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**PART 1 – G-3273 CONSTRAINT RELAXATION/S-356 FIELD TEST AND S-357N
REVISED OPERATIONAL STRATEGY (INCREMENT 1.1 AND INCREMENT 1.2)**

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1.0 INTRODUCTION

The 2012 Water Conservation Areas, Everglades National Park (ENP), and ENP-South Dade Conveyance System Water Control Plan (2012 Water Control Plan) is the current approved Water Control Plan governing operations within the Modified Water Deliveries (MWD) field test project area. The 2012 Water Control Plan, which includes the operational guidance for the Everglades Restoration Transition Plan (ERTP), modified the WCA-3A Regulation Schedule from the 2002/2006 Interim Operational Plan (IOP) for Protection of the Cape Sable Seaside Sparrow (CSSS), including lowering of the top zone (Zone A) of the Regulation Schedule, expansion of Zone E1 and removal of the seasonal closure of S-12C. These 2012 Water Control Plan changes were expected to reduce the need for S-334 releases from WCA-3A to the South Dade Conveyance System (SDCS) during Column 2 operations.

The G-3273 Constraint Relaxation/S-356 Field Test and S-357N Operational Strategy (previously referred to as “Increment 1”), was initiated on 15 October 2015 through a temporary deviation from specific water management operating criteria contained in the 2012 Water Control Plan. The Increment 1 Field Test was the first in a series of related, incremental efforts that will result in a Comprehensive Operational Plan (COP) to be incorporated into the 2012 Water Control Plan. The incremental approach to the development of the COP will 1) allow interim benefits towards restoration of the natural systems, 2) reduce uncertainty of operating the components of the MWD and C-111 South Dade Projects, and 3) provide information to complete the COP efficiently. The first two increments are field tests that will be conducted to assist future development of Increment 3, the COP, for the operation of the MWD to ENP and C-111 South Dade Projects.

The Increment 1 field test included relaxing the G-3273 stage constraint on the delivery of water to ENP Northeast Shark River Slough (NESRS). Increment 1 duration was planned for approximately one to two years, until completion of critical components of the MWD and C-111 South Dade projects needed to operate the Northern Detention Area (NDA). The Increment 1 field test was initiated when the stage at G-3273 exceeded 6.8 feet, National Geodetic Vertical Datum (NGVD)¹ on October 15, 2016. Prior to Increment 1, the delivery of a net inflow of water to NESRS by S-333 was discontinued (S-333 zero or S-334 must match S-333) when the stage at G-3273 exceeded 6.8 feet, NGVD. Relaxation of G-3273 constraint and operation of S-356 were expected to and did increase water deliveries to NESRS. As a result, reliance on S-334 releases to the SDCS (Column 2 mode of operations) to assist with lowering of stages in Water Conservation Area (WCA) 3A were expected to and did decrease due to: 1) the increased availability to discharge into NESRS, and 2) by the inclusion of new field test criteria restricting when and how S-334 is used to pass S-333 flows during Column 2 operations. The Increment 1 monitoring plan anticipated the potential need for incremental modifications to the operational strategy (within the covered National Environmental Protection Act (NEPA) Environmental Assessment (EA) scope) as a result of the ongoing field test monitoring and technical assessments, with potential updates to be coordinated with the Project Delivery Team (PDT) during regularly-scheduled interagency meetings to occur four times per year.

¹ All elevations in this document are in feet in relation to the National Geodetic Vertical Datum of 1929 (NGVD) unless otherwise stated.

Implementation of the Increment 1 field test occurred from October 15, 2015 to December 1, 2015 after which the Corps proceeded with pre-storm drawdown and flood control operations due to very strong El Niño conditions experienced in the WCAs during the 2015-2016 dry season. The pre-storm drawdown and flood control operations were conducted in accordance with the 2012 Water Control Plan, independent of the Increment 1 field test. At the request of the South Florida Water Management District (SFWMD), the Corps initiated a temporary emergency deviation to the Increment 1 stage maximum operating limit of 7.5 feet, NGVD in the L-29 Canal for purposes of providing high water relief in WCA 3A on February 15, 2016 (hereafter referred to as the 2016 Temporary Emergency Deviation). Upon review of monitoring data associated with Increment 1 and the 2016 Temporary Emergency Deviation, it became apparent that modifications are necessary to the Increment 1 Operational Strategy to maintain the Congressionally-authorized flood mitigation requirements within the 8.5 Square Mile Area (SMA) and to facilitate completion of the C-111 South Dade Project's ongoing construction necessary for Increment 2 of the field test. Furthermore, the Corps is proposing to include additional operational flexibility within the revised operational strategy for Increment 1 Plus (hereafter referred to as Increment 1.1/1.2) to operate the L-29 Canal to a maximum of 7.8 feet, NGVD, subject to downstream constraints. Increment 1.1 of the operational strategy will maintain the L-29 Canal stage maximum operating limit of 7.5 feet, NGVD. Increment 1.2 will increase the L-29 Canal stage maximum operating limit up to 7.8 feet, NGVD. The Corps is also proposing to modify the Increment 1 operational strategy to address the mandated terms and conditions of the U.S. Fish and Wildlife Services (USFWS) July 22, 2016 ERTTP Biological Opinion (BO), which includes expanded closure periods for S-12A, S-12B, S-343A, S-343B, and S-344 as mandated by the Reasonable and Prudent Alternative (RPA) identified within the BO. A Supplemental Environmental Assessment (EA) for the "G-3273 Constraint Relaxation/S-356 Field Test and S-357N Revised Operational Strategy: Increment 1 Plus (Increment 1.1 and Increment 1.2)" accompanies this Operational Strategy to provide documentation of the environmental effects resulting from the implementation of these changes to the Increment 1 Operational Strategy.

2.0 INCREMENTAL UPDATES TO INCREMENT 1 (INCREMENT 1.1/1.2)

Increment 1.1/1.2 is an update to the Increment 1 field test. The combined duration of Increments 1, 1.1 and 1.2 may extend beyond the two calendar years initially envisioned for Increment 1 to compensate for the temporary suspension of the Increment 1 field test during the 2016 Temporary Emergency Deviation and extended recovery period (February-November 2016). In addition to the 2016 Temporary Emergency Deviation, extension of the Increment 1 and Increment 1.1/1.2 field tests duration to up to three years will allow sufficient time to complete the C-111 South Dade construction components needed to operate the NDA during Increment 2 of the MWD field test. Increments 1.1 and 1.2 will extend until implementation of Increment 2. Operational criteria not specified within this Operational Strategy will continue to utilize the 2012 Water Control Plan. This updated strategy seeks to increase flow to NESRS while providing operational flexibility needed to:

- A. maintain operating limits in the L-29 Canal that prevents adverse impacts to the remaining private ownership along the L-29 Canal with their current limitations (pending future acquisition/improvements of real estate interests along Tamiami Trail including Florida Department of Transportation channel and flowage easement for the bridge and roadway),

- B. facilitate MWD to ENP Project construction for the deepening of the C-358 Canal and installation of S-357N,
- C. facilitate the construction of C-111 South Dade Contract 8 and Contract 8A,
- D. maintain the authorized flood mitigation for the 8.5 SMA,
- E. maintain pre-existing flood protection along the L-31N and C-111 Canals, and
- F. provide supplemental flows to Taylor Slough to help facilitate the recovery of Florida Bay from the 2015 extreme hyper-salinity event.

While the near record-high WCA-3A stages during February-March 2016 created many water management challenges, the 2016 Temporary Emergency Deviation executed in response to these conditions provided valuable information on the responses within ENP and the SDCS system to raising of the L-29 Canal, including evaluation of operational limitations of the 8.5 SMA flood mitigation project prior to completion of the MWD and C-111 South Dade projects. The information gathered during the emergency deviation will be used to inform this proposed revision to the Increment 1 field test and future development of the Increment 2 field test. The 2015 Environmental Assessment (EA)/Finding of No Significant Impact (FONSI) and associated Operational Strategy for Increment 1 recognized that adjustments to the incremental operations may be necessary to ensure their ability to achieve project objectives.

Increment 1 is initially being updated to Increment 1.1 to provide additional operational flexibility needed to continue additional inflows to NESRS while maintaining the objectives (A through F) described above. This Operational Strategy also specifies the conditions that will allow transition of Increment 1.1 to Increment 1.2 (refer to Section 4.0). After completion of the MWD 8.5 SMA features and completion of the C-111 South Dade Contract 8 western levees (L-357W and L-315) and prior to the ability to operate the C-111 South Dade Northern Detention Area, the operational flexibility identified within this Operational Strategy will be used to increase flow to NESRS while evaluating whether the operational criteria continues to meet the field test objectives. Incremental changes will be maintained for time periods sufficient to assess the effectiveness of the operational change for representative conditions. COP (Increment 3) is needed in order to fully realize the natural system benefits that were used to justify the considerable federal and state expenditures associated with these projects. The COP must also develop, evaluate, and select operating criteria which will at a minimum clearly maintain flood risk management requirements. The developed COP will be incorporated into the Water Control Plan in compliance with NEPA.

There are three distinct modes of water management operations specified in the 2012 Water Control Plan: Column 1, Column 2, and Water Supply. These three modes were retained for Increment 1 of the field test and are also retained for Increments 1.1 and 1.2, although the operational strategy for these increments also specify additional requirements for use of Column 2 operations. As initially defined in the IOP 2002 and IOP Supplement 2006 and retained through the 2012 Water Control Plan, Column 1 is the condition when regulatory releases from WCA 3A can be met by normal operation of the WCA 3A regulatory outlets (S-12s, S-333, S-344, S-343s, S-151). Column 2 is the condition when regulatory releases from WCA 3A are made via S-333 to the L-29 Canal and via S-334 to the L-31N Canal and the SDCS to address the reduction of WCA 3A releases due to the CSSS sub-population A structure closure period. Column 2 operations

generally require the increased use of pumping stations S-331, S-332B, S-332C, and S-332D. During Column 2 operations, the control stages along the L-31N and C-111 Canals are also lowered to help maintain the existing flood risk management along the SDCS and also to provide the necessary downstream gradient for the S-334 releases to reach S-332B, S-332C, and S-332D pump stations. Column 2 operations were established under IOP 2002 to mitigate for potential adverse effects on WCA 3A related to actions taken to protect CSSS sub-population A within western ENP, including the seasonal closure of the S-12A, S-12B, and S-12C regulatory outlets under IOP. One of the questions that Increment 1.1 and 1.2 and Increment 2.0 should help answer is what are the required seasonal operational canal ranges within the SDCS to best manage ENP water levels while preventing harm to nearby agricultural properties.

Not all flood mitigation and seepage management features envisioned in the MWD and C-111 South Dade Projects have been constructed. Therefore, Increment 1.1 retains from Increment 1, a requirement for additional water management operating criteria for features of the SDCS including S-197 (in addition to the S-197 operating criteria defined in the 2012 Water Control Plan). Operating criteria for S-197 will be reassessed once construction of the C-111 South Dade Project NDA is constructed and operable, and/or upon completion of the Increment 1.1 field test.

The Increment 1.1 and 1.2 Operational Strategies also define the start of testing protocol for S-357N operating criteria that will be incorporated into the ongoing field test following completion of the C-358 seepage collection canal and associated S-357N; the prescribed S-357N operational testing plan may also continue following completion of C-111 South Dade construction Contracts 8 and 8A, which will enable operation of the NDA. When the Increment 1 field test EA/FONSI was approved in May 2015, completion of the MWD S-357N was anticipated by April 2015, prior to the initiation of Increment 1 operations; the USACE currently anticipates completion of the S-357N early 2017. All structures in the MWD Increment 1 and Increment 1.1 and 1.2 field tests will be evaluated and their operating criteria will be subject to a complete revision in Increment 2.

Information obtained from the Increment 1 field test and the Increment 1.1 and 1.2 field tests (e.g. achieving objectives without violating constraints, unanticipated results, etc.) will be used to support development of a second field test (Increment 2) and subsequent modifications to the 2012 Water Control Plan. Increment 2 is anticipated to build upon the Increment 1.1/1.2 Operational Strategy and include, but not be limited to, proposing water management operating criteria to increase the maximum stage allowed in the L-29 Canal (e.g., raise L-29 constraint from elevation 7.5-7.8 up to 8.5 feet). Evaluation of Increment 1 and Increments 1.1 and 1.2 during and after the field test will likely result in refining, revising, or removing operating criteria contained in Increments 1.1 and/or 1.2 for MWD and C-111 South Dade Projects when developing the Increment 2 Operational Strategy.

Similar to the Increment 1 and Increment 1.1 and 1.2 field tests, the Increment 2 Operational Strategy and the modifications to the 2012 Water Control Plan will be supported by appropriate NEPA. Information obtained from Increment 2 will be used to support development of the Increment 3, the COP. It is anticipated that incremental updates to the water control plan may occur as information is gained during field testing, if appropriate, prior to the development of the integrated comprehensive water control plan, or the COP. For example, the 2012 Water Control

Plan may be updated following completion of Increment 1 and Increment 1.1/1.2 and prior to Increment 2 of the field test.

Broad restoration goals and objectives of the MWD Project include improved timing, location and quantities of water deliveries to ENP. More specific goals, objectives and constraints for Increment 1 and Increment 1.1/1.2 are found in the 2015 EA which supported Increment 1 of the field test.

2.1 2016 TEMPORARY EMERGENCY DEVIATION FOR WCA 3A HIGH WATER

While conducting the Increment 1 Field Test, heavy rainfall occurred within the South Florida Ecosystem during the month of January 2016. The first half of the dry season (November 2015 – January 2016) was the wettest for this period since record keeping began in 1932. The USACE Jacksonville District initiated a temporary emergency deviation from the approved 2012 WCP for purposes of alleviating high water conditions within the project area on February 15, 2016. The 2016 Temporary Emergency Deviation was requested by SFWMD to protect natural resources within WCA 3A. The sequence of the operational experience and adjustments that have contributed to this revised Operational Strategy for Increment 1.1 and Increment 1.2 are summarized below:

- Increment 1 – October 2015 through February 2016. Use of the Increment 1 criteria began October 15, 2015 and continued until February 12, 2016. However from December 1, 2015 through February 12, 2016, SDCS canal stages were lowered in preparation for and recovery from forecasted and actual rain from December 1, 2015 through December 23, 2015. Note: SDCS Canals were operated in accordance with the Pre-Storm, Storm, and Storm Recovery Operations documented in Table 7-6 of the 2012 Water Control Plan, which were incorporated by reference within the Increment 1 Operational Strategy.
- Increment 1 operations were suspended to implement the approved 90-day Temporary Emergency Deviation (February 12, 2016 through May 11, 2016) and planned 60-day recovery/transition period back to Increment 1 operations (May 12 through July 10, 2016). In response to very large rainfall in January the USACE approved the SFWMD request for additional operational flexibility to increase WCA 3A discharge by raising the L-29 constraint up to 8.5 ft with corresponding lowering of the 8.5 SMA, L-31N, and C-111 canals to compensate for the resulting higher stages and increased groundwater seepage along the eastern boundary of ENP and expanded utilization of Column 2 operations to convey WCA 3A releases to the SDCS. The G-3273 trigger relaxation which is a major component of Increment 1 was kept throughout the 2016 Temporary Emergency Deviation.
- The 2016 Temporary Emergency Deviation Recovery Period Extension began July 11, 2016 to allow the continuation of releases from WCA 3A through S-333 and S-334 in accordance with the Rainfall-based Management Plan target while not exceeding the L-29 average stage constraint of 7.5 ft. In addition, the interior canal within the 8.5 SMA and the SDCS L-31N Canal along the eastern boundary of the 8.5 SMA will remain lower to better ensure that the authorized flood mitigation is maintained. Consistent with the terms

of the FDEP Emergency Order authorization, these operations continued through November 30, 2016.

During the 2016 Temporary Emergency Deviation, temporary flowage authorizations from private land owners along the L-29 Canal were required and were obtained by the SFWMD allowing maximum stages of 8.5 feet, NGVD. Efforts by the USACE and DOI/ENP to acquire permanent real estate interests along Tamiami Trail (expected January 2017) and Florida Department of Transportation channel and flowage easements for the bridge and roadway improvements, as required to raise the maximum operating limit of the L-29 Canal above 7.5 feet, are ongoing with all acquisition expected to be complete by October 2017. With some improvements made by the SFWMD during the 2016 Temporary Emergency Deviation, sustained stage over 8.0 feet was implementable during the period covered by the temporary flowage authorizations. Additional existing constraints at the remaining private ownerships along the L-29 Canal limited the peak operating stage during the 2016 Temporary Emergency Deviation to about 8.3 feet. In addition, flows at S-331, S-176 and S-177 were significantly increased to manage seepage into the L-31N and C-111 canals. To achieve project purposes, the L-31N and C-111 Canals were operated lower than the Column 2 stages contained in the 2012 Water Control Plan.

Increments 1.1 and 1.2 will provide increased operational flexibility of the C-111 South Dade detention areas to allow the detention areas to respond to expected fluctuations in water the levels in eastern ENP. This operational flexibility will increase with higher stages within NESRS and be reduced with lower stages within NESRS and will include more flexibility than that provided in the original Increment 1 Operational Strategy. When conditions allow, the distribution of flows along the L-31N will be changed to move water away from the Contracts 8 and 8A construction area during the time period when this is likely to help facilitate continued construction progress for Contract 8 and expedite construction for Contract 8A following the contract award in September 2016. Some short-term loss of effectiveness of the hydraulic ridge is expected with the corresponding increase in use of the downstream facilities. To offset the potential for reduced flows to Taylor Slough, up to 250 cfs of supplemental flows to Taylor Slough may be supplied to S-332D (and/or the SFWMD proposed connection from S-200 to Taylor Slough) as long as WCA 3A is above its floor elevation of 7.5 feet by 0.5 feet (8.0 ffeet) in April and May and above 8.5 feet (1.0 foot above the water supply floor) in all other months. To facilitate management of hydroperiods along the eastern boundary of ENP to better meet habitat and nesting targets (2016 ERTF BO), up to one pump may be run at S-332BN, S-332B, and S-332C and up to two pumps at S-332D may be run within an operating range from 3.8 to 4.2 feet (highest stage at which water supply is usually initiated).

A timely completion of the remaining MWD and C-111 South Dade (Contracts 8 and 8A) construction features (Figure 7) will provide further ability to raise water levels in ENP while maintaining the required water levels in the residential and agriculture areas in southeastern Miami-Dade County. Completion of Contracts 8 and 8A includes the construction of several miles of detention area levees and internal berms, and construction can be expedited with relatively dry conditions across the construction footprint. Operation of the Contract 8 and Contract 8A features along the 8.5 SMA Richmond Drive, within the 8.5 SMA Detention Cell and within the NDA are a prerequisite to implementation of MWD Increment 2 water levels within the L-29 Canal and NESRS.

2.2 COMPARISON OF INCREMENT 1.2 TO INCREMENT 1.1 OPERATIONAL STRATEGY

Increment 1.2 will raise the L-29 Borrow Canal stage constraint from 7.5 up to 7.8 feet, NGVD. However, this is dependent on achievement of milestones external to the Operational Strategy. Maximum operational water levels in the L-29 Canal may be gradually increased above the Increment 1.1 constraint of 7.5 ft, NGVD contingent upon the following conditions:

- A. acquisition of the required real estate interest and any associated improvements for the private ownership along Tamiami Trail including Florida Department of Transportation channel and flowage easements for the bridge and roadway improvements;
- B. completion of the C-358 Canal (Richmond Drive Seepage Collection Canal) and installation and operation of S-357N (C-358 control structure);
- C. completion of sufficient portions of Contract 8 (construction of the C-111 NDA L-315 western levee and the L-357W Extension Levee between Richmond Drive) and completion of the Contract 8A berms inside the 8.5 SMA Detention Cell.

Compared to Increment 1.1, a further incremental increase in inflows to NESRS will be achieved by incrementally raising the L-29 stage constraint from 7.5 to 7.8 feet when conditions A, B and C are completed. This additional capacity will increase deliveries to NESRS and also assist efforts to lower WCA 3A during periods of high stages as experienced during 2016.

2.3 OPERATIONAL CHANGES TO ADDRESS USFWS BIOLOGICAL OPINION

In accordance with the Endangered Species Act, the USACE completed consultation with the USFWS to assess effects of the USACE water management operations in the southern part of the Everglades on the endangered CSSS and other listed species. During this consultation, the USFWS determined that current conditions within the sparrow's habitat threaten its survival. The USACE responsibility is to manage its water management system in compliance with the Endangered Species Act, while the USFWS responsibility is to protect and enhance species and their habitats, which includes the endangered CSSS. The USACE coordinated closely with the USFWS to determine what measures the USACE can take within its given authorities to improve the sparrow's habitat and ensure the USACE is able to operate its water management system in compliance with the Endangered Species Act, while also meeting the needs of the multiple congressionally-authorized purposes of the Central and Southern Florida (C&SF) project.

The Biological Opinion is a document that states the opinion of the USFWS as to whether a federal action is likely to jeopardize the continued existence of listed species. The USFWS issued the new BO for the ERTTP on July 22, 2016. The BO of the USFWS is that the continued operation of the ERTTP would jeopardize the endangered CSSS by reducing its likelihood of survival and recovery. The BO recommends operational modifications and an expedited schedule for ongoing restoration initiatives in the southern Everglades to aid in improving suitable nesting habitat for the sparrow. For the CSSS, the BO presents a recommendation for a Reasonable and Prudent Alternative, with numerous elements, to the USACE proposed ERTTP action. Main elements of the RPA are: habitat performance targets; actions to move water east; surveys and studies; and adaptive management. The RPA further specifies that the USACE shall proceed as scheduled for completing NEPA

analysis on Increment 1 Plus (referred to as Increment 1.1/1.2 within this Operational Strategy) and, as allowable by law, raising L-29 canal levels from 7.5 feet up to 7.8 feet prior to March 1, 2017; Increment 2 and, as allowable by law, raising L-29 from 7.8 feet up to 8.5 feet prior to March 1, 2018; and Increment 3/COP in 2019. Additional terms of the BO will affect the operation of S-12A, S-12B, S-333, S-332B, S-332C and S-332D. Upon conclusion of each NEPA analysis, the USACE will promptly adjust water management operations accordingly. The Corps is taking specific actions to comply with the USFWS terms and conditions specified in the BO and to implement the RPA.

Successful recovery of the sparrow requires continued collaborative efforts among federal, tribal and state partnering agencies. The USACE, within its authorities, will continue to work with the USFWS to find other helpful initiatives which could be enacted by partners and stakeholders to aid in this important effort.

Based on evaluation of the regional modeling conducted in support of the ERTTP 2016 consultation, the components from the BO modeling [(I) and (II)] which require modifications to the 2012 Water Control Plan were included in the proposed operational condition consistent with the requirements of the RPA. Text within Annex 1 of the operational strategy is excerpted directly from Appendix F of the 2016 USFWS ERTTP BO. The modeling assumptions for the BO analysis which describe the SDCS operations under Component II are adjusted within this Operational Strategy to provide sufficient flexibility for the USACE and SFWMD water managers to achieve the intended performance from the RPA Proposed Operational Condition. The Increment 1.1 and 1.2 operational criteria are displayed in Table 1.

3.0 WATER QUALITY

Water deliveries into the ENP Shark River Slough are subject to the water quality criterion for total phosphorus (TP) contained in Appendix A of the 1991 Settlement Agreement (Appendix A SA). Appendix A SA compliance is currently assessed by comparing the Long Term Limit (LTL) against the 12-month flow-weighted mean (FWM) TP concentration in parts-per-billion (ppb). This is calculated using the measured flows from the S-12A, S-12B, S-12C, S-12D, S-333 and S-334 structures that distribute flows from WCA 3A into Shark River Slough.

A Technical Oversight Committee (TOC) technical sub-team is evaluating the Appendix A SA compliance methodology to address additional flows and inflow points and the incorporation of S-356. Wherefore, water quality compliance will be evaluated separately for the S-356 pump station in a prescribed manner which is consistent with elements of Appendix A SA. The proposed compliance period for the S-356 pump station is the same as the Appendix A SA compliance period of October 1 through September 30. Increment 1 operations began on October 15, 2015 when G-3273 rose above 6.8 feet. It is expected that Increment 1.1/1.2 operations will commence on March 1, 2017. Consistent with TOC coordination conducted for Increment 1, operating plan changes suggested by the water quality compliance analyses, if needed, would be implemented only after the completion of the Increment 1 and Increments 1.1 and 1.2 test period of up to three years. For the complete duration of Increment 1 and Increments 1.1 and 1.2, the USACE does not plan to impose operational constraints for water quality that could restrict or otherwise limit inflows to NESRS. Additional discussion on water quality is contained in the EA and the accompanying monitoring plan.

4.0 OPERATIONAL STRATEGY FOR INCREMENT 1.1/1.2 FIELD TEST

The G-3273 Constraint Relaxation/S-356 field test (Increment 1) was a temporary planned deviation from the 2012 Water Control Plan. The ERTTP was implemented in October 2012 through water management operating criteria contained in the 2012 Water Control Plan. The Increment 1 duration was planned for approximately one to two years, until completion of critical components of the MWD and C-111 South Dade projects needed to operate the NDA. The Increment 1 field test was initiated when the stage at G-3273 exceeded 6.8 feet on October 15, 2016. The refined water management operating criteria related to G-3273, S-356 and S-357N, as established following the operational testing in Increment 1 and Increment 1.1/1.2, may also be incorporated into the Water Control Plan (modification to the 2012 Water Control Plan) if appropriate. The combined duration of Increment 1, 1.1 and 1.2 may extend beyond the two calendar years initially envisioned for Increment 1 to compensate for the temporary suspension of the Increment 1 field test during the 2016 Temporary Emergency Deviation and extended recovery period (February-November 2016). In addition to the 2016 Temporary Emergency Deviation, extension of the Increment 1 and Increment 1.1 and 1.2 field test duration to up to three years will allow sufficient time to complete the C-111 South Dade construction components needed to operate the NDA during Increment 2 of the MWD field test.

Due to the constraints described above, Increment 1.1 provides more flexibility to 1) help facilitate the required construction, 2) continue to deliver more water to NESRS, 3) provide temporary increased Column 2 capacity, and 4) maintain flood risk management. During supplemental deliveries of up to 250 cfs, measured at S-334 or S-337, to Taylor Slough, Florida Bay, and Manatee Bay, it is expected that S-356 will be used less in Increment 1.1 than expected in Increment 1. However this is with the exception or periods during relatively dry conditions with typical seasonal rainfall patterns.

The Increment 1.1 and 1.2 Operational Strategies include the required S-12A and S-12B seasonal closure period of October 1 through July 14 to protect CSSS sub-population A within western ENP, consistent with the RPA requirement from the 2016 USFWS ERTTP BO. However, under specified high-water conditions within WCA 3A (identified in Table 1), S-12A may remain open through October 31, and S-12B may remain through November 30. The 2012 Water Control Plan, which includes the WCA 3A Regulation Schedule and the Rainfall Plan, will continue to govern water management operations during Increment 1.1, with the exception of operating criteria for S-12A, S-12B, S-328, S-151, S-331, S-333, S-334, S-335, S-337, S-338, S-343A, S-343B, S-344, S-355A, S-355B, S-356, S-357, S-357N, S-332B, S-332C, S-332D, S-194, S-196, S-176, S-177, and S-197 as contained in the below operational strategy for use during the field test.

However, due to the uncertainty of how existing flood protection levels afforded by the SDCS will be maintained, “OPERATIONAL FLEXIBILITY, OBJECTIVES AND CONSTRAINTS” applies to all structures as identified in Table 1, not limited to the structures listed above.

Increment 1.2 will increase the current operating limit up to 7.8 feet in the L-29 canal, while relaxing the G-3273 constraint for S-333, and utilizing S-356 for control of the seepage to the L-31N Canal. During Increments 1.1 and 1.2, the combined flows through S-333 and S-356 will be more than what would have been discharged through these features under ERTTP operations. S-173 releases and pumping with S-331 are used to: 1) maintain target L-31N Canal stages; 2) provide flood mitigation to the 8.5 SMA eastern areas and assist S-357 in maintaining flood

mitigation for the 8.5 SMA when S-357 operational capacity is limited; and 3) convey WCA 3A regulatory releases to the SDCS from S-334 during Column 2 operations. In addition, Increment 1.1 and 1.2 water management operations will result in increased seepage to the L-31N Canal as the increased flow into NESRS will increase stages along the west side of L-31N. This increase is not expected to be fully manageable until the construction and operation of the C-111 South Dade Project NDA. Because of this, Increment 1.1 and 1.2 will retain the Increment 1 additional water management operating criteria for S-197 (in addition to the S-197 operating criteria defined in the 2012 Water Control Plan) to provide flexibility to help facilitate construction and to maintain flood risk management for Southeastern Miami-Dade County. At a minimum, S-333, S-334, S-356, S-197, and S-357N will be operated, as well as S-332B, S-332C, S-332D, S-194, S-196, S-176 and S-177 as identified in Table 1. If available for use, S-355A and S-355B may also be utilized to discharge to the L-29 canal as indicated in the 2012 Water Control Plan and other future associated permit requirements.

The G-3273 stage constraint will be relaxed, with system conditions being regularly monitored by water managers and scientists. Adjustments within the operational strategy provided below will be made as needed for the duration of the field test consistent with the EA. Data will be analyzed during and after Increments 1.1 and 1.2 as described in the Monitoring and Analysis Appendices to the associated Environmental Assessment. During the development of the original Increment 1 field test Operational Strategy, the interagency operations sub-team identified a preliminary list of analyses to be conducted to inform future water management actions within the Increment 1 test and future field test operations.

The monitoring gages to be used for the analysis are listed in Table 5. The region containing the existing monitoring gages has been divided into four maps as shown on Figures 2, 3, 4, and 5. These analyses were developed to complement the overall monitoring plan (Appendix C of the 2015 EA) and will continue to be used under Increment 1.1 and Increment 1.2 to assess and evaluate the achievement of several of the stated water management objectives from the monitoring plan, including to:

- A. ensure existing levels of flood protection are maintained within the northern L-31N Basin (between S-335 and S-331);
- B. ensure existing levels of flood mitigation are maintained within the protected portion of the 8.5 SMA;
- C. determine whether Increment 1.1 or 1.2 contributes to flooding within the C-111 basin; and
- D. determine whether Increment 1.1 or 1.2 operational changes at S-197 are necessary to ensure existing levels of flood protection are maintained within the C-111 Basin (south of S-176); the associated evaluation will include an assessment of the trigger criteria used for S-197 gate openings.

Information and operational criteria identified from Increment 1.1 and 1.2 field tests will be used to develop operations and monitoring criteria for a subsequent operational field test (Increment 2) that will raise the maximum operating limit in the L-29 Canal up to a maximum of 8.5 feet, as outlined in the 2008 MWD Tamiami Trail Limited Re-evaluation Report and Final EIS. Operational changes based on Increment 1.1 and 1.2 may be incorporated into the 2012 WCP prior to implementing the operational strategy for Increment 2, as appropriate.

Consistent with the coordination structure established for Increment 1, field test operations updates and action items will be discussed on a weekly basis between water managers from USACE and SFWMD, as well as ENP when needed, to provide collective interpretation of results and evaluate implementation of field test operations relative to the Increment 1.1/1.2 field test goals, objectives, and constraints. USACE, SFWMD, and ENP will meet monthly to discuss the collected data and the results of preliminary analyses, as well as system conditions and field test operations. Results from these weekly and monthly coordination meetings, including preliminary recommendations from water managers to incrementally modify the operational strategy (within the covered NEPA EA scope), will be further discussed with the project delivery team (PDT) during regularly-scheduled interagency meetings to occur four times per year. PDT meetings will also include updates from the water quality and ecological monitoring sub-teams. Additional meetings (e.g. WCA 3 Periodic Scientists Calls) and/or workshops may be conducted in support of the field test on an as-needed basis based upon ongoing or anticipated conditions within the WCAs, ENP, and/or the SDCS.

Additional details corresponding to the operational conditions, Conditions 10.1 through 10.4, are provided in Section 10.0. Table 1 is complementary to the Section 10.0.

