to estimate habitat units (HUs).

If soils are the type that have undergone subsidence, and the restored hydrology from the Kissimmee Headwaters Revitalization Project (KHRP) has not taken this into account, the outcome of the restoration could differ because the wetlands will be wetter than projected, thus altering HU calculations and possibly increasing phosphorus loading. Both of these are fundamental to project goals and success, and the absence of this information compromises the integrity of the report.

Without information on and interpretation of the possible effects of soil organic matter content on subsidence, possible phosphorus enrichment while under pasture management, and potential phosphorus release upon rehydration, the success of the project in meeting restoration goals cannot be determined.

**Significance – High**

The omission of the soils information is significant because without full information, expected project efficacy cannot be judged.

**Recommendations for Resolution:**

To resolve these concerns, the report would need to include the following:

1. Background information, data, and context data on floodplain soils so that the role of soil can be evaluated for potential subsidence and phosphorus loading.
2. An evaluation of the consequences of soil subsidence, if it is a factor, with the re-establishment of flows and stage, as well as the release schedule from Lake Kissimmee during the KHRP.

**Final Panel Comment 7:**

**A concise explanation describing the relationship between the sequencing of construction events and the production of environmental benefits is not provided.**

**Basis for Comment:**

The fundamental basis for requesting additional funds to complete the KRR project is that expending those funds would be the most cost-effective alternative and that 77% of the project benefits will only be realized upon completing the remaining elements of the project. The main basis of the cost-benefit analysis is that 77% of the project benefits are achieved by completing the final 35% (based on cost) of the project. This includes completion of Contract 10, Contract 12, Implementation of the Revised Schedule, and the KHRP. Contract sequencing is a key argument in Appendix D for the cost-benefit analysis but is not adequately supported by the assumptions presented in Appendix C. A project schedule that included sequencing of contracts was not provided with the cost estimate in Appendix B. The report does not include a clear explanation for the rationale behind the sequencing of contracts.

**Significance – Medium:**

The report is incomplete and the findings are questionable because an explanation as to how and why the Selected Alternative Plan is the most cost effective, including 77% of the project benefits being realized upon project completion, has not been provided.

**Recommendations for Resolution:**

To resolve these concerns, the report would need to include the following:

1. A paragraph(s) explaining in detail why the construction sequencing necessarily results in the majority of the ecosystem benefits occurring only after the final 35% of the KRR is completed.
2. A project schedule showing the sequence of past and future contract completion.

**Final Panel Comment 8:**

**Additional detail is needed in Appendix E pertaining to the costs and impacts to HU and flood protection from the SFWMD work that is being requested for consideration as work-in-kind services.**

**Basis for Comment:**

Generally, the work-in-kind crediting is well presented; however, additional detail regarding the impact to HU and flood protection goals is needed and the associated costs for engineering solutions, costs justified, and the methodology for determining cost savings could be better presented and in more detail.

Section 3.4 briefly discusses the loss of 400 acres in benefit due to some lands not being acquired in their entirety (i.e., River Acres). However, Appendix E does not adequately explain the impact that the losses of beneficial acreage have on the overall project. It is unclear in the presentation of HUs if the loss of beneficial acreage has been accounted for in Table 3-4, Table 3-6, Table 3-7, and Appendix D. Appendix E also does not discuss the impact, if any, that the work-in-kind may have had on flood protection.

It is unclear how the work-in-kind has been validated within the overall cost estimate. It is unclear what the total work-in-kind credit sought is and what the total savings are. The only possible location for presenting work-in-kind costs within the KRR LRR is in Section 3.7 (Changes in Cost Apportionment), including Table 3-8. However, work-in-kind is not discussed relative to costs in this section.

The last paragraph in Section E.1.4 summarizes the USACE policy to disallow credit but does not provide a conclusion one way or another for inclusion of these costs in the work-in-kind credit. In addition, the last paragraph of Section E.2 recommends that the SFWMD not receive credit for staff review of plans and specifications. However, this contradicts the fourth paragraph of Section 5 where it appears that credit for all work-in-kind is recommended.

The total dollar amount presented in the first sentence of first paragraph of Section E.1.4 does not correlate with the dollar amounts presented immediately following. The total dollar amount that the SFWMD is seeking credit for should be \$4.7 million.

**Significance – Medium:**

The lack of detail with regard to the SFWMD work-in-kind costs and to the impact on habitat restoration and flood protection goals does not provide sufficient information for recommendation for the authorization of credit to the non-Federal sponsor for work-in-kind.

**Recommendations for Resolution:**

To resolve these concerns, the report would need to include the following:

1. An explanation of how not acquiring real estate has impacted, if at all, the habitat restoration and flood protection goals of the project.
2. A table for each instance of work-in-kind or a compilation table providing more detailed information for work-in-kind costs incurred by the SFWMD. Table(s) should include original estimated costs (if available or applicable), including real estate acquisition costs, costs incurred by SFWMD, and cost savings assumed and/or realized. Table(s)

should include acres not purchased as a result of engineering solutions and non-standard estate instruments.

3. More detail in Appendix E on the determination of savings assumed and justification of the costs incurred.
4. A discussion of how the work-in-kind credit is applied to the overall cost share of the non-Federal sponsor in Section 3.7.
5. The addition of a sentence stating if review of plans and specifications will be allowed following the citation of the USACE national policy in Section E.1.4, and a correction of the discrepancy between Section E.1.4, Section E.2, and Section 5.

