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FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

COMMISSIONER ADAM H. PUTNAM

January 20, 2016

Mr. Chris Stahl
Florida State Clearinghouse
Florida Department of Environmental Protection
2600 Blair Stone Road, M.S. 47
Tallahassee, FL 32399-2400

RE: Department of the Army, Jacksonville District Corps of Engineers – Supplemental Environmental Assessment and Proposed Finding of No Significant Impact, G-3273 Constraint Relaxation/S-356 Field Test and S-357N Revised Operational Strategy: Increment 1 Plus (Increment 1.1/1.2). SAI # FL 201612097815C

Dear Mr. Stahl:

The Florida Department of Agriculture and Consumer Services (FDACS) appreciates the opportunity to provide comments on the Supplemental Environmental Assessment (EA) and Proposed Finding of No Significant Impact (FONSI), G-3273 Constraint Relaxation/S-356 Field Test and S-357N Revised Operational Strategy: Increment 1 Plus (Increment 1.1/1.2), Miami-Dade County, Florida, dated December 2016. We are submitting the following comments for consideration as part of the Florida State Clearinghouse consistency evaluation.

FDACS supports the Increment 1.1/1.2 effort and completion of the C-111 South Dade Project to increase operational flexibility and the capacity to convey more water west towards Everglades National Park (ENP) and the headwaters of Taylor Slough. Both ENP and the agricultural areas adjacent to ENP will benefit from increased opportunities to move water away from the private lands where it is not needed and into the restoration project areas.

We believe that implementation of the proposed revised operational strategy will result in negative impacts to privately owned agricultural lands in Miami-Dade County that rely on the

South Dade Conveyance System (SDCS) and appropriate operation of the C-111 South Dade project and the C-111 Spreader Canal Project to maintain flood protection. The operations currently proposed will not maintain existing flood protection and will result in adverse impacts to C-111 Basin private property even though recent operations prove environmental benefits can be maintained without increasing the flood risk to private property. Our concerns are detailed below.

S-176 Operations

The Operations Table for Increment 1.1/1.2 (Table 1 in Appendix A) for operations specified for S-176 and S-177 will return the system to the same levels that contributed to adverse impacts to crops through persistent high groundwater levels and above ground flooding events. The Corps states one of their goals is to "maintain pre-existing flood protection along the L-31N and C-111 Canals." It is not clear what "pre-existing" means specifically in this context since there have been so many different operating regimes in this area. It has been shown in recent years that the rigid operations that were followed prior to Increment 1 contributed to significant flood damage in the area.

The S-176 operating range, once the Corps decides that the North Detention Area (NDA) and 8.5 Square Mile Area (SMA) are "functionally complete," is too high for that reach of the canal. The guidelines set S-176 as the last structure to operate in that reach with the Detention Areas as the first priority, which is appropriate. However, with restrictions placed on the S-332 structures under the new Everglades Restoration Transition Plan (ERTP), S-176 operations may be the only effective outlet under wet conditions. The range of 4.75 to 5.0 ft. NGVD has been shown to contribute to crop damage in the past as a result of the prolonged high water table under farmland to the east. The guidelines for S-176 need to be revised so the gates will open much sooner if the S-332B, C and D pumps cannot keep the canal below 4.6 ft. NGVD. We request the range discussed and accepted at the October 2016 workshop, 4.0 to 4.6 ft. NGVD, be reinstated in the final Supplemental EA and FONSI.

S-177 Operations

The S-177 structure has a problem similar to S-176. The S-177 should not default to the 3.6 to 4.2 range. If the South Florida Water Management District (SFWMD) pumps cannot keep the canal in the appropriate range, or if sparrow concerns limit pumping at those stations, then S-177 should be used to achieve the same levels, not a range that we know leads to crop damage to farms in the area. We request the range discussed and accepted at the October 2016 workshop,

3.0 to 3.6 ft. NGVD, be reinstated in the final Supplemental EA and FONSI. We understand that the operations for S-199 and S-200 pumps have been omitted from the Supplemental EA and Proposed FONSI at the request of the SFWMD since these are currently operated by SFWMD under their C-111 Spreader Canal permit and are not incorporated into the current 2012 Water Conservation Areas, Everglades National Park, and South Dade Conveyance System Water Control Plan (2012 Water Control Plan).

S-197 Low Flows Based on Stages at S-178

The S-197 low flows based on stages at S-178 have been removed from the revised operational strategy for Increment 1.1/1.2. This is an unexpected development that was never mentioned in the workshops when developing the revised operational strategy. Increment 1 prescribed small discharges to help moderate high stages within the C-111 Canal as detailed in Table 1 of Appendix A. The S-197 protocols utilized in Increment 1 should be reinstated in the final Supplemental EA and FONSI. A report on the impacts of S-197 low level operations is still pending and the proposed Increment 1.1/1.2 includes water supply deliveries to Manatee Bay which were achieved under the Increment 1 operations.

It is not consistent with knowledge gained and revised water management conditions to revert back to the 2012 Water Control Plan for structures 176, 177, 178 and 197. Additional water management capabilities and flexibility are now in place due to completion and operation of the C-111 Spreader Canal Project and the near completion of the C-111 South Dade Project. Other operations proposed in the Supplemental EA and Proposed FONSI have progressed from the 2012 Water Control plan via the Increment 1 Field Test, 2016 Temporary Emergency Operations and 2016 Temporary Emergency Deviation Recovery Period Extension. The proposed operational revisions to Increment 1 are due to the many new conditions that need to be addressed, including the increase of the L-29 stage to 7.8 ft. NGVD and the increased duration of S-12 closures.

On page Appendix A.1-29, the revised conditions of the revised operational strategy are detailed. They include less use of S-356, less use of S-332B North, less use of S-332B (West), more use of S-331 to deliver water to Tayler Slough and more use of S-176, S-177, S18C and S-197 to compensate for the increased pumping at S-331. Also included are operational restrictions at S-332B, S-332C, and S-332DX1 during construction, commitment to deliver excess water from WCA-3A and using S-332D to ensure flow to Taylor Slough, and less use of S-332B, S-332C, and S-332D to meet the habitat hydroperiod targets imposed by the ERTP Biological Opinion

(BO). All of this leads to more water in the SDCS which requires that potential impacts to private lands also be addressed.

Operational stages protective of private agricultural lands do not require a reduction in environmental benefits. On page Appendix A.1-43 the text states "It has also been demonstrated that along the L-31 Canal reach, operation of the SDA has been able to maintain the hydraulic ridge and effectively hold stages in eastern ENP higher while also simultaneously maintaining lower L-31 N Canal levels to prevent or reduce seepage under the L-31N. This has been observed during recent operations." Given this success, the lower canal levels east of ENP adjacent to agricultural lands that were collaboratively developed during the technical workshops for this effort should be reinstated in the final Supplemental EA and FONSI along with the S-197 protocols utilized in Increment 1.

Thank you for the opportunity to provide Clearinghouse comments. We look forward to continued progress for all areas impacted by the construction and operations of the South Dade restoration projects and working with our state and federal partners to improve system-wide capabilities and restoration success. If you have any questions regarding FDACS' comments, please contact Ray Scott at (850) 617-1716 or Rebecca Elliott at (561) 682-6040.

Sincerely,

Rebecca Elliott
Water Policy Liaison
Office of Agricultural Water Policy

Memorandum

TO: Chris Stahl, Florida State Clearinghouse

THROUGH: Edward C. Smith, Director
Office of Ecosystem Projects

FROM: Frank Powell, Inger Hansen, Jordan Pugh, Rhapsodie Osborne, Alyssa Freitag, Tom Behlmer and Natalie Barfield
Office of Ecosystem Projects

DATE: January 18, 2017

SUBJECT: Department of the Army, Jacksonville District Corps of Engineers — Supplemental Environmental Assessment and Proposed Finding of No Significant Impact, G-3273 Constraint Relaxation/S-356 Field Test and S-357N Revised Operational Strategy: Increment 1 Plus (Increment 1.1/1.2) — Miami-Dade County, Florida.

SAI #: FL201612097815C

Summary:

The Jacksonville District U.S. Army Corps of Engineers (Corps) has prepared a Draft Supplemental Environmental Assessment (EA) and Proposed Finding of No Significant Impact (FONSI) for an operations field test that will include relaxation of the Gauge-3273 (G-3273) constraint, operation of the L-29 Canal up to 7.8 feet National Geodetic Vertical Datum (NGVD), operation of the S-356 Pump Station and implementation of an operational strategy for the S-357N water control structure following construction completion. The Increment 1 Plus (Increment 1.1/1.2) field test is the continuation of the first of two operating periods in a series of sequential efforts that are intended to incorporate constructed features of the Modified Water Deliveries to Everglades National Park (MWD to ENP) and C-111 South Dade projects into a comprehensive operations plan, referred to as the Combined Operating Plan (COP).

The purpose of this field test is to continue to evaluate relaxing the existing G-3273 stage constraint while operating the L-29 Canal up to 7.8 feet NGVD to enable increased water deliveries from Water Conservation Area 3 (WCA 3) to ENP through the Northeast Shark River Slough (NESRS) for the benefit of natural resources, while maintaining flood mitigation/protection. The field test will also implement a testing protocol to assist in defining operating criteria for the new 8.5 Square Mile Area S-357N water control structure following construction completion. The Increment 1.1/1.2 field test is the continuation of the first of two operating periods in a series of sequential efforts that will result in a COP for the operation of the water management infrastructure connected to the MWD to ENP and C-111 South Dade projects. Operations in the project area are currently governed by the WCAs, ENP and ENP to South Dade Conveyance System (SDCS) Water Control Plan (WCP). The Corps is initiating the Increment 1.1/1.2 field test, which includes the relaxation of the current operational stage constraint at the G-3273 for inflow into NESRS, the operation of

the L-29 Canal up to 7.8 feet NGVD and the operation of the S-356 Pump Station for control of seepage into the L-31N Canal.

During the Increment 1.1/1.2 field test, the combined flows to NESRS through the S-333 water control structure and the S-356 Pump Station will likely be more than what would have otherwise been discharged through the S-333 water control structure under current WCP operations. No changes to water supply operations are proposed.

Background:

The Florida Department of Environmental Protection (FDEP/Department) has previously provided both verbal and written comments regarding the incremental relaxation of the G-3272 constraint for deliveries to the ENP throughout the joint planning efforts and the State's Coastal Zone Management Program responses. Our comments on similar proposals were provided in the following letters and authorization submitted to the Corps:

- September 30, 2016, FDEP Conditional Authorization to Conduct a Multi-Year Operational Test of the S-356 Pump Station (Increment 1)
- March 27, 2015, FDEP Clearinghouse letter for Draft EA and FONSI, Proposed G-3273 Constraint Relaxation/S-356 Field Test and S-357N Operational Strategy (SAI # FL201502067180C)
- March 13, 2015, FDEP Conditional Authorization to Conduct a Multi-Year Operational Test of the S-356 Pump Station (Increment 1)
- October 24, 2014, FDEP Conditional Authorization to Conduct a 21-Day Operational Test of the S-356 Pump Station (Increment 0)
- July 14, 2014, FDEP Clearinghouse letter for Scoping Notice — Proposed Operations Field Test (SAI # FL201308236696C)
- September 6, 2013, FDEP Memo with the South Florida Water Management District (SFWMD) comments on the Corps' draft EA for the Proposed G-3273 Planned Deviation from the 2012 Water Conservation Areas, Everglades National Park and ENP-South Dade Conveyance System Water Control Plan (SAI # FL201308236696C)
- November 16, 2012, FDEP letter requesting additional information for a two-year S-356 Pump Station and G-3273 constraint relaxation field test request for the MWD to ENP Project (FDEP File No. 0246512). The letter contained both SFWMD and FDEP comments on the proposed testing project.
- July 8, 2011, FDEP Clearinghouse letter for Scoping Notice — Combined Operations Plan, MWD (SAI # FL201105255769)
- November 9, 2010, FDEP Memo to the State Clearinghouse regarding the Corps' draft EA for Temporary Deviation from Interim Operation Plan (IOP) Table ES-1; S-333: G-3273 Constraint (SAI # FL10-5486C)
- December 9, 2009, FDEP Memo to Susan Conner (Corps) providing comments on the G-3273 Modification field test.