TABLE 1

Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
	<p>Operational criteria not specified in Table 1 will utilize 2012 WCP. If there is a conflict between the criteria in this table and the criteria described in text of the conditions then the criteria of the text in the conditions sections shall be control.</p> <p>The 2012 Water Control Plan, which includes the WCA-3A Regulation Schedule and the Rainfall Plan, will continue to govern water management operations during Increment 1.1, with the exception of operating criteria for S-12A, S-12B, S-328, S-151, S-331, S-333, S-334, S-335, S-337, S-338, S-343A, S-343B, S-344, S-355A, S-355B, S-356, S-357, S-357N, S-332B, S-332C, S-332D, S-194, S-196, S-176, S-177, and S-197 as contained in the below operational strategy for use during the field test</p> <p>The Flood Risk Management (FRM) and Environmental Restoration (ER) operational ranges prescribed below were developed from a combination of operational experience, modeling results, analysis of historical data, and the expected performance of existing and proposed features. These ranges are not the simple ON and OFF ranges used for pumps or the simple OPEN and CLOSE used for gates in C&SF modeling analyses. For example secondary routes are often represented in a model by setting a higher On/Off or Open/Close range for the structure conveying water to this route. Modeling of this nature establishes how often the use of the secondary route is required but not necessarily the optimum use of the conveyance. The operation plan should allow use of the secondary route with clear objectives (e.g. send water to maintain base flow or level or both) and constraints (e.g. maximum flow and stages).</p> <p>When stages are above the FRM&ER HIGH stage criteria, timely action (e.g. gate adjustment or pumping changes) will be made to lower the stage at a rate consistent with the existing conditions (e.g. height above the HIGH stage, rate of rise, recent basin rainfall, and expected inflows) and forecasted conditions.</p> <p>Within the range between the FRM&ER HIGH and FRM&ER LOW stage criteria, the operators have full discretion to adjust pumps or gates or a combination of both to achieve the stage deemed most appropriate for the current and expected conditions. Changes in pumps or pumping rate (number or RPM of pumps) can be implemented to rotate pumps or compensate for unavailable pumps. For basins with high rates of surface and groundwater interactions compliance with the operation range should be based on the daily average stage. For canal stages being maintained by pump stations compliance with the operation range should allow the use of daily averages (0000 to 2400) with the lowest operating stage maintained above the low limit for each pump.</p> <p>When the canal stage falls below the FRM&ER LOW stage criteria timely operational changes will be made to either raise the canal stage back to the operational range or transition into appropriate operational stages below the FRM&ER LOW stage (e.g. water conservation)</p> <p>Separate ranges (WS HIGH and WS LOW) are defined for when to initiate water supply (WS) and when to maximize water supply to the extent that water availability, conveyance, and other system constraints allow.</p>	

<p>WCA-3A Interim Regulation Schedule</p>	<p><i>WCA-3A Interim Regulation Schedule shown on Figure 7-5A, Figure 7-5B, and Figure 7-5C of the 2012 Water Control Plan. A revised Figure 7-5C is shown in Figure 2 for Increment 1.1/1.2 field test.</i></p> <p>When in Zone A S-12s, S-333, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s open full, S-151 make discharges to the East Coast and ENP-SDCS as needed and make maximum allowable discharge when WCA-3B stage (Site 71) is below 8.5 feet, NGVD. S-343A&B and S-344, if non-nesting season (15 July through 30 September), make maximum allowable discharge if downstream conditions permit.</p> <p>When in Zone D S-12s, S-333, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. S-333 make water supply discharges to the East Coast and ENP-SDCS as needed, discharge Rainfall Plan target flow for S-333 when permitted by downstream conditions. S-151 makes water supply discharges to the East Coast and ENP-SDCS as needed. S-343A&B and S-344 normally closed in this Zone unless water is needed for environmental reasons. Operational intent is to maximize discharge capacity from S-333 prior to utilization of the S-12s, subject to conditions below.</p> <p>When in Zone E S-12s, S-333, S-151, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. S-333 make water supply discharges to the East Coast and ENP-SDCS as needed, discharge Rainfall Plan target flow for S-333 when permitted by downstream conditions. S-151 makes water supply discharges to the East Coast and ENP-SDCS as needed. S-343A&B and S-344 normally closed in this Zone unless water is needed for environmental reasons. The L-67A Borrow Canal stage (S-333 headwater) should not be drawn down below 7.5 feet, NGVD unless water is supplied from another source. Operational intent is to maximize discharge capacity from S-333 prior to utilization of the S-12s, subject to conditions below.</p> <p>When in Zone E1, make up to maximum practicable releases at S-12C, S-12D, S-142, S-151, S-31, S-337, S-335, S-333, S-355 A/B, and S-334 when permitted by downstream conditions. S-12s, S-333, S-151, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. Revert to Zone E rules if the FWS has determined that nesting for the CSSS-A has ended, or if the headwater at S-333 falls below 8.25 feet, NGVD. In Zone E1 the goal is to use the available capacity to gradually lower WCA-3A to the bottom of Zone E1 and then keep WCA-3A near the bottom of Zone E1 with a focus of keeping WCA-3A near 9.0 feet NGVD at the start of the wet season. The use of the capacity available in Zone E1 should consider the Snail Kite recession limits (about 0.33 feet per month).</p>	<p><i>WCA-3A Interim Regulation Schedule shown on Figure 7-5A, Figure 7-5B, and Figure 7-5C of the 2012 Water Control Plan. A revised Figure 7-5C is shown in Figure 2 for Increment 1.1/1.2 field test.</i></p> <p>When in Zone A S-12s, S-333, S-343A&B, and S-344 subject to conditions in Table 1, otherwise, S-12s open full, S-151 make discharges to the East Coast and ENP-SDCS as needed and make maximum allowable discharge when WCA-3B stage (Site 71) is below 8.5 feet, NGVD. S-343A&B and S-344, if non-nesting season (15 July through 30 September), make maximum allowable discharge if downstream conditions permit.</p> <p>When in Zone D S-12s, S-333, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. S-333 make water supply discharges to the East Coast and ENP-SDCS as needed, discharge Rainfall Plan target flow for S-333 when permitted by downstream conditions. S-151 makes water supply discharges to the East Coast and ENP-SDCS as needed and make up to maximum allowable discharge when WCA-3B stage (Site 71) is below 8.5 feet, NGVD. S-343A&B and S-344 normally closed in this Zone unless water is needed for environmental reasons. Operational intent is to maximize discharge capacity from S-333 prior to utilization of the S-12s, subject to conditions below.</p> <p>When in Zone E S-12s, S-333, S-151, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. S-333 make water supply discharges to the East Coast and ENP-SDCS as needed, discharge Rainfall Plan target flow for S-333 when permitted by downstream conditions. S-151 makes water supply discharges to the East Coast and ENP-SDCS as needed. S-343A&B and S-344 normally closed in this Zone unless water is needed for environmental reasons. The L-67A Borrow Canal stage (S-333 headwater) should not be drawn down below 7.5 feet, NGVD unless water is supplied from another source. Operational intent is to maximize discharge capacity from S-333 prior to utilization of the S-12s, subject to conditions below.</p> <p>When in Zone E1, make up to maximum practicable releases at S-12C, S-12D, S-142, S-151, S-31, S-337, S-335, S-333, S-355 A/B, and S-334 when permitted by downstream conditions. S-12s, S-333, S-151, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. Revert to Zone E rules if the FWS has determined that nesting for the CSSS-A has ended, or if the headwater at S-333 falls below 8.25 feet, NGVD. In Zone E1 the goal is to use the available capacity to gradually lower WCA-3A to the bottom of Zone E1 and then keep WCA-3A near the bottom of Zone E1 with a focus of keeping WCA-3A near 9.0 feet NGVD at the start of the wet season. The use of the capacity available in Zone E1 should consider the Snail Kite recession limits (about 0.33 feet per month).</p>
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Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Rainfall Plan	<p>Rainfall Plan located in Table 7-1 of the 2012 Water Control Plan. Operational intent is to maximize discharge capacity from S-333 prior to utilization of the S-12s, subject to conditions below. Rainfall Plan target distribution through S-333 may exceed 55% of the Rainfall Plan target. When S-12s capacity is required the structure should be opened from east to west.</p> <p>S-12s/S-333 pre-emptive/proactive releases to better manage high stages in WCA-3A. S-12s and/or S-333 release up to projected WCA-3A inflow based upon system water management operations and/or rainfall to create storage in WCA-3A for expected inflow.</p> <p>Regulatory component of the Rainfall Plan determined by multiplying the distance (in feet) the WCA-3A water level is above Zone E/E1 by 2,500 cfs from 1 January through 30 June and by 5,000 cfs from 1 July through 31 December.</p> <p>Calculate Modified Rainfall Plan to gather comparison and historical information.</p>	
Pre-Storm/Storm / and Storm Recovery Operations for the SDCS	Pre-Storm/Storm/and Storm Recovery Operations for the SDCS in Table 7-6 of the 2012 Water Control Plan.	
S-343A, S-343B, and S-344	Closed from 1 October through 14 July independent of WCA-3A levels.	

Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
S-12 A/B/C/D	<p>S-12A closed from 01 October through 14 July with the following limited conditional opening; S-12B closed from 01 October through 14 July with the following limited conditional opening;</p> <p>S-12A and/or S-12B will be conditionally opened during October under the following conditions.</p> <ol style="list-style-type: none"> 1. WCA-3A stage on 30 Sep is greater than 10.5 ft, NGVD; or 2. WCA-3A stage is projected to rise above 10.75 ft, NGVD (IOP Zone A) during October, based on consideration of projected inflows and direct rainfall. 3. S-12A and/or S-12B will be conditionally closed when the WCA-3A stage falls below 10.25 feet NGVD, OR on 01 November, whichever comes first. <p>S-12B will be conditionally opened during November under the following conditions.</p> <ol style="list-style-type: none"> 1. WCA-3A stage on 31 Oct is greater than 11.0 ft, NGVD; or 2. WCA-3A stage is projected to rise above 11.25 ft, NGVD during November, based on consideration of projected inflows and direct rainfall. 3. S-12B will be closed when the WCA-3A stage falls below 10.75 feet NGVD, OR on 01 December, whichever comes first. <p>S-12C no closure period. S-12D no closure period.</p> <p>S-12A Year-round: To provide access to cultural areas, when Rainfall Plan results in S-12 target flows, S-12A up to 100 cfs release.</p> <p>S-12A Cultural Access Release: S-12A up to 100 cfs release available when Rainfall Plan results in S-12 target flows. From 01 October through 14 July, USACE must request informal consultation with FWS to avoid impacts on CSSS-A. During this time, the duration of this release will not exceed five consecutive days. S-12A up to 100 cfs release may only occur when WCA-3A 3-gage average (WCA-3AVG - Sites 63, 64, 65) is greater than 8.4 feet, NGVD. During S-12A up to 100 cfs release, data such as but not limited to NP-205 and area rainfall will be monitored with NP-205 increase or anticipated increase above 5.7 feet, NGVD resulting in closing of S-12A.</p> <p>S-12C/D Year-round: S-12C and/or S-12D release up to WCA-3A Regulation Schedule (Zone A maximum) or Rainfall Plan (target flow).</p> <p>S-12s Flow Distribution: S-12 opening sequence to meet Target Flows is from east (S-12D) to west (S-12A); S-12s flow distributions would not be limited to the historical percentage distribution of flow from the S-12s (10 percent at S-12A, 20 percent at S-12B, 30 percent at S-12C, 40 percent at S-12D).</p> <p>S-12A/B/C/D Headwater greater than 11.0 feet, NGVD: May be opened an amount only enough to stop overtopping of gates. The Corps will assess the feasibility of leaving the gates closed and allowing overtopping.</p> <p>DOI to install sandbags to prevent flow through culverts under ENP Tram Road by February 1 if necessary.</p>	

Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
S-333	<p>Closed when L-29 Canal stage is above its maximum limits under Increment 1.1 and 1.2, respectively. Refer to L-29 Borrow Canal criteria below.</p> <p>Rainfall Plan target flow for S-333 (to NESRS). Rainfall Plan target distribution through S-333 may exceed 55% of the Rainfall Plan target.</p> <p>When WCA-3A is in Zone E1 or Zone A, up to maximum practicable through S-333 to NESRS.</p> <p>Water Supply and Supplemental Deliveries (up to 250 cfs) to Taylor Slough, Florida Bay, and Manatee Bay may be delivered through this route when it does not conflict with use of S-356. Water Supply and Supplemental Deliveries may be delivered through the S-151, S-337, S-335 route.</p>	<p>Rainfall Plan target flow for S-333 (to NESRS), plus as much of the remaining Rainfall Plan target flow that the S-12s cannot discharge to be passed through S-334 and subject to capacity constraints, which are 1,350 cfs at S-333, L-29 maximum stage limit, and canal stage limits downstream of S-334.</p> <p>When WCA-3A is in Zone E1 or Zone A, up to maximum practicable through S-333 to NESRS.</p> <p>S-334 flows will not be constrained by S-333 flows, and there is no constraint to require matching S-333 and S-334 flows.</p>
L-29 Borrow Canal	<p>L-29 Maximum Canal Stage is limited to 7.5 ft, NGVD. Maximum operating limit may be raised from 7.5 to 7.8 ft, NGVD contingent upon the following.</p> <ul style="list-style-type: none"> A. The required real estate interest and any associated improvements for the private ownership along Tamiami Trail B. Functional completion of the C-358 Canal and installation of S-357N C. Completion of sufficient portions of Contract 8, which are the construction of the C-111 NDA L-315 western levee and the L-357W Extension Levee between Richmond Drive and completion of the Contract 8A modifications within the 8.5 SMA Detention Cell. 	

Operational Component	Column 1: No WCA-3A Regulatory Releases to SDGS or SRS	Column 2: WCA-3A Releases to SDGS
S-355A & S-355B	<p>Follow the same constraints as S-333. Open whenever hydraulic gradient allows flow from WCA-3B to L-29 with low risk of backflow from L-29 to WCA-3B.</p> <p>A. Constraints on the Operation of S-355A and S-355B. The S-355A and S-355B water control structures will be operated to comply with the following constraints:</p> <ul style="list-style-type: none"> i. The S-355A or S-355B or both shall be opened only when there is sufficient stage difference between the water levels in Water Conservation Area (WCA)-3B at S-355A/S-355B and the L-29 Borrow Canal and whenever the gradient allows for southerly flow from WCA-3B at S-355A/S-355B to L-29 Borrow Canal; ii. Discharges from S-355A or S-355B or a combination of both shall be limited as required to prevent the L-29 Canal stage from exceeding the L-29 Borrow Canal stage constraint as determined by the water control plan; iii. Discharges from S-355A or S-355B or a combination of both shall be limited as required to prevent impacts to the existing project purposes of the Central & Southern Florida (C&SF) Project including but not limited to flood damage reduction and water supply; and iv. Operations are consistent with, and follow, the existing regulation schedule and water control plan for WCA 3A/3B. <p>B. The S-355A and S-355B water control structures shall be closed if any of the four conditions above are not met, and when there is a potential for reverse flow (from L-29 Borrow Canal to WCA-3B) through the structures. The actual open and close levels of the structures will depend on the water conditions, forecasts, and other system constraints.</p>	
S-334	<p>Water Supply and Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay.</p>	<p>Pass all or partial S-333 flows subject to downstream constraints.</p> <p>S-334 flows will not be constrained by S-333 flows, and there is no constraint to require matching S-333 and S-334 flows.</p> <p>Operated in accordance with Condition 3. Refer to Section 4.4 in the Operational Strategy.</p> <p>Water Supply</p> <p>Supplemental Water Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay.</p>

Operational Component	Column 1: No WCA-3A Regulatory Releases to SDGS or SRS	Column 2: WCA-3A Releases to SDGS
S-356	<p>Operating Range from 5.5 to 5.8 NGVD</p> <p>Operated in accordance with Condition 1 and Condition 2. Refer to the conditions language in the Operational Strategy.</p> <p>Under normal conditions, the intent will be to use S-356 to maximize flow to NESRS and thereby reduce the use of S-338/G-211 with the exception of water supply and supplemental water deliveries.</p> <p>S-336 will be closed when S-356 is operated.</p> <p>When supplemental water deliveries are being delivered through S-334 and they by themselves or in combination with local rainfall result in S-356 pumping to maintain the canal range below the top of the range, the supplement delivery will be stopped by closing S-334 by the next business day or sooner. Supplemental water can be delivered to Taylor Slough through S-151, S337, S-335 while S-356 is operating.</p> <p>S-356 may be used to divert excess flow from L-30 through S-335 if desired by the agencies (ENP, SFWMD, and USACE). S-335 releases are still dependent on having available downstream capacity.</p>	<p>Not Operated</p>
S-151	<p>Water Supply</p> <p>Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay.</p>	<p>Regulatory releases pursuant to WCA-3A Regulation Schedule during Conditions 3. Refer to the conditions language in the Operational Strategy.</p> <p>Water Supply</p> <p>Supplemental Deliveries (up to 250 cfs) to Taylor Slough, Florida Bay, and Manatee Bay.</p>
S-337	<p>Water Supply</p> <p>Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay.</p>	<p>Regulatory releases pursuant to WCA-3A Regulation Schedule during Conditions 3. Refer to the conditions language in the Operational Strategy.</p> <p>Supplemental Water Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay.</p>

Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
S-335	Condition 1 and Condition 2 Operating Range from 6.5 to 7.0 NGVD Condition 3 and Condition 4 Operating Range from 7.0 to 7.5 feet NGVD Water Supply Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay.	
S-338	Operating Range from 5.5 to 5.8 feet NGVD	
G-211	Operating Range from 5.5 to 6.0 feet NGVD Note: If S-331 pumping is limited and the G-211 tailwater rises above 5.3 feet, NGVD then close G-211. Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay. It is the expectation that supplemental deliveries will not cause prolonged pumping with two or more units at S-331.	Operating Range from 5.3 to 5.7 feet NGVD Note: If S-331 pumping is limited and the G-211 tailwater rises above 5.3 feet, NGVD then close G-211. Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay. It is the expectation that supplemental deliveries will not cause prolonged pumping with two or more units at S-331.

Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
S-357	<p>S-357 will be operated to maintain an average-daily water level in C-357 at LPC1 or S-357 headwater between 5.0 to 5.5 feet, NGVD. When drier conditions allow reduced pumping at S-357, canal range of 5.5 to 6.0 feet, NGVD may be utilized.</p> <p>S-357 operations will be constrained to two pump units for most conditions and S-331 will be used more to provide flood mitigation for the Las Palmas Community (8.5 SMA) and to help facilitate the S-357N, Contract 8, and Contract 8A construction.</p> <p>If the stage at LPG2 rises above 6.6 feet NGVD then a canal range of 3.5-4.0 may be used at S-331 until the stage at LPG2 falls below 6.5 feet NGVD. If capacity is not available at S-331 to maintain this lower range or S-357 stage exceeds 6.2 ft, NGVD, then pumping at S-357 may be increased to more than two units until the stage at LPG2 falls below 6.5 feet NGVD.</p> <p>Pump sequence: Step 1. Use S-331 pump and follow its criteria; if desired recession rates not achieved at LPG2, then go to step 2. Step 2. Turn on one electric or one diesel unit; if more pumping capacity is needed then go to step 3. Step 3. Turn on two units; if more pumping capacity is still needed and capacity is not available at S-331 to maintain the lower range of 3.5-4.0, then go to step 4. Step 4. Turn on three units with the goal of holding S-357 HW at 3.0 ft, NGVD and not to exceed 10.0 ft, NGVD at LPDC1 gage.</p> <p>When S-357 pump station is restricted due to the construction of the flow way berms inside the 8.5 SMA detention cell and subsequent operational testing, the following constraints will be used to maintain the flood mitigation for 8.5 SMA..</p> <ol style="list-style-type: none"> 1. If no units are available, a G-3273 constraint of 6.8 ft, NGVD will be used for S-333 and S-356. 2. If one electric or one diesel is available, a G-3273 constraint of 6.9 ft, NGVD will be used for S-333 and S-356. 3. If two units are available, a G-3273 constraint of 7.0 ft, NGVD will be used for S-333 and S-356. <p>Following completion of C-111 South Dade NDA, there will be no restrictions of the number of pump units at S-357.</p>	

Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
S-331	<p>S-331 HW operational range will lower as the stage at LPG2 rises as long as there is downstream capacity. Providing capacity for the operational ranges prescribed below will be a higher priority than regulatory releases from WCA-3A to S-331.</p> <ol style="list-style-type: none"> 1. When $LPG2 > 6.6$ then S331 HW will be maintained between 3.5 and 4.0 until the stage at LPG2 falls below 6.5 feet NGVD. 2. When $6.0 < LPG2 < 6.6$ then S331 HW will be maintained between 4.5 and 4.0. 3. When $5.5 < LPG2 < 6.0$ then S331 HW will be maintained between 5.0 and 4.5. <p>When $LPG2 < 5.5$ then water manager may use any operation range as long as the bottom of the range is at or above 5.0 ft, NGVD (e.g. 5.5 to 6.0).</p> <p>If the stage at LPG2 rises above or expected to rise and remain above 6.6 feet NGVD for over 24 hours then a range of 3.5-4.0 may be used at S-331 until the stage at LPG2 falls below 6.5 feet NGVD. If capacity is not available at S-331 to maintain this lower range or S-357 stage exceeds 6.2 ft, NGVD, then pumping at S-357 may be increased to more than two units until the stage at LPG2 falls below 6.5 feet NGVD.</p> <p>Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay. It is the expectation that supplemental deliveries will not cause prolonged pumping with two or more units at S-331. When $LPG2 < 5.5$ then water manager may use any operation range as long as the bottom of the range is at or above 5.0 ft, NGVD (e.g. 5.5 to 6.0) when pumping at S-331 and above 4.8 when siphoning at S-331. There is no stage requirement when water supply deliveries are being made through G-211.</p>	
Northern Detention Area (NDA)	<p>The final configuration of the NDA is being constructed (exterior berms and interior berms). The future NDA will connect the 8.5 Square Mile Area (SMA) Detention Cell and contain what is now the S-332B North Detention Area (also referred to as the S-332B North Seepage Reservoir within Table 1).</p> <p>This seepage reservoir will have a normal maximum water depth limit of 2.5 feet*. However, if the USACE determines that a flood emergency exists the depth of water would be increased to 3.5 feet*, when possible.</p> <p>*The depth limit is based on the estimated averaged across the entire detention area.</p>	
Southern Detention Area (SDA)	<p>The final configuration of the Southern Detention Area (SDA) is being constructed (interior berms).</p> <p>The Southern Detention Area (SDA) encompasses what was previously the S-332B West Seepage Reservoir, the S-332C Seepage Reservoir, and the S-332B/C Connector and raising the western levee of the previous reservoirs. It is very unlikely that there will be overflow from the SDA.</p> <p>The SDA will have a normal maximum water depth limit of 2.5 feet*. However, if USACE determines that a flood emergency exists similar to an event like the “No Name” storm, the depth of water would be increased to 3.5 feet*, when possible.</p> <p>* The depth limit is based on the estimated average across the entire detention area.</p>	
S-332B North Seepage Reservoir	<p>The north reservoir is a 240-acre reservoir located to the north of the pump station.</p> <p>This seepage reservoir will have a normal maximum water depth limit of 2.5 feet (due to its small area). This 2.5 feet depth corresponds to 9.3 feet, NGVD at the S-332B (North) tailwater. However, if USACE determines that a flood emergency exists, the depth of water would be increased to 3.5 feet, when possible. If needed to facilitate construction of the NDA, flow to S-332B North will be minimized.</p>	

Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
		<p>The operational components [S-338, S-332B, S-332C, S-332D, S-194, S-196, S-176, S-177, S-18C, S-197 and S-199/S-200 (SFWMD owned and operated)] of the following four sections interact differently based on the time of year, local conditions, and regional conditions. Specifically, during the time period from February through July the operation of many of the L-31N and C-111 structures will need to be adjusted to improve the likelihood of achieving stages that will facilitate (or at least reduce the conflict with) Cape Sable Seaside Sparrow (CSSS) nesting and habitat maintenance. Depending on the local and regional conditions operations are expected to vary from conserving water to maintain hydroperiod during drier times to sending considerable flows to tide to moderate stages during periods of high rainfall. With some of these routes subject to downstream conditions the available capacity and routes are expected to change as conditions change; therefore, no fixed hierarchy for the order and location of discharge can be set.</p> <p><u>Example of Water Distribution During Wet Periods.</u> Adjust the use of S-332B, S-332C, and S-332D in preparation for and during the nesting season by 1) discharging water to tide through S-338 to the extent downstream conditions allow and the desired flow to Taylor Slough is achieved to reduce the use of S-331, 2A) use of S-194 and S-196 to send water to tide through the C-102 and C-103 canal to the extent that downstream conditions allow, and 3) release water through S-176 (SFWMD S-199/S-200 pump stations may use this water in accordance with the permitted operating plan), S-177, S-18C, and S-197 subject to the S-197 flow restriction. The objective of facilitating C-111 South Dade construction by moderating the use of S-357 and S-332B West and minimizing the use and S-332B North remain.</p> <p><u>Example of Water Distribution During Dry Periods.</u> Use S-332B, S-332C, and S-332D to achieve the stages in southeastern ENP and use of S-332D to achieve target flows to Taylor Slough (up to 250 cfs as measured at S-334 or S-337).</p>

Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
<p><u>S-332B and S-332C, and S-332D</u></p>	<p>S-332B, S-332C, and S-332D operations are independent of whether other SDCS operations are under Column 1 or Column 2 mode of operations.</p> <p>S-332D Detention Area (S-332D minus S-332DX1) has the following calendar based flow limits</p> <ul style="list-style-type: none"> • 07/15 through 11/30 No Constraint – May use all pumps (design capacity of 575 cfs) • 12/01 through 01/31 Limit of 3 diesel pumps (design capacity of 325 cfs) • 02/01 through 07/14 Limit of 2 diesel pumps (design capacity of 250 cfs) <p>If SFWMD proposed connection from S-200 to Taylor Slough is completed, flows through this connection will be incorporated as part of the above operational constraints.</p> <p><u>02/15 through 07/31 (CSSS nesting window)</u> Operating Range from 4.2 to 4.8 feet, NGVD</p> <p>Use of C-102, C-103, S-199, S-200, S197 as stages rise above 4.2 feet, NGVD to achieve the desired stage and recession rates for CSSS Sub Populations F, C & D. Since the nesting window extends into the wet season it is expected that meaningful flow will need to be sent to tide to moderate the stage rise along the eastern boundary of ENP. When excess water is being discharged to tide an effort will be made to direct a large portion of the excess water to Biscayne Bay through the C-102/C-103 canal to the extent downstream capacity allows.</p> <p><u>08/01 through 02/14</u> Operating Range from 4.0 to 4.6 feet, NGVD</p> <p>Operational Range of 4.0 to 4.6 until construction of the NDA and 8.5 SMA are functionally complete. Once the NDA and 8.5 SMA features are functionally complete, such that construction conflicts with water management of canal levels are resolved, the operational range will be raised 0.2 feet to 4.2/4.8 feet, NGVD.</p> <p>During this period the normal management of water will be to fully maintain the hydraulic ridge and deliver water to eastern ENP using the full available capacity of S-332B, S-332C, and S-332D. If the capacity available at S-332B, S-332C, and S-332D is unable to maintain the operational range then use S-194/S-196/S-197 (Low flow discharges through S-197 available for conditions 2, 3, and 4)</p> <p>To facilitate management of hydroperiods along the eastern boundary of ENP to better meet habitat and nesting targets (2016 B.O.), up to one pump may be run at S-332BN, S-332B, and S-332C and up to two pumps at S-332D may be run within an operating range from 3.8 to 4.2 feet NGVD (highest stage at which water supply is usually initiated).</p>	
<p>S-332DX1</p>	<p>With the lowering of an approximately 250 feet long section of S-332D High Head Cell weir to ground surface, the concern of over using S-332DX1 is lessened; as there is less available head to move water into the SDA. During Increment 1.1 and 1.2 there is full flexibility in the use of S-332DX1.</p> <p>S-332DX1 may be used to divert a portion of S-332D discharge when the CSSS calendar based flow restrictions limit the flow into the S-332D detention area.</p> <p>Use of S-332DX1 may be minimized to construct the SDA interior berms.</p>	

Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
S-328	The S-328 may be used to increase deliveries to Taylor Slough up to 250 cfs as measured at S-332D and provided that an average water depth of at least six inches is maintained in Cell 1; the six inch depth criteria was developed based upon a modeled operational range of 5.8 to 5.7 feet. Prior to initial operation of S-328, construction of the three L-31W Canal plugs proposed between S-328 and the L-31W gap must be completed and the monitoring regime approved by the Corps must be implemented. The L-31W Canal plugs were identified in the 2016 C-111 South Dade Contract 9 EA; these features may be constructed by SFWMD as components of the SFWMD proposal to move more water to Taylor Slough and Florida Bay.	
S-194 and S-196	Since S-194 and S-196 are manually operated structures (no remote control) and require downstream operational changes to effectively move water, these routes will be used to steadily move moderate (e.g. total of 100 to 200 cfs) flows to tide to allow the reduced use of S-332B, S-332C, and S-332D secondarily when this is likely to help achieve better CSSS habitat or nesting conditions. The object will be to develop sustainable openings which move enough water to help achieve the desired stage or rate of rise in eastern ENP with relatively infrequent gate changes. S-194/S-196 will also be used minimize the use of S-332B North during construction of the NDA. 15 February through 31 July (early CSSS nesting window) Operating Range from 4.2 to 4.8 feet, NGVD 01 August through 14 February Operating Range from 4.0 to 4.6 feet, NGVD Operational Range of 4.6 to 4.0 until construction of the NDA and 8.5 SMA are functionally complete. Once the NDA and 8.5 SMA features are functionally complete such that construction conflicts with water management of canal levels are resolved, the operational range will be raised 0.2 feet to 4.8/4.2 feet, NGVD.	
S-176	Operating Range from 4.75 to 5.0 feet, NGVD Operational Range of 4.0 to 4.9 feet, NGVD until construction of the NDA and 8.5 SMA are functionally complete. Once the NDA and 8.5 SMA features are functionally complete, such that construction conflicts with water management of canal levels are resolved, the operational range will return to 4.75 to 5.0 feet, NGVD. 01 August through 14 February, S-176 may release up to an additional 200 cfs discharge to Manatee Bay while maintaining C-111 Canal stages at S-176 HW above 4.5 ft, NGVD.	
S-177	Operating Range from 3.6 to 4.2 feet, NGVD	

Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS																																																									
	S-177 may be used to lower S-177 HW down to 3.6 ft, NGVD. If the rainfall over the last 14 days exceeds 5.5 inches, then S-177 may be opened to lower S-177 HW down to 3.3 feet-NGVD. During the period from 01 August through 14 February, S-177 may release up to an additional 200 cfs water supply delivery to Manatee Bay while maintaining C-111 Canal stages at S-177 HW above 3.2 ft, NGVD																																																										
S-18C	Operating Range from 2.3 to 2.6 feet, NGVD	Operating Range from 2.0 to 2.25 feet, NGVD																																																									
S-197	<p>S-197 will be operated consistent with the 2012 Water Control Plan reflecting the replaced S-197 structure (2012). Conditions cited below are referred below in Section 10.0 of the G-3273 Constraint Relaxation/S-356 Field Test and S-357N Revised Operational Strategy (Increment 1.1 and Increment 1.2).</p> <table border="0"> <tr> <td colspan="3">1. Condition 1</td> </tr> <tr> <td><u>S-18C HW</u></td> <td>or</td> <td><u>S-177 HW (feet, NGVD)</u></td> </tr> <tr> <td>>3.3</td> <td></td> <td>>4.3</td> </tr> <tr> <td>>3.1</td> <td></td> <td>>4.2</td> </tr> <tr> <td>>2.8</td> <td></td> <td>>4.1</td> </tr> <tr> <td colspan="3">2. Condition 2</td> </tr> <tr> <td><u>S-18C HW</u></td> <td>or</td> <td><u>S-177 HW (feet, NGVD)</u></td> </tr> <tr> <td>>3.3</td> <td></td> <td>>4.3</td> </tr> <tr> <td>>3.1</td> <td></td> <td>>4.2</td> </tr> <tr> <td>>2.8</td> <td></td> <td>>4.1</td> </tr> <tr> <td>>Table 2B</td> <td></td> <td>NA</td> </tr> <tr> <td><Table 2B</td> <td></td> <td>NA</td> </tr> <tr> <td colspan="3">3. Conditions 3 and 4</td> </tr> <tr> <td><u>S-18C HW</u></td> <td>or</td> <td><u>S-177 HW (feet, NGVD)</u></td> </tr> <tr> <td>>3.3</td> <td></td> <td>>4.3</td> </tr> <tr> <td>>3.1</td> <td></td> <td>>4.2</td> </tr> <tr> <td>>2.8</td> <td></td> <td>>4.1</td> </tr> <tr> <td>> Table 3B</td> <td></td> <td>NA</td> </tr> <tr> <td>< Table 3B</td> <td></td> <td>NA</td> </tr> </table> <p>Criteria for S-177 only applies when gate is fully open for 24 hours.</p>		1. Condition 1			<u>S-18C HW</u>	or	<u>S-177 HW (feet, NGVD)</u>	>3.3		>4.3	>3.1		>4.2	>2.8		>4.1	2. Condition 2			<u>S-18C HW</u>	or	<u>S-177 HW (feet, NGVD)</u>	>3.3		>4.3	>3.1		>4.2	>2.8		>4.1	>Table 2B		NA	<Table 2B		NA	3. Conditions 3 and 4			<u>S-18C HW</u>	or	<u>S-177 HW (feet, NGVD)</u>	>3.3		>4.3	>3.1		>4.2	>2.8		>4.1	> Table 3B		NA	< Table 3B		NA
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Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
TABLE 2B/3B	<u>Month</u>	<u>Monthly Median S-18C HW Stage (ft, NGVD)</u>
	January	2.2
	February	2.0
	March	2.0
	April	1.8
	May	2.0
	June	2.3
	July	2.4
	August	2.4
	September	2.5
	October	2.5
	November	2.3
December	2.2	

4.1 S-333 AND S-356 OPERATIONAL STRATEGY

At the start of Increment 1.1, unchanged from Increment 1 limits, the L-29 Canal (L-29) will be managed to prevent a sustained stage above 7.5 feet (average of S-333 tailwater [TW] and S-334 headwater [HW]). The L-29 stage will be maintained below 7.5 feet NGVD by reducing or completely ceasing net (S-333 minus S-334) inflow into L-29 when the L-29 stage rises near or above 7.5 feet, NGVD. Both S-333 and S-356 releases to L-29 will be subject to this constraint. Later in the sequential implementation of Increment 1.2 after the requisite real estate acquisitions are complete and the C-111 South Dade Contract 8 western levee construction is sufficiently complete, the L-29 stage may be incrementally raised up to 7.8 feet, NGVD as described in Section Table 1.

Continuing the adaptive approach formulated for Increment 1 the water level constraint at G-3273 will not be a pre-determined constraint under Increment 1.1/1.2, allowing NESRS to receive more water, relative to ERTTP, pursuant to the WCA-3A Regulation Schedule and Rainfall Plan. G-3273 will continue to be used as an indicator to define when NESRS is experiencing low, moderate, and high water levels. WCA-3A stage as measured by the three gage average (average of monitoring gauges Sites 63, 64 and 65) will continue to be used to define the priority of releases from S-333 and S-356 to L-29/NESRS. Specifically, when WCA-3A stage is above the Increment 1 Action Line during the S-12A closure period (Figure 1 which varies from 10.0 to 10.75 feet), all of the available L-29 capacity will be dedicated to lowering WCA-3A. WCA-3A stages relative to the Increment 1 Action Line will typically be assessed weekly. When WCA-3A stages are falling from above the Increment 1 Action Line to below it, i.e., moving from conditions described in (3) or (4) to conditions described in (2) below, operations may be adjusted weekly. When WCA-3A stages are increasing from below the Increment 1 Action Line to above it, i.e., moving from conditions described in (2) below to conditions described in (3) or (4) below, operations may be adjusted more frequently than weekly. Operating criteria for S-197 will be reassessed once construction of the C-111 South Dade Project NDA is constructed and operable, and/or upon completion of the Increment 1.1/1.2 field test. All structures in the MWD Increment 1/1.1/1.2 field tests will be evaluated and their operating criteria and canal levels will be subject to a complete revision in Increment 2.

4.2 REVISED CONDITIONS OF THE OPERATIONAL STRATEGY

The need to maintain flood mitigation for the 8.5 SMA while facilitating A) completion of the C-358 Canal installation of S-357N (C-358 control structure) and deepening canal to design specifications and B) completion of C-111 South Dade Contracts 8 and 8A (construction of the C-111 NDA to fill the existing 2 mile gap in the hydraulic ridge system) warrant the following changes to the previous Increment 1 Operational Strategy.

- Less use of S-356 if there is average or above average rainfall as there will be the need to dedicate more capacity to WCA-3A.
- More flexibility in the S-357 range to compensate for the head losses expected due to hydraulic limitation imposed by the S-357N installation including but not limited to
 - the installation of two culvert sets (two 72 inch diameter CMP at each location) in the C-358 canal for construction access and

- a by-pass culvert (two 72 inch diameter CMP) and trench system around the S-357N construction area.
- Less use of S-332B North during L-315, L-316, and L-318 NDA Levee construction, as the existing Partial NDA is located near the southern end of the C-111 South Dade Contract 8 construction footprint.
- Less use of S-332B (West), S-332C and/or S-332DX1 during Contract 8 and Contract 8A construction within the SDA, as these structures discharge near the southern extent of the Contract 8 work.
- More use of S-331 to A) assist S-357 in maintaining the flood mitigation for the 8.5 SMA while restricting S-357 flow into the 8.5 SMA Detention Area, B) to assist in lower WCA-3A, and C) to deliver more water to Taylor Slough.
- More use of the C-102 (S-194) and C-103 (S-196) canals to assist S-332C and S-332D during moderately wet conditions.
- More use of S-176, S-177, S-18C and S-197 than in the original Increment 1 to compensate for the increased pumping at S-331 and operational restrictions at S-332B, S-332C, and S-332DX1 during the C-111 South Dade Contracts 8 and 8A construction.
- Commitment to deliver excess water from WCA-3A and using S-332D to ensure flow to Taylor Slough, with the objective of providing flows favorable to Florida Bays continued recovery from the 2015 extreme hyper-salinity event.
- Less use of S-332B, S-332C, and S-332D to meet the habitat hydroperiod targets imposed by the 2016 ERTF BO.

4.3 UNVARYING CONDITIONS OF THE OPERATIONAL STRATEGY

- a) L-29 Canal. The L-29 operational stage limit will be raised as prescribed below to A) increase the discharge capacity from WCA-3A thereby improving hydrologic conditions within NESRS and reducing the likelihood/magnitude of high water impacts within WCA-3A, B) facilitate a quicker transition to the lower flows or closure of S-12A/S-12B which are more compatible with the target nesting and habitat criteria of the CSSS Sub-Population A, and C) facilitate flow and stages along the L-31N which combined with the redistribution of pumping can provide drier condition which could help facilitate construction.
 - i) Prior to the acquisition of the required real estate interest along the L-29 Canal and prior to sufficient completion of the MWD 8.5 SMA and C-111 South Dade Contracts 8 and 8A western levee construction and berms inside the 8.5 SMA Detention Cell), the L-29 operational stage limit will remain at 7.5 feet.
 - ii) After the acquisition of the required real estate interest along the L-29 Canal and following sufficient completion of the MWD 8.5 SMA and C-111 South Dade Contract 8 and 8A western levee construction and berms inside the 8.5 SMA Detention Cell), the L-29 operational stage limit will be up to 7.8 feet NGVD.
- b) Flow into NESRS will be adjusted to moderate the rise in the stage at G-3273 and other NESRS monitoring locations as appropriate for the current stage, construction conditions, rainfall forecast, and time of the year.