**Final Panel Comment 9:**

**The calculations of HUs lack appropriate detail and there are currently more realistic and ecologically appropriate ways to evaluate hydrologic regime improvements, water quality conditions, and habitat increases.**

**Basis for Comment:**

There are two major problems with the HU information, as described below:

**(1) The calculations of HUs were done over a decade ago and do not acknowledge advances in the field of restoration ecology assessment.**

There is no explanation of how the HU calculations were done and no reference to the original sources that documented the process. Just as importantly, the HU approach apparently developed for the KRR in the early 1990s has been largely eclipsed over time by advances in the assessment of ecological condition (e.g., NRC, 2001; Palmer et al., 2005; and many other more recent reviews). Advances are clearly shown in the development of “expectations”/targets for 25 chapters in Anderson et al. (2005) and in more recent refinements. These are not reflected in any kind of metrics for calculating restoration progress. Consequently, the report implicitly acknowledges advances, but does not discuss them specifically. These items are nicely reported in Anderson et al. (2005) and Bousquin et al. (2005) and in the 2006 Executive Summary of these two volumes.

**(2) The terminology for the various scenarios is confusing (e.g., baseline, existing conditions, without project), calculation of credits is not described, and “habitat unit lift” is not adequately explained.**

The report does not define what an HU is. It needs to explain how the credits were calculated and aggregated over the different HUs. The report compares to a baseline but doesn’t say what the baseline is.

- a. The revised change in the HUs and the role of various phases is not adequately explained. Table 3-6 references a “baseline.” The “note on habitat unit calculations” states that the HEP was done for “existing conditions as well as the selected plan and without project.” It is unclear whether the baseline HUs in Table 3-6 refer to “existing conditions,” “without project,” or some other scenario. The “note” also does not explain how scaling was implemented, and what a ‘0’ represents in the scaling scheme. It is also not clear how the synergistic effect of the KHRP on HUs provided by Phases I, II, III, IVa, and IVb was calculated. There appears to be a math error in the total number of the “Habitat Units Baseline” column based on the values provide in the column above it.
- b. Section 3.4 does not adequately describe a “habitat unit lift”. Based on Table 3-6, the Panel surmised that a HU lift is the increase in HUs realized from the construction phase, i.e., the difference between HUs within the construction phase and the baseline HUs. This section would benefit from a simple explanation of HU lift.

**Significance – Medium:**

The calculation of HUs is directly related to the calculation of project benefits. There is insufficient documentation of the calculation of project benefits to justify the request for additional funds through the LRR.

### **Recommendations for Resolution:**

To resolve these concerns, the report would need to include the following:

1. A description of the assumptions and context of HU calculations as restoration metrics, an explicit reference to the original and subsequent sources of information used to make the calculations, and an explanation of the assumptions about the time period over which they would be credited.
2. An acknowledgement that advances have been made in the estimation of ecological and environmental benefits from restoration apart from HU. Reference literature such as Palmer et al. (2005), NRC (2001), and other more recent reviews to support the fact that these advances have occurred.
3. An acknowledgement (if justified from conclusions drawn from item 1) that the use of HUs may underestimate the return of reference conditions and ecosystem functions that might otherwise have been used to justify project outcome and success. The Panel is not suggesting that the HU approach be substituted with more advanced approaches, or with the “expectations” in the Anderson (2005) report. Demonstrating the link between the advances and the “expectations” will show that more than just HUs is available, if needed, to demonstrate progress in the restoration trajectory.
4. A clarification of whether the baseline HUs in Table 3-6 refer to “existing conditions,” “without project,” or some other scenario.
5. An explanation in the “note” below Table 3-6 of how scaling was implemented, and what a ‘0’ represents in the scaling scheme.
6. A clarification of how the synergistic effect of the KHRP on HUs provided by Phases I, II, III, IVa, and IVb was calculated.
7. A more detailed description of what is meant by a “habitat unit lift” in Section 3.4.
8. A review of the calculations in Table 3-6. The “Habitat Units Baseline” column has a math error in the total number presented based on the values provided in the column above.
9. An explanation of the Implementation row in Table 3-6 in response to 2a above. Even though there is a note for this row, it is still confusing to the Panel. The first five rows for Acreage (Restored Floodplain) add up to 36,500 acres; implementation is then presented as 29,300 acres, but the total is still 36,500 acres. It is not clear how the 4,421 HUs are derived and why they are added to the total. The Panel recommends removing the 29,300 acres from this row and only presenting the HUs realized from the KHRP. If it is vitally important to impart the significance of the 29,300 acres, then it should be done with a separate note associated with Phases I-IV.

### **Literature Cited:**

Anderson, D.H. et al. (2005). Volume II - Kissimmee River Restoration Studies: Defining Success: Expectations for Restoration of the Kissimmee River.

Bousquin, S.G. et al. (2005). Volume I - Kissimmee River Restoration Studies: Establishing a Baseline: Pre-restoration Studies of the Channelized Kissimmee River.

National Research Council (NRC). (2001). Compensating for Wetland Losses under the Clean Water Act. National Academy Press. Washington, DC.

Palmer, M. A., et al. (2005). Standards for Ecologically Successful River Restoration. *Journal of Applied Ecology*, 42:208-217.

**Final Panel Comment 10:**

**Most of the restoration monitoring and evaluation is focused on the floodplain and channel, while offsite effects of phosphorus loading to Lake Okeechobee, a major justification of the original project, receive little discussion.**

**Basis for Comment:**

Reflooding, especially of the dried pasture soils, may result in a change of phosphorus (P) mobility, transport, and off-site eutrophication. If it is true that Lake Okeechobee has become P-enriched due to anthropogenic sources (Engstrom et al., 2006), then the report needs to acknowledge that additional sources of P could be mobilized with inundation of the formerly drained floodplain soils. This, of course, is contingent on whether the soils are iron or calcium rich, as these elements interact with P to determine response to redox potential and pH. Further, implications for Lake Okeechobee depend on the magnitude of this potential loading in comparison with other P sources. Given the results of a series of studies over more than a decade on the potential of various sources of P loading and eutrophication (Boggess et al., 1995; Reddy et al., 1995; Havens and Walker, 2002; Cheesman et al., 2010), the report should be clear on the relative importance of this issue.