Comments:

The Department has provided input and guidance throughout the planning process and is supportive of initiating the Increment 1.1/1.2 field test. The Department authorized a 21-day operational test of the S-356 Pump Station (Increment 0) on October 24, 2014, and a conditional authorization to conduct a multi-year operational test of the S-356 Pump Station (Increment 1) on March 13, 2015 and a one-year extension of the conditional authorization to continue the operational test of the S-356 Pump Station (Increment 1) on September 30, 2016, as part of implementing the operational strategy and monitoring plan described in the Increment 1 EA. Most of the components for the MWD to ENP and C-111 South Dade projects have been constructed or are currently under construction, but a Combined Operations Plan has not been developed. The Department believes that the Increment 1.1/1.2 field test is necessary to not only move forward on implementing Increment 1 Plus, but to establish a path forward for Increment 2, and the completion and implementation of the Combined Operations Plan.

The previous FDEP conditional authorizations for Increment 1 provided to the Corps relied upon the acknowledgment that all parties, including the Corps, the Department of Interior (DOI), the SFWMD and the FDEP, are committed to implementing joint restoration projects and associated operational plans in a manner that is consistent with the objectives of the underlying Central and South Florida (C&SF) Project. It is important to acknowledge in this Draft Supplemental EA, as in previous EAs, there is a commitment that the Corps, DOI and the State would use all available relevant data and supporting information to inform operational planning and decision making, document decisions made and evaluate the resulting information from those decisions to avoid adverse impacts to water quality where practicable and consistent with the purposes of the conditional authorization for Increment 1.

The Department received the semi-annual report for the Increment 1 field test on August 31, 2016. The Department anticipates receipt of the annual report in early 2017 that details the operations and monitoring for the first year of Increment 1 field test operations. Please note a separate conditional authorization is required from the Department that authorizes operational testing of the S-356 Pump Station for the Increment 1.1/1.2 field test.

The conditional authorization provided to the Corps on September 30, 2016, does not authorize the operation of the S-357N water control structure nor does the current FDEP MWD to ENP Project Comprehensive Everglades Restoration Plan Regulation Act (CERPRA) permit (FDEP File No. 0246512-003). A permit modification is required to operate the S-357N water control structure.

The conditional authorization provided to the Corps on September 30, 2016, as a Reasonable Assurance relied upon adherence to Section 8.3 of the Recommendations Chapter in the Central Everglades Planning Project (CEPP), Project Implementation Report (PIR); whereas Section 8.3 provides the expectations and guiding principles associated with water quality for ENP and the

Southern Estuaries. During the Increment 1.1/1.2 field test, the combined flows to NESRS through the S-333 water control structure and the S-356 Pump Station will likely be more than what would have otherwise been discharged through the S-333 water control structure under current WCP operations. The CEPP water quality language, as illustrated below, shall be included into this Draft Supplemental EA and an explanation/analysis/assessment as to how the Corps plans to follow these guiding principles to resolve potential water quality issues associated with the proposed Increment 1.1/1.2 field test.

> *"Restoration of the Everglades requires projects that address hydrologic restoration as well as water quality improvement. This has been recognized by the National Academy of Sciences in its most recent biennial report where it noted that near-term progress to address both water quality and water quantity improvements in the central Everglades is needed to prevent further declines of the ecosystem. The significant amount of water resulting from CEPP is contemplated to significantly improve restoration of the Everglades. Both the Federal and State parties recognize that water quantity and quality restoration should be pursued concurrently and have collaborated to develop and concur on a suite of restoration strategies being implemented by the State to improve water quality ("State Restoration Strategies"), as well as other State and Federal restoration projects, both underway and planned, to best achieve Everglades hydrologic objectives. Specific examples of Federally authorized projects include the Everglades Restoration Transition Plan, Modified Water Deliveries to Everglades National Park Project, and the Tamiami Trail Next Steps Project.[5] One of the goals of these projects and their associated operating plans, as well as certain components of the CERP awaiting authorization or that are being planned as part of the CEPP is to improve water quantity and quality in the Everglades through more natural water flow within the remnant Everglades, which includes the water conservation areas and ENP. Variations in flows of the C&SF system may result from a variety of reasons. These reasons include natural phenomena (e.g., weather) and updates to the operating manuals to achieve the purposes of the C&SF Project such as flood control and water supply.*
>
> *One goal of the Consent Decree[6] is to restore and maintain water quality within ENP. The Consent Decree established, among other things, long-term water quality limits for water entering ENP to achieve this goal. The existing limits for ENP are flow dependent and, generally, increased volume of water results in a lower allowable concentration of phosphorus to maintain the overall load of phosphorus entering the ENP. There will be redistribution of flows and increased water volume above existing flows associated with system restoration efforts beyond the current State Restoration Strategies projects. The USACE and its Federal and State partners recognize that to achieve long-term hydrologic improvement, water quality may be impacted, particularly as measured by the current Consent Decree Appendix A compliance methodology. The USACE and the State partners agree that the monitoring locations/stations for inflows to ENP will require revision. An evaluation of this and other aspects of the compliance methodology are currently being conducted by the Technical Oversight Committee (TOC).*

In an effort to address these potential impacts and determine updates to Appendix A to reflect increased inflows and new discharges into ENP since the Consent Decree was entered, the parties to the Consent Decree have established a process and scope for evaluating and identifying necessary revisions to the Appendix A compliance methodology utilizing the scientific expertise of the TOC. The TOC may consider all relevant data, including the 20 years of data collected since Appendix A was implemented. Ultimately, such evaluations and changes to the Appendix A compliance methodology would be recommended by the Consent Decree's TOC for potential agreement by all parties. Failure to develop a mutually agreed upon and scientifically supportable revised compliance methodology will impact the State's ability to implement or approve these projects.

The aforementioned State Restoration Strategies will be implemented under a Clean Water Act discharge permit that incorporates and requires implementation of corrective actions required under a State law Consent Order, as well as a Framework Agreement between the U.S. Environmental Protection Agency and the State discharge permitting agency, the Florida Department of Environmental Protection, to ensure compliance with Clean Water Act and State water quality requirements for existing flows into the Everglades. The Clean Water Act permit for the State facilities, the associated Consent Order (including a detailed schedule for the planning, design, construction, and operation of the new project features), and technical support documents were reviewed by, and addressed all of, the U.S. Environmental Protection Agency's previous objections related to the draft National Pollutant Discharge Elimination System ("NPDES") permits, prior to issuance.

All parties are committed to implementing the State Restoration Strategies, joint restoration projects, and associated operational plans, in an adaptive manner that is consistent with the objectives of the underlying C&SF Project. The USACE and the State will use all available relevant data and supporting information to inform operational planning and decision making, document decisions made, and evaluate the resulting information from those decisions to avoid adverse impacts to water quality where practicable and consistent with the purposes of the C&SF Project. Based upon current and best available technical information, the Federal parties believe at this time that the State Restoration Strategies, implemented in accordance with the State issued Consent Order and other joint restoration projects, are sufficient and anticipated to achieve water quality requirements for existing flows to the Everglades. If there is an exceedance of the Appendix A compliance limits, which results from a change in operation of a Federal project, and it has been determined that an exceedance cannot be remedied without additional water quality measures, the Federal and State partners agree to meet to determine the most appropriate course of action, including what joint measures should be undertaken as a matter of shared responsibility. These discussions will include whether it is appropriate to exercise any applicable cost share authority. If additional measures are required and mutually agreed upon, then they shall be implemented in accordance with an approved process, such as a general reevaluation report or limited reevaluation report, and if

necessary, supported through individual project partnership agreements. Failure to develop mutually agreed upon measures and cost share for these measures may impact the State's ability to operate the Federal project features."

[5] The next phase of bridging for Tamiami Trail roadway as authorized by Congress.
[6] *United States v. South Florida Water Management District, et al.*, Case No. 88-1886-CIV-Moreno (U.S.D.C., S.D. Fla.).

The Draft Supplemental EA shall include an acknowledgment that the Technical Oversight Committee will consider and decide whether future Consent Decree Appendix A calculations for Long-Term Limits will include the S-356 Pump Station.

The Draft Supplemental EA should acknowledge that the Increment 1.1/1.2 field test may affect multiple construction projects such as the 2.6-Mile Tamiami Trail Bridge and C-111 Spreader Canal. In addition, an acknowledgment should be noted for the authorization of CEPP in December 2016.

The Draft Supplemental EA does not present hydrologic model simulation for the Increment 1.1/1.2 field test operational strategy, but relies upon model screening runs that were conducted for the United States Fish and Wildlife Service 2016 Everglades Restoration Transition Plan (ERTP) Biological Opinion and SFWMD South Dade efforts. The Department recommends an evaluation of operational changes as the operational strategy described in Appendix A may have an impact on affected environments and Everglades Restoration progress.

Specific Comments:

- The title of the project "G-3273 Constraint Relaxation/S-356 Field and S-357N Revised Operational Strategy" does not represent the entire affected area as Appendix A — Operational Strategy includes changes to a larger regional system. Within the project location description, please describe the larger regional system.

- The Department recommends clear and concise figures that illustrate all structures and project components identified in the Increment 1.1/1.2 operational strategy.

- **Page 1-1, Section 1.1 Project Authority:**
  Please note that there are other related documents that are not referenced. Please include all applicable documents.

- **Page 1-12, Figure 1-3, Page 4-27 and Page 10 in the Draft ERTP Increment 1 Field Test Assessment from Appendix A:**
  The Draft Supplemental EA states the S-357 Pump Station is designed to operate at 575 cubic feet per second (cfs); however, please note the FDEP permit File No. 0317442-003 authorizes 500 cfs at the S-357 Pump Station.

- **Page 1-25, Section 1.10 Permits:**
  1. In the preface paragraph, please include a reference to FDEP issuing S-356 Pump Station Operational Test authorization for Increment 1 extension issued on September 30, 2016, in accordance with the requirements of Specific Condition No. 22 for Pump Station Testing of permit File No. 0246512-003 for an additional year of operational testing.
  2. In the preface paragraph, please change "FDEP has issued testing approval for Increment 1 testing operations associated with the S-356 pump station under the test authorization provision (specific condition 18 of CERPRA permit number 0246512-10)" to "FDEP has issued a testing approval for a one-year extension to Increment 1 testing operations associated with the S-356 Pump Station under the test authorization provision (specific condition no. 22 of CERPRA permit number 0246512-003)."
  3. Update File No. 0306639-002 to 0306639-003.
  4. Update "Modification to File No. 0246512-010 or otherwise a modification or test authorization to File No. 0246512-003" to "Modification to File No. 0246512-003 and test authorization." File No. 0246512-010 has been superseded by File No. 0246512-003.
  5. Update File No. 0317442-002 to 0317442-003.
  6. Update "New Permit File No. 0246512-012, C-111 South Dade Project, Contract 8 Phase" to "Modification to File No. 0246512-012, C-111 South Dade and Modified Water Deliveries to the Everglades National Park Projects." Contract 8 phase was issued in File Nos. 0246512-008 and 0246512-011. File No. 0246512-012 added Contract 8A and partial demolition and decommission of S-174 and S-175.
  7. Update the Non-ECP permit File No. 06, 50259070, which was modified to File No. 0237803-001.

- **Page 4-64, Table 4-3. Past, Present and Reasonably Foreseeable Actions and Plans Affecting the Project Area:**
  Please reference CEPP in Table 4-3 as being authorized through the Water Resources Development Act (WRDA) in 2016. Please clarify why the CERP projects listed are outside the affected area (e.g., Picayune Strand Restoration Project, Site 1 Impoundment Project and Indian River Lagoon South Project).

- **Appendix A.1-13: Operational Strategy for Increment 1.1/1.2 Field Test:**
  Please include FDEP in the weekly and monthly meetings for the Increment 1.1/1.2 field test operations updates.

