# ANNEX E
# TECHNICAL REVIEWS

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# REVIEW PLAN

**Central Everglades Planning Project, Florida**
**Post Authorization Change Report**
**(Integrated Feasibility Study and Draft Environmental Impact Statement)**

**SFWMD Approval Date:**
**Last Revision Date:**

## 1. PURPOSE AND REQUIREMENTS

**a. Purpose.** This Review Plan defines the scope and level of peer review for a Post Authorization Change Report (PACR), prepared as an Integrated Feasibility Study and Draft Environmental Impact Statement (FS/DEIS), for the Central Everglades Planning Project (CEPP), Florida, which was authorized by section 1401(4) of the Water Infrastructure Investments for the Nation (WINN) Act of 2016. The PACR is being prepared by the South Florida Water Management District (SFWMD) under the authority of section 203 of the Water Resources Development Act (WRDA) of 1986, as amended. Section 203 of WRDA 1986, as amended, grants authority to non-federal interests to conduct feasibility level studies for water resources projects for submittal to the Secretary of the Army for review, approval, and forwarding to Congress for authorization. The intent of this review plan is to establish a plan for review of the CEPP PACR (prepared by the SFWMD) that follows the review process for a traditional USACE feasibility study, as defined in Engineering Circular (EC) 1165-2-214, as closely as possible. Acronyms used in this review plan are defined in Attachment 1.

**b. References**

(1) Engineer Regulation (ER) 1165-2-209, Studies of Water Resources Development Projects by Non-Federal Interests, 4 Feb 2016

(2) EC 1165-2-214, Civil Works Review, 15 Dec 2012

(3) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011

(4) ER 1110-1-12, Quality Management, Change 2, 11 Mar 2011

(5) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007

(6) Work Plan for the CEPP PACR (Integrated FS/DEIS)

(7) Enterprise Standard (ES)-08101, Software Validation for the Hydrology, Hydraulics, and Coastal Community of Practice, 01 Jun 2011

**c. Requirements.** This Review Plan was developed in accordance with EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement, and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition, decision documents are subject to safety assurance review, cost engineering review and certification (per EC 1165-2-214), and planning models are subject to certification/approval (per EC 1105-2-412). Guidance on quality assurance for engineering models is contained in ER 1110-2- 1150, Engineering and Design for Civil Works Projects.

## 2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the peer review efforts described in this Review Plan. For a traditional feasibility study conducted by US Army Corps of Engineers (USACE), the RMO for a decision document is typically the pertinent USACE Planning Center of Expertise (PCX). The SFWMD has requested USACE assistance to facilitate the involvement of the USACE Ecosystem Restoration Planning Center of Expertise (ECO-PCX) as the RMO to: (1) manage the ATR and IEPR for the CEPP PACR, (2)

coordinate the cost engineering review and certification process with the USACE Cost Engineering Directory of Expertise (DX), and (3) to coordinate as necessary with the USACE Risk Management Center (RMC) because of potential for life safety issues, associated with levees and with the Planning Center of Expertise for Flood Risk Management (FRM-PCX). In November 2017, USACE South Atlantic Division staff declined the SFWMD request for USACE review assistance and limited the USACE role to review of SFWMD-prepared products by a designated USACE Jacksonville Technical Support Staff.

Therefore, for the CEPP PACR (Integrated FS/DEIS), the SFWMD will serve as the RMO for ATR activities that will be conducted to meet the guiding principles and intent of the ATR process for a traditional USACE study (see Section 5 below). The RMO for the Independent External Peer Review effort described in Section 6 of this Review Plan is the SFWMD, working in conjunction with a third-party contractor (Battelle Memorial Institute). The SFWMD will serve as the RMO for a third-party cost engineering review (Legis Consultancy, Inc.) to assess the adequacy of cost estimates, construction schedules, and contingencies (see Section 8 below).

**3. STUDY INFORMATION**

a. **Decision Document.** The decision document is the PACR, prepared as an Integrated FS/DEIS. The SFWMD is preparing this PACR to evaluate alternatives to increase water storage and treatment wetlands on the A-1 and A-2 parcels and A-2 expansion lands, and address necessary improvements to water conveyance (canals, culverts, bridges, pump stations, etc.) to move water from Lake Okeechobee to the new storage area. The PACR will select and recommend a plan that would best meet the planning objectives for increased water storage and the overall public interest for review and approval by the Assistant Secretary of the Army (Civil Works) and subsequent Congressional authorization.

b. **Study/Project Description.** The Everglades ecosystem encompasses a system of diverse wetland landscapes that are hydrologically and ecologically connected across more than 200 miles from north to south and across 18,000 square miles of southern Florida. In 2000, the U.S. Congress authorized the Federal government, in partnership with the State of Florida, to embark upon a multi-decade, multi-billion dollar Comprehensive Everglades Restoration Plan (CERP) to further protect and restore the remaining Everglades ecosystem while providing for other water-related needs of the region. The CERP was approved in Section 601(b)(1)(A) of the WRDA of 2000. The authorization states:

> *(b) Comprehensive Everglades Restoration Plan. –*
>
> *(1) Approval. –*
>
> *(A) IN GENERAL. — Except as modified by this section, the Plan is approved as a framework for modifications and operational changes to the Central and Southern Florida Project that are needed to restore, preserve, and protect the South Florida ecosystem while providing for other water-related needs of the region, including water supply and flood protection. The Plan shall be implemented to ensure the protection of water quality in, the reduction of the loss of fresh water from, and the improvement of the environment of the South Florida ecosystem and to achieve and maintain the benefits to the natural system and human environment described in the Plan, and required pursuant to this section, for as long as the project is authorized.*

Specific authorization for the CEPP was sought under Section 601(d) as a future CERP project:

> *(d) AUTHORIZATION OF FUTURE PROJECTS.—*
>
> > *(1) IN GENERAL.—Except for a project authorized by subsection (b) or (c), any project included in the Plan shall require a specific authorization by Congress.*
> >
> > *(2) SUBMISSION OF REPORT.—Before seeking congressional authorization for a project under paragraph (1), the Secretary shall submit to Congress—*
> >
> > > *(A) a description of the project; and*
> > >
> > > *(B) a project implementation report for the project prepared in accordance with subsections (f) and (h).*

Sections 601(f) and (h) required that project implementation reports (PIR) recommend projects that (1) are cost-effective and justified by the environmental benefits derived by the South Florida ecosystem, and (2) would be implemented in a manner that is protective of the South Florida Ecosystem and other water-related needs of the region, including water supply and flood protection

CERP involves modification of the existing network of drainage canals and levees that make up the Central and Southern Florida Flood Control Project (C&SF). Since 2000, much progress has been made. Construction has begun on the first generation of CERP project modifications already authorized by Congress. PIRs have also been completed, or are nearing completion, for the second generation of CERP projects for Congressional authorization. The next step for implementation of CERP is to redirect a portion of water that is currently discharged to the east and west coast estuaries from Lake Okeechobee and restore water flow to the south, allowing for restoration of natural habitat conditions and water flow in the central Everglades and re-connecting the ecosystem from Lake Okeechobee to Everglades National Park (ENP) and Florida Bay.

The CEPP focuses on developing the next phase, or third generation, of CERP projects for the central Everglades region and was conducted as a national pilot project in the USACE streamlined planning process (*USACE Recommendations for Transforming the Current Pre-Authorization Study Process, January 2011*).

CEPP developed the initial increment of the project features that provide for storage, treatment and conveyance south of Lake Okeechobee, decompartmentalization by removal of canals and levees within Water Conservation Area 3 (WCA 3), and seepage management to retain water within the natural system.

The study area for the CEPP encompassed a portion of the greater Everglades system including Lake Okeechobee, the Northern Estuaries (St. Lucie River and Indian River Lagoon, and the Caloosahatchee River and Estuary), the Everglades Agricultural Area, the Water Conservation Areas, ENP, Southern Estuaries (Florida Bay and Biscayne Bay), and the Lower East Coast Area (also referred to as the Atlantic Coastal Ridge) (Figure 1).

The CEPP PACR will have a narrower focus, both geographically and functionally, than the original CEPP as discussed in paragraph 3.c below.

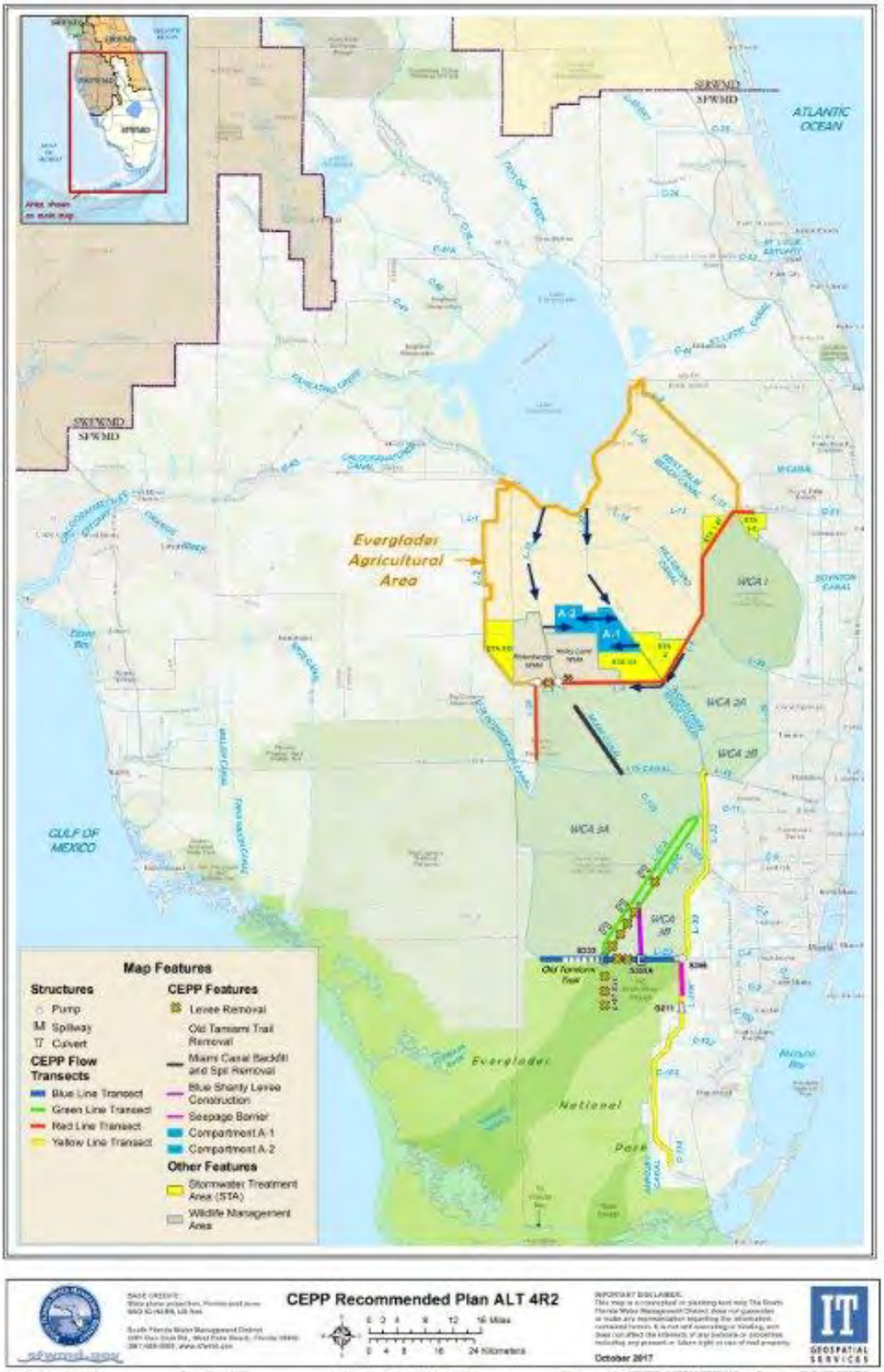


**Figure 1. CEPP Recommended Plan ALT4R2**

c. **CEPP Post-Authorization Change Report (Integrated Feasibility Study and Draft Environmental Impact Statement).** CEPP was authorized for construction in section 1401(4) of the WIIN Act of 2016. Despite the progress that CEPP will make in achieving CERP goals, additional activities are still required to further improve ecological conditions and functions within the central portion of the Everglades ridge and slough community. There is an additional need for storage and treatment wetlands in the Everglades Agricultural Area above what is currently authorized to achieve the proper quantity, quality, timing and distribution of freshwater flow needed in the central Everglades as identified in the Comprehensive Review Study (1999).

The purpose of the PACR is to evaluate modifications to the federally authorized CEPP, focused on evaluating and selecting a plan that will increase the amount of water storage and associated treatment wetlands in the CEPP Project Partnership Agreement (PPA) New Water to send additional water south to the historic Everglades ecosystem while even further reducing damaging regulatory discharges of freshwater from Lake Okeechobee to estuaries via the St. Lucie Canal to the east and the Caloosahatchee Canal to the west. The PACR will also reaffirm that the CEPP PPA South, North and New Water project features can accommodate additional flows south that will result from additional storage and treatment wetlands on the A-1 and A-2 parcels and A-2 expansion lands (see Figure 1). Among the alternatives considered, the PACR will evaluate an increase in storage of 240,000 ac-ft if a reservoir is sited on the A-2 parcel and potential A-2 expansion lands and an increase in storage of 360,000 ac-ft if a portion of the A-1 parcel is included in the potential reservoir footprint, potentially replacing existing and/or authorized projects on these parcels.

The future without project condition for the PACR will assume that the authorized features of the CEPP, have been constructed and are operable. The CEPP encompasses a vast majority of the remaining natural area of the historic Everglades ecosystem and is designed to send an additional 210,000 acre-feet of new water south into the Everglades on an average annual basis by reducing regulatory discharges of water from Lake Okeechobee to estuaries on the east coast of Florida via the St. Lucie Canal (C-44) and on the west coast via the Caloosahatchee Canal (C-43), which have adverse effects on the resources of those estuaries.

The CEPP PACR will address the Everglades Agricultural Area Storage Reservoirs (Component G) of CERP and water treatment needed to achieve the total CERP goal of approximately 300,000 ac-ft of average annual flow to the central portion of the Everglades to restore ecosystem conditions (see Figure 1). The PACR will recommend modifications to the CEPP New Water Component, and other CEPP components, if required, to achieve the average annual flow envisioned by CERP to the central portion of the Everglades to restore ecosystem conditions.

The plan formulation strategy for the CEPP PACR focused on potential management measures and alternatives that would provide for increased water storage and treatment and improved conveyance features in the Everglades Agricultural Area (EAA) that would enable further improvement in delivery of water south to the historic Everglades ecosystem and further reduce undesirable regulatory discharges from Lake Okeechobee to the estuaries on the east and west coast of Florida. The cost of the recommended improvements was anticipated to be between $1 billion and $2 billion. The SFWMD is conducting this PACR in accordance with section 203 of the Water Resources Development Act of 1986, as amended.

A SFWMD Project Planning Team was formed and is comprised of those individuals from SFWMD and other agencies directly involved in the development of the PACR from various disciplines. A Memorandum of Agreement (MOA) with USACE was executed in November 2017 that defined specific tasks and activities for designated Jacksonville District Support Staff to provide technical support to the SFWMD. A Government Coordination Team was also established for coordination of SFWMD planning activities for the CEPP PACR. In addition to USACE, the Government Coordination Team included the following: U.S. Fish and Wildlife Service; U.S. Geological Survey; National Park Service – Everglades National Park; Environmental Protection Agency; Seminole Tribe of Florida; Miccosukee Tribe of Indians of Florida; Florida Department of Agriculture and Consumer Services; Florida Department of Environmental Protection; Florida Department of Transportation; Florida Fish and Wildlife Conservation Commission; Highlands County; Lee County; Martin County; Okeechobee County; Osceola County; St. Lucie County; City of Fort Myers; City of Okeechobee; and others public agencies interested in participating.

The Jacksonville District (SAJ) Technical support staff reviewed documentation and modeling prepared by the SFWMD for the study. The SAJ Technical Support Staff provided feedback on technical elements of the CEPP PACR and USACE guidance for incorporation prior to submittal to the Assistant Secretary of the Army for Civil Works (ASA[CW]) office. Due to the expedited project schedule, additional coordination with the USACE vertical team members in the South Atlantic Division (SAD) and Headquarters (HQ) offices was not able to occur prior to the submittal of the study.

**d. Expedited Process.** Extreme wet years in 2016 and 2017 have reinforced concerns about the limitations of the storage, treatment, and conveyance system in the EAA included in the federally authorized CEPP to further reduce undesirable regulatory releases from Lake Okeechobee to the estuaries on the east and west coasts of Florida. Florida Senate Bill 10 (SB 10), passed and signed into law in 2017, authorized accelerated efforts by the SFWMD to pursue a CEPP PACR in support of a plan to increase reservoir water storage and necessary water treatment areas in the A-1 and A-2 parcel and A-2 Expansion area in the EAA, with storage targets ranging from 240,000 acre-feet if the reservoir is located on only the A-2 parcel up to 360,000 acre-feet if the A-2 parcel and some portion of the A-1 Flow Equalization Basin (FEB) area would be used to construct a larger storage reservoir. SB-10 also authorized the SFWMD to work in cooperation with USACE to develop the CEPP PACR.

SB-10 included specific target dates for initiation of the study, legislative update, and submittal for congressional approval. Accordingly, the SFWMD requested assistance from USACE in a letter dated June 26, 2017. Subsequent discussions with USACE led to a decision by SFWMD to pursue the CEPP PACR, with technical assistance from USACE, by using authority granted by section 203 of the Water Resources Development Act (WRDA) of 1986, as amended, which authorizes non-federal interest to prepare and submit feasibility studies to the Secretary of the Army for review, approval, and subsequent authorization by Congress.

The SFWMD has scheduled to submit the CEPP PACR to the ASA(CW) by March 30, 2018. Section 203 of WRDA 1986 provides the ASA(CW) 180 days to review, approve, and forward the report to Congress for authorization. The SFWMD has developed an expedited project schedule that will follow the USACE planning process as prescribed in the ER 1165-2-209 (Studies of Water Resources Development Projects by Non-Federal Interest), the USACE Planning Guidance Notebook (ER 1105-2-100), and other pertinent guidance. The documentation will include the

necessary technical evaluations and agency coordination to ensure compliance with the full suite of applicable environmental laws, regulations, and executive orders.

Table 1 outlines the expedited project schedule.

**Table 1. Expedited Project Schedule**

| Study Phase | Decision Point | Duration |
|---|---|---|
| SFWMD Project Scoping | Federal Interest Determination | October 12 – December 21, 2017 |
| Execution | Alternative Array and Plan Selection | November 22 – February 8, 2017 |
| Draft PACR Preparation | Prepare document for ATR and IEPR | November 1, 2017 – February 9, 2018 |
| Review and PACR Revision | ATR and IEPR Periods | February 9, 2018 – March 27, 2018 |
| Final PACR | Submit to ASA(CW) | March 30, 2018 |
| ASA(CW) Approval | Submit to Congress | October 1, 2018 |

e. **Factors Affecting the Scope and Level of Review.** This section assesses the factors affecting the risk informed decisions regarding the appropriate scope and level of review to be undertaken for the CEPP PACR. These factors are identified and addressed in EC 1165-2-214. The assessment of these factors facilitate a determination of the appropriate level of review and types of expertise represented on the various review teams.

- The extent to which the project will likely be justified by life safety, or the project likely involves significant threat to human life/safety assurance:

    - The proposed project will involve modifications to the C&SF Project for Flood Control and Other Purposes as well as construction of an above ground, deep storage reservoir. In accordance with the Programmatic Regulations developed for the CERP, the proposed project cannot reduce the levels of flood risk below those existing in December 2000. Flood risk will function as a constraint for the study and will be considered in alternative formulation and evaluation. Analysis will be conducted for the project to ensure that flood risk management will not be diminished.

    - The analysis of alternatives will utilize hydrologic models that simulate the climatological period of record from 1965-2005, which encompass a complete range of climatological conditions including active hurricane years. The project team is expecting to apply the same models for analysis of the levels of service for flood protection as used for plan formulation analysis of alternatives to quantify the potential extent of hydrologic effects and for determination of lands required for the project (takings analysis). This period of record approach is consistent with the CERP draft Programmatic Regulations' Guidance

Memorandum 3 (Savings Clause Requirements). The CEPP assessment of the levels of service for flood protection will be applied in this PACR to include analysis of primary/secondary canal stages and analysis of a representative sample of Lower East Coast (LEC) reference locations east of the East Coast Protection (ECP) levee for the Tentatively Selected Plan (TSP) in order to demonstrate potential impacts to the levels of service for flood protection within the period of record. During screening of management measures, a more limited assessment of adjacent canal stages and seepage losses across the ECP levee was performed, conditionally dependent on successful testing/demonstration that this approach provides a suitable surrogate to the CEPP levels of service for flood protection assessment methodology based on review of early RSM-GL modeling results. If needed, water levels will be monitored during implementation in select areas of potential impact.

- The estimated total cost of the project, including mitigation costs, is greater than $45 million based on a reasonable estimate at the end of the reconnaissance phase:
    - Based upon previous CERP projects and the complexity of issues in the study area, the costs of the recommended actions in the CEPP PACR was initially assumed to significantly exceed $45 million.
- A request by the Governor of an affected state for a peer review by independent experts:
    - No such request has been made nor is such a request anticipated.
- A request to conduct a peer review by independent experts from a head of a Federal or state agency charged with reviewing the project:
    - No such request has been made nor is such a request anticipated.
- The project/study is likely to involve significant public dispute as to the size, nature, or effects of the project:
    - There is potential for controversy or strongly differing positions regarding the size, nature, or effects of the project. The proposed project includes a deep water reservoir to implement ecosystem restoration within the Everglades system and improve conditions in the Northern estuaries.
- The project/study is likely to involve significant public dispute as to the economic or environmental cost or benefit of the project:
    - An economic analysis and analysis of environmental effects was conducted as part of the PACR to ensure that a cost effective alternative was selected. The PACR also described the alternatives that were analyzed and criteria used to evaluate, compare and select a Tentatively Selected Plan.
- The information in the decision document or anticipated project design is likely to be based on novel methods, involve the use of innovative materials or techniques, present

complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices:

  - Planning models employed to predict ecosystem benefits may be considered novel, or at least unique in application to CERP components. Alternative designs are expected to be neither novel nor precedent setting. The report addresses alternatives that will likely include above-ground storage areas, seepage management barriers, canal improvements, etc.—measures that are commonplace for the USACE and do not change the scope or function of the authorized project.

- A preliminary assessment of where the project risks are likely to occur and what the magnitude of those risks might be (e.g., what are the uncertainties and how might they affect the success of the project):

  - As part of the CEPP PACR, an assessment of risk and uncertainty was developed and assembled into a Risk Register document. The Risk Register includes risk assessments of all pertinent issues regarding Plan Formulation and Policy, Environmental, Socioeconomics, Real Estate and Engineering. The Risk Register is being developed by SFWMD and submitted with the CEPP PACR in Appendix B. The Risk Register was used to guide the Planning Team through the development of the CEPP PACR, and will determine the level of detail for analysis of any policy or technical issues.

- If the project design is anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule:

  - Project features will likely include those basic measures to achieve the project objectives of ecosystem restoration. Most proposed measures include dam, levee, canals, and pump stations. Pump stations and most other mechanical equipment may contain secondary or backup systems. These systems would ensure that maintenance could be performed on the equipment without temporarily reducing ecosystem restoration benefits. Unique construction sequencing is not expected; however, implementation of seepage management components may be necessary before operation of any project features that increase water flows in certain areas.

- Specific aspects of the study will likely be challenging:

  - The large geographic area, interconnected array of management measures from previously authorized studies, and restoration efforts currently in planning, create unique challenges for this project.

Based upon the assessment of the above factors relative to the CEPP PACR, the required review efforts are identified in the subsequent sections of this Review Plan.

f. **In-Kind Contributions.** The non-Federal sponsor, SFWMD, is preparing the CEPP PACR under authority granted by section 203 of WRDA 1986 and in accordance with USACE guidance for feasibility studies for water resources project prepared by non-federal interests, ER 1165-2-209.

For this study, the SFWMD and its consultants prepared the entire CEPP PACR, except for specific technical assistance tasks and inherently federal government coordination/consultation tasks that USACE will conduct in accordance with a MOA between the SFWMD and USACE developed under the authority of section 1126 of the WIIN Act of 2016. Section 1126 allows a non-federal interest to contract with USACE for technical assistance in preparing section 203 feasibility studies. The MOA with USACE was executed in November 2017. Future USACE support activities under the MOA could potentially include preparing specific elements portions of the CEPP PACR and leading coordination/consultation actions with federal agencies and Tribes. All products and analyses prepared for this CEPP PACR are subject to Quality Control (QC), ATR, and IEPR (or equivalent processes).

## 4. QUALITY CONTROL (QC)

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) were subject to quality control reviews by the SFWMD and their contractor (J-Tech) as outlined in the Job Specific Quality Plan (Attachment 2). The Job Specific Quality Plan for the CEPP PACR has been developed in a manner as consistent as possible with the DQC standards defined in ER 1165-2-214 and other pertinent USACE guidance. Senior, experienced SFWMD and J-Tech team members participated in quality checks, representing all pertinent disciplines including: plan formulation, economics, environmental compliance, engineering design, coastal hydraulics and hydrology, geotechnical engineering, cost engineering and real estate. QC was accomplished interactively given the extremely tight schedule. Much of the technical review was completed through the project SharePoint site where revisions and comments were tracked in Microsoft Word. Comments were received informally through follow-up discussions, project management meetings, team meetings, lock-down reviews, and in email, while some formal comments were also received and addressed. Attachment 2 summarizes the J-Tech process for working seamlessly with the SFWMD. Attachment 2 also provides the list of preparers and reviewers of work products.

Project management meetings occurred three times per week (Monday, Wednesday, and Friday) from October through delivery to the ASA(CW). These project management meetings were used to discuss the development of each component of the study including plan formulation, alternative development, public involvement, environmental effects, alternative costs, engineering design, study schedule, study process, and USACE policy. The pace of plan formulation and alternative development required consistent communication and review of planning results to allow timely decisions to be made and results presented to stakeholders. General project team meetings, as well as sub-group project team meetings, were held weekly to update technical staff on the process of plan formulation and alternative development.

As material was developed reviews were completed by discipline leads and technical staff updated study findings accordingly. Key points in the study process occurred in mid-January prior to delivery of the draft report for IEPR. The SFWMD Bureau Chiefs were provided copies of the reports for more formal review and the CEPP PACR was updated. A next level of review occurred by SFWMD management and revisions were made based on these comments during a week-long review lock-down. The review lock-down included the study project management team working through the CEPP PACR page-by-page to address comments. Key technical staff were called in to the meeting to address critical questions that remained and ensure consistency of the environmental effects of the study alternatives. A second study review lock-down was held by the project management team in early February to complete a thorough review of the CEPP PACR Appendices and Annexes to again ensure consistency.

The SFWMD's Modeling Section also followed standardized practices consistent with the Capability Maturity Model Integration concepts. The Modeling Section applied standard model methodologies in managing model software configuration, assigning resources according to project priorities, using models certified for use by USACE, and conducting team and leadership review of work products as well as briefing stakeholders at public meetings.

## 5. AGENCY TECHNICAL REVIEW (ATR)

Per EC 1165-2-214, ATR is mandatory for all decision documents (including supporting data, analyses, compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. In a traditional USACE study process, ATR is managed within USACE by the designated RMO (the USACE ECO-PCX for ecosystem restoration studies) and is conducted by a qualified review team. SFWMD requested that USACE organize and conduct an ATR (with SFWMD funds) for the CEPP PACR under the MOA described above, and USACE declined the SFWMD request. Subsequently, SFWMD requested USACE technical review support by SAJ experts on a designated SAJ Technical Support Team, again to be conducted under the auspices of the USACE/ SFWMD MOA. This review would provide for an independent technical review by USACE experts to represent an alternative review approach to mirror the traditional USACE ATR process to the extent possible. USACE declined this SFWMD request in December 2017.

In absence of an ATR or ATR-like process, the SFWMD elected to reach out to federal, state, and local agency technical experts in Florida who are familiar with CERP, but had no direct involvement in development of the CEPP PACR, to provide a technical review of the draft CEPP PACR. The review team members represent experts from EPA, NPS, USFWS, DOI, NOAA, NRCS, FDEP, FDACS, FDOT, FWC, local counties, and SFWMD technical experts not involved in the CEPP PACR process. The members of this review team conducted an expedited ATR of the study, including supporting data, analyses, environmental compliance documents, etc. The review assessed whether the analyses presented were technically correct and comply with published USACE guidance and whether the document explains the analyses and results in a clear manner for the public and decision makers. To the extent possible, this ATR was conducted in accordance with the specific criteria identified in EC 1165-2-214 (paragraph 9).

a. **Products to Undergo ATR.** The ATR was performed on the CEPP PACR to be submitted to the ASA(CW) in accordance with section 203 of WRDA 1986, including all supporting appendices, annexes, and model results. Model-building pieces of software, including spreadsheet models (RESOPS and LOOPS for CEPP), are not validated through the standard engineering software validation process. Therefore, the models used in development of the CEPP PACR were consistent with those used in CEPP.

b. **Required ATR Team Expertise.** The SFWMD organized the ATR team, which was comprised of individuals from the critical technical disciplines that were required in the preparation of the CEPP PACR. The ATR team members for this project are identified in Attachment 3. Technical disciplines appropriate for this review include: Plan Formulation, Economics, Ecosystem Restoration Analysis, Environmental Regulatory Compliance (e.g., National Environmental Policy Act [NEPA] documentation preparation), Real Estate Project Operations, and a variety of engineering disciplines. Table 2 provides a description of required expertise for each discipline.

**Table 2. ATR Team Expertise**

| ATR Team Members/Disciplines | Expertise Required |
|---|---|
| Planning | The planning reviewer should be a senior water resources planner with a minimum of 5 years demonstrated experience in large scale component based ecosystem restoration. |
| Economics | The economics reviewer should be a senior economist preferably with a minimum of 10 years demonstrated experience evaluating ecosystem restoration project benefits and costs and identifying incidental benefits (preferably flood risk management and water supply). |
| Ecosystem Resources/ NEPA Compliance | Environmental resources reviewer should be a senior biologist, ecologist, or environmental engineer, preferably with a minimum of 10 years demonstrated experience in ecosystem restoration and familiarity with freshwater, coastal and estuarine systems. Must be able to review for NEPA compliance (including cultural resources coordination) and quality and applicability of ecosystem benefits evaluations. |
| Hydrology, Hydraulic (H&H) Engineering and Modeling | The H&H reviewer should be a senior hydraulic engineer with a minimum of 10 years demonstrated experience in the field of hydrology and hydraulics, including a general knowledge of south Florida hydrology and water management. The reviewer should have significant experience with the application of integrated surface water and groundwater models, including the capability to review typical data output from hydrologic models. Prior experience with some of the hydrologic modeling tools selected for project application, including the RESOPS, LOOPS, RSMBN, SFWMM, RSM Glades-LECSA, DMSTA and HEC-RAS, is preferred but not required. |
| Geotechnical Engineering | The geotechnical reviewer should have experience in geotechnical aspects of water storage and conveyance features, with familiarity of south Florida geology. A minimum of 10 years demonstrated experience is preferred. |
| Civil Engineering | The civil engineering reviewer should have experience in engineering/construction management for water storage and conveyance and sediment control. A minimum of 10 years demonstrated experience is preferred. |
| Cost Engineering | The cost engineering/construction management reviewer should have a minimum 10 years demonstrated experience in performing cost engineering/construction management for all phases of the project, including safety assurance. The reviewer should be familiar with the construction industry and practices used in Florida and/or the southeastern United States. |
| Real Estate | The real estate reviewer should be a senior real estate specialist experienced with large, complex civil works projects. A minimum of 5 years demonstrated experience is preferred. |

c. **Documentation of ATR.** A Comment Form (in an Excel spreadsheet format) was used to document all ATR comments, responses and associated resolutions accomplished throughout

the review process. Comments were limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment would normally include:

(a) The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures;

(b) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed;

(c) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and

(d) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially where there appears to be incomplete or unclear information, commenters may seek clarification in order to assess whether specific concerns may exist.

The ATR was documented on a Comment Form provided by the SFWMD and included the text of each ATR concern, the SFWMD response, a brief summary of the pertinent points in any discussion, and the resolution (Attachment 4)

**6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)**

IEPR is the most independent level of review and is applied in cases where the risks and magnitude of the proposed project are such that a critical examination by a qualified team outside of the preparing agency, in this case SFWMD, is warranted. A risk-informed decision, as described in USACE guidance (EC 1165-2-214), is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE and SFWMD in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- Type I IEPR. Type I IEPR is required for all decision documents except where no mandatory triggers apply, criteria for an exclusion are met, and a risk-informed recommendation justifies exclusion. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-214.

- Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside of the preparing agency and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of

the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

a. **Decision on IEPR.** IEPR is required for this decision document based on a review of the risk factor discussion listed previously. Significant factors in this decision included the large project size, area of influence of the project, the potential for controversy or strongly differing positions, the development of an EIS, and the likelihood that mandatory IEPR triggers specified in EC 1105-2-214 will be exceeded. Additionally, due to the modifications to the C&SF Project system and consideration of a storage reservoir within the EAA, there is a potential that the proposed project could result in risk to human life or health. The C&SF Project system functions as a flood risk management network for south Florida. The project team will identify all urban and agricultural areas within the study area where levels of service for flood risk reduction could be affected by the project. Non-performance of the C&SF Project or modifications to the C&SF Project system could result in increased risk to human life by potentially having and adverse effect on current levels of flood risk reduction that the system provides to the Lower East Coast Area.

   For that reason, it is currently anticipated that safety assurance will be addressed in the Type I IEPR for the CEPP PACR. It is further anticipated that a Type II IEPR will be required during the Preconstruction Engineering and Design (PED) phase of the project, which would occur after the decision document is completed and the project is authorized by Congress. That decision will be reflected in a subsequent Review Plan covering any design phase activities.

   A detailed scope of the Type I IEPR will be determined in advance of the review. Significant or relevant public or agency comments received prior to or during IEPR will be provided to the panel of reviewers.

b. **Products to Undergo Type I IEPR.** The Draft CEPP PACR, with EIS and technical appendices, to be delivered to the ASA(CW), was subjected to IEPR. Scope of Type I IEPR should include:

   - General review of the draft report for completeness and clarity of discussion.
   - Completeness and appropriateness of ecosystem restoration analyses.
   - Completeness and appropriateness of economic analyses.
   - Completeness and appropriateness of engineering analyses.
   - Safety Assurance (review of final risk assessment)

c. **Required Type I IEPR Panel Expertise.** Each panel member should be a professional from academia, a public agency, consulting firm, or similar vocation demonstrated experience in his/her area of expertise. Panel members should be familiar with large, complex civil works projects with high public and interagency interests. Descriptions of required expertise are provided in Table 3.

**Table 3. IEPR Team Expertise**

| IEPR Panel Members/Disciplines | Expertise Required |
|---|---|
| Planning | The planner panel member should be a professional from academia, a public agency or an architect-engineer or consulting firm with a minimum 10 years demonstrated experience in evaluating and conducting complex multi-objective public works projects with competing trade-offs. Experience should encompass projects with high public and interagency interests and may have nearby project impacted sensitive habitats. |
| Economics | The economics panel member should be a professional from academia, a public agency or an architect-engineer or consulting firm with a minimum of 10 years demonstrated experience in evaluating ecosystem restoration project benefits and costs and identifying incidental benefits (preferably flood risk management and water supply). |
| Environmental/Ecological Evaluation | Environmental resources panel member should be a senior biologist, ecologist, or environmental engineer professional from academia, a public agency or an architect-engineer or consulting firm with a minimum 10 years demonstrated experience in evaluating and conducting ecological evaluations for complex multi-objective public works projects with competing trade-offs. Experience should encompass projects with high public and interagency interests and may have nearby project impacted sensitive habitats. |
| Hydraulic Engineer | The hydraulic engineering panel member should be from academia, a public agency or an architect-engineer or consulting firm with a minimum 10 years demonstrated experience in hydraulic engineering. Active participation in related professional societies is encouraged. |
| Geotechnical Engineering | The geotechnical panel member should be from academia, a public agency or an architect-engineer or consulting firm with a minimum 10 years demonstrated experience in embankment design (i.e. slope stability, seepage evaluation, settlement analysis, and construction methods) for flood risk management and water storage, cut/fill operations, construction dewatering, and seepage control. Experience should also include geotechnical evaluation of flood risk management structures. Active participation in related professional societies is encouraged. |

d. **Documentation of Type I IEPR.** The SFWMD conducted an IEPR for the CEPP PACR by way of a contract with the Battelle Memorial Institute (Battelle). Battelle is one of two contractors (Outside Eligible Organizations, or OEOs, as defined by section 2034 of WRDA 2007) that USACE currently has under contract to conduct IEPRs for USACE feasibility studies and post-authorization planning and design projects. The IEPR panel will be managed for the SFWMD by Battelle in accordance with the requirements in EC 1165-2-214, Appendix D. IEPR Panel comments will be compiled by Battelle and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in section 5. Battelle prepared a final IEPR Report that be transmitted to ASA(CW) with the CEPP PACR as Attachment 5 and shall:

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions; and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

The final IEPR Report was submitted by Battelle to the SFWMD. No significant issues were identified and the SFWMD has draft responses to the IEPR panel comments (Attachment 5). The SFWMD expects final comment backchecks to be available in April 2018.

**7. POLICY AND LEGAL COMPLIANCE REVIEW**

As the CEPP PACR is being developed by the SFWMD (a non-federal interest) under authority granted by section 203 of WRDA 1986, as amended, formal policy and legal review of the document will be conducted by ASA(CW) and USACE upon submittal of the report to ASA(CW). The objective of the SFWMD is to develop a legally sufficient and policy compliant document to the ASA(CW) for subsequent congressional authorization for construction. Accordingly, the SFWMD coordinate closely with the SAJ Technical Support Staff to ensure the document meets USACE legal and policy requirements as closely as possible. USACE guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews determine whether the recommendations in the reports, supporting analyses, and coordination comply with law and policy, and warrant approval and submittal to Congress for authorization.

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

The SFWMD requested that USACE conduct (with SFWMD funds) a cost engineering review and certification process for the CEPP PACR in conjunction with the USACE Cost Engineering DX, located in the Walla Walla District. The USACE South Atlantic Division declined that request. The SFWMD has instead elected to contract directly for a third-party cost engineering review by Legis Consultancy, Inc., which currently holds a cost engineering contract with the USACE Cost Engineering DX. The cost engineering review, and associated review documentation, by Legis Consultancy, Inc., will follow the process applied to traditional USACE feasibility studies to the extent possible. The ATR-Level Draft Summary Report has been included in the submittal of the CEPP PACR to the ASA(CW) as Attachment 6.

**9. MODEL CERTIFICATION AND APPROVAL**

EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to QC, ATR, and IEPR.

EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional

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

a. **Planning Models.** The planning model developed for CEPP was be used for this PACR. The planning model incorporates existing CEPP performance measures into Habitat Evaluation Procedures, a decision matrix, or other similar quantification tools to measure and assess project benefits. The planning models were certified for use during CEPP. SFWMD had requested USACE assistance (using SFWMD funds) to work with the USACE ECO-PCX to certify the CEPP ecological model for application to the CEPP PACR (FR/EIS), and USACE declined this request to provide this assistance.

b. **Engineering Models.** The engineering models and other tools described in Table 4 were used in the development of alternatives for the PACR. All these models were previously approved for use and were applied in development of CEPP.

**Table 4. Engineering Models Applied**

| Model Name and Version | Model Description |
|---|---|
| HEC-RAS | The Hydrologic Engineering Center's River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. HEC-RAS version 4.2 includes capabilities that allow the model to apply complex operation of gated structures and pump stations. Such operations can change in time or water level conditions anywhere in the system. HEC-RAS allows the 1-dimensional channel flow to interact with 2-dimensional floodplain flow allowing for more accurate floodplain mapping. In areas where the interaction of open channel flow and aquifer groundwater needs to be explicitly modeled, an integrated tool based on the original HEC-RAS and MODFLOW models can now be used to accurately simulate the aquifer/canal flow exchange. |
| RESOPS | REservoir Sizing and Operations Screening (RESOPS) is a coarse-scale water management simulation spreadsheet model that was developed to quickly test alternative reservoir sizes and system operating rules for the region surrounding and including Lake Okeechobee. RESOPS performs monthly time-step, 41-year (1965-2005) continuous simulations of the hydrology and operations of south Florida's regional water management system and the interaction with proposed reservoir and wetland treatment area features and generates a wide variety of graphical and statistical summary measures of performance that can be used to compare up to four test scenarios. |

| Model Name and Version | Model Description |
|---|---|
| RSMBN | The Regional Simulation Model - Basins (RSMBN) is a link-node based model designed to simulate the transfer of water from a pre-defined set of watersheds, lakes, reservoirs or any "'waterbody" that either receives or transmits water to another adjacent waterbody. The RSMBN uses the same source code as the mesh-based RSM, which includes the RSMGL regional model. The model assumes that water in each waterbody is held in level pools. The model domain covers Lake Okeechobee and four major watersheds: Kissimmee, Lake Okeechobee, St. Lucie River, Caloosahatchee River and the Everglades Agricultural Area. |
| RSMGL | The RSMGL model provides a tool to simulate the natural hydrology and the water management operations of several important basins in South Florida. The Glades-LECSA (Lower East Coast Service Area) implementation uses the Regional Simulation Model (RSM) developed by the Hydrologic and Environmental Systems Modeling Section of the South Florida Water Management District. The RSM is an implicit, finite-volume, continuous, distributed, and integrated surface-water and ground-water model. It can simulate one-dimensional canal/stream flow and two-dimensional overland and groundwater flow in arbitrarily shaped areas using a variable triangular mesh. The overland and groundwater flow components are fully coupled in the RSM for a more realistic representation of runoff generation. It has physically-based formulations for the simulation of overland and groundwater flow, evapotranspiration, infiltration, levee seepage, and canal and structure flows. |
| SFWMM | The South Florida Water Management Model (SFWMM) will be used as a source of boundary conditions to the other planning or detailed models and also as the representation of the full CEPP PACR tentatively selected plan in the "updating conceptual framework" portion of the project. The SFWMM is a physically-based simulation model that combines the hydrology and management aspects of a greater portion of the |
| DMSTA | The Dynamic Model for Stormwater Treatment Areas (DMSTA) was developed for the U.S. Department of the Interior and the U.S. Army Corps of Engineers (Walker and Kadlec 2005, http://www.wwwalker.net/DMSTA/index.htm). DMSTA was developed and calibrated to information specific to south Florida, and to predict phosphorus removal performance of Stormwater Treatment Areas (STAs) and storage reservoirs. DMSTA parameters were calibrated based on data from fully functional treatment cells with viable vegetation communities. The model generates error/warning notices if simulated conditions exceeded the range of the calibration characteristics. DMSTA does not allow dry outs, and does not reproduce the vegetative responses and phosphorus dynamics (e.g., post-dry-out spikes) observed in treatment cells that periodically go dry. Phosphorus removal performance simulated for large wetland systems with limited water availability may be overly optimistic. |

| Model Name and Version | Model Description |
|---|---|
| LOOPS | The Lake Okeechobee Operations Screening (LOOPS) is a hydrologic simulation tool that provides rapid screening-level testing of alternative operating rules and strategies for Lake Okeechobee, including Regulation Schedules, Water Shortage Plans, and protocols for defining release amounts when the Regulation Schedule guidance only provides ranges of flows. Inputs include daily time-series values for the Lake net inflow, basin runoff from the Caloosahatchee and St. Lucie basins, lake evaporation rates, and the hydrologic state and forecast information that drive Lake regulation schedules. The strength of the LOOPS Model is with its ability to quickly test the performance of alternative operating scenarios to screen ideas and perform sensitivity tests for the primary lake-management objectives. |
| C-43 Spreadsheet | The C-43 Spreadsheet Model "C43_PIR-model_Final.xls" was developed for the CERP Project "C-43 Reservoir Phase I" (Starnes & Marlowe, 2007) to compare with-project discharge over S-79 (the downstream point at which the basin discharges into the estuary) to both the pre-project discharge over S-79 and to a time series representing restoration target flows over S-79 for a 41-year, daily period of simulation. The model also shows a water budget for the reservoir and tracks reservoir inflows, releases and storage. Because the LOOPS model does not simulate storage in the C-43 basin, it was necessary to use the C-43 Spreadsheet Model for an accurate depiction of changes in the effects of Lake Okeechobee releases to the west. |

Additional models used in engineering design of the TSP are included in Table 5.

**Table 5. Additional Engineering Models Applied**

| Model Name | Model Description |
|---|---|
| ACES | The Automated Coastal Engineering System (ACES) modeling software by USACE forms part of the Coastal Engineering Design and Analysis System (CEDAS), an interactive analysis system focused on the fields of coastal, ocean, and hydraulic engineering. The wind adjustment and wave growth module of ACES is used to estimate wave conditions within water bodies. This module provides estimates for wave growth over open-water and restricted fetches in both deep and shallow water based on a function of wind speed, fetch, and water depth. |
| SEEP/W | SEEP/W is a finite element software product used to model groundwater flow in porous media. This program can be used to model from saturated steady-state problems to saturated/unsaturated transient analyses. |
| SLOPE/W | SLOPE/W is a model that can use results from a SEEP/W model to analyze a variety of slip surface shapes, pore-water pressure conditions, soil properties and loading conditions. The program input includes the geometry of the cross section analyzed, the hydraulic conductivity and soil-water characteristic curve for each soil layer in the model, and the hydraulic boundary conditions. |

## 10. VALUE ENGINEERING

A value engineering (VE) study will not be conducted for the CEPP PACR, as USACE advised the SFWMD team that a VE study is not required for a study submitted in accordance with Section 203 of WRDA 1986, as amended.

## 11. REVIEW SCHEDULES AND COSTS

a. **ATR Schedule and Cost.** ATR was performed on the draft PACR. Comments were incorporated and the PACR was finalized. An orientation briefing occurred as indicated Table 6 and further described in the following paragraphs.

**Table 6. ATR Schedule**

| ATR Review Activity | Date |
|---|---|
| ATR Kickoff | February 9, 2018 |
| ATR Draft Report | February 9 - 23, 2018 |
| ATR Final Comments Due | February 23, 2018 |

i. ATR Kickoff

ATR efforts began with an orientation to CERP, CEPP and PACR provided by the SFWMD on February 9, 2018. Review of the draft PACR followed this ATR Kickoff.

ii. ATR Draft Report

Review of the draft PACR should occur February 9 – February 23, 2018.

b. **Type I IEPR Schedule and Cost.** The final IEPR Report was received on March 12, 2018, and the SFWMD responses and IEPR Panel back checks are scheduled to be completed by March 27, 2018. The IEPR is estimated to cost approximately $60,000 to $80,000.

## 11. PUBLIC PARTICIPATION

The SFWMD adopted an aggressive public participation and outreach plan for the CEPP PACR with multiple components as described below. These components helped guide development of the CEPP PACR.

*Component 1: Maximizing Existing Public and Stakeholder Participation Capacity*

The SFWMD made use of existing public, stakeholder, and interagency coordination mechanisms in the preparation of the CEPP PACR to the extent practicable in light of the aggressive schedule. This component reflects the existing network of meetings currently conducted by the Task Force, Working Group, Science Coordination Group, Water Resources Advisory Commission (WRAC), and the SFWMD Governing Board. These regular public meetings provide opportunities for the stakeholders, interest groups, and public to engage in a host of restoration activities. Throughout the CEPP PACR study period, these meetings included briefings and updates on the CEPP PACR. Tools such as web-casting, video and audio recording, web-based records, and social media were also used to enhance access to these meetings and to broaden the availability of information produced by these meetings.

*Component 2: Public and Stakeholder Meetings*

The SFWMD sponsored a series of public meetings and workshops specifically designed to provide information of the CEPP PACR development and encourage stakeholder input to the PACR. These meetings provided local governments, interested stakeholders, Tribes, and the public with opportunities to engage in two-way dialogue at a more technical and detailed level at key phases of the planning process such as the scope of the study, development of goals and targets, development and evaluation of alternatives, and plan selection.

*Component 3: Enhanced Federal, State, and Local Government Engagement*

Section 3.c above describes the process by which the SFWMD engaged federal, state, and local agencies in an intergovernmental coordination process to seek input to the planning process for the CEPP PACR and receive comments on study activities and work products. In addition to the scheduled public and stakeholder meetings, the SFWMD held two interagency meetings/teleconferences to brief agencies on study progress and provide opportunities for feedback and suggestions for SFWMD consideration. In addition, traditional agency coordination and compliance actions under existing laws and regulations was pursued in collaboration with the Jacksonville District Support Staff as identified in the MOA with USACE and specific sub-agreements.

## 12. REVIEW PLAN APPROVAL AND UPDATES

The SFWMD Project Manager is responsible for approving this Review Plan. The SFWMD will provide a copy of this Review Plan with the submittal of the report to ASA(CW). The Review Plan is a living document and may change as the study progresses. The SFWMD is responsible for keeping the Review Plan up to date. Revisions and updates to the Review Plan are documented in Attachment 7, and the Jacksonville District Support Staff will be provided copies for information.

## 13. REVIEW PLAN POINTS OF CONTACT

Public questions and/or comments on this review plan can be directed to Matt Morrison, SFWMD Office of Everglades Policy & Coordination, at (561) 682-6844 or by email at mjmorris@sfwmd.gov .

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# ATTACHMENT 1

# ACRONYMS AND ABBREVIATIONS

| Term | Definition | Term | Definition |
|---|---|---|---|
| ACES | Automated Coastal Engineering System | PCX | Planning Center of Expertise |
| ATR | Agency Technical Review | PED | Preconstruction Engineering and Design |
| ASA(CW) | Assistant Secretary of the Army for Civil Works | PIR | Project Implementation Reports |
| ATR | Agency Technical Review | PPA | Project Partnership Agreement |
| C&SF | Central and Southern Florida project | RESOPS | Reservoir Sizing and Operations Screening |
| CEDAS | Coastal Engineering Design and Analysis System | RSM | Regional Simulation Model |
| CEPP | Central Everglades Planning Project | RSMBN | Regional Simulation Model Basins |
| CERP | Comprehensive Everglades Restoration Plan | RMC | Risk Management Center |
| DMSTA | Dynamic Model for Stormwater Treatment Areas | RSMGL | Regional Simulation Model Glades Lower East Coast |
| DQC | District Quality Control/Quality Assurance | RMO | Review Management Organization |
| DX | Directory of Expertise | SAD | USACE South Atlantic Division |
| EAA | Everglades Agricultural Area | SAJ | USACE Jacksonville District |
| EC | Engineer Circular | SAR | Safety Assurance Review |
| ECO-PCX | Ecosystem Restoration Plan Center of Expertise | SB 10 | Senate Bill 10 |
| ECP | East Coast Protection | SET | Scientific and Engineering Technology |
| EIS | Environmental Impact Statement | SFWMD | South Florida Water Management District |
| ENP | Everglades National Park | SFWMM | South Florida Water Management Model |
| ER | Engineering Regulation | STA | Stormwater Treatment Area |
| ES | Enterprise Standard | TSP | Tentatively Selected Plan |
| FRM-PCX | Flood Risk Management Planning Center of Expertise | USACE | U.S. Army Corps of Engineers |
| HEC-RAS | Hydrologic Engineering Center's River Analysis System | VE | Value Engineering |
| HQ | Headquarters | WCA | Water Conservation Area |
| IEPR | Independent External Peer Review | WIIN Act | Water Infrastructure Investments for the Nation Act |
| LEC | Lower East Coast | WRAC | Water Resources Advisory Commission |
| MOA | Memorandum of Agreement | WRDA | Water Resources Development Act |
| OEO | Outside Eligible Organization | | |
| OMRR&R | Operation, Maintenance, Repair, Replacement, and Rehabilitation | | |
| QC | Quality Control | | |
| PACR | Post-Authorization Change Report | | |

# ATTACHMENT 2

# SOUTH FLORIDA WATER MANAGEMENT DISTRICT

# J-TECH QUALITY CONTROL PLAN

# CENTRAL EVERGLADES PLANNING PROJECT
# POST-AUTHORIZATION CHANGE REPORT

# JOB SPECIFIC QUALITY PLAN

## Post Authorization Change Report
## Feasibility Study and Environmental Impact Statement
## For
## Everglades Agricultural Area Storage Reservoir Project

**Palm Beach County, Florida**

**J-Tech Work Order. 4600003015-WO12**

**Prepared For:**

**South Florida Water Management District**

**Prepared By:**

**J-Tech**
**3300 PGA Boulevard**
**Suite 780**
**Palm Beach Gardens, FL 33410**

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**2.0 PROCESS.....1**

## 1.0 PURPOSE OF PROCEDURES

These procedures establish the methodology for Quality Assurance and Quality Control (QA/QC) for the Integrated Feasibility Report and EIS (FR/EIS) to be submitted to the Assistant Secretary of the Army for Civil Works (ASA (CW)) as a Post Authorization Change Report (PACR) for the Central Everglades Planning Project (CEPP), referred to as the EAA Storage Reservoir Project. These procedures were developed in accordance with several internal review processes including Tetra Tech's QA/OC Procedures for Modeling projects and Jacobs' QA/QC Procedures for North America Infrastructure and Facilities Groups dated October 5, 2007. It addresses requirements for Checking, Reviewing, and Authorizing work for use during project execution. Our goal, by use of these procedures, is flawless technical performance.

In addition to the J-Tech internal QA/QC process documentation, the U.S. Army Corps of Engineers (USACE) and SFWMD have specific requirements. USACE requirements for Agency Technical Review, Independent External Peer Review, Cost Certification, and Model Certification or Approval are defined in the EAA Storage Reservoir Project Review Plan that references this document.

## 2.0 PROCESS

Clear, correct, complete, and concise project work properly checked, reviewed, and authorized for use is essential to achieving project performance requirements. Since information sources (e.g. clients, vendors, subconsultants, project team members, etc) may vary significantly, it is critical that methods for verifying their fitness for use are consistent.

Little segregation was made between review of deliverables completed by J-Tech and the SFWMD given the expedited project schedule and integration of team members. Instead reviews were managed by technical disciplines and documentation of reviews was managed by discipline. review documentation of comments from QC reviewers and how they were resolved with the project team. Much of the study review was completed informally through tracked changes in Microsoft Word. Comments were received informally through follow-up discussions, project management meetings, team meetings, lock-down reviews, and in email, while some formal comments were also received and addressed. Work products that support the CEPP PACR can generally be defined by the following technical disciplines:

- Plan Formulation
- Modeling for Planning
- Environmental Benefits Analysis
- Cost Engineering for Planning
- National Environmental Policy Act (NEPA)
- USACE Policy
- Engineering Design
- Cost Engineering for the Tentatively Selected Plan

Many of these disciplines require documentation of existing data sources and literature searches. Therefore QA/QC processes were implemented for report documentation (Plan Formulation, NEPA, and USACE Policy). A project SharePoint site was used to allow multiple authors to work concurrently on project documentation and to manage the study administrative record. The project SharePoint site also allowed management of document reviews. Report sections from CEPP were initially updated through SharePoint by technical staff at the SFWMD and J-Tech. At key points in the study material was reviewed and comments were made as tracked changes and/or comments in Microsoft word. Various iterations of the main report, appendices, and annexes were tracked using SharePoint. Key points in the study were used to confirm comments had been addressed and accept tracked changes to allow authors to work from a 'clean' version of documents. The previous versions with tracked changes and comments were saved (Figure 1). Figure 1 is a screen shot of the SharePoint document structure. Any comments that had not been addressed, or could not be addressed, were kept in the 'active' word documents. Table 1 includes the names of document preparers and their role.Ultimately all documentation was reviewed consistent with USACE requirements for Agency Technical Review and Independent External Peer Review as discussed in the EAA Storage Reservoir Project Review Plan.

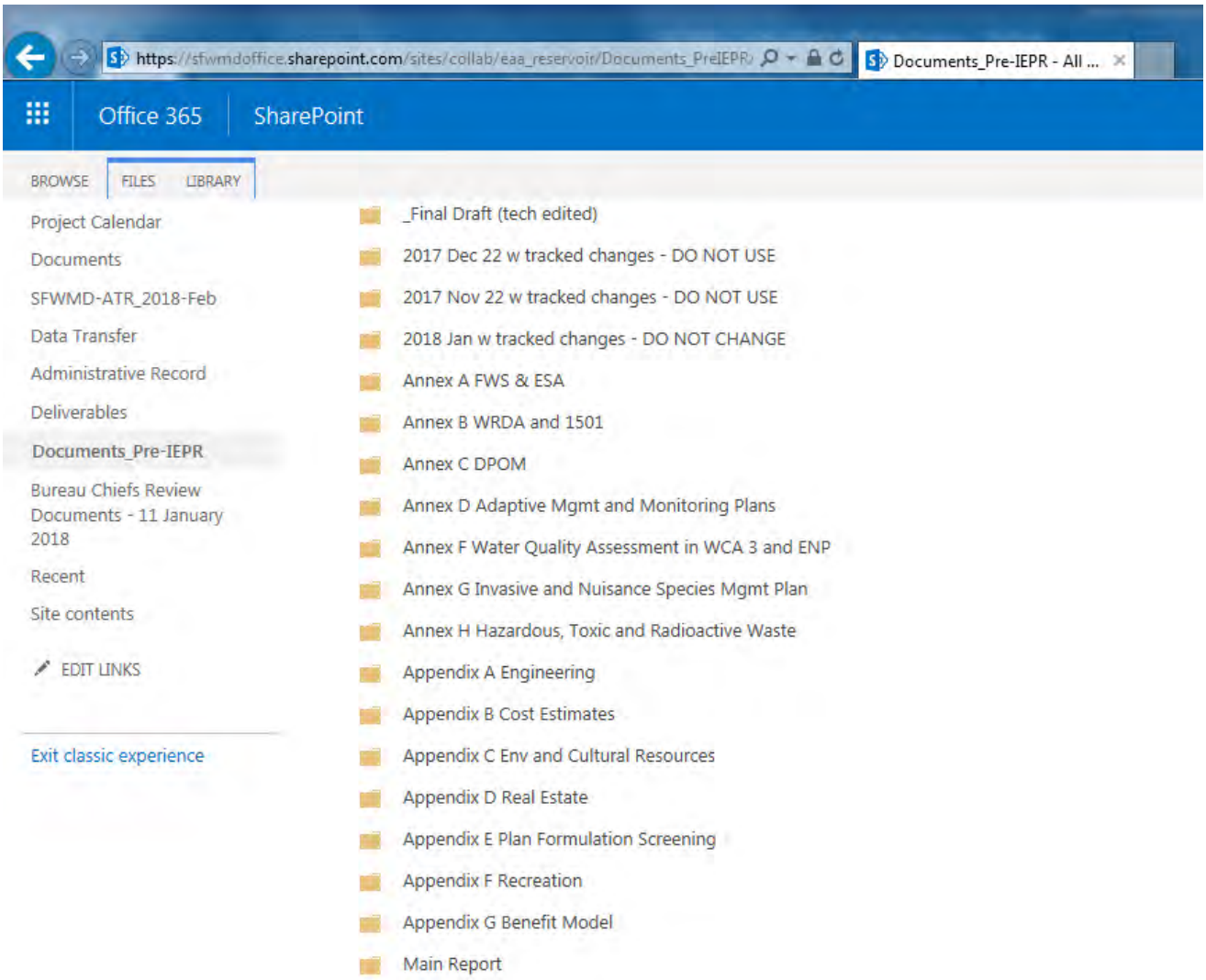


**Figure 1. SharePoint Document File Folder Structure**

**Table 1. List of CEPP PACR Report Preparers and Reviewers**

| Name | Organization | Discipline/Expertise | Role in Document Preparation |
|---|---|---|---|
| Mike Albert | SFWMD | Project Management | Project Management Team |
| Jeremy Ashton | SFWMD | Social Media | Media |
| Dennis Barnett | J-Tech | Civil Engineer | Project Management Team |
| Susan Bennett | SFWMD | Creative Services | Media |
| Michael Brown | SFWMD | Engineer | Hydrologic Modeling |
| Luis Cadavid | SFWMD | Engineer | Engineering Reviewer/Operations |
| Carlos Camacho | J-Tech | Engineer Intern | Engineering Support |
| Lisa Canty | J-Tech | Biologist | Habitat benefits/Biological Resources Reviewer |
| James Carney | J-Tech | Economist | Recreation Economics |
| Sam Chamness | J-Tech | Electrical Engineering | Electrical Design/Engineering |
| Will Chatfield-Taylor | J-Tech | GIS Specialist | GIS |
| Jamie Childers | J-Tech | Water Resources Planner | Project Management Team |
| Abe Cooper | SFWMD | Attorney | Reviewer |
| Sandeep Dabral | SFWMD | Modeler | Hydrologic Modeling |

| Name | Organization | Discipline/Expertise | Role in Document Preparation |
|---|---|---|---|
| Tibebe Dessalegne | SFWMD | Engineer | Engineering Reviewer |
| Lourdes Elias | SFWMD | Executive Assistant | Administrative Support |
| Scott Estergard | J-Tech | Planner | Reviewer |
| Francisco Martinez-Rivera | J-Tech | Engineer | Reviewer |
| Hongsheng Gao | SFWMD | Engineer | Geological Resources/Engineering Reviewer |
| John Garlanger | J-Tech | Engineer | Geotechnical Design/Engineering & 2D Seepage Modeling Oversight |
| Penny Garver | J-Tech | Technical Editor | Report Editing |
| Patti Gorman | SFWMD | Biologist | Adaptive Management/Biological Resources/Monitoring Plan/Oyster Habitat Suitability Analysis |
| David Gravender | J-Tech | Technical Editor | Report Editing |
| Susan Gray | SFWMD | Biologist | Reviewer |
| Seyed Hajimirzaie | SFWMD | Engineer | Engineering Reviewer/Hydrology/Operations |
| Jun Han | SFWMD | Engineer | Engineering Reviewer |
| Harold Hennessey-Correa | SFWMD | Modeler | Hydrologic Modeling |
| Alexandra Hoffard | SFWMD | Geographer | GIS |
| Scott Huebner | SFWMD | Engineer | Water Management and Operations Reviewer |
| Jack Ismalon | SFWMD | Engineer | Design and Cost Reviewer |
| Megan Jacoby | SFWMD | Policy Analyst | Reviewer |
| Nirmala Jeyakumar | SFWMD | Environmental Compliance | Reviewer |
| Kang-Ren Jin | SFWMD | Engineer | Engineering Reviewer |
| Northon Jocelyn | SFWMD | Engineer | Engineering Reviewer |
| Nathan Kennedy | SFWMD | Economist | Socioeconomics/Ecosystem Services |
| Fahmida Khatun | SFWMD | Modeler | Hydrologic Modeling |
| Van Kile | J-Tech | Engineer | Pump Station Design/Engineering |
| Haley Koptak | SFWMD | Assistant | Administrative Support |
| Jerry Krenz | SFWMD | Planner | Recreation |
| Timothy Lavallee | J-Tech | Engineer/NEPA Compliance | Aesthetics/Reviewer |
| Jennifer Leeds | SFWMD | Project Management | Project Management Team |
| Pam Lehr | SFWMD | Water Quality | Reviewer |
| Zhongwei Li | SFWMD | Engineer | Engineering Reviewer |
| Jan Loftin | SFWMD | Public Involvement | Public Involvement |
| Maria Loinaz | J-Tech | Engineer | Hydraulic Design/Engineering & 3D Seepage Modeling |
| Brenda Low | SFWMD | Analyst | Public Involvement |
| Francisco Martinez | J-Tech | Engineer | Quantities and Costs |
| Jeremy McBryan | SFWMD | Engineer | Plan Formulation/Stormwater Treatment Area Design |
| Stuart McGahee | J-Tech | Engineer | Cost Engineering |
| Jay McGovern | J-Tech | Biologist | Reviewer |
| Brenda Mills | SFWMD | Planner | Project Assurances/Savings Clause Evaluations |
| Cheol Mo | SFWMD | Water Quality | Water Quality Monitoring Plan |
| Danielle Morancy | SFWMD | Modeler | Hydrologic Modeling |

| Name | Organization | Discipline/Expertise | Role in Document Preparation |
|---|---|---|---|
| Matthew Morrison | SFWMD | Project Management | Project Management Team |
| Sashi Nair | SFWMD | Modeler | Hydrologic Modeling |
| Ellen Negley | SFWMD | Publishing | Creative Services |
| Dawn Nelson | J-Tech | Desktop Publisher | Report Editing |
| Nicole Niemeyer | SFWMD | Water Quality | Water Quality Monitoring |
| Raul Novoa | SFWMD | Modeler | Hydrologic Modeling |
| Jayantha Obeysekera | SFWMD | Climatologist | Climate |
| Jose Otero | SFWMD | Engineer | Operations Reviewer |
| Joel Ortiz-Brignoni | SFWMD | Engineer | Instrumentation & Controls Reviewer |
| Akintunde Owosina | SFWMD | Engineer | Hydrologic Modeling/Reviewer |
| Ray Palmer | SFWMD | Real Estate | Real Estate |
| Karen Patterson | J-Tech | Biologist | Biological Assessment |
| Stephanie Phippen | J-Tech | Project Management | NEPA Compliance/Reviewer |
| Audra Platt | SFWMD | Attorney | Reviewer |
| Chen Qi | SFWMD | Engineer | Engineering Reviewer |
| Armando Ramirez | SFWMD | Tribal Liaison | Cultural Resources |
| Peter Rawlik | SFWMD | Water Quality | Water Quality Monitoring Plan |
| John Raymond | SFWMD | Monitoring | Hydrometeorological Monitoring Plan |
| Gregg Reynolds | ENP | Biologist | Benefit Evaluation |
| Linda Rivard | J-Tech | Biologist | Reviewer |
| Leroy Rodgers | SFWMD | Invasive Species | Invasive Species Management |
| David Rudnick | ENP | Biologist | Benefit Evaluation |
| Jessica Ryan | J-Tech | Engineer | Reservoir Wave Analysis/Modeling |
| Jason Schultz | SFWMD | Public Coordination | Public Involvement |
| Raymond Sciortino | J-Tech | Civil Engineer | Lead Engineer |
| Sean Sculley | SFWMD | Engineer | Applied Science/Ecology Reviewer |
| John Shaffer | SFWMD | Environmental Compliance | 1501 Compliance |
| Jonathan Shaw | SFWMD | Hydrogeologist | Water Supply |
| Fred Sklar | SFWMD | Biologist | Adaptive Management/Biological Resources/Monitoring Plan |
| Joanne Stover | J-Tech | Technical Editor | Administrative Record |
| Robert Taylor | SFWMD | Environmental Scientist | HTRW |
| Scott Thourot | SFWMD | Civil Engineer | Recreation Analysis |
| Lacramioara Ursu | SFWMD | Geographer | GIS |
| Stuart Van Horn | SFWMD | Water Quality | Reviewer |
| Randy VanZee | SFWMD | Modeler | Hydrologic Modeling |
| Liselle Vega-Cortez | J-Tech | Engineer | Design/Engineering & 2D Seepage Modeling |
| Georgia Vince | J-Tech | Project Management | Project Management Team |
| Scott Vose | J-Tech | Economist | Cost Engineering/Engineering Appendix |
| Shawn Waldeck | J-Tech | Civil Engineer | Engineering Oversight and Reviewer |
| Naiming Wang | SFWMD | Modeler | Hydrologic Modeling |
| Paul Warner | SFWMD | Scientist | Policy |
| Samuel Watkin | J-Tech | Engineer | Reservoir Wave Analysis/Modeling Oversight |
| Leslye Waugh | SFWMD | Project Management | Project Management Team |

| Name | Organization | Discipline/Expertise | Role in Document Preparation |
|---|---|---|---|
| Zach Welch | SFWMD | Biologist | Adaptive Management/Biological Resources/Monitoring Plan |
| Mike Whitten | J-Tech | Biologist | Protected Species |
| Walter Wilcox | SFWMD | Modeler | Lead Hydrologic Modeling |
| Mark Wilsnack | SFWMD | Engineer | Engineering Reviewer |
| Qinglong Wu | SFWMD | Monitoring | Hydrometeorological Monitoring Plan |
| Shi Kui Xue | SFWMD | Water Quality | Phosphorus Assessment |
| Marcy Zehnder | SFWMD | Real Estate | Reviewer |
| Jie Zeng | SFWMD | Engineer | Engineering Reviewer |
| Lichun Zhang | SFWMD | Engineer | Engineering Reviewer |
| Patrick Zuloaga | J-Tech | Ecologist | Protected Species/Habitat Units |

The modeling for planning included a series of hydrologic, hydraulic, and water quality models that required review of model inputs and outputs. The SFWMD's modeling team performed these tasks. Therefore, a discussion of their standardized practices consistent with the Capability Maturity Model Integration concepts is included in the EAA Storage Reservoir Review Plan.

The model results for each alternative were post-processed for input into the CEPP Planning Model. The CEPP Planning Model was applied consistent with the previously approved planning model. The post-processed model results were reviewed as they were input to the CEPP Planning Model and updates were made to post-processing scripts if issues were identified. The finalized CEPP Planning Model and the associated inputs were also reviewed and tracked in spreadsheets.

Rough order of magnitude (ROM) costs were also generated at the planning level to complete the incremental cost analysis. Review of ROM costs and the assumptions associated with the quantities were completed internally in close collaboration between J-Tech and the SFWMD. The quantities and costs were based on best professional judgement and the experience of individuals identified in Table 1 gained from construction of existing and ongoing SFWMD and USACE projects in south Florida. Once a tentatively selected plan was identified the assumptions made in planning were built upon to develop MCASES costs described in Appendix B of the CEPP PACR. Ultimately, all documentation of costs (including the associated risk register and construction schedule) were reviewed consistent with USACE requirements as discussed in the EAA Storage Reservoir Project Review Plan.

The engineering design work, modeling and calculations presented in Appendix A of the CEPP PACR, were reviewed first by the J-Tech Lead Engineer then by other J-Tech and SFWMD engineers listed in Table 1. Following internal review all documentation was distributed for review consistent with USACE requirements for Agency Technical Review and Independent External Peer Review as discussed in the EAA Storage Reservoir Project Review Plan.