- c) S-357 and S-331 for the 8.5 SMA. To help facilitate the construction described above while maintaining 8.5 SMA flood mitigation, operations of S-357 will be constrained to two pumps (with one being used when conditions allow) for most conditions and S-331 will be used more to provide flood mitigation for the 8.5 SMA. The 8.5 SMA Detention Area is adjacent to the Contract 8 construction area, and minimizing the use of S-357 will help facilitate construction. The following operational criteria and ranges will be used, as established for the extended recovery period following the 2016 temporary emergency deviation.
- i) S-331 HW operational range will lower as the stage at LPG2 rises as long as there is downstream capacity. Providing capacity for the operational ranges prescribed below will be a higher priority than regulatory releases from WCA-3A to S-331.
 - (1) When $LPG2 > 6.6$ then S-331 HW will be maintained between 3.5 and 4.0 until the stage at LPG2 falls below 6.5 feet, NGVD.
 - (2) When $6.0 < LPG2 < 6.5$ then S331 HW will be maintained between 4.5 and 4.0
 - (3) When $5.5 < LPG2 < 6.0$ then S331 HW will be maintained between 5.0 and 4.5.
 - (4) When $LPG2 < 5.5$ then water manager may use any operation range as long as the bottom of the range is at or above 5.0 ft, NGVD (e.g. 5.5 to 6.0).
 - ii) S-357 pumping will be constrained to a maximum of two pumps unless the stage at LPG2 rises above 6.6 feet NGVD. The operational range for C-357 will be from 5.5 to 5.0 with the latitude to allow a range of 6.0 to 5.5 if drier conditions allow reduced operation of S-357.
 - iii) If the stage at LPG2 rises above 6.6 feet NGVD then a range of 4.0/3.5 may be used at S-331 until the stage at LPG2 falls below 6.5 feet NGVD. If capacity is not available at S-331 to maintain this lower range or S-357 stage exceeds 6.2 ft, NGVD, then pumping at S-357 may be increased to more than two units until the stage at LPG2 falls below 6.5 feet NGVD.
 - iv) When S-357 pump station is restricted due to the construction of the flow way berms inside the 8.5 SMA detention cell, the following criteria will be used to maintain the flood mitigation for 8.5 SMA.
 - o If no units are available, G-3273 constraint for S-333 and S-356 is 6.8 ft, NGVD
 - o If one electric or one diesel is available, G-3273 constraint for S-333 and S-356 is 6.9 ft, NGVD
 - o If two units are available, G-3273 constraint for S-333 and S-356 is 7.0 ft, NGVD

Construction of the 8.5 SMA features and C-111 South Dade Contracts 8 and 8A will be considered functionally complete when the USACE construction manager with input from the USACE water managers and USACE Engineering Division formally communicate it to the SFWMD project manager and water managers. Once functionally complete, such that construction conflicts with water management of canal levels are resolved, the S-331 HW range specified above will be raised by up to 0.5 feet and the S-357 HW range will be evaluated with the effects of this change. If S-357N is available, it may be used to prevent the undesired movement of water through the C-358 during drier conditions. It is assumed that for these changes that the full capacity at S-357 is available.

- d) L-31N Canal Reach from S-331 to S-176. S-332B, S-332C, S-332D, S-176, S-194, and S-196 will be operated to maintain the L-31N Canal reach between S-331 and S-176 in accordance with Table 1 except during hydraulic testing of the NDA and SDA. When drier conditions allow, water may be distributed away (south) from the Contracts 8 and 8A Construction area. S-332B, S-332C, S-332D, S-176, S-194, and S-196 will be used to distribute water to help facilitate construction while maintaining the hydraulic ridge, maintaining hydroperiods, and delivering water to Taylor Slough. The S-328 structure (eight 60 inch diameter CMP with gates) located in the southwest corner of Cell 1 of the S-332D Detention Area may be used to increase deliveries to Taylor Slough up to 250 cfs provided that an average water depth of at least six inches is maintained in Cell 1 (criteria developed based upon a modeled operational range of 5.8 to 5.7 feet). Prior to initial operation of S-328, construction of the three L-31W Canal plugs proposed between S-328 and the L-31W gap must be completed. The L-31W Canal plugs were identified in the 2016 C-111 South Dade Contract 9 EA; these features may be constructed by SFWMD as components of the SFWMD proposal to move more water to Taylor Slough and Florida Bay.
- e) C-111 Canal Reach from S-176 to S-177.
S-177 may be opened to lower S-177 HW down to 3.6 ft, NGVD. If the rainfall over the last 14 days exceeds 5.5 inches then S-177 may be opened to lower S-177 HW down to 3.3 feet, NGVD. No specific strategy is provided for transition to drier conditions due to the complexities of meeting multiple objectives. However, the stage at Taylor Slough Bridge (TSB) relative to the historical stages (Table 1B) should be considered along with the expected availability of excess/supplemental water.
- f) Supplemental Water Deliveries to Taylor Slough, Florida Bay, and Manatee Bay.
SDCS operations for increment 1.1 and 1.2 are intended to utilize the C-111 South Dade Southern Detention Area and the S332D Detention Area to maintain canal stage targets in the lower L-31N and C-111 canals. S-176 and structures downstream, S-177 and S-18C will be used to pass excess flows to the marsh downstream of S-18C and utilize S-197 as needed.

Prolonged use of the C111 South Dade detention areas, particularly following significant rain events has the tendency to set up a large stage difference between the marsh to the west and the canal stage in the lower L31N and C111. This is expected and is how the system is designed to work, as it is the water level in the detention areas that provides the hydraulic ridge that supports this stage difference. However, after the rain event has passed through the system, the hydraulic ridge can dissipate quickly following an abrupt cessation of pumping. This can result in rapid drainage of the marsh and has the potential to result in fish being stranded over large areas of Taylor Slough.

To mitigate for this potential rapid drainage of the marsh, increment 1.1 and 1.2 will include the operational flexibility for water managers to provide up to 250 cfs in order to avoid excessive drainage of the marsh to the west of the detention areas. Supplemental water deliveries will be limited to conditions when WCA-3A is above its floor elevation of 7.5 feet NGVD by 0.5 feet (8.0 ft, NGVD) in April and May and above 8.5 ft, NGVD (1.0 foot

above the water supply floor) in all other months. This flow limit will be measured at S-334 or S-337. This operation will be limited to 8 weeks per year when the 3-gage average is below the historical median of WCA-3A. There will be no time limit while the 3-gage average is above the median stage. This operation is intended to support gradual recession rates in the marsh by providing additional water to the S332D pump station, or maintain a canal stage in a range conducive gradual recession rates. Data collected during the incremental test will be assessed to evaluate the effectiveness of this operation as we move forward with a Combined Operating Plan. The effects of supplemental water deliveries will be discussed among the USACE, ENP, and SFWMD during monthly meetings and prior to initiation of flows.

4.4 INCREMENT 1.1/1.2 OPERATIONAL STRATEGY CONDITIONS

4.4.1 CONDITION 1. Year-round when stage at G-3273 is below 6.6 feet NGVD* and WCA-3A stage is below the Increment 1 Action Line (Figure 1) (S-333 has priority; S-356 use is secondary to S-333 but S-356 can and should be used subject to L-29 stage limitations):

- a) S-333 and S-334. S-333 will be used to release up to the full rate prescribed by WCA-3A Regulation Schedule and the Rainfall Plan into NESRS subject only to the L-29 adjusted constraint. The combined flow from the S-333, S-12A, S-12B, S-12C, and S-12D should not exceed the total prescribed by the Rainfall Plan except as allowed by the 2012 Water Control Plan and constrained by the E RTP Biological Opinion's stage and recession limits with the latitude to deliver excess water from WCA-3A to supply water to Taylor Slough as long as WCA-3A's stage is above 8.0 ft, NGVD in April and May and above 8.5 ft, NGVD (one foot above WCA-3A's water supply net withdrawal floor) in all other months. Deliveries through S-332D will still comply with the seasonal discharge limits for nesting of the CSSS Sub Population C. This supplemental delivery will only occur when it does not conflict with the ability to maintain canal stages within their operational ranges and is expected to occur during relatively drier conditions at which time this magnitude of flow will become important as it will help sustain the hydraulic ridge at S-332C and S-332D.
- b) S-356. S-356 may be used to control the stage in L-31N between 5.5 and 5.8 feet to the extent there is capacity in L-29 except during the S-12A closure period when the use will be limited to one unit if the full discharge prescribed by the Rainfall Plan cannot be made. Compliance with the range limits is based on the daily average stage at S-356/S-336 headwaters. The operator of S-356 (currently the USACE) may turn pump units on and off within this range. Using S-356 to maintain the L-31N Canal range to 5.5 to 5.8 feet allows the flexibility to keep G-211 and S-338 closed or reduce G-211 and S-338 discharge if conditions make this desirable.
- c) L-30 Canal and S-335. Excess flow from L-30 through S-335 may be diverted into NESRS using S-356. Delivery of water from WCA-3A (through S-151, S-337, and S-335) is allowed. When S-335 HW is above 6.5 feet, the SFWMD has full latitude to make the S-335 discharge required to maintain the desired stage in the L-30 Canal and also provide S-335 discharge to reduce pump unit cycling at S-356 or S-331 (by releasing the flow

required to maintain steady pumping at S-331 through G-211) or both. S-335 releases are still dependent on having available downstream capacity.

- d) S-197. S-197 will be operated consistent with the 2012 Water Control Plan (Table 1A) for S-197.

* Note: For the time period from January 1st through near the end of May that a stage of 6.6 at G3273 reflect a very wet (above median and near P75). For the period from mid-May through December 6.6 is near (+/- 0.2 feet) median (P50) conditions.

TABLE 1A: S-197 Operating Criteria

S-18C HW (feet, NGVD)	or	S-177 HW (feet, NGVD)	S-197 Target Flow (cfs) (daily time-weighted average)
>3.3		>4.3	2,400
>3.1		>4.2	1,600
>2.8		>4.1	800
Criteria for S-177 only applies when gate is fully open for 24 hours			

TABLE 1B: Monthly Median Taylor Slough Bridge (TSB) Stages (POR 1978-2015)

Month	Monthly Median TSB Stage
January	~2.6 feet, NGVD
February	~2.4 feet, NGVD
March	~2.2 feet, NGVD
April	~1.8 feet, NGVD
May	~1.8 to 2.2 feet, NGVD
June	~2.2 to 3.6 feet, NGVD
July	~3.6 feet, NGVD
August	~3.6 feet, NGVD
September	~4.0 feet, NGVD
October	~4.1 feet, NGVD
November	~4.0 to 3.8 feet, NGVD
December	~3.8 to 2.7 feet, NGVD

4.4.2 CONDITION 2. Year-round when stage at G-3273 is above 6.6 feet NGVD * and the WCA-3A stage is below the Increment 1 Action Line (Figure 1) (S-356 has limited priority over S-333):

The following criteria will be triggered when G-3273 rises above 6.6 feet, NGVD for more than 24 hours and will remain in effect until G-3273 declines to 6.5 feet, NGVD.

- a. S-333 and S-334. S-333 will be used to release up to the full rate prescribed by the WCA-3A Regulation Schedule and the Rainfall Plan into NESRS subject to the L-29 adjusted constraint and an assured minimum available capacity of one unit at S-356 (about 125 cfs) when the L-29 constraint is 7.5 and 3 units at S-356 (375 cfs) when the L-29 constraint is 7.8 ft. If the assured minimum available capacity indicated at S-356 is not possible due to the L-29 constraint, then S-333 releases will be reduced to allow S-356 to achieve the specified minimum available capacity.
- b. It is expected that during drier times the need to deliver supplement flow to Taylor Slough would diminish the use of S-356 compared to Increment 1 if this water was delivered through S-334. Water may be delivered through the S-151, S-337, S-335 route to reduce this conflict. During the wet season it is expected that supplemental deliveries will be relatively small and occurring during dry periods. At the end of the wet season it is expected that the supplemental deliveries be larger and more persistent. Deliveries through S-332D/S-332DX1 will still comply with the seasonal discharge limits for nesting of the CSSS.
- c. S-356. S-356 may be used to control the stage in L-31N between 5.5 and 5.8 feet with an assured minimum available capacity of one unit (about 125 cfs) when the L-29 constraint is 7.5 and 3 units (375 cfs) when the L-29 constraint is 7.8 ft. Compliance with the range limits is based on the daily average stage at S-356/S-336 headwater. The operator of S-356 (currently the USACE) may operate the pumps within this range. Using S-356 to maintain the L-31N Canal between 5.5 and 5.8 feet allows the flexibility to keep G-211 and S-338 closed or reduce G-211 and S-338 discharge if conditions make this desirable.
- d. L-30 Canal and S-335. Excess flow from L-30 through S-335 may be diverted into NESRS using S-356. Delivery of water from WCA-3A (through S-151, S-337, and S-335) is allowed. When S-335 HW is above 6.5 feet, the SFWMD has full latitude to make the S-335 discharge required to maintain the desired stage in the L-30 Canal and also provide S-335 discharge to reduce pump unit cycling at S-356 or S-331 (by releasing the flow required to maintain steady pumping at S-331 through G-211) or both. S-335 releases are still dependent on having available downstream capacity.
- e. S-18C. S-18C will be operated in accordance with the Column 1 (2.6/2.3) of the 2012 Water Control Plan.

- f. S-197. For Increment 1.1/1.2 additional S-197 flexibility will be allowed to achieve the interim goals. S-197 will be operated based upon S-18C HW stage as prescribed below (Tables 2A and 2B). These additional S-197 operating criteria do not change the existing S-197 operating criteria for openings prescribed by the conditions at S-177.

* Note: For the time period from January 1st through near the end of May a stage of 6.6 at G3273 reflects a very wet (above median and near P75) condition. For the period from mid-May through December 6.6 is near (+/- 0.2 feet) median (P50) conditions.

TABLE 2A: S-197 Operating Criteria

S-18C HW (feet, NGVD)	or	S-177 HW (feet, NGVD)	Maximum S-197 Flow (cfs) (daily time-weighted average)
> 3.3		> 4.3	2,400 (full)
> 3.1		> 4.2	1,600 (two-thirds)
> 2.8		> 4.1	500
> Table 2B		NA	minimum(S-176+ <u>100</u> , S-177+ <u>100</u> , <u>300</u>)
< Table 2B		NA	minimum(S-176+ <u>50</u> , S-177+ <u>50</u> , <u>250</u>)
Criteria for S-177 only applies when gate is fully open for 24 hours			

TABLE 2B: Monthly Median S18C HW Stages (POR 1978-2015)

Month	Monthly Median S-18C HW Stage
January	2.2 feet, NGVD
February	2.0 feet, NGVD
March	2.0 feet, NGVD
April	1.8 feet, NGVD
May	2.0 feet, NGVD
June	2.3 feet, NGVD
July	2.4 feet, NGVD
August	2.4 feet, NGVD
September	2.5 feet, NGVD
October	2.5 feet, NGVD
November	2.3 feet, NGVD
December	2.2 feet, NGVD

4.4.3 CONDITION 3. When WCA-3A stage is above the Increment 1 Action Line (Figure 1) during S-12A seasonal closure window from 01 October (or initial S-12A closure date) through 14 July *

- a) The following criteria will be triggered when WCA-3A three gage average exceeds the Increment 1 Action line for more than 24 hours and will remain in effect the three gage average declines to 0.1 feet below the Increment 1 Action line for 48 hours.
- b) S-356. S-356 is not operated.
- c) S-333 and S-334. S-333 makes maximum releases to NESRS subject to the L-29 constraint. When the L-29 constraint is reached or exceeded, S-334 may be used to maintain the L-29 Canal stage at or below the adjusted constraint by delivering a portion of the WCA-3A regulatory releases to the SDCS (including the use of pumping stations S-331, S-332B, S-332C, and S-332D) when the following conditions (i, ii, and iii) are met:
 - i) S-12C and S-12D are full open.
 - ii) The discharge to tide from all of the WCAs are maximized to the extent that downstream conditions allow.
 - iii) The SDCS has available capacity (as defined in paragraph “iv”) below) while maintaining L-31N stage below 4.6 feet, NGVD.
Under these conditions (i, ii, and iii), the following criteria (iv, v, and vi) will govern S-334 operation, including maximum discharge limits:
 - iv) When the daily average stage in L-31N using the HW of S-332B, S-332C, and S-332D can be maintained below 4.4 feet then there is no limit on the S-334 discharge as long as the other L-31N canal reaches are maintained within their respective ranges.
 - v) When the average stage in L-31N at the HW of S-332B, S-332C, and S-332D cannot be maintained below 4.4 feet then:
 - (1) When daily combined pumping at S-332B, S-332C, and S-332D is less than 1,125 cfs, S-334 may be utilized up to a maximum flow rate of 250 cfs.
 - (2) When daily combined pumping at S-332B, S-332C, and S-332D is less than 1,000 cfs (increased storage capacity may be available within the SDCS), S-334 may be utilized up to 400 cfs.
 - vi) S-334 flows will not be constrained by S-333 flows, and there is no constraint to require matching S-333 and S-334 flows.

* The use of S-334 based on criteria “i)” through “v)” may continue long enough past the end of the S-12A and S-12B closure period (14 July) to release the volume of water that would have been released, according to the WCA-3A Regulation Schedule, had the S-12s been allowed to be open, but in no case beyond August 15th. The determination of the extent to which the S-12 closures cause water to be retained in WCA-3A beyond that expected during the pre-ISOP schedule for WCA-3A (1993 Experimental Program, including no seasonal closure of the S-12s) will be computed monthly by USACE water managers and reported annually by the USACE for the period from 1 October through 14

July. When the combined WCA-3A releases from the S-12s and S-333 are less than the releases computed for the pre-ISOP schedule, a WCA-3A "discharge deficit" resulting in additional accumulation of water in WCA-3A is indicated for the period from 1 October through 14 July. For this WCA-3A accounting computation, S-333 discharges to NESRS computed under the pre-ISOP schedule will be based on inclusion of the G-3273 constraint of 6.8 feet, NGVD. S-334 deliveries will be discontinued when S-334 capacity is no longer required to meet the discharge prescribed by the Rainfall Plan and the WCA-3A storage volume accumulated due to the discharge deficit (the balance) is discharged but in no case beyond August 15th. S-334 discharges to the SDCS under all conditions and S-333 deliveries to NESRS when G-3273 (S-333 flows greater than S-334 flows) will both count as flows to be subtracted from the WCA-3A balance computed through 14 July.

- I. S-334 will not be used after 14 July during periods when the WCA-3A stage is below the Increment 1 Action Line. S-334 may be used to discharge accumulated water from 15 July through 14 August if WCA 3A stage is above the Increment 1 Action Line. Regardless of conditions within WCA-3A or any residual WCA-3A storage deficit balance, the use of S-334 to deliver a portion of WCA-3A regulatory releases to the SDCS will be discontinued on 15 August. The WCA-3A storage deficit balance resultant from the S-12 closures, if applicable for the prior period from 1 November through 14 July, will zero-out on 15 August and will preclude a balance carryover into the next year.
 - II. If more water was released from WCA-3A under Increment 1 than computed for the pre-ISOP schedule, a WCA-3A "discharge surplus" balance is indicated for the period from 1 November through 14 July, and S-334 will not be utilized for WCA-3A regulatory releases to the SDCS during the period from 15 July through start of S-12A Seasonal Closure window on 30 September.
- d) L-30 Canal. Delivery of water from WCA-3A (through S-151, S-337, and S-335) is allowed. Net flow from the L-30 Canal should be minimized with the corresponding lowering of the C-4 Canal (opening G-119 and S-380) if downstream conditions allow. When S-335 HW is above 7.0 feet, the SFWMD has full latitude to make the S-335 discharge required to maintain the desired stage in the L-30 Canal below 7.5 feet NGVD if there is capacity available downstream. When S-335 HW is above 7.0 feet NGVD discharge from the L-30 canal through S-335 may be used to reduce pump unit cycling at S-356 or S-331 (by releasing the flow required to maintain steady pumping at S-331 through G-211). Delivery of water from WCA-3A through S-151, S-337, and S-335 is allowed.
- e) Operation of S-18C will be in accordance with the Column 2 (Open 2.25 Close 2.00) of the 2012 Water Control Plan.
- f) S-197. For Increment 1.1/1.2 additional S-197 flexibility will be allowed to achieve the interim goals. S-197 will be operated based upon S-18C HW (S-18C HW and S-178 TW

are very similar) stage as prescribed below (Tables 3A and 3B and text). These additional S-197 operating criteria do not change the existing S-197 operating criteria for opening prescribed by the conditions at S-177, which are unchanged from the 2012 WCP.

TABLE 3A: S-197 Operating Criteria

S-18C HW (feet, NGVD)	or	S-177 HW (feet, NGVD)	Maximum S-197 Flow (cfs) (daily time-weighted average)
> 3.3		> 4.3	2,400 (full)
> 3.1		> 4.2	1,600 (two-thirds)
> 2.8		> 4.1	500 (one-third)
> Table 3B		NA	minimum(S-176+ <u>200</u> , S-177+ <u>200</u> , <u>400</u>)
< Table 3B		NA	minimum(S-176+ <u>100</u> , S-177+ <u>100</u> , <u>300</u>)
Criteria for S-177 only applies when gate is fully open for 24 hours			

TABLE 3B: (same as Table 2B): Monthly Median S-18C HW Stages (POR 1978-2015)

Month	Monthly Median S-18C HW Stage
January	2.2 feet, NGVD
February	2.0 feet, NGVD
March	2.0 feet, NGVD
April	1.8 feet, NGVD
May	2.0 feet, NGVD
June	2.3 feet, NGVD
July	2.4 feet, NGVD
August	2.4 feet, NGVD
September	2.5 feet, NGVD
October	2.5 feet, NGVD
November	2.3 feet, NGVD
December	2.2 feet, NGVD

Within these operational ranges, S-197 gates may be adjusted to maintain the daily average flow rates and stages within the appropriate and corresponding ranges. If a flow or stage is outside of the corresponding range for more than one day (24 hour average) then the appropriate gate change will be made no later than the next working day.

Water managers may use any or all of the four gates at S-197 to achieve the daily average flows prescribed by the stage ranges while, when possible keeping gate openings small enough to prevent manatee movement.

4.4.4 CONDITION 4. When WCA-3A stage is above the Increment 1 Action Line (Figure 1) from 15 July through start of S-12A Seasonal Closure window on 30 September (or initial S-12A closure date) (S-333 has priority with no use of S-334):

- a) The following criteria will be triggered when WCA-3A three gage average exceeds the Increment 1 Action line for more than 24 hours and will remain in effect the three gage average declines to 0.1 feet below the Increment 1 Action line for 48 hours.
- b) S-356 is not operated and S-334 remains closed.
- c) S-333 makes maximum releases to NESRS subject only to the L-29 constraint.
- d) L-30 Canal. Delivery of water from WCA-3A (through S-151, S-337, and S-335) is allowed. Net flow from the L-30 Canal should be minimized with the corresponding lowering of the C-4 Canal (opening G-119 and S-380) if downstream conditions allow. When S-335 HW is above 7.0 feet, the SFWMD has full latitude to make the S-335 discharge required to maintain the desired stage in the L-30 Canal below 7.5 feet NGVD if there is capacity available downstream. When S-335 HW is above 7.0 feet NGVD discharge from the L-30 canal through S-335 may be used to reduce pump unit cycling at S-356 or S-331 (by releasing the flow required to maintain steady pumping at S-331 through G-211) or both if the flow at S-334 is insufficient.
- e) Operation of S-18C will be in accordance with the Column 2 (Open 2.25 Close 2.00) of the 2012 Water Control Plan.
- f) S-197. For Increment 1.1/1.2 additional S-197 flexibility will be allowed to achieve the interim goals. S-197 will be operated based upon S-18C HW stage as prescribed below (Tables 4A and 4B and text). These additional S-197 operating criteria do not change the existing S-197 operating criteria for opening prescribed by the conditions at S-177, which are unchanged from the 2012 WCP.

TABLE 4A: (same as Table 3A): S-197 Operating Criteria

S-18C HW (feet, NGVD)	or	S-177 HW (feet, NGVD)	Maximum S-197 Flow (cfs) (daily time-weighted average)
> 3.3		> 4.3	2,400 (full)
> 3.1		> 4.2	1,600 (two-thirds)
> 2.8		> 4.1	500 (one-third)
> Table 3B		NA	minimum(S-176+ <u>200</u> , S-177+ <u>200</u> , <u>400</u>)
< Table 3B		NA	minimum(S-176+ <u>100</u> , S-177+ <u>100</u> , <u>300</u>)
Criteria for S-177 only applies when gate is fully open for 24 hours			

TABLE 4B: (same as Table 2B and Table 3B): Monthly Median S18C HW Stages (POR 1978-2015)

Month	Monthly Median S-18 HW Stage
January	2.2 feet, NGVD
February	2.0 feet, NGVD
March	2.0 feet, NGVD
April	1.8 feet, NGVD
May	2.0 feet, NGVD
June	2.3 feet, NGVD
July	2.4 feet, NGVD
August	2.4 feet, NGVD
September	2.5 feet, NGVD
October	2.5 feet, NGVD
November	2.3 feet, NGVD
December	2.2 feet, NGVD

Within these operational ranges, S-197 gates may be adjusted to maintain the daily average flow rates and stages within the appropriate and corresponding ranges. If a flow or stage is outside of the corresponding range for more than one day (24 hour average) then the appropriate gate change will be made no later than the next working day.

Water managers may use any or all of the four gates at S-197 to achieve the daily average flows prescribed by the stage ranges while, when possible keeping gate openings small enough to prevent manatee movement.

4.5 PRE-STORM, STORM/POST-STORM OPERATIONS

These operations remain unchanged from the 2012 Water Control Plan, Table 7-6.

4.6 OPERATIONAL FLEXIBILITY, OBJECTIVES AND CONSTRAINTS (ALL FOUR OPERATIONAL CONDITIONS):

The following areas have been identified to have some uncertainties which may require some additional operational flexibilities:

- Operational range of L-30 may be adjusted by +/- 0.2 ft
- Operational range for S-338 may be adjusted by +/- 0.2 ft
- Operational range for S-194 may be adjusted +/- 0.2 ft

- Operational range for S-196 may be adjusted +/- 0.2 ft
- During the period when pumping at S-332B, S-332C, S-332D combined is restricted to less than 1,125 cfs total (up to 325 cfs may not be available during C-111 SD construction) due to the operational restrictions associated with the RPA targets of the 2016 ERTTP BO or maintenance/repair issues which result in reduced pump capacity or a combination of both, the operational range for S-176 may be lowered 0.2 feet from the operating range of 4.75 to 5.0 (the adjusted lower limit of S-176 HW is 4.55).
- During the period when pumping at S-199 and S-200 combined is restricted to less than 300 cfs total due to the operational restrictions associated with the RPA targets of the 2009 C-111 Spreader Canal Western Project BO and/or 2016 ERTTP BO or maintenance/repair issues which result in reduced pump capacity, the operational range for S-177 may be lowered 0.2 ft from the operating range of 3.6 to 4.2 (the adjusted lower limit of S-177 HW is 3.4 ft, NGVD).
- During the period when pumping at S-357 is limited to 250 cfs due to construction within the 8.5 SMA detention area then the operational range for L-31N may be lowered by 0.2 ft and S-197 may be used per the criteria in Table 3A regardless of the current operational condition.
 - G-3273 will be constrained to 7.0 ft, NGVD
- Operational flexibility for S-357 and S-357N is included within the 8.5 SMA test operations which includes adjustments from +/- 0.2 to +/- 0.5 ft after the initial + 0.5 ft change.

4.7 ADDITIONAL OPERATIONAL FLEXIBILITY, OBJECTIVES AND CONSTRAINTS (ALL FOUR OPERATIONAL CONDITIONS):

The purpose of this flexibility is to allow for adaptive management to provide a rapid response to unpredicted extreme weather conditions such as but not limited to: sub-tropical or tropical storms that produce 8 inches of rainfall within 5 days; 15 days of water levels above ground in Las Palmas community (8.5 SMA) as measured at LPG-2 with no rainfall over 8.5 SMA; or reduced pumping capacities (one or multiple pump stations are out of service) along L-31N and C-111 canals during flood control operations.

- S-357 may be utilized to draw its headwater down to elevation 3.0 feet, NGVD to help facilitate C-358 and S-357N construction.

It is not expected that there will be a need to use these additional operational flexibilities frequently. However, if conditions occur similar to those experienced during the El Nino events of the 2015/2016 dry season these additional operational flexibilities may be used.

4.8 OBJECTIVES

Increment 1.1/1.2 will extend until implementation of Increment 2, which requires that C-111 South Dade project features are constructed to enable operation of the NDA, required real estate interest are acquired along the L-29 Canal, and development and NEPA assessment of the operational criteria to support Increment 2. During this period of up to three years, the Increment 1/1.1/1.2 criteria will have to respond to considerable variations in weather, flows, stages, and structural conditions including the construction of minor and major operational features. To do so effectively, considerable operational flexibility was incorporated into the operational criteria for each of the four operational conditions. Experience with sustained lower operational ranges in the L-31N Canal from G-211 to S-176 and in the C-111 Canal from several short (less than three days) pre-storm operations and the recent longer (90 days) “*Temporary Emergency Deviation to Alleviate High Water Levels in Water Conservation Area 3A (WCA-3A) by Lifting the L-29 Borrow Canal Constraint between S-333 and S-334*” has shown that with the existing infrastructure, including incomplete features of the C-111 South Dade and MWD projects (C-358, S-357N, 8.5 SMA Detention Cell, and NDA), operational constraints are necessary to continue increased inflows to ENP (compared to the 2012 WCP) while maintaining the authorized flood mitigation for the 8.5 SMA. It has been demonstrated that the below conditions are necessary to provide most of the required flood mitigation for the 8.5 SMA prior to operation of the NDA:

- A. Lower water levels in the L-31N canal from G-211 to S-331
- B. G-3273 constrained to below 7.2 FT, NGVD
- C. Limited operation of S-357 to alleviate the undesirable effects of return seepage from the 8.5 SMA Detention Cell on water levels and recession rates within the southwest corner of the 8.5 SMA.

It has also been demonstrated that along the L-31N Canal reach, operation of the SDA has been able to maintain the hydraulic ridge and effectively hold stages in eastern ENP higher, while also simultaneously maintaining lower L-31N Canal levels to prevent or reduce seepage under the L-31N. This has been observed during recent operations. Both operational experience and modeling conducted under the 2015-2016 SFWMD South Dade Investigation study show that operational levels within the L-31N and C-111 Canals need to transition up (become higher) as conditions become dry (reducing availability of water to maintain the hydraulic ridge within the NDA/SDA). An abrupt shut down of S-332B, S-332C, and S-332D when water levels decline in the early dry season below the flood control level causes flow to Taylor Slough from S-332D to end abruptly, undesirable recession rates in ENP and undesirable seepage to the east. The following bullets describe objectives that the additional operational flexibility will be used to meet and criteria to ensure that the use of the operational flexibility does not have unintended impacts:

- **When WCA-3A is in Zone A of the WCA-3A Regulation Schedule Use Upstream Discharges to Tide to Reduce Inflows.** The operational flexibility included in the 2012 WCP will continue to be used to increase the delivery of water to NESRS, while also continuing to use existing ERTTP operational flexibility to reduce inflows into WCA-3A by discharging water to tide as required to moderate the use of Column 2 deliveries to the

SDCS. This includes short-term holding of additional water in WCA-2A to provide more opportunity to discharge excess water to tide through S-38/S-34.

- **Supplemental water deliveries to Taylor Slough, Florida Bay, and Manatee Bay.** With Florida Bay still recovering from the 2015 hyper-salinity event, an additional objective of this Operational Strategy will be to provide sustained/enhanced flow to Taylor Slough, Florida Bay, and Manatee Bay. With the regional water availability currently above average, it is expected that there will be sufficient excess water within the upstream WCAs to supply S-332C and S-332D during most of the 2016 to 2015 dry season. This will be done by delivering water from WCA-3A and distributing it south, away from the Contract 8 construction footprint. The volume supplied will be limited to 250 cfs or less (measured at S-337 or S-334) supplied to Taylor Slough to reduce water supply impacts. This delivery is only available while WCA-3A three gage average is above 8.0 feet NGVD in April and May and above 8.5 ft, NGVD in all other months.
- **Maintain Operational Flexibility of Remaining Structures in Miami-Dade County.** The SFWMD retains its authority to lower the operational ranges of the remaining structures in eastern Miami-Dade County in response to rain, direct flows from Increment 1.1/1.2 operations, and increased seepage from Increment 1.1/1.2 Operations. These structures include all structures not listed in Table 7-5 of the E RTP (April 2012). Specific structures included are S-148, S-21, S-165, S-21A, S-167, S-179, S-20F, and S-178.

4.9 WATER SUPPLY OPERATIONS

Consistent with the 2015 G-3273 Constraint Relaxation/S-356 Field Test and S-357N Operational Strategy, no changes to water supply operations are proposed. It is anticipated that water supply deliveries to the SDCS will not be needed when S-356 is pumping. If S-356 is pumping and S-334 and/or S-335 are to be utilized to deliver water supply to SDCS, then S-356 will stop pumping.

4.10 HYDRAULIC TESTING FOR DETENTION AREAS

During Increment 1.1/1.2, there may also be hydraulic testing to support analyses undertaken to define the performance of Increment 1.1/1.2. Based on preliminary analysis by the SFWMD, the historical flow data for periods with low rainfall has consistently shown that, in absence of the operation of the C-111 Spreader Canal Western Project S-200 pump station, approximately half of the water pumped into the S-332D Detention Area flows as groundwater to the C-111 Canal. Hydraulic testing may include the use of S-332B North (pumps to NDA), S-332B (pumps to Southern Detention Area, or SDA), S-332C (pumps to SDA), and S-332D, as well as the C-111 Spreader Canal Western Project (C-111SC) S-199 and S-200 pump stations (currently operated by SFWMD) and all associated detention areas. The operational levels allowed by Increment 1.1/1.2 provide sufficient flexibility for the proposed hydraulic testing.

Hydraulic testing for both the L-31N and C-111 should not exceed one month duration. Hydraulic testing of the L-31N Canal should not lower the canal below the water supply level of 4.0 feet NGVD. Hydraulic testing of the C-111 Canal should not lower the canal below the water supply level of 3.0 feet NGVD.

4.11 OPERATIONAL STRATEGY FOR 8.5 SQUARE MILE AREA

During Increment 1.1/1.2, the 8.5 Square Mile Area (8.5 SMA) structures (S-357) and Canals (C-357, C-358) will be managed to provide the authorized flood mitigation.

During Increment 1.1/1.2, S-331 will be used to 1) provide flood risk management for the lands located along the east side of the L-31N Canal; 2) convey excess water from WCA-3A to the C-111 Detention Areas and the C-111 Canal as required by this field test; 3) provide water supply to Taylor Slough, the L-31N, and C-111 Canals; and 4) act as a partial or complete replacement to S-357 should mechanical, permitting issues or seepage impacts limit or preclude the use of S-357.

The operational criteria in the conditions provide the starting criteria and ranges for development of the final operating criteria. Testing of criteria will begin once all of the 8.5 SMA and Contract 8 and 8A construction is completed.

The 2012 Water Control Plan does not contain water management operating criteria for the planned gated culvert (S-357N) located in the 8.5 SMA upstream of S-357, at the intersection of C-357 and the newly constructed seepage collection canal (C-358). The 2012 Design Refinement for the 8.5 SMA Environmental Assessment did not address water management operating criteria for S-357N or C-358 and stated that all gates would be in the closed position until a new operational protocol is developed for S-357N as part of the MWD Project.

The testing protocol for S-357N during the Increment 1.1/1.2 field test is designed to establish the operating criteria for S-357N. A newly installed water level monitoring gage (with telemetry) upstream of S-357N will be observed during S-357 pumping. The testing protocol for S-357N will be an iterative approach consisting of 4 to 5 weeks of gate changes during the wet season. The S-357N gate changes will be meant to test the hydrologic response of the system to minor adjustments in operations at S-357N. S-357N consists of 3 box type gated concrete control structures. Each structure will be equipped with a manually operated double leaf slide gate system. The double leaf slide gate system was designed to accommodate variable flow regimes: (1) weir flows to by lowering the top gate; (2) orifice flows by raising the lower gate; or (3) submerged or un-submerged, uncontrolled flows by raising both the top and bottom gates above the top (crown) of the culvert.

Following completion of the C-111 South Dade Project NDA and modification of the outlet weirs for the 8.5 SMA detention area, the 8.5 SMA detention area will discharge directly into the NDA; these features are currently scheduled for completion in Fiscal Year 2017, concurrent with the planned duration of the Increment 1.1/1.2 field test. Interim water management operating criteria for the planned 8.5 SMA gated culvert S-357N will be implemented in conjunction with Increment 1.1/1.2, including potential operational adjustments if the C-111 South Dade Project NDA is available during the field test.

