

APPENDIX C: CLEAN WATER ACT SECTION 404 (B)(1) EVALUATION

This page intentionally left blank

1 INTRODUCTION

This appendix provides a Section 404(b)(1) evaluation for Central Everglades Planning Project South (CEPP South). It generally addresses the potential environmental effects of the wetland and aquatic ecosystem alterations expected from the construction of CEPP South Contract 1 features and associated dredge and fill activities.

1.1 Location

The study area for CEPP identified in the 2014 CEPP Final Project Implementation Report and Environmental Impact Statement (PIR/EIS) (Corps 2014) encompasses the Northern Estuaries (St. Lucie River and Indian River Lagoon and the Caloosahatchee River and Estuary), Lake Okeechobee, a portion of the Everglades Agricultural Area (EAA), the Water Conservation Areas (WCAs), Everglades National Park (ENP), the Southern Estuaries (Florida Bay and Biscayne Bay), and the Lower East Coast (LEC) (**Figure 1**). The CEPP included features broken into three phases. The Environmental Assessment (EA) addresses interim operations of features associated with CEPP South Contract 1 that include conveyance features that function to redistribute the existing water from WCA 3A into WCA 3B and eastern ENP. Reference the red circle in **Figure 1** that delineates the area potentially affected by implementation of the proposed action. **Figure 2** and **Figure 3** illustrate components of the CEPP recommended plan identified to be included in CEPP South from the 2014 CEPP Final PIR/EIS.

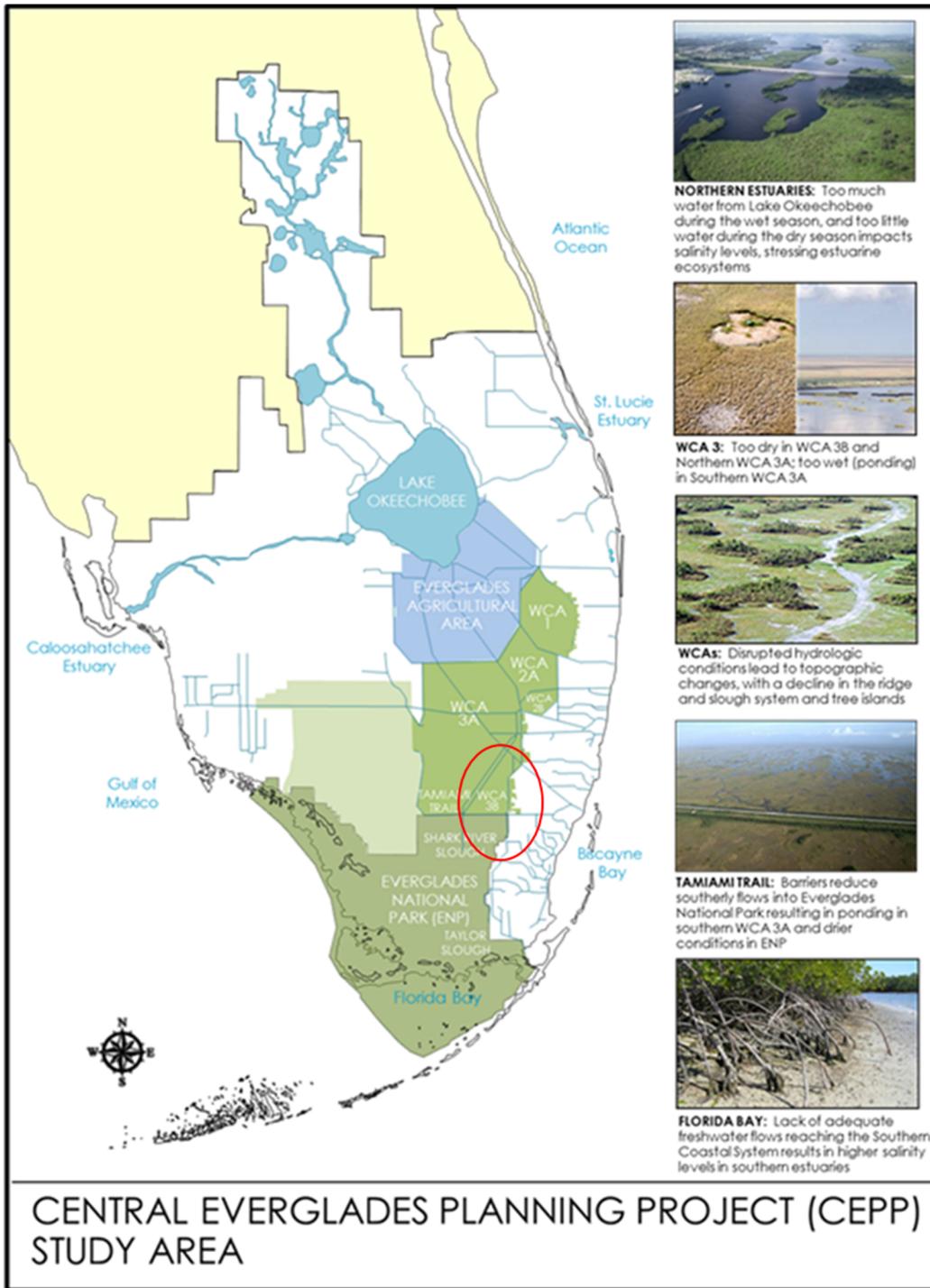


Figure 1. Map of CEPP study area.

1.2 Project Description

The purpose of CEPP as identified in the 2014 CEPP Final PIR/EIS is to improve the quantity, quality, timing and distribution of water flows to the Northern Estuaries (St. Lucie and Caloosahatchee), central Everglades (WCA 3 and ENP), and Florida Bay while increasing water supply for municipal and agricultural users (USACE 2014). Due to the size and complexity of CEPP, project implementation will involve phases of multi-year construction through individual project partnership agreements (PPAs) or amendments to existing PPAs between the U.S. Army Corps of Engineers (Corps) and the South Florida Water Management District (SFWMD). Phased implementation efforts maximize the opportunity to realize incremental restoration benefits by initially building features that utilize existing water in the system that meets state water quality standards. The 2014 CEPP Final PIR/EIS is available at: <https://www.saj.usace.army.mil/Missions/Environmental/Ecosystem-Restoration/Central-Everglades-Planning-Project/>.

Components of the CEPP Recommended Plan were grouped into three separate implementation phases within the 2014 CEPP Final PIR/EIS based upon the spatial distribution of the Recommended Plan features and the locations within the CEPP study area where separable hydrologic environmental benefits would accrue. As described in the 2014 CEPP Final PIR/EIS, these groupings included project features in northern WCA 3A (CEPP North), project features in southern WCA 3A, WCA 3B and ENP (CEPP South), and project features that provide new water and required seepage management that benefits the entirety of the study area (CEPP New Water). In section 1308(a) of the WRDA of 2018, Congress authorized the project for ecosystem restoration, Central and Southern Florida, Everglades Agricultural Area, Florida (CEPP EAA), in accordance with Section 601 of the WRDA of 2000, as recommended in the addendum to the CEPP Post Authorization Change Report, Feasibility Study and Draft EIS dated May 2018, with such modifications as the Secretary of the Army considers appropriate. This project for ecosystem restoration would convert the 14,000-acre CEPP A-2 Flow Equalization Basin (FEB) into a 10,500-acre storage reservoir and would include a 6,500-acre Stormwater Treatment Area (STA). **Table 1** illustrates the Recommended Plan features identified within the 2014 CEPP Final PIR/EIS (USACE 2014), as modified by WRDA 2018. Reference Section 6 of the 2014 CEPP Final PIR/EIS for a complete description of project dependencies including Comprehensive Everglades Restoration Plan (CERP) and non-CERP projects that must be constructed and operating before implementation of the associated CEPP features (USACE 2014).