# ATTACHMENT 3

# CENTRAL EVERGLADES PLANNING PROJECT
# POST-AUTHORIZATION CHANGE REPORT

# AGENCY TECHNICAL REVIEW (ATR) TEAM

| | |
|---|---|
| **Agency Name:** | South Florida Water Management District |
| **Reviewer Name:** | Holly Andreotta |
| **Reviewer Job Title:** | Lead Environmental Analyst |
| **Reviewer Email:** | handreot@sfwmd.gov |
| **Reviewer Phone #:** | (561) 682-6432 |

**Reviewer Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Bachelor of Science, Marine Biology and Zoology |
| **Area(s) of Expertise:** | Wildlife biologist |
| **Years of Professional Experience:** | 17+ years |
| **Licenses/Certifications:** | Certified gopher tortoise agent, qualified eastern indigo snake observer, qualified northern crested caracara observer, qualified manatee observer and qualified for blasting observations, qualified for Florida bonneted bat monitoring, qualified for Florida grasshopper sparrow monitoring, certified sedimentation and erosion control inspector. Certified by FWC for python (and other exotic reptiles) capture and euthanization (captive bolt) |

| | |
|---|---|
| **Agency Name:** | SFWMD Everglades Technical Support Bureau |
| **Reviewer Name:** | Carmela Bedregal |
| **Reviewer Job Title:** | Section Lead |
| **Reviewer Email:** | cbedrega@sfwmd.gov |
| **Reviewer Phone #:** | (561) 682-2737 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | BS Industrial Engineering, MS Environmental Engineering |
| **Area(s) of Expertise:** | Water Quality |
| **Years of Professional Experience:** | 23 years |
| **Licenses/Certifications:** | Professional Engineer |

| | |
|---|---|
| **Agency Name:** | U.S. Fish and Wildlife Service |
| **Reviewer Name:** | Timothy Breen |
| **Reviewer Job Title:** | Everglades North Supervisor, Supervisory Fish and Wildlife Biologist |
| **Reviewer Email:** | timothy_breen@fws.gov |
| **Reviewer Phone #:** | (772) 469-4239 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | St. Louis University (B.A. Biology); Georgia Southern University (M.S. Biology) |
| **Area(s) of Expertise:** | Ecology, Fish and Wildlife Biology, Endangered Species Act, MBTA, FWCA |
| **Years of Professional Experience:** | 23 years |
| **Licenses/Certifications:** | |

| | |
|---|---|
| **Agency Name:** | SFWMD |
| **Reviewer Name:** | Jennifer Brown / Audra Platt |
| **Reviewer Job Title:** | Jennifer: Sr. Attorney /<br>Audra: Associate Attorney |
| **Reviewer Email:** | jebrown@sfwmd.gov / aplatt@sfwmd.gov |
| **Reviewer Phone #:** | x2258 / x6718 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Jennifer - Nova Southeastern University - Shepard Broad Law Center /<br>Audra - Stetson University College of Law (J.D) |
| **Area(s) of Expertise:** | Policy |
| **Years of Professional Experience:** | Jennifer = 13 years /<br>Audra = less than 1 year |
| **Licenses/Certifications:** | J.D. |

| | |
|---|---|
| **Agency Name:** | South Florida Water Management District |
| **Reviewer Name:** | Abner Cooper |
| **Reviewer Job Title:** | Attorney consultant |
| **Reviewer Email:** | acooper@sfwmd.gov |
| **Reviewer Phone #:** | (561)386-6207 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | B.A. University of Michigan, J.D University of San Diego |
| **Area(s) of Expertise:** | environmental, real estate, and governmental relations |
| **Years of Professional Experience:** | 38 years |
| **Licenses/Certifications:** | Florida Bar and Massachusetts Bar |

| | |
|---|---|
| **Agency Name:** | U.S. Department of the Interior |
| **Reviewer Name:** | Dennis Duke |
| **Reviewer Job Title:** | Senior Progrsm Manager |
| **Reviewer Email:** | DDUKE@USGS.GOV |
| **Reviewer Phone #:** | 7863850070 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Master of Science in Civil Engineering from Georgia Tech |
| **Area(s) of Expertise:** | Federal Water Resources Planning, Development, and Construction |
| **Years of Professional Experience:** | 44 years |
| **Licenses/Certifications:** | Georgia Professional Engineer |

| | |
|---|---|
| **Agency Name:** | Florida Department of Agriculture and Consumer Services |
| **Reviewer Name:** | Rebecca Elliot / Tom MacVicar |
| **Reviewer Job Title:** | Rebecca: Environmental Manager /<br>Tom: Water Resource Consultant |
| **Reviewer Email:** | relliott@sfwmd.gov and Rebecca.Elliott@freshfromflorida.com /<br>tom@macvicarconsulting.com |
| **Reviewer Phone #:** | 561-682-6040 / 561-689-1708 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Rebecca: BS. Biology with Chemistry minor, Florida State University /<br>Tom: BS. Agriculture Engineering, U. of. Florida; MS. Water Resources Engineering, Cornell Univ. |
| **Area(s) of Expertise:** | Rebecca: Environmental Science and Chemistry, Water Policy and Water Resources<br>Tom: Water Management Planning and Operations in Central and Southern Florida |
| **Years of Professional Experience:** | Rebecca: 35 yrs<br>Tom: 40 yrs |
| **Licenses/Certifications:** | Tom: Florida Professional Engineer |

| | |
|---|---|
| **Agency Name:** | South Florida Water Management District |
| **Reviewer Name:** | Brian Garrett |
| **Reviewer Job Title:** | Scientist 4 |
| **Reviewer Email:** | bgarret@sfwmd.gov |
| **Reviewer Phone #:** | 561-682-6653 |

**Reviewer Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Bachelor of Science, Univ of Georgia, Ecology; Master of Science, Florida Atlantic Univ, Environmental Studies |
| **Area(s) of Expertise:** | wetland fauna |
| **Years of Professional Experience:** | 20+ years |
| **Licenses/Certifications:** | |

| | |
|---|---|
| **Agency Name:** | FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION |
| **Reviewer Name:** | Mariano Guardo, PhD, PE, D.WRE |
| **Reviewer Job Title:** | State Hydrographic Engineer. Engineering, Hydrology and Geology Program |
| **Reviewer Email:** | Mariano.Guardo@dep.state.fl.us |
| **Reviewer Phone #:** | (561) 681-6619 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Diploma of Civil Engineer, Catholic University, Caracas, Venezuela; MSCE (Hydrology and Water Resources), |
| **Area(s) of Expertise:** | Civil Engineering (H&H, Water Resources, Geotech, Modeling), Environmental/Restoration |
| **Years of Professional Experience:** | Over 30 years experience in private (consulting) and public (state) organizations. |
| **Licenses/Certifications:** | Professional Engineer: FL & Venezuela; Diplomate Water Resources Engineer (AAWRE and ASCE) |

| | |
|---|---|
| **Agency Name:** | FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION |
| **Reviewer Name:** | Inger Hansen |
| **Reviewer Job Title:** | Engineer Specialist IV, Office of Ecosystem Projects |
| **Reviewer Email:** | Inger.Hansen@dep.state.fl.us |
| **Reviewer Phone #:** | (561) 681-6709 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Bachelor's of Science in Ocean Engineering, Florida Atlantic University, Boca Raton, FL; Master's of Science in |
| **Area(s) of Expertise:** | Technical Reviews; Restoration Planning Projects; Environmental; Permitting |
| **Years of Professional Experience:** | 32 yrs; includes 17 yrs on environmental restoration projects including CEPP (FDEP PM) |
| **Licenses/Certifications:** | |

| | |
|---|---|
| **Agency Name:** | SFWMD |
| **Reviewer Name:** | Nenad Iricanin |
| **Reviewer Job Title:** | Principal Scientist Water Quality Monitoring |
| **Reviewer Email:** | nirican@sfwmd.gov |
| **Reviewer Phone #:** | 561.682.2956 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Bachelor of Science, Chemical Oceanography (Florida Institute of Technology); Master of Science, Chemical |
| **Area(s) of Expertise:** | Water Quality(fresh/estuarine/marine); General/Other |
| **Years of Professional Experience:** | 26 years |
| **Licenses/Certifications:** | |

| | |
|---|---|
| **Agency Name:** | FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION |
| **Reviewer Name:** | Paul Julian |
| **Reviewer Job Title:** | Environmental Consultant |
| **Reviewer Email:** | paul.julian@dep.state.fl.us |
| **Reviewer Phone #:** | (239) 344-5605 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Bachelor's of Science in Biochemistry, Masters of Science in Environmental Science and currently pursing |
| **Area(s) of Expertise:** | Water quality, aquatic ecology, wetlands |
| **Years of Professional Experience:** | 13 years |
| **Licenses/Certifications:** | Professional Wetland Scientist |

| | |
|---|---|
| **Agency Name:** | South Florida Water Management District |
| **Reviewer Name:** | Jonathan Madden |
| **Reviewer Job Title:** | Section Leader, Compliance and Reporting Section, Water Quality Bureau |
| **Reviewer Email:** | jmadden@sfwmd.gov |
| **Reviewer Phone #:** | 561-682-2617 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | B.S. Civil and Environmental Engineering, Clarkson University |
| **Area(s) of Expertise:** | Monitoring and reporting of nutrients for compliance, source controls, Everglades restoration |
| **Years of Professional Experience:** | 20 years |
| **Licenses/Certifications:** | Professional Engineer, FL |

| | |
|---|---|
| **Agency Name:** | Broward County / Environmental Planning and Community Resilience / Water Resources |
| **Reviewer Name:** | Carolina Maran |
| **Reviewer Job Title:** | Water Resources Manager |
| **Reviewer Email:** | cmaran@broward.org |
| **Reviewer Phone #:** | 954-519-0356 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Doctorate: Civil and Environmental Engineering - Water Resources - Colorado State University |
| **Area(s) of Expertise:** | Dr. Maran is responsible for coordinating countywide water resource planning and policy concerns related to |
| **Years of Professional Experience:** | 16 years |
| **Licenses/Certifications:** | PhD |

| | |
|---|---|
| **Agency Name:** | FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION |
| **Reviewer Name:** | Grover Garry Payne, Ph.D. |
| **Reviewer Job Title:** | Environmental Manager |
| **Reviewer Email:** | grover.payne@dep.state.fl.us |
| **Reviewer Phone #:** | (850) 245-8423 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Bachelor's of Science in Biology, Christopher Newport University; Masters of Science in Soil Science, |
| **Area(s) of Expertise:** | Water quality, soil/water chemistry |
| **Years of Professional Experience:** | 28+ years |
| **Licenses/Certifications:** | |

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|---|---|
| **Agency Name:** | South Florida Water Management District |
| **Reviewer Name:** | Garth W. Redfield |
| **Reviewer Job Title:** | Chief Environmental Scientist |
| **Reviewer Email:** | gredfiel@sfwmd.gov |
| **Reviewer Phone #:** | 561 682-6611 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Ph.D., University of California, Davis |
| **Area(s) of Expertise:** | Aquatic Ecology, Ecosystem Management, Water Quality |
| **Years of Professional Experience:** | 35 + years |
| **Licenses/Certifications:** | Certified Senior Ecologist, Ecological Society of America, #139 |

| | |
|---|---|
| **Reviewer Name:** | Tracy C. Robb, PE |
| **Reviewer Job Title:** | Professional Engineer III, Office of Ecosystem Projects |
| **Reviewer Email:** | Tracy.Robb@dep.state.fl.us |
| **Reviewer Phone #:** | (561) 681-6621 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Bachelor's of Science in Mechanical Engineering, Florida Atlantic University, Boca Raton, FL |
| **Area(s) of Expertise:** | Civil Engineering; Technical Reviews; Permitting; Operations |
| **Years of Professional Experience:** | 25 years with 8 years of technical review experience on restoration projects |
| **Licenses/Certifications:** | Professional Engineer in Florida and California |

| | |
|---|---|
| **Agency Name:** | SFWMD |
| **Reviewer Name:** | Brad Robbins |
| **Reviewer Job Title:** | Section Lead Water Quality Monitoring |
| **Reviewer Email:** | brrobbin@sfwmd.gov |
| **Reviewer Phone #:** | 561-753-2400 x4764 |

**Reviewer Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Bachelor of Science: Fisheries & Wildlife Mngmt (minor Entomology), University of Missouri; Master of Science: Zoology, University of Auckland, New Zealand; PhD Biology: University of South Florida |
| **Area(s) of Expertise:** | water quality, estuarine/marine landscape ecology, (geo)statistics, GIS, remote sensing, population dyamics, |
| **Years of Professional Experience:** | 20 years |
| **Licenses/Certifications:** | |

| | |
|---|---|
| **Agency Name:** | Florida Department of Transportation |
| **Reviewer Name:** | Ruban Rodiguez |
| **Reviewer Job Title:** | Drainage Project Manager |
| **Reviewer Email:** | Ruben.Rodriguez@dot.state.fl.us |
| **Reviewer Phone #:** | (954) 777-4461 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | |
| **Area(s) of Expertise:** | |
| **Years of Professional Experience:** | |
| **Licenses/Certifications:** | |

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|---|---|
| **Agency Name:** | South Florida Water Management District |
| **Reviewer Name:** | Seán P. Sculley Snr., PE |
| **Reviewer Job Title:** | Principal Engineer |
| **Reviewer Email:** | ssculley@sfwmd.gov |
| **Reviewer Phone #:** | 561.682.6109 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | BS Civil Engineering, University of Virginia (1982); Master of Civil Engineering, North Carolina State |
| **Area(s) of Expertise:** | Statistical hydrology, water quality, esp. Everglades STA compliance; project management |
| **Years of Professional Experience:** | 34 years |
| **Licenses/Certifications:** | Professional Engineer, State of Florida, 1989 (PE 41198); Member Sigma Xi, The Scientific Research Society; Member Chi Epsilon, The National Civil Engineering Honor Society |

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|---|---|
| **Agency Name:** | FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION |
| **Reviewer Name:** | Art Sengupta, PE, PG |
| **Reviewer Job Title:** | Professional Engineer III, EHG, Dam Safety |
| **Reviewer Email:** | ART.SENGUPTA@DEP.STATE.FL.US |
| **Reviewer Phone #:** | (850) 245-8491 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | M.S. in Applied Geology, Delhi; M.S. in Petroleum Engineering, Houston, TX; M.S. in Geology, MI; MBA, |
| **Area(s) of Expertise:** | Civil Engineering; Geology; Dam Engineering; Technical Reviews |
| **Years of Professional Experience:** | 25 years |
| **Licenses/Certifications:** | Professional Engineer, Florida; Professional Geologist (FL, Inactive) |

| | |
|---|---|
| **Agency Name:** | South Florida Water Mangement District |
| **Reviewer Name:** | Karin Smith |
| **Reviewer Job Title:** | Principal Scientist |
| **Reviewer Email:** | karsmith@sfwmd.gov |
| **Reviewer Phone #:** | 561-682-2026 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | MS - Hydrogeology from Florida Atlantic University |
| **Area(s) of Expertise:** | Hydrogeology, Water Supply, Water Use Permitting |
| **Years of Professional Experience:** | 28 years |
| **Licenses/Certifications:** | Professional Geologist |

| | |
|---|---|
| **Agency Name:** | SFWMD |
| **Reviewer Name:** | Sandra Smith |
| **Reviewer Job Title:** | Section Administrator, Engineering Design |
| **Reviewer Email:** | sasmith@sfwmd.gov |
| **Reviewer Phone #:** | 561-682-6510 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | BSCE from Florida Institute of Technology, 1993 |
| **Area(s) of Expertise:** | general engineering, civil |
| **Years of Professional Experience:** | 24 years |
| **Licenses/Certifications:** | Florida PE 53193; LEED AP |

| | |
|---|---|
| **Agency Name:** | South Florida Water Management District |
| **Reviewer Name:** | Kevin Snell |
| **Reviewer Job Title:** | Section Leader |
| **Reviewer Email:** | ksnell@sfwmd.gov |
| **Reviewer Phone #:** | 561-682-2588 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | B.S. Engineering & Industrial Mgmt. - Clarkson University |
| **Area(s) of Expertise:** | Large Scale Construction |
| **Years of Professional Experience:** | 20 years |
| **Licenses/Certifications:** | |

| | |
|---|---|
| **Agency Name:** | Everglades National Park, National Park Service |
| **Reviewer Name:** | Donatto Surratt* Where denoted in the Comment Field, William W. Walker comments are also |
| | * Where denoted in the Comment Field, William W. Walker comments are also incorporated. Dr. Walker holds a Ph.D. from Harvard University as an Environmental Engineer. |
| **Reviewer Job Title:** | Ecologist |
| **Reviewer Email:** | donatto_surratt@nps.gov |
| **Reviewer Phone #:** | 561.735.6003 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Environmental Science, Ph.D., Florida A&M University |
| **Area(s) of Expertise:** | Water quality |
| **Years of Professional Experience:** | 12 years |
| **Licenses/Certifications:** | |

| | |
|---|---|
| **Agency Name:** | SOUTH FLORIDA WATER MANAGEMENT DISTRICT |
| **Reviewer Name:** | Paul Warner |
| **Reviewer Job Title:** | Principal Scientist |
| **Reviewer Email:** | pwarner@sfwmd.gov |
| **Reviewer Phone #:** | 561-682-6512 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | B.S. in Biological Science - Michigan State University - 1977 |
| **Area(s) of Expertise:** | USACE policy, authorizing statutes and SFWMD-USACE Agreements; CERP |
| **Years of Professional Experience:** | 25 in Everglades Restoration - 36 years total professional experience |
| **Licenses/Certifications:** | |

| | |
|---|---|
| **Agency Name:** | South Florida Water Management District |
| **Reviewer Name:** | Marcy Zehnder |
| **Reviewer Job Title:** | Section Administrator, Real Estate Acquisition Section, Real Estate Division |
| **Reviewer Email:** | mzehnder@sfwmd.gov |
| **Reviewer Phone #:** | 561-682-6694 |

**Review Background Information**

| | |
|---|---|
| **Education (note degree(s) obtained and college):** | Business Management, Palm Beach State College |
| **Area(s) of Expertise:** | Real Estate - Title Abstracting, Title Examination, Land Acquisition, Land Disposal |
| **Years of Professional Experience:** | 32+ years |
| **Licenses/Certifications:** | State of Florida Certified Land Searcher, State of Florida Real Estate Sales License (inactive) |

# ATTACHMENT 4

# CENTRAL EVERGLADES PLANNING PROJECT
# POST-AUTHORIZATION CHANGE REPORT

# AGENCY TECHNICAL REVIEW (ATR) COMMENTS

| Comment # | Agency | Reviewer | Report Section | Discipline | Comment | Basis of Concern | Suggested action to rememdy/resolve concern | District Response | Report Updated By (provide name and date) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SFWMD | Brad Robbins | Appendix C | Water Quality | Statement that Lake Okeechobee TP was <40 ppb prior to 1970 is only weakly supported by Havens (1997) based on his citing Odum (1953) and Joyner (1974). Odum's study is especially suspect as even Havens admits he added the study despite it's results not being comparable. Joyner (1974) whose results are difficult to interpret without a more thorough discussion of rainfall and inflows. | | | Concur. Added reference in the statement: Prior to 1970, the background TP concentration in Lake Okeechobee was less than 0.040 milligrams per liter (mg/l, Haven and James 1997) while at present it exceeds 0.090 mg/l.<br>Karl E. Havens & R. Thomas James. 1997. A Critical Evaluation of Phosphorus Management Goals for LakeOkeechobee, Florida, USA, Lake and Reservoir Management, 13:4, 292-301, DOI: 10.1080/07438149709354320. | Jamie Childers, 2/26/2018 |
| 2 | SFWMD | Brad Robbins | Appendix C | Water Quality | Mention that increased flows would likely be managed by improved operations of local basin reservoirs such as C-43 and the C-23/24 reservoirs. Did you also want to include the C-44 Reservoir and STA here? | | | Concur. Added "C-44 reservoir and and Lakeside Ranch STA, Taylor Creek STA, and Nubbin Slough STA in the sentance: The number of low-flow events would increase slightly in both estuaries but would be managed with improved operations of local basin reservoirs such as C-43, the C-23/24 and C-44 reservoirs, and Lakeside Ranch STA, Taylor Creek STA, and Nubbin Slough STA. | Jamie Childers, 2/26/2018 |
| 3 | SFWMD | Brad Robbins | Appendix C | Water Quality | I need a better explaination on how increasing P loads by 30% (FWO) or by 36% (TSP) because of a 43% increase in flows will result in a 5% decrease in [P] in discharge waters. | | | Calculation is provided in Annex F, Table F-3 to explain the statement: Phosphorus loading into the northern portion of WCA 3A is expected to increase by about 30 percent relative to the FWO condition as a direct result of the increase in hydrologic loading; however, relative to the existing condition, phosphorus loads from the TSP will be increase by approximately 36 percent due to 43% flow increase. Phosphorus concentrations in water discharged into WCA 3A are expected to be lower by approximately 5% relative to existing conditions; consistent with the FWO. | Jamie Childers, 2/26/2018 (No change made to the report) |
| 4 | SFWMD | Abe Cooper | ES | | Abe Cooper: Why don't we state what the PACR itself provides in reduced discharges and then identify the overall per centage reduction in discharges when combined with other authorized projects. Regarding statement "The PACR provides an overall 55% reduction in discharge volumes and a 63% reduction in the number of discharge events to the Northern Estuaries from Lake Okeechobee, in conjunction with other authorized projects." | | | Information regarding the benefit that the PACR itself provides has been added to the report. | Leslye Waugh, 2/16/2018 |
| 5 | SFWMD | Paul Warner | ES | | Paul Warner commented on the text "one multi-purpose alternative (C360C)" Add a phrase to define what is meant by multipurpose alternative. For example, maybe add "(i.e., environmental water supply, agricultural water supply and flood control)." | | | Added language to define multipurpose consistent with rest of document. | Leslye Waugh, 2/16/2018 |
| 6 | SFWMD | Paul Warner | ES | | Paul Warner commented on the third paragraph "It is not clear how this paragraph differs from the previous paragraph. Are they not both dealing with the CEPP PACR planning?" | | Agreed. Added one sentence to paragraph above and deleted redundent info. | Agreed. Added one sentence to paragraph above and deleted redundent info. | Leslye Waugh, 2/16/2018 |
| 7 | SFWMD | Brian Garrett | Section 5 | Policy | The following state listed species are now State Threatened Species: Little Blue Heron, American Oystercatcher, Black Skimmer, Tricolored Heron, Rosette Spoonbill, & Reddish Egret. They were listed as Species of Special Concern (SSC) in the report. | | | Moved these species to the state-listed species list in Sections 5.1.5 and 5.25 | Linda Rivard, 3/6/2018 |
| 8 | SFWMD | Brian Garrett | Section 5 | Ecology | While this project will not likely introduce any new non-native species of fish, the expansion of non-native fish species is almost inevitable. I agree this would still only be a minor adverse effect. | | | Changed the following statement in Section 5.1.6.2 and 5.2.6.2 to indicate likley expansion of non-native fish species as a result of changes in water distribution: Introduction or expansion of non-native fish species due to changes in water distribution is likely to occur; however, the extent of invasion is uncertain at this time, providing a minor adverse effect. | Linda Rivard, 3/5/2018 |
| 9 | SFWMD | Brian Garrett | Section 5 | Ecology | The project will be beneficial for aquatic and semi-aquatic species of herpetofauna such as the threatened American crocodile, some species such as the threatened eastern indigo snake may lose habitat. The increased in hydroperiod may allow for the expansion of non-native herpetofauna such as large non-native snakes. | | | Added the suggested text to Section 5.1.6.3 and 5.2.6.3, but indicated that an overall long-term, minor beneficial effect to amphibians and reptile communities are anticipated. | Linda Rivard, 3/5/2018 |
| 10 | SFWMD | Brian Garrett | Section 5 | Ecology | It should be understood that an increase in apple snails will likely be exotic apple snails, but snail kite utlize exotics as well as native species of apple snail. The anticipated increase in apple snail foraging by snail kites is dependant on the presence of open sloughs being available too. | | | Added these sentences near the end of the first paragraph to address this comment: Although it is expected that the increase in apple snails will likely be exotic species, snail kite utilize exotic species as well as native species of apple snail. The anticipated increase in apple snail foraging by snail kites also is dependent on the presence and availability of open sloughs. | Linda Rivard, 3/5/2018 |
| 11 | SFWMD | Brian Garrett | Section 5 | Ecology | Eastern indigo snake would lose known habitat in the construciton area. | | | Added this sentence near the end of the paragraph to address this comment: Habitat known to support eastern indigo snake would be lost within the construction area. | Linda Rivard, 3/5/2018 |
| 12 | SFWMD | Brian Garrett | Section 5 | Policy | The following state listed species are now State Threatened Species: Little Blue Heron, American Oystercatcher, Black Skimmer, Tricolored Heron, Rosette Spoonbill, & Reddish Egret. They were listed as Species of Special Concern (SSC) in the report. | | | Moved these species to the state-listed species list in Sections 5.1.5 and 5.25 | Linda Rivard, 3/6/2018 |

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|---|---|---|---|---|---|---|---|---|---|
| 13 | SFWMD | Brian Garrett | Section 5 | Ecology | It states "Even the slight increases in hydroperiods associated with the PACR alternatives would likely increase crayfish density within northern WCA 3A and ENP, particularly within the marl prairies." It should be noted that increases in hydroperiod may have the opposite effect in some areas without long enough dry periods to reduce large predatory fish populations. These predatory fish populations can reduce crayfish populations. There is a balance of dry periods (that reduce large predatory fish) and wet periods that help maintain crayfish populations. There would still be a likely net increase in crayfish. | | | Added the suggested text to this paragraph to address comment. | Linda Rivard, 3/5/2018 |
| 14 | SFWMD | Brian Garrett | Section 5 | Ecology | While this project will not likely introduce any new non-native species of fish, the expansion of non-native fish species is almost inevitable. I agree this would still only be a minor adverse effect. | | | Changed the following statement in Section 5.1.6.2 and 5.2.6.2 to indicate likley expansion of non-native fish species as a result of changes in water distribution: Introduction or expansion of non-native fish species due to changes in water distribution is likely to occur; however, the extent of invasion is uncertain at this time, providing a minor adverse effect. | Linda Rivard, 3/5/2018 |
| 15 | SFWMD | Brian Garrett | Section 7 | Policy | Should the Migratory Bird Treaty Act of 1918 be added to the list of Laws, Policies, and Regulations? | | | Added MBTA to Table 7-2. | Georgia Vince, 3/6/2018 |
| 16 | SFWMD | Brian Garrett | Section 10 | General | Flood Control Storage Capacity appears to be part of the definition of Federally Endangered Species. It needs to be in bold and seperated from Federally Endangered Species. | | | Corrected | Mike Albert, 3/7/2018 |
| 17 | SFWMD | Brian Garrett | Appendix C | Ecology | Scientific Names of several herpetological species have changed: Pig Frog (change *Rana grylio* to *Lithobates grylio* ), Southern Leopard Frog (change *Rana sphenocephalus* to *Lithobates sphenocephalus* ), Florida softshell turtle (change *Trionyx ferox* to *Apalone ferox* ), green water snake should be listed as Florida green watersnake (change *Natrix cyclopion* to *Nerodia floridan* a too), water snake should be listed as Southern banded watersnake (the species listed *Natrix sipedon* does not exist in south Florida at all - instead the species *Nerodia facisata* should be listed). | | | Document has been updated | Georgia Vince, 3/6/2018 |
| 18 | SFWMD | Brian Garrett | Appendix C | Ecology | Since soils in northern WCA-3A have likely experienced some eutrophication via overdrying and experiencing more fires (including muck fires) than are usual exprienced in this region, are there concerns that open water areas in northern WCA-3A will fill with dense cattail or willow once they are rehydrated appropriately? This would likely eliminate open water foraging areas for snail kites. | | | As the project does not anticipate an increase in cattail, if cattail expansion where to occur, the protocols outlined in Annex G Invasive and Nuiance Species Management Plan of the CEPP PACR and the CEPP PIR will be employed. | Jennifer Leeds, 3/8/2018 (No change made to the report.) |
| 19 | SFWMD | Brian Garrett | Appendix C | Ecology | Since soils in northern WCA-3A have likely experienced some eutrophication via overdrying and experiencing more fires (including muck fires) than are usual exprienced in this region, are there concerns that open water areas in northern WCA-3A will fill with dense cattail or willow once they are rehydrated appropriately? This would likely limit foraging by wood storks. | | | As the project does not anticipate an increase in cattail, if cattail expansion where to occur, the protocols outlined in Annex G Invasive and Nuiance Species Management Plan of the CEPP PACR and the CEPP PIR will be employed. | Jennifer Leeds, 3/8/2018 (No change made to the report.) |
| 20 | SFWMD | Brian Garrett | Appendix C | Ecology | The Consultation Area for Florida bonneted bat has expanded and includes PBC along with almost the entire District footprint. However, dependent on substrate, it still may be unlikely that roosts would occur in our focus area. I don't think this would change the conclusion for this species, but it may be necessary to check any structures on the construction footprint for bats prior to construction. | | | Prior to construction any necessary surveys would take place based on consultation | Jennifer Leeds, 3/8/2018 (No change made to the report.) |
| 21 | SFWMD | Brian Garrett | Appendix C | General | Southern Glades is referenced in this section a couple of times. It should likely be listed as Southern Glades Wildlife & Environmental Area to ensure people understand the specific property being discussed. | | | Revising the text as suggested | Jennifer Leeds, 3/8/2018 |
| 22 | SFWMD | Brian Garrett | Appendix C | Ecology | This section states that "amphibian species richness will change." Since richness is simply the measure of the number of species contained within a given area, it would be better stated as "amphibian and reptile species diversity will likely change." I believe that is is safe to include reptiles in with amphibians in this statement. | | | Revising the text as suggested | Jennifer Leeds, 3/8/2018 |
| 23 | SFWMD | Brian Garrett | Appendix C | Ecology | The following sentence should be cited using Beck et al. 2013, "Within the EAA, it is anticipated that conversion of agriculture lands to freshwater wetlands within the STA would improve habitat for bird species." The complete reference is as follows: Beck, T.J., D.E. Gawlik, and E.V. Pearlstine. 2013. Community patterns in treatment wetlands, natural wetlands, and croplands in Florida. The Wilson's Journal of Ornithology. 125: 329-341. | | | Refernce cited | Jennifer Leeds, 3/8/2018 |
| 24 | SFWMD | Brian Garrett | Appendix C | Policy | Should the Migratory Bird Treaty Act of 1918 be added to the list of Laws, Policies, and Regulations? | | | Added MBTA to list of laws and regulations | Leslye Waugh, 3/7/2018 |
| 25 | SFWMD | Brian Garrett | Annex A | Ecology | Bald eagles, both immature and adult eagles, have been observed in the A1 FEB as recently as by Brian Garrett during Avian Protection Plan surveys during May, 2017. They are not unusal to see in there. | | | Section updated to note regular occurrence of mature and immature BE in the project area, with the most recent sighting occurring in May 2017 in the A-1 FEB during Avian Protection Plan surveys | Linda Rivard, 3/1/2018 |

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| 26 | SFWMD | Brian Garrett | Annex A | Ecology | It states in this section that Everglade snail kites require "...small trees or shrubs near foraging areas as nest sites and shallow inundated areas to sustain their food source, the apple snail." Everglade snail kites only require emergant vegetation as a nest substrate. Woody vegetation is perferred, but non-woody plants like dense cattail is commonly used too. The shallow indundated areas must be open water areas too. | | | Inserted the recommended text in this section. | Linda Rivard, 3/1/2018 |
| 27 | SFWMD | Brian Garrett | Annex A | Ecology | There have recently been more than 80 nesting attempts by Everglade snail kites in the south and southeastern portions of the Rotenberger Wildlife Management Area. This is likely about 4 miles (~6 km) away from the A-2 STA footprint. This nesting occurred duirng 2017 and 2018. | | | Inserted the recommended text in Section 3.1.6.1 and Section 3.4. | Linda Rivard, 3/1/2018 |
| 28 | SFWMD | Brian Garrett | Annex A | Ecology | Wood storks have been observed in the A1 FEB as recently as by Brian Garrett during Avian Protection Plan surveys during June, 2017. They are not unusal to see in there. | | | Updated text as recommended on page 31 (last paragraph) to denote latest observation in the A-1 FEB as June 2017, and that they are commonly observed in the project area. Did not see any relevant text to update on page 30 as noted in comment page #'s. | Linda Rivard, 3/1/2018 |
| 29 | SFWMD | Brian Garrett | Annex A | Ecology | Any structures may need to be monitored using accoustic equipment to be sure bonneted bats are not present. | | | Revised the last sentence of the Florida bonneted bat effects paragraph to read as follows: Although the project is not expected to effect Florida bonneted bat, any constructed structures will be monitored using acoustic equipment to ensure bonneted bats are not present. | Linda Rivard, 3/1/2018 |
| 30 | SFWMD | Brian Garrett | Annex A | Ecology | Did anybody check with the FWC Sunrise office to see if any caracara are known to be nesting in Rotenberger? | | | Text revised to include a statement that prior to project implementation, consultation with FWC to conduct appropriate wildlife surveys will be conducted. | Jennifer Leeds 3/8/2018 |
| 31 | SFWMD | Brian Garrett | Annex A | Ecology | Bald eagles are likely to use both the A1 and A2 sites for foraging (not nesting). They are commonly observed during the Spring and early Summer months during Avian Protection Plan surveys. | | | The direct impacts discussion has been updated to incude this statement (none of the following text regarding lack of abundant prey was deleted however): However, bald eagles are likely to use both the A-1 and A-2 sites for foraging, and they are commonly observed during the spring and early summer months during Avian Protection Plan surveys. | Linda Rivard, 3/1/2018 |
| 32 | SFWMD | Brian Garrett | Annex A | Ecology | Snail kites have been documented nesting in nearby Rotenberger (as close as 4 miles away). | | | This information was added to the last paragraph of the snail kite discussion in Section 5.12 | Linda Rivard, 3/1/2018 |
| 33 | SFWMD | Brian Garrett | Annex A | Ecology | Is there concern that increased soil P would cause emergent plants such as cattail and willow to grow into dense monocultures that would not allow snail kite foraging? | | | As the project does not anticipate an increase in cattail, if cattail expansion where to occur, the protocols outlined in Annex G Invasive and Nuiance Species Management Plan of the CEPP PACR and the CEPP PIR will be employed. | Jennifer Leeds, 3/8/2018 (No change made to the report.) |
| 34 | SFWMD | Holly Andreotta | Section 5 | Ecology | Under Vertebrate Fauna. The burrowing owl is listed as a species of state concern. It is a threatened species now. | medium | medium | Updated status of burrowing owl as reccommended. | Linda Rivard, 3/5/2018 |
| 35 | SFWMD | Holly Andreotta | Section 5 | Ecology | Noise. Wouldn't noise be reduced a bit if Ag equip is no longer constantly running the Ag fields? May be worth a mention. Constant Ag equipment operation vs a pump station. | medium | low | Revised the second to last sentence in these sections to read as follows: All action alternatives include construction of additional pump stations which would result in long-term, negligible increases in noise, which overall are expected to be less in comparison to current ongoing noise associated with agricultural equipment use in the agricultural fields . | Linda Rivard, 3/5/2018 |
| 36 | SFWMD | Holly Andreotta | Annex A | Ecology | The last two sentences of this section amy need to be updated as the Consultation Area for EUFL has expanded and includes PBC long with almost the entire District footprint. However, dependent on substrate, it still may be unlikely that roosts would occur in our focus area. I don't htink this would change the conclusion for this species. | medium | medium | Added the following text to the end of the paragraph to address the comment: Range information available from the USFWS for Florida bonneted bat does not include Palm Beach County (USFWS no date b); however, the USFWS Consultation Area for Florida bonneted bat was recently expanded to include all of Palm Beach County as well as the nearly entire area of the SFWMD footprint. Bats in south Florida are thought to roost primarily in trees and manmade structures, with protective tree cover around bat roosts thought to be important for predator avoidance and for allowing earlier emergence from the roost, allowing bats to take advantage of peak insect activity that occurs at dusk and extend their foraging time (78 FR 191, October 2, 2013). However, it is important to note that available information on roosting sites for this species is extremely limited. Roosting and foraging areas appear varied, with the species occurring in forested, suburban, and urban areas. Bonneted bats are closely associated with forested areas because of their tree-roosting, but specific information is limited. It is unlikely that suitable roosts with protective cover would occur in the project area, and along with the range information available for Florida bonneted bat, this species is unlikely to occur in the project area. | Linda Rivard, 3/1/2018 |

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| 37 | SFWMD | Holly Andreotta | Annex A | Ecology | The Consultation Area for EUFL has expanded and includes PBC long with almost the entire District footprint. However, dependent on substrate, it still may be unlikely that roosts would occur in our focus area. I don't think this would change the conclusion for this species. | medium | medium | Added the following text to the end of the paragraph to address the comment: Range information available from the USFWS for Florida bonneted bat does not include Palm Beach County (USFWS no date b); however, the USFWS Consultation Area for Florida bonneted bat was recently expanded to include all of Palm Beach County as well as the nearly entire area of the SFWMD footprint. Bats in south Florida are thought to roost primarily in trees and manmade structures, with protective tree cover around bat roosts thought to be important for predator avoidance and for allowing earlier emergence from the roost, allowing bats to take advantage of peak insect activity that occurs at dusk and extend their foraging time (78 FR 191, October 2, 2013). However, it is important to note that available information on roosting sites for this species is extremely limited. Roosting and foraging areas appear varied, with the species occurring in forested, suburban, and urban areas. Bonneted bats are closely associated with forested areas because of their tree-roosting, but specific information is limited. It is unlikely that suitable roosts with protective cover would occur in the project area, and along with the range information available for Florida bonneted bat, this species is unlikely to occur in the project area. | Linda Rivard, 3/5/2018 |
| 38 | SFWMD | Holly Andreotta | Annex A | Ecology | Could also add that the District will provide Protected Species Training, Qualified Eastern Indigo Snake Observer Training, and Ground Nesting Bird Training to all staff accessing the project site prior to commencement of activities. | low | low | Added this information as the last bullet in this section. | Linda Rivard, 3/5/2018 |
| 39 | SFWMD | Abner Cooper | Section 1 | | Last sentence on p. 1-2 says CERP will restore more natural flows and refers to Figure 1-3 which shows CERP flows and Revised Pre-Drainage Flows. No explanation as to why there was revision of the Pre-drainage flows. Also the Caption under the table says "CERP 0 is similar to CERPA performance..." No explanation of what CERPA is and term is not used in the table. | | Clarify the statement | The last statement preceding the reference to the figures has been amended to read: "The CERP is designed to restore more natural flows by re-directing water currently discharged to the Atlantic Ocean and Gulf of Mexico, to a southern flow across the Everglades similar to pre-drainage conditions that were altered by the Federally authorized Central and Southern Florida project (C&SF Project) to address flood protection and water supply needs in south Florida." | Dennis Barnett, 3/1/2018 |
| 40 | SFWMD | Abner Cooper | Section 1 | | Second para reference to "Band 1" Projects should be defined. Also make sure there is consistency in how the term is used on p p. 2-16 and table on p. 6-47 | Band 1 in on pages 2-16 and table on p. 6-47 | Clarify the statement | Reference to "Band 1" projects contains a reference to sections 2 and 6 of the CEPP PIR for more information. Section 2.5 (page 2-16) of the PACR contains a more detailed description of "Band 1" projects. Band 1 projects as discussed in sections 1, 2, and 6 of the PACR are consistent. The sentence referring to CERP "Band 1" projects on page 1-7 has been amended to read as follows: " to accommodate CERP "Band 1" projects (described in more detail in Section 2.5 of this report) ..." | Dennis Barnett, 3/1/2018 |
| 41 | SFWMD | Abner Cooper | Section 1 | | 4th Paragraph. This para explains why CEPP PIR screened out the reservoir and sta. It does not give a clear explanation. I went back to the CEPP PIR, App. E and would suggest that the paragraph be revised to the following: "Screening efforts conducted and described in the CEPP PIR (CEPP PIR 2015, Section 3.2.1.5) eliminated a 12-foot deep reservoir configuration due to budgetary constraints. The CEPP PIR estimated a nearly $2 billion cost for a 21,000 acres reservoir and 7,000 acre STA capable of delivering an average annual flow of approximately 240,000 ac-ft to the central Everglades. While the CEPP plan formulation process resulted in the deep reservoir component being screened out, it should be noted that based on scoring for all storage and treatment criteria, this was a "cost effective alternative" that provided "the greatest benefits to the everglades" and performed better for the northern Estuaries and the greater Everglades than all other alternatives considered (see CEPP PIR, Appendix E). | | | The purpose of the excerpt from the CEPP PIR reference in the PACR was not to explain why a deeper reservoir was screened from further consideration in the CEPP PIR. The purpose of the excerpt from the CEPP PIR was to demonstrate, building upon CEPP, that future increments of storage in the EAA would be necessary going forward from CEPP to fully acheive the level of restoration envisioned by CERP. Considering the context of the excerpt. no change to the text is considered necessary. | Dennis Barnett, 3/1/2018 (No change made to the report.) |
| 42 | SFWMD | Abner Cooper | Section 1 | | Suggest adding the following language which I have put in brackets to the third sentence in Section 1.9. "Consequently, the PACR has been prepared in accordance with USACE guidance contained in Engineering Regulation [ER] 1165-2-209 (February 4, 2016) for Section 203 studies of water resources development projects prepared by non-Federal interests [and addresss all the required elements of such a study prepared by a non-Federal interest presented in Appendix B of the ER.] | | Modify the language accordingly | The suggested langauge is already contained in the last sentence of section 1.9 on page 1-20. No further change is necessary in response to this comment. | Dennis Barnett, 3/1/2018 (No change made to the report.) |
| 43 | SFWMD | Abner Cooper | Section 2 | | The Figure 2-1 on p. 2-1Chart has a period of analysis that starts in 2026 and ends in 2076 but the following paragraph on p.2-2 says the period of analysis is 2028-2078. | | modify the chart accordingly | Report changed to be consistent with POA from 2026 - 2076. | Leslye Waugh, 3/6/2018 |

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| 44 | SFWMD | Abner Cooper | Section 2 | | Row on Climate(including Sea Level Rise). In the Column "Future Without Project Conditions", the second to last sentence, the reference to Engineering Circular 1165-2-212 is incorrect. This circular was replaced in December 31,2013 by Engineering Regulation [ER]1100-2-8162. Like the old EC, it requires that all planning studies consider alternatives that are evaluated for the range of future Sea Level Change represented by scenarious of low intermediate, and high sea level change The low level represents the historic rate of sea level change. Here is a link from the USACE website on Sea level change with the current ERs: http://www.corpsclimate.us/ccaceslcurves.cfm. This should be reviewed to make sure no significant change in evaluation of sea level change has occured since the EC Circular. Also discussion in Section 6.11.1.1 on sea level change should be reviewed to make sure it is satisfied ER 1100-2-8162. | EC was replaced by ER | Review new ER to determine if any additional analysis/evaluation of Sea level change is needed. | The text in Table 2-1 on page 2-9 references the sea level rise (SLR) analysis developed for the CEPP PIR, which was prepared in accordance with EC 1165-2-212 (the previous USACE guidance). Therefore, we retained the reference to EC. However, we added the following text to the table to clarify the current status: "Note that EC 1165-2-212 was subsequently replaced by ER 1100-2-8162 (December 2013). The SLR analysis conducted for the CEPP PIR is not expected to have appreciably changed since the CEPP PIR was prepared. The SFWMD is working with USACE Jacksonville District to update the sea level rise analysis." Similar text was added to section 6.11.1.1 to acknowledge the new USACE guidance and steps being taken in conjunction with USACE Jacksonville District to update the SLR analysis for the PACR. | Dennis Barnett, 3/1/2018 |
| 45 | SFWMD | Abner Cooper | Section 2 | | Row on Air Quality. In the Column "Future Without Project Conditions", add the following sentence after the second to last sentence which gives legal support to the statement that clean air act does not apply to an attainment area: "See EPA Final Rule on Determining Conformity of General Federal Action to State or Federal Implementation Project (58 Fed Reg. 63213, Nov. 30, 1993)." | | Add recommended sentence | Concur. Suggested sentence has been added. | Dennis Barnett, 3/1/2018 |
| 46 | SFWMD | Abner Cooper | Section 2 | | Second Row "Status of CERP Projects", Column "Future Without Project Condition", Change "Site 1 Impoundment Project" to "Site 1 Phase 1 Project" since not likely entire project will be operational. Rather just the impoundment itself will be. | | modify the language accordingly. Consider revisions to Sec.2.5.8 on the Impoundment Project as well. | Concur. Suggested sentence has been added. | Dennis Barnett, 3/1/2018 |
| 47 | SFWMD | Abner Cooper | Section 2 | | Last paragraph says that Tamiami Next Step Bridges were not simulated in Future Without Project Condition due to "uncertainty regarding the implementation sequence and schedule for the TTNS bridges." However, Section 2.5, third para, p . 2-16, states that TTNS bridging was included in the Future Without Project Condition. It is also included in Table 2-2 on FWO on p.2-17 as part of the FWO. Also Table 6-9 on p. 6-49, shows it as an interdependent project for CEPP PACR. Consider further evaluation of this component if not otherwise addressed elsewhere. | | | Table 2-2 presents information on projects expected to be in place in the FWO condition. The fact that the TTNS was not included in the simulations for the CEPP PACR due to information that is currently unknown does not exclude it from the FWO. It also does not change the fact that TTNS is identified as an interdependent project in Table 6-9 of the PACR. The absence of TTNS from the simulations at this time did not have an appreciable effect on the plan formulation and selection of the TSP. | Dennis Barnett, 3/1/2018 (No change made to the report.) |
| 48 | SFWMD | Abner Cooper | Section 2 | | It is stated that "The BBCW Project features were not included in the CEPPPACR modeling representation of the FWO project condition." But there is no explanation why. | | Brief explanation why BBCW project features not modeled in the FWO condition. | (Same comment as # 284) Added back some language from the CEPP PIR to explain why BBCW features were not included in the PACR modeling representation of the FWO conditionfor CEPP. Text is also applicable to the PACR. Added the following text to the end of the last sentence in the paragraph: "... since these features along the coast in Miami-Dade County were not considered significant for CEPP plan formulation, and in turn, for plan formulation for the CEPP PACR." | Dennis Barnett, 3/1/2018 |
| 49 | SFWMD | Abner Cooper | Section 3 | | The 4th paragraph in Section 3.1 says the the" plan formulation process for this study was conducted in accordance with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (1983)."The 1983 Principles and Guidelines were revised by CEQ starting in March 2013 as per direction from Congress in Sec. 2031 of WRDA 2007. Here is the link to the Federal Register Notice: https://www.gpo.gov/fdsys/pkg/FR-2014-12-24/pdf/2014-30170.pdf . There is an issue as to whether the new Principles and Guidelines apply to the Army Corps. During FY2017, the Corps planning activities remained under the 1983 Principles and Guidelines, pursuant to language in the explanatory statement accompanying the Energy and Water Development Appropriations title of the Consolidated Appropriations Act, 2016 (P.L. 114-113). The new revised Principles and Guidelines are now referred as the Principles, Requirements, and Guidelines. They are comprised of three components: (1) the Principles and Requirements revised in March 2013 (formerly called Principles and Standards (here is a link to the new Principles and Standards: https://obamawhitehouse.archives.gov/sites/default/files/final_principles_and_requirements_march_2013.pdf. (2)Interagency Guidelines completed December 24, 2014,providing guidance to Federal agencies for determining the applicability of the Principles and Guidelines and for developing agency specific implementing procedures for formulating, evaluating, and comparing water resources projects, programs, activities and related actions (here is a link to the new Interagency Guidelines: https://obamawhitehouse.archives.gov/sites/default/files/docs/prg_interagency_guidelines_12_2014.pdf , and (3) the Agency Specific Procedures, outlining agency-specific procedures forincorporating the Principles and Requirements into agency missions and programs. Here is the CEQ link that | | | In recent appropriations bills for Federal water resource projects, Congress has specifically prohibited USACE from expending any funds to develop or implement rules or guidance to support implementation of the Principles and Requirements for Federal Investments in Water Resources released in March 2013 or the final Interagency Guidelines released in December 2014. Thus, the revised Principles, Requirements, and Guidelines have not been implemented, and the 1983 Principles and Guidelines will remain as the planning guidance for the foreseeable future. The current report language will remain as-is. | Dennis Barnett, 3/1/2018 (No change made to the report.) |

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| 50 | SFWMD | Abner Cooper | Section 3 | | In Table 3-2, Second Column titled "Socio-Political and Environmental", the first row in that column addresses unwilling sellers and eminent domain. Suggest that the sentence including the following additional language which I have bracketed: "Avoid unwilling sellers, no eminent domain authority in the EAA [for the purpose of implementing the EAA Reservoir Project]." | | Modify the language as indicated. | Concur. Suggested changes made to the report. | Dennis Barnett, 3/5/2018 |
| 51 | SFWMD | Abner Cooper | Section 4 | | Last sentence in Section 4.0 states" This evaluation and comparison among the alternatives enabled the SFWMD team to identify the Tentatively Selected Plan (TSP), which would be equivalent to the National Ecosystem Restoration (NER) plan in USACE water resource planning guidance."<br>Not sure why the term "equivalent" is used. Under ER1105-2-100,page 2-7, Section 2.3.f.Step6 -Selecting a Plan", a single alternative is selected. The criteria for selection depends on the project outputs. The National Economic Development (NED) plan is used for all project purposes except ecosystem restoration and the selected plan is referred to as the NED Plan (Section 2.3.f(1)).The National Ecosystem Restoration(NER) Plan is used for ecosystem projects and the selected plan is referred to as the National Ecosystem Restoration(NER) Plan (Section2.3.f.2) Projects which produce both NED and NER benefits result in a "best" recommended plan where no alternative plan has a higher excess of NED and NER benefits over total project costs and is referred to as a Combined NED/NER Plan (Section2.3.f(3). Shouldn't the selected plan be referred to as the NER Plan rather than "equivalent to the NER Plan". Or is the reason for use of "equivalent" is that the CEPP PACR has a water supply component as well as environmental restoration as benefits (see last paragraph in Section 4.5.1 on page 4-23), in which case shouldn't the selected plan be a Combined NED/NER Plan? The PACR evaluates the alternatives under all 4 accounts so it is just a matter of choosing the correct designation of the selected alternative.<br>Note Section 4.6-Identification of the TSP, on page 4-26, refers to the selected plan as the NER Plan and not as equivalent to the NER Plan. | | | The NER equivalent and tentative NER plan language was used to identify the tentatively selected plan to be consistent with the Federal process. | Leslye Waugh, 2/27/2018 (No change mage to the report.) |
| 52 | SFWMD | Abner Cooper | Section 4 | | The bullet "Efficiency"is defined as "CE/ICA identified plans that maximize environmental benefits compared to costs" This is a different definition than in ER1105-2-100, Appendix E, page E-5, subsection(a)(4) which states that "Efficiency is the extent to which an alternative plan is the most cost-effective means of alleviating the specified problems and realizing the specified opportunities, consistent with protecting the Nation's environment." This definition should be used instead. | | | The definition in this section is consistent with the CEPP PIR and will remain as-is. | Mike Albert, 3/2/2018 (No change made to the report.) |
| 53 | SFWMD | Abner Cooper | Section 4 | | Third paragraph. Second sentence refers to "CERPA scenario". No explanation of what CERPA is. I presume it is a model. There should be a brief explanation of what this is. There is also a similar reference in the 4th paragraph in Section 4.6 on page 4-26. | | | Both references to "CERPA" in Section 4 have been clarified. "CERPA" refers to the updated model scenario from the RECOVER 2005 Initial CERP update. Where "CERPA" is referenced on pages 4-5 and 4-26, the text has been revised to read: "… with the CERPA scenario, the updated model scenario from the RECOVER 2005 Initial CERP Update effort (RECOVER 2005)." | Dennis Barnett, 3/6/2018 |
| 54 | SFWMD | Abner Cooper | Section 4 | | In the first paragraph there is an correct statutory reference. Reference should be to Section 373.4598,F.S, not Section 473.4958 which does not exist. | | | Concur. Correction made. | Mike Albert, 3/2/2018 |
| 55 | SFWMD | Abner Cooper | Section 4 | | There is no comparison of alternatives with respect to "Acceptability". | | | The narrative below table 4-2 notes "There were similar levels of acceptability among the different alternatives with the notable exception of some preference for the R240A and R240B alternatives based on concerns that the existing A-1 FEB should remain in place." No additional comparisons of acceptability between the alternatives were observed. | Mike Albert, 3/2/2018 (No change made to the report.) |
| 56 | SFWMD | Abner Cooper | Section 4 | | Section 4.1 on p. 4-1under bullet "Completeness" says in the parantheses that completeness will be evaluated for the alternive plans in Section 4.1.3. But there is no comparison of alternatives with respect to completeness in section 4.1.3. It does say that interdepencies are discussed in Section 6.7 but these are interdepencies with respect to other projects and not an evaluation of the completeness of each alternative. | | | Additional text added to Section 4.1.3 to indicate that all CEPP PACR alternatives provide a similar level of completeness. | Leslye Waugh, 3/6/2018 |

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| 57 | SFWMD | Abner Cooper | Section 4 | | The 4th sentence in section 4.6.1 states" Operations were refined for Alternative R240A, creating Alternative C240A, to provide additional ecological benefits to the Northern Estuaries, the Greater Everglades, and for other water-related needs of the region. Alternative C240A performed better than the more costly best buy, Alternative C360C." This seems counterintuitive, i.e. that additional water provided to the Everglades should result in increased benefits. Since these two sentences are the justification for selecting C240A over C360C, suggest a more detailed statement be provided explaining what the operational changes were and why these operation changes to C240A resulted in more benefits than the same operational changes to C360C. | | | Added statement to explaine additional benefit provided by the C240A. | Georgia Vince, 3/7/2018 |
| 58 | SFWMD | Abner Cooper | Section 4 | | Suggest that the discussion on identifying the TSP in Section 4.6.2 go into more detail on the decision. It simply says that C240A offers the lowest cost reservoir and operational design but provides similar environmental benefits. Suggest a brief recap of the TSP's Effectiveness, Acceptability, Completeness and Efficiency which was evaluated in Section 4. | | | The TSP, including a recap and further discussion on its effectiveness, acceptability, completeness, and efficiency, is discuused in detail in Section 6. There is no need to add additional deatil to the end of Section 4.6.2. We have added the following sentence to the end of Section 4.6.2: "The C240A plan and the overall justification for its selection as the TSP is presented in more detail in Section 6." | Dennis Barnett, 3/6/2018 |
| 59 | SFWMD | Abner Cooper | Section 5 | | In the first paragraph of Section 5.1, it indicates that the alternatives will be evaluated on their environmental affects. The alternatives do not include C240A but rather R240A. Shouldn't C240A be evaluated as well since it is the TSP and included the various subsections and tables in Section 5.1? C240A was evaluated in Section 5.2 separately but shouldn't all alternatives be evaluated together in Section 5.1 before the TSP is selected? Section 5.1 also indicates that Alt. C360C was modelled separated from R360C and R360D. Was C240A separately modelled from R240A and R240B. If not, explain why not? | | | The evaluation of alternatives in Section 5 determined that the R240A and C360C were Best Buys and Cost Effective alternatives. The R240A was then optimized with the C360C operational flexibility (creating the C240A) and determined to provide more benefits at a lower cost then and was selected as the TSP. | Leslye Waugh, 3/7/2018 (No change made to the report.) |
| 60 | SFWMD | Abner Cooper | Section 6 | | In the last paragraph in Section 6.1.1on p.6-3, it is stated that the TSP includes refined operations to provide water to meet other water related needs (i.e. water supply) in the EAA. These refined operations are described in detail in Annex C. Shouldn't there also be a reference to the refined operations to provide additional ecological benefits as explained in Section 4.6.1? | | | Revisions made to the text as suggested | Jennifer Leeds, 3/8/2018 |
| 61 | SFWMD | Abner Cooper | Section 6 | | Suggest that the first part of Section 6.1.2.4 be revised as follows for a more accurate statement: The first part of the current sentence states:"The appropriate relocation benefits were included as part of the Talisman Exchange/acquisition agreement…" This part should be revised to the following: " Relocation benefits were addressed as part of the Talisman Exchange/acquisition agreement..." | | | revised per suggestion | Leslye Waugh, 2/27/2018 |
| 62 | SFWMD | Abner Cooper | Section 6 | | Table 6-2 - Progress Toward Meeting Interim Targets indicates in the last column "Summary of TSP's Effects" that the TSP's effects are the same as the FWO for the three indicators of water volume, water supply to Lower East Coast and water supply to LOSA. This should be confirmed. Would think that at least TSP would have beneficial effect beyond FWO even if original CEPP is included in the FWO since CEPP PACR adds additional 160k acre-feet water annually on average. | | | Added statement to water volume "In general, improved special distribution to the natural system and associated environmental benefits will result from the implementation of the TSP." | Leslye Waugh, 2/27/2018 |
| 63 | SFWMD | Abner Cooper | Section 6 | | The last sentence in section 6.4.1regarding re-certifying lands in WCA3A/3B should only apply to construction and not to operations. Such lands have already been certified for operations of the C&SF Project which should be sufficient for CEPP operations. Suggest deleting the reference to operations. | | | deleted reference to operations | Leslye Waugh, 2/27/2018 |
| 64 | SFWMD | Abner Cooper | Section 6 | | The last sentnece in 6.6.1 regarding land credit should be revised. Fair market value is determined based on whether the land were acquired before the date of the PPA (fmv date is date of land certification) or acquired after the date of the PPA (fmv dateis the date the lands were acquired). Suggest that the sentence be revised to state as follows: "SFWMD will receive credit for the fair market value of the lands in accordance with the terms of the CERP Master Agreement." | | | revised per suggestion | Leslye Waugh, 2/27/2018 |
| 65 | USFWS | Tim Breen | ES | General/Other | Paragraph 1: "The PACR provides an overall 55% reduction in discharge volumes and a 63% reduction in the number of discharge events to the Northern Estuaries from Lake Okeechobee, in conjunction with other authorized projects." Are these benefits in addition to the benefits of CEPP or including the benefits of CEPP? | Notice that these values are with all projects in place, including this project. This project on its own provides significantly smaller benefits than those laid out here. | Please clarify | Correct, the PACR provides an overall 55% reduction in discharge volumes and a 63% reduction in the number of discharge events to the Northern Estuaries from Lake Okeechobee, in conjunction with other authorized projects. Tables have been added to the PACR which show the incremental increase as a result of project implemetation. | Jennifer Leeds/Project Team, 3/8/2018 |
| 66 | USFWS | Tim Breen | ES | General/Other | When discussing benefits of the CEPP PACR on this page and elsewhere, it is not clear whether the benefits are the result of only the proposed project or if they are from the combination of CEPP and the CEPP PACR | Concern is whether or not the benefits from this specific action are being articulated clearly. | Please clarify | Tables have been added to the PACR which show the incremental increase as a result of project implemetation. | Jennifer Leeds/Project Team, 3/8/2018 |

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| 67 | USFWS | Tim Breen | ES | General/Other | Paragraph 1 states "the TSP would increase CEPP flows from an average annual flow of approximately 210,000 ac-ft, approximately two-thirds of CERP flows, to an average annual flow of approximately 370,000 ac-ft." This is an increase of 160,000 ac-ft, but in Appendix G. 7 it states that this increase is 115,000 ac-ft. | Here you state that the TSP provides an additional 160,000 ac-ft of flow. Appendix G.7 says 115,000 ac-ft of additional water supply. | Please clarify which estimate is correct. | Concur. Appendix G.7 has been revised to be consistent with the statement in paragraph 1 on page ES-9 and similar statements made elesewhere in the report. | Jamie Childers, 2/28/2018 |
| 68 | USFWS | Tim Breen | ES | General/Other | Paragraph 3 states "In total, the TSP combined with CEPP components provides a total of approximately 370,000 ac-ft on an average annual basis, meeting the CERP goal for flows into the central Everglades." This claims that all water will flow into the Central Everglades. Is the water that would be used for basin demands (reservoir water between 8.2' and 22.6') accounted for in this estimate? | Water in the reservoir when stage is over 8.2 ft can be used for basin demands. Have these demands been incorporated into the calculations of new water going to the Central Everglades? | Please clarify and correct calculations if needed | No, 370,000 ac-ft of average annual flow is identified as restoration flows leaving the facilities and going into the central Everglades. Basin demands will continue to be met from Lake Okeechobee. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 69 | USFWS | Tim Breen | Section 2 | Modeling | Table 2-2 identifies ERTP 2012 as part of the Existing Condition and FWO, this should be changed to ERTP (2016) | Operations under ERTP (2012) were resulting in impacts to the CSSS that the Service believed would result in jeopardy of the species. In 2016, the Corps and Service worked together to develop operations to avoid jeopardy of the species (ERTP 2016). ERTP 2016 is the current operational strategy that should be considered under the ECB and FWO. | Action should be modeled with ERTP 2016 | At the time of the EAASR effort, parallel planning efforts including the CEPP South LRR and the Combined Operational Plan development were not fully mature. The focus of the EAA project was to provide the CERP water budget in the north at the redline and identifying new criteria beyond the originally authorized CEPP potentially added significant complexity and effort without providing a fully informed path to resolution (i.e. CEPP as authorized does not meet the ERTP 2016 criteria). Since restoration and CSS performance have been narrated as complimentary, it is expected that a more detailed and informed operational refinement to can be pursued in a subsequent step when more information is available from those parallel efforts. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 70 | USFWS | Tim Breen | Section 2 | Modeling | Table 2-2 states that the L-29 maximum stage is 9.7'. L-29 max stage of 9.7' is unrealistic given current constraints from flood protection and FDOT easements. Currently it is not certain that L-29 stage can go up to 8'5' for any extended period of time. | Constraints are limiting the stage in the L-29, and it is not realistic to assume a stage of 9.7'. | Action should be modeled with more realistic stages in the L-29 | The modeling assumptions for operations in the FWO are based on authorized projects and is consistent with CEPP. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 71 | USFWS | Tim Breen | Section 2 | Modeling | Operations are identified as ERTP 2012. The current operational plan is ERTP 2016 | Operations under ERTP (2012) were resulting in impacts to the CSSS that the Service believed would result in jeopardy of the species. In 2016, the Corps and Service worked together to develop operations to avoid jeopardy of the species (ERTP 2016). ERTP 2016 is the current operational strategy that should be considered under the ECB and FWO. | Action should be modeled with ERTP 2016 | At the time of the EAASR effort, parallel planning efforts including the CEPP South LRR and the Combined Operational Plan development were not fully mature. The focus of the EAA project was to provide the CERP water budget in the north at the redline and identifying new criteria beyond the originally authorized CEPP potentially added significant complexity and effort without providing a fully informed path to resolution (i.e. CEPP as authorized does not meet the ERTP 2016 criteria). Since restoration and CSS performance have been narrated as complimentary, it is expected that a more detailed and informed operational refinement to can be pursued in a subsequent step when more information is available from those parallel efforts. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 72 | USFWS | Tim Breen | Section 2 | General/Other | Second paragraph states "...water levels in the L-29 Canal adjacent to the Tamiami Trail may be raised up to 8.5 ft NGVD on the eastern side of the divide structure following completion of the NEPA assessment..." A FONSI has been signed to allow the L-29 to be raised to 8.5' once construction is completed for teh South Dade system. | NEPA has been completed | Change the wording to indicate that the NEPA has been completed to have the ability to raise the L-29 canal to 8.5 ft. | Section 2.5.7 was updated to reflect the completion of NEPA for the L-29 Canal stage. | Georgia Vince, 3/6/2018 |
| 73 | USFWS | Tim Breen | Section 3 | General/Other | Need clarification of statements in Paragraph 3 on this page | What are the specific class limit adjustments or changes that are identified in the following statement? "These class limit changes represent a change in the flow chart guidance that extends byond the inherent flexibility in the current 2008 LORS." What revisions to the Lake Okeechobee operations were made throughout the alternative plan formulation process? | Please clearly define in the text | The changes have been documented in the TSP MDR in Appendix A Annex A-2 | Jennifer Leeds 3/8/2018 |
| 74 | USFWS | Tim Breen | Section 4 | General/Other | Clarify what actions result in discharges being reduced "...by 40% and 55% to the Calossahatchee and St. Lucie Estuaries" Is this only the result of the CEPP PACR (TSP) or CEPP + CEPP PACR? | Similar statements are made in other areas of the document, and it is not clear if these statements are based on the incremental effects of the TSP above and beyond the FWO operations and conditions. Are these numbers based on the combination of all actions under CEPP <u>and</u> CEPP PACR (TSP)? In this document, you should be clear about the benefits/impacts from the TSP alone. | Please clarify | Added statement to clarify the benefits provided by the CEPP PACR. | Georgia Vince, 3/7/2018 |

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| 75 | USFWS | Tim Breen | Section 4 | Modeling | Under the first objective at the top of Table 4-1, the discussion about hydroperiod (PM 5.1) is confusing | This is worded oddly. It says there are increases in all areas except a long list of areas that increases aren't seen. Maybe list the specific areas where increases are seen and the difference between the CEPP PACR and FWO results. Also, when it says "improvements would be expected" what does that mean? Does it mean that the model results show improvements or that you expect to see improvements but it isn't backed up by model results? | Please clarify | Comment reviewed by project team the table includes a list of areas effected by the project (changed or unchanged). All expected improvements are based modeling results of performance measures. | Jennifer Leeds, 3/7/2018 (No change made to the report.) |
| 76 | USFWS | Tim Breen | Section 4 | Modeling | The third paragrpah states that "Alternative C240A was ultimately able to achieve 97% of the CERP Goal over this 36-year period of record." Seems out of place to discuss C240A here with no associated analysis. | No analysis of C240A is provided. How was it determined that 97% of the CERP Goal was being achieved by this alternative? | Recommend removing this statement. It is repeated in Section 4.6 on page 4-26 where it is more appropriate. | Concur. It is not appropriate to discuss results associated with C240A without first describing the alternative, which occurs later in section 4.6. Deleted sentence from page 4-5 as suggested. To replace the deleted sentence, added the following sentence at the end of the last paragraph on page 4-5: "Alternatives R240A and R240B would each achieve approximately 89% of the CERP goal for flow to the central Everglades, Alternatives R360C and R360D would each achieve approximately 91% of the CERP goal, and C360C would achieve approximately 94% of the CERP goal." | Dennis Barnett, 3/5/2018 |
| 77 | USFWS | Tim Breen | Section 4 | General/Other | Paragraph 1 states that "Alternative R240A is the best buy with the lowest cost per unit of habitat improvement ($2,564 average annual cost per average annual HU; Table 4-9). The second least cost alternative in terms of average cost per habitat improvement is Alternative C360C ($2,651 average annual cost per average annual HU; Table 4-9)." It appears that R240B would actually be the second least cost alternative. | Based on Table 4-9, it looks like R240B has a lower cost per HU when compared to C360C. Why is C360C considered a best buy when R240B is not? | Please clarify why C360C was identified as the second least cost alternative when R240B was actually less costly. | The results presented in the report follow the USACE Cost Effectiveness/Incremental Analysis process. R240A is a "best buy" because it has the lowest cost/HU. R240B is not a "best buy" because it provides the same HU output as R240A at a higher cost per HU. Of the 360,000 ac-ft alternatives, C240C provides the lowest per HU cost. Therefore, it is a "best buy" as well. This result is adequately explained in the report. | Dennis Barnett, 3/5/2018 (No change made to the report.) |
| 78 | USFWS | Tim Breen | Section 4 | General/Other | What concerns were expressed by commenters on the need for the A1-FEB to remain inplace? | Part of the basis for considering Alt R240A above C360C was of the lack of Acceptability of C360C. Was this based on some commenters wanting the A1-FEB to remain in place? If so, what supporting information was provided for keeping the A1-FEB in place? | Please clarify | Added the following clarifying language after the 3rd sentence in Section 4.3: "Alternatives R360C, R360D, and C360C would require incorporating the A-1 FEB into the proposed storage reservoir. Resource agencies and interest groups had expressed concerns about potential impacts to the Restoration Strategies Program, the associated Consent Agreement, and the potential additional actions that might be necessary to offset those adverse effects if the A-1 FEB were converted to deep storage." | Dennis Barnett, 3/5/2018 |
| 79 | USFWS | Tim Breen | Section 4 | Modeling | How does Alternative C240A outperform C360C? | How did C240A outperform C360A? The C360C operations improved performance over R360C by about 700 HUs. But when the same operations are applied to C240A, it out performs R240A by nearly 7,000 HUs. How did we get a 10x increase in benefits going from C360A to C240A? | Please explain | Added statement to explain additional benefit provided by the C240A. | Georgia Vince, 3/7/2018 |
| 80 | USFWS | Tim Breen | Section 5 | Ecology | The minor to moderate negative effects to the CSSS discussed in Table 5.1.1 are concerning | There is not enough information included in the document for us to evaluate the potentially minor to moderate negative effects to the CSSS identified in this section of the document. | Need more information detailing the analysis that resulted in the conclusions about the effects to CSSS | After the CEPP PACR is submitted to the ASA (CW) office on March 30, 2018 Government to Government consultation, including Section 7 consultation with USFWS, will occur. | Jennifer Leeds, 3/8/2018 (No change made to the report.) |
| 81 | USFWS | Tim Breen | Section 5 | Ecology | Table 5.1.1 states that the CEPP PACR will result in increases in forage base for the Florida panther that would provide a minor benefit to the species. This is incorrect. | It is difficult to understand how conversion of upland habitat to wetlands would benefit the panther since the project area will be wetlands and reservoir inundated most of the year | Please correct this statement to more accuratley reflect the impacts to the Florida panther. | Revised the florida panther impacts discussions to remove the statements regarding minor beneficial effects to this species over the long-term related to improved forage base, and included the following information regarding the anticipate adverse impact to this species: For all alternatives, conversion of upland habitat that could be potentially used by Florida panther to transverse the area to wetland habitat, thereby eliminating potential habitat for the Florida panther would result in an adverse affect. | Linda Rivard, 3/5/2018 |
| 82 | USFWS | Tim Breen | Section 5 | Ecology | The minor to moderate negative effects to the CSSS nesting pattern described in this section are a significant concern. | There is not enough information included in this section for us to evaluate if mitigation efforts would be adequate. Additional adverse effects to the CSSS above the FWO are a concern. | Need more information detailing the mitigation efforts. How will they mitigate effects to the CSSS? | After the CEPP PACR is submitted to the ASA (CW) office on March 30, 2018 Government to Government consultation, including Section 7 consultation with USFWS, will occur. | Jennifer Leeds, 3/8/2018 (No change made to the report.) |
| 83 | USFWS | Tim Breen | Annex A | Ecology | Maps do not depict all locations of listed species as described in the text. | Maps do not depict all of the locations of the species. | Please coordinate with the Service to ensure all GIS data on species occurrence is up to date. | Available GIS data was used to generate maps; however, this data was re-checked and the maps were updated in the EA. | Linda Rivard, 3/5/2018 |
| 84 | USFWS | Tim Breen | Annex A | Ecology | In the first and second paragraph, you identify a minor increase in hydroperiod that will cause a minor to moderate effect on CSSS nesting patterns, but then you conclude this "may affect, but is not likely to adversely affect the CSSS". | The effects to CSSS described in this section would result in a "may affect, likely to adversely affect" determination fo the CSSSS. | The determination for CSSS should likely be changed to "may affect, likely to adversely affect." Add Marl prairie and CSSS performance measures to the model assessment in Appendix G. | revised the affects determination for CSSS throughout the document as: May affect, likely to adversely affect CSSS; however it would not adversely modify its critical habitat. | Linda Rivard, 3/5/2018 |