- **Appendix C.1-14, C.1.4 Active Mandates and Permits:**
  Please clarify which project the new monitoring stations south of S-331 are associated with described in C.1.4. Table C.A-1 references proposed new wells for the C-111 SC project. Please ensure that all monitoring stations included in the Draft Supplemental EA are depicted in a clear and concise figure.

- **Appendix C.1-9: Administration and Implementation of the Monitoring Plan**
  In the statement regarding the proposed Water Quality Monitoring Plan, item (2) lists "distinguish water sources for S-35." This should be corrected to S-356.

- **Appendix C, Table C.2-4:**
  Please ensure all locations identified in the monitoring table are reflected in a clear and concise figure.

The Department sincerely appreciates the opportunity to comment and looks forward to continuing our partnership with the Corps. Should you have any questions regarding our comments, please contact Natalie Barfield at (850) 245-3197.

Electronic copies to:
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January 20, 2017

Chris Stahl
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RE: SAI #FL201612097815C, U.S. Army Corps of Engineers–Supplemental Environmental Assessment (EA) and Proposed Finding of No Significant Impact (FONSI) for the G-3273 Constraint Relaxation/S-356 Field Test and S-357N Revised Operation Strategy: Increment 1 Plus (Increment 1.1/1.2), Miami Dade County

Dear Mr. Stahl:

The Florida Fish and Wildlife Conservation Commission (FWC) has reviewed the above-referenced assessment, and provides the following comments in accordance with FWC's authorities under Chapter 379, Florida Statutes; Chapter 68, Florida Administrative Code; and Article 4, Section 9, of the Florida Constitution.

Project Description

The U.S. Army Corps of Engineers (USACE) proposes modifications to the water management operating criteria relating to the *Central and Southern Florida Project Water Control Plan for Water Conservation Areas, Everglades National Park, and ENP-South Dade Conveyance System, 2012* (further referenced as the Water Control Plan). The Water Control Plan affects an area within the Central and Southern Flood (C&SF) Project located in south Florida and includes portions of several counties, as well as the Everglades Complex Wildlife Management Areas (ECWMA), Everglades National Park (ENP), Big Cypress National Preserve (BCNP), and adjacent areas. The 2012 Water Control Plan was further modified by the *G-3273 Constraint Relaxation/S-356 Field Test and S-357N Operational Strategy, 2015* (further referenced as Increment 1). The National Environmental Policy Act (NEPA) documentation for the Increment 1 field test was completed on May 27, 2015, with signing of a Finding of No Significant Impact (FONSI) incorporating an Environmental Assessment (EA). This Supplemental EA and FONSI for Increment 1.1/1.2 further modifies the 2012 Water Control Plan and the Increment 1 field test to meet the Congressionally authorized purposes of the C&SF Project. These purposes include flood control, navigation, preservation of fish and wildlife, drainage, salinity control, and water supply.

USACE states that the objectives of the proposed modifications remain consistent with those defined in the Increment 1 EA and FONSI (dated May 27, 2015) and define the overarching project goal is to increase S-333 water deliveries from WCA-3A to Everglades National Park through Northeast Shark River Slough for the benefit of natural resources. The Increment 1.1/1.2 EA and FONSI provides additional operational flexibility to deliver supplemental flows to Taylor Slough to help facilitate the recovery

of Florida Bay from hyper-salinity events. Furthermore, the USACE is proposing to modify Increment 1 operational strategy to address the mandated terms and conditions of the July 22, 2016, U.S. Fish and Wildlife Service (USFWS) Everglades Restoration Transition Plan (ERTP) Biological Opinion (BO), which includes expanded closure periods for S-12A, S-12B, S-343A, S-343B, and S-344, as mandated by the identified Reasonable and Prudent Alternatives.

Comments and Recommendations

The FWC continues to support the development of a water control plan that raises the maximum operational limit of the L-29 canal, increases the availability of S-333 deliveries from WCA-3A to Everglades National Park through Northeast Shark River Slough, and provides operational flexibility to deliver water to Taylor Slough. Support for the proposed actions were expressed in letters from the FWC to the USACE Jacksonville District Commander on December 1, 2016, and November 11, 2016, respectively (enclosed). USACE may consider including these letters as reference material within the Increment 1.1/1.2 EA.

Raising the maximum operational limit in the L-29 canal maximizes opportunities for water to flow from north to south and delivers fresh water to Everglades National Park and Florida Bay. These combined actions will help maintain ecologically desirable water levels in the Everglades and Francis S. Taylor Wildlife Management Area (EWMA) where the FWC has fish and wildlife and land management responsibilities. The Everglades and Francis S. Taylor Wildlife Management Area includes WCA-2, WCA-3A, and WCA-3B.

Alternatives Analysis

The Increment 1.1/1.2 EA and FONSI presented five alternatives for consideration (Alternatives A-E). The alternatives are well developed and the FWC staff appreciate the table of Alternatives Description (Table 1-2) as a way to easily differentiate between the complex alternatives. The FWC supports the decision to eliminate Alternatives B and C from consideration as they do not raise the canal stage in the L-29 canal or provide a high water strategy for the EWMA. Furthermore, the FWC supports the preferred alternative (Alternative D) that provides a process to raise the L-29 canal stage to 7.8 feet NGVD, incorporates a high water strategy for the EWMA, and provides operational flexibility to deliver supplemental flows to Taylor Slough to help facilitate the recovery of Florida Bay.

High Water Strategy

The FWC has fish and wildlife and land management responsibilities for EWMA and has found that hydrology, water depth, and duration of standing water are very important components of wildlife and habitat protection. The FWC has developed a position paper entitled *Hydrologic Requirements for the Everglades and Francis S. Taylor Wildlife Management Area* dated November 20, 2013 (enclosed). This paper provides a biologically based guidance for managing water levels in the Everglades to ensure restoration of fish and wildlife populations, habitat, and diversity so that the goals of the

Everglades restoration may be fully realized. The FWC staff recommend that the above-mentioned position paper be referenced within the Increment 1.1/1.2 EA and FONSI to help readers understand the various wildlife impacts, ecological concerns, and recreational impacts from prolonged high water in the EWMA.

The Increment 1.1/1.2 EA and FONSI correctly recognize that actions to alleviate and manage high water conditions in EWMA are a critical component of the Water Control Pan. The FWC appreciates that USACE and the USFWS have worked cooperatively to develop and incorporate a high water strategy for managing high water events in the EWMA. The high water strategy is included in the preferred alternative and may help mitigate for the increased frequency and duration of high water events in the EWMA associated with extending the closure periods of the S-12A, S-12B, S-343A, S-343B, and S-344 structures.

The high water strategy developed through consultation with USFWS and incorporated into Increment 1.1/1.2 EA and FONSI utilizes the 90th percentile of historical water levels for WCA-3A, expressed as a 3-gauge average. This represents a stage threshold or deviation action line to reduce potential for adverse impacts due to high stages in the EWMA. The 90th percentile water level varies seasonally and reaches a maximum of 11.50 feet NGVD during the month of October. The FWC appreciates the added flexibility the high water strategy provides for managing high water events in the EWMA but cautions that the strategy may be inconsistent with the FWC high water criteria that was developed as a conservation practice to reduce stress on native wildlife during high water events.

The FWC utilizes a high water criteria based on the daily mean stage at the 62 and 63 stage gauges as a mechanism to restrict access, reduce stress on native wildlife, and protect native vegetation and tree islands. Regression analysis between the daily WCA-3A 3-gauge average and the daily mean stage of the 62 and 63 gauges indicates that a significant linear relationship exists ($R^2 = 0.93$). The linear equation suggests that the 62-63 closure criterion of 11.60 NGVD is reached when the 3-gauge average is approximately 10.92 NGVD, which is 0.6 feet less than the 90th percentile maximum of 11.50 feet NGVD. The criteria used by FWC to protect native wildlife and wildlife habitats is more closely related to the 75% percentile of historical water levels for WCA-3A 3-gauge average. Therefore, the FWC staff recommends that USACE considers using the 75% percentile of historical water levels for WCA-3A 3-gauge average when making ecological considerations for the EWMA in future planning processes.

Operational Strategy

The FWC appreciates the opportunity to work directly with the USACE engineers and staff very closely on the operational plan during the Increment 1.1/1.2 Project Delivery Team (PDT) meetings. The face-to-face engagement and USACE technical support remains critical to developing and understanding the complexities of the Water Control Plan. The Increment 1.1/1.2 Operational Strategy (Appendix A) offers several critical improvements over the previous operational strategy. As expressed in the previously referenced letters, the FWC supports expeditious implementation of an operational strategy that raises the L-29 canal stage and provides flexibility to deliver water to Taylor Slough.

The Increment 1.1/1.2 EA, FONSI and the associated Operational Strategy identifies several contingent actions required to raise the L-29 canal stage from 7.5 to 7.8 NGVD. These identified actions include acquisition of real estate interests and "*associated improvements.*" The FWC staff recommend that the USACE considers removing all references to "*associated improvements*" as a contingent factor because moderate improvements sufficient to protect these properties when canal levels were > 7.8 NGVD were completed during the 2016 Emergency Deviation. Furthermore, in lieu of completing improvements, which may take an indeterminate time, the USACE could consult with the potentially affected parties to seek concurrence or a flowage agreement until such time as the permanent improvements are complete.

The Increment 1.1/1.2 EA, FONSI and the associated Operational Strategy incorporates operational criteria for the S-328 structure contingent on the construction of three L-31W canal plugs proposed between S-328 and the L-31W gap. The L-31W canal plugs were identified in the 2016 C-111 South Dade Contract 9 EA and are contracted for installation by the South Florida Water Management District. The FWC staff recommends that the USACE considers making this prescriptive condition a recommendation which may help create near-term opportunities to use the S-328 structure to facilitate the recovery of Florida Bay from hyper-salinity conditions.

The FWC understands the complexities of raising the L-29 canal stage to increase flows to Northeast Shark River Slough and fully supports USACE's efforts. We sincerely appreciate the opportunity to provide comments on the Increment 1.1/1.2 EA and FONSI and find the actions consistent with FWC's authorities under the Coastal Zone Management Act/Florida's Coastal Management Program. We offer our staff support to continue working directly with the USACE to refine water level criteria and management actions that may prevent, or reduce, high water events in the EWMA. If you or your staff would like to coordinate further on any of the recommendations contained within this letter please contact me directly at (561) 625-5704 or by email at James.Erskine@MyFWC.com. If you require general assistance, please do not hesitate to contact Jane Chabre by phone at (850) 410-5367 or by email at FWCConservationPlanningServices@myfwc.com.

Sincerely,

James Erskine, Everglades Coordinator
Office of Executive Director

jme/ma/mk
ENV 1-3-2
ENP G-3273 Constraint Relaxation S-356 Field Test and S-357N Op Strategy_32074_012017
Enclosures
cc: Melissa Nasuti, U.S. Army Corps of Engineers,
Melissa.A.Nasuti@usace.army.mil

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November 16, 2016

Colonel Jason A. Kirk
Jacksonville District Commander
US Army Corps of Engineers
701 San Marco Boulevard
Jacksonville, FL 32207-8175
Jason.A.Kirk@usace.army.mil

RE: Recommendation to expedite the Florida Bay Plan

Dear Colonel Kirk:

On behalf of the Florida Fish and Wildlife Conservation Commission (FWC), I write to the importance of Florida Bay as an ecologically and economically important natural resource. The Bay's critical fish and wildlife resources and marine habitats support significant recreational and commercial fisheries in the Florida Keys and Everglades National Park, and provide high quality outdoor recreation for Florida residents and visitors.

In recent years, Florida Bay suffered hypersaline conditions contributing to algae blooms and seagrass die-offs, negatively impacting the Bay's ecosystem. Additional fresh water deliveries can help maintain ecologically beneficial salinities. The proposed Florida Bay Plan is an incremental step that works with existing restoration projects, accelerates implementation of key restoration components, and complements the longer term restoration goals.