Operation Limit for this Test Phase

During non-test period, the operation will revert to the current water control plan (e.g. E RTP). The following operational limits will be maintained or relaxed during test phases:

- Increase limit to two pumps (up to 250 cfs); to allow testing of C-358 and S-357N.
- Stage limit of 10.0 feet at southern end of the 8.5 SMA Detention Area (LPDC1) (unchanged from 2012 Water Control Plan);
- Allow S-357 Stage range to be lowered from 6.0 – 5.5 to 5.5 – 5.0 if there is insufficient water for sustained pumping with two units and keep LPC1 above 5.0. It is preferred that sustained pumping with two units (up to 250 cfs) can be achieved while not lowering the C-357 below 5.0. If this flexibility is used the stage in the L-31N between G-211 and S-331 should be allowed to rise to the top half of the operation range. Operational flexibility under wet conditions could allow S-357 Stage range to be lowered to 5.0 to 3.0 feet.
- During testing phases S-331 HW operational range will lower as the stage at LPG2 rises as long as there is downstream capacity. Providing capacity for the operational ranges prescribed below will be a higher priority than regulatory releases from WCA-3A to S-331.
 - (1) When $6.0 < \text{LPG2} < 6.5$ then S331 HW will be maintained between 4.5 and 4.0
 - (2) When $5.5 < \text{LPG2} < 6.0$ then S331 HW will be maintained between 5.0 and 4.5.
 - (3) When $\text{LPG2} < 5.5$ then S331 HW will be maintained between 6.0 and 5.0.
- Limit sustained flow from S-357N to less than 200 cfs (40 percent of the total capacity of S-357). It is generally expected that S-357N discharge will be less than 100 cfs.

When there is sufficient excess water for sustained pumping with one to two units at S-357 (e.g. 75, 125, 200, or 250) a test phase may be initiated. Each Test Phase should be at least four weeks in duration to gain experience over a representative range of conditions. A Test Phase Form summarizing the criteria, desired pumping rates, constraints, desired duration, initial setting for S-357N, strategy for adjusting S-357N in response to changes, and the operational monitoring required will be prepared for each test in advance. During conditions with sufficient excess water at least one test will try to achieve sustained pumping with two units at S-357 (either two diesel pump units for a total discharge rate of about 250 cfs, or one diesel pump unit and one electric pump for a total discharge of about 200 cfs).

Test Phases should be designed and executed to achieve the required groundwater control (prescribed levels above) and to prevent daily average discharges through S-357N exceeding 200 cfs (40% of S-357 total capacity).

Example of a Test Phase

During conditions with sufficient excess water at least one test will try to achieve sustained pumping with two units at S-357 (either two diesel pump units for a total discharge rate of about 250 cfs or one diesel pump unit and one electric pump for a total discharge of about 200 cfs). The duration of this test will be four to six weeks. The water manager will determine the sustainable pumping rate and try to keep it unchanged. However, pumping between 200 and 250 cfs is allowed. Pumping should be reduced from 250 to 200 if the C-357 stage falls below 5.7 for more than 24 hours. If the C-357 canal stage falls below 5.5 feet for more than 24 hours, then S-357 should be reduced (e.g. to 200 cfs, or 125 cfs, or 75 cfs) to allow the C-357 canal stage to rise to above 5.7, and this reduced pumping rate should be maintained until water levels rise enough to support the targeted pumping rate.

The three upper (weir) gates at S-357N should be opened (lowered) one foot from about 6.5 feet to 5.5 feet. These opening are expected to result in a sustained discharge of about 80 cfs. When sufficiently steady conditions occur, flow measurements at S-357 should be scheduled to the extent they are required to collect enough data to develop a refined flow equation for S-357N.

If the discharge from S-357N is insufficient to provide water levels that meet (or are expected to meet) the prescribed levels above criteria within three days, then the openings at S-357N should be increased by either 0.5 or 1.0 feet based on what is expected to achieve compliance with the prescribed levels within three days. Conversely, if the S-357N discharges are resulting in an undesirable/untenable drawdown then the S-357N opening should be reduced by raising the weirs in 0.2 feet increments. Subsequent to the initial changes, based upon discussions with SFWMD and ENP, the Corps shall determine through iterative changes fixed weir elevations which will result in adequate levels.

TABLE 5: HYDRO-METEOROLOGIC MONITORING LOCATIONS

<u>Feature</u>	<u>Parameter</u>	<u>Purpose</u>
S-12A	HW, TW, Q	Flow volume
S-12B	HW, TW, Q	Flow volume
S-12C	HW, TW, Q	Flow volume
S-12D	HW, TW, Q, Precipitation	Flow volume
S-343A	HW, TW, Q	Flow volume
S-343B	HW, TW, Q	Flow volume
S-344	HW, TW, Q	Flow volume
SRS1	Stage	Depth, duration, recession
3B-71	Stage	Depth, duration, recession
S-151	HW, TW, Q	Flow volume (to L-31N/S-356 or Taylor Slough)
S-337	HW, TW, Q	Flow volume (to L-31N/S-356 or Taylor Slough)
S-335	HW, TW, Q	Flow volume (to L-31N/S-356 or Taylor Slough)
S-333	HW, TW, Q	Canal level, flow volume
S-334	HW, TW, Q	Canal level, flow volume
S-336	HW, TW, Q	Canal level, flow volume
S-355A	HW, TW, Q	Canal level, flow volume
S-355B	HW, TW, Q	Canal level, flow volume
S-356	HW, TW, Q	Canal level, flow volume
G-3273	Stage	Depth, duration, recession
S-357N	HW, Q	Canal level, flow volume
S-357	HW, TW, Q	Canal level, flow volume
S-331	HW, TW, Q, Precipitation	Canal level, flow volume
S-338	HW, TW, Q	Canal level, flow volume
S-332B	HW, TW, Q	Canal level, flow volume
S-332C	HW, TW, Q	Canal level, flow volume
S-194	HW, TW, Q	Canal level, flow volume
S-196	HW, TW, Q	Canal level, flow volume
S-332D	HW, TW, Q	Canal level, flow volume

S-328	HW, TW, Q	Flow volume
RG4	Stage	Depth, duration, recession
NTS18	Stage	Depth, duration, recession
S-332DX1	HW, TW, Q	Depth, duration, recession, flow volume
G-3574	Stage	Depth, duration, recession
G-3576	Stage	Depth, duration, recession
G-3577	Stage	Depth, duration, recession
G-3578	Stage	Depth, duration, recession
G-3272	Stage	Depth, duration, recession
G-596	Stage	Depth, duration, recession
G-3626	Stage	Depth, duration, recession
G-3627	Stage	Depth, duration, recession
<u>Feature</u>	<u>Parameter</u>	<u>Purpose</u>
G-3628	Stage	Depth, duration, recession
G-3437	Stage	Depth, duration, recession
Angel's Well	Stage	Depth, duration, recession
LPG1	Stage	Depth, duration, recession
LPG2	Stage	Depth, duration, recession
LPG3	Stage	Depth, duration, recession
LPG5	Stage	Depth, duration, recession
LPG7	Stage	Depth, duration, recession
LPG8	Stage	Depth, duration, recession
LPG11	Stage	Depth, duration, recession
LPG12	Stage	Depth, duration, recession
LPG13	Stage	Depth, duration, recession
LPG14	Stage	Depth, duration, recession
LPG15	Stage	Depth, duration, recession
NE1	Stage	Depth, duration, recession
NE2	Stage	Depth, duration, recession
NE4	Stage	Depth, duration, recession
G-3557	Stage	Depth, duration, recession
G-3558	Stage	Determine duration, recession rates
S-177	HW, TW, Q	Canal level, flow volume
S-178	TW, Q	Canal level, flow volume
S-18C	HW, TW, Q, Precipitation	Canal level, flow volume
S-197	Q	flow volume
S-357N	Q	flow volume
G-613	Stage	Depth, duration, recession
G-864A	Stage	Depth, duration, recession
G-3336	Stage	Depth, duration, recession
G-3338	Stage	Depth, duration, recession
G-3350	Stage	Depth, duration, recession
G-3355	Stage	Depth, duration, recession

G-3620	Stage	Depth, duration, recession
G-3901	Stage	Depth, duration, recession
G-789	Stage	Depth, duration, recession
ENP-TSB	Stage	Depth, duration, recession
C-358	Stage	Canal level
G-211	HW, TW, Q	Canal level, flow volume
S-199	HW, TW, Q	Canal level, flow volume
S-200	HW, TW, Q	Canal level, flow volume

Notes: HW– headwater stage; TW– tailwater stage; Q– discharge (cfs)

Figure 1: WCA-3A Regulation Schedule with Increment 1 Action Line

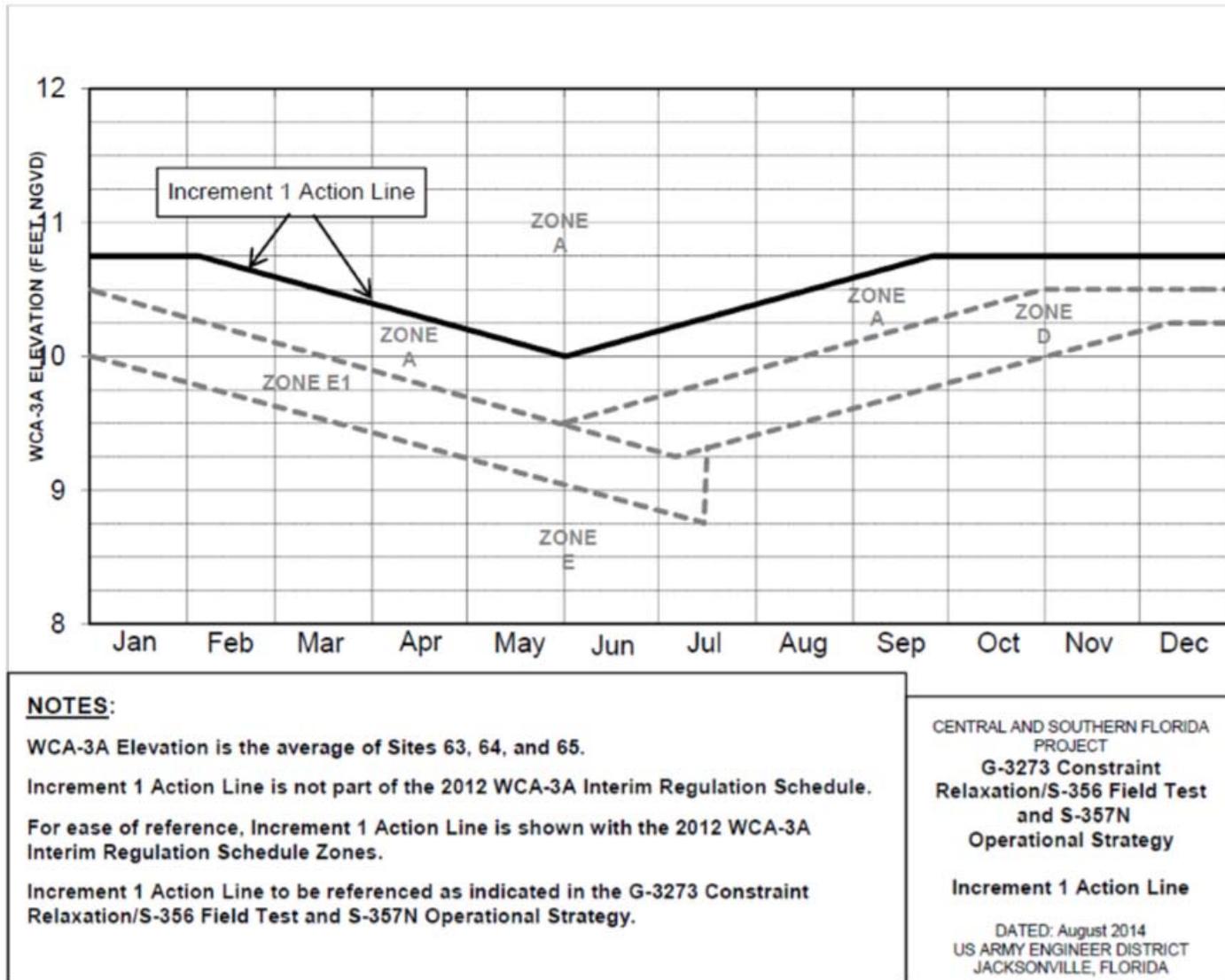
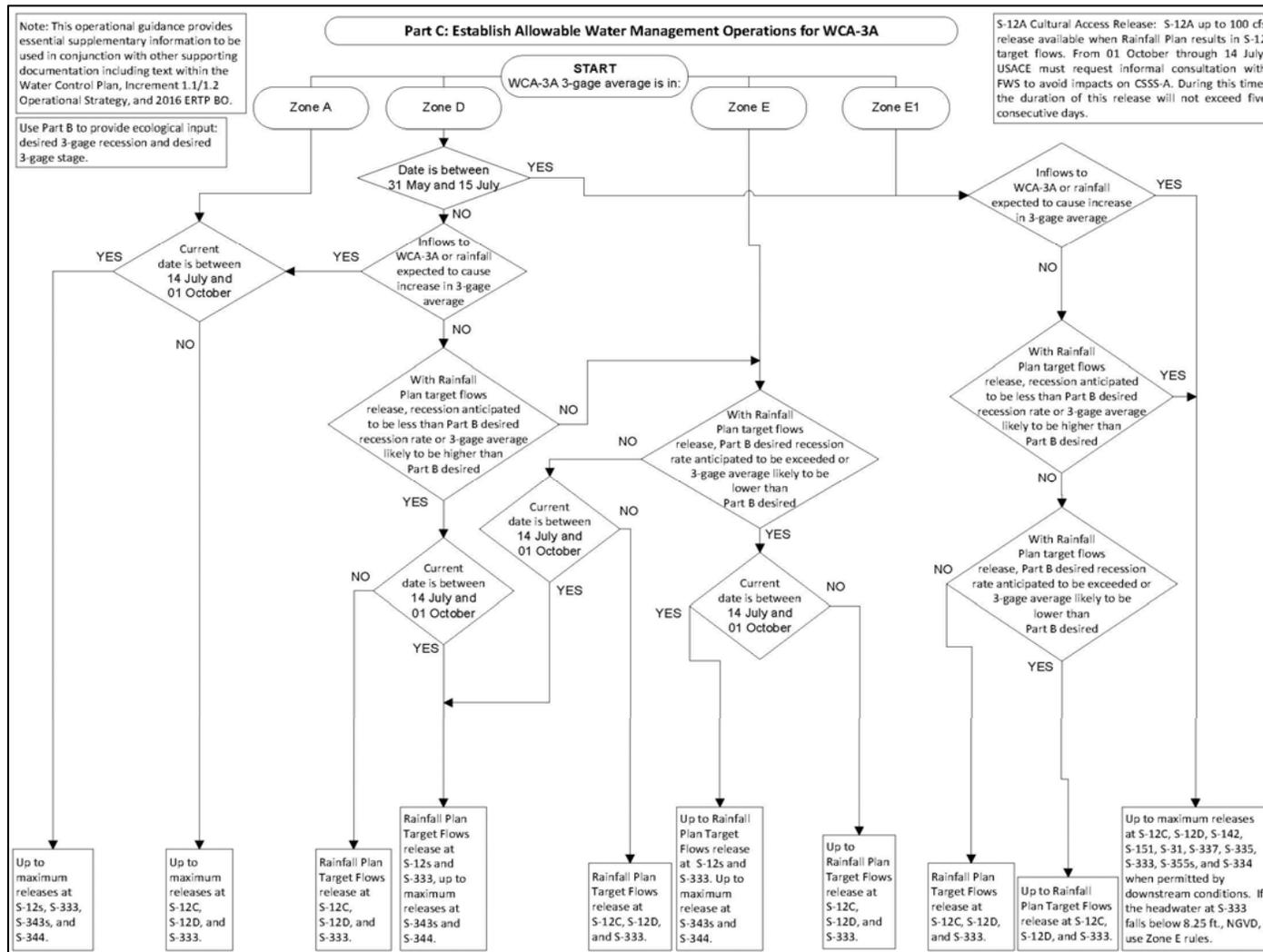


Figure 2: WCA-3A Regulation Schedule Revised Figure 7-5C



Note: S-12A and S-12B operations in October and November are subject to WCA-3A high water strategy (please refer to Table 1)

Figure 3: Hydro-meteorologic Monitoring Location

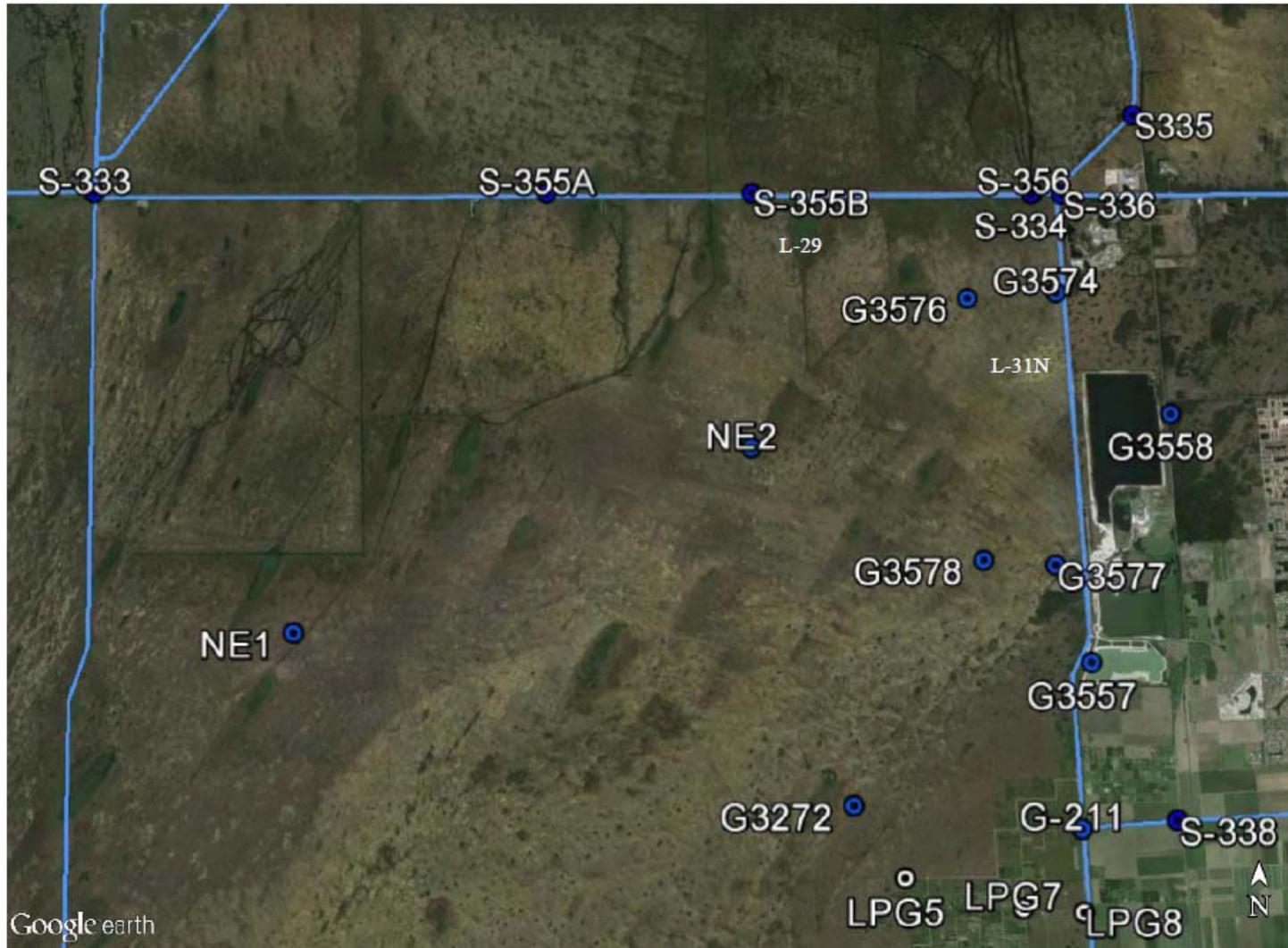


Figure 4: Hydro-meteorologic Monitoring Location (continued)

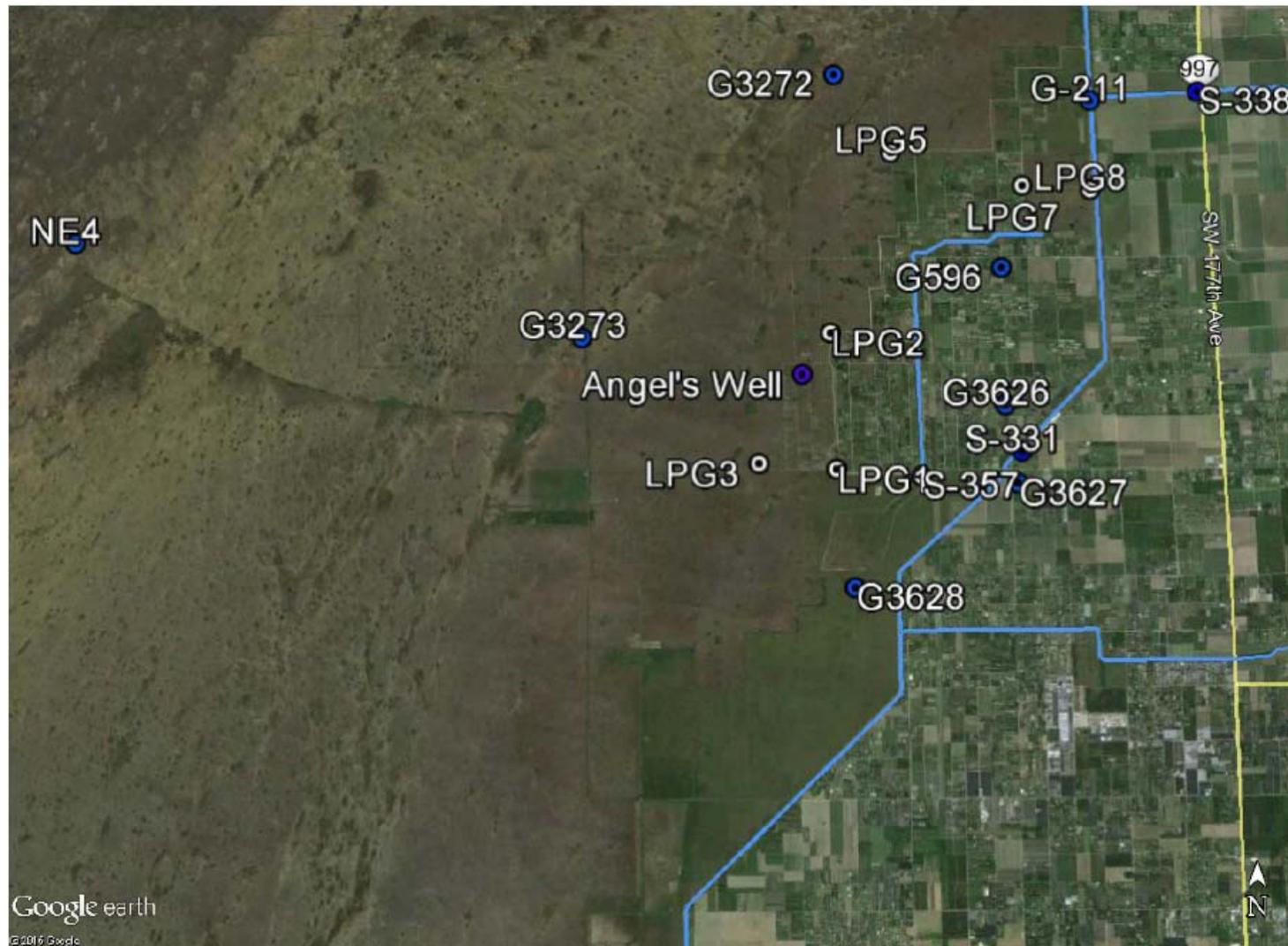


Figure 5: Hydro-meteorologic Monitoring Location (continued)

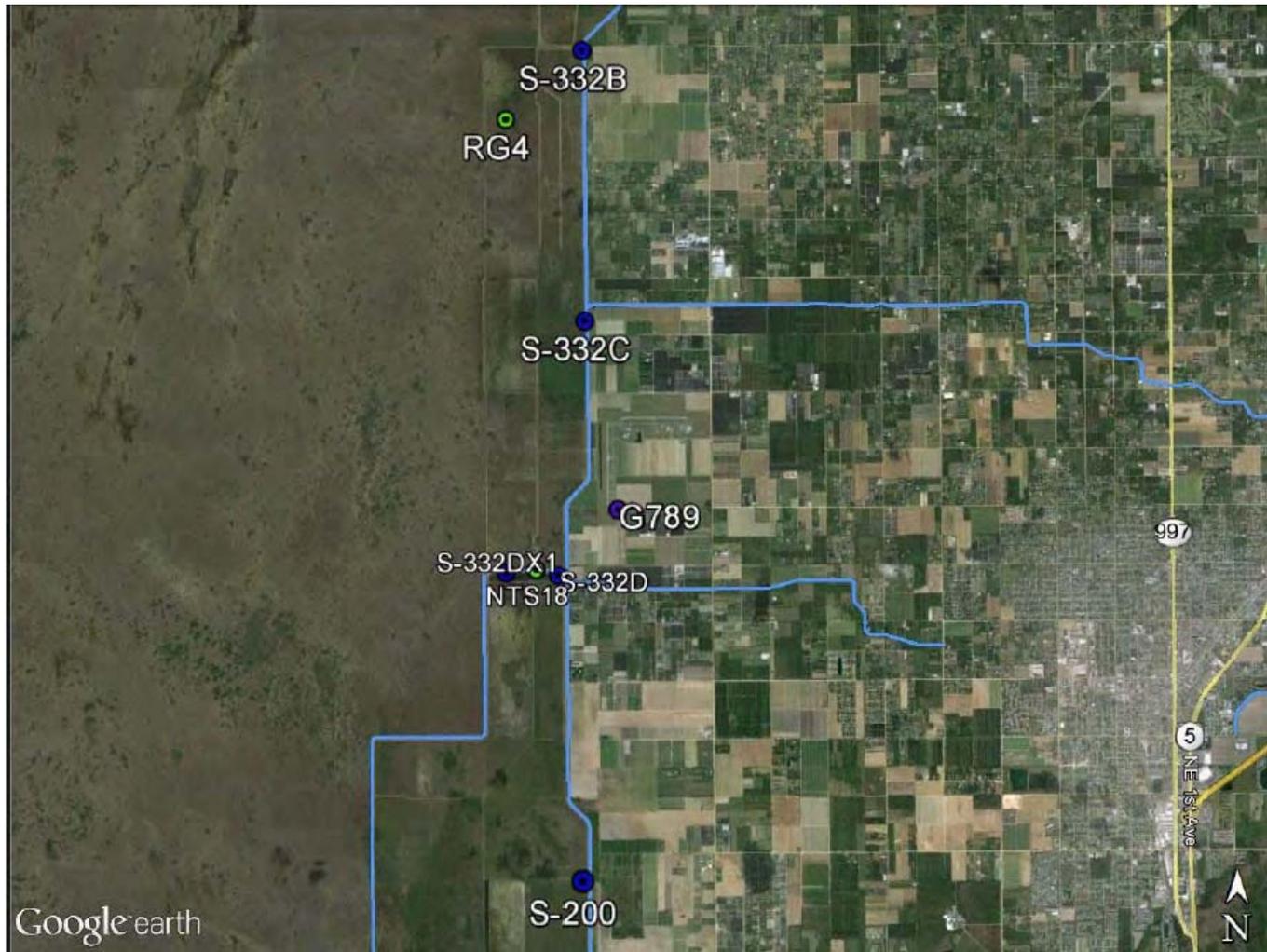


Figure 6: Hydro-meteorologic Monitoring Locations (continued)

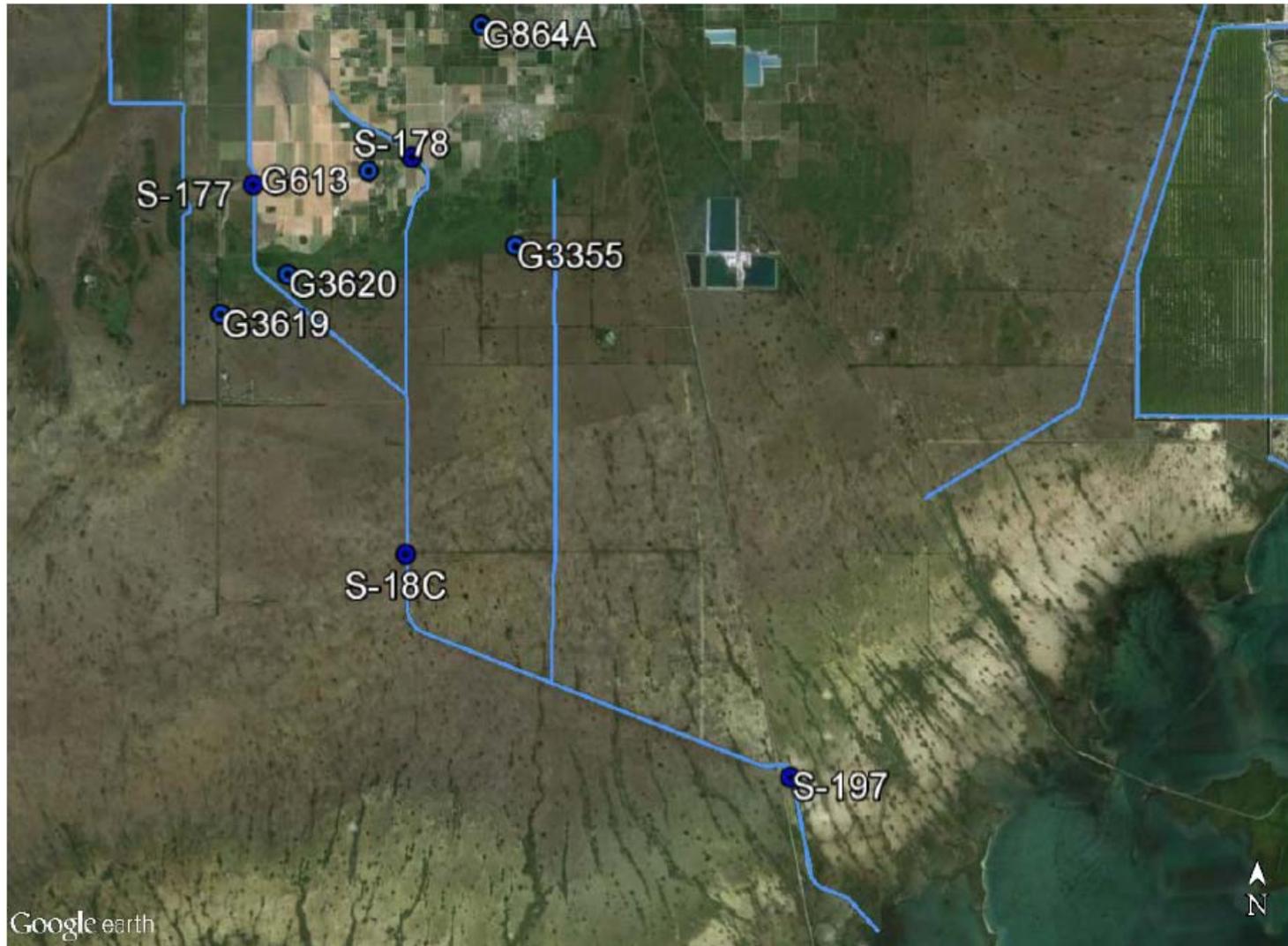
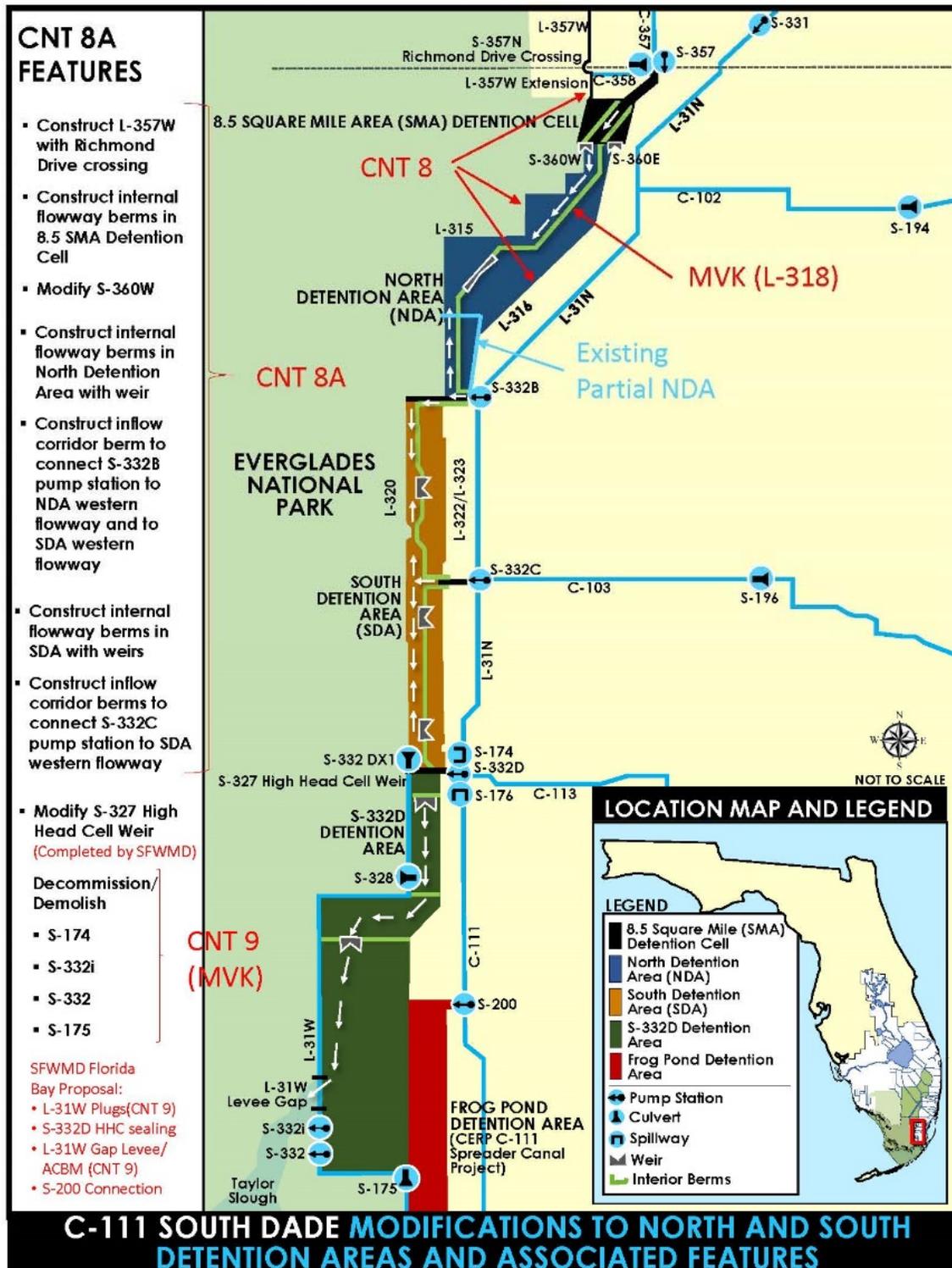


Figure 7: C-111 South Dade Contracts 8 and 8A Features



ANNEX 1

Appendix F - ERTP-2016 Proposed Operational Scenario

Based on evaluation of the regional modeling conducted in support of the ERTP-2016 consultation, the following components [(I) through (V)] are included in the proposed operational scenario. The proposed operational scenario includes components selected from the following modeling scenarios: Round 1 Scenario B (R1B); Round 2 Scenario H (R2H); and the Round 2 sensitivity scenarios used to assess performance under a potential MWD Increment 2 scenario (Scenarios INCR2B, INCR2B2, INCR2H, and INCR2H2).

Component (I) and component (II) of the operational scenario require modifications to the 2012 Water Control Plan (2012 WCP). Modifications will be implemented by the Corps through a planned deviation to the 2012 WCP following completion of the requisite NEPA and approvals, currently anticipated in October 2016.

