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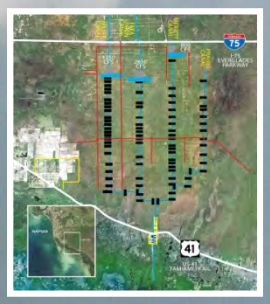
Final Independent External Peer Review Report Picayune Strand Restoration Project (PSRP), Draft Limited Reevaluation Report (LRR) and Environmental Assessment Post-Authorization Change Report



Prepared by
Battelle Memorial Institute

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

Contract No. W912HQ-10-D-0002
Task Order: 0038

Final Independent External Peer Review Report
Picayune Strand Restoration Project (PSRP),
Draft Limited Reevaluation Report (LRR) and
Environmental Assessment Post-Authorization Change Report

by

Battelle
505 King Avenue
Columbus, OH 43201

for

Department of the Army
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Final Independent External Peer Review Report for the

Picayune Strand Restoration Project (PSRP)
Draft Limited Reevaluation Report (LRR) and Environmental Assessment Post-Authorization Change Report

EXECUTIVE SUMMARY

Project Background and Purpose

The Picayune Strand Restoration Project (PSRP) area, previously known as the Golden Gate Estates, was established in the early 1960s in Collier County in southwest Florida. The development was split into two entities: the Northern Golden Gate Estates (NGGE), which remains a residential subdivision, and the Southern Golden Gate Estates (SGGE), which had very limited development and was purchased from private owners for restoration. The SGGE area is now known as the Picayune Strand State Forest. The PSRP consists of approximately 94 square miles located between Interstate 75 and U.S. Highway 41. It is situated southwest of the Florida Panther National Wildlife Refuge, north of Ten Thousand Island National Wildlife Refuge and Collier-Seminole State Park, east of the Belle Meade Conservation and Recreation Lands Project Area, and west of the Fakahatchee Strand State Preserve.

The intent of the PSRP is "to restore and enhance the wetlands in the former Southern Golden Gate Estates subdivision and in adjacent public lands by reducing overdrainage. Implementation of the restoration plan would also improve the water quality of coastal estuaries by moderating the large salinity fluctuations caused by freshwater point discharge of the Faka Union Canal. The plan would also aid in protecting the City of Naples' eastern Golden Gate well field by improving groundwater recharge."

The PSRP Limited Reevaluation Report and Environmental Assessment Post-Authorization Change Report (LRR/EA PACR) requests the authorization for a total project cost of $612 million, which exceeds the Water Resources Development Act's (WRDA) Section 902 limit authorized cost of $504 million. While the 2004 Final Project Implementation Report (PIR) and Environmental Impact Statement (EIS) cost and the current total project cost differences are due to multiple factors, the project components as presented in the PIR/EIS were conceptual and subject to significant refinement. Through project engineering and design (PED) phase investigations, more detailed information has provided a more accurate cost.

The revisions discussed in this integrated LRR/EA PACR represent design refinements to the 2004 Final PIR/EIS original design. For example, the EA component of this report describes the need for, and evaluates the effect of, the tieback levee. The PIR/EIS assumed the need for a 12,000 foot berm north of the spreader canal to ensure movement of the water from each pump station flowed south into the restored wetlands. Further hydraulic and hydrologic (H&H) analysis deemed that the small berm was not sufficient and an engineered levee spanning the width of the restored project area would be required. This longer tieback levee is necessary to

prevent recirculation of the water and ensures the restorative water is transferred south into the project area to obtain the benefits in the PIR/EIS. The tieback levee will be 54,000 feet long.

The PSRP Final PIR/EIS was approved by the Office of the Chief of Engineers on September 15, 2005. The project was authorized for construction in Section 1001(15) of WRDA 2007. The LRR/EA PACR presents the results and recommendations of investigations into restoration of natural water flow across 85 square miles of western Collier County that were drained for an extensive residential development.

Independent External Peer Review Process

The U.S. Army Corps of Engineers (USACE) is conducting an Independent External Peer Review (IEPR) of the Picayune Strand Restoration Project Draft Limited Reevaluation Report and Environmental Assessment Post Authorization Change Report (hereinafter Picayune Strand LRR/EA PACR). As a 501(c)(3) non-profit science and technology organization, Battelle is independent, is free from conflicts of interest (COIs), and meets the requirements for an Outside Eligible Organization (OEO) per guidance described in USACE (2012). Battelle has experience in establishing and administering peer review panels for USACE and was engaged to coordinate the IEPR of the Picayune Strand LRR/EA PACR. 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 (2012a, 2012b) 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).

Based on the technical content of the Picayune Strand LRR/EA PACR review documents and the overall scope of the project, Battelle identified candidates for the Panel in the following key technical areas: civil engineering, cost engineering, economics, Civil Works planning, and environmental/ecological evaluation. Three panel members were selected for the IEPR. USACE was given the list of candidate panel members, but Battelle made the final selection of the Panel[1].

The Panel received an electronic version of the 282-page Picayune Strand LRR/EA PACR review document, along with a charge that solicited comments on specific sections of the documents to be reviewed. USACE prepared the charge questions following guidance provided in USACE (2012) and OMB (2004), which were included in the draft and final Work Plans.

The USACE Project Delivery Team briefed the Panel and Battelle during a kick-off meeting held via teleconference prior to the start of the review to provide the Panel an opportunity to ask questions of USACE and clarify uncertainties. Other than this teleconference, there was no direct communication between the Panel and USACE during the peer review process. The Panel produced more than 70 individual comments in response to the 22 charge questions.

IEPR panel members reviewed the Picayune Strand LRR/EA PACR documents individually. The panel members then met via teleconference with Battelle to review key technical comments,

[1] Battelle identified two candidates who served in combined roles: one panel member served as the civil engineering and cost engineering expert, and one panel member served as the economics and the Civil works planning expert.

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, nine Final Panel Comments were identified and documented. Of these, one was identified as having high significance, five had medium significance, and three had low significance.

Results of the Independent External Peer Review

The panel members agreed among themselves on their "assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (USACE, 2012; p. D-4) in the Picayune Strand LRR/EA PACR review documents. Table ES-1 lists the Final Panel Comments statements by level of significance. The full text of the Final Panel Comments is presented in Appendix A of this report. The following summarizes the Panel's findings.

Based on the Panel's review, the report is well-prepared and provides a convincing rationale for selecting Alternative 2. This Picayune Strand LRR/EA PACR is a good example of the Comprehensive Everglades Restoration Program (CERP) process, in which significant work has been completed by a multidisciplinary team, using the best available science and professional judgment to provide an excellent presentation of information through the use of maps, diagrams, and tables.

Civil Engineering and Cost Engineering – From a civil engineering and cost engineering perspective, the Picayune Strand LRR/EA PACR provides a thorough explanation of project refinements and design modifications that led to cost increases, such as revised hydraulic and hydrologic modeling identifying the need for a full length tieback levee system, discovery of unexpected geotechnical conditions, collection of more detailed topography, and a general increase of material prices. However, the Panel is concerned by some of the cost increases, including the same capacity pump system incurring a large cost increase from the original project and similar PED phase and construction management percentage increases. In analyzing the cost increases, the Panel thought there might be potential cost savings associated with eliminating pump redundancy or reducing the associated operation, maintenance, repair, replacement, and rehabilitation (OMRR&R). The Panel is also concerned that costs were included for flood protection features that may no longer be necessary based on revised hydraulic and hydrologic modeling; therefore, a revision of the cost estimates may be necessary.

Economics and Civil Works Planning –The Picayune Strand LRR/EA PACR is very thorough in describing the plan formulation and associated economics of the overall project and the synergies related to adjacent projects. From a planning perspective, it appears that the screening process eliminated alternatives without providing quantitative justification; however, this may be due to the fact that the preferred alternative is already under construction. The Panel also believes that the report would benefit from a correlation of the components completed with the benefits accrued. This correlation would provide a more transparent and better-documented benefit analysis. The Panel also thinks that a presentation of the quantitative costs and

environmental impacts for each alternative footprint (that incorporates and acknowledges sunk costs) would provide a better basis for the selection of the tieback levee.

Environmental/Ecological Evaluation – The LRR/EA PACR generally meets the requirements of the National Environmental Policy Act (NEPA); however, the document relies heavily on references to information contained in the 2004 PIR/EIS and other prior project documents, making a cohesive review difficult. There are some inconsistencies and a general lack of detail relative to determination of project benefits, the Manatee Mitigation Feature, levee borrow sources, and allocated PED costs. Finally, given that some of the PSRP phases have been constructed for more than five years, a preliminary assessment is not included of monitoring data to date relative to predicted project performance and the status of an integrated project-level adaptive management (AM) strategy based on new CERP guidance.

Table ES-1. Overview of nine Final Panel Comments Identified by the Picayune Strand LRR/EA PACR IEPR Panel

No.	Final Panel Comment
	Significance – High
1	Three Flood Protection Features (Private Lands, Port of Islands, and 6L's Farm) have been included in the cost estimate, although at least two of them have been eliminated from the Picayune Strand Restoration Project, which could affect the accuracy of the cost estimate.
	Significance – Medium
2	The report does not clearly explain why the project engineering and design costs increased from the initial estimates.
3	Without-project conditions are not defined enough to determine and optimize incremental costs and benefits.
4	The benefit-to-cost ratio of pump station system redundancy is not explained.
5	The Manatee Mitigation Feature is not consistently described, and the current status of ESA consultations is not clearly presented.
6	The report does not describe the implementation status of the Adaptive Management plan for the PSRP, discuss allocated funding for the plan, or assess its effectiveness should the allocated budget be reduced.
	Significance – Low
7	The post-implementation monitoring results are not included for the portions of the Picayune Strand Restoration Project (e.g., Prairie Canal) that are already constructed.
8	The report does not explain that the alternative screening process appears to be influenced by the fact that the preferred alternative is already under construction.
9	The summary of the 404(b)(1) evaluation is too abbreviated, and missing detail, for example, on levee siting considerations and source and type of fill material.

