

# **Environmental Assessment and Finding of No Significant Impact**

PLANNED TEMPORARY DEVIATION TO LIFT  
CONSTRAINTS ON WATER CONSERVATION AREA  
3B, SITE 71 FOR 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**

### **PLANNED TEMPORARY DEVIATION TO LIFT CONSTRAINTS ON WATER CONSERVATION AREA 3B, SITE 71 FOR 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. Water management operations at S-152 are governed to date by stage constraints within Water Conservation Area 3B (WCA 3B) under Phase 2 of the DECOMP Physical Model operational strategy, which is a deviation to the 2012 WCAs, Everglades National Park (ENP), and ENP to South Dade Conveyance System Water Control Plan. The Supplemental EA and Finding of No Significant Impact (FONSI) for that action is dated November 9, 2017.

In order to provide relief from high water stages within WCA 3A, the Corps is initiating a planned temporary deviation from Phase 2 of the DECOMP Physical Model operational strategy to raise the stage constraint at gages SRS-1 and/or Site 71 from 8.5 feet (ft.) National Geodetic Vertical Datum of 1929 (NGVD) to 8.7 ft., NGVD from the beginning of this deviation through September 15, 2018, and then up to 9.0 ft., NGVD from September 16, 2018 through November 30, 2018 allowing approximately 18,000 acre-feet per month discharges out of WCA 3A, based on 300 cubic feet per second (cfs) flow rate through S-152. This action will increase the volume of water that is able to be sent to WCA 3B out of WCA 3A. The planned temporary deviation will be needed until the WCA 3A stage, as measured by the average of Site 63, Site 64, and Site 65 gages (3-gage average) falls below Zone A of the Regulation Schedule or November 30, 2018, whichever occurs first. The planned temporary deviation will extend no later than the duration of the Florida Department of Environmental Protection (FDEP) Emergency Final Order. The Proposed Action is expected to mitigate for severe ecologic and economic losses that could result from prolonged high water levels. If the WCA 3A stage level is not managed 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.

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:

Under provisions of emergency consultation of the Endangered Species Act, the Corps has determined that the Proposed Action may affect, but is not likely to adversely affect, the eastern indigo snake, wood stork, Everglade snail kite, and Everglade snail kite critical habitat. The USFWS concurred with the Corps' species effects determinations as a result of the Proposed Action on July 9, 2018.

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. The FDEP concurred with the Corps determination on July 10, 2018.

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 Temporary Action will have no adverse effect on historic properties eligible or potentially eligible for the National Register of Historic Places. Consultation has been initiated and is ongoing with the State Historic Preservation Officer, the Seminole Tribe of Florida, the Seminole Nation of Oklahoma, the Miccosukee Tribe of Indians, and the Thlopthlocco Tribal Town. Consultation will be finalized prior to implementation of the proposed action.

The Proposed Action is not anticipated to adversely affect water quality and water quality certification has been waived. The FDEP issued an Emergency Final Order on June 20, 2018 and waived water quality certification for those activities authorized by this Emergency Final Order. The Proposed Action is in compliance with the Clean Water Act.

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 ENP, and protection of fish and wildlife.

The Corps completed this EA in accordance with National Environmental Policy Act (NEPA) (42 U.S.C. 4321 *et seq.*) and the Corps implementing regulations for NEPA at 33 CFR Part 230 to address the Federal action of the planned temporary deviation to the water control plan to address immediate concerns with high water levels within WCA 3A. The signed FONSI and EA 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 have no significant impact on the quality of the human environment.

**KIRK.JASON.ANTHONY.1118174956**

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

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**ENVIRONMENTAL ASSESSMENT  
ON  
PLANNED TEMPORARY DEVIATION TO LIFT CONSTRAINTS ON WATER  
CONSERVATION AREA 3B, SITE 71 FOR RELIEF OF HIGH WATER LEVELS  
WITHIN WATER CONSERVATION AREA 3A**

**BROWARD AND MIAMI-DADE COUNTIES, FLORIDA**

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**ENVIRONMENTAL ASSESSMENT**  
**PLANNED TEMPORARY DEVIATION TO LIFT CONSTRAINTS ON WATER**  
**CONSERVATION AREA 3B, SITE 71 FOR RELIEF OF HIGH WATER LEVELS**  
**WITHIN WATER CONSERVATION AREA 3A**  
**BROWARD AND MIAMI-DADE COUNTIES, FLORIDA**

**1.0 PROJECT PURPOSE AND NEED**

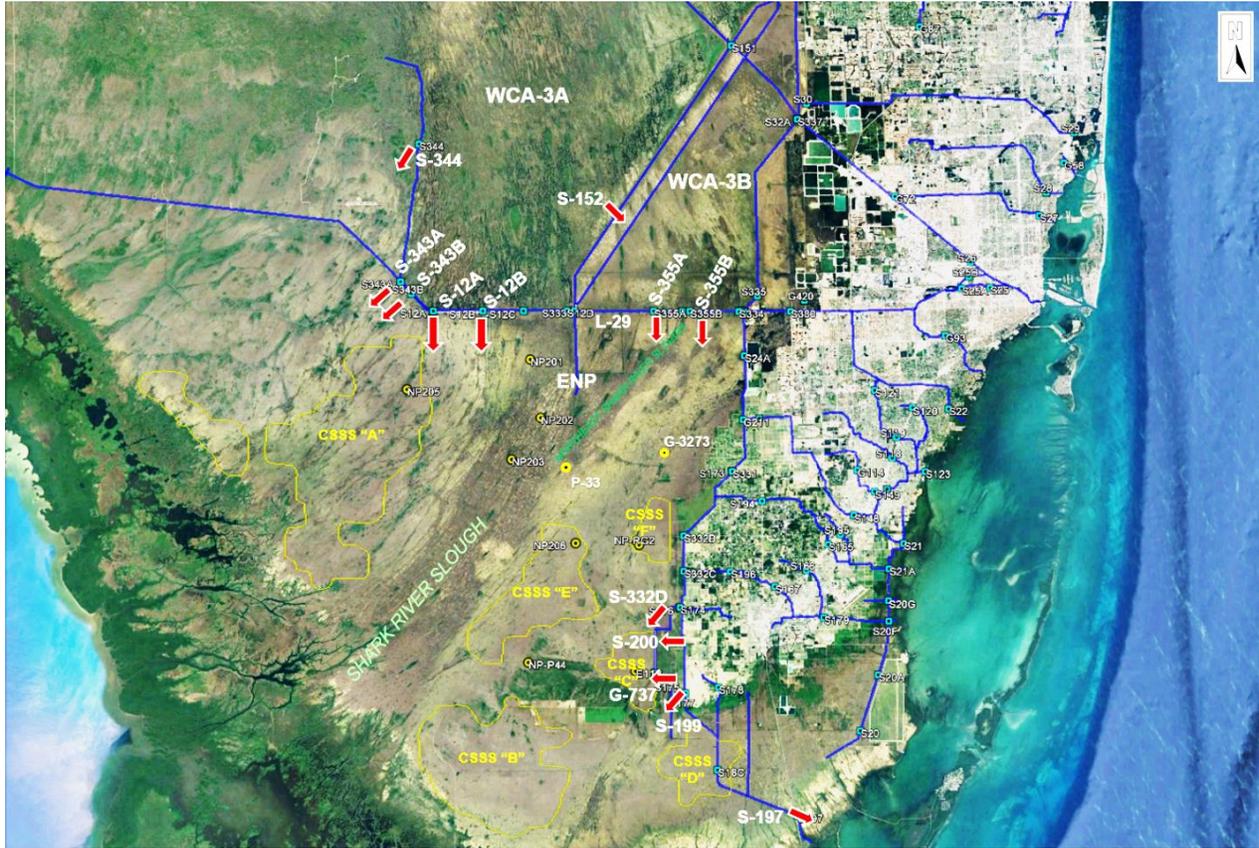
**PROJECT AUTHORITY**

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. Section 601(b)(1) of the Water Resources Development Act of 2000 (WRDA 2000), Public Law 106-541, authorized the Comprehensive Everglades Restoration Plan (CERP) as a framework for modifications and operational changes to the C&SF Project to restore, preserve, and protect the South Florida ecosystem while providing for other water-related needs of the region including water supply and flood protection. The water conservation area (WCA) 3 Decompartamentalization and Sheetflow Enhancement (DECOMP) Project is a component of CERP (USACE 1999). The United States Army Corps of Engineers (Corps) and the South Florida Water Management District (SFWMD) entered into a design agreement dated May 12, 2000, to conduct activities related to the planning, engineering, and design of CERP projects, including the DECOMP Project. The DECOMP Physical Model is a limited duration, fully controlled field test being conducted pursuant to that agreement as a design effort to gather information to formulate decompartamentalization of WCA 3 and to use for the design of CERP features. The DECOMP Physical Model utilizes structure S-152 to deliver experimental flows into a pocket between the L-67A and L-67C canal and levee system between WCA 3A and WCA 3B to evaluate environmental responses to flow and evaluate the effects of partial and complete backfilling of canals and levee modifications.

**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 WCA 3 and adjacent areas. Features of the Proposed Action are located in Miami-Dade Counties (**Figure 1**). S-152 is located in Broward County along the southern end of the L-67A levee and canal, between WCA 3A and WCA 3B. S-152 consists of 10 gated 60-inch diameter culverts with a combined maximum design flow rate of 750 cubic feet per second (cfs). S-152 was constructed as part of the DECOMP Physical Model. The L-67A Canal is both a borrow and a conveyance canal, receiving waters from the Miami Canal, S-9 pump station, and WCA 3A. The L-67A Canal is bounded on the east by the L-67A levee and on the west by a spoil mound from the original excavation of the L-67A canal. A series of gaps in the spoil mound allows mixing of canal water with WCA 3A marsh water. The L-67C canal does not directly receive discharges from control structures nor is it used for conveyance. The L-67C canal is bounded to the east by the L-67C levee and on the west by a spoil mound from the original excavation of the L-67C canal. During operation of S-152, water is allowed to pass

from WCA 3A through the L-67A canal into the pocket through S-152. A 3,000-foot (ft.) long gap exists in the L-67C levee downstream of S-152 allowing water to pass into WCA 3B.



**FIGURE 1. PROJECT LOCATION AND RELEVANT C&SF PROJECT FEATURES IN WCA 3A AND WCA 3B**

**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 ENP, preservation of ENP, prevention of saltwater intrusion, drainage and water control, groundwater recharge, recreation, and navigation. A series of mid-May storms caused conditions to change very rapidly from very dry to very wet conditions in South Florida, with Lake Okeechobee, the WCAs, and the eastern coast of Florida accumulating most of the rainfall. The WCA 3A, 3-gage average is 10.67 feet (ft.) National Geodetic Vertical Datum of 1929 (NGVD), as of July 17, 2018, which is 0.39 ft. above the WCA 3A Increment 2 Action Line. WCA 3A received a historical high rainfall of 12.33 inches in the month of May which was 301% of the average for that month, as shown in **FIGURE 2**. However, WCA 3A has received approximately 70 % of the average rainfall in the months of June and July. **FIGURE 3** illustrates the sharp rise of the WCA 3A 3-gage average (i.e. the average of Site 63, Site 64 and Site 65) into

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Zone A of the WCA 3A Regulation Schedule in May of this year and the elevation above the WCA 3A Increment 2 Action Line due to this rainfall. The WCA 3A, 3-gage average stage levels during May and June also coincides with the period of record (1962-2017) high water stage, for this time of year, in WCA 3A as indicated in Exceedance Statistics Plot shown in **FIGURE 4**. Also, water levels in WCA 3A are not expected to lower quickly, as illustrated in dynamic positional analysis provided on July 8, 2018, by the SFWMD in **FIGURE 5**.