The Florida Fish and Wildlife Conservation Commission commends the South Florida Water Management District for taking actions to improve the hydrology and ecology of Florida Bay. We respectfully ask the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the National Park Service to work cooperatively and expeditiously with the state agencies to commence construction of the improvements comprising the Florida Bay Plan. The successful and timely completion of such projects are necessary to protect Florida Bay's ecology and achieve the broader ecological benefits of Everglades restoration.

Sincerely,

Robert Spottswood
Commissioner

cc: Peter Antonacci, Executive Director, South Florida Water Management District
Pedro Ramos, Superintendent, Everglades & Dry Tortugas National Park
Jonathan Steverson, Secretary, Florida Department of Environmental Protection
Larry Williams, Field Supervisor, U. S. Fish and Wildlife Service

December 01, 2016

Colonel Jason A. Kirk
Jacksonville District Commander
US Army Corps of Engineers
701 San Marco Boulevard
Jacksonville, FL 32207-8175

Re: Request to Complete C-111 South Dade Projects Contract 8 & 8A Critical Features

Dear Colonel Kirk:

I write on behalf of the Florida Fish and Wildlife Conservation Commission (FWC) to convey our continued support for the expeditious development of a water control plan incorporating an Increment 2 Operational Strategy that supports raising the maximum operational limit in the L-29 canal. These actions will allow significantly more water to pass under Tamiami Trail and aid in the rehydration and restoration of Shark River Slough and Taylor Slough.

Raising the maximum operational limit in the L-29 canal maximizes opportunities for water to flow from north to south, and delivers fresh water to Everglades National Park and Florida Bay. This will help reduce future pressures on regionally significant natural resources of the global Everglades including Lake Okeechobee, the Caloosahatchee estuary, and the St. Lucie estuary. Furthermore, these combined actions will help maintain ecologically desirable water levels in the Everglades and Francis S. Taylor Wildlife Management Area (FWMA).

In order to protect Florida's valuable fish, wildlife and wildlife habitats from the recurring effects of sustained high water, the FWC requests the U.S. Army Corps of Engineers accelerates and completes critical features of the C-111 South Dade Projects Contract 8 and Contract 8A, and takes any actions necessary to raise the maximum operational limit in the L-29 canal prior to the onset of the 2017 wet season.

Successfully raising the maximum operational limit in the L-29 canal requires coordinated actions from the state and federal partners and the FWC is prepared to assist in any way possible. Please feel free to contact FWC's Everglades Coordinator, James M. Erskine, by phone at 561-882-5704 or [redacted] to coordinate any further assistance.

Sincerely,

Alligator Ron Bergeron
Commissioner

RB/jmc

cc: Peter Antonacci, Executive Director, South Florida Water Management District
Shannon Estenoz, Director US DOI Office of Everglades Restoration Initiatives
Jonathan Steverson, Secretary, Florida Department of Environmental Protection
Pedro Ramos, Superintendent, Everglades & Dry Tortugas National Park
Larry Williams, Field Supervisor, U.S. Fish and Wildlife Service

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Chief of Staff

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[redacted]

Managing fish and wildlife resources for their long-term well-being and the benefit of people.

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MyFWC.com

POSITION PAPER: HYDROLOGIC REQUIREMENTS
FOR
THE EVERGLADES AND FRANCIS S. TAYLOR WILDLIFE MANAGEMENT AREA
FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
November 20, 2013

Purpose

A stated goal of the Comprehensive Everglades Restoration Plan (CERP) is "to capture fresh water that now flows unused to the ocean and the Gulf and redirect it to areas that need it most. Most of the water will be devoted to environmental restoration, reviving a dying ecosystem." The Florida Fish and Wildlife Conservation Commission (FWC) believes that guidelines currently being considered for management of water in and through this ecosystem may result in high and low water conditions that have an impact on fish and wildlife populations, habitat, and diversity, particularly certain state and federally listed imperiled species. Such outcomes would be inconsistent with the goal of reviving a dying ecosystem; however, modifications are feasible to insure water management guidelines are consistent with CERP goals. The purpose of this paper is to provide biologically based guidance for managing water levels in the Everglades to insure restoration of fish and wildlife populations, habitats, and diversity such that CERP goals can be fully realized.

Executive Summary

The FWC fully supports the stated goals of CERP. It is the position of the FWC that water levels in the Central Everglades should be managed in a manner that sustains and restores native fish and wildlife populations, habitat and diversity. To achieve this outcome FWC asserts that water levels in the Water Conservation Areas (WCAs) should not exceed two feet in depth at the height of the wet season with water recession and ascension rates not exceeding 0.25 feet per week. The FWC has revisited the regulation schedule recommended to the U.S. Army Corps of Engineers for WCA 3A by its predecessor agency, the Florida Game and Fresh Water Fish Commission in 1980, and has reviewed the U.S. Fish and Wildlife Service's draft *Multi-Species Transition Strategy for Water Conservation Area 3A* to form this position on a biologically based water management strategy. Together, these two proposals explicitly take into account the hydrologic tolerances and limitations of a variety of species and communities that are characteristic of the Everglades. Other sources supporting this position include research on the relationship of water levels and tree islands; apple snails; maximum foraging depths for wading birds (five of which are listed as a Species of Special Concern); and over three decades of telemetry data on movements of Florida panthers in the Everglades and Big Cypress region, which correlates effectively to depths that white-tailed deer can access. In addition, this position and findings in this paper have been informed by six decades of FWC staff experience in managing the Everglades and Francis S. Taylor Wildlife Management Area (EWMA).

Comprising Water Conservation Areas 2A, 2B, 3A, and 3B, the EWMA totals 671,831 acres or 82% of the Water Conservation Areas in south Florida and roughly 30% of the remaining Everglades landscape south of the Everglades Agricultural Area. We conclude the 1980

recommendation remains generally applicable and the draft *Multi-Species Transition Strategy for Water Conservation Area 3A*, with a few exceptions noted, recommends water depths that fall within reasonable ranges. In general, the FWC recommends optimal water depths no more than two feet during the height of the wet season (late October – early November) and close to ground level during the driest time of the year (late May – early June), as measured from the average slough elevation. Extreme high water resulting from prolonged rainfall, hurricanes, or tropical storms causing water levels to exceed two feet must not be allowed to persist longer than 60 days.

Introduction

The FWC is committed to supporting the Central Everglades Planning Project (CEPP) and working collaboratively with our partners. CEPP represents a water management plan for the Everglades that stems from and is central to the Comprehensive Everglades Restoration Plan (CERP). We intend for this document to serve as the foundation for the FWC's recommendations regarding the planning and implementation of CERP and CEPP. We acknowledge this document may need to be refined further as we work with other agencies, researchers, and stakeholders to evaluate subsequent CERP projects and other CEPP-related activities such as water regulation schedules that would affect the Everglades and Francis S. Taylor Wildlife Management Area (EWMA or Water Conservation Areas [WCAs] 2A, 2B, 3A, and 3B). It is our intent to make sure water management parameters provide for water depths and durations for this area that will sustain and restore resident fish and wildlife, including imperiled species.

There is a long history of research, biological observation and expertise associated with identifying water management parameters most suitable for wildlife. Staff review of two documents was central to the development of this position paper including the draft *USFWS Multi-Species Transition Strategy for Water Conservation Area 3A* (U.S. Fish and Wildlife Service [USFWS] 2010) and the regulation schedule recommended by the Florida Game and Fresh Water Fish Commission (GFC) in 1980 (Schortemeyer 1980). Both of these documents present a multi-species approach toward determining biologically based recommendations for managing water in the EWMA.

This paper provides guidelines based on historical information for maintaining fish and wildlife diversity and richness in the largest part of the EWMA: WCA 3A. Most of the research in the EWMA has focused on WCA 3A since it is the largest of the WCAs. This paper addresses water management aspects of Everglades restoration from a fish and wildlife diversity perspective and recommends general ranges of water depths for both the peak of the wet season (October into November) and the driest part of the dry season (May into June). Additionally, this paper describes how water levels managed outside of the desired range of conditions have impacted vegetation communities, wildlife diversity, and species richness, particularly for state- and federally listed species. The FWC's position statement references the experiences and reports the FWC and its predecessor agency, the GFC, have provided since the authorization of the Central and South Florida Project in 1948 and continuing into current CERP planning efforts.

Background

Because roughly half of the original extent of the Everglades has been lost to development and agriculture, today's water managers face a difficult task of routing the same amount of rain that historically fell through today's much-reduced system consisting of canals, levees, and impoundments while providing water supply, flood control, and conserving the remaining Everglades landscape for fish and wildlife. One of the greatest challenges for the Comprehensive Everglades Restoration Plan is to accomplish this three-pronged mission. The WCAs in this area are now subject to extremely high water levels for extended periods of time, particularly in the southern end of WCA 3A, when the capacity of the Central and South Florida Project is exceeded by periods of high rainfall. They are also subject to artificially low water levels, and particularly in the northern part of WCA 3A, during drought periods.

The FWC and GFC have six decades of experience in managing the large part of the Everglades landscape that is today referred to as WCAs 2A, 2B, 3A, and 3B. The Central and South Florida Project was authorized by Congress in 1948, and construction of its levee and canal system, including the WCAs, began in 1952 (Light and Dineen 1994). In 1952, WCAs 2 and 3 were designated as the EWMA with the GFC as the land management agency, and in 1953 the GFC began the Everglades Impoundment Investigation with funding from the Federal Aid in Fish and Wildlife Restoration Acts (Wallace 1960). The July 1953 annual report by Clay Gifford, GFC biologist, clearly recognized even then that a multi-species approach would be required (Gifford 1953). It also acknowledged the difficulty in developing the knowledge base necessary to link engineered hydrologic regimes with the ecological needs of a complex biological community.

The GFC continued to investigate, implement, and evaluate management approaches within the EWMA. In 1960 it issued a formal status report, *Recommended Program for Conservation Area 3* (Wallace 1960), outlining the expected impacts of constructing the proposed L-67 levee system. Later, and primarily as a result of a dramatic deer die off in the WCAs in the late 1960s, the Florida Chapter of the Wildlife Society appointed the Special Study Team on the Florida Everglades, a group of five national fish and wildlife biologists, to "evaluate the...wildlife situation in the Everglades...and suggest some possible courses of action." This team was assembled at the request of the Central and Southern Florida Flood Control District (predecessor of today's South Florida Water Management District), and with agreement by the GFC. Their 1970 report, *Everglades Water and Its Ecological Implications*, also recognized the need to address a suite of native species if the WCAs were to be successfully managed (Cornell et al. 1960). For deer management, it recommended that water levels not exceed two feet during the wet season and recede to a depth of six to eight inches in February, during fawning. In 1983, staff developed a deer-management approach that reduced the likelihood of catastrophic deer mortalities due to high water levels (GFC 1983).

A decade later, the GFC published its first set of comprehensive recommendations for managing water levels to support fish and wildlife in WCA 3A (Schortemeyer 1980). This report, *An Evaluation of Water Management for Optimum Wildlife Benefits in Conservation Area 3A*, recognized three hydrologic zones in WCA 3A: an area that was negatively affected by low water and peat fires, largely lying north of Alligator Alley; an area in central WCA 3A where the

sawgrass ridges, sloughs, and tree islands appeared to be relatively intact, and an area along eastern and southern WCA 3A that had suffered from prolonged high water levels. Based on an analysis of Everglades plant communities and selected wildlife species, Schortemeyer (1980) developed schedules for seven species or suites of species: the deer; the alligator, passerine birds, and the pig frog; the Everglade snail kite; wood stork; largemouth bass; diving ducks; and dabbling ducks. Recognizing that no one place would be optimal for all species, he summarized these recommendations in a proposed water regulation schedule that would allow water levels in the sawgrass community to peak at a depth of about 1.38 feet on November 1 and then gradually and steadily recede to a low of -0.05 feet by June 1. At that time, water levels would increase to the 1.38-foot depth at the beginning of November. This proposal was formally approved as a recommended schedule for WCA 3A by the GFC's Commissioners in May 1980.