Also implied in the report is that restored floodplain vegetation will serve to sequester nutrients. It is not clear whether this would affect downstream loading of P.

**Significance – Medium:**

The KRR LRR did not appear to evaluate the potential for increased P loading to Lake Okeechobee, which affects the completeness of the report.

**Recommendations for Resolution:**

To resolve these concerns, the report would need to be revised as follows:

1. An evaluation of the potential role of P loading to Lake Okeechobee from a potentially remobilized floodplain soil source in the context of other known P sources and abatement efforts should be added.
2. If it turns out that remobilization of P and offsite P loading is not an issue, and that P sequestration is a net benefit from sequestration, then that should be added to strengthen the justification of the project.

**Literature Cited:**

Boggess, C.F., E. G. Flaig, and R. C. Fluck (1995). Phosphorus budget-basin relationships for Lake Okeechobee tributary basins. Ecological Engineering, 5(2-3): 143-162.

Cheesman, A.W., E.J. Dunne, B.L. Turner, and K.R. Reddy (2010). Soil Phosphorus Forms in Hydrologically Isolated Wetlands and Surrounding Pasture Uplands. Journal of Environmental Quality, 39(4): 1517-1525.

Engstrom, D.R., S.P. Schottler, P.R. Leavitt, and K.E. Havens (2006). A Reevaluation of the Cultural Eutrophication of Lake Okeechobee Using Multiproxy Sediment Records. *Ecological Applications*, 16:1194-1206.

Havens, K.E. and W.W. Walker, Jr. (2002). Development of a Total Phosphorus Concentration Goal in the TMDL Process for Lake Okeechobee, Florida (USA). *Lake and Reservoir Management*, 18(3): 227-238. September.

Reddy, K. R., O.A. Diaz, L.J. Scinto, and M. Agami (1995). Phosphorus dynamics in the Lake Okeechobee Watershed, Florida. *Ecological Engineering*, 5(2-3): 183-207.

**Final Panel Comment 11:**

**The purpose of the LRR and the project description and history are not clearly presented.**

**Basis for Comment:**

Three important sections of the report--Introduction (i.e., purpose), Description of Authorized Project, and History of Project--contain either confusing or incomplete information.

**Introduction:** There appear to be two purposes of the LRR: (1) request Congress to increase the authorized cost from \$643 million to \$987 million and (2) request Congress to grant USACE the authority to credit the non-Federal sponsor (SFWMD) for engineering services in lieu of real estate land acquisition.

Page vii indicates that USACE may wish to provide credit for construction and then both construction and engineering. Page iii only mentions engineering. On page 1-1 the document mentions only engineering for past and future solutions and does not mention construction. The report would be clearer if the description of the purposes were consistent across the board.

In Section 1.0 (page 1-1) the description of the second purpose is confusing: “to request authorization to have the authority to grant in-kind credit to the SFWMD” and the criteria for the credit all in one sentence. The Panel understands the reasoning but feels this sentence would be clearer if it was broken up into two or more sentences.

**Description of Authorized Project:** The Description of Authorized Project section in the LRR provides a good description of where the project is located and how large the project area is, but the section does not provide details regarding why the project has been authorized, the purpose of the project, or its general components.

It was a bit confusing to see “headwaters regulations schedule” in the Summary in contrast to “headwaters revitalization project” elsewhere, when they apparently are one in the same.

**History of Project:** The History of Project section in the LRR does not provide the history of how and why the original flood damage reduction project was developed and why there is a need for restoration

There are limited details provided on the construction history of the KRR project. This section should include a description of which components of the project have been completed to date and which components have been started but not completed.

On page 1-3, third paragraph: Figures 1-1 and 1-3 illustrate the KRR floodplain for the Upper and Lower Basin, respectively. It is unclear from the text on page 1-3 and the legends for the figures whether this represents the 5-year floodplain or the 100-year floodplain.

On page 1-3 in the second paragraph there is no citation or justification for the headwaters revitalization component.

**Significance – Medium:**

Inconsistencies, undocumented statements, and incomplete information affect the completeness and understanding of the project.

**Recommendations for Resolution:**

To resolve these concerns, the report would need to include the following:

1. Consistent descriptions throughout the report of the proposed in-kind services for which the USACE seeks authorization to provide credit in lieu of real estate acquisition.
2. A more concise description in Section 1.0 of the second purpose of the PAC LRR. The description of the criteria for granting in-kind services should be in a separate sentence or paragraph.
3. A change in Section 1.1 to include the information provided in Section 1.3. It is the panel's view that the Project History section appears to be a good project description.
4. The addition of detailed descriptions from earlier Feasibility Reports, perhaps in an Appendix. These earlier reports should also be cited in the Project Description section of the main LRR.
5. Consistent wording in the Summary and the rest of the LRR, particularly with regard to the reference to "headwaters regulation schedule" and "headwaters revitalization project".
6. A description of why the original flood damage reduction project was developed and what its major components included. A brief statement describing what impacts to the environment occurred that have resulted in the need for restoration would be beneficial to the LRR.
7. A description of the construction activities that have been completed or that are partially completed up to this point. A chart similar to Figure 3-4 (KRR Future Project Costs) that details contract durations and cumulative costs incurred from project inception to July 2009 would be helpful.
8. A figure for the Upper and Lower Basins that clearly demarcates the 5-year and 100-year flood lines for the KRR, since the project authorizes different levels of land acquisition for land in the 5-year floodplain (fee title) and land between the 5-year and 100-year flood lines (flowage easement).
9. A citation added to the second sentence of the second paragraph on page 1-3 to provide the justification for the necessity of the headwaters revitalization component.
10. Contract numbers included in Figure 1-2, as is done in Figure 1-3.