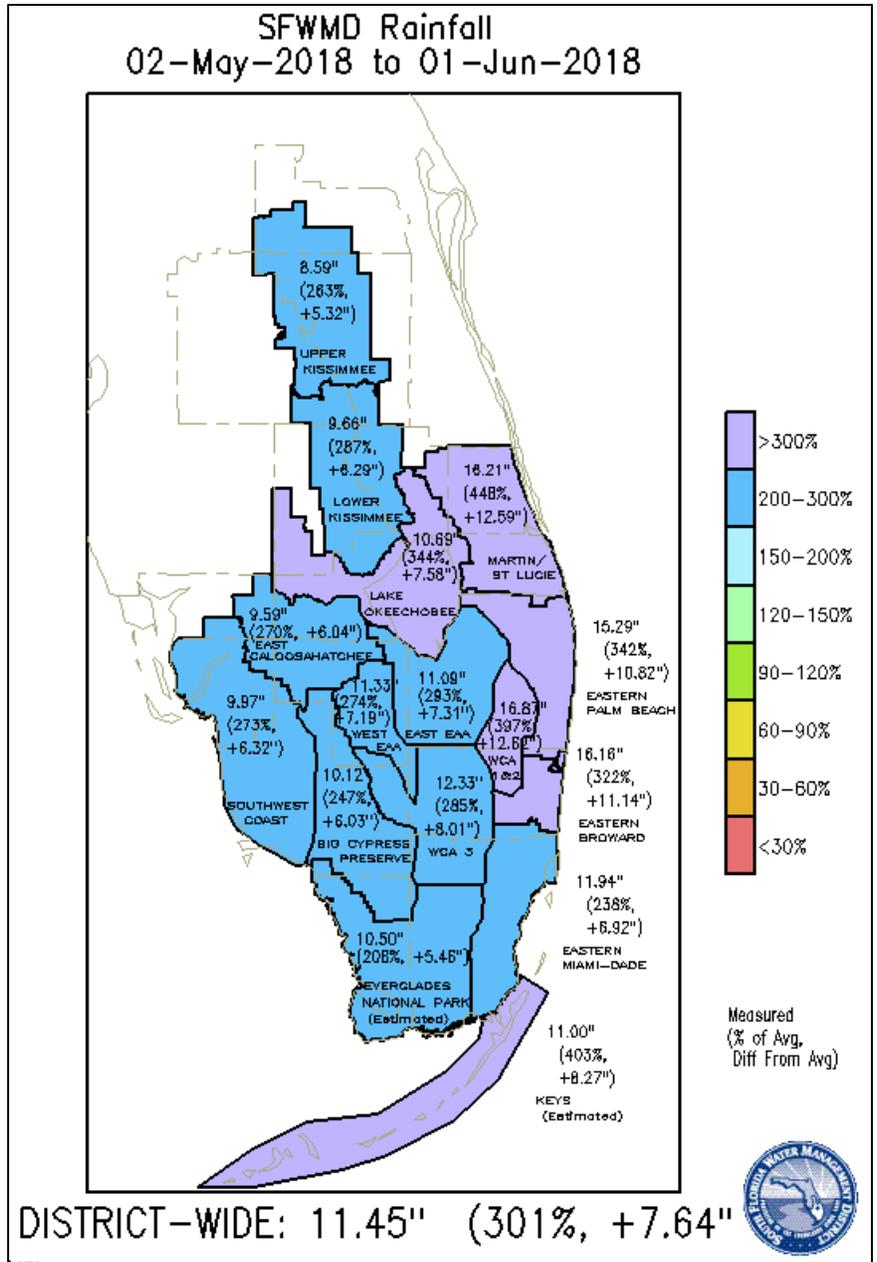
Many areas of South Florida are currently experiencing high water levels, which restricts the ability to safely move water to mitigate the effects of flooding. If the WCA 3A stage level is not managed to limit the prolonged duration of high water conditions, there is potential for these high water levels 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. The stages within WCA 3A are the most concerning because construction, environmental constraints, and current system capacity limit the volume of water that can be moved out of the system. WCA 3A is the southernmost storage area in the C&SF Project and has an extremely limited outlet capacity.

Water management operations at S-152, are currently governed by Phase 2 of the DECOMP Physical Model operational strategy (USACE 2017). In order to provide relief from high water stages within WCA3 A, the Corps is seeking a planned temporary deviation from Phase 2 of the DECOMP Physical Model operational strategy which currently defines operations for S-152 (USACE 2017). Under current operations, S-152 may discharge up to 750 cfs until either DECOMP Physical Model objective(s) are met or S-152 is closed subject to operational constraints. When WCA 3B stages (at gages SRS-1 and/or Site 71) equal or exceed 8.5 feet (ft.) National Geodetic Vertical Datum of 1929 (NGVD), S-152 releases are reduced or discontinued. Water quality operational rules have been developed within Phase 2 of the DECOMP Physical Model operational strategy to guide initiation of testing within a given year and to determine the continuation of operations once S-152 is operating based on the forecasted geometric mean for Total Phosphorous (TP) concentrations at S-151, as well as biweekly data collection to ensure low inflow TP concentrations into WCA 3B. S-152 may be operated year round through 2021 under Phase 2 of the DECOMP Physical Model operational strategy (USACE 2017) and is subject to downstream constraints.

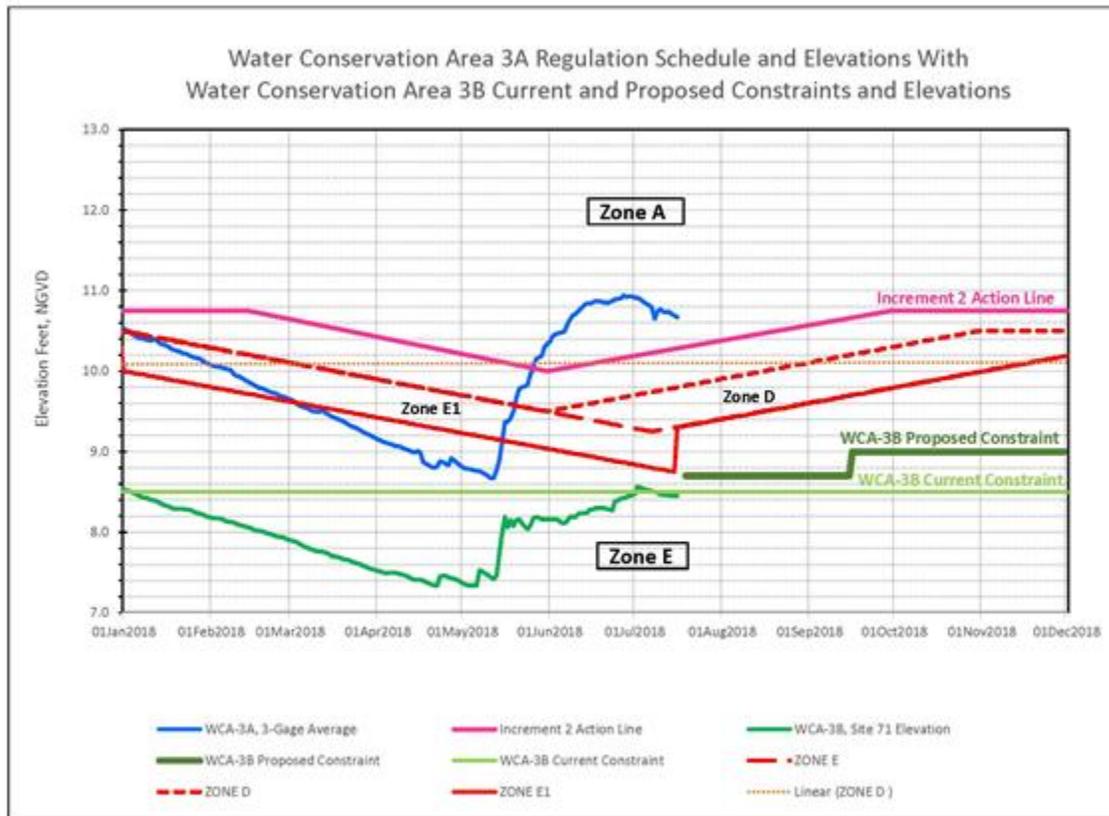
In order to provide relief from high water stages within WCA 3A, the Corps is initiating a planned temporary deviation from Phase 2 of the DECOMP Physical Model operational strategy to raise the stage constraint at gages SRS-1 and/or Site 71 from 8.5 ft. NGVD to 8.7 ft., NGVD from the beginning of this deviation through September 15, 2018, and then up to 9.0 ft., NGVD from September 16, 2018 through November 30, 2018 allowing approximately 18,000 acre-feet per month discharges out of WCA 3A, based on 300 cubic feet per second (cfs) flow rate through S-152. Discharges from each of the outflows structures (S-31, S-355A, S-355B, WCA 3B temporary outflow pumps placed at S-355B, S-335 (by way of seepage into the L-30 Canal from WCA 3B)) for WCA 3B will be regulated to help avoid exceeding the deviation constraint limit measured at Site 71 or the SRS-1. If the WCA 3A, 3-gage average falls below WCA 3A, Increment 2 Action Line prior to November 30, 2018, the WCA 3B outflow structures will continue to be utilized until the stage measured at the Site 71 or SRS-1 recedes below 8.5 ft., NGVD. The intent of this operation is to transition the stage at Site 71 or SRS-1 from the deviation constraint limit to 8.5 ft., NGVD prior to WCA 3A stage receding below Zone A of the WCA 3A Regulation Schedule.

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Outflow structures' discharges will be subject to their respective downstream constraints. The SFWMD is also currently installing four 30-inch pumps (with a total installed capacity of approximately 200 cfs) along the L-29 levee to further facilitate the movement of water from WCA 3B to the L-29 Canal. Reference **Appendix B** for additional information regarding the temporary installation of pumps. The planned temporary deviation will be needed until the WCA 3A stage, as measured by the average of Site 63, Site 64 and Site 65 gages (3-gage average) falls below Zone A of the WCA 3A Regulation Schedule, or November 30, 2018 whichever occurs first. The planned temporary deviation will extend no later than the duration of the Florida Department of Environmental Protection (FDEP) Emergency Final Order (EFO). The FDEP issued an EFO in response to high rainfall and flooding in the South Florida Region, OGC No.: 18-1066, on June 20, 2018 (**Appendix B**). The EFO states that the Corps and SFWMD are hereby authorized to make temporary operational changes in order to minimize detrimental impacts to the environment, to the public, to adjacent properties, and to downstream receiving water. The Proposed Action is expected to increase water stages within WCA 3B temporarily; however water elevations due to the deviation operations will not exceed those historically experienced as a result of periodic rain events. The Proposed Action is expected to mitigate for severe ecologic and economic losses that could result from prolonged high water levels. Loss of natural resources directly affects fisheries and fishing, hunting, and ecotourism. The Proposed Action is the third planned temporary deviation conducted in 2018 to alleviate high water conditions within WCA 3A.