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| 85 | USFWS | Tim Breen | Annex A | Ecology | Discussion on the effects to the Florida panther are inconsistent | Converting 17,000 acres of agriculture to reservoir/STA is a significant alteration of habitat that would negatively impacts prey for the panther. How could the project "reduce potential habitat" for prey items and also "improve prey base"? How would the project "decrease hunting ability of the panther" and "result in greater use by the panther"? | Please edit and clarify discussion on impacts to the Florida panther. | revised the affects determination for Florida panther throughout the document as: May affect, likely to adversely affect Florida panther. | Linda Rivard, 3/5/2018 |
| 86 | USFWS | Tim Breen | Annex A | Ecology | ESA determinations for several species should be changed based on your discussion and analysis. | ESA determinations do not match the discussion. | At a minimum, change determinations for CSSS and Florida panther to "may affect, likley to adversely affect". | determinations were updated as suggested. | Linda Rivard, 3/5/2018 |
| 87 | USFWS | Tim Breen | Annex C | Engineering | Design of the levees is important to know. Will these be roller compacted concrete? Will they have steps? Is there a wave run-up concern? What type of surface will be at the crest of the levee? | Design of the levees is a potential concern for wildlife entrapment as seen at other projects. | Design of levees should minimize potentail for wildlife entrapment. | The approximate 15% - 20% level of detail design and specifications on the embankments is contained in the Engineering Appendix A, section A.8 | Jennifer Leeds, 3/1/2018 (No change made to the report.) |
| 88 | USFWS | Tim Breen | Annex C | General/Other | At what stage will the A-1 FEB take water from the A-2 Reservoir? | The maximum depth of the preferred operational range in Figure 3-3 is 3.00 ft at the beginning of the dry season and it reduces to 2.60 ft during the wet season months. At what stages will water be taken from the A-2 Reservoir? | Please clarify | Inflow to the A-1 FEB is determined by an operational range as outlined in Annex C C.3.1.3 and based on the defined operational protocol in figure 3.3 A-1 FEB operating zones. Inflows to the A-1 FEB from the A-2 reservoir will be based on various operational and environmental factors. Under normal conditions, operational strategies for the A-1 FEB are examined on a weekly basis by the SFWMD STA Group and the Water Management Section. Factors considered in delineating A-1 FEB operations are, but not limited to: antecedent, current and forecast conditions (dry, normal, wet), available storage in the A-1 FEB, and conditions (depth and water quality conditions) in STA 2 and STA 3/4. Upon the A-2 Reservoir's completion, the reservoir complex will be operated in conjunction with the A-1 FEB and existing STAs. As additional design details are developed during the PED phase, the operational criteria for the A-2 Reservoir will become more refined. Reference section C.7.1.2 | Jennifer Leeds, 3/1/2018 (No change made to the report.) |
| 89 | USFWS | Tim Breen | Annex C | General/Other | The fifth paragraph states that water deliveies to the basins from the A-2 reservooir would occur when there is additional capacity beyond those identified for restoration flows. Are the restoration flows defiend somewhere? How were they defined? | The District states that water in the A-2 reservoir could be used for water supply when the reservoir is above 8.2'. This means that the first 8.2 ft of storage are for environmental deliveries and the next 14 ft (8.2-22.6 ft) is available for water supply. This equates to 36% for the environment and 64% for water supply. How was the water supply trigger determined? | Please clarify | Water in the A-2 reservoir will only be delivered back to the Miami and North New River Canals where is could be used for water supply purposes if restoration flows are met. For example, if the reservoir depth is above 8.2' and restoration flows are not met, then environmental demands have priority and will be met and water supply would be met from Lake Okeechobee as they are today. | Jennifer Leeds, 3/1/2018 (No change made to the report.) |
| 90 | USFWS | Tim Breen | Annex G | General/Other | The original CEPP PIR and EIS contains a lot of information that was not included within the CEPP PACR, Annex G. Numerous sections were omitted from the CEPP PACR. Important non-native fish management measures were also not included. | Missing information | Please include this information. | The CEPP PACR INSMP is intended to supplement the INSMP completed for CEPP. Annex G was updated to make this clear. The table of specific species in the project area was added back into the report and includes fish; CEPP Table G-2, now Table G-1. | Jamie Childers, 3/5/2018 |
| 91 | USFWS | Tim Breen | Annex G | General/Other | The following nine sections were omitted from and not addressed in the CEPP PACR Annex G including specific control by project feature for both construction and OMRR&R phases: G.6.1 Surveillance – Early Detection and Rapid Response; G.6.2 Control; G.6.3 Monitoring; G.6.4 Pre-construction Phase; G.6.5 Design and Construction Phases; G.6.6 Operational Testing and Monitoring Period; G.6.7 OMRR&R Phase; G.6.8 Specific Control by Project Feature – Construction Phase; G.6.9 Specific Control by Project Feature – OMRR&R Phase | Missing information | Please include this information. | Information from these sections relevant to the A-2 parcel and A-2 Expansion area and proposed features of this CEPP PACR is included in Annex G. Annex G has been updated to more clearly indicate that this is intended to be a supplement to the CEPP PIR INSMP and not a stand alone INSMP. | Jamie Childers, 3/5/2018 |
| 92 | USFWS | Tim Breen | Annex G | General/Other | Education/Outreach and Education/Outreach Opportunities at Recreational Areas was omitted. This section in the CEPP PIR and EIS addressed the spread of invasive species at recreation areas such as boat ramps, hiking trails, and hunting areas which can serve as vectors and pathways for aquatic and terrestrial invasive species. | Educating the public on preventing the spread of invasive species can be a cost effective component of the overall management strategy. | Please include this information. | This section was added back into Annex G and updated based on recreation activities relevent to the proposed project changes. | Jamie Childers, 3/5/2018 |
| 93 | USFWS | Tim Breen | Annex G | General/Other | The CEPP PIR and EIS, Annex G, included Table G-2: Priority Species/Areas for Early Detection and Rapid Response; Table G-3: Invasive Plant Species Documented in the Project Area; Table G-4: Invasive Animal Species Documented in the Project Area; Table G-5: Invasive and Nuisance Species Management Costs – Construction Phase; and Table G-6: Invasive and Nuisance Species Management Costs—OMRR&R Phase. | These Tables were omitted from the CEPP PACR, Annex G | Please include this information. | CEPP Table G-2 is now Table G-1 and identifies specific species in the A-2 parcel and A-2 Expansion area and those species that may affect, or spread from, the proposed project features (the A-2 Reservoir and A-2 STA). The CEPP PACR INSMP is intended to supplement the CEPP PIR INSMP therefore all the original tables were not added back to the report. Text was added to make clear that this Annex is intended to supplement previous work. | Jamie Childers, 3/5/2018 |
| 94 | USFWS | Tim Breen | Annex G | General/Other | Copper concentrations exceeded the interim benchmark for protection of the Everglade snail kite; however, soil remediation is not proposed. | Lack of remediation proposed | The Service recommends that the District develop a soil remediation and monitoring plan for the proposed corrective action area and submit to the Service for review and concurrence. | Concur. The potential for a soil remeditation and monitoring plan is included in Appendix C.2.2.12. | Jamie Childers, 3/5/2018 |

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| 95 | USFWS | Tim Breen | Annex H | General/Other | Approximately half of the area has been sampled for contaminants. The District intends to sample the remainder of the area in the future. | Service acknowledges your intent to complete the contaminants sampling on the remainder of the affected lands in the future. | N/A | Comment noted. This is also included in Appendix C.2. | Jamie Childers, 3/7/2018 |
| 96 | USFWS | Tim Breen | Appendix C.2 | Ecology | In Table C.2.1-2., the performance measure used for CSSS is incorrect and is based on the previous ERTP (2012). | Current PM is for 40% of each CSSS subpop to have at least 90 continuous days between March 1 - July 15. Also have a performance measure of 90-210 day discontinuous hydroperiod over 40% of each subpop. These are laid out in ERTP (2016). | District should use ERTP (2016) throughout the document and in modeling efforts | At the time of the EAASR effort, parallel planning efforts including the CEPP South LRR and the Combined Operational Plan development were not fully mature. The focus of the EAA project was to provide the CERP water budget in the north at the redline and identifying new criteria beyond the originally authorized CEPP potentially added significant complexity and effort without providing a fully informed path to resolution (i.e. CEPP as authorized does not meet the ERTP 2016 criteria). Since restoration and CSS performance have been narrated as complimentary, it is expected that a more detailed and informed operational refinement to can be pursued in a subsequent step when more information is available from those parallel efforts. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 97 | USFWS | Tim Breen | Appendix C.2 | Ecology | In both Tables C.2.1-4 and Table C.2.1-5, the alternatives performed worse than the ECB and FWO. This is a concern for the Servicce. | Adverse impacts to CSSS would result from the alternatives. | District should use ERTP (2016) throughout the document and in modeling efforts | At the time of the EAASR effort, parallel planning efforts including the CEPP South LRR and the Combined Operational Plan development were not fully mature. The focus of the EAA project was to provide the CERP water budget in the north at the redline and identifying new criteria beyond the originally authorized CEPP potentially added significant complexity and effort without providing a fully informed path to resolution (i.e. CEPP as authorized does not meet the ERTP 2016 criteria). Since restoration and CSS performance have been narrated as complimentary, it is expected that a more detailed and informed operational refinement to can be pursued in a subsequent step when more information is available from those parallel efforts. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 98 | USFWS | Tim Breen | Appendix G | General/Other | Last sentence states additional new water would be approximately 115,000 ac-ft per year on average compared to the currently authorized CEPP plan. This amount is not the same as what is stated in other parts of this CEPP PACR. Other Sections state an additional 370,000 ac-ft of water will result from the TSP. | The amount of new water produced form the CEPP PACR needs to be identified and consistent throughout the documents. | Please clarify. | Concur. Text was updated to be consistent with updated text from section 6.7.1 of the main report. | Jamie Childers, 2/28/2018 |
| 99 | FDEP | Tracy Robb | Appendix A | Engineering | The DPOM and technical memo on canal conveyance improvements refer to stages in NGVD while the engineering plans use NAVD. It is understood that the District operators still prefer NGVD. Therefore, elevations in these documents should refer to both datums (NAVD and NGVD) until the District decides to only use NAVD. | Potential confusion or errors when documents for the same project use two datums. | Operations Plans may include both NAVD and NGVD until Ops Division decides to just use NAVD. Technical memos should only use NAVD since they are not used by operators, but could include both datums. | To address this issue, Appendix A will be revised so that all elevations referenced in the text will be provided in both datums. The elevations provided in the drawings and figures in Appendix A will remain as NAVD elevations; however, the conversion formula for the project site of NGVD = NAVD + 1.43' will be added to the figures and drawings. | Raymond Sciortino, 3/9/2018 |
| 100 | FDEP | Tracy Robb | Annex C | Engineering | Section refers to an "A2 Reservoir Seepage Canal". There is no canal dedicated to seepage management along the north and east perimeter of the reservoir. | Incorrect. | Revise to "A2 Reservoir Inflow-Outflow Canal" | Revisions made to the text as suggested | Jennifer Leeds, 3/1/2018 |
| 101 | FDEP | Tracy Robb | Annex C | Engineering | The project proposes use of the A2 Reservoir Inflow-Outflow Canal as a multi-purpose canal including seepage management. This project has a lot of operational flexibility; however, there are operational scenerios when the A2 Reservoir pumps should operate and seepage would be an issue to the north (i.e. high stages in A2, but not max) . Use of the SW-2 and SW-3 structures may help isolate the canal to initiate seepage control (pumps) to lower the canal, but simultaneously capturing flows in the Miami and NNR requires further review. | Projects are required to demonstrate no significant adverse impacts to adjacent lands as part of the permitting process. Operation of the reservoir to its full capacity should not be limited in order to echieve the benefits. | Finalize seepage analysis. Determine when the stage in A2 requires additional seepage management. Review potential operational scenerios to mitigate. | The seepage analysis is currently being finalized. The section will be modified as appropriate to reflect the required seepage mitigation measures. | Jennifer Leeds, 3/1/2018 |
| 102 | FDEP | Tracy Robb | Appendix A | Engineering | Report mentions that the seepage results will be available in March after additional geotechnical investigations occur and the seepage analysis is completed. The FDEP ATR is willing to provide a separate review of this analysis, if requested by the District. | FDEP would like to ensure that potential concerns have been addressed at this stage in the process. It is undertood that this issue can be deferred to detailed design, but it has the potential to impact the footprint if a separate seepage canal is required. | Suggest providing the seepage analysis to FDEP for a separate review. If the District is confident that the seepage issues can be addressed through design modifications or operations, this can be deferred to design. | The final results of the seepage analysis have been included in the PACR. Technical review by DEP can be done during the design phase. | Leslye Waugh, 3/9/2018 |
| 103 | FDEP | Tracy Robb | Appendix A | Modeling | The modeling report states that there are no changes to the assumptions used in CEPP for the PACR. However, there are parameters that differ from the assumptions in CEPP. Please note these differences in the model assumptions, either in the MDR or another section in the report. | To ensure that differences in the model assumptions are clearly identified for transparency. | Clarify differences in model assumptions from CEPP model and the basis for using different assumptions (i.e. deep reservoir, new data). | The CEPP scenario (EARFWO) is unchanged in the PACR with no updates to modeling assumptions or parameters. The project modeling including the EAASR C240 TSP utilize that same modeling tools and assumptions as the EARFWO except where described already in the MDRs. Details related to DMSTA modeling will be included in a technical memorandum and referenced in the MDRs as was done in the 2012 CEPP PIR. | Leslye Waugh, 3/9/2018 |
| 104 | FDEP | Tracy Robb | Section 9 | General/Other | The list is identified as the preparers of CEPP when this is really the list for the CEPP PACR. | Recognition of level of effort by stakeholders on CEPP since it was used as the basis for this PACR. In fact, many sections area unchanged. | Include the list of preparers from CEPP in this section (separate) along with the list for the CEPP PACR. | Concur, report revised to include the list of preparers for CEPP PACR | Mike Albert, 3/2/2018 |

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| 105 | FDEP | Tracy Robb | Appendix A | Engineering | Addressing the A1 FEB seepage along the north property line did not appear to be mentioned in the report. Please discuss how this will be handled. | The A1 FEB does not have a cutoff wall and should undergo a separate seepage analysis. | Identify changes to A1 FEB seepage canal that may be required. | Concur. Seepage model description and results showing modifications to the A1FEB seepage management measures have been included in Appendix A, Section 8.9 | Mike Albert, 3/14/2018 |
| 106 | FDEP | Inger Hansen | Section 4 | Modeling | Recommend removing the footnote on the base year as the previous CEPP effort had a different base year than what is being proposed for this project. | Clarification | Remove footnote. | Footnote changed to "Base Year is 2026." 2026 is the beginning of the 50-year period of analysis for the TSP. | Dennis Barnett, 3/5/2018 |
| 107 | FDEP | Inger Hansen | ES | General/Other | Since the PACR is using the CEPP PIR Report as the starting point, it is difficult to discern exactly which statements in the report have been edited or added for just the A2 Reservoir. The report should attempt to focus and consolidate the benefits of this storage component. | Comparison of benefits should be clearly outlined and the document could be streamlined/simplified. | At this point in the process, we can only suggest inclusion of direct language or paragraphs when discussing the impacts/benefits associated with the A2 Reservoir compared to the A2 FEB and to differentiate it from the overall CEPP project components wherever possible. | This Post Authorization Change Report is an update to the authorized CEPP therefore it is necessary to include information from the original document while identifying the incremental benefits. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 108 | FDEP | Inger Hansen | Annex F | Water Quality | Second to last sentence of first paragraph: please either explain is meant by "enhance WQBEL compliance" or consider rewording. | Clarification | Please revise text for clarity. | reworded to state will meet WQBEL compliance | Jennifer Leeds, 2/28/2018 |
| 109 | FDEP | Inger Hansen | Annex F | Water Quality | Some of the DMSTA model assumptions are provided here, but details about settling rates for the deeper A-2 Reservoir (compared to the A2 FEB) and the basis for the assumptions were not provided. Please specify how the DMSTA model has evolved (SFWMD/Wang 2012) since CEPP/FWO conditions and how the assumptions used compare to what was assumed in CEPP/FWO conditions. The methodology has been discussed, but it does not appear to be captured clearly in the PACR. | Clarification | Please provide clarificaiton on the differences in the model assumptions used for the A2 Reservoir/TSP with CEPP compared to CEPP/FWO. | Details and model assumptions on the hydrologic modeling conducted for the CEPP PACR are contained in the Engineering Appendix A, sub-section Annex A-2 Hydrologic Modeling which contains the Model Documentation Reports. | Jennifer Leeds, 3/1/2018 (No change made to the report.) |
| 110 | FDEP | Mariano Guardo | Appendix A | Engineering | Pumping flows through P-1 Pump Station with a design Q of 4600 cfs is controlled by the SW-2 and SW-3 (both gated spillways with design Q of 3000 cfs each) from Miami Canal and NNR Canal, respectively. Flows from both canals were simulated for three different locations of the P-1 Pump Station. The hydraulic gradients (Figure A.6.6-1) show that the minimum losses of about 1.3 ft occur for the P-1 location at mile 9.6. That condition is valid for about 3000 cfs from the NNR Canal and about 1600 cfs from the Miami Canal (Figure A.6.6-4). Boundary conditions (stages) at both canals were 6.5 ft NAVD. I am guessing that value was obtained from Inv Elev = -8 ft NAVD and 14.5 ft estimated normal depth (Table A.6.6-1). If the normal water depth is going to be used for both canals as boundary conditions (stages), the 14.5 ft value can be questionable. In addition, the calculation of the normal depth (with Manning Equation, for uniform flow) depends on the bottom slope (S), and if S = 0, the normal depth tends to infinity. The use of 14.5 ft should be an assumed water depth (boundary condition) able to generate a H2 profile. | It's an important factor dealing with the operation schedules of the project. The hydraulic gradients in the canal are a function of the boundary conditions (stages for different discharges) through the SW-2 and SW-3 gated spillways which represent the inflows from the Miami and NNR Canals. | Please review assumptions since the proposed operations and seepage management are based on these values. | The boundary stages used for the Miami Canal and the NNR Canal in the P-1 Station drawdown simulations were the assumed operational stages for both canals when discharges from Lake Okeechobee are being conveyed through the Miami and NNR canals into the A-2 Reservoir. The calculations to derive the A-2 Inflow-Outflow Canal flow capacity using the Manning's Equation, shown in Table A.6.6-1, was a separate exercise, which used a normal depth of 14.5 feet and slope = 0.0001 ft/ft. | Maria Loinaz, 3/9/2018 (No change made to the report.) |
| 111 | FDEP | Mariano Guardo | Appendix A | Engineering | Five different design scenarios were analyzed for wind and storm. Eventually a 54-in precipitation were selected from the PMP of 72-hr duration. In A.5.3.1 Inflow Design Storm, a precipitation a 54 in over the area of the reservoir will produced such Inflow Design Storm (in 72 hr). The SW-1 ungated spillway (crest elev at 31.1 ft NAVD) will start releasing flow almost instantaneously assuming the reservoir is at normal capacity (22 ft of water with average ground elevation at 8.5 ft NAVD). For this reason, the design head of the spillway will be smaller than 4.5 ft, and of course will mainly depend upon routing of the inflow hydrographs through the length of the spillway. The assumption of the 54 in (4.5 ft) over the NFSL Elevation of 31.1 ft NAVD yielding the head over the spillway (for design considerations) appears to imply that no discharge will occur until the rainfall (54 in) has ceased (after 72 hr). | It is relevant to determine the height of the dam section. it's the height component produced by the routing of a selected extreme event (flood). In this case, the 4.5 ft precipitation lasting three days (72 hr) when the A-2 Reservoir is at the NFSL Elev of 31.1 ft NAVD, will begin discharging immediately. So, considering the storage capacity of the reservoir above 31.1 ft NAVD, the peak height over the SW-1 ungated spillway will not reach 4.5 ft in water depth. The assumption of 4.5 ft peak head over the spillway is a very conservative assumption. | Perhaps this is a conservative assumption at this time given the project schedule. Suggest evaluating these assumptions at a higher level of detail during the design process to lower dam height. | The typical weir coefficients for a broad crested weir range from 2.6 to 3.1. Solving the weir equation given a height of 4.5 and a flow rate of 340 cfs results in weir lengths of 13.7 feet and 11.5 feet for weir coefficients of 2.6 and 3.1, respectively. The weir coefficient was assumed to be in the lower range given that the lower coefficients are associated with larger weir widths (above 15 feet). The 72-hour, PMP storm was simulated for various weir sizes, starting with a weir length of 13.5 feet, which results in a peak flow of 303.5 cfs and a peak height over the weir of 4.2 feet. Thus, the approach is conservative but to match a peak flow of 340 cfs during the 72-hour PMP storm, a larger weir length is required. By iterative simulations, a weir length of 15.2 feet resulted in a peak flow of 340.6 cfs during the 72-hour, PMP storm. The text in Section A.6 was revised to include this information. | Maria Loinaz, 3/9/2018 |
| 112 | FDEP | Mariano Guardo | Appendix A | Engineering | Please review the typical cross section of the A-2 Reservoir in Figure 5.4-1 that was used to analyze the overtopping. Note the shape of core, filters and embankments do not match the latest design section. | The internal distribution of soils within the dam should not affect the overtopping and therefore, should not be part of the figure. | Revise to be consistent or remove soils info. | This figure has been revised to be consistent with the typical cross-sections provided in Appendix A, Annex C-1. | Raymond Sciortino, 3/8/2018 |

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| 113 | FDEP | Mariano Guardo | Appendix A | Engineering | Please clarify the source for the assumption for the overtopping discharge of 0.1 cfs/ft in the PACR. | Overtopping of a dam like this one could cause failure by erosion of the downstream embankment. Selection of an overtopping rate that has been agreed to is important. | Please document the overtopping value assumption in the PACR. | An overtopping limit of 0.1 cfs/ft has been adopted, as recommended in DCM-2.<br><br>This is broadly in line with guidance provided in the EurOtop Manual (2016), and correlates to the "Start of Damage" condition as per guidance in the Coastal Engineering Manual (USACE, 2002). The wind and precipitation scenarios used for the design of the A-2 Reservoir are associated with rare extreme storm scenarios. Hence a "Start of Damage" condition is believed to be appropriate for the preliminary design of the A-2 Reservoir, indicating that minor damage may occur from extreme wave events.<br><br>Exposure to damage from overtopping depends on how the wave run-down interacts with landward side of the structure, which is a function of the slope type and resilience (e.g. grass quality, soil type etc). Hence, the tolerable discharge limits and associated damage will be re-assessed in future PED phase of the project to ensure they are still appropriate.<br><br>Refer to comment added on page A5-7 of "Appendix A.05 Hydrologic Design" and on page A-2-13 of "Annex A-2 A-2 Reservoir Wave and Overtopping Analysis". | Jessica Ryan, 3/8/2018 |
| 114 | FDEP | Mariano Guardo | Appendix A | Engineering | The SW-1 Overflow Weir design, as mentioned in other comments, should be revised because the use of 4.5 ft as the height over the spillway is too conservative. | The assumption considers instantaneous precipitation of 4.5 ft over the reservoir, rather than in 72 hr. | Consider routing the event to lower the pool during detailed design. | The typical weir coefficients for a broad crested weir range from 2.6 to 3.1. Solving the weir equation given a height of 4.5 and a flow rate of 340 cfs results in weir lengths of 13.7 feet and 11.5 feet for weir coefficients of 2.6 and 3.1, respectively. The weir coefficient was assumed to be in the lower range given that the lower coefficients are associated with larger weir widths (above 15 feet). The 72-hour, PMP storm was simulated for various weir sizes, starting with a weir length of 13.5 feet, which results in a peak flow of 303.5 cfs and a peak height over the weir of 4.2 feet. Thus, the approach is conservative but to match a peak flow of 340 cfs during the 72-hour PMP storm, a larger weir length is required. By iterative simulations, a weir length of 15.2 feet resulted in a peak flow of 340.6 cfs during the 72-hour, PMP storm. The text in Section A.6 was revised to include this information. | Maria Loinaz, 3/9/2018 |
| 115 | FDEP | Mariano Guardo | Appendix A | Engineering | The Gated Culvert C-1, as shown in Table A.6.3-2 (pg. A.6-6), is an outflow from the A-2 Reservoir into the Inflow Canal (north boundary). However in Table A.1-1 (pg. A.1-2 of the A.1 TENTATIVELY SELECTED PLAN section, it is stated, in the Purpose of Feature, that "allows for inflow from the A-2 Inflow-Outflow Canal to the A-2 Reservoir" | Based on stages in the Inflow-Outflow Canal, A-2 Reservoir, and location of the Gated Culvert C-1, the option of inflow into the A-2 Reservoir would be practically impossible (possible only by pumping through P-1). | Please review the purpose of this culvert to ensure it can used as represented. | Gated Culvert C-1 is intended to function as an outflow structure for the A-2 Reservoir. However, at one time it was considered as possibly being used as an inflow structure given certain stage conditions. It was later realized that the likelihood of having the necessary stage conditions for C-1 to function as an inflow structure are very low; therefore, this structure should be consistently described as an outflow structure in the report. Table A.1-1 has been revised to describe C-1 as only an outflow structure. | Raymond Sciortino, 3/8/2018 |
| 116 | FDEP | Mariano Guardo | Appendix A | Engineering | The calculated and design flows for the A-2 Reservoir Gated Box Culverts (C-1, C-9 and C-10) appear to be high for the shown HW and TW stages. A reasonable estimate for these flow conditions can be obtained using the Orifice Equation (Q = Cd x A x Square-root [HW-TW]). Cd approaches 0.62. For instance for the C-1 Structure (3 gates 12Wx12H). The A = 432 square-ft, HW-TW= 31.1- 6.5 = 24.6 ft, Q = 1328 cfs (11,990 cfs). Please explain the significant difference | The order of magnitude of the flows appers to be very large for the difference in stages (HW-TW) and the sectional area of the box culverts. | Box culverts may be oversized. Please review as part of the value engineering for this project during the design process. | The orifice flow equation in the comment is missing the 2g term in the square root portion. The SFWMD Atlas of Flow Computations orifice flow equation 47 on page 25 is Q = Cd x A x SqRt(2g-HW-invert-0.6(TW-invert)). Using this equation for the C-1 culvert with a HW of 31.1 and a TW of 6.5 would result in a flow of 11,163 cfs. The flow calculations were simulated as culverts in MIKE 11 using a Manning's n of 0.013. | Maria Loinaz, 3/9/2018 (No change made to the report.) |

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| 117 | FDEP | Mariano Guardo | Appendix A | Engineering | The anisotropy ratios of 50 and 100 used for three of the layers (hydrogeology) of the cross sections appear to be extremely high. The anisotropy is defined as the ratio of the hydraulic conductivity in the horizontal direction to the hydraulic conductivity in the vertical direction (Kh/Kv). | Seepage analysis will be impacted if these values are incorrect. | Please document the source of these values or correct them if additional geotechnical work provides new information. | The hydraulic conductivities values and anisotropy ratios for the Caprock, Fort Thompson Formation, Caloosahatchee Formation and Tamiami Formation selected for use in the conceptual design of the EAA A-2 Reservoir, were initially defined in the EAA A-1 BODR, after an extensive geotechnical investigation performed on the EAA A-1 Reservoir, which included more than 330 borings, a large scale seepage test with numerous piezometers (Test Cell Program) and an extensive laboratory testing program. Our evaluation of the test borings performed at the A-1 Reservoir site and two boreholes performed at the A-2 Reservoir site, review of the parameters used for the design and analysis of the adjacent EAA A-1 Reservoir embankment and experience with similar soils on prior projects concluded that based on the information available at this time these parameters adequately represent the soil layers present beneath the site. However, the engineering properties for use in the final design cross sections of the EAA A-2 Reservoir will be selected after an extensive field and laboratory testing program is completed at the A-2 site. | Liselle Vega-Cortez, 3/8/2018 (No change made to the report.) |
| 118 | FDEP | Art Sengupta | Appendix A | Engineering | Blasting the cap rock will damage the near impermeable base of the reservoir. | Blasting of the cap rock may increase the potential for seepage. | Recommend geophysical techniques to map the cap rock such as MASW and select the blasting areas carefully. | Blasting of the caprock was performed as part of the Test Cell program, with the purpose of determining the availability and suitability of the material. As mentioned in Appendix 08-09 of the BODR, blasting of the caprock during the Test Cell program, was performed with no major issues, except predicting the extent of different zones of weathering within the caprock, as this layer showed great variability during the Test Cells construction. However, as previously mentioned in Section A.8.4.1 of the PACR, additional field exploration will be required to further define the construction materials, including the caprock, within the A-2 Reservoir site. Note that the caprock is not an impermeable unit. It contains numerous vertical solution features filled with sand. Also note that the proposed borrow trenches within the reservoir will be excavated through the caprock and extend several feet into the underlying formation. | Liselle Vega-Cortez, 3/8/2018 (No change made to the report.) |
| 119 | FDEP | Art Sengupta | Appendix A | Engineering | Grid pattern for geotechnical borings should be similar to pattern used for A-1 FEB. | Geotechnical borings completed to date are insufficient given the depth of the reservoir pool and soils. | Suggest following the same geotechnical pattern used for A-1 FEB for the A2 Reservoir during the design process. | As previously mentioned in Section A.7.1 of the PACR, additional detailed field geotechnical exploration will be required during the basic engineering design phase of the EAA A-2 Reservoir. As part of the additional field geotechnical exploration and considering the A-2 site covers an approximate area of 10,600 acres, a large number of boreholes and test wells is expected, especially along the centerline of the A-2 embankment and along the centerline of the proposed borrow trenches. | Liselle Vega-Cortez, 3/8/2018 (No change made to the report.) |
| 120 | FDEP | Art Sengupta | Appendix A | Engineering | The existing inclined chimney drain with rock core will be difficult to construct and may be more expensive than a vertical chimney drain. The C-44 Reservoir has an inclined chimney drain which is causing the construction problems while according to the preliminary design the chimey drain was intended to be vertical. | The C-44 Reservoir has an inclined chimney drain which is causing the construction problems. | Please consider using a vertical chimney drain draining into a blanket drain at the base during detailed design as part of value engineering for the project. | The original conceptual design cross section was modified to change the vertical chimney drain to an inclined chimney drain for constructability purposes. In our experience, inclined cores and chimney drains are much more common than vertical cores and chimney drains.<br>There is no difference in terms of performance but construction is actually much simpler with the core or chimney inclined at the same slope as the slope on the upstream shell (shoulder), e.g., 1.5H:1.0V. The construction sequence would involve constructing the downstream shell to a certain elevation, potentially its final height, constructing the inclined chimney drain on the upstream slope of the shell to a lower elevation than the elevation of the shell, constructing the inclined core to a lower elevation than the drain, then constructing the upstream shell to a lower elevation than the core. If a vertical core or chimney is constructed, each lift of the embankment must be constructed to approximately the same height for each of component of the embankment before the next lift of the embankment is constructed. | Liselle Vega-Cortez, 3/8/2018 (No change made to the report.) |

| Comment # | Agency | Reviewer | Report Section | Discipline | Comment | Basis of Concern | Suggested action to rememdy/resolve concern | District Response | Report Updated By (provide name and date) |
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| 121 | FDEP | Art Sengupta | Appendix A | Engineering | Consider raising the depth of the slurry wall to the top of Caloosahatchee ( a natural unconfirmity) rather than a hanging wall as shown. | Breaking through the natural unconfirmity will increase seepage. | Consider lessening the depth of the slurry wall and use soil bentonite mix- SB wall. | The cut-off wall was considered in the conceptual design cross sections of the A-2 embankment to force the seepage to pass vertically downward through the caprock and the Fort Thompson formation into the Caloosahatchee formation to reduce the potential for soil heave (and soil piping) in the seepage canals constructed just beyond the outside toe of the embankment. The cut-off wall provided to us in the conceptual cross sections that were evaluated extends to a bottom elevation of -34.10 feet (NAVD). Most of the slurry wall contractors working in Florida can easily excavate the cutoff wall using conventional hydraulic excavators to depths of 40 to 50 feet. | Liselle Vega-Cortez, 3/8/2018 (No change made to the report.) |
| 122 | FDEP | Art Sengupta | Appendix A | Engineering | The flow pattern does not reflect difference in rock types between Caloosahatchee and Fort Thompson | Relationship is not correctly portrayed. | Revise to use appropriate values for K. | The hydraulic conductivity values and anisotropy ratios for these layers are listed in Table A.8.5.1 of the PACR. As stated in the response to Comment 117 above, the horizontal and vertical hydraulic conductivities selected for each layer are based on the best available data, including the data generated from the measured performance of the test cell constructed and tested during the design of the A-1 reservoir. During final design of the EAA A-2 reservoir additional performance testing will be completed using both pumped wells, monitor wells, piezometers, and test cells to verify the hydraulic conductivities used in the seepage analyses. | Liselle Vega-Cortez, 3/8/2018 (No change made to the report.) |
| 123 | FDEP | Art Sengupta | Appendix A | Engineering | Consider intermediate dikes for lowering the height of the dam by limiting the wave height and lowering the risk of failure. | The area is close to some large urban centers like Miami and Fort Lauderdale. Consider adding intermediate dikes to control wave height and lower the elevation of dam. May also result in cost savings. | Include analysis with intermediate dikes during the design process. | The use of intermediate dikes can be considered during future PED phase of the project to investigate the reduction in wave height, and potential for reducing the elevation of the dam.<br><br>Refer to comment added on page A5-10 of "Appendix A.05 Hydrologic Design" and on page A-2-19 of "Annex A-2 A-2 Reservoir Wave and Overtopping Anlaysis" | Jessica Ryan, 3/8/2018 |
| 124 | FDEP | Paul Julian | Annex D | Water Quality | Maps of "Existing structure monitoring locations in WCA3A/3B" do not have all structure monitoring identified. This map has marsh monitoring and some structures (i.e. S152) identified but not S8, S9, etc. Suggest revising. | Figure heading and figure do not match and does not accurately characterize monitoring locations | revise figure | revised maps were included in the report | Leslye Waugh, 3/6/2018 |
| 125 | FDEP | Paul Julian | Annex D | Water Quality | Maps of "Existing structure monitoring locations in ENP" do not have all structure monitoring identified. Suggest revising. | Figure heading and figure do not match and does not accurately characterize monitoring locations | revise figure | revised maps were included in the report | Leslye Waugh, 3/6/2018 |
| 126 | FDEP | Paul Julian | Annex D | Water Quality | The presented Mercury and Toxicant Mointoring appears to be based on the newly revised (but not authroized) CGM 42. | The presented monitoring does not reflect the agreed upon CERP Guidance Memorandum | Revise Mercury and other Toxicant monitoring consistent with the current CGM 42 | Revised to be consistent with current CGM 42 | Nicole Niemeyer, 3/1/2018 |
| 127 | FDEP | Paul Julian | Annex D | Water Quality | Please consider a marsh monitoring location within the Blue Stany flow way | The current level of mointoring will not capture local changes in marsh water quality within the flowway during post construction stabilization or how the marsh will respond due to changes in local hydrology | include a marsh monitoring station within the blue shanty flow way | The CEPP PACR did not revisit monitoring stations outside the proposed TSP features. No additional monitoring stations within the Everglades Protection Area are proposed at this time. | Leslye Waugh, 2/28/2018 (No change made to the report.) |
| 128 | FDEP | Paul Julian | Annex F | Water Quality | In Figure F-4, does "STA3/4" represent the current STA 3/4 or the integrated STA 3/4 and A-2 STA? If so please clarify on figure and in text. | As the figure and current text is written, it is unclear if "STA 3/4" is represented as the current STA 3/4 configuration or the integrated STA 3/4 and A-2 STA as in other figures. | Please clarify in the text and figure | In the TSP the A-2 Reservoir is integrated with STA 3/4. Text was changed to clarify. | Jennifer Leeds, 3/1/2018 |
| 129 | FDEP | Paul Julian | Annex F | Water Quality | Based on Figure F-4, it appears that during some months flow will be redicteded away from STA 3/4 and STA 2 (i.e. negative flow) when comparing FWO and TSP. Is this correct? If so, is it sufficient enough to impact current STA operations? | The operation of the A-2 reservior and STA will take water away from the best performing STAs. | Please clarify in the text. | It is not expected that these changes in flow will impact STA operation. The addition of the upstream A2 storage reservoir and new A2 STA provide an opportunity for improved distribution of flow and loads across a broader group of features. In fact, the hydrologic regime predicted in the C240 TSP for STA 2/B, STA 3/4 and STA A2 from the perspective of temporal inflow distribution and water depths is actually improved compared to the EARECB and EARFWO conditions. See Section 3.2 of the PACR. | Georgia Vince, 3/6/2018 |
| 130 | FDEP | Paul Julian | Annex F | Water Quality | Table F-2 indicated increases to TP loading rate to STA-2, is this a function of increased water available for treatments? Is there a way to determine the loading rate for just STA 3/4 alone? Does this increase in loading rate exceeded the optimial loading rate | Based on currently modeling loading to the STAs will increase, does this increase in load and subsequent loading rate exceed the optimal loading rate(s) for the STAs. | Please clarify the loading to STA 3/4 and determine if the loading rate exceeds the optimal loading rate for the STA | In general, there is no optimal phosphorus loading rate for STAs.There have been some planning-level targets discussed over the years, but there are many factors that affect STA performance including water depths, vegetation conditions, inflows/velocities, soil type, antecedent conditions, etc. | Jennifer Leeds, 3/6/2018 (No change made to the report.) |
| 131 | FDEP | Paul Julian | Annex F | Water Quality | Please reference the Phosphorus rule (62-302.540 FAC) assessment in the South Florida Environmental Report which is conducted annually and will continue to be conducted annually in the future. | This is an ongoing assessment conducted by the State of Florida and should be highlighted accordingly. Furthermore, in recent years impacted stations have begun to recover and the expectation with restoration is that more stations will transition in the future due to restoration activites. | Reference the TP rule assessment and acknowledge system wide improvements already achieved. | South Florida Environmental Report referenced in text | Jennifer Leeds, 3/1/2018 |

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| 132 | FDEP | Paul Julian | Annex F | Water Quality | Why was a linear regression, pearson correlation (both parameteric) and a spearman's rank correlation analysis used? When doing trend analysis a Thiel-Sen estimator and kendall tau correlation analysis would be more appropriate. Both Thiel-Sen and Kendall tau | Statistical methods utilized to assess trends. | Please consider other statsitical methods more appropriate to for assessing trends. | The analysis was updated to reflect the use of the Kendall's tau-b (tb) test for assessing trends. | Jennifer Leeds, 3/1/2018 |
| 133 | FDEP | Paul Julian | Annex F | Water Quality | Figure F-9 shows CA36 geometric mean TP concentration at >20 µg/L for WY2017, and >10 µg/L at CA324. This is inconsistent with WY2017 results presented in Table F-4 and 2018 SFER. | Figure F-9 shows significantly greater TP concentrations at impacted stations in WCA-3 than are reported elsewhere for WY2017. | It appears that WY2016 data may have been used to produce Figure F-9. Revise figure. | Figure has been revised for clarification | Georgia Vince, 3/8/2018 |
| 134 | FDEP | Garry Payne | Annex F | Water Quality | Greater detail needs to be added concerning the DMSTA modelling assumptions | Clarification | Please include more details/documentation concerning modelling assumptions, specifically parameters that differ from values used in CEPP. | Details and model assumptions on the hydrologic modeling conducted for the CEPP PACR are contained in the Engineering Appendix A, sub-section Annex A-2 Hydrologic Modeling which contains the Model Documentation Reports. | Jennifer Leeds, 3/1/2018 (No change made to the report.) |
| 135 | FDEP | Garry Payne | Annex F | Water Quality | Table F-4 of 2017 AGM for station CA324 has an "N/A", but there are a number of samples (6) above the minimum required. Please clarify why the value is shown as N/A or revise the table. | Clarification | Please check the values described. Also need to footnote meaning /cause for N/A values. Should also acknowledge that this Table was taken from the SFER. | Footnote has been updated for clarification | Georgia Vince, 3/8/2018 |
| 136 | FDEP | Garry Payne | Annex F | Water Quality | Table F-5. First column in Table indicates that all listed stations are Impacted, which is not correct. | Clarification | Either delete "Network" column from table or correctly designate Impacted and Unimpacted networks. | Table has been revised to reflect impacted and unimpacted networks | Jennifer Leeds, 3/1/2018 |
| 137 | FDEP | Garry Payne | Annex B | General/Other | In Table B-6, no units are provided for the Table. | Clarification | Please add appropriate units to Table or caption. | Units added to Table B-6 | Brenda Mills, 3/5/2018 |
| 138 | SFWMD | Nenad Iricanin | Appendix C.1 | Water Quality | Top of Page<br>Making statements such as background concentrations in Lake Okeechobee were less than 0.04 mg/L needs to be supported with a reference. | When making these types of statements that cannot be empirically supported due to lack of data and may be a result of statistical or numerical modeling with high uncertainty, it is important to provide the reference of the source material. | Provide reference. | Reference added to the statement. | Jamie Childers, 2/26/2018 |
| 139 | SFWMD | Nenad Iricanin | Appendix C.1 | Water Quality | Second paragraph starting with "Nitrogen is generally"<br>The middle of the paragraph implies that excess nutrients are the cause of damaging discharges that contribute to depressed DO conditions. The sentence should state that excess nutrients associated with damaging discharges contribute to depressed oxygen conditions. | The primary influence on oxygen production may be associated with light attenuation in the estuary due to high dissolved organic matter associated with freshwater runoff and potentially the increased turbidity as a result of flocculation from freshwater/marine water interaction. These factors and low salinities will affect the health of seagrasses which will ultimately affect DO production. | Re-phrase sentence. | Document has been updated | Georgia Vince, 3/6/2018 |
| 140 | SFWMD | Nenad Iricanin | Appendix C.1 | Water Quality | While the Caloosahatchee and St. Lucie estuaries are nitrogen-limited, so are portions of Florida Bay. | The discussion of nutrient limitation for Florida Bay is omitted. | Should add Florida Bay's nutrient limitation | Document has been updated | Georgia Vince, 3/6/2018 |
| 141 | SFWMD | Nenad Iricanin | Appendix C.1 | Water Quality | Emission of Hg from natural sources is estimated as ~5000 metric tons per year (Pirrone et al 2010) while anthropogenic sources are estimated at ~2000 metric tons per year (Pirrone et al 2010; Krabbenhoft and Sunderland 2013). Volcanic (and geothermal sources) account of 2% of the natural emission while biomass burning (e.g. wildfires) account of 13% (Pirrone et al 2010). It seems that wildfires should be listed as a natural source of Hg emission. | By not including wildfires as an important natural source of Hg, the authors are missing an important sources whose occurrence is more frequent than volcanic eruptions. | Should consider entering wildfire as an important natural source. | Document has been updated | Georgia Vince, 3/6/2018 |
| 142 | SFWMD | Nenad Iricanin | Appendix C.1 | Water Quality | Figure C.1-8 shows some important information that is not presented in the discussion. While the change in concentrations of TP are correct for WCA3 inflows and SRS, the decrease in FWM TP for the WCA3 inflows is statistically different. The observed decrease for SRS is not. | Statistically, the observed decrease in FWM at SRS over time is statistically not different from "no change" in TP concentrations. That can be interpreted two ways: 1) the effort to reduce TP at SRS needs to improve; or 2) we have reached zone of diminishing returns where further decreases in inflow concentrations to WCA3 will result in very low changes at the SRS structures. Are we at equilibrium? | That's a management decision. | Project team reviewed and discussed with commenter and decided that no change to the document was necessary. | Leslye Waugh, 3/7/2018 (No change made to the report.) |
| 143 | SFWMD | Nenad Iricanin | Appendix C.1 | Water Quality | Need to be careful when using terms that indicate absolute certainty. Achieving TMDL targets is expected to improve dissolved oxygen conditions and reduce incident algal blooms. There is not 100% certainty. Using terms such as "will result" or "will improve" suggest that we know this is a fact. We need to be consistent in our assessment of how certain we are that by achieving a modeled target that expected results will occur. | When dealing with results from any numeric or statistical model, it is important that we recognize that if we meet modeling conditions, these things should occur; they a probability that they will not occur as predicted. | Try to maintain consistency | Document has been updated | Georgia Vince, 3/6/2018 |
| 144 | SFWMD | Nenad Iricanin | Appendix C.2 | Water Quality | Ibid | Ibid | Ibid | Project team will review the document for consistency. | Leslye Waugh, 3/7/2018 |
| 145 | SFWMD | Nenad Iricanin | Appendix C.2 | Water Quality | Last paragraph is not comprehensible. It seems like it is a composition of dependent clauses. | Paragraph is hard to read and understand | Please consider re-writing. | Paragraph rewritten to clarify the intent | Jennifer Leeds, 3/2/2018 |
| 146 | SFWMD | Nenad Iricanin | Appendix C.2 | Water Quality | This section discusses the expected benefits to the southern estuaries as a result of CEPP PACR. It states that minor effects would be expected for salinity while other conditions would similar to the FWO. However, the FWO section (Appendix C.1) does not have a discussion of water quality in southern estuaries. | There appears nothing that would support this statement in C.2.1. | If the information for FWO is not in the water quality section in Appendix C.1, then pleas provide a reference where the reader can turn to see this differences. | Added a reference at the end of the statement to Appendix G - Environmental Benefits Model | Jennifer Leeds, 3/2/2018 |
| 147 | SFWMD | Nenad Iricanin | Annex D | Water Quality | OPO4 is technically orthophosphate not ortho phosphorus. Another name for this form of P is reactive phosphate or P. Orthophosphate has a very simple chemical formula PO4. The OPO4 suggests five oxygen atoms bonded to one P. | Important to use correct formula and name. | | Text revised based on recommendation | Jennifer Leeds, 3/2/2018 |

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| 148 | SFWMD | Nenad Iricanin | Annex D | Water Quality | It is important to note that Ca, Na, SO4, PO4, Cl (which is missing from list) are not acronyms but formulas. TN, OPO4, TP, TFe, TS, MeHg, THg, etc. are acronyms. | Need to distinguish between acronyms and formulas. | | Additional effects analysis that is typically conducted on the TSP are included in C.2.2 and not necessary in C.2.1 | Jennifer Leeds, 3/2/2018 |
| 149 | SFWMD | Nenad Iricanin | Annex D | Water Quality | I believe that LOI (Loss on Ignition) or LOC (Loss on Combustion) is actually being measured and translated to organic matter content. | The organic matter listed as parameter should be supplemented with parameter name LOI or LOC whichever is the method used to determine organic matter content. | | The sampling method will be further defined during permitting for each component prior to operations. The prefered sampling methods can be determined at that time. | Leslye Waugh, 3/7/2018 (No change made to the report.) |
| 150 | SFWMD | Nenad Iricanin | Annex D | Water Quality | Use of ACF or other autosamplers for collecting water quality samples may not be the preferred method for monitoring in the near future. | Need to be careful that we don't corner ourselves with using a method for collecting water quality samples that is not cost effective. | | The sampling method will be further defined during permitting for each component prior to operations. The prefered sampling methods can be determined at that time. | Leslye Waugh, 2/28/2018 (No change made to the report.) |
| 151 | SFWMD | Nenad Iricanin | Annex F | Water Quality | There is a discrepancy between the map showing trends for WCA3 marsh stations and Table F-5. The map show different trends than the table. This is due to different statistical methods used in the trend analyses. The map shows the trend in annual TP concentrations for WCA3 stations as determined using a Kendall's tau-b analysis for WY2005-WY2017. The table uses a correlation analysis (Pearson Correlation and Spearman's Correlation) to determine trends. The results from these two analyses are different than the Kendall tau-b. For the data set used (based on number of observations) the Kendall tau-b trend is preferred due to its robustness. | Observed difference between map and table needs to be addressed. | A suggested modification for this section of Annex F is provided with this Excel file. The modification contains suggest changes to the narrative and table with the additional removal of Figures F-11 and F-12. | Tables and figures have been revised with the suggested changes | Jennifer Leeds, 3/1/2018 |
| 152 | SFWMD | Marcy Zehnder | Section 6 | General/Other | Edit to correct ambiguous and/or incorrect information | Information is incorrect and/or ambiguous | Edit Section 6.1.2.1 to clarify ; edit Section 6.1.2.2 to correct; see copy labeled "6.1.2 - CORRECTIONS" | reviewed and revisions made to section | Leslye Waugh, 2/27/2018 |
| 153 | SFWMD | Marcy Zehnder | Section 6 | General/Other | Delete information regarding CEPP south of the red line | Information is incorrect and/or unnecessary | Edit 6.4.1 to delete unnecessary information; see copy labeled "6.4.1 - CORRECTION" | concur, revised per suggested edit | Leslye Waugh, 2/27/2018 |
| 154 | SFWMD | Marcy Zehnder | Appendix D | General/Other | Correct inaccuracies in Appendix D Table of Contents | Information is incorrect | Amend various items on the Appendix D Table of Contents; see copy labeled "APPENDIX D TABLE OF CONTENTS - CORRECTIONS" | Concur. Corrections have been made. | Jamie Childers, 2/28/2018 |
| 155 | SFWMD | Marcy Zehnder | Appendix D | General/Other | Correct to delete and/or correct unnecessary, incorrect or ambiguous information | Information is incorrect and/or ambiguous | Amend contents of D.4.1.2 to delete and/or correct; see copy labeled "D.4.1.2 - CORRECTIONS" | Concur. Corrections have been made. | Jamie Childers, 2/27/2018 |
| 156 | SFWMD | Marcy Zehnder | Appendix D | General/Other | Delete incorrect information regarding MRTA and CEPP south of the red line | Information is incorrect and/or unnecessary | Edit to delete incorrect information regarding MRTA and/or unnecessary information for CEPP south of the red line; see copy labeled "D.5.1 - CORRECTIONS" | Concur. Corrections have been made. | Jamie Childers, 2/27/2018 |
| 157 | SFWMD | Marcy Zehnder | Appendix D | General/Other | Correct to delete and/or correct unnecessary, incorrect, poorly written and/or ambiguous information | Information is incorrect and/or ambiguous | Amend title and contents of D.5.2, D.5.2.1 and D.5.2.2 to delete and/or correct; see copy labeled "D.5.2 - CORRECTIONS" | Concur. Corrections have been made. | Jamie Childers, 2/27/2018 |
| 158 | SFWMD | Marcy Zehnder | Appendix D | General/Other | Correct inaccuracies and delete information regarding areas south of the red line | Information is incorrect and/or unnecessary | Amend D.5.3 to delete and/or correct incorrect information or information south of the red line; see copy labeled "D.5.3 - CORRECTIONS" | Concur. Corrections have been made. | Jamie Childers, 2/28/2018 |
| 159 | SFWMD | Marcy Zehnder | Appendix D | General/Other | Correct incorrect information | Information is incorrect | Correct D.6.2; see copy labeled "D.6.2 - CORRECTIONS" | Concur. Corrections have been made. | Jamie Childers, 2/28/2018 |
| 160 | SFWMD | Marcy Zehnder | Appendix D | General/Other | Correct and clarify information; delete information regarding CEPP south of the red line | Information is incorrect and/or unnecessary | Amend to clarify and delete CEPP south of red line; see copy labeled "D.7 - CORRECTIONS" | Concur. Corrections have been made. | Jamie Childers, 2/28/2018 |
| 161 | SFWMD | Marcy Zehnder | Appendix D | General/Other | Delete all of Section D.10 - information regarding CEPP south of the red line | Information is incorrect and/or unnecessary | Delete all of D.10, which only contains information for CEPP south of the red line; see copy labeled "D.10 - CORRECTIONS" | Concur. Corrections have been made. | Jamie Childers, 2/28/2018 |
| 162 | SFWMD | Marcy Zehnder | Appendix D | General/Other | Clarify information regarding CEPP PACR and delete information regarding CEPP south of the red line | Information is incorrect and/or unnecessary | Amend D.20 to clarify and delete any information regarding CEPP south of the red line; see copy labeled "D.20 - CORRECTIONS" | Concur. Corrections have been made. | Jamie Childers, 2/28/2018 |
| 163 | SFWMD | Marcy Zehnder | Appendix D | General/Other | Amend to delete information regarding FEB A-1, which is not part of PACR | Information is incorrect and/or unnecessary | Amend D.22 to clarify and delete any information regarding FEB A-1, which is not part of PACR; see copy labeled "D.22 - CORRECTIONS" | Concur. Corrections have been made. | Jamie Childers, 2/28/2018 |
| 164 | SFWMD | Marcy Zehnder | Appendix D | General/Other | Correct State owned acres | Information is incorrect | Correct D.25.4; see copy labeled "D.25.4 - CORRECTION" | Concur. Corrections have been made. | Jamie Childers, 2/28/2018 |
| 165 | SFWMD | Marcy Zehnder | Appendix D | General/Other | Delete information regarding CEPP south of the red line | Information is incorrect and/or unnecessary | Amend to delete information regarding CEPP south of the red line; see copy labeled "D.26 - CORRECTION" | Concur. Corrections have been made. | Jamie Childers, 2/28/2018 |
| 166 | SFWMD | Karin Smith | Section 2 | General/Other | Land use is fixed since development in the CEPP PACR benefit area (natural areas) is prohibited and potential increases to public water supply (PWS) allocations in general, have been capped by state rule ~~at the 2006 actual withdrawals (per the Lower East Coast [LEC] water supply plan).~~ | the wording is not accurate | re-word as follows: … have been capped by state rule which, in general, limits consumptive use withdrawals that induce drawdowns<br><br>from the Everglades system to actual use as of April 1, 2006 | Concur. Suggested revision has been made. | Dennis Barnett, 3/1/2018 |
| 167 | SFWMD | Karin Smith | Appendix C.1 | Modeling | Existing Condition: PWS demand in 2016 was 817 MGD. Table says 802 MGD | the stated value is incorrect | correct number | Document has been updated (Section 2 and C.1) | Georgia Vince, 3/6/2018 |

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| 168 | SFWMD | Karin Smith | Section 2 | General/Other | The section describes 2 miles of slurry wall and then 3 additional miles at 36 feet deep. But the last sentence says the model assumed a 4 mile wall, based on planned future expansions. | the numbers don't add up | revise wording to explain why 4 miles was used when there is already 5 miles built | The modeling assumptions are based on the original plan which was to build a 4-mile slurry wall. The modeling assumptions are consistent with CEPP. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 169 | SFWMD | Karin Smith | Section 4 | Modeling | The objective, 'provide freshwater flow to the central Everglades' includes salt water intrusion but this issue is not discussed in the narrative | not a complete discussion, is this surficial aquifer intrusion or ENP/Florida Bay intrusion? | add wording on whether the alternatives improved water for salt water intrusion | Provided statement regarding project will help mitigate the effects of saltwater intrusion. | Georgia Vince, 3/7/2018 |
| 170 | SFWMD | Karin Smith | Section 5 | Modeling | In both LECSA1 and LECSA3 it has the statement "An increased demand of ## million gallons per day is provided for LECSA'. This wording sounds like there is increased demand and it's being met by additional water from CEPP PACR. I did not think there was increased demand in these runs. | the wording leads to confusion | revise wording to state that an additional ## MGD is avaialable to meet demenad | revised wording in the tables as recommended. | Linda Rivard, 3/6/2018 |
| 171 | SFWMD | Karin Smith | Section 5 | Modeling | same comment as above for Table 5.1-4 | the wording leads to confusion | revise wording to state that an additional ## MGD is avaialable to meet demenad | revised wording in the tables as recommended. | Linda Rivard, 3/6/2018 |
| 172 | SFWMD | Karin Smith | Section 6 | General/Other | Why do Tables 5.1-4 and 5.2-4 not include the EAA as a geographic region and discuss the water supply improvements of the TSP that are mentioned under 6.1.1 Plan Features? | incomplete discussion | If applicable, add EAA and discuss water supply benefits of TSP | This project is not specifically formulated for water supply as a goal or objective. | Leslye Waugh, 2/27/2018 |
| 173 | SFWMD | Karin Smith | Section 6 | Modeling | Why is there no statement or explanation for the negative numbers in the 90% comparison? | incomplete discussion to justify saying in other places in the document that there is no elimination or transfer of existing legal sources of water supply | explain negative numbers in 90% column | Explanation added to Section 6.9.1.1 | Jennifer Leeds, 3/5/2018 |
| 174 | SFWMD | Karin Smith | Annex B | Policy | The narrative asserts that the the levels of service for flood protection are not reduced in the tribal areas. | according to Annex B.2.2.2 the flood analysis looked at Lake O, EAA, Everglades Protective Levees and areas east of those levees. It does not indicate any analysis on the western side of WCA 3A where the tribal lands are or Broward County where the Seminole headquarters are. So what is the basis of the assertion of no flood LOS decrease on tribal lands? | clarify if an analysis was done for tribal areas | For Broward County see groundwater difference maps and seepage maps. Additional analysis was added for the west side of WCA 3A (WCA3_3A-2) in Annex B. | Brenda Mills, 2/28/2018 |
| 175 | SFWMD | Karin Smith | Annex B | Modeling | the description of where the flooding potential was analyzed says 'near the L-28 Levee and STOF Big Cypress Reservation but this is not very specific compared to maps for other areas discussed earlier. No results are shown either | not able to see results that led to conclusions | provide more details | Figures were added to show the results for specific cells | Brenda Mills, 3/5/2018 |
| 176 | SFWMD | Karin Smith | Annex B | Modeling | the discussion is about improved water levels for natural areas but not on flooding in tribal residential or agrigultural areas | discussion seems incomplete | provide additional information | description was modified | Brenda Mills, 3/2/2018 |
| 177 | SFWMD | Karin Smith | Appendix A | General/Other | just an fyi that in the EAA, the groundwater is very saline due to trapped seawater. | | none | Comment Noted. This will be considered during the future PED phase of the project, when alternative potable water systems are evaluated. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 178 | SFWMD | Karin Smith | Appendix C.1 | General/Other | the text references a Yellow, Blue and Red line but does not explain them or include a map reference | missing reference? | state what map these lines can be found on | Refrenced CEPP PIR | Georgia Vince, 3/6/2018 |
| 179 | SFWMD | Karin Smith | Appendix C.1 | Policy | refers to Chapter 40E-20<br>refers to minimum flows and levels | Chapter 40E-20 was repealed in 2014<br>the correct term is now minimum flows and minimum water levels | remove reference to 40E-20 from document<br>correct MFL references to new terminology (search document for other instances) | Removed reference to the rule. | Georgia Vince, 3/7/2018 |
| 180 | SFWMD | Karin Smith | Appendix C.1 | Policy | Everglades and Loxahatchee River Watershed Restricted Allocation Area criteria missing explanation of regional water availability rule after reference. In the following sentence, the RAA criteria is not mentioned as a limiting factor | rule mentioned in multiple other places but this is the only place where the actual rule is referenced | add to sentence: … in 2007, as part of the Minimum Flow and Minimum Water Level (MFL) recovery strategies. If a utility … due to restrictions from the RAA criteria and potential impacts … | Document has been updated | Georgia Vince, 3/6/2018 |
| 181 | SFWMD | Karin Smith | Appendix C.1 | General/Other | refers to M & I uses<br>calls the surficial aquifer an 'alternative water source' | what is M & I?<br>the Surficial Aquifer System is not an alternative source | define M & I acronym<br>re-word this sentence | Document has been updated | Georgia Vince, 3/6/2018 |
| 182 | SFWMD | Karin Smith | Appendix C.1 | Modeling | says that 2nd Gen CERP projects are pending authorization but in Section C-1.3 (Pg C.1-84) it says they are authorized | conflicting information | fix as appropriate | Could only find one reference to second gen projects/No change | Georgia Vince, 3/6/2018 |
| 183 | SFWMD | Karin Smith | Appendix C.2 | General/Other | refers to Section 6.8 which I think is now 6.9 (2 places) | incorrect reference | change from 6.8 to 6.9 | Text revised based on recommendation | Jennifer Leeds, 3/2/2018 |
| 184 | SFWMD | Karin Smith | Appendix A | Modeling | It is not clear from the RSM-BN assumptions table whether the irrigation demand in the EAA is the same for ECB and FWO. If it is the same, then the 2012 sugarcane on the A-2 footprint is still assumed to be irrigated in the FWO. I thought FWO included the CEPP project as authorized which would have replaced the sugarcane with an FEB. | unclear documentation | clarify whether the water supply analysis included the reduction in irrigation demand in the EAA from removal of the sugarcane in the A-2 footprint | In the EAA, supplemental demand is assumed to be reduced as project footprint take up former production area. This is true both for the A-2 footprint in the FWO and the A-2 expansion area in the TSP. A clarifying sentence will be added to the assumptions tables. | SFWMD Modeling Team, 3/9/2018 |
| 185 | SFWMD | Karin Smith | Annex B | Policy | The dashes under the LOSA bullet appear to indicate that LECSA-2 and LECSA-3 are within LOSA, which they are not. | incorrect presentaton of information | Turn LECSA-2 and LECSA-3 into bullets rather than dashes | The dashes in front of LECSA-2and LECSA-3 have been revised to bullets | Jennifer Leeds, 3/1/2018 |
| 186 | SFWMD | Karin Smith | Annex B | Modeling | This sentence does not explain what was done: 'Quantification of water made available by the project for other water related needs is consistent with the FWO project condition as identified in the CEPP PIR' | For water made available for other water related needs, there is no narrative explaining how it was determined. According to Chapter 6.9.1.3 no water was quantified for LOSA but there was some excess capacity at times to send to the Miami and/or N New River basins (but requires LORS update). | Add details on how the water for other water related needs was analyzed | Revised text that describes method. | Brenda Mills, 3/5/2018 |
| 187 | SFWMD | Karin Smith | Annex B | General/Other | list of users of groundwater does not include landscape/recreational surface water users also misses landscape irrigation | missing use type | delete 'agricultural' before irrigation wells, add 'landscape and' before agricultural users | Revisions made to the text as suggested | Jennifer Leeds, 3/2/2018 |
| 188 | SFWMD | Karin Smith | Annex B | Modeling | 2nd paragraph describes groundwater stage increase of 0.1 to 0.5 feet. It doesn't say if those increases are all below ground and if they are above ground, why flooding is not anticipated | clarification of criteria for saying flooding is not a problem. Since FWO and C240 results are similar, was there some discussion in the original CEPP PIR that says why this level of increase from ECB does not result in flooding? | additional clarifying language | No change. The section decribes the purpose of the graphics is to understand changes in regional groundwater not to determine flooding at a specific location. | Brenda Mills, 3/5/2018 (No change to the report.) |

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| 189 | SFWMD | Karin Smith | Annex B | General/Other | The first sentence says the TSP would provide water to meet other related needs and the last statement says that no water was quantified for other water related needs. Which is it? It is inconsistent with other areas of the document (Annex B.2.3 and 6.9.1.3, for example) | It mentions canals and LOSA water level benefits from the excess water but since it says no quantified water for LOSA, this seems contradictory. | provide clear and consistent language throughout the documents | Altered paragraph to make it clearer. | Brenda Mills, 3/5/2018 |
| 190 | SFWMD | Karin Smith | Annex B | General/Other | Again, the statements about whether there is water made available for other water related needs are confusing. | throughout the document, statements on this subject are not clear. First it says no water was quantified for LOSA and then it says that additional water may be available. | provide clear and consistent language throughout the documents | Altered text to clarify no water was quantified for other water related needs | Brenda Mills, 3/5/2018 |
| 191 | SFWMD | Carmela Bedregal | Section 2 | Policy | Table 2-1, the report indicates in Water Quality (Sections C-1-1-12 and C.1.3.12) "… and associated basin management action plans within the study area" This applies to the Lake Okeechobee and coastal estuaries. The approach in the Southern Everglades follows the Everglades Forever Act, the Settlement Agreement and Chapter 40E-63, F.AC., and associated planning efforts. | Ensure that the policy approach for each water is correct, as different approaches apply. | … and associated basin management action plans within the Lake Okeechobee and coastal estuaries…" | Concur. Suggested revision has been made. | Dennis Barnett, 3/1/2018 |
| 192 | SFWMD | Carmela Bedregal | Section 3 | General/Other | "…the CEPP PACR objective is to increase CEPP flows from an average annual flow of approximately 210,000 acre-feet (ac-ft) to providing a significant increase in the quantity of water flowing to the central Everglades…" instead of providing a significant increase, it seems that a number, same as 210,000 ac-feet is needed. | A qualitative statement may not sufficiently communicate the project benefits. | "…the CEPP PACR objective is to increase CEPP flows from an average annual flow of approximately 210,000 acre-feet (ac-ft) to "***[enter how many acre feet are expected]*** in the quantity of water flowing to the central Everglades…". | Concur. The following text was added in Section 3.1, at the end of the 2nd paragraph on page 3-1: "The CEPP PIR (page ES-6) stated that CEPP would provide approximately 210,000 ac-ft per year of additional clean freshwater to the central portion of the Everglades, which would be represent about two-thirds of the estimated additional flow anticipated from CERP. Accordingly, the target flow would be in the general range of 300,000 ac-ft or greater. More information on this CERP goal is provided in Section 4.1.1." | Dennis Barnett, 3/5/2018 |
| 193 | SFWMD | Carmela Bedregal | Section 3 | General/Other | The map does not present the LOK and coastal estuaries as part of the Study Area. | Inaccurate. | Replace the map. | Figure 3-1 to depict the study area is the same as Figure 1-7 in the Introduction section of the report. The figure is consistent with depictions of the CEPP study area in the CEPP PIR. Lake Okeechobeee and the Northern Estuaries are clearly depicted on Figure 3-1 and discussed in the text as part of the study area. No figure change is considered to be necessary. | Dennis Barnett, 3/5/2018 (No change made to the report.) |
| 194 | SFWMD | Carmela Bedregal | Section 3 | General/Other | The description for Alternative C360C is very general and could be expanded a little bit. | Prevent additonal questions by providing additional detail. | " | The Alternative C360C is the same configuration as R360C with the addition of operational flexability. Reference to Section 3.5.3 was added to the description. | Georgia Vince, 3/6/2018 |
| 195 | SFWMD | Carmela Bedregal | Section 5 | General/Other | The FWO for Lake Okeechobee indicates "The BMAP is currently under development via a public stakeholder driven process." The first phase of the BMAP is currently under the first implementation phase and additional detail is available in the Northern Everglades and Estuaries Protection Program statutes including long-term expectations. | Inaccurate. | "The first phase of the BMAP is currently under the first implementation phase. [Clarify the long-term schedule of implementation and expectations]." | The referenced text (two occurences on page 3-15) was information copied directly from and attributed to the C&SF Comprehensive Review Study ("Yellow Book") in regard to a conceptual plan for an EAA Reservoir. As a direct quote from the Yellow Book, it would not be appropriate to change the language. | Dennis Barnett, 3/3/2018 (No change made to the report.) |
| 196 | SFWMD | Carmela Bedregal | Section 5 | General/Other | Same comment as for page 5-13. | Same comment as for page 5-13. | Same comment as for page 5-13. | The referenced text (two occurences on page 3-15) was information copied directly from and attributed to the C&SF Comprehensive Review Study ("Yellow Book") in regard to a conceptual plan for an EAA Reservoir. As a direct quote from the Yellow Book, it would not be appropriate to change the language. | Dennis Barnett, 3/3/2018 (No change made to the report.) |
| 197 | SFWMD | Carmela Bedregal | Appendix C.1 | Water Quality | The report states: "Nitrogen is generally not considered to be a problem within the Everglades landscape. The concentration of total nitrogen (TN) varies from about 2.2 mg/l in WCA 1 to around 0.85 mg/L in pristine areas of ENP. Lake Okeechobee TN concentration is presently around 1.7 mg/l. In the CRE, the St. Lucie River and Estuary, and portions of Florida Bay, excess nutrients cause damaging discharges that contribute to depressed oxygen conditions. The Caloosahatchee River and Estuary and St. Lucie River and Estuary are generally considered to be nitrogen-limited with inorganic forms of nitrogen such as nitrate+nitrite having an impact on the ecosystem. The concentration of nitrogen in discharges from the C-43 and C-44 canals into the Northern Estuaries is approximately 1.5 mg/l with approximately 0.5 mg/l provided by the highly bioavailable inorganic forms such as nitrate+nitrite and ammonia." Consider indicating the bioavailable fraction in the Lake Okeechobee inflows, as this will be fraction to be diverted away from the estuaries. | Supplement discussion of water quality to stengthen benefits of diverting peak events. | Discussing the Lake Okeechobee bioavailable fraction in inflows to the estuaries may be relevant. | Comment and text was reviewed by the project team and no additional changes were determined to be necessary. | Jennifer Leeds, 3/7/2018 (No change made to the report.) |