**Final Panel Comment 12:**

**The goal of maintaining the existing level of flood protection should be considered as a project constraint.**

**Basis for Comment:**

Three constraints are specifically mentioned in the report on page 1-4. Constraints are defined as "...statements about things you want to avoid doing, or cannot change, while meeting your objectives" (Planning Primer, IWR Report 97-R-15, 1997). The last sentence of the authorization as stated in this report in Section 1-2 on page 1-2 states, "*The Secretary shall take such action as may be necessary to ensure that implementation of the project to restore the Kissimmee River will maintain the same level of flood protection as is provided by the current flood control project.*" Based on the language found in the authorization, maintaining the original level of flood protection should be included as a constraint.

**Significance – Medium:**

Omitting an important constraint mentioned in the authorization without providing an explanation does not instill confidence that the constraint was used or adhered to during the planning process.

**Recommendations for Resolution:**

To resolve these concerns, the report would need to maintain the existing level of flood protection as a fourth constraint in the report.

**Literature Cited:**

USACE (1997). Planning Primer. Department of the Army, U.S. Army Corps of Engineers, Institute for Water Resources, Alexandria, VA. IWR Report 97-R-15, November.

**Final Panel Comment 13:**

**Several ecological factors are not discussed thus making the report incomplete.**

**Basis for Comment:**

The report is missing several pieces of ecological information. Providing this information will result in a more complete understanding of the project and its potential for success.

- While endangered species are discussed briefly, some comments on invasive aliens should be mentioned to indicate whether or not they are expected to be a problem, and if not, why not. *Melaleuca* and *Schinus*, for example, are two species that are compromising restoration efforts in the Everglades. These are not mentioned.
- Climate change has become a prominent topic since the beginning of this project. There is considerable recent discussion of climate change on the trajectory of restoration projects that should be considered and added to the report.
- Nowhere is fire mentioned as a natural component of the reference condition. Presumably it is not a factor because stream flow only ceased once during the period of pre-channelization record. But for completeness, it should at least be acknowledged as not a factor to be considered.
- The Kissimmee River LRR should be more explicit about what the project does not do in the Kissimmee River basin. For example, Figure 1-1 has a lot of detail, but it is not explicit whether the Kikko Wildlife management area plays any role in the KRR. The Panel assumes that this reach will remain as a canal. Similarly, the Panel must assume that nothing is being done downstream from S-65.
- The statement “Conservation of freshwater storage in the natural system relieves pressure on the freshwater supply for consumptive uses” suggests that the restoration will increase groundwater recharge of aquifers in this part of the state, thus increasing the availability for consumptive uses. A citation would be appropriate to document this concept. If it is true, the manner and extent to which conservation is achieved would be useful information. The lack of a water budget for the reach makes this difficult to evaluate. The groundwater discharge-recharge dynamics, if connected to the Floridan Aquifer, should be apparent to the reader.
- The statement on page 4-6, top, on stormwater treatment areas (STAs) (“relieve overstretched stormwater treatment areas (STAs), and benefit water quality and habitat structure throughout the Everglades ecosystem”) is too cryptic to understand. The Panel wonders if this means that STAs will no longer be needed. There are implications that additional flooding of pasture increases the P loading of the system, but there is no information on estimated amounts. This information should be put into perspective with other sources of P loading of Lake Okeechobee. The 1992 document indicates that P effects on Lake Okeechobee would not be significantly affected.
- Although the Panel agrees that grazing should be suspended, the lack of grazing is not necessarily a panacea for restoration. McCoy and Rodriguez (1994) should be consulted regarding removal of cattle in floodplain wetlands. If a situation like this is not expected, then the report should point out how the subtropical Kissimmee situation is different from the Costa Rican wetland.

**Significance – Medium:**

Any one of these comments alone is minor; in aggregate, however, they have the cumulative effect of an incomplete report.

**Recommendation for Resolution:**

To resolve these concerns, the report would need to include statements that provide information relevant to the items listed above.

**Literature Cited:**

Anderson, D.H. et al. (2005). Volume II - Kissimmee River Restoration Studies: Defining Success: Expectations for Restoration of the Kissimmee River.

Bousquin, S.G. et al. (2005). Volume I - Kissimmee River Restoration Studies: Establishing a Baseline: Pre-restoration Studies of the Channelized Kissimmee River.

McCoy, M.B., and Rodriguez, J.M. (1994). Cattail (*Typha domingensis*) eradication methods in the restoration of a tropical, seasonal, freshwater marsh. In: *Global Wetlands: Old and New*, ed. W.J. Mitsch, pp. 469–483. Amsterdam, The Netherlands: Elsevier.

**Final Panel Comment 14:**

**The underlying assumptions on restoration have not been provided to illustrate the relationship between restoration targets and a return to “historic” conditions.**

**Basis for Comment:**

The expectations and targets set forth in the 2005 reports (Anderson et al., 2005; Bousquin et al., 2005) represent a useful advance beyond the information provided in the 1990s. What is lacking in the Kissimmee River LRR is an explanation of how the various performance measures are inter-related and how they might be aggregated in a way that would provide decisionmakers with a framework for evaluating progress towards targets. There must be hierarchical or functional relationships among the performance measures to provide insight into how they might be used, and especially to demonstrate how emergent properties would be achieved (“emergent properties” – more than the sum of the parts - are often mentioned, but it is not clear if this is only the effect of the KHRP, the interaction of floodplain and channel components downstream, or both). The default approach might be to evaluate performance measures independently on a case-by-case basis. However, a conceptual framework would be helpful in explaining how this evaluation would take place.