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List of Tables

LIST OF ACRONYMS

AM	Adaptive Management
ATR	Agency Technical Review
BCR	benefit-to-cost ratio
CERP	Comprehensive Everglades Restoration Plan
COI	Conflict of Interest
CZMA	Coastal Zone Management Act
DCM	Design Criteria Memo
DrChecks	Design Review and Checking System
EC	Engineering Circular
EMP	Environmental Monitoring Plan
ESA	Endangered Species Act
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FSSP	Fakahatchee Strand State Preserve
FWS	U.S. Fish and Wildlife Service
H&H	hydraulic and hydrologic
HU	habitat unit
IEPR	Independent External Peer Review
LRR/EA PACR	Limited Reevaluation Report and Environmental Assessment Post-Authorization Change Report
LWRC	Louisiana Water Resources Council
MAP	Monitoring and Assessment Plan
MMF	Manatee Mitigation Feature
MMPA	Marine Mammal Protection Act
NEPA	National Environmental Policy Act
NGGE	Northern Golden Gates Estates
NMFS	National Marine Fisheries Service
OEO	Outside Eligible Organization
OMB	Office of Management and Budget
OMRR&R	Operation, Maintenance, Repair, Replacement, and Rehabilitation

PDT	Project Delivery Team
P.E.	Professional Engineer
PED	Project Engineering and Design
PIR/EIS	Project Implementation Report/Environmental Impact Statement
PSRP	Picayune Strand Restoration Project
RCW	red-cockaded woodpecker
ROD	Record of Decision
SFWMD	South Florida Water Management District
SGGE	Southern Golden Gates Estates
SSR	System Status Report
SWIM	Surface Water Improvement and Management
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Service
WRDA	Water Resources Development Act

1. INTRODUCTION

The Picayune Strand Restoration Project (PSRP) area, previously known as the Golden Gate Estates, was established in the early 1960s in Collier County in southwest Florida. The development was split into two entities: the Northern Golden Gate Estates (NGGE), which remains a residential subdivision, and the Southern Golden Gate Estates (SGGE), which had very limited development and was purchased from private owners for restoration. The SGGE area is now known as the Picayune Strand State Forest. The PSRP consists of approximately 94 square miles located between Interstate 75 and US Highway 41. It is situated southwest of the Florida Panther National Wildlife Refuge, north of Ten Thousand Island National Wildlife Refuge and Collier-Seminole State Park, east of the Belle Meade Conservation and Recreation Lands Project Area, and west of the Fakahatchee Strand State Preserve.

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The objective of the work described here was to conduct an Independent External Peer Review (IEPR) of the Picayune Strand Restoration Project Limited Reevaluation Report and Environmental Assessment Post-Authorization Change Report (hereinafter Picayune Strand LRR/EA PACR) in accordance with procedures described in the Department of the Army, U.S. Army Corps of Engineers (USACE) Engineer Circular (EC) *Civil Works Review* (EC 1165-2-214) (USACE, 2012) and Office of Management and Budget (OMB) *Final Information Quality Bulletin for Peer Review* (OMB, 2004). 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 Picayune Strand LRR/EA PACR. The full text of the Final Panel Comments is presented 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 (ATR), as described in USACE (2012).

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 Picayune Strand LRR/EA PACR was conducted and managed using contract support from Battelle, which is an Outside Eligible Organization (OEO) (as defined by EC 1165-2-214) 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 (2012) and in accordance with OMB (2004) guidance. Supplemental guidance on evaluation for conflicts of interest (COIs) 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

At the beginning of the Period of Performance, 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. In addition, 22 charge questions were

provided by USACE and included in the draft and final Work Plans. The final charge also included general guidance for the Panel on the conduct of the peer review (provided in Appendix B of this final report).

Table 1 presents the schedule followed in executing the IEPR. Due dates for milestones and deliverables are based on the award/effective date of April 22, 2013. The review documents were provided by USACE on April 30, 2013. Note that the work items listed in Task 6 occur after the submission of this report. Battelle will enter the nine 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. Battelle will provide USACE and the Panel a pdf printout of all DrChecks entries, through comment closure, as a final deliverable and record of the IEPR results.

Table 1. Picayune Strand LRR/EA PACR IEPR Schedule

Task	Action	Due Date
1	Award/Effective Date	4/22/2013
	Review Documents Available	4/30/2013
	*Battelle submits draft Work Plan	4/29/2013
	USACE provides comments on draft Work Plan	5/2/2013
	*Battelle submits final Work Plan	5/7/2013
2	Battelle requests input from USACE on the conflict of interest (COI) questionnaire	4/23/2013
	USACE provides comments on COI questionnaire	4/25/2013
	*Battelle submits list of selected panel members	5/1/2013
	USACE confirms the panel members have no COI	5/6/2013
	Battelle completes subcontracts for panel members	5/20/2013
3	Battelle convenes kick-off meeting with USACE	5/6/2013
	Battelle sends review documents to panel members	5/30/2013
	Battelle convenes kick-off meeting with panel members	5/28/2013
	Battelle convenes kick-off meeting with USACE and panel members	5/28/2013
	Battelle convenes mid-review teleconference for panel members to ask clarifying questions of USACE	6/4/2013
4	Panel members complete their individual reviews	6/10/2013
	Battelle provides panel members with talking points for Panel Review Teleconference	6/11/2013
	Battelle convenes Panel Review Teleconference	6/13/2013
	Battelle provides Final Panel Comment templates and instructions to panel members	6/13/2013
	Panel members provide draft Final Panel Comments to Battelle	6/18/2013
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	6/18-6/21/2013
	Battelle finalizes Final Panel Comments	6/21/2013
5	Battelle provides Final IEPR Report to panel members for review	6/24/2013
	Panel members provide comments on Final IEPR Report	6/25/2013
	***Battelle submits Final IEPR Report to USACE**	**6/26/2013**

Table 1, continued. Picayune Strand LRR/EA PACR IEPR Schedule

Task	Action	Due Date
6[a]	Battelle inputs Final Panel Comments to DrChecks and provides Final Panel Comment response template to USACE	6/27/2013
	Battelle convenes teleconference with USACE to review the Post-Final Panel Comment Response Process	6/27/2013
	Battelle convenes teleconference with Panel to review the Post-Final Panel Comment Response Process (if necessary)	6/28/2013
	USACE provides draft PDT Evaluator Responses to Battelle	7/2/2013
	Battelle provides the panel members the draft PDT Evaluator Responses	7/3/2013
	Panel members provide Battelle with draft BackCheck Responses	7/8/2013
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	7/8/2013
	Battelle convenes Comment-Response Teleconference with panel members and USACE	7/12/2013
	USACE inputs final PDT Evaluator Responses to DrChecks	7/16/2013
	Battelle provides PDT Evaluator Responses to panel members	7/17/2013
	Panel members provide Battelle with final BackCheck Responses	7/19/2013
	Battelle inputs the panel members' final BackCheck Responses to DrChecks	7/22/2013
	*Battelle submits pdf printout of DrChecks project file	7/23/2013
	Contract End	9/25/2013

** Deliverable*
[a] Task 6 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: civil engineering, cost engineering, economics, Civil Works planning, and environmental/ecological evaluation. These areas correspond to the technical content and overall scope of the Picayune Strand LRR/EA PACR project.

To identify candidate panel members, Battelle reviewed the credentials of the experts in Battelle's Peer Reviewer Database, sought recommendations from colleagues, contacted former panel members, and conducted targeted Internet searches. Battelle evaluated these candidate panel members in terms of their technical expertise and potential COIs. Of these candidates, Battelle chose the most qualified individuals, confirmed their interest and availability, and ultimately selected three experts for the final Panel.

The three selected reviewers constituted the final Panel. The remaining candidates were not proposed for a variety of reasons, including lack of availability, disclosed COIs, or lack of the precise technical expertise required.

The candidates were screened for the following potential exclusion criteria or COIs.[2] These COI questions were intended to serve as a means of disclosure and to better characterize a candidate's employment history and background. Providing a positive response to a COI screening question did not automatically preclude a candidate from serving on the Panel. For example, participation in previous USACE technical peer review committees and other technical review panel experience was included as a COI screening question. A positive response to this question could be considered a benefit.

- Previous and/or current involvement by you or your firm[3] in the Picayune Strand Restoration Project (PSRP), Draft Limited Reevaluation Report (LRR) and Environmental Assessment Post Authorization Change Report (hereinafter: Picayune Strand LRR/EA PACR) and/or technical appendices.
- Previous and/or current involvement by you or your firm[3] in ecosystem restoration projects in the greater Naples, Florida region, including in Golden Gate, Florida.
- Previous and/or current involvement (conceptual or actual design, construction, or O&M) by you or your firm[3] in projects related to the Picayune Strand LRR/EA PACR.
- Current employment by the U.S. Army Corps of Engineers (USACE).
- Previous and/or current involvement with paid or unpaid expert testimony related to the Picayune Strand LRR/EA PACR.

[2] 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."

[3] Includes any joint ventures in which a panel member's firm is involved and if the firm serves as a prime or as a subcontractor to a prime.

