

COMPREHENSIVE EVERGLADES RESTORATION PLAN
**LAKE OKEECHOBEE WATERSHED
RESTORATION PROJECT**
DRAFT INTEGRATED PROJECT
IMPLEMENTATION REPORT
AND ENVIRONMENTAL
IMPACT STATEMENT



July 2018



Annex C

ANNEX C
DRAFT PROJECT OPERATING MANUAL

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C DRAFT PROJECT OPERATING MANUAL

The main purpose of this draft Project Operating Manual (POM) is for day-to-day use in start-up operations in water management for essentially all foreseeable conditions affecting the integration of the LOWRP. The project will be operated in accordance with the final POM to achieve the goals, purposes, and benefits outlined in the PIR, including the quantity, timing, and distribution of water for the natural system, and other water-related needs. Report preparation is pursuant to ER 1110-2-240, and is in accordance with guidance contained in EM 1110-2-3600, ER 1110-2-8156, and the programmatic regulations GM #5. All elevations referenced in this DPOM are in feet, and reference the National Geodetic Vertical Datum 29 (NGVD29).

Modifications and/or revisions to the Project Operating Manual (POM) will occur during subsequent project phases. Development of the POM is an iterative process that will continue throughout the life of the project. The POM will be updated at specific intervals during the detailed design, construction and operational testing and monitoring phases of the project. Refinements to the operating criteria in the POM will be made as more information is obtained on project detailed design, data, operational experience, and general information gained during these phases. It is also anticipated that once the POM is completed and the long-term operations and maintenance phase is underway, it may be necessary to revise the POM from time to time based on additional scientific information, new CERP or non-CERP activities being implemented, and new CERP updates. This draft POM is based upon preliminary designs and modeling assumptions during the planning process, the preliminary and final POMs will provide additional detail as it becomes available.

C.1 General Project Purposes, Goals, Objectives, and Benefits

The purpose of LOWRP is to modify structural and operational components of the C&SF Project to achieve restoration of the Everglades and the south Florida ecosystem. Other water-related needs such as urban and agricultural water supply and flood protection will be considered as part of the LOWRP. The project features will be operated in accordance with this POM to achieve the purposes set forth in the PIR. In addition to managing the releases and storing of water in the feature(s) and wells, operations includes the quantity, timing, and distribution of water for the natural system and other water-related needs.

LOWRP objectives are planned to be fulfilled through a variety of changes including:

- The construction of a storage wetland attenuation feature (K-05) and associated levees and control structures
- The construction of wetlands adjacent to the Kissimmee River, converting the historic river bed to wetlands area
- ASR wells distributed throughout the region

C.2 Project Features

The LOWRP consists of multiple features including existing natural and man-made canals, rivers and lakes as well as proposed new features including water control structures, a WAF, wetlands and canals.

C.2.1 Existing Features

Existing features of the LOWRP include C&SF basins and structures. The structures are listed below according to their parent basin (Lake Okeechobee or the Kissimmee River) (See **Figure C-1** for Map).

C.2.1.1 Lake Okeechobee

S-127 Pump, Spillway and Lock: S-127 is a pumping plant and navigation lock located on the northwest shore of Lake Okeechobee in the alignment of Levee 48 about 12 miles southwest of the town of Okeechobee. Pumping is initiated when the headwater elevation reaches 14.0 ft. (NGVD29) and terminated when it drops to 13.25 ft. (NGVD29) and in storm conditions the stage can be lowered to 13.0 ft. (NGVD29). In drought conditions the spillway may be used to backflow for irrigation purposes.

C.2.1.2 Kissimmee River

KI-1: KI-1 is a three-barrel culvert located through L-48, about 5.5 miles west of the town of Okeechobee. Control is by a submersible gate on a concrete box inlet structure. The purpose of the structure is for emergency flood control, maintaining drainage from the L-59 canal into the Kissimmee River and shortly to Lake Okeechobee. Gates are kept full open during hurricane alerts in order to pass the maximum discharge possible.

KI-2: KI-2 is a single-barrel culvert located through L-48, about 7 miles west of the town of Okeechobee. Control is by a submersible gate on a concrete box inlet structure. The purpose of the structure is to release water from Paradise Run of the old Kissimmee River into the Kissimmee River. Gates are kept full open during hurricane alerts in order to pass the maximum discharge possible.

S-65E: S-65E is a gated spillway with discharge controlled by six cable operated vertical lift gates and a lock structure with two pairs of sector gates. The structure is located on C-38 about 7.3 miles downstream from S-65D and is the last control structure on C-38 before Lake Okeechobee. The purpose of the structure is to maintain canal stages in C-38 to the upstream flood design stage and restricts downstream flood stages and channel velocities as well as passing sufficient discharge during low-flow periods to maintain downstream stages and irrigation demands. The structure operates to maintain an optimum headwater elevation of 21.0 NGVD through manual control.

S-84: S-84 is a gated spillway with discharge controlled by two cable operated, vertical lift gates located on C-41A canal about 12 miles downstream of S-83 and about a mile upstream from the junction of C-41A and C-38. The purpose of the structure is to maintain optimum upstream stages in C-41A; pass design flood without exceeding the upstream flood design; restrict downstream flood stages and channel velocities to non-damaging levels; and prevent backflow from Lake Okeechobee through C-38 through high lake stages. The structure operates to maintain an optimum headwater elevation between 24.3 ft. and 25.2 ft. (NGVD29) through automatic controls.