- I. WCA-3A outlet structures S-12A, S-12B, S-343A, S-343B, and S-344 will close on 01 October and will remain closed through 14 July, except under the following conditions (A and B) when additional WCA-3A discharges from S-12A and/or S-12B are necessary to limit the duration of WCA-3A high water stages:
 - A. S-12A and/or S-12B will be conditionally opened during October under the following conditions:
 1. WCA-3A stage on 30 SEP > 10.50 feet NGVD; OR
 2. WCA-3A stage projected to rise above 10.75 feet NGVD (IOP Zone A) during October, based on consideration of projected inflows including direct rainfall.

S-12A and/or S-12B will be conditionally closed when the WCA-3A stage falls below 10.25 feet, NGVD, OR on 01 November, whichever comes first.

- B. S-12B will be conditionally opened during November under the following conditions:
 1. WCA-3A stage on 31 OCT > 11.00 feet NGVD; OR
 2. WCA-3A stage projected to rise above 11.25 feet NGVD during November, based on consideration of projected inflows including direct rainfall.

S-12B will be closed when the WCA-3A stage falls below 10.75 feet NGVD, OR on 01 December, whichever comes first.

Following completion of the requisite NEPA and approvals, the revised seasonal closure periods and “high water strategy” criteria specified above would supersede the seasonal closure periods identified in the 2012 WCP for ERTP; the previous ERTP seasonal closure requirements specified in the 2012 WCP are 01 November through 14 July for S-12A, S-343A, S-343B, and S-344, and 01 January through 14 July for S-12B. Based on consideration of pertinent new information and/or additional technical analyses, the “high water strategy” criteria may be further adjusted prior to final implementation through an update to the WCP or a planned deviation.

All other operational criteria for S-12A, S-12B, S-12C, and S-12D will remain unchanged from the operations specified in the 2012 WCP, including the S-12A cultural access release of up to 100 cfs. S-12A up to 100 cfs release may only be requested by the Miccosukee Tribe of Indians when the Tribe is unable to access cultural areas within ENP. Also unchanged from the 2012 WCP criteria, if the headwater elevation at S-12A or S-12B is greater than 11.0 feet NGVD, the corresponding S-12 structure gate(s) may be opened an amount only enough to stop overtopping of gates; if the S-12A and/or S-12B gates are opened under this condition, that gates would be closed when the corresponding headwater elevations falls below 10.75 feet NGVD, AND the WCA-3A 3AS3W1 monitoring stage is below 11.00 feet NGVD.

The default operational criteria for closure of the WCA-3A outlet structures S-12A, S-12B, S-343A, S-343B, and S-344 between 01 October and 14 July were included in the R1B modeling scenario. The “high water strategy” criteria were developed by the Corps to mitigate for the increased frequency and duration of WCA-3A high water stages in excess of the 90th percentile of historical water stages, compared to the 2012 WCP/ERTP, associated with these expanded closure periods; the 90th percentile water level varies seasonally and reaches a maximum of 11.5 feet NGVD during the month of October. Levee safety concerns and the risk of overtopping to the perimeter levees are exacerbated with higher water levels in WCA-3A and are most vulnerable during the later parts of the wet season (July, August, September and early October), which coincides with the height of the hurricane season. The results of the Corps’ Baseline and Modification Modeling (BAMM) regional flood routing study are expected to be available in late 2017 to provide further technical analysis and quantification of potential risk to WCA levees and water control structures. Pending completion of the BAMM regional flood routing study, the Corps will carefully monitor trends in WCA-3A water elevations and weather forecasts to assess any potential risks to health and safety posed by wind and waves caused by storms and hurricanes, as informed by Appendix A-5 to the 2011 ERTF Final Environmental Impact Statement.

- II. The following South Dade Conveyance System (SDCS) water control structure operations will supersede the operations specified in the 2012 WCP. All other operational criteria for the SDCS water control structures shall remain unchanged from the operations specified in the 2012 WCP. The operational criteria for the water control structures listed within section (II) were not previously modified under the MWD Increment 1 temporary planned deviation to the 2012 WCP. Based on consideration of pertinent new information and/or additional technical analyses identified during NEPA, the operational criteria for these SDCS water control structures may be further adjusted prior to final implementation through an update to the WCP or a planned deviation. The operational criteria indicated below were included in the R2H modeling scenario.
 - A. S-338
 - 1. During CSSS nesting window from 16 February through 31 July: open 5.3 feet NGVD / close 4.9 feet NGVD (operations are independent of whether other SDCS operations are under Column 1 or Column 2 mode of operations);
 - 2. SDCS Column 2 mode of operations from 01 August through 15 February: open 5.4 feet NGVD / close 5.0 feet NGVD;

3. SDCS Column 1 mode of operations from 01 August through 15 February: open 5.8 feet NGVD / close 5.5 feet NGVD (unchanged from 2012 WCP).
- B. S-332B and S-332C
1. During CSSS nesting window from 15 February through 31 July: open 5.0 feet NGVD / close 4.7 feet NGVD (open/close triggers unchanged from 2012 WCP);
 2. Outside of CSSS nesting window from 01 August through 31 December: open 4.5 feet NGVD / close 4.2 feet NGVD (open/close triggers are lowered 0.5 feet from 2012 WCP Column 1 operations; operations are independent of whether other SDCS operations are under Column 1 or Column 2 mode of operations);
 3. Prior to the CSSS nesting window, operations will transition linearly from criteria (2) to criteria (1) during the 6-week period from 31 December through 15 February;
 4. In order to promote gradual transitions within the adjacent ENP wetlands, the electric pump or the first diesel pump unit at S-332BN (up to 125 cfs from S-332B to Northern Detention Area), S-332B (up to 125 cfs from S-332B to Southern Detention Area), and S-332C (up to 125 cfs) may be operated using the following trigger criteria:
 - i. During CSSS nesting window from 15 February through 31 July: open 4.7 feet NGVD / close 4.5 feet NGVD (operational guidelines unchanged from 2012 WCP, with close trigger matching 2012 WCP Column 2 criteria);
 - ii. Outside of CSSS nesting window from 01 August through 31 December: open 4.2 feet NGVD / close 4.0 feet NGVD (operations are independent of whether other SDCS operations are under Column 1 or Column 2 mode of operations);
 - iii. Prior to the CSSS nesting window, operations will transition linearly from criteria (ii) to criteria (i) during the 6-week period from 31 December through 15 February.
- C. S-332D
1. During CSSS nesting window From 15 February through 31 July: open 4.85 feet NGVD / close 4.65 feet NGVD (open/close triggers unchanged from 2012 WCP);
 2. Outside of CSSS nesting window from 01 August through 31 December: open 4.35 feet NGVD / close 4.15 feet NGVD (open/close triggers are lowered 0.5 feet from 2012 WCP Column 1 operations; operations are independent of whether other SDCS operations are under Column 1 or Column 2 mode of operations);
 3. Prior to the CSSS nesting window, operations will transition linearly from criteria (2) to criteria (1) during the 6-week period from 31 December through 15 February;
 4. S-332D Discharge limitations to Taylor Slough (unchanged from 2012 WCP):
 - i. Deliver up to 500 cfs from 15 July (or the end of the breeding season, as confirmed by FWS) through 30 November; deliver up to 325 cfs from 01 December through 31 January; and deliver up to 250 cfs from 1 February through 14 July;
 - ii. S-332DX1 may be used to re-direct a portion of S-332 pump discharges into the Southern Detention Area, consistent with seasonal constraints on water deliveries to Taylor Slough under (i);

5. In order to promote gradual transitions within the adjacent ENP Taylor Slough wetlands, the first diesel pump unit at S-332D will be operated using the following trigger criteria:
 - i. During CSSS nesting window from 15 February through 31 July: open 4.65 feet NGVD / close 4.5 feet NGVD (operational guidelines unchanged from 2012 WCP, with open trigger set slightly lower than S-332B/S-332C (to facilitate S-332D priority) and close trigger matching 2012 WCP Column 2 criteria at S-332B/S-332C);
 - ii. Outside of CSSS nesting window from 01 August through 31 December: open 4.15 feet NGVD / close 4.0 feet NGVD (operations are independent of whether other SDCS operations are under Column 1 or Column 2 mode of operations);
 - iii. Prior to the CSSS nesting window, operations will transition linearly from criteria (ii) to criteria (i) during the 6-week period from 31 December through 15 February.

D. S-194 and S-196

1. During early CSSS nesting window from 16 February through 15 May: open 4.5 feet NGVD / close 4.0 feet NGVD (operations are independent of whether other SDCS operations are under Column 1 or Column 2 mode of operations);
2. During late CSSS nesting window from 01 June through 31 July: open 4.8 feet NGVD / close 4.3 feet NGVD (operations are independent of whether other SDCS operations are under Column 1 or Column 2 mode of operations);
3. Operations will transition from criteria (1) to criteria (2) during the 2-week period from 15 May through 01 June;
4. SDCS Column 2 mode of operations from 01 August through 15 February: open 4.8 feet NGVD / close 4.3 feet NGVD;
5. SDCS Column 1 mode of operations from 01 August through 15 February: open 5.5 feet NGVD / close 4.8 feet NGVD (unchanged from 2012 WCP).

E. S-176

1. SDCS Column 1 mode of operations: open 5.0 feet NGVD / close 4.75 feet NGVD (unchanged from 2012 WCP);
2. SDCS Column 2 mode of operations: open 4.9 feet NGVD / close 4.7 feet NGVD (unchanged from 2012 WCP);
3. September 01 through 31 December: S-176 may be opened to release up to an additional 200 cfs while maintaining C-111 Canal stages between 4.55 and 4.80 feet NGVD (operations are independent of whether other SDCS operations are under Column 1 or Column 2 mode of operations). Implementation details for these operations will be further developed concurrent with the requisite NEPA assessment.

F. S-177

1. SDCS Column 1 or Column 2 mode of operations: open 4.2 feet NGVD / close 3.6 feet NGVD (unchanged from 2012 WCP);
 2. September 01 through 31 December: S-177 may be opened to release up to an additional 200 cfs while maintaining C-111 Canal stages between 3.2 and 3.9 feet NGVD (operations are independent of whether other SDCS operations are under Column 1 or Column 2 mode of operations). Implementation details for these operations will be further developed concurrent with the requisite NEPA assessment.
- III. The USACE will also employ operational flexibility within the 2012 WCP, based on the guidelines listed below. The operational flexibility available to the Corps within the 2012 WCP was previously documented in the Corps' July 2015 Biological Assessment for ERTF-2016.
- A. When conditions allow, USACE will delay opening and/or implement early closure of S-12A, S-12B, S-343A, S-343B and S-344 structures beyond the required seasonal closure periods specified under component I (default closure period from 01 October through 14 July) to further limit flow into western Shark River Slough; the minimum required seasonal closure periods for these water control structures are specified under component I and summarized below:
 1. S-12A: Required closure period from 01 November through 14 July; required seasonal closure will be extended from 01 October through 14 July if the "high-water strategy" criteria specified under component I are not triggered;
 2. S-12B: Required closure period from 01 December through 14 July; required seasonal closure will be extended from 01 October through 14 July if the "high-water strategy" criteria specified under component I are not triggered;
 3. S-343A, S-343B, and S-344: Closed from 01 October through 14 July.
 - B. Discharge capacity from S-333 into NESRS will be maximized prior to utilization of the S-12 structures.
 - C. When flows through the S-12 structures are determined necessary by the WCA-3A Regulation Schedule and the Rainfall Plan, USACE will prioritize flow through the easternmost S-12 structures as capacity allows, in order to minimize flow through the S-12A and S-12B structures. This prioritization of the S-12 structures assumes that flows through the S-333 structure into NESRS are already at capacity or have reached an associated constraint.
 1. If additional releases from WCA-3A are required and S-333, S-12D and S-12C are already operated at capacity, then S-12B may be utilized for the required release.

2. If additional releases from WCA-3A are required and S-333, S-12D, S-12C, and S-12B are already operated at capacity, then S-12A may be utilized for the required release.
 3. Releases through the S-12A and S-12B structures will only occur outside their mandated closure periods, with the exception of when the headwater elevation at S-12A or S-12B is greater than 11.0 feet NGVD. Consistent with the 2012 WCP, under this condition, the corresponding S-12 structure gate(s) may be opened an amount only enough to stop overtopping of gates; if the S-12A and/or S-12B gates are opened under this condition, that gates would be closed when the corresponding headwater elevations falls below 10.75 feet NGVD, AND the WCA-3A 3AS3W1 monitoring stage is below 11.00 feet NGVD.
- D. Flexibility associated with preemptive releases will assist to maintain target stages within WCA-3A and allow for further flexibility in discharges through the S-12 and S-333 structures. Preemptive releases are used to create storage within WCA-3A when large adjustments to inflow into WCA-3A or large regional rainfall events are forecasted.
1. Preemptive release amounts are calculated based upon expected inflows into WCA- 3A from WCA-1/WCA-2 outlet structures (i.e. S-10s/S-11s) and/or forecasted regional rainfall events. When either of these events is predicted to occur, USACE may utilize the WCA-3A outlet structures to include the available S-12s and S-333 structures to create storage within WCA-3A; if S-12A and/or S-12B are closed based on the criteria listed under Component I, S-12A and/or S-12B would not be operated for preemptive releases.
 2. Discharges from WCA-3A will be discontinued as the weekly (or other interval) Rainfall Plan target flow calculations dictate. Implementation of preemptive releases will result in an accounting of the amount of water released in excess of the Rainfall Plan target flows.
- E. The order of S-332B, S-332C and S-332D pumping will be prioritized base on coordination with the FWS, SFWMD and ENP.
1. This flexibility will be used to promote an increased number of consecutive dry days within CSSS habitat during the nesting window as requested by FWS and to promote a 90-210 day discontinuous hydroperiod within CSSS habitat.
 2. Local rainfall patterns, antecedent conditions and operations will be discussed in real-time to determine pumping prioritization.
- IV. To further prevent westward flow of water into CSSS-A, the 2011 ERTF FEIS also included blocking of the Old Tamiami Trail Borrow Canal culvert between S-12C and S-12B, at the junction with the Shark Valley Tram Road. Authority to purchase, install, monitor and maintain this feature resides with the U.S. Department of the Interior (DOI). Due to potential effects on the WCA-3A discharge capacity (most notably during high water conditions) and concerns previously indicated by the Miccosukee Tribe, this action will be closely coordinated by DOI

with the Corps. The closure of the Old Tamiami Trail Borrow Canal culvert was included in all modeling scenarios, including R1B, R2H, INCR2B, INCR2B2, INCR2H, and INCR2H2. Closure of this structure is most critical during the mandated closure period for S-12A and S-12B to minimize any potential effects of S-12C and/or S-12D operations on water levels within the CSSS-A habitat area, to complement the closure of the culverts along the ENP Tram Road.

- V. The Corps has planned several steps to allow more water from WCA-3A to move to the east and under the Tamiami Trail Bridge into Shark River Slough including raising the maximum stage in the L-29 canal. To accomplish this, the Corps will develop and adopt water operations plan that allows the L-29 stage to be expeditiously raised. Starting with “Increment 1 Plus,” “Increment 2,” and the “Combined Operational Plan” (COP).
 - A. The Corps will proceed as scheduled for completing NEPA analysis on “Increment 1 Plus” (raising L-29 canal levels up to 7.8) and, as allowable by law, raising L-29 canal levels to 7.8 ft NGVD prior to March 1, 2017;
 - B. The Corps will proceed as scheduled for completing NEPA analysis on “Increment 2” NEPA (raising L-29 up to 8.5) and, as allowable by law, raising L-29 canal levels to 8.5 ft NGVD prior to March 1, 2018;
 - C. The Corps will proceed as scheduled for completing NEPA analysis on “COP” in 2019;
 - D. Upon conclusion of each NEPA, the Corps will promptly adjust water management operations.
- VI. The Corps will provide a strategy for pre-emptively operating structures in order to avoid the need for the high-water criteria openings of the S-12A/B. Discharges prior to October 1 will be aggressive enough to allow as much water to be moved towards the east as possible. Pre-emptive operations should strive to avoid S-12A/B openings in October and November, when practicable.

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PART 2 – INCREMENT 1 VERSUS INCREMENT 1.1/1.2 COMPARISON TABLE

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INCREMENT 1.0 VS. INCREMENT 1.1/1.2 COMPARISON TABLE

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.0	WCA-3A Interim Regulation Schedule	<p>WCA-3A Interim Regulation Schedule shown on <i>Figure 7-5A, Figure 7-5B, and Figure 7-5C.</i></p> <p>When in Zone A S-12s, S-333, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s open full, S-151 make discharges to the East Coast and ENP-SDCS as needed and make maximum allowable discharge when WCA-3B stage (Site 71) is below 8.5 feet, NGVD. S-343A&B and S-344, if non-nesting season (15 July through 31 October), make maximum allowable discharge if downstream conditions permit.</p> <p>When in Zone D S-12s, S-333, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. If S-333 is closed or discharging less than 28 percent of computed flow for SRS, S-12 must discharge at least 73 percent and up to 100 percent of the computed flow for SRS, if capacity is available. S-333 make water supply discharges to the East Coast and ENP-SDCS as needed, discharge Rainfall Plan target flow for S-333 when permitted by downstream conditions. S-151 makes water supply discharges to the East Coast and ENP-SDCS as needed. S-343A&B and S-344 normally closed in this Zone unless water is needed for environmental reasons.</p> <p>When in Zone E S-12s, S-333, S-151, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. S-333 make water supply discharges to the East Coast and ENP-SDCS as needed, discharge Rainfall Plan target flow for S-333 when permitted by downstream conditions. S-151 makes water supply discharges to the East Coast and ENP-SDCS as needed. S-343A&B and S-344 normally closed in this Zone unless water is needed for environmental reasons. The L-67A Borrow Canal stage (S-333 headwater) should not be drawn down below 7.5 feet, NGVD unless water is supplied from another source.</p> <p>When in Zone E1, make up to maximum practicable releases at S-12C, S-12D, S-142, S-151, S-31, S-337, S-335, S-333, S-355 A/B, and S-334 when permitted by downstream conditions. S-12s, S-333, S-151, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. Revert to Zone E rules if the FWS has determined that nesting for the CSSS-A has ended, or if the headwater at S-333 falls below 8.25 feet, NGVD.</p>	<p>WCA-3A Interim Regulation Schedule shown on <i>Figure 7-5A, Figure 7-5B, and Figure 7-5C.</i></p> <p>When in Zone A S-12s, S-333, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s open full, S-151 make discharges to the East Coast and ENP-SDCS as needed and make maximum allowable discharge when WCA-3B stage (Site 71) is below 8.5 feet, NGVD. S-343A&B and S-344, if non-nesting season (15 July through 31 October), make maximum allowable discharge if downstream conditions permit.</p> <p>When in Zone D S-12s, S-333, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. If S-333 is closed or discharging less than 28 percent of computed flow for SRS, S-12 must discharge at least 73 percent and up to 100 percent of the computed flow for SRS, if capacity is available. S-333 make water supply discharges to the East Coast and ENP-SDCS as needed, discharge Rainfall Plan target flow for S-333 when permitted by downstream conditions. S-151 makes water supply discharges to the East Coast and ENP-SDCS as needed and make up to maximum allowable discharge when WCA-3B stage (Site 71) is below 8.5 feet, NGVD. S-343A&B and S-344 normally closed in this Zone unless water is needed for environmental reasons.</p> <p>When in Zone E S-12s, S-333, S-151, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. S-333 make water supply discharges to the East Coast and ENP-SDCS as needed, discharge Rainfall Plan target flow for S-333 when permitted by downstream conditions. S-151 makes water supply discharges to the East Coast and ENP-SDCS as needed. S-343A&B and S-344 normally closed in this Zone unless water is needed for environmental reasons. The L-67A Borrow Canal stage (S-333 headwater) should not be drawn down below 7.5 feet, NGVD unless water is supplied from another source.</p> <p>When in Zone E1, make up to maximum practicable releases at S-12C, S-12D, S-142, S-151, S-31, S-337, S-335, S-333, S-355 A/B, and S-334 when permitted by downstream conditions. S-12s, S-333, S-151, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. Revert to Zone E rules if the FWS has determined that nesting for the CSSS-A has ended, or if the headwater at S-333 falls below 8.25 feet, NGVD.</p>

<p>Increment 1.1/1.2</p>	<p>WCA-3A Interim Regulation Schedule</p>	<p><i>WCA-3A Interim Regulation Schedule shown on Figure 7-5A, Figure 7-5B, and Figure 7-5C of the 2012 Water Control Plan. A revised Figure 7-5C is shown in Figure 2.</i></p> <p>When in Zone A S-12s, S-333, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s open full, S-151 make discharges to the East Coast and ENP-SDCS as needed and make maximum allowable discharge when WCA-3B stage (Site 71) is below 8.5 feet, NGVD. S-343A&B and S-344, if non-nesting season (15 July through 30 September), make maximum allowable discharge if downstream conditions permit.</p> <p>When in Zone D S-12s, S-333, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. S-333 make water supply discharges to the East Coast and ENP-SDCS as needed, discharge Rainfall Plan target flow for S-333 when permitted by downstream conditions. S-151 makes water supply discharges to the East Coast and ENP-SDCS as needed. S-343A&B and S-344 normally closed in this Zone unless water is needed for environmental reasons. Operational intent is to maximize discharge capacity from S-333 prior to utilization of the S-12s, subject to conditions below.</p> <p>When in Zone E S-12s, S-333, S-151, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. S-333 make water supply discharges to the East Coast and ENP-SDCS as needed, discharge Rainfall Plan target flow for S-333 when permitted by downstream conditions. S-151 makes water supply discharges to the East Coast and ENP-SDCS as needed. S-343A&B and S-344 normally closed in this Zone unless water is needed for environmental reasons. The L-67A Borrow Canal stage (S-333 headwater) should not be drawn down below 7.5 feet, NGVD unless water is supplied from another source. Operational intent is to maximize discharge capacity from S-333 prior to utilization of the S-12s, subject to conditions below.</p> <p>When in Zone E1, make up to maximum practicable releases at S-12C, S-12D, S-142, S-151, S-31, S-337, S-335, S-333, S-355 A/B, and S-334 when permitted by downstream conditions. S-12s, S-333, S-151, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. Revert to Zone E rules if the FWS has determined that nesting for the CSSS-A has ended, or if the headwater at S-333 falls below 8.25 feet, NGVD. In Zone E1 the goal is to use the available capacity to gradually lower WCA-3A to the bottom of Zone E1 and then keep WCA-3A near the bottom of Zone E1 with a focus of keeping WCA-3A near 9.0 feet NGVD at the start of the wet season. The use of the capacity available in Zone E1 should consider the Snail Kite recession limits (about 0.33 feet per month).</p>	<p><i>WCA-3A Interim Regulation Schedule shown on Figure 7-5A, Figure 7-5B, and Figure 7-5C of the 2012 Water Control Plan. A revised Figure 7-5C is shown in Figure 2.</i></p> <p>When in Zone A S-12s, S-333, S-343A&B, and S-344 subject to conditions in Table 1, otherwise, S-12s open full, S-151 make discharges to the East Coast and ENP-SDCS as needed and make maximum allowable discharge when WCA-3B stage (Site 71) is below 8.5 feet, NGVD. S-343A&B and S-344, if non-nesting season (15 July through 30 September), make maximum allowable discharge if downstream conditions permit.</p> <p>When in Zone D S-12s, S-333, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s.. S-333 make water supply discharges to the East Coast and ENP-SDCS as needed, discharge Rainfall Plan target flow for S-333 when permitted by downstream conditions. S-151 makes water supply discharges to the East Coast and ENP-SDCS as needed and make up to maximum allowable discharge when WCA-3B stage (Site 71) is below 8.5 feet, NGVD. S-343A&B and S-344 normally closed in this Zone unless water is needed for environmental reasons. Operational intent is to maximize discharge capacity from S-333 prior to utilization of the S-12s, subject to conditions below.</p> <p>When in Zone E S-12s, S-333, S-151, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. S-333 make water supply discharges to the East Coast and ENP-SDCS as needed, discharge Rainfall Plan target flow for S-333 when permitted by downstream conditions. S-151 makes water supply discharges to the East Coast and ENP-SDCS as needed. S-343A&B and S-344 normally closed in this Zone unless water is needed for environmental reasons. The L-67A Borrow Canal stage (S-333 headwater) should not be drawn down below 7.5 feet, NGVD unless water is supplied from another source. Operational intent is to maximize discharge capacity from S-333 prior to utilization of the S-12s, subject to conditions below.</p> <p>When in Zone E1, make up to maximum practicable releases at S-12C, S-12D, S-142, S-151, S-31, S-337, S-335, S-333, S-355 A/B, and S-334 when permitted by downstream conditions. S-12s, S-333, S-151, S-343A&B, and S-344 subject to conditions below, otherwise, S-12s discharge Rainfall Plan target flow for S-12s. Revert to Zone E rules if the FWS has determined that nesting for the CSSS-A has ended, or if the headwater at S-333 falls below 8.25 feet, NGVD. In Zone E1 the goal is to use the available capacity to gradually lower WCA-3A to the bottom of Zone E1 and then keep WCA-3A near the bottom of Zone E1 with a focus of keeping WCA-3A near 9.0 feet NGVD at the start of the wet season. The use of the capacity available in Zone E1 should consider the Snail Kite recession limits (about 0.33 feet per month).</p>
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	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.0	Rainfall Plan	<p>Rainfall Plan located in Table 7-1 of the 2012 Water Control Plan. Operational intent is to maximize discharge capacity from S-333 prior to utilization of the S-12s, subject to conditions below. Rainfall Plan target distribution through S-333 may exceed 55% of the Rainfall Plan target.</p> <p>S-12s/S-333 pre-emptive/proactive releases to better manage high stages in WCA-3A. S-12s and/or S-333 release up to projected WCA-3A inflow based upon system water management operations and/or rainfall to create storage in WCA-3A for expected inflow.</p> <p>Regulatory component of the Rainfall Plan determined by multiplying the distance (in feet) the WCA-3A water level is above Zone E/E1 by 2,500 cfs from 1 January through 30 June and by 5,000 cfs from 1 July through 31 December.</p> <p>Calculate Modified Rainfall Plan to gather comparison and historical information.</p>	
Increment 1.1/1.2	Rainfall Plan	<p>Rainfall Plan located in Table 7-1 of the 2012 Water Control Plan. Operational intent is to maximize discharge capacity from S-333 prior to utilization of the S-12s, subject to conditions below. Rainfall Plan target distribution through S-333 may exceed 55% of the Rainfall Plan target. When S-12s capacity is required the structure should be opened from east to west</p> <p>S-12s/S-333 pre-emptive/proactive releases to better manage high stages in WCA-3A. S-12s and/or S-333 release up to projected WCA-3A inflow based upon system water management operations and/or rainfall to create storage in WCA-3A for expected inflow.</p> <p>Regulatory component of the Rainfall Plan determined by multiplying the distance (in feet) the WCA-3A water level is above Zone E/E1 by 2,500 cfs from 1 January through 30 June and by 5,000 cfs from 1 July through 31 December.</p> <p>Calculate Modified Rainfall Plan to gather comparison and historical information.</p>	
Increment 1.0	Pre-Storm/Storm/and Storm Recovery Operations for the SDCS	Pre-Storm/Storm/and Storm Recovery Operations for the SDCS in Table 7-6 of the 2012 Water Control Plan.	
Increment 1.1/1.2	Pre-Storm/Storm/and Storm Recovery Operations for the SDCS	Pre-Storm/Storm/and Storm Recovery Operations for the SDCS in Table 7-6 of the 2012 Water Control Plan.	

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.0	S-343A, S-343B, and S-344	Closed from 01 November through 14 July independent of WCA-3A levels.	
Increment 1.1/1.2	S-343A, S-343B, and S-344	Closed from 1 October through 14 July independent of WCA-3A levels.	
Increment 1.0	S-12 A/B/C/D	<p>S-12A closed from 1 November through 14 July; S-12B closed from 1 January through 14 July; S-12C no closure period. S-12D no closure period.</p> <p>S-12A closed from 1 November through 14 July, S-12B closed from 1 January through 14 July subject to below unless FWS has determined that nesting season for the CSSS-A has ended. WCA-3A water levels may require the opening of S-12A and/or S-12B during the period from 1 November through 14 July (additional NEPA documentation) to avoid unacceptable risk of failure of WCA-3A levees and/or outlet structures.</p> <p>S-12A Year-round: To provide access to cultural areas, when Rainfall Plan results in S-12 target flows, S-12A up to 100 cfs release.</p> <p>S-12A Cultural Access Release: S-12A up to 100 cfs release available when Rainfall Plan results in S-12 target flows. From 1 November through 14 July, USACE must request informal consultation with FWS to avoid impacts on CSSS-A. During this time, the duration of this release will not exceed five consecutive days.</p> <p>S-12A up to 100 cfs release may only occur when WCA-3A 3-gage average (WCA-3AVG - Sites 63, 64, 65) is greater than 8.4 feet, NGVD. During S-12A up to 100 cfs release, data such as but not limited to NP-205 and area rainfall will be monitored with NP-205 increase or anticipated increase above 5.7 feet, NGVD resulting in closing of S-12A.</p> <p>S-12C/D Year-round: S-12C and/or S-12D release up to WCA-3A Regulation Schedule (Zone A maximum) or Rainfall Plan (target flow).</p> <p>S-12s Flow Distribution: S-12 opening sequence to meet Target Flows is from east (S-12D) to west (S-12A); S-12s flow distributions would not be limited to the historical percentage distribution of flow from the S-12s (10 percent at S-12A, 20 percent at S-12B, 30 percent at S-12C, 40 percent at S-12D).</p> <p>S-12A/B/C/D Headwater greater than 11.0 feet, NGVD: Open an amount only enough to stop overtopping of gates.</p>	

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.1/1.2	S-12 A/B/C/D	<p>S-12A closed from 01 October through 14 July with the following limited conditional opening; S-12B closed from 01 October through 14 July with the following limited conditional opening;</p> <p>S-12A and/or S-12B will be conditionally opened during October under the following conditions.</p> <ol style="list-style-type: none"> 1. WCA-3A stage on 30 Sep is greater than 10.5 ft, NGVD; or 2. WCA-3A stage is projected to rise above 10.75 ft, NGVD (IOP Zone A) during October, based on consideration of projected inflows and direct rainfall. 3. S-12A and/or S-12B will be conditionally closed when the WCA-3A stage falls below 10.25 feet NGVD, OR on 01 November, whichever comes first. <p>S-12B will be conditionally opened during November under the following conditions.</p> <ol style="list-style-type: none"> 1. WCA-3A stage on 31 Oct is greater than 11.0 ft, NGVD; or 2. WCA-3A stage is projected to rise above 11.25 ft, NGVD during November, based on consideration of projected inflows and direct rainfall. 3. S-12B will be closed when the WCA-3A stage falls below 10.75 feet NGVD, OR on 01 December, whichever comes first. <p>S-12C no closure period. S-12D no closure period.</p> <p>S-12A Year-round: To provide access to cultural areas, when Rainfall Plan results in S-12 target flows, S-12A up to 100 cfs release.</p> <p>S-12A Cultural Access Release: S-12A up to 100 cfs release available when Rainfall Plan results in S-12 target flows. From 1 November through 14 July, USACE must request informal consultation with FWS to avoid impacts on CSSS-A. During this time, the duration of this release will not exceed five consecutive days.</p> <p>S-12A up to 100 cfs release may only occur when WCA-3A 3-gage average (WCA-3AVG - Sites 63, 64, 65) is greater than 8.4 feet, NGVD. During S-12A up to 100 cfs release, data such as but not limited to NP-205 and area rainfall will be monitored with NP-205 increase or anticipated increase above 5.7 feet, NGVD resulting in closing of S-12A.</p> <p>S-12C/D Year-round: S-12C and/or S-12D release up to WCA-3A Regulation Schedule (Zone A maximum) or Rainfall Plan (target flow).</p> <p>S-12s Flow Distribution: S-12 opening sequence to meet Target Flows is from east (S-12D) to west (S-12A); S-12s flow distributions would not be limited to the historical percentage distribution of flow from the S-12s (10 percent at S-12A, 20 percent at S-12B, 30 percent at S-12C, 40 percent at S-12D).</p> <p>S-12A/B/C/D Headwater greater than 11.0 feet, NGVD: May be opened an amount only enough to stop overtopping of gates. The Corps will assess the feasibility of leaving the gates closed and allowing overtopping.</p> <p>DOI to install sandbags to prevent flow through culverts under ENP Tram Road by February 1 if necessary.</p>	

<p>Increment 1.0</p>	<p>S-333</p>	<p>1) Year-round when stage at G-3273 is below 6.8 and when WCA-3A stage is below the Increment 1 Action Line (Figure 1) (S-333 has priority; S-356 use is secondary to S-333 but S-356 can and should be used subject to L-29 stage limitations): S-333 will be used to release up to the full rate prescribed by WCA-3A Regulation Schedule and the Rainfall Plan into NESRS subject only to the L-29 constraint. The combined flow from the S-333, S-12A, S-12B, S-12C, S-12D should not exceed the total prescribed by the Rainfall Plan except as allowed by the 2012 Water Control Plan and constrained by the ERTF Biological Opinion’s stage and recession limits. b) S-356 will be used to control the stage in L-31N between 5.5 and 5.8 feet to the extent there is capacity in L-29 without reducing the ability to release the full allocation through S-333. Compliance with the range limits is based on the daily average stage at S-356/S-336. The USACE has full latitude to turn pump units on and off within this range. Using S-356 to maintain the L-31N Canal range to 5.5 to 5.8 feet, allows the flexibility to keep G-211 and S-338 closed or reduce G-211 and S-338 discharge if conditions make this desirable.</p> <p>2) Year-round when stage at G-3273 is above 6.8 and the WCA-3A stage is below the Increment 1 Action Line (Figure 1) (S-356 has limited priority over S-333): S-333 will be used to release up to the full rate prescribed by the WCA-3A Regulation Schedule and the Rainfall Plan into NESRS subject to the L-29 constraint and an assured minimum available capacity of 250 cfs through S-356. If 250 cfs at S-356 is not possible due to the L-29 constraint, then S-333 releases will be reduced to allow S-356 to achieve the minimum available capacity of 250 cfs, if the S-356 capacity is needed to maintain the target stage range in L-31N. The combined flow from the S-333, S-12A, S-12B, S-12C, S-12D should not exceed the total prescribed by the Rainfall Plan. b) S-356 will be used to control the stage in L-31N between 5.5 and 5.8 feet with an assured minimum available capacity of 250 cfs through S-356 (S-356 limited priority over S-333), subject only to the L-29 constraint. Compliance with the range limits is based on the daily average stage at S-356/S-336. The USACE may turn pump units on and off within this range. Using S-356 to maintain the L-31N Canal between 5.5 and 5.8 feet allows the flexibility to keep G-211 and S-338 closed or reduce G-211 and S-338 discharge if conditions make this desirable.</p> <p>4) When WCA-3A stage is above the Increment 1 Action Line (Figure 1) from 15 July through 31 October (S-333 has priority with no use of S-334): a) S-333 makes maximum releases to NESRS subject only to L-29 constraint.</p>	<p>3) When WCA-3A stage is above the Increment 1 Action Line (Figure 1) from 1 November through 14 July * (S-333 has priority) b) S-333 makes maximum releases to NESRS subject to L-29 constraint, with no dependency or other constraints.</p> <p>When the L-29 constraint is reached or exceeded, S-334 may be utilized to maintain the L-29 Canal stage at or below 7.5 feet. Refer to S-334 operational criteria for additional details.</p> <p>Use of S-334 will be discontinued when the WCA-3A storage volume accumulated due to the discharge deficit (the balance) is discharged. S-334 discharges to the SDCS and S-333 deliveries to NESRS when G-3273 stage is above 6.8 feet (S-333 flows greater than S-334 flows) will both count as flows to be subtracted from the WCA-3A balance computed through 14 July.</p> <p>*The use of S-334 may continue long enough past the end of the S-12A and S-12B closure period (14 July) to release the volume of water that would have been released, according to the WCA-3A Regulation Schedule, had the S-12s been allowed to be open.</p>
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	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.1/1.2	S-333	<p>Closed when L-29 Canal stage is above its maximum limits under Increment 1.1 and 1.2, respectively. Refer to L-29 Borrow Canal criteria below.</p> <p>Rainfall Plan target flow for S-333 (to NESRS). Rainfall Plan target distribution maximized through S-333 to release the Rainfall Plan target subject to the L-29 constraint.</p> <p>When WCA-3A is in Zone E1 or Zone A, up to maximum practicable through S-333 to NESRS.</p> <p>Water Supply and Supplemental Deliveries (up to 250 cfs) to Taylor Slough, Florida Bay, and Manatee Bay may be delivered through this route when it does not conflict with use of S-356. Water Supply and Supplemental Deliveries may be delivered through the S-151, S-337, S-335 route.</p>	<p>Rainfall Plan target flow for S-333 (to NESRS), plus as much of the remaining Rainfall Plan target flow that the S-12s cannot discharge to be passed through S-334 and subject to capacity constraints, which are 1,350 cfs at S-333, L-29 maximum stage limit, and canal stage limits downstream of S-334.</p> <p>When WCA-3A is in Zone E1 or Zone A, up to maximum practicable through S-333 to NESRS.</p> <p>S-334 flows will not be constrained by S-333 flows, and there is no constraint to require matching S-333 and S-334 flows.</p>
Increment 1.0	L-29 Borrow Canal	L-29 Maximum Canal Stage is limited to 7.5 ft, NGVD.	
Increment 1.1/1.2	L-29 Borrow Canal	<p>L-29 Maximum Canal Stage is limited to 7.5 ft, NGVD. Maximum operating limit may be raised from 7.5 to 7.8 ft, NGVD contingent upon the following.</p> <ul style="list-style-type: none"> A. The required real estate interest and any associated improvements for the private ownership along Tamiami Trail B. Functional completion of the C-358 Canal and installation of S-357N C. Completion of sufficient portions of Contract 8, which are the construction of the C-111 NDA L-315 western levee and the L-357W Extension Levee between Richmond Drive and completion of the Contract 8A modifications within the 8.5 SMA Detention Cell. 	