- Previous and/or current employment or affiliation with members of the cooperating agencies or local sponsors: the state of Florida; South Florida Water Management District (SFWMD); Florida Division of Forestry; Florida Department of Environmental Protection; Florida Fish and Wildlife Conservation Commission; the Conservancy of Southwest Florida; Collier County, Florida; Collier-Seminole State Park; Big Cypress Preserve, Florida; Miccosukee Tribe; Fakahatchee Strand State Preserve, Florida; and/or 10,000 Islands National Wildlife Refuge (for pay or pro bono).
- Past, current, or future interests or involvements (financial or otherwise) by you, your spouse, or your children related to the greater Naples, Florida region, including Golden Gate, Florida.
- Current personal involvement in other USACE projects, including authorship of any manuals or guidance documents for USACE. If yes, provide titles of documents or description of project, dates, and location (USACE district, division, Headquarters, ERDC, etc.), and position/role. Please highlight and discuss in greater detail any projects that are specifically with the Jacksonville District.
- Previous or current involvement in the development or testing of models that will be used for or in support of the Picayune Strand LRR and PACR, including MIKESHE/Mike11; MIKE FLOOD; MIKE 21; MIKE 11; MIKE Zero; and HEC-RAS 4.1.
- Current firm[3] involvement in 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. Please also clearly delineate the percentage of work you personally are currently conducting for the Jacksonville District. Please explain.
- Any previous employment by USACE as a direct employee, notably if employment was with the Jacksonville District. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.
- Any previous employment by USACE as a contractor (either as an individual or through your firm[3]) 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 flood management studies, and include the client/agency and duration of review (approximate dates).
- Pending, current or future financial interests in the Picayune Strand LRR/EA PACR - related contracts/awards from USACE.
- A significant portion (i.e., greater than 50%) of personal or firm[3] revenues within the last 3 years from USACE contracts.
- A significant portion (i.e., greater than 50%) of personal or firm[3] revenues within the last 3 years from contracts with the non-Federal sponsor (South Florida Water Management District).
- Any publicly documented statement (including, for example, advocating for or discouraging against) related to the Picayune Strand project.
- Participation in prior Federal studies relevant to the Picayune Strand project and/or the Picayune Strand LRR/EA PACR.
- Previous and/or current participation in prior non-Federal studies relevant to the Picayune Strand project and/or the Picayune Strand LRR/EA PACR.

- 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?

In selecting the final members of the Panel, Battelle chose experts who best fit the expertise areas and had no COIs. One of the three panel members is an independent consultant and the other two are affiliated with consulting companies. Battelle established subcontracts with the panel members when they indicated their willingness to participate and confirmed the absence of COIs through a signed COI form. USACE was given the list of candidate panel members, but Battelle made the final selection of the Panel. Section 4 of this report provides names and biographical information on the panel members.

3.3 Conduct of the IEPR

Prior to beginning their review and within five days of their subcontracts being finalized, all members of the Panel attended a kick-off meeting via teleconference planned and facilitated by Battelle in order to review the IEPR process, the schedule, communication procedures, and other pertinent information for the Panel. Battelle planned and facilitated a second kick-off meeting via teleconference during which USACE presented project details to the Panel. Before the meetings, the IEPR Panel received an electronic version of the final charge as well as the Picayune Strand LRR/EA PACR review documents and reference materials listed below. The documents and files in bold font were provided for review; the other documents were provided for reference or supplemental information only.

- **Picayune Strand Restoration Project, Draft Limited Reevaluation Report and Environmental Assessment—**86 pages
  - **Appendix A. Engineering and Design**—26 pages
  - **Appendix B. Cost**—98 pages
  - **Appendix C. 404(b) Evaluation—**7 pages
  - **Appendix D. Coastal Zone Management Consistency**—6 pages
  - **Appendix E. Correspondence—**7 pages
  - **Appendix F. Real Estate Plan**—48 pages
  - **Acronyms**—4 pages
- USACE guidance Civil Works Review (EC 1165-2-214, 15 December 2012)
- Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* (December 16, 2004).

3.4 Review of Individual Comments

The Panel was instructed to address the charge questions/discussion points within a charge question response table provided by Battelle. At the end of the review period, the Panel produced 70 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 summarized the 70 comments into a preliminary

list of nine 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 members 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 Final IEPR Report and decide which panel member would 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.

At the end of these discussions, the Panel identified 10 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 Picayune Strand LRR/EA PACR IEPR:

- 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 the other panel member 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 Panel 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(s) 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, success, or justification of the project. Comments rated as high indicate that the Panel analyzed or assessed the methods, models, and/or analyses and determined that there is a "showstopper" issue.
2. Medium: Affects the completeness of the report in describing the project, but will not affect the recommendation or justification of the project. Comments rated as medium indicate that the Panel does not have sufficient information to analyze or assess the methods, models, or analyses.
3. Low: Affects the understanding or accuracy of the project as described in the report, but will not affect the recommendation or justification of the project. Comments rated as low indicate that the Panel identified information (tables, figures, equations, discussions) that was mislabeled or incorrect or data or report sections that were not clearly described or presented.

- Guidance for Developing Recommendations: The recommendation section was to include specific actions that 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).

During the Final Panel Comment development process, the Panel determined that two of the Final Panel Comments could be dropped and one new Final Panel Comment was added; therefore, the total Final Panel Comment count became nine. 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. At the end of this process, nine Final Panel Comments were prepared and assembled. 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 candidate panel members (who were screened for availability, technical background, and COIs), and provided it to USACE for feedback. Battelle made the final selection of panel members.

An overview of the credentials of the final three 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 area of technical expertise is presented in the text that follows the table.

Table 2. Picayune Strand LRR/EA PACR IEPR Panel: Technical Criteria and Areas of Expertise

Technical Criterion	Bastian	Giovannozzi	Bottone
Economics/Civil Works Planning *(dual role)*			
Minimum 10 years of demonstrated experience in evaluating ecosystem restoration project benefits and costs	X		
Minimum 10 years of experience identifying incidental benefits (preferably flood risk management and water supply)	X		
Minimum 10 years of planning experience	X		
Familiarity with USACE Civil Works planning policies, methodologies, and procedures	X		
10 years of demonstrated experience in evaluating and conducting complex multi-objective public works projects with competing trade-offs	X		
Experience with projects with high public and interagency interests that may have nearby project- impacted sensitive habitats	X		
M.S. degree or higher in economics or related field	X[a]		
Civil Engineering/Cost Engineering *(dual role)*			
Registered professional engineer		X	
Minimum 10 years of demonstrated experience in engineering with a concentration in hydrology and hydraulics		X	
Minimum 10 years of demonstrated experience in preparing and evaluating cost estimates for complex engineering projects		X	
Experience with embankment design (i.e., slope stability, seepage evaluation)		X	
Experience with cut/fill operations		X	
Experience with construction dewatering		X	
Experience with seepage control		X	
Active participation in related professional societies		X	
Environmental/Ecological Evaluation			
Minimum 10 years of demonstrated experience in evaluating and conducting ecological evaluations for complex multi-objective public works projects with competing trade-offs			X
Experience with projects of high public and interagency interests that may have nearby project-impacted sensitive habitats			X
Experience with the Endangered Species Act			X
Familiarity with all National Environmental Policy Act Environmental Impact Statement requirements			X
Active participation in related professional societies			X
M.S. degree or higher in an appropriate field of study			X[a]

[a] *Waiver statement was presented as part of Task 2 deliverable and approved by USACE*

David Bastian, P.E.

Role: Economics and Civil Works planning
Affiliation: Independent Contractor

Mr. Bastian is an independent consultant specializing in USACE compliance and policy review, plan formulation and incremental cost analysis, dredging and flood risk reduction, and hydraulic and river engineering. He is a registered professional engineer (P.E.) in Mississippi. He earned his B.S. in civil engineering from the Georgia Institute of Technology in 1968 and his M.S. in river engineering from Delft University, Netherlands, in 1972. He has more than 35 years of experience in navigation, dredging, and water resource-related activities, most of which have been with USACE. His demonstrated experience in evaluating ecosystem restoration project benefits and costs directly related to water resources economic evaluation spans 20 years and includes the review of USACE water resources feasibility reports for both technical and economic evaluation.

From 1993 to 1998, he served as a USACE Headquarters technical and policy compliance review expert for the Washington Level Review Center. In that capacity, he reviewed all feasibility reports (including environmental restoration, flood risk management, and water supply) for National Economic Development and National Ecosystem Restoration justification (including evaluation of ecosystem restoration project benefits and costs and incidental benefits). From 2001 to the present, he has been a consultant on various USACE feasibility studies, most notably the Louisiana Coastal Protection and Restoration study; the Individual Environmental Reports for the Greater New Orleans levee rebuild effort involving ecosystem restoration economic evaluation; and the many Project Description Reports comprising the Greater New Orleans levee rebuild effort involving the analysis and identification of incidental benefits.

From 1987 to the present, Mr. Bastian has been involved directly, as part of a study team and/or as a reviewer, on complex multi-objective publics works projects with competing tradeoffs, most notably for Panama Canal enlargement compared to a new sea-level canal (as U.S. delegate to the Commission for the Study of Alternatives to the Panama Canal) (1987-1993) and for the Louisiana Coastal Protection and Restoration study (2006-2008). The Louisiana Coastal Protection and Restoration, Louisiana Coastal Area, and Greater New Orleans Hurricane Storm Damage Risk Reduction studies (2006-2012) all had high public and interagency interests and involved impacting nearby sensitive habitats. In addition to his planning experience described above, Mr. Bastian ran the Chesapeake Bay Model to provide results for environmental and navigation studies (1974-1980) and worked at the Institute for Water Resources as a navigation researcher where he developed planning tools for the USACE (1980-1987).

As a reviewer and consultant, Mr. Bastian is familiar with USACE Civil Works planning policies, methodologies, and procedures, having employed Engineer Regulation (ER) 1105-2-100 and other pertinent ERs, Engineer Manuals, Engineer Pamphlets, and the USACE Planning Dashboard.

Michael Giovannozzi, P.E.

Role: Civil and cost engineering
Affiliation: AquaTerra Consulting International

Mr. Giovannozzi is a coastal and hydraulic engineer for AquaTerra Consulting International in West Palm Beach, Florida. He has more than 13 years of engineering experience in both government and private sectors in the fields of coastal and hydraulic engineering throughout the United States. He earned his B.S. in civil engineering from the University of Delaware in 1999 and his M.S. in civil engineering from the University of Delaware in 2001. He is a registered professional engineer (P.E.) in Florida, Alabama, Texas, Georgia, and South Carolina. Mr. Giovannozzi's work history includes two years with the USACE Philadelphia District, three years with the USACE Seattle District, and eight years in private consulting. His experience includes hydraulic and hydrologic studies, sediment transport modeling, numerical modeling of water level and flow speed, probabilities of overtopping of protective structures, design of bank stabilization, wetland and eco-system restoration, flood mapping, and flood damage reduction studies.