The 25 or so project targets (“expectations” from Anderson et al. (2005) or the most current set of indicators being monitored) should be mentioned and how the results from the target monitoring would be synthesized as suggested by the last sentence at the top of page 4-11 of the Kissimmee River LRR. “In terms of benefits, the effect of complete restoration can be seen as multiplicative, or even exponential.” Readers need to have confidence that projected successes will be forthcoming. Documentation is critical to achieving a level of comfort.

For evaluation of the “ecological integrity,” it is necessary to know, to the extent possible: (1) what ecological conditions were present historically; (2) the current pre-restoration condition; and (3) how much the gap between the two has closed through restoration/KHRP implementation. By setting out this framework for hydrology, water quality, and habitat, it is only then that there is a scale against which to evaluate ‘success.’

Hydrologic regime needs to be better described because it is the fundamental driver of wetland processes, and ultimately the factor that must be returned through restoration, in large part through the KHRP. With one exception of a short period from the pre-channelization record, continuous channel flow was a property of the original system. But one criterion for restoration is “average flow velocities between 0.8 – 1.8 cubic feet per second (cfs) when flows are contained within channel banks.” This is not a recapitulation of reference conditions, but rather a judgment of what would be good for the ecological integrity of the biota. It is not clear if the flow velocities, stage recessions, stage hydrographs, etc., are meant to maintain aquatic diversity or to re-establish reference conditions (or both). Further, the Kissimmee River LRR does not specify if climate records indicate that rainfall episodes exist that would constrain the capacity to maintain these projected flows. Since hydrologic regime is the driver of all other aspects of the KRR, it is troubling to see so little information about studies on a water budget. Very little information is provided on the tributaries to the river, although it is stated that 58% of the flow would come from upstream, and this is why the revitalization is so critical. This lack

of information on hydrology makes it difficult to evaluate the relative importance of overbank flows as a source of water to this very large floodplain. Due to the presumed nature of the sandy soils and possible role of the Floridan Aquifer (i.e., references to groundwater discharge), it cannot be known from the report how much wetting and saturation of the floodplain depend upon overbank versus groundwater discharge. These are issues that need to be addressed.

Figures are needed to illustrate and communicate the foregoing concepts. There is no graphic in the report that illustrates the existing water levels and the historic ones, as well as to the extent that the restoration will be altering those. Figure 6 in the supplemental material (U.S. Congress, 1992) is the kind of illustrative material that should populate this document. Figure 9 is also very illustrative of differences in dissolved oxygen between the channelized and backfilled (restored) condition. While these figures may be out of date, they are the sort that can be effective in illustrating how hydrologic indicators might be evaluated. Another useful example is Figure 2.7c in Bousquin et al. (2005). It shows the reference and baseline data for stage vs. percent duration. When it is stated that 77% of the benefits have yet to be realized (i.e., Habitat Unit Lift; Section 4 of Kissimmee River LRR), “permitting a more natural flow regime for the river,” it is critical to see some kind of flow or stage frequency distribution (percent exceedance) to compare pre- and post-restoration. Other examples like this could at minimum be footnoted, placed in appendices, or even scattered throughout the report.

#### **Significance – Low:**

The technical quality of the report is considerably weakened by the lack of more complete documentation, a clear explanation of the logic that leads to the conclusion that ecological integrity will be achieved and is measurable, and having good illustrations that communicate convincing data.

#### **Recommendations for Resolution:**

To resolve these concerns, the report would need to include the following:

1. Graphical results or conceptualizations on hydrology, water quality (DO), and habitat to illustrate (1) historical ecological conditions (the baseline), (2) the current pre-restoration condition (altered), and (3) the projected post-project condition. This will allow a visualization of the change over time through restoration/KHRP implementation.
2. A presentation of the latest thinking of those involved in assessing restoration success on the relationship between measured indicators of ecological condition (whatever they currently are) and project targets for channel and floodplain recovery. This should be backed up by relevant literature.
3. An explanation of how ecological integrity will be achieved.
4. Additional information on the hydrology of the project and the key components that will be used to achieve and assess the hydrologic regime required for a successful project.

#### **Literature Cited:**

Anderson, D.H. et al. (2005). Volume II - Kissimmee River Restoration Studies: Defining Success: Expectations for Restoration of the Kissimmee River.

Bousquin, S.G. et al. (2005). Volume I - Kissimmee River Restoration Studies: Establishing a Baseline: Pre-restoration Studies of the Channelized Kissimmee River.

U.S. Congress, House (1992). Kissimmee River Restoration Study: Communication from the Assistant Secretary of the Army (Civil Works) Transmitting a Letter from the Chief of Engineers, Department of the Army, Submitting a Report Together with Accompanying Papers and illustrations, Pursuant to Section 116(h) of the Water Resources Development Act of 1990. 102nd Cong., 2nd sess., House Document 102-286.

**Final Panel Comment 15:**

**More details on the project's construction history should be included to provide context for the reader.**

**Basis for Comment:**

Section 1.3 of the Kissimmee River LRR does not provide a history of the project, just a brief overview of the major components of the KRR project. This project, however, has been under way for nearly two decades. Section 1.3 should describe the activities of the project to date, and when, specifically, those activities were undertaken. Figures 1-1, 1-2, and 1-3 provide good visual information, but the reader would benefit from greater detail, both in the figures and in the written text of this section.

For example, it is unclear whether the dates listed under each Phase in Figure 1-1 represent the initiation date or completion date of the phase, or the expected completion or initiation date. Additionally, in Figures 1-2 and 1-3 no dates are provided and Figure 1-2 has no contract numbers included.