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.0	S-355A & S-355B	If available for use, S-355A and S-355B may also be utilized to discharge to the L-29 canal as indicated in the 2012 Water Control Plan and other future associated permit requirements.	
Increment 1.1/1.2	S-355A & S-355B	<p>Follow the same constraints as S-333. Open whenever hydraulic gradient allows flow from WCA-3B to L-29 with low risk of backflow from L-29 to WCA-3B.</p> <p>A. Constraints on the Operation of S-355A and S-355B. The S-355A and S-355B water control structures will be operated to comply with the following constraints:</p> <ul style="list-style-type: none"> i. The S-355A or S-355B or both shall be opened only when there is sufficient stage difference between the water levels in Water Conservation Area (WCA)-3B at S-355A/S-355B and the L-29 Borrow Canal and whenever the gradient allows for southerly flow from WCA-3B at S-355A/S-355B to L-29 Borrow Canal; ii. Discharges from S-355A or S-355B or a combination of both shall be limited as required to prevent the L-29 Canal stage from exceeding the L-29 Borrow Canal stage constraint as determined by the water control plan; iii. Discharges from S-355A or S-355B or a combination of both shall be limited as required to prevent impacts to the existing project purposes of the Central & Southern Florida (C&SF) Project including but not limited to flood damage reduction and water supply; and iv. Operations are consistent with, and follow, the existing regulation schedule and water control plan for WCA 3A/3B. <p>B. The S-355A and S-355B water control structures shall be closed if any of the four conditions above are not met, and when there is a potential for reverse flow (from L-29 Borrow Canal to WCA-3B) through the structures. The actual open and close levels of the structures will depend on the water conditions, forecasts, and other system constraints.</p>	

<p style="text-align: center;">Increment 1.0</p>	<p style="text-align: center;">S-334 (Operations are continued on the next page.)</p>	<p style="text-align: center;">Not Operated</p>	<p>Water Supply.</p> <p>3) When WCA-3A stage is above the Increment 1 Action Line (Figure 1) from 1 November through 14 July * (S-333 has priority)</p> <p>When L-29 constraint is reached or exceeded, S-334 may be utilized to maintain the L-29 Canal stage at or below 7.5 feet by delivering a portion of the WCA-3A regulatory releases to the SDCS (including the use of pumping stations S-331, S-332B, S-332C, and S-332D) when the following conditions (i, ii, and iii) are met:</p> <ul style="list-style-type: none"> i) S-12C and S-12D are full open, and ii) the discharge to tide from all of the WCAs are maximized to the extent that downstream condition allow, and iii) the SDCS has available capacity (daily combined pumping rate at S-332B, S-332C, and S-332D is less than 1,125 cfs) to maintain L-31N stage in the lower half of the range). <p>Under these conditions (i, ii, and iii), the following criteria (iv, v, and vi) will govern S-334 operation, including maximum discharge limits:</p> <ul style="list-style-type: none"> iv) When daily combined pumping at S-332B, S-332C, and S-332D is less than 1,125 cfs, S-334 may be utilized up to a maximum flow rate of 250 cfs. v) When daily combined pumping at S-332B, S-332C, and S-332D is less than 1,000 cfs (increased storage capacity may be available within the SDCS), S-334 may be utilized up to 400 cfs. vi) S-334 flows will not be constrained by S-333 flows, and there is no constraint to require matching S-333 and S-334 flows. <p>*The use of S-334 may continue long enough past the end of the S-12A and S-12B closure period (14 July) to release the volume of water that would have been released, according to the WCA-3A Regulation Schedule, had the S-12s been allowed to be open. The determination of the extent to which the S-12 closures cause water to be retained in WCA-3A beyond that expected during the pre-ISOP schedule for WCA-3A (1993 Experimental Program, including no seasonal closure of the S-12s) will be computed weekly by USACE water managers and reported annually by the USACE for the period from 1 November through 14 July. When the combined WCA-3A releases from the S-12s and S-333 are less than the releases computed for the pre-ISOP schedule, a WCA-3A "discharge deficit" resulting in additional accumulation of water in WCA-3A is indicated for the period from 1 November through 14 July. For this WCA-3A accounting computation, S-333 discharges to NESRS computed under the pre-ISOP schedule will be based on inclusion of the G-3273 constraint of 6.8 feet.</p> <p>In addition to operational guidelines indicated above under (3), the following additional criteria will govern the use of S-334 operation after 14 July:</p>
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	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
			I. When daily combined pumping at S-332B, S-332C, and S-332D is less than 1,125 cfs, S-334 may be utilized up to a maximum limit of 250 cfs to deliver a portion of the WCA-3A regulatory releases to the SDCS. Use of S-334 will be temporarily discontinued when daily combined pumping at S-332B, S-332C, and S-332D is greater than 1,125 cfs. II. Use of S-334 will be discontinued when the WCA-3A storage volume accumulated due to the discharge deficit (the balance) is discharged. S-334 discharges to the SDCS and S-333 deliveries to NESRS when G-3273 stage is above 6.8 feet (S-333 flows greater than S-334 flows) will both count as flows to be subtracted from the WCA-3A balance computed through 14 July. III. S-334 will not be used after 14 July during periods when the WCA-3A stage is below the Increment 1 Action Line. Regardless of conditions within WCA-3A or any residual WCA-3A storage deficit balance, the use of S-334 to deliver a portion of WCA-3A regulatory releases to the SDCS will be discontinued on 15 August. The WCA-3A storage deficit balance resultant from the S-12 closures, if applicable for the prior period from 1 November through 14 July, will zero-out on 15 August and will preclude a balance carryover into the next year. IV. If more water was released from WCA-3A under Increment 1 than computed for the pre-ISOP schedule, a WCA-3A “discharge surplus” balance is indicated for the period from 1 November through 14 July, and S-334 will not be utilized for WCA-3A regulatory releases to the SDCS during the period from 15 July through 31 October.
Increment 1.1/1.2	S-334	Water Supply and Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay.	Pass all or partial S-333 flows subject to downstream constraints. S-334 flows will not be constrained by S-333 flows, and there is no constraint to require matching S-333 and S-334 flows. Operated in accordance with Condition 3. Refer to the conditions language in the Operational Strategy. Water Supply Supplemental Water Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay.

<p>Increment 1.0</p>	<p>S-356</p>	<p>1) Year-round when stage at G-3273 is below 6.8 and when WCA-3A stage is below the Increment 1 Action Line (Figure 1) (S-333 has priority; S-356 use is secondary to S-333 but S-356 can and should be used subject to L-29 stage limitations):</p> <p>S-356 will be used to control the stage in L-31N between 5.5 and 5.8 feet to the extent there is capacity in L-29 without reducing the ability to release the full allocation through S-333. Compliance with the range limits is based on the daily average stage at S-356/S-336. The USACE has full latitude to turn pump units on and off within this range. Using S-356 to maintain the L-31N Canal range to 5.5 to 5.8 feet, allows the flexibility to keep G-211 and S-338 closed or reduce G-211 and S-338 discharge if conditions make this desirable.</p> <p>Excess flow from L-30 through S-335 may be diverted into NESRS using S-356 if desired by the agencies (ENP, SFWMD, USACE). When S-335 HW is above 6.0 feet, the SFWMD has full latitude to make the S-335 discharge required to maintain the stage in L-30 and also provide S-335 discharge to reduce pump unit cycling at S-356 and S-331, if appropriate (by releasing the flow required to maintain steady pumping at S-331 through G-211).</p> <p>2) Year-round when stage at G-3273 is above 6.8 and the WCA-3A stage is below the Increment 1 Action Line (Figure 1) (S-356 has limited priority over S-333):</p> <p>S-333 will be used to release up to the full rate prescribed by the WCA-3A Regulation Schedule and the Rainfall Plan into NESRS subject to the L-29 constraint and an assured minimum available capacity of 250 cfs through S-356. If 250 cfs at S-356 is not possible due to the L-29 constraint, then S-333 releases will be reduced to allow S-356 to achieve the minimum available capacity of 250 cfs, if the S-356 capacity is needed to maintain the target stage range in L-31N. The combined flow from the S-333, S-12A, S-12B, S-12C, S-12D should not exceed the total prescribed by the Rainfall Plan.</p> <p>S-356 will be used to control the stage in L-31N between 5.5 and 5.8 feet with an assured minimum available capacity of 250 cfs through S-356 (S-356 limited priority over S-333), subject only to the L-29 constraint. Compliance with the range limits is based on the daily average stage at S-356/S-336. The USACE may turn pump units on and off within this range. Using S-356 to maintain the L-31N Canal between 5.5 and 5.8 feet allows the flexibility to keep G-211 and S-338 closed or reduce G-211 and S-338 discharge if conditions make this desirable.</p>	<p>Not Operated</p>
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	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.1/1.2	S-356	<p>Operating Range from 5.5 to 5.8 NGVD</p> <p>Operated in accordance with Condition 1 and Condition 2. Refer to the conditions language in the Operational Strategy.</p> <p>Under normal conditions, the intent will be to use S-356 to maximize flow to NESRS and thereby reduce the use of S-338/G-211 with the exception of water supply and supplemental water deliveries.</p> <p>S-336 will be closed when S-356 is operated.</p> <p>When supplemental water deliveries are being delivered through S-334 and they by themselves or in combination with local rainfall result in S-356 pumping to maintain the canal range below the top of the range, the supplement delivery will be stopped by closing S-334 by the next business day or sooner. Supplemental water can be delivered to Taylor Slough through S-151, S337, S-335 while S-356 is operating.</p> <p>S-356 may be used to divert excess flow from L-30 through S-335 if desired by the agencies (ENP, SFWMD, and USACE). S-335 releases are still dependent on having available downstream capacity.</p>	Not Operated
Increment 1.0	S-151	Water supply	Regulatory releases pursuant to WCA-3A Interim Regulation Schedule.
Increment 1.1/1.2	S-151	<p>Water Supply</p> <p>Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay.</p>	<p>Regulatory releases pursuant to WCA-3A Regulation Schedule during Conditions 3. Refer to the conditions language in the Operational Strategy.</p> <p>Water Supply</p> <p>Supplemental Deliveries (up to 250 cfs) to Taylor Slough, Florida Bay, and Manatee Bay.</p>

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.0	S-337	Water supply	Regulatory releases pursuant to WCA-3A Interim Regulation Schedule.
Increment 1.1/1.2	S-337	Water Supply Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay.	Regulatory releases pursuant to WCA-3A Regulation Schedule during Conditions 3. Refer to the conditions language in the Operational Strategy. Supplemental Water Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay.
Increment 1.0	S-335	<p>Water supply</p> <p>The intent is to limit the volume of water passed at S-335 to pre-ISOP conditions and not use S-332B, S-332C, or S-332D or other triggers to pass additional flows. Note: It is recognized that under these conditions operations of S-335 would be infrequent.</p> <p>1) Year-round when stage at G-3273 is below 6.8 and when WCA-3A stage is below the Increment 1 Action Line (Figure 1) (S-333 has priority; S-356 use is secondary to S-333 but S-356 can and should be used subject to L-29 stage limitations):</p> <p>Excess flow from L-30 through S-335 may be diverted into NESRS using S-356 if desired by the agencies (ENP, SFWMD, USACE). When S-335 HW is above 6.0 feet, the SFWMD has full latitude to make the S-335 discharge required to maintain the stage in L-30 and also provide S-335 discharge to reduce pump unit cycling at S-356 and S-331, if appropriate (by releasing the flow required to maintain steady pumping at S-331 through G-211).</p> <p>If S-356 is pumping and S-334 and/or S-335 are to be utilized to deliver water supply to SDCS, then S-356 will stop pumping.</p>	
Increment 1.1/1.2	S-335	<p>Condition 1 and Condition 2 Operating Range from 6.5 to 7.0 NGVD</p> <p>Condition 3 and Condition 4 Operating Range from 7.0 to 7.5 feet NGVD</p> <p>Water Supply</p> <p>Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay.</p>	

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.0	S-338	<p>Using S-356 to maintain the L-31N Canal range to 5.5 to 5.8 feet, allows the flexibility to keep G-211 and S-338 closed or reduce G-211 and S-338 discharge if conditions make this desirable.</p> <p>S-338 will be operated consistent with the 2012 Water Control Plan except during hydraulic testing of the NDA and SDA.</p> <p>Open 5.8 feet, NGVD Close 5.5 feet, NGVD</p>	<p>S-338 will be operated consistent with the 2012 Water Control Plan except during hydraulic testing of the NDA and SDA.</p> <p>Open 5.8 feet, NGVD Close 5.4 feet, NGVD</p>
Increment 1.1/1.2	S-338	Operating Range from 5.5 to 5.8 feet NGVD	
Increment 1.0	G-211	<p>Using S-356 to maintain the L-31N Canal range to 5.5 to 5.8 feet, allows the flexibility to keep G-211 and S-338 closed or reduce G-211 and S-338 discharge if conditions make this desirable.</p> <p>Open 6.0 feet, NGVD Close 5.5 feet, NGVD</p> <p>Note: If S-331 pumping is limited and the G-211 tailwater rises above 5.3 feet, NGVD then close G-211.</p>	<p>Open 5.7 feet, NGVD Close 5.3 feet, NGVD</p> <p>Note: If S-331 pumping is limited and the G-211 tailwater rises above 5.3 feet, NGVD then close G-211.</p>
Increment 1.1/1.2	G-211	<p>Operating Range from 5.5 to 6.0 feet NGVD</p> <p>Note: If S-331 pumping is limited and the G-211 tailwater rises above 5.3 feet, NGVD then close G-211.</p> <p>Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay. It is the expectation that supplemental deliveries will not cause prolonged pumping with two or more units at S-331.</p>	<p>Operating Range from 5.3 to 5.7 feet NGVD</p> <p>Note: If S-331 pumping is limited and the G-211 tailwater rises above 5.3 feet, NGVD then close G-211.</p> <p>Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay. It is the expectation that supplemental deliveries will not cause prolonged pumping with two or more units at S-331.</p>

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.0	S-357	<p><u>S-357 OPERATING CRITERIA</u></p> <p>The S-357 pump station will be operated for the purpose of providing flood mitigation for the 8.5 SMA. S-357 will be operated to maintain an average-daily water level in C-357 at LPC1 or S357 headwater (HW) between 5.7 to 6.2 feet-NGVD (National Geodetic Vertical Datum of 1929).</p> <p>Note: DELTA is defined as the north to south groundwater gradient between Angel Well’s water level and LPG1’s water level.</p> <p>DELTA equals (Angel Well’s water level) minus (LPG1’s water level).</p> <p><u>On Criteria:</u> When C-357 measured at LPC1 or S357 HW is at or above 5.7 ft-NGVD., S-357 may be operated with pump constraints. (Operating range in C-357 is 5.7 to 6.2 ft-NGVD).</p> <p><u>Off Criteria:</u> When C-357 measured at LPC1 or S357HW is below 5.7 ft-NGVD. When DELTA is less than 0.1ft, then S-357 will remain off for a minimum of 24 hours and until DELTA is equal to or larger than 0.2 ft When Las Palmas Detention Cell Gage 1 (LPDC1) is above 10 feet-NGVD.</p> <p>Pumping Constraints: C1: If DELTA is equal to or larger than 0.2 feet then S-357 can be operated up to maximum capacity. C2: If (DELTA is between 0.1 feet and 0.2 feet) then S-357 is limited to a maximum of 250 acre-feet per day. C3: If (DELTA is less than 0.1 feet) then S-357 will remain off for a minimum of 24 hours and until DELTA is equal to or larger than 0.2 feet.</p> <p>Additional Operating Information:</p> <ol style="list-style-type: none"> 1. S-357 pumps will be turned off to prevent overflow of the detention cell. 2. These criteria do not preclude the exercising of pumps or the testing of repairs, provided that the pumps are run individually and that the run time does not exceed two hours per pump per month. 3. These criteria will not preclude field tests of S-357 to further the understanding of the hydrology and hydraulics of the 8.5 SMA conditions during ideal or acceptable meteorological and climate conditions. 4. If the USACE determines that detrimental seepage is occurring into the 8.5 SMA due to operations of S-357 then additional S-357 pumping constraints may be added including suspending S-331 “Low Range Adjustment”. 5. Operations of S-357 may be suspended during times of construction. 6. Under normal conditions, the intent is to limit the pumping capacity of S-357 to 250 acre feet per day. 	

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.1/1.2	S-357	<p>S-357 will be operated to maintain an average-daily water level in C-357 at LPC1 or S-357 headwater between 5.0 to 5.5 feet, NGVD. When drier conditions allow reduced pumping at S-357, canal range of 5.5 to 6.0 feet, NGVD may be utilized.</p> <p>S-357 operations will be constrained to two pump units for most conditions and S-331 will be used more to provide flood mitigation for the Las Palmas Community (8.5 SMA) and to help facilitate the S-357N, Contract 8, and Contract 8A construction.</p> <p>If the stage at LPG2 rises above 6.6 feet NGVD then a canal range of 3.5-4.0 may be used at S-331 until the stage at LPG2 falls below 6.5 feet NGVD. If capacity is not available at S-331 to maintain this lower range or S-357 stage exceeds 6.2 ft, NGVD, then pumping at S-357 may be increased to more than two units until the stage at LPG2 falls below 6.5 feet NGVD.</p> <p>Pump sequence:</p> <ul style="list-style-type: none"> Step 1. Use S-331 pump and follow its criteria; if desired recession rates not achieved at LPG2, then go to step 2. Step 2. Turn on one electric or one diesel unit; if more pumping capacity is needed then go to step 3. Step 3. Turn on two units; if more pumping capacity is still needed and capacity is not available at S-331 to maintain the lower range of 3.5-4.0, then go to step 4. Step 4. Turn on three units with the goal of holding S-357 HW at 3.0 ft, NGVD and not to exceed 10.0 ft, NGVD at LPDC1 gage. <p>When S-357 pump station is restricted due to the construction of the flow way berms inside the 8.5 SMA detention cell and subsequent operational testing, the following constraints will be used to maintain the flood mitigation for 8.5 SMA..</p> <ol style="list-style-type: none"> 1. If no units are available, a G-3273 constraint of 6.8 ft, NGVD will be used for S-333 and S-356. 2. If one electric or one diesel is available, a G-3273 constraint of 6.9 ft, NGVD will be used for S-333 and S-356. 3. If two units are available, a G-3273 constraint of 7.0 ft, NGVD will be used for S-333 and S-356. <p>Following completion of C-111 South Dade NDA, there will be no restrictions of the number of pump units at S-357.</p>	

<p>Increment 1.0</p>	<p>S-331</p>	<p>During this interim phase of operations, S331 will be used to 1) Provide flood damage reduction for the lands located along the east side of the L-31N canal, 2) convey excess water from WCA-3A to the C-111 Detention Areas and the C-111 Canal as required by Column 2 operation under the Interim Operation Plan for Protection of the Cape Sable Seaside Sparrow, 3) water supply to Taylor Slough, the L-31N, and C-111 Canals, and 4) as a partial or complete replacement to S-357 should mechanical or permitting issues (such as water quality limit) preclude the use of S-357.</p> <p>S-331 will be operated using four pumping ranges: “high”, “middle”, “low” and “low adjustment”, based on LPG2 and S-357 operational ability. S-331/S-173 operations will be triggered based on the S-331 HW elevation. The intent is to have S-357 provide the drainage authorized by the 8.5 SMA 2000 GRR while maintaining or improving the hydroperiods of the wetlands along the west side of the 8.5 SMA protection levee. Only a portion of the S-357 capacity can be used due to the limited infiltration rate provided by the 8.5 SMA’s small detention cell and the inability to overflow this detention cell. Due to the limited pumping capacity at S-357 it is expected that, at times, this capacity will be insufficient to maintain the C-357 Canal at target stages. During these time periods the S-331 operational range will be lowered to assist S-357 in maintaining drainage. The operational ranges and corresponding S-357 HW stages are provided below:</p> <p>S-331 “High Range” (LPG2 less than 5.5 ft-NGVD): When LPG2 is less than 5.5 ft-NGVD, the “high range” applies and S-331 HW will have no limit.</p> <p>S-331 “Intermediate Range” (LPG2 is between 5.5 and less than 6.0 ft-NGVD): When LPG2 is between 5.5 and less than 6.0 ft-NGVD, the “intermediate range” applies and S-331 average-daily HW will be maintained between 4.5 and 5.0 ft-NGVD to the extent allowable by downstream conditions.</p> <p>S-331 “Low Range” (LPG2 at or above 6.0 ft-NGVD): When LPG2 is at or above 6.0 ft-NGVD and S-357 constraints are limiting the ability of maintaining C-357 average-daily water level below 6.2 ft-NGVD, the “low range” applies and S-331 average-daily HW will be maintained between 4.0 and 4.5 ft-NGVD to the extent allowable by downstream conditions and for a minimum of 24 hours.</p> <p>S-331 “Low Range Adjustment” (LPG2 at or above 6.0 ft-NGVD): When LPG2 is at or above 6.0 ft-NGVD and S-357 constraints are not limiting the ability of maintaining C-357 average-daily water level below 6.2 ft-NGVD, the “low range adjustment” applies and S-331 average-daily HW will be maintained between 4.5 and 5.0 ft-NGVD to the extent allowable by downstream conditions.</p> <p>Additional Operating Information:</p> <ol style="list-style-type: none"> 1. When operating near range limits operations may be adjusted to the nearest range without reaching the range. This allows a transition to the next projected range or to avoid rapid changes in operating ranges. 2. S-331 “Low Range” may be used instead of the “Low Range Adjustment” to further the understanding of the hydrology and hydraulics of the 8.5 SMA conditions during ideal or acceptable meteorological and climate conditions, in order to provide data to help define a long-term solution to issues related to the S-357 pump station or during times of construction. 3. If the USACE determines the use of the “Low Range” instead of the “Low Range Adjustment” reduces or prevents undesirable seepage effects within the flood mitigation area due to S-357 operations, then the “Low Range” will be used instead of the “Low Range Adjustment” until the undesirable seepage effects from S-357 are modified by other operational or structural changes. 4. Evaluation to use the “Low Range Adjustment” instead of the “Low Range” should be done on a daily basis. 5. The operational ranges may be changed immediately in response to the trigger stage. <p>Note: If S-331 tailwater is above 6.0 feet, NGVD or the S-176 headwater is above 5.5 feet, NGVD then no pumping at S-331. Under normal conditions, pumping at S-331 should be limited to two pumps or less.</p>
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	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.1/1.2	S-331	<p>S-331 HW operational range will lower as the stage at LPG2 rises as long as there is downstream capacity. Providing capacity for the operational ranges prescribed below will be a higher priority than regulatory releases from WCA-3A to S-331.</p> <ol style="list-style-type: none"> 1. When $LPG2 > 6.6$ then S331 HW will be maintained between 3.5 and 4.0 until the stage at LPG2 falls below 6.5 feet NGVD. 2. When $6.0 < LPG2 < 6.6$ then S331 HW will be maintained between 4.5 and 4.0. 3. When $5.5 < LPG2 < 6.0$ then S331 HW will be maintained between 5.0 and 4.5. <p>When $LPG2 < 5.5$ then water manager may use any operation range as long as the bottom of the range is at or above 5.0 ft, NGVD (e.g. 5.5 to 6.0).</p> <p>If the stage at LPG2 rises above or expected to rise and remain above 6.6 feet NGVD for over 24 hours then a range of 3.5-4.0 may be used at S-331 until the stage at LPG2 falls below 6.5 feet NGVD. If capacity is not available at S-331 to maintain this lower range or S-357 stage exceeds 6.2 ft, NGVD, then pumping at S-357 may be increased to more than two units until the stage at LPG2 falls below 6.5 feet NGVD.</p> <p>Supplemental Deliveries up to 250 cfs as measured at S-334 or S-337 to Taylor Slough, Florida Bay, and Manatee Bay. It is the expectation that supplemental deliveries will not cause prolonged pumping with two or more units at S-331. When $LPG2 < 5.5$ then water manager may use any operation range as long as the bottom of the range is at or above 5.0 ft, NGVD (e.g. 5.5 to 6.0) when pumping at S-331 and above 4.8 when siphoning at S-331. There is no stage requirement when water supply deliveries are being made through G-211.</p>	
Increment 1.0	Northern Detention Area (NDA)	<p>The future Northern Detention Area (NDA) is planned to contain the 8.5 Square Mile Area (SMA) Detention Cell, S-332B North Seepage Reservoir, and the area connecting the two.</p> <p>This seepage reservoir will have a normal maximum water depth of 2.0 feet. However, if the USACE determines that a flood emergency exists similar to an event like the “No Name” storm, the depth of water would be increased to 4.0 feet, when possible.</p>	
Increment 1.1/1.2	Northern Detention Area (NDA)	<p>The final configuration of the NDA is being constructed (exterior berms and interior berms). The future NDA will connect the 8.5 Square Mile Area (SMA) Detention Cell and contain what is now the S-332B North Detention Area (also referred to as the S-332B North Seepage Reservoir within Table 1).</p> <p>This seepage reservoir will have a normal maximum water depth limit of 2.5 feet*. However, if the USACE determines that a flood emergency exists the depth of water would be increased to 3.5 feet*, when possible.</p> <p>*The depth limit is based on the estimated averaged across the entire detention area.</p>	

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.0	Southern Detention Area (SDA)	The Southern Detention Area (SDA) is the result of combining the S-332B West Seepage Reservoir, the S-332C Seepage Reservoir, and the S-332B/C Connector and raising the western levee of the previous reservoirs. It is very unlikely that there will be overflow from the SDA. This seepage reservoir will have a normal maximum water depth of 2.0 feet. However, if USACE determines that a flood emergency exists similar to an event like the “No Name” storm, the depth of water would be increased to 4.0 feet, when possible.	
Increment 1.1/1.2	Southern Detention Area (SDA)	The final configuration of the Southern Detention Area (SDA) is being constructed (interior berms). The Southern Detention Area (SDA) encompasses what was previously the S-332B West Seepage Reservoir, the S-332C Seepage Reservoir, and the S-332B/C Connector and raising the western levee of the previous reservoirs. It is very unlikely that there will be overflow from the SDA. The SDA will have a normal maximum water depth limit of 2.5 feet*. However, if USACE determines that a flood emergency exists similar to an event like the “No Name” storm, the depth of water would be increased to 3.5 feet*, when possible. * The depth limit is based on the estimated average across the entire detention area.	
Increment 1.0	S-332B North Seepage Reservoir	The north reservoir is a 240-acre reservoir located to the north of the pump station with a weir discharging to the east. This seepage reservoir will have a normal maximum water depth of 2.0 feet. This 2.0 feet depth corresponds to 8.8 feet, NGVD at S-332B (North) tailwater. However, if USACE determines that a flood emergency exists similar to an event like the “No Name” storm, the depth of water would be increased to 4.0 feet, when possible.	
Increment 1.1/1.2	S-332B North Seepage Reservoir	The north reservoir is a 240-acre reservoir located to the north of the pump station. This seepage reservoir will have a normal maximum water depth limit of 2.5 feet (due to its small area). This 2.5 feet depth corresponds to 9.3 feet, NGVD at the S-332B (North) tailwater. However, if USACE determines that a flood emergency exists, the depth of water would be increased to 3.5 feet, when possible. If needed to facilitate construction of the NDA, flow to S-332B North will be minimized.	

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.0	<u>S-332B and S-332C, and</u>	<p>Column 1 Criteria for S-332B and S-332C: Pumped up to 575 cfs* On 5.0 feet, NGVD Off 4.7 feet, NGVD *Pump to capacity if limiting conditions within the Sparrow habitat are not exceeded. There will be no overflow into ENP.</p> <p>Note: There are two 125-cfs pumps and one 75-cfs pump directed to the Southern Detention Area. The remaining two 125-cfs pumps are directed to the north seepage reservoir.</p>	<p>Column 2 Criteria: Pumped up to 575 cfs* On 4.8 feet, NGVD Off 4.5 feet, NGVD *Pump to capacity if limiting conditions within the Sparrow habitat are not exceeded. There will be no overflow into ENP.</p> <p>Note: There are two 125-cfs pumps and one 75-cfs pump directed to the Southern Detention Area. The remaining two 125-cfs pumps are directed to the north seepage reservoir.</p>
Increment 1.1/1.2	<u>S-332B and S-332C, and</u>	<p>S-332B and S-332C operations are independent of whether other SDCS operations are under Column 1 or Column 2 mode of operations.</p> <p><u>02/15 through 07/31 (CSSS nesting window)</u> Operating Range from 4.2 to 4.8 feet, NGVD</p> <p>Use of C-102, C-103, S-199, S-200, S197 as stages rise above 4.2 feet, NGVD to achieve the desired stage and recession rates for CSSS Sub Populations F, C & D. Since the nesting window extends into the wet season it is expected that meaningful flow will need to be sent to tide to moderate the stage rise along the eastern boundary of ENP. When excess water is being discharged to tide an effort will be made to direct a large portion of the excess water to Biscayne Bay through the C-102/C-103 canal to the extent downstream capacity allows.</p> <p><u>08/01 through 02/14</u> Operating Range from 4.0 to 4.6 feet, NGVD</p> <p>Operational Range of 4.0 to 4.6 until construction of the NDA and 8.5 SMA are functionally complete. Once the NDA and 8.5 SMA features are functionally complete, such that construction conflicts with water management of canal levels are resolved, the operational range will be raised 0.2 feet to 4.2/4.8 feet, NGVD.</p> <p>During this period the normal management of water will be to fully maintain the hydraulic ridge and deliver water to eastern ENP using the full available capacity of S-332B, S-332C, and S-332D. If the capacity available at S-332B, S-332C, and S-332D is unable to maintain the operational range then use S-194/S-196/S-197 (Low flow discharges through S-197 available for conditions 2, 3, and 4)</p> <p>To facilitate management of hydroperiods along the eastern boundary of ENP to better meet habitat and nesting targets (2016 B.O.), up to one pump may be run at S-332BN, S-332B, and S-332C and up to two pumps at S-332D may be run within an operating range from 3.8 to 4.2 feet NGVD (highest stage at which water supply is usually initiated).</p>	

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.0	<u>S-332D</u>	<p>Column 1 Criteria for S-332D: Pump up to 500 cfs from 15 July (or the end of the breeding season, as confirmed by FWS) through 30 November; 325 cfs from 1 December through 31 January; and 250 cfs from 1 February through 14 July. On 4.85 feet, NGVD Off 4.65 feet, NGVD</p>	
Increment 1.1/1.2	<u>S-332D</u>	<p>S-3332D operations are independent of whether other SDCS operations are under Column 1 or Column 2 mode of operations.</p> <p><u>02/15 through 07/31 (CSSS nesting window)</u> Operating Range from 4.2 to 4.8 feet, NGVD</p> <p>Use of C-102, C-103, S-199, S-200, S197 as stages rise above 4.2 feet, NGVD to achieve the desired stage and recession rates for CSSS Sub Populations F, C & D. Since the nesting window extends into the wet season it is expected that meaningful flow will need to be sent to tide to moderate the stage rise along the eastern boundary of ENP. When excess water is being discharged to tide an effort will be made to direct a large portion of the excess water to Biscayne Bay through the C-102/C-103 canal to the extent downstream capacity allows.</p> <p><u>08/01 through 02/14</u> Operating Range from 4.0 to 4.6 feet, NGVD</p> <p>Operational Range of 4.0 to 4.6 until construction of the NDA and 8.5 SMA are functionally complete. Once the NDA and 8.5 SMA features are functionally complete, such that construction conflicts with water management of canal levels are resolved, the operational range will be raised 0.2 feet to 4.2/4.8 feet, NGVD.</p> <p>During this period the normal management of water will be to fully maintain the hydraulic ridge and deliver water to eastern ENP using the full available capacity of S-332B, S-332C, and S-332D. If the capacity available at S-332B, S-332C, and S-332D is unable to maintain the operational range then use S-194/S-196/S-197 (Low flow discharges through S-197 available for conditions 2, 3, and 4)</p> <p>To facilitate management of hydroperiods along the eastern boundary of ENP to better meet habitat and nesting targets (2016 B.O.), up to one pump may be run at S-332BN, S-332B, and S-332C and up to two pumps at S-332D may be run within an operating range from 3.8 to 4.2 feet NGVD (highest stage at which water supply is usually initiated).</p> <p>S-332D Detention Area (S-332D minus S-332DX1) has the following calendar based flow limits</p> <ul style="list-style-type: none"> • 07/15 through 11/30 No Constraint – May use all pumps (design capacity of 575 cfs) • 12/01 through 01/31 Limit of 3 diesel pumps (design capacity of 325 cfs) • 02/01 through 07/14 Limit of 2 diesel pumps (design capacity of 250 cfs) <p>If SFWMD proposed connection from S-200 to Taylor Slough is completed, flows through this connection will be incorporated as part of the above operational constraints.</p>	

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.0	S-332DX1	Open when stage difference between RG4 and NTS18 exceeds 1.0 foot and CR2 stage is higher than NTS18 stage (Gage locations shown on <i>Figure 7-7</i>). RG4 and CR2 typically have higher water levels than NTS18. Utilize RG4 water level gage located in northern portion of the SDA, NTS18 water level gage located in southern portion of the SDA, and CR2 water level gage located in ENP west of the SDA. Close when stage difference between RG4 and NTS18 is less than 0.25 feet or NTS18 stage is 0.75 feet greater than CR2 stage. ENP may make a recommendation to USACE to adjust the open/close criteria by + or – 0.5 feet.	
Increment 1.1/1.2	S-332DX1		With the lowering of an approximately 250 feet long section of S-332D High Head Cell weir to ground surface, the concern of over using S-332DX1 is lessened; as there is less available head to move water into the SDA. During Increment 1.1 and 1.2 there is full flexibility in the use of S-332DX1. S-332DX1 may be used to divert a portion of S-332D discharge when the CSSS calendar based flow restrictions limit the flow into the S-332D detention area. Use of S-332DX1 may be minimized to construct the SDA interior berms.
Increment 1.0	S-328	Not Operated	
Increment 1.1/1.2	S-328	The S-328 may be used to increase deliveries to Taylor Slough up to 250 cfs as measured at S-332D and provided that an average water depth of at least six inches is maintained in Cell 1; the six inch depth criteria was developed based upon a modeled operational range of 5.8 to 5.7 feet. Prior to initial operation of S-328, construction of the three L-31W Canal plugs proposed between S-328 and the L-31W gap must be completed. The L-31W Canal plugs were identified in the 2016 C-111 South Dade Contract 9 EA; these features may be constructed by SFWMD as components of the SFWMD proposal to move more water to Taylor Slough and Florida Bay.	