The GFC continued to provide recommendations based on experience in the EWMA to water managers in the 1980s (Schortemeyer 1999), and in 1995 formed a team of biologists to participate in the interagency "Restudy" that developed CERP (approved in 2000). During that time, the GFC drew on its past experience, including its analysis of the effects of the extreme high-water event in 1994–1995 (Coughlin and Richards 1995, Guerra 1997), to influence the development of key performance measures used during the Restudy to evaluate alternative draft plans, particularly in WCAs 2 and 3. The GFC also gathered data from WCAs 3A and 3B in a field study that investigated the vegetative community structure and composition on the heads of tree islands from the three zones identified by Schortemeyer (1980), a fourth zone of hardwood hammocks in southwestern WCA 3A, and in WCA 3B. This study determined that both extreme high and extreme low water levels are predictors of tree and shrub species diversity on tree islands in the WCAs (Heisler et al. 2002). The information from this effort enabled the Restudy to refine its performance measures in key indicator regions in WCAs 3A and 3B. Anderson (2000) further analyzed the effects of hydrologic and topographic gradients on woody vegetation of tree islands in the dry zone of northern WCA 3A and the moderately wet zone in central WCA 3A. He concluded that the optimal hydrology to maintain the natural diversity of woody vegetation on tree islands in WCA 3A would involve fewer extreme high and low water events, and would include hydroperiods ranging from 80 to 90% inundation and average ponding depths of 0.78 to 1.41 feet. More recently, staff co-authored a report that concluded that canopy composition and structure of tree islands in WCAs 3A and 3B are strongly correlated with extremely wet and extremely dry conditions, as opposed to mean annual water levels (Wetzel et al. 2008).

The FWC has continued to contribute its knowledge and expertise after CERP was approved through contributions to the initial raising of the Tamiami Trail and into the development of the Everglades Restoration Transition Plan. Since the inception of the WCAs, FWC staff has built on its experience in managing WCAs 2 and 3 (with the exception of the portion of WCA 3A that is the Reservation of the Miccosukee Tribe of Indians of Florida), relying on field observations, field studies, and reports by other researchers (e.g, by the U.S. Geological Survey, South Florida Water Management District, and universities). An excellent summary of knowledge gained, particularly as related to high water levels, was presented as a PowerPoint presentation to the RECOVER team by FWC biologist Tim Towles in 2009 (Towles 2009).

Hydrology of the Everglades

The hydrology of the Everglades is driven by a pattern of high levels of precipitation in late May through October and a dry season between October and May (Cornwell et al. 1970, Duever et al. 1994). It is generally accepted that the predrainage system existed as a hydrologic unit that originated in the Kissimmee headwaters, meandered through the Kissimmee River and its oxbows and marshes, and then gathered into Lake Okeechobee. Lake Okeechobee would periodically overflow into the sawgrass plains immediately south of the lake in what is now the Everglades Agricultural Area, and traveled south via sheetflow in the ridge and slough system to Shark River Slough in today's Everglades National Park (Cornwell et al. 1970, Light and Dineen 1994). The scale of this system allowed for water level fluctuations that were attenuated by marsh vegetation.

Because roughly half of the original extent of the Everglades has been lost to development and agriculture (Davis and Ogden 1994), the capacity of the Central and South Florida Project is exceeded by periods of high rainfall, particularly in the southern part of WCA 3A, where water levels tend to pond. Conversely, artificially low water levels in the northern part of WCA 3A have caused damaging peat fires during drought periods.

Imperiled Species and their Relation to Water Depth in the EWMA

Florida panther

Water depths in western WCA 3A in particular are of significance to the Florida panther. This area lies within the eastern part of the panther's breeding range (Oronato et al. 2011). Consistent with this range estimate, telemetry data confirm that panthers consistently used the western part of WCA 3A before the year 2000. Since that time, however, in spite of the fact that panther populations have increased significantly, their use of this area has dropped dramatically, coinciding with deeper water levels persisting for longer durations and fewer deer (an important prey species). MacDonald-Beyers and Labisky (2005) studied the relationship between water levels in the Big Cypress prairies and radio-collared deer concluded that the depth at which deer movement is negatively affected is about 19.7 inches. Ensuring water levels in this historical panther breeding range can support a healthy deer herd will be critical not only to the conservation of panthers, but also to their recovery.

While panthers can and do use shallow wetlands, they rely on forested areas to stalk their prey and to rest. The tree islands and their associated thicker vegetation provide this type of habitat in western WCA 3A, but deeper water and a reduced amount of upland areas provided by tree islands would discourage panther use of this part of WCA 3A (Darrell Land, FWC, personal communication 2013). Water levels managed not to exceed a depth of two feet at the peak of the wet season and to near the ground surface at the peak of the dry season will be necessary for the panther to regain use of western WCA 3A.

Wading birds

To a large extent, the depth at which wading birds can forage is limited by the length of their bills. For the seven wading bird species (white ibis, snowy egret, little blue heron, tricolored heron, roseate spoonbill [all of which are Species of Special Concern], great egret, and great blue heron) that commonly forage in the Everglades, maximum depths at which they can forage range from about 6.3 inches to about 15.3 inches (Powell 1987). These depths need to be taken into account if the EWMA is to continue to provide foraging opportunities for these species. Recession rates are also an important factor to consider when managing wading birds. The FWC recommends recession rates averaging between 0.05 and 0.25 feet per week, with no water-level reversals, beginning in January and ending at the end of May. Water levels managed not to exceed a depth of two feet at the peak of the wet season and to near the surface at the peak of the dry season will be necessary for these species to nest and forage in the EWMA.

Everglade snail kite

Snail kites search for prey by sight, so they typically forage over relatively open wet prairie and sloughs. They capture apple snails within about four inches of the surface as the snails come to the surface to respire (Bennetts et al. 1994). Apple snails feed on the periphyton component of both wet prairies and sloughs (Browder et al. 1994). Wet prairies, as opposed to sloughs, appear to be an important area for apple snail production, particularly in areas dominated by maidencane (Karunaratne et al. 2006). Water depths greater than 1.6 feet during the peak apple snail breeding season result in fewer egg clusters and delayed egg laying that result in the next year a larger number of juvenile snails that are too small for snail kites. The main areas where snail kites nested historically were in the WCAs and Lake Okeechobee; however, in recent years, most

of the snail kite nesting effort has been at the northern extent of its range, in the Kissimmee Chain of Lakes. This northward shift is problematic in that colder weather at the start of the nesting season would delay nesting, resulting in poor nest success for that year (Z. Welch, FWC, personal communication). Water levels managed not to exceed a depth of two feet at the peak of the wet season and to near the ground surface at the peak of the dry season with ascension and recession rates not exceeding 0.25 feet per week will be necessary for snail kites to forage on apple snails in the EWMA. The science on snail kites and apple snails lead us to conclude that if water levels are not managed as prescribed above, snail kites will become further imperiled if not extirpated.

Draft *USFWS Multi-Species Transition Plan*

The USFWS (2010) recommends recommended ranges of water levels, specifically in WCA 3A, that would benefit the wood stork; Everglade snail kite and the kite's main prey species, the Florida apple snail; tree islands; and the wet prairie in southwestern WCA 3A. These individual species/community requirements were then blended to provide a multi-species approach to estimating appropriate water depths overall. This plan did not address limits to water depths for the stork, kite, or apple snail during the wet season, but instead focused on a maximum desirable depth during the pre-breeding season, starting on January 1. The following are their recommendations.

Wood stork: Water depths should peak in October and recede to about 1.16 to 2.03 feet in January. The recommended water level recession rate is about 0.84 inches per week. During the dry season (May), the minimum water depth should fall to between -0.34 and 0.52 feet.

Everglade snail kite: During the dry season (May), water levels should fall no lower than -0.34 and +0.52 feet in the southwestern part of WCA 3A.

Florida apple snail: Water depths for apple snails should reach 1.31 to 1.97 feet in January. The recession rate should be about 0.8 inches per week. During the dry season (May), the water depth should be no greater than 1.31 feet and no less than 0.33 feet), the depth at which apple snails quit moving. However, FWC staff recommends revisiting these water levels because they understand that Phil Darby, who collected the field data upon which this was based, disagrees with the USFWS' calculations, believing them to be too deep (Z. Welch, FWC, personal communication). Recession rates are important for managing for apple snails. The FWC recommends ascension rates no greater than 0.05 to 0.25 feet per week from the beginning of June to the beginning of October.

Taking into account these water depths, as well as ones estimated for tree islands and wet prairie, the USFWS (2010) developed a regulation schedule that peaked at a depth of about 2 feet.

Major Vegetation Communities in the EWMA and Their Importance to Fish and Wildlife

Three major vegetation communities occur in the EWMA: tree islands, sawgrass ridges and sloughs (collectively known as the ridge and slough system), and wet prairie. These communities support a wide variety of aquatic, wetland-dependent, and semi-terrestrial species,

including some that are listed for special protection by the State of Florida and the USFWS. Water levels managed not to exceed a depth of two feet at the peak of the wet season and to near the surface at the peak of the dry season will be necessary for the continued existence and recovery of these plant communities.

Tree islands: Tree islands are a unique structural component of the Everglades, providing habitat for wildlife species that require some component of upland habitat with trees or brush in an overall matrix of marsh. Tree islands may occur (in order of increasing height above the slough bottom) as willow strands, bayhead swamp forests, and tropical hardwood hammocks. The last of these may be found throughout the EWMA, but are more numerous in southwestern WCA 3A and southern WCA 3B. Willow strands, which may also contain other brushy species such as pond apple, provide colonial wading bird habitat (Rodgers et al. 1996), while the bayheads and tropical hardwood hammocks may be important for neotropical migrating passerine birds (Mitchell 2010, Gawlik and Rocque 1998). Alligators, turtles, and snakes lay their eggs on the dry parts of tree islands (Towles 2009).

Much attention has also been given to the higher tree islands as refugia for Everglades's wildlife species, such as deer, bobcats, marsh rabbits, raccoons, and other small mammals. During extremely high-water events, these terrestrial or semi-terrestrial species crowd onto what remains at or above water on tree islands and onto levees, where overcrowding and competition for food create physical stress (in extreme cases, resulting in death) and susceptibility to disease and parasites. This is particularly true for does, yearling, and fawns (Cornwell et al. 1970). Cornwell et al. (1970) noted that the situation became so severe during the high-water events in 1957–1958 and 1966 that all vegetation was completely removed, the bark of trees and shrubs eaten as high up as a deer could reach, and tree island soils were trampled into mud by both deer and wild hogs.

While less information is available on impacts to Everglades wildlife species other than deer, Schortemeyer (1980) noted that water reversals during periods of naturally occurring recession have caused nest failure for alligators and turtles. FWC staff has also reported opossums, grey foxes, bobcats, and raccoons crowded on levees during high-water events in 1986 and in 2005, and evidence of extensive predation on marsh rabbits during the 1986 event (unpublished GFC internal reports; T. Towles, FWC, personal communication 2013). Much of the effect on the diversity and abundance of wildlife can be inferred by changes in tree island vegetation. For example, the willow strand that supported the Andytown rookery in WCA 3A was one of the largest (over 60 acres) used by nesting wading birds before 1994; now only one-quarter acre of it remains.

High-water events are not the only threat to tree islands. While fire naturally occurred in the predrainage Everglades (Gunderson and Snyder 1994), water management has exacerbated the extent and duration of extreme drought, particularly in WCA 2 (Worth 1988) and WCA 3A. By 1970, a combination of peat fires and high water levels had severely degraded tree islands in much of WCA 2 (Cornwell et al. 1970, Light and Dineen 1994). Loss of tree islands, whether it is through flood or fire, results in loss of an important habitat component of the Everglades landscape.

The draft *USFWS Multi-Species Transition Plan* (USFWS 2010) proposes that the maximum water depths (expected to occur from mid-September to mid-October) that tree islands could tolerate was 2.5 feet for no longer than 120 days. However, FWC staff does not consider this to be interpreted as an acceptable water depth to be reached on a regular basis; a slightly lower depth of 2.46 feet would represent the deepest water that tree islands in WCA 3A can tolerate as long as this depth does not exceed 60 days. Furthermore, the plan does not examine the potential effects of extremely low water levels, such as those that contributed to conditions that burned out tree islands in northern WCA 3A.