Another historically relevant data point is the initial assessment of land acquisition required for the project and, in some cases, areas where land acquisition did not occur due to mitigating circumstances requiring other solutions as detailed in Appendix E. Figures 1-1 and 1-3 demarcate the Kissimmee River Restoration Floodplain. There is, however, no demarcation of the land acquisition requirement for the project. Furthermore, the land area initially thought to require title or easement acquisition is not identified; nor is the fact mentioned that the initial assessment was later changed, leading to a significant increase in projected costs.

**Significance – Low:**

A thorough presentation of the history of project activities to date provides the foundation for the reader to understand the justifications for the projected cost overruns.

**Recommendations for Resolution:**

To resolve these concerns, the report would need to include the following:

1. A change to the dates for each Phase in Figure 1-1 to specify when the phase was initiated (or is expected to be initiated) and when the phase was completed (or is expected to be completed).
2. Contract numbers and initiation and completion dates for the activities depicted in Figure 1-2.
3. Initiation and completion dates for all activities depicted in Figure 1-3.
4. A figure identifying all the land that was initially thought to be required for the project to acquire title and easement over.
5. A history of the project in Section 1.3, including a timeline of activities from the project authorization to the present year, with contracts for construction activities and land acquisitions clearly demarcated.
6. Moving the general project details from Section 1.3 to Section 1.1 to include goals and objectives, project constraints, project assumptions, and restoration criteria, as these are not related to the project history.
7. Reconsidering of the order in which project history and project description are presented.

## **APPENDIX B**

**Final Charge to the Independent External Peer Review Panel  
as  
Submitted to USACE on July 9, 2010**

**on the**

**Kissimmee River LRR**

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**Final Charge Guidance and Questions to the Peer Reviewers  
for the  
Central and Southern Florida Project, Kissimmee River Restoration,  
Kissimmee River, Florida,  
Post Authorization Change Limited Reevaluation Report**

## **BACKGROUND**

The Kissimmee River Restoration (KRR) is a major environmental restoration project located in central Florida. The goal of the project is to restore or significantly improve over 36,000 acres of wetlands located within the 40 square mile Kissimmee River Basin. As part of the Central & Southern Florida (C&SF) Project the river was channelized in the 1960s as a flood risk management measure. While the channelization achieved its intended goal, it also significantly altered the natural ecosystem. The KRR project will greatly improve the natural ecosystem without eliminating the flood risk management benefits. KRR and the Kissimmee Headwaters Revitalization Project (KHRP) were jointly authorized by Section 101(8) of the Water Resources Development Act of 1992 (Public Law 112-580). Both projects are referred to collectively as the Kissimmee River Restoration and for the purposes of this report are inseparable components of the same project.

There have been no changes in project purpose, design, scope, location, benefits, environmental impacts, or social impacts. There has, however, been a significant increase in total project cost. Total project costs, after being adjusted for inflation, are projected to exceed the 20% allowance provided by Section 902 of the Water Resources Development Act of 1986 (33 U.S.C. 2280). A Post Authorization Change Report is required, and has been prepared. This Limited Re-evaluation Report (LRR) is the object of the required IEPR. Costs have increased primarily due to real estate acquisition costs. Real estate prices in Florida have increased much faster than the prescribed civil works inflation rate.

Completion of the KRR is necessary to achieve full ecological benefits of restoration. Much of the restoration work to date has been to support an eventual rehydration and restoration of the river and floodplain ecosystem. A recent analysis indicates that a full 77% of the ecological benefits have yet to be realized. Completing the project is an extremely cost-effective use of restoration dollars.

## **OBJECTIVES**

The objective of this work is to conduct an independent external peer review (IEPR) of the Kissimmee River Post Authorization Change Limited Reevaluation Report (LRR) in accordance with the Department of the Army, U.S. Army Corps of Engineers, Water Resources Policies and Authorities' *Civil Works Review Policy* (EC 1165-2-209) dated January 31, 2010 and the Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* released December 16, 2004.

Peer review is one of the important procedures used to ensure that the quality of published information meets the standards of the scientific and technical community. Peer review typically

evaluates the clarity of hypotheses, validity of the research design, quality of data collection procedures, robustness of the methods employed, appropriateness of the methods for the hypotheses being tested, extent to which the conclusions follow from the analysis, and strengths and limitations of the overall product.

This purpose of the IEPR is to assess the “adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used” (EC 1165-2-209; p. D-4) for the Kissimmee River LRR. The IEPR will be limited to technical review and will not involve policy review. The IEPR will be conducted by subject matter experts (i.e., IEPR panel members) with extensive experience in ecological restoration, water resources planner economics, and cost engineering issues relevant to the project. They should also have experience applying their subject matter expertise to ecosystem restoration.

The panel members will be “charged” with responding to specific technical questions as well as providing a broad technical evaluation of the overall project. Per EC 1165-2-209, Appendix D, review panels should identify, explain, and comment upon assumptions that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods. Review panels should be able to evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable. Reviews should focus on assumptions, data, methods, and models. The Panel may offer opinions as to whether there are sufficient analyses upon which to base a recommendation.

## DOCUMENTS PROVIDED

The following is a list of documents and reference materials that will be provided for the review. **The documents and files presented in bold font are those which are to be reviewed.** All other documents are provided for reference.

- **C &SF Project: Kissimmee River Restoration, Kissimmee River, Florida Post Authorization Change Limited Reevaluation Report.**
- Kissimmee River Feasibility Study, 1992
- Kissimmee River Headwaters Revitalization Project, Integrated Project Modification Report and Supplement to the Final Environmental Impact Statement, 1996
- USACE guidance *Civil Works Review Policy* (EC 1165-2-209) dated January 31, 2010
- CECW-CP Memorandum dated March 31, 2007
- Office of Management and Budget’s *Final Information Quality Bulletin for Peer Review* released December 16, 2004.