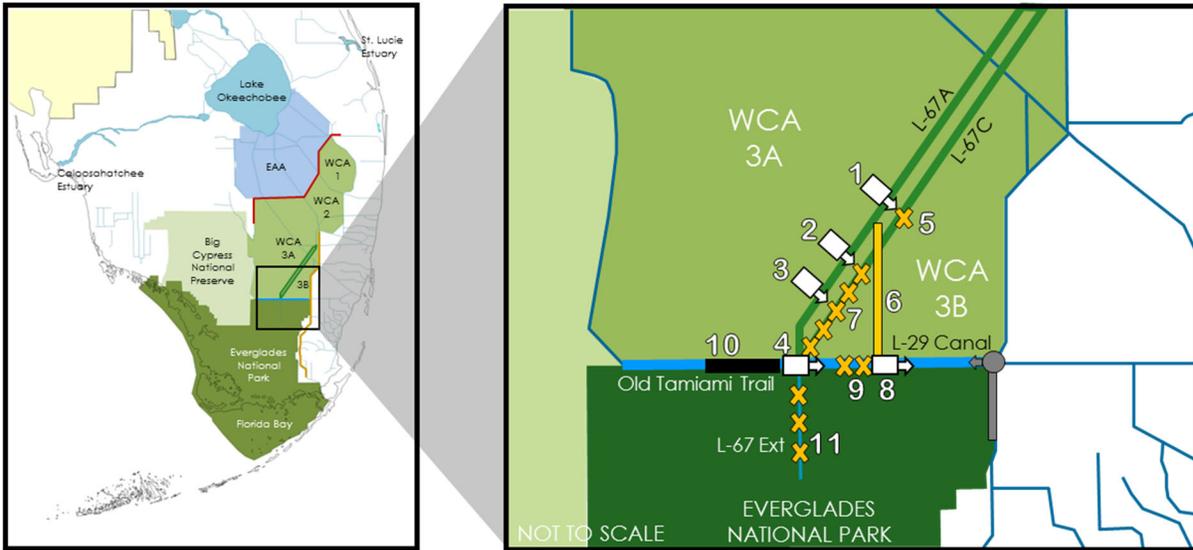
Table 1. CEPP and CERP EAA features by implementation phase.

Project	Features
CEPP North	• L-6 Diversion
	• S-8 Pump Modifications
	• L-4 Levee Degrade and Pump Station
	• L-5 Canal Improvements
	• Miami Canal Backfill
CEPP South	• L-67 A Structure North
	• One L-67 C Gap (6,000 ft.)
	• Increase S-356 to 1,000 cfs
	• Increase S-333*
	• L-29 Gated Spillway
	• L-67 A Structures 2 and 3 South
	• L-67 A Spoil Pile Removal
• Remove L-67 C Levee Segment	

Project	Features
	<ul style="list-style-type: none"> • Remove L-67 Extension Levee
	<ul style="list-style-type: none"> • 8.5 Mile Blue Shanty Levee
	<ul style="list-style-type: none"> • Remove L-29 Levee Segment
	<ul style="list-style-type: none"> • Backfill L-67 Canal Extension
	<ul style="list-style-type: none"> • Remove Old Tamiami Trail*
CEPP New Water	<ul style="list-style-type: none"> • Seepage Barrier L-31 N
CERP EAA	<ul style="list-style-type: none"> • A-2 Reservoir and A-2 STA
	<ul style="list-style-type: none"> • Miami Canal and North New River Canal Improvements

* Action currently being constructed by the SFWMD

The Corps has completed a Validation Report (formerly referred to as a Limited Reevaluation Report) for CEPP South in response to requirements specified in paragraph 15 of the 2014 CEPP Chief's Report. The CEPP South Validation Report has confirmed project components, construction sequencing, and project dependencies as identified in the 2014 CEPP Final PIR/EIS (Corps 2014). The CEPP South Validation Report was approved by the Corps' South Atlantic Division (SAD) on May 31, 2019. Construction of CEPP features in CEPP South will prepare the system for the future additional inflows from Lake Okeechobee by providing the necessary additional outlet capacity from WCA 3A. The specific features of the CEPP Recommended Plan to be implemented in CEPP South include conveyance features that function to deliver and re-distribute existing water from WCA 3A to WCA 3B, and ENP through NESRS. **Figure 2** and **Figure 3** illustrates components of the CEPP Recommended Plan identified to be included in CEPP South from the 2014 CEPP Final PIR/EIS (USACE 2014). A portion of the features identified within CEPP South in the 2014 CEPP Final PIR/EIS are currently being pursued and constructed by the SFWMD and the NPS. Reference the main report of the Environmental Assessment (EA) for additional information.



#	STRUCTURE	STRUCTURE/FEATURE TYPE	CFS	TECHNICAL NOTES
1	S-631	Gated Culvert	500	Delivers water from WCA 3A to 3B, east of L-67D Levee
2	S-632	Gated Culvert	500	Delivers water from WCA 3A to 3B, west of L-67D Levee
3	S-633	Gated Culvert	500	Delivers water from WCA 3A to 3B, west of L-67D Levee
4	S-333 (N)	Gated Spillway w/new canal	1150	Delivers water from L-67A Canal to L-29 Canal; supplements existing S-333 gated spillway
5		L-67C Levee Removal Gap		Gap, ~ 6000 feet (corresponding to S-631)
6	L-67D	Blue Shanty Levee		Levee, ~ 8.5 miles, connecting from L-67A to L-29 (6 feet high, 14-foot crest width, 3:1 side slopes)
7		L-67C Levee Removal		Complete removal of ~ 8 miles from New Blue Shanty Levee (L-67D) south to intersection of L-67A/L-67C; L-67C canal is not backfilled
8	S-355W	Gated Spillway	1230	Maintains water deliveries to eastern L-29 Canal
9		Levee Removal (L-29)		Removal of ~ 4.3 miles between L-67A and Blue Shanty Levee intersection with L-29 Levee
10		Removal of remnants of Old Tamiami Trail roadway		Removal of ~ 6 miles of roadway west of L-67 Extension
11		L-67 Extension Levee Removal and Canal Backfill)		Complete removal of ~ 5.5 miles of remaining L-67 Extension, including S-346 culvert

Figure 2. CEPP Recommended Plan southern distribution and conveyance features and location (USACE 2014).

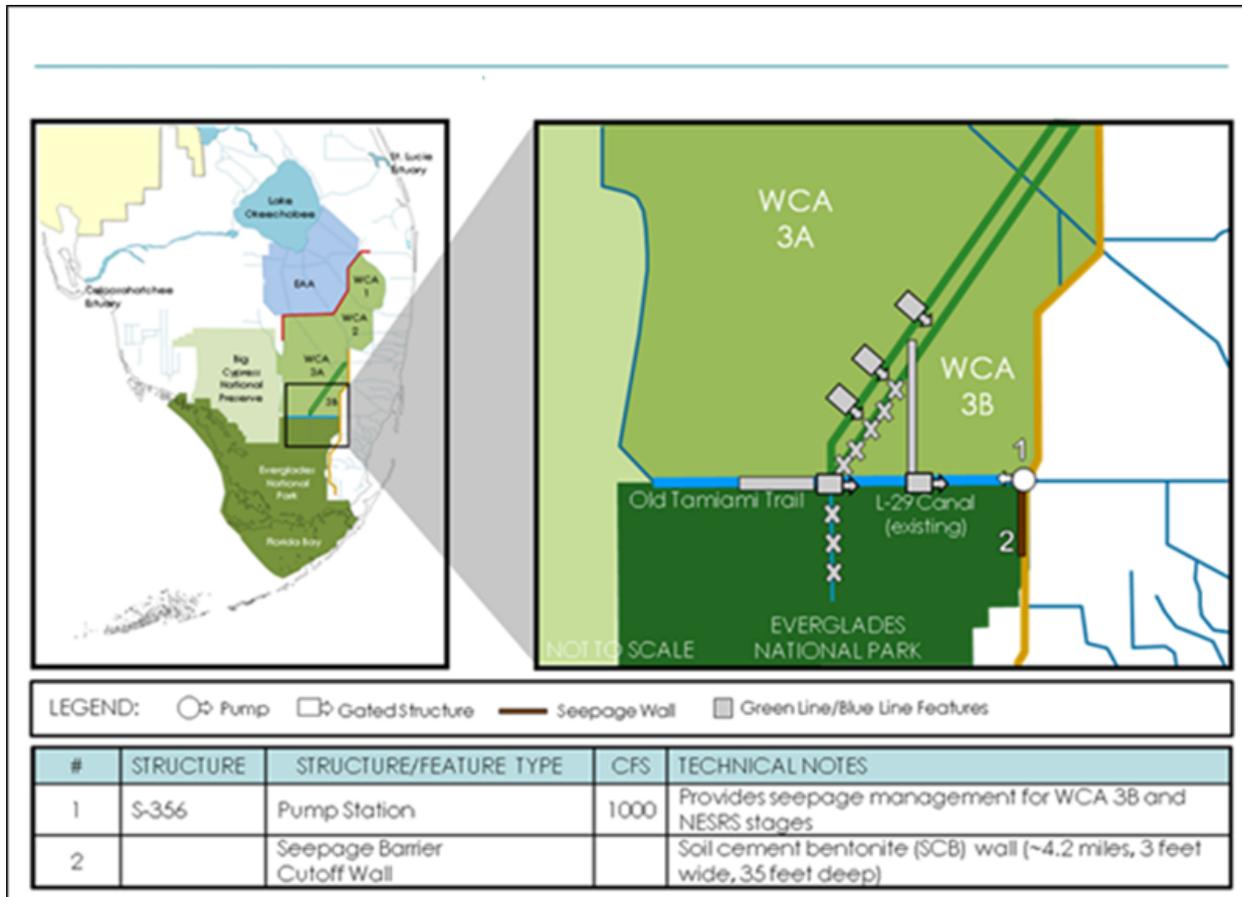


Figure 3. CEPP Recommended Plan seepage management features and location (USACE 2014).