**FIGURE 2: PRECIPITATION MAP WITHIN THE PROJECT AREA BETWEEN MAY 2 AND JUNE 1, 2018 (MAP COURTESY OF SOUTH FLORIDA WATER MANAGEMENT DISTRICT).**



**FIGURE 3. WCA 3A REGULATION SCHEDULE AND STAGE WITH WCA 3B CURRENT AND PROPOSED CONSTRAINTS AND STAGE**

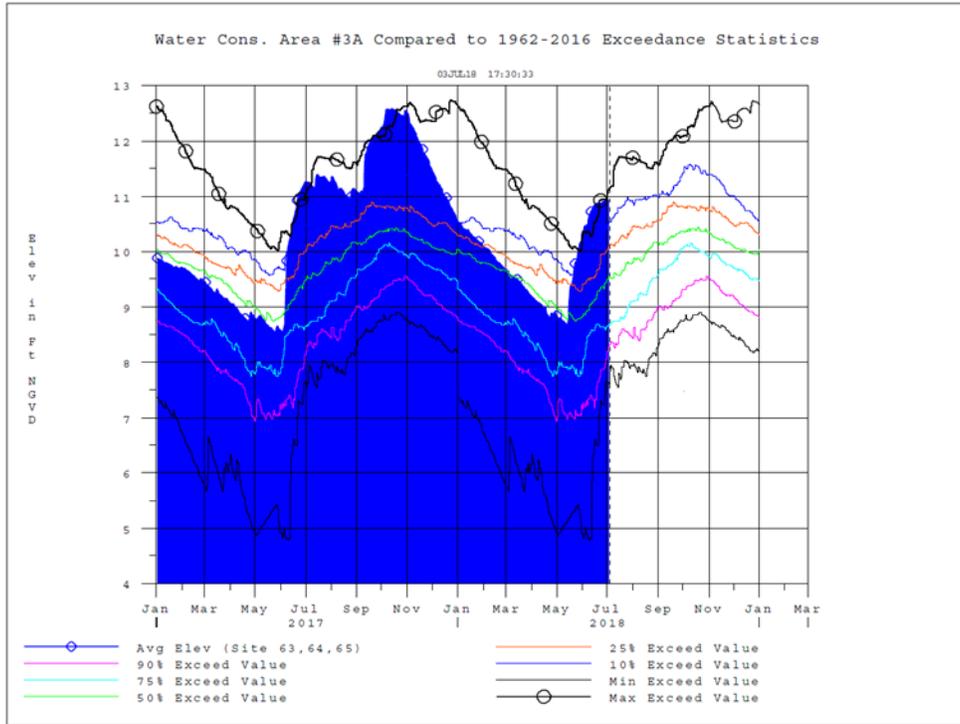


FIGURE 4. WCA 3A STAGE STATISTICS

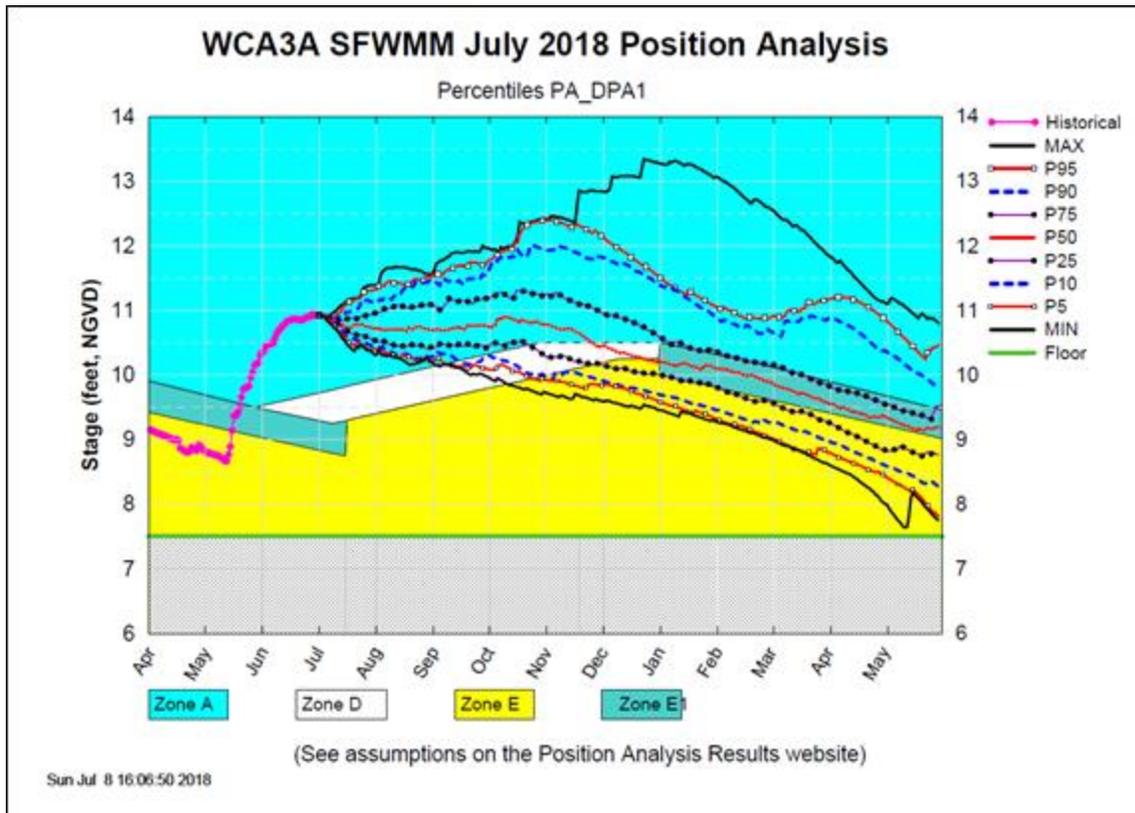


FIGURE 5. SFWMD MONTHLY DYNAMIC POSITIONAL ANALYSIS OF WCA 3A

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## RELATED ENVIRONMENTAL DOCUMENTS

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

- 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
- Installation, Testing and Monitoring of a Physical Model for the Water Conservation Area 3 Decompartamentalization and Sheet Flow Enhancement Project Final Environmental Assessment and Design Test Documentation Report, U.S. Army Corps of Engineers, Jacksonville District, April 2010.
- Documentation Report for Water Conservation Area 3 Decompartamentalization and Sheetflow Enhancement – Part 1 (DECOMP PIR), U.S. Army Corps of Engineers, Jacksonville District, September 2012.
- Supplemental Finding of No Significant Impact Installation, Testing and Monitoring of a Physical Model for the Water Conservation Area 3 Decompartamentalization and Sheet Flow Enhancement Project, U.S. Army Corps of Engineers, Jacksonville District, July 2015.
- Environmental Assessment and Finding of No Significant Impact, 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.
- Environmental Assessment and Finding of No Significant Impact, 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.
- Supplemental Environmental Assessment and Finding of No Significant Impact, 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 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, Installation, Testing, and Monitoring of a Physical Model for the Water Conservation Area 3 Decompartamentalization and Sheetflow Enhancement Project: Phase 2, U.S. Army corps of Engineers, Jacksonville District, November 2017.
- Environmental Assessment and Finding of No Significant Impact, 2018 Planned Temporary Deviation to Affect Relief of High Water Levels within Water Conservation Area 3A, U.S. Army Corps of Engineers, Jacksonville District, June 2018.
- Environmental Assessment and Finding of No Significant Impact, 2018 Planned Temporary Deviation from the 2012 Water Control Plan for Water Conservation Area 2A, U.S. Army Corps of Engineers, Jacksonville District, June 2018.

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

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## DECISIONS TO BE MADE

This EA will evaluate whether to initiate a planned temporary deviation to current C&SF operations as governed by Phase 2 of the DECOMP Physical Model operational strategy (USACE 2017) which is a deviation to the 2012 Water Control Plan. This EA will document and evaluate alternatives to accomplish that goal. The No Action Alternative and other reasonable alternatives will be studied to determine the Preferred Alternative.

## SCOPING AND ISSUES

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

## PERMITS, LICENSES, AND ENTITLEMENTS

This EA will be routed through the State of Florida Clearinghouse for Coastal Zone Management Act (CZMA) coordination, and early coordination has been initiated. The Corps has determined the Proposed Action is consistent to the maximum extent practicable with Florida's Coastal Management Program. The Florida State Clearinghouse concurred with this determination on July 10, 2018. The Proposed Action is not anticipated to adversely affect water quality and State water quality certification is not necessary. The FDEP issued an EFO in response to high rainfall and flooding in the South Florida Region, OGC No.: 18-1066, on June 20, 2018 (**Appendix B**). The EFO states that the Corps and SFWMD are hereby authorized to make temporary operational changes in order to minimize detrimental impacts to the environment, to the public, to adjacent properties, and to downstream receiving water. The FDEP EFO waives the requirement for state water quality certification for this Federal Action but requires the established water quality sampling regime to continue during this deviation. The FDEP EFO expires November 30, 2018.

## 2.0 PROPOSED ACTION AND ALTERNATIVES

Each of the following alternatives described below were considered and evaluated against the project purpose and need and each alternative's environmental impacts were considered.

**Alternative A (No Action Alternative):** The No Action Alternative would continue current DECOMP Physical Model operations as defined in Phase 2 of the DECOMP Physical Model operational strategy (USACE 2017). S-152 may discharge up to 750 cfs to facilitate the DECOMP Physical Model field test, until either DECOMP Physical Model objective(s) are met or S-152 is closed subject to operational constraints. When WCA 3B stages (at gages SRS-1 and/or Site 71) equal or exceed 8.5 ft. NGVD, S-152 releases may be reduced or discontinued. Water quality operational rules have been developed within Phase 2 of the DECOMP Physical Model operational strategy to guide initiation of testing within a given year and to determine the continuation of operations once S-152 is operating based on the forecasted geometric mean for Total Phosphorous (TP) concentrations at S-151, as well as biweekly data collection to ensure low inflow TP concentrations into WCA 3B. S-152 may be operated year round through 2021 under Phase 2 of the DECOMP Physical Model operational strategy (USACE 2017) and are subject to downstream constraints. Reference the DECOMP Physical Model EA and FONSI dated November 9, 2017, for a complete description of current operations associated with S-152.

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**Alternative B (Relaxation of the WCA 3B Stage Constraint (at gages SRS-1 and/or Site 71) up to 9.0 ft. NGVD):**

Alternative B relaxes the current 8.5 ft., NGVD stage constraint at gages SRS 1 and/or Site 71 from 8.5 ft. NGVD to 8.7 ft., NGVD from the beginning of this deviation through September 15, 2018, and then up to 9.0 ft., NGVD from September 16, 2018 through November 30, 2018 allowing approximately 18,000 acre-feet per month discharges out of WCA 3A, based on 300 cfs flow rate through S-152. Discharges from each of the outflows structures (S-31, S-355A, S-355B, WCA 3B temporary outflow pumps placed at S 355B, S-335 (by way of seepage into the L-30 Canal from WCA 3B)) for WCA 3B will be regulated to help avoid exceeding the deviation constraint limit measured at Site 71 or the SRS-1. If the WCA 3A, 3-gage average falls below WCA 3A, Increment 2 Action Line prior to November 30, 2018, the WCA 3B outflow structures will continue to be utilized until the stage measured at the Site 71 or SRS-1 recedes below 8.5 ft., NGVD. The intent of this operation is to transition the stage at Site 71 or SRS-1 from the deviation constraint limit to 8.5 ft., NGVD prior to WCA 3A stage receding below Zone A of the WCA 3A Regulation Schedule. Outflow structures' discharges will be subject to their respective downstream constraints.

The Proposed Action is expected to increase water stages within WCA 3B temporarily; however, water elevations due to the deviation operations will not exceed those historically experienced as a result of periodic rain events. Alternative B will extend no later than the duration of the EFO ending November 30, 2018.

The DECOMP Physical Model water quality constraint described referenced above in Alternative A has been waived under Alternative B per the FDEP EFO. The FDEP EFO waives the requirement for state water quality certification for this Federal Action. However it should be noted that recent phosphorus concentrations (7 ppb on June 19, 2018 and July 2, 2018) at S-152 meets the requirements by the existing S-152 permit allowing S-152 flows into WCA 3B.

**Alternative C (Relaxation of the WCA 3B Stage Constraint (at gages SRS-1 and/or Site 71) up to 10.0 ft. NGVD):**

Alternative C relaxes the current 8.5 ft. NGVD stage constraint at gages SRS-1 and/or Site 71 up to 10.0 ft. NGVD. Alternative C will extend no later than the duration of the Emergency Final Order ending November 30, 2018.

The DECOMP Physical Model water quality constraint described referenced above in Alternative A has been waived under Alternative C per the FDEP EFO. The FDEP EFO waives the requirement for state water quality certification for this Federal Action. However it should be noted that recent phosphorus concentrations (7 ppb on June 19, 2018 and July 2, 2018) at S-152 meets the requirements by the existing S-152 permit allowing S 152 flows into WCA 3B.