## SCHEDULE

TASK	ACTION	DUE DATE
Conduct Peer Review	Review documents sent to panel members	8/4/2010
	Battelle/IEPR panel Kick-off Meeting	8/5/2010
	USACE/Battelle/panel Kick-off Meeting with panel members	8/5/2010
	IEPR panel members complete their review	8/19/2010
Prepare Final Panel Comments and Final IEPR Report	Battelle provides panel members merged individual comments and talking points for panel review teleconference	8/26/2010
	Convene panel review teleconference	8/30/2010
	Battelle provides Final Panel Comments (FPC) directive to panel	8/31/2010
	Panel members provide draft Final Panel Comments (FPC) to Battelle	9/8/2010
	Battelle provides feedback to panel members on draft FPCs; panel provides revised draft FPCs per Battelle feedback (iterative process)	9/8-9/15/2010
	FPCs finalized	9/15/2010
	Battelle provides Final IEPR report to panel for review	9/17/2010
	Panel provides comments on Final IEPR report	9/21/2010
	*Battelle submit Final IEPR Report to USACE	9/24/2010
Comment/ Response Process	Battelle inputs Final Panel Comments to DrChecks; Battelle provides Final Panel Comment response template to USACE	9/28/2010
	USACE PDT provides draft responses and clarifying questions to Battelle	10/8/2010
	Battelle provides panel members the draft Evaluator responses and clarifying questions	10/14/2010
	Panel members provide Battelle with draft BackCheck responses	10/19/2010
	Teleconference with Battelle and panel members to discuss panel's draft BackCheck responses	10/19/2010
	FPC Teleconference between Battelle, IEPR team, and PDT to discuss FPCs, draft responses and clarifying questions	10/20/2010
	USACE inputs final Evaluator responses in DrChecks	11/3/2010
	Battelle provides Evaluator responses to panel members	11/8/2010
	Panel members provide Battelle with BackCheck responses	11/12/2010
	Battelle inputs BackCheck responses in DrChecks	11/18/2010
	*Battelle submits pdf printout of DrChecks to USACE	11/19/2010

## **CHARGE FOR PEER REVIEW**

Members of this peer review panel are asked to determine whether the technical approach and scientific rationale presented in the Central and Southern Florida Project Kissimmee River Restoration, Kissimmee River, Florida - Post Authorization Change Limited Reevaluation Report (Kissimmee River LRR) are credible and whether the conclusions are valid. The reviewers are asked to determine whether the technical work is adequate, competently performed, properly documented, satisfies established quality requirements, and yields scientifically credible conclusions. The Panel is being asked to provide feedback on economics, cost engineering, water resources planning, and plan formulation. The reviewers are not being asked whether they would have conducted the work in a similar manner.

Specific questions for the panel members (by report section or Appendix) are included in the general charge guidance, which is provided below.

### **General Charge Guidance**

Please answer the scientific and technical questions listed below and conduct a broad overview of the Kissimmee River LRR. Please focus on your areas of expertise and technical knowledge. Even though there are some sections with no questions associated with them, that does not mean that you cannot comment on them. Please feel free to make any relevant and appropriate comment on any of the sections and appendices you were asked to review. In addition, please note the following guidance. Note that the panel will be asked to provide an overall statement related to 2 and 3 below per USACE guidance (EC 1165-2-209; Appendix D).

1. Your response to the charge questions should not be limited to a “yes” or “no.” Please provide complete answers to fully explain your response.
2. Assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, and any biological opinions of the project study.
3. Assess the adequacy and acceptability of the economic analyses, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, and models used in evaluation of economic or environmental impacts of the proposed project.
4. If appropriate, offer opinions as to whether there are sufficient analyses upon which to base a recommendation.
5. Identify, explain, and comment upon assumptions that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods.
6. Evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable
7. Please focus the review on assumptions, data, methods, and models.

Please **do not** make recommendations on whether a particular alternative should be implemented, or whether you would have conducted the work in a similar manner. Also please **do not** comment on or make recommendations on policy issues and decision making.

Comments should be provided based on your professional judgment, **not** the legality of the document.

1. If desired, panel members can contact one another. However, panel members **should not** contact anyone who is or was involved in the project, prepared the subject documents, or was part of the USACE Independent Technical Review.
2. Please contact the Battelle Project Manager (Corey Wisneski, [wisneskic@battelle.org](mailto:wisneskic@battelle.org)) or Program Manager (Karen Johnson-Young, [johnson-youngk@battelle.org](mailto:johnson-youngk@battelle.org)) for requests or additional information.
3. In case of media contact, notify the Battelle Program Manager immediately.
4. Your name will appear as one of the panel members in the peer review. Your comments will be included in the Final IEPR Report, but will remain anonymous.

**Please submit your comments in electronic form to Corey Wisneski,  
[wisneskic@battelle.org](mailto:wisneskic@battelle.org), no later than August 19, 10 pm EDT.**

**Independent External Peer Review  
Central and Southern Florida Project, Kissimmee River Restoration,  
Kissimmee River, Florida,  
Post Authorization Change Limited Reevaluation Report**

**Final Charge Questions**

**GENERAL QUESTIONS**

1. To what extent has it been shown that the project is technically sound, environmentally acceptable, and economically justified?
2. Are the assumptions that underlie the economic, engineering, and environmental analyses sound?
3. Are the economic, engineering, and environmental methods, models, and analyses used adequate and acceptable?
4. In general terms, are the planning methods sound?
5. Are the interpretations of analysis and conclusions based on the analysis reasonable?
6. What sections of the report are well written and do not require further revision?