Figure C-1. LOWRP map of existing structures.

C.2.2 Proposed Features

The features as outlined in the following subsections have been proposed as part of LOWRP. In addition to construction of new features, there would be modifications to existing features.

C.2.2.1 New Features

The new features can be seen in **Figure C-2** are discussed in the following sections.

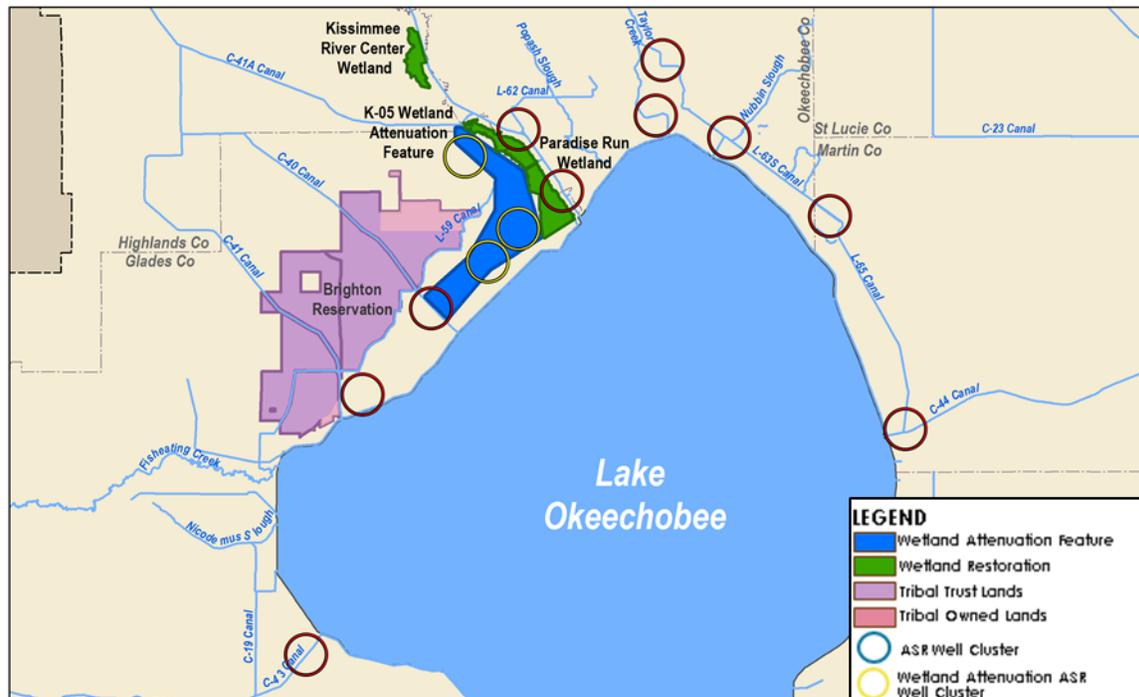


Figure C-2. LOWRP map of new features.

C.2.2.1.1 K-05 Wetland Attenuation Feature

The K-05 wetland attenuation feature (WAF) would be located west of the Kissimmee River approximately 7 miles southwest of the town of Okeechobee. The northern bounds of the feature will be located approximately 700 feet from C-41A, the eastern bounds approximately 1.5 miles from the Kissimmee River, the southern bounds approximately 700 feet to the north of FL-78, and the western bounds approximately 700 feet from canal C-40. The feature will have approximately 43,600 ac-ft of storage consisting of around 26.8 miles of embankments and around 11,000 acres of feature and setbacks. The feature is intended to have a 4 foot storage depth, 15.5 foot high perimeter embankment, two 15.5 foot high internal embankment(s) to mitigate wind/wave run up effects, a perimeter toe road, and a perimeter seepage canal measuring 20 feet deep with a 30 foot bottom width. The internal embankments will be located to divide the feature into thirds; the exact locations will vary depending on the results of a future wind/wave analysis. Perimeter canals will have two seepage pumps located on the northwestern and southwestern part of K-05. The internal embankments will each have gated culverts to equalize the water levels in the feature on either side of the internal embankment. There will be two emergency spillways which will be ogee weirs. Water will be pumped into the feature at a pump station just downstream of S-84 on the C-41A canal. The outlet of the feature will be through a gated spillway on the existing L-59 canal which flows east to the Kissimmee River. The control structures proposed for the K-05 and Paradise Run can be seen in **Figure C-3**.