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.0	S-194 and S-196	Column 1 Criteria for S-194 and S-196: Open 5.5 feet, NGVD Close 4.8 feet, NGVD	Column 2 Criteria for S-194 and S-196: Operated to maximize flood control discharges to coast Open 4.9 feet, NGVD Close 4.5 feet, NGVD
Increment 1.1/1.2	S-194 and S-196	<p>Since S-194 and S-196 are manually operated structures (no remote control) and require downstream operational changes to effectively move water, these routes will be used to steadily move moderate (e.g. total of 100 to 200 cfs) flows to tide to allow the reduced use of S-332B, S-332C, and S-332D secondarily when this is likely to help achieve better CSSS habitat or nesting conditions. The object will be to develop sustainable openings which move enough water to help achieve the desired stage or rate of rise in eastern ENP with relatively infrequent gate changes. S-194/S-196 will also be used minimize the use of S-332B North during construction of the NDA.</p> <p>15 February through 31 July (early CSSS nesting window): Operating Range from 4.2 to 4.8 feet, NGVD</p> <p>01 August through 14 February: Operating Range from 4.0 to 4.6 feet, NGVD</p> <p>Operational Range of 4.6 to 4.0 until construction of the NDA and 8.5 SMA are functionally complete. Once the NDA and 8.5 SMA features are functionally complete such that construction conflicts with water management of canal levels are resolved, the operational range will be raised 0.2 feet to 4.8/4.2 feet, NGVD.</p>	
Increment 1.0	S-176	Column 1 Criteria for S-176: Open 5.0 feet, NGVD Close 4.75 feet, NGVD	Column 2 Criteria for S-176: Open 4.9 feet, NGVD Close 4.7 feet, NGVD
Increment 1.1/1.2	S-176	<p>Operating Range from 4.75 to 5.0 feet, NGVD</p> <p>Operational Range of 4.0 to 4.9 feet, NGVD until construction of the NDA and 8.5 SMA are functionally complete. Once the NDA and 8.5 SMA features are functionally complete, such that construction conflicts with water management of canal levels are resolved, the operational range will return to 4.75 to 5.0 feet, NGVD.</p> <p>01 August through 14 February, S-176 may release up to an additional 200 cfs discharge to Manatee Bay while maintaining C-111 Canal stages at S-176 HW above 4.5 ft, NGVD.</p>	

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS
Increment 1.0	S-177	Column 1 Criteria for S-177: Open 4.2 feet, NGVD (see S-197 open) Close 3.6 feet, NGVD	Column 2 Criteria for S-177 (same as Column 1 criteria): Open 4.2 feet, NGVD (see S-197 open) Close 3.6 feet, NGVD
Increment 1.1/1.2	S-177	Operating Range from 3.6 to 4.2 feet, NGVD	
		S-177 may be used to lower S-177 HW down to 3.6 ft, NGVD. If the rainfall over the last 14 days exceeds 5.5 inches, then S-177 may be opened to lower S-177 HW down to 3.3 feet-NGVD. During the period from 01 August through 14 February, S-177 may release up to an additional 200 cfs water supply delivery to Manatee Bay while maintaining C-111 Canal stages at S-177 HW above 3.2 ft, NGVD	
Increment 1.0	S-18C	Column 1 Criteria for S-18C: Open 2.6 feet, NGVD Close 2.3 feet, NGVD	Column 2 Criteria for S-18C: Open 2.25 feet, NGVD Close 2.0 feet, NGVD
Increment 1.1/1.2	S-18C	Operating Range from 2.3 to 2.6 feet, NGVD	Operating Range from 2.0 to 2.25 feet, NGVD

	Operational Component	Column 1: No WCA-3A Regulatory Releases to SDCS or SRS	Column 2: WCA-3A Releases to SDCS																																																																																																																		
Increment 1.0	S-197	If S-177 HW is greater than 4.1 feet, NGVD or S-18C HW is greater than 2.8 feet, NGVD, S-197 release 1/3 capacity. If S-177 HW is greater than 4.2 feet, NGVD for 24 hours or S-18C HW is greater than 3.1 feet, NGVD, S-197 release 2/3 capacity. If S-177 HW is greater than 4.3 feet, NGVD or S-18C HW is greater than 3.3 feet, NGVD, S-197 release full capacity. Close gates when all the following three conditions are met: (1.) S-176 HW is less than 5.2 feet, NGVD and S-177 HW is less than 4.2 feet, NGVD. (2.) Storm has moved away from the basin. (3.) After Conditions 1 and 2 are met, keep the number of S-197 gates open necessary only to match residual flow through S-176. All gates should be closed if S-177 HW is less than 4.1 feet, NGVD after all conditions are satisfied. (See Increment 1.0, Table 1)	If S-177 HW is greater than 4.1 feet, NGVD or S-18C HW is greater than 2.8 feet, NGVD, S-197 release 1/3 capacity. If S-177 HW is greater than 4.2 feet, NGVD for 24 hours or S-18C HW is greater than 3.1 feet, NGVD, S-197 release 2/3 capacity. If S-177 HW is greater than 4.3 feet, NGVD or S-18C HW is greater than 3.3 feet, NGVD, S-197 release full capacity. Close gates when all the following three conditions are met: (1.) S-176 HW is less than 5.2 feet, NGVD and S-177 HW is less than 4.2 feet, NGVD. (2.) Storm has moved away from the basin. (3.) After Conditions 1 and 2 are met, keep the number of S-197 gates open necessary only to match residual flow through S-176. All gates should be closed if S-177 HW is less than 4.1 feet, NGVD after all conditions are satisfied. (See Increment 1.0, Table 1)																																																																																																																		
Increment 1.1/1.2	S-197	S-197 will be operated consistent with the modified 2012 Water Control Plan reflecting the replaced S-197 structure (2012). Conditions cited below are referred below in Section 10.0 of the G-3273 Constraint Relaxation/S-356 Field Test and S-357N Revised Operational Strategy (Increment 1.1 and Increment 1.2). <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; vertical-align: top;">1.</td> <td style="width: 15%; vertical-align: top;">Condition 1</td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> </tr> <tr> <td></td> <td><u>S-18C HW</u></td> <td style="text-align: center;">or</td> <td><u>S-177 HW (feet, NGVD)</u></td> <td></td> <td><u>S-197 Target Flow (cfs) (daily time-weighted average)</u></td> </tr> <tr> <td></td> <td>>3.3</td> <td></td> <td>>4.3</td> <td></td> <td>2,400</td> </tr> <tr> <td></td> <td>>3.1</td> <td></td> <td>>4.2</td> <td></td> <td>1,600</td> </tr> <tr> <td></td> <td>>2.8</td> <td></td> <td>>4.1</td> <td></td> <td>800</td> </tr> <tr> <td style="vertical-align: top;">2.</td> <td style="vertical-align: top;">Condition 2</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td><u>S-18C HW</u></td> <td style="text-align: center;">or</td> <td><u>S-177 HW (feet, NGVD)</u></td> <td></td> <td><u>S-197 Target Flow (cfs) (daily time-weighted average)</u></td> </tr> <tr> <td></td> <td>>3.3</td> <td></td> <td>>4.3</td> <td></td> <td>2,400 (full)</td> </tr> <tr> <td></td> <td>>3.1</td> <td></td> <td>>4.2</td> <td></td> <td>1,600 (two-thirds)</td> </tr> <tr> <td></td> <td>>2.8</td> <td></td> <td>>4.1</td> <td></td> <td>500</td> </tr> <tr> <td></td> <td>>Table 2B</td> <td></td> <td>NA</td> <td></td> <td>minimum (S-176+100, S-177+100, 300)</td> </tr> <tr> <td></td> <td><Table 2B</td> <td></td> <td>NA</td> <td></td> <td>minimum (S-176+50, S-177+50, 250)</td> </tr> <tr> <td style="vertical-align: top;">3.</td> <td style="vertical-align: top;">Conditions 3 and 4</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td><u>S-18C HW</u></td> <td style="text-align: center;">or</td> <td><u>S-177 HW (feet, NGVD)</u></td> <td></td> <td><u>S-197 Target Flow (cfs) (daily time-weighted average)</u></td> </tr> <tr> <td></td> <td>>3.3</td> <td></td> <td>>4.3</td> <td></td> <td>2,400 (full)</td> </tr> <tr> <td></td> <td>>3.1</td> <td></td> <td>>4.2</td> <td></td> <td>1,600 (two-thirds)</td> </tr> <tr> <td></td> <td>>2.8</td> <td></td> <td>>4.1</td> <td></td> <td>500 (one-third)</td> </tr> <tr> <td></td> <td>> Table 3B</td> <td></td> <td>NA</td> <td></td> <td>minimum (S-176+200, S-177+200, 400)</td> </tr> <tr> <td></td> <td>< Table 3B</td> <td></td> <td>NA</td> <td></td> <td>minimum (S-176+100, S-177+100, 300)</td> </tr> </table> <p>Criteria for S-177 only applies when gate is fully open for 24 hours.</p>		1.	Condition 1						<u>S-18C HW</u>	or	<u>S-177 HW (feet, NGVD)</u>		<u>S-197 Target Flow (cfs) (daily time-weighted average)</u>		>3.3		>4.3		2,400		>3.1		>4.2		1,600		>2.8		>4.1		800	2.	Condition 2						<u>S-18C HW</u>	or	<u>S-177 HW (feet, NGVD)</u>		<u>S-197 Target Flow (cfs) (daily time-weighted average)</u>		>3.3		>4.3		2,400 (full)		>3.1		>4.2		1,600 (two-thirds)		>2.8		>4.1		500		>Table 2B		NA		minimum (S-176+100, S-177+100, 300)		<Table 2B		NA		minimum (S-176+50, S-177+50, 250)	3.	Conditions 3 and 4						<u>S-18C HW</u>	or	<u>S-177 HW (feet, NGVD)</u>		<u>S-197 Target Flow (cfs) (daily time-weighted average)</u>		>3.3		>4.3		2,400 (full)		>3.1		>4.2		1,600 (two-thirds)		>2.8		>4.1		500 (one-third)		> Table 3B		NA		minimum (S-176+200, S-177+200, 400)		< Table 3B		NA		minimum (S-176+100, S-177+100, 300)
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PART 3 – INCREMENT 1 ASSESSMENT

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DRAFT

ERTP Increment 1 Field Test Assessment
Period of October 01, 2015 through September 30, 2016

CESAJ-OD-MW

May 18, 2016

Water Management Assessment of Increment 1 Field Test

An analysis of hydrologic conditions in Water Conservation Area 3A (WCA-3A), Northeast Shark River Slough (NESRS) and 8.5 Square Mile Area (SMA) from October 15, 2015 to September 30, 2016 was performed and is presented in this report. Implementation of MWD Increment 1 Field Test operations began on October 15, 2015 with a goal to increase water deliveries to NESRS by relaxing G-3273 constraint. The field test was superseded by a Temporary Emergency Deviation action to alleviate high water conditions in WCA-3A on February 15, 2016. The high water conditions in WCA-3A was a direct result of extremely high rainfall amounts throughout the month of December 2015 and January 2016, which were influenced by strong *El Niño* conditions. The Temporary Emergency Deviation was implemented for 90 days and was followed by a 60-day recovery period, which was then extended until the end of November 2016. A timeline for Increment 1 operations as well as the temporary emergency deviation is depicted in **Table 1**. All data reported below is provisional and based on best available information.

TABLE 1. INCREMENT 1 AND TEMPORARY EMERGENCY DEVIATION TIMELINE

Action/Operation	Begin Date	End Date
Increment 1 – Condition 1	October 15, 2015	December 1, 2015
Pre-Storm Drawdown & Flood Control Operations	December 1, 2015	December 22, 2015
Transitioning back to Increment 1 Operations	December 22, 2015	February 12, 2016
Temporary Emergency Deviation Request/Authorization	February 12, 2016	December 31, 2016
Temporary Emergency Deviation Implementation	February 15, 2016	May 11, 2016
Recovery Period	May 12, 2016	July 10, 2016
Extension of the Recovery Period	July 11, 2016	November 30, 2016 FDEP permit; December 15, 2016 SAD Approval

Precipitation

A comparison of observed monthly precipitation totals and monthly averages for WCA-3A and 8.5 SMA are shown in **Table 2**. **Figure 1** shows WCA-3A monthly rainfall hyetograph from October 2015 to September 2016 and the average monthly rainfall, which was obtained from SFWMD (30-year record from 1986 to 2015). **Figure 2** plots the 8.5 SMA monthly rainfall and compares it to the Dade County monthly average rainfall. The highest monthly rainfall during the Increment 1 Field Test occurred in January 2016, in which WCA-3A and 8.5 SMA received 9.54 and 8.28 inches of rain, respectively. For the 12-month period from October 1, 2015 to September 30, 2016, WCA-3A received approximately 63.54 inches of rain compared to the average total of 51.26 inches; and 8.5 SMA received about 76.06 inches of rain compared to the average total of 52.92 inches for Dade County.

TABLE 2. TOTAL MONTHLY PRECIPITATION (INCHES)

Year	Month	Estimated Precipitation over WCA-3A (inches)	Average Precipitation over WCA-3A (inches)	Estimated NEXRAD Gridded Precipitation over 8.5 SMA (inches)	Average Precipitation over Dade County (inches)
2015	October	2.41	4.33	4.85	3.37
	November	3.99	2.36	3.54	2.05
	December	4.27	1.66	9.02	1.69
2016	January	9.54	1.64	8.28	1.75
	February	2.75	1.92	2.23	1.98
	March	1.82	2.38	0.99	2.76
	April	1.10	2.90	0.35	2.65
	May	7.49	4.32	11.25	3.55
	June	8.20	8.56	7.02	9.04
	July	4.67	7.05	7.69	7.89
	August	11.33	7.51	12.37	9.02
	September	5.97	6.63	8.47	7.17
	Total	63.54	51.26	76.06	52.92

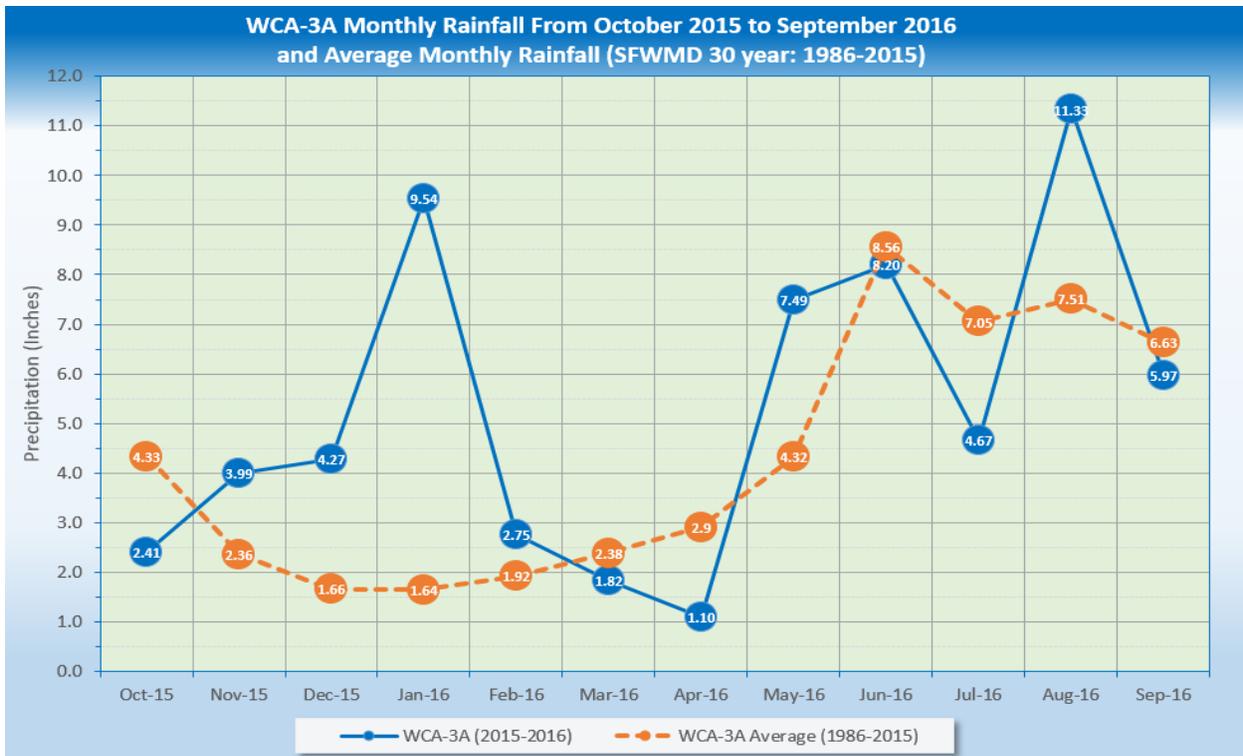


FIGURE 1. WCA-3A MONTHLY RAINFALL HYETOGRAPH

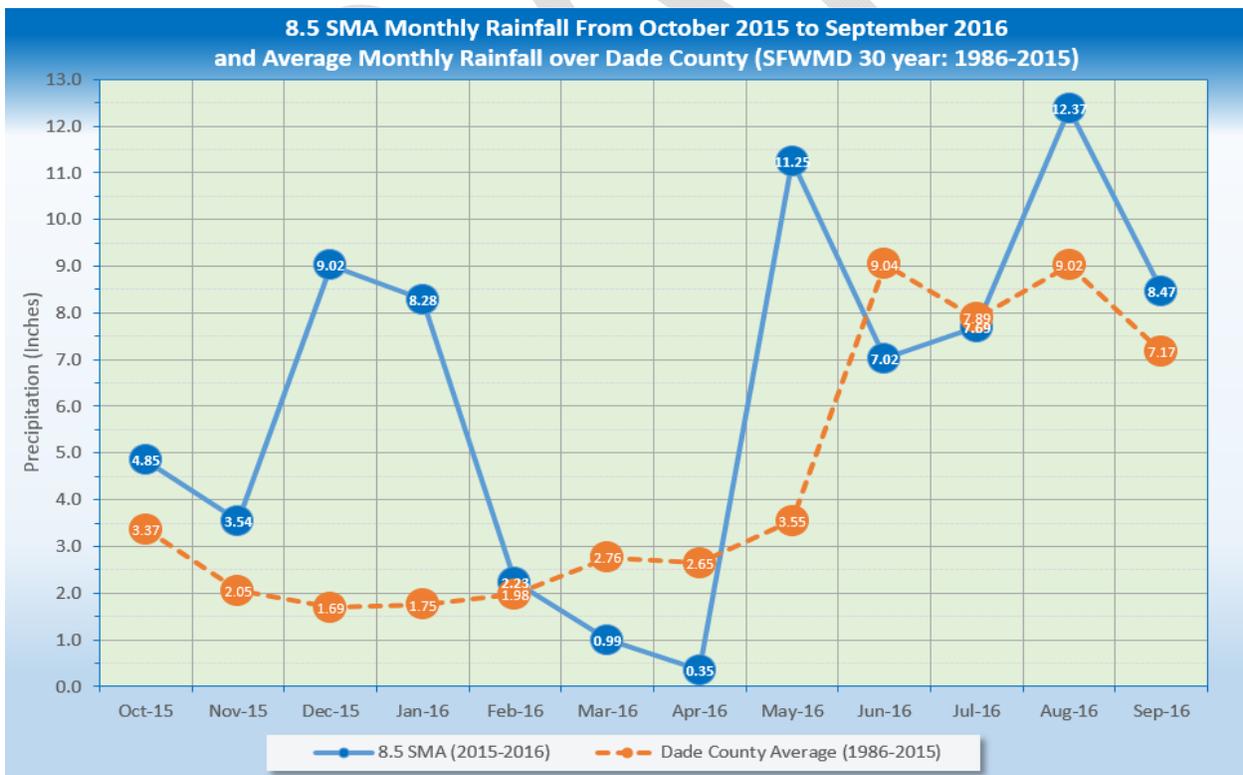


FIGURE 2. LAS PALMAS COMMUNITY (8.5 SMA) MONTHLY RAINFALL HYETOGRAPH

Water Conservation Area 3A

Water level in WCA-3A on October 1, 2015 was at elevation 10.21 feet, NGVD, which put it in Zone D of the regulation schedule. Significant rainfalls that came in November and early December 2015 caused the water level in WCA-3A to rise above Zone A of the regulation schedule and the subsequent January 2016 rainfall pushed the water level in WCA-3A to reach a peak stage of 11.50 feet, NGVD on February 18, 2016. Rainfall hyetograph, stage hydrograph, and regulation schedule of WCA-3A are shown in **Figure 3**. In addition, WCA-3A stage hydrograph from January 2015 to September 2016 was plotted with stage exceedance statistics computed from the daily average water level of Sites 63, 64, and 65 from 1962 to 2013 in **Figure 4**. The compiled stage-exceedance statistical data are maximum, minimum, median (P50), 90th percentile (P90), 75th percentile (P75), 25% percentile (P25), and 10% percentile (P10). At a peak stage of 11.50 feet NGVD, the WCA-3A water level was above the period of record maximum for February. The WCA-3A water level receded elevation 9.48 feet, NGVD on May 16, 2016, which put it above the P75 value at that time of the year. The 75th percentile (p75) of historical values is the water level observed less than 25% of the time. From May to August 2016, the WCA-3A water level rose moderately tracking along the median value (P50). On September 13, 2016, the WCA-3A water level reached its 2016 wet season peak at elevation 10.81 feet, NGVD, which put it in the range between P75 and P50 (median).

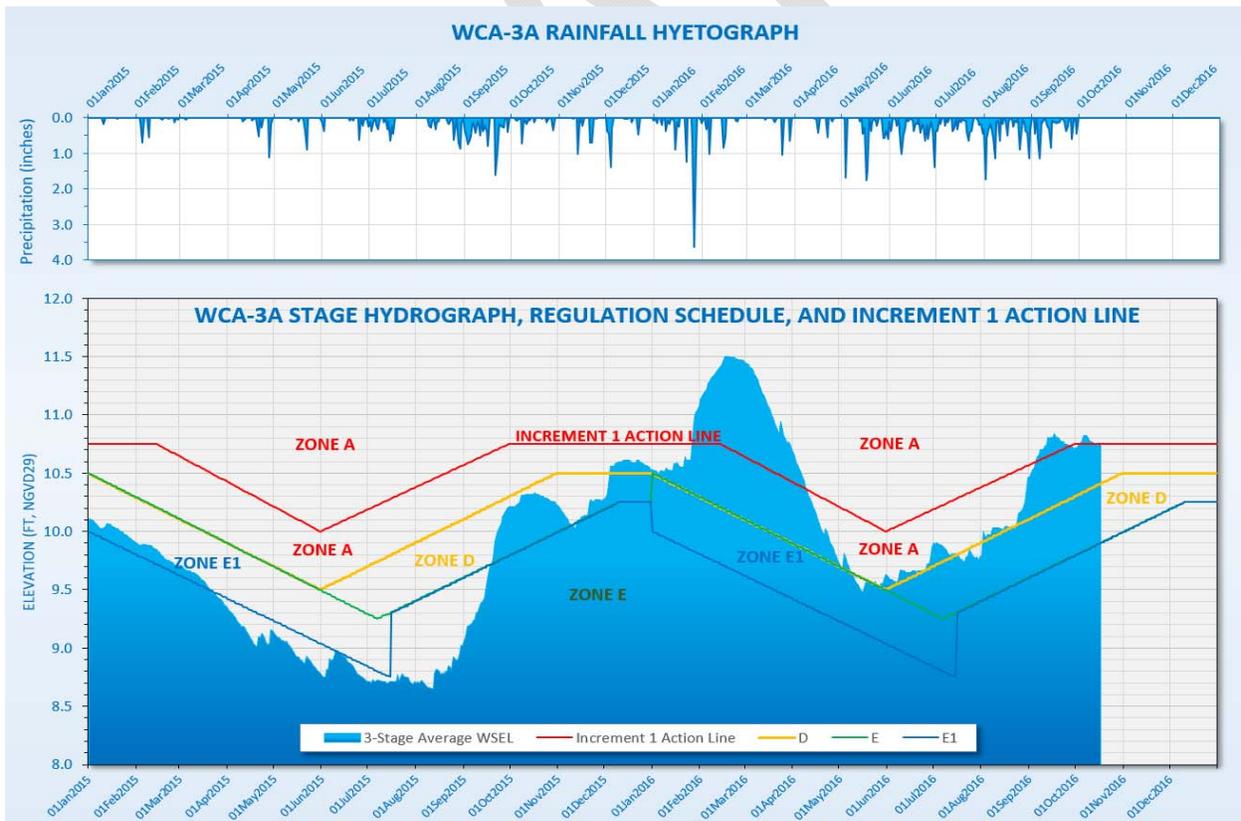


FIGURE 3. WCA-3A RAINFALL HYETOGRAPH AND STAGE HYDROGRAPH

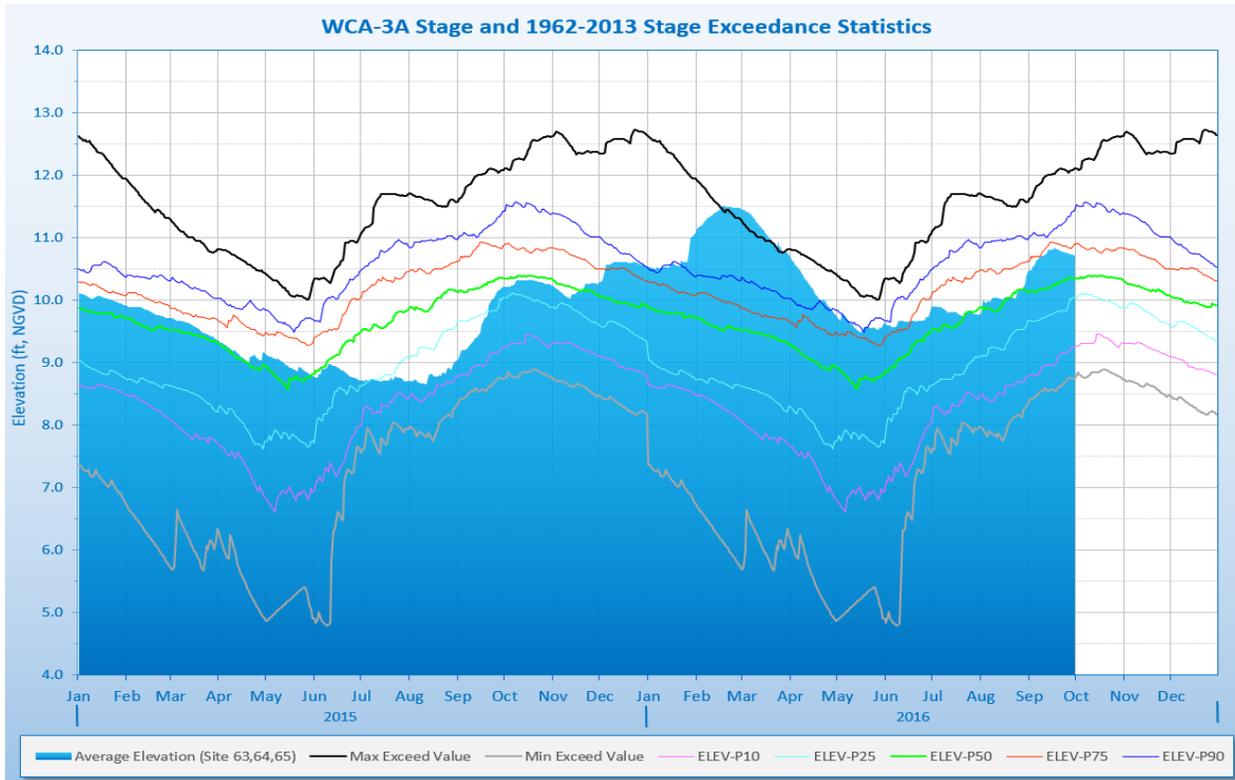


FIGURE 4. WCA-3A STAGE AND STAGE EXCEEDANCE STATISTICS (1962-2013)

Water Deliveries to NESRS and SRS

With G-3273 constraint lifted from 6.8 to 7.5 ft, NGVD, S-333 was used to deliver additional water from WCA-3A to NESRS and even larger volumes were delivered after the Temporary Emergency Deviation was implemented, in which L-29 stage constraint was raised to 8.5 from 7.5 feet, NGVD. Monthly volumes of water delivery to NESRS during the period from October 01, 2015 to September 30, 2016 are listed in **Table 3**. Majority of inflows to NESRS are the discharges from S-333 (minus S-334) and S-356. In Increment 1 Column 2 operations, S-334 diverts all or partial S-333 flows to L-31N Canal when L-29 Canal reached elevation 7.5 feet, NGVD. Monthly and annually volumes of water deliveries from WCA-3A to Shark River Slough (SRS) in ENP from 2012 to 2016 are shown in **Table 4**. As a result of the Increment 1 Field Test, Temporary Emergency Deviation, and Recovery Period operations, total volumes of water delivered to NESRS and SRS are approximately 395,200 and 1,270,800 acre-feet, respectively.

TABLE 3. MONTHLY AND TOTAL VOLUMES (AC-FT) OF WATER DELIVERED TO NESRS

Year	Month	Volume (ac-ft)
2015	October	52,000
	November	51,200
	December	21,000
2016	January	19,000
	February	28,800
	March	74,900
	April	65,800
	May	26,000
	June	11,100
	July	30,700
	August	13,800
	September	600
Total		395,200

TABLE 4. MONTHLY AND TOTAL VOLUMES (AC-FT) OF WATER DELIVERED TO SHARK RIVER SLOUGH (ENP)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2012	32,700	13,300	5,900	700	25,600	44,900	71,500	87,400	115,100	177,900	123,900	105,600	804,500
2013	40,200	14,600	3,900	700	47,900	63,800	112,600	149,300	133,800	122,700	88,000	40,800	818,300
2014	6,400	43,300	55,200	600	100	12,300	61,700	75,500	101,600	100,500	91,200	23,700	572,100
2015	13,100	15,100	8,900	0	0	0	0	0	14,500	122,500	56,700	108,900	339,700
2016	108,500	180,800	203,100	127,400	61,600	44,300	66,900	79,400	110,700	-	-	-	982,700

S-356 Operations

S-356 pump station consists of four 125 cfs diesel engines driven pumps and is located along Tamiami Canal at S-334. The S-356 pump station was designed to mitigate for increased seepage anticipated from increased water deliveries to NESRS as a result of full implementation of the Modified Water Deliveries (MWD) to ENP Project. The goal of utilizing the S-356 pump station during Increment 1 Field Test is to collect data to develop operational criteria for the MWD. Its operating criteria is to maintain its headwater elevation between 5.5 and 5.8 feet, NGVD. Monthly discharge volumes of S-356 from October 2015 to September 2016 are shown in Table 5. S-356 stage and discharge hydrographs showing headwater elevation, tailwater elevation, and flow rates from October 1, 2015 to September 30, 2016 are shown Figure 5.

Table 5. Monthly volumes of S-356 discharges

Year	Month	Volume (acre-feet)
2015	October	9,701
	November	14,989
	December	10,060
2016	January	10,425
	February	185
	March	237
	April	229
	May	287
	June	197
	July	329
	August	3,016
	September	217
Total		49,654

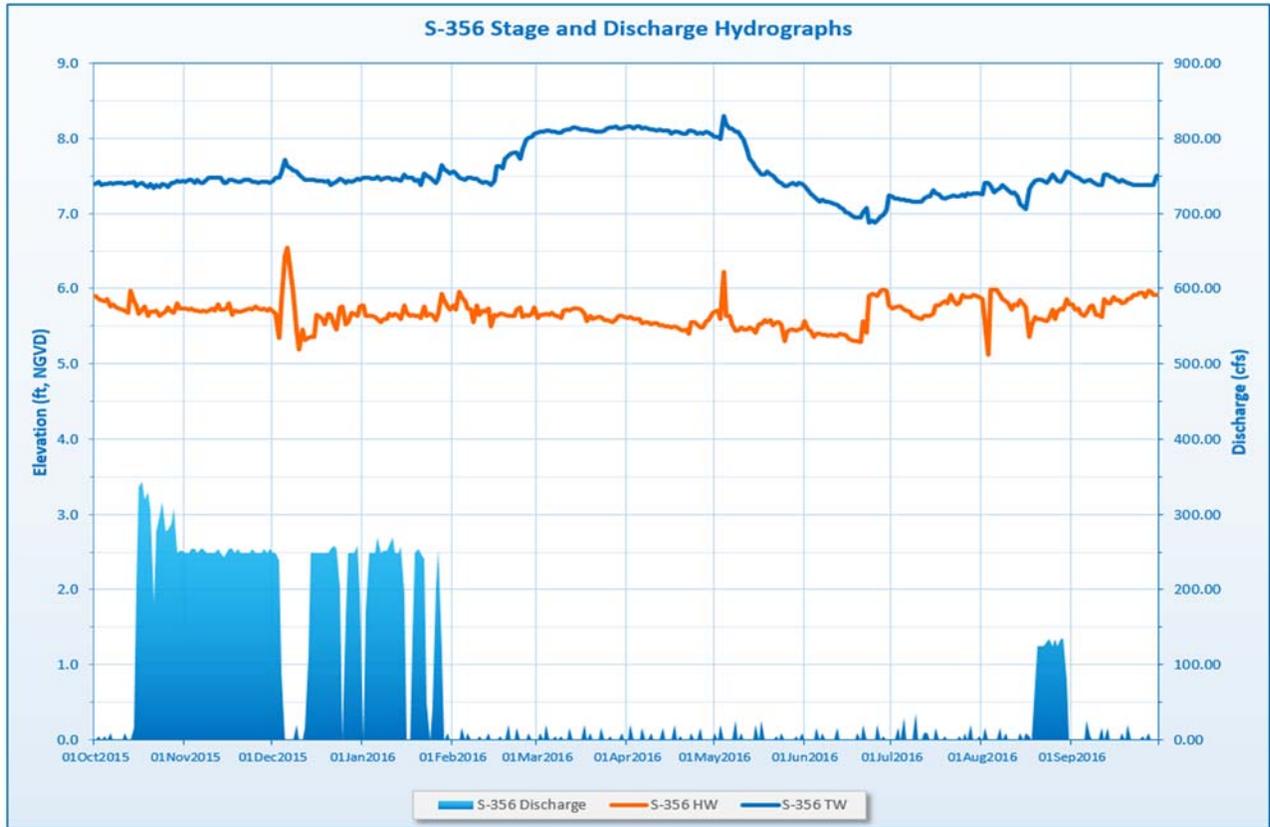


FIGURE 5. S-356 STAGE AND DISCHARGE HYDROGRAPHS

S-357 Operations

S-357 pump station was designed to discharge up to 575 cfs to provide flood mitigation for the Las Palmas Community, known as 8.5 SMA, by maintaining its headwater between 5.7 and 6.2 feet, NGVD. According to the Increment 1 operational strategy for 8.5 SMA, the goal of the S-357 pump operation was not to exceed 250 cfs. Since the implementation of the L-29 Canal Temporary Emergency Deviation, the S-357 pump routinely exceeded the 250 cfs limit after April 10, 2016 due to the average-daily north to south groundwater gradient (DELTA) between Angel’s Well water level and Las Palmas 1 (LPG1) water level exceeding their flood mitigation thresholds. Monthly volumes discharged from S-357 to the 8.5 SMA detention cell are shown in Table 6. S-357 reached a peak monthly volume of 25,640 acre-feet in May 2016. A total of 103,800 acre-feet was pumped by S-357 into the 8.5 SMA detention cell from October 1, 2015 to September 30, 2016.

Table 6. Monthly volumes of S-357 discharges into 8.5 SMA detention cell

Year	Month	Volume (acre-feet)
2015	October	1,880
	November	480
	December	2,230
2016	January	2,710
	February	2,330
	March	9,510
	April	17,530
	May	25,640
	June	13,510
	July	4,430
	August	13,370
	September	10,470
Total		103,800

Rainfall hyetograph of 8.5 SMA, NESRS monthly inflow volumes, stage hydrographs of S-357 headwater, LPG1, and Angel's well, and S-357 and S-356 discharge hydrographs from October 1, 2015 to October 31, 2016 are all plotted in **Figure 5** to convey the hydrologic responses in NESRS (G-3273) and 8.5 SMA (LPG1) due to rainfall, increased water delivery to NESRS, and pumping at S-357.