Ridge and sloughs: The ridge and slough system is typified by a generally north to south orientation of alternating ridges that support sawgrass and slough communities. The sloughs are characterized by water lilies, floating hearts, and spatterdock at the surface and submerged bladderworts, whose stems provide a substrate for growth of periphyton, a naturally occurring algal community (Gunderson 1994). Periphyton is an important contributor to the primary production in the Everglades (Browder et al. 1994). During periods of relatively high water, the fish population expands into the higher sawgrass areas (Wallace 1960). When water levels recede, fishes are concentrated into the sloughs, where they provide prey for up to 11 species of wading birds, including the federally listed wood stork and the state-listed white ibis, little blue heron, tricolored heron, snowy egret, and roseate spoonbill (Gawlik 1999). Bancroft et al. (1991) noted that the southern part of WCA 3A is a critical foraging area for overwintering wood storks during dry years, when much of their foraging habitat elsewhere has dried out. Alligator holes are an important feature in the transition area between the sloughs and the ridges, becoming critical refugia for fishes and other aquatic species during periods of low water, particularly for larger fishes (Robertson and Frederick 1994) and a source of water for deer (Loveless 1959) and presumably for other mammal species as well. During extreme drought, however, they can be destroyed by peat fires, which can also kill the alligators themselves (Schortemeyer 1980).

Wet prairie: Wet prairies are a form of marsh dominated by emergent grass-like species, usually spikerush, beakrush, and maidencane (Gunderson 1994). Periphyton is also an important component of the submerged part of this community (Browder et al. 1994). They generally have a hydroperiod of 290 to 365 days (Goodrick 1974). Wet prairies in the EWMA, particularly in southwestern WCA 3A, have historically been important habitat for the federally endangered Everglade snail kite and its prey, the apple snail. The wet prairies and the ridge and slough communities provide critical foraging habitat for a wide variety of wading birds, including those currently designated by the State as Species of Special Concern. Wet prairies also provide high-quality browse for deer as long as the water depths remain below about 20 inches, a depth above which begins to hamper deer movement (MacDonald-Beyers and Labisky 2005).

The USFWS (2010) acknowledged the need for dry-downs of wet prairies to a depth below 1.6 inches for no longer than four to six weeks every four to five years. The recommended duration range has been shortened by two weeks in order to avoid overdrying the northern part of WCA 3A.

Recommended Water Depths

In response to data indicating that the snail kite and the apple snail population in WCA 3A had greatly declined in the late 1990s and early 2000s, the USFWS in 2008 worked with snail kite and apple snail researchers to determine measures that would help return kites and the snails to their previous numbers and densities in WCA 3A. The product was the *WCA 3A Snail Kite Transition Strategy*. It was subsequently revised with input from FWC and South Florida Water Management District staffs; expanded to address the wood stork, tree islands, and wet prairie; and was renamed the *USFWS Multi-Species Transition Strategy for Water Conservation Area 3A* (USFWS 2010). We have reviewed this draft report, and considered it in light of the regulation schedule that the GFC officially recommended in 1980. We have also consulted studies conducted by others (see Towles 2009) who have investigated the effects of water levels on tree islands and the wet prairie community. The USFWS (2010) target depths are slightly deeper than those recommended by Schortemeyer (1980), having been developed for a different suite of species and habitats, primarily south of Alligator Alley (Interstate 75). In general, however, both reflect a range of desired targets with peak water levels occurring in the late October to early November timeframe, receding steadily to a low at or near ground level in late May and early June, and then rising steadily to a peak again by late October and early November. It is important to recognize that interannual variations in rainfall may not allow these targets to be reached during all years, and that actual depths will vary depending on the location at which they are measured; however, these figures provide an envelope for an ecologically acceptable hydrologic regime for WCA 3A, and perhaps for WCA 3B, for most years.

An integral component of the USFWS approach is that an interagency team would meet regularly during the year to determine the targets for each specific season based on an assessment of the species' needs. This assessment would include up-to-date monitoring data, forecasted climate conditions, and the past years' hydrology. As new information and technologies become available, these guidelines will have to be revised. It is also important to recognize that all of these targets may not be attainable during all years and that their application should not cause unintended adverse consequences.

Conclusions

- A review of the two multi-species regulation schedules that have been proposed for WCA 3A, data on the effects of hydrology on its tree islands, and maximum depths for foraging for wading birds common to the Everglades provides the basis for the FWC's position. Guidance for water level management within the EWMA generally remains as recommended by Schortemeyer (1980), with a high-water depth no more than two feet by late October to early November and then a gradual and a steady recession to a low of near ground level by late May to early June. At that time, water levels would increase back to no deeper than two feet by the end of October to early November.
- During extreme storms or unusually wet seasons, water levels may rise above the desired levels, but even then depths should not persist for longer than 60 days above desired levels. At an average water depth of two feet north of Alligator Alley, the FWC has to

close the EWMA to avoid exacerbating stress on the terrestrial and semi-terrestrial species that crowd on the highest points of tree islands and the levees.

- Recession rates are an important factor to consider when managing wading birds. The FWC recommends recession rates averaging between 0.05 and 0.25 feet per week, with no water-level reversals, beginning in January and ending at the end of May. Recession rates are also important for managing for apple snails. The FWC recommends ascension rates no greater than 0.05 to 0.25 feet per week from the beginning of June to the beginning of October.
- WCA 3B has not been subjected to a regulation schedule; thus, water levels are not dictated by human-induced extreme fluctuations. Instead, water levels are affected by precipitation, evapotranspiration, seepage, and inflow from the S-151structure. As a result, the tree islands in WCA 3B represent some of the least impacted islands north of Everglades National Park. Transferring high water levels from WCA 3A to WCA 3B via CEPP or any other water management plan is not an acceptable approach to the FWC. Staff has developed a draft management strategy for WCA 3B: Water depths at the beginning of January should be 1.7 feet and recede at a rate of 0.6 inches per week until it hits a dry-season low of 0.7 feet (8.4 inches) in late May. At that time, water would rise to a depth of a little less than 1.9 feet in the first part of October, after which the water would recede gradually to the 1.7-foot level recommended for the beginning of January.
- The stated goal of CERP prioritizes water management for restoration of the Everglades ecosystem. CERP components, including CEPP, should strive not just to conserve, but to restore conditions for listed species, including the federally endangered Florida panther.
- If we continue down the path of managing the hydrology in the EWMA based on the current water regulation schedule that allows for periods of prolonged high water levels, the science and basic biology concludes that native plant and wildlife species which characterize the central Everglades will not be restored, but instead further harmed.
- While this paper represents our current opinion, it is the intent of FWC to continue working partners and stakeholders to continue to refine hydrologic requirements as more information becomes available. We continue our commitment to ensuring that, in the near term, CEPP and, in the longer term, CERP realize the goal of restoration of the greater Everglades system.

LITERATURE CITED

Anderson, M.R. 2000. Hydrologic and topographic gradient effects on woody vegetation of tree islands in the Everglades Wildlife Management Area. Masters Thesis. Florida Atlantic University, Boca Raton, Florida.

Bancroft, G.T., W. Hoffman, R.J. Sawicki, and J.C. Ogden. 1991. The importance of the water conservation areas in the Everglades to the endangered wood stork (*Mycteria americana*). Conservation Biology 6(3): 392-398.

Bennetts, R.E., M.W. Collopy, and J.A. Rodgers, Jr. 1994. The snail kite in the Florida Everglades: A food specialist in a changing environment. Chapter 21 *in* S.M. Davis and

J.C. Ogden, editors. Everglades: The ecosystem and its restoration. St. Lucie Press, Boca Raton, Florida.

Browder, J.A., P.J. Gleason, and D.R. Swift. 1994. Periphyton in the Everglades: Spatial variation, environmental correlates, and ecological implications. Chapter 16 *in* S.M. Davis and J.C. Ogden, editors. Everglades: The ecosystem and its restoration. St. Lucie Press, Boca Raton, Florida.

Cornwell, G.W., R.L. Downing, A.R. Marshall, J.N. Layne, and C.M. Loveless. 1970. Everglades water and its ecological implications. Report of the Special Study Team of the Florida Everglades dated August 1970. The team was appointed by the Florida Chapter of the Wildlife Society in March 1970 at the request of the Central and Southern Florida Flood Control District and agreed to by the Florida Game and Fresh Water Fish Commission. 42 pp.

Coughlin, S.P., and L.B. Richards. 1995. 1994 – 1995 high water event in the Everglades and Francis S. Taylor Wildlife Management Area. Unpublished report dated November 1995, West Palm Beach, Florida. 45 pp.

Darby, P.C., L.B. Karunaratne, and R.E. Bennetts. 2005. The influence of hydrology and associated habitat structure on spatial and temporal patterns of apple snail abundance and recruitment. Final report to the U.S. Geological Survey University of West Florida/U.S. Geological Survey, Pensacola, Florida.

Davis, S.M., and J.C. Ogden. 1994. Introduction. Chapter 1 *in* S.M. Davis and J.C. Ogden, editors. Everglades: The ecosystem and its restoration. St. Lucie Press, Boca Raton, Florida.

Duever, M.J., J.F. Meeder, L.C. Meeder, and J.M. McCollum. 1994. The climate of south Florida and its role in shaping the Everglades ecosystem. Chapter 9 *in* S.M. Davis and J.C. Ogden, editors. Everglades: The ecosystem and its restoration. St. Lucie Press, Boca Raton, Florida.

Florida Game and Fresh Water Fish Commission (GFC). 1983. Everglades emergency deer hunt controversy. In-house report, Florida Game and Fresh Water Fish Commission, West Palm Beach. 29 pp.

Gawlik, D.E. (editor). 1999. South Florida wading bird report, Vol 5 (1): 1-18.

Gawlik, D.E. 2002. The effects of prey availability on the numerical response of wading birds. Ecological Monographs 72(3): 329-346.

Gawlik, D.E., and D.A. Rocque. 1998. Avian communities in bayheads, willowheads, and sawgrass marshes of the central Everglades. The Wilson Bulletin 110(1): 45-55.

Gifford, C.L. 1953. Annual progress report for investigations project as required by Federal Aid in Fish and Wildlife Restoration Acts: Everglades impoundment investigation. Report dated July 1, 1953, for Project No. W-39-R. 30 pp.

Goodrick, R.L. 1974. The wet prairies of the northern Everglades. Pages 47- 51 *in* P.J. Gleason, editor. Environments of south Florida: Present and past. Miami Geological Society, Memoir 2. Miami, Florida.

Guerra, R. 1997. Effects of the 1994 and 1995 high water event on tree islands in Conservation Area 3A South. In-house report dated January 1997, Florida Game and Fresh Water Fish Commission, West Palm Beach, Florida. 20 pp.

Gunderson, L.H. 1994. Vegetation of the Everglades: Determinants of community compostion. Chapter 13 *in* S.M. Davis and J.C. Ogden, editors. Everglades: The ecosystem and its restoration. St. Lucie Press, Boca Raton, Florida.

Gunderson, L.H., and J.R. Snyder. 1994. Fire patterns in the southern Everglades. Chapter 11 *in* S.M. Davis and J.C. Ogden, editors. Everglades: The ecosystem and its restoration. St. Lucie Press, Boca Raton, Florida.

Heisler, I.L., D.T. Towles, L.A. Brandt, and R.A. Pace. 2002. Tree island vegetation and water management in the central Everglades. Chapter 9 *in*: A. van der Valk and F.H. Sklar, editors. Tree islands of the Everglades, Kluwer Academic Publishers, Boston Massachusetts.

Karunaratne, L.B., P.C. Darby, and R.E. Bennets. 2006. The effects of wetland habitat structure on Florida apple snail density. Wetlands 26(4): 1143-1150.

Light, S.S., and J.W. Dineen. 1994. Water control in the Everglades: A historical perspective. Chapter 4 *in* S.M. Davis and J.C. Ogden, editors. Everglades: The ecosystem and its restoration. St. Lucie Press, Boca Raton, Florida.