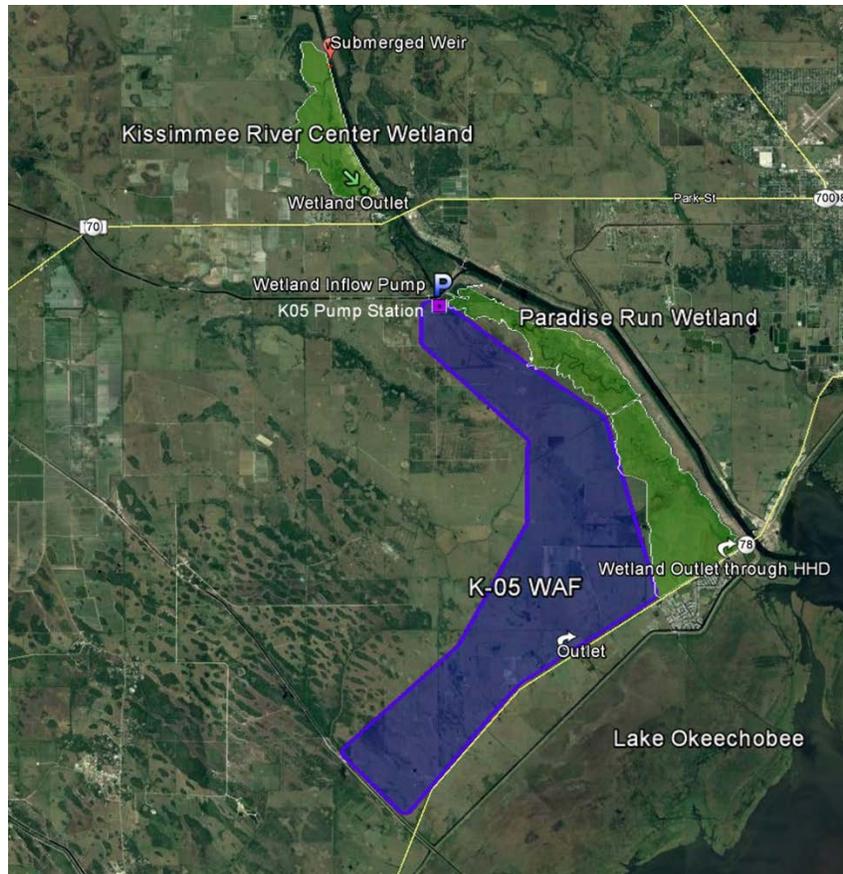


Figure C-3. Water control structures of K-05/Paradise Run.

Inlet Structures and Inflows: The inlet pump station will be located on the C-41A canal just downstream (east) of the S-84 spillway structure. The pump station will be capable of pumping approximately 1,500 cfs with units housed inside a structure. It will pump water from the C-41A canal, but effectively Lake Okeechobee water, as there are no control structures between S-84 and the lake, into the north cell of the K-05 feature. The number and capacity of each pump has not yet been determined during this draft stage of the POM. Additional inlets into the K-05 will include 15 ASR wells from the UFA at 7.7 cfs each (116 cfs total flow) and 10 ASR wells from the APPZ also at 7.7 cfs each (77 cfs total flow).

Outlet Structures: There will be a spillway on the K-05 at the intersection of the embankment and the L-59 canal which will release water out of the feature. The L-29 canal flows east into Kissimmee River about 1 mile downstream through the KI-1/G-34 culvert. The size and capacity of the spillway has not been determined during this draft stage of the POM. There will be two emergency spillways, both on the east embankment with one toward the north and one toward the south.

C.2.2.1.2 Paradise Run Wetlands

The Paradise Run wetlands area is located downstream of S-65E on the west bank of the Kissimmee River north of the Buckhead Ridge community. It consists of 4,084 acres of historic Kissimmee River channel and flood plains. This project will consist of clearing the historic channel; adding a pump station at the north end of the site; adding an overflow weir into the L-59 embankments to connect the north and south sides of the area; adding a new culvert through the Herbert Hoover Dike on C-38 or through the L-48 canal

to the south; and potentially levee/berm surrounding the area depending on modeling results and more detailed site investigations.

C.2.2.1.3 Kissimmee River Center Wetlands

The Kissimmee River Center wetlands areas is located between S-65D and S-65E on the west bank of the C-38. It consists of 1,196 acres of lowland flood plains of the historic Kissimmee River with spoils mounds from the C-38 construction toward the south end of the site. The project will consist of adding a submerged weir on C-38 to deliver water at the north end of the site. Water will exit the site through an existing culvert at the south end of the site. Water would then flow through a canal and enter C-38 about 1 mile downstream.

C.2.2.1.4 Aquifer Storage and Recover Wells

The project will consist of 80 ASR wells located north of Lake Okeechobee. Some will be located close to the K-05 and will be integrated into its operations. Of the 80 wells, 50 will be in the Upper Floridan Aquifer (UFA) and 30 in the Avon Park Permeable Zone (APPZ). The wells will range in depth from 500 to 1200 feet and are expected to pump at 7 cfs each. The sources, capacities and efficiencies are listed below for each type proposed:

- ASR wells linked to the K05 WAF (25)
 - 15 from the UFA at 116 cfs total capacity and 70% efficiency
 - 10 from the APPZ at 77 cfs total capacity and 30% efficiency
- ASR wells linked to Lake Okeechobee (55)
 - 35 from the UFA at 270 cfs total capacity and 70% efficiency
 - 20 to the APPZ at 154 cfs total capacity and 30% efficiency

C.2.2.2 Removed Features

At this time no existing features are being proposed to be removed.

C.2.2.3 Modified Features

The L-59 will be altered significantly surrounding the K-05 WAF. The WAF, as proposed, straddles the existing L-59 canal and associated embankments. The canal will be plugged on the west end of K-05 so that the feature embankments can cross the space and contain water. This will alter the flow flexibility in the existing canal, such it will only flow west from K-05, whereas currently it can flow either east or west. Re-grading of parts of the L-59 will be done to ensure flow west. The eastern part of L-59 will remain on the east side of the K-05 to discharge water via spillway to C-38.

C.3 Project Relationships

There are several projects that may affect or be affected by LOWRP. This plan has been developed based on the operations of existing related projects, and/or related planned projects with approved operating plans, including both CERP and non-CERP activities. A summary of each related project and its relationship to LOWRP is provided below.