FIGURE 6. HYDROLOGIC CONDITIONS IN NESRS AND 8.5 SMA DURING INCREMENT 1 AND THE TEMPORARY EMERGENCY DEVIATION OPERATIONS

As shown in **Figure 6**, water levels at LPG1 averaged around 7.0 ft, NGVD from the end of March to early May 2016 and eventually receded to elevation 6.2 ft, NGVD on May 3, 2016 with the continuous pumping at S-357 at an average rate of 230 cfs. The ground surface elevation at the LPG1 gauge is 6.6 feet, NGVD. The next day on May 4, 2016 approximately 6 inches of rain fell on 8.5 SMA causing the water level at LPG1 to reach elevation 7.31 feet, NGVD. S-357 increased its pumping rate from 372 cfs on May 3 to 500 cfs on May 11 in an effort to lower stages at LPG1 below the ground surface elevation of 6.6 feet, NGVD. At 500 cfs pumping rate, S-357 headwater level was drawn down to elevation 3.58 feet, NGVD and the corresponding stage at LPG1 was 7.03 feet, NGVD. The effects of the Temporary Emergency Deviation operations in NESRS, Las Palmas Community (8.5 SMA), and surrounding areas on May 11, 2016 were captured by the ground and surface water contours plotted in **Figure 7**. The crosshatch areas in **Figure 7** represents high water levels, which are ranged from 9.25 to 10.0 feet, NGVD. The ground and surface water contours map illustrates the hydrologic responses in NESRS and 8.5 SMA as a result of over 160,000 acre-feet of inflows to NESRS during the 90 days of Temporary Emergency Deviation and the maximum pumping at S-357 in an attempt to provide flood mitigation to the residents of the Las Palmas Community.

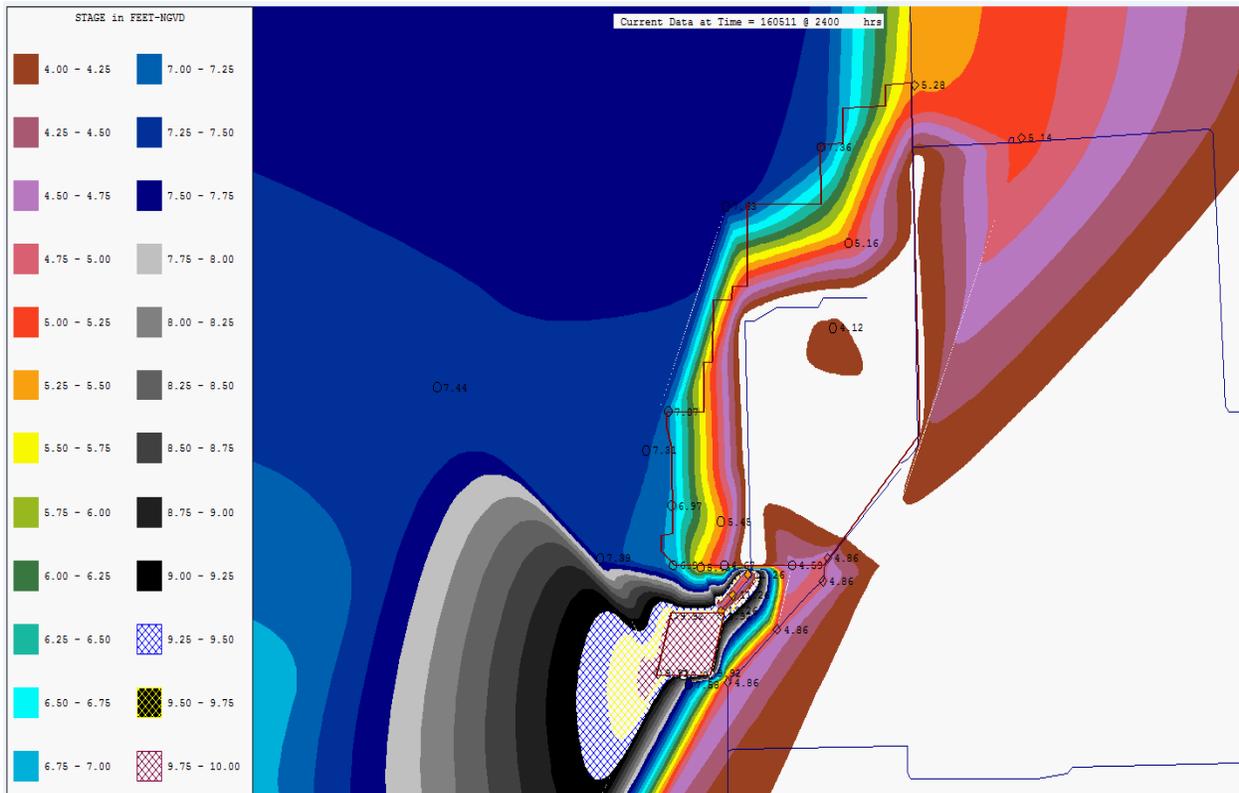


FIGURE 7. GROUND AND SURFACE CONTOURS MAP ON MAY 11, 2016

Conclusion

In summary, over 1,270,000 acre-feet of water was delivered to ENP between October 1, 2015 and September 30, 2016. Approximately 395,000 of the total inflow was delivered to NESRS via S-333 and S-356 during the same time period. Approximately 103,800 acre-feet was discharged from S-357 also during the same period of October 1, 2015 to September 30, 2016. The water levels in NESRS and SRS responded accordingly to the water deliveries from WCA-3A and rainfalls over the basin as shown in the stage hydrographs at NESRS2 (**Figure 7**), G-3273 (**Figure 8**) and Angel's Well (**Figure 9**). All available ground water storages typically occurred in Rocky Glades during the dry season were taken up by the large inflow volumes of water during the three-month of the Temporary Emergency Deviation (March to May 2016). With higher water levels in NESRS during the dry season, subsequent rainfall events over the NESRS and 8.5 SMA contributed to above normal water levels at Angels Well, NESRS2 and G-3273 gauges from March to July 2016. From July to September 2016, water levels at these indicator gauges were within the average to above average range for the remainder of the wet season. The average monthly inflow volume to NESRS and the average monthly precipitation over 8.5 SMA during this period are around 15,000 acre-feet and 9.5 inches, respectively.

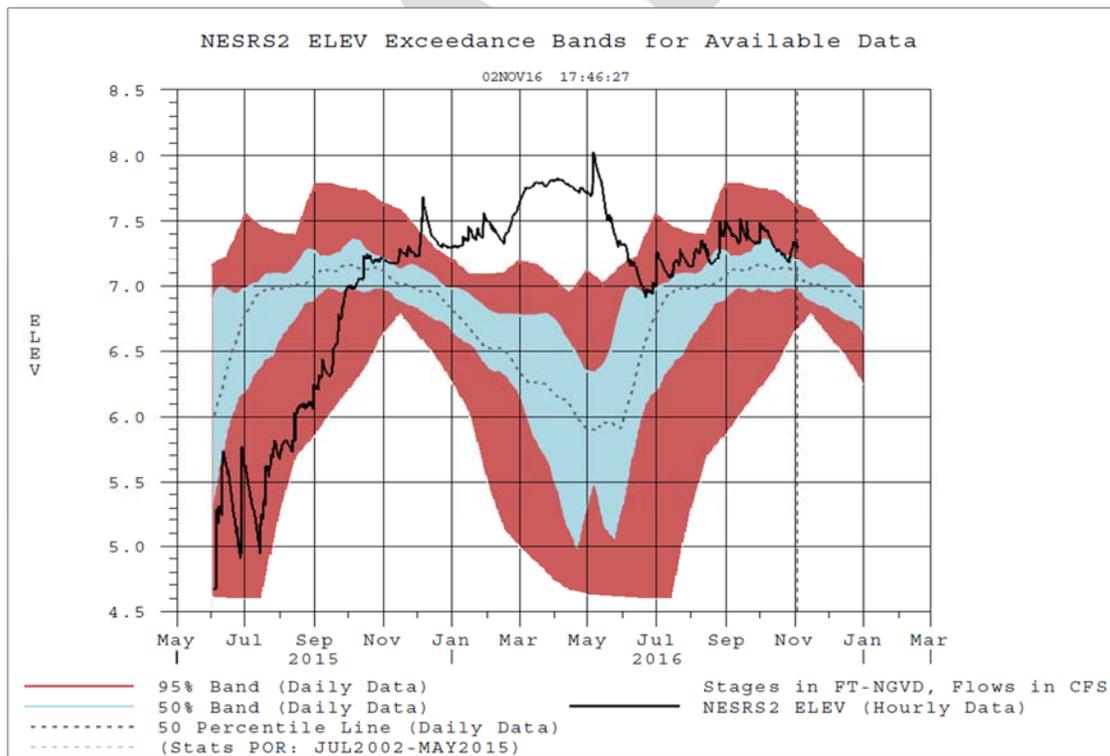


FIGURE 8. NESRS2 STAGE HYDROGRAPH AND EXCEEDANCE BANDS

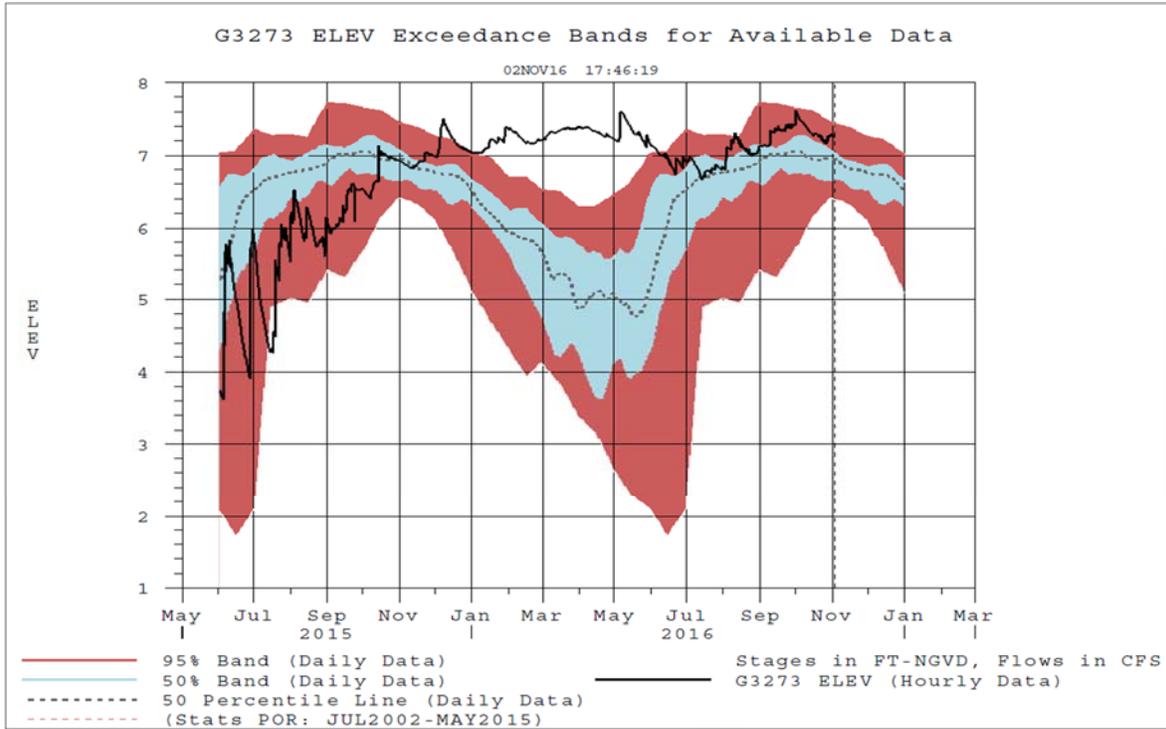


FIGURE 9. G-3273 STAGE HYDROGRAPH AND EXCEEDANCE BANDS

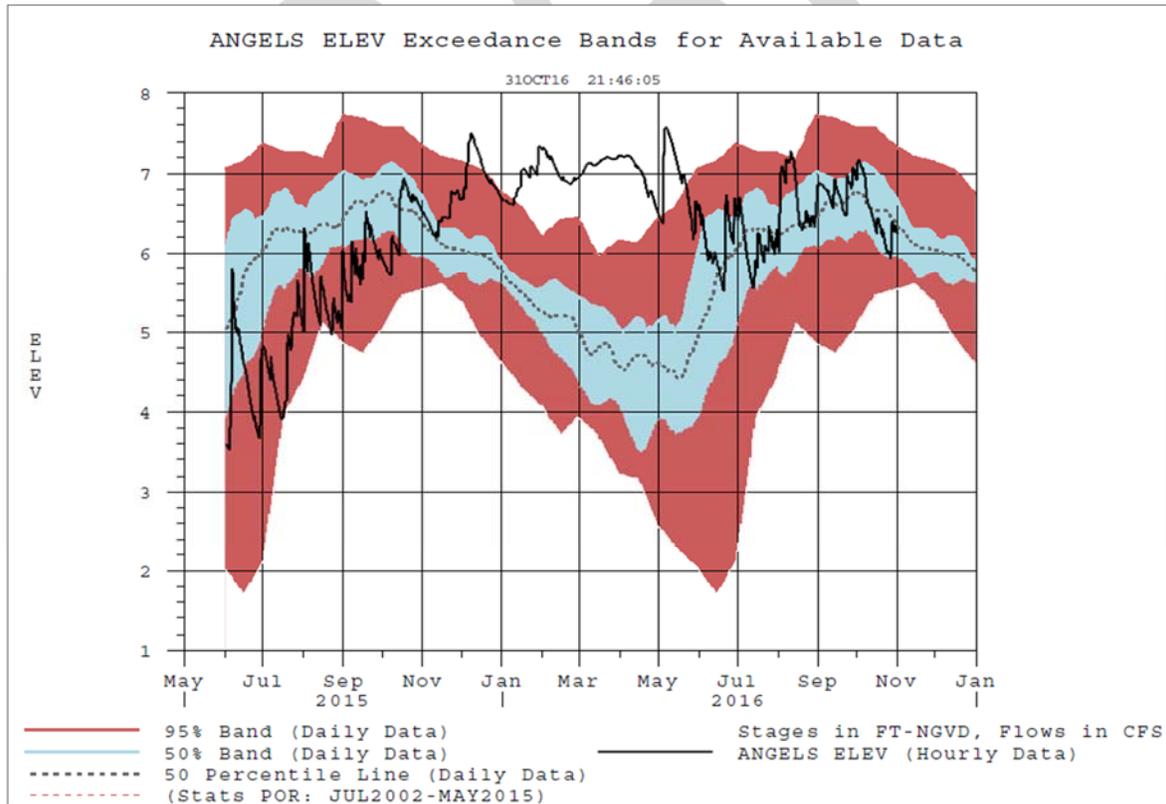


FIGURE 8. ANGELS WELL STAGE HYDROGRAPH AND EXCEEDANCE BANDS

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**PART 4 – OPERATIONAL CRITERIA FOR HIGH WATER RELIEF OF WCA 3 A
(PROTECTIVE OPERATIONAL CRITERIA TO COMPENSATE FOR SUSTAINED
L-29 STAGE OF 8.5 FEET NGVD)**

**NOTE: INCLUDED FOR REFERENCE. REFER TO SECTION 1.3.5 OF THE
ACCOMPANYING ENVIRONMENTAL ASSESSMENT FOR INFORMATION
RELATED TO THESE OPERATIONS**

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Operational Criteria for High Water Relief of WCA-3A (Protective Operational Criteria to Compensate for Sustained L-29 Stage of 8.5 feet NGVD)

To provide high water relief for WCA-3A it is possible to substantively increase the available discharge capacity through S-333 by raising the L-29 stage limit and by routing water along an eastern manually operated route (S-151, S-337, S-335, S-356, & G-211).

The following criteria are protective and implementable operational criteria to compensate for the sustained increased flow to Northeast Shark River Slough (NESRS) associated with raising the L-29 Stage Limit from 7.5 to 8.5 feet NGVD. It is expected that over the period when flows to NESRS are increased that the water level in NESRS and along the entire eastern boundary of Everglades National Park (ENP), will rise meaningfully.

The increased S-333 discharges associated with this action are expected to be of a relatively short duration. A fixed duration or target line (e.g. at or below the Zone A Regulation Schedule Line for WCA-3A) or a combination of both will need to be determined. There will be a meaningful (e.g. 60 day) recovery period once the L-29 constraint is returned to 7.5 feet NGVD, during which the water level would recede to stages typical of the recent hydrological conditions and the operational criteria of ERTF Increment 1. The lowered operational ranges will remain until this recovery period is completed. A fixed duration or target stages [e.g. being below the upper quartile (P75) at representative gages along the eastern boundary of ENP] or a combination of both will need to be determined. All structures will be operated within their design limits and Maximum Allowable Gate Limits (MAGO).

To the extent that the raised L-29 stage limit allows, S-333 discharges will be sent to Northeast Shark River Slough (NESRS). S-334 will be used to the extent that is required to maintain the L-29 stage below the current temporary stage limit. It is expected that the L-29 stage limit will be raised from 7.5 to 8.5 feet NGVD incrementally as high water issues are resolved with the vendors. Once the L-29 stage limit is raised above 8.3 feet NGVD that at least initially there will be sufficient capacity for all of S-333's full capacity. If the L-29 stage is below the raised L-29 stage limit with S-333 discharging at its' full capacity (1,350 cfs) the USACE may use S-356 to reduce the flow south through G-211 and control the L-31N stage north of G-211. In addition, if the L-29 stage peaks well below the 8.5 feet- NGVD limit, with S-333 discharging at the maximum rate allowed by its MAGO limits, water from WCA-3A can be delivered through the manual route of S-151, S-337, and S-356.

The drainage (S-335 minus S-337) of the L-30 canal by S-335 will be reduced (below historical rate for comparable conditions) to free up capacity through G-211 and at the S-332B, S-332C, and S-332D detention areas and along the C-111 Canal. To provide compensating groundwater drainage the western reaches (S-336 to G-119 and G-119 to S-380) of the C-4 Canal will be lowered to the extent practical. Water passed through the L-30 Canal (water released by S-337) can and will be used if the available L-29, L-31N, and C-111 capacity exceeds the S-333's capacity. The SFWMD will continue to have the ability to detain or supply water from the L-30 Canal to smooth operations or respond to short term loss of downstream capacity. The drainage of the L-30 canal by S-335 discharges will be reduced until there is sufficient capacity to meet the primary objective of maximizing the discharge from WCA-3A or WCA-3A's condition becomes more normal, or WCA-3B conditions become acutely adverse, or the headwater (HW) stage rises to above the top of S-335's gate at 8.0 feet NGVD. If S-335's HW stage rises above 8.0 feet S-335 gate may be opened as necessary prevent flow over the top of the gate.

Should flow through S-334 be needed then flows will be maximized to the extent the following constraints allow. However, if the L-31N stage rises above the operation ranges prescribed below then S-334 discharges will be reduced to 250 cfs or less until the canal daily average stage returns to within the prescribed ranges. If the available capacity at S-332B, S-332C, and S-332D is insufficient to maintain the L-31N below the top of the lowered operational range for more than 24 hours then all S-334 flow will be ceased until the L-31N stage is lowered and maintained in the lowered operational range for 24 hours.

S-338 discharges will be maximized (e.g. 250 to 300 cfs) to the extent that downstream conditions allow. This includes operating S-148 with an open/close of 3.0/2.5 for S-148 flows of less than 700 cfs and with an open/close of 3.5/3.0 (lower half of the low range) for S-148 flow greater than 700 cfs.

G-211 will discharge to the extent practical to convey S-334 and S-335 discharges, and to maintain the L-31N with the 5.7/5.3 stage range prescribed by Column 2 operations.

S-331 will be operated to maintain S-331's HW using the standard ranges lowered by 0.2 feet (normal 4.3 to 4.8 and low from 3.8 to 4.3) with the remaining criteria unchanged.

S-332B and S-332C will be operated to maintain the L-31N's average daily stage between 4.6 and 4.3; which is 0.2 feet lower than the Column 2 ranges of 4.8 and 4.5 feet NGVD.

S-332D will be operated to discharge up to 250 cfs to S-332D's detention area and up to 325 cfs to the Southern Detention Area (SDA) through S-332DX1 to maintain the L-31N's average daily stage between 4.6 and 4.3 feet NGVD.

Discharge to tide through the C-102 Canal will be maximized to the extent that downstream conditions allow. The SFWMD will continue to have full operational flexibility to operate S-165 within the low range of 3.0 to 1.9 feet NGVD. It is acknowledged that without remote control of S-194 (manually operated structure) that changes to S-194 will occur less frequently.

Discharge to tide through the C-103 Canal will be maximized to the extent that downstream conditions allow. The SFWMD will continue to have full operational flexibility to operate S-167 within its low range of 3.0 to 1.9 feet NGVD and to operate S-179 between 2.0 and 1.5 feet NGVD. It is acknowledged that without remote control of S-196 (manually operated structure) that changes to S-196 will occur less frequently.

S-176 will be operated to maintain the L-31N average daily stage within the operational range. The amount of inflow from S-334/S-335 and discharge through S-176 will be adjusted to compensate for the available pumping capacity at S-332B, S-332C, and S-332D to 1) maintain the L-31N average daily stage within the operational range of 4.6 to 4.3 feet NGVD while facilitating S-334 flows. The SFWMD has complete discretion to increase pumping to proactively maintain the stage near the bottom of the range. The intention is to make full use of the available capacity at S-332B, S-332C, and S-332D while allowing normal maintenance. During period of higher than normal rainfall S-334 discharges will be reduced as required to assist S-332B, S-332C, and S-332D in maintaining the canal stage at the bottom of the range. Equitable use of S-332B, S-332C, and S-332D is based on having the net inflow (S-331 minus S-194 minus S-196 minus S-176) into the L-31N reach between S-331 and S-176 be comparable to the volume sent to the C-111 Canal.

S-199 will be operated with all available capacity until March 1, 2016 at which time the availability of the pumps will require compliance with the criteria for the Cape Cable Seaside Sparrow Critical Habitat Unit 3 (formerly known as Sub-Population D) ; stage at EVER4 below 2.36 feet NGVD.

S-200 will be operated with all available capacity until March 1, 2016 at which time the availability of the pumps will require compliance with the criteria for the Cape Cable Seaside Sparrow Critical Habitat Unit 2 (formerly known as Sub-Population C) ; stage at R3110 below 4.95 feet NGVD.

S-177 will be operated to maintain an average daily stage below 3.6 but no lower than 3.0 in the upstream reach of the C-111 Canal. The goal will be to maintain a fairly steady discharge through S-177 based on, but not limited to, the average daily/24-hour or instantaneous discharge from S-176 minus the flow through S-199. At times it will be necessary to discharge more than this amount due to rapid changes in the canal stage from rainfall and or increased inflow from S-176 and when S-199/S-200 are unavailable due to CSSS operation constraints.

S-18C will be fully open (gates out of the water) to maintain the Column 2 operational range of 2.25 to 2.0.

S-197 will be operated to maintain the S-18C's Daily Average HW between 2.6 and 2.3 feet NGVD with a daily discharge limit which does not exceed 400 cfs (half of the typical flow for a one third opening of S-197. This will result in discharges larger than those prescribed by the ERTTP Increment 1 when WCA-3A is above the High Water Action Line (Case 3). S-197 discharge will be reduced as the stage declines towards 2.3 feet NGVD using S-176 and S-177 discharges as an indicator of inflows. S-197 shall be closed if S-18C HW fall below 2.3 feet NGVD. For the expected duration of this deviation (February through April) the stage of 2.3 represents a stage well above the historical median.

Operational Changes for WCA-3B in Response to High Water in WCA-3A

To provide some high water relief for WCA-3A the S-151 and S-152 structure will be used to release water from WCA-3A into WCA-3B to the extent that the Trigger Stage (measured at Site 71) of 8.5 feet NGVD allows. The preferred inflow route for WCA-3B is through S-152 but S-151 may be used if S-152 is unavailable. The operation of S-152 can be partially or fully open. If the Trigger stage is exceeded for more than 24 hours then all inflows shall be closed until the stage at Site 71 declines to below the Trigger Stage for more than 24 hours. If the stage in the L-29 allows the manually operated S-355A/S-355B will be opened to release water from WCA-3B with some minor back flow expected at times. The opening of S-355A/S-355B will likely extend past the L-29 Stage relaxation period. If the Site 71 constraint is raised and there is capacity available the L-30 canal may be lowered to provide groundwater drainage of WCA-3B.

Operational Flexibility Allowed (for all sections)

To address uncertainties, present or future system conditions, the following actions may be taken for any duration throughout the effect of the temporary deviation:

- Adjust stages upstream of S-357 and S-331 +/- 0.7 feet to maximize and/or optimize conditions consistent with the purpose.
- Adjust stages within the applicable canal system +/- 0.5 feet to maximize and/or optimize conditions consistent with the purpose.

- Adjust gate openings, pump rates and/or flows as needed to maximize and/or optimize conditions consistent with the purpose.

**PART 5 – RECOVERY PERIOD EXTENSION OPERATIONAL PLAN TO BE
IMPLEMENTED UNTIL THE APPROVAL FO THE REVISED INCREMENT 1
OPERATIONAL STRATEGY**

**NOTE: INCLUDED FOR REFERENCE. REFER TO SECTION 1.3.5 OF THE
ACCOMPANYING ENVIRONMENTAL ASSESSMENT FOR INFORMATION
RELATED TO THESE OPERATIONS**

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"Recovery Period Extension Operational Plan to be implemented until the approval of the Revised Increment 1 Operational Strategy."

The goal of this Recovery Period Extension Operational Plan is to continue the Temporary Emergency Deviation 60-day recovery period operations until the Revised Increment 1 Operational Strategy is approved (presently anticipated in October 2016). The Temporary Emergency Deviation for the L-29 Canal stages above 7.5 ft, NGVD was concluded on 15 May after 90 days, and the 60-day recovery period for the 8.5 SMA and South Dade Conveyance System (SDCS) is currently in affect. In absence of an extension, the 60-day recovery period would conclude on 10-July. Consistent with the ongoing 60-day recovery period allowed under the Temporary Emergency Deviation, releases from WCA-3A via S-333 will continue to be made in accordance with Rainfall-based Management Plan target while not exceeding the L-29 average stage constraint of 7.5 ft, NGVD. In addition, low canal levels to allow for better drainage along the 8.5 Square Mile Area (SMA) and South Dade Conveyance System (SDCS) will be kept as outlined in the Temporary Emergency Deviation. The below operational criteria will be followed from July 10, 2016 until the Revised Increment 1 Operational Strategy is developed and implemented.

Operational Criteria

These criteria are formulated to deal with the likely above average flows and to adjust/compensate for the potential for an early end to the wet season. The following bullets describe the current conditions as of mid-June and indicate the need for an extended recovery period.

- With G3273 at 6.93 ft, NGVD NESRS can be characterized as being at the upper quartile (P75) for the historical period of record from 1990 to 2014. The stage of 6.55 at ANGEL indicates conditions that are between the median (P50) of 5.84 and the upper quartile (P75) 6.62 ft, NGVD for the period of record of 1984 through 2015.
- The current stage of WCA-3A, as measured by the three gage average, is near the top of Zone D which is relatively high for this time of the year. Specifically, the three gage average stage of 9.66 ft, NGVD put WCA-3A well above the median (P50) value of 9.34 and just below the upper quartile (P75) value of 9.81 ft, NGVD for the 1962 through 2014 Period of Record.
- For the northern portion of WCA-3A Site 62 (GA3A2 or the Deer Gage) is used to characterize the stage. Site 62 is currently 11.87 ft, NGVD which puts it between the P95 of 11.57 and the historical maximum of 12.06. On Wednesday June 22, 2016 the stage at Site 62 was high enough to trigger opening of S-340 and the expected flows of the next fourteen days are high enough to trigger the opening of S-339.
- With about 38,000 acre-ft of volume in the A1-FEB continued outflow on the order of 1,000 cfs with no inflow (which is unlikely in the wet season) is expected to persist for at least 19 days.
- With Lake Okeechobee at 14.92 ft, NGVD which is 1.66 ft above the historical average and 2.82 ft above the modeled average for the current regulation schedule, it is expected that if/when dry conditions occur in WCA-3A that treated water may be sent to the Water Conservation Areas (WCAs).

All of these stages are well above the median values indicating that it is likely that we will have above average conditions/flows through most of wet season. With WCA-3A flora and fauna still recovering from a high water event it is important to prevent, to the extent practical, another high water event. These criteria also take into account the need to A) complete the C-358 Canal (Richmond Drive Seepage Collection Canal) and installation of S-357N (C-358 control structure), B) completion of Contracts 8 and

8A (construction of the C-111 South Dade Northern Detention Area to fill the existing 2 mile gap in the hydraulic ridge system and provide a hydraulic connection between the 8.5 SMA Detention Cell and the C-111 South Dade Northern Detention Area), C) maintain the authorized level of flood mitigation for the 8.5 SMA, D) conservatively maintain flood damage reduction along the L-31N and C-111 Canals, and E) provide supplemental flows to Taylor Slough to facilitate the recovery of Florida Bay from the 2015 extreme Hyper-Salinity and to compensate for potential reductions in delivery of water to Taylor Slough through the Rocky Glades from achieving the previous goals.

During the extended recovery period, operational criteria within the SDCS will be managed in accordance with the Increment 1 Operational Strategy except where specified below (items A through E). The following Increment 1 criteria will be replaced, modified, or clarified:

A. L-29 Constraint and Rainfall Plan. The stage in the L-29 Canal will be limited to a maximum daily average of 7.5 ft, NGVD for the entire extended recovery period, consistent with the criteria identified for the Temporary Emergency Deviation during the 60-day recovery period. Consistent with the 2012 Water Control Plan, the normal latitude to adjust WCA-3A discharges based on expected inflows will be used in Zones A, D, and E1 (There is no Zone B & C). Additional flow above the rate prescribed by the Rainfall Plan will be allowed in Zone E when excess Lake Okeechobee water is being sent to WCA-3A. The additional volume discharged from WCA-3A will not exceed the excess volume delivered to WCA-3A on a weekly basis. Discharge to WCA-3B (S-151-S-31 or S-151) or to tide (S-31) will be included in this calculation. As long as the WCA-3A three gage average is above 8.0 ft, NGVD (0.5 ft above the floor of 7.5 ft, NGVD) the SFWMD will deliver up to 250 cfs of additional water to supply water to Taylor Slough using S-332D, to maintain the hydraulic ridge within the C-111 South Dade Southern Detention Area using S-332B/S-332C, or a combination of both.

B. G-3273 Constraint. The G-3273 constraint will remain relaxed, however, flow into NESRS will be adjusted to moderate the rise in the stage at G-3273 as it rises from 6.8 to 7.2 ft, NGVD. If conditions (antecedent stage and rainfall) result in the stage exceeding 7.2 ft, NGVD then the net flow into NESRS will be zero until G-3273 recovers to below 6.8 ft, NGVD. Maintaining G-3273 stage near 6.8 ft, NGVD will result in stages higher than median.

C. S-357 and S-331. The operation of S-357 and S-331 will be used to facilitate the construction described above while maintaining 8.5 SMA authorized flood mitigation. Since the 8.5 SMA Detention Area abuts the Contract 8 construction area minimizing the use of S-357 and maximizing the use of S-331 will facilitate construction. The following operational criteria, guidance, and ranges will be used:

- The general operational range for C-357 will be from 5.0 to 5.5 with the latitude to allow a range of 5.5 to 6.0 if drier conditions allow reduced operation of S-357 (the operational range prescribed by the 2012 WCP and the Increment 1 Operational Strategy is 5.7 to 6.2). The previously used DELTA requirement will be suspended. If conditions allow and capacity is available at S-331, pumping at S-357 will be reduced to one pump or less to facilitate ongoing levee construction within the Northern Detention Area. Pumping with more than two units will be avoided if practicable by making the full use of S-331 and monitoring for recession rates and stages within the 8.5 SMA appropriate for the conditions.
- S-331 HW operational range will lower as the stage at LPG2 rises using the following ranges as long as there is downstream capacity. Providing capacity for the operational ranges prescribed

below will be a higher priority than regulatory releases from WCA-3A to S-331. These ranges may be lowered by as much as 0.5 feet if S-357 HW is above 5.5 feet NGVD and a lack of sufficient recession or water levels within the 8.5 SMA appropriate for the conditions (time of the year and rainfall) indicates the need.

- When $6.0 < \text{LPG2} < 6.5$ then S-331 HW will be maintained between 4.0 and 4.5
- When $5.5 < \text{LPG2} < 6.0$ then S-331 HW will be maintained between 4.5 and 5.0 (Operation is unchanged from the 2012 WCP and Increment 1).
- When $\text{LPG2 HW} < 5.5$ then S-331 HW will be maintained between 5.0 and 6.0.
- If a rainfall event results in stages at G-3273, LPG2, and ANGEL above 7.0 ft, NGVD then a range of 3.5 to 4.0 may be used at S-331 HW until the stage at any one of these gages falls below 6.8 ft, NGVD. If capacity is not available at S-331 then S-357 pumping may be increased up to maximum until capacity at S-331 is available at S-331 or any of these gages falls below 6.8 ft, NGVD.

D. L-31N from S-331 to S-176. The C-111 South Dade pump stations S-332B, S-332C, and S-332D along L-31N are operated to provide flood protection to the South Dade basin, consistent with the objectives of the C-111 South Dade project. To facilitate the construction described above while providing operational flexibility to A) receive additional flow from S-331 due to increased pumping at S-331 for the 8.5 SMA as prescribed by the previous section, B) receive additional water from WCA-3A, and C) deliver additional water to Taylor Slough. The stage in the L-31N as measured by the HW of S-332B, S-332C, and S-332D will be maintained between 4.1 and 4.6 (off criteria are 0.4 feet lower than the Column 2 ranges of 4.5 to 4.8 feet NGVD) by generally adhering to the following sequence of priority: (1) using S-332B, S-332C, and S-332D first; (2) then using S-176 if there is available capacity at S-199/S-200 (to maximize flow to Taylor Slough) ; (3) then using S-194 and S-196 (discharge to Biscayne Bay through the C-102 and C-103 Canals) ; (4) and finally using S-176 , S-177, S-18C, to S-197 if capacity is available at S-197. With S-194 and S-196 are manually operated there will be some lag time in operational changes at these structures when it may be necessary to reduce pumping to maintain within range until the S-194/S-196 discharges can be adjusted. At times use of S-332BN will be reduced to facilitate Contract 8 construction and may be limited to one unit or not pumping at all while S-194 or S-196 or both are open.

E. C-111 from S-176 to S-197. S-197 will continue to be available for maximum discharges of up to 400 cfs when S-18C HW is above 2.3 ft, NGVD and the available capacity at S-199 and S-200 is insufficient. S-200 and S-199 will be used to maintain the C-111 reach from S-176 to S-177 within the calendar ranges listed below (from the C-111 Spreader Canal Western Project Preliminary Project Operating Manual dated May 2016)

- 4.0 to 3.0 January 1st through February 14th.
- 4.0 to 3.3 February 15th through July 31st.
- 3.4 to 3.0 August 1st through December 31st.

S-177 may be opened and used to lower the S-177 HW down to 3.6 ft NGVD if the available capacity provided by S-200 and S-199 is insufficient. The C-111 Spreader Canal Preliminary Project (C-111 SC Project) Operating Manual off criteria for S-199 and S-200 (3.6 feet, NGVD), is the same as the Column 1 and Column 2 gate closure criteria for S-177. S-199 and S-200 subject to their CSSS Nesting Constraints will be used to provide enhanced flows to Taylor Slough and Florida Bay while facilitating CSSS nesting. The C-111 SC Project is a SFWMD project and S-199 and S-200 are state owned and operated structures.

No specific exit strategy is provided for transition to drier conditions due to the complexities of meeting these somewhat conflicting objectives. However, the stage at the Taylor Slough Bridge (TSB) relative to the historical stages should be considered along with the expected availability of excess/supplemental water. The default operation for S-18C will be for S-18C to be operated consistent with the Column 1 (Open 2.6 Close 2.3) if no excess water from WCA-3A is being sent to the SDCS. If more than 100 cfs of excess water from WCA-3A is being sent to the SDCS then S-18C will be operated in Column 2 (Open 2.25 Close 2.00).

Compliance with all operational ranges will be assessed based on the daily average stage. Instantaneous stages are expected to go 0.2 to 0.3 outside of these ranges when pumps are cycling.

Operational Flexibility Allowed:

To address uncertainties, present or future system conditions, the following actions may be taken for any duration throughout the effect of the temporary deviation:

1. Adjust stages within the applicable canal system +/- 0.5 feet to maximize and/or optimize conditions consistent with the purpose.
2. Adjust gate openings, pump rates and/or flows as needed to maximize and/or optimize conditions consistent with the purpose.