Mr. Giovannozzi has prepared and evaluated cost estimates and has provided independent technical reviews and value engineering services for complex engineering projects, including flood damage protection, coastal shoreline restoration, and ecosystem restoration projects, throughout the United States and internationally. A representative study includes the Shoreline and Ecosystem Restoration Project, Seahurst Park, Burien, Washington, where he provided value engineering services to reduce project costs for a shoreline protection and ecosystem restoration on Puget Sound by optimizing cut/fills and suggesting alternative construction materials to reduce capital expenditures and ongoing maintenance costs. Mr. Giovannozzi has extensive experience with embankment design for flood risk management and water storage through the design and evaluation of coastal and inland flood protection structures such as levees, revetments, coastal dunes, and embankments for both flood risk management and water storage. As part of a pilot project for the Everglades Restoration Program, he performed hydraulic modeling, seepage analysis, wave run-up and overtopping assessment, and water level and flow speed determination for the embankment design for a water storage treatment area for the Biscayne Bay Coastal Wetlands Project, Miami, Florida, Coastal Wetlands Planning and 30% Design Phase.

Mr. Giovannozzi's experience in design and construction management of cut/fill operations, including working with contractors for project constructability and cut/fill optimization and value engineering of fill materials, is demonstrated in his work with the St. Lucie Power Plant Embankment Stabilization Project, St. Lucie, Florida. In addition, Mr. Giovannozzi has experience in the design of construction dewatering for dredge material management areas and in the construction of flood risk reduction and coastal protection projects, most notably for the Shoalwater Flood Damage Reduction Project, Tokeland, Washington. That project involved construction of a beach nourishment and sand dune placement for the protection of a sensitive marine habitat and flood damage reduction to upland infrastructure. Mr. Giovannozzi also has experience in evaluating embankment seepage and designing seepage control measures. He performed seepage analysis and provided conceptual designs to minimize embankment seepage

losses for several Miami-Dade stormwater treatment areas as part of the 30% design for the Everglades Restoration Pilot Project.

Mr. Giovannozzi is an active member of the American Society of Civil Engineers, Coasts, Oceans, Ports, and Rivers Institute and the Association of Coastal Engineers. He regularly attends and presents at national and international conferences on flood damage reduction and shoreline protection.

Peter Bottone

Role: Environmental and ecological evaluation
Affiliation: King Engineering Associates, Inc.

Mr. Bottone is the ecological services production manager for King Engineering Associates, Inc. in Tampa, Florida. He earned his B.A. in biology from the University of South Florida in 1982 and has more than 29 years of professional consulting experience conducting ecological evaluations for large-scale, complex, multi-objective public works projects with competing trade-offs in Florida, primarily under CERP, SFWMD's Surface Water Improvement and Management (SWIM) restoration programs, and the Florida Department of Transportation (FDOT). Mr. Bottone's areas of specialization are NEPA environmental assessment/environmental impact studies and documentation; habitat and hydrological restoration and mitigation design; Environmental Resource Permit (ERP)/Section 404 permitting; submerged aquatic vegetation mapping, research, and analysis; watershed and land management planning; stormwater retrofit design; wetland delineation and impact assessment; and wildlife and listed species studies.

Mr. Bottone has served as an environmental consultant responsible for preparation of NEPA documentation for large FDOT and Federal Highway Administration (FHWA) highway/bridge projects and has participated in previous IEPR Panel reviews of Federally sponsored projects involving NEPA compliance. Project examples include the I-75 Mobility 2000 Expansion Projects in Collier and Lee Counties for FDOT/FHWA-SR 951 to Bonita Beach, Golden Gate to Bonita Beach, Alico, Corkscrew to Daniels Pkwy, all of which required wetland assessments, pond siting, Endangered Species Act (ESA) consultations for Florida panther and other endangered species, development of an EIS as well as evaluation of effects on multi-agency flow-way restoration projects during the Project Development and Environment/Environmental Assessment PD&E/EA process. They required evaluation of tradeoffs among private, public, and conservation land owners with various interests relative to the needed expansion of the Interstate system, while providing mitigation and maintaining water resource and habitat restoration objectives being implemented in the region. Of the numerous large-scale public works projects that Mr. Bottone has worked on, many have involved proximity to sensitive lands and therefore required detailed assessment of all potential project impacts associated with the proposed action and coordination with various agencies. Examples include the Tamiami Trail Widening Project and the Everglades Agricultural Area (EAA) Project Implementation Report under CERP.

Mr. Bottone has also evaluated impacts involving tradeoffs between private and public stakeholders with varying interests relative to the need to meet project objectives. He is routinely required to address compliance with the ESA, including formal and informal consultations,

preparation of Endangered Species Biological Assessments, and coordination with the Fish and Wildlife Service and the National Marine Fisheries Service in the evaluation of project impacts using USACE determination of effect keys and obtaining Federal permits for numerous public sector roadway, port, and water resource projects throughout West Central and South Florida. Representative projects include the SFWMD SWIM Coral Creek and Alligator Creek Ecosystem Restoration Projects; the Kissimmee River Pool E Restoration Feasibility Study for the SFWMD/CERP; and the Myakka State Forest and Edward W. Chance Reserve Hydrologic Restoration Projects for SFWMD. He is a member of the American Water Resources Association.

5. SUMMARY OF FINAL PANEL COMMENTS

The panel members agreed among themselves on their "assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (USACE, 2012; p. D-4) in the Picayune Strand LRR/EA PACR review documents. Table ES-1 lists the Final Panel Comments statements by level of significance. The full text of the Final Panel Comments is presented in Appendix A of this report. The following summarizes the Panel's findings.

Based on the Panel's review, the report is well-prepared and provides a convincing rationale for selecting Alternative 2. This Picayune Strand LRR/EA PACR is a good example of the Comprehensive Everglades Restoration Program (CERP) process, in which significant work has been completed by a multidisciplinary team, using the best available science and professional judgment to provide an excellent presentation of information through the use of maps, diagrams, and tables.

Civil Engineering and Cost Engineering – From a civil engineering and cost engineering perspective, the Picayune Strand LRR/EA PACR provides a thorough explanation of project refinements and design modifications that led to cost increases, such as revised hydraulic and hydrologic modeling identifying the need for a full length tieback levee system, discovery of unexpected geotechnical conditions, collection of more detailed topography, and a general increase of material prices. However, the Panel is concerned by some of the cost increases, including the same capacity pump system incurring a large cost increase from the original project and similar PED phase and construction management percentage increases. In analyzing the cost increases, the Panel thought there might be potential cost savings associated with eliminating pump redundancy or reducing the associated operation, maintenance, repair, replacement, and rehabilitation (OMRR&R). The Panel is also concerned that costs were included for flood protection features that may no longer be necessary based on revised hydraulic and hydrologic modeling; therefore, a revision of the cost estimates may be necessary.

Economics and Civil Works Planning –The Picayune Strand LRR/EA PACR is very thorough in describing the plan formulation and associated economics of the overall project and the synergies related to adjacent projects. From a planning perspective, it appears that the screening process eliminated alternatives without providing quantitative justification; however, this may be due to the fact that the preferred alternative is already under construction. The Panel also

believes that the report would benefit from a correlation of the components completed with the benefits accrued. This correlation would provide a more transparent and better-documented benefit analysis. The Panel also thinks that a presentation of the quantitative costs and environmental impacts for each alternative footprint (that incorporates and acknowledges sunk costs) would provide a better basis for the selection of the tieback levee.

Environmental/Ecological Evaluation – The LRR/EA PACR generally meets the requirements of the National Environmental Policy Act (NEPA); however, the document relies heavily on references to information contained in the 2004 PIR/EIS and other prior project documents, making a cohesive review difficult. There are some inconsistencies and a general lack of detail relative to determination of project benefits, the Manatee Mitigation Feature, levee borrow sources, and allocated PED costs. Finally, given that some of the PSRP phases have been constructed for more than five years, a preliminary assessment is not included of monitoring data to date relative to predicted project performance and the status of an integrated project-level adaptive management (AM) strategy based on new CERP guidance.

Table 3. Overview of nine Final Panel Comments Identified by the Picayune Strand LRR/EA PACR IEPR Panel

No.	Final Panel Comment
	Significance – High
1	Three Flood Protection Features (Private Lands, Port of Islands, and 6L's Farm) have been included in the cost estimate, although at least two of them have been eliminated from the Picayune Strand Restoration Project, which could affect the accuracy of the cost estimate.
	Significance – Medium
2	The report does not clearly explain why the project engineering and design costs increased from the initial estimates.
3	Without-project conditions are not defined enough to determine and optimize incremental costs and benefits.
4	The benefit-to-cost ratio of pump station system redundancy is not explained.
5	The Manatee Mitigation Feature is not consistently described, and the current status of ESA consultations is not clearly presented.
6	The report does not describe the implementation status of the Adaptive Management plan for the PSRP, discuss allocated funding for the plan, or assess its effectiveness should the allocated budget be reduced.
	Significance – Low
7	The post-implementation monitoring results are not included for the portions of the Picayune Strand Restoration Project (e.g., Prairie Canal) that are already constructed.
8	The report does not explain that the alternative screening process appears to be influenced by the fact that the preferred alternative is already under construction.

9	The summary of the 404(b)(1) evaluation is too abbreviated, and missing detail, for example, on levee siting considerations and source and type of fill material.

6. REFERENCES

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SFWMD (2007). South Florida Environmental Report, Appendix 7B-1: Comprehensive Everglades Restoration Plan Adaptive Management Strategy. South Florida Water Management District, West Palm Beach, Florida.

