

October 2017

Environmental Assessment and Finding of No Significant Impact

EMERGENCY DEVIATION TO AFFECT RELIEF OF
HIGH WATER LEVELS WITHIN WATER
CONSERVATION AREA 3A AND THE SOUTH
DADE CONVEYANCE SYSTEM POST HURRICANE
IRMA AND PLANNED DEVIATION TO AFFECT
RELIEF OF HIGH WATER LEVELS WITHIN WATER
CONSERVATION AREA 3A

Broward and Miami-Dade Counties, Florida



**US Army Corps
of Engineers** ®
Jacksonville District

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FINDING OF NO SIGNIFICANT IMPACT

EMERGENCY DEVIATION TO AFFECT RELIEF OF HIGH WATER LEVELS WITHIN WATER CONSERVATION AREA 3A AND THE SOUTH DADE CONVEYANCE SYSTEM POST HURRICANE IRMA AND PLANNED DEVIATION TO AFFECT RELIEF OF HIGH WATER LEVELS WITHIN WATER CONSERVATION AREA 3A

BROWARD AND MIAMI-DADE COUNTY, FLORIDA

I have reviewed the Environmental Assessment (EA) for the Proposed Action. This Finding incorporates by reference all discussions and conclusions contained in the EA enclosed hereto. Operations in the project area are currently governed by the Modified Water Deliveries to Everglades National Park Project G-3273 Constraint Relaxation/S-356 Field Test and S-357N Revised Operational Strategy Increment 1 Plus (Increment 1.1 and 1.2; hereafter referred to as MWD Increment 1 Plus), which is a deviation to the 2012 Water Conservation Areas, Everglades National Park and Everglades National Park to South Dade Conveyance System Water Control Plan (2012 Water Control Plan). The EA and Finding of No significant Impact (FONSI) for that action is dated February 16, 2017.

The U.S. Army Corps of Engineers (Corps), Jacksonville District, initiated an emergency deviation on September 15, 2017 from MWD Increment 1 Plus and the 2012 Water Control Plan in order to provide high water relief for Water Conservation Area 3A and the South Dade Conveyance System in the wake of Hurricane Irma. These emergency deviation actions will be in effect until the WCA 3A 3-station gage average (3 AVG) reaches the bottom of Zone A of the WCA 3A Regulation Schedule. In addition, the Corps also proposes to initiate a planned temporary deviation to further mitigate for stages within WCA 3A. The planned temporary deviation includes delayed closure of the S-12A, S-12B, S-343A, S-343B and S-344 structures until the WCA 3 three gage average falls below the MWD Increment 1 Action Line or January 1, 2018. The WCAs are flooding in a manner that inundates tree islands and other wildlife habitat, and if sustained will negatively impact birds and mammals dependent on that habitat. If the rate of rise is not mitigated to limit the prolonged duration of high water conditions, there is potential for these high water levels to pose greater risks to valuable natural resources, public health, safety or welfare as the wet season and hurricane season continue due to reduced flood storage.

Emergency water management actions implemented on September 15, 2017 with the approval of the Corps' South Atlantic Division include: 1) raising the current 7.5 feet National Geodetic Vertical Datum (NGVD) of 1929 maximum operating limit in the L-29 Canal up to 8.5 feet NGVD until the WCA-3 gage average stage falls below Zone A of the WCA 3A Regulation Schedule. 2) use of the S-356 structure (up to 500 cfs) to provide flood relief along L-31N Canal between structures S-335 and G-211 along the eastern side of Everglades National Park; and 3) use of S-357 (up to 575 cubic feet per second, cfs) to provide flood mitigation to the 8.5 Square Mile Area (SMA) due to excessive seepage from high water levels within Northeast Shark River Slough; 4) continued implementation of the June 2017 WCA 3A Planned Temporary Deviation (on-going); and 5) continued implementation of July 2017 WCA 2A Planned Temporary Deviation (on-going). These deviations are expected to continue until the WCA 3A 3 AVG average reaches the bottom of Zone A of the WCA 3A Regulation Schedule. The proposed planned temporary deviation includes delayed closure of the S-12A, S-12B structures and reopening of the S-343A, S-343B and S-344 structures until the WCA 3A, 3-AVG falls below the MWD Increment 1 Action Line or January 1, 2018, whichever comes first. The proposed planned temporary deviation components are being coordinated with the U.S. Fish and Wildlife Service under provisions of the 2016 Everglades Restoration Transition Plan Biological Opinion.

The emergency deviation and proposed planned temporary deviation were coordinated with various federal and state agencies as well as federally-recognized tribes. Emergency consultation pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended, is on-going with the U.S. Fish and Wildlife Service.

Based on information analyzed in the EA, reflecting pertinent information obtained from agencies having jurisdiction by law and/or special expertise, I conclude that the Proposed Action will not significantly affect the quality of the human environment and does not require an Environmental Impact Statement. Reasons for this conclusion are in summary:

- a. Under provisions of emergency consultation the Corps has determined that the Proposed Action may affect, but is not likely to adversely affect, the endangered Cape Sable seaside sparrow, endangered Everglade snail kite and wood stork if component 4 (delayed closure of S-12A, S-12B, and reopening of S-343A, S-343B and S-344) is not implemented. If the planned temporary deviation is implemented, the Corps concludes that the action may affect Cape Sable seaside sparrow and will initiate formal consultation under the ESA. Delayed closure of S-12A, S-12B and reopening of S-343A, S-343B and S-344 structures will not be implemented as part of this deviation until the Jacksonville District receives approval from its South Atlantic Division.
- b. The Corps has determined that the Proposed Action is consistent to the maximum extent practicable with the enforceable policies of Florida's approved Coastal Zone Management Program.
- c. The Proposed Action has been coordinated with the Florida State Historic Preservation Officer and the appropriate federally recognized Tribes in accordance with the National Historic Preservation Act and consideration given under the National Environmental Policy Act. The Corps has determined that the Proposed Action will have no adverse effect on historic properties eligible or potentially eligible for the National Register of Historic Places. The State Historic Preservation Officer has concurred with the determination of no adverse effect. The Seminole Tribe of Florida do not object to the Proposed Action. No formal comments have been received from other interested parties.
- d. The Proposed Action is not anticipated to adversely affect water quality and water quality certification has been waived. The Florida Department of Environmental Protection issued an Emergency Final Order on June 23, 2017 and an amended Emergency Final Order on August 4, 2017 waiving water quality certification for those activities authorized by this Emergency Final Order. The Proposed Action is in compliance with the Clean Water Act.
- e. The Proposed Action will maintain the authorized purposes of the Central and Southern Florida Project, including flood control, water supply for municipal, industrial, and agricultural uses, prevention of saltwater intrusion, water supply for Everglades National Park, and protection of fish and wildlife.
- f. The Corps completed this EA in accordance with ER 200-2-2 to address the federal action of the emergency water management actions implemented September 15, 2017 and to consider environmental consequences associated with the proposed planned temporary deviation to the water control plan (delayed closure of S-12A, S-12B, and reopening of S-343A, S-343B and S-344) to address immediate concerns with high water levels within WCA 3A. The signed FONSI will be circulated for public review. The Corps may generate a supplemental EA as necessary to

discuss and disclose any additional effects to the human environment that may not have been addressed within this EA.

In view of the above and the attached EA, and after consideration of coordination with federal and state agencies and tribal representatives, I conclude that the Proposed Action would not result in a significant effect on the human environment. This FONSI incorporates by reference all discussions and conclusions contained in the EA enclosed herewith.

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JASON A. KIRK, P.E.
Colonel, U.S. Army
District Commander

7 October 2017
Date

**ENVIRONMENTAL ASSESSMENT
ON
EMERGENCY DEVIATION TO AFFECT RELIEF OF HIGH WATER LEVELS WITHIN
WATER CONSERVATION AREA 3A AND THE SOUTH DADE CONVEYANCE SYSTEM
POST HURRICANE IRMA AND PLANNED DEVIATION TO AFFECT RELIEF OF HIGH
WATER LEVELS WITHIN WATER CONSERVATION AREA 3A**

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ENVIRONMENTAL ASSESSMENT

EMERGENCY DEVIATION TO AFFECT RELIEF OF HIGH WATER LEVELS WITHIN WATER CONSERVATION AREA 3A AND THE SOUTH DADE CONVEYANCE SYSTEM POST HURRICANE IRMA AND PLANNED DEVIATION TO AFFECT RELIEF OF HIGH WATER LEVELS WITHIN WATER CONSERVATION AREA 3A

BROWARD AND MIAMI-DADE COUNTIES, FLORIDA

1.0 PROJECT PURPOSE AND NEED

1.1 PROJECT AUTHORITY

The Central and Southern (C&SF) Project for Flood Control and Other Purposes was initially authorized by the Flood Control Act of 1948, Public Law 80-858, approved June 30, 1948. The remaining works of the Comprehensive Plan were authorized by the Flood Control Act of 1954, Public Law 83-780, approved September 3, 1954. There have been numerous modifications to the original C&SF Project authority. Examples of these modifications specific to this action include the 1992 Modified Water Deliveries to Everglades National Park General Design Memorandum and Environmental Impact Statement, and 1994 C&SF Project General Reevaluation Report and Environmental Impact Statement.

1.2 PROJECT LOCATION

The water management operating criteria relating to the proposed action affects an area within the C&SF Project located in south Florida and includes Lake Okeechobee, the Caloosahatchee and St. Lucie Estuaries, Water Conservation Area 3 (WCA 3), Everglades National Park (ENP), and adjacent areas. Features of the proposed action are located in Broward and Miami-Dade Counties (**Figure 1**).

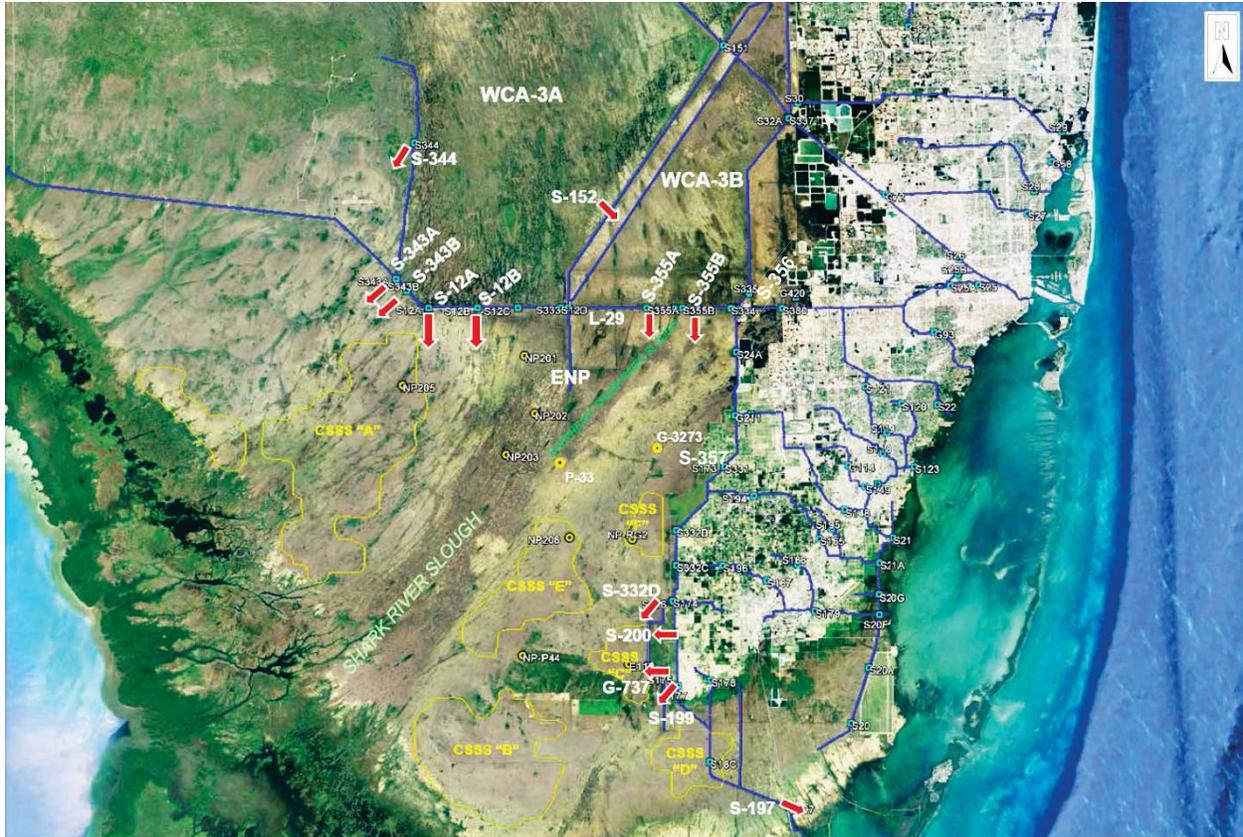


FIGURE 1. PROJECT LOCATION AND RELEVANT C&SF PROJECT FEATURES OF THE MWD PROJECT AND C-111 PROJECTS

1.3 PROJECT NEED OR OPPORTUNITY

The C&SF Project currently functions and was originally authorized to function as a multi-purpose water management system. The Congressionally-authorized purposes of the C&SF Project include flood control, agricultural irrigation, municipal and industrial water supply, preservation of fish and wildlife, water supply to Everglades National Park (ENP), preservation of ENP, prevention of saltwater intrusion, drainage and water control, groundwater recharge, recreation, and navigation. Operations in the project area are currently governed by the Modified Water Deliveries to Everglades National Park (MWD) Project: G-3273 Constraint Relaxation/S-356 Field Test and S-357N Revised Operational Strategy Increment 1 Plus (Increment 1.1 and 1.2); hereafter referred to as MWD Increment 1 Plus, which is a deviation to the 2012 Water Conservation Areas (WCAs), ENP and the ENP to South Dade Conveyance System (SDCS) Water Control Plan (hereafter referred to as the 2012 Water Control Plan). The EA and Finding of No significant Impact (FONSI) for MWD Increment 1 Plus is dated February 16, 2017.

The U.S. Army Corps of Engineers, Jacksonville District (Corps) implemented an Emergency Deviation from the 2012 Water Control Plan and the Modified Water Deliveries to Everglades National Park Project Increment Plus Operational Strategy on September 15, 2017 in order to provide relief from high water stages within Water Conservation Area (WCA) 3A and the SDCS on September 15, 2017 due to Hurricane Irma. Emergency water management activities that were

implemented on September 15, 2017 upon approval of the Corps' South Atlantic Division (SAD) include raising stages in the L-29 Canal up to 8.5 feet National Geodetic Vertical Datum (NGVD) of 1929, increased pumping at the S-356 to provide flood relief along L-31N Canal, increased pumping at S-357 structures to provide flood mitigation to the 8.5 SMA and associated operational changes within the SDCS (refer to Appendix A). In addition to these emergency water management actions, the Corps also proposes to delay closure of the S-12A, S-12B, and reopen the S-343A, S-343B and S-344 structures as further risk reduction measures for WCA 3A natural resources, public health, safety or welfare as the wet season and hurricane season continue due to reduced flood storage. The delayed closures and reopening have not been implemented and they along with the emergency water management actions taken immediately following Hurricane Irma are assessed within this EA.

Hurricane Irma developed on 30 August 2017 off the Cape Verde Islands and rapidly intensified as it moved west across the Caribbean. The storm caused catastrophic damage on several of the Leeward Islands, and made landfall in Florida on September 10, 2017. Relevant emergency orders (Appendix B) for flood relief and other measures were issued as outlined in **Table 1**. Total precipitation associated with Hurricane Irma is included within **Table 2**.

TABLE 1. EMERGENCY ORDERS ISSUED FOR HURRICANE IRMA

Agency	Number	Date
Office of the Governor	Executive Order 17-235	September 4, 2017
Florida Department of Environmental Protection	OGC 17-0990	September 5, 2017
Florida Department of Environmental Protection	OGC 17-0989	September 10, 2017
Federal Emergency Management Agency	82 FR 44196	Declaration: September 5, 2017 Publication: September 21, 2017

TABLE 2. TOTAL PRECIPITATION EXPERIENCED WITHIN C&SF PROJECT ACTION AREA BETWEEN SEPTEMBER 2, 2017 AND SEPTEMBER 23, 2017

Area	Precipitation	% of Average (September 2-25)
East EAA	10.01 inches	216% (average 4.6 inches)
WCA-1 & WCA-2	9.79 inches	205% (average 4.78 inches)
WCA-3	10.71 inches	220% (average 4.87 inches)
Eastern Miami-Dade	9.87 inches	161% (average 6.13 inches)

All areas of South Florida are inundated with water, restricting the ability to safely move water to mitigate the effects of flooding. Immediate action was necessary to deviate from permitted water management practices to move flood water out of the WCAs, and subsequently provide opportunities to move more water south out of the WCAs as well as within the SDCS. Therefore, the Corps initiated an emergency deviation from the approved Water Control Plan on September 15, 2017 for purposes of alleviating high water conditions within the project area. This action was taken to prevent risk to property. The proposed action includes a further planned temporary deviation to further mitigate for severe ecologic and economic losses that could result from prolonged high water levels. Loss of natural resources directly affects fisheries and fishing, seafood harvesting and ecotourism.

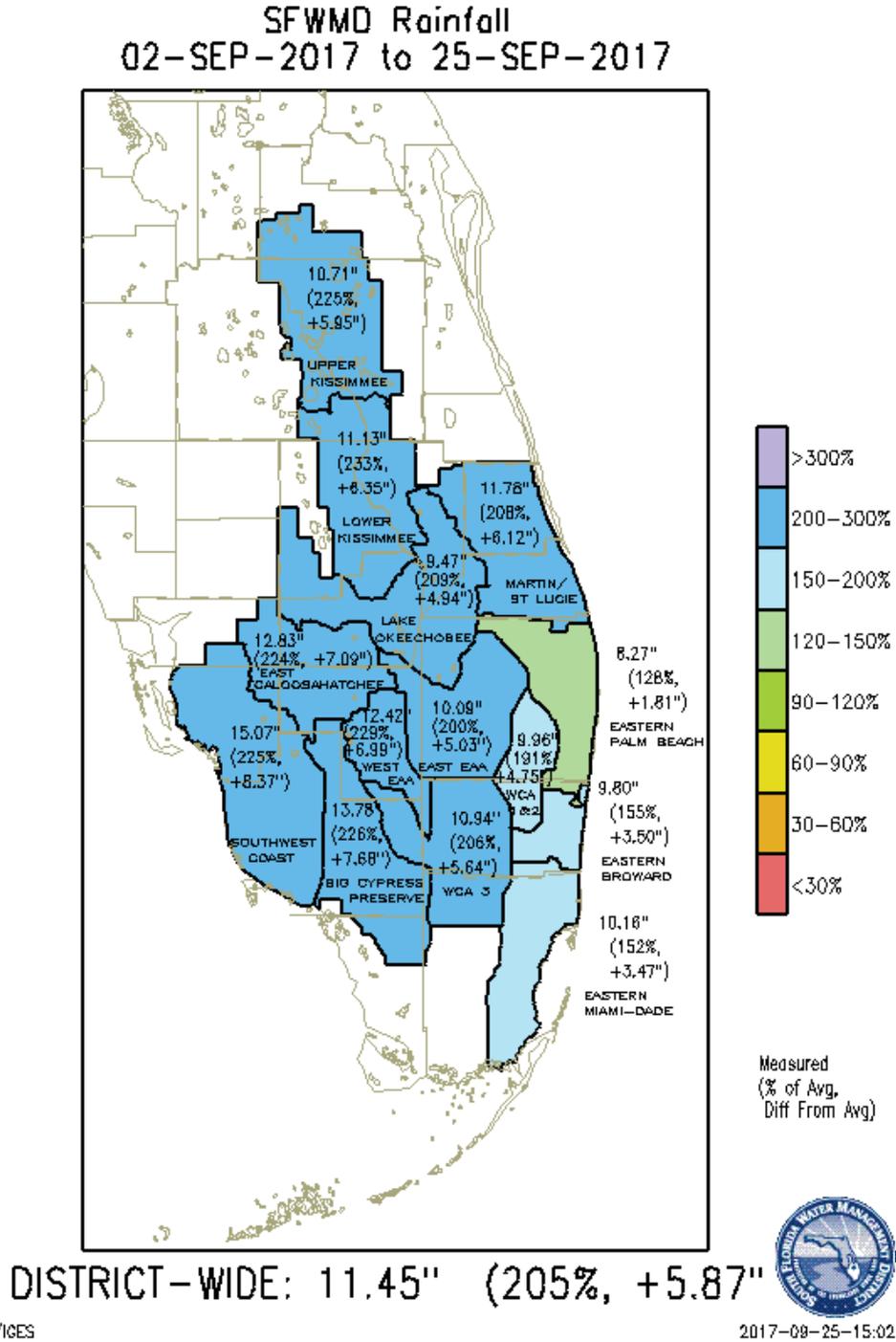


FIGURE 2: PRECIPITATION MAP WITHIN THE PROJECT AREA BETWEEN SEPTEMBER 2 AND SEPTEMBER 25, 2017 (MAP COURTESY OF SOUTH FLORIDA WATER MANAGEMENT DISTRICT).

Due to the unprecedented rainfall during the month of June 2017, as well as Hurricane Irma in September, WCA 2A and WCA 3A are above Zone A of their respective regulation schedules

(**Table 3**). In addition, the EAA, which is located directly north of the WCAs and sends excess water south into the WCAs, has also received a significant amount of rainfall, further exacerbating the rate of rise in the WCAs following Hurricane Irma.

TABLE 3. WCA STAGES COMPARED TO REGULATION SCHEDULE (DATA REFLECTS STAGES ON SEPTEMBER 25, 2017).

Area	Current Stage (feet NGVD)	Regulation Schedule (feet NGVD)	Deviation from Regulation Schedule (feet)
WCA 1	17.07	17.50	-0.43
WCA 2A	14.27	12.87	0.77
WCA 3A	12.11	9.76	2.35

The stages within WCA 3A are the most concerning because environmental constraints and current system capacity limit the volume of water that can be moved out of the system. The WCA 3A regulation schedule is currently above the maximum regulation schedule as shown in **Figure 3** and the maximum exceedance elevation for this time of the year, as shown in **Figure 4**.