The Corps plans to proceed with advertisement and award of the first construction contract for CEPP South in July and September 2020, respectively. The CEPP South Environmental Assessment (EA) addresses the interim operations of features associated with CEPP South Contract 1. The EA considers potential direct, indirect, and cumulative effects from interim operations of features associated with CEPP South Contract 1 defined in the 2020 CEPP and EAA Reservoir Draft Project Operating Manual (DPOM) (**Appendix A**) that include conveyance features that function to redistribute the existing water from WCA 3A into WCA 3B and eastern ENP. Furthermore, due to the phased construction of CEPP South features, which includes completion of the S-631, S-632, and S-633 gated culverts on the L-67A levee and a single corresponding L-67C interim gap, prior to the construction of the Blue Shanty Levee (L-67D) and degrade of the 4.3 miles of the L-29 levee between L-67A and the intersection of the L-67D with the L-29 levee, as part of the interim operations described in the DPOM, the Corps proposes to install temporary pumps adjacent to the L-29 canal as an interim measure to enhance and redirect flow south towards the L-29 canal.

The EA also includes information on design refinements included in CEPP South to improve flow conveyance in the Blue Shanty Flowway. These include: (1) backfill of an east-west agricultural ditch in the Blue Shanty Flowway to improve southerly flow conveyance to the L-29 canal and to move water through the Tamiami Trail bridges; and (2) active vegetation management in the Blue Shanty Flowway to reconnect historic sloughs. Active vegetation management of historic sloughs, combined with backfill of the east-west agricultural ditch and adjacent spoil pile removal, is expected to increase the areal extent

of sheetflow in the Blue Shanty Flowway and redirect more flow toward the natural orientation (south) of the landscape, rather than to the east. Environmental effects of the above mentioned design refinements (i.e. backfill of the east-west agricultural ditch and active vegetation management) and CEPP South Contract 1 features are the same scope and size as identified in the 2014 CEPP Final PIR/EIS. Therefore, potential effects associated with their construction remain within the range identified in the prior NEPA document. Information pertaining to the construction and installation of the design refinements and CEPP South Contract 1 features (e.g. construction footprint (acres)) is mentioned in this Appendix for reference. These design refinements and features function to redistribute the existing water from WCA 3A into WCA 3B and eastern ENP.

Components included in the first construction contract for CEPP South, including identified design refinements, are as follows:

S-631, S-632, & S-633 Structures, L-67C Interim Gap, and Portion of the East-West Agricultural Ditch:

For this phase (construction Contract 1) of the project, the Corps will construct the following features: three gated, 500 cfs box culverts in the L-67A levee (to be named S-631, S-632, and S-633 from north to south); remove approximately 3000 feet of existing spoil piles northwest of the L-67A canal where the S-631 and S-632 structures will be built; and degrade 3,000 feet of the L-67C levee to the southeast of S-633 (a portion of the CEPP full L-67C levee degrade within the Blue Shanty Flowway); and backfill the east-west agricultural ditch with degraded material from the adjacent spoil piles between L-67A and L-67C (approximately 1.36 miles). Reference **Figure 4** through **Figure 7**. The L-67C canal will be temporarily plugged to create a crossing to the western side of the agricultural ditch, but the canal will be returned to pre-project state after completion of the ditch backfill.

Up to 0.5 miles at the southernmost terminus of the L-67 extension canal (adjacent to the levee terminus) may be plugged using fill material taken from CEPP projects (e.g., CEPP South Contract 1 and/or Old Tamiami Trail (OTT) Road Removal projects, etc.) that is unsuitable for construction use, except for disposal/backfill. Reference **Figure 4**.

Active Vegetation Management: Active vegetation management in the Blue Shanty Flowway to enhance flow by reconnecting historic sloughs. Historic sloughs in WCA 3B have been encroached with sawgrass due to changes in hydrology. Active vegetation management of these sloughs, combined with backfill of the east-west remnant agricultural canal and spoil pile removal, is expected to increase the areal extent of sheetflow in the Blue Shanty Flowway, and to redirect more flow toward the natural orientation (south) of the landscape, rather than to the east. Active vegetation management would be accomplished through the use of herbicides (glyphosate). The potential location for active vegetation management within the Blue Shanty Flowway is depicted in green in **Figure 8**, consisting of 1,003 acres. The green depicts remnant sloughs.

L-29 Canal Temporary Pumps: Due to the phased construction schedule currently anticipated for the CEPP South features (updated from the preliminary implementation sequence identified in the 2014 CEPP PIR/EIS), which includes completion of the S-631, S-632, and S-633 gated culverts on the L-67A levee and a single corresponding L-67C interim gap, approximately 3-4 years prior to the construction of the Blue Shanty levee (L-67D) and degrade of the 4.3 miles of the L-29 levee between L-67A and the intersection of the L-67D with the L-29 levee, temporary pumps with a total discharge capacity of 200 cfs will be

installed adjacent to the L-29 canal. The proposed temporary pumps would be utilized as an interim measure to enhance and redirect flow south towards the L-29 canal (rather than to the east), complementing the active vegetation management within the Blue Shanty Flowway and initiating transition of the Blue Shanty Flowway towards the CEPP planned end state.

During the 2017 and 2018 water management deviations for WCA 3A high water conditions which occurred during State-issued Emergency Orders, the SFWMD similarly deployed temporary pumps with 200 cfs total capacity at the S-355A structure to allow for releases from WCA 3B flows that were added from WCA 3A by expanded use of the S-152 structure. The temporary pumps would be installed between L-67A and the CEPP South L-67D, within the alignment of the planned CEPP Blue Shanty Flowway. Since the location is west of S-355A, additional pump collection sumps may need to be installed immediately adjacent and north of the L-29 levee at the one or two selected optimal temporary pump locations. Sumps to facilitate discharge from a marsh area can be prone to high nutrient concentrations as water levels recede, therefore consideration of local effects on nutrient concentrations will be considered when evaluating water quality monitoring methods at the temporary pumps. When the pumps are removed in advance of the L-29 levee segment removal, the sump excavations will be returned to the pre-installation condition. Based on the use of temporary pumps during the 2017 and 2018 deviations, it is expected that no more than two sumps (100 cfs each) at approximately 25-50 feet length (north-south dimension) by 12-25 feet width (east-west dimension) is expected. Temporary pumps are expected to be placed at the intersection of historic sloughs being treated as part of the active vegetation management discussed above, and the L-29 canal. Potential locations for the temporary pumps, selected in coordination with the Decomp Physical Model Science Team, are identified in **Figure 8** as S-152-AMI-P2, S-632AMI-P2, and S-633-AMI-P2.