C.3.1.1 2008 Lake Okeechobee Regulation Schedule (2008 LORS)

2008 LORS is the current authorized regulation schedule used in the management of Lake Okeechobee water levels developed during HHD rehabilitation. It was identified to be effective at decreasing the risk to public health and safety, reducing the number of high-volume discharges to the estuaries, and providing critical flexibility to perform water management operations. Independent of LOWRP implementation, there is an expectation that revisions to the 2008 LORS will be needed following the implementation of other CERP projects and Herbert Hoover Dike infrastructure remediation. A change in 2008 LORS based on completed remediation of Herbert Hoover Dike may impact LOWRP operations.

C.3.1.2 Central and Southern Florida Project Water Control Manual

The Kissimmee River and its control structures are regulated by the Master Water Control Manual for Kissimmee River-Lake Istokpoga Basin (1994). This is the most recent water control manual for the S 65E structure, which is within the bounds of the project, as well as for S-84. S-65E is the last control structure on C-38 before Lake Okeechobee and will be one of the main delivery avenues to the K-05 feature. S-84 will also likely be a main delivery avenue for the feature. A change in the water control manual for S-65E or S-84 (Kissimmee River-Lake Istokpoga Basin) could impact LOWRP operations. Changes to the Master Water Control Manual for Lake Okeechobee and Everglades Agricultural Area could also impact the operations of the Paradise Run wetland operations, which includes L-59 canal and its associated structures.

C.3.1.3 Indian River Lagoon - South

The Indian River Lagoon-South (IRL-S) Restoration Project is now under way to reverse the damaging effects of pollution and unnaturally large fresh water discharges into these ecologically vital water bodies. The delicate balance of fresh and salt water in the lagoon and estuary would be restored, polluted water would be treated, and degraded habitats would be revitalized. The Indian River Lagoon-South project employs a regional approach to address the Martin County and St. Lucie County portions of the lagoon. This project helps to balance the overall environmental needs as defined by LOWRP planning for the St. Lucie Estuary.

C.3.1.4 C-43 West Basin Storage Feature

The Caloosahatchee River (C-43) West Basin Storage Feature project would improve the timing, quantity, and quality of freshwater flows to the Caloosahatchee River and Estuary. The C-43 West Basin Storage Feature would help ensure a more natural, consistent flow of fresh water to the estuary. To restore and maintain the estuary during the dry season, the project would capture and store basin stormwater runoff, along with a portion of water discharged from Lake Okeechobee. Managers would then slowly release water into the Caloosahatchee River, as needed. These features help to better balance the overall environmental needs as defined by LOWRP planning for the Caloosahatchee Estuary.

C.4 Major Constraints

There are several projects that may affect or be affected by LOWRP. This plan has been developed based on the operations of existing related projects, and/or related planned projects with approved operating plans, including both CERP and non-CERP activities. A summary of each related project and its relationship to CEPP is provided below.

C.4.1 Paradise run

Paradise Run wetlands has two potential discharge points. One is a new culvert through the Herbert Hoover Dike discharging into C-38 directly, the other is to discharge south into the L-48 canal which is the rim canal for the dike. The canal runs under state road 78 near the Buckhead Ridge community. The flow capacity and structural limitations of this bridge are not currently known but may impose limitations on the discharges through this route.

Another potential discharge point for the north end of Paradise Run is through KI-1/G-34 culvert. The discharges for Paradise Run may be constrained by the existing structure and operational capability without modifications.

C.4.2 Existing Legal Users, Levels of Flood Damage Reduction, and Water Quality

Because this project relies heavily on the re-distribution of existing water, without due consideration during preliminary project design, development of this operating plan, and during adaptive management, there would be a risk of violating one or more of the constraints described below. Section 601(h)(5)(A) of the WRDA requires that “Until a new source of water supply of comparable quantity and quality as that available on the date of enactment of this Act (December 11, 2000) is available to replace the water to be lost as a result of implementation of the Plan, the Secretary and the non-federal sponsor shall not eliminate or transfer existing legal sources of water, including those for:

“An agricultural or urban water supply; Allocation or entitlement to the Seminole Tribe of Florida under Section 7 of the Seminole Indian Land Claims Settlement Act of 1987 (25 U.S.C. 1772e); The Miccosukee Tribe of Indians of Florida; Water supply for Everglades National Park; or, Water supply for fish and wildlife.”

Section 601(h)(5)(B) of the WRDA requires that implementation of the Plan shall not reduce levels of service for flood protection that are in existence on the date of enactment of this Act (December 11, 2000); and in accordance with applicable law.

Florida Statute 373.1501(5)(d) similarly requires that the quantity of water available to existing legal users shall not be diminished by implementation of project components so as to adversely impact existing legal users, that existing levels of flood protection would not be diminished outside the geographic area of the project component, and that water management practices would continue to adapt to meet the needs of the restored natural environment. Florida Statutes also require that all surface water discharges meet state water quality standards.

C.5 Standing Instructions to Project Operators

Once the LOWRP features operational testing and initial monitoring phase for the interim operations phase is concluded, the SFWMD will manage the day-to-day project operations of the newly constructed feature, control structures, pump stations, and wetlands. Standing instructions for the SFWMD project operators would be further developed during the detailed design phase and then in interim operations phase of the project that include refinements in operations due to general and past operational experience, additional scientific information, CERP updates, and new CERP or non-CERP activities that have been completed.