Based on consideration of the current approved levee screening risk assessments for WCA 3A, the Corps recommends evaluating and implementing all available and appropriate water management options to immediately lower WCA 3A high water stages when the WCA 3A 3 AVG is forecast to exceed 12.7 feet NGVD. The WCA 3A average stage of 12.7 feet NGVD corresponds to approximately 12.0 feet NGVD at the 3-65 gage location (3A-28), which triggers initiation of semi-weekly high water inspections by the South Florida Water Management District (SFWMD) along the L-28 and L-29 levee segments which border WCA 3A. The WCA 3A average stage of 12.7 feet NGVD also coincides with the period-of-record (1962-2017) high water stage in WCA 3A, and exceedance of this elevation will encroach into the required 2.5 feet of levee freeboard at the low point (el. 14.3 feet., NGVD29) of the L-29 Levee along southern WCA 3A (L-29 Section 2) and increase potential for overwash/overtopping of the U.S. Highway 41 (Tamiami Trail) during storm events. As the stage increases in WCA 3A, there is also increased risk of seepage that could progress to movement of material, need for intervention, and inundation of populated areas east of the L-37 Levee segment of the East Coast Protective Levee (ECPL). The Corps continues to assess risk to the WCA 3A levee system based on consideration of stage projections, direct field observations from the system-wide levee inspections, short-term and intermediate rainfall forecasts, and conditions and trends within the upstream basins.

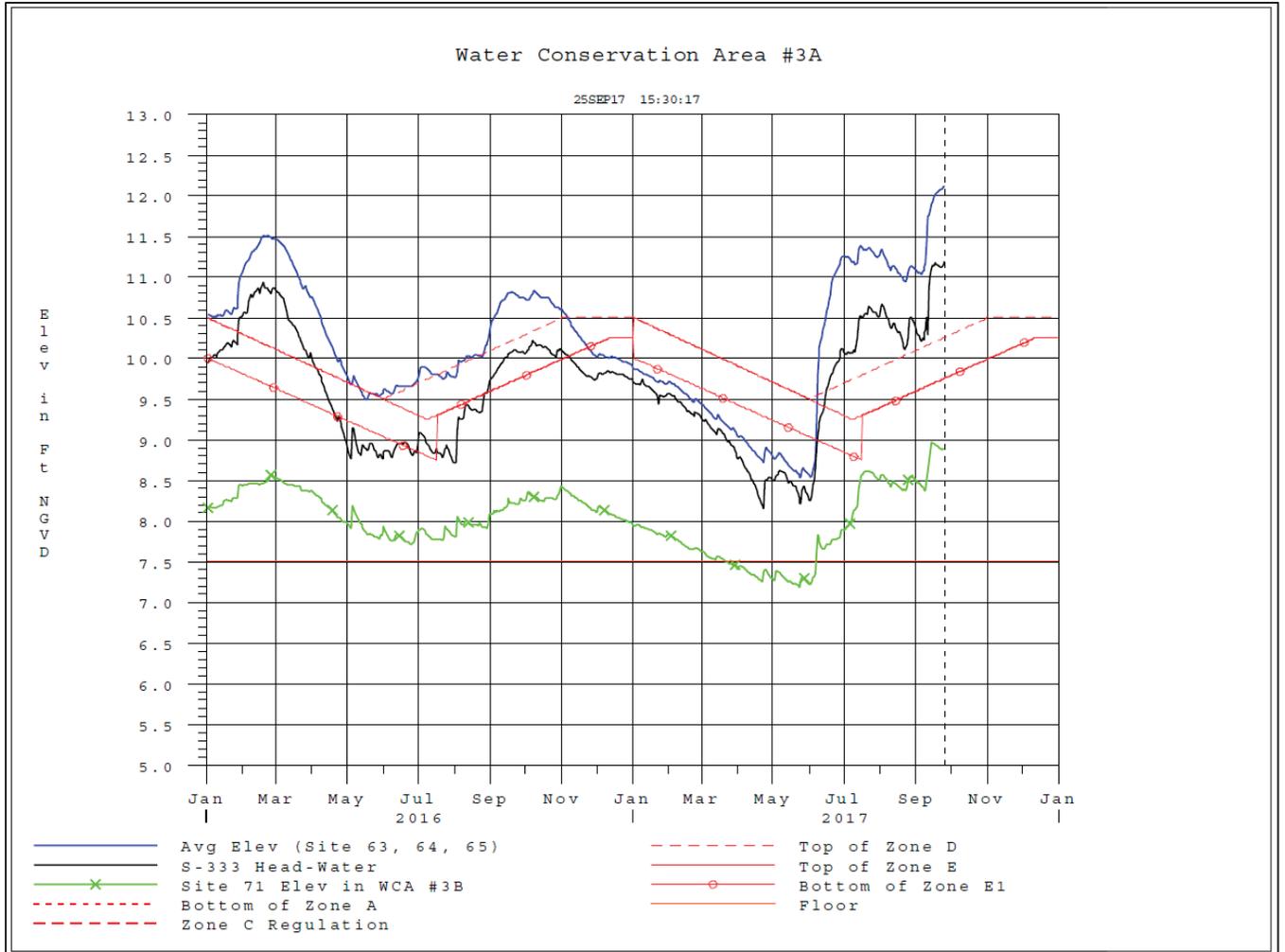
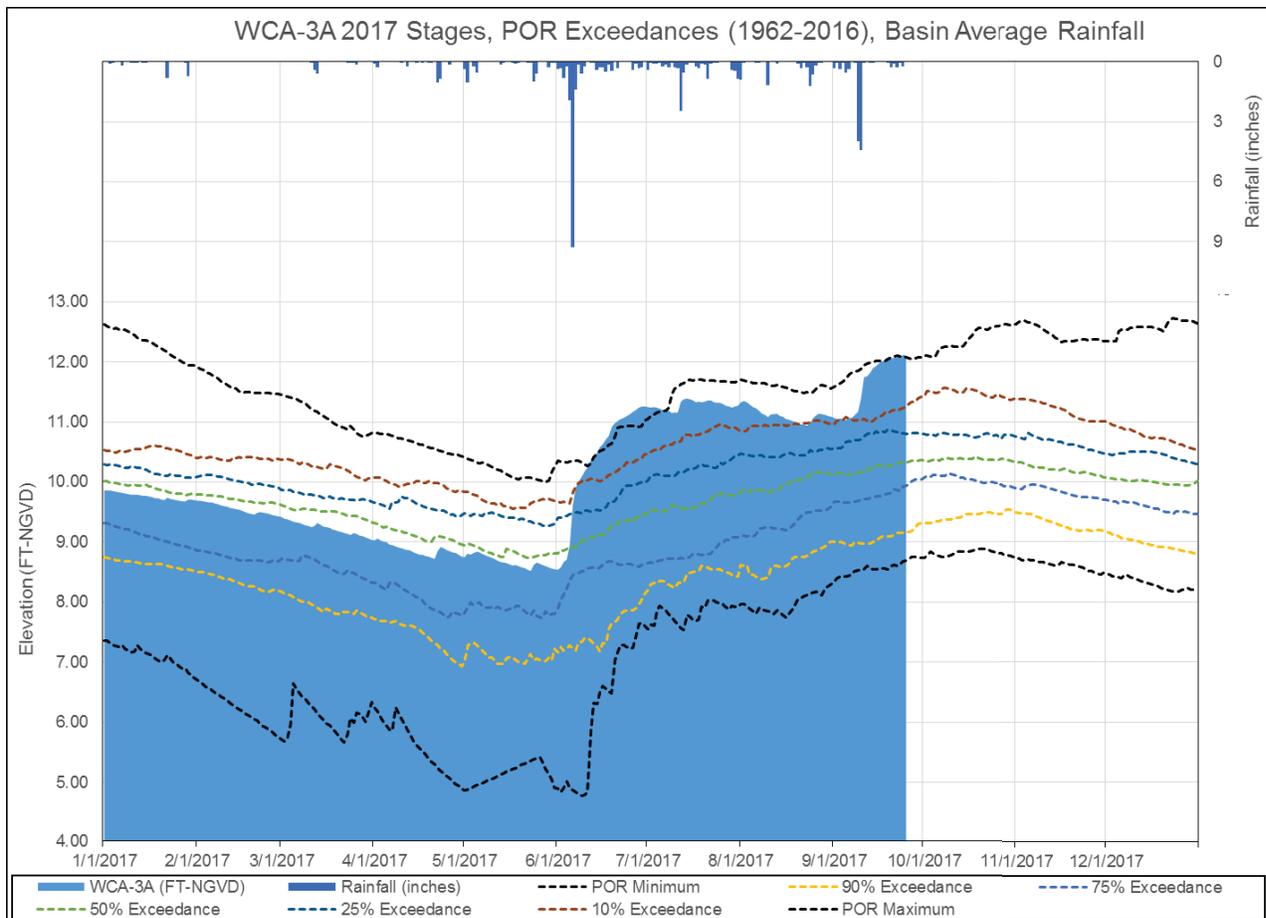


FIGURE 3. WCA 3A STAGE HYDROGRAPH AND REGULATION SCHEDULE



1.4 RELATED ENVIRONMENTAL DOCUMENTS

The Corps has documented a number of environmental documents relevant to the Proposed Action:

- *General Design Memorandum and Environmental Impact Statement, Modified Water Deliveries to Everglades National Park*, U.S. Army Corps of Engineers, Jacksonville District, June 1992
- *C-111, Central and Southern Florida Project for Flood Control and Other Purposes, Final General Reevaluation Report and Environmental Impact Statement*, U.S. Army Corps of Engineers, Jacksonville District 1994
- *1998 Emergency Deviation from Test 7 of the Environmental Program of Water Deliveries to Everglades National Park to Protect the Cape Sable Seaside Sparrow, Central and Southern Florida Project for Flood Control and Other Purposes, Final Environmental Assessment*, U.S. Army Corps of Engineers, Jacksonville District, 1999
- *Jeopardy and Adverse Modification Biological Opinion on the Modified Water Delivery to Everglades National Park Experimental Program to Everglades National Park and Canal-111 South Dade Projects*, U.S. Fish and Wildlife Service, Vero Beach, Florida 1999

- *Comprehensive Review Study of the Central and Southern Florida Project, Comprehensive Everglades Restoration Plan Final Integrated Feasibility Report and Programmatic Environmental Impact Statement*, U.S. Army Corps of Engineers, Jacksonville District 1999
- *General Reevaluation Report and Final Supplemental Environmental Impact Statement, 8.5 Square Mile Area*, U.S. Army Corps of Engineers, Jacksonville District, July 2000
- *Central and Southern Florida Project for Flood Control and Other Purposes, Interim Structural and Operational Plan, Emergency Deviation from Test 7 of the Experimental Program of Water Deliveries to Everglades National Park for Protection of the Cape Sable Seaside Sparrow Final Environmental Assessment*, U.S. Army Corps of Engineers, Jacksonville District, 2000
- *Interim Operating Plan for the Protection of the Cape Sable Seaside Sparrow Final Supplemental Environmental Impact Statement*, U.S. Army Corps of Engineers, Jacksonville District, 2002
- *Biological Opinion, Final Interim Operating Plan*, U.S. Fish and Wildlife Service, Vero Beach, Florida, November 17, 2006
- *Interim Operational Plan for the Protection of the Cape Sable Seaside Sparrow Final Supplemental Environmental Impact Statement*, U.S. Army Corps of Engineers, Jacksonville District, December 2006
- *C-111 Engineering Documentation Report*, U.S. Army Corps of Engineers, Jacksonville District, May 2007
- *Draft Environmental Assessment; Design Modifications for the Canal 111 Project*, U.S. Army Corps of Engineers, Jacksonville District, June 2007
- *Modified Water Deliveries to Everglades National Park Tamiami Trail Modifications Final Limited Reevaluation Report and Environmental Assessment*, U.S. Army Corps of Engineers, Jacksonville District, June 2008
- *Draft Environmental Assessment; Proposed Interim Operating Criteria for 8.5 Square Mile Area Project*, U.S. Army Corps of Engineers, Jacksonville District, November 2008
- *Revised Draft Environmental Assessment; Proposed Interim Operating Criteria for 8.5 Square Mile Area Project*, U.S. Army Corps of Engineers, Jacksonville District, April 2009
- *Canal-111 Spreader Canal Project Implementation Report*, U.S. Army Corps of Engineers, Jacksonville District, 2009
- *Biological Opinion, Canal-111 Spreader Canal*, U.S. Fish and Wildlife Service, Vero Beach, Florida, August 25, 2009
- *Biological Opinion, Everglades Restoration Transition Plan*, U.S. Fish and Wildlife Service, Vero Beach, Florida, November 17, 2010
- *Central and Southern Florida Project Comprehensive Everglades Restoration Plan C-111 Spreader Canal Western Project Final Integrated Project Implementation Report and Environmental Impact Statement*, U.S. Army Corps of Engineers, Jacksonville District, January 2011
- *Environmental Assessment; Proposed Interim Operation Criteria for 8.5 Square Mile Area Project*, U.S. Army Corps of Engineers, Jacksonville District, June 2011
- *Environmental Assessment; Design Refinement for the 8.5 Square Mile Area*, U.S. Army Corps of Engineers, Jacksonville District, August 2012

- *Environmental Assessment for Expansion of C-111 Detention Area and Associated Features South Miami-Dade County*, U.S. Army Corps of Engineers, Jacksonville District, May 2012
- *Everglades Restoration Transition Plan Final Environmental Impact Statement*, U.S. Army Corps of Engineers, Jacksonville District, October 19, 2012
- *Environmental Assessment; G-3273 Constraint Relaxation/S-356 Field Test and S-357N Operational Strategy*, U.S. Army Corps of Engineers, Jacksonville District, May 2015.
- *Environmental Assessment and Finding of No Significant Impact; Modifications to the C-111 South Dade North and South Detention Areas and Associated Features*, U.S. Army Corps of Engineers, Jacksonville District, December 2016.
- *Environmental Assessment and Proposed Finding of No Significant Impact; Modifications to the C-111 South Dade Project, L-31W*, U.S. Army Corps of Engineers, Jacksonville District, July 2016.
- *Environmental Assessment; L-29 Canal and South Dade Conveyance System Temporary Emergency Deviation to Affect Relief of High Water Levels within Water Conservation Area 3A*, U.S. Army Corps of Engineers, Jacksonville District, February 2016
- *Supplemental Environmental Assessment; L-29 Canal and South Dade Conveyance System Temporary Emergency Deviation to Alleviate High Water Levels in Water Conservation Area 3A*, U.S. Army Corps of Engineers, Jacksonville District, May 2016.
- *Environmental Assessment Temporary Emergency Deviation to Alleviate High Water Levels in Water Conservation Area 3A (S-344 Deviation)*, U.S. Army Corps of Engineers, Jacksonville District, April 2016.
- *Environmental Assessment and 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 and 1.2)*, U.S. Army Corps of Engineers, Jacksonville District, April 2016. February 2017.
- *Environmental Assessment and Finding of No Significant Impact: Planned Temporary Deviation to Affect Relief of High Water Levels within Water Conservation Area 3A*, U.S. Army Corps of Engineers, Jacksonville District, June 2017.
- *Environmental Assessment and Finding of No Significant Impact: Planned Temporary Deviation from the 2012 Water Control Plan for Water Conservation Area 2A*, U.S. Army Corps of Engineers, Jacksonville District, August 2017.

Information contained within the previous NEPA documents listed above, as well as others described later, is incorporated by reference into this EA.

1.5 DECISIONS TO BE MADE

This EA will evaluate emergency water management actions taken on September 15, 2017 to mitigate for precipitation and reduce water elevations within WCA 3A following Hurricane Irma. In addition, this EA will evaluate whether to implement a planned temporary deviation to further assist to mitigate stages in WCA 3A. The planned deviation would include delayed closures of the S-12A, S-12B and reopening of S-343A, S-343B and S-344 structures and is detailed in Alternative C in **Section 2.0** of this EA. This EA documents and evaluates alternatives to accomplish both the goals of the emergency water management actions implemented on September 15, 2017 as well as the potential planned temporary deviation to include delayed structural closings and reopening to further reduce water stages within WCA 3A. The No Action

Alternative and other reasonable alternatives are studied in detail to determine the Preferred Alternative.

1.6 SCOPING AND ISSUES

Please reference **Appendix B** for pertinent correspondence.

1.7 PERMITS, LICENSES, AND ENTITLEMENTS

Information regarding this emergency deviation has been submitted to the Florida Department of Environmental Protection (FDEP). FDEP previously issued a testing approval for MWD Increment 1 Plus and an operational permit for the C-111 South Dade Northern Detention Area.

Coastal Zone Management Act Consultation for the actions taken regarding Hurricane Irma was waived by the FDEP Emergency Orders addressing Hurricane Irma. Following expiration of the applicable emergency orders, Coastal Zone Management Act coordination may involve modifications to the following:

1. Modification to File No. 0306639-003, S-197 Control Structure Project, Environmental Resource Permit: SFWMD permit
2. Modification to File No. 0246512-0003 and test authorization, Modified Water Deliveries to the Everglades National Park Project, CERPRA permit: Corps permit
3. Modification to File No. 0246512-012, C-111 South Dade and Modified Water Deliveries to Everglades National Park Project: Corps permit
4. Modification, if deemed necessary by FDEP for revised operations to S-333, S-335, S-337, S-343A, S-343B and S-344 to the Non Everglades Construction Everglades Forever Act Permit File No. 0237803-001: SFWMD permit
5. Modification to the C-111 South Dade Emergency Order No. 9 may be required to adjust the operations for S-332B/C/D and S-328.
6. Modification to CERPRA Permit File No. 0304879-007 for the Decomp Physical Model (S-152)

The Corps has determined the proposed action is consistent to the maximum extent practicable with Florida's Coastal Management Program. On June 23, 2017 FDEP issued an Emergency Final Order in response to high rainfall and flooding in the south Florida region, specifically the Everglades Protection Area that threatens certain stormwater management systems, works and impoundments and poses an imminent or immediate danger to valuable natural resources, the public health, safety or welfare (**Appendix B**). This Emergency Final Order was amended on August 4, 2017 to allow for construction of temporary features. As part of the FDEP Emergency Final Order, FDEP temporarily allowed modified operations of the projects listed above and permitted immediate employment of any remedial means deemed necessary to redress the emergency. FDEP waived water quality certification for those activities authorized by this Emergency Final Order.

Pursuant to the Emergency Final Order, the Corps shall continue water quality and hydrologic monitoring of the existing permitted Corps project features, to identify and evaluate water quality and hydrologic conditions. The monitoring work provides water quality data associated with state water quality standards and the long-term phosphorus concentration limits contained within

the Settlement Agreement to the Federal Everglades lawsuit (Case No. 88-1886), and hydrologic data necessary for the adaptive operation of the pump stations to evaluate the effects on wildlife, water supply and flood protection in the C&SF project.

On September 5, 2017, FDEP issued an additional Emergency Final Order in response “*to the imminent or immediate danger to the public health, safety, and welfare of the citizens of the State of Florida posed by Hurricane Irma...*” The September 5 and amended September 15, 2017 FDEP Emergency Final Orders address water resource management associated with Hurricane Irma.

2.0 PROPOSED ACTION AND ALTERNATIVES

Each of the following alternatives described below were considered and evaluated against the project purpose and need and associated environmental effects considered.

Alternative A (No Action Alternative): The No Action Alternative would continue current C&SF water management operations as defined in MWD Increment 1 Plus, which is a deviation to the 2012 Water Control Plan. Alternative A also includes continued implementation of water management operations outlined within the June 2017 WCA 3A Planned Temporary Deviation and the July 2017 WCA 2A Planned Temporary Deviation. The No Action alternative represents conditions prior to September 15, 2017 when the Corps' South Atlantic Division approved emergency water management actions to address effects associated with Hurricane Irma.

Alternative B (Relaxation of the L-29 Canal Constraint; SDCS Modifications): Alternative B relaxes the current 7.5 feet National Geodetic Vertical Datum (NGVD) of 1929 maximum operating limit in the L-29 Canal up to 8.5 feet NGVD until the WCA3, 3AVG falls below Zone A of the WCA 3A Regulation Schedule. Alternative B also includes use of the S-356 structure (up to 500 cfs) to provide flood relief along L-31N Canal between structures S-335 and G-211 along the eastern side of ENP. In addition, Alternative B includes use of S-357 (up to 575 cfs) to provide flood mitigation to the 8.5 Square Mile Are (SMA) due to excessive seepage from high water levels within Northeast Shark River Slough (SRS). Finally, Alternative B also includes continued implementation of water management operations outlined within the June 2017 WCA 3A Planned Temporary Deviation and July 2017 WCA 2A Planned Temporary Deviation. Alternative B represents conditions post September 15, 2017 when the Corps' South Atlantic Division approved emergency water management actions to address effects associated with Hurricane Irma. The Corps explored other emergency management action alternatives in addition to those described within Alternative B, however, based upon C&SF Project conditions immediately following the storm, other alternatives were screened and Alternative B was chosen as the most effective alternative to meet the multiple C&SF Project purposes.

Alternative C (Relaxation of L-29 Canal Constraint; Delayed closure of S-12A/B and reopening of S-343A/B, S-344, SDCS Modifications): Alternative C is the same as Alternative B except for the inclusion of delayed closure of the S-12A, S-12B and reopening of S-343A, S-343B and S-344 structures. In accordance with the 2016 Everglades Restoration Transition Plan (ERTP) Biological Opinion (BO) under Increment 1 Plus, the S-12A, S-12B, S-343A, S-343B and S-344 structures are closed annually to protect the endangered Cape Sable seaside sparrow (CSSS). Specifically, S-343A, S-343B and S-344 are scheduled to close October 1, 2017; S-12A is scheduled to close November 1, 2017 and S-12B is scheduled to close December 1, 2017. Under Alternative C, the S-12A and S-12B structures would remain open past their CSSS closure dates and S-343A, S-343B and S-344 would reopen to facilitate release of water from WCA 3A until the WCA-3 3 AVG falls below the MWD Increment 1 Action Line or January 1, whichever comes first. The, S-12A, S-12B, S-343A, S-343B and S-344 structures would open on July 15, 2018 in accordance with the 2016 Everglades Restoration Transition Plan (ERTP) Biological Opinion (BO). Implementation of any of these measures individually would have utility in furthering the goal of reducing levels in WCA 3A. Each closure or reopening has independent utility and could be implemented in conjunction with any of the others, but all proposed delayed closures and

reopening together are the most effective. Beneficial effects and effects of the action would be commensurate with the significance of the measures taken. Alternative C also includes continued implementation of water management operations outlined within the 2017 WCA 3A Planned Temporary Deviation and 2017 WCA 2A Planned Temporary Deviation.