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APPENDIX A

Final Panel Comments

on the

Picayune Strand LRR/EA PACR

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Final Panel Comment 1

Three Flood Protection Features (Private Lands, Port of Islands, and 6L's Farm) have been included in the cost estimate, although at least two of them have been eliminated from the Picayune Strand Restoration Project, which could affect the accuracy of the cost estimate.

Basis for Comment

Appendix A (p. A-5) and Appendix F (p. 10-11) of the Picayune Strand Limited Reevaluation Report and Environmental Assessment Post-Authorization Change Report (LRR/EA PACR) state that updated hydraulic and hydrologic (H&H) modeling indicated that the Private Lands and Port of the Islands Flood Protection Features were determined to be "no longer necessary." However, project engineering and design (PED) and construction costs for these components are still included in the Appendix B cost estimate (Sub Appendix A, pp. 5-6, 9) at a cost of $46.7 million.

Appendix A also states that H&H analysis is under way to determine if a smaller Protection Feature will "maintain the required levels of flood protection" for 6L's Farm. The cost for this feature is given as $44.1 million in Appendix B (Sub Appendix A, p. 8). Since the reduction or elimination of this feature could result in additional cost savings, it would be beneficial to complete the H&H modeling to determine the required level of flood protection for 6L's Ranch.

The cost savings associated with the complete elimination of the Protection Features for the three combined areas may affect the relationship of project cost to the Section 902 cost limit.

Significance – High

Elimination of the Flood Protection Features in question may bring the revised cost below the Section 902 limit.

Recommendations for Resolution

1. Determine if the costs for the Flood Protection Features shown in the Appendix B cost estimate for Private Lands, Port of the Islands, and 6L's Farm are still necessary.
2. If applicable, revise the cost estimate by eliminating Flood Protection Features that are no longer necessary for Private Land and Port of the Islands.
3. Complete the H&H analysis to determine the required scope and scale of the 6L's Farm Protection Features and revise the cost estimate accordingly.

Final Panel Comment 2

The report does not clearly explain why the project engineering and design costs increased from the initial estimates.

Basis for Comment

According to Appendix A (pp. A-1 to A-2), several components of the project have already begun the construction and/or engineering and design phase. In a review of the Total Cost Summary in Appendix B (Sub Appendix A, pp. 2-4), the Merritt and Faka Union pump stations each have additional estimated PED costs of about 4.5% of the total remaining construction costs for completion, whereas the Miller Pump station requires additional PED costs of about 5.4% of the remaining construction cost for completion. The PED costs for the other components range from 12.8% to 15.1% for completion (Appendix B, Sub Appendix A, pp. 5-10).

The Cost Engineering Appendix states that the total PED costs spent through 30 September 2012 are 33.7% of the total construction cost (for components constructed or currently under construction) spent through the same time period. The remaining PED needed to complete the project is 8.6% of the remaining construction cost, resulting in an overall PED of 19.4% of the construction cost. This is much higher than the original estimate of 10% given in the Picayune Strand Final Project Implementation Report and Environmental Impact Statement (PIR/EIS) (USACE 2004).

The Engineering Appendix describes the primary reasons the PED costs increased over the original PIR/EIS estimate: advanced stage design refinements resulting in the need for a full tie-back levee, increased pump sizes, and inefficiencies associated with transferring project ownership between USACE and the South Florida Water Management District. However, it is not clear which components the PED funds were expended on. The Total Project Cost Summaries for the individual project components (Appendix B, Sub Appendix A, pp. 2-10) shows estimated additional PED costs, but does not include details on PED funds expended to date, so it is unclear what level of effort has been expended on the design of these components.

Significance – Medium

The adequacy and appropriateness of the cost estimates cannot be determined without additional information on the increased PED costs.

Recommendations for Resolution

1. Provide a cost breakdown of PED costs spent to date (or through 30 September 2012 to remain consistent with existing documents) for each of the project components, including those that have been implemented. The allocation of PED costs should be included for each of the components in order to analyze the validity of the cost estimate for the remaining components.
2. Provide information to support the increase in PED for the components that have not yet been implemented.

Literature Cited:

USACE (2004). Comprehensive Everglades Restoration Plan, Picayune Strand Restoration: Final Integrated Project Implementation Report and Environmental Impact Statement for the Picayune Strand Restoration Project. Jacksonville, Florida. September 2004.

Final Panel Comment 3

Without-project conditions are not defined enough to determine and optimize incremental costs and benefits.

Basis for Comment

The Panel assumes that the without-project conditions presented in the Picayune Strand LRR/EA PACR are the portion of the project that would be completed once the inflated originally authorized costs have been spent. Section 6, Figures 6-3 and 6-4 (pp. 6-8 and 6-9) provides a summary of the detailed benefits – hydrologic, biological, estuarine, etc., as measured in habitat units (HU) – and associated costs of the remaining discrete project features. However, there are no supporting data with which to determine whether this summary correctly identifies the remaining benefits to be accrued and whether they represent the optimized plan.

Specifically, the Panel identified the following issues:

- Section 6 of the 2004 PIR/EIS summarizes HU lift and benefits for the Picayune Strand Restoration Project (PSRP) as a single project (Southern Golden Gates Estates (SGGE) -- Alternative 3D), but the Panel could not find a breakout of the HUs associated with the individual project phases (e.g., Merritt, Miller, Prairie, Faka Union). Additional information is necessary to support how benefits are assigned for each project phase shown in Table 6-3 (p. 6-7).
- Tables 6-1 and 6-2 (pp. 6-3 and 6-4) in the LRR/EA PACR (and their introductory text) do not describe what constitutes the "Revised Future without" conditions in Column 4. It appears that the figures in those columns are used to determine the calculation of the HU lift for both the "with" and "without" scenarios, but additional clarification is necessary.
- While some of the benefits for the adjacent lands along the PSRP's eastern border (Panther Refuge, Fakahatchee, South Belle Meade, etc.) have already been achieved with Prairie and Merritt implementation (Tables 6-1 and 6-2), the allocation of HU lift associated with synergistic effects to adjacent lands is not clearly presented in Table 6-3.
- The LRR/EA PACR does not clearly explain what benefits were assigned to other project components already implemented (i.e., road removal, exotic/nuisance plant species control, etc.) in the PIR/EIS for the various phases of the PSRP and how they are accounted for in the "without project" conditions.

The Executive Summary of the LRR/EA PACR (p. E-ii) states that the Merritt Canal and associated work will be completed this summer, the Faka Union Canal and associated work has been under construction since 2011 and is due for completion in the fall of 2014, and the Miller Canal and associated work is to be awarded this summer. Based on this information, by the end of fiscal year 2014, about 65 percent of the pumping capacity and canal plugging will be in place and the flow to the lower Faka Union Canal will be blocked. This implies that the estuarine point source of fresh water will have been

eliminated. Drainage of the project area will have been almost completely eliminated, as most project area rainfall would no longer be conveyed to the Gulf by canal but would flow across the project area as sheetflow. However, this information does not agree with the statement made in Section 6.2 of the LRR/EA PACR (p. 6-10) that the project would "only realize 30 percent of the hydrologic, 38 percent of the biological and zero percent of the estuarine benefits."

Significance – Medium

Not enough data were provided to determine the accuracy and reliability of the incremental benefits claimed in the LRR/EA PACR.

Recommendations for Resolution

1. Provide a map and accompanying text contrasting the project features that have been completed and those that are remaining once authorized funds are spent.
2. Provide a corresponding map (or set of maps) and accompanying text contrasting the associated hydrologic, biologic, and estuarine HUs for the project features that have been completed and those that are remaining once authorized funds are spent.

Literature Cited:

USACE (2004). Comprehensive Everglades Restoration Plan, Picayune Strand Restoration: Final Integrated Project Implementation Report and Environmental Impact Statement for the Picayune Strand Restoration Project. Jacksonville, Florida. September 2004.

Final Panel Comment 4

The benefit-to-cost ratio of pump station system redundancy is not explained.

Basis for Comment

Appendix A of the Limited Reevaluation Report and Environmental Assessment Post-Authorization Change Report (LRR/EA PACR) explains that several design refinements during the engineering and design phase contributed to a nearly 100% increase in the pump station costs compared to the original estimate in the Final Project Implementation Report and Environmental Impact Statement for Picayune Strand (PIR/EIS) (USACE 2004). According to Appendix A (p. 18), a primary factor for the cost increase was the addition of "redundant diesel engine-driven pumping systems (pumps, engine, reduction gear, and associated appurtenances)" for each of the pump stations. The redundant systems caused an increase in mechanical construction costs and an increase in building costs due to the increased square footage required to house the additional equipment.

According to Appendix A (Section 6.5, p. 14), USACE Jacksonville District signed a Design Criteria Memorandum (DCM) (USACE 2008) that adopted the South Florida Water Management District (SFWMD) *Major Pump Station Engineering Guidelines* (SFWMD 2005). The Panel did not have enough information about this DCM to determine whether the redundant system is a requirement or a recommendation of the DCM. If it is a recommendation, it is necessary to compare the benefit-to-cost ratio (BCR) of the redundant system versus a single-pump system. The analysis should include operation and maintenance, repair, replacement, and rehabilitation (OMRR&R) considerations, specifically preventative maintenance routines and/or emergency repair plans for single pump systems.

In addition, there is no discussion in the hydraulic and hydrologic modeling explanation in Appendix A (pp. A-21 to A-22) justifying the need for a redundant system or discussing potential effects of pump failures, such as expected level of flooding during a failure/outages, system redundancy from adjacent pump stations, etc.

Significance – Medium

The adequacy and appropriateness of the cost estimates cannot be determined without additional information on the BCR of pump station redundancy.