## **SFWMD TEMPORARY PUMPS**

Separate and apart from the above alternatives, the SFWMD is currently installing temporary pumping systems in the L-67A levee, north of the Miami Canal S-151 location, in order to help reduce water levels in WCA 3A while structure S-151 is under construction. The SFWMD is proposing to install two 42-inch temporary pumps (with a total installed capacity of approximately 200 cfs) through the L-67A levee, approximately 4.4 miles northeast of S-151 to divert water around S-151. The water will move from L-67A to the L-67C borrow canal, and ultimately

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discharge into C-304 through an open connection excavated between the two canals approximately 1.2 miles southeast of S-151. The SFWMD is also currently installing four 30-inch pumps (with a total installed capacity of approximately 200 cfs) along the L-29 levee to further facilitate the movement of water from WCA 3A to WCA 3B. The four 30-inch pumps will move water from WCA 3A to the L-29 Canal and will be installed in the location of the S-355's (could be either S355 A, S355B or both). Reference **Appendix B** for additional information regarding the temporary installation of pumps. The State is responsible for obtaining all required permits and/or modifications to existing permits, as well as any necessary approval by the Corps under 33 U.S.C. 408, for the installation and operations of the temporary features. Installation of temporary pumping systems by the SFWMD would be in place under implementation of Alternative A, Alternative B, and Alternative C and is an independent action being conducted by the SFWMD. The SFWMD intends to complete pump installation immediately, and to operate them as needed through the duration of the FDEP EFO which expires November 30, 2018 to facilitate the movement of water from WCA 3A and through WCA 3B. The SFWMD previously installed pumps along the L-29 levee during a prior planned temporary deviation to alleviate high water levels within WCA 3A conducted in 2016.

## ISSUES AND BASIS FOR CHOICE

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

The No Action Alternative would continue current DECOMP Physical Model operations as defined in Phase 2 of the DECOMP Physical Model operational strategy (USACE 2017). When WCA 3B stages (at gages SRS-1 and/or Site 71) equal or exceed 8.5 ft. NGVD, S-152 releases are reduced or discontinued under current operations (USACE 2017). Alternative A does not meet the project purpose and need as described in **Section 1.0**. Alternative A does not increase the capacity to reduce stages in WCA 3A by providing additional operational flexibility to move water from WCA 3A to WCA 3B through S-152. Alternative B includes raising the stage constraint from 8.5 ft. NGVD at gages SRS-1 and/or Site 71 up to 9.0 ft. NGVD. Monitoring of stage levels in WCA 3B, at SRS-1 and/or Site 71 demonstrate that levels of 9.0 ft. NGVD, have been reached historically from rain driven events (see **FIGURE 7** and **FIGURE 8**). Raising the stage at gages SRS-1 and/or Site 71 from 8.5 ft. NGVD to 9.0 ft. NGVD under the temporary planned deviation will result in an increase in the volume of water by approximately 600 acre-feet per day which equates to approximately 18,000 acre-feet per month. In the absence of above average rainfall it is expected that the continued operation of S-152 will provide more than 0.1 feet of high water relief to WCA 3A. Discharges from each of the outflows structures for WCA 3B will be regulated to help avoid exceeding the deviation constraint limit of 8.7 or 9.0 ft., NGVD. In addition, permanent and temporary outflow structures will be utilized to return WCA 3B to 8.5 ft., NGVD at the end of the temporary planned deviation or prior to the WCA 3A stage receding below Zone A of the WCA 3A, whichever occurs first. Alternative C includes raising the stage constraint from 8.5 ft., NGVD at gages SRS-1 and/or Site 71 up to 10.0 ft. NGVD. Raising the stage at gages

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SRS-1 and/or Site 71 up to 10.0 ft., NGVD would exceed the maximum recorded historical stage in WCA 3B of approximately 9.75 ft., NGVD and this condition has therefore not been previously tested during the operation of S-152 under the DECOMP Physical Model.

The Proposed Action (Alternative B) will maintain the authorized purposes of the C&SF Project, which include flood control; water supply for agricultural irrigation, municipalities, industry, and ENP; regional groundwater control and prevention of saltwater intrusion; enhancement of fish and wildlife; and recreation. The current level of flood protection east of the L-30 and L-31N levees must be maintained. Increased water levels within WCA 3B may result in increased seepage to the east, as well as potential impacts to the protective levee system (L-30 and L-31N). This may occur when the stage at SRS-1 and/or Site 71 in WCA 3B rises past 8.5 ft. NGVD. Alternative C would raise the stage constraint at gages SRS-1 and/or Site 71 higher than Alternative B and the No Action Alternative (*i.e.* 10.0 ft. NGVD versus 9.0 ft. NGVD and 8.5 ft. NGVD respectively). Implementation of Alternative C would increase the likelihood of exceeding the maximum recorded historical stage of approximately 9.75 ft., NGVD in WCA 3B and may decrease the ability to maintain the authorized purposes of the C&SF Project to include, but not limited to, flood control. The L-67A and L-67 C canals and the associated L-67A and L-67C levees were constructed to reduce seepage under the eastern perimeter levees of WCA 3, L-33, and L-30, by providing a step down of the water level difference between WCA 3A and WCA 3B, thereby, providing flood protection for the developed communities east of WCA 3B.

Based upon the impact analysis conducted within this EA, Alternative B is the Preferred Alternative. This plan is expected to best meet the project purpose and need while minimizing any negative impacts. Alternative B best utilizes current capacity and existing structures within the C&SF Project to reduce water levels in WCA 3A by increasing flow to WCA 3B. Construction of four 30-inch temporary pumps along the L-29 levee currently being undertaken by the SFWMD, will help facilitate the movement of water from WCA 3B into the L-29 canal. Potential impacts to WCA 3B as a result of increased water levels due to the Proposed Action are expected to be temporary and of short duration.

The installation of temporary pumping systems by the SFWMD would be in place under implementation of Alternative A, Alternative B, and Alternative C and is an independent action being conducted by the SFWMD.

## **ALTERNATIVES ELIMINATED FROM DETAILED EVALUATION**

Alternatives A and B were retained for detailed evaluation in **Section 4.0**. Alternative C was eliminated from detailed evaluation for the reasons as outlined above in **Section 2.0**.

## **PREFERRED ALTERNATIVE**

Based upon the impact analysis conducted within this EA, Alternative B is the Preferred Alternative. This plan is expected to best meet the project purpose and need identified in **Section 1.0**. Summary details of the Preferred Alternative are listed below:

To help alleviate the high-water conditions in WCA 3A and address uncertainties or future system conditions, the following actions may be taken until the WCA 3A stage, as measured by the WCA

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3A, 3-gage average falls below Zone A of the WCA 3A Regulation Schedule or November 30, 2018, whichever occurs first:

- From the beginning of this deviation through September 15, 2018 the S-152 structure shall remain open until the stage measured at Site 71 or the SRS-1 gages are above 8.7 ft., NGVD for more than 24 hours.
- From September 16, 2018 through November 30, 2018 the S-152 structure shall remain open until the stage measured at the Site 71 or SRS-1 gages are above 9.0 ft., NGVD for more than 24 hours.
- Discharges from each of the outflows structures\* for WCA 3B will be regulated to help avoid exceeding the deviation constraint limit measured at Site 71 or SRS-1.
- If the WCA 3A, 3-gage average falls below WCA 3A, Increment 2 Action Line prior to November 30, 2018, the WCA 3B outflow structures\* will continue to be utilized until the stage measured at the Site 71 or SRS-1 recedes below 8.5 ft., NGVD. The intent of this operation is to transition the stage at Site 71 or SRS-1 from the deviation constraint limit to 8.5 ft., NGVD prior to WCA 3A stage receding below Zone A of the WCA 3A Regulation Schedule.
- Outflow structures' discharges will be subject to their respective downstream constraints.

\*WCA 3B Outflow Structures: S-31, S-355A, S-355B, WCA 3B temporary outflow pumps placed at S 355B, S-335 (by way of seepage into the L-30 Canal from WCA 3B)

### **3.0       AFFECTED ENVIRONMENT**

#### **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 Everglades Agricultural Area (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. In the pre-drainage system, the inundation pattern supported an expansive system of freshwater marshes including long hydroperiod sawgrass "ridges" interspersed with open-water "sloughs", higher elevation marl prairies on either side of Shark River Slough, and forested wetlands in the Big Cypress marsh. Rainfall and seasonal discharge from Lake Okeechobee resulted in overland surface flows (sheet

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flow) which helped to maintain the microtopography, directionality, and spatial extent of ridges and sloughs. Accretion of peat soils typical of the ridge and slough landscape required prolonged flooding, characterized by 10 to 12 month annual hydroperiods, and ground water that rarely dropped more than one foot below ground surface (Tropical BioIndustries Inc. 1990). The depths, distributions and duration of surface flooding largely determined the vegetation patterns, as well as the distribution, abundance and seasonal movements, and reproductive dynamics of all of the aquatic and many of the terrestrial animals in the Everglades (Davis and Ogden 1994, Kushlan and Kushlan 1979, Holling, Gunderson and Walters 1994, Walters and Gunderson 1994).

Construction of canals and levees by C&SF Project resulted in the creation of artificial impoundments and has altered hydroperiods and depths within the action area. For example, northern WCA 3A has been over drained and its natural hydroperiod shortened while the eastern and southern portion of WCA 3A is primarily affected by high water and prolonged periods of inundation. The result has been substantially altered plant community structures, reduced abundance and diversity of animals and spread of non-native vegetation. The once vast, naturally connected landscape has been cut into a mosaic of various-sized habitat patches. The ridge and slough habitat has become severely degraded in a number of locations and is being replaced with a landscape more uniform in terms of topography and vegetation with less directionality (National Research Council 2012). The canals adjacent to the project area likely serve as an effective barrier to wildlife movement, interfering with or preventing life functions of many native wildlife species.

The remaining portions of the Everglades are stressed and exhibit levels of reduced aquatic function. The overall negative ecological trends in the remaining portions of the Everglades are expected to continue into the future, with additional loss of resources through landscape alterations and degradation of habitat. The effects of the existing infrastructure and future water management practices will continue to cause dry-outs in the natural system. The threat of extreme fires will persist, destroying peat that is necessary for plant growth and water retention. Although, less extreme, soil subsidence will also continue as dry-outs, particularly extreme during periods of drought, contribute to further soil oxidation. Droughts may increase in frequency and intensity as a result of climate change as well. Unnatural shorter or longer hydroperiods will likely continue to cause detriment to remaining tree islands.

A complete description of the affected environment with respect to operations of S-152 is discussed within the DECOMP Physical Model EA and FONSI dated April 13 2010 (USACE 2010), the Supplemental FONSI dated July 8, 2015 (USACE 2015) and the Supplemental EA and FONSI dated November 9, 2017 (USACE 2017).

## **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.

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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.

## **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.

## **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).

## **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 subtidal seagrass beds in the estuarine waters of Florida Bay.

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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.

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. Water lilies (*Nymphaea alba*) were originally widespread in sloughs throughout many areas of WCA 3A (McVoy, et al. 2011). Reduced freshwater inflow and drainage by the Miami Canal have overdrained the northern portion of WCA 3A, 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 with large areas of shrubs and monotypic cattail. Northern WCA 3A lacks the diversity of communities that exists in southern WCA 3A. In southern WCA 3A, Wood and Tanner (1990) documented the trend toward deep water lily dominated sloughs due to impoundment. In approximately 1991, the hydrology of southern WCA 3A shifted to the deeper water and extended hydroperiods of the new, wet hydrologic era resulting in a northward shift in slough vegetation communities within the WCA 3A impoundment (Zweig and Kitchens 2008). Typical Everglades vegetation, including tree islands, wet prairies, sawgrass marshes, and aquatic sloughs also occur throughout 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 predominated 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.

## **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

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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 impacts 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.

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

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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.

The DECOMP Physical Model uses a before-after-control impact (BACI) experimental design to evaluate hydrologic and ecological responses to flow (USACE 2010). During operation of the DECOMP Physical Model, water is allowed to pass from WCA 3A through the L-67A Canal into the pocket through S-152. The 10 culverts with vertical slide gates discharge directly into the pocket and are manually operated on site. The culverts were designed to generate velocities of at least two centimeters per second (cm/s), the expected threshold velocity to entrain sediments. In order to establish sheetflow and evaluate canal back filling options, a 3,000 ft. long gap was opened in the L-67C Levee downstream of S-152 during installation of the culverts. Levee material was deposited in the L-67C Canal to create a 1,000 ft. long completely full backfill segment and a 1,000 ft. long partially full backfill segment.