During normal conditions, the project structures shall be operated in accordance with the approved operating manual. Deviations from the normal operations would be permitted as outlined in C.12 of this POM.

C.6 Operational Strategy

The operational strategies described in this plan are intended to meet the goals, objectives, and benefits in the PIR, and include restoration, preservation, and protection of the natural ecosystem, while providing for the other water-related needs of the region, as well as meeting the requirements for protection of health and public safety.

It is important to understand that the draft POM will develop over time as the details of the design of LOWRP components are developed and finalized. The first draft is presented in this document with the recognition that multiple revisions and operational fine-tuning would occur over the life of the project. Thus the operations discussed herein represent the first draft of a start-up operational strategy recognizing that constraints in the system may be temporary due to the completion of many of the LOWRP components as well as other CERP and Non-CERP Projects. As design of the project is finalized, the start-up operations will be as well.

As a general operational strategy, the LOWRP system would be operated to attenuate flows during the wet season and provide water during the dry season when the release to Lake Okeechobee would be beneficial to the environmental health and water supply from the lake.

C.6.1 Achieving Natural System Goals, Objectives, and Benefits

Reducing the inflows into Lake Okeechobee during wet periods; reducing the volume of flood control releases to the sensitive estuaries; and providing more stable lake levels during dry periods can benefit submerged aquatic vegetation as well as wildlife in the basin. A project combined storage of 491,000 ac-ft (43,000 ac-ft for K-05 and 448,000 ac-ft for the ASR wells) can reduce the number of days that the estuaries will experience harmful large flows on both coasts as well as harmful low flows on the Caloosahatchee. The seepage management components of the project are designed to reduce the loss of fresh water from the K-05 feature. As the designs are finalized for each component, the operational specifics will be identified.

C.6.1.1 K-05 WAF Operations

In order to most efficiently utilize the capabilities of K-05 WAF, the operational intent is receive and store water at periods of high lake stages and return water back during periods of low flows. The accounting period has not yet been determined at the time of this draft POM. Based on the results of the initial optimization, the K-05 feature was modeled, and is intended to be operated as follows:

- K-05 will accept water when the official Lake Okeechobee elevation is above the blue dashed line in **Figure C-4** (13.1–14.8 feet NGVD29) and the depth in the feature is at or below 4.0 feet.
- K-05 will return water to the lake when the lake elevation is below the orange solid line or when the depth in the feature is above 4 feet in **Figure C-5** (12.7-14.4 feet NGVD29).
- K-05 will deliver water to Paradise Run wetland but the operations for this have not yet been determined or modeled.

- It is anticipated that water recovery from the K-05 WAF ASR wells will support maintenance of wetland vegetation during dry times.

For additional information concerning modeling assumptions for K-05 Feature operations, please refer to **Appendix A, Annex 3**.

C.6.1.2 Aquifer Storage and Recovery Wells

The operational intent of the ASR wells is to pump water into the aquifer during wet periods and pump water out into the system during dry periods. The volume of water pumped out during dry periods shall not exceed the volume pumped into the aquifer during wet periods. The operational intent is receive and store water at periods of high lake stages and return water back during periods of low stages. The accounting period for the ASR operations has not been determined at the time of this draft POM but will likely be over a longer multi-year period. Based on the results of the initial optimization, the ASR wells were modeled, and are intended to be operated as follows:

- The UFA ASR wells will accept water when the official Lake Okeechobee elevation is above the purple dashed line in **Figure C-5** (13.0 to 14.9 feet NGVD29).
- The APPZ ASR wells will accept water when the official Lake Okeechobee elevation is above the purple solid line in **Figure C-5** (13.2 to 14.8 feet NGVD29).
- The ASR wells will return water to Lake Okeechobee or K-05 when the official Lake Okeechobee elevation is below the green dotted line in **Figure C-5** (12.8 to 14.5 feet NGVD29).