2.1 ISSUES AND BASIS FOR CHOICE

Both the emergency deviation and proposed planned temporary deviation are envisioned to reduce water stages within WCA 3A, the 8.5 SMA, and the SDCS to the extent practicable given the current infrastructure, as well as consideration of downstream system constraints to include flood mitigation and environmental considerations including threatened and endangered species. The alternatives described in **Section 2.0** were formulated, considered, and evaluated based on the achievement of project purpose and need and compliance with project constraints (**Section 1.3**). Potential effects on the human environment were also evaluated (**Section 4.0**).

Alternative A, the No Action Alternative, would maintain operations as identified within the 2012 Water Control Plan, MWD Increment 1 Plus operational strategy, June 2017 WCA 3A Planned Temporary Deviation and the July 2017 WCA 2A Planned Temporary Deviation. Current operations are not sufficient to significantly reduce stages within WCA 3A, and further operational flexibility is required in order to reduce outflow constraints within WCA 3A given the current and future projected conditions. Alternative A does not meet the project purpose and need as described in **Section 1.3**. If no action was taken the outflows out of WCA 3A would be greatly reduced after the closure dates on the before mentioned structures. **Table 4** shows the flows and volumes out WCA 3A if the closure dates were observed. It is expected that Alternative C relative to Alternative B could further reduce stages in WCA 3A by approximately 0.3 feet by December 1 (the last closure date).

TABLE 4. ESTIMATED VOLUMES OUT OF STRUCTURES IF THEY CLOSE ON CLOSURE DATES IDENTIFIED IN THE 2016 ERTP BO.

Closure Date	Days Until Close	Structures	Flow (cfs/day)	Volume (acre-ft./day)	Total Volume (ac-ft.)
1 Nov	37	S-12A	890	1,765	65,317
1 Dec	67	S-12B	590	1,170	78,408
1 Oct	6	S-343A	315	625	3,749
1 Oct	6	S-343B	400	793	4,760
1 Oct	6	S-344	230	456	2,737
		Totals	2,425	4,810	154,971
				Total feet WCA 3A	0.31

Alternative B includes raising the maximum operating limit constraint within the L-29 Canal up to 8.5 feet NGVD, operational modifications within the SDCS, as well continued implementation of the June 2017 WCA 3A Planned Temporary Deviation and the July 2017 WCA 2A Planned Temporary Deviation. Alternative B would provide significant benefits to WCA 3A by reducing stages within WCA 3A. Current projections, which include raising the maximum operating limit in the L-29 canal up to 8.5 feet NGVD and the WCA 3A structure closure dates identified in the E RTP BO, indicate that WCA 3A will remain above schedule until around the 1st of January, as shown in the 50th percentile line in the dynamic positional analysis (**Figure 5**).

Alternative C allows for operational flexibility to remove water directly from WCA 3A by raising the maximum operating limit in the L-29 canal up to 8.5 feet NGVD, utilizing operational flexibility within the SDCS and continuation of the June 2017 WCA 3A Temporary Planned Deviation and the July 2017 WCA 2A Temporary Planned Deviation; however, Alternative C also includes the provision to delay the closure periods associated with the S-12A, S-12B, S-343A, S-343B and S-344 structures. These structures are all direct outlets from WCA 3A, thereby, providing a more significant benefit to directly reduce stages within WCA 3A. Currently, between WCA 2A and WCA 3A there is approximately 1,171,403 ac-ft. of excess water above the top of Zone A. Delayed closures of these structures will contribute approximately 1,600 cfs extra flow out of WCA 3A, or an extra 3,200 ac-ft. per day. As shown in **Table 5**, in comparison with Alternative B, implementation of Alternative C could reduce stages within WCA 3A by approximately 0.70 feet over a 92-day period.

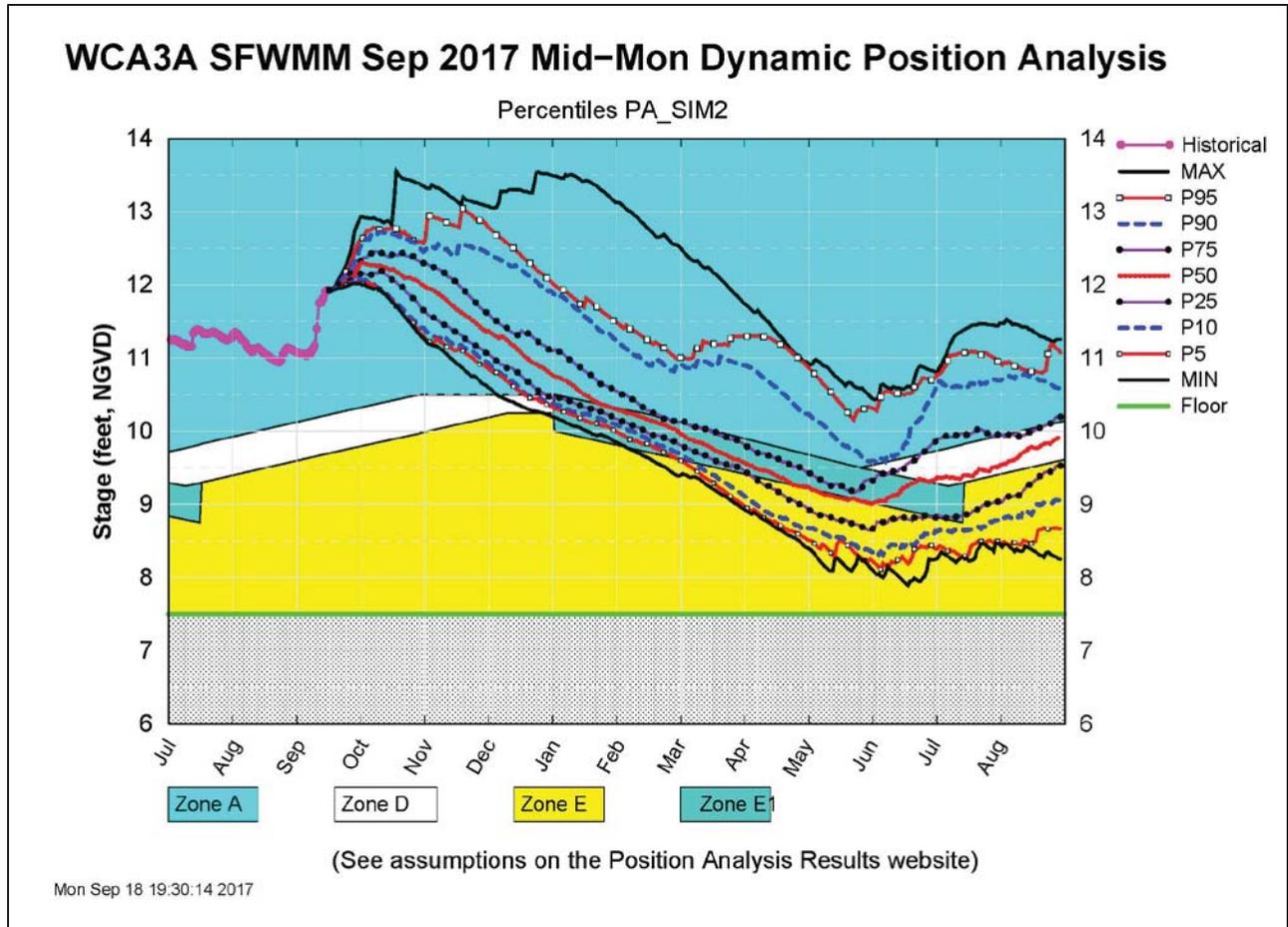


Figure 5. DYNAMIC POSITIONAL ANALYSIS FOR WCA 3A ON 18 SEPTEMBER (COURTESY OF SFWMD).

TABLE 5. ESTIMATED VOLUMES OUT OF STRUCTURES THAT WOULD NORMALLY BE CLOSED BETWEEN OCTOBER 1 AND DECEMBER 1.

Closure Date	Structures	Flow (cfs/day)	Volume (acre-feet/day)	30 days Volume (ac-ft.)	60 days Volume (ac-ft.)	Oct 1-Jan 1 (92 days) (ac-feet)
1 Nov	S-12A	600	1,190	35,703	71,406	109,489
1 Dec	S-12B	560	1,111	33,323	66,646	102,190
1 Oct	S-343A	225	446	13,389	26,777	41,058
1 Oct	S-343B	315	625	18,744	37,488	57,482
1 Oct	S-344	200	397	11,901	23,802	36,496
	Totals	1900	3,769	113,060	226,119	346,716
		Total feet WCA 3A	0.01	0.23	0.46	0.70

The S-12A, S-12B, S-343A, S-343B and S-344 are all closed annually for protection of the endangered CSSS as outlined within the July 22, 2016, U.S. Fish and Wildlife Service (USFWS) ERTTP BO. In that BO, USFWS determined that unless alternatives to current water operational practices are explored and implemented, continued implementation of ERTTP is likely to jeopardize the continued existence of the CSSS. The July 22, 2016 BO presented a Reasonable and Prudent Alternative (RPA) that would avoid jeopardizing the CSSS. The RPA identified operational modifications and expediting restoration initiatives for some of the structures in the southern portion of the Everglades ecosystem to provide suitable nesting habitat for the endangered CSSS. One main element of the RPA was extended seasonal closures to outlet structures within WCA 3A (i.e. S-12A, S-12B, S-343A, S-343B, S-344), with the flexibility to open S-12A and S-12B under high water conditions between October and November.

Although Alternative C would provide greater benefits to WCA 3A and the fish and wildlife resources that rely upon WCA 3A through reduction in water stages; this alternative also has the potential to affect hydroperiods within CSSS habitat in western SRS where CSSS, subpopulation A (CSSS-A) resides. The 2016 ERTTP BO RPA includes hydrological targets for discontinuous hydroperiod within the marl prairie habitat east and west of SRS. Specifically, the 2016 ERTTP BO states:

“The marl prairie habitat that the CSSS requires for its survival and recovery persists under a hydrologic regime of 90 – 210 wet days (water above ground; discontinuous). In order to maintain and restore a sufficient area of suitable marl prairie habitat for each CSSS subpopulation, USACE will manage water levels in a manner aimed at meeting the following:

- a. Subpopulation A – At least 24,000 acres of suitable habitat within, and adjacent to, CSSS subpopulation A must show a 4-year running average discontinuous hydroperiod range of 90-210 days, with no 2 consecutive years failing to meet this target.*
- b. Subpopulations B through F – At least 40 percent of each designated CSSS critical habitat unit must show a 4-year running average discontinuous hydroperiod range of 90-210 days, with no 2 consecutive years failing to meet this target.”*

(2016 ERTTP BO, Section 7.1.1, Targets, page 205)

Implementation of Alternative C may affect attainment of the USFWS target for CSSS, but would also provide benefits to other federally-listed species that nest and forage within WCA 3A to include the endangered Everglade snail kite, threatened wood stork and a variety of state-listed wading bird species. However, it is important to emphasize that during consultation under the 2016 ERTTP BO, USFWS prioritized the CSSS over the other federally-listed species due to CSSS population size. The Corps does not anticipate any direct effects on actual sparrows, but indirect effects on CSSS associated with the potential for longer annual discontinuous hydroperiods than the USFWS target. The Corps recognizes the commitments made within the 2016 ERTTP BO and remains committed to implementation of the RPA. At this time, however, the Corps immediate concern is to reduce stages within WCA 3A to further reduce

risk in WCA 3A for natural resources, public health, safety or welfare as the wet season and hurricane season continue due to reduced flood storage.

Currently the S-12A and S-12B headwaters are at 11.0 feet NGVD, which is equivalent to the top of the closed gate elevation. This means that if these structures were closed now, at these water levels, they would be overtopped almost immediately and would trigger a limited gate opening sufficient to prevent gate overtopping. The headwater at these structures is not projected to decline before the scheduled closure dates for S-343A, S-343B, and S-344, as seen in **Figure 5**. The Corps is taking all steps to alleviate high water conditions in WCA 3A including limiting inflows to the extent practicable given conditions within the upstream basins. Currently WCA 2A is above the transition zone, as described in the July 2017 WCA 2A Planned Temporary Deviation, and therefore the Corps is required to make discharges out of the S-11 structures until it falls back below this level. Other steps the Corps is implementing to reduce stages in WCA 3A include maximizing discharge through S-12C, S-12D, S-333, S-334, and S-151, and maximizing discharges to tide from each of the WCAs. Despite implementation of these steps as well as raising the L-29 Canal constraint, WCA 3A stage measured at the S-12A and S-12B headwater is 11.24 feet NGVD and 11.27 feet NGVD respectively. The top of the S-12A and S-12B slide gates is at elevation 11.0 feet NGVD when the gates are closed.

2.2 ALTERNATIVES ELIMINATED FROM DETAILED EVALUATION

All alternatives were included within the detailed evaluation.

2.3 PREFERRED ALTERNATIVE

Based upon the impact analysis conducted within this EA, Alternative C is the Preferred Alternative. This plan is expected to best meet the project purpose and need identified in **Section 1.3**. Summary details of the Preferred Alternative are listed below:

- Raising the maximum operating limit constraint within the L-29 Canal up to 8.5 feet NGVD;
- Operational modifications within the SDCS;
- Continued implementation of the June 2017 WCA 3A Planned Temporary Deviation;
- Continued implementation of the July 2017 WCA 2A Planned Temporary Deviation;
- Delayed closure of the S-12A and S-12B and reopening of S-343A, S-343B and S-344; these structures will close once WCA 3A 3AVG falls below the WCA 3A Action Line (refer to **Figure 5**).

This plan is expected to best meet the project purpose and need while minimizing negative effects. Alternative C best utilizes current capacity and existing structures within the C&SF Project to increase water deliveries from WCA 3A to ENP. Immediate action is necessary to deviate from current water management practices for the purposes of removing water from WCA 3A post Hurricane Irma. The Corps evaluated variations on potential delayed closures and reopening as shown in **Table 5** in order to provide information related to how outflow from the various

structures if closure were delayed would affect stages in WCA 3A. This analysis recognizes that the alternative that will be implemented may likely represent operations somewhere in between Alternative B and Alternative C. Stage reductions in WCA 3A may range between 0.01 feet up to 0.70 feet depending upon the suite of delayed closures or reopening of structures. Implementation of any of these measures individually would have utility in furthering the goal of reducing levels in WCA 3A. Each early closure or reopening has independent utility and could be implemented in conjunction with any of the others, but all proposed delayed closures and reopening together are the most effective. Beneficial effects and effects of the action would be commensurate with the significance of the measures taken.

3.0 AFFECTED ENVIRONMENT

3.1 GENERAL ENVIRONMENTAL SETTING

The remaining portion of the Greater Everglades wetlands includes a mosaic of interconnected freshwater wetlands and estuaries located primarily south of the EAA. A ridge and slough system of patterned, freshwater peat lands extends throughout the WCAs into SRS in ENP. The ridge and slough wetlands drain into tidal rivers that flow through mangrove estuaries into the Gulf of Mexico. Higher elevation wetlands that flank either side of SRS are characterized by marl substrates and exposed limestone bedrock. Those wetland areas located to the east of SRS include the drainage basin for Taylor Slough, which flows through an estuary of dwarf mangrove forests into northeast Florida Bay. The Everglades wetlands merge with the forested wetlands of Big Cypress National Preserve (BCNP) to the west of WCA 3.

Declines in ecological function of the Everglades have been well documented. Construction of canals and levees by the C&SF Project has resulted in the creation of artificial impoundments and has altered hydroperiods and depths within the project area. The result has been substantially altered plant community structures, reduced abundance and diversity of animals and spread of non-native vegetation.

A complete description of the affected environment with respect to Increment 1 is discussed within the EA and FONSI dated May 27, 2015 (USACE 2015). Further information regarding 8.5 SMA can be found within the July 2000 8.5 SMA GRR/FSEIS (USACE 2000), 2011 Proposed Interim Operating Criteria for 8.5 SMA EA (USACE 2011), and 2012 design refinement for the 8.5 SMA EA (USACE 2012a).

3.2 CLIMATE

The climate of south Florida is subtropical. Seasonal rainfall patterns in south Florida resemble the wet and dry season patterns of the humid tropics more than the winter and summer patterns of temperate latitudes. Of the 53 inches of rain that south Florida receives on average annually, 75% falls during the wet season months of May through October. Tropical storms and hurricanes also provide major contributions to wet season rainfall. During the dry season (November through April), rainfall is governed by large-scale winter weather fronts that pass through the region approximately weekly. However, due to the variability of climate patterns (La Niña and El Niño), dry periods may occur during the wet season and wet periods may occur during the dry season. High evapotranspiration rates in south Florida roughly equal annual precipitation. Mean annual temperature for the south Florida ecosystem ranges from 72 ° Fahrenheit (F) (22 ° Celsius [C]) in the northern Everglades to 76 ° F (24 ° C) in the southern Everglades (Thomas 1974). There is now evidence of anthropogenic changes to global climate patterns that will likely have an impact on south Florida in terms of rainfall, evapotranspiration, and temperature.

3.3 GEOLOGY AND SOILS

The geology and soils of South Florida represent many of the opportunities, constraints, and impacts of regional water management. The high transmissivity of the Biscayne Aquifer allows rapid recharge of lower east coast well fields while it sets the stage for water competition between the Everglades and Biscayne Bay regarding the issue of seepage control. The loss of peat soils of

the Everglades provides an indicator of ecosystem change due to drainage activities. Peat soils predominate in previously flooded areas. Peat soils have subsided as a result of oxidation due to drainage, which has affected local topography and hydroperiods.

The lower east coast on the Atlantic Coastal Ridge is mostly underlain by thin sand and Miami Limestone that are highly permeable and moderately to well-drained. To the west of the coastal ridge, soils of the lower east coast contain fine sand and loamy material and have poor drainage. Rockland areas on the coastal ridge in Miami-Dade County are characterized by weathered limestone surfaces and karst features such as solution holes and sinkholes. Higher elevation marshes of the southern Everglades on either side of SRS are characterized by calcitic marl soils deposited by calcareous algal mats and exposed lime rock surfaces with karst features such as solution pits and sinkholes.

3.4 STUDY AREA LAND USE

The existing land use within the study area varies widely from agricultural to high-density multi-family and industrial urban uses. Much of the land use/cover change occurring in south Florida over the past several years can be categorized as either the creation of new developments in previously natural or agricultural areas, or the change in the types of agriculture practiced. Generally, urban development is concentrated along the Lower East Coast (LEC) from Palm Beach County to Miami-Dade County. WCA 3, located directly north of ENP, is part of the Everglades Complex of Wildlife Management Areas and are managed by the Florida Fish and Wildlife Conservation Commission (FWC).

3.5 HYDROLOGY

The major characteristics of south Florida's hydrology are: (1) local rainfall; (2) evapotranspiration; (3) canals and water control structures; (4) flat topography; (5) the highly permeable surficial aquifer along a thirty to forty mile-wide coastal strip. Local rainfall is the source of all of south Florida's fresh water. The surface water that is not removed from the land by evapotranspiration and seepage to the underlying aquifer is drained to the Atlantic Ocean, Florida Bay, or the Gulf of Mexico by very slow, shallow sheetflow through wetlands or relatively quickly through man-made canals.

Levees and canals constructed during the last 60 years under the C&SF Project have divided the former Everglades into areas designated for development and areas for fish and wildlife benefits, natural system preservation, and water storage. The natural areas consist of the three WCAs located north of Tamiami Trail. ENP is located south of Tamiami Trail. The WCAs provide detention storage for water from Lake Okeechobee, the EAA, and parts of the east coast region. Detention of water helps prevent floodwaters from inundating the east coast urban areas; provides water supply and detention for east coast urban and agricultural areas and ENP; improves the water supply for east coast communities by recharging underground freshwater reservoirs; reduces seepage; and provides control for saltwater intrusion in coastal aquifers. While the WCAs may reduce the severity of the drainage of the Everglades caused by the major canal systems, thus reducing effects to fish and wildlife caused by the major drainage systems, the levees surrounding the WCAs still function to impound the Everglades, precluding the historic flow patterns. The C&SF Project infrastructure, combined with operational constraints, makes it difficult to provide natural timing, volume and distribution. In wet periods, water is impounded in the WCAs and

then discharged to ENP or coastal canals for eventual release to tide. During dry periods, water can flow through the canals to coastal areas and bypass the ENP wetlands.

3.5.1 WATER CONSERVATION AREAS 3A AND 3B

The largest WCA is WCA 3, which is divided into two parts, 3A and 3B. It is approximately 40 miles long from north to south and covers approximately 915 square miles. Ground elevations slope southeasterly one to three feet in ten miles ranging from 13 feet NGVD in northwest WCA 3A to six feet, NGVD in southeast WCA 3B. The area is enclosed by approximately 111 miles of levees, of which 15 miles are common to WCA 2. An interior levee system across the southeastern corner of the area reduces seepage into an extremely pervious aquifer.

The upper pool, WCA 3A, provides an area of approximately 752 square miles for storage of excess water from the following sources: regulatory releases from WCA 2A; rainfall excess from approximately 750 square miles in Collier and Hendry counties (through Mullet Slough); flood control inflows from 71 square miles of the former Davie agricultural area lying east of pump station S-9 in Broward County; and excess water from a 208 square mile agricultural drainage area of the Miami Canal and other adjacent EAA areas to the north. WCA 3A provides water supply to the LEC, as well as the SDCS, in accordance with the WCA 3A Regulation Schedule, and WCA 3A provides water deliveries to ENP in accordance with the Rainfall Formula and the WCA 3A Regulation Schedule, collectively referred to as the Rainfall Plan (USACE 2006). Due to its limited discharge capacity compared to the spatial extent of the watershed from which it receives water, consecutive rainfall events have the potential to quickly utilize potential storage within WCA 3A and result in discharges from WCA 3A to SRS and/or the SDCS via the S-12 structures and/or S-333 and S-334.

South of WCA 3 and within ENP, the northern portion of SRS is also partially divided by the remaining 5.5 miles of the L-67 Extension Levee, which extends south from the southern terminus of L-67A at Tamiami Trail. Outflows from WCA 3A to ENP are regulated according to the WCA 3A Regulation Schedule, with some additional WCA 3A outflows to ENP from groundwater seepage across Tamiami Trail and seasonal surface water flows through the L-28 gaps, which then continue south along the L-28 borrow canal towards the Tamiami Trail bridges west of S-12A.