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. Since 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.

## **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,

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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.

Water deliveries to eastern ENP (NESRS) 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 previously limited under 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. Following completion of C-111 South Dade Northern Detention Area in June 2018, along with prior approval of the Increment 2 field test operational strategy in February 2018, the Corps now has additional operational

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flexibility to allow incremental increases within the L-29 Canal up to the maximum 8.5 feet, NGVD limit, subject to downstream constraints. The L-29 Canal stage was raised to 8.0 feet, NGVD on July 1, 2018. Further incremental increases in the L-29 Canal maximum operating limit are planned during August through early October 2018, concurrent with construction completion of the Canal 111 South Dade Project South Detention Area.

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 of 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 capability of the S-355A and S-355B spillways to lower water levels in WCA 3B will be reduced due to the recent raising of the maximum operating limit in the downstream L-29 Canal to 8.0 feet, NGVD, and the S-355 spillways would be closed in advance of the L-29 Canal stage exceeding the prescribed maximum operating limit.

## **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.

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## 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 (*Hyallolella 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 natilis*), 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 (*Trionys ferox*), water snake (*Natrix sipidon*), green water snake (*Natrix cyclopion*), mud snake (*Francina 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 (*Plegadis falcinellus*), 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*).

**THREATENED AND ENDANGERED SPECIES**

**FEDERALLY PROTECTED SPECIES**

The Corps has coordinated with USFWS 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 1).

**TABLE 1. FEDERALLY THREATENED AND ENDANGERED SPECIES WITHIN THE PROJECT AREA.**

Common Name	Scientific Name	Status
<b>Mammals</b>		
Florida panther	<i>Puma concolor coryi</i>	E
Florida manatee	<i>Trichechus manatus latirostris</i>	T, CH**
Florida bonneted bat	<i>Eumops floridanus</i>	E
<b>Birds</b>		
Cape Sable seaside sparrow	<i>Ammodramus maritimus mirabilis</i>	E, CH**
Everglade snail kite	<i>Rostrhamus sociabilis plumbeus</i>	E, CH
Wood stork	<i>Mycteria americana</i>	T
<b>Reptiles</b>		
Eastern indigo snake	<i>Drymarchon corais couperi</i>	T

E = Endangered; T = Threatened; CH = Critical Habitat

\*\* Indicates Critical Habitat for the designated species is not within the action study area

**STATE LISTED SPECIES**

The project area also provides habitat for several state listed species

**TABLE 2.**

**TABLE 2. STATE LISTED SPECIES WITHIN THE PROJECT AREA**

Common Name	Scientific Name	Status
<b>Mammals</b>		
Everglades mink	<i>Mustela vison evergladensis</i>	T
<b>Birds</b>		
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

T=Threatened

## ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. 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). There is no EFH within the project area.

## WATER QUALITY

Water quality in the study area is significantly influenced by development, landscape modifications, and water management infrastructure. The C&SF Project led to changes in the landscape by opening large land tracts for urban development and agricultural uses and by the construction of extensive drainage networks. The area of study, WCA 3B has been an impounded (surrounded by levees) rain driven system since the 1960s. Inflows from the L67A Canal have only occurred for a brief testing period in the late 1990's and more recently with the DPM inflows. Water quality within WCA 3B due to the impoundment condition has limited nutrient enrichment noted in the soils as compared to WCA 3A. 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. Hydrology within WCA 3B has been extensively disrupted by impounding the area and the existence of agricultural canals from pre-C&SF activities. 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, as well as legacy loading within the WCA's. 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 impact 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.).

## 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 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

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[http://www.dep.state.fl.us/water/tmdl/.](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 is the nutrient of concern within WCA 3 and NESRS. Under the current conditions, total phosphorus concentrations at the structures involved in this project area are within the low to average range (~5-10 µg/L TP) for this time of year. SRS was in compliance with the SA requirements for WY 2016 (1 October 2015-30 September 2016).

There are three long term marsh nutrient monitoring stations within WCA 3B. Two of these three stations had a geometric mean below 5 µg/L for WY 2016. The remaining station located in the southern reach of WCA 3B had a geometric mean below 10 µg/L. Northern WCA 3 feeds into S-151, which is the precursor structure to the S-152, which flows into WCA 3B. The most recent samples at the S-152 (7 ppb on June 19, 2018 and July 2, 2018) meet the requirements of the existing S-152 permit allowing S-152 flows into WCA 3B. Recent WCA water quality data indicates that the recovery from dry season conditions has occurred within WCA 3A and low phosphorus conditions (below 10 ppb) are expected at the S-152 until dry season conditions resume in the WCA’s (no earlier than November or December 2018 based on current weather forecasts/conditions.)

## **NATIVE AMERICANS**

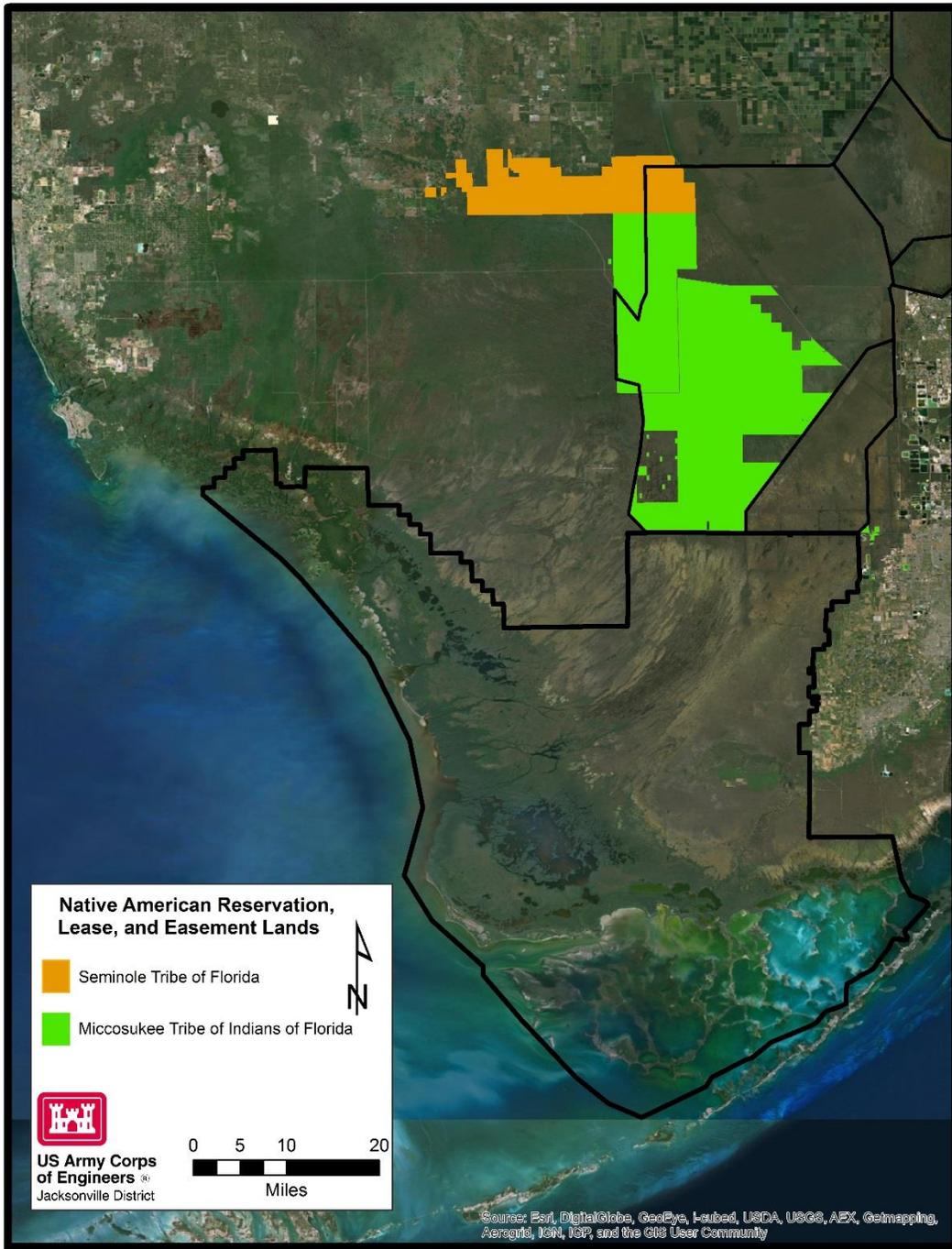
There are two federally recognized tribes; Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida that are located within and adjacent to the project area (**FIGURE 6**). Both tribes maintain a strong connection to the project area through continued use and regard the indigenous populations 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 of Indians of Florida and Seminole Tribe of Florida 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.

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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 6. MAP OUTLINING THE LOCATION OF TRIBAL RESERVATION, LEASED AND EASEMENT LANDS.**

## CULTURAL RESOURCES

Within the larger region that includes WCA3, there are numerous recorded archeological sites indicative of Native American habitation. Prior to European contact, the Everglades were a heavily

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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 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 121 cultural resources, as identified in the Florida Master Site File, are located within the project area. 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.

## **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 (NO<sub>2</sub>), ozone (O<sub>3</sub>),

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particle pollution (10 microns or less in diameter (PM<sub>10</sub>), and 2.5 microns or less in diameter (PM<sub>2.5</sub>), and sulfur dioxide (SO<sub>2</sub>)) 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 PM<sub>10</sub>. Although sufficient data have been collected for attainment determinations, EPA has not considered PM<sub>10</sub> for attainment determinations in Florida yet.

## **HAZARDOUS, TOXIC OR RADIOACTIVE WASTES**

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 site visit was conducted during the initial design of the DECOMP Physical Model (*i.e.* S-152) on October 28, 2008 for purposes of performing a preliminary HTRW evaluation. No obvious sources of ground water or soil contamination (*i.e.* drums, solid waste or other areas of recognized environmental concern) were observed. The SFWMD levees and inspected areas showed no visible evidence of contamination such as discolored soil, seeping liquids, films on water, abnormal grading, or fills. Nor were the following discovered which could have indicated potential HTRW problems: landfills, dumps and disposal areas, burning or burned areas, pits, quarries and borrow areas, wells, odors, water treatment plants, abandoned buildings, and/or transport areas such as boat yards, harbors, and truck terminals.

## **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.

## **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

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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.

## **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. The L-67A and L-67C canals are open year round and provide fishing opportunities from both the canal and from levee banks. Recreational boaters can gain access to WCA 3 by more than twenty ramps. In the vicinity of the project area, there are three boat ramps in WCA 3A (north) near the Holey Land and Rotenberger Wildlife Management Areas (WMAs). Six boat ramps are in WCA 3A (north) and 3A (south) which include boat access to L-67A. There are three boat ramps in WCA 3B, the Francis S. Taylor WMA, which provide access to the L-67A and L-67C canals. 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.