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| 198 | SFWMD | Carmela Bedregal | Appendix C.1 | Policy | The report states: "The SFWMD, in concert with FDEP and the Florida Department of Agriculture and Consumer Services (FDACS), have put together the Lake Okeechobee Protection Plan (LOPP), which describes the State's plan to achieve the TP loading TMDL for the lake (SFWMD 2011a)." This strategy has been supplemented with BMAP. May need update. | This strategy has been supplemented with the BMAP. May need update. | Refer to body of document. | Updated the text with the following: The Florida Department of Environmental Protection, in conjunction with the other two Coordinating Agencies for the Northern Everglades and Estuaries Protection Program (SFWMD and FDACS), have developed the Lake Okeechobee Basin Management Action Plan (BMAP). The BMAP is the watershed phosphorus control component for Lake Okeechobee, designed to achieve the total maximum daily load by improving the management of phosphorus sources within the Lake Okeechobee watershed through implementation of regulations and best management practices, continued development and continued implementation of improved best management practices, improvement and restoration of the hydrologic function of natural and managed systems, and use of alternative technologies for nutrient reduction (373.4595 (3)(b) F.S., 2016) | Jennifer Leeds, 3/5/2018 |
| 199 | SFWMD | Carmela Bedregal | Appendix C.1 | Policy | The report states: " Extensive data collection and technical analyses are near completion for the development of performance measures for the watershed's Pollutant Source Control Programs. This was a necessary first step in support of technical amendments to the District's regulatory program. The next step includes adoption of schedules, strategies and technical methodologies for fully implementing source controls and BMP programs (for non-FDACS participants), and quantitatively measuring the combined source control programs progress toward achieving water quality goals." This strategy has been revised. It needs update. | This strategy has been replaced with the BMAP. It needs update. | Refer to body of document. | Report has been updated. | Jennifer Leeds, 3/7/2018 |
| 200 | SFWMD | Carmela Bedregal | Appendix C.1 | Policy | Report discussion regarding "The State of Florida's current plan (2011 to 2013)..." may need to be updated. | The expections on loading and other references may be outdated. | Refer to FDEP Lake Okeechobee BMAP. | Text was revised with updated BMAP's and State efforts. | Jennifer Leeds, 3/8/2018 |
| 201 | SFWMD | Carmela Bedregal | Appendix C.1 | Policy | The report states: "...as a result of extensive litigation over the last 20 years between the State of Florida and Federal agencies (the Department of the Interior [DOI] and USEPA) and other parties, the State has been compelled to establish numeric criteria for TP, implement agricultural BMPs to control phosphorus discharges, and build stormwater treatment systems to ensure that water leaving the EAA and entering the WCAs meets the criteria..." May want ot clarify it is BMPs in general pursuant to a regulatory program. | Provide additional detail on the BMPs requirements. | Add "Implement BMPs to control phosphorus in discharges through a regulatory source control program with phosphorus reduction requirements as established in Chapter 40E-63, Florida Administrative Code, ... "<br><br>Also, instead of "compelled", should it be required"? BMPs are not only for agricultural sources. | Report revised as suggested. | Georgia Vince, 3/7/2018 |
| 202 | SFWMD | Carmela Bedregal | Appendix C.2 | General/Other | Note that the categories in the C.2.1 and C.2.2 are not necessarily the same. | | | Additional effects analysis that is typically conducted on the TSP are included in C.2.2 and not necessary in C.2.1 | Jennifer Leeds, 3/2/2018 |
| 203 | SFWMD | Carmela Bedregal | Appendix C.2 | Water Quality | Regarding effect on water quality in the EAA, the report states: "Relative to the FWO, the EAA nutrient loads would be similar to the FWO. Nutrient loads from existing conditions should decrease from the conversion of agricultural practices from the A-2 lands as well as other lands that will no longer be farmed in when the CEPP PACR is implemented." A question that may be received from the public is: if additional inflows from Lake Okeechobee occur at peak flow conditions, when TP levels may be at its highest, indirect effects on the EAA Works of the District (e.g., increased sediments, etc) or on the water quality of agricultural irrigation water may occur. The same may apply if water quality from Lake Okeechobee does not improve as a result of the current initiatives. | Verify ECP performance. | Indicate the thresholds being considered for modeling for th enew inflows to the Works of the District in the EAA. | The modeling assumptions for water quality for both Lake Okeechobee and the EAA irrigation water are unchanged in this plan when compared to the assumptions used in Restoration Strategies and CEPP. Just as in CEPP, the majority of the new water is delivered "off-peak" limiting the risks identified in this comment. Additionally, with the A2 storage reservoir in place, the direct impact of increased sediments and on-peak discharges to the A1-FEB and Stash will be reduced. | Georgia Vince, 3/6/2018 |
| 204 | SFWMD | Carmela Bedregal | Annex D | General/Other | The report refers to an Area of Influence and the Study Area. The map presented is the same as in Section 3.1 of the main report in page 3-2. May need to clarify how the different areas relate to each other or use a consistent term. | Clarity. | Clarify how the different areas relate to each other or use a consistent term. | The Study Area map contains the Areas of Influence referenced. Text was added for clarification. | Georgia Vince, 3/7/2018 |
| 205 | SFWMD | Carmela Bedregal | Annex D | Water Quality | The report states: "As a placeholder, it is suggested that a total of four structures (EAA inflows and outflows) will be needed. These structures will be monitored weekly for specific conductance, pH, DO, temperature and TP, TN, and with an autosampler for TP as well. A single STA discharge will be monitored for an extensive parameter list and with an autosampler as well. A structure moving water from the reservoir to the STA will be monitored using only grab samples. An STA end structure will also be monitored. The monitoring costs for the CEPP PACR were assumed to be consistent with CEPP. Therefore, estimated annual costs for monitoring this component are $261,879 which includes vehicle costs, staff time, and supplies, as well as analytical costs. Capital costs were estimated at $170,625 in CEPP and can be assumed the same for the CEPP PACR. Table D.2-1 describes the new structures for surface water monitoring of the A-2 Reservoir and A-2 STA." OPO4 and TDP are monitored at the "Reservoir to EAA location", but not at the "EAA Exchange Stations". Please add monitoring of TDP or OPO4 (the same as what is monitored at the S3/S354 Miami Canal station) at the inflow EAA Exchange Stations. | Clarity. | Please add TDP and/or OPO4 to the EAA Exchange Stations in Table D.2-1. | More detailed WQ monitoring will be evaluated during the environmental permitting process. | Leslye Waugh, 3/7/2018 (No change made to the report.) |

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| 206 | SFWMD | Carmela Bedregal | Section 9 | General/Other | Under "Discipline" for me, Carmela Bedregal, should be "Engineer". It is blank. | Completeness | | Concur, suggested change was made. | Mike Albert, 3/2/2018 |
| 207 | SFWMD | Jon Madden | Section 6 | Policy | The WERP project description appears prescriptive and innacurate. Uncertainties remain on specific flow paths, so a more general description is advised. | STOF has expressed concern over features which discharge water from West Feeder Canal into their reservation's native areas. This description does not align with current WERP alternatives. | Suggest updating WERP description as follows: "...to re-establish sheetflow from the West Feeder Canal Basin ~~across the Big Cypress Seminole Indian Reservation and~~ through historic overland flow paths including existing cypress sloughs into Big Cypress Seminole Indian Reservation and Big Cypress National Preserve all while maintaining..." | Concur, revised per suggested edit. | Leslye Waugh, 2/27/2018 |
| 208 | SFWMD | Jon Madden | Section 6 | Water Quality | Table 6-4 Water Quality "Past Actions" or "Present Actions" do not recognize source controls and construction of storage and treatment facilities to date to address water quality. | The District and State of Florida have made significant investments in resources, land acquisition as well as construction and maintenance of facilities, which is not reflected in past or present actions in this table. | Include, within "Past Actions" or "Present Actions" as appropriate, high level language previously communicated by the District in many forums and publications summarizing actions to improve water quality, including source control programs, treatment facilities construction and operation, and scientific research. | The table is consistent with CEPP PIR and will remain as-is. | Leslye Waugh, 2/27/2018 (No change mage to the report.) |
| 209 | SFWMD | Jon Madden | Appendix C.1 | Water Quality | The following statement does not reflect variability of TP concentrations within the natural system: "Within the remnant Everglades, the background phosphorus concentration in surface waters does not exceed 0.006 mg/l TP." | This statement potentially sets misguided expectations for TP concentrations in the Eveglades marsh by implying all times and all locations should "not exceed 0.006 mg/l TP." | Suggest modifying the text similar to: "Within the remnant Everglades, the background phosphorus concentration in surface waters ~~does not exceed~~ has been quantified as 0.006 mg/l TP or less, with natural spatial and temporal variability." | Revisions made to the text as suggested | Georgia Vince, 3/8/2018 |
| 210 | SFWMD | Jon Madden | Appendix C.1 | Water Quality | It is not clear what is meant by "S-9 basin". | It appears that this section should be referencing either the S-9 pump station or the C-11W basin which it serves. | Clarify the area being referenced as "S-9 basin". | S-9 was corrected to C-11 basin. | Georgia Vince, 3/7/2018 |
| 211 | SFWMD | Jon Madden | Appendix C.1 | Water Quality | It is not clear what is meant by "S-9 basin". | It appears that this section should be referencing either the S-9 pump station or the C-11W basin which it serves. | Clarify the area being referenced as "S-9 basin". | S-9 was corrected to C-11 basin. | Georgia Vince, 3/7/2018 |
| 212 | SFWMD | Jon Madden | Appendix C.2 | Water Quality | This section describes a 29% increase in nutrient loading "relative to the FWO condition as a direct result of the increase in hydrologic loading", but the hydrologic section C.2.1.7.7 indicates only a 10% increase in average annual combined flow compared to teh FWO. | Is it possible these two sections comparing to different FWO conditions (CEPP included?) or are they simply referencing different grouping of inflows to the WCAs? If WCA 2A inflows are reduced, offsetting the WCA 3A increase in inflows, then why do Overland Vector maps in Annex F appear to show higher flow in WCA 2A? | Confirm that CEPP is included in FWO for both comparisons and clarify the WCA 3A and WCA 2A inflows described in each, if necessary. It is not clear why WCA 2A flows are included in the WCA 3 Hydrology section. Consider clarifying the hydrologic increase/decrease for each WCA in the hydrologic section, since that is how the nutrient loading is presented inthe WQ section. | Text was revised to be consistent with descriptions in Annex F. | Jennifer Leeds, 3/8/2018 |
| 213 | SFWMD | Jon Madden | Appendix C.2 | Policy | Refer to comment on page 6-22 | | | All comments from Section 6 have been addressed | Jennifer Leeds, 3/2/2018 |
| 214 | SFWMD | Jon Madden | Appendix C.2 | Water Quality | Refer to comment on page 6-27 | | | All comments from Section 6 have been addressed | Jennifer Leeds, 3/2/2018 |
| 215 | SFWMD | Jon Madden | Annex F | Water Quality | What is the rationale for Annex F addressing only WCA 3 and ENP, though overland Vector maps appear to indicate changes within WCA 2A. | The PACR provides glimpses of changes within WCA 2A, but may not address these to the satisfaction of an interested reader. | Where applicable throughout the report (for example in the introduction to Annex F) describe the relative significance of changes within WCA 2A and explain the focus on WCA 3A and ENP. | The study area for the CEPP PACR is described in Section 1 of the report which defines the term "greater everglades" in the CEPP PACR as WCA 3 and ENP. Benefits to WCA 2A were realized in the FWO with CEPP in place. Environmental effects from the execution of the CEPP PACR would be greater than those evaluated in the CEPP. The largest effects would occur in the Northern Estuaries, and areas immediately south of the EAA. | Jennifer Leeds, 3/1/2018 (No change made to the report.) |
| 216 | SFWMD | Jon Madden | Annex F | Water Quality | Recognize that two of the five WCA 3A impacted stations have transitioned to unimpacted. | Only describing the three remaining impacted stations ignores progress made thus far in improving conditions at the TP Rule stations. | Revise similar to as follows: In WCA 3A, five marsh stations were originally identified as impacted based upon elevated soil phosphorus and water column TP concentrations; of these, three marsh stations (CA324, CA35, and CA36) remain impacted. | Text revised based on recommendation | Jennifer Leeds, 3/1/2018 |
| 217 | SFWMD | Jon Madden | Annex F | Water Quality | The intent of arrow on Figure F-14 is unclear. | The arrow in the figure is captioned to "show effect of increased flows", but points to an area on the figure where the C240A and FWO are virtually identical. | Clarify intent by editing the figure's "Note" and/or better indicating the separation between FWO/C240A and the ECB, if that is the intent. | Figure has been revised for clarification | Georgia Vince, 3/8/2018 |
| 218 | SFWMD | Kevin Snell | Appendix A/Appendix B | Engineering | Localized dewatering is referenced in this report for construction of the structures and pump station. Has overall site water management been considered as part of this plan? Muck stripping, drilling/blasting and various components of the embankment construction are typically performed in a dry condition. This report does not seem to include any reference to site-wide dewatering. Appropriate management of the water is believed to be critical to the success and timing of the proposed construction. | | | During the future PED phase of the project, a preliminary dewatering plan will be deveoped for each of the major construction contracts/ design packages of the project. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 219 | SFWMD | Kevin Snell | Appendix A | Engineering | It may have been referenced somewhere in the report, but I was unable to locate any reference to the stockpiled A1 FEB processed rock being used for the A2 Reservoir. Will this material be transported and used in the A2 project? | | | A discussion about the use of the stockpiled processed rock at the A-1 FEB site as fill material for the EAA Reservoir project has been added to Section A.7.6 as well as Appendix B. | Raymond Sciortino, 3/9/2018 |

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| 220 | SFWMD | Kevin Snell | Appendix A | Engineering | Not being aware of the topography within the project limits, have considerations been made to level the STA lands? Understanding the cost, the benefits typically create additional effective treatment area, eliminate the need for internal levees and prevent short-circuiting of flows. | | | The overall site plan for the project (included in Annex C-1) calls for the backfilling of all east-west from ditches within the footprint of the A-2 STA. However, leveling of the land within the footprint of the A-2 STA has not been considered yet. The leveling of the A-2 STA will be considered during the future PED phase of the project. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 221 | SFWMD | Kevin Snell | Appendix A | Engineering | Is it possible that the function of the C9 & C10 Structures be combined into one structure if it were to be relocated to the southeast corner of the A2 Reservoir site and operated in conjunction with G720? | | | The pros and cons associated with the elimination/addition of proposed structures as well as new uses for existing structures will be considered during the future PED phase of the project. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 222 | SFWMD | Kevin Snell | Appendix A | Engineering | Understanding that the WSE is not controlled by pumps, is there ever a scenario where the District might want to/could inflow directly from the Inflow/Outflow Canal into Cell 3 of the STA, instead of having to pump it through the reservoir? Is there a need for a structure which would gravity connect the Inflow/Outflow Canal to Cell 3? Also, in a pumped scenario, is there a need to have a structure that gravity connects the STA 3/4 Inflow Canal to Cell 4 of the A-2 STA? | | | See response to Comment #115. As with Structure C-1, there is a low probability that the stage at any given time in the A-2 Reservoir Inflow-Outflow Canal will be high enough to provide gravity inflow through a gated culvert to Cell 3 or any other cell within the A-2 STA. However, considering that the stages in the STA 3/4 Inflow Canal would be much higher than the stages in the A-2 Reservoir Inflow-Outflow Canal, the STA 3/4 Inflow Canal could be used to provide gravity inflow to Cell 4 or any other cell within the A-2 STA. A discussion of the possibility of revisions to the TSP features during the future PED phase of the project (including the addition of a gated culvert to allow for gravity inflow to the A-2 STA from the STA 3/4 Inflow Canal) has been added to the end of Section A.1. | Raymond Sciortino, 3/8/2018 |
| 223 | SFWMD | Kevin Snell | Appendix A/Appendix B | Engineering | Instead of stockpiling excess muck material in a widened levee section, would it not be more cost effective to spread the organic material into low areas or into remnant agricultural canals/ditches? It would eliminate O&M costs (mowing/washout repair) over the project's lifecycle? | | | During the future PED phase of the project, a preliminary muck disposal plan will be deveoped for each of the major construction contracts/ design packages of the project. The plan may include the muck disposal recommendations provided in your comment. For the Bolles Canal Conveyance Improvments project, a large quantitiy of muck was disposed of by piling it along the boundary of the project site so that it could be taken by farmers for use in their adjacent farm fields. Perhaps for the EAA Reservoir project, a portion of the muck could be transfered to the famrers for use in the adjacent farm fields to the north of the project site. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 224 | SFWMD | Kevin Snell | Appendix A | Engineering | Seepage calculations have been done for the overall reservoir. However, I was unable to find an operating range for the Inlow/Outflow Canal. Has seepage from this canal into the adjacent agricultural lands to the north been considered? | | | A discussion of the seepage management and seepage impact of the project has been added to Section A.9. | Raymond Sciortino, 3/9/2018 |
| 225 | SFWMD | Kevin Snell | Appendix A/Appendix B | Engineering | It's assumed that the cut/fill balance calculations have been used to generate the borrow/embankment dimensions for the X-sections, correct? | | | That is correct. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 226 | SFWMD | Kevin Snell | Appendix A | Engineering | Presently, there are several FDOT permitted culvert crossings under US 27 and adjacent to the A1 FEB (including 2 concrete double-box culverts). Have any considerations been made to utilize the A1 FEB's north/east seepage canals and the existing box culverts under US 27 to convey flows to/from the North New River Canal? | | | As shown in Typical Section G in Annex C-1, the TSP includes modifying the portion of the existing A-1 FEB seepage canal along the north side of the A-1 FEB, so that it will be part of the A-2 Reservoir Inflow-Outflow Canal and no longer part of or connected to the A-1 FEB seepage canal. During the future PED phase of the project, the existing box culvert that crosses under U.S. Highway 27 and connects to the NNR Canal near the northeast corner of the A-1 FEB will be surveyed and inspected to determine if the condition, size, inverts and location of the culvert are suitable for connecting this existing culvert to the A-2 Reservoir Inflow-Outflow Canal and using it in lieu of constructing Bridges B-2 and B-3, while still providing the required conveyance capacity with an acceptable level of headloss. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 227 | SFWMD | Kevin Snell | Appendix A | Engineering | Have the US 27 FDOT culverts been considered as a conveyance to facilitate temporary construction dewatering activities? | | | During the future PED phase of the project, a preliminary dewatering plan will be developed for each of the major construction contracts/ design packages of the project. The use of these existing culverts which cross under U.S. Highway 27 and other existing culverts and water control structures for dewatering purposes during construction will be addressed in these dewatering plans. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |

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| 228 | SFWMD | Kevin Snell | Appendix A/Appendix B | Engineering | Hydroseeding has not been successful for the District in achieving an 'acceptable stand of grass' on expansive levee/embankment slopes. Please consider sod as a cost effective alternative or leave slopes as bare rock if the overwash analysis proves feasible. | | | The typical sections included in Annex C-1, call for a 6" layer of muck to be placed on the embankment surfaces that are to be hydroseeded. This approach of muck placement on embankments followed by hydroseeding has worked fairly well for the first two phases of the SFWMD Bolles Canal Conveyance Improvement project and is the intended stabilization method for the 3rd phase of the Bolles Canal project which is currently under construction. During the future engineering design phase of the EAA Reservoir project, the merits of sodding versus hydroseeding, will be evaluated for different areas of the project to be stabilized. In addition, the final design documents will require sodding in areas immediately adjacent to water control structures and bridges in accordance with typical practice for SFWMD projects. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 229 | SFWMD | Kevin Snell | Appendix A | Engineering | Drilling, blasting (collateral fracturing) and excavating for the the embankment material through an 8' caprock layer would appear to increase the potential for seepage. Has this topic been considered in the seepage analysis? | | | See the response to Comment 118. The quantity of seepage passing beneath the proposed embankment is primarily controlled by the horizontal hydraulic conductivities of the Fort Thompson and Caloosahatchee formations. Most of the foundation seepage will enter the foundation through the borrow pits that parallel the centerline of the embankment at a distance of about 300 feet from the inside toe of the embankment. Analyses will be made during final design to determine the optimum location of the borrow pits with respect to haul distances and seepage quantities. | Liselle Vega-Cortez, 3/8/2018 (No change made to the report.) |
| 230 | ENP | Donatto Surratt | Annex F | Water Quality | Figure F4 title and caption identify flow for A-2 STA, but none is presented in the figure. | Lack of the A-2 STA flows in the figure makes it difficult validate the text statements about these flows. | Update the figure with the A2 STA flows. | A revised figure has been generated to include A2 STA flows. | Jennifer Leeds, 3/6/2018 |
| 231 | ENP | Donatto Surratt | Annex F | Water Quality | Table F3 - Include a breakdown of the contributions of flow, load, and concentration for the S9s, S190, and S140 | Breaking down the source contributions allows the reader to better understand where the excess concentrations, and hence loads are coming from, making it easier to support the projects regardings sources that are improved by the treatment features. | Update the table with a breakdown of the individual sources to WCA3A. | The intent of Table F3 is to focus on the contribution of the Reservoir. A breakdown of flows and loads does not have relevance in evaluating the effects between FWO, C240A and ECB. | Jennifer Leeds, 3/6/2018 (No change made to the report.) |
| 232 | ENP | Donatto Surratt | Annex F | Water Quality | A true trend analysis, instead of speculating about trends, should be performed for the same 12 years identified in this report. | The seasonal Kendall test is most appropriate for these data as they tend to be non-normally distributed and have seasonality. Just stating more station will have trends if this test is applied is not understandable. Performing the test removes the speculation and improves the power of this section. | Perform the seasonal Kendall trend analysis. | The analysis was updated to reflect the use of the Kendall's tau-b (τb) test for assessing trends. | Jennifer Leeds, 3/1/2018 |
| 233 | ENP | Donatto Surratt | Annex F | Water Quality | The first paragraph argues that Tamiami Trail culverts are part of the Appendix A compliance calculation when they are not. | The inclusion of Tamiami Trail culverts in the compliance calculation for Appendix A misrepresents Appendix A requirements and makes meeting compliance sound more complicated than it actually is presently. | Remove Tamiami Trail culverts from the description of compliance calculation in Appendix A. | The Tamiami Trail culverts as part of the Appendix A compliance calculation have been removed. | Jennifer Leeds, 3/6/2018 |
| 234 | ENP | Donatto Surratt | Annex F | Water Quality | Table F2 - Includes FWM TP concentrations that do not match output from the PACR DMSTA runs. | Presentation of the numbers provided in Table F2 can mislead a reviewer to believe the STAs are performing better than actually modeled for the scenarios. | Table F2 should be corrected for the FWM TP concentrations determined for the project. | The DMSTA predicted FWM TP concentrations presented in Table F-2 were calculated following the same methodology as used in USACE (2014). The only difference between the two methods is that the data presented in Table F-2 were derived from Water Year summaries while the USACE (2014) data were based on calendar years. Additionally, both methods relied on DMSTA output data. While the USACE (2014) indicated that annual FWM TP concentrations for STA-2 and STA-3/4 were adjusted using a minimum annual concentration of 12 or µg/L, the results presented in Table F-2 of the CEPP PIR (USACE 2014) are generally less than 12 ppb suggesting that the adjustment was not applied. Therefore, the summary of the DMSTA predicted FWM presented in the CEPP PACR did not apply this adjustment for consistency. Changes to the footnotes have been made | Georgia Vince, 3/7/2018 |
| 235 | ENP | Donatto Surratt | Annex D | Water Quality | Nutrient monitoring for the A2 Reservoir and STA are only for the inflow and outflow structures, but should include some internal monitoring. This internal monitoring will be invaluable when it comes time to understand dynamics within these features for the purpose of improving long-term performance. | Internal montioring of the A2 Reservoir and STA are the only means by which understanding of internal dynamics will be assessed especially if these features do not perform at the expected level. | Add internal monitoring to the A2 Reservoir and STA. | Internal monitoring to the reservoir or STA is not required as part of the monitoring plan. | Leslye Waugh, 3/7/2018 (No change made to the report.) |

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| 236 | ENP | Donatto Surratt | Annex D | Water Quality | Monitoring downstream of the new spreader canal is approximately 3.8 km away (CA35). It could take much longer than 5 years to begin seeing adverse impacts to the WCA3A marsh. An additional montioring location should be considered within 0.5 km downstream of the spreader canal. | Adversely impacting the ecology of WCA3A is not the intent of these projects and as such, monitoring local to the feature modifications, especially ones that considerably distrub the marsh, such as the construction of a spreader canal through the marsh, should occur near the feature to better understand the impact and allow time for true adaptive management. | Add montioring within 0.5 km downstream of the northwest WCA3A spreader canal. | The CEPP PACR did not revisit monitoring stations outside the proposed TSP features. No additional monitoring stations within the Everglades Protection Area are proposed at this time. | Leslye Waugh, 2/28/2018 (No change made to the report.) |
| 237 | ENP | Donatto Surratt | Annex D | Water Quality | Throughout the main document, the discussion of compliance for Shark River Slough is deferred to the subteam working on it through the TOC. However, in this section, the PACR presupposes the monitoring approach the TOC will decide on. This is inconsistent with the main body of the document and predicts an outcome from the TOC's work, which should not be done. | This comment is marked as high because based on the assumption about the TOC decision on how to monitor water quality through the Blue Shanty, no additional monitoring is proposed. However, there should be consideration of monitoring water quality within the flow path of the Blue Shanty. | Add nutrient montioring within the flow path of the Blue Shanty. | The CEPP PACR did not revisit monitoring stations outside the proposed TSP features. No additional monitoring stations within the Everglades Protection Area are proposed at this time. | Leslye Waugh, 2/28/2018 (No change made to the report.) |
| 238 | ENP | Donatto Surratt | Annex D | Water Quality | Monitoring with regards to the L-67 extension backfill is limited to sediment cores and should be expanded to vegetation at the same time scale. | Adverse and positive changese need to be documented in response to restoration efforts and monitoring vegetation in addition to the sediment cores will provide a more complete understanding of the long-term impacts of the restoration action. | Add vegetation monitoring at the same time scale as the sediment core profiles or more frequently. | The CEPP PACR did not revisit monitoring stations outside the proposed TSP features. No additional monitoring stations within the Everglades Protection Area are proposed at this time. | Leslye Waugh, 2/28/2018 (No change made to the report.) |
| 239 | ENP | Donatto Surratt | Annex D | Water Quality | Blue Shanty flowway needs internal monitoring. | Having nutrient monitoring at the inflow and outflow of the Blue Shanty does not provide insight to internal dynamics and that monitoring needs to be incorporated, especially if the flowway does not perform as anticipated. | Add nutrient montioring within the flow path of the Blue Shanty. | The CEPP PACR did not revisit monitoring stations outside the proposed TSP features. No additional monitoring stations within the Everglades Protection Area are proposed at this time. | Leslye Waugh, 2/28/2018 (No change made to the report.) |
| 240 | ENP | Donatto Surratt | Annex D | Water Quality | The seepage wall cutoff impacts needs to be monitored within the ENP marsh. There is an existing monitoring program for NESRS and this project could leverage that program and extend the duration of that program for purposes of this PACR. | The science on impacts from operating the seepage barrier and retaining water in the ENP marsh is limited and understanding the impacts of these operations is warranted. Thus monitoring within the ENP marsh should be considered. | Leverage and potenitally extend the duration of the existing monitoring for the S356 field test for NESRS. | The CEPP PACR did not revisit monitoring stations outside the proposed TSP features. No additional monitoring stations within the Everglades Protection Area are proposed at this time. | Leslye Waugh, 2/28/2018 (No change made to the report.) |
| 241 | ENP | Donatto Surratt | General | Water Quality | There is no description of the detailed water quality modeling for the PACR (Walker/Surratt) | Without the details to the modeling applied for the PACR, there is no means by which to evaluate the assertions on water quality improvements provided throughout the document. | Include the DMSTA modeling details. | See Annex A-2 of Appendix A: Engineering | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 242 | ENP | Donatto Surratt | General | Water Quality | A 2.5 m/yr settling rate is being applied for the A2 Reservoir in the SFWMD DMSTA modeling. This settling rate is difficult to justify and we have advocated for a 0 m/yr settling rate. (Walker/Surratt) | The selection of the 2.5 m/yr settling rate was described by SFWMD to be based on early data in Lake Okeechobee and reviewed reservoirs. It is not clear if these other reservoirs had vegetations supporting nutrient removal. A safer assumption is a 0 m/yr settling rate as it is not clear how vegetation will function in the proposed reservoir. | Apply a 0 m/yr settling rate for the reservoir. | All modeling assumptions are included in the Model Documentation Report contained in Annex A-2 of the Engineering Appendix A | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 243 | ENP | Donatto Surratt | General | Water Quality | The DMSTA model run allows STA diversion. These diversions around the STAs should be treated during planning consistent with Restoration Strategies. (Walker/Surratt) | While we recognize real-world application of the STA will result in diversion in response to extreme events, during the planning phase, all water directed to the Everglades should be treated. | We had a discussion with SFWMD modelers and they have determined that an effort will be made to modify flows within the RSM and DMSTA to eliminate all STA diversions. This is supposed to be presented as a senstivity analysis, but will be presented as an additional Appendix to the PACR. | Updated MDR is included in Annex A-2 of the Engineering Appendix A | Leslye Waugh, 3/6/2018 |
| 244 | ENP | Donatto Surratt | General | Water Quality | The ECB and FWO were developed using SFWMD 2X2 Model, while the CEPP PACR was developed based on RSMBN flows. There needs to be another run of the ECB and FWO using the RSMBN for comparability among the scenarios. (Walker) | Comparing the ECB and FWO to the alternative scenarios is complicated by not having them all built based on the same flow inputs. | We had a discussion with SFWMD modelers and we were not able to secure commitment for these runs, but the modelers suggested it may be possible during the review period. | We are focused on ensuring the treatment capability of the C240 alternative and have made unprecedented planning efforts to ensure consistency between the hydrologic and water quality tools. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 245 | ENP | Donatto Surratt | General | Water Quality | There is a need for documenting changes made to DMSTA code and input files relative to those used in Restoration Strategies and CEPP. (Walker) | There are a number modifications made for modeling treatment feature performance. These modification need to be documented, so that anyone can repeat the work performed by SFWMD. | We had a discussion with SFWMD modelers and they have agreed to make the needed documentations. | The changes have been documented in a modeling technical memorandum. | Jennifer Leeds, 3/8/2018 |
| 246 | ENP | Donatto Surratt | General | Water Quality | There appears to be a discrepency between RSMBN flows and DMSTA flows, such that DMSTA was treating only 96.5% of the water. (Walker) | During the review of the modeling output, observation of the flow timeseries showed that about 3.5% of the flow was missing. | We had a discussion with SFWMD modelers and they have described how the flows for DMSTA were originated. This description helped resolved concern with regards to the 96.5% of flow. They have agreed to document the development of these flows. | The changes have been documented in a modeling technical memorandum. | Jennifer Leeds, 3/8/2018 |

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| 247 | ENP | Donatto Surratt | General | Water Quality | With regards to Appendix A compliance determination, accelerating the filling of the Miami Canal and hydropattern restoration in NW WCA-3A would help improve concentrations delivered to Shark River Slough. Despite the uncertainty, the CEPP analysis indicated that those features, along with the existing negative correlation between Shark River Slough TP concentrations and inflows, and downward trends at the inflow structures would offset the impact of increased flows on the long-term total phosphorus limit. (Walker/Surratt) | The PACR repeatedly describes concerns with meeting compliance for Appendix A because of the increased flows to Shark River Slough. Beyond waiting for the TOC to "resolve" Appendix A, focusing attention on remedies to elevated TP concentrations and load delivery to Shark River Slough can expedite achieving compliance. | Focus attention on accelerating the Miami Canal backfill and improving hydrology in NW WCA3A. | The backfilling of the Miami Canal is a feature of the future CEPP South PPA and changes to the implementation schedule remain consistent with the authorized CEPP. | Leslye Waugh, 3/7/2018 (No change made to the report.) |
| 248 | ENP | Donatto Surratt | General | Water Quality | With regards to Appendix A compliance determination, accelerating L-67A diversion of water away from the S333 structure and through the Blue Shanty can improve the chances of achieving compliance with Appendix A as structure S333 has shown to be the major structure involved in elevated TP delivered to Shark River Slough. | The PACR repeatedly describes concerns with meeting compliance for Appendix A because of the increased flows to Shark River Slough. Beyond waiting for the TOC to "resolve" Appendix A, focusing attention on remedies to elevated TP concentrations and load delivery to Shark River Slough can expedite achieving compliance. | Focus attention on accelerating diversion of L-67A water away from the S333 structure and through the Blue Shanty. | The backfilling of the Miami Canal is a feature of the future CEPP South PPA and changes to the implementation schedule remain consistent with the authorized CEPP. | Leslye Waugh, 3/7/2018 (No change made to the report.) |
| 249 | SFWMD | Sean Sculley | ES | Engineering | Table ES-1: it is not clear why some of the CEPP FWO 2018 costs (channels & canals, levees, floodway control) are higher than the corresponding CEPP PACR TSP 2018 costs. | | Provide reason for decreases in these cost categories. | Concur. Construction costs for the A-2 FEB in the authorized CEPP plan were included in cost codes 09 (Channels and Canals), 11 (Levees), and 15 (Floodway Control and Diversion). As the A-2 reservoir and STA would replace the A-2 FEB in the PACR TSP, the estimated A-2 FEB construction costs were deleted from the corresponding cost codes in the PACR TSP column, and cost code 03 (Reservoirs) was added to the PACR TSP column to address construction costs associated with the proposed A-2 reservoir. Text was added following Table ES-1 to clarify this point. Since this table also appears in section 6 similar edits were added to section 6. | Dennis Barnett, 3/1/2018 |
| 250 | SFWMD | Sean Sculley | Section 1 | Engineering | Another factor contributing large Lake O releases to the northern estuaries was the Emergency Final Order, issued June 23, 2017, directing SFWMD and USACE to lower WCA water levels ASAP by, in part, minimizing inflows. | Full disclosure of factors contributing to high NE discharges. | Mention the EFO in this paragraph. | We recognize that the EFO effected discharges from Lake O however the ones listed in the document were considered to be the most pertinent to the project document. | Jennifer Leeds, 3/7/2018 (No change made to the report.) |
| 251 | SFWMD | Sean Sculley | Section 2 | Engineering | "No operational changes for the L-29 Canal stage, G-3273 constraint or S-356 pump station were represented in the FWO project condition". | Why not? Changes to L-29 and G-3273 constraints have already been implemented. This has a significant effect on volumes of water able to be delivered to NESRS. | Include L-29 constraint relaxation to 8.5' and remove G-3273 constraint. | The modeling assumptions for operations in the FWO are based on authorized projects and is consistent with CEPP. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 252 | SFWMD | Sean Sculley | Section 2 | Water Quality | Discharges from the Everglades STAs are not now required to meet the WQBEL. | STAs will be required to meet WQBEL after all corrective actions are complete, by December 2024. | Replace "are" with "will be". | Concur. Changed 2nd sentence in section 2.5.3 to read as follows: "After all corrective actions are complete, by December 2024, Discharges from the Everglades STAs will be required to meet a numeric discharge limit for TP concentrations, referred to as a water quality-based effluent limit (WQBEL), which is contained in both the EFA and NPDES permits." | Dennis Barnett, 3/1/2018 |
| 253 | SFWMD | Sean Sculley | Section 2 | Engineering | Item 2d - the 8.5 SMA detention area is not complete--the flow connection to the C-111 NDA has not been constructed. | inaccurate status | change "complete" to "in progress" | Concur. Suggested revision has been made. | Dennis Barnett, 3/1/2018 |
| 254 | SFWMD | Sean Sculley | Section 2 | Engineering | "…the eastern side of the divide structure…" | vague reference to S-333 | change to "the S-333 structure" | Concur. Suggested revision has been made. | Dennis Barnett, 3/1/2018 |
| 255 | SFWMD | Sean Sculley | Section 2 | Engineering | Why was only 4 miles of seepage wall modeled when 5 miles were constructed? | inconsistency | give reason for 4 mile wall being modeled instead of 5 mile | The modeling assumptions are based on the original plan which was to build a 4-mile slurry wall. The modeling assumptions are consistent with CEPP. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 256 | SFWMD | Sean Sculley | Section 3 | Engineering | "…and discharges made down to 18 inches below ground level". | inaccurate | should be "above ground level" | The referenced text (two occurences on page 3-15) was information copied directly from and attributed to the C&SF Comprehensive Review Study ("Yellow Book") in regard to a conceptual plan for an EAA Reservoir. As a direct quote from the Yellow Book, it would not be appropriate to change the language. | Dennis Barnett, 3/3/2018 (No change made to the report.) |
| 257 | SFWMD | Sean Sculley | Annex C | Engineering | Spillway S-351 operations description is imprecise | description can be improved | Change sentence that begins with "S-351 permits…" to "S-351 can release water by gravity from Lake Okeechobee…". Change next sentence to "It also can discharge water from the EAA to Lake Okeechobee when the Lake level is lower than the EAA canal level; otherwise, the S-2 pump station is used to lift water from the EAA canal to the Lake." Next sentence, replace "hurricane tides" with "wind-induced water levels". | The referenced text (two occurences on page 3-15) was information copied directly from and attributed to the C&SF Comprehensive Review Study ("Yellow Book") in regard to a conceptual plan for an EAA Reservoir. As a direct quote from the Yellow Book, it would not be appropriate to change the language. | Dennis Barnett, 3/3/2018 (No change made to the report.) |
| 258 | SFWMD | Sean Sculley | Annex C | Engineering | Spillway S-354 operations description is imprecise | description can be improved | see changes for S-351 text, above. | Revisions made to the text as suggested | Jennifer Leeds, 3/1/2018 |
| 259 | SFWMD | Sean Sculley | Annex C | Water Quality | Inaccurate description of A-1 FEB re water quality | inaccurate | replace "The A-1 FEB project increases water qualiity treatment…" with "The A-1 FEB project supplements water quality treatment…". | Revisions made to the text as suggested | Jennifer Leeds, 3/1/2018 |
| 260 | SFWMD | Sean Sculley | Annex C | Engineering | S-355A and S-355B | inaccurate | these two discharge into the L-29 canal, not the L-67C canal; USACE received an operating permit from FDEP in 2015--the structures' operation is not limited to short-term, temporary operations. | Revisions made to the text as suggested | Jennifer Leeds, 3/1/2018 |

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| 261 | SFWMD | Sean Sculley | Appendix C.1 | Ecology | Statement that Lake O "currently" has an extensive littoral zone references a study 31 years ago | reference underlies assertion of current conditions | cite a more current reference | The reference was updated to the 2017 SFER. | Georgia Vince, 3/7/2018 |
| 262 | SFWMD | Sean Sculley | Appendix C.1 | Ecology | 2nd para. "ENP canal and levee banks" | awkward; sounds like there are canals and levees in ENP (technically there is one--L-67 ext.) | replace with "and canal and levee banks adjacent to ENP" | Document has been updated | Georgia Vince, 3/7/2018 |
| 263 | SFWMD | Sean Sculley | Appendix C.1 | Ecology | "620,000 acres of agricultural land" | inconsistency | the main report uses a different size of the EAA; page C.1-56 says there are 700,000 acres in the EAA | Updated to 450,000 acres in the EAA based on the 2018 SFER | Jennifer Leeds, 3/7/2018 |
| 264 | SFWMD | Sean Sculley | Appendix C.1 | Ecology | Inaccurate # of STAs | There are 5 STAs: STA-1E, STA-1W, STA-2, STA-3/4 and STA-5/6, not eight. STA-2 is not referenced as STA-2N and STA-2S. STA-5 and STA-6 used to be separate but now are one. | Reword to be consistent with designation given in EFA and NPDES permits--5 STAs--1E, 1W, 2, 3/4 and 5/6. Remove subsequent references to STAs 2N and 2S. | Document has been updated | Georgia Vince, 3/6/2018 |
| 265 | SFWMD | Sean Sculley | Appendix C.1 | Water Quality | STA-3/4 recent TP outflow concentration is mischaracterized | The long-term component of the WQBEL is not based on a five-year average outflow TP concentration as the statement implies. | Replace with "To date, the **outflow** TP concentration in the best-performing STA (STA-3/4) **was equal to or below 13 ppb in two of the last five years**, which meets...". | Document has been updated | Georgia Vince, 3/6/2018 |
| 266 | SFWMD | Sean Sculley | Appendix C.1 | Engineering | | WCAs were created in 1945 by C&SF FCD? Congress did not authorize WCAs until 1948. | | Language is consistent with CEPP | Jennifer Leeds, 3/7/2018 (No change made to the report.) |
| 267 | SFWMD | Garth Redfield | Section 2 | Ecology | The middle paragraph describing historical changes is fine, but needs to be expanded by a couple of sentences on the orginal canal system and the enormous changes that occurred long before the Project but after 1917 with the muck canals. | Serious lack of historical context | Pull text of historical chapter of Davis and Ogden 1994 | The focus of Section 2 of the PACR is to document "existing conditions" and "future without project (FWO) conditions." More detailed information about the history of human-induced changes to the south Florida ecosystem is well-documented in other publications, and inclusion of additional historical information would not add value to the discussion of existing and FWO conditions. No additional historical information has been added to the report. | Dennis Barnett, 3/3/2018 (No change made to the report.) |
| 268 | SFWMD | Garth Redfield | Section 2 | Water Quality | Information in Chapter 3A of the SFER reflects major improvements in water quality and these trends are expected to continue. The majority of the EPA marshes have low nutrients levels and meet state water quality standard. | Water quality conditions downstream should be clear | Pull text of the summary in Chapter 3A; author Paul Julian | Several quotes have been added from the SFER. | Leslye Waugh, 3/7/2018 |
| 269 | SFWMD | Garth Redfield | Section 5 | Water Quality | The middle paragraph on Table 5.2-2 is OK, but if anything it understates WQ benefits. High flow events are serious WQ episodes and any measureable decrease is very important. | Reducing LO high water events is understated. | Editing can help | Added this sentence to the end of the middle paragraph: A reduction in high flow events would significantly benefit water quality. | Linda Rivard, 3/6/2018 |
| 270 | SFWMD | Garth Redfield | Section 5 | Water Quality | TP Rule compliance should be positively influenced for the reasons stated in the paragraph, not uncertain. | Don't want to miss a value for the TP Rule. | Editing can help | The statement was revised to say the effect will be minimal in the long term which is consistent with the language in CEPP. | Georgia Vince, 3/7/2018 |
| 271 | SFWMD | Garth Redfield | Section 6 | Water Quality | The TSP would not exceed the above-ambient phosphorus concentrations, but in areas with volumes of water significantly increase such as NW WCA-3A, the total load of phosphorus may impact periphyton mat cover, structure, and composition. | Everglades restoration will ALWAYS increase loads in a restorative manner. The last part of this sentence needs to read: **but in areas where improved water quantity provides more TP loading, such as NW WCA-3A, periphyton are expected to show changes in mat cover, structure and composition consistent with improved water conditions.** | Clarify restorative changes in TP loading vs. detrimental changes. | concur, revised per suggested edit | Leslye Waugh, 2/27/2018 |
| 272 | SFWMD | Garth Redfield | Annex D | Ecology | This Part 1 Adaptive Management is very detailed and highly diverse. It is very costly, but more importantly it requires a major investment in staff time, even if contracting is used extensively. One RECOVER staff person is suggested to oversee, a dozen would be more realistic. | The magnitude of this techincal effort requires an explicit evaluation and optimization process after the project is authorized. We must not be put in a position of committing technical resources beyond reasonable staffing expectations. Hanging millions on Dr. BACI seems great, but is it realistic? We need a process to integrate and priotize when the time comes. | Add a process for monitoring and research review and adaption. I notice that the WQ Plan in Part 2 has a 5-year review cycle. Review would be good in Part 1 as well. | The existing process being used on CERP projects has been successful and will continue as part of this project. | Leslye Waugh, 3/7/2018 (No change made to the report.) |
| 273 | SFWMD | Garth Redfield | Annex D | Water Quality | Add EMRT to acronymes list: Environmental Monitoring Review Team (Water Quality Bureau, SFWMD) | Missing acronym | | The Environmental Monitoring Review Team (EMRT) is not referenced in the Annex D Part 2 so it was not added to the Glossary/Acronyms list. | Leslye Waugh, 2/28/2018 (No change made to the report.) |
| 274 | SFWMD | Garth Redfield | Annex D | Water Quality | In the Part 1 monitoring plan, you use a 10 year horizon. Here you go to 50 years. Why the difference? Likewise, you have signatures on this plan from around the CERP world, while none are required for the Part 1 plan. How so? | Recondsider, explain or modify | | The existing process being used on CERP projects has been successful and will continue as part of this project. | Leslye Waugh, 3/7/2018 (No change made to the report.) |
| 275 | SFWMD | Garth Redfield | Annex D | Water Quality | Note: The proposed use of autosamplers in this table is consistent with current practice and requirements, but may be found to be unnecessary in the future. | Add clarifying note. | | The sampling method will be further defined during permitting for each component prior to operations. The prefered sampling methods can be determined at that time. | Leslye Waugh, 3/7/2018 (No change made to the report.) |

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| 276 | SFWMD | Garth Redfield | Annex D | Ecology | CEPP PACR monitoring in this Annex is segmented into four parts; two highly evolved, one aspirational (ecology) and one in between (adpative man.). This apples and oranges collection renders agency resoucre commitments unhighly uncertain. We need a Comprehensive Project Level Monitorng Plan. | We could comitt in this Annex to a process to get all four monitoring components better planned, integrated and compatible with existing monitoring. The hyrometerological and water quality plans are well along in this process, but the biological comonents need work. The QAOT, EMRT committees provide a platform for such a process. | Add a process for monitoring and research review and integration through established agency teams at the beginning of the Annex. | Language to re-evaluate the monitoring plans during the development of Construction Phasing, Transfer, and Warranty Plan(s) was added to the Executive Summary of Annex D, Part I. | Jennifer Leeds, 3/7/2018 |
| 277 | SFWMD | Garth Redfield | Annex F | Water Quality | This paragraph is not easy to understand. We say 'qualitiative' as an operative word, then proceed with page after page of data analysis and interpretation. So, what does qualitative mean? The direction of change without magnitude? If so, say so. Why the word 'impacts'? Wouldn't change, influences or effects be more descriptive of what this Annex is doing? | Some clarification of where this Annex is going would be helpful in the first paragraph. We must accommodate the fact that the Project will likely improve downstream water quality conditions; impacts is misleading. | Revise first paragraph to better reflect what is being done on P assessment. | Revison incorporated to clarify there will be improvements | Jennifer Leeds, 3/1/2018 |
| 278 | SFWMD | Garth Redfield | Annex F | Water Quality | When mentioning the phosphorus rule, we must keep straight what we are talking about. The State P Rule is: Water Quality Standards for Phosphorus within the Everglades Protection Area; achievement of the criterion is ONLY based on the four part text applied to impacted and unimpacted networks and individual stations. After a definition, we could just use P Rule, or TP Rule. | The long-term mean of 10 is just one of the four parts. On the last sentence, 'impacts' can be used for positive or negative influences. However, it tends to be used for negative changes in water quality circles. Throughout the Annex, I suggest that we be more specific, using 'changes, influences, benefits, detriments etc' to clarify what we mean. | As mentioned later in this Annex, much of the downstream Everglades is expected to gradually see better water quality with the Project so we must be certain that the audience of this report gets that message, as communicated in F.3.2 very nicely. Section F.3.3 expresses the P Rule correctly and completely. | Revisoins made to the document | Georgia Vince, 3/7/2018 |
| 279 | SFWMD | Garth Redfield | Annex F | Ecology | The message from these four figures is really tough to get, visual comparisons don't tell us a lot. | If there are 'difference' maps for flows and hydroperiod they would be much more meaningful. | Add difference maps if possible. | Difference maps are not generated for this type of analysis | Jennifer Leeds, 3/1/2018 (No change made to the report.) |
| 280 | SFWMD | Garth Redfield | Annex F | Water Quality | The figures, tables and narrative in this part of Annex F need to be redone based on one table consistent with the SFER and containing Kendall trend analyses highlighting declining trend, significant declining trend and associated statistics. | The linear regression and Spearman's tests are not appropriate and give conflicting results. The audience can not be asked to interpret multiple statistical outcomes. The graphics on F-27 can be removed or modified to reflect monthly data and Kendall statistics. | Please see the review by Nenad Iricanin, WQB, SFWMD. | The analysis was updated to reflect the use of the Kendall's tau-b (τb) test for assessing trends. | Jennifer Leeds, 3/1/2018 |
| 281 | SFWMD | Garth Redfield | Annex F | Water Quality | Not clear why this table goes back to 1991, when other water quality tables use 2005 - 2017 period of report. | Team should consider the value of consistency across water quality data summaries. | Table can be modified. | The WY1991 through WY2017 period was presented in Table F-6 to maintain consistency with the previous report. | Jennifer Leeds, 3/6/2018 (No change made to the report.) |
| 282 | SFWMD | Garth Redfield | Annex F | Water Quality | Top paragraph, Appendix A does NOT include flows through the culverts. It does not S355A&B when flowing. | See the Settlement Agreement reports on the TOC website.....each describes the Appendix A calculation methodology. | | The Tamiami Trail culverts as part of the Appendix A compliance calculation have been removed. | Jennifer Leeds, 3/6/2018 |
| 283 | SFWMD | Garth Redfield | Annex F | Water Quality | As mentioned above, 'qualitiative' should be more specific. We predict the direction of change as done the first paragraph, but the magnitude of change is subject to too many uncertainities from a quantititive perspective so that the quantity / quality influences on Appendix A can not be predicted. | Revise second paragraph in the CONCLUSION. | | This paragraph will be revised to indicate that while water quality is expected to improve, compliance with Appendix A cannot be quantified given the high level of uncertainity. | Jennifer Leeds, 3/6/2018 |
| 284 | SFWMD | Paul Warner | ES | General/Other | In second paragraph, report states that WIIN Act is also known as WRDA-2016. This is not quite accurate. The WINN Act contains WRDA-2016 as Title I; there are several other aspects to the WINN Act. | Accuracy | Suggest rephrasing to say that the "....WINN Act , which includes the Water Resources Development Act (WRDA) 2016 as Title I of the Act." | Concur. Suggested revisions have been made. | Leslye Waugh, 2/19/2018 |
| 285 | SFWMD | Paul Warner | ES | Policy | In paragraph 3, 4th sentence, it is not accurate to say that WRDA-2000 directed the USACE to maximize use of Talisman lands. | Accuracy | In paragraph 3, 4th sentence, suggest you rephrase to read "In the Senate's Committee Report on WRDA-2000, the Committee directed the USACE to maximize use of the lands acquired by the SFWMD through the Talisman purchase and exchange, as well as lands other EAA lands held by the Non-Federal Sponsor, for the design and construction of the EAA Reservoir. The Committee also directed the USACE to take full advantage of the Talisman lands by maximizing the depth of water stored on these lands. " | Concur. Suggested revisions have been made. | Leslye Waugh, 2/19/2018 |
| 286 | SFWMD | Paul Warner | ES | General/Other | In paragraph 4, the term multipurpose is used for the first time with no explanation of what is meant in this instance. | Improvement in clarity/understanding for reader | Suggest that in first instance, a phrase be added to give the reader an idea of what is meant by multipurpose (i.e., "environmental water supply, agricultural water supply and flood protection) | Concur. Clarifying language has been added. | Leslye Waugh, 2/19/2018 |

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| 287 | SFWMD | Paul Warner | ES | General/Other | In paragraph 1 and above Table ES-1, it is not clear that that the PACR results in only a $1.1 billion increase. | Improvement in clarity/understanding for reader | Suggest that the second sentence be modified to read "The first cost of the authorized CEPP plus the PACR TSP, defined as the capital investment costs (2018 price level), is $3,134,000,000....." Suggest changing the Table title to Estimated First Costs for the Authorized CEPP With and Without the PACR" or "Comparison of First Costs for the Authorized CEPP, and CEPP as Modified by the PACR". Also add a plus sign between "CEPP" and PACR TSP in the far right column heading. | Concur. Pertinent revisions were made to clarify text and table. | Dennis Barnett, 3/1/2018 |
| 288 | SFWMD | Paul Warner | ES | General/Other | The last paragraph under "Coordination with other Agencies and the Public" is not clear. It sounds like it is referring to a separate planning process than the first two paragraphs, but I don't think it is. | Improvement in clarity/understanding for reader | This paragraph should be rephrased to clarify. | Concur. Deleted the referenced paragraph, as it was redundant of preceding paragraphs. | Leslye Waugh, 2/19/2018 |
| 289 | SFWMD | Paul Warner | Section 6 | General/Other | The number of acres in state ownership differs from that in SB-10. This section says there are 3,656 acres of land in SFWMD/State ownershiip while SB-10 said there were 3,200. | Accuracy | Check the numbers and correct if appropriate. | the numbers in the PACR are correct | Leslye Waugh, 2/28/2018 (No change made to the report.) |
| 290 | SFWMD | Paul Warner | Section 6 | General/Other | This section talks a lot about FWO, but there does not appe | Accuracy | Suggest adding a sentence something like the following near the beginning of this section. " For the PACR TSP, the authorized CEPP, along with other CERP and non-CERP projects within the CEPP PIR study area that have been authorized, are under construction, or are completed, are assumed to be in place and operational in the future without (FWO) project condition." | concur, revised per suggested edit | Leslye Waugh, 2/28/2018 |
| 291 | SFWMD | Paul Warner | Section 6 | General/Other | Reference to Table 6-5 says in includes the costs for the TSP, while the table shows CEPP and CEPP plus the TSP. This gets a little confusing. Suggest you edit to clarify what is cost of CEPP as authorized, what is cost of incremental increase resulting from TSP, and the total of CEPP plus the TSP. | Clarity | **Suggest expanding the current sentence in the first full paragraph to something like the following: "Table 6-5** includes a breakdown of the estimated costs for the authorized CEPP compared with estimated costs for the authorized CEPP plus the PACR TSP. The cost of the authorized CEPP after updating to 2018 price levels is $2,024,000,000. The total cost of the authorized CEPP plus the modifications resulting from the PACR TSP (at 2018 price level) is $3,127,000,000. The net increase in cost resulting from the PACR TSP is $1,103,000,000." | concur, revised per suggested edit | Leslye Waugh, 2/28/2018 |
| 292 | SFWMD | Paul Warner | Section 6 | General/Other | The last sentence in paragraph 1 says that the TSP would not change the provisions for federal cost-share for OMRR&R of state facilities. This is a little misleading because the PACR recommends an increase in cost-share based on the greater amount of new water flowing through these facilities. | clarity | Suggest that you either delete the sentence, or add a new sentence at the end something like the following "However, a change in the cost-share percentage is recommended based on the additional new water to provided by the TSP and treated by these facilities." | concur, revised per suggested edit | Leslye Waugh, 2/28/2018 |
| 293 | DOI | Dennis Duke | Section 2 | General/Other | Is Site 1 in its entirety to be included? Recognize this was copied from CEPP PIR but we have better knowledge now regarding future of Site 1. | | | Since no official action has been taken to date on the future of Site 1, we elected to retain the description that is presently in Section 2.5.8. | Dennis Barnett, 3/1/2018 (No change made to the report.) |
| 294 | DOI | Dennis Duke | Section 2 | Modeling | Why are the Biscayne Bay Coastal Wetlands feature "not" included In the FWO? Suggest copying the entire para from the CEPP PIR where it explains why. | | | Concur. Suggested language from the CEPP PIR has been added to the paragraph. | Dennis Barnett, 3/1/2018 |
| 295 | DOI | Dennis Duke | Section 6 | General/Other | Next to last item, regarding BCWPA. Recognize this was copied from CEPP PIR, but the timeline for C-11 has slipped 4 years and the S-333 expansion will be complete in 2020. May want to consider revising the statement that the C-11 reservoir must be completed prior to increasing flows through S-333 or implementing WCA 3B inflow structures is overly restrictive as stated. Particularly since the S-333 enlargement will be completed in 2020 and the C-11 reservoir will not be completed until 2025. Suggest limiting this restriction to only the new inflow structures for WCA 3B. | | | Revised S-333 anticipated completion date to 2020. Remaining items reflect the current IDS. | Leslye Waugh, 2/27/2018 |
| 296 | DOI | Dennis Duke | Section 6 | General/Other | Last item, regarding Tamiami Trail Next Steps – While it is not explicitly stated, it is assumed this completion only applies to the 2.6 mile western bridge. This was copied from CEPP PIR but may want to clarify here. | | | table states it is the 2.6 mile bridge | Leslye Waugh, 2/27/2018 (No change mage to the report.) |
| 297 | Broward County | Carolina Maran | General | General/Other | The comments included in Broward County's Agency Technical Review are based on the analysis of the Draft Main Report, Appendix A.1, Annex B and Annex C. Please note that the established time frame was insuficient to provide the extensive review required for this type of document. | | | Thank you for your review. | Leslye Waugh, 3/6/2018 (No change made to the report.) |

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| 298 | Broward County | Carolina Maran | General | General/Other | Broward County has provided technical review of the 2013 CEPP planning report and continues to support the projects included at the CEPP PACR and its ultimate ability to provide higher-quality and additional freshwater to the Everglades, and more specifically to WCA 2 and WCA 3, and in alignment with the Broward County Integrated Water Resources Plan. The Everglades is a major source of recharge to the Biscayne Aquifer, which is the primary source of drinking water for Broward County. As such, it is highly desirable that the CEPP PACR TSP consists of a 240,000 ac-ft. with multi-purpose operational flexibility, also allowing the increase in availability of water supply for the region. Broward County has been prioritizing superficial storage as an alternative water supply and drought buffer, including the C-51 reservoir project and Broward's WPA (C-11 and C-9 impoundments). No adverse effects from CEPP PACR to the County has been identified. Foreseen benefits from the restored higher sheet flow scenarios might help to address sea level rise and saltwater intrusion. Additional storage and conveyance infrastructure might also help mitigate against future changes to precipitation patterns and extremes. | | | Thank you for your comment. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 299 | Broward County | Carolina Maran | Section 2 | Engineering | Trend Analysis might be incorporated in the report (or later in the process) to evaluate historic versus future climate conditions and address non-stationarity issues. As future condition uncertainties are reduced, CEPP PACR projects might be evaluated accordingly. For instance, tidal boundary conditions reflecting future sea level change for the range of sea level rise expected is feasible to be determined. Also, the assumption "there is little basis to assume that hydrologic conditions in the study area would be substantially different between 2050 and 2076." is not aligned with some recommendations agreed in the region and endorsed by the Southeast Florida Climate Compact. | To determine appropriate risks and uncertainties associated with project implementation, considering potential climate change impacts. In addition, "Water Security" is enhanced by the implementation of CEP PACR projects, given the importance of reservoirs to cope with more frequent extreme events. In the context of climatic changes, the importance of reservoirs is increased: floods and droughts are expected to be more frequent, and the progressive concentration of occurrences in the tails of the probability distribution might indicate the need for potentially larger storage areas. | | USACE Jacksonville District has agreed to provide technical assistance to the SFWMD in 2018 to update the climate change/sea level rise analysis that was conducted for the CEPP PIR. No changes will be made to the PACR in this regard pending completion of the update. We concur that the additional storage that would be provided by the A-2 reservoir proposed in the CEPP PACR would provide greater flexibility for climate change adaptation. | Dennis Barnett, 3/1/2018 (No change made to the report.) |
| 300 | Broward County | Carolina Maran | ES | Policy | Suggestion: to include at the beginning of the report that appropriate timing and distribution will be associated with the 76% increase in flows to the central portion of the Everglades. | To educate the reader, from the beginning of the document. | | Water supply/water conservation was not a planning objective for the CEPP PACR. Municipal and industrial water supply/demand considerations for existing and FWO conditions are presented in Table 2-1. No additional specific langauge in this regard has been added to the text. | Dennis Barnett, 3/1/2018 (No change made to the report.) |
| 301 | Broward County | Carolina Maran | Section 1 | Policy | The table lists no corresponding CEPP objective to reduce flood damages. The text might clarify that the proposed CEPP PACR projects will also result in flood prevention, considering the multi-purpose operation flexibility of the TSP. | To educate the reader, from the beginning of the document. | | The CEPP PIR did not have a specific objective to reduce flood damages and, likewise, the CEPP PACR also did not have that objective. A planning constraint for both documents was "avoid reduction in the existing level of service for flood protection caused by plan implementation." The CEPP PACR TSP was formulated to meet that constraint. Accordingly, the suggested revision is not appropriate. | Dennis Barnett, 3/1/2018 (No change made to the report.) |
| 302 | Broward County | Carolina Maran | Section 1 | Policy | Suggestion: replace "Avoid reduction" in the existing level of service for flood protection caused by ... | The entire document mentions reduction, and not avoid reduction. | | The referenced constraint was also identified verbatim in the CEPP PIR, and that constraint was carried forward in the CEPP PACR. Since the PACR addresses a post authorization change to CEPP, we have maintained consistency with the CEPP PIR. | Dennis Barnett, 3/1/2018 (No change made to the report.) |
| 303 | Broward County | Carolina Maran | Section 2 | Policy | Suggestion: The ongoing implementation of indoor and outdoor water conservation measures is also contributing to maintain PWS numbers. This consideration might be included in the text to contribute to the assumption that future water supply condition can be fixed at existing condition levels. | To emphasize / recognize Water Conservation efforts. | | Water supply/water conservation was not a planning objective for the CEPP PACR. Municipal and industrial water supply/demand considerations for existing and FWO conditions are presented in Table 2-1. No additional specific langauge in this regard has been added to the text. | Dennis Barnett, 3/1/2018 (No change made to the report.) |

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| 304 | Broward County | Carolina Maran | Appendix A | Engineering | Is it possible to include the probability of occurrence related to the 72 hour PMP of 54 inches rainfall event? | To associate risks. | | PMP is defined by the National Weather Service as "Theoretically the greatest depth of precipitation for a given duration that is physically possible over a given size storm area at a particular geographical location at a certain time of the year." I do not believe that it is possible to accurately calculate a return period (or recurrance interval) for a storm event that would be as extreme as the 72-hour PMP. However, NOAA's online Precipitation Frequancy Data Server (PFDS) (at https://hdsc.nws.noaa.gov/hdsc/pfds/) can be used to calculate total rainfall for storm events of return periods up to 1,000 years for specific durations and locations within the U.S. Using the PFDS, it was calculated that there would be 19.5 inches of rainfall for the 1,000-yr/3-day storm and 38.4 inches of rainfall for the 1,000-yr/60-day storm at the A-2 Reservoir site. Given these results, the 54", 72-hour PMP for the A-2 Reservoir site could be considered as representing a storm event with a return interval greater than 1,000 years. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 305 | Broward County | Carolina Maran | Appendix A | Engineering | Suggestion to add: Assuming changes in WCAs stages are negligible (less than a 0.1ft during average conditions with no significant change during extreme dry and wet conditions, as stated), the Broward's WPA goal to reduce seepage losses from WCA-3A and WCA-3B is not impacted by the CEPP PACR. | To clarify how projects will be functioning together. | | Agreed; this conclusion is further supported by modeled seepage volumes in the area which show a small increase relative to the EARFWO, but still reduced seepage compared to the EARECB. | Leslye Waugh, 3/9/2018 (No change made to the report.) |
| 306 | SFWMD | Sandra Smith | Appendix A | Engineering | seepage analysis may need to consider the anticipted soil conditions post-blasting | Unclear whether seepage would be different based on soil conditions post-blasting, not strictly based upon borings obtained pre-construction. | may be worthwhile to repeat some borings in A1 FEB to compare the pre-construction borings to post-blasting borings for comparison. | See response to Comments 118 and 229 above. | Liselle Vega-Cortez, 3/8/2018 (No change made to the report.) |
| 307 | SFWMD | Sandra Smith | ES | General/Other | unclear whether TSP in the PACR should describe the "added" capacity above and beyond the FWO vs TSP. For example language near end of ES-1 reads: "increase by an additional 210,000" vs portions that read "from avg of 210,000" "to 370,000 ac-ft." | Sometimes reads as if it would have increased from 210,000 which would equal total 420,000 if it were providing 210,000 additional. Indicates that R360D provides capacity of 360,000 ac-ft, however it does not acknowledge that this is not in addition to the existing 60,000 ac-ft A1 FEB capacity that remains in the 240 alternatives. | storage should be described in terms of net increase compared to FWO / CEPP plan or clearly state otherwise (particularly where A1 FEB becomes Reservoir since there is an existing capacity that this option replaces.) | The PACR consistently states that the TSP would increase CEPP flows to the central portion of the Everglades from an average annual of approximately 210,000 ac-ft to an average annual of approximately 370,000 ac-ft, reflecting an incremental increase as a direct result from the A-2 reservoir and STA vs. the A-2 FEB in the authorized CEPP plan. We could not identify any references to delivery of an "additional 210,000 ac-ft" of water in the PACR. The comment indicates some potential confusion between the average annual volume of water to be be delivered to the central portion of the Everglades and the capacities of the EAA reservoir stroage alternatives (240,000 ac ft and 360,000 ac-ft). These volumes are not directly comparable. The A-1 FEB does provide some storage capacity south of Loke Okeechobee, but it is a separate project and not part of the authorized CEPP plan that is proposed for modification in this PACR. | Dennis Barnett, 3/1/2018 |
| 308 | SFWMD | Sandra Smith | Appendix A | Engineering | 3D seepage model and adequate geotech to evaluate possible existence of a confining layer was not available | Experience at A1 FEB indicates seepage may be a concern for the area. Experience at other sites shows that breaching the confining layer can require additional considerations. | Consider generalizing certain elements of the TSP to allow for whether a configuration with an STA to the north addresses seepage better than an STA to the west after more information is available. | The pros and cons associated with alternative layouts (including potential seepage impacts) for the A-2 Reservoir and A-2 STA will be considered during the future PED phase of the project. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 309 | SFWMD | Sandra Smith | Appendix A | Engineering | With only 200 cfs conveyance increase proposed for the NNR Canal, and S354 discharge to Miami Canal capabilites shown to be above the 1000 CFS proposed at S354 it seems it'd be more economical for all capacity improvements to be focused on the Miami Canal. | Economies of scale can be found in one slightly more significant construction effort on only Miami Canal to get all the increased conveyance needed instead of two major canal projects. | If NNR flows are directed to A1 FEB and Miami Canal to A2 (with some additional available by redirecting A1 seepage to A2) it would allow deletion of the new B-2 and B3 bridges to construct the A2 inflow canal under US27 NB and SB. The seepage canals along N edge of A1 ans A2 could be connected to allow return of seepage water to either A1 or A2 with a shorter A2 inflow/outflow canal just from Miami Canal to A2 the PS. | Alternative plans for conveying flows from Lake Okeechobee to the A-2 Reservoir as well as alternative plans for conveyance improvements to the Miami Canal and/or NNR Canal should be developed and considered by SFWMD during the future PED phase of the project. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 310 | SFWMD | Sandra Smith | Appendix A | Engineering | States no widened cross sections were considered due to right-of-way limitations along with proximity of US27 embankments. Annex does not evaluate any other conveyance alternatives. Main report does not make note of this issue. | Main report states that no alternative was eliminated just due to cost. Main report and Annex A-1 do not adequately explain why the conveyance alternatives evaluated in Annex A-1 is limited to 1000 CFS on Miami and 200 CFS on NNR, rather than a larger conveyance only on Miami. | Increased capacity, if needed and worthwile to pursue along NNR Canal instead of Miami Canal, could be provided within the existing right-of-way by sheet pile wall on one side, potentially along the US27 side so maintenance remains from the east. | See response to Comment #309. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 311 | SFWMD | Sandra Smith | General | General/Other | wording is unclear what additional "new water" is for FWO vs TSP. | Wording refers to 210,000 ac-ft as "from" but the 370,000 ac-ft is additional. Additional compared to existing or in addition to CEPP FWO? | select clear, consistently used wording for these that are clear whether it is compared to FWO when appropriate or compared to existing. | The TSP provides an additional 370,000 ac-ft of average annual flow to the central Everglades as compared to the ECB. | Leslye Waugh, 3/6/2018 (No change made to the report.) |

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| 312 | SFWMD | Sandra Smith | Appendix A | General/Other | Experience shows that STA Cells divided in 4 quadrants as shown has limitations that cell 1 would be offline if cell 3 must be taken offline (similar for cell 2 if cell 4 is taken offline). | Because layout requires water to flow thru the eastern cell to reach the western cell the western 2 are more dependent on the eastern than desireable. | redraw the cells, potentially with an inflow canal fed by a single structure out of the reservoir. Total structures for the STA would be increased but each would function independently. | During the future PED phase of the project, the location and design of each TSP feature will be refined and optimized; which may include the relocation, addition, removal and/or combination of some water control structures and conveyance features. As part of the optimization of the design of the A-2 STA, the location, design and number of STA canals, treatment cells and/or gated culverts within the proposed footprint of the A-2 STA may be revised. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 313 | SFWMD | Sandra Smith | Appendix A | General/Other | Is overflow structure better if placed at the south end of the reservoir? | DCM-2 indicates the gates should be considered inoperable during PMP. If an overflow did occur the inflow outflow canal structures during the PMP overflow of the inflow / outflow canal would be to the north which could have development in the future. | If placed at the south any potential impact would be to natural lands in government ownership. | During the future PED phase of the project, the location and design of each TSP feature will be refined and optimized; which may include the relocation, addition, removal and/or combination of some water control structures and conveyance features. As part of the optimization of the design of the A-2 Reservoir, the location of the reservoir overflow spillway (SW-1) may be revised. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 314 | SFWMD | Sandra Smith | Appendix A | General/Other | Minimize penetrations thru the embankment | Each penetration of the embankment creates a potential seepage path | Consider co-locating pump station, gated structures (C-1 and possibly C-10) and overflow structure so multiple penetrations thru embankment are planned and implemented as one. Similarly, reconfiguration of the STA cells (potentially with a short inflow canal) would eliminate the need for the second structure (C-4) discharging to the STA cells. | During the future PED phase of the project, the location and design of each TSP feature will be refined and optimized; which may include the relocation, addition, removal and/or combination of some water control structures and conveyance features, which could minimize penetrations through the A-2 Reservoir dam embankment. Co-locating Gated Culvert C-1 and Pump Station P-1 has been considered and will be further evaluated during the future PED phase of the project. Essentially, it would involve including gravity bays as part of Pump Station P-1, which is a viable option. For simplicity, the design for Pump Station P-1 currently does not include any gravity bays. The use of single distribution/inflow canal for the A-2 STA that could distribute flow to each A-2 STA cell independently will be considered during the future PED phase of the project. A single distribution canal would also be helpful if there is a need to deliver flow from the STA 3/4 Inflow Canal to the A-2 STA cells (see response to Comment #222). | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 315 | SFWMD | Sandra Smith | Appendix A | General/Other | Reduce need for long expansions of power supply/routing of new power lines. | Co-locating certain features that require power with each other or with existing infrastructure | Consider co-locating pump station, gated structures (C-1 and possibly C-10); power supply and generator could be coordinated/consolidated if co-located. Potentially co-locate C-9 near G720 to consolidate power needs as well. | During the future PED phase of the project, the location and design of each TSP feature will be refined and optimized; which may include the relocation, addition, removal and/or combination of some water control structures and conveyance features. The cost savings in electrical power infrastructure associated with the combining or co-locating of certain water control structures will be considered. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 316 | SFWMD | Sandra Smith | Appendix A | General/Other | C-11 structure not directly related to the A2 reservoir | C-11 addresses an issue at the NE corner of A1 that may not have a direct negative impact on A2. | supplying A2 from only the Miami Canal and connecting the seepage canals along the N edges of A1 and the east end of A2 (described in another comment regarding conveyance) may eliminate the need for adding C-11. | As shown in Typical Section G in Annex C-1, the TSP includes modifying the portion of the existing A-1 FEB seepage canal along the north side of the A-1 FEB, so that it will be part of the A-2 Reservoir Inflow-Outflow Canal and no longer part of or connected to the A-1 FEB seepage canal. As a result of this modification there will be an approximately 1,800 LF remnant section of the A-1 FEB seepage canal which will be connected to the north end of the existing A-1 FEB seepage canal along the east side of the A-1 FEB with Culvert C-11. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 317 | SFWMD | Sandra Smith | Appendix A | Engineering | silent to existing topography potentially requiring land leveling, soil inversion, etc which may be required in the STA cells | cost can be high if extensive work is required; success hindered if not graded adequately. LIDAR shows portions of the defined cells vary 2' in areas defined as a single cell. | verify maximum grade changes, dispersment of the higher lands within a given cell that would still allow successful treatment/maintenance. Adjust cells if warranted and add land leveling (as well as soil inversion if required). | The overall site plan for the project (included in Annex C-1) calls for the backfilling of all east-west farm ditches within the footprint of the A-2 STA. However, leveling of the land within the footprint of the A-2 STA has not been considered yet. The leveling of the A-2 STA will be considered during the future PED phase of the project. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |

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| 318 | SFWMD | Sandra Smith | Appendix A | Engineering | Allow for consideration of design alternatives to the trapezoidal embankment shown. | Traditional dams are nearly vertical. If wave wall prevented wildlife access along certain areas and interior face were more vertical there could be benefits that are not considered with the 3H:1V typical as shown. | Reduction in wave heights along these long spanses; possible value to new approaches to seepage management such as inclusion of a PVC liner on that more vertical face or behind the constructed face would result in some increase to the storage volume and potentially reduce overal embankment height. | Yes, a vertical structure could potentially be used to reduce embankment height in terms of overtopping. However, it is likely that a gravity based vertical structure would be required to accommodate the wave forcing within the dam. This is likely to have significant cost implications due to the depth of the dam and required foundations.<br><br>The use of intermediate dikes can be considered during the future PED phase of the project to investigate the reduction in wave height, and the potential for reducing the elevation of the dam (refer to comment #123). Similarly, potential refinements to the slope/embankment configuration can be investigated in the future PED phase of the project once the design wave climate is refined. | Jessica Ryan, 3/8/2018 (No change made to the report.) |
| 319 | SFWMD | Sandra Smith | General | Modeling | Report and Appendices do not acknowledge whether current modeling for the CEPP recommended 4' FEB shows concurrence that the model results indicate similar performance as was outlined in the CEPP to accurately base the TSP comparison to the FWO. | Similar results and/or explanations for variations could validate current modeling. | include CEPP 4' FEB for comparison. | The FWO includes the authorized CEPP which had a 4' FEB as a project feature. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 320 | SFWMD | Sandra Smith | Section 4 | General/Other | Does previous expenditures for A1 FEB count as part of the "Damages" cost? | if not, then where is this accounted for where any feature is not retained or repurposed? | clarify total cost invested including cost of prior projects to be modified. | Previous expendtiures for the A-1 FEB would not be lost, even under one of the 360,000 ac-ft alternatives that would involve conversion of the A-1 FEB to a deep reservoir. The 360,000 ac-ft reservoir alternatives would essentially follow the same alignment of the A-1 FEB and the larger structures would build upon the FEB structure that is already present. | Dennis Barnett, 3/1/2018 (No change to the report.) |
| 321 | SFWMD | Jennifer Brown/Audra Platt | Section 1 | General/Other | Need to consistently title the document. "Intergrated" used sometimeand not others | | | Based on a word search of section 1, each time the term "feasibility study" or "feasibility report" was used, the word "integrated" precedes the term. No change to the report is necessary. | Dennis Barnett, 3/1/2018 (No change to the report.) |
| 322 | SFWMD | Jennifer Brown/Audra Platt | Section 2 | Modeling | why wasn't BBCW included in modeling? Too far east? | | | (Same comment as # 268 and # 284) Added back some language from the CEPP PIR to explain why BBCW features were not included in the PACR modeling representation of the FWO conditionfor CEPP. Text is also applicable to the PACR. Added the following text to the end of the last sentence in the paragraph: "... since these features along the coast in Miami-Dade County were not considered significant for CEPP plan formulation, and in turn, for plan formulation for the CEPP PACR." | Dennis Barnett, 3/1/2018 |
| 323 | SFWMD | Jennifer Brown/Audra Platt | Section 2 | Policy | Put Miccosukee in 1 paragraph and STOF in another rather than lump together in 1 paragraph | | | This section provides a brief overview of the two tribes from the perspective of existing and FWO conditions. The tribes are described in separate paragraphs, but a single paragraph generally describes the relationship of both tribes to the Everglades ecosystem. The text in the PACR is consistent with the content of the corresponding section of the CEPP PIR. No change in the report is considered necessary. | Dennis Barnett, 3/1/2018 (No change to the report.) |
| 324 | SFWMD | Jennifer Brown/Audra Platt | Section 4 | General/Other | Florida statute is wrong, instead of 373.4958 it should be 373.4598 | | | Concur. Correction made. | Mike Albert, 3/5/2018 |
| 325 | SFWMD | Jennifer Brown/Audra Platt | Section 5 | Policy | so all alternatives increase number of itmes the flow falls below 450 cfs at S-79. while we don't want to make Caloosahatchee directly linked to the lake it seems that making things worse at the low end is perhaps not the greatest | | | As the project is implemented and operated, additional operational refinements to meet restoration flows based on hydrologic conditions will be evaluated. | Jennifer Leeds, 3/8/2018 (No change made to the report.) |
| 326 | SFWMD | Jennifer Brown/Audra Platt | Section 5 | Policy | statement about improving low flows by using the local basin reservoirs. Was any of that modeled in this exercise? If not suggest deleting that sentence. The C-43 is designed to meet the MFL, which is less than 450 cfs. As part of the rule development update that is presently ongoing, updated modeling about C-43 reservoir to meet 400 cfs flows was conducted and presented to the public. please speak with Don Medellin & Jennifer Barnes | | | The C-43 model assumptions are consistent with what was used in CEPP. Changes to the MFL for the Caloosahatchee is currently undergoing review and rule development but has not been adopted as of the preparation of the CEPP PACR. | Jennifer Leeds, 3/8/2018 (No change made to the report.) |
| 327 | SFWMD | Jennifer Brown/Audra Platt | Section 5 | General/Other | Lake Okeechobee and Greater Everglades - did all the alternatives have the same outcome? Looks like the response only involves 1 alternative, rather than discussing all of the alternatives. | | | Report will be reviewed for consistency in language | Jennifer Leeds, 3/8/2018 (No change made to the report.) |
| 328 | SFWMD | Jennifer Brown/Audra Platt | Section 5 | Policy | statement about improving low flows by using the local basin reservoirs. Was any of that modeled in this exercise? If not suggest deleting that sentence. The C-43 is designed to meet the MFL, which is less than 450 cfs. As part of the rule development update that is presently ongoing, updated modeling about C-43 reservoir to meet 400 cfs flows was conducted and presented to the public. please speak with Don Medellin & Jennifer Barnes | | | The C-43 model assumptions are consistent with what was used in CEPP. Changes to the MFL for the Caloosahatchee is currently undergoing review and rule development but has not been adopted as of the preparation of the CEPP PACR. | Jennifer Leeds, 3/8/2018 (No change made to the report.) |

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| 329 | SFWMD | Jennifer Brown/Audra Platt | Section 6 | General/Other | instead of **improve** (severity and duration of water restrictions) would use "reduce." Improve could be miscontrusted to mean more severe drought | | | concur, revised per suggested edit | Leslye Waugh, 2/27/2018 |
| 330 | SFWMD | Jennifer Brown/Audra Platt | Section 8 | General/Other | suggest putting (PPA) after first footnote. | | | Non-concur, this footnote refers to the Project Cooperation Agreement (PCA) and not a PPA. I have included "(PCA)" after footnote. | Mike Albert, 3/2/2018 |
| 331 | SFWMD | Jennifer Brown/Audra Platt | Section 6 | General/Other | last paragraph in that section seems more appropriate in section 6.9.2.1 | | | text is relevant in existing section. Statement is also made in the subsequent section. | Leslye Waugh, 2/27/2018 |
| 332 | SFWMD | Jennifer Brown/Audra Platt | Section 6 | Policy | should include Agricultural or urban water supply in the LOSA to the bullet point list | | | concur, revised per suggested edit | Leslye Waugh, 2/27/2018 |
| 333 | SFWMD | Jennifer Brown/Audra Platt | Annex B | Modeling | describing what intervening non-CERP things were included in the EARECB scenario. Was LORS08 used? If so, would include that. | | | LORS 08 is included in bulleted list on page Annex B-10. | Brenda Mills, 3/7/2018 |
| 334 | SFWMD | Jennifer Brown/Audra Platt | Annex B | Policy | Lake O is not the legal source of water for the northern estuaries. Rephrase the semtemces to make it clear to stakeholders that we are not trying to use Lako O to solve Caloosahatchee's low flow issues | | | Table B-4 does not list sources of water to meet existing legal sources. Although it may be implied that LOK and the watershed are sources for the Caloosahatchee and St Lucie Estuaries, it is not stated. In addition, method is consistent with Guidance Memos. | Brenda Mills, 3/7/2018 (No change to the report.) |
| 335 | SFWMD | Jennifer Brown/Audra Platt | Annex B | Modeling | 1st paragraph says intervening non-CERP removed from the analysis for savings clause. So unclear what regulation schedule used in the analysis. | | | There is no analysis of the LOK schedule since it is not the subject of the PACR. Think of it as a pre-existing condition that will not change or determine the outcome of the savings clause analysis of the TSP. | Brenda Mills, 3/7/2018 (No change to the report.) |
| 336 | SFWMD | Jennifer Brown/Audra Platt | Annex B | General/Other | 1st sentence too narrow for the types of uses that exist in LECSA. Sentence should say "existing legal sources of water in the LECSA include groundwater and surface water for such uses as public water supply, agricultural, landscape and recreation, and domestic wells." Surface water in LECSA is more than just agriculture. Way written makes it look like we are not analyzing the other use types using surface water. | | | Revisions made to the text as suggested | Jennifer Leeds, 3/2/2018 |
| 337 | SFWMD | Jennifer Brown/Audra Platt | Annex B | Modeling | 4th paragraph talks about no locally triggered cutbacks in the existing base condition scenario. How is that given that we have had declared water shortages for south dade during the period of record? | | | the locally triggered water supply cutbacks are based on groundwater levels at selected locations consistent with past actions by GB to declare water shortages. GW is calibrated and verified. However, GB decisions may be based on a number factors including those external to gw conditions or any other simulated hydrologic conditions. | Brenda Mills, 3/7/2018 (No change to the report.) |
| 338 | SFWMD | Jennifer Brown/Audra Platt | Annex B | Modeling | what numbers were being used to simulate Brighton's water use demands? STOF does not give us a lot of specifics about their demands and they don't give us pumpage. Also, we are reevaluating their entitlement. So has there been any cross-checking with Akin's group to determine if the we can say their entitelment is met for both the Table 7 volumes as well as the volumes were are calculating in the current effort? | | | yes, the model is set-up to ensure their demands are met with the exception of demands met directly by LOK. They are subject to water shortage cutback like permitted users. This is consistent with past agreements and planning processes. See Appendix A, Annex A-2 for model documentation. | Brenda Mills, 3/7/2018 (No change to the report.) |
| 339 | SFWMD | Jennifer Brown/Audra Platt | Annex B | | seems like the sections should be in B.2.4.6 - water supply for fish and wildlife. Section presently in is about meeting permitted demands and we don't give permits to the environment. | | | WRDA 2000 uses the term "existing legal sources of water". This differs from state law's use of "existing legal users". The are not one in the same. | Brenda Mills, 3/7/2018 (No change to the report.) |
| 340 | SFWMD | Jennifer Brown/Audra Platt | Annex B | Policy | section should discuss what the 450 cfs is related to. Entire paragraph has the potential to conflict with the Caloosahatchee MFL reevaluation the District is presently in rule development about. The MFL is currently 30cfs and we are doing rulemaking to change it to 400 cfs. | | | The RECOVER performance measure applied for the savings clause evaluation is for restoration. Additional text has been added to both B.2.4.6.1 and B.2.4.6.2 to make this distinction. | Brenda Mills, 3/7/2018 |
| 341 | SFWMD | Jennifer Brown/Audra Platt | Annex B | Modeling | does the EARFWO scenario include the C-43 reservoir? I recognize its just 3 months difference between the EARFWO and the TSP but are we really recommending a scenario that will make things worse for the Caloosahatchee? | | | Yes, the C-43 project is assumed in place and operational in the FWO scenario. | Jennifer Leeds, 3/2/2018 (No change made to the report.) |
| 342 | SFWMD | Jennifer Brown/Audra Platt | Annex B | Modeling | why is there 40 water years in this analysis? What happened to the 41st WY like the other sections? | | | There are only 40 (complete) water years in the 41 year POR. | Brenda Mills, 3/7/2018 (No change to the report.) |
| 343 | SFWMD | Jennifer Brown/Audra Platt | Annex B | Modeling | why is there 40 water years in this analysis? What happened to the 41st WY like the other sections? | | | There are only 40 (complete) water years in the 41 year POR. | Brenda Mills, 3/7/2018 (No change to the report.) |
| 344 | SFWMD | Jennifer Brown/Audra Platt | Annex B | Policy | what is the likelihood that the post LORS08 regulation schedule will include the needed class limit changes and optimization? Is there a plan B to make this work? If not, should there be a caveat about future evaluation? | | | A Plan B will be developed if this approach is not achieved. | Brenda Mills, 3/7/2018 (No change to the report.) |
| 345 | SFWMD | Jennifer Brown/Audra Platt | Annex B | Policy | So looks like we are choosing the more unsafe alternative. The likelihood of getting back the WSE levels is unlikely given the ecological concerns so… | | | The discussion in the text is when HHD remediation is completed and the HHD DSAC Level 1 rating is lowered, higher maximum lake stages and increased frequency and duration of high lake stages may be possible to provide the additional storage capacity assumed with the TSP. Not implying an unsafe alternative but a recognition that any changes to the regulation schedule would be post-remediation. | Jennifer Leeds, 3/2/2018 (No change made to the report.) |
| 346 | SFWMD | Jennifer Brown/Audra Platt | Annex B | | Section is supposed to be about flood protection and effects of hold higher water levels on the levee. Feels like much of the section is gearing up to talk about flooding the natural system rather than effects on the levee. refocus the WCA 3A portion to say whether there would be an impact on that portion of 3A along the levee. more like the 3B discussion | | | The frequency, duration, and peak stages of high water levels within WCA 3A is appropriate to understand thepotential impacts to the east coast levee and is consitent with USACE analyses and expectations. There is no discussion of ecological implications in WCA 3A. | Brenda Mills, 3/7/2018 (No change to the report.) |

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| 347 | SFWMD | Jennifer Brown/Audra Platt | Annex B | General/Other | say individual parcels rather than fields since you are supposed to be analyzing more than just agricultural uses. | | | Revisions made to the text as suggested | Jennifer Leeds, 3/2/2018 |
| 348 | SFWMD | Jennifer Brown/Audra Platt | Annex B | General/Other | paragraph that starts with "comparison" is duplicative. Is already on Annex B-49 | | | Revisions made to the text as suggested | Jennifer Leeds, 3/2/2018 |
| 349 | SFWMD | Jennifer Brown/Audra Platt | Annex B | General/Other | rather than trying to be different, would use the same language or say "as stated above." | | | Revisions to text were made during the ATR review and addressed comment | Jennifer Leeds, 3/2/2018 |
| 350 | SFWMD | Jennifer Brown/Audra Platt | Annex B | General/Other | section is inconsistent. First sentence says TSP would provide water ot meet other water related needs in LOSA. But the therefore sentence says no water for water-related needs in LOSA. Also is unclear if you are swapping the EAA's normal Lake O water for this new reservoir water all of the time or just some of the time? otherwise, I'm not clear how the non-EAA LOSA improves. but the EAA users are not going to want to give up their normal Lake O volumes. | | | text revised to avoid inconsistency | Brenda Mills, 3/7/2018 |
| 351 | SFWMD | Jennifer Brown/Audra Platt | Annex B | | would say biscayne aquifer rather than surficial aquifer | | | Revisions made to the text as suggested | Jennifer Leeds, 3/2/2018 |
| 352 | SFWMD | Jennifer Brown/Audra Platt | Annex B | Policy | should include Agricultural or urban water supply in the LOSA to the bullet point list | | | Revisions made to the text as suggested | Jennifer Leeds, 3/2/2018 |
| 353 | SFWMD | Jennifer Brown/Audra Platt | Annex B | General/Other | when referring ot a statute in a sentence say **section** 373.470. don't just start with the number | | | Revisions made to the text as suggested | Jennifer Leeds, 3/2/2018 |
| 354 | SFWMD | Jennifer Brown/Audra Platt | Annex B | Policy | would include sentence to the effect of LOSA rules prevent users from increasing their withdrawals from canals being used to convey water to the reservoir. But also should be clear that the LOSa RAA was only meant to be in place for as long as LORS08 was in place. | | | Revisions to text were made during the ATR review and addressed comment | Jennifer Leeds, 3/2/2018 |
| 355 | SFWMD | Jennifer Brown/Audra Platt | Annex B | General/Other | I started reading the state compliance report but stopped. Was COMPLETELY redundant of the previous 66 pages of the annex and the rest of the PACR. While we would normally include a separate report because the USACOE would actually be writing the EIS, there is nothing in the statute that says we have to prepare a separate report. Would be much more efficient to include a sentence in all appropriate locations that the following analysis includes what is required by Section 373.1501, F.S. | | | In an effort to ensure consistency and completeness with the Federal Planning process, a State Compliance 1501 Report was prepared and submitted to FDEP for review, approval and subsequesnt issuance of an Executive order. | Jennifer Leeds, 3/2/2018 (No change made to the report.) |
| 356 | SFWMD | Jennifer Brown/Audra Platt | Annex B | | 3rd sentence sounds like back pumping. | | | Text was reviewed and revised as necessary | Jennifer Leeds, 3/8/2018 |
| 357 | SFWMD | Jennifer Brown/Audra Platt | General | General/Other | when referring to the restricted allocation area for the LEC, the purpose is to protect water in the Lower East Coast Everglades Waterbodies, including C&SF canals, secodary & tertiary canals. Is not an everglades RAA. There are no withdrawals actually happening in the everglades. | | | Will review the document and refernces to Everglades RAA will be updated to LEC Restricted Allocation Area. | Jennifer Leeds, 3/8/2018 (No change made to the report.) |
| 358 | FDOT | Ruban Rodriguez | Appendix A | Engineering | I have read the Engineering Appendix A.1A document and have focused on the potential impacts to US 27 by the construction of two bridges and NNR canal stabilization. The new proposed bridges as Structures B2 and B3 with HS25 design loading rate have to be reviewed by our Structure Office "Ramon.Otero@dot.state.fl.us " once the Bridge Hydraulic and Location Hydraulic report are completed. The two feet freeboard is a DOT standard criteria for debris clearance and we are in concurrence with the report. However, I am curious as to whether the new construction will have any impacts to the vertical alignment of US-27 at those locations or not. as described in the report, storm water discharges within the NNR canal basin are limited to ¾ in/day. NNR will be able to can convey the resultant inflows along with a sustained LO release rate of 200 cfs as long as water stage at G-370 does not exceed 8.0 feet NGVD. However, velocities in the canal will exceed 2.5 ft/sec and stabilization will be needed in order to prevent scour of US-27. We would like to know the design of stabilization within the limited NNR ROW. | | | During the future PED phase of the project, the design of each TSP feature will be refined and optimized; which may include installing a new multi-barrel box culvert in lieu of constructing proposed bridges B-2 and B-3. Also, there is an existing multi-barrel box culvert near the north east corner of the A-1 FEB that might be suitable for use in lieu of constructing proposed bridges B-2 and B-3 (see response to Comment #226). If during the PED phase it is determined that bridges are a better option than a box culvert, then preliminary bridge design drawings will be prepared which will show if there needs to be any change in the vertical alignment of U.S. Highway 27 to accommodate the construction of the bridges. The design of stabilization measures (e.g. riprap) for the proposed U.S. Highway 27 bridges or box culvert will be prepared during the PED phase of the project. | Raymond Sciortino, 3/8/2018 (No change made to the report.) |
| 359 | FDACS | Rebbeca Elliot/Tom MacVicar | Section 6 | Policy | Water Supply. We are pleased to see the significant reduction in water shortage cutbacks shown in figure 6-10, page 6-59, however we are concerned with inconsistencies in the planning document regarding water supply. The report documents (Figure B-6) that a substantial percentage of LOSA water demands will be met by the new reservoir yet the main document says that agricultural demand in LOSA "will continue to be met by existing sources" (p. ES-9 and page 6-60).<br><br>Language in the report describing the use of A-2 to meet irrigation demand needs to be clearer, especially if this is the reason for the improved performance during water shortages. Some advocates are already opposing any such use, and this issue resulted in federal litigation when the A-1 reservoir was proposed a decade ago with a similar idea despite CERP including increased water supply from the EAA Storage Reservoir project. For there to be a reliable assurance that this water would be available in the future, the PACR needs to be much more explicit in making this operational use very clear in any document the Federal government receives from the District. | | | The CEPP PACR was not formulated to meet irrigation damands or improve water supply. The multipurpose operational flexibility allows for water to be returned to the Miami and North New River Canals when restoration flows have been met. | Jennifer Leeds, 3/8/2018 (No change made to the report.) |

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| 360 | FDACS | Rebbeca Elliot/Tom MacVicar | General | Policy | Flood Protection. Agricultural flood protection is another major concern for the FDACS. Based on a quick review of the model output readily available it appears that the current level of service will be maintained. The EAA reservoir project in the 1999 plan approved by Congress was one of only two projects that included the enhancement of flood protection as a project purpose. The conveyance enhancements in this plan coupled with the new inflow pump station for the reservoir would allow some enhancement to be achieved through purely operational means and it would seem this should be part of the analysis. The ability to reduce peak stage in both the Miami and North New River Canals could greatly reduce the need for flood control pumping at S-2 and S-3 while providing improved flood protection for the farms and cities near the lake | | | Thank you for your comment. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 361 | FDACS | Rebbeca Elliot/Tom MacVicar | Section 6 | Policy | Schedule. The schedule shown in figure ES-4, p ES 14, appears to be unconstrained by funding limits and is similar to the unconstrained schedule shown in the CEPP report. However, it is described in the preceding page, ES 13, as being constrained to $50 million in federal funds and $50 million in state funds per year. The exact same schedule is shown in figure 6-9, p 6-49, and is described there as being "with unconstrained resources and funding", which appears to be accurate. The figure ES-4 description needs to be corrected as being with unconstrained resources and funding. It would be useful to convey a more realistic time frame in keeping with the constrained schedule provided in the CEPP report. We recommend a constrained schedule also be inserted into the ES and Section 6. | | | the implementation schedule has been updated. | Leslye Waugh, 2/27/2018 |
| 362 | FDACS | Rebbeca Elliot/Tom MacVicar | Section 6 | Policy | Project Dependencies. Figures ES-4 p ES 14, and figure 6-9, p 6-49 cite a 2018 draft Integrated Delivery Schedule (IDS), that does not seem to be available at this time and is not included in the documentation. The project dependencies and sequencing of CEPP and non-CEPP projects is a major concern for FDACS since the success of all projects without negative impacts to both developed and undeveloped lands relies on proper sequencing to address water quality, construction prerequisites, operational options, and seepage control. Based on this review, it is not clear to us that the carefully thought out sequencing included in CEPP has been followed. We recommend including the draft 2018 IDS in your documentation and look forward to review of the CEPP PACR sequencing in the future. | | | Project operational constraints and dependencies are recongnized in the document. See the Engineering Appendix A and Section 6.7 | Leslye Waugh, 2/27/2018 (No change mage to the report.) |
| 363 | FDACS | Rebbeca Elliot/Tom MacVicar | General | Modeling | Several areas show improved environmental performance that seems to be related to operational changes that are not dependent on changes to the size of the A-2 reservoir. It specifically mentions changes to the upper bands of the Lake Okeechobee schedule and modifications to south Dade operations to achieve more benefits for Florida Bay. These changes, and potentially others, that are not dependent on the additional storage in A-2 should be included in the future-without modeling of the CEPP plan so it is clear that all the outcomes shown in the PACR are related solely to the additional storage being proposed and not to operational changes that are available under the existing CEPP authorization. | | | As storage is added and system infrastructure capability is increased, it makes sense to develop optimized Lake Okeechobee schedule rules that work with storage and focus on the events beyond what current infrastructure can handle. The operational criteria identified for the EAASR project are specifically designed to work with the proposed infrastructure and cannot be separated from the physical features. The FWO modeling contains the as-modeled operations of the authorized plan and is therefore the correct point of comparison for evaluating the potential lift provided by the EAASR proposed infrastructure when operated in an efficient way. | Leslye Waugh, 3/6/2018 (No change made to the report.) |
| 364 | FDACS | Rebbeca Elliot/Tom MacVicar | Annex B | Modeling | Figure B-45 is labeled as inflow probability curve for Florida Bay using transect 27. Transect 27 estimates flow through Shark River Slough, not inflow to Florida Bay. Inflow to Florida Bay is shown on the previous chart showing transect 23, which is correct. | | | Adjusted text in coordination with F Sklar to clarify role of flows at SRS to decrease salinity in FL Bay. Also changed figure caption - Shark River Slough for transect 27. | Brenda Mills, 3/7/2018 |

# ATTACHMENT 5

# SOUTH FLORIDA WATER MANAGEMENT DISTRICT

# INDEPENDENT EXTERNAL PEER REVIEW

# CENTRAL EVERGLADES PLANNING PROJECT
# POST-AUTHORIZATION CHANGE REPORT

March 12, 2018

Michael Albert
Senior Project Manager
Federal Policy and Coordination
Directorate of Contracting
South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL 33406
MAlbert@sfwmd.gov

Purchase Order No. 4500104139

SUBMITTAL OF DELIVERABLE: *Independent External Peer Review (IEPR) of the Central Everglades Planning Project, Florida Post-Authorization Change Report Everglades Agricultural Area Storage Reservoir Integrated Feasibility Report and Environmental Impact Statement: Final Report*

Dear Mr. Albert:

This letter accompanies the submission of the Final Report for the Independent External Peer Review (IEPR) of the Central Everglades Planning Project, Florida Post-Authorization Change Report Everglades Agricultural Area Storage Reservoir Integrated Feasibility Report and Environmental Impact Statement.

Please contact me at 781-681-5510 if you have any technical questions regarding this submittal.

Sincerely,

Lynn McLeod
Project Manager

encl.

# Final Independent External Peer Review Report
# Central Everglades Planning Project, Florida
# Post-Authorization Change Report
# Everglades Agricultural Area Storage Reservoir
# Integrated Feasibility Report and
# Environmental Impact Statement

Prepared by
Battelle Memorial Institute

Prepared for
South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL 33406

Purchase Order No. 4500104139

March 12, 2018

BATTELLE
It can be done

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Purchase Order No. 4500104139

# Final Independent External Peer Review Report
# Central Everglades Planning Project, Florida
# Post-Authorization Change Report
# Everglades Agricultural Area Storage Reservoir
# Integrated Feasibility Report and
# Environmental Impact Statement

Prepared by

Battelle
505 King Avenue
Columbus, Ohio 43201

for

South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL 33406

March 12, 2018

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# Final Independent External Peer Review Report Central Everglades Planning Project, Florida Post-Authorization Change Report Everglades Agricultural Area Storage Reservoir Integrated Feasibility Report and Environmental Impact Statement

## Executive Summary

### PROJECT BACKGROUND AND PURPOSE

The South Florida Water Management District (SFWMD), as local sponsor to the Central Everglades Planning Project (CEPP), has prepared a CEPP Post Authorization Change Report (PACR) (Integrated Feasibility Study and Environmental Impact Statement). Section 373.4598 Florida Statutes, passed and signed into law in 2017, mandates accelerated efforts by the SFWMD to pursue the PACR in support of a plan to increase water storage and water quality treatment wetlands in the Everglades Agricultural Area (EAA) south of Lake Okeechobee, Florida. The law directs the SFWMD to evaluate two alternative storage targets: 240,000 acre-feet on the A-2 parcel and A-2 expansion area, and up to 360,000 acre-feet of storage on A-1 and A-2 parcels combined, and associated conveyance improvements.

The CEPP PACR is being conducted under the authority provided by Section 203 of the Water Resources Development Act (WRDA) of 1986, as amended by Section 1014(a) of the WRDA 2014, which authorizes non-Federal interests to undertake feasibility studies of proposed water resources development projects for submission to the Secretary of the Army. Upon approval of the CEPP PACR by the Governing Board of the SFWMD and the Assistant Secretary of the Army for Civil Works, the recommended plan will be submitted to Congress for authorization.

The CEPP PACR does not represent a complete reevaluation of the CEPP. The focus and purpose of the CEPP PACR is to evaluate and select storage and treatment features in the EAA south of Lake Okeechobee that will increase the amount of storage and treatment wetlands in the CEPP Project Partnership Agreement (PPA) New Water and send additional water south to the historic Everglades ecosystem. The CEPP PACR will also reaffirm that the CEPP PPA South and North can accommodate additional flows south that will result from additional storage and treatment wetlands on the A-1, A-2, and A-2 expansion area flow equalization basins by evaluating the need for additional improvements to the conveyance system from Lake Okeechobee to the new storage features. No changes to the conveyance system south of the EAA, beyond those included in the CEPP, are anticipated as a result of the PACR. The benefit of management measures recommended in the CEPP PACR would be the reduction of undesirable regulatory discharges of freshwater from Lake Okeechobee to estuaries on the east and west coast of Florida and increased flows to the greater Everglades. All other project features authorized in the CEPP would not be affected by the scope of the CEPP PACR.

The increase in storage and treatment features and the associated improvements in conveyance to move more water to the new EAA storage features evaluated and recommended in the CEPP PACR would further improve the quantity, quality, timing, and distribution of water flows to the Northern Estuaries, central Everglades (Water Conservation Area 3 and Everglades National Park), and Florida Bay while maintaining water supply for municipal and agricultural users.

Since the Comprehensive Everglades Restoration Plan (CERP) was approved:

- Three projects were authorized in the 2007 WRDA and proceeded to construction (Indian River Lagoon-South, Picayune Strand, and Site 1 Impoundment) and a fourth project, Melaleuca and Other Exotic Plants Biological Controls, was implemented under the programmatic authority in WRDA 2000.

- Three projects were authorized in the 2014 WRDA. The C-43 Reservoir and Biscayne Bay Coastal Wetlands Phase I Project proceeded to construction, and detailed design began on the Broward County Water Preserve Area Project.

- The CEPP, which includes the first increment of the EAA Storage Reservoirs, was authorized in WRDA 2016.

Despite this progress, ecological conditions and functions within the central portion of the Everglades ridge and slough community will continue to decline due to lack of sufficient quantities of freshwater flow into the central Everglades and timing and distribution problems. The SFWMD initiated the CEPP PACR in August 2017 to respond to this concern and evaluate alternatives for the final increment of CERP EAA Storage needed to achieve the CERP 300,000 acre-feet of average annual flow to the central portion of the Everglades to restore ecosystem conditions.

## Independent External Peer Review Process

Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analysis. SFWMD is conducting an Independent External Peer Review (IEPR) of the Central Everglades Planning Project, Florida Post-Authorization Change Report Everglades Agricultural Area Storage Reservoir Integrated Feasibility Report and Environmental Impact Statement (hereinafter: SFWMD CEPP PACR IEPR) which is being prepared for the U.S. Army Corps of Engineers (USACE) under the authority granted by Section 203 of the WRDA of 1986 (P.L. 99-662). 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 the USACE Engineer Circular (EC) titled *Water Resources Policies and Authorities: Civil Works Review* (USACE, 2012). Battelle has experience in establishing and administering peer review panels for USACE and was engaged to coordinate this SFWMD CEPP PACR IEPR. The IEPR was conducted following USACE and Office of Management and Budget (OMB) guidance described in USACE (2012) and OMB (2004). This final report presents the Final Panel Comments of the IEPR Panel (the Panel). Details regarding the IEPR (including the process for selecting panel members, the panel members' biographical information and expertise, and the charge submitted to the Panel to guide its review) are presented in appendices.

Based on the technical content of the decision documents and the overall scope of the project, Battelle identified potential candidates for the Panel in the following key technical areas: Civil Works planning/ economics, environmental/ecological evaluation, hydraulic engineering, and geotechnical engineering.

Battelle screened the candidates to identify those most closely meeting the selection criteria and evaluated them for COIs and availability. SFWMD was given the list of final candidates to confirm that they had no COIs, but Battelle made the final selection of the four-person Panel.

The Panel received electronic versions of the decision documents (1,634 pages in total), along with a charge that solicited comments on specific sections of the documents to be reviewed. Following guidance provided in USACE (2012) and OMB (2004), Battelle prepared the charge questions, which were included in the draft and final Work Plans and approved by SFWMD for this IEPR.

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

IEPR panel members reviewed the decision documents individually. The panel members then met via teleconference with Battelle to review key technical comments and reach agreement on the Final Panel Comments to be provided to SFWMD. 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/high, medium, medium/low, or low); and (4) recommendations on how to resolve the comment.

Battelle also received public comments from SFWMD on the SFWMD CEPP PACR (approximately 174 pages of letters and individual comments received via email) and provided them to the IEPR panel members. The panel members were charged with determining if any information or concerns presented in the public comments raised any additional discipline-specific technical concerns with regard to the SFWMD CEPP PACR review documents. After completing its review, the Panel identified one new issue and subsequently generated one Final Panel Comment that summarized the concern.

Overall, six Final Panel Comments were identified and documented. Of these, one had medium significance, one had medium/low significance, and four had low significance. The Panel did not identify any high or medium/high concerns.

## Results of the Independent External Peer Review

The panel members agreed 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 SFWMD CEPP PACR review documents. Table ES-1 lists the Final Panel Comment statements by level of significance. The full text of the Final Panel Comments is presented in Section 4.2 of this report. The following summarizes the Panel’s findings.

Based on the Panel’s review, the SFWMD CEPP PACR is a well-written document that provides excellent supporting documentation on economic, engineering, environmental, and plan formulation issues and decisions. The report provided a balanced assessment of the economic, engineering, and environmental issues of the overall project. The Panel noted some redundancy of information provided in the various documents; however, the panel members recognize that the files they reviewed were submitted for review prior to the document being pulled together as one complete document. Even given the format in which the report was supplied, the Panel was able to find the information necessary to understand the decisions

made and found the documentation necessary to validate those decisions. The Panel identified only a few elements of the report that should be clarified or elements of the project where additional documentation of information is warranted. Furthermore, the Panel identified only a few places in the report where project findings and objectives need to be documented or revised.

**Plan Formulation:** The Panel believes that SFWMD has assessed all reasonable alternatives given the narrow scope of the purpose and need. However, during review of the public comments, it was noted that numerous comments focused on an alternative that does not appear to be discussed in the PACR. To ensure that the alternatives assessment meets the Council on Environmental Quality's regulation 40 CFR Part 1502.14(a), SFWMD should conduct and document an objective evaluation of the public's suggested alternative and, if applicable, provide information on why it was not carried forward for further detailed study.

**Engineering:** The documentation reviewed was well written and very thorough given the breadth of the analysis performed to support the document. Informed public should be able to understand the complex analysis used to derive the decisions made throughout the document. However, the Panel believes that a little more information is necessary on the risks and uncertainty associated with the Tentatively Selected Plan (TSP). Currently, the TSP is presented as a static known solution without variability. However, it was developed based on data that had an upper and lower bound to each metric. Therefore, the TSP really has upper and lower bounds which represent the uncertainty and risk associated with it. The Panel believes these bounds should be included as part of the TSP discussion. In addition, information on the models that were used and how well they represent the area would be beneficial. Including this information will strengthen the conclusions drawn regarding the proposed project.

**Economics:** The Panel noted that the economics evaluation clearly received great focus, scrutiny, and effort and that very few issues remain to be addressed from a benefit-cost perspective. The panel members also noted that the description of the future without condition for this large and complex study demonstrates an exceptional degree of accuracy that stands apart from other, similar analyses. As outlined in the engineering summary above, the panel members believe more information is needed on the uncertainty and risks associated with the TSP with regard to the benefits and costs. They also agree that more information on the economic models used to simulate expected future conditions is warranted. Finally, the review documents would benefit from additional information on the impacts to commercial and recreational navigation and flood risk reduction to address inconsistencies regarding these impacts.

**Environmental:** The Panel determined that the conclusions drawn from the assessments conducted were reasonable and complete based on the information provided. The panel members understand that, because this is a Section 203 project, consultation with cooperating and permitting agencies and with the Tribes will be conducted by USACE in the next phase of the project. Therefore, concerns and comments regarding those consultations and possible changes arising from them are not included in this Final IEPR Report.

**Table ES-1. Overview of Six Final Panel Comments Identified by the SFWMD CEPP PACR IEPR Panel**

| No. | Final Panel Comment |
|---|---|
| **Significance – Medium** | |
| 1 | Risk and uncertainty associated with the future without-project conditions (FWO) and TSP are not clearly communicated. |
| **Significance – Medium/Low** | |
| 2 | During its review of the public comments, the Panel noted that several letters discussed a new alternative the commenters believe is a viable solution. However, the PACR does not explain why the alternative was not addressed in the screening process. |
| **Significance – Low** | |
| 3 | The PACR does not provide sufficient information on the specific models used and their overall performance. |
| 4 | Impacts to navigation and flood risk reduction are not clearly described and the decision documents seem to be inconsistent. |
| 5 | Recreation feature costs discussed in Appendix F were escalated from fiscal year 2014 prices through indexing rather than following best practice methods and USACE guidance, which call for costs and benefits to be reevaluated if more than three fiscal years have elapsed. |
| 6 | FWO projections regarding population growth and economic development under the CEPP with-project conditions may be too conservative, an uncertainty that has not been addressed. |

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Appendix B. Identification and Selection of IEPR Panel Members for the SFWMD CEPP PACR IEPR

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# LIST OF ACRONYMS

| | |
|---|---|
| **ATR** | Agency Technical Review |
| **CEPP** | Central Everglades Planning Project |
| **CERP** | Central Everglades Restoration Plan |
| **CEQ** | Council on Environmental Quality |
| **COI** | Conflict of Interest |
| **CSRM** | Coastal Storm Risk Management |
| **DMSTA** | Dynamic Model for Stormwater Treatment Areas |
| **EA** | Environmental Assessment |
| **EAA** | Everglades Agricultural Area |
| **EC** | Engineer Circular |
| **EFH** | Essential Fish Habitat |
| **EIS** | Environmental Impact Statement |
| **ENP** | Everglades National Park |
| **ER** | Engineer Regulation |
| **FDACS** | Florida Department of Agricultural and Consumer Services |
| **FDEP** | Florida Department of Environmental Protection |
| **FHM** | FIPR Hydrologic Model |
| **FRM** | Flood Risk Management |
| **FWCC** | Florida Wildlife Conservation Commission |
| **FWO** | Future Without-Project Conditions |
| **GRR** | General Reevaluation Report |
| **H&H** | Hydrologic and Hydraulic |
| **HEC-FDA** | Hydrologic Engineering Center Flood Damage Reduction Analysis |
| **HEC-RAS** | Hydrologic Engineering Center River Analysis System |
| **HTRW** | Hazardous, Radioactive, and Toxic Waste |
| **IEPR** | Independent External Peer Review |
| **IHM** | Integrated Hydrologic Model |
| **NED** | National Economic Development |
| **NEPA** | National Environmental Policy Act |
| **O&M** | Operation and Maintenance |

| | |
|---|---|
| **OEO** | Outside Eligible Organization |
| **OMB** | Office of Management and Budget |
| **PACR** | Post Authorization Change Report |
| **PIR** | Project Implementation Report |
| **PPA** | Project Partnership Agreement |
| **RECONS** | Regional Economic System |
| **RSM** | Regional Simulation Model |
| **SFWMD** | South Florida Water Management District |
| **SFWMM** | South Florida Water Management Model |
| **TSP** | Tentatively Selected Plan |
| **USACE** | United States Army Corps of Engineers |
| **USFWS** | United States Fish and Wildlife Service |
| **USGS** | United States Geological Survey |
| **WCA 3** | Water Conservation Area 3 |
| **WRDA** | Water Resources Development Act |

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# 1. INTRODUCTION

The South Florida Water Management District (SFWMD), as local sponsor to the Central Everglades Planning Project (CEPP), has prepared a CEPP Post Authorization Change Report (PACR) (Integrated Feasibility Study and Environmental Impact Statement). Section 373.4598 Florida Statutes, passed and signed into law in 2017, mandates accelerated efforts by the SFWMD to pursue the PACR in support of a plan to increase water storage and water quality treatment wetlands in the Everglades Agricultural Area (EAA) south of Lake Okeechobee, Florida. The law directs the SFWMD to evaluate two alternative storage targets: 240,000 acre-feet on the A-2 parcel and A-2 expansion area, and up to 360,000 acre-feet of storage on A-1 and A-2 parcels combined, and associated conveyance improvements.

The CEPP PACR is being conducted under the authority provided by Section 203 of the Water Resources Development Act (WRDA) of 1986, as amended by Section 1014(a) of the WRDA 2014, which authorizes non-Federal interests to undertake feasibility studies of proposed water resources development projects for submission to the Secretary of the Army. Upon approval of the CEPP PACR by the Governing Board of the SFWMD and the Assistant Secretary of the Army for Civil Works, the recommended plan will be submitted to Congress for authorization.

The CEPP PACR does not represent a complete reevaluation of the CEPP. The focus and purpose of the CEPP PACR is to evaluate and select storage and treatment features in the EAA south of Lake Okeechobee that will increase the amount of storage and treatment wetlands in the CEPP Project Partnership Agreement (PPA) New Water and send additional water south to the historic Everglades ecosystem. The CEPP PACR will also reaffirm that the CEPP PPA South and North can accommodate additional flows south that will result from additional storage and treatment wetlands on the A-1, A-2, and A-2 expansion area flow equalization basins by evaluating the need for additional improvements to the conveyance system from Lake Okeechobee to the new storage features. No changes to the conveyance system south of the EAA, beyond those included in the CEPP, are anticipated as a result of the PACR. The benefit of management measures recommended in the CEPP PACR would be the reduction of undesirable regulatory discharges of freshwater from Lake Okeechobee to estuaries on the east and west coast of Florida and increased flows to the greater Everglades. All other project features authorized in the CEPP would not be affected by the scope of the CEPP PACR.

The increase in storage and treatment features and the associated improvements in conveyance to move more water to the new EAA storage features evaluated and recommended in the CEPP PACR would further improve the quantity, quality, timing, and distribution of water flows to the Northern Estuaries, central Everglades (Water Conservation Area 3 and Everglades National Park), and Florida Bay while maintaining water supply for municipal and agricultural users.

Since the Comprehensive Everglades Restoration Plan (CERP) was approved:

- Three projects were authorized in the 2007 WRDA and proceeded to construction (Indian River Lagoon-South, Picayune Strand, and Site 1 Impoundment) and a fourth project, Melaleuca and Other Exotic Plants Biological Controls, was implemented under the programmatic authority in WRDA 2000.

- Three projects were authorized in the 2014 WRDA. The C-43 Reservoir and Biscayne Bay Coastal Wetlands Phase I Project proceeded to construction, and detailed design began on the Broward County Water Preserve Area Project.

- The CEPP, which includes the first increment of the EAA Storage Reservoirs, was authorized in WRDA 2016.

Despite this progress, ecological conditions and functions within the central portion of the Everglades ridge and slough community will continue to decline due to lack of sufficient quantities of freshwater flow into the central Everglades and timing and distribution problems. The SFWMD initiated the CEPP PACR in August 2017 to respond to this concern and evaluate alternatives for the final increment of CERP EAA Storage needed to achieve the CERP 300,000 acre-feet of average annual flow to the central portion of the Everglades to restore ecosystem conditions.

Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analysis. The objective of the work described here was to conduct an Independent External Peer Review (IEPR) of the SFWMD CEPP PACR (hereinafter: SFWMD CEPP PACR IEPR) 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 the Office of Management and Budget (OMB), *Final Information Quality Bulletin for Peer Review* (OMB, 2004). 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).

This final report presents the Final Panel Comments of the IEPR Panel (the Panel) on the existing engineering, economic, environmental, and plan formulation analyses contained in the SFWMD CEPP PACR review documents (Section 4). Appendix A describes in detail how the IEPR was planned and conducted, including the complete schedule followed in executing the IEPR. Appendix B provides biographical information on the IEPR panel members and describes the method Battelle followed to select them. Appendix C presents the final charge to the IEPR panel members for their use during the review; the final charge was submitted to SFWMD in the final Work Plan according to the schedule listed in Table 1.

## 2. PURPOSE OF THE IEPR

To ensure that documents USACE relies upon to make decisions 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). This process is also required to be implemented to project documents prepared under authorization of Section 203 of the WRDA.

In general, the purpose of peer review is to strengthen the quality and credibility of the SFWMD-developed decision documents for water resource projects in support of the USACE Civil Works program. IEPR provides an independent assessment of the engineering, economic, environmental, and plan formulation analyses of a project study. In particular, 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 SFWMD CEPP PACR was conducted and managed using contract support from Battelle, which is an Outside Eligible Organization (OEO) (as defined by EC 1165-2-214). Battelle, a 501(c)(3) organization under the U.S. Internal Revenue Code, has experience conducting IEPRs for USACE, for state and local agencies, and for industrial clients. Prior to contracting for the SFWMD CEPP PACR IEPR, Battelle completed an internal organizational COI screening to ensure that the panel members were free from COIs before conducting the IEPR.

## 3. METHODS FOR CONDUCTING THE IEPR

The methods used to conduct the IEPR are briefly described in this section; a detailed description can be found in Appendix A. Table 1 presents the major milestones and deliverables of the SFWMD CEPP PACR IEPR. Due dates for milestones and deliverables are based on the award/effective date listed in Table 1. Note that the actions listed under Task 6 occur after the submission of this report. Battelle anticipates submitting the pdf printout of the Comment Response Record (the final deliverable) on April 10, 2018. The actual date for contract end will depend on the date that all activities for this IEPR are conducted and subsequently completed.

**Table 1. Major Milestones and Deliverables of the SFWMD CEPP PACR IEPR**

| Task | Action | Due Date |
|---|---|---|
| **1** | Award/Effective Date | 12/13/2017 |
| | Review documents and Public Comments received | 2/5/2018 |
| **2** | Battelle submits list of selected panel members[a] | 1/9/2018 |
| | SFWMD confirms the panel members have no COI | 1/12/2018 |
| **3** | Battelle convenes kick-off meeting with SFWMD | 1/12/2018 |
| | Battelle convenes kick-off meeting with SFWMD and panel members | 1/19/2018 |
| **4** | Panel members complete their review of the documents | 2/21/2018 |
| | Panel members provide draft Final Panel Comments to Battelle | 3/1/2018 |
| | Panel finalizes Final Panel Comments | 3/6/2018 |
| **4[b]** | Battelle sends public comments to Panel | 2/6/2018 |
| | Panel identify and develop one Final Panel Comment with regard to the public comments | 2/23/2018 |
| **5** | Battelle submits Final IEPR Report to SFWMD[a, b] | 3/12/2018 |
| **6[c]** | Battelle convenes Comment Response Teleconference with panel members and SFWMD | 3/29/2018 |
| | Battelle submits pdf printout of Comment Response Record[a] | 4/10/2018 |
| | Contract End/Delivery Date | 7/1/2018 |

[a] *Deliverable.*

[b] *The public comment review was conducted in time to include the information in the Final Report, therefore, the final report represents the deliverable for both Task 5a and Task 5b originally proposed.*

[c] *Task 6 activities occur after the submission of this report.*

Battelle identified, screened, and selected four panel members to participate in the IEPR based on their expertise in the following disciplines: Civil Works planning/economics, environmental/ecological evaluation, hydraulic engineering, and geotechnical engineering. The Panel reviewed the SFWMD CEPP PACR review documents and produced six Final Panel Comments in response to 15 charge questions provided by SFWMD for the review. Battelle instructed the Panel to develop the Final Panel Comments using a standardized four-part structure:

1. Comment Statement (succinct summary statement of concern)
2. Basis for Comment (details regarding the concern)
3. Significance (high, medium/high, medium, medium/low, or low; in accordance with specific criteria for determining level of significance)
4. Recommendation(s) for Resolution (at least one implementable action that could be taken to address the Final Panel Comment).

Battelle reviewed all Final Panel Comments for accuracy, adherence to USACE guidance (EC 1165-2-214, Appendix D), and completeness prior to determining that they were final and suitable for inclusion in the Final IEPR Report. There was no direct communication between the Panel and SFWMD during the preparation of the Final Panel Comments. The Panel's findings are summarized in Section 4.1; the Final Panel Comments are presented in full in Section 4.2.

# 4. RESULTS OF THE IEPR

This section presents the results of the IEPR. A summary of the Panel's findings and the full text of the Final Panel Comments are provided.

## 4.1 Summary of Final Panel Comments

The panel members agreed 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 SFWMD CEPP PACR IEPR review documents. The following summarizes the Panel's findings.

Based on the Panel's review, the SFWMD CEPP PACR is a well-written document that provides excellent supporting documentation on economic, engineering, environmental, and plan formulation issues and decisions. The report provided a balanced assessment of the economic, engineering, and environmental issues of the overall project. The Panel noted some redundancy of information provided in the various documents; however, the panel members recognize that the files they reviewed were submitted for review prior to the document being pulled together as one complete document. Even given the format in which the report was supplied, the Panel was able to find the information necessary to understand the decisions made and found the documentation necessary to validate those decisions. The Panel identified only a few elements of the report that should be clarified or elements of the project where additional documentation of information is warranted. Furthermore, the Panel identified only a few places in the report where project findings and objectives need to be documented or revised.

**Plan Formulation:** The Panel believes that SFWMD has assessed all reasonable alternatives given the narrow scope of the purpose and need. However, during review of the public comments, it was noted that numerous comments focused on an alternative that does not appear to be discussed in the PACR. To ensure that the alternatives assessment meets the Council on Environmental Quality's regulation 40 CFR Part 1502.14(a), SFWMD should conduct and document an objective evaluation of the public's suggested

alternative and, if applicable, provide information on why it was not carried forward for further detailed study.

**Engineering:** The documentation reviewed was well written and very thorough given the breadth of the analysis performed to support the document. Informed public should be able to understand the complex analysis used to derive the decisions made throughout the document. However, the Panel believes that a little more information is necessary on the risks and uncertainty associated with the Tentatively Selected Plan (TSP). Currently, the TSP is presented as a static known solution without variability. However, it was developed based on data that had an upper and lower bound to each metric. Therefore, the TSP really has upper and lower bounds which represent the uncertainty and risk associated with it. The Panel believes these bounds should be included as part of the TSP discussion. In addition, information on the models that were used and how well they represent the area would be beneficial. Including this information will strengthen the conclusions drawn regarding the proposed project.

**Economics:** The Panel noted that the economics evaluation clearly received great focus, scrutiny, and effort and that very few issues remain to be addressed from a benefit-cost perspective. The panel members also noted that the description of the future without condition for this large and complex study demonstrates an exceptional degree of accuracy that stands apart from other, similar analyses. As outlined in the engineering summary above, the panel members believe more information is needed on the uncertainty and risks associated with the TSP with regard to the benefits and costs. They also agree that more information on the economic models used to simulate expected future conditions is warranted. Finally, the review documents would benefit from additional information on the impacts to commercial and recreational navigation and flood risk reduction to address inconsistencies regarding these impacts.

**Environmental:** The Panel determined that the conclusions drawn from the assessments conducted were reasonable and complete based on the information provided. The panel members understand that, because this is a Section 203 project, consultation with cooperating and permitting agencies and with the Tribes will be conducted by USACE in the next phase of the project. Therefore, concerns and comments regarding those consultations and possible changes arising from them are not included in this Final IEPR Report.

## 4.2 Final Panel Comments

This section presents the full text of the Final Panel Comments prepared by the IEPR panel members.

## Final Panel Comment 1

**Risk and uncertainty associated with the future without-project conditions (FWO) and TSP are not clearly communicated.**

### Basis for Comment

All projections of future conditions and models of natural systems have uncertainty. There are two types of uncertainty in forecasting and modeling: parameter uncertainty and boundary uncertainty. Uncertainty in the model parameters can be minimized through model calibration. Uncertainty in the model and the forecast of external boundary conditions can include sea level rise or future economic, demographic, and climatic conditions. Neither model nor forecasting uncertainty are explicitly addressed in the CEPP PACR, and there is no documentation that the uncertainty in the model results includes upper and lower bounds for performance metrics that impact design criteria.

Uncertainty in future sea level rise was included in the documentation at a high, medium, and low estimate. It is important to understand the uncertainty and the degree to which the model uncertainty propagates through the analysis as well as impacts to the design results. A high degree of model uncertainty combined with a high degree of risk could result in very different outcomes than would a low degree of model uncertainty combined with a low degree of risk. For example, depending on the actual sea level rise, the actual outcome of the FWO and TSP could be very different. If the upper and lower bounds identified for targeted evaluation metrics that impact design criteria are incorporated in the model, the uncertainty in the model results will be included in the document and the range of actual outcomes will be demonstrated.

From a plan formulation perspective, the CEPP PACR is unclear on how risk and uncertainty affect the FWO condition and alternative plans. The decision document does indicate that at least some uncertain future conditions were evaluated. However, projections do not address uncertainty, nor do the documents address the risk that would result if the alternatives do not achieve the projected outputs. The reader is directed to the CEPP Project Implementation Report (PIR) for more information on risk and uncertainty, and the decision document unconvincingly states that there is no change in risk and uncertainty in the PACR.

Furthermore, model uncertainty and probability-based outcomes are not sufficiently represented in the decision documentation. Specifically, the PACR does not evaluate output metrics using a probabilistic approach, nor are there any probability-based histograms describing how risk was calculated.

To adequately evaluate uncertain conditions (such as the degree and timing of climate change and sea level rise), potential impacts should be modeled probabilistically. For example, designing structures for the 100-year event is designing to a 1% probability. Output metrics should be evaluated using a distribution of probability-based histogram.

### Significance – Medium

Although some uncertainty analysis was performed, the partial analysis of risk and uncertainty affects the completeness of the report

## Final Panel Comment 1

### Recommendations for Resolution

1. Include upper and lower bounds on model results that impact CEPP design.
2. Propagate model uncertainty through subsequent models and analysis.
3. Evaluate design metrics with probabilistic design criteria.

## Final Panel Comment 2

**During its review of the public comments, the Panel noted that several letters discussed a new alternative the commenters believe is a viable solution. However, the PACR does not explain why the alternative was not addressed in the screening process.**

### Basis for Comment

Public comments provided by SFWMD are presented in Appendix C.2, Pertinent Correspondence. Numerous public comments state that the sizes of the reservoir and stormwater treatment areas for the alternatives evaluated in the PACR are inadequate and that a much larger reservoir, up to 13,000 acres, is needed to achieve the CERP goals for delivering water to the Everglades.

Council on Environmental Quality (CEQ) regulations (Title 40, Chapter V, Part 1502.14(a)) state that agencies shall, "Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." The Panel notes that comments on this proposed alternative were received within the timeframe of the public meetings listed in Section 7.1. Further, Section 3.1 of the PACR states, "In addition to technical analyses, the planning process also requested and considered stakeholder input to develop alternative plans" (p. 3-1). The Panel does not find any acknowledgment or consideration of the larger reservoir and STA alternative in the PACR.

Considering the CEQ regulation noted above, the Panel believes that an objective evaluation of the public's concerns should be documented in the PACR, including the reason(s) why this alternative should or should not warrant evaluation.

### Significance – Medium/Low

If the screening process is viewed as circumventing CEQ regulations, the process could be vulnerable to criticism and potential future dispute.

### Recommendation for Resolution

1. Evaluate this alternative in the PACR and explain why the alternative should either be carried forward or eliminated from further review.

## Final Panel Comment 3

**The PACR does not provide sufficient information on the specific models used and their overall performance.**

### Basis for Comment

Section 3.2.1.3 briefly describes the suite of models used in or relied upon by the CEPP PACR. How these models are used to transparently simulate expected future conditions is not clear or well defined. Model performance is critical to the confidence and therefore certainty given to the model results.

Models are used to predict the response to changes in the design and operation of physical features and to assess the cost effectiveness of management measures. Most models have parameters that require calibration (when feasible). These parameters are adjusted to improve the fit of the model results to observed events. The calibration process can eliminate model uncertainty as well as impart confidence in the predictive capability of the models. The better a model is calibrated to observed events, the more uncertainty in the model results will be reduced.

In addition, the model performance is not well documented, and the reader cannot assess the predictive capability of the models used in the evaluation and design of the TSP.

### Significance – Low

The lack of information on the models used affects the completeness of the document.

### Recommendations for Resolution

1. Document model performance metrics when possible.
2. Provide details on the assumptions, parameters, and inputs for the models described in Section 3.
3. State whether models used in the PACR are certified for use by the appropriate USACE PCX.

## Final Panel Comment 4

**Impacts to navigation and flood risk reduction are not clearly described and the decision documents seem to be inconsistent.**

### Basis for Comment

Navigation and recreation are congressionally authorized and economically important purposes of Lake Okeechobee and the Okeechobee Waterway. Sections 4 and 5 are not consistent in describing impacts of the CEPP PACR on these uses of the systems under evaluation.

Section 4.5.1 states that none of the alternatives considered will impact navigation, while Section 5.2.15.3 states that the TSP will result in improved recreational navigation opportunities.

Sections 4.5.1 and 5.1.15.2 are similarly inconsistent on flood risk reduction. The former indicates that existing flood risk reduction will be maintained, while the latter states that there will be improvement under the TSP.

These apparent inconsistencies make it difficult to determine whether the TSP will result in economic impacts to very important purposes of the WRDA 2000 and subsequent authorizations.

### Significance – Low

This minor technical inconsistency will not affect the selection or justification of the TSP.

### Recommendations for Resolution

1. Review performance measures to ascertain the magnitude of impacts to navigation and flood risk reduction.
2. Review the discussion of impacts in Sections 4 and 5 to ensure consistency.

## Final Panel Comment 5

**Recreation feature costs discussed in Appendix F were escalated from fiscal year 2014 prices through indexing rather than following best practice methods and USACE guidance, which call for costs and benefits to be reevaluated if more than three fiscal years have elapsed.**

### Basis for Comment

Reasonable and current estimates of expected benefits and project feature costs are important to demonstrate economic feasibility to both Federal and non-Federal decision makers. Best practice and the Planning Guidance Notebook, Appendix E standard (USACE, 2000) have established that both benefit and cost estimates are considered current if they were developed less than three fiscal years since preparation of the study using them. If more than three years have elapsed since benefits and costs were last estimated, an economic reevaluation is strongly suggested.

While it is unlikely that economic benefits attributable to recreation have changed significantly, there is a high probability that economic costs have changed in light of recent economic growth and scarcity brought about by Hurricane Irma.

### Significance – Low

This issue affects the technical completeness of the report but will not affect project justification.

### Recommendations for Resolution

1. Perform a reconnaissance-level reevaluation of the economic costs of providing the proposed recreation features.
2. Explain the factors leading to any significant change in recreation feature costs.
3. Recalculate the benefit-cost ratio and net benefits.

**Literature Cited**

USACE (2000). Planning Guidance Notebook. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. Engineer Regulation (ER) CECW-P 1105-2-100. 22 April 2000.

## Final Panel Comment 6

**FWO projections regarding population growth and economic development under the CEPP with-project conditions may be too conservative, an uncertainty that has not been addressed.**

### Basis for Comment

The CEPP PACR describes its FWO as a future in which the CEPP is constructed and operational. In turn, the CEPP's with-project conditions represent an optimized, least-cost solution to the Everglades ecosystem degradation issues as described in the CEPP PIR. That solution is expected to improve the health, economic vitality, and sustainability of the Everglades.

As a result of that improvement, there is a significant chance that the Everglades will respond more robustly than envisioned in the PIR's assessment of with-project conditions, which may lead to greater-than-expected population and economic growth. The uncertainty associated with these potential responses is not clearly addressed in the PACR.

Accordingly, the Panel believes a better-than-expected response to CEPP implementation could drive greater economic development than envisioned in the PACR, which could spur additional economic growth and drive higher demand for municipal and industrial water demand, flood risk protection, navigation, and recreation. These possible outcomes could affect the economic impacts of the PACR.

### Significance – Low

This technical omission in the PACR affects the completeness of the report but is unlikely to affect project justification.

### Recommendations for Resolution

1. Review the socioeconomic projections of the CEPP with-project conditions.
2. Consider the possibility of a more robust response of the Everglades to CEPP implementation.
3. Discuss veritable Everglades response to CEPP in the evaluation of uncertainty (Section 2 of the PACR).

# 5. REFERENCES

OMB (2004). Final Information Quality Bulletin for Peer Review. Executive Office of the President, Office of Management and Budget, Washington, D.C. Memorandum M-05-03. December 16.

The National Academies (2003). Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports. The National Academies (National Academy of Science, National Academy of Engineering, Institute of Medicine, National Research Council). May 12.

USACE (2012). Water Resources Policies and Authorities: Civil Works Review. Engineer Circular (EC) 1165-2-214. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. December 15.

USACE (2000). Planning Guidance Notebook. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. Engineer Regulation (ER) CECW-P 1105-2-100. 22 April 2000.

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# APPENDIX A

IEPR Process for the SFWMD CEPP PACR IEPR

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## A.1 Planning and Conduct of the Independent External Peer Review (IEPR)

Table A-1 presents the schedule followed in executing the Central Everglades Planning Project, Florida Post-Authorization Change Report Everglades Agricultural Area Storage Reservoir Integrated Feasibility Report and Environmental Impact Statement IEPR (hereinafter: SFWMD CEPP PACR IEPR). Due dates for milestones and deliverables are based on the award/effective date listed in Table A-1. The review documents were provided by South Florida Water Management District (SFWMD) on February 5 and 6, 2018. Note that the actions listed under Task 6 occur after the submission of this report and are described in more detail in Section A.7.

**Table A-1. SFWMD CEPP PACR Complete IEPR Schedule**

| Task | Action | Due Date |
|---|---|---|
| 1 | Award/Effective Date | 12/13/2017 |
| | Review documents and public comments received from SFWMD | 2/5/2018 |
| | Battelle submits draft Work Plan[a] | 12/22/2017 |
| | SFWMD provides comments on draft Work Plan | 1/5/2018 |
| | Battelle submits final Work Plan[a] | 1/9/2018 |
| 2 | Battelle requests input from SFWMD on the conflict of interest (COI) questionnaire | 12/15/2017 |
| | SFWMD provides edits, or confirms no edits, on COI questionnaire | 12/20/2017 |
| | Battelle submits list of selected panel members[a] | 1/9/2018 |
| | SFWMD confirms the panel members have no COI | 1/12/2018 |
| | Battelle completes subcontracts for panel members | 1/19/2018 |
| 3 | Battelle convenes kick-off meeting with SFWMD | 1/12/2018 |
| | Battelle sends review documents to panel members | 2/6/2018 |
| | Battelle convenes kick-off meeting with panel members | 1/19/2018 |
| | Battelle convenes kick-off meeting with SFWMD and panel members | 1/19/2018 |
| | Battelle convenes mid-review teleconference for panel members to ask clarifying questions of SFWMD | 2/16/2018 |
| 4 | Panel members complete their review of the documents | 2/21/2018 |
| | Battelle provides talking points to panel members for Panel Review Teleconference | 2/22/2018 |
| | Battelle convenes Panel Review Teleconference | 2/23/2018 |
| | Battelle provides Final Panel Comment templates and instructions to panel members | 2/23/2018 |
| | Panel members provide draft Final Panel Comments to Battelle | 3/1/2018 |
| | Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments | 3/2/2018 - 3/5/2018 |

**Table A-1. SFWMD CEPP PACR Complete IEPR Schedule (continued)**

| Task | Action | Due Date |
|---|---|---|
| **3** | Panel finalizes Final Panel Comments | 3/6/2018 |
| **4[b]** | Battelle receives public comments from SFWMD | 2/5/2018 |
| | Battelle sends public comments to Panel | 2/6/2018 |
| | Panel members complete their review of the public comments | 2/21/2018 |
| | Battelle and Panel review Panel's responses to public comments | 2/12/2018 |
| | Panel drafts Final Panel Comment regarding the public comments | 3/1/2018 |
| | Panel finalizes Final Panel Comment regarding public comments | 3/6/2018 |
| **5** | Battelle provides Final IEPR Report to panel members for review | 3/7/2018 |
| | Panel members provide comments on Final IEPR Report | 3/8/2018 |
| | Battelle submits Final IEPR Report to SFWMD[a, b] | 3/12/2018 |
| **6[c]** | Battelle provides Final Panel Comment response template to SFWMD | 3/13/2018 |
| | Battelle convenes teleconference with SFWMD to review Comment Response process | 3/13/2018 |
| | Battelle convenes teleconference with Panel to review Comment Response process | 3/14/2018 |
| | SFWMD provides draft Evaluator Responses to Battelle | 3/23/2018 |
| | Battelle provides draft Evaluator Responses to panel members | 3/26/2018 |
| | Panel members provide draft BackCheck Responses to Battelle | 3/28/2018 |
| | Battelle convenes teleconference with panel members to discuss draft BackCheck Responses | 3/29/2018 |
| | Battelle convenes Comment Response Teleconference with panel members and SFWMD | 3/29/2018 |
| | SFWMD provides final Evaluator Responses | 4/3/2018 |
| | Battelle provides final Evaluator Responses to panel members | 4/4/2018 |
| | Panel members provide final BackCheck Responses to Battelle | 4/6/2018 |
| | Battelle inputs the panel members' final BackCheck Responses in the Word file | 4/9/2018 |
| | Battelle submits pdf of Comment Response Record* | 4/10/2018 |
| | Contract End/Delivery Date | 7/1/2018 |

[a] *Deliverable.*

[b] *The public comment review was conducted in time to include the information in the Final Report, therefore, the final report represents the deliverable for both Task 5a and Task 5b originally proposed.*

[c] *Task 6 activities occur after the submission of this report.*

At the beginning of the Period of Performance for the SFWMD CEPP PACR IEPR, Battelle held a kick-off meeting with SFWMD to review the preliminary/suggested schedule, discuss the IEPR process, and address any questions regarding the scope and schedule. Some changes to the schedule occurred after this meeting and are documented in Table A-1 above. The final charge consisted of 15 charge questions provided by SFWMD (all included in the draft and final Work Plans) and general guidance for the Panel on the conduct of the peer review (provided in Appendix C of this final report).

Prior to beginning their review and after their subcontracts were finalized, all the 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 SFWMD presented project details to the Panel. Before the meetings, the IEPR Panel received an electronic version of the final charge. The panel received the review documents and reference/supplemental materials listed in Table A-2 on February 5, 2018.

**Table A-2. Documents to Be Reviewed and Provided as Reference/Supplemental Information**

| Document | No. of Review Pages |
|---|---|
| PACR | 287 |
| Appendix A – Engineering Appendix | 171 |
| Appendix B – Cost Engineering | 44 |
| Appendix C.1 – Existing FWO Project Conditions | 168 |
| Appendix C.2 – Environmental Effects | 21 |
| Appendix C.3 – Public Comments | 174 |
| Appendix C.4 – Environmental Compliance Information - Clean | 17 |
| Appendix D – Real Estate | 32 |
| Appendix E – Plan Formulation | 18 |
| Appendix F – Recreation | 28 |
| Appendix G – Environmental Benefits Model | 62 |
| Annex A – Draft EAA Storage Reservoir BA | 86 |
| Annex A-1 – Canal Conveyance Improvements Modeling Report and Pump Station Hydraulic Design Calculations | 15 |
| Annex A-2 – Wave and Overtopping Report | 202 |
| Annex B – Analyses Required by WRDA 2000 and Florida State Law | 72 |
| Annex C – Draft Project Ops Manual | 41 |
| Annex C-1 – Earthwork Typical Sections for TSP and Overall Site Plan for TSP | 11 |
| Annex D – Adaptive Management and Monitoring | 110 |
| Annex D-1 – Mechanical Plates | 9 |
| Annex F – Phosphorus Assessment | 38 |

**Table A-2. Documents to Be Reviewed and Provided as Reference/Supplemental Information (continued)**

| Document | No. of Review Pages |
|---|---|
| Annex G – Invasive Species | 28 |
| **Total Number of Review Pages** | **1,634** |
| **Supplemental Documents** | |
| Appendix B – Cost Engineering, Attachment B and Beyond (pages 45 – 187 of original Appendix) | 143 |
| Annex G-1 – Core Borings | 638 |
| Annex H – HTRW | 461 |
| **Total Supplemental Pages** | **1,242** |

In addition to the materials provided in Table A-2, the panel members were provided the following USACE guidance documents.

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

Near the middle of the review, the Panel provided Battelle four questions regarding various aspects of the project. Battelle submitted panel member questions to SFWMD. On the Battelle-facilitated mid-review teleconference, held February 16, 2018, SFWMD discussed the questions with the Panel and Battelle. SFWMD provided additional written responses to all of the questions on February 22, 2018.

## A.2 Review of Individual Comments

The Panel was instructed to address the charge questions/discussion points within a charge question response form provided by Battelle. At the end of the review period, the Panel produced 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. At the end of the review, Battelle summarized the individual comments into a preliminary list of overall comments and discussion points. Each panel member's individual comments were shared with the full Panel.

## A.3 IEPR Panel Teleconference

Battelle facilitated a 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 should serve as the lead author for the development of each Final Panel Comment. This information exchange ensured that the Final IEPR Report would accurately represent the Panel's assessment of the project, including any conflicting opinions. The Panel engaged in a thorough discussion of the overall positive and negative comments, added any missing issues of significant importance to the findings, and merged any related individual comments. At the conclusion of the teleconference, Battelle reviewed each Final Panel

Comment with the Panel, including the associated level of significance, and confirmed the lead author for each comment.

## A.4 Preparation of Final Panel Comments

Following the teleconference, Battelle distributed 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 SFWMD CEPP 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 a summary email 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 members as needed and to contribute to a particular Final Panel Comment. If a significant comment was identified that was not covered by one of the original Final Panel Comments, the appropriate lead was instructed to draft a new Final Panel Comment.

- Format for Final 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/high, medium, medium/low, and low; see descriptions 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:

    - **High:** There is a fundamental issue within study documents or data that will influence the technical or scientific basis for selection of, justification of, or ability to implement the recommended plan.
    - **Medium/High:** There is a fundamental issue within study documents or data that has a strong probability of influencing the technical or scientific basis for selection of, justification of, or ability to implement the recommended plan.
    - **Medium:** There is a fundamental issue within study documents or data that has a low probability of influencing the technical or scientific basis for selection of, justification of, or ability to implement the recommended plan.
    - **Medium/Low:** There is missing, incomplete, or inconsistent technical or scientific information that affects the clarity, understanding, or completeness of the study

documents, and there is uncertainty whether the missing information will affect the selection of, justification of, or ability to implement the recommended plan.

  - **Low:** There is a minor technical or scientific discrepancy or inconsistency that affects the clarity, understanding, or completeness of the study documents but does not influence the selection of, justification of, or ability to implement the recommended plan.

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

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 U.S. Army Corps of Engineers (USACE) policy. At the end of this process, six Final Panel Comments were prepared and assembled. There was no direct communication between the Panel and SFWMD during the preparation of the Final Panel Comments. The full text of the Final Panel Comments is presented in Section 4.2 of the main report.

## A.5 Conduct of the Public Comment Review

Following the schedule in Table A-1, Battelle received a PDF file containing 174 pages of public comments on the SFWMD CEPP PACR from USACE. Battelle then sent the public comments to the panel members in addition to the following charge question:

1. **Do the public comments raise any additional discipline-specific technical concerns with regard to the overall report?**

The Panel produced individual comments in response to the charge question. Each panel member's individual comments for the public comment review were shared with the full Panel. Battelle reviewed the comments to identify any technical concerns that were identified by the public. Upon review, Battelle determined and the Panel confirmed that one issue was identified related to the public comments. The Panel developed the Final Panel Comment at the same time as the other five Final Panel Comments documenting the Panel's concerns.

## A.6 Final IEPR Report

After concluding the review and preparation of the Final Panel Comments, Battelle prepared a Final IEPR Report (this document) on the overall IEPR process and the IEPR panel members' findings. Each panel member and Battelle technical and editorial reviewers reviewed the IEPR report prior to submission to SFWMD.

## A.7 Comment Response Process

As part of Task 6, Battelle will provide a Word version of the Final Panel Comments so that SFWMD can review and respond to them. SFWMD will provide responses (Evaluator Responses) to the Final Panel Comments, and the Panel will respond (BackCheck Responses) to the Evaluator Responses. All SFWMD

and Panel responses will be documented by Battelle. Battelle will provide SFWMD and the Panel a pdf of the Comment Response Record containing the final IEPR results.

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# APPENDIX B

Identification and Selection of IEPR Panel Members for the SFWMD CEPP PACR IEPR

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## B.1 Panel Identification

The candidates for the South Florida Water Management District (SFWMD) Central Everglades Planning Project, Florida Post-Authorization Change Report Everglades Agricultural Area Storage Reservoir Integrated Feasibility Report and Environmental Impact Statement (hereinafter: SFWMD CEPP PACR IEPR) Panel were evaluated based on their technical expertise in the following key areas: Civil Works planning/economics, environmental/ecological evaluation, hydraulic engineering, and geotechnical engineering. These areas correspond to the technical content of the review documents and overall scope of the SFWMD CEPP 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 conflicts of interest (COIs). Of these candidates, Battelle chose the most qualified individuals, confirmed their interest and availability, and ultimately selected four experts for 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.