Stage variability within WCA 3 typically follows an annual cycle; the levels vary from high stages in the late fall and early winter to low stages at the beginning of the wet season (typically late May or early June). Water stages within WCA 3A typically exceed the top of the WCA 3A Regulation Schedule during the months of August through October, with this duration extended to earlier in the wet season (May) and/or later into the dry season during wet years (November and December). Above-normal rainfall patterns associated with El Niño conditions during the dry season months (November through May) may also result in water stages which exceed the top of the Regulation Schedule. Overall, water stage decreases from northwest to southeast within WCA 3, consistent with the general direction of surface water flow and prevailing topography within WCA 3. Water depth is typically between one to two and a half feet, with the shallower waters in the higher elevation northwestern portion of WCA 3. Water stages and depths in WCA 3B are typically much lower than water stages and depths in WCA 3A, due to limited surface water inflows into WCA 3B and the reduction of seepage from WCA 3A to WCA 3B consistent with the design purpose of

the L-67A and L-67C levees. Water levels in WCA 3B are affected by seepage losses to the east towards the L-30 borrow canal and seepage losses to the south towards the L-29 Canal.

Water supply deliveries from the C&SF Project (also known as the Regional system) to coastal canals are utilized to recharge coastal well fields and to prevent saltwater intrusion into the Biscayne aquifer. When canal levels drop below adequate recharge levels due to a combination of well field drawdowns, evaporation, and lack of rainfall, water supply deliveries are typically made from the Regional system. When canal levels drop in Miami-Dade County, regional water supply is delivered from WCA 3A through one of two delivery routes. Depending on system conditions, both routes may be utilized concurrently. For the northern delivery route from WCA 3A, water supply deliveries are either released from S-151 to the Miami Canal within WCA 3B (C-304), followed by downstream releases to either Miami-Dade County's SDCS by utilizing S-337 and/or by utilizing S-31 to release into the C-6 Canal. For the southern delivery route from WCA 3A, water supply deliveries are released from S-333 (from the upstream L-67A Canal), passed through the L-29 Canal, and are released to the SDCS by utilizing S-334.

The most important component of the groundwater system within the study area is the Biscayne aquifer, an unconfined aquifer unit underlying an area of approximately 3,000 square miles in southeast Florida, from southern Palm Beach County southward through Broward County to South Miami-Dade County. Groundwater in WCA 3 generally flows from the northwest to the southeast, with extensive seepage across the eastern and southern levees, L-30 (southeast corner of WCA 3B) in particular. However, the direction of groundwater flow may be locally influenced by rainfall, drainage canals, or well fields. Fluctuations in groundwater levels are seasonal. Groundwater levels within WCA 3 are influenced by water levels in adjacent canals. Where there is no impermeable formation above the aquifer, surface water recharges the system and the groundwater level can rise freely. In times of heavy rainfall, the aquifer fills and the water table rises above the land surface, contributing to seasonal inundation patterns throughout the area.

3.5.2 NORTHEAST SHARK RIVER SLOUGH

Northeast SRS is a complex area located in the northeast corner of ENP. It is currently the northern terminus of SRS, which is aligned from the northeast to southwest across ENP. Tamiami Trail is the northern boundary, the L-31N Canal the eastern boundary, and the L-67 Extension Canal the western boundary of the Northeast SRS. Prior to construction and operation of the C&SF Project, Northeast SRS would have been characterized as wet most of the year, but regional developments have impacted historic freshwater routes into the area. In addition, if historic levels are not maintained through the end of the wet season, significant reductions in surface water can occur during the dry season below historic dry season levels.

Water enters NORTHEAST SRS primarily from WCA 3A via S-333, and then to the L-29 Borrow Canal and subsequent passage through several sets of culverts and the one-mile Tamiami Trail bridge (completed as part of the MWD Project in 2013) under Tamiami Trail. S-355A and S-355B may also be used to deliver water from WCA 3B to the L-29 Canal for subsequent passage through the culverts to Northeast SRS. The discharges made from WCA 3A through the S-12 structures and S-333 are target flows determined from the Rainfall Plan (USACE 2012a). Under the Rainfall Plan in the 2012 Water Control Plan, water deliveries would be computed and operations adjusted weekly, if necessary based on the sum of two components: a rainfall response component and a

WCA 3A regulatory component. The normal operational target flow distribution is 55% through the S-333 into Northeast SRS and 45% through the S-12 structures into ENP west of the L-67 Extension. Eastern portions of the ENP are also influenced by the system of canals and structures that provide flood control and water supply for the LEC urban and agricultural areas. The operational intent of the Rainfall Plan under the 2012 Water Control Plan and the Increment 1.1 and 1.2 field test is to maximize discharge capacity from S-333 prior to utilization of the S-12s. The Rainfall Plan target distribution through S-333 may exceed 55% of the Rainfall Plan target. Additional details for the Rainfall Plan are provided in Section 3.6.

3.5.3 WESTERN SHARK RIVER SLOUGH

Western SRS located to the west of L-67 Extension Levee and bounded on the north by Tamiami Trail, is primarily influenced by rainfall and water management operations at the S-12 structures (A, B, C and D). Under the 2012 Water Control Plan, the utilization of the S-12 structures and the seasonal sequential closure periods beginning from the west at S-12A (November 1 through July 15) and S-12B (January 1 through July 15) is meant to move water from WCA 3A into SRS while providing conditions for Cape Sable seaside sparrow Subpopulation-A (CSSS-A) nesting and breeding. In accordance with the 2016 ERTTP BO, the seasonal closures window for S-12A and S-12B was expanded to initiate on October 01 under the Increment 1.1 and Increment 1.2 field test, except under prescribed high water conditions within WCA 3A. Releases from WCA 3A are specified by the Rainfall Plan, which includes the regulation schedule for WCA 3A and the Rainfall Formula. This Rainfall Based Management Plan consists of a rainfall-based delivery target and a supplemental regulatory component that specifies the total amount of water to be delivered to ENP in weekly volumes through the S-333 and S-12 structures. The operational intent of the Rainfall Plan under the 2012 Water Control Plan and the Increment 1.1 and 1.2 field test is to maximize discharge capacity from S-333 prior to utilization of the S-12s. When S-12s capacity is required the structure should be opened from east to west. Additional details for the Rainfall Plan are provided in Section 3.6.

3.5.4 TAYLOR SLOUGH

Taylor Slough is in the southeast quadrant of ENP. The area through the Rocky Glades and Taylor Slough is higher in elevation compared to ground levels north, south, or west. Because of this characteristic, the area is normally drier than other areas in the ENP. The Rocky Glades and Taylor Slough are somewhat like an island or a peninsula extending from the canals into the ENP. Under ERTTP, specified C-111 basin canal water levels/ranges and S-332D pump station operations have resulted in Taylor Slough being provided water from the C-111 Basin mainly during the wet season. During the dry season, under ERTTP, water deliveries to Taylor Slough were limited to provide conditions conducive to CSSS Sub-population C nesting (325 cfs from December 1 – January 31; 250 cfs from February 1 – July 14).

Since completion of the S-332D Detention Area in 2003, maximum surface water flows observed at the Taylor Slough Bridge (approximately 1.8 miles downstream of the existing L-31W gap and the remnant S-332/S-332I pump stations) typically range between 250 and 550 cfs during the wet season months of June to October. The flow at Taylor Slough includes contributions from the S-332D Detention Area and flow-way, southerly flow within the remnant L-31W Canal (including significant seepage inflows from the S-332D Detention Area), and drainage from the adjacent ENP wetlands. The S-332D Detention Area includes the High Head Cell (a portion of the S-327 weir

was degraded by SFWMD in August 2016, as part of the C-111 South Dade Project), the Cell 1 detention area, the Cell 2 detention area, and the flow-way cell. **Figure 4** and **Figure 5** provide an overview of the S-332D Detention Area and the northern reaches of the L-31W Canal, including prevalent surface water flow pathways (indicated by green arrows) and seepage/groundwater flow pathways (indicated by blue arrows). Backfill and/or plugs within the remnant segments of the L-31W Canal will reduce seepage losses from the S-332D Detention Area to the L-31W Canal, reduce drainage of the adjacent ENP wetlands by the L-31W Canal, and promote increased sheetflow to Taylor Slough. Additional plugs along the L-31W Canal are currently under construction by the SFWMD as part of the C-111 South Dade Project (Reference **Section 1.3.2** of the MWD Increment 1 Plus EA).

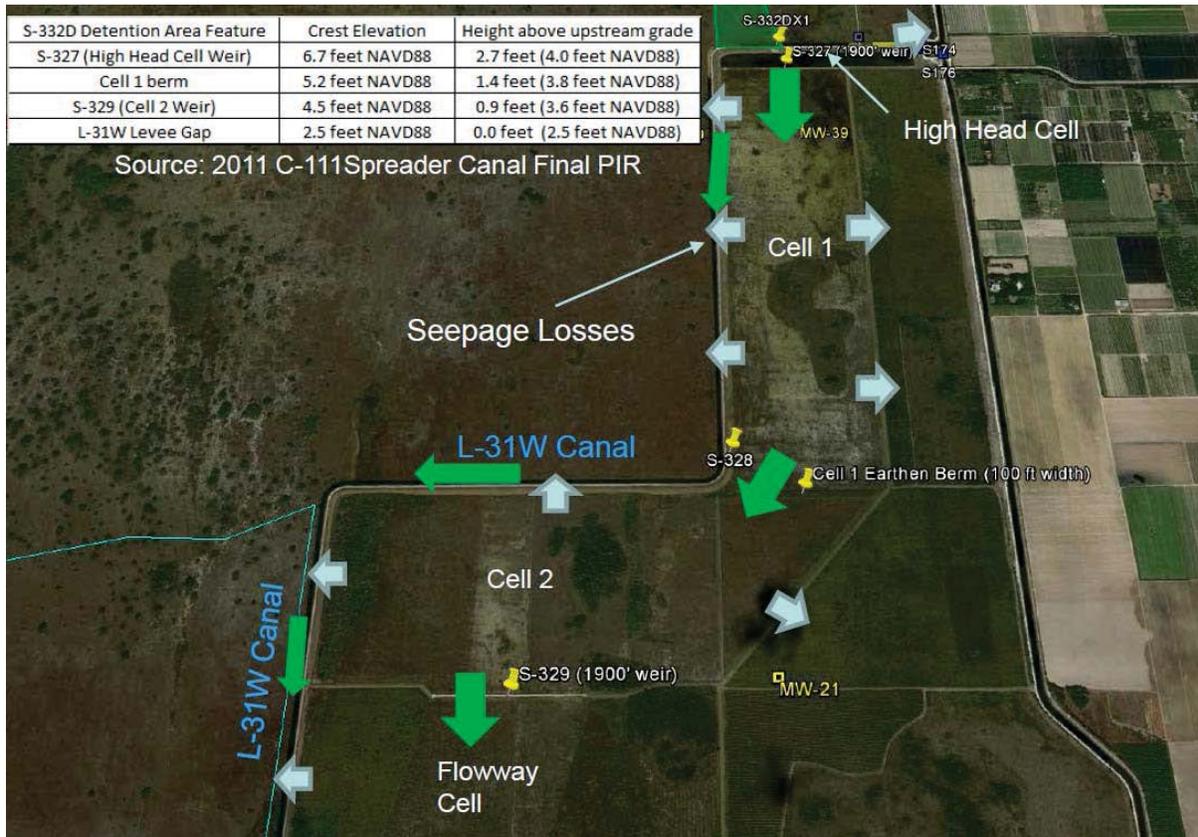


FIGURE 6. NORTHERN S-332D DETENTION AREA.

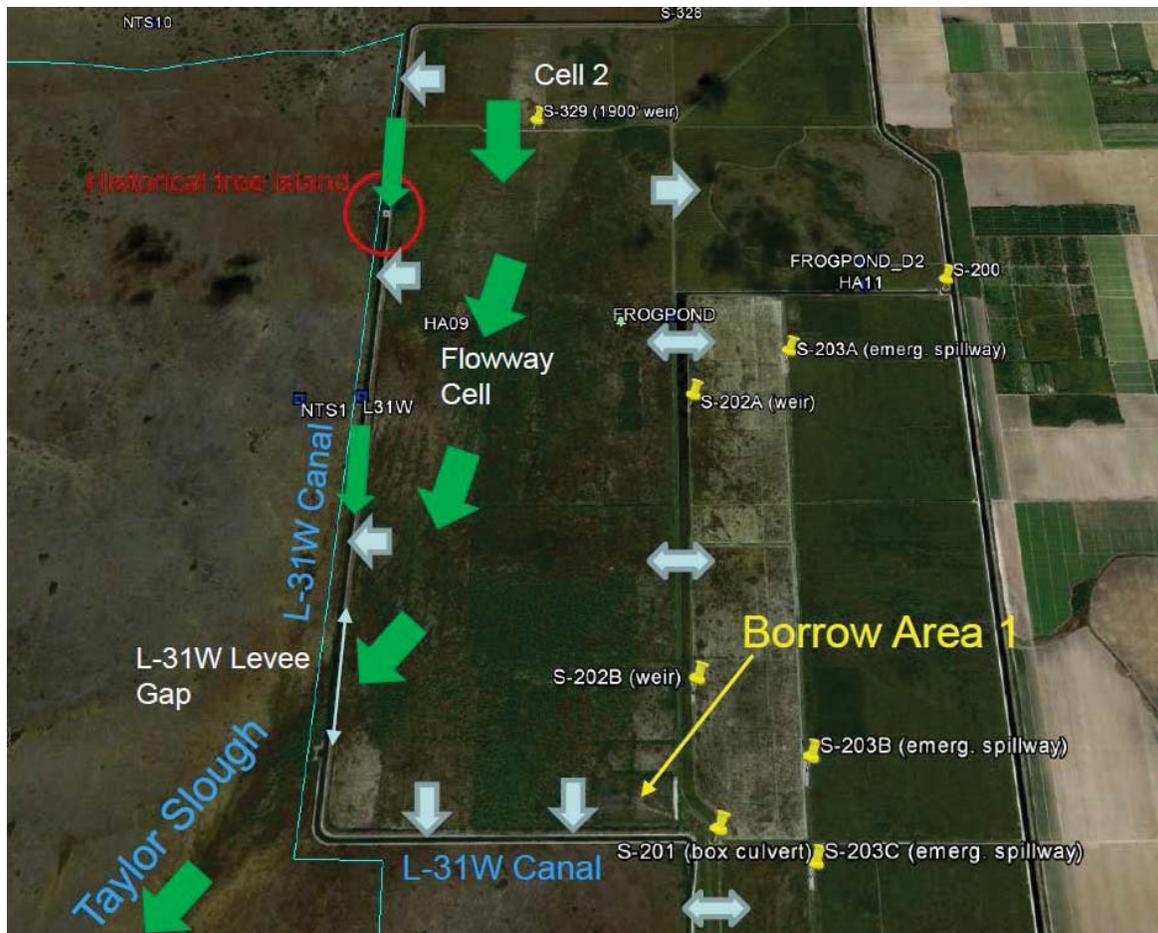


FIGURE 7. SOUTHERN S 332D DETENTION AREA

3.5.5 LOWER EAST COAST AREA

The LEC area is located to the east of the L-31N, L-31W, and C-111 canals. Under ERTTP, specified canal water levels/ranges are meant to provide flood protection, water supply, and prevention of saltwater intrusion for the LEC. The LEC can be provided water supply from WCA 3A and Lake Okeechobee according to their respective regulation schedules. In wet conditions, the excess water from the LEC is discharged to tide.

3.5.6 8.5 SQUARE MILE AREA

The 8.5 SMA is a primarily residential area adjacent to, but west of, the L-31N Canal. The 8.5 SMA, which is also known as the Las Palmas community, is bordered on both the west and north by Northeast SRS. The community has water management infrastructure consisting of a perimeter levee, a seepage collection canal (C-357), a pump station (S-357), and a southern detention area meant to collectively provide flood mitigation as part of the MWD Project (USACE 2000). An additional seepage collection canal (C-358) along Richmond Drive has been operational since April 2016 to manage water stages within the southwest corner of the 8.5 SMA. A new gated water control structure (S-357N) at the junction of the C-358 and C-357 canals presently planned for completion in February 2018, which will replace the current temporary by-pass culverts.

3.5.7 BISCAYNE BAY

Biscayne Bay is a shallow, tidal sound located near the extreme southeastern part of Florida. Biscayne Bay, its tributaries, and Card Sound are designated by the State of Florida as aquatic preserves, while Card and Barnes Sounds are part of the Florida Keys National Marine Sanctuary. A significant portion of the central and southern portions of Biscayne Bay comprise Biscayne National Park. Under ERTTP, specified canal water levels/ranges are meant to provide flood protection for the portions of the LEC and Miami-Dade County, which may result in discharges to Biscayne Bay.

3.5.8 FLORIDA BAY

Florida Bay and the Ten Thousand Islands comprise approximately 1,500 square miles of ENP. The bay is shallow, with an average depth of less than three feet. To the north is the Florida mainland and to the south lie the Florida Keys. Sheet flow across the marl prairies of the southern Everglades and 20 creek systems fed by Taylor Slough and the C-111 Canal provide direct inflow of freshwater to the bay. Surface water from SRS flows into Whitewater Bay and these flows may also provide essential recharge for central and western Florida Bay. Exchange with Florida Bay occurs when this lower salinity water mass flows around Cape Sable into the western sub-region of the bay.

3.6 REGIONAL WATER MANAGEMENT (OPERATIONS)

The C&SF Project contains multiple water bodies created by the existing C&SF levee infrastructure and implementation of the water management operating criteria, including WCA 1, WCA 2, and WCA 3. Associated with the inflow to and discharge from the water bodies is an infrastructure of structures and canals that are managed by the implementation of water management operating criteria that can include specified water levels or ranges. The WCA 3A Interim Regulation Schedule, which was implemented with ERTTP, is a compilation of water management operating criteria, guidelines, rule curves, and specifications that govern storage and release functions. Typically, a regulation schedule has water level thresholds which vary with the time of year and result in discharges. The threshold lines of regulation schedules define the discharge zones and are traditionally displayed graphically. Additionally, a corresponding table is typically used to identify the structure discharge rules for the zones. As with most regulation schedules, the WCA 1, WCA 2, and WCA 3A regulation schedules must take into account various, and often conflicting, project purposes. The WCAs are regulated for the Congressionally-authorized C&SF Project purposes to provide: flood control; water supply for agricultural irrigation, municipalities and industry, and ENP; regional groundwater control and prevention of saltwater intrusion; enhancement of fish and wildlife; and recreation. An important component of flood control is the maintenance of marsh vegetation in the WCAs, which provide a dampening effect on hurricane-induced wind tides that have the potential to affect residential areas to the east of the WCAs. The marsh vegetation, along with the east coast protection levee, also prevents floodwaters that historically flowed eastward from the Everglades from flowing into the developed areas along the southeast coast of Florida.

Besides releases from WCA 2A via the S-11 structures, WCA 3A receives inflow from pumping stations S-8, S-9, and S-140. The S-9 pump station removes runoff in the area west of Ft. Lauderdale known as Western C-11. The S-9A pump station, located adjacent to the S-9 pump

station, returns seepage water from WCA 3A and WCA3B collected in the L-37, L-33 and the US 27 borrow canals. The S-140 pump station serves the 110 square mile area north and east of the interceptor canal and west of L-28. S-140 is used to maintain canal levels below 10.5 feet, NGVD unless gravity flow into WCA 3A is possible at an adequate rate. Water also enters northeastern WCA 3A by gravity through the S-150 gated culvert. Discharges at S-142 are made from WCA 3A into the North New River Canal. The SFWMD can pump runoff from the North New River Canal and the C-13 Canal into WCA 3A through S-142 by operating their pump station, G-123.

Water levels in WCA 3A are managed primarily by five gated spillways: the S-12 structures (S-12A, S-12B, S-12C, and S-12D) and S-333. Additionally, the S-151, S-343A, S-343B and S-344 gated culvert structures can be utilized to discharge from WCA 3A. From July 2002 through October 2012, WCA 3A was regulated according to a seasonally varying 8.75 to 10.75 feet, NGVD regulation schedule and the Rainfall Plan (initiated in 1985), as per IOP (2002 IOP EIS and 2006 IOP Final Supplemental EIS). In October 2012, the WCA 3A Regulation Schedule was revised with implementation of the ERTTP recommended plan through the 2012 Water Control Plan. Revisions to the WCA 3A Regulation Schedule included incorporation of the WCA 3A 1960 9.5 to 10.5 feet NGVD Zone A, along with expansion of Zone D forward to December 31 and expansion of Zone E1 backwards to January 1. The discharges made from WCA 3A through the S-12s and S-333 are target flows determined from the Rainfall Plan; when WCA 3A is in Zone A, these target flows are the maximum flow possible based on structure design capacities and consideration of downstream operational constraints. Under the Rainfall Plan, water deliveries are computed and operations adjusted weekly, if necessary based on the sum of two components: a rainfall response component and a WCA 3A supplemental regulatory component. The Rainfall Plan provides for the rainfall response component within all zones of the WCA 3A Regulation Schedule, with the additional regulatory release requirement added when the WCA 3A water levels fall within the higher regulation schedule zones above Zone E, including Zone E1. Under current ERTTP water management practice, which were unchanged with both Increment 1 and Increment Plus, discharge capacity from S-333 into the L-29 Canal and Northeast SRS is maximized prior to utilization of the S-12 structures, in order to limit potential effects from WCA 3A discharges on the CSSS western subpopulation (CSSS-A). When flows through the S-12 structures are determined necessary by the WCA 3A Regulation Schedule and the Rainfall Plan, water managers prioritize flow through the easternmost S-12 structures as capacity allows, in order to minimize flow through the S-12A and S-12B structures. The historical operational target flow distribution of 55% through S-333 into Northeast SRS and 45% through the S-12 structures into ENP west of the L-67 Extension is no longer used as a constraint governing water management operations of WCA 3A and northern ENP under ERTTP. Weekly WCA 3A water management release decisions are coordinated with ENP. MWD Increment Plus specifies seasonal closure of the S-343A, S-343B, S-344, S-12A and S-12B structures, with the following rigid closure periods: October 1 through July 14 for S-343A, S-343B, S-344; November 1 through July 14 for S-12A; and December 1 through July 14 for S-12B. Except under prescribed WCA 3A high water conditions, the S-12A and S-12B seasonal closure period will initiate on October 01. There are no prescribed closure periods for S-12C or D, although either or both of these structures may be closed when Rainfall Plan target releases are achieved through S-333.