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## 4.0 ENVIRONMENTAL EFFECTS

### GENERAL ENVIRONMENTAL EFFECTS

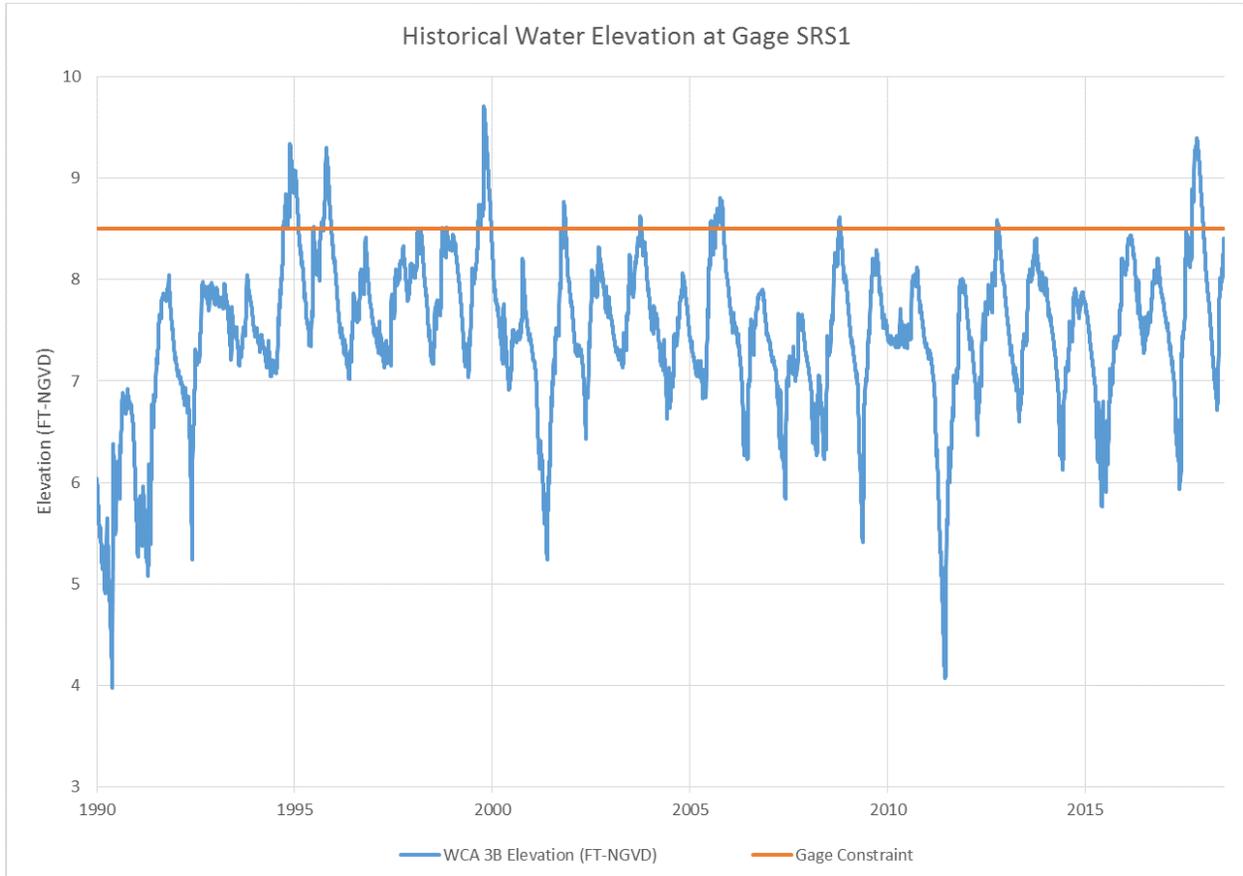
**TABLE 3** includes anticipated changes to the existing environment including direct, indirect, and cumulative effects. Environmental effects caused by the planned temporary deviation are expected to be of a short duration. Potential environmental effects of current water management operations (No Action Alternative) are thoroughly evaluated within the Supplemental EA and FONSI for the DECOMP Physical Model dated November 9, 2017 and are hereby incorporated by reference (USACE 2017).

Alternative B is expected to increase water deliveries from WCA 3A to WCA 3B for the temporary benefit of natural resources within WCA 3A. Alternative B relaxes the current 8.5 ft. NGVD stage constraint at gages SRS-1 and/or Site 71 to 8.7 ft., NGVD from the beginning of this deviation through September 15, 2018, and then up to 9.0 ft., NGVD from September 16, 2018 through November 30, 2018 allowing approximately 18,000 acre-feet per month discharges out of WCA 3A, based on 300 cfs flow rate through S-1529. Alternative B is expected to increase water stages within WCA 3B relative to Alternative A; however water elevations due to the deviation operations will not exceed those historically experienced as a result of periodic rain events. Water levels experienced within WCA 3B under implementation of the Proposed Action would be similar to the range of water levels experienced under prior water management. **FIGURE 7** and **FIGURE 8** illustrate the historical recorded stage as measured at Site-71 and SRS-1 within the project area. The stage hydrographs indicate that the variations in water levels follow a periodic, seasonal pattern as expected from a rainfall-driven system. WCA 3B has intermittently experienced stages above 8.5 ft. NGVD as measured at Site-71 and SRS-1 throughout the recent assessment period evaluated within these figures (1990-2018).

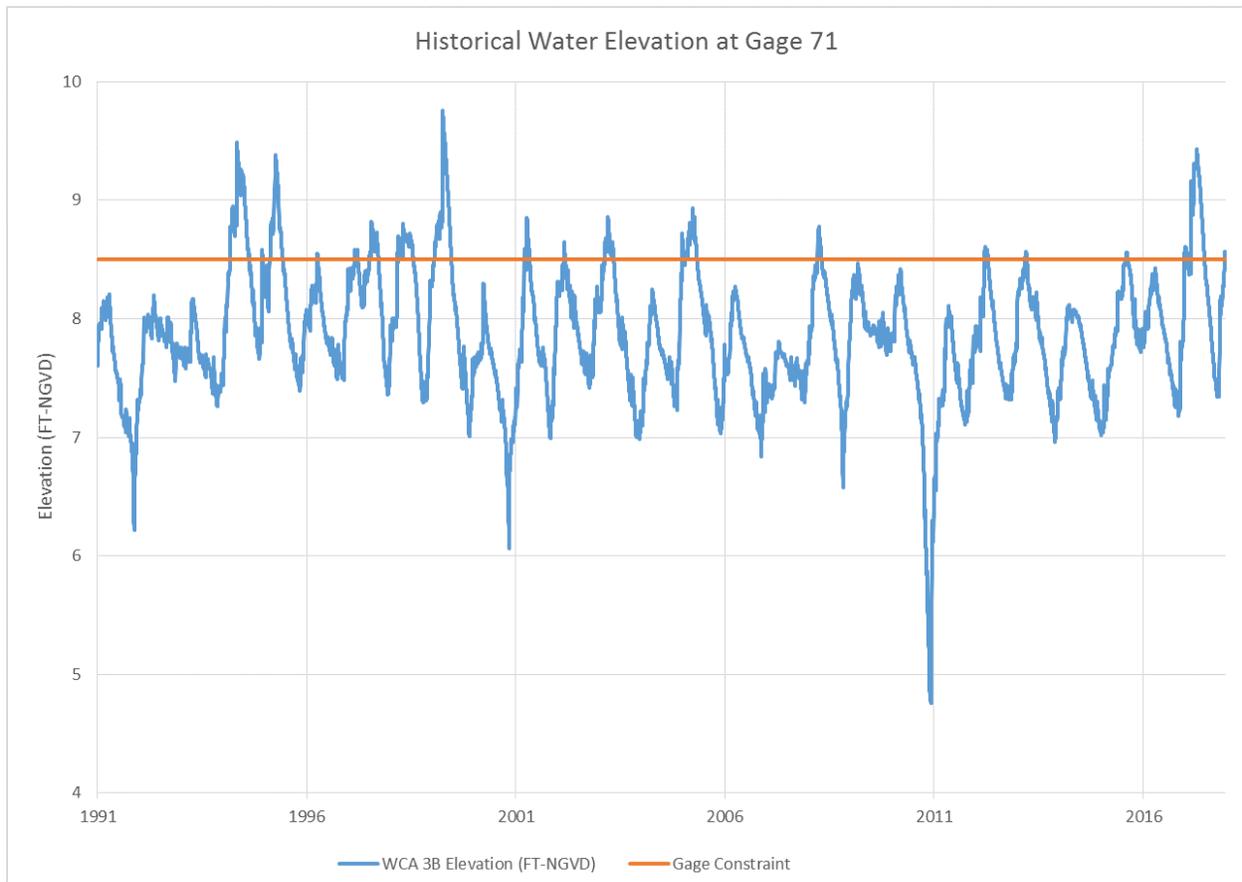
WCA 3B currently experiences very little overland flow and has become primarily a rain-driven system due to the construction of the L-67 A and L-67C canal and levee system. Water levels in WCA 3B are too low and do not vary seasonally. Loss of sheetflow to WCA 3B has accelerated soil loss and reduced elevations between ridges and sloughs, as well as existing tree islands. Minor beneficial effects on wetland vegetation and fish and wildlife resources within WCA 3B may occur by increasing flows; however water elevations due to the deviation operations are not anticipated to exceed those historically experienced as a result of periodic rain events. No additional effects to vegetation communities and fish and wildlife resources to WCA 3B are expected beyond those described for Alternative A due to the short duration of the Proposed Action.

There are many recreational opportunities throughout south Florida. WCA 3A 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 WCA 3A. Due to heavy rainfall leading to high water levels, the FWC has closed access to the WCAs within the project area leading to economic losses within the region and impacts on local businesses. Alternative B increases the capacity to reduce stages in WCA 3A by providing additional operational flexibility. Potential reductions in high water levels and decreased periods of prolonged flooding is expected to provide temporary benefits within WCA 3A to vegetation and fish and wildlife resources, including Federally threatened and endangered species such as the

wood stork and Everglade snail kite. Prolonged periods of flooding eliminates foraging and nesting opportunities for wading birds.



**FIGURE 7. MONITORING DATA FOR GAGES AND PERTINENT STRUCTURES RELATED TO WCA 3B OPERATIONS. HISTORICAL WATER ELEVATIONS AT GAGE SRS1.**



**FIGURE 8. MONITORING DATA FOR GAGES AND PERTINENT STRUCTURES RELATED TO WCA 3B OPERATIONS. HISTORICAL WATER ELEVATIONS AT GAGE 71.**

Water levels within the Everglades have historically fluctuated on a seasonal, annual, and interannual basis; therefore, it is likely that cultural resources within the WCAs have been previously exposed to natural hydrological conditions that may be experienced under the current condition. Based on the fluctuation of water levels that historic properties have been exposed to during recent history, the No Action Alternative would have no adverse effect to cultural resources listed or eligible for listing in the National Register of Historic Places (NRHP). The Proposed Action will hold water levels slightly higher within WCA 3B relative to the No Action Alternative; however, historic properties located within the area of potential effects have experienced similar water levels as a result of periodic rain events. Due to the temporary nature and short duration of the project, and based on the recurrent condition of water levels that cultural resources have been exposed to naturally, the Corps has determined that the Proposed Action will have no adverse effects on historic properties listed or eligible for listing in the NRHP.

The Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida rely upon the Everglades in its natural state to support their cultural, subsistence, and commercial activities. While the tribes’ reservation lands are not located within WCA 3B, portions of the Miccosukee

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Tribe's Alligator Alley Reservation are located in WCA 3A. In addition, both tribes hold easements and leases from the State of Florida over large portions of the WCA 3A. The continued implementation of the No Action Alternative has the potential for negative impacts to occur on fish and wildlife resources primarily within WCA 3A where high water levels and prolonged inundation periods are expected to continue. Previous consultations with the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida have indicated that tree islands within WCA 3A are utilized for the tribes' hunting, fishing, trapping, foraging, and frogging rights within Federal reservation lands, and lands owned and leased by the tribes. The Miccosukee Tribe of Indians of Florida have continuously expressed concern with high water levels in WCA 3A where many tribal members live and utilize culturally sensitive areas. High water impacts to tree islands in WCA 3A as a result of implementation of the No Action Alternative may directly affect lands owned and leased by the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida. Fish, wildlife, and vegetative resources within WCA 3A are expected to benefit with implementation of the Proposed Action. A potential decrease in high water levels in WCA 3A may provide an overall net benefit for tree islands which Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida utilize for cultural purposes, as well as hunting, fishing, trapping, foraging, frogging; therefore, implementation of the Proposed Action will not adversely impact Tribal resources.