Candidates were screened for the following potential exclusion criteria or COIs. These COI questions were intended to serve as a means of disclosure in order to better characterize a candidate's employment history and background. Battelle evaluated whether scientists in universities and consulting firms that are receiving SFWMD-funding have sufficient independence from SFWMD to be appropriate peer reviewers. Guidance in the Office of Management and Budget's (OMB) *Final Information Quality Bulletin for Peer Review* (OMB, 2004, p. 18) states:

> "…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."

| Panel Conflict of Interest (COI) Screening Questionnaire for the IEPR of the SFWMD CEPP PACR | |
|---|---|
| 1. Previous and/or current involvement by you or your firm in the Central Everglades Planning Project (CEPP), Florida Post-Authorization Change Report Everglades Agricultural Area Storage Reservoir Integrated Feasibility Report and Environmental Impact Statement and related projects. | |
| 2. Previous and/or current involvement by you or your firm in Comprehensive Everglades Restoration Plan (CERP) projects for the central Everglades region. | |

| Panel Conflict of Interest (COI) Screening Questionnaire for the IEPR of the SFWMD CEPP PACR | |
|---|---|
| 3. Previous and/or current involvement by you or your firm in the conceptual or actual design, construction, or operation and maintenance (O&M) of any projects for the CEPP or CERP-related projects. | |
| 4. Current employment by the South Florida Water Management District (SFWMD). | |
| 5. Previous and/or current involvement with paid or unpaid expert testimony related to CEPP or CERP. | |
| 6. Previous and/or current employment or affiliation with South Florida Water Management District (SFWMD) or any Federal, State, County, local and regional agencies, environmental organizations, and interested groups working on CEPP or CERP *(for pay or pro bono)* including, but not limited to*:*<br>• Tetra Tech, Inc.<br>• Jacobs Engineering<br>• Everglades National Park (ENP)<br>• Florida Department of Environmental Protection (FDEP)<br>• Fish and Wildlife Service (FWS)<br>• United States Geological Survey (USGS)<br>• Florida Department of Agricultural and Consumer Services (FDACS)<br>• Florida Wildlife Conservation Commission (FWCC)<br>• Any Florida Counties or Municipalities within the CERP planning area<br>• USACE<br>• members of RECOVER | |
| 7. Past, current, or future interests or involvements (financial or otherwise) by you, your spouse, or your children related to Southern Florida, including the South Florida ecosystem. | |
| 8. Current personal involvement with other USACE projects, including whether involvement was to author any manuals or guidance documents for USACE. If yes, provide titles of documents or description of project, dates, and location (USACE district, division, Headquarters, Engineer Research and Development Center, etc.), and position/role. Please highlight and discuss in greater detail any projects that are specifically with the Jacksonville District. | |
| 9. Previous or current involvement with the development or testing of models that will be used for, or in support of, the CEPP PACR Everglades Agricultural Area Storage Reservoir Integrated Feasibility Report and Environmental Impact Statement.<br>• South Florida Regional Simulation Model (RSM)<br>• Dynamic Model for Stormwater Treatment Areas (DMSTA)<br>• RECOVER PM<br>• ECO Model (for Habitat Units) | |

| Panel Conflict of Interest (COI) Screening Questionnaire for the IEPR of the SFWMD CEPP PACR | |
|---|---|
| 10. Current firm involvement with other SFWMD projects, or projects/contracts with the USACE Jacksonville District. If yes, provide title/description, dates, and location, and position/role. Please also clearly delineate the percentage of work you personally are currently conducting for SFWMD or USACE Jacksonville District. Please explain. | |
| 11. Any previous employment by SFWMD or the USACE Jacksonville District as a direct employee. If yes, provide title/description, dates employed, and place of employment, and position/role. | |
| 12. Any previous employment by SFWMD as a contractor (either as an individual or through your firm) within the last 10 years. If yes, provide title/description, dates employed, and place of employment, and position/role. | |
| 13. Previous experience conducting technical peer reviews. If yes, please highlight and discuss any technical reviews concerning ecosystem restoration and flood management, and include the client/agency and duration of review (approximate dates). | |
| 14. Pending, current, or future financial interests in Central Everglades Planning Project, Florida Post-Authorization Change Report Everglades Agricultural Area Storage Reservoir Integrated Feasibility Report and Environmental Impact Statement-related contracts/awards from SFWMD. | |
| 15. Significant portion of your personal or office's revenues within the last three years came from SFWMD contracts. | |
| 16. Significant portion of your personal or office's revenues within the last three years came from USACE Jacksonville contracts. | |
| 17. Any publicly documented statement (including, for example, advocating for or discouraging against) related to CEPP or CERP. | |
| 18. Participation in relevant prior and/or current state or Federal studies relevant to this project, CEPP, and/or CERP. | |
| 18. Previous and/or current participation in prior studies relevant to this project and/or CEPP or CERP. | |
| 19. Has your research or analysis been evaluated as part of the CEPP or CERP? | |
| 20. Is there any past, present, or future activity, relationship, or interest (financial or otherwise) that could make it appear that you would be unable to provide unbiased services on this project? If so, please describe. | |

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 SFWMD 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. The term “firm” in a screening question referred to any joint venture in which a firm was involved. It applied to whether that firm serves as a prime or as a subcontractor to a prime. Candidates were asked to clarify the relationship in the screening questions.

## B.2 Panel Selection

In selecting the final members of the Panel, Battelle chose experts who best fit the expertise areas and had no COIs. Table B-1 provides information on each panel member’s affiliation, location, education, and overall years of experience. 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. SFWMD was given the list of candidate panel members, but Battelle selected the final Panel.

**Table B-1. SFWMD CEPP PACR IEPR Panel: Summary of Panel Members**

| Name | Affiliation | Location | Education | P.E. | Exp. (yrs) |
|---|---|---|---|---|---|
| **Civil Works Planning / Economics (Dual Role)** | | | | | |
| David Luckie | Independent Consultant | Mobile, AL | B.A., Economics & Finance | N/A | 29 |
| **Environmental / Ecological Evaluation** | | | | | |
| Kris Thoemke | Coastal Engineering Consultants, Inc. | Naples, FL | Ph.D., Biology | N/A | 39 |
| **Hydraulic Engineering** | | | | | |
| Patrick Tara | INTERA, Inc. | Lutz, FL | M.S., Civil Engineering | Yes | 27 |
| **Geotechnical Engineering** | | | | | |
| B. Dan Marks III | Marks Enterprises of NC, PLLC | Asheville, NC | Ph.D., Civil/Geotechnical Engineering | Yes | 48+ |

Table B-2 presents an overview of the credentials of the final four members of the Panel and their qualifications in relation to the technical evaluation criteria. More detailed biographical information regarding each panel member and his area of technical expertise is given in Section B.3.

**Table B-2. SFWMD CEPP PACR IEPR Panel: Technical Criteria and Areas of Expertise**

| Technical Criterion | Luckie | Thoemke | Tara | Marks |
|---|---|---|---|---|
| **Civil Works Planning / Economics (Dual Role)** | | | | |
| Minimum 10 years of demonstrated experience in public works planning with high public and interagency interests. | X | | | |
| Minimum 10 years of experience directly related to water resource economic evaluation or review. | X | | | |
| Familiar with USACE plan formulation process, procedures, and standards. | X | | | |
| Familiar with evaluation of alternative plans for ecosystem restoration projects | X | | | |
| Familiar with economic evaluation techniques, including cost-effectiveness/incremental cost analyses. | X | | | |
| Familiar with procedures associated with identifying the National Ecosystem Restoration plan. | X | | | |
| Experience should encompass projects with nearby project-impacted sensitive habitats. | X | | | |
| M.S. degree or higher in economics | X | | | |
| **Environmental / Ecological Evaluation** | | | | |
| Minimum 10 years of experience directly related to water resource environmental evaluation or review and National Environmental Policy Act (NEPA) compliance. | | X | | |
| Extensive experience working with wetlands and estuarine ecosystems. | | X | | |
| Familiar with USACE calculation and application of environmental impacts and benefits. | | X | | |
| Experience in the South Florida region | | X | | |
| M.S. degree or higher in an appropriate field of study. | | X | | |
| **Hydraulic Engineering** | | | | |
| Expert in hydraulic and hydrologic modeling related to wetland restoration. | | | X | |
| Minimum of 10 years of experience in hydrologic and hydraulic engineering or as professor from academia with extensive background in hydrologic and hydraulic theory and practice, knowledge of South Florida hydrology and water management. | | | X | |
| Familiar with the application of integrated surface water and groundwater models, including the capability to review typical data output from hydrologic models. | | | X | |
| Experience with hydrologic modeling tools selected for project application, including: RESOPS, LOOPS, RSMBN, SFWMM, RSMGL, DMSTA, HEC-RAS | | | X | |
| Active participant in related professional societies. | | | X | |
| M.S. degree or higher in civil engineering or a related field. | | | X | |

**Table B-2. SFWMD CEPP PACR IEPR Panel: Technical Criteria and Areas of Expertise (continued)**

| Technical Criterion | Luckie | Thoemke | Tara | Marks |
|---|---|---|---|---|
| **Geotechnical Engineer** | | | | |
| Minimum 10 years of experience directly related to geologic processes in coastal environments | | | | X |
| Experience with geomorphic processes in wetlands and coastal ecosystems. | | | | X |
| Experience in the South Florida region. | | | | X |
| B.S. degree or higher in engineering. | | | | X |

## B.3 Panel Member Qualifications

Detailed biographical information on each panel member's credentials, qualifications, and areas of technical expertise is summarized in the following paragraphs.

| | |
|---|---|
| **Name** | **David Luckie** |
| **Role** | **Civil Works Planner/Economist** |
| **Affiliation** | **Independent Consultant** |

Mr. Luckie is an independent consultant with 29 years of professional experience in water resource economics, planning, plan formulation, benefit-cost analysis, and risk-based analysis. His public works experience encompasses decades of work with Federal and non-Federal agencies, as well as local and state organizations. He earned his B.S. in economics and finance from the University of South Alabama in 1986. His professional experience includes working with multidisciplinary teams to provide or review complex planning studies for coastal storm risk management (CSRM), dam safety, flood risk management (FRM), ecosystem restoration, and water supply and water quality studies. He is intimately familiar with Engineer Regulation (ER) 1105-2-100 and the 6-Step Planning Process and has prepared, supervised, or reviewed numerous planning studies in his career.

Mr. Luckie is familiar with the evaluation of alternative plans for both CSRM and FRM studies and has conducted, supervised, or reviewed several water resource studies featuring numerous alternative plans constructed from an array of different management measures. Over the last three decades, Mr. Luckie has been involved in numerous CSRM studies. Two examples are the Panama City Beach, Florida, study, a multipurpose project that included structural, non-structural, and recreation outputs, and the Mississippi Coastal Improvements Program following Hurricanes Katrina and Rita. He has also served as a panel member on the IEPRs of the Hereford Inlet CSRM Study in New Jersey and the Encinitas – Solana Beach CSRM Study in California. He applied his knowledge of ER-1105-2-100 and the 6-Step Planning Process in each of these high-profile efforts.

Least cost analysis, also known as cost-effectiveness analysis, has been a significant aspect of Mr. Luckie's decades of work. He is familiar with the evaluation of alternative plans. As a Regional Economist with the USACE Mobile District (1988-2006), Mr. Luckie conducted, supervised, or reviewed benefit-cost analyses for a variety of water resource projects, both single-purpose and multi-purpose projects covering the full range of USACE missions. Relevant studies include the Apalachicola-Chattahoochee-Flint River and the Alabama-Coosa-Tallapoosa Comprehensive Studies; the draft Programmatic Environmental Impact Statements covering the states of Alabama, Florida, and Georgia; and the Hunting Bayou General Reevaluation Report (GRR) in Houston, Texas.

Mr. Luckie is very familiar with USACE standards and procedures. He has extensive experience performing National Economic Development (NED) analyses, specifically as they relate to flood and coastal risk management. For more than 25 years, he has performed, supervised, or reviewed NED procedures for technical accuracy and for compliance with policy, guidance, and accepted planning principles. Such studies as Panama City Beaches and Mississippi Coastal Improvements reflect this expertise.

Mr. Luckie has been using the Hydrologic Engineering Center Flood Damage Reduction Analysis (HEC-FDA) software since its inception in the 1990s. He has also performed, reviewed, or trouble-shot scores of HEC-FDA analyses for Federal, non-Federal, and private-sector clients. In addition, he has mentored interns and junior economists in USACE methodologies for CSRM, requiring them to calculate without- and with-project condition damages, either by hand or with a Microsoft Excel spreadsheet, before allowing them to use HEC-FDA. He is also very familiar with the USACE Regional Economic System (RECONS) model and the estimation of Regional Economic Development benefits, and has used the model for both Federal and non-Federal project proponents since its inception.

| | |
|---|---|
| **Name** | **Kris Thoemke, Ph.D., CEP** |
| **Role** | **Environmental and ecological evaluation** |
| **Affiliation** | **Coastal Engineering Consultants, Inc.** |

Dr. Thoemke is a Senior Scientist for Coastal Engineering Consultants, Inc. He received his Ph.D. in biology from the University of South Florida in 1979 and is a Certified Environmental Professional. He has 39 years of experience as a professional ecologist in South Florida working as a researcher and land manager for the State of Florida, a private ecological consultant, an environmental and outdoor communicator, and as Everglades project manager for a non-profit organization.

For the past twelve years as an environmental consultant, Dr. Thoemke has conducted marine and estuarine environmental assessments, environmental permitting, and listed species surveys along the Atlantic and Gulf coasts in Florida. Dr. Thoemke has conducted environmental consulting work related to water resource environmental permitting and National Environmental Policy Act (NEPA) compliance documentation. Additionally, he teaches graduate courses in environmental management, permitting and NEPA for the American Public University System.

Dr. Thoemke is familiar with large, complex Civil Works projects with high public and interagency interests. His direct experience includes his work as a wetland scientist on the Florida Everglades restoration program, ongoing involvement as the environmental scientist for the Charlotte County, Florida,

Erosion Control Project for Stump Pass, and participation on a team working on large Civil Works restoration projects for the State of Louisiana in the Mississippi Delta region.

Dr. Thoemke's experience with construction impacts on marine and terrestrial ecology of coastal regions and characterization of benthic communities includes identifying and assessing construction impacts to seagrass, mangrove, shorebird, and dune plant communities at Stump Pass and Blind Pass, Florida, and gopher tortoise habitat at Clam Pass and Vanderbilt Beach Parks, Florida. His Ph.D. research focused on estuarine benthic invertebrates, and he has more than 30 years of experience characterizing benthic communities. He also has extensive experience permitting and mitigating for construction impacts resulting from coastal and upland development, including assessing and monitoring impacts to beach and dune systems, nesting sea turtles, shorebirds, and upland listed species found in the coastal and beach/dune habitats. In addition, he has conducted post-storm analysis of beach and dune systems.

Dr. Thoemke is familiar with all NEPA and environmental impact statement (EIS) requirements. He gained experience with environmental policies and processes by preparing reports and by serving on IEPR panels, including the Walton County, Florida, Hurricane and Storm Reduction Feasibility Report and Draft Environmental Assessment, and the CEPP Draft Project Implementation Report (PIR) and EIS.

Dr. Thoemke was a member of an integrated team of scientists and engineers that prepared the EIS for the Terrebonne Basin Barrier Island Shoreline Restoration Project, Louisiana, including Endangered Species Act, essential fish habitat (EFH), and NEPA requirements. In addition, he has reviewed EISs and EAs for other coastal restoration projects in the Mississippi Delta. Dr. Thoemke was project manager on the Port Everglades Ocean Dredged Material Disposal Site Environmental Assessment, which included Marine Mammals Protection Act listed species. In addition, he has completed Section 7 assessments for listed species under National Marine Fisheries Service jurisdiction for projects in several south Florida locations, and he coordinated with U.S. Fish and Wildlife Service (USFWS) to prepare an updated Biological Opinion for swimming sea turtles and shorebirds on Marco Island, Florida. He has provided EFH consultation to several projects and continues to prepare EFH studies for marine and estuarine species as a part of his permitting work. Dr. Thoemke is a member of the National Association of Environmental Professionals and is a member and Chairman of the Certification Review Board of the Academy of Board Certified Environmental Professionals.

| | |
|---|---|
| **Name** | **Patrick Tara, P.E., P.H.** |
| **Role** | **Hydraulic engineering** |
| **Affiliation** | **INTERA, Inc.** |

Mr. Tara is a principal water resources engineer with INTERA, Inc., and is a licensed engineer and professional hydrologist in Florida. He received his M.S. in civil engineering from the University of South Florida in 1991. Mr. Tara has over 27 years of experience in water resource engineering, focused on surface water hydrology, groundwater, hydraulics, and integrated surface water/groundwater hydrologic systems. He has developed hydrologic and hydraulic (H&H) models for environmental restoration, water supply, and minimum flows and levels. His project experience is focused in Florida; he has worked for all the water management districts in Florida as well as the Florida Department of Environmental Protection.

Mr. Tara has experience with most of the hydrologic modeling tools selected for project application. His experience in H&H modeling projects includes the development and application of numerous model

codes with a focus on shallow water table environments. His modeling studies have examined both surface and groundwater impacts. He has significant experience with integrated hydrologic models and was involved in the development and application of the FIPR Hydrologic Model (FHM) and Integrated Hydrologic Model (IHM), both of which are fully integrated hydrologic models. He has reviewed the Regional Simulation Model (RSM) code and applied the natural systems RSM model; he has also used the RSM code within a Monte Carlo-based uncertainty analysis to determine the uncertainty in model output based on the uncertainty of model parameters. He also has experience with the ELM, MIKE SHE, and WASH models and has used them to perform Monte Carlo uncertainty analyses. Additionally, Mr. Tara has experience with the South Florida Water Management Model (SFWMM) to define the boundary conditions for the ELM model and with DMSTA to evaluate the benefits of converting land adjacent to Lake Okeechobee into a stormwater treatment area. DMSTA was modified to support uncertainty analysis and used inside Crystal Ball to evaluate the model results given the uncertainty in both the settling rate and the input concentration.

Mr. Tara has applied the Hydrologic Engineering Center River Analysis System (HEC-RAS) model to many riverine systems in Florida for minimum flows and levels development, floodplain delineation, and scour analysis. He has utilized the model in both steady-state and dynamic modes. He has also utilized HEC Geo-RAS to take advantage of the Geographic Information System data in the development of HEC-RAS models. He has extensive experience working on large rivers and large-river watersheds and has conducted engineering studies on such systems as the Alafia, Hillsborough, Apalachicola, St John's, and Chattahoochee River in Florida. Many of these studies included secondary channels and branching and braided natural systems.

Mr. Tara has served as a peer reviewer for many hydrologic models in Florida, including those for litigation support; has participated in numerous conferences; and has presented his works in journals, at conferences, and on conference posters. He is a member of the national and state American Water Resources Association and a member of the American Institute of Hydrology.

| | |
|---|---|
| **Name** | **B. Dan Marks, Ph.D., P.E.** |
| **Role** | **Geotechnical engineering** |
| **Affiliation** | **Marks Enterprises of NC, PLLC** |

Dr. Marks is the owner and manager of Marks Enterprises of NC, PLLC, in Ashville, North Carolina, and is a registered professional engineer in North Carolina, Georgia, and South Carolina. He earned his Ph.D. in civil engineering from Oklahoma State University in 1970 and has over 48 years of experience as a geotechnical and civil engineer. His areas of expertise include administration and management of geotechnical engineering projects; dam and water-retention structure analyses and design; earth-retaining structure analyses and design; landslide and slope stability analyses; remediation design; stabilization; erosion and sedimentation control; seepage analyses and groundwater flow evaluations; geosynthetics and geotextiles in drainage and reinforcement; and failure analyses and remediation consulting.

Dr. Marks has direct experience related to geologic processes in coastal environments. He has completed over a hundred projects at state ports on the Atlantic Seaboard from Maryland to Florida, including the Nuclear Submarine Station at Goose Creek, South Carolina, and the Norfolk Naval Shipyard Berth & Pier Stability Evaluation. Dr. Marks has extensive experience working with geomorphic processes in wetlands and coastal ecosystems. He has completed more than 200 dam projects that included

wetland and coastal ecosystem permits for design and construction. Dr. Marks has experience in the South Florida region, most recently with a groundwater control system project for city block development in West Palm Beach, Florida, and a potential hurricane flood dewatering system. He is experienced with erosion control of protected side slopes and level crowns against storm-generated wave overtopping. He co-authored the *Technical Manual for Dam Owners: Impacts of Trees and Woody Vegetation on Earthen Dams* for the Federal Emergency Management Agency and the first *Erosion & Sedimentation Control Manual* used by the Federal Highway Administration. He has authored 20 publications, more than 15 reports, and over 75 presentations in the geotechnical field, including stabilization, remediation, and erosion control.

# APPENDIX C

Final Charge for the SFWMD CEPP PACR IEPR

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# Charge Questions and Guidance to the Panel Members for the Independent External Peer Review (IEPR) of the Central Everglades Planning Project, Florida, Post-Authorization Change Report Everglades Agricultural Area Storage Reservoir Integrated Feasibility Report and Environmental Impact Statement

***This is the final Charge to the Panel for the SFWMD CEPP PACR IEPR. This final Charge was submitted to SFWMD as part of the final Work Plan, originally submitted on January 9, 2018.***

## BACKGROUND

South Florida Water Management District (SFWMD), as local sponsor to the Central Everglades Planning Project (CEPP), has prepared this CEPP Post Authorization Change Report (PACR) (Integrated Feasibility Study and Environmental Impact Statement). Section 373.4598 Florida Statutes, passed and signed into law in 2017, mandates accelerated efforts by the SFWMD to pursue the PACR in support of a plan to increase water storage and water quality treatment wetlands in the Everglades Agricultural Area (EAA) south of Lake Okeechobee, Florida. The law directs the SFWMD to evaluate two alternative storage targets: 240,000 acre-feet on the A-2 parcel and A-2 expansion area and up to 360,000 acre-feet of storage on A-1 and A-2 parcels combined, and associated conveyance improvements.

The CEPP PACR is being conducted under the authority provided by Section 203 of the WRDA of 1986, as amended by Section 1014(a) of the WRDA 2014, which authorizes non-Federal interests to undertake feasibility studies of proposed water resources development projects for submission to the Secretary of the Army. Upon approval of the CEPP PACR by the Governing Board of the SFWMD and the Assistant Secretary of the Army for Civil Works, the recommended plan will be submitted to Congress for authorization.

The CEPP PACR does not represent a complete reevaluation of the CEPP. The focus and purpose of the CEPP PACR is to evaluate and select storage and treatment features in the EAA south of Lake Okeechobee that will increase the amount of storage and treatment wetlands in the CEPP Project Partnership Agreement (PPA) New Water and send additional water south to the historic Everglades ecosystem. The CEPP PACR will also reaffirm that the CEPP PPA South and North can accommodate additional flows south that will result from additional storage and treatment wetlands on the A-1, A-2, and A-2 expansion area flow equalization basins by evaluating the need for additional improvements to the conveyance system from Lake Okeechobee to the new storage features. No changes to the conveyance system south of the EAA, beyond those included in the CEPP, are anticipated as a result of the PACR. The benefit of management measures recommended in the CEPP PACR would be the reduction of undesirable regulatory discharges of freshwater from Lake Okeechobee to estuaries on the east and west coast of Florida and increased flows to the greater Everglades. All other project features authorized in the CEPP would not be affected by the scope of the CEPP PACR.

The increase in storage and treatment features and the associated improvements in conveyance to move more water to the new EAA storage features evaluated and recommended in the CEPP PACR would further improve the quantity, quality, timing and distribution of water flows to the Northern Estuaries, central Everglades (Water Conservation Area 3 [WCA 3] and Everglades National Park [ENP]), and Florida Bay while maintaining water supply for municipal and agricultural users.

Since the Central Everglades Restoration Plan (CERP) was approved:

- Three projects were authorized in the 2007 WRDA and proceeded to construction (Indian River Lagoon-South, Picayune Strand, and Site 1 Impoundment) and a fourth project, Melaleuca and Other Exotic Plants Biological Controls, was implemented under the programmatic authority in WRDA 2000.

- Three projects were authorized in the 2014 WRDA. The C-43 Reservoir and Biscayne Bay Coastal Wetlands Phase I Project proceeded to construction, and detailed design began on the Broward County Water Preserve Area Project.

- The Central Everglades Planning Project, which includes the first increment of the EAA Storage Reservoirs, was authorized in WRDA 2016.

Despite this progress, ecological conditions and functions within the central portion of the Everglades ridge and slough community will continue to decline due to lack of sufficient quantities of freshwater flow into the central Everglades and timing and distribution problems. The SFWMD initiated the CEPP PACR in August 2017 to respond to this concern and evaluate alternatives for the final increment of CERP EAA Storage needed to achieve the CERP 300,000 acre-feet of average annual flow to the central portion of the Everglades to restore ecosystem conditions.

## OBJECTIVES

The objective of this work is to conduct an independent external peer review (IEPR) of the Central Everglades Planning Project, Florida Post-Authorization Change Report Everglades Agricultural Area Storage Reservoir Integrated Feasibility Report and Environmental Impact Statement (hereinafter: SFWMD CEPP PACR IEPR) in accordance with the Department of the Army, U.S. Army Corps of Engineers (USACE), Water Resources Policies and Authorities' *Civil Works Review* (Engineer Circular [EC] 1165-2-214, dated 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 decision 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) who meet the technical criteria and areas of expertise required for and relevant to the project.

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. The review assignments per panel member may vary slightly according to discipline.

| Review Documents | No. of Review Pages |
|---|---|
| PACR | 287 |
| Appendix A – Engineering Appendix | 171 |
| Appendix B – Cost Engineering | 44 |
| Appendix C.1 – Existing FWO Project Conditions | 168 |
| Appendix C.2 – Environmental Effects | 21 |
| Appendix C.3 – Public Comments | 174 |
| Appendix C.4 – Environmental Compliance Information - Clean | 17 |
| Appendix D – Real Estate | 32 |
| Appendix E – Plan Formulation | 18 |
| Appendix F – Recreation | 28 |
| Appendix G – Environmental Benefits Model | 62 |
| Annex A – Draft EAA Storage Reservoir BA | 86 |
| Annex A-1 – Canal Conveyance Improvements Modeling Report and Pump Station Hydraulic Design Calculations | 15 |
| Annex A-2 – Wave and Overtopping Report | 202 |
| Annex B – Analyses Required by WRDA 2000 and Florida State Law | 72 |
| Annex C – Draft Project Ops Manual | 41 |
| Annex C-1 – Earthwork Typical Sections for TSP and Overall Site Plan for TSP | 11 |
| Annex D – Adaptive Management and Monitoring | 110 |
| Annex D-1 – Mechanical Plates | 9 |
| Annex F – Phosphorus Assessment | 38 |
| Annex G – Invasive Species | 28 |
| **Total Number of Review Pages** | **1,634** |
| **Supplemental Documents** | |
| Appendix B – Cost Engineering, Attachment B and Beyond (pages 45 – 187 of original Appendix) | 143 |
| Annex G-1 – Core Borings | 638 |
| Annex H – HTRW | 461 |
| **Total Supplemental Pages** | **1,242** |

**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 & DELIVERABLES

This schedule is based on the receipt date of the final review documents and may be revised if review document availability changes. This schedule may also change due to circumstances out of Battelle's control such as changes to SFWMD's project schedule and unforeseen changes to panel member and SFWMD availability. As part of each task, the panel member will prepare deliverables by the dates indicated in the table (or as directed by Battelle). All deliverables will be submitted in an electronic format compatible with MS Word (Office 2003).

| Task | Action | Due Date |
|---|---|---|
| Attend Meetings and Begin Peer Review | Battelle convenes kick-off meeting with panel members | 1/19/2018 |
| | Battelle convenes kick-off meeting with SFWMD and panel members | 1/19/2018 |
| | Battelle sends review documents to panel members | 2/6/2018 |
| | Battelle convenes mid-review teleconference for panel members to ask clarifying questions of SFWMD | 2/16/2018 |
| Prepare Final Panel Comments | Panel members complete their individual reviews | 2/21/2018 |
| | Battelle provides talking points for Panel Review Teleconference to panel members | 2/22/2018 |
| | Battelle convenes Panel Review Teleconference | 2/23/2018 |
| | Battelle provides Final Panel Comment templates and instructions to panel members | 2/23/2018 |
| | Panel members provide draft Final Panel Comments to Battelle | 3/1/2018 |
| | Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments | 3/2/2018 – 3/5/2018 |
| | Panel finalizes Final Panel Comments | 3/6/2018 |
| Review Public Comments | Battelle receives public comments from SFWMD | 2/5/2018 |
| | **Battelle sends public comments to Panel | 2/6/2018 |
| | Panel completes its review of public comments | 3/21/2018 |
| | Battelle and Panel review the Panel's responses to the charge question regarding the public comments | 3/23/2018 |
| | Panel drafts Final Panel Comment relevant to the public comments | 3/1/2018 |
| | Panel finalizes Final Panel Comment regarding public comments | 3/6/2018 |
| | Battelle provides Final IEPR Report to panel members for review | 3/7/2018 |

| Task | Action | Due Date |
|---|---|---|
| Review Final IEPR Report | Panel members provide comments on Final IEPR Report | 3/8/2018 |
| | *Battelle submits Final IEPR Report to SFWMD | 3/12/2018 |
| | *Battelle submits Addendum to the Final IEPR Report to SFWMD | Not Applicable |
| Comment/ Response Process | Battelle provides Final Panel Comment response template to SFWMD | 3/13/2018 |
| | Battelle convenes teleconference with SFWMD to review the Comment Response process | 3/13/2018 |
| | Battelle convenes teleconference with Panel to review the Comment Response process | 3/14/2018 |
| | SFWMD provides draft Evaluator Responses to Battelle | 3/23/2018 |
| | Battelle provides draft Evaluator Responses to panel members | 3/26/2018 |
| | Panel members provide draft BackCheck Responses to Battelle | 3/28/2018 |
| | Battelle convenes teleconference with panel members to discuss draft BackCheck Responses | 3/29/2018 |
| | Battelle convenes Comment Response Teleconference with panel members and SFWMD | 3/29/2018 |
| | SFWMD provides final Evaluator Responses to Battelle | 4/3/2018 |
| | Battelle provides final Evaluator Responses to panel members | 4/4/2018 |
| | Panel members provide final BackCheck Responses to Battelle | 4/6/2018 |
| | Battelle consolidates panel members' final BackCheck Responses into the Comment Response Record | 4/9/2018 |
| | *Battelle submits pdf printout of Comment Response Record project file | 4/10/2018 |

***** Deliverables

****** Battelle will provide public comments to the Panel after they have completed their individual reviews of the project documents to ensure that the public comment review does not bias the Panel's review of the project documents.

## CHARGE FOR PEER REVIEW

Members of this IEPR Panel are asked to determine whether the technical approach and scientific rationale presented in the decision documents are credible and whether the conclusions are valid. The Panel is asked to determine whether the technical work is adequate, competently performed, and 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 decision 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 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, or prepared the subject documents.

2. Please contact the Battelle Project Manager Lynn McLeod (mcleod@battelle.org) for requests or additional information.

3. In case of media contact, notify the Battelle Project Manager Lynn McLeod (mcleod@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 the Project Manager, Lynn McLeod, no later than 10 pm ET by the date listed in the schedule above.

# Independent External Peer Review of the Central Everglades Planning Project, Florida, Post-Authorization Change Report Everglades Agricultural Area Storage Reservoir Integrated Feasibility Report and Environmental Impact Statement

## Charge Questions and Relevant Sections as Supplied by SFWMD

The following Review Charge to Reviewers outlines the objectives of the Independent External Peer Review (IEPR) for the subject study and identifies specific items for consideration for the IEPR Review Panel.

The objective of the IEPR is to obtain an independent evaluation of whether the interpretations of analysis and conclusions based on analysis are reasonable for the subject study. The IEPR Panel is requested to offer a broad evaluation of the overall study decision document in addition to addressing the specific technical and scientific questions included in the Review Charge. The IEPR Panel has the flexibility to bring important issues to the attention of decision makers, including positive feedback or issues outside those specific areas outlined in the Review Charge. The IEPR Panel can use all available information to determine what scientific and technical issues related to the decision document may be important to raise to decision makers.

The Panel review is to focus on scientific and technical matters, leaving policy determinations for the SFWMD, and subsequently to USACE and the Army, following submittal of the report to the Assistant Secretary of the Army (Civil Works) in accordance with Section 203 of the Water Resources Development Act of 1986, as amended. The Panel should not make recommendations on whether a particular alternative should be implemented or present findings that become “directives” in that they call for modifications or additional studies or suggest new conclusions and recommendations. In such circumstances the IEPR Panel would have assumed the role of advisors as well as reviewers, thus introducing bias and potential conflict in their ability to provide objective review.

Panel review comments are to be structured to fully communicate the Panel’s intent by including the comment, an explanation of why it is important, any potential consequences of failure to address, and suggestions on how to address the comment.

The IEPR Panel is asked to consider the following items as part of its review of the decision document and supporting materials.

**Broad Evaluation Review Charge Questions**

1. Are the need for, and intent of, the decision document clear?
2. Does the decision document adequately address the stated need and intent relative to scientific and technical issues?
3. Assess the adequacy and acceptability of the project evaluation data used in the study analyses.
4. Assess the adequacy and acceptability of the economic, environmental, and engineering assumptions that underlie the study analyses.

5. Assess the adequacy and acceptability of the economic, environmental, and engineering methodologies, analyses, and projections.
6. Assess the adequacy and acceptability of the models used in the evaluation of existing and future without-project conditions and of economic or environmental impacts of alternatives.
7. Assess the adequacy and acceptability of the methods for integrating risk and uncertainty.
8. Assess the adequacy and acceptability of the formulation of alternative plans and the range of alternative plans considered.
9. Assess the adequacy and acceptability of the quality and quantity of the surveys, investigations, and engineering sufficient for conceptual design of alternative plans.
10. Assess the adequacy and acceptability of the overall assessment of significant environmental impacts and any biological analyses.
11. Evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable.
12. Assess the considered and tentatively selected alternatives from the perspective of systems, including systemic aspects being considered from a temporal perspective, including the potential effects of climate change.

### Battelle Summary Charge Questions to the Panel Members

**Summary Questions**

13. Please identify the most critical concerns (up to five) 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.
14. Please provide positive feedback on the project and/or review documents.

**Public Comments Review Question**

15. Do the public comments raise any additional discipline-specific technical concerns with regard to the overall report?

## ADDITIONAL COMMENTS OR ISSUES IDENTIFIED

Please feel free to make any relevant and appropriate comment on any of the sections and appendices you were asked to review, including any typographical errors or editorial issues that you caught. Typos and editorial issues *typically do not rise* to a significance level or a Final Panel Comment, but instead can be provided separately to the SFWMD.

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BATTELLE

It can be done

# PDT DRAFT EVALUATOR RESPONSES

# Independent External Peer Review of the Central Everglades Planning Project, Florida Post-Authorization Change Report Everglades Agricultural Area Storage Reservoir Integrated Feasibility Report and Environmental Impact Statement

## PDT Draft Evaluator Responses

Prepared by

Battelle
505 King Avenue
Columbus, Ohio 43201

for

South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL 33406

March 12, 2018

## Final Panel Comment 1

**Risk and uncertainty associated with the future without-project conditions (FWO) and TSP are not clearly communicated.**

### Basis for Comment

All projections of future conditions and models of natural systems have uncertainty. There are two types of uncertainty in forecasting and modeling: parameter uncertainty and boundary uncertainty. Uncertainty in the model parameters can be minimized through model calibration. Uncertainty in the model and the forecast of external boundary conditions can include sea level rise or future economic, demographic, and climatic conditions. Neither model nor forecasting uncertainty are explicitly addressed in the CEPP PACR, and there is no documentation that the uncertainty in the model results includes upper and lower bounds for performance metrics that impact design criteria.

Uncertainty in future sea level rise was included in the documentation at a high, medium, and low estimate. It is important to understand the uncertainty and the degree to which the model uncertainty propagates through the analysis as well as impacts to the design results. A high degree of model uncertainty combined with a high degree of risk could result in very different outcomes than would a low degree of model uncertainty combined with a low degree of risk. For example, depending on the actual sea level rise, the actual outcome of the FWO and TSP could be very different. If the upper and lower bounds identified for targeted evaluation metrics that impact design criteria are incorporated in the model, the uncertainty in the model results will be included in the document and the range of actual outcomes will be demonstrated.

From a plan formulation perspective, the CEPP PACR is unclear on how risk and uncertainty affect the FWO condition and alternative plans. The decision document does indicate that at least some uncertain future conditions were evaluated. However, projections do not address uncertainty, nor do the documents address the risk that would result if the alternatives do not achieve the projected outputs. The reader is directed to the CEPP Project Implementation Report (PIR) for more information on risk and uncertainty, and the decision document unconvincingly states that there is no change in risk and uncertainty in the PACR.

Furthermore, model uncertainty and probability-based outcomes are not sufficiently represented in the decision documentation. Specifically, the PACR does not evaluate output metrics using a probabilistic approach, nor are there any probability-based histograms describing how risk was calculated.

To adequately evaluate uncertain conditions (such as the degree and timing of climate change and sea level rise), potential impacts should be modeled probabilistically. For example, designing structures for the 100-year event is designing to a 1% probability. Output metrics should be evaluated using a distribution of probability-based histogram.

### Significance – Medium

Although some uncertainty analysis was performed, the partial analysis of risk and uncertainty affects the completeness of the report

### Recommendations for Resolution

1. Include upper and lower bounds on model results that impact CEPP design.

## Final Panel Comment 1

2. Propagate model uncertainty through subsequent models and analysis.
3. Evaluate design metrics with probabilistic design criteria.

## PDT Draft/Final Evaluator Response (FPC 1)

| | | | |
|---|---|---|---|
| X | **Concur** | | **Non-Concur** |

Explanation: The following language and associated reference has been added to section 3.2.1.3:

"The modeling and design of the EAA Storage Reservoir was based on the framework developed in the CEPP and peer-reviewed tools that provide a sound engineering and scientific foundation. The CEPP PACR analysis was performed using a suite of tools previously developed, calibrated and applied during the CEPP. Detailed description of the model peer review and certification process is described in the CEPP PIR, Appendix G. Model documentation reports have been provided in Appendix A, Annex A-2 which provides detailed information on model assumptions, parameters, inputs and pertinent references of model development and validation."

| | | | | |
|---|---|---|---|---|
| **Recommendation 1, 2 and 3:** | | **Adopt** | X | **Not Adopt** |

Explanation:

Recommendation 1: The risks and uncertainties done in the CEPP PIR still hold true and are applicable in the CEPP PACR. The modeling analysis that was conducted in the CEPP PACR built upon the modeling analysis conducted for the CEPP PIR. The same modeling tools that have been calibrated, validated and certified as acceptable for use in the CEPP PIR were applied. This recommended uncertainty and error analyses was performed and reported during development of the CEPP PIR which was the basis for the CEPP PACR analysis. The results can be found in CEPP PIR, Appendix G, Section G.4. Hydrologic model Root Mean Square Error (RMSE) was propagated through the performance measure and benefit model process to ensure that relative alternative selection was robust in the face of model uncertainty.

Recommendation 2: The modeling and analyses in support of the CEPP PIR is the basis for the modeling and analyses completed for this study. Model uncertainty is addressed in the CEPP PACR in the same manner that it was addressed in the CEPP PIR. The subject of model uncertainty and its potential impact on the analysis was addressed during the initial study and documented in CEPP PIR Appendix G, Section G.4. The uncertainty analyses completed for the modeling tools and approach in the CEPP PIR apply to the CEPP PACR since the models are the same and its application identical.

Recommendation 3: The same evaluation method and metrics used in the CEPP PACR were used in the previous CEPP PIR. This was to ensure that the alternatives evaluated in the CEPP PACR and the performance (of the modified project features) can be directly comparable to the performance of the previously authorized project. The CEPP PIR was developed using a deterministic approach and that approach is carried on into the CEPP PACR to ensure direct comparison to the PIR. The CEPP PACR analysis was performed using a suite of tools previously developed, calibrated and applied during the CEPP. Detailed description of the model peer review and certification process is described in the CEPP PIR, Appendix G. Model documentation reports have been provided in Appendix A, Annex A-2

| |
|---|
| which provides detailed information on model assumptions, parameters, inputs and pertinent references of model development and validation. The CEPP PACR and CEPP are a part of the CERP program which recognizes uncertainty in data and analyses and provides a mechanism, and a robust adaptive management approach, to address uncertainty as projects are implemented, tested and operated by making adjustments necessary to meet desired performance outcomes. |
| **Panel Draft/Final BackCheck Response (FPC 1)** |
| **Concur** **Non-Concur** |
| Please **enter an X** in front of your selection above. Based on the PDT response, the Panel has provided the following response. Explanation: |

## Final Panel Comment 2

**During its review of the public comments, the Panel noted that several letters discussed a new alternative the commenters believe is a viable solution. However, the PACR does not explain why the alternative was not addressed in the screening process.**

### Basis for Comment

Public comments provided by SFWMD are presented in Appendix C.2, Pertinent Correspondence. Numerous public comments state that the sizes of the reservoir and stormwater treatment areas for the alternatives evaluated in the PACR are inadequate and that a much larger reservoir, up to 13,000 acres, is needed to achieve the CERP goals for delivering water to the Everglades.

Council on Environmental Quality (CEQ) regulations (Title 40, Chapter V, Part 1502.14(a)) state that agencies shall, "Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." The Panel notes that comments on this proposed alternative were received within the timeframe of the public meetings listed in Section 7.1. Further, Section 3.1 of the PACR states, "In addition to technical analyses, the planning process also requested and considered stakeholder input to develop alternative plans" (p. 3-1). The Panel does not find any acknowledgment or consideration of the larger reservoir and STA alternative in the PACR.

Considering the CEQ regulation noted above, the Panel believes that an objective evaluation of the public's concerns should be documented in the PACR, including the reason(s) why this alternative should or should not warrant evaluation.

### Significance – Medium/Low

If the screening process is viewed as circumventing CEQ regulations, the process could be vulnerable to criticism and potential future dispute.

### Recommendation for Resolution

1. Evaluate this alternative in the PACR and explain why the alternative should either be carried forward or eliminated from further review.

### PDT Draft/Final Evaluator Response (FPC 2)

| | Concur | X | Non-Concur |
|---|---|---|---|

Explanation: SFWMD non-concurs with the panel that additional alternatives need to be further evaluated beyond the initial screening process. SFWMD understands that the basis for the suggested option was to ensure that Water Quality Based Effluent Limits will be achieved for water quantity benefits delivered to the estuaries. Substantial revisions and additional text has been added to the document since the version submitted to the panel in February which includes revisions incorporated based on feedback during the IEPR, ATR review process and from Corps technical feedback. These additions further describe the screening and evaluation process used to develop alternatives. Please refer to the updated Sections 3.1, 3.2 and 3.3 of the Main Report and Appendix E (attached). SFWMD also revised the text in the *Public and Stakeholder Topics of Concern* (pg ES-15) section of the Executive Summary, to clarify how

concerns on this topic were addressed. In addition, these comments are captured and responded to in the comment matrix provided in Appendix C.

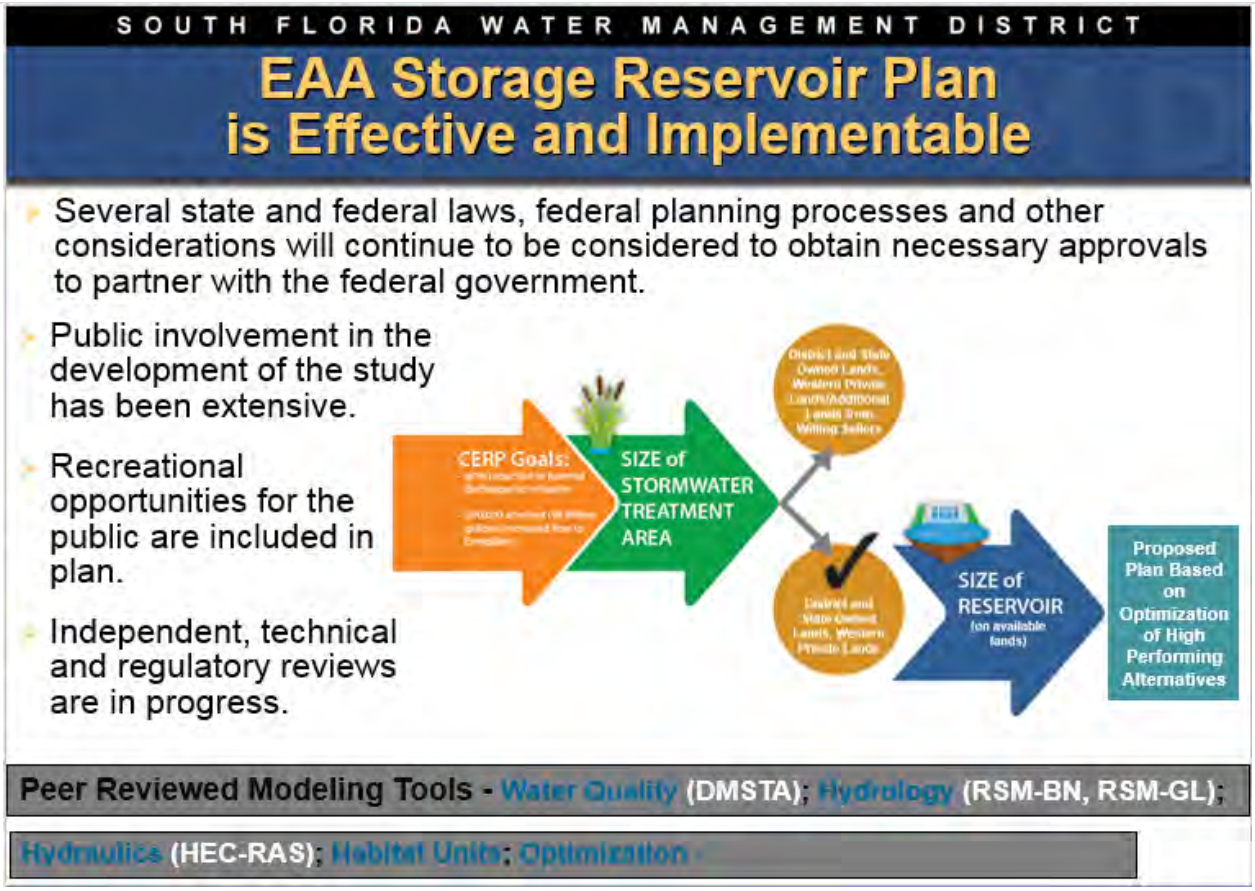
The SFWMD appropriately sized the A-2 STA using the DMSTA model which has been certified by the Corps for this purpose and used successfully in prior restoration planning projects (such as the CEPP and in the State's Restoration Strategies Program for the expansion of STA-1W and the A-1 FEB). The STA sizing exercise is based on sound assumptions and integrates existing SFWMD treatment facilities (STA 2 and STA 3/4). The new CEPP PACR features leverage existing infrastructure and operational flexibility across the regional water management system to meet State water quality standards. This allows for the right sizing of the proposed CEPP PACR treatment facilities and maximum use of publicly owned land in a fiscally responsible manner. Due to the deterministic nature of the models, and how they were applied to incorporate a 41-year period of record (POR) encompassing both extreme wet and dry years, the current size of the STA will treat all flows and variability of these flows as contained in the POR.

| **Recommendation 1:** | | **Adopt** | **X** | **Not Adopt** |
|---|---|---|---|---|

The SFWMD team does not concur with the assessment on the alternatives screening process. SFWMD followed the U. S. Army Corps of Engineers planning process and regulations for plan formulation of project implementation reports and environmental impact statements which is consistent with the NEPA. SFWMD followed the CEQ regulations and rigorously explored and objectively evaluated all reasonable alternatives. Reasonable alternatives had to meet the constraints in Florida state law and also USACE planning process and regulations to pass the screening criteria.

During the development of the alternatives for the CEPP PACR, stakeholders expressed concerns about the appropriate sizing of the STA facility needed for water quality treatment in order to ensure that the additional flows to be sent south to the Everglades Protection Area meet State water quality standards. Several technical considerations including diversions, loading of existing STAs, concurrence between models and phosphorus settling rates, were expressed and accounted for in final plan selection to ensure project benefits are delivered (refer to Appendix A, Annex A-2). Through refinement of the modeling effort, the size of the STA was increased for all alternatives, to ensure water quality treatment facilities are adequate and sized appropriately to ensure compliance with State water quality standards. Proposed operations of the TSP efficiently integrate the new facilities (A-2 Reservoir and A-2 STA) with the existing State Facilities (A-1 FEB, STA-2 and STA-3/4) to meet the objectives of the project.

The public comments advocating for the evaluation of a larger reservoir and stormwater treatment area were directly addressed in the planning process including the sections of the report referenced above and at several public meetings and presentations including the SFWMD's report to the Florida Legislature in January of 2018. During the public scoping process, the screening criteria for the CEPP PACR carried forward the evaluations performed under the CEPP plan formulation and incorporated the CERP goals of achieving 80% reduction of damaging discharges to the northern estuaries and providing an additional 300,000 ac-ft of flow into the central Everglades when evaluating a range of sizes for each management measure. For stormwater treatment areas, the array of alternatives evaluated areas of 6,500 and 11,500 acres. For reservoirs, the CEPP PACR process evaluated reservoir sizes up to approximately 20,000 acres and the array of alternatives included reservoir areas of 10,100 and 19,700 acres.




All configurations evaluated provided the necessary storage and treatment capacity for flows to the Everglades and to meet State water quality standards. All initial alternatives were designed to improve the quantity, quality, timing and distribution of water flows to the central Everglades. The location of these alternatives provided the maximum flexibility in Lake Okeechobee operation by increasing storage, treatment and conveyance to the south, which reduces harmful discharges from Lake Okeechobee to the St. Lucie and Caloosahatchee Estuaries. Other alternative locations were evaluated on land availability, willing and non-willing sellers, and proximity to existing SFWMD infrastructure. Locations not adjacent to existing SFWMD infrastructure did not provide the same level of performance, operational flexibility or use of public lands.

**Panel Draft/Final BackCheck Response (FPC 2)**

| | | | |
|---|---|---|---|
| | **Concur** | | **Non-Concur** |

Please **enter an X** in front of your selection above. Based on the PDT response, the Panel has provided the following response. Explanation:

## Final Panel Comment 3

**The PACR does not provide sufficient information on the specific models used and their overall performance.**

### Basis for Comment

Section 3.2.1.3 briefly describes the suite of models used in or relied upon by the CEPP PACR. How these models are used to transparently simulate expected future conditions is not clear or well defined. Model performance is critical to the confidence and therefore certainty given to the model results.

Models are used to predict the response to changes in the design and operation of physical features and to assess the cost effectiveness of management measures. Most models have parameters that require calibration (when feasible). These parameters are adjusted to improve the fit of the model results to observed events. The calibration process can eliminate model uncertainty as well as impart confidence in the predictive capability of the models. The better a model is calibrated to observed events, the more uncertainty in the model results will be reduced.

In addition, the model performance is not well documented, and the reader cannot assess the predictive capability of the models used in the evaluation and design of the TSP.

### Significance – Low

The lack of information on the models used affects the completeness of the document.

### Recommendations for Resolution

1. Document model performance metrics when possible.
2. Provide details on the assumptions, parameters, and inputs for the models described in Section 3.
3. State whether models used in the PACR are certified for use by the appropriate USACE PCX.

| PDT Draft/Final Evaluator Response (FPC 3) | | | |
|---|---|---|---|
| X | Concur | | Non-Concur |

Explanation: The following language and associated reference has been added to section 3.2.1.3:

The modeling and design of the EAA Storage Reservoir was based on the framework developed in the CEPP. The peer-reviewed tools provide a sound engineering and scientific foundation. The CEPP PACR analysis was performed using the suite of tools previously developed, calibrated, applied, documented, reviewed and approved for use and validated through the Corps Engineering Model Certification process established under the Engineering and Construction Science and Engineering Technology initiative during the CEPP planning process. Detailed description of the model peer review and certification process is described in the CEPP PIR, Appendix G. Model documentation reports have been provided in the CEPP PACR Appendix A, Annex A-2 which provides detailed information on model assumptions, parameters, inputs and pertinent references of model development and validation.

| **Recommendation 1:** | **X** | **Adopt** | | **Not Adopt** |
|---|---|---|---|---|

Explanation: Additional language described above and included in the report, highlights the location where the model documentation reports are provided. Additional engineering model descriptions are referenced in the MDR's.

This document provides additional references to a variety of calibration, validation and verification testing reports which will address the commenters concerns.

| **Recommendation 2:** | **X** | **Adopt** | | **Not Adopt** |
|---|---|---|---|---|

Explanation: This information is available in the CEPP PACR Appendix A, Annex A in the Modeling Documentation reports. These reports include information on parameters, modeling inputs and assumptions in addition to providing model links to modeling files (including input files). Pertinent references are also provided to additional modeling documentation.

| **Recommendation 3:** | **X** | **Adopt** | | **Not Adopt** |
|---|---|---|---|---|

Explanation: In the CEPP PACR Appendix A, Annex A, Section 2 notes the following: "The RSMBN (SFWMD, FDEP & FDACS, 2009a, 2009b), RSMGL (SFWMD, 2010 and 2011), and DMSTA (Walker & Kadlec, 2005; Wang, 2012) models were reviewed through the USACE validation process for engineering software, as part of the CEPP project. The RSM and DMSTA models were classified as "allowed for use" for South Florida applications in August 2012 and January 2013, respectively. "

**Panel Draft/Final BackCheck Response (FPC 3)**

| | **Concur** | | **Non-Concur** |
|---|---|---|---|

Please **enter an X** in front of your selection above. Based on the PDT response, the Panel has provided the following response. Explanation:

## Final Panel Comment 4

**Impacts to navigation and flood risk reduction are not clearly described and the decision documents seem to be inconsistent.**

### Basis for Comment

Navigation and recreation are congressionally authorized and economically important purposes of Lake Okeechobee and the Okeechobee Waterway. Sections 4 and 5 are not consistent in describing impacts of the CEPP PACR on these uses of the systems under evaluation.

Section 4.5.1 states that none of the alternatives considered will impact navigation, while Section 5.2.15.3 states that the TSP will result in improved recreational navigation opportunities.

Sections 4.5.1 and 5.1.15.2 are similarly inconsistent on flood risk reduction. The former indicates that existing flood risk reduction will be maintained, while the latter states that there will be improvement under the TSP.

These apparent inconsistencies make it difficult to determine whether the TSP will result in economic impacts to very important purposes of the WRDA 2000 and subsequent authorizations.

### Significance – Low

This minor technical inconsistency will not affect the selection or justification of the TSP.

### Recommendations for Resolution

1. Review performance measures to ascertain the magnitude of impacts to navigation and flood risk reduction.
2. Review the discussion of impacts in Sections 4 and 5 to ensure consistency.

### PDT Draft/Final Evaluator Response (FPC 4)

| | | | |
|---|---|---|---|
| X | **Concur** | | **Non-Concur** |

Explanation: The text noted in Section 4.5.1 has been edited to state: “Flood control is a constraint of the project and the alternatives successfully maintained the level of service for flood protection. Negligible improvements to flood control for Lake Okeechobee and moderate improvements in WCA 3A, Zone A stage frequencies were identified. Minor beneficial improvements to Lake Okeechobee navigation will be realized with the implementation of any alternative as a result of increased stages in the low stage range of the lake (see Appendix A, Annex A-2, Figure 4.2).”

| | | | | |
|---|---|---|---|---|
| **Recommendation 1:** | X | **Adopt** | | **Not Adopt** |

| | | | | |
|---|---|---|---|---|
| Explanation: A review of Appendix A, Annex A-2 included a review of the effects of the alternative and TSP on Lake Okeechobee stages. Stage duration curves for the lake show increased stages at the low-stage range which was correlated to minor beneficial improvements to navigation. Increase frequency of stages within Zone A of WCA 3A indicates beneficial flood control to this area. | | | | |
| **Recommendation 2:** | **X** | **Adopt** | | **Not Adopt** |
| Explanation: Section 4.5.1 has been revised as noted. | | | | |
| **Panel Draft/Final BackCheck Response (FPC 4)** | | | | |
| | **Concur** | | **Non-Concur** | |
| Please **enter an X** in front of your selection above. Based on the PDT response, the Panel has provided the following response. Explanation: | | | | |

## Final Panel Comment 5

**Recreation feature costs discussed in Appendix F were escalated from fiscal year 2014 prices through indexing rather than following best practice methods and USACE guidance, which call for costs and benefits to be reevaluated if more than three fiscal years have elapsed.**

### Basis for Comment

Reasonable and current estimates of expected benefits and project feature costs are important to demonstrate economic feasibility to both Federal and non-Federal decision makers. Best practice and the Planning Guidance Notebook, Appendix E standard (USACE, 2000) have established that both benefit and cost estimates are considered current if they were developed less than three fiscal years since preparation of the study using them. If more than three years have elapsed since benefits and costs were last estimated, an economic reevaluation is strongly suggested.

While it is unlikely that economic benefits attributable to recreation have changed significantly, there is a high probability that economic costs have changed in light of recent economic growth and scarcity brought about by Hurricane Irma.

### Significance – Low

This issue affects the technical completeness of the report but will not affect project justification.

### Recommendations for Resolution

1. Perform a reconnaissance-level reevaluation of the economic costs of providing the proposed recreation features.
2. Explain the factors leading to any significant change in recreation feature costs.
3. Recalculate the benefit-cost ratio and net benefits.

**Literature Cited**

USACE (2000). Planning Guidance Notebook. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. Engineer Regulation (ER) CECW-P 1105-2-100. 22 April 2000.

### PDT Draft/Final Evaluator Response (FPC 5)

| | | |
|---|---|---|
| Concur | X | Non-Concur |

Explanation: While the SFWMD acknowledges the Planning Guidance Notebook's suggestion to reevaluate recreational changes more than three years old, the SFWMD does not feel that it is warranted for the analysis performed in Appendix F. The recreational costs in Appendix F were developed using the same generic unit costs that were developed for CEPP recreational features in the CEPP PIR to provide a similar comparison of the changes from the PACR. No detailed estimates based on site specific features were performed for the recreational features in the CEPP PIR.

However, the CEPP PACR TSP recreational features were analyzed in the Micro-Computer Aided Cost Estimating System (MCASES) cost estimate and a detailed cost was used to develop final project

costs. The difference between the level of detail in the MCASES estimate performed in the PACR and the CEPP costs evaluated in the CEPP PIR would not have made a suitable comparison. The analysis performed in the CEPP PIR was brought forward in the CEPP PACR Appendix F analysis due to the following:

- The PACR does not modify any recreational features brought forward from CEPP other than sites A and C.
- The CEPP PIR costs are only four years old (2014) and the escalation rate applied should represent a suitable planning level estimate.
- Altering the cost estimate approach from that performed in the CEPP PIR may cause confusion and would not be suitable for comparison.

| **Recommendation 1:** | | **Adopt** | **X** | **Not Adopt** |
|---|---|---|---|---|

Explanation: No detailed estimates based on site specific features were performed for either the CEPP PIR or CEPP PACR for recreational features in Appendix F analysis. Generic unit costs used to develop these estimates were conceptual planning level costs. Recreational costs brought forward from the CEPP PIR are only 4 years old. The SFWMD believes appropriate escalation rates have been applied to these costs and they represent a suitable planning level comparison of the CEPP versus the CEPP PACR recreational features.

| **Recommendation 2:** | | **Adopt** | **X** | **Not Adopt** |
|---|---|---|---|---|

Explanation: Due to the conceptual nature of the original estimate (generic unit costs versus site specific estimates) the SFWMD believes escalation rates are appropriate for this planning level comparison of the effects of the PACR on the original CEPP.

| **Recommendation 3:** | | **Adopt** | **X** | **Not Adopt** |
|---|---|---|---|---|

Explanation: Due to the conceptual nature of the original estimate (generic unit costs versus site specific estimates) the SFWMD believes it is unlikely that a new benefit-cost ratio or net benefits would change.

**Panel Draft/Final BackCheck Response (FPC 5)**

| | **Concur** | | **Non-Concur** |
|---|---|---|---|

Please **enter an X** in front of your selection above. Based on the PDT response, the Panel has provided the following response. Explanation:

## Final Panel Comment 6

**FWO projections regarding population growth and economic development under the CEPP with-project conditions may be too conservative, an uncertainty that has not been addressed.**

### Basis for Comment

The CEPP PACR describes its FWO as a future in which the CEPP is constructed and operational. In turn, the CEPP's with-project conditions represent an optimized, least-cost solution to the Everglades ecosystem degradation issues as described in the CEPP PIR. That solution is expected to improve the health, economic vitality, and sustainability of the Everglades.

As a result of that improvement, there is a significant chance that the Everglades will respond more robustly than envisioned in the PIR's assessment of with-project conditions, which may lead to greater-than-expected population and economic growth. The uncertainty associated with these potential responses is not clearly addressed in the PACR.

Accordingly, the Panel believes a better-than-expected response to CEPP implementation could drive greater economic development than envisioned in the PACR, which could spur additional economic growth and drive higher demand for municipal and industrial water demand, flood risk protection, navigation, and recreation. These possible outcomes could affect the economic impacts of the PACR.

### Significance – Low

This technical omission in the PACR affects the completeness of the report but is unlikely to affect project justification.

### Recommendations for Resolution

1. Review the socioeconomic projections of the CEPP with-project conditions.
2. Consider the possibility of a more robust response of the Everglades to CEPP implementation.
3. Discuss veritable Everglades response to CEPP in the evaluation of uncertainty (Section 2 of the PACR).

### PDT Draft/Final Evaluator Response (FPC6)

| | | | |
|---|---|---|---|
| **X** | **Concur** | | **Non-Concur** |

Explanation: The SFWMD agrees with the panel comments that economic development under the CEPP with-project conditions may be conservative. We refer the panel to Annex D which outlines the adaptive management and monitoring protocols over seen by RECOVER which is the science section of the CERP program. The function of the adaptive management protocols is to make recommendations based on real time monitoring of the ecology of the ecosystem. The following text has been added to Section 6.11 Risk and Uncertainty "risk and uncertainty in CEPP FWO and CEPP PACR performance is addressed in Annex D".

| | | | | |
|---|---|---|---|---|
| To address uncertainty in the socioeconomic projections, a robust evaluation is included of potential ecosystem services benefits as a result of the TSP in Section 6.2.3, Ecosystem Services. This analysis provides the results of a rigorous review of pertinent documentation attempting to quantify the substantial value provided by benefits from ecosystem services. The results of this analysis, however, revealed incomplete and sometimes difficult to define values making quantification difficult. The SFWMD believes that Section 6.2.3 represents an appropriate level of analysis of socioeconomic benefits that can be justified given the information available. | | | | |
| **Recommendation 1, 2 and 3:** | | **Adopt** | **X** | **Not Adopt** |
| Explanation: A robust evaluation of potential ecosystem services benefits as a result of the TSP is included in Section 6.2.3, Ecosystem Services. This analysis provides the results of a rigorous review of pertinent documentation attempting to quantify the substantial value provided by benefits from ecosystem services. The results of this analysis, however, revealed incomplete and sometimes difficult to define values making quantification difficult. The SFWMD believes that Section 6.2.3 represents an appropriate level of analysis of socioeconomic benefits that can be justified given the information available. Additionally, this uncertainty will be addressed through adaptive management employed by the CERP program. | | | | |
| **Panel Draft/Final BackCheck Response (FPC 6)** | | | | |
| | **Concur** | | **Non-Concur** | |
| Please **enter an X** in front of your selection above. Based on the PDT response, the Panel has provided the following response. Explanation: | | | | |

# ATTACHMENT 6

## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

## LEGIS CONSULTANCY COST REVIEW

## CENTRAL EVERGLADES PLANNING PROJECT
## POST-AUTHORIZATION CHANGE REPORT

# Everglades Agricultural Area Storage Reservoir Project - Preparation for Agency Technical Review

# [ATR-Level Draft Summary Report]

South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL

14 March 2018

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*Purchase Order No.: 4500104361*
*Order Date: 12/22/2017*
*Purchasing Agent: J. Harris-Fitzroy*

sfwmd.gov

LEGIS CONSULTANCY, INC.

| | | |
|---|---|---|
| *Prepared by:* | William Stevenson<br>Manager Cost Engineering, Legis Consultancy, Inc. | 3.14.2018<br>*Date* |
| *Prepared by:* | Patrick S. Ray, JD, CCP, PMP<br>Vice President, Legis Consultancy, Inc. | 3.14.2018<br>*Date* |
| *Reviewed by:* | David R. Smart, JD, PMP<br>President, Legis Consultancy, Inc. | 3.14.2018<br>*Date* |
| *Approved by:* | Michael C. Ray, PE, CCP, PSP, PMP<br>Managing Principal, Legis Consultancy, Inc. | 3.14.2018<br>*Date* |

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## Notice

This report is intended solely for the use of the South Florida Water Management District and J-TECH (a joint venture of Tetra Tech, Inc. and Jacobs Engineering Group, Inc.) and is not intended for use by any other person, partnership, corporation or any other entity, in whole or in part, without the express written consent of the South Florida Water Management District or J-TECH. Legis Consultancy, Inc. hereby disclaims any and all responsibility and liability for consequences of any other use or reliance by others on this document or any information contained herein.

# 1.0 EXECUTIVE SUMMARY

On December 22, 2017, the South Florida Water Management District (SFWMD) engaged Legis Consultancy, Inc. (Legis) to provide comments and technical support on the status of the Everglades Agricultural Area Storage Reservoir Project documentation prepared for the District in advance of the Agency Technical Review (ATR). While a substantial portion of the review has been performed, the SFWMD and Legis continue to work through outstanding issues. Draft I was reported on February 19, 2018, Draft II was reported by conference March 5, 2018. This document constitutes the *ATR-Level Draft Summary Report*. SFWMD anticipates a final summary report (Task 4) which includes a review of all final Post Authorization Change Report (PACR) documentation pertinent to ATR and resolution (or explanation of unresolved issues) of final ATR comments. The final report will be submitted March 30, 2018.

**Project Background:** As a result of environmentally damaging freshwater water discharges from the Lake Okeechobee area to the Florida Bay, the South Florida Water Management District is conducting a feasibility study to determine if a large scale new construction civil works project is practicable to reduce this damage. Currently, the tentatively selected plan (TSP) is known as the Everglades Agricultural Area Storage Reservoir Project. New construction for the project is expected to continue until late 2027. The project is broken down into eight contracts: 1) Miami Canal Conveyance Improvements, 2) North New River Conveyance Improvements, 3) Reservoir Levee Embankment Slurry Walls, 4) Reservoir and A-2 STA Culvert and Spillway, 5) A-2 Reservoir and A-2 STA Embankments and Canals, 6) Gate Spillways Construction, 7) Bridges, and 8) A-2 Reservoir Pump Station.

**Legis Team:** The Legis team consisted of seven professionals including one principal-in-charge, one project manager, two principal cost engineers, one senior cost engineer, one research assistant, and one technical editor.

**Scope of Work:** The scope of work includes a kickoff meeting and project technical support, conducted all via telephone. Submittals will include a 1) ATR-Level Review – 1st Draft, 2) ATR-Level Review – 2nd Draft, 3) ATR-Level Draft Summary Report and a 4) Summary Report.

**Confidentiality and Document Security:** Legis considers all of its work on this assignment to be procurement-sensitive. All Legis personnel have executed non-disclosure agreements that cover the firm's work and documents.

**Documents provided by the Client:** SFWMD supplied Legis with thirty-two documents (narratives, schedules, quantity takeoffs, estimates, etc.) relative to the project.

**Approach to the Assignment:** Legis developed and documented an eleven-step approach to completing the assignment.

**Recommendations:**

**Quality Management Process**

- Include the firm Quality Management Program and how program is applied to this specific project.
- Include more occurrences of QC activities.
- Ensure that QC activities address all areas of project.
- Comment/resolution form should detail specific area of QC activities.

**Scoping Documents**

- Scoping documents appear adequate and reasonable for a project at this stage of maturity.

**Quantity Development**

- Remove QTO calculations that do not result in quantities found in the MII estimate. If there is a reason to keep such calculations, clearly label them as not being used in the MII estimate.
- Round off quantities to eliminate decimal fractions where appropriate.
- Scrub the assumptions section to eliminate inconsistencies with the calculations.

- Identify on the QTO exactly what element of the MII estimate the QTO calculation applies to.

**MCACES MII Estimate**

- Update folder quantities and units of measure.
- Update notes for folders where lower level folders do not match folder structure.
- Contractor Classifications should be reevaluated and updated.
- Review contractor assignments.
- Reassess formulas for consistency.
- Review quantity variations for excavated and blasted rock.
- Reexamine equipment found in crew costs.
- Review crew productivities to match project schedule.
- Update labor rates for consistency.
- Review zero quantity items found in JOOH.
- Reexamine approximately 40 User Items to update notes and vendor quotes.
- Update bridge costs.
- Move Mobilization costs to project cost.
- Review contractor profit calculations to ensure USACE Profit Weighted Guidelines are satisfied.
- Reexamine JOOH models to eliminate unnecessary items.

**Project Schedule**

- The project schedule appears adequate and reasonable for a project at this stage of maturity.

**Cost and Schedule Risk Analysis**

- Provide risk register and accompanying narrative.
- Provide evidence of PDT involvement in the risk analysis process (meeting minutes, sign-in sheets, etc.).
- Provide market research.

## 2.0 PROJECT OVERVIEW

A general overview is discussed in this section. Details are provided on 1) the Everglades Agricultural Area Storage Reservoir Project, 2) Legis Consultancy's Team, 3) Legis Consultancy's Scope of Work, and 4) document security issues.

### 2.1 Project Background

As a result of environmentally damaging freshwater water discharges from the Lake Okeechobee area to the Florida Bay, the South Florida Water Management District (SFWMD) is conducting a feasibility study to determine if a large scale new construction civil works project is practicable to reduce this damage. Currently, the tentatively selected plan (TSP) is the known as the Everglades Agricultural Area Storage Reservoir Project.

New construction for the project is expected to continue until late 2027. The project is broken down into eight contracts: 1) Miami Canal Conveyance Improvements, 2) North New River Conveyance Improvements, 3) Reservoir Levee Embankment Slurry Walls, 4) Reservoir and A-2 STA Culvert and Spillway, 5) A-2 Reservoir and A-2 STA Embankments and Canals, 6) Gate Spillways Construction, 7) Bridges, and 8) A-2 Reservoir Pump Station. Specifically, two areas of the project are expected to be the most costly and of the longest durations to construct. First, a new reservoir will be constructed: the A-2 East Reservoir with a storage capacity of 240,000 ac/ft. Second a new pump station (4,600 CFS) will be constructed and a 300 CFS pump will be relocated to a new pump station.

As the U.S. Army will likely finance the majority of the Everglades Agricultural Area Storage Reservoir Project, the project cost, schedule and economic risk must be approved by the Assistant Secretary of the Army for Civil Works (Mr. Ryan A. Fisher - Acting) prior to work commencing. SFWMD understands that the cost, schedule and economic risk will undergo a review similar to the current U.S. Army Corps of Engineers (USACE) Agency Technical Review (ATR) process. This ATR process is rigorous and requires adherence to multiple Engineering Regulations (ER), Engineer Manuals (EM), Engineer Circulars (EC), Engineer Technical Letters (ETL), and memorandums of guidance.