Water deliveries to eastern ENP (Northeast SRS) are controlled by the stage in L-29 Canal, as pressure from the water within the canal (hydraulic head), is required to force water through the

Tamiami Trail culverts and the one mile bridge and into ENP. As the L-29 Canal stage increases, more water is forced beneath the road through 17 sets of culverts (49 total culverts, three culverts per set in most locations) and the one mile bridge. The L-29 Canal maximum operating stage has been limited under ERTTP and previous regional operating plans due to concerns regarding: (1) potential flooding and seepage effects within residential or agricultural areas of Miami-Dade County; (2) potential damage to the Tamiami Trail roadway sub-base; and (3) potential flooding effects to privately-owned real estate adjacent to Tamiami Trail and within eastern ENP. The MWD Tamiami Trail Modifications (TTM) Project, which was completed in December 2013, included construction of the one mile bridge and Tamiami Trail roadway reconstruction/resurfacing to allow for the maximum operating stage in the L-29 Canal to be raised from 7.5 feet to 8.5 feet, NGVD following the acquisition of the required real estate interests by the Corps and ENP. Following completion of the MWD TTM Project, the MWD Increment Plus water management operating criteria for the L-29 Canal between S-333 and S-334 is meant to limit the L-29 Canal stage to no more than 7.5-7.8 feet, NGVD in response to potential flooding effects to privately-owned real estate adjacent to Tamiami Trail and within eastern ENP which may result from extended durations with higher operating stages in the L-29 Canal (above 7.5-7.8 feet, NGVD). Increment 1.2 includes the capability to raise the L-29 Canal stage maximum operating limit from 7.5 up to 7.8 feet, NGVD, contingent upon compliance with all of the following conditions: (1) acquisition of required real estate interest and any associated improvements for the private ownership along Tamiami Trail including receipt of Tamiami Trail Bridge and roadway channel and flowage easements from the Florida Department of Transportation; (2) completion of the C-358 Canal (Richmond Drive Seepage Collection Canal) and installation of S-357N (C-358 control structure); (3) completion of sufficient portions of Contracts 8 (construction of the C-111 NDA L-315 western levee and the L-357W Extension Levee between Richmond Drive and the 8.5 SMA Detention Cell) and completion of the Contract 8A berms inside the 8.5 SMA Detention Cell. ERTTP also included an additional operational constraint for the L-29 Canal water level related to potential flooding and seepage effects within residential and/or agricultural areas of Miami-Dade County; this constraint, which is removed during implementation of the MWD Increment 1 Plus planned deviation, required S-333 discharges to Northeast SRS will be discontinued when the G-3273 water level within Northeast SRS reaches 6.8 feet, NGVD during the normal Column 1 mode of operations, or S-333 discharges into the L-29 Canal to be matched with S-334 discharges out of the L-29 Canal when operating under the Column 2 mode of operations.

When WCA 3A water levels are in Zone A of the WCA 3A Interim Regulation Schedule, S-343A, S-343B, and S-344 can be utilized to discharge from WCA 3A into BCNP outside if the prescribed closure period for these gated culvert structures. Discharges can also be made through S-343A, S-343B and S-344 when agreed to by SFWMD, Corps, and NPS to extend hydroperiods within BCNP. The S-151 gated culvert structure is located along the Miami Canal and operated according to the WCA 3A Interim Regulation Schedule (USACE 2012a). S-151 discharges into the Miami Canal (C-304) in WCA 3B for flood diversion and for the purpose of providing water supply to LEC canals and the SDCS. Under existing conditions, water does not flow directly from WCA 3B into the L-29 Borrow canal. There are two discharge structures, gated spillways S-355A and S-355B, along L-29 south of WCA 3B that are designed to move water from WCA 3B into the L-29 Canal. The S-355 structures are completed components of the MWD Project, intended to function in concert with the proposed MWD S-345 structures along L-67A/L-67C to address the

MWD Project objective of restoring WCA 3B as a functioning component of the Everglades hydrologic system and restoration of water deliveries to Northeast SRS.

There are three distinct modes of water management operations for MWD Increment 1 Plus, which are consistent with the previous IOP (2002, 2006 Supplement) and ERTTP (2012 Water Control Plan): Column 1, Column 2, and water supply. Column 1 refers to the condition when regulatory releases from WCA 3A can be met by normal operation of the WCA 3A regulatory outlets (the S-12 structures, S-333, S-151, S-343A, S-343B, and/or S-344). Column 2 refers to the condition when regulatory releases from WCA 3A are made via S-333 to the L-29 Canal and via S-334 to the L-31N Canal and the SDCS; Column 2 operations generally require the use of pump stations S-331, S-332B, S-332C, and S-332D. During Column 2 operations, the control stages along the L-31N Canal are also lowered to minimize potential flood impacts to the SDCS and also to provide the necessary downstream gradient for the S-334 releases to reach S-332B, S-332C, and S-332D pump stations. Column 2 operations are used to offset or mitigate for potential adverse effects on WCA 3A related to actions taken to protect CSSS sub-population A within western ENP, including seasonal closure of the S-12A and S-12B regulatory outlets under ERTTP (S-12C seasonal closure criteria were additionally included with IOP). The IOP/ERTTP generally prescribed that the Column 2 mode of operation would be used when any S-12 structure is closed in order to protect the CSSS (November 1 through July 14, under ERTTP), although Column 1 operations would continue until the capacity of the S-12 structures that remain open is insufficient to handle the discharge from WCA 3A. Similarly, the IOP/ERTTP generally prescribed that Column 2 operations may continue past re-opening of the S-12 structures (July 15) to mitigate for adverse effects on WCA 3A stage levels resulting from the ERTTP closures of S-12A, S-12B, S-343A, S-343B, and S-344, based on comparison to WCA stage levels that would have been expected under the WCA 3A Regulation Schedule in place prior to the 2000 Interim Structural and Operational Plan (ISOP; the predecessor of IOP 2002); the cited 1985 WCA 3A Regulation Schedule was first incorporated the Rainfall Plan and included no seasonal closures for the S-12s. Under historical IOP and ERTTP operations, the Column 2 mode of operations has also been used as an additional water management tool for WCA 3A high water conditions. Beginning in 2014, the Corps and SFWMD are applying a WCA 3A water budget accounting tool to track the expected effect on WCA 3A stage levels resulting from the ERTTP closures of S-12A, S-12B, S-343A, S-343B, and S-344.

MWD Increment 1 Plus is a planned deviation from ERTTP that includes modifications determined as necessary, following review of monitoring data associated with Increment 1 and the 2016 Temporary Emergency Deviation, to the Increment 1 operational strategy to maintain the Congressionally-authorized flood mitigation requirements within the 8.5 SMA and to facilitate completion of the Canal 111 South Dade Projects ongoing construction necessary for Increment 2 of the field test. Increment 1, which was initiated on October 15, 2015 maintained the ERTTP maximum operating limit of 7.5 feet, NGVD in the L-29 Canal, while relaxing the G-3273 constraint for S-333, and utilizing S-356 for control of the seepage to the L-31N Canal.

3.7 FLOOD CONTROL

Water management and flood control is achieved in south Florida through a variety of canals, levees, pumping stations, and control structures within the WCAs, ENP, and SDCS. The WCAs provide a detention reservoir for rainfall over the WCAs, excess water from the EAA and parts of the east coast region, and for flood discharge from Lake Okeechobee to tide. The WCAs provide

levees to prevent the Everglades floodwaters from inundating the east coast urban areas; provide a water supply for the east coast areas and ENP; improve water supply for east coast communities by recharging underground freshwater reservoirs; reduce seepage; ameliorate salt-water intrusion in coastal well fields; and provide mixed quality habitat for fish and wildlife in the Everglades.

The East Coast Canals are flood control and outlet works that extend from St. Lucie County southward through Martin, Palm Beach, and Broward Counties to Miami-Dade County. The East Coast Canal watersheds encompass the primary canals and water control structures located along the LEC and their hydrologic basins. The main design functions of the project canals and structures in the East Coast Canal area are to protect the adjacent coastal areas against flooding; store water in conservation areas west of the levees; control water elevations in adjacent areas; prevent salt-water intrusion and over-drainage; provide freshwater to Biscayne Bay; and provide for water conservation and public consumption. The East Coast Canals consist of 40 independently operated canals, one levee, and 50 operating structures, consisting of 35 spillways, 14 culverts, and one pump station. The project operates to prevent major flood damage; however, due to urbanization, the existing surface water management system now has to handle greater peak flows than in the past. The SDCS provides a way to deliver water to areas of south Miami-Dade County. This canal system was overlaid on the existing flood control system. Many of these canals are used to remove water from interior areas to tide in times of excess water.

The C-111 South Dade Project was authorized to remove 40 percent of the Standard Project Flood (SPF) flows. This purpose remains an important objective because of the remaining agriculture within the basin. The South-Dade County Basin (south of the S-331 pump station) is provided flood protection by operation of the S-332B/S-332C/S-332D pump stations completed under the C-111 South Dade Project and through operation of the L-31N and C-111 Canal control structures (S-176, S-177, S-18C, and S-197). The South-Dade County basin may also receive inflows from upstream basin drainage through the S-331 pump station and the adjacent S-173 gated culvert structure. Under the 2012 Water Control Plan and MWD Increment 1 Plus, S-331/S-173 releases are the result of water management operations to: (1) maintain target L-31N Canal stages; (2) provide flood mitigation to the 8.5 SMA eastern areas when sufficient capacity is available at S-357 and maintain flood mitigation for the 8.5 SMA when S-357 operational capacity is limited; and (3) WCA 3A regulatory releases to the SDCS from S-334 during ERTF Column 2 operations. The COP will include regional hydrologic modeling in order to balance the ecological restoration objectives of the MWD and C-111 South Dade projects while demonstrating compliance with the project constraints. This will include flood mitigation requirements to prevent potential MWD project-induced flood damages in the 8.5 SMA and to maintain the level of flood damage reduction associated with the 1994 C-111 GRR-EIS Recommended Plan. The performance of the C-111 South Dade Project features, with respect to both project objectives and constraints, is dependent on the outcome of the COP, including details of the operational plans and operational constraints within WCA 3A, ENP, and the 8.5 SMA.

3.8 VEGETATIVE COMMUNITIES

The Everglades landscape is dominated by a complex of freshwater wetland communities that includes open water sloughs and marshes, dense grass- and sedge-dominated marshes, forested islands, and wet marl prairies. The primary factors influencing the distribution of dominant freshwater wetland plant species of the Everglades are soil type, soil depth, and hydrological

regime (USFWS 1999). These communities generally occur along a hydrological gradient with the slough/open water marsh communities occupying the wettest areas (flooded more than nine months per year), followed by sawgrass marshes (flooded six to nine months per year), and wet marl prairie communities (flooded less than six months per year) (USFWS 1999). The Everglades freshwater wetlands eventually grade into intertidal mangrove wetlands and sub tidal seagrass beds in the estuarine waters of Florida Bay. Development and drainage over the last century have dramatically reduced the overall spatial extent of freshwater wetlands within the Everglades, with approximately half of the pre-drainage 2.96 million acres of wetlands being converted for development and agriculture (Davis and Ogden 1997). Alteration of the normal flow of freshwater through the Everglades has also contributed to conversions between community types, invasion by exotic species, and a general loss of community diversity and heterogeneity.

Vegetative communities of the WCAs have suffered from both over-drainage and prolonged periods of inundation associated with the stabilization of water levels (USACE 1999). Many areas of WCA 3A still contain relatively good wetland habitat consisting of a complex of tree islands, sawgrass marshes, wet prairies, and aquatic sloughs. However, the northern portion of WCA 3A has been over-drained, resulting in increased fire frequency and the associated loss of tree islands, wet prairie, and aquatic slough habitat. Northern WCA 3A is currently dominated largely by mono-specific sawgrass stands and lacks the diversity of communities that exists in southern WCA 3A. In southern WCA 3A, Wood and Tanner (1990) first documented the trend toward deep water lily dominated sloughs due to impoundment. In approximately 1991, the hydrology of southern WCA 3A shifted to deeper water and extended hydroperiods resulting in corresponding shifts in vegetation communities (Zweig and Kitchens 2008). Typical Everglades vegetation, including tree islands, wet prairies, sawgrass marshes, and aquatic sloughs is contained in WCA 3B. However, within WCA 3B, the ridge and slough landscape has been severely degraded by the virtual elimination of overland sheetflow due to the L-67 Canal and Levee system. WCA 3B experiences very little overland flow and has become primarily a rain-fed system pre-dominated by shorter hydroperiod sawgrass marshes with relatively few sloughs or tree islands remaining. Water levels in WCA 3B are also too low and do not vary seasonally, contributing to poor ridge and slough patterning. Loss of sheetflow to WCA 3B has also accelerated soil loss reducing elevations of the remaining tree islands in WCA 3B and making them vulnerable to high water stages.

Vegetative trends in ENP have included a substantial shift from the longer hydroperiod slough/open water marsh communities to shorter hydroperiod sawgrass marshes (Davis and Ogden 1997; Armentano et al. 2006). In addition, invasion of sawgrass marshes and wet prairies by exotic woody species has led to the conversion of some marsh communities to forested wetlands (Gunderson et al. 1997).

The estuarine communities of Florida Bay have also been affected by upstream changes in freshwater flows through the Everglades. A reduction in freshwater inflows into Florida Bay and alterations of the normal salinity balance have affected mangrove community composition and may have contributed to a large-scale die-off of seagrass beds (USFWS 1999). Mangrove communities along Biscayne Bay have also seen a reduction in freshwater inflows and a reduction in historic habitat range by urban and agricultural development leaving only a remnant ribbon of suitable habitat immediately adjacent to the bay. Both bays experiences salinities in excess of 40

practical salinity unit on a seasonal basis. Manatee Bay and Barnes Sound are presently characterized by extended periods with little or no freshwater input, interspersed with erratic large volume discharges from the C-111 Canal, which is presently the major source of freshwater flows.

In contrast to the vast extent of wetland communities, upland communities comprise a relatively small component of the Everglades landscape and are largely restricted to Long Pine Key, the northern shores of Florida Bay, and the many tree islands scattered throughout the region. Vegetative communities of Long Pine Key include rockland pine forest and tropical hardwood forest. In addition, substantial areas of tropical hardwood hammock occur along the northern shores of Florida Bay and on elevated portions of some forested islands.

The vast majority of wetland features within the 8.5 SMA have undergone varying degrees of disturbance related to land clearing for agricultural or residential improvements and invasion by exotic species. Generally, wetlands with the least amount of disturbance are located in the western areas of the 8.5 SMA. The developed (eastern) portion of the 8.5 SMA, except the Federal Aviation Administration (FAA) radar facility, is virtually devoid of wetlands, whereas a zone extending down the central portion is dotted by wetlands intermixed within agricultural and residential land uses. Many of the wetland communities include varying densities of exotics including: Brazilian pepper (*Schinus terebinthifolius*), Australian pine (*Casuarina equisetifolia* L.), and melaleuca (*Melaleuca quinquenervia*). The 8.5 SMA includes an Australian pine forest that is very dense, supporting a sparsely vegetated understory and ground cover. A prevalent ground cover species is sawgrass, growing within a thick layer of duff comprised entirely of pine needles. Australian pine can be found in monotypic stands, along marsh and prairie edges, and in abandoned fields. Brazilian pepper is common along roadsides and also forms dense wooded plots throughout the 8.5 SMA (USACE 2012a).

3.9 FISH AND WILDLIFE RESOURCES

Aquatic macro invertebrates form a vital link between the algal and detrital food web base of freshwater wetlands and the fishes, amphibians, reptiles, and wading birds that feed upon them. Important macro invertebrates of the freshwater aquatic community include crayfish (*Procambarus alleni*), riverine grass shrimp (*Palaemonetes paludosus*), amphipods (*Hyallela aztecus*), Florida apple snail (*Pomacea paludosa*), Seminole ramshorn (*Planorbella duryi*), and numerous species of aquatic insects (USACE 1999).

Small freshwater marsh fishes are also important processors of algae, plankton, macrophytes, and macro invertebrates. Marsh fishes provide an important food source for wading birds, amphibians, and reptiles. Common small freshwater marsh species include the native and introduced golden topminnow (*Fundulus chrysotus*), least killifish (*Heterandria formosa*), Florida flagfish (*Jordenella floridae*), golden shiner (*Notemigonus crysoleucas*), sailfin molly (*Poecilia latipinna*), bluefin killifish (*Lucania goodei*), oscar (*Astronotus ocellatus*), eastern mosquitofish (*Gambusia holbrooki*), and small sunfishes (*Lepomis* spp.) (USACE 1999).

Within the Greater Everglades, numerous sport and larger predatory fishes occur in deeper canals and sloughs. Common species include largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), redear sunfish (*Lepomis microlophus*), black crappie (*Pomoxis nigromaculatus*), Florida gar (*Lepisosteus platyrhincus*), threadfin shad (*Dorosoma petenense*),

gizzard shad (*Dorosoma cepedianum*), yellow bullhead (*Ameiurus natalis*), white catfish (*Ameiurus catus*), bowfin (*Amia calva*), and tilapia (*Tilapia* spp.) (USACE 1999). Larger fishes are an important food source for wading birds, alligators, otters, raccoons, and mink.

The freshwater wetland complex supports a diverse assemblage of reptiles and amphibians. Common amphibians include the greater siren (*Siren lacertina*), Everglades dwarf siren (*Pseudobranchius striatus*), two-toed amphiuma (*Amphiuma means*), pig frog (*Rana grylio*), southern leopard frog (*Rana sphenocephala*), Florida cricket frog (*Acris gryllus*), southern chorus frog (*Pseudacris nigrita*), squirrel tree frog (*Hyla squirela*), and green tree frog (*Hyla cinerea*) (USACE 1999). Amphibians also represent an important forage base for wading birds, alligators, and larger predatory fishes (USACE 1999).

Common reptiles of freshwater wetlands include the American alligator (*Alligator mississippiensis*), snapping turtle (*Chelydra serpentina*), striped mud turtle (*Kinosternon bauri*), mud turtle (*Kinosternon subrubrum*), cooter (*Chrysemys floridana*), Florida chicken turtle (*Deirochelys reticularia*), Florida softshell turtle (*Trionyx ferox*), water snake (*Natrix sipedon*), green water snake (*Natrix cyclopion*), mud snake (*Francia abacura*), and Florida cottonmouth (*Agkistrodon piscivorus*) (USACE 1999).

The freshwater wetlands of the Everglades are noted for their abundance and diversity of colonial wading birds. Common wading birds include the white ibis (*Eudocimus albus*), glossy ibis (*Plegadus falcenellus*), great egret (*Casmerodius albus*), great blue heron (*Ardea herodias*), little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), snowy egret (*Egretta thula*), green-backed heron (*Butorides striatus*), cattle egret (*Bubulcus ibis*), black-crowned night heron (*Nycticorax nycticorax*), yellow-crowned night heron (*Nycticorax violacea*), roseate spoonbill (*Ajaia ajaja*), and wood stork (*Mycteria americana*) (USACE 1999).

Mammals that are well-adapted to the aquatic and wetland conditions of the freshwater marsh complex include the rice rat (*Oryzomys palustris natator*), round-tailed muskrat (*Neofiber alleni*), and river otter (*Lutra canadensis*). Additional mammals that may utilize freshwater wetlands on a temporary basis include the white-tailed deer (*Odocoileus virginianus*), Florida panther (*Puma concolor coryi*), bobcat (*Lynx rufus*), and raccoon (*Procyon lotor*).

Conditions within the 8.5 SMA provide important resources for opportunistic small animals including raccoons, rabbits, squirrels, songbirds, hawks, kestrels, crows, turkey vultures, frogs, and various reptiles. White-tailed deer have been observed. On-site surveys have found the greatest degree of species richness within the forested wetland systems within the ENP lands to the west of the 8.5 SMA, whereas species richness was lowest in wetlands on higher elevations (7.0-8.0 feet, NGVD) in the eastern regions of the 8.5 SMA, in close proximity to L-31N (USACE 2011). This eastern region of the 8.5 SMA is dedicated to agricultural and residential land uses, and provides only marginal benefits to resident wildlife (USACE 2012a).

The change in fish and wildlife diversity and wetland function between the western and eastern portions of the 8.5 SMA correlates with an elevation gradient (increasing elevations from west to east) and land use. Both elevation and land use are interdependent co-variables as lower elevations correlate with frequent flooding that limits the extent and type of land use. Higher elevations are

more compatible with agricultural, commercial, and residential land uses. A recent overview of wildlife observed within the 8.5 SMA can be found in the 2011 Proposed Interim Operating Criteria for 8.5 SMA EA (USACE 2011), and 2012 design refinement for the 8.5 SMA EA (USACE 2012a).

3.10 THREATENED AND ENDANGERED SPECIES

3.10.1 FEDERALLY PROTECTED SPECIES

The Corps has coordinated with USFWS and National Marine Fisheries Service (NMFS), in accordance with Section 7 of the Endangered Species Act, to determine federally-listed threatened and endangered species that are either known to occur or are likely to occur within the project area.

TABLE 6. FEDERALLY THREATENED AND ENDANGERED SPECIES WITHIN THE PROJECT AREA.