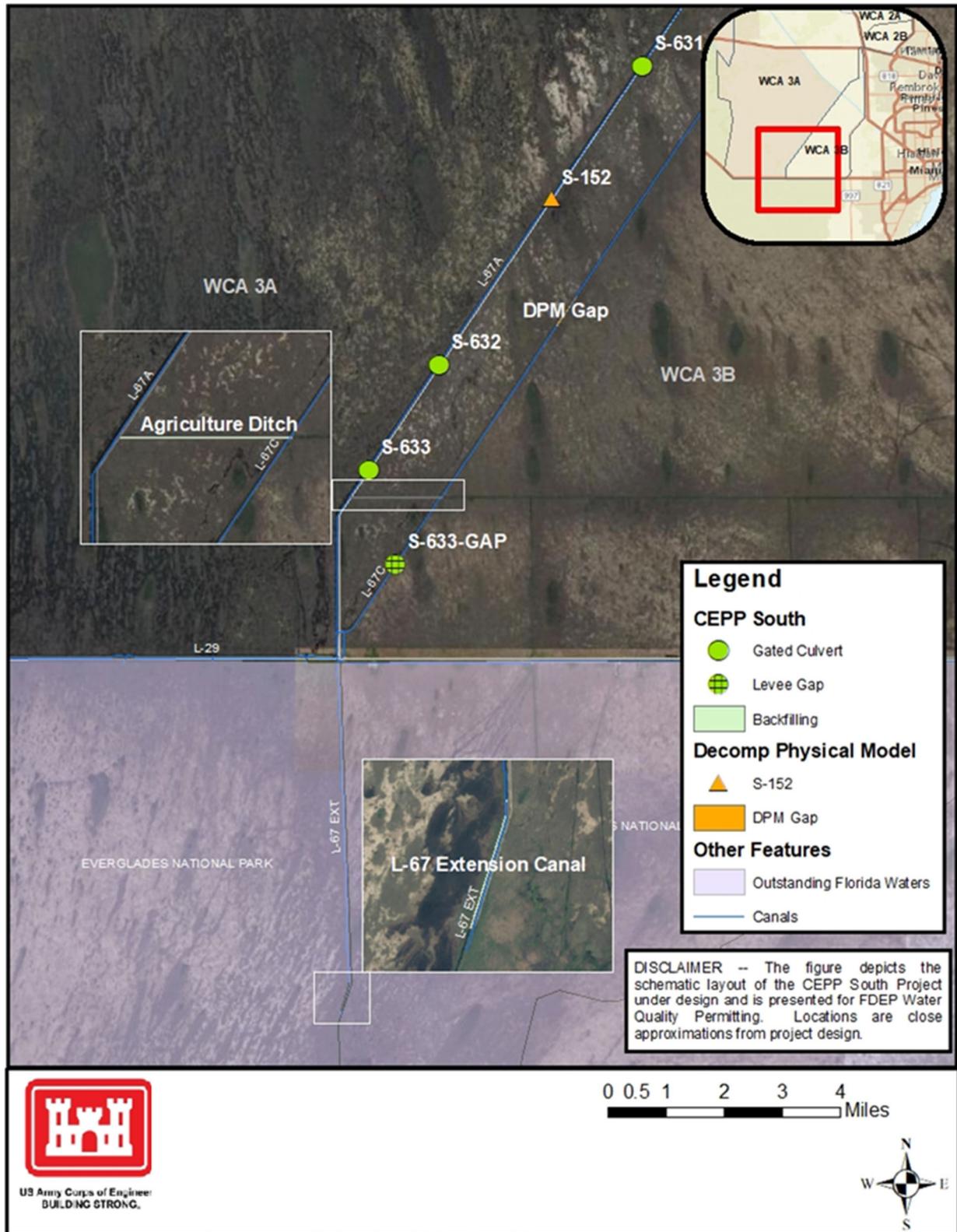


Figure 4. CEPP South Contract 1 features.

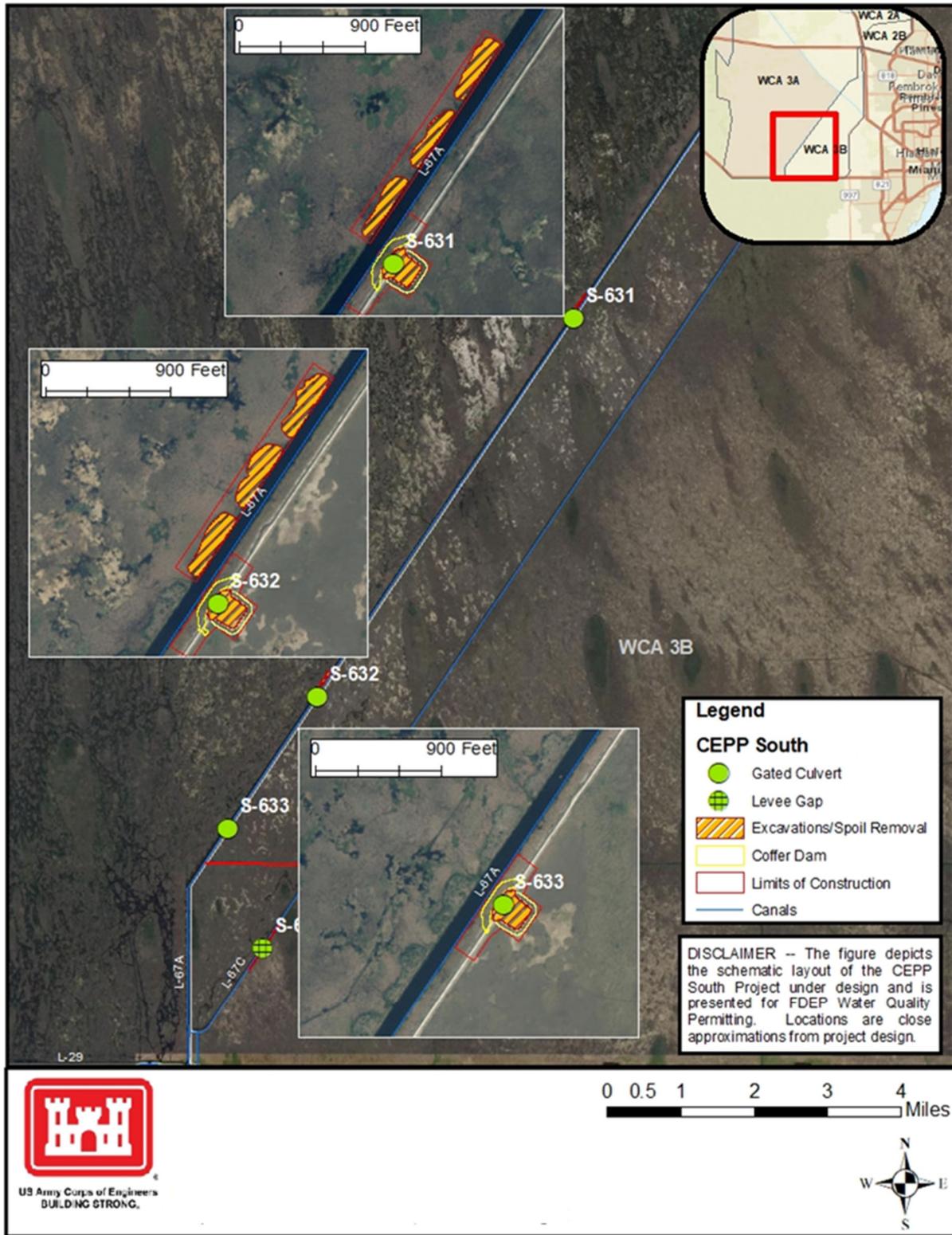


Figure 5. CEPP South Contract 1 Construction (S-631, S-632, S-633)