### 2.2 Team Personnel

The Legis Consultancy Team consisted of the following members:

| Individual | Role |
|---|---|
| Michael Ray, PE[1], CCP[2], PSP[3], PMP[4] | Principal-in-Charge; Executive QC |
| David Smart, JD[5], PMP[4] | Project Manager |
| Bill Stevenson | Principal Cost Engineer |
| Patrick Ray, JD[5], CCP[2], PMP[4] | Principal Cost Engineer |
| Daniel Jamison | Senior Cost Engineer |
| Michele Huff | Engineering Research Assistant |
| Melissa Marion-Landais | Technical Editor |

[1] PE – Professional Engineer

[2] CCP – Certified Cost Professional (AACEI–Association for the Advancement of Cost Engineering International)

[3] PSP – Planning & Scheduling Professional (AACEI–Association for the Advancement of Cost Engineering International)

[4] PMP – Project Management Professional (PMI–Project Management Institute)

[5] JD – Juris Doctor (Consultant, Non-practicing Attorney)

## 2.3 Legis Consultancy, Inc. Scope of Work

As contained in the SFWMD Purchase Order (and subsequent modification), Legis Consultancy's Scope of Work is defined as:

***Task 1 Kickoff Meeting***
*Within two weeks of Notice to Proceed (NTP) Legis shall coordinate with the District and lead a project kickoff meeting. At this meeting Legis will identify project team members, review the scope of work, identify any issues or coordination items and review the project schedule.*

***Task 2 Project Support***
*Legis will provide technical support via phone directly with the District's planning consultant (JTech) as needed prior to submission of the ATR documents. Technical assistance will include preliminary review of work prior to the District's completion of the draft PACR report, such as review and updating of the CEPP Risk Register to fit the CEPP PACR. Legis will not provide analysis, cost estimates or other technical assistance during this task which may compromise the independent nature of their review.*

***Task 3 ATR Level Review***
*The submittal package, as described above, will be provided to Legis for their technical review. The ATR will include review of a first draft including the complete scoping documents and complete MII cost estimate. Review comments will be compiled in an excel spreadsheet by Legis and submitted to the District within 10 days from receipt of the draft document. Legis will coordinate and conduct, within one week of comment submission, an ATR workshop to review comments. The District shall then provide comment responses for subsequent Legis backcheck.*
*Upon completion of the first draft the District will submit a second draft report which will include the complete P6 schedule and the complete Cost & Schedule Risk Analysis along with an updated report incorporating Legis comments as well as comments that may be incorporated from other District review effort (i.e. an IEPR review). Legis will compile their review comments in an excel spreadsheet and submit to the District within 10 days from receipt of the draft document. Legis will coordinate and conduct, within one week of second draft comment submission, an ATR workshop to review comments. The District shall then provide comment responses for subsequent backcheck.*

***Task 4 Legis ATR-Level Summary Report***
*Upon completion of Task 3 Legis shall provide to the District a report summarizing their efforts on the project. The report shall include a description of the reviews performed, who provided the reviews, and a description of the process that was taken to insure compliance with Corps standards.*

***Task 5 Legis ATR-Level Draft Summary Report (Added via PO Rev1)***
*Legis shall provide to the District, no later than March 14, 2018, a report summarizing their efforts to-date on the project. The report shall include a description of the reviews performed, who provided the reviews, and draft comments based on the materials reviewed. This task has been added via revision with the intent to have draft documentation of review comments and summary report for the work performed through March 14, 2018. The report shall include a statement recognizing that, while a substantial portion of the review has been performed, the SFWMD and Legis continue to work through outstanding review issues. The report shall further note that SFWMD anticipates a final summary report (Task 4) which includes review of all final PACR documentation pertinent to the ATR and resolution (or explanation of unresolved issues) of final ATR comments.*

***Task 6 Resolution of Draft Summary Report Comments (Added via PO Rev1)***
*Legis shall provide support and coordination to SFWMD staff to adequately address, by resolution or by documenting the status of unresolved issues, comments provided in the draft summary report (Task 5). Legis shall conduct at least one (1) meeting with SFWMD staff to the*

*discuss the status and resolution summary prior to completion of the final summary report (Task 4).*

*Note: Revision shall include updating Payment and Deliverable Schedule to include new tasks. Costs for Task 5 and 6 will be submitted by Legis for SFWMD approval. Schedule shall include March 14 for Task 5 deliverable. Task 4 deliverable should be revised to note 7 days from completion of Task 6.*

## 2.4 Legis Consultancy Execution of Scope of Work

See *Section 4.0 Methodology*.

## 2.5 Document Control & Security

Legis Consultancy treats client and project information as confidential by default. Legis personnel are required to sign a non-disclosure agreement (NDA) with the company as a condition of employment. For most projects, Legis is bound by multiple NDA's which may include the contract vehicle as well as project specific NDA's. Federal contractors are required to comply with NIST 800-171, Protecting Controlled Unclassified Information in Non-federal Information Systems and Organizations. Most Legis project work, particularly for government entities, is treated as Controlled Unclassified Information (CUI) under the procurement sensitive and infrastructure sensitive categories.

Data security is also maintained at the CUI level per NIST 800-171. This level mandates many precautions to guard against unauthorized data access. For example, Legis uses the, "least possible access rule", when determining user permissions to the Legis primary domain controller. This means a user is given access to only what is needed for the project at hand.

## 3.0 DOCUMENTS REVIEWED

Below are the documents and packages reviewed by Legis Consultancy for the preparation of this report. All were provided by SFWMD in electronic form.

Legis was instructed by SFWMD to remove #10 from the documents provided.

**SFWMD Support**
**Legis Project No. 2114**

| # | FILE NAME | CONTAINS | DATE DELIVERED | FORMAT |
|---|---|---|---|---|
| 1 | 00_Appendix B_Cost Engineering | Narrative Project Summary | 2.8.2018 | pdf |
| 2 | 00_Executive Summary -020618 | Narrative Executive Summary | 2.8.2018 | word |
| 3 | 01_B.3-MCACES_EAA_Summary_20180201 | MII Roll-up | 2.8.2018 | pdf |
| 4 | 02_B.4-SCHEDULE (MS Project)_Preliminary_EAA Reservoir_v5 | Project Schedule | 2.8.2018 | pdf |
| 5 | 04_Attachment B-EAA Storage Reservoir Project_CSRA_Report_20180205 | Cost Schedule Risk Analysis | 2.8.2018 | pdf |
| 6 | 05_Attachment C-Appendix B_Quantities Spreadsheets | Quantity Take Offs | 2.8.2018 | pdf |
| 7 | 240-A1(L) Levees N-1 | Quantity Take Offs | 2.8.2018 | pdf |
| 8 | A THRU E | Plans | 2.8.2018 | pdf |
| 9 | F(L) THRU N-1 | Plans | 2.8.2018 | pdf |
| 10 | ~~FULL 240A1(L) Structure-Levee Quantity Appendix_011918~~ | ~~Plans and Quantity Take Offs~~ | ~~2.8.2018~~ | ~~pdf~~ |
| 11 | MCACES_EAA Reservoir_Report_012018_v1 | MII Estimate Report | 2.8.2018 | pdf |
| 12 | MCACES_EAA Reservoir_Report_012018_v1 | MII Estimate Report | 2.8.2018 | word |
| 13 | MCACES_EAA Reservoir_v5 | | 2.8.2018 | visual bsc |
| 14 | MCACES_EAA Reservoir_v5 | MII Native Estimate | 2.8.2018 | mii |
| 15 | ROM Cost per DESIGN_122917_v18_Used for Populating MCACES_011818 | Excel Summary of Estimate | 2.8.2018 | excel |
| 16 | SCHEDULE_Preliminary_EAA Reservoir_v5 | Project Schedule | 2.8.2018 | pdf |
| 17 | DRAFT Schedule_Preliminary_EAA Reservoir_v6 | MS Project - Project Schedule | 2.12.2018 | MS project |
| 18 | Appendix_QTO_022718_v2 | Quantity Take Offs | 3.2.2018 | pdf |
| 19 | DRAFT Schedule_Preliminary_EAA Reservoir_v7 | MS Project - Project Schedule | 3.2.2018 | MS project |
| 20 | DRAFT Schedule_Preliminary_EAA Reservoir_v7 | Project Schedule | 3.2.2018 | pdf |
| 21 | EAA Earthwork Production Requirments | Earthworks QTO | 3.2.2018 | pdf |
| 22 | EAA_Storage Res_MCACES Summary_20180301 | MII Roll-up | 3.2.2018 | pdf |
| 23 | MCACES_EAA Reservoir_v5 | MII Native Estimate | 3.2.2018 | mii |
| 24 | Appendix B_Cost Engineering_03.12.2018 | Cost Narrative | 3.13.2018 | pdf |
| 25 | ATT A_Schedule_EAA Reservoir_Legis Review #3 | Schedule | 3.13.2018 | pdf |
| 26 | ATT B Appendix_QTO_031218_v5 | Quantity Take Offs | 3.13.2018 | pdf |
| 27 | CEPP PAC Report_TPCS_20180312 | Total Project Cost Summary | 3.13.2018 | pdf |
| 28 | Copy of QM-QC_031218 | Quality Control Document | 3.13.2018 | excel |
| 29 | EAA Storage Reservoir Project_CSRA_Report_03.12.2018 | Cost Schedule Risk Analysis | 3.13.2018 | pdf |
| 30 | EAA_MCACES Summary_20180312 | MII Roll-up | 3.13.2018 | pdf |
| 31 | MCACES_EAA Reservoir_20180312 | MII Native Estimate | 3.13.2018 | mlp |
| 32 | Schedule_EAA Reservoir_Legis Review #3 | MS Project - Project Schedule | 3.13.2018 | mpp |

## 4.0 METHODOLOGY

The study was conducted in the following manner:

- The Legis Consultancy team leader held an internal kickoff meeting at which the team members were briefed on the assignment.
- All team members then reviewed the documents provided by the client and the USACE ATR requirements.
- The team leader prepared the report outline and distributed to the team members.
- After the documents were reviewed, the team met again at which time the team leader made specific research, analytic and writing assignments based on each team member's area of expertise and experience.
- Each team member then delved deeper into the documentation related to his/her assignment, undertook the appropriate analysis, and prepared an internal draft covering his/her section of the report.
- The team leader assembled the various section drafts for the technical editor to strengthen.
- The assembled draft was reviewed by the project quality control officer.
- The reviewed document was returned to the drafters for adjustments.
- The technical editor reviewed the changed draft.
- The team leader prepared the document for a final principal-in-charge review.
- The project manager shipped the draft document to the client.

# 5.0 FINDINGS AND RECOMMENDATIONS

## 5.1 General

Depending on the maturity level of a project, a USACE ATR Team (ATR Team) typically relies on a required set of documents to be provided by the project sponsor to conduct the ATR. Projects can be determined to be at one of three levels of maturity: 1) Alternative Formulation Briefing (AFB) Level – parametric based products, 2) Feasibility Level – detail based products, or 3) Post Authorization /Appropriation – detail based products.

The Everglades Agricultural Area Storage Reservoir Project is at the feasibility level so an ATR Team would expect to review the following documents:

- Record of Quality Management process
- Quantity Development
- Scoping documents (reports, plans, and investigations) that support quantities quantity development
- Microcomputer Aided Cost Estimating System (MCACES) Estimate(s) in the MCACES electronic software for the recommended plan
- Total project schedule and construction schedule to support escalation calculations
- Risk-based processes used to establish basis of contingencies, a formal risk analyses and risk report for projects greater than the established cost threshold

## 5.2 Record of Quality Management Process

The Legis Team has been provided with a document titled Copy of QM-QC_031218 for a record of the project quality management process. The document begins with a section titled “method” which provides bullet point details of the quality management processes utilized on the EAA Cost Engineering Project. Following are presentations of fifteen occurrences when Quality Control activities were conducted.

First, it is assumed that J-TECH has a lengthy and robust Quality Management Program for client deliverables. This document should be presented as part of an agency review. Second, a reviewer will likely be looking for a greater number of Quality Control Occurrences that touch all parts of the deliverable (in this case no QC of schedule and CSRA was presented). Lastly, QC details should include the specific area reviewed (example: Structural Calculations for B-1 Bridge).

**Recommendations** – The Legis team presents the following recommendations relative to the Quality Management Process:

- Include the firm Quality Management Program and how program is applied to this specific project.
- Include more occurrences of QC activities.
- Ensure that QC activities address all areas of project.
- Comment/resolution form should detail specific area of QC activities.

## 5.3 Scoping Documents

The Legis Team was provided with a project scoping document titled *DRAFT_CEPP PACR_Main Report_02-16-2018*. The main document is 305 pages and has seven annexes and eight appendices. The document contains maps, charts, graphs, pictures, etc. that detail abundant project details. Areas covered include: cost, schedule, risk, real estate, adaptive management, nuisance, wildlife, regulatory, modeling and numerous other project specific items. This document, as well as

*00_Appendix B_Cost Engineering* and *00_Executive Summary – 020618* appear to provide appropriate project scope details for any future reviewer.

**Recommendations** – Scoping documents appear adequate and reasonable for a project at this stage of maturity.

## 5.4 Quantity Development

A successful ATR submittal requires a comprehensive quantity takeoff (QTO) to support the items contained in the MII estimate. Each QTO should briefly describe the item being quantified, provide a set of understandable calculations and identify the units of measure used. Care must be taken to properly convert from one set of units to another set of units when such a conversion is appropriate. (For example, typically measurements of a concrete structure are in feet, the volume is calculated in cubic feet and this quantity is converted into cubic yards. This is a simple concept that far too often is the subject of error because the unit of measure was not properly identified.)

There must be a clear linkage between the QTO result and the MII estimate quantity and note fields. Simple QTO calculations can be undertaken in the MII note field. More complex calculations are best undertaken using a QTO spread sheet.

The Legis team reviewed the QTO files provided by the client and observed the following:

- The QTO calculations were generally clear.
- The assumptions appeared appropriate.
- The units of measure were appropriate.
- There were often many QTO calculations that were not reflected in the MII estimate and notes.
- The linkage between the QTO documentation and the MII estimate was often difficult to understand without interpretation of the calculations.

The Legis team selected 4 elements for a more detailed analysis. These include P-1 Pumping Station, B-1 Bridge, C-1 Culvert, Levee Section A, and SW-2 Spillway.

**Pump Stations:** The following items are of concern found in Pump Station P-1. While only Pump Station P-1 was reviewed in detail due to time constraints, these observations, in whole or in part, apply to all pump stations on the project.

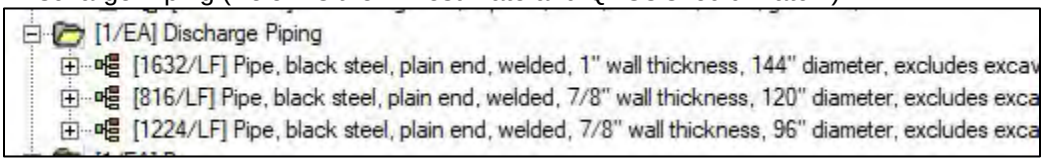
- Coffer Dam
  - QTO refers to cofferdam in summary of quantities and provides 2 quantities without backup calculations.
  - MII omits the cofferdam item.

- Concrete (Below is the MII estimate and QTOs should match.)

  - All concrete items: Ready mix items should include waste; Placement items should reflect neat quantity.
  - All concrete items: QTO does not contain formwork takeoff.

  - Reinforcing steel: QTO indicates 873.7 tn.
  - Reinforcing steel: MII reflects approximately 619 tn reinforcing steel (Some concrete items include reinforcing steel, this should be clarified in QTO.)

- Discharge Piping (Below is the MII estimate and QTOs should match.)




  - QTO assumption section states the discharge piping is 60 in diameter.
  - MII lists Piping as 96, 120 and 144 in diameter.

  - QTO indicates 36 each 45 degree bends for 96, 120 and 144 in diameter pipe.
  - MII omits pipe bends.

  - QTO indicate that all piping has a wall thickness of 0.75 in.
  - MII indicates 7/8 in and 1 in wall thicknesses.

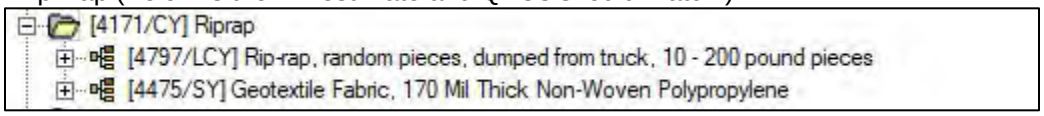
  - QTO indicates no thrust blocks or other pipe restraints.
  - MII omits thrust blocks or other pipe restraints.

- Pumps (Below is the MII estimate and QTOs should match.)

  - QTO indicates 9 pumps.
  - MII reflects 9 pumps (Material and Installation included) plus 200 hours of installation time. Needs clarification.

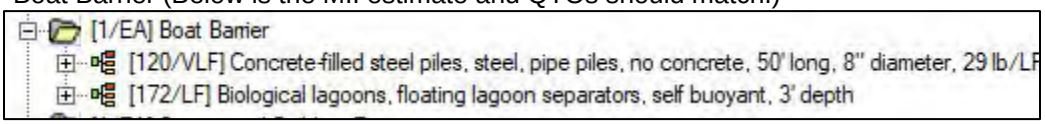
  - QTO assumption section indicates 5 ea 900 cfs pumps.
  - MII reflects 4 ea 800 cfs, 2 ea 400 cfs, and 3 ea 200 cfs pumps.

- Rip Rap (Below is the MII estimate and QTOs should match.)



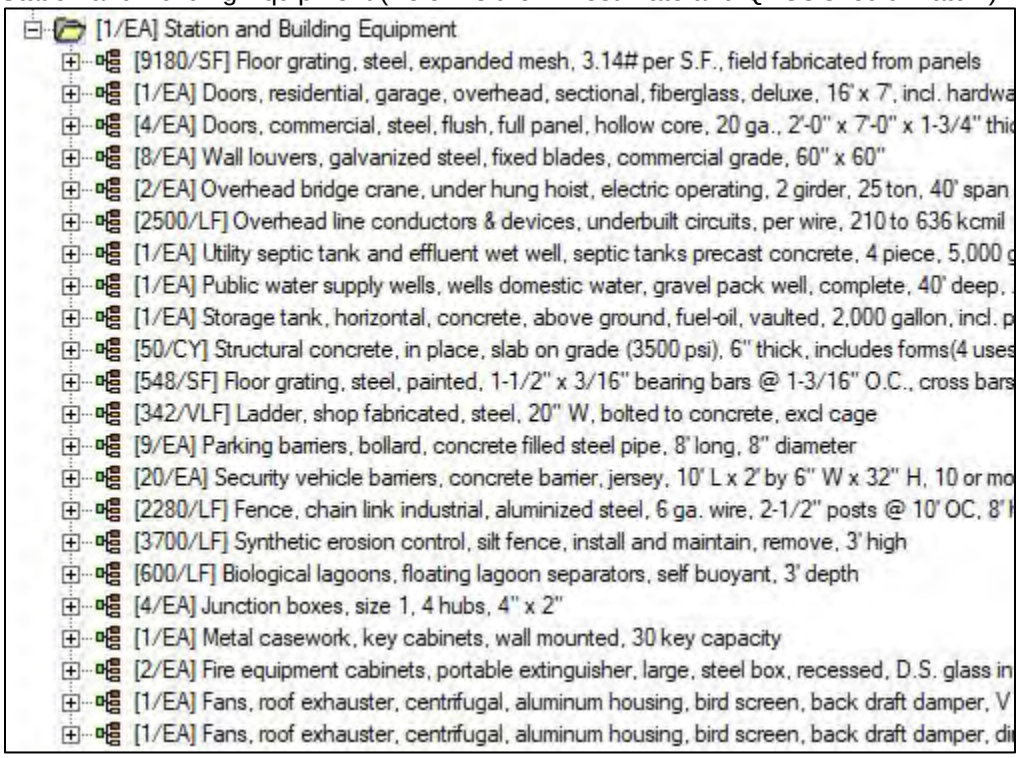

  - QTO indicates quantity in sf.
  - MII reflects quantity in sy.
  - Convert from sf to sy in QTO.

- Boat Barrier (Below is the MII estimate and QTOs should match.)




  - QTO indicates 3 ea pile.
  - MII reflects 120 lf piling.
  - QTO unclear; should indicate assumed length of pile and calculation to lf.

- Station and Building Equipment (Below is the MII estimate and QTOs should match.)

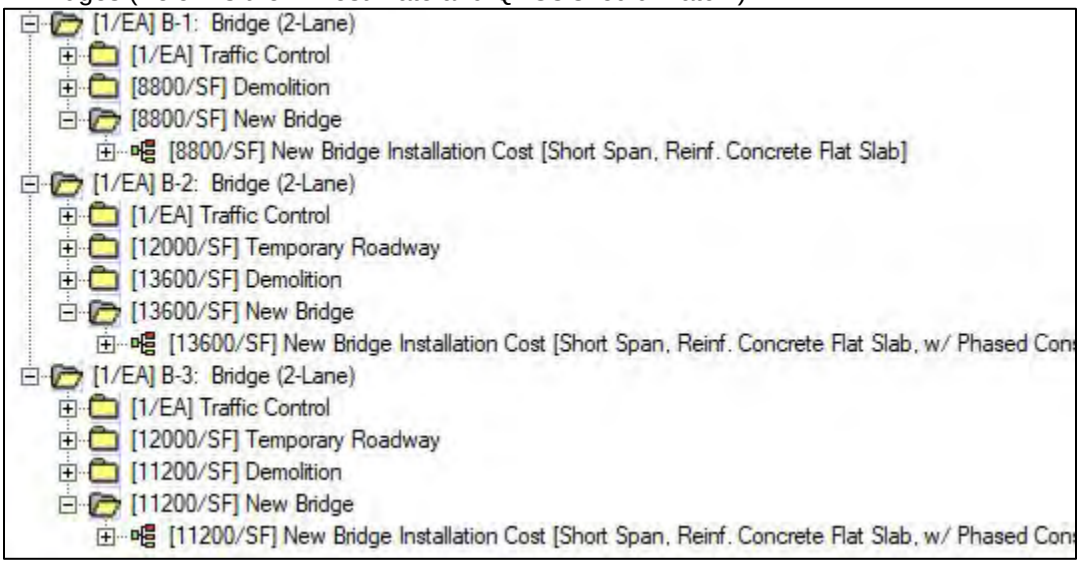



  - QTO indicates 65 cy structural concrete.
  - MII reflects 50 cy structural concrete.

  - QTO indicates 4 doors but no door hardware.
  - MII omits door hardware.

**Bridges:** The following items of concern are found Bridges B-1, B-2 and B-3.

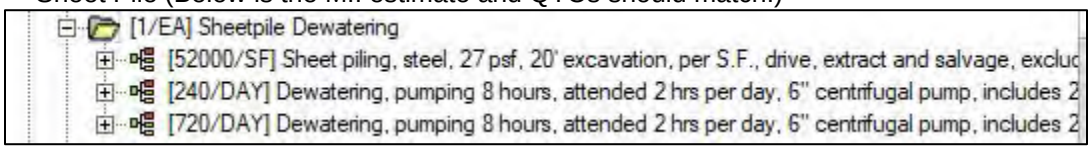
- Bridges (Below is the MII estimate and QTOs should match.)




  - QTO lists 3 bridges, all 200 ft long, but of varying roadway widths.
  - QTO lists all 3 bridges as 2 lane.
  - MII reflects 3 bridges having varying deck areas
  - MII reflects all 3 bridges as 2 lane

**Culverts:** The following items are of concern in Culvert C-1. While only Culvert C-1 was reviewed in detail due to time restraints, these observations, in whole or in part, apply to all culverts on the project.

- Sheet Pile (Below is the MII estimate and QTOs should match.)




  - QTO indicates 95767 sf.
  - MII reflects 52000 sf.
  - Possible error in QTO calculation.

- Culvert Concrete (Below is the MII estimate and QTOs should match.)

```
[1854/CY] Foundation
    [2600/SFC] C.I.P. concrete forms, slab on grade, edge, wood, over 12", 4 use, includes erec
    [2039/CY] Structural concrete, ready mix, heavyweight, high early, 4000 psi, includes local a
    [2039/CY] Structural concrete, placing, foundation mat, pumped, over 20 C.Y., includes level
[1255/CY] Culvert Walls
    [37000/SFC] C.I.P. concrete forms, walls, steel framed plywood, over 16' to 20' high, based o
    [1380/CY] Structural concrete, ready mix, heavyweight, high early, 4000 psi, includes local a
    [1380/CY] Structural concrete, placing, walls, pumped, 15" thick, includes leveling (strike off)
[2472/CY] Top Slab
    [17500/SF] C.I.P. concrete forms, elevated slab, flat plate, plywood, 21' to 35' high ceilings, 4
    [2719/CY] Structural concrete, ready mix, heavyweight, high early, 4000 psi, includes local a
    [2719/CY] Structural concrete, placing, elevated slab, pumped, over 10" thick, includes leve
[470/CY] Miscellaneous Concrete
    [9400/SFC] C.I.P. concrete forms, walls, steel framed plywood, over 16' to 20' high, based on
    [517/CY] Structural concrete, ready mix, heavyweight, high early, 4000 psi, includes local ag
    [517/CY] Structural concrete, placing, walls, pumped, 15" thick, includes leveling (strike off)
```

  - All concrete items: Ready mix items should include waste; Placement items should reflect neat quantity.
  - All concrete items: QTO does not contain formwork takeoff.

- Steel Rebar (Below is the MII estimate and QTOs should match.)

```
[479.8/TON] Reinforcing Steel
    [479.8/TON] Reinforcing steel, in place, walls, #3 to #7, A615, grade 60, incl labor for acces
```

  - QTO indicates 381.8 tn.
  - MII reflects 479.8 tn.
  - QTO notes refer to both 1.2% and 0.8% volume of concrete. Confusing. Recommend omitting one of the notes or clarifying.

- Gates (Below is the MII estimate and QTOs should match.)

```
[3/EA] Gates
    [3/EA] 12' x 12' Box Culvert Gate, Full Installation
```

  - QTO contains 144 lf gate seal.
  - MII omits gate seal item.

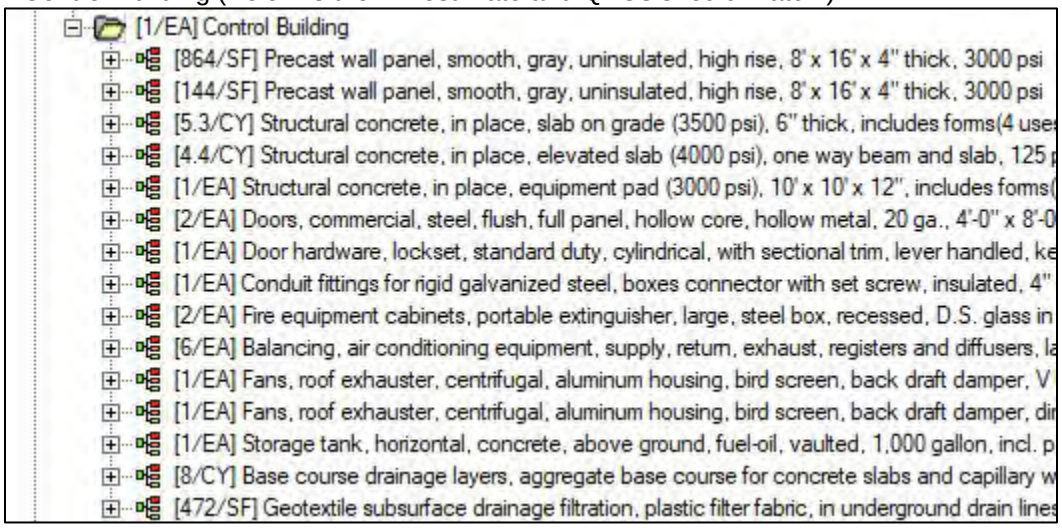
- Boat Barrier (Below is the MII estimate and QTOs should match.)

```
[1/EA] Boat Barrier
    [120/VLF] Concrete-filled steel piles, steel, pipe piles, no concrete, 50' long, 8" diameter, 29 lb/L
    [172/LF] Biological lagoons, floating lagoon separators, self buoyant, 3' depth
```

  - QTO indicates 6 ea pile.
  - MII reflects 120 lf piling.
  - QTO unclear, should indicate assumed length of pile and calculation to lf.

  - QTO indicates 344 lf of barrier.
  - MII reflects 172 lf of barrier.

- Control Building (Below is the MII estimate and QTOs should match.)



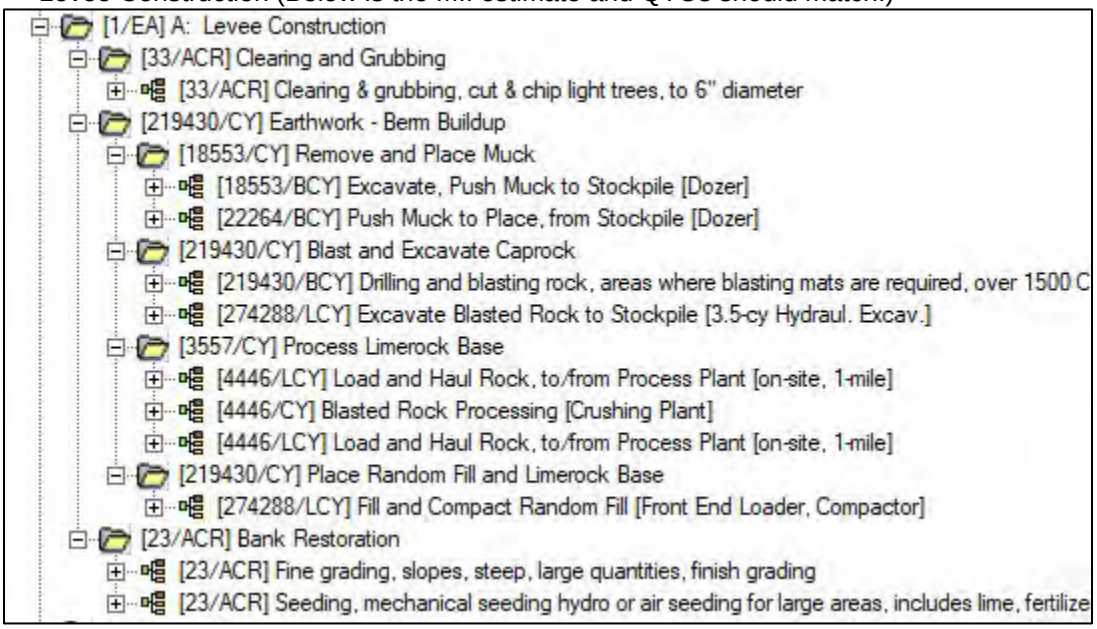

  - QTO indicates 10.7 cy and 1.8 cy of poured-in-place walls.
  - MII reflects 864 sf and 144 sf of precast concrete walls.

  - QTO indicates 2 doors.
  - MII reflects only one set of door hardware.
  - Balance of door hardware (hinges, door stops, etc.) appears missing.

  - QTO indicates 6 hoods.
  - MII omits hoods.

**Levees:** The following items are of concern in Levee A. While only Levee A was reviewed in detail due to time restraints, these observations, in whole or in part, apply to all levees on the project

- Levee Construction (Below is the MII estimate and QTOs should match.)



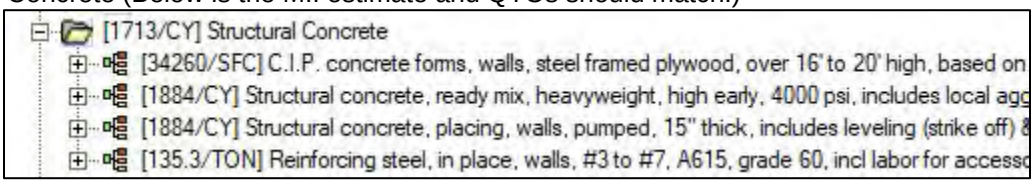

  - QTO indicates random fill as 274288 cy.
  - MII Random Fill folder label reflects 219430 cy.

  - QTO does not specifically identify blasted rock quantity (labeling issue).
  - MII reflects 219430 cy blasted rock.

  - QTO does not identify 219430 cy as a quantity. One must assume it is the sum of 215873 cy and 3557 cy in the table.

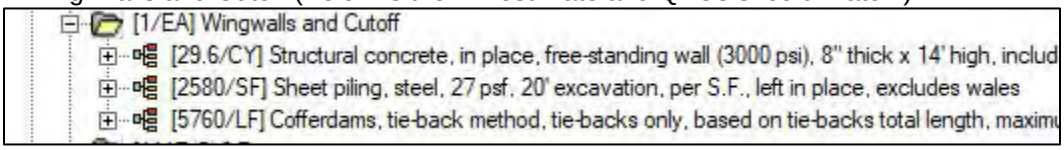
**Spillways:** The following items are of concern in Spillway SW-2. While only Spillway SW-2 was reviewed in detail due to time restraints, these observations, in whole or in part, apply to all Spillways on the project.

- Concrete (Below is the MII estimate and QTOs should match.)



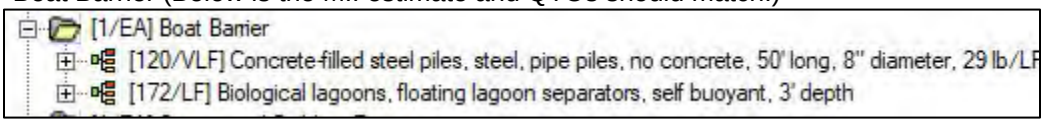

  - All concrete items: Ready mix items should include waste; Placement items should reflect neat quantity.
  - All concrete items: QTO does not contain formwork takeoff.

- Wing Walls and Cutoff (Below is the MII estimate and QTOs should match.)




  - QTO indicates Sheet Pile as 9580 sf.
  - MII reflects 2580 sf.

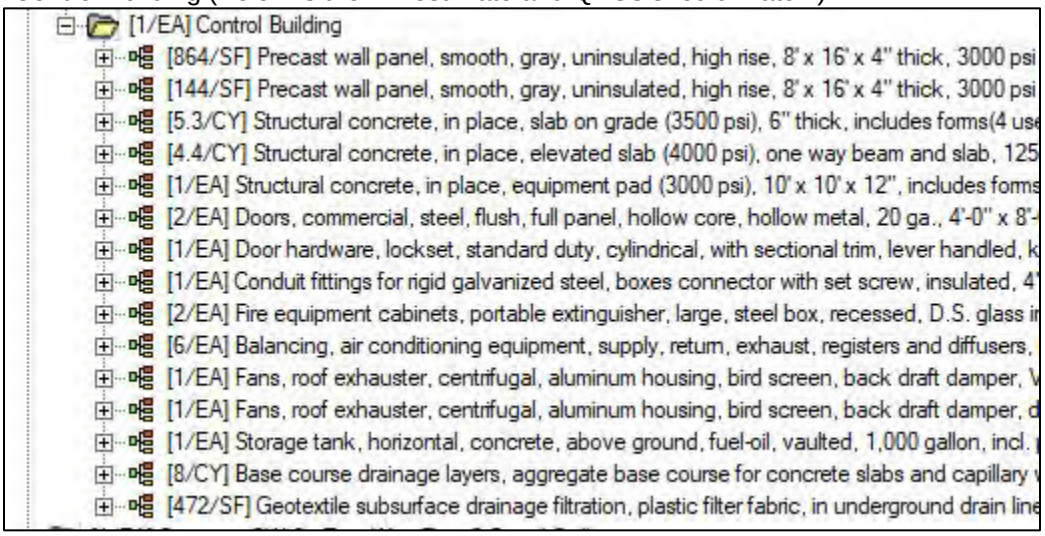
- Boat Barrier (Below is the MII estimate and QTOs should match.)




  - QTO indicates 6 ea pile.
  - MII reflects 240 lf piling.
  - QTO unclear, should indicate assumed length of pile and calculation to lf.

  - QTO indicates 340 lf of barrier.
  - MII reflects 172 lf of barrier.

- Control Building (Below is the MII estimate and QTOs should match.)




  - QTO indicates 10.7 cy and 1.8 cy of poured-in-place walls.
  - MII reflects 864 sf and 144 sf of precast concrete walls.

  - QTO indicates 2 doors.
  - MII reflects only one set of door hardware.
  - Balance of door hardware (hinges, door stops, etc.) appears to be missing.

  - QTO indicates 6 hoods.
  - MII omits hoods.

It is often difficult to relate the QTO components to the MII estimate because of differing terminology and differing locations in the estimate.

**Recommendations** – The Legis team presents the following recommendations relative to the QTO development:

- Remove QTO calculations that do not result in quantities found in the MII estimate. If there is a reason to keep such calculations, clearly label them as not being used in the MII estimate.
- Round off quantities to eliminate decimal fractions where appropriate.
- Scrub the assumptions section to eliminate inconsistencies with the calculations.
- Identify on the QTO exactly what element of the MII estimate the QTO calculation applies to.

## 5.5 MCACES MII Estimate

**Estimate Structure**
Estimate has been organized based on the Civil Works Classification System
With the exception of Earthwork related items, folder quantities for other work generally contain Quantities and Unit of Measure equal to 1 EA. It is recommended that Quantities and Unit of Measure be updated based on the work and quantities contained within the folder.

**Project Folders**
Overall, folder notes are provided to define scope of work in detail which in most cases does match the lower level folders. Some folders, such as Contract 6, Flood Control Diversion, Water Control Structure include scope for work that could not be identified the lower level folders. Folder notes indicate a total of 4 spillway structures, however folders are included for only 3 structures - SW-2, SW-3, and SW-4.

**Contracting Plan**
Overall, it appears that the Prime Contractor will self-perform the bulk of all work activities with the exception of Dewatering, Concrete, Piling. Pumps, and Recreation.

Subcontracting Plans should be re-evaluated based on the work items contained within each project. In general, it would not be expected that a Heavy Civil Contractor will self-perform items such as Electrical, Building Construction, Gate Fabrication and Installation, among others.

Contractor Classifications for Sub contractors should be re-evaluated and updated or supported with notes, based on the work being performed. Currently the Dewatering Sub is indicated as Pile Driving.

**Work Items**
Estimate contains the following Earthwork Quantities:

| | |
|---|---|
| Blasted Rock Processing [Crushing Plant] | 691,261 |
| Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | 42,259,486 |
| Excavate to Stockpile [3.5-cy Hydraul. Excav.] | 36,800 |
| Excavate, Push Muck to Stockpile [Dozer] | 10,400,944 |
| Fill and Compact Random Fill [Front End Loader, Compactor] | 29,884,978 |
| Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | 1,429,730 |
| Load and Haul Rock, to/from Stockpile [on-site, 1-mile] | 23,457,886 |
| Material Handling Between Stockpiles [Dozer, Loader] | 38,120,932 |

All Items for Earthwork as included as a USR Cost, representing $370,491,139.50 in Direct Cost, or 35% of the total Direct Cost.
Review of detail for these quantities indicates that several items have incorrect contractor assignments, inconsistent quantity formulas, or contain what appear to be inconsistent quantities.

Contractor Assignment Example:

Contract 8, Dewatering Operation and Maintenance [2 laborers] is assigned to Prime Contractor, yet all other items are assigned to Dewatering Sub

Inconsistent Formulas:

Contract 5, Two line items for Fill and Compact Random Fill [Front End Loader, Compactor] are based on what appears to be a 38.6% swell factor.

Contract 5, One line item for Fill and Compact Random Fill [Front End Loader, Compactor] is based on what appears to be no swell factor

Contract 5, Four line items for Fill and Compact Random Fill [Front End Loader, Compactor] are based on what appears to be a 15% swell factor.

Quantity Variation:

Contract 5, Blasted Rock Processing [Crushing Plant] contains 621,261 LCY which includes a 25% swell factor.

Contract 5, Excavate Blasted Rock to Stockpile [3.5-cy Hydraulic Excavation] contains 38,388,954 LCY, which includes a 25% swell factor.

**Crew Development**
Crew Cost for several cost items appears to be lacking necessary equipment to complete the work or does not contain sufficient notes to clearly describe work plan.

Example:

Item 314116101600 - Sheet piling, steel, 27 psf, 20' excavation, per SF, drive, extract and salvage, excludes wales

Work appears to be marine based installation of cofferdam for construction. Crew contains no cost for marine based equipment.

Assuming work will be competed in a dewatered area, has the cost of Design for cofferdam consider to be Life Safety included?

Item 025413103731 - Biological lagoons, floating lagoon separators, self-buoyant, 3' depth

Appears to be water-based operations from the work item descriptions, however contain no cost of equipment to work from water.

**Project Duration**
Duration stated in the MCACES file stands at 2,555 Days, or 7 years, based on 100% productivity and a single 10 hour shift, 6 days per week.

Based on the Crew Hours (2,779,448 Hours) from MII, a total of 277,945 Crew days will be required to complete the project. Based on MII, work is expected to be completed utilizing a single shift, 6 days per week.

Based on the information contained within MII, a minimum of 18 separate crews will be required, working concurrently, 6 days per week, for 7 years to complete construction.

**Production Rates**
Production Rates appear to be based on the information contained in the Cost Engineering Appendix. Production rate sources are noted in the MII folder and are assumed to be accurate as stated.

**Labor Cost**
Current Estimate includes 8,323,883 Man-hours at an average hourly rate (Bare Cost) of $24.71 which is considered to be reasonable as a whole.

Detailed review by labor class indicates inconsistency, specifically with Laborers, which should be reviewed. Base wage rates range from $7.25 to $33.08 for Laborer, with Fringes being applied inconsistently. See example below.

It is also noted that the majority of Labor rate are based on union labor compared to Davis-Bacon or Open shop labor, which should be supported given the lack of union labor in South Florida.

| Labor Classification | Jbase | Abase | Fbase | Tax Fringe | Amount |
|---|---|---|---|---|---|
| General Labor, Lowest Paid | $ 7.25 | $ 5.44 | $ 8.25 | $ - | |
| Semi-Skilled | $ 10.64 | $ 7.98 | $ 11.64 | $ - | $ 14.52 |
| Semi-Skilled, Outside | $ 10.64 | $ 7.98 | $ 11.64 | $ - | $ 1.00 |
| Traffic Control | $ 28.99 | $ 15.94 | $ 30.99 | $ 1.50 | |
| Skilled Worker | $ 35.24 | $ 28.19 | $ 36.24 | $ 9.39 | |
| Skilled, Outside | $ 33.08 | $ 24.81 | $ 34.08 | $ 10.30 | |

**Incorrect Quantities**
Review indicates that 13 line items contain Quantity of 1 EA, which appears to be understated or incorrect.

Reference:

> Item 260533252250 - Conduit fittings for rigid galvanized steel, boxes connector with set screw, insulated, 4" diameter
>
> Item occurs 13 times, with a quantity of 1 each, which should be validated and updated.
>
> This item appears to represent Conduit runs, given there are no additional conduit listing in the estimate. It is likely that conduit runs will be longer than 1 EA.

Certain zero quantity items exist under Job Office Overhead.

**Contractor Assignments**
Contractor Assignment have been made for all Project Work Items, however as previously noted, these appear to be inconsistent at times.

**USR Cost Items**
In general, USR Cost Items appear to be supported through project notes.

A total of 325 entries are based on USR created items in the Estimate and represent a total of 40 unique work items. Total Direct cost of all USR items in the estimate stands at $612,084,025.47, or 58.5% of the total Direct Cost.

Four (4) Items contain no documentation to support the total cost of $326,101 in Direct Cost for these items.

Thirty (30) items are based on incomplete notes and/or quotations, representing $51,589,900 in Direct Cost for these items.

Three (3) items for Bridges have been included with identical descriptions, however only two of these items include 20% increase in Unit Cost based on FDOT. Total Direct Cost for these bridges stands at $6,620,200

**Mobilization**
Estimate includes $49,872,958.47 (4% markup) for Mobilization which has been applied as a contractor markup and is evenly distributed throughout all project and attached to each individual item, inflating unit cost.

Based on the Order of Markups applied, cost for Small Tools, JOOH, HOOH, Profit, or Bond will not be added to the cost of mobilization. This has the potential to understate cost by 13% overall. Mobilization should be moved from Markups to the Project Cost.

**Markups**
Order of Markups has been updated and has been arranged based on typical USACE projects.

**Prime Contractor Profit**
Profit for each of the eight contractors has been developed using the Profit Weighted Guidelines, however at least one variable per contractor has not been evaluated. In general Level of Difficulty and Degree of Assistance by Government has been evaluated for each contractor.

**Job Office Model**
Work Items are included for items such as SNOW REMOVAL which are likely to be unnecessary and should be removed. Currently these items are listed with “0” Quantity, and “0” Cost, and do not affect the overall cost of the model.

**Recommendations** – The Legis team presents the following recommendations relative to the MCACES MII Estimate:

- Update folder quantities and units of measure.
- Update notes for folders where lower level folders do not match folder structure.
- Contractor Classifications should be reevaluated and updated.
- Review contractor assignments.
- Reassess formulas for consistency.
- Review quantity variations for excavated and blasted rock.
- Reexamine equipment found in crew costs.
- Review crew productivities to match project schedule.
- Update labor rates for consistency.
- Review zero quantity items found in JOOH.
- Reexamine approximately 40 User Items to update notes and vendor quotes.
- Update bridge costs.
- Move Mobilization costs to project cost.
- Review contractor profit calculations to ensure USACE Profit Weighted Guidelines are satisfied.
- Reexamine JOOH models to eliminate unnecessary items.

## 5.6 Project Schedule

The current project schedule for Everglades Agricultural Area Storage Reservoir Project is found in one PDF and one native document:

- ATT A Schedule_EAA Reservoir_Legis Review #3 - PDF
- Schedule_EAA Reservoir_Legis Review #3

While there looks to be a slightly different appearance (line verses bar) of the two documents (each appears to be from MS Project Scheduling Software), both present the same substantive durations for the project. Project Start Date is 01.01.2020 and finish date is 12.21.2027 for a total project duration of 2912 calendar days or 95.7 months. The project schedule is broken into nine parts:

- General – Lands & Damages, Relocations, Planning, Engineering & Design, Construction Management, Fish and Wildlife (duration "2080 days")
- CONTRACT 1 – Miami Canal Conveyance Improvements (duration "780 days")
- CONTRACT 2 – North New River Conveyance Improvements (duration "390 days")
- CONTRACT 3 – Reservoir Levee Embankment Slurry Walls (duration "415 days")
- CONTRACT 4 – Reservoir and A-2 STA Culvert and Spillway (duration "520 days")
- CONTRACT 5 – A-2 Reservoir and A-2 STA Embankments and Canals (duration "1452 days")
- CONTRACT 6 – Gate Spillways Construction (duration "525 days")
- CONTRACT 7 – Bridges (duration "800 days")
- CONTRACT 8 – A-2 Reservoir Pump Station (duration "1557 days")

In general, the schedule appears adequate for this stage of project maturity. Project logic appears reasonable and sound. Documents and interviews indicate that resource levels are a) Reservoir Dam Crews – two per embankment, a) Canal Crew – two, b) Levee Crews – two, c) Recreation Crews – two, d) Culvert Crews – three, e) Culvert Crews (Spillways) – three, f) Bridge Crews – one, and g) Pump Station Crews – one. All the crews look reasonable in a vacuum but a local market labor study should be conducted to support any labor availability (skilled and unskilled) assumptions in a rural area executing approximately $400 M in new construction per year for five years. This analysis should also include a review of material (primarily dirt and concrete) and equipment availability. Additionally, the productivity analysis should be conducted based on SFWMD historical data or similar to determine the appropriateness of durations assigned to large work items. These include: a) planning and engineering, b) reservoir levees, c) channels and canals, d) culverts (multiple cases of concurrent construction), e) spillways, f) bridges, and g) construction of the 4,600 CFS pump station.

It should be noted that with the exception of many horizontal or most vertical projects, scheduling of project activities can vary greatly. Considerations can include resource availability, site accessibility, funding accessibility, payment schedule, owner requirements, and other related influences. It is suggested that a brief narrative accompany the schedule so that the reviewer can determine if any of these are factors and how the schedule relates to the estimate.

**Recommendations** – The project schedule appears adequate and reasonable for a project at this stage of maturity.

## 5.7 Cost and Schedule Risk Analysis

ER 1110-2-1150, ER 1110-2-1302, and ETL 1110-2-573 govern the civil works contingency development using risk-based principles. USACE requires the use Oracle Crystal Ball Monte Carlo Simulation software. Established contingency values must be risk based. ATR Guidance requires the inclusion of four critical items in the process:

- Project delivery team active involvement and respective risk potentials.
- All project features of the civil works work breakdown structure.
- Internal and external risk factors.
- Report presentation and reflection in the Total Project Cost Summary (TPCS).

ER 1110-2-1302 requires involvement of the Project Delivery Team (PDT) with the cost. Specifically, the involvement of areas of design, contracting, construction, legal, project management, and construction management are necessary to the development of an appropriate risk register. This participation is reflected in a sign-in sheet or a brief narrative attached to the CSRA.

An acceptable CSRA requires the use of a comprehensive WBS for use in the analysis process. Further the risk register should include internal and external risk factors. Internal risk factors are those faced by an organization within itself that arise during normal operations of the organization. These generally fall in three areas: human factors, technology factors, and physical factors. External risks arise from outside and organization. These include natural disasters, civil disruptions, and environmental hazards.

Lastly, the CSRA results need to be presented in a presentation that can be included in a TPCS or similar document. The presentation should reflect all the details (risk register, tornado charts, contingency summary, specific driver risks, market research, and mitigation recommendations) of the previous three requirements.

The Legis team received a 22 page PDF EAA Storage Reservoir Project_CSRA_Report_03.12.2018 for the CSRA exercise. Acceptable details are provided to reach the 34 percent ($518,179,720) cost contingency and the 30 percent (29.1 months) schedule contingency. With contingencies added, the project total construction cost is $2,042,237,720 and the project construction schedule duration is 128 months.

**Recommendations** – The Legis team presents the following recommendations relative to the Cost and Schedule Risk Analysis:

- Provide risk register and accompanying narrative.
- Provide evidence of PDT involvement in the risk analysis process (meeting minutes, sign-in sheets, etc.).
- Provide market research.

### 5.8 ATR Checklist

USACE provides a comprehensive checklist of the items required for the ATR. Due to the current status of the early development of the SFWMD ATR documents, the Legis Team recommends that completing the checklist be delayed until the package is more completely developed. (See *Appendix 8.3 USACE ATR Package Checklist*)

## 6.0 CONCLUSION

The Legis Team recognizes that the documents provided by the client represent an “in-process” picture at a given date of the development of the client’s ATR submittal package. The team also recognizes that while it has been analyzing this set of documents, the client’s team has been making corrections and improvements such that some (or many) of our comments may be moot. That said, we recommend that the client utilize the ATR Package Checklist from this report to assess the current standing of the ATR package.

## 7.0 ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| **AACEI** | Association for the Advancement of Cost Engineering, International |
| **ANSI** | American National Standards Institute |
| **ASTM** | American Society for Testing and Materials |
| **ATR** | Agency Technical Review |
| **CCP** | Certified Cost Professional |
| **CEPP** | Central Everglades Planning Project |
| **CERP** | Comprehensive Everglades Restoration Plan |
| **CPM** | Critical Path Method |
| **CSRA** | Cost and Schedule Risk Analysis |
| **EAA** | Everglades Agricultural Area |
| **ECB** | Engineering and Construction Bulletin |
| **EIS** | Environmental Impact Statement |
| **EM** | Engineer Manual |
| **ER** | Engineer Regulation |
| **ETL** | Engineer Technical Letter |
| **FWO** | Future without Projection Condition |
| **JD** | Juris Doctor |
| **LORS** | Lake Okeechobee Regulation Schedule |
| **MII** | Second Generation Micro-Computer Aided Estimating System |
| **NICET** | National Institute for Certification in Engineering Technologies |
| **NDA** | Non-Disclosure Agreement |
| **NTP** | Notice to Proceed |
| **NWW** | United States Army Corps of Engineers, Walla Walla District |
| **ODC** | Other Direct Costs |
| **P6** | Primavera Professional Project Management (Version 6) |
| **PACR** | Post Authorization Change Report |
| **PE** | Professional Engineer |
| **PIR** | Project Implementation Report |
| **PMP** | Project Management Professional |
| **PPA** | Project Partnership Agreement |
| **PSP** | Planning and Scheduling Professional |
| **QA** | Quality Assurance |
| **QC** | Quality Control |
| **QTO** | Quantity Take-Off |
| **ROM** | Rough Order of Magnitude |
| **SFWMD** | South Florida Water Management District |

| | |
|---|---|
| **SOW** | Scope of Work |
| **STA** | Stormwater Treatment Area |
| **TSP** | Tentatively Selected Plan |
| **USACE** | U.S. Army Corps of Engineers |
| **WRDA** | Water Resources Development Act |

# 8.0 APPENDICES

## 8.1 User Item Report

## 8.2 Zero Quantity Report

## 8.3 ATR Package Checklist

**Everglades Agricultural Area Storage Reservoir Project** — **Legis Consultancy, Inc.**
**Preparation for Agency Technical Review Report** — **March 14, 2018**
**MII Estimate**
**User (USR) Items - Summary** — **Appendix 8.1**