Common Name	Scientific Name	Status
Mammals		
Florida panther	<i>Puma concolor coryi</i>	E
Florida manatee	<i>Trichechus manatus latirostris</i>	E, CH
Florida bonneted bat	<i>Eumops floridanus</i>	E
Birds		
Cape Sable seaside sparrow	<i>Ammodramus maritimus mirabilis</i>	E, CH
Snail kite	<i>Rostrhamus sociabilis plumbeus</i>	E, CH
Red-cockaded woodpecker	<i>Picoides borealis</i>	E
Roseate tern	<i>Sterna dougallii</i>	T
Wood stork	<i>Mycteria americana</i>	T
Reptiles		
American Alligator	<i>Alligator mississippiensis</i>	T, SA
American crocodile	<i>Crocodylus acutus</i>	T, CH
Eastern indigo snake	<i>Drymarchon corais couperi</i>	T
Gopher tortoise	<i>Gopherus polyphemus</i>	C
Green sea turtle*	<i>Chelonia mydas</i>	E
Hawksbill sea turtle*	<i>Eretmochelys imbricata</i>	E
Kemp's Ridley sea turtle*	<i>Lipodochelys kempii</i>	E
Leatherback sea turtle*	<i>Dermochelys coriacea</i>	E
Loggerhead sea turtle*	<i>Caretta</i>	E
Fish		
Smalltooth sawfish*	<i>Pristis pectinata</i>	E, CH
Invertebrates		
Bartram's hairstreak butterfly	<i>Strymon acis bartrami</i>	E, CH

Elkhorn coral*	<i>Acropora palmata</i>	T, CH
Florida leafwing butterfly	<i>Anaea troglodyta floridalis</i>	E, CH
Miami blue butterfly	<i>Cyclargus thomasi bethunebakeri</i>	E
Schaus swallowtail butterfly	<i>Heraclides aristodemus ponceanus</i>	E
Staghorn coral*	<i>Acropora cervicornis</i>	T, CH
Stock Island tree snail	<i>Orthalicus reses</i> (not incl. <i>nesodryas</i>)	T
Plants		
Deltoid spurge	<i>Chamaesyce deltoidea</i> spp. <i>Deltoidea</i>	E
Garber's spurge	<i>Chamaesyce garberi</i>	T
Johnson's seagrass*	<i>Halophila johnsonii</i>	E, CH
Okeechobee gourd	<i>Cucurbita okeechobeensis</i> ssp. <i>okeechobeensis</i>	E
Small's milkpea	<i>Galactia smallii</i>	E
Tiny polygala	<i>Polygala smallii</i>	E
Blodgett's silverbush	<i>Argythamnia blodgettii</i>	T
Cape Sable thoroughwort	<i>Chromolaena frustrata</i>	E, CH
Everglades bully	<i>Sideroxylon reclinatum</i> spp. <i>austrofloridense</i>	C
Florida bristle fern	<i>Trichomanes punctatum</i> spp. <i>Floridanum</i>	E
Florida pineland crabgrass	<i>Digitaria pauciflora</i>	C
Florida prairie clover		E
Crenulate Lead Plant		C
Carter's small flowered flax		E, CH
Florida Brickell- bush		E, CH
Florida semaphore cactus		E, CH
Sand flax		E
Pineland sandmat	<i>Chamaesyce deltoidea</i> ssp. <i>Pinetorum</i>	C

3.10.2 STATE LISTED SPECIES

The project area also provides habitat for several state listed species **Table 9**.

TABLE 7. STATE LISTED SPECIES WITHIN THE PROJECT AREA

Common Name	Scientific Name	Status
Mammals		
Everglades mink	<i>Mustela vison evergladensis</i>	T
Birds		
Snowy plover	<i>Charadrius alexandrinus</i>	T
American oystercatcher	<i>Haematopus palliatus</i>	T
Black skimmer	<i>Rynchops niger</i>	T
Least tern	<i>Sterna antillarum</i>	T
White-crowned pigeon	<i>Columba leucocephalus</i>	T
Little blue heron	<i>Egretta caerulea</i>	T
Tricolored heron	<i>Egretta tricolor</i>	T
Reddish egret	<i>Egretta rufescens</i>	T
Roseate spoonbill	<i>Ajajaajaja</i>	T
Florida sandhill crane	<i>Antigone Canadensis pratensis</i>	T
Southeastern American kestrel	<i>Falco sparverios paulus</i>	T
Reptiles		
Rim rock crown snake	<i>Tantilla oolitica</i>	T
Plants		
Pine-pink orchid	<i>Bletia purpurea</i>	T
Lattace vein fern	<i>Thelypteris reticulata</i>	E
Eatons spikemoss	<i>Selaginella eatonii</i>	E
Wright's flowering fern	<i>Anemia wrightii</i>	E
Tropical fern	<i>Schizaea pennula</i>	E
Mexican vanilla	<i>Manilla mexicana</i>	E

E=Endangered; T=Threatened; SC=Species of Special Concern

3.11 ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fishery Conservation and Management Act, 16USC 1801 et seq. Public Law 104-208 reflects the Secretary of Commerce and Fishery Management Council authority and responsibilities for the protection of essential fish habitat (EFH). The southern estuaries comprise Biscayne National Park and a large portion of ENP and are a shallow estuarine system (average depth less than 3 feet). Florida Bay is the main receiving water of the greater Everglades. The southern estuaries contain essential fish habitat for corals; coral reef and live bottom habitat; red drum (*Sciaenops ocellatus*); penaeid shrimps; spiny lobster (*Panulirus argus*); other coastal migratory pelagic species and the snapper-grouper complex. Essential fish habitat in the southern estuaries is comprised of seagrasses, estuarine mangroves, intertidal flats, the estuarine water column, live/hard bottoms, and coral reefs.

3.12 WATER QUALITY

Water quality in the study area is significantly influenced by development. The C&SF Project led to significant changes in the landscape by opening large land tracts for urban development and agricultural uses, and by the construction of extensive drainage networks. Natural drainage patterns in the region have been disrupted by the extensive array of levees and canals which has

resulted in further water quality degradation. The water quality of the study area is largely controlled by Lake Okeechobee and the EAA to the north and urban and agricultural development southeast of ENP. The northern WCAs are fed from Lake Okeechobee as well as runoff from the EAA. Stormwater Treatment Areas (STAs) were constructed to reduce total phosphorus from surface water runoff releases from Lake Okeechobee. Water quality impairment within the study area can generally be attributed to nutrients and bioavailable forms of mercury. A short discussion of nutrients is provided below followed by a review of water quality within the project area. This proposed action will have no effects on mercury deposition (atmospheric source) or mercury methylation (due to factors not influenced by this proposed action, such as sulfur content in the water column etc.).

3.12.1 NUTRIENTS

Nutrients such as phosphorus and nitrogen compounds are a concern in the estuaries, WCAs, ENP, and Lake Okeechobee since they result in an imbalance of flora and fauna. To address nutrient discharges the FDEP has recently established surface water quality numeric nutrient criteria for all Florida water bodies and developed National Pollution Discharge Elimination (NPDES) Total Maximum Daily Loads (TMDLs) for many watersheds with excessive nutrient pollution. TMDLs for phosphorus and/or nitrogen currently exist for Lake Okeechobee. Additional information on the status and implementation of TMDLs within the study area can be found at <http://www.dep.state.fl.us/water/tmdl/>.) Within the Everglades Protection Area, phosphorus concentrations are regulated by the “Phosphorus Rule” 62-302.540 F.A.C. and are subject to the terms of the 1992 Consent Decree in *United States v. South Florida Water Management*. District (S.D. Fla No. 88-1886-CIV-MORENO).

Total phosphorus (TP) is the nutrient of concern within WCA 3 and Northeast SRS. Under the current conditions, TP concentrations at the S-333 structure is higher (11 parts per billion (ppb) 9/18/17) than that the expected wet season average this far into marsh rehydration, apparently due to the hurricane conditions and is expected to drop to below 10 ppb and continue to approximately 8ppb as the marsh recovers from hurricane conditions. Recent data (9/18/17) from S12B-D grabs yielded results at or below 7ppb TP. Any discharges from the S-152 are required to be at or below 10 ppb TP (geomean). SRS was in compliance with the 1992 Consent Decree requirements for Water Year 2016 (October 1, 2015- September 30, 2016).

3.13 NATIVE AMERICANS

There are two federally recognized tribes (Miccosukee Tribe of Indians of Florida [Miccosukee Tribe] and the Seminole Tribe of Florida [Seminole Tribe]) that are located within and adjacent to the project area (**Figure 8**). Both tribes maintain a strong connection to the project area through continued use and regard the indigenous populations of Florida as their ancestors. The project area includes a large segment of the Miccosukee Tribe’s Alligator Alley Reservation which spans portions of WCA 3A, the Tamiami Trail Reservation Area which consists of three parcels of land used for commercial services, and the Miccosukee Reserved Area which is the center of the Miccosukee Indian population. In addition, both tribes have leases and easements within WCA 3A and have historically recognized rights within ENP that stems from the Native Americans who lived within the ENP boundary prior to the parks creation.

The Miccosukee Tribe and Seminole Tribe have a long history of living within the project area. Both tribes moved into the region during the eighteenth and nineteenth centuries from Georgia and Alabama. Fleeing the U.S. Army and the forced relocation policies of the Indian Removal Act (1830), the Miccosukee and Seminoles were part of Native American groups commonly referred to as Seminoles; however, there are references to some of the groups involved in the conflict as Mikasuki, which supports the subsequent separation of the two groups (Weisman 1999). Many of these groups fled into the swamp areas of south Florida and made their homes within the Everglades and other remote areas of region. The coming of the Civil War led to the abandonment of the removal efforts and the various Native American groups were largely left alone until the late nineteenth century. In 1928 the Tamiami Trail opened, cutting through the Everglades and bringing along with it tourists and explorers into the region, and, for the first time, bringing complete access for the various tribes to participate in the larger economy that was growing in south Florida.

As early as 1894, the Federal governmental and later the State of Florida started to acquire lands within the Big Cypress area. However, initial attempts to relocate tribal members to these areas failed as there were simply no incentives to abandon traditionally occupied areas in favor of the new lands (Weisman 1999). “The Indian New Deal changed that, and for the first time, services, programs, and land were brought together...at Big Cypress” (Weisman 1999:125). In the 1930s, the Federal Government started to bring services to the various Seminole groups. Some of the groups relocated and started to receive Federal aid, while some groups resisted government intrusion into their lives and remained in various traditional areas that now included sites along Tamiami Trail (Weisman 1999). Throughout the next two decades the Federal Government instituted various aid programs to assist the Native American groups living within the reservations until the early 1950s. In the early 1950s, the Federal Government’s policies radically changed, as it was felt that native groups should now join “mainstream society” and that Federal aid should come to an end (Weisman 1999:131). Being faced with a reduction in support and possible termination of recognition as a group by the government, various Native American groups on these reservations began to organize and form their own tribal governments to assist in the protection of their interests. In 1957, the Seminole Tribe of Florida received Federal recognition. However, wishing to remain separate and to maintain their own identity, many of the groups along the Tamiami Trail refused to join and instead held out to form their own government that would be federally recognized in 1962 as the Miccosukee Tribes of Indians of Florida.

Today most of the Miccosukee Tribe lives within the confines of the reservation located along the forty mile bend of Tamiami Trail while many of the Seminoles Tribal members live on various reservations properties with the largest being those of Big Cypress, Hollywood, and Brighton Reservations. In addition to the Federal reservation, the Miccosukee Tribe has also established a perpetual lease to large portions of the WCA 3A area while the Seminole Tribe has a lease within the northwestern portion of WCA 3A. The members of both groups maintain a traditional life style that is intricately connected to the Everglades. Traditional practices of hunting, fishing and general living are still maintained, along with modern entrepreneurship through various enterprises such as cattle ranching and with tourism related businesses along Tamiami Trail. Today, both tribes have vibrant, thriving cultures based within the Everglades region. These practices continue to tie the Tribes to the Everglades in such a way that careful consideration of effects is warranted.

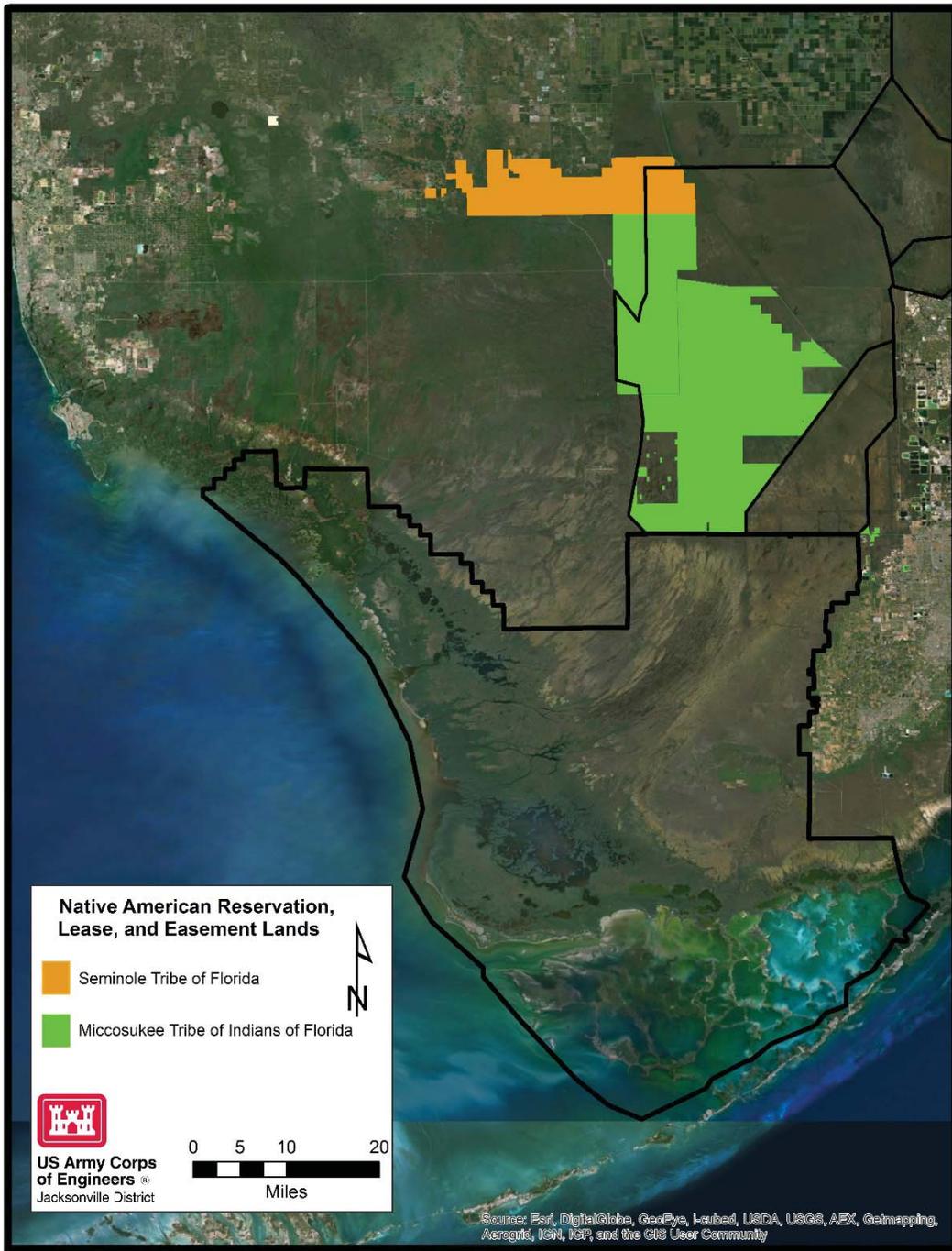


FIGURE 8. MAP OUTLINING THE LOCATION OF TRIBAL RESERVATION, LEASED AND EASEMENT LANDS.

3.14 CULTURAL RESOURCES

Within the larger region that includes ENP and WCA3, there are numerous recorded archeological sites indicative of Native American habitation. Prior to European contact, the Everglades were a heavily populated area. Native Americans traveled via canoe and on foot through the saw grass and inhabited many of the tree islands that dot the landscape. The earliest known habitation sites date to the Early Archaic period (7,500 BC) when the Everglades were much drier. However, within the larger area of south Florida, evidence of Paleo-Indian (12,000 to 7,500 BC) habitation has also been recorded (i.e. Warm Mineral Springs (8SO18) and Little Salt Spring (8SO79) (Griffin 1988). Some of the Early Archaic habitation sites have only recently been rediscovered as the result of managed drainage programs in south Florida. As the climate warmed and sea level rose, many Native Americans abandoned the lowest of the tree islands as they became submerged. This process continued through what is known as the Middle Archaic, until climate conditions stabilized around 300 BC at the start of the Late Archaic. Today many sites from both the Early and Middle Archaic periods are no longer submerged and may have more modern Native American use.

After the Archaic period, the region became incorporated into what is known as the Glades region and remained inhabited until European contact, when Old World diseases and slave raiding heavily reduced the Native populations during the late 1,500s-1,700s. Many of the tree islands through this portion of the Everglades have sites associated to the Glades period. This period has been broken down into successive stages starting with Glades I, which dates from 500 BC to 750 AD, Glades Period II dating from 750 to 1,200 AD, and Glades Period III dating from 1,200 AD to European contact in the 1,500s. Typical habitation sites through this region are commonly referred to as middens, which are the accumulation of daily life activities on these tree islands. Material remains can stretch from the surface to well over one meter below the surface on certain islands. Native American burials can also be found among these habitation sites.

After European contact, Native American populations in the region continuously declined and remained at low levels until Miccosukee and Seminole tribal groups moved into the area while fleeing the U.S. Army and U.S. Governments' forced relocation program. Many sites associated with both the Miccosukee and Seminole tribes are known to exist throughout the region.

The broad region of ENP and WCA 3 has been subject to numerous cultural resource investigations and have been found to contain a wide variety of cultural resources that vary within their significance. There are archaeological resources associated with some of the earliest habitation sequences within south Florida and relatively recent sites directly associated with modern Native American tribes who were removed from ENP shortly after its creation.

Approximately 277 cultural resources, as identified in the Florida Master Site File, are located within the project area. Of these resources, 121 sites are located within WCA 3 north of the L-29 canal. The majority of these sites were identified based on a 1987 aerial analysis of the WCA and the presence of archaeological materials was not ground-truthed (Taylor 1987). Only approximately 25 sites within WCA 3 have been identified based on a physical archaeological investigation. A total of 8 cultural resources within WCA3 have been listed or determined eligible for listing in the National Register of Historic Places (NRHP), including Mack's Fish Camp Historical District.

The southern portion of the project area, south of the L-29 Canal, is located entirely within ENP. ENP has been subject to many archaeological investigations that have identified approximately 156 cultural resources within the project area. Of these resources, 40 have been listed or determined eligible for listing in the NRHP, including two archaeological districts. A small portion of Ten Thousand Islands Archaeological District is located on the western edge of the project area and the SRS Archaeological District is contained entirely within the project area. The SRS Archaeological District contains no less than 63 archaeological resources, 39 of which are contributing resources to the district (Schwandron 1996). Sites typically found within the SRS are described as earth middens; however, multi-occupation sites such as Tiger Hammock (8DA11) which is associated with Glades II and III and Seminole occupations have also been identified.

3.15 AIR QUALITY

Air monitoring reports are prepared annually by FDEP to inform the public of the air pollutant levels throughout the State of Florida. All areas within the state are designated with respect to each of the six pollutants (carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particle pollution (10 microns or less in diameter (PM₁₀), and 2.5 microns or less in diameter (PM_{2.5}), and sulfur dioxide (SO₂)) as attainment (*i.e.*, in compliance with the standards); non-attainment (*i.e.*, not in compliance with the standards); or unclassifiable (*i.e.*, insufficient data to classify). Attainment areas can be further classified as maintenance areas. Maintenance areas are areas previously classified as non-attainment which have successfully reduced air pollutant concentrations to below the standard. Southeast Florida including Miami-Dade County continues to be classified by the U.S. Environmental Protection Agency (EPA) as an attainment/maintenance area for ozone. Florida remains designated as unclassifiable for PM₁₀. Although sufficient data have been collected for attainment determinations, EPA has not considered PM₁₀ for attainment determinations in Florida yet.

3.16 HAZARDOUS, TOXIC OR RADIOACTIVE WASTES

Along the southern boundary of WCA 3A and WCA 3B there are levees and canals constructed in the 1950s and 1960s that limit vehicle access to the interior. Activity within the WCA is generally limited to fishing, hunting, and birding though there may be some illegal dumping of solid wastes along the perimeter. No soil testing for residual contaminants has been conducted within the WCA 3A and WCA 3B as part of this project since the lands have no history of prior agricultural or industrial use that would cause such contamination.

A search of FDEP petroleum spill and storage sites database done in October of 2014 identified six petroleum storage sites and one spill site along Tamiami Trail between S-333 and S-356. Petroleum storage at Everglades Safari site was closed in 2005; however, a petroleum spill at this site is listed as ongoing as of October 2014. Petroleum storage facilities operated by the SFWMD are located at the S-333 and S-356 structures.

A search of FDEP's databases of contamination sites and petroleum storage facilities identified five spill sites and 15 petroleum storage facilities located along the canal or within the 8.5 SMA. The SFWMD is listed as the permit holder for storage facilities at the S-357 and S-331 pump stations. The spill at the SFWMD's S-331 pump station has been completed. A spill at the General Portland, Inc. facility west of the canal is listed as ongoing. Three non-petroleum cleanup sites

are located along the L-31N Canal. Two of the sites are located along the L-31N Canal buffer trail and one is located within the 8.5 SMA.

3.17 NOISE

Noise levels are associated with surrounding land use. Within the major natural areas of south Florida, external sources of noise are limited and of low occurrence. Existing sources of noise are limited to vehicular traffic travelling on roads adjacent to and cutting through the project area. Other sources of noise which may occur within these natural areas include air boats, off road vehicles, swamp buggies, motor boats, and occasional air traffic. Sources of noise in rural, areas include noise associated with agricultural production such as the processing and transportation of agricultural produce. Within the rural municipalities and urban areas, sound levels would be expected to be of greater intensity, frequency, and duration. Noise associated with transportation arteries, such as highways, railroads, primary and secondary roads, airports, operations at commercial and industrial facilities etc., inherent in areas of higher population would be significant and probably override those sounds associated with natural emissions.

3.18 AESTHETICS

The visual characteristics of south Florida can be described according to the three dominant land use categories: natural areas, agricultural lands, and urban areas. The natural areas consist of a variety of upland and wetland ecosystems, including lakes, ponds, vast expanses of marsh and wet prairie, with varying vegetative components. Uplands are often dominated by pine, although other sub-tropical and tropical hardwoods do occur. Overall, the land is extremely flat, with few natural topographic features such as hills or other undulations. Much of the visible topographic features within the natural areas are man-made. Generally, urban development is concentrated along the LEC. Development is typically immediately adjacent to or nearby protected natural areas.

3.19 SOCIOECONOMICS

Florida's economy is characterized by strong wholesale and retail trade, government, and service sectors. The economy of south Florida is based on services, agriculture, and tourism. The three counties that comprise the LEC are heavily populated. Much of the land within the area potentially impacted is within ENP and is publicly owned. However, a number of privately owned parcels still exist within this region. Several private entities currently own real estate within the project area adjacent to Tamiami Trail and within ENP (**Figure 9**). Property owners include three airboat concessionaires, the Airboat Association of Florida, Florida Power and Light, Lincoln Financial Media, and Salem Communications. Efforts by the Corps and DOI/ENP to acquire real estate interests are ongoing and also include channel and flowage easements for the Tamiami Trail Bridge and roadway. All required real estate, channel and flowage easements to allow raising of the L-29 Canal maximum operating limit above 7.5 feet, NGVD are expected to be acquired by October of 2017. The Corps has acquired flowage easements for the Airboat Association.