**TABLE 3. SUMMARY OF POTENTIAL ENVIRONMENTAL CONSEQUENCES ASSOCIATED WITH IMPLEMENTATION OF THE NO ACTION AND ACTION ALTERNATIVES.**

<b>Resource</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative) <u>(Relaxation of the WCA 3B Stage Constraint at gages SRS-1 and/or Site 71) up to 9.0 ft. NGVD</u></b>
Climate	Implementation of Alternative A would not result in significant impacts to the climate of south Florida.	Implementation of Alternative B would not result in significant impacts to the climate of south Florida.
Geology and Soils	Alternative A is expected to have beneficial effects on geology and soils within WCA 3B due to improvements in hydroperiods. The continued implementation of Alternative A within WCA 3B has the potential to affect ( <i>i.e.</i> increased oxidation, subsidence and peat fires) soils due to increased durations of dry downs as a result of current infrastructure and water management practices. WCA 3B experiences very little overland flow and has become primarily a rain-driven system. Water levels in WCA 3B are too low and do not vary seasonally. Loss of sheetflow to WCA 3B has accelerated soil loss and reduced elevations between ridges and sloughs, as well as existing tree islands. Alternative A is expected to provide minor beneficial effects on geology and soils by increasing flows to WCA 3B.	No additional effects beyond those described for Alternative A. Minor beneficial effects on geology and soils within WCA 3B may occur by increasing flows to WCA 3B as this portion of the system experiences very little overland flow. Alternative B is expected to increase water stages within WCA 3B temporarily relative to Alternative A.
Land Use	Implementation of the Alternative A would not result in significant impacts to study area land use.	Implementation of Alternative B would not result in significant impacts to study area land use.
Hydrology	Stage levels experienced within WCA 3A and WCA 3B would be similar to the range experienced under current water management operations.	Alternative B is expected to result in a minor reduction to water stages in WCA 3A of approximately 0.1 feet. Alternative B is expected to increase water stages within WCA 3B temporarily

		relative to Alternative A by up to 0.5 feet, as prescribed by the proposed deviation stage limit for WCA 3B; however water elevations due to the deviation operations will not exceed those historically experienced as a result of periodic rain events. If the WCA 3A, 3-gage average falls below WCA 3A, Increment 2 Action Line during the deviation, the S-152 and WCA 3B outflow structures will be operated to transition the WCA 3B stage from the deviation constraint limit down to 8.5 ft., NGVD prior to the WCA 3A stage receding below Zone A of the WCA 3A Regulation Schedule. If hydrologic conditions result in WCA 3A water levels receding and approaching Zone A within the proposed deviation period, the operational intent is that WCA 3B water levels will be managed to recede coincident with water levels in WCA 3A.
Regional Water Management	Stage levels experienced within WCA 3B would be similar to the range experienced under current water management operations. The No Action Alternative will maintain the authorized purposes of the C&SF Project.	Alternative B is expected to increase water stages within WCA 3B temporarily relative to Alternative A; however water elevations due to the deviation operations will not exceed those historically experienced as a result of periodic rain events. Alternative B increases the capacity to reduce stages in WCA 3A by providing additional operational flexibility to move water from WCA 3A to WCA 3B through S-152.
Flood Control	Implementation of Alternative A increases the potential risk to levee integrity within WCA 3A if WCA 3A flood stages exceed the maximum historical observed stage of 12.7 feet NGVD.	Alternative B increases the capacity to reduce stages in WCA 3A by providing additional operational flexibility to move water from WCA 3A to WCA 3B through S-152. Alternative B is expected to increase water stages within WCA 3B temporarily relative to Alternative A. Increased

		<p>water stages within WCA 3B will result in increased seepage to the east. This may occur when the stage at SRS-1 and/or Site 71 in WCA 3B rises to 8.5 ft., NGVD. Discharges from each of the outflows structures for WCA 3B will be regulated to help avoid exceeding 8.7 feet, NGVD from the beginning of this deviation through September 15, 2018, then up to 9.0 ft., NGVD from September 16, 2018 through November 30, 2018 as measured at SRS-1 and/or Site 71. The target stage in the WCA 3B before the peak of the Atlantic Hurricane Season on September 15 is intended to be kept lower in order to maintain a buffer to accommodate wet season rainfall and still keep the stages below period of record maximum of 9.7 ft. NGVD. If the water levels in the WCA 3B exceed the moderate levee safety risk threshold USACE established at 9.0 ft., NGVD, consistent with the SFWMD's levee safety program, the SFWMD will initiate weekly levee inspection. The elevated levee safety risk threshold for WCA 3B is established at 9.5 ft., NGVD, which will trigger semi-weekly inspections by SFWMD. Outflow structures' discharges will be subject to their respective downstream constraints. Alternative B will extend no later than November 30, 2018. Construction of two 42-inch temporary pumps in the L-67A levee to divert water around S-151 while under construction will also help facilitate the movement of water from WCA 3B to the C-304 canal. Construction of four temporary 30-inch pumps along the L-29 levee will also help to move water from WCA 3B to the L-29 Canal. Due to these provisions, in addition to the</p>
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		<p>temporary nature of Alternative B, there will be no significant effect on flood control within the WCAs. In addition, as compared with the No Action Alternative, Alternative B will help to alleviate concerns regarding risk to levee safety with WCA 3A by providing additional outlet capacity from WCA 3A.</p> <p>The proposed deviation operations do not change the current operational criteria for the water control structures within the C&amp;SF canals adjacent to WCA 3B, including structures along the L-30 Canal (S-337; S-335) and the L-31N Canal (S-356; S-334; S-338; G-211). S-152 operations may be periodically adjusted within the prescribed operational flexibility, based on real-time consideration of stage conditions, observed seepage, SFWMD levee inspections, and/or forecast rainfall conditions. Increased seepage from WCA 3B may result in minor increases to structure flows at S-335, S-334 (including releases to the SFWMD C-4 impoundment), and G-211 during the deviation period, but no significant effects to the C&amp;SF flood risk management system are expected with the proposed deviation. Consistent with current operations of the DPM, the manually-operated S-152 structure will be closed following issuance of a Hurricane Watch or Hurricane Warning for the project area.</p>
Vegetative Communities	Implementation of Alternative A may result in negative effects to tree islands as a result of high water levels that are expected to continue to occur within WCA 3A. Loss of sheetflow to WCA 3B has	No additional effects beyond those described for Alternative A. Minor additional beneficial effects on wetland vegetation within WCA 3B may occur as improved inundation patterns help to maintain

	accelerated soil loss and reduced elevations between ridges and sloughs, as well as existing tree islands. Alternative A is expected to provide minor beneficial effects on vegetation by increasing hydroperiods and/or decreasing the duration of dry downs.	existing wetland vegetation as this portion of the system experiences very little overland flow. Alternative B is expected to increase water stages within WCA 3B temporarily relative to Alternative A. Negative effects to tree islands within WCA 3B are not anticipated. Elevation and tree community surveys conducted on tree islands within WCA 3B are significantly drier than islands in WCA 3A; however, most of the islands are dominated by flood-tolerant species. A potential decrease in high water levels in WCA 3A may provide an overall net benefit for tree islands within WCA 3A.
Fish & Wildlife Resources	Major adverse effects to terrestrial wildlife within WCA 3A due to high stages and limited 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.	No additional effects beyond those described for Alternative A. Minor beneficial effects on fish and wildlife resources within WCA 3B by increasing flows. Benefits to birds and mammals within WCA 3A due to reduction in water elevations, providing dry ground for foraging, loafing and resting.
Threatened and Endangered Species	Effects determinations for federally threatened and endangered species within the project area as a result of implementation of Phase 2 of the DECOMP Physical Model operational strategy are listed in Table 4-2 of the Supplemental EA and FONSI dated November 9, 2017 EA. Alternative A is expected to alleviate potential negative effects to the threatened wood stork and endangered Everglade snail kite due to effects of prolonged high stages on nesting and foraging ability within WCA 3A.	Within WCA 3B, the Corps determined that the Proposed Action may affect, but is not likely to adversely affect, the Everglade snail kite and its designated critical habitat, the wood stork, and the eastern indigo snake. The Corps has determined that the Proposed Action would have no effect on the Florida panther, Florida manatee, and Cape Sable seaside sparrow. 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.
Essential Fish Habitat	No effect	No effect
Water Quality	Operational criteria developed for Alternative A allow opening of the S-152 only when the forecasted geometric mean for total phosphorous is at or below	Alternative B is not anticipated to adversely affect water quality. The FDEP issued an EFO in response to high rainfall and flooding in the South

	10 µg/L. These criteria are protective by limiting surface water phosphorus concentrations to levels that prevent degradation of the marsh. Operational rules are based on the forecasted geometric mean for TP concentrations at S-152 as well as biweekly data collection to ensure low inflow TP concentrations into WCA 3B.	Florida Region, OGC No.: 18-1066, on June 20, 2018 (Appendix B). The EFO states that the Corps and SFWMD are hereby authorized to make temporary operational changes in order to minimize detrimental impacts to the environment, to the public, to adjacent properties, and to downstream receiving water. The FDEP EFO waives the requirement for state water quality certification for this Federal Action. However it should be noted, water quality conditions (S-152 concentrations for TP) as of July 2018 are below the 10 ppb (7 ppb) constraint criteria identified within Phase 2 of the DECOMP Physical Model operational strategy (no waiver is needed related to water quality conditions)
Native Americans	Potential adverse effect on Tribal properties through prolonged high stages within WCA 3A.	No adverse effect. A potential decrease in high water levels in WCA 3A may provide an overall net benefit for tree islands which Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida utilize for cultural purposes, as well as hunting, fishing, trapping, foraging, frogging.
Cultural Resources	No adverse effect	No adverse effect.
Air Quality	No effect. Implementation of the Alternative A would not result in significant impacts to air quality. S-152 is a manually operated structure.	No effect. Implementation of the Alternative B would not result in significant impacts to air quality. S-152 is a manually operated structure.
Hazardous, Toxic and Radioactive Wastes	No effect. Low risk for increased mobilization of existing HTRW where it might exist within the study area.	No effect. Low risk for increased mobilization of existing HTRW where it might exist within the study area.
Noise	No effect. Implementation of the Alternative A would not result in significant impacts to the noise environment. No construction.	No effect. Implementation of the Alternative B would not result in significant impacts to the noise environment. No construction.
Aesthetics	No effect. Implementation of the Alternative A would not result in significant impacts to aesthetics.	No effect. Implementation of the Alternative B would not result in significant impacts to aesthetics.

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Recreation	No effect.	High water levels are currently limiting access to recreational opportunities within WCA 3A. Due to heavy rainfall leading to high water levels, the FWC has closed access to the WCAs within the project area leading to economic losses within the region and impacts on local businesses. Alternative B increases the capacity to reduce stages in WCA 3A by providing additional operational flexibility, therefore, potentially reducing the FWC closure period duration with WCA 3A.
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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 (EPA), USFWS, FWC, Florida Department of Agriculture and Consumer Services, State Historic Preservation Office, Seminole Tribe of Florida, the Miccosukee Tribe of Indians of Florida, the Seminole Nation of Oklahoma, and the Thlopthlocco Tribal Town. 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. It should be noted that operations as described in **Appendix A** were subsequently modified on July 18, 2018 to further address potential concerns regarding increased seepage to the east when stages at SRS-1 and or Site 71 in WCA 3B rise to 8.5 ft., NGVD. The target stage in WCA 3B before the peak of the Atlantic Hurricane Season on September 15 is intended to be kept lower in order to maintain a buffer to accommodate wet season rainfall and still keep the stages below period of record maximum of 9.7 ft., NGVD.

### NATIVE AMERICAN TRIBES

As part of the consideration of effects, consultation with the Seminole Tribe of Florida, the Seminole Nation of Oklahoma, the Miccosukee Tribe of Indians, and the Thlopthlocco Tribal Town was initiated on July 10, 2018 (refer to **Appendix B**). The Miccosukee Tribal Representative, the Seminole Nation of Oklahoma, and the Thlopthlocco Tribal Town concurred with the Corps' determination of no adverse effect to historic properties. Consultation with other interested, federally-recognized tribes is ongoing and will be finalized prior to implementation of the Proposed Action.