Recommendations for Resolution

1. Explain in Appendix A whether system redundancy is a requirement or a recommendation of the DCM.
2. If system redundancy is recommended by the DCM, revise Appendix A to include a summary of the hydraulic and hydrologic modeling results that support the need for a redundant pump system.
3. If system redundancy is recommended by the DCM, compare the BCR of a redundant system versus single pump system OMRR&R, specifically discussing preventative maintenance routines and/or emergency repair plans for single pump systems.

Literature Cited:

USACE (2004). Comprehensive Everglades Restoration Plan, Picayune Strand Restoration: Final Integrated Project Implementation Report and Environmental Impact Statement for the Picayune Strand Restoration Project. Jacksonville, Florida. September 2004.

Final Panel Comment 5

The Manatee Mitigation Feature is not consistently described, and the current status of ESA consultations is not clearly presented.

Basis for Comment

While it is acknowledged throughout the LRR/EA PACR and Appendices that implementation of the PSRP may result in impacts to the West Indian Manatee refugia located in the POI Basin, thereby requiring the need to provide a Manatee Mitigation Feature (MMF), this feature is not consistently described. Review of the recently updated Real Estate Appendix F (pgs F-15 &16) of the LRR/EA PACR indicates that a more detailed alternatives analysis of the MMF is ongoing than what is presented in the Executive Summary, Sections 2, 4 and 5, and Appendix E of the LRR/EA PACR. In addition, results from a recent USGS 3D hydrodynamic assessment of the PSRP's potential impacts to the POI Basin warm water refugia (Decker et al. 2013) reaffirm that PSRP alterations may have a negative effect on the POI Basin's continued suitability as a passive thermal refuge for manatees. The results and/or implications of this updated modeling analysis are not presented in the LRR/EA PACR.

Similarly, potential impacts to the Federally threatened red cockaded woodpecker (RCW) are associated with the proposed 6,000 foot westernmost extension of the Miller tie-back levee, yet these potential impacts were not considered in the original design [Alternative 3D] (Section 5, pg 5-7 & Table 5-1). As a result, this project component is undergoing additional H&H analysis to determine if this potential impact to RCW can be avoided.

With the understanding that the ESA and Marine Mammal Protection Act (MMPA) consultations are ongoing with the NMFS and FWS, it is important for the LRR/EA PACR to comprehensively describe and update the status of the PSRP's potential effects on the manatee and the RCW. Moreover, in the case of the manatee, inclusion of this updated information will allow a more complete assessment of the impacts the MMF may have on the projected PSRP estuarine benefits.

Significance – Medium

Inconsistencies and incomplete information affect the completeness and understanding of the project relative to the ESA, NEPA, and projected PSRP estuarine benefits.

Recommendations for Resolution

1. Appendix E should be updated and expanded to include more recent FWS, and NMFS consultations related to the manatee, RCW or other listed species issues under the ESA;
2. Revise/update the MMF discussion found in Section 2 to include the various alternatives being considered by the multiagency task force as referenced in Appendix F or associated with more recent FWS/USGS consultations and studies;

3. Modify Sections 4.6.7 and 5.1.5 to include updated findings relative to the manatee;
4. Modify Section 5.1.5.5 to include updated H&H analysis and findings relative to the RCW:
5. Provide an evaluation or description of the potential impacts to projected PSRP estuarine benefits associated with implementation of the MMF in Section 6.0
6. Modify and update the Executive Summary and Appendix C to be consistent with the above revisions.

Literature Cited:

Decker, J., Swain, E., Stith, B. and Langtimm, C. (2013). Assessing factors affecting the thermal properties of a passive thermal refuge using three-dimensional hydrodynamic flow and transport modeling. J. Waterway. Port, Coastal, Ocean Eng., 139(3): 209-220.

Final Panel Comment 6

The report does not describe the implementation status of the Adaptive Management plan for the PSRP, discuss allocated funding for the plan, or assess its effectiveness should the allocated budget be reduced.

Basis for Comment

Implementation of an effective strategy for an Adaptive Management (AM) plan is a requirement under WRDA 2007 and is often cited (NRC 2010, NRC 2012, Thom 2000) as critical to the success of large-scale restoration projects, given the risk and uncertainties associated with predictive hydraulic and hydrologic modeling as a tool for determining project design and environmental benefits. For this reason, the PSRP relies heavily on implementing an AM plan strategy along with an integrated Environmental Monitoring Plan (EMP) to achieve full PSRP benefits. The following are examples of this reliance:

- Assumptions made in the 2009 U.S. Fish and Wildlife Service (FWS) Biological Opinion (pp. 27, 28, 100) that allowed the FWS to make an assessment of "may affect, not likely to adversely affect" for many species were predicated on "the implementation of the EMP and AM strategies" due to "uncertainties such as H&H model inaccuracies, model sensitivity and the lack of completed operational plans."
- The 2007 Record of Decision (ROD) references pre- and post-monitoring as key features in determining whether the benefits of the project are being achieved in support of the AM processes for the PSRP.
- The Final Fish and Wildlife Coordination Act Report (USFWS, 1999) recommends that the Comprehensive Everglades Restoration Program (CERP) develop an adaptive assessment strategy, possibly by the Adaptive Assessment Team, as part of the Restoration Coordination and Verification RECOVER process;
- Section 6.8.13, Risk and Uncertainty Analysis of the Project Implementation Report/Environmental Impact Statement (PIR/EIS, p. 6-133) describes limitations of the MIKE SHE model (i.e., interpolation of available survey data) and describes the need for AM strategies to address these uncertainties and increase the likelihood for project success.

With so much reliance on EMP and AM plan strategies for the successful implementation of the PSRP (as indicated in these earlier documents) and with the emergence of updated CERP AM implementation documents (RECOVER 2010), the Panel does not understand why there is no updated discussion referencing the status of the AM plan and EMP and their implementation in the LRR/EA PACR. The opportunity to evaluate implementation of AM strategies for the PSRP appears relevant, given the fact that construction of some PSRP phases (Prairie and Merritt Canal) were completed more than five years ago.

It is also unclear how funding was allocated for the AM plan and EMP and where such funding is described. In the PIR/EIS, the cost of implementing the EMP (Appendix H, Table H-13) is estimated to be $7.4M, with an average annual cost of $877,000 (Section 8.6.4). Only a brief reference to monitoring costs is included in Appendix A of the LRR/EA PACR under the PED tasks (p. A-20), but there is no breakdown on what has already been expended for work in progress or what is allocated for future AM plan and EMP implementation (Appendix B, Sub Appendix A, Total Project Cost Summary Table).

As stated in NRC (2012), "recent large cuts to the RECOVER MAP pose a risk to system-wide assessment," the implications of which may compromise future funding. The LRR/EA PACR does not include any detail on if and how the PSRP AMP and EMP will continue in anticipation of future budget cuts.

Significance – Medium

The details and status of the AM plan and EMP, including how funding has been allocated, is needed to demonstrate how the best available science will be integrated with adaptive management to achieve overall project optimization and cost-effectiveness for the PSRP.

Recommendations for Resolution

1. Include clearer roles and responsibilities for achieving effective adaptive management for the PSRP, similar to AM plan updates prepared under the CERP program which have a "Roles and Responsibilities Matrix" (SFWMD 2007).
2. Describe how management strategies will be altered and tested through modeling when new data and analysis are obtained from monitoring, including definable trigger points. To assist with this, consider including a decision/summary matrix, similar to Table 3-6, Programmatic Management Options Matrix, contained in RECOVER (2010), which will allow for effective assessment of the project results against the stated project goals/objectives.
3. Reference the allocated costs for implementing the AM plan/EMP in Section 2.0 and include as a separate line item in the Project Cost Estimate, Appendix B
4. In Section 2.0, address provisions for maintaining effective implementation of the AM plan and the EMP should future funding be curtailed.

Literature Cited:

NRC (2012). Progress Toward Restoring the Everglades: The Fourth Biennial Review, 2012. National Research Council. Washington, DC: The National Academies Press.

NRC (2011). Progress Toward Restoring the Everglades: The Third Biennial Review, 2010. National Research Council. Washington, DC: The National Academies Press.

RECOVER 2010. CERP Adaptive Management Integration Guide. Restoration Coordination and Verification. C/O US Army Corps of Engineers, JAX District,

Jacksonville, Florida, and the South Florida Water Management District, West Palm Beach, Florida.

SFWMD (2007). South Florida Environmental Report, Appendix 7B-1: Comprehensive Everglades Restoration Plan Adaptive Management Strategy. South Florida Water Management District, West Palm Beach, Florida.

Thom, R.M. (2000). Adaptive management of coastal ecosystem restoration projects. Ecol. Eng., 15:365-372.

USFWS (2009). Biological Opinion for Picayune Strand Restoration Project.. U.S. Fish and Wildlife Service South Florida Ecological Services Office, Vero Beach, Florida.

USFWS (1999). Final Fish and Wildlife Coordination Act Report. U.S. Fish and Wildlife Service, South Florida Restoration Office, Vero Beach, Florida.

Final Panel Comment 7

The post-implementation monitoring results are not included for the portions of the Picayune Strand Restoration Project (e.g., Prairie Canal) that are already constructed.

Basis for Comment

Due to the risk and uncertainties of large-scale hydrological restoration efforts, the ability of the PSRP to achieve the expected results relies on confirming that project conditions (topographic elevations, geology, soils, etc.) used in the modeling and benefit analysis reasonably represent the actual field-verified conditions determined during project design and pre- and post-project monitoring. The assessment of restoration progress is dependent on having sufficient pre- and post-project implementation monitoring data (NRC 2012).

In this regard, the Panel has some concerns that the LRR/EA PACR lacks references to or discussion of pre- and post-implementation monitoring results for portions of the PSRP that have been constructed (e.g., monitoring results from Prairie Canal in 2004 and 2006-07), particularly information on predicted versus observed responses of hydrology and habitat. Specifically:

- Reference to anecdotal observations made in the LRR/EA PACR (Section 4.0, p. 4-1) that "during the past four wet seasons, partial restoration of wet season flows in the eastern portion of the PSRP" was noted and that "increased hydroperiods and groundwater levels have risen" based on data obtained from monitoring wells. However, these data are not provided or further discussed relative to project performance measures and the cited reference is not included in the References section of the report.