| # Entries | | Description |
|---|---|---|
| 1 | | 12' x 12' Box Culvert Gate, Full Installation Count |
| 2 | | 25' x 16' SS Spillway Gate, Full Installation Count |
| 1 | | 25' x 18' SS Spillway Gate, Full Installation Count |
| 8 | | 7' x 7' Box Culvert Gate, Full Installation Count |
| 1 | | ADA Fishing Platform [Material and Installation] Count |
| 1 | | Airboat Crossing [Material and Installation] Count |
| 10 | | Blasted Rock Processing [Crushing Plant] Count |
| 1 | | Boat Ramp [Material and Installation] Count |
| 2 | | Courtesy Dock [Material and Installation] Count |
| 15 | | Dewatering Operation and Maintenance [2 laborers] Count |
| 15 | | Dewatering Pump Operation [Fuel Costs] Count |
| 15 | | Dewatering Pump Rentals [24" Hydraflow Pumps] Count |
| 57 | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] Count |
| 8 | | Excavate to Stockpile [3.5-cy Hydraul. Excav.] Count |
| 33 | | Excavate, Push Muck to Stockpile [Dozer] Count |
| 2 | | Fill and Compact Base [Front End Loader, Compactor] Count |
| 25 | | Fill and Compact Random Fill [Front End Loader, Compactor] Count |
| 1 | | Fire Ring [Material and Installation] Count |
| 1 | | Fishing Pier [Material and Installation] Count |
| 2 | | Group Shelter, 16' x 24' [Material and Installation] Count |
| 3 | | Kayak Launch [Material and Installation] Count |
| 6 | | Kiosk Shelter [Material and Installation] Count |
| 30 | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] Count |
| 10 | | Load and Haul Rock, to/from Stockpile [on-site, 1-mile] Count |
| 10 | | Material Handling Between Stockpiles [Dozer, Loader] Count |
| 2 | | New Bridge Installation Cost [Short Span, Reinf. Concrete Flat Slab, w/ Phased Construction] Count |
| 1 | | New Bridge Installation Cost [Short Span, Reinf. Concrete Flat Slab] Count |
| 2 | | Place Riprap [Hydraul. Excavat.] Count |
| 3 | | Pump Installation Crew Count |
| 1 | | Pump Station Demolition Crew Count |
| 1 | | Pump, 200 cfs [Material and Installation] Count |
| 1 | | Pump, 400 cfs [Material and Installation] Count |
| 1 | | Pump, 800 cfs [Material and Installation] Count |
| 1 | | Pumps for 300 cfs Pump Station [Materials] Count |
| 8 | | Push Material to Stockpile [Dozer] Count |
| 33 | | Push Muck to Place, from Stockpile [Dozer] Count |
| 4 | | Slurry Wall Installation Count |
| 3 | | Small Boat Ramp [Material and Installation] Count |
| 4 | | Vault Toilet [Material and Installation] Count |
| **325** | | **TOTAL: USR Line Item Cost Entries** |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | 12' x 12' Box Culvert Gate, Full Installation | Sub Bid: Based on recent costs for culvert gates constructed within the SFWMD (Jack Ismalon, jismalo@sfwmd.gov). Cost includes all necessary materials and installation of the gate. | 3 | EA | Q | PRIME CONTRACTOR 4 | 61,632.00 | 184,896.00 |
| USR | Z | | 25' x 16' SS Spillway Gate, Full Installation | Sub Bid: Based on recent costs for similar spillway gates constructed within the SFWMD (Jack Ismalon, jismalo@sfwmd.gov). Cost includes all necessary materials and installation of the gate. | 3 | EA | Q | PRIME CONTRACTOR 6 | 1,168,000.00 | 3,504,000.00 |
| USR | Z | | 25' x 16' SS Spillway Gate, Full Installation | Sub Bid: Based on recent costs for similar spillway gates constructed within the SFWMD (Jack Ismalon, jismalo@sfwmd.gov). Cost includes all necessary materials and installation of the gate. | 3 | EA | Q | PRIME CONTRACTOR 6 | 1,168,000.00 | 3,504,000.00 |
| USR | Z | | 25' x 18' SS Spillway Gate, Full Installation | Sub Bid: Based on recent costs for similar spillway gates constructed within the SFWMD (Jack Ismalon, jismalo@sfwmd.gov). Cost includes all necessary materials and installation of the gate. | 3 | EA | Q | PRIME CONTRACTOR 6 | 1,314,000.00 | 3,942,000.00 |
| USR | Z | | 7' x 7' Box Culvert Gate, Full Installation | Sub Bid: Based on recent costs for culvert gates constructed within the SFWMD (Jack Ismalon, jismalo@sfwmd.gov). Cost includes all necessary materials and installation of the gate. | 2 | EA | Q | PRIME CONTRACTOR 4 | 20,972.00 | 41,944.00 |
| USR | Z | | 7' x 7' Box Culvert Gate, Full Installation | Sub Bid: Based on recent costs for culvert gates constructed within the SFWMD (Jack Ismalon, jismalo@sfwmd.gov). Cost includes all necessary materials and installation of the gate. | 2 | EA | Q | PRIME CONTRACTOR 4 | 20,972.00 | 41,944.00 |
| USR | Z | | 7' x 7' Box Culvert Gate, Full Installation | Sub Bid: Based on recent costs for culvert gates constructed within the SFWMD (Jack Ismalon, jismalo@sfwmd.gov). Cost includes all necessary materials and installation of the gate. | 2 | EA | Q | PRIME CONTRACTOR 4 | 20,972.00 | 41,944.00 |
| USR | Z | | 7' x 7' Box Culvert Gate, Full Installation | Sub Bid: Based on recent costs for culvert gates constructed within the SFWMD (Jack Ismalon, jismalo@sfwmd.gov). Cost includes all necessary materials and installation of the gate. | 2 | EA | Q | PRIME CONTRACTOR 4 | 20,972.00 | 41,944.00 |
| USR | Z | | 7' x 7' Box Culvert Gate, Full Installation | Sub Bid: Based on recent costs for culvert gates constructed within the SFWMD (Jack Ismalon, jismalo@sfwmd.gov). Cost includes all necessary materials and installation of the gate. | 2 | EA | Q | PRIME CONTRACTOR 4 | 20,972.00 | 41,944.00 |
| USR | Z | | 7' x 7' Box Culvert Gate, Full Installation | Sub Bid: Based on recent costs for culvert gates constructed within the SFWMD (Jack Ismalon, jismalo@sfwmd.gov). Cost includes all necessary materials and installation of the gate. | 2 | EA | Q | PRIME CONTRACTOR 4 | 20,972.00 | 41,944.00 |
| USR | Z | | 7' x 7' Box Culvert Gate, Full Installation | Sub Bid: Based on recent costs for culvert gates constructed within the SFWMD (Jack Ismalon, jismalo@sfwmd.gov). Cost includes all necessary materials and installation of the gate. | 3 | EA | Q | PRIME CONTRACTOR 4 | 20,972.00 | 62,916.00 |
| USR | Z | | 7' x 7' Box Culvert Gate, Full Installation | Sub Bid: Based on recent costs for culvert gates constructed within the SFWMD (Jack Ismalon, jismalo@sfwmd.gov). Cost includes all necessary materials and installation of the gate. | 4 | EA | Q | PRIME CONTRACTOR 4 | 20,972.00 | 83,888.00 |
| USR | Z | | ADA Fishing Platform [Material and Installation] | Quantity: Based on estimated number of fishing platforms required; Material: Based on quote provided by XXXXXXX (awaiting quotes, price and notes will be updated upon receiving); Sub Bid: Based on installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 50,000.00 | 52,100.00 |
| USR | Z | | Airboat Crossing [Material and Installation] | Quantity: Based on estimated number of airboat crossings required; Sub Bid: Based on full installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 75,000.00 | 75,000.00 |
| USR | Z | | Blasted Rock Processing [Crushing Plant] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 2,121.00 | CY | Q*1.25 | PRIME CONTRACTOR 5 | 2.89 | 6,562.11 |
| USR | Z | | Blasted Rock Processing [Crushing Plant] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 2,842.00 | CY | Q*1.25 | PRIME CONTRACTOR 5 | 2.89 | 8,792.79 |
| USR | Z | | Blasted Rock Processing [Crushing Plant] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,446.00 | CY | Q*1.25 | PRIME CONTRACTOR 5 | 2.89 | 13,755.36 |
| USR | Z | | Blasted Rock Processing [Crushing Plant] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 5,698.00 | CY | Q*1.25 | PRIME CONTRACTOR 5 | 2.89 | 17,628.89 |
| USR | Z | | Blasted Rock Processing [Crushing Plant] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 9,731.00 | CY | Q*1.25 | PRIME CONTRACTOR 5 | 2.89 | 30,106.48 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Blasted Rock Processing [Crushing Plant] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 15,406.00 | CY | Q*1.25 | PRIME CONTRACTOR 5 | 2.89 | 47,664.21 |
| USR | Z | | Blasted Rock Processing [Crushing Plant] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 99,551.00 | CY | Q*1.25 | PRIME CONTRACTOR 5 | 2.89 | 307,998.19 |
| USR | Z | | Blasted Rock Processing [Crushing Plant] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 140,376.00 | CY | Q*1.25 | PRIME CONTRACTOR 5 | 2.89 | 434,305.56 |
| USR | Z | | Blasted Rock Processing [Crushing Plant] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 184,065.00 | CY | Q*1.25 | PRIME CONTRACTOR 5 | 2.89 | 569,473.80 |
| USR | Z | | Blasted Rock Processing [Crushing Plant] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 227,025.00 | CY | Q*1.25 | PRIME CONTRACTOR 5 | 2.89 | 702,386.60 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,235,629.00 | LCY | Q*1.25 | PRIME CONTRACTOR 1 | 2.24 | 5,323,488.08 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,123,324.00 | LCY | Q*1.25 | PRIME CONTRACTOR 2 | 2.24 | 2,674,863.28 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,661.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 3,955.18 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,666.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 11,110.70 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,709.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 11,213.09 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,709.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 11,213.09 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,709.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 11,213.09 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,709.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 11,213.09 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 8,376.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 19,944.96 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 8,376.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 19,944.96 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 10,298.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 24,521.64 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 10,298.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 24,521.64 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 10,298.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 24,521.64 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 10,298.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 24,521.64 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 11,435.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 27,229.06 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 13,169.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 31,358.07 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 15,618.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 37,189.64 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 18,318.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 43,618.89 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 18,318.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 43,618.89 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 19,832.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 47,224.03 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 23,005.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 54,779.59 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 26,458.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 63,001.89 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 46,525.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 110,785.50 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 70,224.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 2.24 | 167,217.65 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 16,476.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 39,232.71 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 66,909.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 159,323.96 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 81,849.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 194,899.14 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 91,182.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 217,122.92 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 100,721.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 239,837.22 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 101,712.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 242,196.99 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 134,110.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 319,343.23 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 151,990.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 361,919.15 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 274,288.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 653,135.60 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 413,056.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 983,570.48 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 478,401.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 1,139,170.24 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 827,915.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 1,971,434.27 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 888,366.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 2,115,380.42 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,288,606.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 3,068,433.39 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,111,935.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 5,028,947.47 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,256,522.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 5,373,238.57 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 3,592,890.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 8,555,403.01 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 3,647,439.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 8,685,295.29 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 6,075,850.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 14,467,836.59 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 6,285,692.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 14,967,513.13 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 9,503,045.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.24 | 22,628,686.05 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 5,834.00 | LCY | Q*1.25 | PRIME CONTRACTOR 6 | 2.24 | 13,891.94 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 5,834.00 | LCY | Q*1.25 | PRIME CONTRACTOR 6 | 2.24 | 13,891.94 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 5,834.00 | LCY | Q*1.25 | PRIME CONTRACTOR 6 | 2.24 | 13,891.94 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 11,302.00 | LCY | Q*1.25 | PRIME CONTRACTOR 6 | 2.24 | 26,912.36 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 11,302.00 | LCY | Q*1.25 | PRIME CONTRACTOR 6 | 2.24 | 26,912.36 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 11,302.00 | LCY | Q*1.25 | PRIME CONTRACTOR 6 | 2.24 | 26,912.36 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,496.00 | LCY | Q*1.5 | PRIME CONTRACTOR 8 | 2.24 | 5,943.48 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,496.00 | LCY | Q*1.5 | PRIME CONTRACTOR 8 | 2.24 | 5,943.48 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 19,441.00 | LCY | Q*1.25 | PRIME CONTRACTOR 8 | 2.24 | 46,292.98 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 23,334.00 | LCY | Q*1.5 | PRIME CONTRACTOR 8 | 2.24 | 55,563.01 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 23,334.00 | LCY | Q*1.5 | PRIME CONTRACTOR 8 | 2.24 | 55,563.01 |
| USR | Z | | Excavate Blasted Rock to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 43,061.00 | LCY | Q*1.25 | PRIME CONTRACTOR 8 | 2.24 | 102,537.01 |
| USR | Z | | Boat Ramp [Material and Installation] | Quantity: Based on estimated number of fishing platforms required; Sub Bid: Based on full installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 1,500,000.00 | 1,500,000.00 |
| USR | Z | | Courtesy Dock [Material and Installation] | Quantity: Based on estimated number of docks required; Sub Bid: Based on full installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 10,000.00 | 10,000.00 |
| USR | Z | | Courtesy Dock [Material and Installation] | Quantity: Based on estimated number of docks required; Sub Bid: Based on full installation costs provided by XXXXXX. | 5 | EA | Q | Recreation Subcontractor (5) | 10,000.00 | 50,000.00 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 3 | MO | <none> | Dewatering Subcontractor (5) | 937.44 | 4,557.46 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 3 | MO | <none> | Dewatering Subcontractor (5) | 937.44 | 4,557.46 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 4 | MO | <none> | Dewatering Subcontractor (5) | 937.44 | 6,076.61 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 6 | MO | <none> | Dewatering Subcontractor (1) | 937.44 | 9,114.92 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 6 | MO | <none> | Dewatering Subcontractor (2) | 937.44 | 9,114.92 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 7 | MO | <none> | Dewatering Subcontractor (8) | 937.44 | 10,634.07 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 7 | MO | <none> | Dewatering Subcontractor (8) | 937.44 | 10,634.07 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 10 | MO | <none> | Dewatering Subcontractor (5) | 937.44 | 15,191.53 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 18 | MO | <none> | Dewatering Subcontractor (5) | 937.44 | 27,344.75 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 24 | MO | Q | Dewatering Subcontractor (5) | 937.44 | 36,459.67 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 30 | MO | <none> | Dewatering Subcontractor (5) | 937.44 | 45,574.59 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 42 | MO | Q | Dewatering Subcontractor (5) | 937.44 | 63,804.42 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 60 | MO | <none> | PRIME CONTRACTOR 8 | 937.44 | 69,567.88 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 48 | MO | Q | Dewatering Subcontractor (5) | 937.44 | 72,919.34 |
| USR | Z | | Dewatering Operation and Maintenance [2 laborers] | Assumes 2 laborers monitoring dewatering pumps half time for duration of pumping. | 50 | MO | Q | Dewatering Subcontractor (5) | 937.44 | 75,957.65 |
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 3 | MO | <none> | Dewatering Subcontractor (5) | 12,528.00 | 37,584.00 |
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 3 | MO | <none> | Dewatering Subcontractor (5) | 12,528.00 | 37,584.00 |
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 4 | MO | <none> | Dewatering Subcontractor (5) | 12,528.00 | 50,112.00 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 6 | MO | <none> | Dewatering Subcontractor (1) | 12,528.00 | 75,168.00 |
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 6 | MO | <none> | Dewatering Subcontractor (2) | 12,528.00 | 75,168.00 |
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 7 | MO | <none> | Dewatering Subcontractor (8) | 12,528.00 | 87,696.00 |
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 7 | MO | <none> | Dewatering Subcontractor (8) | 12,528.00 | 87,696.00 |
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 10 | MO | <none> | Dewatering Subcontractor (5) | 12,528.00 | 125,280.00 |
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 18 | MO | <none> | Dewatering Subcontractor (5) | 12,528.00 | 225,504.00 |
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 24 | MO | Q | Dewatering Subcontractor (5) | 12,528.00 | 300,672.00 |
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 30 | MO | <none> | Dewatering Subcontractor (5) | 12,528.00 | 375,840.00 |
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 42 | MO | Q | Dewatering Subcontractor (5) | 12,528.00 | 526,176.00 |
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 48 | MO | Q | Dewatering Subcontractor (5) | 12,528.00 | 601,344.00 |
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 50 | MO | Q | Dewatering Subcontractor (5) | 12,528.00 | 626,400.00 |
| USR | Z | | Dewatering Pump Operation [Fuel Costs] | Sub Bid: Assumes pumps burn average 4 gallons per hour at $2.61/gal. Monthly cost of 4-GPH x 8-hrs/day x 30-day/month x $2.61/gal x 5-pumps = $12,528/mo. | 60 | MO | <none> | PRIME CONTRACTOR 8 | 12,528.00 | 751,680.00 |
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 3-Month period each for a total of 30-Rental-Pump-Months. | 15 | MO | <none> | Dewatering Subcontractor (5) | 12,528.00 | 187,920.00 |
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 6-Month period each for a total of 30-Rental-Pump-Months. | 15 | MO | <none> | Dewatering Subcontractor (5) | 12,528.00 | 187,920.00 |
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 4-Month period each for a total of 30-Rental-Pump-Months. | 20 | MO | <none> | Dewatering Subcontractor (5) | 12,528.00 | 250,560.00 |
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 6-Month period each for a total of 30-Rental-Pump-Months. | 30 | MO | <none> | Dewatering Subcontractor (1) | 12,528.00 | 375,840.00 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 6-Month period each for a total of 30-Rental-Pump-Months. | 30 | MO | <none> | Dewatering Subcontractor (2) | 12,528.00 | 375,840.00 |
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 6-Month period each for a total of 30-Rental-Pump-Months. | 35 | MO | <none> | Dewatering Subcontractor (8) | 12,528.00 | 438,480.00 |
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 6-Month period each for a total of 30-Rental-Pump-Months. | 35 | MO | <none> | Dewatering Subcontractor (8) | 12,528.00 | 438,480.00 |
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 6-Month period each for a total of 30-Rental-Pump-Months. | 50 | MO | <none> | Dewatering Subcontractor (5) | 12,528.00 | 626,400.00 |
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 6-Month period each for a total of 30-Rental-Pump-Months. | 90 | MO | <none> | Dewatering Subcontractor (5) | 12,528.00 | 1,127,520.00 |
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 50-Month period each for a total of 30-Rental-Pump-Months. | 120 | MO | Q*5 | Dewatering Subcontractor (5) | 12,528.00 | 1,503,360.00 |
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 6-Month period each for a total of 30-Rental-Pump-Months. | 150 | MO | <none> | Dewatering Subcontractor (5) | 12,528.00 | 1,879,200.00 |
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 50-Month period each for a total of 30-Rental-Pump-Months. | 210 | MO | Q*5 | Dewatering Subcontractor (5) | 12,528.00 | 2,630,880.00 |
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 50-Month period each for a total of 30-Rental-Pump-Months. | 240 | MO | Q*5 | Dewatering Subcontractor (5) | 12,528.00 | 3,006,720.00 |
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 50-Month period each for a total of 30-Rental-Pump-Months. | 250 | MO | Q*5 | Dewatering Subcontractor (5) | 12,528.00 | 3,132,000.00 |
| USR | Z | | Dewatering Pump Rentals [24" Hydraflow Pumps] | Sub Bid: MWI (Eric McKendree, 772-770-0004) quote for 24" Hydraflo Pump (19,000 GPM) of $8,120/mo with escalation from 3Q15 to 2Q18 per CCWIS factors; Quantity: Assumes five (5) units will be rented for a 6-Month period each for a total of 30-Rental-Pump-Months. | 300 | MO | <none> | PRIME CONTRACTOR 8 | 12,528.00 | 3,758,400.00 |
| USR | Z | | Excavate to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 1.83 | 8,956.13 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Excavate to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 1.83 | 8,956.13 |
| USR | Z | | Excavate to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 1.83 | 8,956.13 |
| USR | Z | | Excavate to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 1.83 | 8,956.13 |
| USR | Z | | Excavate to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 1 | 1.83 | 8,956.13 |
| USR | Z | | Excavate to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 1 | 1.83 | 8,956.13 |
| USR | Z | | Excavate to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 2 | 1.83 | 8,956.13 |
| USR | Z | | Excavate to Stockpile [3.5-cy Hydraul. Excav.] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 2 | 1.83 | 8,956.13 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,162.00 | BCY | Q | PRIME CONTRACTOR 6 | 1.79 | 2,209.05 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,162.00 | BCY | Q | PRIME CONTRACTOR 6 | 1.79 | 2,209.05 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,162.00 | BCY | Q | PRIME CONTRACTOR 6 | 1.79 | 2,209.05 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,267.00 | BCY | Q | PRIME CONTRACTOR 4 | 1.79 | 2,408.67 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,388.00 | BCY | Q | PRIME CONTRACTOR 8 | 1.79 | 2,638.70 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,388.00 | BCY | Q | PRIME CONTRACTOR 8 | 1.79 | 2,638.70 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,368.00 | BCY | Q | PRIME CONTRACTOR 4 | 1.79 | 4,501.76 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,368.00 | BCY | Q | PRIME CONTRACTOR 4 | 1.79 | 4,501.76 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,368.00 | BCY | Q | PRIME CONTRACTOR 4 | 1.79 | 4,501.76 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,368.00 | BCY | Q | PRIME CONTRACTOR 4 | 1.79 | 4,501.76 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,163.00 | BCY | Q | PRIME CONTRACTOR 8 | 1.79 | 7,914.19 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,212.00 | BCY | Q | PRIME CONTRACTOR 4 | 1.79 | 8,007.35 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,212.00 | BCY | Q | PRIME CONTRACTOR 4 | 1.79 | 8,007.35 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,441.00 | BCY | Q | PRIME CONTRACTOR 4 | 1.79 | 8,442.69 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 5,171.00 | BCY | Q | PRIME CONTRACTOR 4 | 1.79 | 9,830.48 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 5,846.00 | BCY | Q | PRIME CONTRACTOR 4 | 1.79 | 11,113.71 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 10,256.00 | BCY | Q | PRIME CONTRACTOR 4 | 1.79 | 19,497.47 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 17,059.00 | BCY | Q | PRIME CONTRACTOR 8 | 1.79 | 32,430.51 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 17,059.00 | BCY | Q | PRIME CONTRACTOR 8 | 1.79 | 32,430.51 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 18,553.00 | BCY | Q | PRIME CONTRACTOR 5 | 1.79 | 35,270.72 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 55,347.00 | BCY | Q | PRIME CONTRACTOR 5 | 1.79 | 105,219.04 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 86,070.00 | BCY | Q | PRIME CONTRACTOR 5 | 1.79 | 163,625.90 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 98,546.00 | BCY | Q | PRIME CONTRACTOR 5 | 1.79 | 187,343.76 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 140,521.00 | BCY | Q | PRIME CONTRACTOR 2 | 1.79 | 267,141.56 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 197,052.00 | BCY | Q | PRIME CONTRACTOR 5 | 1.79 | 374,611.48 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 199,008.00 | BCY | Q | PRIME CONTRACTOR 5 | 1.79 | 378,329.99 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 299,418.00 | BCY | Q | PRIME CONTRACTOR 5 | 1.79 | 569,217.36 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 432,733.00 | BCY | Q | PRIME CONTRACTOR 1 | 1.79 | 822,659.75 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 752,217.00 | BCY | Q | PRIME CONTRACTOR 5 | 1.79 | 1,430,024.17 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,295,544.00 | BCY | Q | PRIME CONTRACTOR 5 | 1.79 | 2,462,931.88 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,809,142.00 | BCY | Q | PRIME CONTRACTOR 5 | 1.79 | 3,439,322.41 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,865,367.00 | BCY | Q | PRIME CONTRACTOR 5 | 1.79 | 3,546,210.59 |
| USR | Z | | Excavate, Push Muck to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 3,062,006.00 | BCY | Q | PRIME CONTRACTOR 5 | 1.79 | 5,821,116.22 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Fill and Compact Base [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 887 | LCY | <none> | PRIME CONTRACTOR 5 | 3.38 | 3,206.09 |
| USR | Z | | Fill and Compact Base [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 905 | LCY | <none> | PRIME CONTRACTOR 5 | 3.38 | 3,271.16 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 423 | LCY | Q*1.386 | PRIME CONTRACTOR 5 | 3.71 | 1,678.85 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 423 | LCY | Q*1.386 | PRIME CONTRACTOR 5 | 3.71 | 1,678.85 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 731 | LCY | <none> | PRIME CONTRACTOR 4 | 3.71 | 2,901.27 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,506.00 | LCY | Q*1.25 | PRIME CONTRACTOR 4 | 3.71 | 17,883.88 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 3.71 | 18,256.96 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 3.71 | 18,256.96 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 3.71 | 18,256.96 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 3.71 | 18,256.96 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 1 | 3.71 | 18,256.96 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 1 | 3.71 | 18,256.96 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 2 | 3.71 | 18,256.96 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 2 | 3.71 | 18,256.96 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 55,442.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 3.71 | 220,043.95 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 170,940.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 3.71 | 678,444.37 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 274,288.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 3.71 | 1,088,622.62 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 367,749.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 3.71 | 1,459,560.32 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 369,014.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 3.71 | 1,464,580.98 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 808,569.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 3.71 | 3,209,132.38 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 1,091,624.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 3.71 | 4,332,550.38 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 1,123,324.00 | LCY | Q*1.25 | PRIME CONTRACTOR 2 | 3.71 | 4,458,364.62 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 2,235,629.00 | LCY | Q*1.25 | PRIME CONTRACTOR 1 | 3.71 | 8,872,995.90 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 3,392,099.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 3.71 | 13,462,913.80 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 5,316,735.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 3.71 | 21,101,608.48 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 5,864,712.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 3.71 | 23,276,476.35 |
| USR | Z | | Fill and Compact Random Fill [Front End Loader, Compactor] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 8,770,178.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 3.71 | 34,807,990.70 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 2,121.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 8,895.15 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 2,121.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 8,895.15 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 2,842.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 11,918.91 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 2,842.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 11,918.91 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,446.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 18,645.84 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,446.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 18,645.84 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 4.03 | 19,291.69 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 4.03 | 19,291.69 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 4.03 | 19,291.69 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 4.03 | 19,291.69 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 1 | 4.03 | 19,291.69 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 1 | 4.03 | 19,291.69 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 2 | 4.03 | 19,291.69 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 2 | 4.03 | 19,291.69 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 5,152.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 21,606.69 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 5,256.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 22,042.85 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 5,698.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 23,896.53 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 5,698.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 23,896.53 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 9,731.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 40,810.31 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 9,731.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 40,810.31 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 15,406.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 64,610.38 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 15,406.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 64,610.38 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 99,551.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 417,501.49 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 99,551.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 417,501.49 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 140,376.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 588,715.23 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 140,376.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 588,715.23 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 184,065.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 771,940.14 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 184,065.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 771,940.14 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 227,025.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 952,107.73 |
| USR | Z | | Load and Haul Rock, to/from Process Plant [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 227,025.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 4.03 | 952,107.73 |
| USR | Z | | Load and Haul Rock, to/from Stockpile [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 2,496.00 | LCY | Q*1.5 | PRIME CONTRACTOR 8 | 2.6 | 6,753.44 |
| USR | Z | | Load and Haul Rock, to/from Stockpile [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 2,496.00 | LCY | Q*1.5 | PRIME CONTRACTOR 8 | 2.6 | 6,753.44 |
| USR | Z | | Load and Haul Rock, to/from Stockpile [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 19,441.00 | LCY | Q*1.25 | PRIME CONTRACTOR 8 | 2.6 | 52,601.64 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Load and Haul Rock, to/from Stockpile [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 23,334.00 | LCY | Q*1.5 | PRIME CONTRACTOR 8 | 2.6 | 63,134.96 |
| USR | Z | | Load and Haul Rock, to/from Stockpile [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 23,334.00 | LCY | Q*1.5 | PRIME CONTRACTOR 8 | 2.6 | 63,134.96 |
| USR | Z | | Load and Haul Rock, to/from Stockpile [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 43,061.00 | LCY | Q*1.25 | PRIME CONTRACTOR 8 | 2.6 | 116,510.43 |
| USR | Z | | Load and Haul Rock, to/from Stockpile [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 3,392,099.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.6 | 9,178,024.82 |
| USR | Z | | Load and Haul Rock, to/from Stockpile [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 5,316,735.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.6 | 14,385,525.24 |
| USR | Z | | Load and Haul Rock, to/from Stockpile [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 5,864,712.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.6 | 15,868,190.25 |
| USR | Z | | Load and Haul Rock, to/from Stockpile [on-site, 1-mile] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 8,770,178.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 2.6 | 23,729,528.92 |
| USR | Z | | Material Handling Between Stockpiles [Dozer, Loader] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 1,123,324.00 | LCY | Q*1.25 | PRIME CONTRACTOR 2 | 1.46 | 1,762,242.66 |
| USR | Z | | Material Handling Between Stockpiles [Dozer, Loader] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 1,288,606.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 1.46 | 2,021,532.94 |
| USR | Z | | Material Handling Between Stockpiles [Dozer, Loader] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 2,111,935.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 1.46 | 3,313,150.93 |
| USR | Z | | Material Handling Between Stockpiles [Dozer, Loader] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 2,235,629.00 | LCY | Q*1.25 | PRIME CONTRACTOR 1 | 1.46 | 3,507,198.99 |
| USR | Z | | Material Handling Between Stockpiles [Dozer, Loader] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 2,256,522.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 1.46 | 3,539,975.41 |
| USR | Z | | Material Handling Between Stockpiles [Dozer, Loader] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 3,592,890.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 1.46 | 5,636,436.18 |
| USR | Z | | Material Handling Between Stockpiles [Dozer, Loader] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 3,647,439.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 1.46 | 5,722,011.29 |
| USR | Z | | Material Handling Between Stockpiles [Dozer, Loader] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 6,075,850.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 1.46 | 9,531,641.87 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Material Handling Between Stockpiles [Dozer, Loader] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 6,285,692.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 1.46 | 9,860,836.77 |
| USR | Z | | Material Handling Between Stockpiles [Dozer, Loader] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 9,503,045.00 | LCY | Q*1.25 | PRIME CONTRACTOR 5 | 1.46 | 14,908,139.88 |
| USR | Z | | Fire Ring [Material and Installation] | Quantity: Based on estimated number of fire rings required; Sub Bid: Based on full installation costs provided by XXXXXX. | 30 | EA | Q | Recreation Subcontractor (5) | 250 | 7,500.00 |
| USR | Z | | Fishing Pier [Material and Installation] | Quantity: Based on estimated number of piers required; Sub Bid: Based on full installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 50,000.00 | 50,000.00 |
| USR | Z | | Group Shelter, 16' x 24' [Material and Installation] | Quantity: Based on estimated number of shelters required; Material: Based on quote provided by XXXXXXX (awaiting quotes, price and notes will be updated upon receiving); Sub Bid: Based on installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 30,000.00 | 31,200.00 |
| USR | Z | | Group Shelter, 16' x 24' [Material and Installation] | Quantity: Based on estimated number of shelters required; Material: Based on quote provided by XXXXXXX (awaiting quotes, price and notes will be updated upon receiving); Sub Bid: Based on installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 30,000.00 | 31,200.00 |
| USR | Z | | Kayak Launch [Material and Installation] | Quantity: Based on estimated number of fishing platforms required; Sub Bid: Based on full installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 4,500.00 | 4,500.00 |
| USR | Z | | Kayak Launch [Material and Installation] | Quantity: Based on estimated number of fishing platforms required; Sub Bid: Based on full installation costs provided by XXXXXX. | 2 | EA | Q | Recreation Subcontractor (5) | 4,500.00 | 9,000.00 |
| USR | Z | | Kayak Launch [Material and Installation] | Quantity: Based on estimated number of fishing platforms required; Sub Bid: Based on full installation costs provided by XXXXXX. | 2 | EA | Q | Recreation Subcontractor (5) | 4,500.00 | 9,000.00 |
| USR | Z | | Kiosk Shelter [Material and Installation] | Quantity: Based on estimated number of fishing platforms required; Material: Based on quote provided by XXXXXXX (awaiting quotes, price and notes will be updated upon receiving); Sub Bid: Based on installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 20,000.00 | 20,900.00 |
| USR | Z | | Kiosk Shelter [Material and Installation] | Quantity: Based on estimated number of fishing platforms required; Material: Based on quote provided by XXXXXXX (awaiting quotes, price and notes will be updated upon receiving); Sub Bid: Based on installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 20,000.00 | 20,900.00 |
| USR | Z | | Kiosk Shelter [Material and Installation] | Quantity: Based on estimated number of fishing platforms required; Material: Based on quote provided by XXXXXXX (awaiting quotes, price and notes will be updated upon receiving); Sub Bid: Based on installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 20,000.00 | 20,900.00 |
| USR | Z | | Kiosk Shelter [Material and Installation] | Quantity: Based on estimated number of fishing platforms required; Material: Based on quote provided by XXXXXXX (awaiting quotes, price and notes will be updated upon receiving); Sub Bid: Based on installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 20,000.00 | 20,900.00 |
| USR | Z | | Kiosk Shelter [Material and Installation] | Quantity: Based on estimated number of fishing platforms required; Material: Based on quote provided by XXXXXXX (awaiting quotes, price and notes will be updated upon receiving); Sub Bid: Based on installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 20,000.00 | 20,900.00 |
| USR | Z | | Kiosk Shelter [Material and Installation] | Quantity: Based on estimated number of fishing platforms required; Material: Based on quote provided by XXXXXXX (awaiting quotes, price and notes will be updated upon receiving); Sub Bid: Based on installation costs provided by XXXXXX. | 3 | EA | Q | Recreation Subcontractor (5) | 20,000.00 | 62,700.00 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | New Bridge Installation Cost [Short Span, Reinf. Concrete Flat Slab, w/ Phased Construction] | Sub Bid: Cost is based on Florida DOT Bridge Cost Report from 2014. Cost has been escalated to 2018 price levels, and reflects the Reinforced Concrete Flat Slab Simple Span item from the Florida DOT report. The report noted a range with low cost of $115/sf and a high of $160/sf. For this project, $160/sf with additional escalation has been used. Also, the FDOT report noted a 20% increase to be included for phased construction. Given the two bridges located at this site, phasing would be required to complete, as traffic would be rerouted onto one side of the highway to complete one bridge. | 11,200.00 | SF | Q | PRIME CONTRACTOR 7 | 206 | 2,307,200.00 |
| USR | Z | | New Bridge Installation Cost [Short Span, Reinf. Concrete Flat Slab, w/ Phased Construction] | Sub Bid: Cost is based on Florida DOT Bridge Cost Report from 2014. Cost has been escalated to 2018 price levels, and reflects the Reinforced Concrete Flat Slab Simple Span item from the Florida DOT report. The report noted a range with low cost of $115/sf and a high of $160/sf. For this project, $160/sf with additional escalation has been used. Also, the FDOT report noted a 20% increase to be included for phased construction. Given the two bridges located at this site, phasing would be required to complete, as traffic would be rerouted onto one side of the highway to complete one bridge. | 13,600.00 | SF | Q | PRIME CONTRACTOR 7 | 206 | 2,801,600.00 |
| USR | Z | | New Bridge Installation Cost [Short Span, Reinf. Concrete Flat Slab] | Sub Bid: Cost is based on Florida DOT Bridge Cost Report from 2014. Cost has been escalated to 2018 price levels, and reflects the Reinforced Concrete Flat Slab Simple Span item from the Florida DOT report. The report noted a range with low cost of $115/sf and a high of $160/sf. For this project, $160/sf with additional escalation has been used. | 8,800.00 | SF | Q | PRIME CONTRACTOR 7 | 171.75 | 1,511,400.00 |
| USR | Z | | Place Riprap [Hydraul. Excavat.] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,266.00 | LCY | <none> | PRIME CONTRACTOR 5 | 2.62 | 12,046.31 |
| USR | Z | | Place Riprap [Hydraul. Excavat.] | Quantity: Based on calculations provided in the cost engineering report; Productivity: Based on estimated production rate calculation provided in the cost engineering report. | 4,351.00 | LCY | <none> | PRIME CONTRACTOR 5 | 2.62 | 12,286.33 |
| USR | Z | | Pump Installation Crew | | 200 | HR | <none> | Pump Subcontractor (8) | 345.97 | 79,863.90 |
| USR | Z | | Pump Installation Crew | | 200 | HR | <none> | PRIME CONTRACTOR 8 | 345.97 | 80,921.85 |
| USR | Z | | Pump Installation Crew | | 200 | HR | <none> | PRIME CONTRACTOR 8 | 345.97 | 80,921.85 |
| USR | Z | | Pump Station Demolition Crew | | 160 | HR | <none> | PRIME CONTRACTOR 8 | 455.23 | 84,393.65 |
| USR | Z | | Pump, 200 cfs [Material and Installation] | Quantity: Based on estimated number of pumps required; Sub Bid: Based on material and installation quote provided by Patterson Pump Company (C. Steve McIntyre, 706-886-2101). Quote received February 2018. | 3 | EA | <none> | Pump Subcontractor (8) | 600,000.00 | 1,800,000.00 |
| USR | Z | | Pump, 400 cfs [Material and Installation] | Quantity: Based on estimated number of pumps required; Sub Bid: Based on material and installation quote provided by Patterson Pump Company (C. Steve McIntyre, 706-886-2101). Quote received February 2018. | 2 | EA | <none> | Pump Subcontractor (8) | 2,400,900.00 | 4,801,800.00 |
| USR | Z | | Pump, 800 cfs [Material and Installation] | Quantity: Based on estimated number of pumps required; Sub Bid: Based on material and installation quote provided by Patterson Pump Company (C. Steve McIntyre, 706-886-2101). Quote received January 2018. | 4 | EA | <none> | Pump Subcontractor (8) | 10,300,000.00 | 41,200,000.00 |
| USR | Z | | Pumps for 300 cfs Pump Station [Materials] | Quantity: Based on estimated number of pumps required; Sub Bid: Based on material and installation quote provided by Creel Pump Inc. (863-465-5757). Quote received July 2015 and escalated to 2Q18 price levels. | 6 | EA | <none> | PRIME CONTRACTOR 8 | 120,750.00 | 724,500.00 |
| USR | Z | | Push Material to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 1.43 | 6,995.97 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Push Material to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 1.43 | 6,995.97 |
| USR | Z | | Push Material to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 1.43 | 6,995.97 |
| USR | Z | | Push Material to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 5 | 1.43 | 6,995.97 |
| USR | Z | | Push Material to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 1 | 1.43 | 6,995.97 |
| USR | Z | | Push Material to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 1 | 1.43 | 6,995.97 |
| USR | Z | | Push Material to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 2 | 1.43 | 6,995.97 |
| USR | Z | | Push Material to Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,600.00 | LCY | Q*1.15 | PRIME CONTRACTOR 2 | 1.43 | 6,995.97 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,394.00 | BCY | Q*1.2 | PRIME CONTRACTOR 6 | 1.37 | 2,028.14 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,394.00 | BCY | Q*1.2 | PRIME CONTRACTOR 6 | 1.37 | 2,028.14 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,394.00 | BCY | Q*1.2 | PRIME CONTRACTOR 6 | 1.37 | 2,028.14 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,520.00 | BCY | Q*1.2 | PRIME CONTRACTOR 4 | 1.37 | 2,211.46 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,735.00 | BCY | Q*1.25 | PRIME CONTRACTOR 8 | 1.37 | 2,524.26 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,735.00 | BCY | Q*1.25 | PRIME CONTRACTOR 8 | 1.37 | 2,524.26 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,842.00 | BCY | Q*1.2 | PRIME CONTRACTOR 4 | 1.37 | 4,134.85 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,842.00 | BCY | Q*1.2 | PRIME CONTRACTOR 4 | 1.37 | 4,134.85 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,842.00 | BCY | Q*1.2 | PRIME CONTRACTOR 4 | 1.37 | 4,134.85 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,842.00 | BCY | Q*1.2 | PRIME CONTRACTOR 4 | 1.37 | 4,134.85 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 4,996.00 | BCY | Q*1.2 | PRIME CONTRACTOR 8 | 1.37 | 7,268.72 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 5,054.00 | BCY | Q*1.2 | PRIME CONTRACTOR 4 | 1.37 | 7,353.10 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 5,054.00 | BCY | Q*1.2 | PRIME CONTRACTOR 4 | 1.37 | 7,353.10 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 5,329.00 | BCY | Q*1.2 | PRIME CONTRACTOR 4 | 1.37 | 7,753.20 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 6,205.00 | BCY | Q*1.2 | PRIME CONTRACTOR 4 | 1.37 | 9,027.70 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 7,015.00 | BCY | Q*1.2 | PRIME CONTRACTOR 4 | 1.37 | 10,206.18 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 12,307.00 | BCY | Q*1.2 | PRIME CONTRACTOR 4 | 1.37 | 17,905.55 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 21,324.00 | BCY | Q*1.25 | PRIME CONTRACTOR 8 | 1.37 | 31,024.45 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 21,324.00 | BCY | Q*1.25 | PRIME CONTRACTOR 8 | 1.37 | 31,024.45 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 22,264.00 | BCY | Q*1.2 | PRIME CONTRACTOR 5 | 1.37 | 32,392.06 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 66,416.00 | BCY | Q*1.2 | PRIME CONTRACTOR 5 | 1.37 | 96,629.14 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 103,284.00 | BCY | Q*1.2 | PRIME CONTRACTOR 5 | 1.37 | 150,268.68 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 118,255.00 | BCY | Q*1.2 | PRIME CONTRACTOR 5 | 1.37 | 172,050.10 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 168,625.00 | BCY | Q*1.2 | PRIME CONTRACTOR 2 | 1.37 | 245,333.80 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 236,462.00 | BCY | Q*1.2 | PRIME CONTRACTOR 5 | 1.37 | 344,030.37 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 238,810.00 | BCY | Q*1.2 | PRIME CONTRACTOR 5 | 1.37 | 347,446.49 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 359,302.00 | BCY | Q*1.2 | PRIME CONTRACTOR 5 | 1.37 | 522,751.22 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 519,280.00 | BCY | Q*1.2 | PRIME CONTRACTOR 1 | 1.37 | 755,504.43 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 902,660.00 | BCY | Q*1.2 | PRIME CONTRACTOR 5 | 1.37 | 1,313,286.92 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 1,554,653.00 | BCY | Q*1.2 | PRIME CONTRACTOR 5 | 1.37 | 2,261,876.51 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,170,970.00 | BCY | Q*1.2 | PRIME CONTRACTOR 5 | 1.37 | 3,158,560.81 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 2,238,440.00 | BCY | Q*1.2 | PRIME CONTRACTOR 5 | 1.37 | 3,256,723.43 |
| USR | Z | | Push Muck to Place, from Stockpile [Dozer] | Quantity: Based on quantity calculations provided in the cost engineering report; Output: Based on estimated production rate calculation provided in cost engineering report. | 3,674,407.00 | BCY | Q*1.2 | PRIME CONTRACTOR 5 | 1.37 | 5,345,922.77 |

| SRC | SRC TAG | O/R | Description | Notes | QTY | UOM | Link/ Formula | Contractor | Unit Bare | Total Direct |
|---|---|---|---|---|---|---|---|---|---|---|
| USR | Z | | Slurry Wall Installation | Sub Bid: Cost based on quote provided by Thrift Contracting (Allen Thrift, (772) 486-2600) for full installation of slurry wall. | 74,488.00 | CY | Q*43.6*3/27 | PRIME CONTRACTOR 3 | 285 | 21,229,080.00 |
| USR | Z | | Slurry Wall Installation | Sub Bid: Cost based on quote provided by Thrift Contracting (Allen Thrift, (772) 486-2600) for full installation of slurry wall. | 99,350.00 | CY | Q*43.6*3/27 | PRIME CONTRACTOR 3 | 285 | 28,314,750.00 |
| USR | Z | | Slurry Wall Installation | Sub Bid: Cost based on quote provided by Thrift Contracting (Allen Thrift, (772) 486-2600) for full installation of slurry wall. | 127,612.00 | CY | Q*43.6*3/27 | PRIME CONTRACTOR 3 | 285 | 36,369,420.00 |
| USR | Z | | Slurry Wall Installation | Sub Bid: Cost based on quote provided by Thrift Contracting (Allen Thrift, (772) 486-2600) for full installation of slurry wall. | 150,856.00 | CY | Q*43.6*3/27 | PRIME CONTRACTOR 3 | 285 | 42,993,960.00 |
| USR | Z | | Small Boat Ramp [Material and Installation] | Quantity: Based on estimated number of fishing platforms required; Sub Bid: Based on full installation costs provided by XXXXXX. | 2 | EA | Q | Recreation Subcontractor (5) | 100,000.00 | 200,000.00 |
| USR | Z | | Small Boat Ramp [Material and Installation] | Quantity: Based on estimated number of fishing platforms required; Sub Bid: Based on full installation costs provided by XXXXXX. | 2 | EA | Q | Recreation Subcontractor (5) | 100,000.00 | 200,000.00 |
| USR | Z | | Small Boat Ramp [Material and Installation] | Quantity: Based on estimated number of fishing platforms required; Sub Bid: Based on full installation costs provided by XXXXXX. | 3 | EA | Q | Recreation Subcontractor (5) | 100,000.00 | 300,000.00 |
| USR | Z | | Vault Toilet [Material and Installation] | Quantity: Based on estimated number of vault toilets required; Material: Based on quote provided by XXXXXXX (awaiting quotes, price and notes will be updated upon receiving); Sub Bid: Based on installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 40,000.00 | 41,800.00 |
| USR | Z | | Vault Toilet [Material and Installation] | Quantity: Based on estimated number of vault toilets required; Material: Based on quote provided by XXXXXXX (awaiting quotes, price and notes will be updated upon receiving); Sub Bid: Based on installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 40,000.00 | 41,800.00 |
| USR | Z | | Vault Toilet [Material and Installation] | Quantity: Based on estimated number of vault toilets required; Material: Based on quote provided by XXXXXXX (awaiting quotes, price and notes will be updated upon receiving); Sub Bid: Based on installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 40,000.00 | 41,800.00 |
| USR | Z | | Vault Toilet [Material and Installation] | Quantity: Based on estimated number of vault toilets required; Material: Based on quote provided by XXXXXXX (awaiting quotes, price and notes will be updated upon receiving); Sub Bid: Based on installation costs provided by XXXXXX. | 1 | EA | Q | Recreation Subcontractor (5) | 40,000.00 | 41,800.00 |
| USR | Z | | Vault Toilet [Material and Installation] | Quantity: Based on estimated number of vault toilets required; Material: Based on quote provided by XXXXXXX (awaiting quotes, price and notes will be updated upon receiving); Sub Bid: Based on installation costs provided by XXXXXX. | 5 | EA | Q | Recreation Subcontractor (5) | 40,000.00 | 209,000.00 |

| No. | Source | Source Tag | | Description | UOM | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | RSM | 323113200500 | | Fence, chain link industrial, galvanized steel, 6 ga. wire, 2" posts @ 10' OC,, 6' high, includes excavation, & concrete | LF | PRIME CONTRACTOR 1 | 25.37 | 0 |
| 2 | HNC | 15623100200 | | Barricades, precast concrete barrier walls, stock units, buy, 10' sections | LF | PRIME CONTRACTOR 1 | 37.06 | 0 |
| 3 | USR | <none> | LEM | Snow Removal | MO | PRIME CONTRACTOR 1 | 300 | 0 |
| 4 | RSM | 323113200500 | | Fence, chain link industrial, galvanized steel, 6 ga. wire, 2" posts @ 10' OC,, 6' high, includes excavation, & concrete | LF | PRIME CONTRACTOR 2 | 25.37 | 0 |
| 5 | HNC | 15623100200 | | Barricades, precast concrete barrier walls, stock units, buy, 10' sections | LF | PRIME CONTRACTOR 2 | 37.06 | 0 |
| 6 | USR | <none> | LEM | Snow Removal | MO | PRIME CONTRACTOR 2 | 300 | 0 |
| 7 | HNC | 15623100200 | | Barricades, precast concrete barrier walls, stock units, buy, 10' sections | LF | PRIME CONTRACTOR 3 | 37.06 | 0 |
| 8 | USR | <none> | LEM | Snow Removal | MO | PRIME CONTRACTOR 3 | 300 | 0 |
| 9 | RSM | 323113200500 | | Fence, chain link industrial, galvanized steel, 6 ga. wire, 2" posts @ 10' OC,, 6' high, includes excavation, & concrete | LF | PRIME CONTRACTOR 3 | 25.37 | 0 |
| 10 | RSM | 323113200500 | | Fence, chain link industrial, galvanized steel, 6 ga. wire, 2" posts @ 10' OC,, 6' high, includes excavation, & concrete | LF | PRIME CONTRACTOR 4 | 25.37 | 0 |
| 11 | HNC | 15623100200 | | Barricades, precast concrete barrier walls, stock units, buy, 10' sections | LF | PRIME CONTRACTOR 4 | 37.06 | 0 |
| 12 | USR | <none> | LEM | Snow Removal | MO | PRIME CONTRACTOR 4 | 300 | 0 |
| 13 | RSM | 323113200500 | | Fence, chain link industrial, galvanized steel, 6 ga. wire, 2" posts @ 10' OC,, 6' high, includes excavation, & concrete | LF | PRIME CONTRACTOR 5 | 25.37 | 0 |
| 14 | HNC | 15623100200 | | Barricades, precast concrete barrier walls, stock units, buy, 10' sections | LF | PRIME CONTRACTOR 5 | 37.06 | 0 |
| 15 | USR | <none> | LEM | Snow Removal | MO | PRIME CONTRACTOR 5 | 300 | 0 |
| 16 | RSM | 323113200500 | | Fence, chain link industrial, galvanized steel, 6 ga. wire, 2" posts @ 10' OC,, 6' high, includes excavation, & concrete | LF | PRIME CONTRACTOR 6 | 25.37 | 0 |
| 17 | HNC | 15623100200 | | Barricades, precast concrete barrier walls, stock units, buy, 10' sections | LF | PRIME CONTRACTOR 6 | 37.06 | 0 |
| 18 | USR | <none> | LEM | Snow Removal | MO | PRIME CONTRACTOR 6 | 300 | 0 |
| 19 | RSM | 323113200500 | | Fence, chain link industrial, galvanized steel, 6 ga. wire, 2" posts @ 10' OC,, 6' high, includes excavation, & concrete | LF | PRIME CONTRACTOR 7 | 25.37 | 0 |
| 20 | HNC | 15623100200 | | Barricades, precast concrete barrier walls, stock units, buy, 10' sections | LF | PRIME CONTRACTOR 7 | 37.06 | 0 |
| 21 | USR | <none> | LEM | Snow Removal | MO | PRIME CONTRACTOR 7 | 300 | 0 |
| 22 | RSM | 323113200500 | | Fence, chain link industrial, galvanized steel, 6 ga. wire, 2" posts @ 10' OC,, 6' high, includes excavation, & concrete | LF | PRIME CONTRACTOR 8 | 25.37 | 0 |
| 23 | HNC | 15623100200 | | Barricades, precast concrete barrier walls, stock units, buy, 10' sections | LF | PRIME CONTRACTOR 8 | 37.06 | 0 |
| 24 | USR | <none> | LEM | Snow Removal | MO | PRIME CONTRACTOR 8 | 300 | 0 |

# Documents

| | | | | | | |
|---|---|---|---|---|---|---|
| **Project Title & Location:** | | | | | **Everglades Agricultural Area Storage Reservoir Project** | |
| **Project Review Phase:** | | | | | | |
| **Project Report Date:** | | | | | | |
| **Reviewer Name & Phone:** | | | | | | |
| **Review Date:** | | | | | | |
| | | | | | **KEY DOCUMENTS SUPPORTING ATR AND COMMENTS** | **COMMENTS** |
| | | | | | ER 1105-2-100, Planning Guidance Notebook. | |
| | | | | | ER 1110-2-1150, Engineering and Design for Civil Works Projects. | |
| | | | | | ER 1110-1-1300, Cost Engineering Policy and General Requirements. | |
| | | | | | ER 1110-2-1302, Civil Works Cost Engineering. | |
| | | | | | EM 1110-2-1304, Civil Works Construction Cost Index System (CWCCIS). | |
| | | | | | ETL 1110-2-573, Construction Cost Estimating Guide for Civil Works. | |
| | | | | | EC 1105-2-410, Review of Decision Documents. | |
| | | | | | Cost Dx Website: http://www.nww.usace.army.mil/html/OFFICES/Ed/C/csra.asp | |
| **Y** | **N** | **N/P** | **N/A** | | **REVIEW CATEGORIES** | |
| | | | | **DOC** | **DOCUMENTS PROVIDED FOR ATR** | |
| | | | | **DOC 1** | Report: As a minimum, the Main Report, the Engineering Appendix, Cost Appendix. | |
| | | | | **DOC 2** | Scoping documents such as drawings, presentations, photos for each alternative under serious study. | |
| | | | | **DOC 3** | Record of DQC - District Quality Control form. | |
| | | | | **DOC 4** | Quantity Take-offs. | |

N/P not provided
N/A not applicable

# Estimate

| | | | | | | |
|---|---|---|---|---|---|---|
| **Project Title & Location:** | | | | | **Everglades Agricultural Area Storage Reservoir Project** | |
| **Project Review Phase:** | | | | | | |
| **Project Report Date:** | | | | | | |
| **Reviewer Name & Phone:** | | | | | | |
| **Review Date:** | | | | | | |
| **Y** | **N** | **N/P** | **N/A** | | **REVIEW CATEGORIES** | **COMMENTS** |
| | | | | **NOTE** | **PROJECT NOTES - (General Construction Details and Narrative)** | |
| | | | | **NOTE** | **Basis of Cost Estimate Notes** | |
| | | | | **NOTE 1** | Project notes provide a clear presentation of the alternative and scope. | |
| | | | | **NOTE 2** | Estimate products clearly depict author and estimate date. | |
| | | | | **NOTE 3** | Each alternative is dated to the same point in time and date. | |
| | | | | **NOTE 4** | Notes and element titles are adequate to convey project scope and estimate assumptions. | |
| | | | | **NOTE 5** | Costs include any potential Hazardous, Toxic, and Radioactive Waste (HTRW) concerns. | |
| | | | | **NOTE 6** | Cost Basis notes provided for significant project costs (>1% of construction value) | |
| | | | | **EST** | **GENERAL ESTIMATE LAYOUT** | |
| | | | | **EST 1** | Alternative estimates developed in accordance with guidelines established in ETL 1110-2-573. | |
| | | | | **EST 2** | The alternative estimates reflect a reasonable consistency in development related to estimate software, methodolgy, assumptions, processes and cost date. | |
| | | | | **EST 3** | WBS adequately reflects all project scope and makes distinction of major construction elements. | |
| | | | | **EST 4** | Major Folder quantity units and unit prices appear reasonable. | |
| | | | | **EST 5** | Unit priced titles clearly indicate the scope of the unit price (labor, equipment, materials, delivery, mobilization, sub and prime contractor, haul, placement, discposal, etc.) | |
| | | | | **EST 6** | Major construction features supported by quantity take-offs and appear reasonable. | |
| | | | | **EST 7** | Total mobilization and demobilization costs applied and reasonable. | |
| | | | | **EST 8** | Overuse of Cost Book unit prices for critical cost items that could undermine the total cost accuracy. | |
| | | | | **EST 9** | Overuse of Lump Sum, Each or Allowance items that do not accurately convey scope or pricing. | |

# Estimate

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | **Construction Estimate Details - Class 4 Estimate Data** | |
| | | | | **EST 11** | Current labor database used that match the location where the work is occurring. | |
| | | | | **EST 12** | Current equipment manual and fuel prices utilized. | |
| | | | | **EST 13** | Adequate crews and productivities that reflect the work being performed. | |
| | | | | **EST 14** | Unit prices appear reasonable based on crew assembly and productivity. | |
| | | | | **EST 15** | Clarification of unit price and what it includes: direct & indirect costs, sub and prime contractors, markups. | |
| | | | | **EST 16** | Markups appear reasonable. | |
| | | | | **EST 17** | Handling methods adequately considered related to demolition or excavation, load and transport, placement or disposal. | |
| | | | | **EST 18** | Earthwork quantities make reasonable adjustments between BCY, LCY and ECY. | |
| | | | | | **Parametric or Unit Priced Items - Class 5 Estimate Data** | |
| | | | | **EST 19** | Unit prices appear reasonable based upon the element title. | |
| | | | | **EST 20** | Major cost elements include note of cost bases, such as historical, trends, bid data, etc. | |
| | | | | **EST 21** | Handling methods adequately considered related to demolition or excavation, load and transport, placement or disposal. | |
| | | | | **EST 22** | Earthwork quantities make reasonable adjustments between BCY, LCY and ECY. | |
| | | | | **EST 23** | Cost basis provided for special systems and equipment such as pumping stations, navlock gates, etc. | |
| | | | | **EST 24** | Dredging – Unit price appears reasonable based on historical costs, locale, type of dredge, fuel prices, productivity. | |
| | | | | **EST 25** | Cost basis provided for estimated allowances. | |
| | | | | | | |
| | | | | **MAT** | **Materials** | |
| | | | | **MAT 1** | Major quantities supported by a quantity take-off document. | |
| | | | | **MAT 2** | Estimate correctly includes State Sales Tax or Gross Receipts Tax to materials and supplies purchased for the contract. | |
| | | | | **MAT 3** | Line item note description for material purchase indicates if shipping is included for major items. | |

## Schedule

| | | | | | | |
|---|---|---|---|---|---|---|
| **Project Title & Location:** | | | | | **Everglades Agricultural Area Storage Reservoir Project** | |
| **Project Review Phase:** | | | | | | |
| **Project Report Date:** | | | | | | |
| **Reviewer Name & Phone:** | | | | | | |
| **Review Date:** | | | | | | |
| **Y** | **N** | **N/P** | **N/A** | | **REVIEW CATEGORIES** | **COMMENTS** |
| | | | | | **SCHEDULES** | |
| | | | | **SCH** | **Construction Schedule** | |
| | | | | **SCH 1** | Construction schedule adequate to reflect the estimate of each alternative. | |
| | | | | **SCH 2** | Schedule used to establish constant dollar basis as needed. | |
| | | | | **SCH 3** | Construction schedule used to calculate the construction escalation based on current OMB rates. | |

# Contingency

| | | | | | | |
|---|---|---|---|---|---|---|
| **Project Title & Location:** | | | | | **Everglades Agricultural Area Storage Reservoir Project** | |
| **Project Review Phase:** | | | | | | |
| **Project Report Date:** | | | | | | |
| **Reviewer Name & Phone:** | | | | | | |
| **Review Date:** | | | | | | |
| **Y** | **N** | **N/P** | **N/A** | | **REVIEW CATEGORIES** | **COMMENTS** |
| | | | | | **RISK-BASED CONTINGENCY** | |
| | | | | **CONT** | **Contingency Value** | |
| | | | | **CONT 1** | Contingency values reasonable for each alternative. | |
| | | | | **CONT 2** | Contingency development basis provided for determining values. | |
| | | | | **CONT 3** | Considers other factors other than just technical design and construction. | |
| | | | | **CONT 4** | Considers external risk potentials. | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Project Title & Location:** | | | | | **Everglades Agricultural Area Storage Reservoir Project** | |
| **Project Review Phase:** | | | | | | |
| **Project Report Date:** | | | | | | |
| **Reviewer Name & Phone:** | | | | | | |
| **Review Date:** | | | | | | |
| **Y** | **N** | **N/P** | **N/A** | | **REVIEW CATEGORIES** | **COMMENTS** |
| | | | | **TPCS** | **PROJECT COST SUMMARY in Current Dollars (first column set)** | |
| | | | | **TPCS 1** | Price level date shown is consistent with the estimate preparation date. | |
| | | | | **TPCS 2** | All project-related Civil Works WBS Features depicted. | |
| | | | | **TPCS 3** | Base costs reflects the esitmate development in current dollars. | |
| | | | | **TPCS 4** | Costs reasonable for PED (30 Feature). Note: percentages are sometimes used to develop these costs. | |
| | | | | **TPCS 5** | Costs reasonable for Construction Management (31 Feature Code). Note: percentages are sometimes used to develop these costs. | |
| | | | | **TPCS 6** | Contingency application reasonable for each alternative. | |

# Reports

| | | | | | | |
|---|---|---|---|---|---|---|
| **Project Title & Location:** | | | | | **Everglades Agricultural Area Storage Reservoir Project** | |
| **Project Review Phase:** | | | | | | |
| **Project Report Date:** | | | | | | |
| **Reviewer Name & Phone:** | | | | | | |
| **Review Date:** | | | | | | |
| **Y** | **N** | **N/P** | **N/A** | | **REVIEW CATEGORIES** | **COMMENTS** |
| | | | | | **REPORTS - Basic Information for Reviewer – Scope and Form** | |
| | | | | **MR** | **Draft Main Report, General** | |
| | | | | **MR 1** | Complete report document provided for ATR. As a minimum: Main Report, Engineering Appendix, Cost Appendix, cost tables and project schedule. | |
| | | | | **MR 2** | Package meets the requirements within ER 1105-2-100, Exhibit G of the Planning Guidance Notebook? | |
| | | | | **MR 3** | Presents the various estimate scopes, technical/design data, method of construction, and assumptions used for developing the comparative estimates included and described (ER 1110-2-1302). | |
| | | | | **MR 4** | Comparative cost estimates developed at the same price level. | |
| | | | | **MR 5** | TPC of each comparative estimate accurately used in the economic analysis comparisons, such as costs and benefits at the same price level (ER 1105-2-100). | |

# Documents

**ESTIMATE PRODUCTS** **Review for decision document estimates, Feasibility estimates thru IGE**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Project Title & Location:** | | | | | **Everglades Agricultural Area Storage Reservoir Project** | **REVIEW COMMENTS** |
| **Project Review Phase:** | | | | | | |
| **Product Date:** | | | | | | |
| **Reviewer Name & Phone:** | | | | | | |
| **Review Date:** | | | | | | |
| | | | | | **KEY DOCUMENTS SUPPORTING ATR AND COMMENTS** | |
| | | | | | ER 1105-2-100, Planning Guidance Notebook. | |
| | | | | | ER 1110-2-1150, Engineering and Design for Civil Works Projects. | |
| | | | | | ER 1110-1-1300, Cost Engineering Policy and General Requirements. | |
| | | | | | ER 1110-2-1302, Civil Works Cost Engineering. | |
| | | | | | EM 1110-2-1304, Civil Works Construction Cost Index System (CWCCIS). | |
| | | | | | ETL 1110-2-573, Construction Cost Estimating Guide for Civil Works. | |
| | | | | | EC 1105-2-410, Review of Decision Documents. | |
| | | | | | Cost Dx Website: http://www.nww.usace.army.mil/html/OFFICES/Ed/C/default.asp | |
| **Y** | **N** | **N/P** | **N/A** | | **REVIEW CATEGORIES** | |
| | | | | **DOC** | **DOCUMENTS PROVIDED FOR ATR** | |
| | | | | **DOC 1** | Report: As a minimum, the Main Report, the Engineering Appendix, Cost Appendix. | |
| | | | | **DOC 2** | Scoping documents such as drawings, presentations, photos. | |
| | | | | **DOC 3** | Supporting Detailed Estimates in MCACES MII and CEDEP dredge estimates in electronic format. | |
| | | | | **DOC 4** | Construction Schedule. | |
| | | | | **DOC 5** | Total Project Schedule, all Features (PED, Acquisiton, and Construction). | |
| | | | | **DOC 6** | Cost and Schedule Risk Analysis (>$40M) or basis for contingency when <$40M. | |
| | | | | **DOC 7** | CSRA Report documenting the process. | |
| | | | | **DOC 8** | Total Project Cost Summary (TPCS). | |
| | | | | **DOC 9** | Summarizes and describes the basis and development of TPC. For example, the source and basis of engineering and design (E&D) (Feature 30), construction management (Feature 31), other pertinent feature costs, the price level of the constant dollar estimates (preparation date and program year date), and basis of cost indexes for inflating the project costs (inflated dollar basis) through the project schedule. | |
| | | | | **DOC 10** | Quantity Take-offs (details and summary). | |
| | | | | **SC** | **SCOPING DOCUMENTS** | |
| | | | | **SC 1** | Scoping documents are adequately developed to the design phase in accordance with ER 1110-2-1150, presenting the Main Report, plan formulation and recommended plan, related scope and cost appendixes, risk analyses, etc. | |

## Documents

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | **SC 2** | Adequate scoping documents have been provided to convey a thorugh and confident understanding of the project scope. | |
| | | | | **SC 2** | The scoping documents are accurately portrayed within the estimates. | |
| | | | | **SC 3** | Reviewer is confident of scope captured within the estimate, schedule and risk review. | |

# Estimate

| | | | | | | |
|---|---|---|---|---|---|---|
| **Project Title & Location:** | | | | | **Everglades Agricultural Area Storage Reservoir Project** | **REVIEW COMMENTS** |
| **Project Review Phase:** | | | | | | |
| **Product Date:** | | | | | | |
| **Reviewer Name & Phone:** | | | | | | |
| **Review Date:** | | | | | | |
| **Y** | **N** | **N/P** | **N/A** | | **REVIEW CATEGORIES** | |
| | | | | | **PROJECT NOTES - (General Construction Details and Narrative)** | |
| | | | | **NOTE** | **Basis of Cost Estimate Notes** | **REVIEW COMMENTS** |
| | | | | **NOTE 1** | Project and Top Folder notes notes present a clear understanding and scope definition. | |
| | | | | **NOTE 2** | Scope presented in the project notes is consistent with the scope of the documents for the corresponding plan. | |
| | | | | **NOTE 3** | Major project construction features clearly identified in the estimate subfolders. | |
| | | | | **NOTE 4** | Top Folder notes clarify major assumptions such as acquisition strategy, expected bid competition, prime and subcontractor assignments, major cost quotes, major construction processes, construction phasing and/or sequencing. | |
| | | | | **NOTE 5** | Top Folder notes address significant or high-risk cost items in the project scope. | |
| | | | | **NOTE 6** | Notes are adequate to convey project scope and estimate assumptions. | |
| | | | | | **Construction Estimate Notes on Critical Costs** | **REVIEW COMMENTS** |
| | | | | **NOTE 8** | General assumptions noted in the project notes and whether they seem reasonable. | |
| | | | | **NOTE 9** | Folder notes provide basis of estimate related to assumptions, quotes, and historical data? | |
| | | | | **NOTE 10** | Site and project access considered and presented in the notes. | |
| | | | | **NOTE 11** | Critical material sources identified and supported by research. | |
| | | | | **NOTE 12** | Unusual construction conditions considered and documented (e.g., studies, geotechnical data, borrow sources, water and water diversion, and weather). | |
| | | | | **NOTE 13** | Unique construction techniques considered, documented and reasonable. | |
| | | | | **NOTE 14** | Environmental concerns addressed impacting construction activities. | |
| | | | | **NOTE 15** | Acquisition Plan identified and matches the estimate structure. | |
| | | | | **NOTE 16** | Subcontracting plan and subcontract crafts identified. | |
| | | | | **NOTE 17** | Effective dates for pricing labor, equipment, and material are current. | |
| | | | | **EST** | Summarizes and describes the basis and development of TPC. For example, the source and basis of engineering and design (E&D) (Feature 30), construction management (Feature 31), other pertinent feature costs, the price level of the constant dollar estimat**es (preparation date and program year date), and basis of cost indexes for inflating the project costs (inflated dollar basis) through the project schedule.** | |
| | | | | **EST 1** | Estimate developed in proper Work Breakdown Structure (WBS) format in accordance with all guidelines (ETL 1110-2-573). | |
| | | | | **EST 2** | Folder title structure and the descriptions adequate to determine what is being estimated. | |
| | | | | **EST 3** | WBS adequately reflects all project scope. | |
| | | | | **EST 4** | Prime and subcontractor assignments appear reasonable. | |
| | | | | **EST 5** | Major Folder quantity units and unit proces appear reasonable. | |
| | | | | **EST 6** | Major folders developed to support a coherent construction schedule development. | |
| | | | | **EST 7** | Major construction features supported by quantity take-offs and appear reasonable. | |

# Estimate

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | **CONSTRUCTION ESTIMATE DETAILS** | |
| | | | | **MISC** | **Miscellaneous Estimate Details** | **REVIEW COMMENTS** |
| | | | | **MISC 1** | Estimate covers the many minor cost items, that together, can add significantly to the project. | |
| | | | | **MISC 2** | Costs include any potential Hazardous, Toxic, and Radioactive Waste (HTRW) concerns. | |
| | | | | **MISC 3** | Limited use of generic Cost Book unit prices for critical cost items that could undermine the total cost accuracy. | |
| | | | | **MISC 4** | Limted use of Lump Sum, Each or Allowance items that do not accurately convey scope or pricing. | |
| | | | | **MISC 5** | Limited use of over-ridden unit or detailed costs that results in lost confidence and greater risks. | |
| | | | | **LAB** | **Labor** | **REVIEW COMMENTS** |
| | | | | **LAB 1** | Current labor rates used that match the estimate date and location where the work is occurring. | |
| | | | | **LAB 2** | Actual labor rates determined to be reasonable, considering the type of work and other site factors. | |
| | | | | **LAB 3** | Overtime application appears justified, reasonable and logical for major work items. | |
| | | | | **LAB 4** | If overtime is used, the direct cost markup factors correctly entered and applied. | |
| | | | | **LAB 5** | Application of Payroll Tax and Insurance (PT&I) for the selected Contractors: State Unemployment Insurance (SUI) based on the state in which the work is occurring vs. using the AVG default. | |
| | | | | **LAB 6** | Under PT&I for Workmen's Compensation Insurance (WCI), was the selected Contractor Class based on the actual work to be performed vs. using the default for Concrete Work? | |
| | | | | **LAB 7** | Labor rates take into consideration potential labor shortages and includes any necessary subsistence or per diem for critical labor elements. | |
| | | | | **LAB 8** | Labor consideration made in mobilization and demobilization efforts. | |
| | | | | **LAB 9** | Correct labor rates used for Building, Heavy, Highway, Residential. | |
| | | | | **LAB 10** | Marine Work – Work performed on or over navigable waterways addresses Longshoreman and Harbor Workers Act insurance, if required by the state. | |
| | | | | **LAB 11** | Dredging – Labor rate database updated to reflect the latest wage rates available for dredging work at the location. | |
| | | | | **LAB 12** | Dredging – Labor rates appear reasonable, based on the location and type of plant performing the work. | |
| | | | | **EQ** | **Equipment** | **REVIEW COMMENTS** |
| | | | | **EQ 1** | Correct regional equipment rates used for the location where the work is occurring. | |
| | | | | **EQ 2** | Database updated to reflect the latest fuel prices for the work site. | |
| | | | | **EQ 3** | Critical equipment choices, size and rates appear reasonable, considering work type and site conditions. | |
| | | | | **EQ 4** | Rates for Average, Difficult, Severe or Standby are correctly applied and justified within the notes. | |
| | | | | **EQ 5** | Standby rates used, in order to ensure that Ownership Costs for equipment were covered for the normal 40 hour work week. | |
| | | | | **EQ 6** | Standby rates included for equipment mobilization and demobilization. | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | **EQ 7** | Rental rates used for equipment not normally owned by the selected contractor. Were operating costs for rented equipment included? | |
| | | | | **EQ 8** | If warranted, were other factors (such as the Cost of Money) updated to reflect current conditions? | |
| | | | | **EQ 9** | Dredging – Based on the actual site conditions, quantities, disposal areas, and schedule: was the selected dredge plant determined to be appropriate for the contract at hand? | |
| | | | | **EQ 10** | work. | |
| | | | | **EQ 11** | Dredging – Dredge plant costs based on the current CEDEP database. | |
| | | | | **EQ 12** | Dredging - Was the dredge plant database, contained in CEDEP, reviewed and were plant costs determined to be reasonable based on the proposed work? | |
| | | | | **EQ 13** | Dredging – Include costs for dredge plant during periods of standby or non-working hours and weather impacts. | |
| | | | | **CP** | **Crews & Productivity** | **REVIEW COMMENTS** |
| | | | | **CP 1** | Critical crew composition and productivity appear reasonable for the major work items. | |
| | | | | **CP 2** | Productivity efficiencies or inefficiencies considered and explained. | |
| | | | | **CP 3** | Critical project productivity rates appear reasonable. Notes describe logic. | |
| | | | | **CP 4** | Heavy equipment crews include the supporting labor and equipment necessary to perform the task at the selected productivity. | |
| | | | | **CP 5** | For large earthwork projects, crew assemblies and productivities for excavation, load, haul, placement, compaction and disposal correlate. | |
| | | | | **CP 6** | Dredging – crew productivity and any applied efficiency factors adequately justified in the estimate. | |
| | | | | **MAT** | **Materials** | **REVIEW COMMENTS** |
| | | | | **MAT 1** | Major quantities supported by a quantity take-off document. | |
| | | | | **MAT 2** | Major, critical or volatile materials and quantities identified at the detail level. | |
| | | | | **MAT 3** | Estimate correctly includes State Sales Tax or Gross Receipts Tax to materials and supplies purchased for the contract. | |
| | | | | **MAT 4** | Estimate notes identify the source of major material quotes, with source, name and date of quote (escalation concern). | |
| | | | | **MAT 5** | Estimate makes adjustments for loss due to handling, placement, cutting, transportation, contamination, etc. Notes document adjustments. | |
| | | | | **MAT 6** | Earthwork quantities indentified based on BCY for excavated material, LCY for hauled material, ECY for placed material. | |
| | | | | **MAT 7** | Earthwork quantities make reasonable adjustments between BCY, LCY and ECY. | |
| | | | | **MAT 8** | Line item note description for material purchase indicates if shipping is included for major items. | |

# Estimate

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | **MOB** | **Mobilization - Preparatory Work, Demobilization – Cleanup** | **REVIEW COMMENTS** |
| | | | | **MOB 1** | Mobilization and demobilization costs are detailed or appropriate. | |
| | | | | **MOB 2** | Total mobilization and demobilization cost appear reasonable. | |
| | | | | **MOB 3** | Multiple mobilizations considered for longer projects impacted by weather or environmental restrictions. | |
| | | | | **MOB 4** | Dredge work: Estimate includes preparation of dredge attendant plant for transfer, the cost to move all plant and equipment return of tug or towing vessel, and preparation of the plant to start work. | |
| | | | | **MOB 5** | Dredge Work: Project and estimate clearly include a construction support site. | |
| | | | | **MOB 6** | Dredge Work: Estimate includes all costs to secure machinery and equipment for storage. | |
| | | | | **MOB 7** | Dredging - Pipeline mobilization, assembly and relocation for surface and underwater appropriately considered. | |
| | | | | **SUB** | **Subcontracting** | **REVIEW COMMENTS** |
| | | | | **SUB 1** | Subcontractor assignments and markups reasonable for the tasks assigned. | |
| | | | | **SUB 2** | Estimate identifies subcontract quotes and addresses markup applications with the quotes. | |
| | | | | **SUB 3** | Appropriate consideration has been made in addressing multi-tier subcontracting for specialty items. | |
| | | | | **PR** | **Prime Contractor** | **REVIEW COMMENTS** |
| | | | | **PR 1** | Prime contractor(s) has been aptly assigned with reasonable markups. | |
| | | | | **PR 2** | Are appropriate taxes included or excluded as may be required? | |
| | | | | **PR 3** | Field office overhead reasonable for this project? | |
| | | | | **PR 4** | Field Office Overhead includes mobilization if not identified elsewhere. | |
| | | | | **PR 5** | Home office overhead appears reasonable for the type of prime contractor specialty. | |
| | | | | **PR 6** | Profit appears reasonable and based on the weighted guideline method or justified by other means. | |
| | | | | **PR 7** | Bond appears reasonable. | |

# Schedule

| | | | | | | |
|---|---|---|---|---|---|---|
| **Project Title & Location:** | | | | | **Everglades Agricultural Area Storage Reservoir Project** | **REVIEW COMMENTS** |
| **Project Review Phase:** | | | | | | |
| **Product Date:** | | | | | | |
| **Reviewer Name & Phone:** | | | | | | |
| **Review Date:** | | | | | | |
| **Y** | **N** | **N/P** | **N/A** | | **REVIEW CATEGORIES** | |
| | | | | **SCH** | **SCHEDULES** | |
| | | | | **CS** | **Construction Schedule** | **REVIEW COMMENTS** |
| | | | | **CS 1** | Reflects the estimate and identifies critical aspects of the project scope and construction activities. | |
| | | | | **CS 2** | Key milestones are depicted. | |
| | | | | **CS 3** | Reflects reasonable logic of activities performed. | |
| | | | | **CS 4** | Indicates a likely critical path. | |
| | | | | **CS 5** | Reflects the estimate productivities for critical path items. | |
| | | | | **CS 6** | Presents sequential and parallel activities where reasonable. | |
| | | | | **CS 7** | Makes distinction between single shift, and double shift. | |
| | | | | **CS 8** | Takes into consideration overtime where applicable. | |
| | | | | **CS 9** | Depicts critical or time-sensitive orders or procurements. | |
| | | | | **CS 10** | Considers weather issues, environmental restrictions, winter construction. | |
| | | | | **CS 11** | Considers project ramp up, mobilization and demobilization. | |
| | | | | **PS** | **Project Schedule** | **REVIEW COMMENTS** |
| | | | | **PS 1** | The Project Schedule in the decision document report includes all FEATURE activities; i.e. review and approval, planning, engineering and design, procurement, construction, close-out and turn-over. | |
| | | | | **PS 2** | The project schedule clearly presents reasonable dates to determine inflation based on escalation indexes, i.e., the activity beginning date or the activity midpoint? | |

# CSRA-Contingency

| | | | | | | |
|---|---|---|---|---|---|---|
| **Project Title & Location:** | | | | | Everglades Agricultural Area Storage Reservoir Project | **REVIEW COMMENTS** |
| **Project Review Phase:** | | | | | | |
| **Product Date:** | | | | | | |
| **Reviewer Name & Phone:** | | | | | | |
| **Review Date:** | | | | | | |
| **Y** | **N** | **N/P** | **N/A** | | **REVIEW CATEGORIES** | |
| | | | | | **RISK-BASED CONTINGENCY** | |
| | | | | **CSRA** | **Formal Cost and Schedule Risk Analysis (CSRA for >$40M)** | **REVIEW COMMENTS** |
| | | | | **CSRA 1** | CSRA structure and process follows the Cost Dx guidance. | |
| | | | | **CSRA 2** | CSRA model provided in electronic format using Excel and Crystal Ball softwares. | |
| | | | | **CSRA 3** | CSRA Report follows Cost Dx template. | |
| | | | | **CSRA 4** | CSRA considers total cost and total schedule, all features. | |
| | | | | **CSRA 5** | Risk Register developed by major PDT members for all project Features. | |
| | | | | **CSRA 6** | Organizational and PM risks considered. | |
| | | | | **CSRA 7** | Contract Acquisition risks considered. | |
| | | | | **CSRA 8** | Technical risks considered. | |
| | | | | **CSRA 9** | Scope quality and detail addressed. | |
| | | | | **CSRA 10** | Lands and Damages and Relocations considered. | |
| | | | | **CSRA 11** | Regualtory and Environmental risks considered. | |
| | | | | **CSRA 12** | Construction risks considered. | |
| | | | | **CSRA 13** | Estimate and schedule accuracy risks considered. | |
| | | | | **CSRA 14** | Volatile pricing and extreme escalation considered. | |
| | | | | **CSRA 15** | Material availability and transport considered. | |
| | | | | **CSRA 16** | External risks: funding, stakeholders, labor, weather, opposition, bidding competition considered. | |
| | | | | **CSRA 17** | Does the CSRA consider opportunities such as VE and alternatives? | |
| | | | | **CSRA 18** | Summarizes and describes the basis and development of TPC. For example, the source and basis of engineering and design (E&D) (Feature 30), construction management (Feature 31), other pertinent feature costs, the price level of the constant dollar estimates (preparation date and program year date), and basis of cost indexes for inflating the project costs (inflated dollar basis) through the project schedule. | |

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|---|---|---|---|---|---|---|
| | | | | **CSRA 19** | Risk model considers any risk duplications and correlations between cost and schedule risk events? | |
| | | | | **CSRA 20** | Risk event correlations have been minimized. | |
| | | | | **CSRA 21** | CSRA model includes the moderate and high risks. | |
| | | | | **CSRA 22** | CSRA considers both internal and external risks. | |
| | | | | **CSRA 23** | CSRA supported by market research and documented assumptions. | |
| | | | | **CSRA 24** | CSRA results traceable back to the PDT Risk Events. | |
| | | | | **CSRA 25** | CSRA model variance distributions appear reasonable w/ backup assumptions. | |
| | | | | **CSRA 26** | Contingency value based upon an 80% confidence level. | |
| | | | | **CSRA 27** | Contingencies appear reasonable based on project complexity and ATR findings. | |
| | | | | **RB** | **Risk Based Contingency Development for <$40M** | **REVIEW COMMENTS** |
| | | | | **RB 1** | Supported by a studied development per major Feature (not just a value w/o basis). | |
| | | | | **RB 2** | Developed as a weighted aggregate of major construction features. | |
| | | | | **RB 3** | Considers other factors other than just technical design and construction (see CSRA above). | |
| | | | | **RB 4** | Considers external risk potentials (see CSRA External Risks above) | |
| | | | | **CV** | **Contingency Value** | **REVIEW COMMENTS** |
| | | | | **CV 1** | Rates appear reasonable for each major Feature item? | |
| | | | | **CV 2** | Overall rate appears reasonable based on reviewers knowledge of project scope and estimates. | |

# TPCS

| Project Title & Location: | | | | | Everglades Agricultural Area Storage Reservoir Project | REVIEW COMMENTS |
|---|---|---|---|---|---|---|
| Project Review Phase: | | | | | | |
| Product Date: | | | | | | |
| Reviewer Name & Phone: | | | | | | |
| Review Date: | | | | | | |
| Y | N | N/P | N/A | | REVIEW CATEGORIES | |
| | | | | TPCS | **TOTAL PROJECT COST SUMMARY in Current Dollars (first column set)** | |
| | | | | TPCS 1 | Proper TPCS format (ETL 1110-2-573). | |
| | | | | TPCS 2 | Price level date shown is consistent with the estimate preparation date. | |
| | | | | TPCS 3 | All project-related Civil Works WBS Features depicted. | |
| | | | | TPCS 4 | Base costs reflects the esitmate development in current dollars. | |
| | | | | TPCS 5 | Summary page roll up supported by sub-project calculations. | |
| | | | | TPCS 6 | Costs reasonable for PED (30 Feature). Note: percentages are sometimes used to develop these costs. | |
| | | | | TPCS 7 | 30 Feature clearly includes costs for PM, P&E, E&D, Reviews & VE, Contracting, reprographics, EDC, Planning during construction. | |
| | | | | TPCS 8 | Costs reasonable for Construction Management (31 Feature Code). Note: percentages are sometimes used to develop these costs. | |
| | | | | TPCS 9 | Contingencies shown separately for each Feature. | |
| | | | | TPCS 10 | Contingency rates match the risk based contingency results (commonly the 80 percent confidence level). | |
| | | | | | **TOTAL PROJECT COST SUMMARY in Current Dollars (second column set)** | |
| | | | | TPCS 11 | Depicts budget year for decision document funding request. | |
| | | | | TPCS 12 | Includes escalation from estimate date to budget year: EM 1110-2-1304, Civil Works Construction Cost Index System (CWCCIS). | |
| | | | | TPCS 13 | Captures total project cost for all Featrures to budget year. | |
| | | | | | **TOTAL PROJECT COST Inflated to Fully Funded Estimate (third column set)** | |
| | | | | TPCS 14 | Escalation dates and rates shown for each inflated Feature. | |
| | | | | TPCS 15 | Escalation dates consistent with the project schedule. | |
| | | | | TPCS 16 | Escalation based on price indexes from the current CWCCIS, EM 1110-2-1304 and correctly applied. | |
| | | | | TPCS 17 | Summarizes and describes the basis and development of TPC. For example, the source and basis of engineering and design (E&D) (Feature 30), construction management (Feature 31), other pertinent feature costs, the price level of the constant dollar estimates (preparation date and program year date), and basis of cost indexes for inflating the project costs (inflated dollar basis) through the project schedule. | |

# TPCS

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | **TOTAL PROJECT COST SUMMARY - Federal and Non-Federal Costs** | |
| | | | | **TPCS 18** | Federal and non-Federal cost share percentages shown. | |
| | | | | **TPCS 19** | Project cost share percent consistent with the Cost Sharing Agreement? | |
| | | | | **TPCS 20** | If applicable, is the cost/value of non-Federal in-kind services shown? | |
| | | | | **TPCS 21** | Cost shares calculated correctly. | |
| | | | | **TPCS 22** | Signature blocks for PM, Cost Chief, Real Estate Chief (ER 1110-2-1302) | |

# Reports

| | | | | | | |
|---|---|---|---|---|---|---|
| **Project Title & Location:** | | | | | **Everglades Agricultural Area Storage Reservoir Project** | **REVIEW COMMENTS** |
| **Project Review Phase:** | | | | | | |
| **Product Date:** | | | | | | |
| **Reviewer Name & Phone:** | | | | | | |
| **Review Date:** | | | | | | |
| **Y** | **N** | **N/P** | **N/A** | | **REVIEW CATEGORIES** | |
| | | | | | **REPORTS - Basic Information for Reviewer – Scope and Form** | |
| | | | | **MR** | **Draft Main Report, General** | **REVIEW COMMENTS** |
| | | | | **MR 1** | Complete report document provided for ATR. As a minimum: Main Report, Engineering Appendix, Cost Appendix, cost tables and project schedule. | |
| | | | | **MR 2** | Package meets the requirements within ER 1105-2-100, Exhibit G of the Planning Guidance Notebook? | |
| | | | | **MR 3** | Executive Summary clearly presents the "Total Project Cost" (TPC) inflated through the project schedule. The TPC at the time the project is authorized by Congress becomes the Baseline Cost Estimate (BCE). The BCE is subject to cost limits of Section 902 Water Resources Development Act of 1986. (ER 1105-2-100) | |
| | | | | **MR 4** | Reported costs for all project Features included in the TPC and reflect the estimating products. | |
| | | | | **MR 5** | Report indicates the Total Project Schedule or duration (ER 1110-2-1150). | |
| | | | | **MR 6** | Both required costs (budget constant dollars and fully funded) presented in the Executive Summary. | |
| | | | | **MR 7** | Report makes distinction between the Federal and Non-Federal dollars. | |
| | | | | | **Comparative Construction Cost Estimates** | **REVIEW COMMENTS** |
| | | | | **MR 8** | Presents the various estimate scopes, technical/design data, method of construction, and assumptions used for developing the comparative estimates included and described (ER 1110-2-1302). | |
| | | | | **MR 9** | Comparative cost estimates developed at the same price level. | |
| | | | | **MR 10** | TPC of each comparative estimate accurately used in the economic analysis comparisons, such as costs and benefits at the same price level (ER 1105-2-100). | |
| | | | | **MR 11** | Contingencies adequate for each alternative in consideration for the alternative risks/complexity. | |

| | | | | | Cost Engineering Appendix | REVIEW COMMENTS |
|---|---|---|---|---|---|---|
| | | | | **CA 1** | Summarizes the scope of the supporting documents and describes the basis of the estimate, such as method of construction, major assumptions and cost data resources used to cost the major cost elements (ER 1110-2-1302). | |
| | | | | **CA 2** | Summarizes the uncertainties associated with major cost items (ER 1105-2-100, appendix E). | |
| | | | | **CA 3** | Summarizes the cost risk and resulting contingency development for the recommended plan construction cost estimate. A risk analysis report is required for any project estimated to greater than $40M. | |
| | | | | **CA 4** | Describes the development of the Plan construction schedule. | |
| | | | | **CA 5** | Summarizes and describes the basis and development of TPC. For example, the source and basis of engineering and design (E&D) (Feature 30), construction management (Feature 31), other pertinent feature costs, the price level of the constant dollar estimates (preparation date and program year date), and basis of cost indexes for inflating the project costs (inflated dollar basis) through the project schedule. | |

# ATTACHMENT 7

# REVIEW PLAN REVISIONS

| Revision Date | Description of Change | Page / Paragraph Number |
|---|---|---|
| 02/28/2018 | The review plan was developed in early October 2018 and maintained as a working draft document for the SFWMD planning team pending a SFWMD/USACE MOA (completed November 16, 2017) and a subsequent specific Support Agreement (completed February 21, 2018) under the MOA for technical assistance from USACE. Following confirmation that USACE would not assist with or facilitate a more traditional ATR, IEPR, or cost engineering review and certification process, SFWMD revised pertinent sections of the review plan to pursue alternative approaches to mimic review procedures in EC 1165-2-214 to the extent possible. | Sections 2, 3.c, 5, 7, 8, 9, 10, and 11 |
| 03/13/2018 | SFWMD revised pertinent sections of the review plan following execution of the SFWMD/USACE Support Agreements and following completion of the ATR, IEPR, and cost review. | |