The Miccosukee Indian Tribe of Florida currently lease two areas adjacent to Tamiami Trail (Osceola and Tigertail Camps) and have several businesses adjacent to Tamiami Trail west of S-333 including the Miccosukee Indian Village, Restaurant and airboat concessionaires.

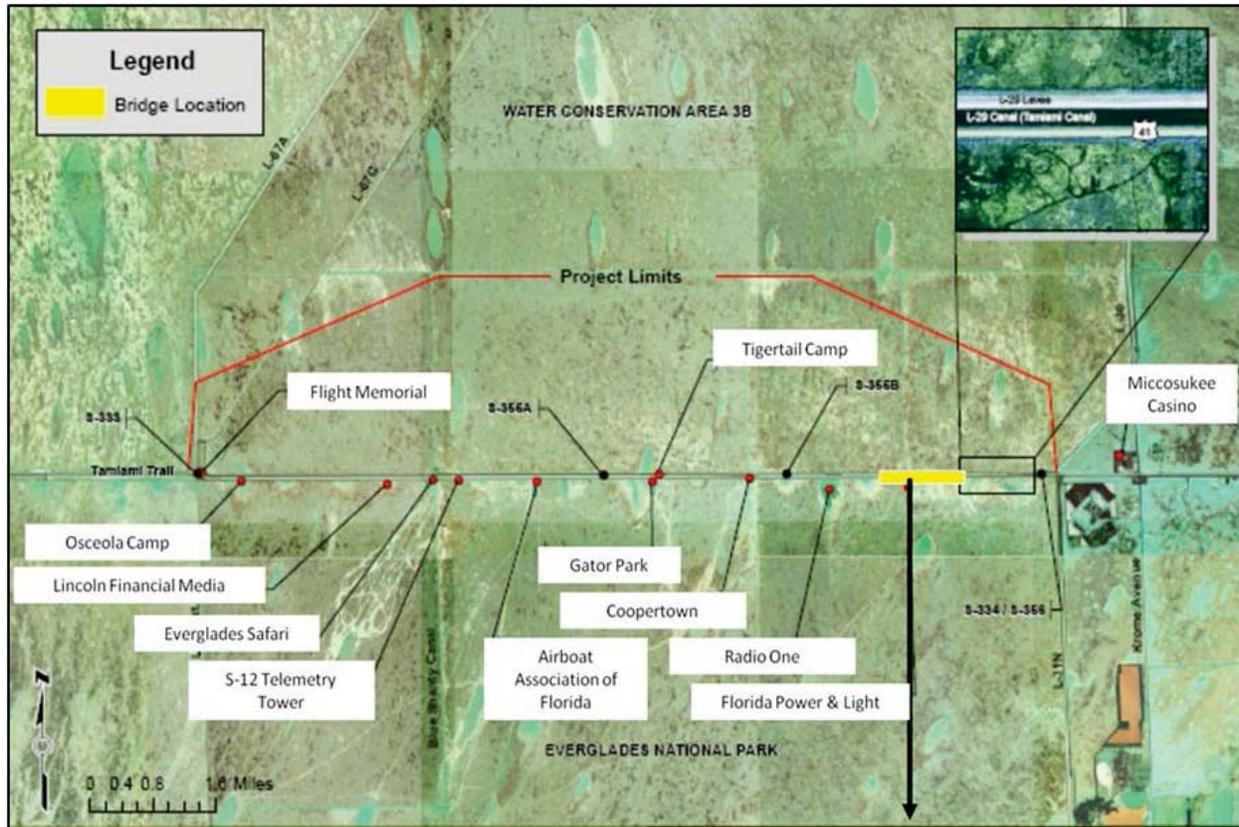


FIGURE 9. LOCATIONS OF PRIVATELY OWNED REAL ESTATE WITHIN THE PROJECT AREA.

The 8.5 SMA is located in the East Everglades, approximately 20 miles southwest of Miami, ten miles north of Homestead, and 6.6 miles south of U.S. Highway 41. It is bounded on the east by L-31N, on the west by Northeast SRS (part of ENP), on the north by SW 104th Street, and on the south by SW 168th (Richmond Drive) Street. The 8.5 SMA presently encompasses approximately ten square miles of mixed use development. Approximately 42 percent (2,699 acres) of the 8.5 SMA is classified as wetlands, one percent (65 acres) as uplands, and 57 percent (3,646 acres) as residential and/or agricultural lands based on a Wetland Rapid Assessment Procedure (WRAP) performed for the 2000 GRR/FSEIS (USACE 2000). The eastern region of the 8.5 SMA is dedicated to agricultural and residential land uses (USACE 2012a).

3.20 AGRICULTURE

The Miami-Dade County agricultural industry is unique in both the types of commodities produced and the method of cultivation. The majority of agricultural activities in the county are located south of Tamiami Trail and east of ENP. A variety of vegetables, fruits, and ornamentals are grown within this region and include many tropical and subtropical crops, which are grown year-round. The most active growing season is between September and May. Because of the wet and dry rainy seasons in the area, planting times are controlled by the elevation of ground water. Soils in these agricultural areas are rocky soils and marl soils.

3.21 RECREATION

There are many recreational opportunities throughout south Florida. WCA 3 has been used for recreational activities including hunting, fishing, frogging, boating, camping, and off-road vehicle use. Private camps are located throughout WCA 3. A variety of other nature-based recreational opportunities are also provided to the public within WCA 3. These activities include wildlife viewing and nature photography. Hiking and bicycling are also permitted on existing levees within the project area where appropriate. There are also several recreation areas at locations along the boundary of WCA 3. Similar recreational opportunities are provided in ENP.

4.0 ENVIRONMENTAL EFFECTS

4.1 GENERAL ENVIRONMENTAL EFFECTS

Table 10 includes anticipated changes to the existing environment including direct, indirect, and cumulative effects. Environmental effects are expected to be spatially limited and small in magnitude given the short duration of the Proposed Action. Potential environmental effects of current water management operations (No Action Alternative) are thoroughly evaluated within the MWD Increment 1 Plus EA and FONSI (dated February 16, 2017) and are hereby incorporated by reference. Potential effects associated with raising stages in the L-29 Canal up to 8.5 feet NGVD were previously and thoroughly documented within the L-29 Canal and South Dade Conveyance System Temporary Emergency Deviation to Alleviate High Water Levels in Water Conservation Area 3A Supplemental EA and FONSI (dated May 10, 2016) and are hereby incorporated by reference. Potential environmental effects associated with the June 2017 WCA 3A Planned Temporary Deviation and July 2017 WCA 2A Planned Temporary Deviation are documented in the 2017 WCA 3A Planned Temporary Deviation EA and FONSI (dated June 28, 2017) and the 2017 WCA 2A Planned Temporary Deviation EA and FONSI (dated July 31, 2017), respectively, and are hereby incorporated by reference. Please refer to the cited documents for additional information (<http://www.saj.usace.army.mil/About/Divisions-Offices/Planning/Environmental-Branch/Environmental-Documents/>).

The proposed action is expected to increase water deliveries from WCA 3A to ENP and Florida Bay for the temporary benefit of natural resources, providing potential for additional discharges from S-197 above the increase previously evaluated for the June 2017 planned temporary deviation due to increased use of S-331. Potential reductions in high water levels and decreased periods of prolonged flooding is expected to provide temporary benefits to vegetation and fish and wildlife resources, including Federally threatened and endangered species such as the wood stork (*Mycteria americana*) and Everglade snail kite (*Rostrhamus sociabilis plumbeus*). Prolonged periods of flooding eliminates foraging and nesting opportunities for wading birds. Moving water south, through ENP will also have the added ecological benefit of improving salinity conditions of Florida Bay. Potential temporary adverse effects to Manatee Bay and Barnes Sound associated with salinity fluctuations are anticipated with continued increased S-197 utilization associated with the June 2017 WCA 3A Planned Temporary Deviation and increased use of S-331.

The proposed action is expected to increase hydroperiods with CSSS-A habitat in western SRS. This increase in hydroperiod will likely reduce the likelihood of attaining in 2018 the USFWS CSSS hydroperiod target of 90-210 days. However as described in the 2016 ERTTP BO (dated July 22, 2016) the USFWS target is based upon a 4-year running average discontinuous hydroperiod range of 90-210 days, with no 2 consecutive years failing to meet this target. In addition, it is also important to note that USFWS at page 186 in the 2016 ERTTP BO acknowledges that “these targets are not technically feasible for all populations in every year at this time.”

Although implementation of Alternative C may affect attainment of the USFWS target for CSSS, it would also provide benefits to other federally-listed species that nest and forage within WCA 3A to include the endangered Everglade snail kite, threatened wood stork and a variety of state-listed wading bird species. It is also important to emphasize that during consultation under the 2016 ERTTP BO, USFWS prioritized the CSSS over the other federally-listed species due to CSSS population size. The Corps does not anticipate any direct effects on actual sparrows, but indirect

effects associated with the potential for longer annual discontinuous hydroperiods. The Corps recognizes the commitments made within the 2016 ERTTP BO and remains committed to implementation of the RPA. At this time, however, the Corps immediate concern is to reduce stages within WCA 3A to further reduce risk in WCA 3A for natural resources, public health, safety or welfare as the wet season and hurricane season continue due to reduced flood storage.

The Corps evaluated variations on potential delayed closures and reopening as show in **Table 5** in order to provide information related to how outflow from the various structures if closure were delayed would affect stages in WCA 3A. This analysis recognizes that the alternative that will be implemented may likely represent operations somewhere in between Alternative B and Alternative C. Implementation of any of these measures individually would have utility in furthering the goal of reducing levels in WCA 3A. Each closure or reopening has independent utility and could be implemented in conjunction with any of the others, but all proposed delayed closures and reopening together are the most effective. Beneficial effects and effects of the action would be commensurate with the significance of the measures taken.

Since water levels within the Everglades have historically fluctuated on a seasonal, annual, and interannual basis, it is likely that cultural resources within the project area have been previously exposed to natural hydrological conditions that may be experienced under the current condition. However, continued increasing high water levels observed in the No Action Alternative has the potential for negative effects on some cultural resources within WCA 3A where high water levels and prolonged inundation periods are expected to continue. Implementation of the Action Alternatives would reduce water levels in WCA 3A and help to control flooding at cultural resources locations. Implementation of the Action Alternatives would increase flows to SRS. Results of previous modeling analyses conducted under ERTTP generally indicate higher water levels just south of the L-29 Canal with progressively lower water stages as the flow moves south. While tree islands within SRS and ENP may experience high water levels, general archaeological predictive models indicates that the presence of archaeological sites are indicative of a preference of higher elevations for habitation uses within tree islands. Water levels in ENP are projected to be similar to those experienced during the 2016 Temporary Emergency Deviation and consistent with levels observed during periods of high water that occurred between 1994 – 1995 and 1999 – 2000. In addition, the temporary nature and short duration of the project would also preclude adverse effects to historic properties within the project area. Therefore, increased water levels during the temporary Action Alternatives is not anticipated to adversely affect historic properties listed or eligible for listing in the NRHP.

There are many recreational opportunities throughout south Florida. WCA 3 has been used for recreational activities including hunting, fishing, frogging, boating, camping, and off-road vehicle use. Other nature-based activities include wildlife viewing and nature photography. Hiking and bicycling are also permitted on existing levees within the project area where appropriate. High water levels are currently limiting access to recreational opportunities within the project area. The FWC has closed access to the WCAs within the project area leading to economic losses within the region and effects on local businesses.

Potential losses in tree islands as a result of high water levels are expected to occur if the proposed action is not taken. Loss of tree islands has the potential to impact cultural resources and culturally important ceremonies practiced by Native American Tribes within the project area.

TABLE 8. SUMMARY OF POTENTIAL ENVIRONMENTAL CONSEQUENCES ASSOCIATED WITH IMPLEMENTATION OF THE NO ACTION AND ACTION ALTERNATIVES.

	Alternative A (No Action)	Alternative B (Relaxation of the L-29 Canal Constraint; SDCS Modifications)	Alternative C (Relaxation of L-29 Canal Constraint; Delayed closure of S-12A/B, reopening of S-343A/B, S-344, SDCS Modifications)
Climate	Implementation of Alternative A would not result in significant effects to the climate of south Florida.	Implementation of Alternative B would not result in significant effects to the climate of south Florida.	Implementation of Alternative C would not result in significant effects to the climate of south Florida.
Geology & Soils	Alternative A is expected to have slight beneficial effects on geology and soils within ENP due to improvements in hydroperiods in comparison with Alternative B and Alternative C.	Improvements in hydroperiods within ENP are anticipated to be greater under Alternative B as compared with Alternative A. Soils within ENP have previously been adversely effected by C&SF Project infrastructure that lead to over-drying of Northeast SRS. Alternative B would also improve soil conditions in southern WCA 3A through reduction in prolonged hydroperiods associated with WCA 3A elevations.	No additional effects beyond those described for Alternative B.
Land Use	No Effect	No Effect	No Effect
Hydrology	Potential effects to ENP eastern Panhandle and Manatee Bay and Barnes Sound as a result of expected increases in frequency and duration of low volume discharges from S-197 relative to the 2012 Water Control Plan, associated with the June 2017 WCA 3A Planned Temporary Deviation. Indeterminate effects to Taylor Slough anticipated due to increased flows in these areas, which may exceed typical wet season durations, associated with the June 2017 WCA 3A Planned Temporary Deviation	Minor reduction to the duration of high water stages within WCA 3A, associated with raising of L-29 canal constraint. Potential minor effects to ENP eastern Panhandle and Manatee Bay and Barnes Sound as a result of expected increases in frequency and duration of low volume discharges from S-197 relative to Alternative A, associated with increased use of S-331. Increased benefits to Northeast SRS as compared with Alternative A due to increased flows in the area. Potential for minor	Moderate reduction to the duration of high water stages within WCA 3A, associated with reopening of the S-343A, S-343B, S-344, and delayed closure of S-12A and S-12B regulatory outlets. Potential effects to Northeast SRS, eastern ENP hydroperiods, ENP eastern Panhandle, Manatee Bay and Barnes Sound as described for Alternative B. Increased hydroperiod anticipated in western SRS due to reopening of the S-343A,

		reduction in eastern ENP hydroperiods associated with increased use of S-357 for 8.5 SMA flood mitigation, if operations are continued beyond when the L-29 Canal is transitioned back to 7.5 feet NGVD.	S-343B and S-344 structures as well as delayed closure of S-12A and S-12B.
Regional Water Management	No Effect	Increased capacity relative to Alternative A to reduce stages in WCA 3A due to operational flexibility.	Increased capacity relative to Alternatives A and B to reduce stages in WCA 3A due to operational flexibility.
Flood Control	Risks associated with overtopping of S-12A/B structures. Increased risks to levee integrity within WCA 3A if WCA 3A flood stages exceed the maximum historical observed stage of 12.7 feet NGVD.	Ability to reduce prolonged high stages in WCA 3A while maintaining flood mitigation for 8.5 SMA and flood protection for C-111 South Dade agriculture.	Ability to reduce prolonged high stages in WCA 3A while maintaining flood mitigation for 8.5 SMA and flood protection for C-111 South Dade agriculture. Increased benefits to WCA 3A associated within implementation of Alternative C in comparison to Alternative B due increased ability to reduce high water stages in WCA 3A.
Vegetative Communities	Minor beneficial effects on vegetation within ENP through continued implementation. Losses in tree islands as a result of high water levels are expected to occur if the proposed action is not taken.	Moderate beneficial effects on wetland vegetation within ENP by increasing flows to Northeast SRS and Taylor Slough. Beneficial effects to vegetation within WCA 3A, including tree islands through reduction in water elevations.	Moderate beneficial effects on wetland vegetation within ENP by increasing flows to Northeast SRS and Taylor Slough. Potential minor adverse effects on CSSS habitat in western SRS due to delayed closure of S-12A/B and reopening of S-343A/B and S-344 structures associated with hydroperiods that likely will be longer than the USFWS preferred discontinues hydroperiod of 90-210 days. Beneficial effects to vegetation within WCA 3A above those anticipated under Alternative B, including tree islands through reduction in water elevations.
Fish & Wildlife Resources	Major adverse effects to terrestrial wildlife within WCA 3A due to high stages and limited	Moderate beneficial effects on fish and wildlife resources within ENP by	Moderate beneficial effects on wetland vegetation within ENP by

	dry ground for foraging, loafing and resting. High water levels inundate tree islands and other wildlife habitats and if sustained, will cause stress and loss of life particularly for birds and mammals.	increasing flows to Northeast SRS and Taylor Slough. Benefits to birds and mammals within WCA 3A due to reduction in water elevations, providing dry ground for foraging, loafing and resting.	increasing flows to SRS and Taylor Slough. Benefits to birds and mammals within WCA 3A above those anticipated under Alternative B due to further anticipated reductions in water elevations, providing dry ground for foraging, loafing and resting. Benefits to wading birds due to increased hydroperiods in western SRS.
Threatened and Endangered Species	Effects determinations for federally threatened and endangered species within the project area are listed in Error! Reference source not found. of the MWD Increment 1 Plus EA. Potential negative effects to threatened wood stork and endangered Everglade snail kite due to effects of prolonged high stages on nesting and foraging ability within WCA 3A.	No additional effects anticipated other than those outlined within Alternative A. Potential beneficial effects to threatened wood stork and endangered Everglade snail kite due to limiting of prolonged high stages on nesting and foraging ability within WCA 3A. The Corps determined that the Proposed Action may affect, but is not likely to adversely affect, the CSSS, Everglade snail kite or wood stork.	Potential beneficial effects to threatened wood stork and endangered snail kite due to limiting of prolonged high stages on nesting and foraging ability within WCA 3A. Potential minor adverse effects on CSSS habitat due to delayed closure of S-12A/B and reopening of S-343A/B and S-344 structures associated with hydroperiods that likely will be longer than the USFWS preferred discontinues hydroperiod of 90-210 days. The Corps does not anticipate any direct adverse effects on CSSS, but minor adverse effects on CSSS habitat in western SRS. It is important to note that CSSS habitat in western SRS is not designated critical habitat as defined under the Endangered Species Act of 1973, as amended. The Corps determined that the Proposed Action may affect, but is not likely to adversely affect, the CSSS, Everglade snail kite or wood stork.
Essential Fish Habitat	No significant adverse effect.	Potential temporary adverse effects to Manatee Bay and Barnes Sound associated	No additional effects beyond those described for Alternative B.

		<p>with salinity fluctuations are anticipated with increased S-197 utilization, however, the Corps does not anticipate that these temporary fluctuations to have a significant effect on essential fish habitat.</p> <p>Beneficial effects to Florida Bay due to extended periods of lower salinity for prey of major Federally managed fish species.</p>	
<p>Water Quality</p>	<p>Implementation of Alternative A would not result in significant effects to water quality.</p>	<p>Relaxing the L-29 Canal constraint up to 8.5 feet NGVD will result in additional flows through the S-333 structure which will increase the total Northeast SRS inflow which is included in the settlement agreement water quality compliance equation for SRS. Greater SRS inflows result in a lower Total Phosphorous compliance limit. Given that the expected concentration of flows at S-333 during the relaxation period is around 8 parts per billion (ppb), the relaxation flows are likely to represent no more than 10 to 15 percent of the total annual flow, and the lowest Long Term Limit is 7.6 ppb, it is unlikely that this action will result in a water quality exceedance for flows into Northeast SRS. If an exceedance does occur, it is anticipated that actions within the temporary emergency deviation for WCA 3A would at most be a minor contributing factor unless unexpected conditions arise.</p> <p>The extremely high rainfall conditions in June 2017 during marsh dryout conditions resulted in high phosphorus concentrations (peak of ~90ppb at S-333)</p>	<p>No additional effects beyond those described for Alternative B.</p>

		that will have significant impacts to the annual flow-weighted mean (raising it).	
Native Americans	Potential adverse effect on Tribal properties through prolonged high stages within WCA 3A.	Alternative B reduces potential for adverse effects on Tribal properties through reduction of prolonged high stages within WCA 3A.	Relative to Alternative B, Alternative C further reduces potential for adverse effects on Tribal properties through reduction of prolonged high stages within WCA 3A.
Cultural Resources	Losses in tree islands as a result of high water levels are expected to occur if the proposed action is not taken. Loss of tree islands has the potential to impact cultural resources and culturally important ceremonies practiced by Native American Tribes within the project area.	Alternative B reduces potential for adverse effects on historic properties through reduction of prolonged high stages within WCA 3A. No adverse effect to historic properties.	Relative to Alternative B, Alternative C further reduces potential for adverse effects on historic properties through reduction of prolonged high stages within WCA 3A. No adverse effect to historic properties.
Air Quality	No Effect	No Effect	No Effect
Hazardous, Toxic and Radioactive Wastes	No Effect	No Effect	No Effect
Noise	No Effect	No Effect	No Effect
Aesthetics	No Effect	No Effect	No Effect
Socioeconomics	Potential minor adverse effects due to Florida Fish and Wildlife Conservation Commission (FWC) closures for recreational hunting within WCA 3A. High water stages pose an immediate threat and impact to valuable natural resources that underpin local economies that surround the Everglades Protection Area.	Implementation of Alternative B would benefit recreation through reduction in high water stages in WCA 3A, thereby reducing duration of FWC closures. Through reduction of stages in WCA 3A, Alternative B would assist to reduce the immediate threat and impact to valuable natural resources that underpin local economies that surround the Everglades Protection Area.	Implementation of Alternative C would provide additional benefits to recreation relative to Alternative B through further reduction in high water stages in WCA 3A, thereby reducing duration of FWC closures. Through reduction of stages in WCA 3A, Alternative C would further assist to reduce the immediate threat and impact to valuable natural resources that underpin local economies that surround the Everglades Protection Area as compared with Alternative B.
Agriculture	No effect due to additional water management operating criteria for features of the SDCS (<i>i.e.</i> S-197) to mitigate for potential risks to flood protection for areas within South Dade.	No additional effects beyond those described for Alternative A.	No additional effects beyond those described for Alternative A.