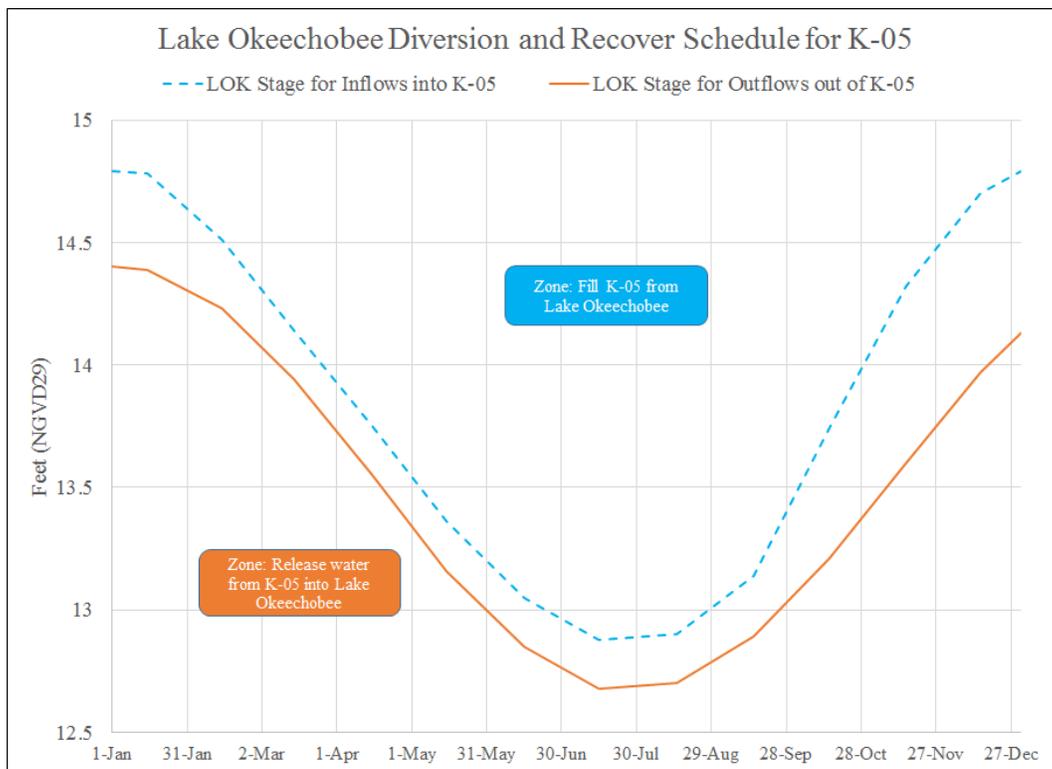


Figure C-4. K-05 diversion and recovery schedules.

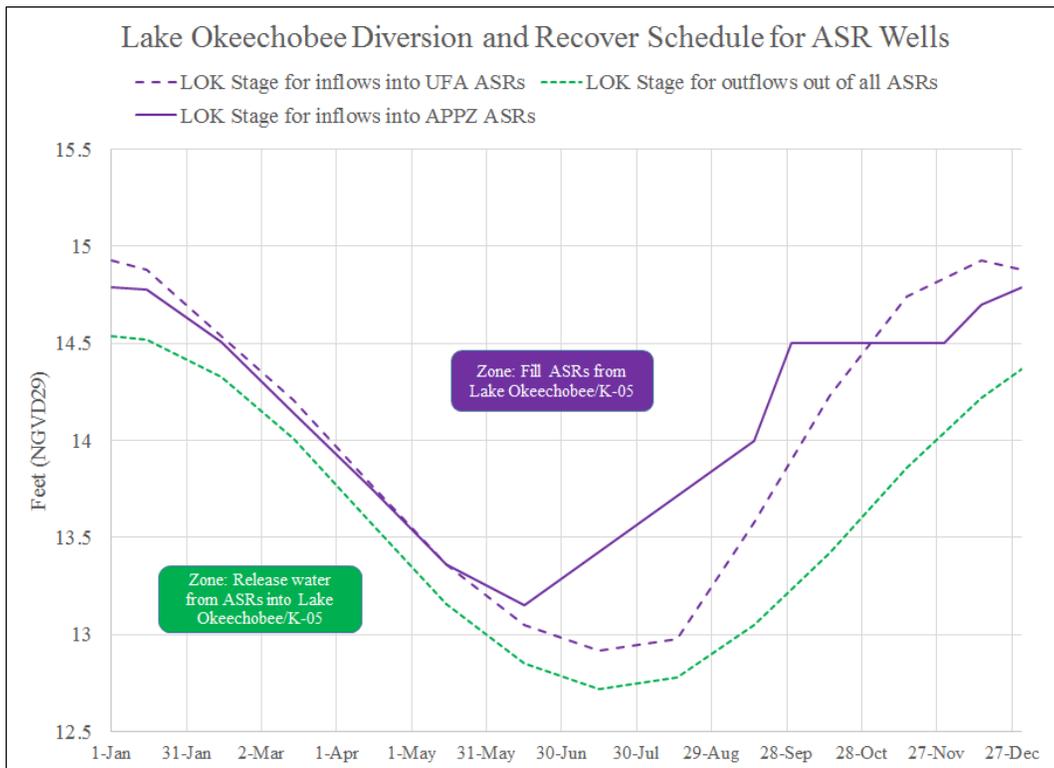


Figure C-5. ASR well diversion and recovery schedules.

C.6.1.2.1 Operational Safeguards for Initial Operations

Initial operations of the K-05 Feature would be closely monitored from the standpoint of levee and structural stability, especially during the initial filling operations.

C.6.1.3 Paradise Run and Kissimmee Center Wetland Operations

The operational intent of the wetlands in the LOWRP project are to provide water in a restored river bed and flood plains. The restored wetlands should mimic the natural flow variation that the historic Kissimmee River experienced. Inundation of flood plains occurs when flows are high with a slow reduction in stage afterwards during wet periods and a lower flow through the historic river bed during dry periods. These areas will be passively managed (no forced water flow such as pumping).

- Paradise Run receives water from C-41A, downstream of S-84, via pump.
- Paradise Run discharges water to C-38 out of a culvert in HDD.
- Kissimmee Center accepts water from C-38 through a weir.
- Kissimmee Center discharges water to C-38 out of an existing culvert and canal.

C.6.1.3.1 Wetland Rainfall-driven Operations

The wetlands are proposed to be operated under a rainfall-driven operation (RDO) scheme. Unlike regulation schedule-based operations, the RDO estimates inflows, releases and outflow deliveries to Kissimmee River and subsequently Lake Okeechobee based on weekly rainfall and Potential Evapotranspiration (PET). The wetlands are not intended to act as storage for the project and will discharge water based upon environmentally ideal water levels in the system which will be determined as project feature designs are developed.

C.6.2 Flood Damage Reduction

The LOWRP is not intended to increase the level of flood protection in the watershed but will maintain existing levels of flood protection.