**1 INTRODUCTION**

7. Comment on whether the purposes of the Kissimmee River Limited Reevaluation Report (LRR) are well-described.

**1.1 Description of Authorized Project**

8. Comment on whether there is enough detail in the description of the authorized project.

**1.2 Authorization**

No questions

**1.3 History of Project**

9. Comment on whether there is enough detail in the project history description.
10. Comment on whether the project history description is accurate.
11. Comment on the goals/objectives of the Kissimmee River project.
12. Comment on the constraints of the Kissimmee River project.

13. Comment on the assumptions of the Kissimmee River project.
14. Comment on the restoration criteria of the Kissimmee River project.

## **2 CHANGES IN PROJECT SINCE AUTHORIZATION**

### **2.1 Changes in Scope of Authorized Project**

No questions

### **2.2 Changes in Project Purpose**

No questions

### **2.3 Changes in Local Cooperation Requirements**

15. Comment on the request to grant the South Florida Water Management District (SFWMD) credit for in-kind work.

### **2.4 Change in Location of Project**

No questions

### **2.5 Design Changes**

16. Comment on the design changes made for the remaining contracts.

## **3 HISTORY AND REEVALUATION OF PROJECT COSTS**

17. Comment on the extent to which the increase in construction costs have been supported by the national data trends presented in this section and in Appendix B.
18. Comment on the extent to which the increases in costs associated with the post-construction project monitoring have been clearly outlined.

### **3.1 Changes in Total Project Costs**

19. Comment on the extent to which the increases in project costs are clearly and adequately explained and justified.

### **3.2 Cultural and Socio-Economic Impacts**

No questions

### **3.3 Funding Since Authorization**

No questions

### **3.4 Changes in Project Benefits**

20. Comment on the extent to which the revised change in habitat units and the role of the various phases of the project in realizing the habitat units is adequately explained. What, if anything, is missing?

### **3.5 Benefit-Cost Analysis**

21. Comment on the extent to which the costs and benefits are consistent with and supported by the analysis in Appendix D.

### **3.6 Changes in Cost Allocation**

No questions

### **3.7 Changes in Cost Apportionment**

No questions

## **4 ECOLOGICAL RESPONSE**

### **4.1 A Vision of Restoration**

22. Have all the concepts for the ecological integrity and restoration of the project area been considered? What, if anything, is missing?

### **4.2 Observations in the Restored Reaches**

23. To what extent have all ecological indicators in Table 4-1 been adequately identified and described? What, if anything, is missing?
24. Do the observed changes for each indicator address the target condition? What, if any, modifications could be made to the restoration and monitoring process.
25. Are the restoration expectations associated with each indicator appropriate and adequate?

### **4.3 Remaining Restoration - Expectations and Linkages**

26. Please comment on whether this section has clearly and completely described both the purpose of and the need for the remaining restoration. Should any additional information be included?
27. Have the potential cumulative impacts of the project or the delay of the project and other previous and future projects been identified? Should any additional information be included?

### **4.4 Conclusion - Realizing Ecological Integrity**

28. Does the conclusion address all of the ecosystem and restoration concerns in the project area?

## **5 RECOMMENDATIONS**

29. Based on your experience, are the recommendations comprehensive and adequate? What, if anything, is missing?

### **Appendix A: Environmental Compliance**

30. Comment on the environmental considerations of the project and the predicted impacts. What, if anything, is missing?
31. Comment on the accuracy and comprehensiveness of the discussion of threatened and endangered species in the study area.
32. Comment on the accuracy and comprehensiveness of the discussion of fish and wildlife in the study area.
33. Comment on the accuracy and comprehensiveness of the discussion of water quality in the study area.
34. Comment on the accuracy and comprehensiveness of the discussion of cultural resources in the study area.

### **Appendix B: Cost Estimates**

35. Comment on the extent to which the cost estimates are clearly explained, adequate, and reasonable.
36. Comment on the extent that the pre-construction, engineering and design (PED) costs have been supported within the appendix.
37. Comment on the extent that the significant construction costs been adequately identified, described, and supported.

### **Appendix C: Contract Scopes**

38. Comment on the extent that assumptions associated with the construction contract sequencing have been validated.
39. Comment if the description of work associated with each contract scope is supported within the cost estimate.

### **Appendix D: Economic Analysis**

40. Comment on the adequacy and completeness of the benefit-cost analysis.

41. Comment on the extent to which the decision-making alternatives are adequately discussed and the preferred alternative justified by the results of the analysis.

#### **Appendix E: Work-in-Kind Crediting and Recommendation**

42. Comment on the extent to which the work-in-kind crediting is adequately presented, the costs justified, and the benefits to the project explained.
43. Comment on the adequacy of the explanation of the crediting recommendation and the support presented for the crediting recommendation.
44. Comment if the significant design assumptions and associated costs for the engineering solutions (in lieu of real estate acquisition) have been clearly presented.
45. Comment on the extent that the significant costs associated with the work-in-kind on acquired lands been validated within the overall cost estimate.

#### **Appendix F: 902 Limit Calculations**

46. Comment on any discrepancies or inaccuracies noted in the 902 limit calculations.

#### **Appendix G: Project Cost Increase Fact Sheet**

47. Comment on the extent to which the Fact Sheet is consistent with information and analyses presented in the Kissimmee River LRR.
48. Comment on the extent to which the assumptions used to develop the status of individual contracts in Appendix C are supported in the Kissimmee River LRR. What, if anything, is missing?

#### **FINAL OVERVIEW QUESTION**

49. What is the most important concern you have with the document or its appendices that was not covered in your answers to the questions above?