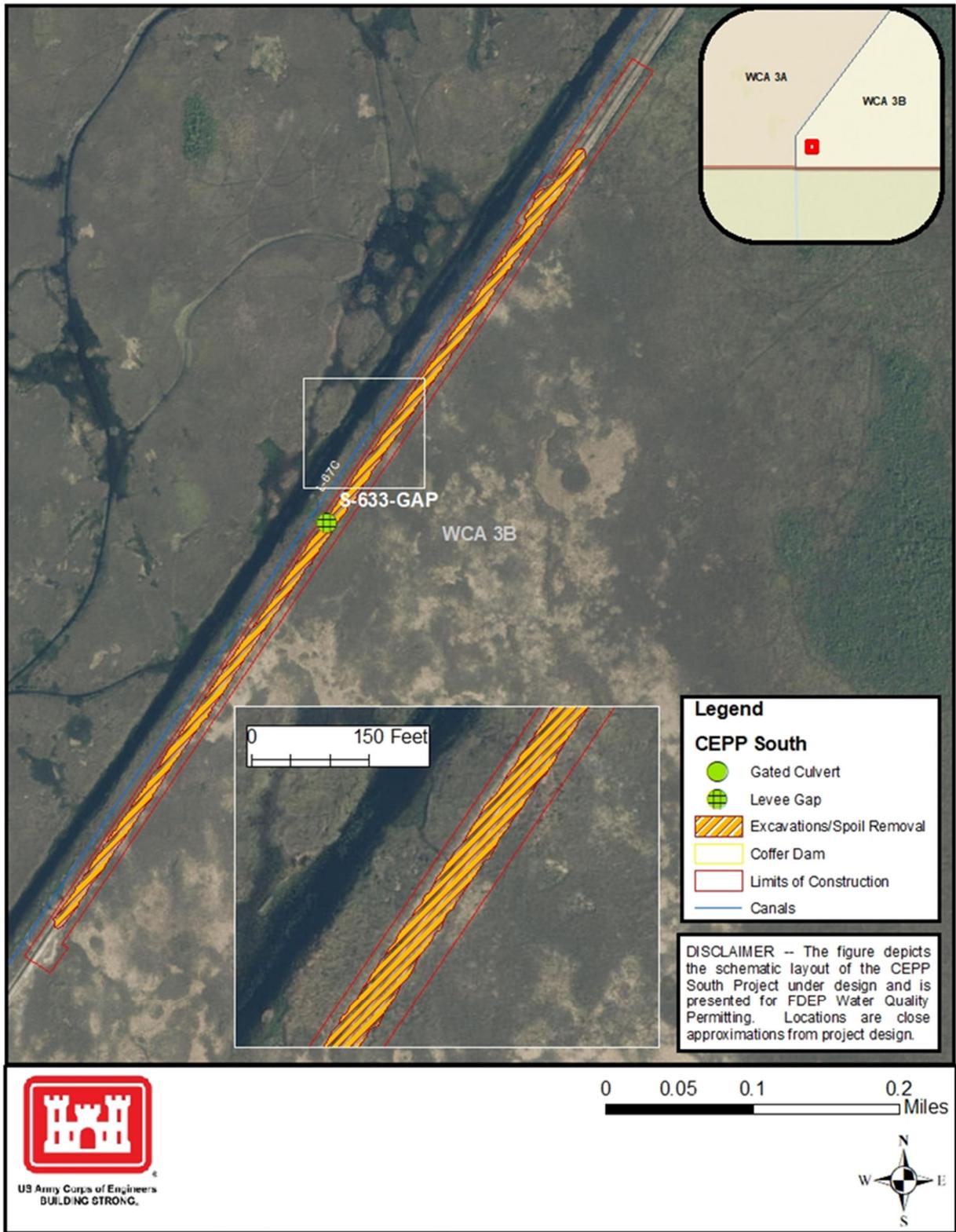


Figure 6. CEPP South Contract 1 Construction (L-67C 3,000 Foot Interim Gap)

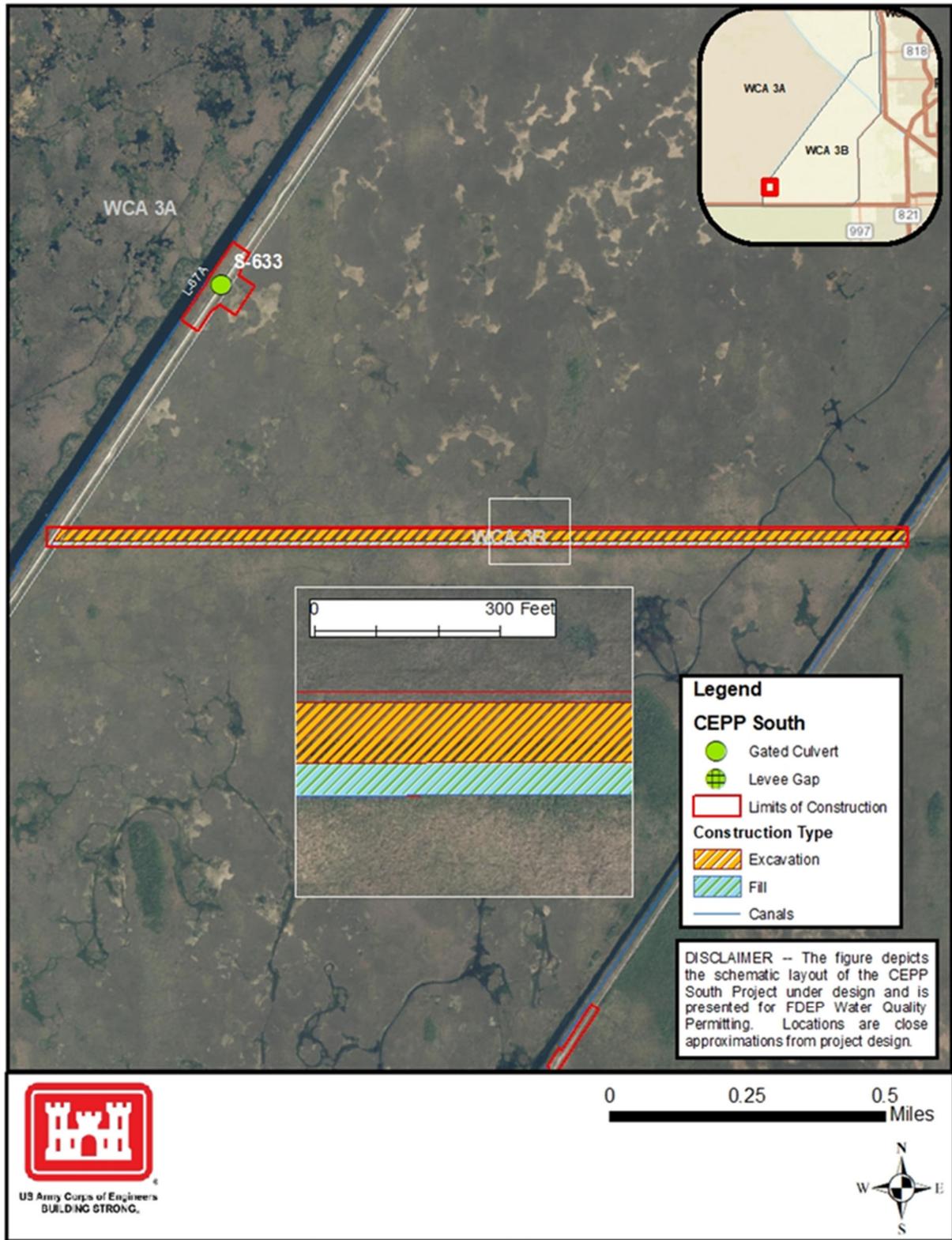


Figure 7. CEPP South Contract 1 Construction (East-West Agricultural Ditch)