MacDonald-Beyers, K., and R.F. Labisky. 2005. Influence of flood waters on survival, reproduction, and habitat use of white-tailed deer in the Florida Everglades. Wetlands 25(3): 659-666.

Mitchell, D.P. 2010. Everglades and Francis S. Taylor Wildlife Management Area Miami Canal bird survey, spring 2010. Internal report, Florida Fish and Wildlife Conservation Commission, Sunrise, Florida. 11 pp.

Oronato, D.P., M. Criffield, M. Lotz, M. Cunningham, R. McBride, E.H. Leone, O.L. Bass, Jr., and E.C. Hellgren. 2011. Habitat selection by critically endangered Florida panthers across the diel period: Implications for land management and conservation. Animal Conservation 14: 196-205.

RECOVER (Restoration Coordination and Verification). 2007. Development and application of comprehensive Everglades Restoration Plan system-wide performance measures. RECOVER is an interagency team "responsible for linking science and the tools of science to a set of system-wide planning, evaluation, and assessment tasks" associated with CERP. Report is dated October 17, 2007, and is available at http://www.evergladesplan.org/pm/recover/perf_systemwide.aspx. Accessed on September 18, 2013.

Robertson, W.B., Jr., and P.C. Frederick. 1994. The faunal chapters: Contexts, synthesis, and departures. Chapter 28 *in* S.M. Davis and J.C. Ogden, editors. Everglades: The ecosystem and its restoration. St. Lucie Press, Boca Raton, Florida.

Rodgers, J.A., Jr., H.W. Kale, and H.T. Smith (editors). 1996. Rare and endangered biota of Florida. Volume V. Birds. University Press of Florida, Gainesville, Florida. 688 pp.

Schortemeyer, J.L. 1980. An evaluation of water management practices for optimum wildlife benefits in Conservation Area 3A. Game and Fresh Water Fish Commission, Ft. Lauderdale, June 1980. Approved by the Game and Fresh Water Fish Commission on May 23, 1980, as its position for transmission to the U.S. Army Corps of Engineers for restoration of the historic vegetation of the Everglades and its native fish and wildlife. 74 pp. + 2 unpaginated appendices.

Schortemeyer, J. 1999. Everglades fish and wildlife conservation. Memorandum dated September 7, 1999, to Tim Coughlin, Florida Fish and Wildlife Conservation Commission.

Towles, D.T. 2009. Extreme high water effects on Everglades plant and animal communities. Unpublished PowerPoint presentation to the RECOVER team. 33 slides.

U.S. Fish and Wildlife Service (USFWS). 2010. USFWS multi-species transition strategy for Water Conservation 3A. Draft document dated July 1, 2010. USFWS, Vero Beach, Florida. 32 pp. + 2 appendices, paginated separately.

Wallace, H.E. 1960. Recommended program for Conservation Area 3. Report W-39-R under the Federal Aid in Fish and Wildlife Restoration Act, Florida Game and Fresh Water Fish Commission, Vero Beach. 22 pp. + 3 apppendices, paginated separately.

Wetzel, P.R., T. Pinion, D.T. Towles, and L. Heisler. 2008. Landscape analysis or tree islands vegetation in Water Conservation Area 3, Florida Everglades. Wetlands 28(2): 276-289.

Worth, D.F. 1988. Environmental response of WCA-2A to reduction in regulation schedule and marsh drawdown. South Florida Water Management District Technical Publication #88-2. 55 pp.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

January 20, 2017

Mr. Chris Stahl
Coordinator, Florida State Clearinghouse
Florida Department of Environmental Protection
2600 Blair Stone Road, M.S. 47
Tallahassee, FL 32399-2400

Subject: SFWMD Review of USACE Supplemental Environmental Assessment and Proposed Finding of No Significant Impact, G-3273 Constraint Relaxation / S-356 Field Test and S-357N Revised Operational Strategy: Increment 1 Plus (Increment 1.1 / 1.2)

Dear Mr. Stahl:

The South Florida Water Management District (SFWMD) has reviewed the subject Environmental Assessment dated December 2016. Our comments are summarized below.

1. Main Document - Environmental Assessment

   A. Page 1-9, last paragraph: The current Environmental Assessment lists the estimated completion date for construction of the S-357N structure as January 2017. This should be updated to reflect the current estimated completion date of March or April 2017.

   B. Pages 2-7, 2-8 and 2-9, Table 2-3: To accurately describe the early dry season operations time frame based on the modeling runs titled R2H, INCR1H, INCR2H and INCR2H2 that is currently stated in the EA document as "Early dry season operations (September-December) being informed by SFWMD South Dade Investigation Workshops". We suggest correcting this statement to say "Early dry season operations (August-December) being informed by SFWMD South Dade Investigation Workshops." Alternative C descriptions on page 2-34 should also be updated accordingly.

   C. Page 4-21, last paragraph and Page 4-40, next to last paragraph: Both paragraphs include a generic phrase stating "... the SFWMD proposed connection of from S-200 to Taylor Slough". For clarification, SFWMD proposes to establish the connection between S-200 and Taylor Slough by constructing a new culvert structure between the C-200 Header Channel and the L-31W Canal. This new structure will be named G-737 and will be operated in accordance with

the operating plan associated with the permit to be issued by FDEP. Suggest that this clarification be added to the text in these paragraphs.

D. Page 4-21, second paragraph: The last sentence of this paragraph states: "Monitoring will need to be conducted to characterize the water quality of these new discharges into the ENP to determine if the current compliance monitoring point (S-332D) needs to be shifted to or include in the S-328 flows". SFWMD recommends that this sentence be deleted.

2. Appendix A – Operational Strategy

A. Table 1, Page A.1-26 and Page A.1-32, paragraph d): Both of the referenced pages include a statement indicating that construction of the three plugs in the L-31W Canal between S-328 and the L-31W gap must be completed prior to initial operation of S-328. Neither the Section 404 permit issued by USACE to SFWMD for the L-31W plug and levee work (Permit Number SAJ-2016-02186) or the Ninth Amended Emergency Final Order to Operate the S-332B, S-332C, S-332D Pump Stations and Appurtenant Structures (File No. OGC Case Nos. 00-0880 and 99-2242) require construction of the plugs prior to operating S-328. SFWMD is agreeable to having the L-31W plugs in place consistent with the District's proposed Florida Bay plan and associated schedule and recommends revising the language on both referenced pages to reflect this.

B. Table 1, Page A.1-27, first paragraph: SFWMD has concerns with the current text that limits the time frame during which water can be delivered and places a constraint that S-177 must be maintained above 3.2 feet NGVD with the restriction of supplemental water deliveries through S-177 during the August 1 to February 14 time period. This limits the District's ability to release water to meet the upstream needs of more favorable hydroperiods for the Cape Sable Seaside Sparrow nesting from February to July. Suggest revising the last sentence to read: "Releases to Manatee Bay through S-177 are limited to a maximum of 250 cfs and require that the daily average stage at S-177 HW be maintained at or above 2.8 ft. NGVD".

C. Page A.1-10, last paragraph: The following sentence should be updated to reflect the current implementation schedule: "It is expected that Increment 1.1/1.2 operation will begin in the November-December 2016, which is well past the start of the May 1 through April 30 water quality reporting year."

D. Table 1, Page A.1-17, last line: Suggest that this sentence be changed from "DOI Sandbag culverts under Tram Road by February 1 if necessary" to "DOI to install sandbags to prevent flow through culverts under ENP Tram Road".

E. Table 1, Page A.1-21, G-211 Row: Change the note from "Note: If S-331 pumping is limited and the G-211 tailwater rises above 5.3 feet, NGVD then close G-211"

to "Note: If S-331 pumping is limited, LPG2 > 5.5 and the G-211 tailwater rises above 5.3 feet, NGVD, then close G-211".

F. Table 1, Page A.1-21, S-338 Row: Change the maximum of the operating range from "5.8 feet NGVD" to "6.0 feet NGVD".

G. Table 1, Page A.1-23, S-331 Row: Change from "When LPG2 < 5.5 then water manager may use any operation range as long as the bottom of the range is at or above 5.0 ft, NGVD (e.g. 5.5 to 6.0)" to "When LPG2 < 5.5 then water manager may use any operation range as long as the bottom of the range is at or above 5.0 ft, NGVD (e.g. 5.5 to 6.0) when pumping at S-331 and above 4.8 when siphoning at S-331. There is no stage requirement when water supply deliveries are being made through G-211."

H. A.1-38, Subparagraph I: This section is inconsistent with the first portion of the paragraph marked with an asterisk on the previous page, which allows discharge of accumulated water until August 15. If the intent is to completely stop Column 2 operations after July 14th if WCA-3A is below the Increment 1 High Water Line, then some editing is required. Suggest replacing the current language with the following:

> "S-334 will not be used after 14 July during periods when the WCA-3A stage is below the Increment 1 Action Line. S-334 may be used to discharge accumulated water from 15 July through 14 August if WCA-3A stage is above the Increment 1 Action Line. Regardless of conditions within WCA-3A or any residual WCA-3A storage deficit balance, the use of S-334 to deliver a portion of WCA-3A regulatory releases to the SDCS will be discontinued on 15 August. The WCA-3A storage deficit balance resultant from the S-12 closures, if applicable for the prior period from 1 November through 14 July, will zero-out on 15 August and will preclude a balance carryover into the next year."

I. Page A.1-43, first partial paragraph: Revise this paragraph to read, "Both operational experience and modeling conducted under the 2015-2016 SFWMD South Dade Investigation study show that an abrupt shut down of S-332B, S-332C, and S-332D when water levels decline in the early dry season below the flood control level causes flow to Taylor Slough from S-332D to end abruptly, undesirable recession rates in ENP and undesirable seepage to the east. The following bullets describe objectives that the additional operational flexibility will be used to meet and criteria to ensure that the use of the operational flexibility does not have unintended impacts:

3. Appendix C – Monitoring Plan

A. Page C.1-32, Section C.1.7.2.1 and Table C.1-3: Stations TAMBR1 and TAMBR4 were renamed L29C1 and L29C4, respectively (DBHydro station names). Monitoring began at these two stations in 2015; they replaced L-29 canal sites just upstream of Tamiami Trail culverts that became unsafe to monitor due to the construction of the one-mile bridge. This section and table should be updated to use the current nomenclature.

B. Page C.1-50, Section C.1.9.1, fifth sentence: This sentence currently reads: "Most of the surface water quality that is specific to the Increment 1.1 /1.2 test is currently scheduled to be conducted by the SFWMD though this is subject to negotiations with ENP". SFWMD and ENP entered into a five-year cooperative agreement (June 2015 – June 2020), "Cooperative Monitoring, Assessment and Modeling to Support Everglades Restoration: Incremental Testing of G-3273 Constraint Relaxation / S-356 and S-357N Operation and Development of a Combined Operational Plan". This Cooperative Agreement covers additional monitoring of surface water and groundwater quality monitoring identified in the Monitoring Plan. SFWMD suggests that this sentence be revised to reflect the active status of the SFWMD-ENP Cooperative Agreement.

C. Page C.2-37, Table C.1-3, last row: SFWMD recommends deleting the S-328 structure row from this table since no agency has been identified for collecting or analyzing water quality samples. Monitoring of this structure will be considered in other forums.

SFWMD is committed to working with the USACE and Everglades National Park to complete the remaining incremental test operations of the Field Test and completion of the Modified Water Deliveries to Everglades National Park Project.