### U.S. ENVIRONMENTAL PROTECTION AGENCY

The Corps contacted the EPA Region 4 for the purpose of notification and discussion of NEPA per correspondence dated July 6, 2018. The Corps told the EPA that it has completed an EA in accordance with NEPA (42 U.S.C. 4321 *et. seq.*) and the Corps' implementing regulations for NEPA at 33 CFR Part 23 to address the Federal action of the planned temporary deviation to the water control plan. Once the planned temporary deviation is approved at the Corps' South Atlantic Division, the Proposed FONSI will be signed and circulated for public review for a period of 15 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. EPA responded that it appreciates the inclusion of their agency in the high water discussions and operational updates and requested notified when the EA is ready for review.

### U.S. FISH & WILDLIFE SERVICE

The USFWS was contacted on July 6, 2018. Emergency consultation pursuant to Section 7 of the ESA is complete and the Proposed Action is in full compliance with the ESA. The Corps had determined that Proposed Action would have the following effects on federally listed species and critical habitat.

- a. May effect, not likely to adversely affect, Eastern indigo snake, wood stork, Everglade snail kite, and Everglade snail kite critical habitat.

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b. No effect on West Indian Manatee, Cape Sable seaside sparrow, and Florida panther.

The USFWS responded on July 9, 2018 noting that the USFWS supports these and other actions to help reduce high water concerns in the WCAs. The USFWS concurred with the Corps' species effects determinations as a result of the Proposed Action. The USFWS noted that when and/or if system wide water levels recede to an acceptable level, the USFWS recommends the Corps prioritize the removal of excess water in WCA 3B.

#### **FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION**

This EA will be routed through the State of Florida Clearinghouse for CZMA coordination, and early coordination has been initiated. Coordination with the Clearinghouse and the FDEP was conducted on July 6, 2018. The Corps has determined the Proposed Action is consistent to the maximum extent practicable with Florida's Coastal Management Program. The Florida State Clearinghouse concurred with this determination on July 10, 2018. The Proposed Action is not anticipated to adversely affect water quality and State water quality certification is not necessary. The FDEP issued an EFO in response to high rainfall and flooding in the South Florida Region, OGC No.: 18-1066, on June 20, 2018 (**Appendix B**). The EFO states that the Corps and SFWMD are hereby authorized to make temporary operational changes in order to minimize detrimental impacts to the environment, to the public, to adjacent properties, and to downstream receiving water. The FDEP EFO waives the requirement for state water quality certification for this Federal Action. The FDEP EFO expires November 30, 2018.

#### **SOUTH FLORIDA WATER MANAGEMENT DISTRICT**

The SFWMD has requested the Proposed Action via correspondence dated July 2, 2018 (**Appendix B**). The SFWMD noted, that the District was looking to continue the operation of the S-152 structure as stages in WCA 3B rise from 8.5 ft. NGVD to 9.0 ft. NGVD to alleviate the high-water conditions in WCA 3A. Additional communication occurred on July 16, 2018 and July 18, 2018 between the Corps and the SFWMD, in which the operational strategy was revised to ensure that the stage constraint in WCA 3B before the peak of the Atlantic Hurricane Season in mid-September is kept lower in order to maintain a buffer to accommodate wet season rainfall and still keep the stages below period of record maximum for WCA 3B of approximately 9.75 ft. NGVD.

#### **FLORIDA STATE HISTORIC PRESERVATION OFFICER**

As part of the consideration of effects, consultation with the Florida State Historic Preservation Officer (SHPO) was initiated on July 10, 2018 and is ongoing (refer to Appendix B). Consultation will be finalized prior to implementation of the Proposed Action.

#### **FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES**

Coordination with the FDACS was conducted on July 6, 2018. FDACS responded that it appreciates the inclusion of their agency in the high water discussions and operational updates and indicated that upon review, it appears the operations proposed would not create any substantial issues for agriculture within the area

**FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION**

Coordination with the FWC was conducted on July 6, 2018. Verbal concurrence was received July 11, 2018, regarding the action being consistent with the State emergency order and overall efforts to conserve fish and wildlife and their habitats in WCA 3A.

**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 impacts would be of short duration. **TABLE 4** summarizes past, present, and projected Corps efforts that cumulatively affect the regional environment of South Florida.

**TABLE 4. PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS AND PLAN AFFECTING THE PROJECT AREA**

	Past Actions/Authorized Plans	Current Actions and Operating Plans	Reasonably Foreseeable Future Actions and Plans
Status of Non-CERP Projects	<ul style="list-style-type: none"> <li>- C&amp;SF Project (1948)</li> <li>- ENP Protection and Expansion Act (1989)</li> <li>- MWD GDM and Final EIS (1992)</li> <li>- C-111 South Dade GRR (1994)</li> </ul>	<ul style="list-style-type: none"> <li>- MWD 8.5 SMA GRR (2000)</li> <li>- MWD Tamiami Trail Modifications Limited Reevaluation Report (2008)</li> <li>- C&amp;SF C-51 West End Flood Control Project</li> <li>- Kissimmee River Restoration</li> <li>- Seepage Barrier near the L-31 N Levee (Miami-Dade Limestone Products Association)</li> <li>- Tamiami Trail Modifications Next Steps (TTMNS) Project</li> </ul>	<ul style="list-style-type: none"> <li>- SFWMD Restoration Strategies Project</li> <li>- MWD Closeout</li> <li>- C-111 South Dade Project (Contracts 8, 8A, and 9)</li> <li>- 2018 Planned Temporary Deviation to Alleviate High Water Levels in WCA 3A</li> </ul>

		- SFWMD Florida Bay Initiatives	
Operations Plan for Lake Okeechobee, WCA 3A, ENP and the SDCS	- Water Supply and Environment (WSE) Lake Okeechobee Regulation Schedule (2000) - IOP 2002 to Present	- Lake Okeechobee Regulation Schedule (LORS 2008) - SFWMD LEC Regional Water Supply Plan - Everglades Restoration Transition Plan (ERTP) October 2012 to present; deviation includes Increment 1 and Increment 1.1 and 1.2 and 2.0 Operational Strategies - Herbert Hoover Dike Dam Safety Modification Study (HHD DSMS) risk reduction measures (2011 through 2025)	- LORS 2008 to be replaced by revised Lake Okeechobee Regulation Schedule by 2024-2025 (per Integrated Delivery Schedule) - SFWMD periodically revises the LEC Regional Water Supply Interim Plan - ERTP to be replaced by COP to be anticipated 2020 to include MWD and C-111 components.
CERP Projects		Congressional Authorization Received: - Broward County Water Preserve Areas Project - Caloosahatchee River (C-43) West Basin Storage Reservoir  - Central Everglades Planning Projects  Congressional Authorization Received and Construction in Progress:	- Future CERP Projects (Lake Okeechobee Watershed Restoration Project, Western Everglades Restoration Project - CEPP PPA South , including DOI removal of portions of the old Tamiami Trail roadway and SFWMD construction of the increased S-333 structure

		<ul style="list-style-type: none"> <li>- Indian River Lagoon-South Project</li> <li>- Picayune Strand Restoration Project</li> <li>- Site 1 Impoundment Project</li> <li>- Biscayne Bay Coastal Wetlands Project</li> <li>- C-111 Spreader Canal Western Project (operated by SFWMD)</li> </ul>	
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**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 current water management practices 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.

**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 planned temporary deviation and the generally beneficial nature of this action.

**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.

**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.

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## **7.0 COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS**

### **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.

### **ENDANGERED SPECIES ACT OF 1973**

It was determined that the Proposed Action would have no effect on species under the purview of the National Marine Fisheries Service, therefore, consultation with NMFS was not necessary. Emergency consultation with USFWS was conducted pursuant to Section 7 of the ESA of 1973, as amended. The Proposed Action is in compliance with the ESA. On July 6, 2018, the Corps send the USFWS its species effects determination for the Proposed Action. The USFWS responded on July 9, 2018. The USFWS concurred with the Corps' species effects determinations as a result of the Proposed Action. The Corps agrees to maintain open and cooperative communication with the USFWS during the planned temporary deviation. The Proposed Action is in full compliance with the ESA.

### **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.

### **NATIONAL HISTORIC PRESERVATION ACT OF 1966**

The Proposed Action is in compliance with Section 106 of the National Historic Preservation Act, as amended. 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, Archeological Resources Protection Act, American Indian Religious Freedom Act, 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 was initiated on July 10, 2018. The Miccosukee Tribal Representative, the Seminole Nation of Oklahoma, and the Thlopthlocco Tribal Town concurred with the Corps' determination of no adverse effect to historic properties. Consultation with the SHPO and other interested, federally-recognized tribes is ongoing and will be finalized prior to implementation of the Proposed Action. The Proposed Action will be in compliance with the goals of this Act upon completion of coordination as stated above.

### **CLEAN WATER ACT OF 1972**

The Proposed Action is not anticipated to adversely affect water quality and State water quality certification is not necessary. The FDEP issued an EFO in response to high rainfall and flooding in the South Florida Region, OGC No.: 18-1066, on June 20, 2018 (**Appendix B**). The FDEP EFO states that the Corps and SFWMD are hereby authorized to make temporary operational changes

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in order to minimize detrimental impacts to the environment, to the public, to adjacent properties, and to downstream receiving water. The FDEP EFO waives the requirement for state water quality certification for this Federal Action. The FDEP EFO expires November 30, 2018. The Proposed Action is in compliance with the goals of this Act.

### **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.

### **COASTAL ZONE MANAGEMENT ACT OF 1972**

The Corps has determined and FDEP concurred on July 10, 2018, that the Proposed Action is consistent to the maximum extent practicable with Florida's approved Coastal Management Program.

### **FARMLAND PROTECTION POLICY ACT OF 1981**

No prime or unique farmland would be impacted by implementation of the Proposed Action. This Act is not applicable.

### **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.

### **MARINE MAMMAL PROTECTION ACT OF 1972**

No marine mammals would be harmed, harassed, injured or killed as a result of the Proposed Action. Manatees do not have access to the WCAs. Therefore, the Proposed Action is in compliance with this Act.

### **ESTUARY PROTECTION ACT OF 1968**

No designated estuary would be affected by the Proposed Action.

### **FEDERAL WATER PROJECT RECREATION ACT OF 1965, AS AMENDED**

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

### **FISHERY CONSERVATION AND MANAGEMENT ACT OF 1976**

No fisheries or other areas under the purview of NMFS would be affected by this action. The Proposed Action is in compliance with the Act.

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### **SUBMERGED LANDS ACT OF 1953**

The Proposed Action would not occur on submerged lands of the State of Florida. The Proposed Action is in compliance with the Act.

### **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.

### **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.

### **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.

### **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.

### **UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT OF 1970**

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

### **ANADROMOUS FISH CONSERVATION ACT**

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

### **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.

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## **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.

## **MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT**

No Essential Fish Habitat would be impacted by this action. Therefore the Proposed Action is in compliance with this Act.

## **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.).

## **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.

## **E.O. 12898, ENVIRONMENTAL JUSTICE**

E.O. 12898 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.

## **E.O. 13089, CORAL REEF PROTECTION**

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

## **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.

## **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.

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**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 expected to benefit migratory birds by improving habitat in WCA 3A and increasing availability of forage species (amphibians, fish, aquatic and invertebrates) for wading birds. The Proposed Action is in compliance with the goals of this E.O.

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## 8.0 LIST OF PREPARERS

### TABLE 5. TABLE OF PREPARERS

Name	Organization	Role in EA
Sharon Tyson	USACE	Biologist
Melissa Nasuti	USACE	Biologist
Ceyda Polatel	USACE	Hydrologist/Engineer
Lan Do	USACE	Water Manager
Olice Williams	USACE	Water Manager
Jim Riley	USACE	Water Quality
Meredith Moreno	USACE	Archeologist

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## **9.0 PUBLIC INVOLVEMENT**

### **SCOPING AND EA**

Reference **Section 1.9**.

### **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**.

### **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#>

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## 10.0 REFERENCES

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