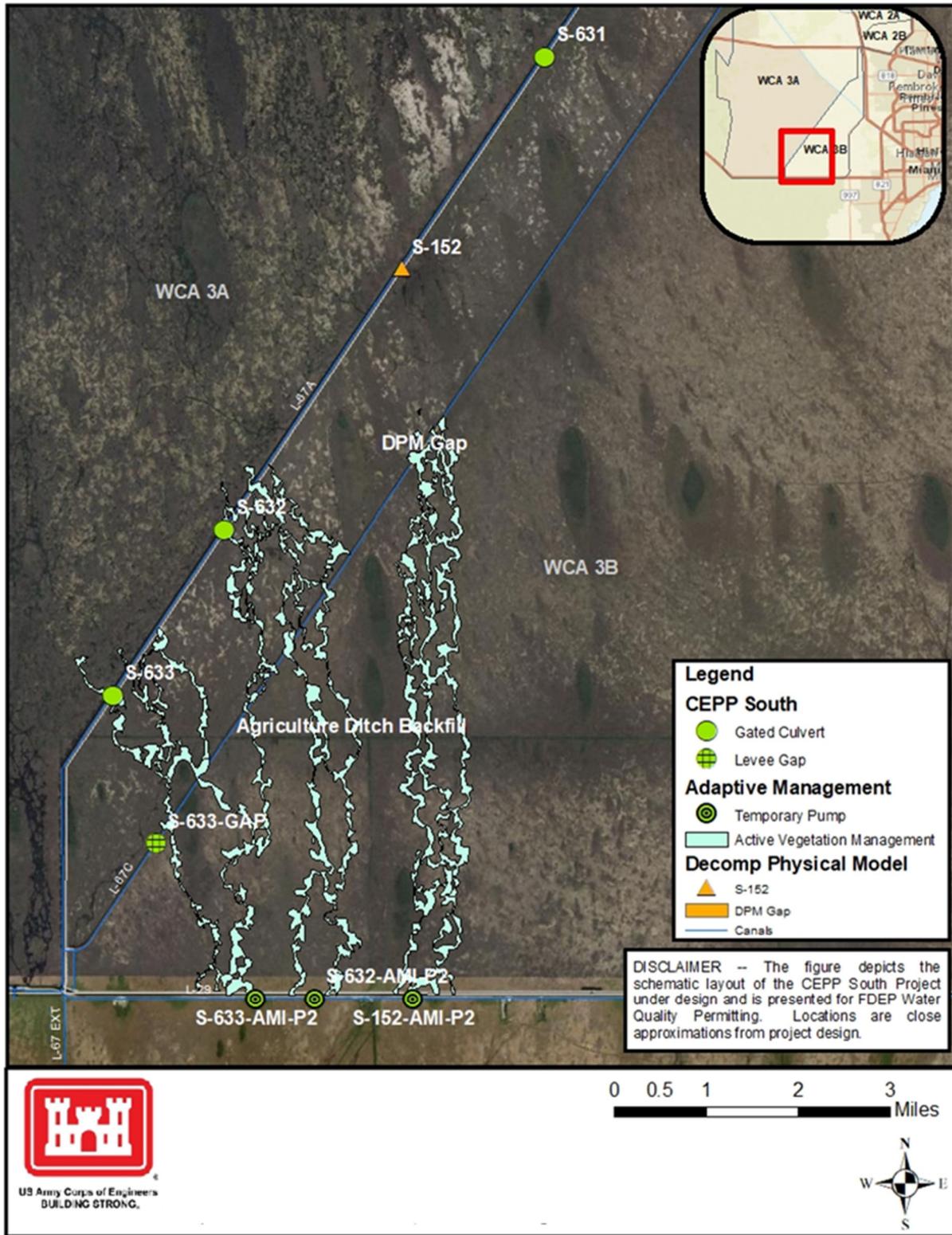


Figure 8. CEPP South (Active Vegetation Management and L-29 Temporary Pumps)

1.2.1 Authority and Purpose

Specific CEPP objectives were identified in the 2014 CEPP Final PIR/EIS to address the central part of the southern Florida ecosystem to improve the quantity, quality, timing, and distribution of water flows to the central Everglades, including WCA 3 and ENP (USACE 2014). The six CEPP objectives identified in the 2014 CEPP Final PIR/EIS were built upon the overall CERP goals and objectives in order to provide the needed linkages between the projects. CERP included goals for enhancing economic values and social wellbeing with specific objectives towards improving other project purposes of the C&SF project, including agricultural, municipal, and industrial water supply (USACE 2014). CEPP South will include conveyance features that function to redistribute the existing water from WCA 3A into WCA 3B and eastern ENP. Implementation of interim operations defined in the 2020 CEPP and EAA Reservoir DPOM (Appendix A) to include the installation and operation of temporary pumps, would allow benefits to be achieved by setting the stage for restoration of sheet flow in the Blue Shanty Flowway. Implementation of the proposed action would begin to achieve objectives to improve seasonal hydroperiods and water depths to support wetland vegetation and fish and wildlife resources in the Everglades system consistent with those identified in the 2014 CEPP Final PIR/EIS. Reference the main report of the EA and Table 1-2 for goals and objectives of CEPP.

1.3 General Description of Dredged or Fill Material

Construction of several project features are expected to involve the discharge of dredged or fill material into wetlands or other aquatic resources such as portions of existing canals or excavation in wetlands for conveyance purposes. For wetland types refer to the National Wetland Inventory (NWI) map in **Figure 9** and the Florida Land Use and Cover Classification System map in **Figure 10**. In general WCA 3A and 3B are large wetlands with tree islands and levee as upland areas. There are wetlands adjacent to the L-67A canal and levee where the S-631, S-632, and S-633 structures will be constructed; adjacent to the L-67C canal and levee that will be degraded; and adjacent to the east-west agricultural ditch and L-67 extension canal that will be backfilled. **Figure 4** through **Figure 8** show the project footprints and impacted areas.

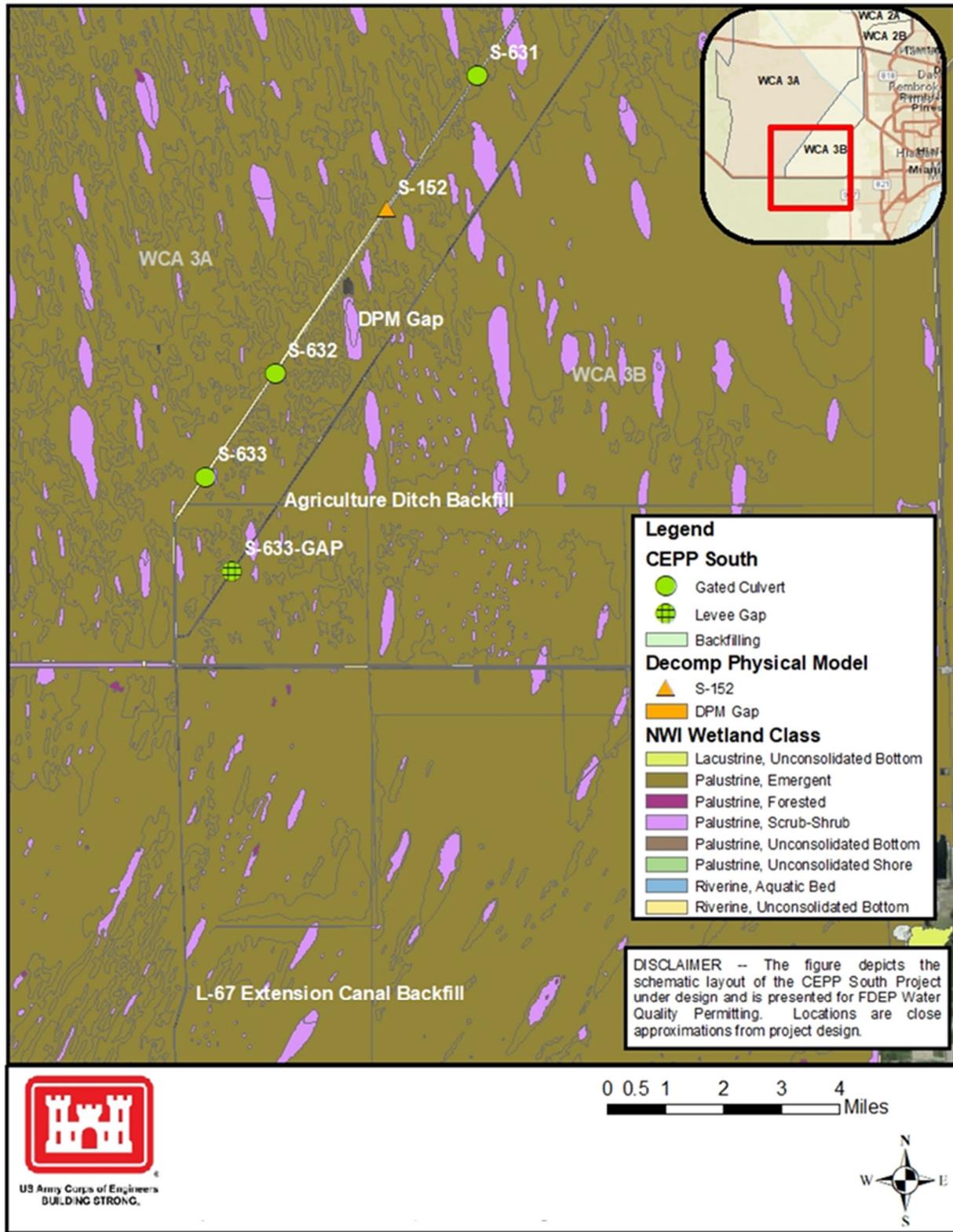


Figure 9. National Wetland Inventory (NWI) Wetlands in CEPP South project area.