- Other literature (e.g., NRC 2012; Chuirazzi and Duever 2008) also reference similar anecdotal observations as well as post-project monitoring data assessment, indicating that preliminary hydrological and vegetative responses in the eastern portion of the PSRP and the adjacent Fakahatchee Strand State Preserve (FSSP) resulting from the Prairie Canal construction may have been evaluated. Inclusion of a more detailed discussion of these findings would help reduce uncertainty regarding project performance measures and therefore assigned benefits.

- The PSRP Project Management Plan indicate that various pre-construction, construction, and post-construction monitoring of listed species occurrences, vegetative responses, and exotic/nuisance plants should have been implemented for various components of the PSRP. Further, under the Comprehensive Everglades Restoration Plan (CERP) Monitoring and Assessment Plan (MAP) (RECOVER 2009), annual MAP Principal Investigators (PI) Reports and Biennial System Status Reports (SSR) are available. These PI Reports and SSRs summarize data

and provide initial data analysis of implemented project components (e.g., 2009 SSR Southern Coastal Systems, Prairie Canal; Barry and Saha 2008). Relevant discussion summarizing these preliminary findings would also help support the assigned project benefits.

Significance – Low

The discussion of post-implementation monitoring data and analysis relative to project performance measures, meeting agency commitments, and predicted project benefits may help verify underlying assumptions, therefore supporting the proposed project cost increases and cost-benefit analysis in the LRR/EA PACR.

Recommendations for Resolution

1. Include additional text, possibly as an added Appendix, summarizing available monitoring data and preliminary data analysis from MAP PI Reports, SSR excerpts, or other reports as applicable to relate the observed project responses versus predicted project responses for implemented components.
2. Identify any unexpected project responses (i.e., exotic/nuisance species problems, undesirable hydroperiod responses) and proposed actions being considered to address these issues in maintaining project performance (e.g., Adaptive Management plan) and assigned benefits.
3. Reference the key findings of this preliminary analysis as appropriate in the Executive Summary or other sections of the LRR/EA PACR (i.e., Section 4.0, Affected Environment and Section 6.0, Evaluation of Project Benefits.

Literature Cited:

NRC (2012). Progress Toward Restoring the Everglades: The Fourth Biennial Review, 2012. National Research Council. Washington, DC: The National Academies Press, 2012.

Chuirazzi, K.J. and Duever, Michael J. (2008). South Florida Environmental Report Appendix 7A-2. South Florida Water Management District, West Palm Beach, Florida.

Barry, M. J. and Saha, Sonali. (2008). 1-Year Post-Restoration Vegetative Monitoring of Prairie Canal and Control Transects: Picayune Strand Restoration. The Institute for Regional Conservation. Delray Beach, Florida.

System Status Report (2009). Native Vegetative Mosaic Results for Picayune Strand Restoration. Southern Coastal Systems. (http://www.evergladesplan.org/pm/projects/proj_30_sgge.aspx

RECOVER 2009. CERP Monitoring and Assessment Plan. CERP Central and Southern Florida Project (Revised December 2009).

Final Panel Comment 8

The report does not explain that the alternative screening process may have been influenced by the fact that the preferred alternative is already under construction.

Basis for Comment

The LRR/EA PACR presents three alternatives to prevent the recirculation of pumped water and compares them to each other and the no-action alternative. The report presents the decision to recommend the tieback levee (Alternative 2) in a basic east-west orientation connecting the three pump stations and flanking them to its terminal points as based on best professional judgment. However, there is limited information in the LRR/EA PACR to evaluate all the alternatives. In addition, the Executive Summary indicates that portions of the tieback levee (Alternative 2) have already been constructed or at least have been included in construction contracts.

The presentation is confusing because the LRR/EA PACR, as a decision document, carries an implied request for approval, yet construction appears to have already been partially implemented. The LRR/EA PACR presents the alternatives and describes the screening process, but does not explain clearly that Alternative 2 may have been chosen because it is already under construction.

Significance – Low

Additional information on why Alternative 2 was chosen would increase the clarity of the LRR/EA PACR.

Recommendations for Resolution

1. A cost and environmental comparison of the alternatives should be provided to justify the selection of Alternative 2.

Final Panel Comment 9

The summary of the 404(b)(1) evaluation is too abbreviated and missing detail, for example, on levee siting considerations and source and type of fill material.

Basis for Comment

USACE is responsible for administering regulations under Section 404(b)(1) of the Clean Water Act (CWA). Under the National Environmental Protection Act (NEPA), potential impacts from the PSRP subject to these regulations, specifically involving the discharge of dredged material into wetlands associated with constructing the larger tie-back levee or other new project features, need to be evaluated in compliance with CWA Section 404(b)(1).

The 404(b)(1) evaluation found in the LRR/EA PACR, Appendix C, only briefly describes the project, factual determinations, and related actions, making a clear determination of full compliance with Section 404(b)(1) difficult. In addition, some updated information contained in the LRR/EA PACR relative to the 404(b)(1) guidelines should be discussed in more detail in Appendix C as well. The following are examples of details missing from the 404(b)(1) evaluation.

- There are several conflicts within the LRR/EA PACR regarding the source and type of borrow material to be used in constructing the tie-back levees. Under Section I (3), Source of Material (p. C-4) of the 404(b) evaluation it is stated that the levee material would be recovered road subsurfaces, canal spoil, and, if required, hauled in from an off-site source. Section F.13, Appendix F (p. F-10) states that levee fill will be obtained onsite, whereas Section A, Appendix A (p. A-14) indicates that quarry material will be hauled in from offsite for the levee construction. In addition, the Comprehensive Everglades Restoration Plan Regulation Act (CERPRA) permit (May 2013) indicates borrow will be obtained by creating a borrow canal north of the tie-back levee. This project element should be consistently described in all portions of the LRR/EA PACR and appendices, including Appendix C.
- Based on updated and ongoing Endangered Species Act (ESA) coordination with the U.S. Fish and Wildlife Service (FWS), Section II(6), Threatened and Endangered Species (p. C-6), should elaborate more on the potential direct impacts and proposed mitigative measures to red-cockaded woodpeckers (RCW) associated with a 6,000 foot portion of the Miller tie-back levee (LRR/EA PACR, Table 5.1 [p. 5-2] and Appendix A, Sub Appendix C, Risk Item RE-2). Additional information should be provided on indirect project impacts on the West Indian Manatee refugia in the Port of the Islands (POI) Basin from PSRP flows.
- A better description on how levee siting alternatives were evaluated to minimize impacts on aquatic resources, wetlands, and habitat should be included in Appendix C. For instance, the 404(b) description for Section I(3), Type of Site, is given as mostly uplands with isolated pockets of hydrated wetlands, and Section I(4), Type of Habitats, is given as disturbed woodland pine habitat. The LRR/EA

PACR states that the levee was sited to minimize impacts on natural habitats by using existing roads and located south of I-75 to minimize flooding impacts on the Northern Golden Gate Estates. In addition, reference was made to a Uniform Mitigation Assessment Method (UMAM) analysis conducted in 2011 regarding wetland impacts associated with levee construction (p. 5-3). However, these levee siting considerations and UMAM analysis are not included in the Appendix C discussion of the 404(b) evaluation.

Significance – Low

Though the LRR/EA PACR focuses only on the increased levee footprint, additional information would improve the completeness of the 404(b) evaluation.

Recommendations for Resolution

1. Consistently describe and add more detail on the source and type of borrow material to be used in levee construction in Appendix C and throughout the report.
2. Consistently describe and add more detail on the habitat descriptions and wetlands affected by the tie-back levee in Appendix C and throughout the report;
3. Provide a more complete, updated analysis of potential project effects mitigation for Federally listed species to confirm continued compliance with the ESA.
4. Modify the text on evaluation of practicable alternatives to include more detail on levee siting and selection in addressing avoidance and minimization criteria of the 404(b) guidelines.

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APPENDIX B

Final Charge to the Independent External Peer Review Panel as Submitted to USACE on May 7, 2013

on the

Picayune Strand LRR/EA PACR

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Charge Questions and Guidance to the Peer Reviewers for the Independent External Peer Review of the Picayune Strand LRR EA/PACR

BACKGROUND

The PSRP area, previously known as Golden Gate Estates began in the early 1960s within Collier County in Southwest Florida. This development is split into two entities: Northern Golden Gate Estates (NGGE) remains a residential subdivision; the Southern Golden Gate Estates (SGGE) had very limited development and was purchased from private owners for restoration. The SGGE area is now known as the Picayune Strand State Forest. The project consists of approximately 94 square miles located between Interstate 75 and US Highway 41. It is situated southwest of the Florida Panther National Wildlife Refuge, north of Ten Thousand Island National Wildlife Refuge and Collier-Seminole State Park, east of the Belle Meade Conservation and Recreation Lands Project Area, and west of the Fakahatchee Strand State Preserve.

The LRR-PACR requests the authorization for a total project cost of $612 million, which exceeds the current 902 limit authorized cost of $504 million. While the 2004 Final Project Implementation Report (PIR) and Environmental Impact Statement (EIS) cost and the current total project cost differences are due to multiple factors, the PIR/EIS was based on significantly less engineering and design than required for a feasibility study. The project components portrayed in the PIR/EIS were conceptual and subject to significant refinement. Through PED phase investigations, more detailed information has provided a more accurate cost. The revisions discussed in this integrated LRR/EA PACR represent design refinements to the 2004 Final PIR/EIS original design. The EA component of this report describes the need for, and evaluates the effect of the tieback levee.