C.6.2.1 Normal and Emergency Operations

All criteria previously established for normal water control operations would continue with under LOWRP. Additional system components constructed as part of LOWRP would use operational criteria based on the modeling of alternatives. Emergency operations have not been established at this time but will be developed as the design is finalized.

C.6.2.2 Hurricane or Tropical Storm Operations

All system components with primary flood control requirements would follow the pre-storm protocols for the C&SF System.

C.6.3 Water Quality

LOWRP will be managed, operated, and maintained to protect and enhance the quality of water and land resources through the conformance with applicable federal and state standards.

C.6.4 Water Supply Operations

The specific operation of LOWRP components, will be developed during the design phases to ensure that existing legal water users are not adversely affected. Generally LOWRP should improve water supply for Lake Okeechobee by discharging water from the feature and pumping water from the ASR wells during dry periods. The additional water will provide more stable water levels while also potentially providing more water in the lake for users during dry periods. At a minimum the project will maintain levels of water supply service for legal users (Savings Clause [Section 601 (h)(5)(A) of WRDA 2000]).

C.6.5 Recreation

Additional recreational opportunities are a benefit of LOWRP. There are abundant recreational facilities within the project area, both private and public; however, no specific water control regulations are required for this purpose. Water levels aren't specifically managed for recreation, although levels do affect recreation facilities. For example, boat launching ramps, pleasure crafts, sightseeing vessels, and bank and

small boat fishing are all influenced by water levels. Regulations concerning USACE public use areas are contained in other publications.

C.6.6 Fish and Wildlife

The design of LOWRP components are such that hydrologic conditions would be established that significantly benefit fish and wildlife through improvements in the types and diversity of habitats. This includes anticipated estuarine improvements in the St. Lucie and Caloosahatchee Estuaries as a result of reducing the frequency and magnitude of damaging releases from Lake Okeechobee. The wetlands will replace habitat lost when the Kissimmee River was channelized by restoring the natural flow and flood plains and improve fish and wildlife habitat in this area and the K-05 WAF will provide habitat for many flora and fauna.

C.6.7 Navigation

There are no authorized project features for navigation within the K-05 feature.

C.6.8 Other

There is currently no further information for this section.

C.7 Pre-Storm/Storm Operations

The Atlantic hurricane season is from 1 June through 30 November. In the event of a tropical depression(s), tropical storm(s), and/or hurricane(s) in the Atlantic/Caribbean Basin or Gulf of Mexico, the National Hurricane Center (NHC) issues products including tropical cyclone public advisories, forecast advisories, forecast discussions, warnings and strike probability forecasts. The SFWMD meteorologists and the SFWMD Emergency Operations Center (EOC) also provide specific advisories for different regions of the district. Pre-storm water level drawdowns may be initiated up to 72 hours in advance of a severe storm event based upon such forecasts, prevalent conditions within the project area, and/or emergency operations directive(s) by the SFWMD EOC. Any drawdowns would be consistent with SFWMD emergency operations procedures. Pre-storm drawdowns would be dependent on the severity of the storm, amount of predicted rainfall and antecedent moisture condition in the watershed.

C.8 Consistency with the Identification of Water and Reservations or Allocations for the Natural System

The Programmatic Regulations [Section 385.28(a)(6)(vi)] for CERP require that the operating manual be consistent with the reservation or allocation of water for the natural system made by the State (in accordance with section 601 of WRDA 2000). In general, the operating criteria within this LOWRP Draft POM are consistent with the operating criteria used to identify the water available for the natural system as described in the PIR. The operating criteria may be further refined during detailed design and captured in the Preliminary POM phase. These refinements would need to be consistent with the reservations described in the PIR.

C.9 Consistency with Savings Clause and State Assurances Provision

In accordance with Water Resources Development Act (WRDA) 2000, CERP projects may not eliminate or transfer existing (as of December 2000) legal sources of water until a new source of water of comparable

quantity and quality is available to replace the water lost as a result of project implementation. The implementation of LOWRP would not preclude operation of the C&SF Project to deliver water from Lake Okeechobee to meet agricultural water supply needs. Therefore, no additional sources of water need to be identified since Lake Okeechobee would continue to provide water to agricultural users and the WCAs and ENP.

C.10 Drought Contingency Plan

Drought contingency plans are regulated by ER 1110-2-1941. There is no drought contingency plan in place for the K-05 Feature. No additional water would be provided to K-05 to prevent dry-out conditions and there is no minimum water depth.

The current drought contingency plan in place for the Lake Okeechobee and the Kissimmee River is located in the *C&SF Project Master Water Control Manual*, Volume 4, Appendix B.

C.11 Flood Emergency Action Plan

At this time, a Flood Emergency Action Plan has yet to be determined.

C.12 Deviation from Normal Operating Criteria

The USACE District Commander is occasionally requested by the non-federal sponsor to approve deviations from normal operating criteria. Prior approval for a deviation is required from USACE-South Atlantic Division (SAD) except as noted below. Deviation requests usually fall into the following categories:

C.12.1 Emergencies

Examples of emergencies that may result in a need to deviate from normal operating criteria include: drowning and other accidents; failure of the operation facilities; chemical spills; treatment plant failures; and other temporary pollution problems. Water control actions necessary to abate the problem should be implemented immediately unless such action would create equal or worse conditions. SAD must be informed of the problem and the emergency operating changes as soon as practicable. In addition, the non-federal sponsor, the SFWMD, should be informed.