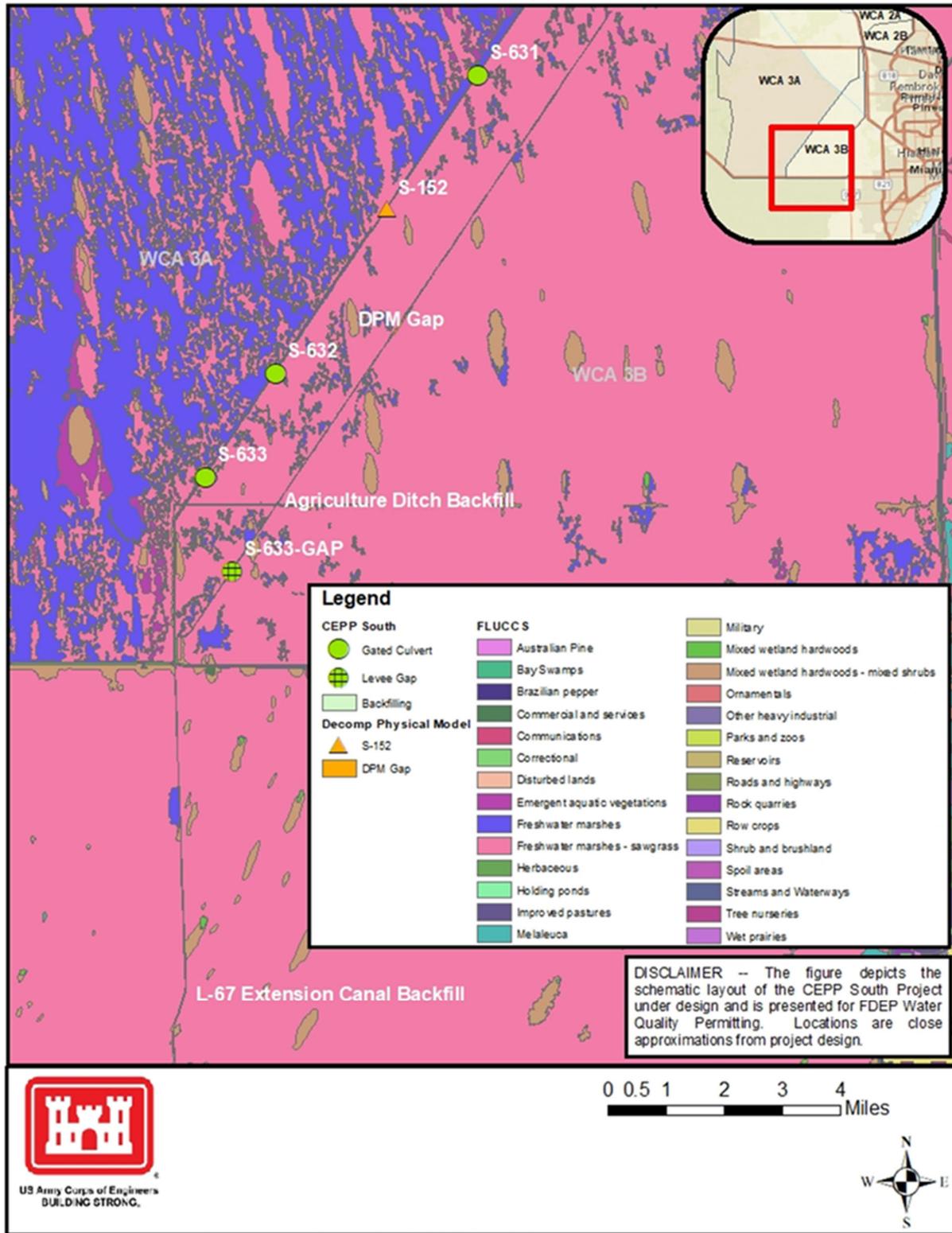


Figure 10. Florida Land Use Classification in CEPP South project area.

1.4 General Characteristics of Material

The project area is located in an undeveloped area of South Florida. The surficial geology consists of Holocene peat, an organic-rich soil that forms in wetlands. Peat is underlain by a thick sequence of marine limestones, with occasional layers of freshwater marl that were deposited during changing sea levels of the Quaternary Period. The uppermost layer of limestone is a hard, weathered limestone known as “caprock”. The Fort Thompson Formation underlies the caprock. The Fort Thompson Formation consists of consolidated limestones and unconsolidated shelly marine sands and silts. The Fort Thompson Formation thickness is approximately 70 ft in the project area, and thins to the west. Soils in the Everglades are primarily composed of peats and mucks. Deep, clean sands characterize the area east of the Everglades and south of Lake Okeechobee. Peat and muck soils, which are dark brown to nearly black, cover approximately 90 percent CEPP project area. Peat, by definition, consists of 65 percent or more organic material with relatively little mineral composition. Muck consists of 25 to 65 percent plant material mixed with mineral soil (i.e., clay, silt, and sand). Levees in the project area generally consist of sand- to cobble-sized carbonate rock (e.g., limestone) with shells and silt excavated from local borrow pits or adjacent borrow canals to construct the levees.

1.5 Quantity of Material (cubic yards)

Table 2 provides a description of construction features and the volume of fill material per construction feature for CEPP South Contract 1. Revised acreages were calculated based on the Universal Mitigation Assessment Method (UMAM) using a National Wetland Inventory (NWI) dataset. The UMAM was used to quantify the functional loss and functional gain from the construction of CEPP South Contract 1 features (**Table 3**).

Based on the UMAM, construction of S-631, S-632, S-633, and the interim 3,000 foot levee gap on the L-67C under CEPP South Contract 1 is expected to result in permanent wetland impacts of 8.85 acres. The construction of the 3,000 foot interim levee gap on the L-67C is expected to result in permanent wetland impacts of 0.19 acres of wetlands and a 5.0 acre gain in wetlands as the levee transitions to sawgrass marsh.

Based on the UMAM, spoil pile removal at S-631 and S-632 is expected to result in a 6.29 acre gain in wetlands. The spoil piles currently contain low functioning wetlands with reduced value due to the presence of lime rock fill at their base. The lime rock is spoil product of the dredging of the adjacent canal. These areas will be scraped to natural grade and are expected to return to re-vegetate with sawgrass. The 2014 CEPP Final PIR/EIS identified that spoil piles along the northwestern side of the of the L-67A canal in the proximity of the L-67A gated culverts would be removed to facilitate sheetflow connectivity with the WCA 3A marsh. Reference **Figure 5** for the spoil piles to be removed based on coordination with the SFWMD, FDEP, and FWC.

Based on the UMAM, backfill of a portion of the east-west agricultural ditch (1.36 miles) is expected to result in a 24.9 acre gain in wetlands. Adjacent to the ditch are 16.21 acres of lime rock fill and muck excavated from the ditch. Vegetation on the spoil piles has naturally established and continues to be wetlands, however similar to the spoil piles discussed above, the base of the piles is artificial and consists of lime rock. These areas will be scraped to natural grade and are expected to return to re-vegetate with sawgrass. The 8.68 acre ditch will be restored to match the adjacent grade to sawgrass march.

Based on the UMAM, the total wetland impact will be 8.85 acres with a functional loss of 5.92; however the total wetland gain will be 36.18 acres with a functional gain of 7.90. The amount of functional gain obtained from construction of CEPP South Contract 1 exceeds the functional loss incurred, therefore no additional mitigation is required. The UMAM evaluation did not include downstream benefits that will be obtained with restored water depths, duration and distribution in WCA 3A, WCA 3B, and ENP. The scope of the UMAM focuses solely on CEPP South project features included in Contract 1.

Estimated acreages of wetland impacts remain within the range identified in the 2014 CEPP Final PIR/EIS and are mentioned in this EA for reference.

Installation of the L-29 temporary pumps would result in temporary wetland impacts of 0.046 acres from the construction of collection sumps that would need to be installed immediately adjacent and north of the L-29 levee. Two sets of temporary pumps, rated at combined 100 cfs at each location, are expected to be installed; however three potential locations have been identified for construction (reference S-152-AMI-P2, S-632-AMI-P2, and S-633-AMI-P2 in **Figure 8**). When the pumps are removed in advance of the L-29 levee segment removal under CEPP South Contract 5, the sump excavations would be returned to the pre-installation condition.

Implementation of the proposed action is expected to result in an overall net increase in wetland function throughout the project area through improved hydrology.

Table 2. Description of construction feature and volume of fill material per construction feature.