Recreation	Recreation in WCA 3A is currently limited due to FWC closures.	Implementation of Alternative B would benefit recreation through reduction in high water stages in WCA 3A, thereby reducing duration of FWC closures.	Implementation of Alternative C would provide additional benefits to recreation relative to Alternative B through further reduction in high water stages in WCA 3A thereby, reducing duration of FWC closures.
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5.0 LIST OF AGENCIES AND PERSONS CONSULTED

The Corps has been in coordination with other Federal and state agencies, and tribal representatives regarding the proposed action. Parties include the SFWMD, FDEP, U.S. Environmental Protection Agency, USFWS, FWC, ENP, Department of the Interior, Florida Department of Agriculture and Consumer Services, State Historic Preservation Office (SHPO), Seminole Tribe of Florida, and the Miccosukee Tribe of Indians of Florida. This coordination is a result of the magnitude of Corps efforts underway to implement water management strategies in south Florida. **Appendix B** of this EA includes documentation of all coordination regarding this action.

5.1 MICCOSUKEE TRIBE OF INDIANS OF FLORIDA

Coordination with the Miccosukee Tribe was conducted via email on September 21 and 25, 2017 for notification purposes and to solicit comments regarding the deviations and the potential effects of flood waters released from WCA 3A. The Miccosukee Tribe have voiced concern about high water levels within WCA 3, the toll continued high water levels take on terrestrial wildlife, and the need for a multi-species recovery plan for the Everglades (Appendix B). Consultation with the Miccosukee Tribe indicated support for the Proposed Action. No formal comments have been received regarding the Corps' determination of no adverse effects to historic properties; however, consultation is ongoing.

5.2 SEMINOLE TRIBE OF FLORIDA

Coordination with the Seminole Tribe was conducted via email on September 21, 2017 for notification purposes and to solicit comments regarding the deviations and the potential effects of flood waters released from WCA 3A. A meeting was held on September 27, 2017 with the Corps and staff from the Tribal Historic Preservation Office to discuss the Proposed Action. Information on the Proposed Action and potential effects to cultural resources was provided pursuant to Section 106 of the National Historic Preservation Act and the National Environmental Policy Act. In a letter dated October 6, 2017, the Seminole Tribe stated "Due to the uncertainty of how many or which tree islands may be affected by [the Proposed Action], and to the still undetermined effects of inundation on cultural resources (historic properties, etc.) that may be present on those islands, we do not have enough information at this time to determine the undertakings effects. However, we do not object to the USACE's action" (Appendix B).

5.3 U.S. ENVIRONMENTAL PROTECTION AGENCY

The Corps contacted the EPA Region 4 for the purpose of notification and discussion of emergency NEPA (**Appendix B**). The Corps has completed an EA in accordance with ER200-2-2 (Corps policy for NEPA compliance) to address the federal action of the emergency water management actions taken on September 15, 2017 to mitigate for precipitation and reduce water elevations within WCA 3A following Hurricane Irma. The emergency deviation was approved on September 15, 2017 by the Corps' South Atlantic Division. In addition to the emergency water management actions implemented on September 15, 2017, this EA evaluates whether to implement a planned temporary deviation to further assist to mitigate stages in WCA 3A. This EA was completed on October 5, 2017 and the FONSI signed and circulated for public review for a period of 30 days. The Corps may generate a supplemental EA as necessary to discuss and disclose any additional effects to the human environment that may not have been addressed within this EA.

5.4 U.S. FISH & WILDLIFE SERVICE

The USFWS was contacted September 27, 2017 and an in-person meeting held September 29, 2017 to discuss the proposed delayed closures of the S-12A, S-12B and reopening of S-343A, S-343B and S-344 structures. In addition, the Corps sent a request for emergency consultation under the provisions of the ESA of 1973, as amended on October 1, 2017. If approved by the Corps' South Atlantic Division, the Corps will provide a biological assessment to support formal ESA consultation for CSSS if there is a delay in the closing of any of the structures with mandated CSSS closure dates (i.e. S-12A, S-12B, S-343A, S-343B or S-344) (Appendix B).

Emergency consultation pursuant to Section 7 of the ESA is on-going with the USFWS under provisions of the 2016 ERTF BO and in is full compliance with the Endangered Species Act of 1973, as amended. The Corps has determined that the Proposed Action may affect, but is not likely to adversely affect, the endangered Cape Sable seaside sparrow, endangered Everglade snail kite and threatened wood stork. However, if there is a delay in closure of any of the structures with mandated CSSS closure dates or a reopening (i.e. S-12A, S-12B, S-343A, S-343B or S-344), the Corps has determined that the proposed action may affect CSSS and will enter into formal ESA consultation with USFWS. The Corps agrees to maintain open and cooperative communication with the USFWS during the deviations.

5.5 FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

On September 5, 2017, FDEP issued an Emergency Final Order in response to Hurricane Irma. This Emergency Final Order was amended on September 15, 2017.

On June 23, 2017 the FDEP issued an Emergency Final Order in response to high rainfall and flooding in the south Florida region, specifically the Everglades Protection Area that threatens certain stormwater management systems, works and impoundments and poses an imminent or immediate danger to valuable natural resources, the public health, safety or welfare (**Appendix B**). As part of the FDEP Emergency Final Order, FDEP temporarily modified operations of the projects listed in **Section 1.7** and permitted immediate employment of any remedial means deemed necessary to redress the emergency. FDEP waived water quality certification for those activities authorized by this Emergency Final Order.

Pursuant to the Emergency Final Order, the Corps shall continue water quality and hydrologic monitoring of the existing permitted Corps project features, to identify and evaluate water quality and hydrologic Conditions. The monitoring work provides water quality data associated with state water quality standards and the long-term phosphorus concentration limits contained within the Settlement Agreement to the Federal Everglades lawsuit (Case No. 88-1886), and hydrologic data necessary for the adaptive operation of the pump stations to evaluate the effects on wildlife, water supply and flood protection in the C&SF project.

5.6 SOUTH FLORIDA WATER MANAGEMENT DISTRICT

The Corps has coordinated the proposed action with SFWMD, the C&SF Project non-federal sponsor. The SFWMD has coordinated with stakeholders during the development of the operational strategy (**Appendix A**) and concurs.

5.7 STATE OF FLORIDA-STATE HISTORIC PRESERVATION OFFICER

Coordination with the SHPO was conducted via email on September 21 and 28, 2017. Based on the description and the temporary nature of the deviation, the SHPO concurred with the Corps' determination of no adverse effect to historic properties that are listed or eligible for listing on the National Register of Historic Places pursuant to the regulations contained in 36 CFR 800.12 (**Appendix B**).

6.0 CUMULATIVE EFFECTS

Cumulative effects are defined in 40 CFR 1508.7 as those effects that result from: the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The primary goal of cumulative effects analysis is to determine the magnitude and significance of the environmental consequences of the Proposed Action in the context of the cumulative effects of other past, present, and future actions. The Proposed Action is expected to mitigate for severe economic losses currently being experienced as a result of high water levels. The general environmental effect of the Proposed Action would be beneficial and any downstream adverse effects would be of short duration.

In addition to the effects of the Corps' proposed action, in June 2017, SFWMD had proposed modifications to existing operations of the S-199, S-200 and G-737 structures which are part of the C-111 Spreader Canal Western Project. These structures were built and operated under a FDEP and Department of the Army Permit. SFWMD consulted with the Corps, Regulatory Division on their proposed modifications and Corps, Regulatory Division concurred with the SFWMD proposals. These operational modifications further assist to move water through Taylor Slough to Florida Bay and assist to alleviate high water concerns within WCA 3A. It is important to note that separate NEPA documentation and ESA consultation were prepared for the SFWMD proposed modifications.

6.1 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

An irreversible commitment of resources is one in which the ability to use and/or enjoy the resource is lost forever. One example of an irreversible commitment might be the mining of a mineral resource. An irretrievable commitment of resources is one in which, due to decisions to manage the resource for another purpose, opportunities to use or enjoy the resource as they presently exist are lost for a period of time. An example of an irretrievable loss might be where a type of vegetation is lost due to road construction. The Preferred Alternative consists of an operational change to MWD Increment 1 Plus which is a deviation to the 2012 Water Control Plan and does not include construction of permanent structures or structural modifications to existing C&SF Project features. The Proposed Action would not cause the permanent removal or consumption of any natural resources.

6.2 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Environmental effects for each resource are discussed above. Adverse environmental effects associated with implementing the Preferred Alternative are expected to be temporary based on the short duration of this emergency and planned deviation and the generally beneficial nature of this action. Temporary minor adverse effects have the potential to occur within Manatee Bay and Barnes Sound due to increases in the frequency, duration, and volume of S-197 discharges; however significant effects are not expected. Potential environmental effects would be limited in spatial extent to the near shore areas of the southern estuaries. In addition, inundation duration within CSSS-A and CSSS-Ax habitat may be longer than under the No Action Alternative due to the delayed closure of S-12A, S-12B, and reopening of S-343A, S-343B and S-344 structures. The

majority of the CSSS habitat within this area is already inundated and delayed closure may act to extend this period of inundation.

6.3 CONFLICTS AND CONTROVERSY

Over the lifetime of the C&SF Project, considerable interest has been generated among local and regional stakeholders. The Corps continually strives to include all interested parties in its decision making process and will continue to consider all issues that arise.

6.4 ENVIRONMENTAL COMMITMENTS

The Corps commits to avoiding, minimizing or mitigating for adverse effects. All practicable means to avoid or minimize environmental effects were incorporated into the Preferred Alternative.

7.0 COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

7.1 NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

Environmental information on the project has been compiled and this EA has been prepared and coordinated for public, state, and Federal agency review. The Proposed Action is in compliance with the National Environmental Policy Act.

7.2 ENDANGERED SPECIES ACT OF 1973

Upon completion of an assessment for species under NMFS purview it was determined that the Proposed Action would have no effect on these species; therefore, consultation with NMFS was not necessary.

The USFWS was contacted September 27, 2017 via formal letter requesting delayed closure of the S-12A, S-12B, and reopening of S-343A, S-343B and S-344 structures as well as the ability to increase pumping at the S-332D structure past November 30, 2017 (refer to **Appendix B**). On September 28, 2017 USFWS via formal indicated the need for formal consultation on CSSS. Since USFWS determined jeopardy on the CSSS due to water management actions in the 2016 ERTF BO, the USFWS Vero Beach Ecological Services Office does not have the authority to grant any deviations from the 2016 ERTF BO RPA; therefore this decision was elevated to USFWS Region 4. Reference **Appendix B** for pertinent correspondence. Emergency consultation pursuant to Section 7 of the ESA is on-going with the USFWS under provisions of the 2016 ERTF BO and in is full compliance with the ESA.

The Corps evaluated variations on potential delayed closures as show in **Table 5** in order to provide information related to how outflow from the various structures if closure and reopening were delayed would affect stages in WCA 3A. The Corps agrees to maintain open and cooperative communication with the USFWS during the proposed deviations.

7.3 FISH AND WILDLIFE COORDINATION ACT OF 1958, AS AMENDED

The Proposed Action has been fully coordinated with USFWS and FWC. In response to the requirements of this Act, the Corps has and will continue to maintain continuous coordination with USFWS and FWC. The Proposed Action is in full compliance with the Act.

7.4 NATIONAL HISTORIC PRESERVATION ACT OF 1966

The Proposed Action is in compliance with Section 106 of the National Historic Preservation Act, as amended (PL 89-665). As part of the requirements and consultation process contained within the National Historic Preservation Act implementing regulations of 36 CFR 800, this project is also in compliance through ongoing consultation with the Archaeological and Historic Preservation Act, as amended (PL 93-29), Archeological Resources Protection Act (PL96-95), American Indian Religious Freedom Act (PL 95-341), Native American Graves Protection and Repatriation Act (NAGPRA) (PL 101-601), Executive Order 11593, 13007, and 13175, the Presidential Memo of 1994 on Government to Government Relations and appropriate Florida Statutes. Consultation with the Florida SHPO, appropriate Federally-recognized tribes, and other

interested parties has been initiated and is ongoing (**Appendix B**). Pursuant to Part XIV, Deviations of the Everglades Restoration Transition Plan Programmatic Agreement (PA), all PA signatories, including the Advisory Council on Historic Preservation and Everglades National Park, were notified of the Proposed Action and its determination of effects to cultural resources by email on September 21, 2017. The Corps has determined the Proposed Action poses no adverse effect to historic properties eligible or potentially eligible for listing in the NRHP. The Florida SHPO concurred with the Corps determination of no adverse effect in an email dated September 28, 2017. The Proposed Action has been coordinated with the Seminole and Miccosukee tribes. In a letter dated October 6, 2017, the Seminole Tribe stated “Due to the uncertainty of how many or which tree islands may be affected by [the Proposed Action], and to the still undetermined effects of inundation on cultural resources (historic properties, etc.) that may be present on those islands, we do not have enough information at this time to determine the undertakings effects. However, we do not object to the USACE’s action” (Appendix B). No formal comments have been received from the Miccosukee Tribe regarding the Corps’ determination of no adverse effect to historic properties. The Proposed Action is in compliance with the goals of this Act.

7.5 CLEAN WATER ACT OF 1972

On June 23, 2017, the FDEP issued an Emergency Final Order in response to high rainfall and flooding in the south Florida region, specifically the Everglades Protection Area that threatens certain stormwater management systems, works and impoundments and poses an imminent or immediate danger to valuable natural resources, the public health, safety or welfare (**Appendix B**). As part of the FDEP Emergency Final Order, FDEP temporarily modified operations of the projects listed above and permitted immediate employment of any remedial means deemed necessary to redress the emergency. FDEP waived water quality certification for those activities authorized by this Emergency Final Order.

Pursuant to the Emergency Final Order, the Corps shall continue water quality and hydrologic monitoring of the existing permitted Corps project features, to identify and evaluate water quality and hydrologic Conditions. The monitoring work provides water quality data associated with state water quality standards and the long-term phosphorus concentration limits contained within the Settlement Agreement to the Federal Everglades lawsuit (Case No. 88-1886), and hydrologic data necessary for the adaptive operation of the pump stations to evaluate the effects on wildlife, water supply and flood protection in the C&SF project. The Corps is in compliance with this Act.

On September 5, 2017, FDEP issued an additional Emergency Final Order in response “*to the imminent or immediate danger to the public health, safety, and welfare of the citizens of the State of Florida posed by Hurricane Irma...*” The September 5 and amended September 15, 2017 FDEP Emergency Final Orders address water resource management associated with Hurricane Irma.

7.6 CLEAN AIR ACT OF 1972

The Proposed Action is being coordinated with the State of Florida. The Proposed Action is in compliance with Section 176 of the Clean Air Act, known as the General Conformity Rule. The Proposed Action will not cause or contribute to violations of the National Ambient Air Quality Standards.

7.7 COASTAL ZONE MANAGEMENT ACT OF 1972

On June 23, 2017, the FDEP issued an Emergency Final Order in response to high rainfall and flooding in the south Florida region, specifically the Everglades Protection Area that threatens certain stormwater management systems, works and impoundments and poses an imminent or immediate danger to valuable natural resources, the public health, safety or welfare (**Appendix B**). As part of the FDEP Emergency Final Order, FDEP temporarily modified operations of the projects listed above and permitted immediate employment of any remedial means deemed necessary to redress the emergency. FDEP waived water quality certification for those activities authorized by this Emergency Final Order. In addition, On September 5, 2017, FDEP issued an additional Emergency Final Order in response “*to the imminent or immediate danger to the public health, safety, and welfare of the citizens of the State of Florida posed by Hurricane Irma...*” The September 5 and amended September 15, 2017 FDEP Emergency Final Orders address water resource management associated with Hurricane Irma. The Corps has determined that the Proposed Action is consistent to the maximum extent practicable with the enforceable policies of Florida’s approved Coastal Zone Management Program.

7.8 FARMLAND PROTECTION POLICY ACT OF 1981

Correspondence with USDA-NRCS for Increment 1 occurred on November 21, 2014. Reference **Appendix C** of the MWD Increment 1 EA and FONSI (dated May 27, 2015). The USDA-NRCS had previously determined that there are delineations of Important Farmland Soils (Farmland of Unique Importance) within the project area. Approximately 975 acres of Prime and Unique Farmland are located mainly within the boundaries of ENP. Correspondence related to Increment 1.1 and 1.2 was provided to the USDA-NRCS on November 23, 2016 noting conversion of Prime and Unique Farmland are not anticipated as a result of the Proposed Action. No additional effects on Prime and Unique Farmland are anticipated due to these deviations from MWD Increment 1 Plus.

7.9 WILD AND SCENIC RIVER ACT OF 1968

No designated Wild and Scenic river reaches would be affected by project related activities. This Act is not applicable.

7.10 MARINE MAMMAL PROTECTION ACT OF 1972

No marine mammals would be harmed, harassed, injured or killed as a result of the Proposed Action. Therefore, the Proposed Action is in compliance with this Act.

7.11 ESTUARY PROTECTION ACT OF 1968

No designated estuary would be affected by the Proposed Action.

7.12 FEDERAL WATER PROJECT RECREATION ACT OF 1965, AS AMENDED

Recreation and fish and wildlife enhancement have been given full consideration in the Proposed Action.

7.13 SUBMERGED LANDS ACT OF 1953

Potential minor adverse effects associated with salinity fluctuations to Manatee Bay, and Barnes Sound as previously identified in the Increment 1 EA and FONSI (dated May 27, 2015) would be temporary and spatially limited to nearshore areas within the southern estuaries (USACE 2015). Significant effects to fish and wildlife resources and vegetative communities within submerged lands of the State of Florida are not expected. The Proposed Action is in compliance with the Act.

7.14 COASTAL BARRIER RESOURCES ACT AND COASTAL BARRIER IMPROVEMENT ACT OF 1990

There are no designated coastal barrier resources in the project area that would be affected by the Proposed Action. These Acts are not applicable.

7.15 RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), AS AMENDED BY THE HAZARDOUS AND SOLID WASTE AMENDMENTS (HSWA) OF 1984, COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA), TOXIC SUBSTANCES CONTROL ACT (TSCA) OF 1976

Implementation of the Proposed Action is not expected to result in the discovery of HTRW since there is no excavation or other construction activities associated with this project. The Proposed Action has a very low risk for increased mobilization of existing HTRW where it might exist within the study area. The Proposed Action is in compliance with these Acts.

7.16 RIVERS AND HARBORS ACT OF 1899

The Proposed Action would not obstruct navigable waters of the United States. The Proposed Action is in full compliance.

7.17 SAFE Drinking Water Act of 1974, As Amended

The Proposed Action would not impact safe drinking water standards. The Proposed Action is in full compliance.

7.18 UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT OF 1970 (PUBLIC LAW 91-646)

Acquisition of real estate is not required for the Proposed Action. The Proposed Action is in compliance with this Act.

7.19 ANADROMOUS FISH CONSERVATION ACT

Anadromous fish species would not be affected. The Proposed Action is in compliance with the Act.

7.20 MIGRATORY BIRD TREATY ACT AND MIGRATORY BIRD CONSERVATION ACT

Migratory and resident bird species have been observed within the project area and are likely to use available habitat for foraging, nesting, and breeding. The Proposed Action is not expected to destroy migratory birds, their active nests, their eggs, or their hatchlings. The Proposed Action will not pursue, hunt, take, capture, kill or sell migratory birds. The Proposed Action is in compliance with these Acts.

7.21 MARINE PROTECTION, RESEARCH AND SANCTUARIES ACT

The Marine Protection, Research and Sanctuaries Act does not apply to the Proposed Action. Ocean disposal of dredge material is not proposed as part of the Proposed Action.

7.22 MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT

No Essential Fish Habitat would be permanently impacted by this action. Minor, temporary, spatially-limited effects associated with increased flow through the S-197 structure may occur. Beneficial effects to Florida Bay due to extended periods of lower salinity for prey of major federally managed fish species. This EA/FONSI is being coordinated with National Marine Fisheries Service. The Proposed Action is in compliance with this Act.

7.23 E.O. 11990, PROTECTION OF WETLANDS

The Proposed Action is expected to have beneficial effects on wetlands. The Proposed Action is in compliance with the goals of this Executive Order (E.O.).

7.24 E.O. 11988, FLOODPLAIN MANAGEMENT

This E.O. instructs Federal agencies to avoid development in floodplains to the maximum extent possible. The Proposed Action is an operational change to existing infrastructure; therefore, no construction is proposed. This action is consistent with the intent of this E.O. and is in compliance.

7.25 E.O. 12898, ENVIRONMENTAL JUSTICE

E.O. 12899 provides that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority or low income populations. The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. The Proposed Action is in compliance with this E.O.

7.26 E.O. 13089, CORAL REEF PROTECTION

No coral reefs would be impacted by the Proposed Action. This E.O. does not apply.

7.27 E.O. 13112, INVASIVE SPECIES

The Proposed Action would have no significant impact on invasive species. The Proposed Action is in compliance with the goals of this E.O.

7.28 E.O. 13045, PROTECTION OF CHILDREN

E.O. 13045, requires each Federal agency to “identify and assess environmental risk and safety risks [that] may disproportionately affect children” and ensure that its “policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.” This action has no environmental safety risks that may disproportionately affect children. The Proposed Action is in compliance.

7.29 E.O. 13186, RESPONSIBILITIES OF FEDERAL AGENCIES TO PROTECT MIGRATORY BIRDS

Migratory and resident bird species have been observed within the project area and are likely to use available habitat for foraging, nesting, and breeding. The Proposed Action is not expected to destroy migratory birds, their active nests, their eggs, or their hatchlings. The Proposed Action is in compliance with the goals of this E.O.

8.0 LIST OF PREPARERS

TABLE 9. TABLE OF PREPARERS

Name	Organization	Role in EA
Gina Ralph	USACE	Biologist
Dan Crawford	USACE	Hydrologist/Engineer
Lan Do	USACE	Water Manager
Allison Joura	USACE	Water Manager
Savannah Lacy	USACE	Water Manager
Jim Riley	USACE	Water Quality
Meredith Moreno	USACE	Archeologist

9.0 PUBLIC INVOLVEMENT

9.1 SCOPING AND EA

Reference **Section 1.9**.

9.2 AGENCY COORDINATION

The Corps is in continuous coordination with other Federal and state agencies, Tribal representatives, and members of the general public. This extensive coordination is a result of the magnitude of Corps efforts underway to implement water management strategies in south Florida. All agency coordination letters related to the Proposed Action are included in **Appendix B**.

9.3 LIST OF RECIPIENTS

A notice of availability for the EA and FONSI was mailed to Federal and state agencies, Tribal representatives, and members of the general public. A complete mailing list is available upon request. The EA and FONSI was also posted the internet at the following address:

<http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/EnvironmentalBranch/EnvironmentalDocuments.aspx#>

<http://www.saj.usace.army.mil/Missions/Environmental/EcosystemRestoration/G3273andS356PumpStationFieldTest.aspx#>

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