C.12.2 Unplanned Minor Deviations

There are unplanned instances that create a temporary need for minor deviations from the normal operating criteria, although these deviations are not considered emergencies. Construction accounts for the major portion of these incidents requiring minor deviations. Examples of activities that may require short-term deviations include construction of utility stream/canal crossings and bridge work. Deviations are also sometimes necessary to carry out maintenance and inspection of facilities. Requests for changes in release rates generally involve time periods ranging from a few hours to a few days. Each request should be analyzed on its own merits. In evaluating the proposed deviation, consideration must be given to upstream watershed conditions, potential flood threat, existing conditions of the feature/storage area, and alternative measures that can be taken. In the interest of maintaining good public relations, requests for minor deviations are generally granted, providing that these deviations will not have adverse effects on the ability of the project (or projects) to achieve the authorized purposes. Approval for these minor deviations normally will be obtained from SAD by telephone. Written confirmation explaining the

deviation and the cause will be furnished to the SAD water control manager. In addition, the non-federal sponsor as well as the State of Florida (FDEP and SFWMD) should be informed.

C.12.3 Planned Deviations

Each circumstance should be analyzed on its own merits. Sufficient data on flood potential, lake and watershed conditions, possible alternative measures, benefits to be expected, and probable effects on other authorized and useful purposes, together with the USACE district recommendation, will be presented by memorandum, facsimile, or electronic mail to the USACE-SAD for review and approval. In addition, the non-federal sponsors as well as the FDEP and SFWMD should be consulted as part of the process of receiving approval from SAD for the deviation.

C.13 Rate of Release Change

At this time, detailed information on Rate of Release Change has yet to be determined.

C.14 Seepage Control

The total linear length of seepage canal around the K-05 feature is approximately 27 miles, around the perimeter. Approximately two seepage return pumps will be used to return seepage flows back into the K-05 feature. Possible pump locations are on the north embankment closest to C-41A and the south embankment closest to state road 78. Exact location and capacity of the seepage return pumps would be determined in detailed design.

C.15 Initial Flow Equalization Basin Filling Plan

At this time, detailed information on the K-05 Initial Filling Plan has yet to be determined.

C.16 Non-typical Operations for Flow Equalization Basin Performance

There are no unforeseen non-typical operations that have been identified in the PIR Phase. This section would be updated in the future if necessary, as non-typical operations may apply during periods of extreme drought or rainfall.

C.17 Aquifer Storage and Recovery System Plan

Please refer to section **C.6.1.2** for the ASR operational strategy.

C.18 Water Control Data Acquisition System Plan

This WCDASP discusses data acquisition essential to the water control management function. This will be a subset of the Water Control Data System specific to CERP.

Some of the CERP pump stations and gates will be equipped with automation components. All of the automation components which are to be operated and maintained by the SFWMD will conform to SFWMD standards of water control data acquisition. Water control data acquisition for operation of the pump stations will be performed via a real time telemetry system known as Supervisory Control and Data Acquisition (SCADA). The communications for the pump stations will be through either microwave communication towers or through SFWMD's Loggernet telemetry network.

When not manned, the pump stations will be operated via remote or automated water level controls with close monitoring by operational staff. The pump stations will be manned, if needed, during the periods of high flow events. During critical storm events such as tropical storms and hurricanes, the operation of the pump stations will follow the guidelines of SFWMD's Emergency Preparedness Manual - Suggested Hurricane Operating Procedures. When the microwave backbone is completed across the state, operation of the pump stations can be accomplished from the SFWMD B-1 building in West Palm Beach.

The stage recorders to be installed will be incorporated into the SFWMD real time data acquisition network. Stage data from these sites and flow data and pump on/off data will be accessible by the SFWMD BCB Field Station and the Water Management Section, Jacksonville District, USACE via the present telemetry system and/or Geostationary Operational Environmental Satellite (GOES) telemetry and/or interagency data exchange procedures.

For the pump stations, an alarm level can be set at which an alarm condition will be indicated when the canal stage at the upstream gage reaches the alarm level. This can alert the operator to manually turn on pump(s) as needed if the pump(s) have not already been turned on automatically. Flexibility exists as to what alarm level, if any, is selected.

Stage, flow, and any precipitation data for the project will be maintained in SFWMD and USACE databases. The data from the SFWMD operated SCADA system such as stage, flow, and rainfall data will be available at a frequency of less than fifteen minutes.

C.19 Consistency with the Adaptive Management Program and Periodic CERP Updates

After initiation of long-term operations and maintenance of this project, the operating manual may be further modified based on operating criteria approved by the USACE and the SFWMD that results from CERP updates and/or recommendations from the adaptive assessment process as outlined in GM #6, Section 6.3.1.

C.20 Interim Operations During Construction

At this time, interim operations during construction cannot be determined.

C.21 Structure Design Data Tables

This section will be updated to include the structure descriptions, after the structures have been designed. The descriptions will include each structure's location, purpose, and technical data.

C.22 Conceptual Description of Project Operations for Transition from the Initial Operating Regime to the Next-Added Increment

This Draft POM is based on the Initial Operating Regime (IOR) and known conditions. As design for the proposed structures and features is finalized the conditions will be re-evaluated throughout and after final design. Conditions of the final design will be incorporated into the Preliminary POM, which will be the next increment of this POM.