The Picayune Strand restoration intent is “to restore and enhance the wetlands in the former Southern Golden Gate Estates subdivision and in adjacent public lands by reducing overdrainage. Implementation of the restoration plan would also improve the water quality of coastal estuaries by moderating the large salinity fluctuations caused by freshwater point discharge of the Faka Union Canal. The plan would also aid in protecting the City of Naples’ eastern Golden Gate well field by improving groundwater recharge.” Section 1 of the 2004 Final PIR/EIS provides more information on the purpose and need of the PSRP.

The PIR/EIS assumed the need for a 12,000 foot berm north of the spreader canal to ensure movement of the water from each pump station flowed south into the restored wetlands. Further hydraulic and hydrologic (H&H) analysis deemed that the small berm was not sufficient and an engineered levee spanning the width of the restored project area would be required. This longer tieback levee is necessary to prevent recirculation of the water and ensures the restorative water is transferred south into the project area to obtain the benefits in the PIR/EIS. The tie-back levee will be 54,000 feet long.

The Decision Document for this project is the integrated LRR/EA PACR and the documented results of the Agency Technical Review (ATR) and IEPR. The PSRP Final PIR/EIS was completed in September of 2004 under the authority of Section 601(d) of the Water Resources Development Act (WRDA) of 2000.

The PSRP Final PIR/EIS was approved by the Office of the Chief of Engineers on September 15, 2005. The project was authorized for construction in Section 1001(15) of WRDA 2007. The Decision Document presents the results and recommendations of investigations into restoration of natural water flow across 85 square miles of western Collier County that were drained for an extensive residential development.

OBJECTIVES

The objective of this work is to conduct an independent external peer review (IEPR) of the Picayune Strand Restoration Project (PSRP), Draft Limited Reevaluation Report (LRR) and Environmental Assessment Post Authorization Change Report (hereinafter: Picayune Strand LRR/EA PACR) in accordance with the Department of the Army, USACE, Water Resources Policies and Authorities' *Civil Works Review* (EC 1165-2-214, December 15, 2012), and the Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* (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.

The purpose of the IEPR is to assess the "adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (EC 1165-2-214; p. D-4) for the Picayune Strand LRR/EA PACR documents. 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 economics, civil engineering, environmental/ecological evaluation, Civil Works planning, and cost engineering issues relevant to the project. They will also have experience applying their subject matter expertise to ecosystem restoration.

The Panel will be "charged" with responding to specific technical questions as well as providing a broad technical evaluation of the overall project. Per EC 1165-2-214, 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 members may offer their opinions as to whether there are sufficient analyses upon which to base a recommendation.

DOCUMENTS PROVIDED

The following is a list of documents, supporting information, and reference materials that will be provided for the review.

Documents for Review

The following documents are to be reviewed by designated discipline:

Title	Approx. No. of Pages	Required Disciplines
Picayune Strand Restoration Project, Draft Limited Reevaluation Report and Environmental Assessment	74	All Disciplines
Appendix A. Engineering and Design	24	Economics/Civil Works Planning and Civil Engineering /Cost Engineering
Appendix B. Cost	122	Economics/Civil Works Planning and Civil Engineering /Cost Engineering
Appendix C. 404(b) Evaluation	7	Economics/Civil Works Planning and Environmental/Ecological Evaluation
Appendix D. Coastal Zone Management Consistency	6	Economics/Civil Works Planning and Environmental/Ecological Evaluation
Appendix E. Correspondence	6	All Disciplines
Appendix F. Acronyms	4	All Disciplines
Total Page Count	243	

Documents for Reference

- USACE guidance *Civil Works Review*, (EC 1165-2-214. December 15, 2012)
- Office of Management and Budget's Final Information Quality Bulletin for Peer Review (December 16, 2004).

SCHEDULE

This schedule is based on the May 6, 2013 estimated receipt of the final review documents. The schedule will be revised upon receipt of final review documents.

Task	Action	Due Date
Conduct Peer Review	Battelle sends review documents to panel members	5/21/2013
	Battelle convenes kick-off meeting with panel members	5/22/2013
	Battelle convenes kick-off meeting with USACE and panel members	5/22/2013
	Battelle convenes mid-review teleconference for panel members to ask clarifying questions of USACE	5/28/2013
	Panel members complete their individual reviews	6/3/2013
Prepare Final Panel Comments and Final IEPR Report	Battelle provides panel members with talking points for Panel Review Teleconference	6/5/2013
	Battelle convenes Panel Review Teleconference	6/6/2013
	Battelle provides Final Panel Comment templates and instructions to panel members	6/6/2013
	Panel members provide draft Final Panel Comments to Battelle	6/12/2013
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	6/12-6/18/2013
	Battelle finalizes Final Panel Comments	6/18/2013
	Battelle provides Final IEPR Report to panel members for review	6/19/2013
	Panel members provide comments on Final IEPR Report	6/21/2013
	*Battelle submits Final IEPR Report to USACE	6/25/2013
Comment/ Response Process	Battelle inputs Final Panel Comments to DrChecks and provides Final Panel Comment response template to USACE	6/27/2013
	Battelle convenes teleconference with Panel to review the Post-Final Panel Comment Response Process (if necessary)	6/27/2013
	USACE provides draft PDT Evaluator Responses to Battelle	7/2/2013
	Battelle provides the panel members the draft PDT Evaluator Responses	7/5/2013
	Panel members provide Battelle with draft BackCheck Responses	7/10/2013
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	7/11/2013
	Battelle convenes Comment-Response Teleconference with panel members and USACE	7/12/2013
	USACE inputs final PDT Evaluator Responses to DrChecks	7/19/2013
	Battelle provides PDT Evaluator Responses to panel members	7/24/2013
	Panel members provide Battelle with final BackCheck Responses	7/29/2013
	Battelle inputs the panel members' final BackCheck Responses to DrChecks	7/26/2013

Task	Action	Due Date
	*Battelle submits pdf printout of DrChecks project file	7/29/2013

CHARGE FOR PEER REVIEW

Members of this IEPR Panel are asked to determine whether the technical approach and scientific rationale presented in the Picayune Strand LRR EA/PACR documents are credible and whether the conclusions are valid. The Panel is 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 the economic, engineering, environmental resources, and plan formulation. The panel members are not being asked whether they would have conducted the work in a similar manner.

Specific questions for the Panel (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 Picayune Strand LRR EA/PACR documents. Please focus your review on the review materials assigned to your discipline/area 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 1165-2-214; 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 evaluating 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 Agency Technical Review (ATR).
2. Please contact the Battelle Project Manager (Corey Wisneski, wisneskic@battelle.org) or Program Manager (Karen Johnson-Young (johnson-youngk@battelle.org) for requests or additional information.
3. In case of media contact, notify the Battelle Program Manager, Karen Johnson-Young (johnson-youngk@battelle.org) 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, no later than June 3, 2013, 10 pm ET.

Independent External Peer Review
of the
Picayune Strand Restoration Project (PSRP),
Draft Limited Reevaluation Report (LRR) and Environmental Assessment
Post Authorization Change Report

Charge Questions and Relevant Sections as Supplied by USACE

General

1. In your opinion, is there sufficient information and analysis presented to support the recommended project cost increase?
2. To what extent has it been shown that the project is still technically sound, environmentally acceptable, and economically justified?
3. Are the assumptions that underlie the economic, engineering, and environmental analyses for the proposed project changes sound?
4. In general terms, are the planning methods sound?
5. Are the interpretations of analysis and conclusions based on the analysis reasonable?

Affected Environment

6. Do you agree with the general analyses of the existing social, financial, and natural resources within the study area?

Environmental Consequences

7. Are the scope and detail of the potential adverse effects that may arise as a result of project implementation sufficiently described and comprehensive?

Alternatives

TieBack Levee Plan Formulation/Alternative Development
(The PSRP PACR LRR/EA contains only limited plan formulation/alternative development directed at evaluating design refinements to the originally authorized individual levee/spreader canals for each of the three major pump stations required for the restoration of the Picayune Strand project site.)

8. Was a reasonably complete array of possible measures considered in the development of alternatives?
9. Please comment on the screening of the proposed alternatives. Are the screening criteria appropriate? In your professional opinion are the results of the screening acceptable? Were any measures or alternatives screened out too early?
10. Were the engineering, economic, and environmental analyses used for this study consistent with generally accepted methodologies?

Tie Back Levee Recommended Plan

11. Comment on whether you agree or disagree with how the selected alternative was formulated and selected. Comment on the plan formulation. Does it meet the study objectives and avoid violating the study constraints?
12. Please comment on the likelihood of the recommended plan to achieve the expected outputs.

Evaluation of Benefits

(This PACR LRR/EA details the required design refinements identified during PED that have resulted in increased project costs since authorization and reflects the need to complete the project in total to realize the significant environmental benefits that will result, hence no additional analysis of environmental benefits was prepared.)

13. Is the benefit analysis still adequate and valid?
14. Does the benefit analysis still justify the recommended plan and increased cost?

Appendix A: Engineering

15. Were the technical assumptions used to determine the preferred alternative valid? Are there other assumptions that should be included in the Alternatives discussion to justify the recommended plan?
16. Is the methodology used to determine the preferred alternative, complete and valid and does it justify the recommendation?

Appendix B: Cost Estimate

17. Was the methodology used to develop the baseline cost estimate adequate and valid?

Appendix C: 404 (b) Evaluation

18. Are the conclusions of the 404 (b) Evaluation clear and concise and does the recommended plan comply with the Section 404 (b)(1) guidelines?

Appendix D: CZMA

19. Is the Federal Consistency Determination for the Coastal Zone Management Act (CZMA) clear and complete?

Appendix F: Real Estate Plan

20. Discuss the extent to which need for land, easements, rights of way, relocations, borrow, disposal, and mitigation are clearly and adequately explained and costs justified.

Summary Questions

21. Please identify the most critical concerns (up to 5) you have with the project and/or review documents. These concerns can be (but do not need to be) new ideas or issues that have not been raised previously.
22. Please provide positive feedback on the project and/or review documents.