Sincerely,

Peter Antonacci
Executive Director

PA/rb

SFWMD Review of USACE Supplemental Environmental Assessment
and Proposed Finding of No Significant Impact,
G-3273 Constraint Relaxation / S-356 Field Test
and S-357N Revised Operational Strategy:
Increment 1 Plus (Increment 1.1 / 1.2)

Additional Minor comments

Section/ Page	Comment
1-3	In Figure 1-1 cannot distinguish MWD features (C-358, S-357N, S-357); suggest including an insert.
1-44,46	S-357N is described as a gated culvert for the first time in the documents on page 44. On page 46 in the Example of Test Phase section, it is apparent that flow through S-357N will be affected by lowering (instead of raising) gate(s): "The three upper (weir) gates at S-357N should be opened (lowered) one foot from about 6.5 feet to 5.5 feet". This important feature may result in more favorable water quality conditions downstream as weir flow is less likely to have sediment or turbidity concerns that if the gate were opened from the bottom.
1-19	Sentence "Increment 2 will increase the L-29 Canal operating constraint up to 7.8 feet" is paradoxical. Use text similar to that on page 1-13 and say "Increment 2 will relax the L-29 operating constraint..." The phrase "constraint relaxation" is used in the title of the document.
1-22	Change "G-3273 stage criteria" to "G-3273 stage constraint" to be consistent ("constraint" is used in the next bullet).
2-34	Replace "G-3272" with "G-3273" in Alternatives B and C titles
3-18	In Section 3.12, Water Quality, sentence "Water is not normally allowed to be directly routed from Lake Okeechobee and EAA runoff to the WCA's" is unclear and needs to be revised. Remove apostrophe from "WCA's".
3-18	In Section 3.12, suggest rewriting sentence "STAs have been designed, constructed and operated for flood control purposes and also to reduce phosphorous (sic) concentrations in runoff from the EAA and regulatory releases from Lake Okeechobee that discharges into the WCAs" to "Everglades Stormwater Treatment Areas (STAs) were constructed to reduce total phosphorus from surface water runoff and releases from Lake Okeechobee"; "phosphorous" is misspelled; should be "phosphorus" (noun); "phosphorous" is an adjective. Not all Lake O releases sent south to the STAs are regulatory releases.
3-19	"phosphorous" is misspelled
4-3, 4-7	In light of the first two anticipated hydrologic effects Increment 1 is anticipated to have within NESRS relative to the 2012 Water Control Plan (64% increase in # days of WCA-3A unconstrained discharges and an increase in frequency and duration of L-29 Canal stage), is there an explanation why there is virtually no increase in average annual hydroperiod comparing Increment 1 and ERTP (Figure 4-4) in most of NESRS?
4-15	Figure 4-8, "gaguge" misspelled
4-23	Last paragraph, sentence that begins with "In response to concerns..." insert ""first" after "including:" and insert "then" after "temporary pumps and".

Section/ Page	Comment
4-23	The placement of a berm around the western end of the C-358 Canal was to prevent surface water from entering the C-358 canal.
4-23	Modify sentence as follows: "Based on the demonstrated ability of these measures to maintain flood mitigation requirements for the 8.5 SMA, the Corps completed construction of a temporary bypass connection between the C-358 Canal and the C-357 Canal in order to maintain this level of service during construction of S-357N".
A.1-5	Third full paragraph, last sentence refers to conditions to allow transition to 1.2 in Section 3.0., which covers WQ. Probably meant to refer to 4.0.
A.1-11	Last sentence on page 11 indicates operational flexibility applies to all structures identified in Section 12. A section 12 was not found in the document.
A-1-11 to 13	Section 4.0 could benefit from better organization and each paragraph focusing on a single topic. This section covers Increment 1.1/1.2 together and each increment individually which makes it confusing.
A.1-29	Rename Sections 4.2 and 4.3 to something like "Revised/Unvarying Conditions of Increment 1.1/1.2 Field Test". The operational strategy is the result of the new or unvaried conditions. Plus the operating strategy includes four condiitons.so it could be clearer.
1.25	May want to add Contract 8A permit to this list
4-64	Table 4-3 may want to add the SFWMD proposed actions to increase flows towards Taylor Slough
1-3	Figure 1-1: suggest using "CERP - C-111 Spreader Canal Western Project " in the legend for red areas (S200, S199 and Frog Pond areas); suggest showing S-333 and S-334 as MWD components (light blue);
1-4	"A design refinement for the 8.5 SMA and EA was completed in August of 2012 (USACE 2012a)." - Suggest showing a figure with details before and after the refinements.
1-21	Suggest adding Contract 8 features explicitly in Figure 1-5 (similar to CNT 8A)
2-7 ~2-9	Table 2-3, 2-4 :For R2H, INCR1H and INCR2H scenarios, suggest excluding the comment "includes lower some coastal operating ranges", Because there's no change has been made in modeling for coastal operating ranges. A slight modification was made for S-148 ops which is not a coastal structure.
2-17 ~2-18	Figure 2-7, 2-8 - ROUND 1 and 2 Modeling instead of ROUND 1 Modeling
2-21	Table 2-5 : suggest not including any numbers in INCR1B and INCR1H columns outside highlighted in yellow to avoid confusion. Suggest adding CSSS-A (Expanded) or CSSS-Ax to match with text
2-28	Table format is confusing.
2-35	2.1.5 "Alternative D represents a combination of simulations INCR1B and R2H conducted for purposes of ESA consultation for the 2016 ERTP BO" Suggest changing to "Alternative D represents a combination of simulations INCR1B and INCR1H conducted for purposes of ESA consultation for the 2016 ERTP BO plus raising L-29 canal maximum stage to 7.8ft"
2-31	2012 WCP has no relevant ops, but confusing for the reader
2-39	Table 2.9: a) suggest adding units (ft, NGVD) for the table. For R2H for SDCS heading, b) suggest adding "Operating range" c) For S177HW, suggest adding definition of high and medium rainfall or 14 day rainfall

Section/ Page	Comment
2-39	Table 2.9: a) correct S338 R2H outside CSSS nesting period data from "Column1: 4.8-5.5; Column2: 4.3-4.8" to "Column1: 5.5-5.8; Column2: 5.4-5.0" b) correct S176HW, inside CSSS nesting period data from "Column2: 4.7-4.9" to "Column1: 4.75-5.0; Column2: 4.7-4.9"; c) correct S176HW, outside CSSS nesting period data from "Column1: 4.75-5.0" to "Column1: 4.75-5.0; Column2: 4.7-4.9"
1-9	Line 8: replace "S-35" with "S-356".
1-14	Penultimate line: replace "Increment 11.1" with "Increment 1.1"
A.1-8	Missing "r" in required; Increment 1.1/1.2 will provide increased operational flexibility of the C-111 South Dade detention areas to allow the detention areas to respond to expected fluctuations in water the levels in eastern ENP
A.1-10	Revise sentence in first paragraph to include "from" stages: raise L-29 constraint from 7.5 to 7.8 by March 1, 2017; raise L-29 constraint from 7.8 to 8.5 by March 1, 2018.
A.1-11	Suggest rewording the following sentences: "During supplemental deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay, it is expected that except during relatively dry conditions with typical seasonal rainfall patterns S-356 will be used less in Increment 1.1 than expected in Increment 1".
A.1-12	Suggest rewording the following sentence: At a minimum, S-333, S-334, S-356, S-197, and S-357N will be utilized, as well as S-332B, S-332C, S-332D, S-194, S-196, S-176 and S-177 as identified in Table 1".
A.1-15 Column 1	Suggest revising sentence from: "When in Zone A S-12s, S-333, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s open full, S-151 make discharges to the East Coast and ENP-SDCS as needed and make maximum allowable discharge when WCA- 3B stage (Site 71) is below 8.5 feet, NGVD. S-343A&B and S-344, if non-nesting season (15 July through 30 September), make maximum allowable discharge if downstream conditions permit" to "When in Zone A From 15 July through 30 September (outside of the CSSS nesting season) S-12s, S-333, S-343A, S343B, and S-344 open to make maximum allowable discharges. During the CSSS nesting period S-12A, S-12B, S-343A, S343B, and S344 are closed as prescribed in the following sections. Year round S-151 may be used to discharge water for water supply, to WCA-3B if Site 71 is below 8.5 feet NGVD, or to tide through S-31 if downstream conditions allow, or any combination thereof".
A.1-15 Column 2	Suggest revising sentence from: "When in Zone A S-12s, S-333, S-343A&B, and S-344 subject to conditions in Table 1, otherwise, S-12s open full, S-151 make discharges to the East Coast and ENP-SDCS as needed and make maximum allowable discharge when WCA-3B stage (Site 71) is below 8.5 feet, NGVD. S-343A&B and S-344, if non-nesting season (15 July through 30 September), make maximum allowable discharge if downstream conditions permit" to "When in Zone A From 15 July through 30 September (outside of the CSSS nesting season) S-12s, S-333, S-343A, S343B, and S-344 open to make maximum allowable discharges. During the CSSS nesting period S-12A, S-12B, S-343A, S343B, and S344 are closed as prescribed in the following sections. Year round S-151 may be used for 1) water supply releases, 2) regulatory discharges to WCA-3B if Site 71 is below 8.5 feet NGVD, 3) regulatory discharges to tide through S-31 if downstream conditions allow, or 4) any combination thereof. Discharge to L-31N and C-111 via S344 following the criteria described in the following sections".

Section/ Page	Comment
A.1-16 Rainfall Plan	Suggest revising sentence from "Rainfall Plan located in Table 7-1 of the 2012 Water Control Plan. Operational intent is to maximize discharge capacity from S-333 prior to utilization of the S-12s, subject to conditions below. Rainfall Plan target distribution through S-333 may exceed 55% of the Rainfall Plan target" to "Rainfall Plan located in Table 7-1 of the 2012 Water Control Plan. Operational intent is to maximize discharge capacity from S-333 prior to utilization of the S-12s, subject to conditions below. When S-12s capacity is required the structure should be opened from east to west. Rainfall Plan target distribution through S-333 may exceed 55% of the Rainfall Plan target".
A.1-19 S-333	Change "Follow the same constraints as S-333. Open whenever hydraulic gradient allows southerly flow" to "Follow the same constraints as S-333. Open whenever the available hydraulic gradient allows meaningful flow south with low risk of backflow (flow north)".
A.1-20 S-356	Change "When supplemental water deliveries are being delivered through S-334 are being made and they by themselves or in combination with local rainfall result in S-356 pumping to maintain the canal range, the supplement delivery will be stopped by closing S-334 by the next business day or sooner. Supplemental water can be delivered to Taylor Slough through S-151, S337, S-335 while S-356 is operating" to "When supplemental water deliveries are being delivered through S-334 and they by themselves or in combination with local rainfall result in S-356 pumping to maintain the canal range below the top of the range, the supplement delivery will be stopped by closing S-334 by the next business day or sooner. Supplemental water can be delivered to Taylor Slough through S-151, S337, S-335 while S-356 is operating".
A.1-20 S-337	Change from "Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337Taylor Slough, Florida Bay, and Manatee Bay" to "Supplemental Deliveries up to 250 cfs to Taylor Slough, Florida Bay, and Manatee Bay as measured at S-334 or S-337".
A.1-22 S-357	Change to: When S-357 pump station is restricted due to the construction of the flow way berms inside the 8.5 SMA detention the following constraints for flow into NESRS will be used to maintain the flood mitigation for 8.5 SMA. 1. If no S-357 units are available a G-3273 constraint of 6.8 ft, NGVD will be used for S-333 and S-356. 2. If one S-357 unit is available a G-3273 constraint of 6.9 ft, NGVD will be used for S-333 and S-356. 3. If two S-357 units are available a G-3273 constraint of 7.0 ft, NGVD will be used for S-333 and S-356.
A.1-23 S-331	Delete redundant last sentence. Change from "Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee It is the expectation that supplemental deliveries will not cause prolonged pumping with two or more units at S-331. When LPG2 < 5.5 then water may use any operation range as long as the manager bottom of the range is at or above 5.0 ft, NGVD (e.g. 5.5 to 6.0)" to "Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee It is the expectation that supplemental deliveries will not cause prolonged pumping with two or more units at S-331".
A.1-24	Change "S-331, 2A) use of S194 and S-196…" to "S-331, 2) use of S-194 and S-196…."

Section/ Page	Comment
A.1-26 S-176	Delete first line of text, "Operating Range from 4.7 to 4.9 Feet, NGVD"
A.1-29,30	Further indent bullets A) and B) as they are sub-bullets or make them part of the previous bullet
A.1-35 S-197	Correct table reference, from "Tables 3A and 3B" to "Tables 2A and 2B".
A.1-43 First bullet	Change "holding short term holding" to "short-term holding".

DRAFT