Feature	Volume of Material (Cubic Yards)
East- West Agricultural Canal Backfill (1.36 miles)	22,870
L-67 Extension Canal Backfill (0.5 Miles)	40,000
S-631 Culvert	5,210
S-631 Spoil Piles Excavated	21,490
S-632 Culvert	4,735
S-632 Spoil Piles Excavated	28,820
S-633 Culvert	4,705
S-633--L-67C 3000 ft Gap Excavated	13,175

Table 3. Summary of wetland impacts and functional loss CEPP South Contract 1 (UMAM).

Structure	Loss	FLUCCS	Acreage	Impact Delta	Functional Loss
S-631, S-632, & S-633	Loss	6411 Sawgrass Marsh	8.66	0.67	5.80

L-67C Levee Degrade	Loss	6411 Sawgrass Marsh	0.19	0.67	0.12
Total Loss	-	-	8.85	0.82	5.92
Structure	Gain	FLUUCS	Acreage	Relative Functional Gain	Functional Gain
Six Spoil Piles	Gain	6172 Mixed Hardwoods	6.29	0.224	1.40
Ag Ditch Spoil Piles	Gain	6172 Mixed Hardwoods	16.21	0.097	1.57
Ag Ditch Open Water	Gain	6440 Emergent Aquatic Vegetation	8.68	0.224	1.94
L-67C Levee Degrade	Gain	Upland	5.0	0.598	2.99
Total Gain	-	-	36.18	-	7.90

1.6 Source of Material

The material will consist of various quantities of various soils, depending on final feature design. Excavated materials from the L-67A structures and L-67C gap will be used to fill the east-west agriculture ditch. The east-west agricultural ditch will be backfilled in two layers: spoil materials adjacent to the canal that are cleared of vegetation will be pushed into the canal followed by fill and muck from L-67A and L-67C that will be used to cap and complete the backfill. If additional cap material is needed, muck from Old Tamiami Trail Road Removal may be used. Excavated material from the removal of Old Tamiami Trail that is unsuitable for construction use, and remaining excavated material from the L-67A structures and L-67C interim gap will be used to fill approximately 0.5 miles of the L-67 extension canal. Fill material will be suitable for backfill and will not include hazardous toxic or radioactive waste (HTRW), asphalt, trash, or vegetation.

1.7 Description of the Proposed Discharge Site

Reference **Section 1.6** which describes the source of fill material and proposed discharge sites.

1.7.1 Location

Reference **Section 1.1** for a description of the project location. CEPP South project features include conveyance features that function to redistribute the existing water from WCA 3A into WCA 3B and eastern ENP. **Figure 4** through **Figure 8** show the project footprints and impacted areas resulting from construction of CEPP South Contract 1 features, design refinements, and L-29 temporary pumps.

1.7.2 Size

The overall area of impact for CEPP South Contract 1 features is approximately 15,543 acres, which generally includes the Blue Shanty Flowway and the area between the L-67A and L-67C extending up to S-631. Construction of Contract 1 features will directly impact approximately 65.7 acres within WCA 3B and ENP (i.e., 0.5 mile L-67 Extension Canal Backfill). Direct impacts from active vegetation management include approximately 1,003 acres with historic sloughs. **Figure 4** through **Figure 8** show the project

footprints and impacted areas resulting from construction of CEPP South Contract 1 features, design refinements, and L-29 temporary pumps.

1.7.3 Site

Reference **Section 1.1** for a description of the project location. CEPP South project features include conveyance features that function to deliver and re-distribute existing water from WCA 3A to WCA 3B and NESRS of ENP. **Figure 4** through **Figure 8** show the project footprints and impacted areas resulting from construction of CEPP South Contract 1 features, design refinements, and L-29 temporary pumps.

1.7.4 Habitat

Reference **Section 1.3** for a description of the existing habitat. **Figure 9** and **Figure 10** show wetland types within the project area defined by the NWI database and the FLUCCS. The project area consists of wetlands. Uplands present in the project area include existing C&SF infrastructure (i.e. levees) and existing tree islands.

1.7.5 Timing and Duration of Discharge

Dewatering for construction of conveyance features may be required. During culvert construction, there may be local sediment disturbance but discharge is expected to be negligible. Discharges from dewatering activities will be managed such that turbidity in the adjacent canal does not exceed turbidity standards. Produced groundwater may be directed to an upland containment area or into adjacent conveyance canals. The contractor will be required to minimize any discharges to the adjacent canal due to dewatering activities that may be required. Any dewatering activity must be approved by the FDEP/SFWMD as required and that approval will be obtained by the contractor. Project construction for the culverts is expected to take approximately 2-3 years. Once the new culverts are constructed, water will be conveyed by gravity flow through.

1.7.6 Description of Disposal Method

If excavated material is used as fill it will be hauled by truck to placement or staging stockpile areas.

1.8 Factual Determinations (Section 230.11)

The determination of effects of each proposed discharge shall include the following: (a) physical substrate determinations, (b) water circulation, fluctuation, and salinity determinations, (c) suspended particulate/turbidity determinations, (d) contaminant determinations, (e) aquatic ecosystem and organism determinations, (f) determination of proposed disposal sites, (g) determination of cumulative effects on the aquatic ecosystem, and (h) determination of secondary effects on the aquatic ecosystem.

1.8.1 Substrate Elevation and Type

The natural topography of the area is nearly flat except for unnatural features (e.g., canals and levees).

1.8.2 Sediment Type

Levee materials consists of sand to cobble-sized limestone, with trace amounts of fine- to medium-grained sand-sized shells, and trace amounts of clay and silt. Marsh materials generally consist of peat, muck and trace amounts of clay in the upper layers, and are underlain by weathered limestone.

1.8.3 Dredge/Fill Material Movement

Best management practices will be employed during construction to control movement of sediment into undisturbed areas and areas outside the construction footprint. Turbidity curtains will be placed prior to construction and will remain in place until construction is completed. Turbidity and erosion control measures during construction will be described in the Environmental Protection Plan and Turbidity Control Plan provided by the contractor.

1.8.4 Physical Effects on Benthos

No adverse impacts to benthic organisms are anticipated other than displacement of those organisms in the construction footprint of the proposed project. These highly prolific organisms are expected to quickly re-establish in the natural wetlands restored through improved hydrology.

1.8.5 Water Circulation, Fluctuation, and Salinity Determination

Turbidity and erosion control measures during construction will be described in the Environmental Protection Plan and Turbidity Control Plan provided by the contractor. Permit compliance monitoring will be conducted to characterize project impacts to water quality. A water quality monitoring plan was submitted to FDEP with the application for water quality certification.

1.8.6 Suspended Particulate/Turbidity Determinations

During project construction, a temporary short-term increase in suspended particulates may occur in the canals and ponded areas associated with construction of water control structures, and levee or canal bank alteration. Best management practices will be used to minimize the suspension and transport of soils, and levee materials into water adjacent to or downstream of the construction area including use of sediment controls, turbidity screens, or sediment blockages for adjacent wetlands.

In general, any short-term impacts to water quality associated with construction of the project will be ameliorated by best management practices for erosion and sedimentation control, and monitoring during construction. Longer-term impacts to water quality not associated with fill and associated with the operation of project features (e.g., flow timing, volume, and/or distribution) will be addressed through operational monitoring and adaptive management actions, if potentially adverse effects are observed or predicted. For example, DPM findings show evidence of P-enrichment associated with areas of excessive velocities (>3 – 15 cm/s) and downstream of degraded levee areas adjacent to unbackfilled canals (Saunders, 2020; Sklar 2018; 2019). Annex D—Adaptive Management and Monitoring Plans for the CEPP from the 2014 CEPP PIR/EIS describes the adaptive management strategies for CEPP that can be implemented. The adaptive management strategies follow a scientific approach that uses performance measures, monitoring, triggers, and/or thresholds to inform restoration progress and support decisions regarding the need to adjust CEPP to improve restoration performance. Adaptive management options described in the 2014 PIR/EIS to assess the role of flow for ridge and slough restoration could include

vegetation management and operational flexibility to maximize flow (refer to the 2014 PIR/EIS—Annex D for additional information).

1.8.7 Expected Changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Disposal Site

Temporary localized increases in suspended particulates and turbidity levels can be expected during construction. Such increases are generally short term and insignificant. All appropriate measures to reduce and contain turbidity will be employed to prevent violations of State Water Quality Standards.

1.8.8 Effects on Chemical and Physical Properties of the Water Column

Chemical and physical properties of the water column are characterized by light penetration, dissolved oxygen, toxic metals, organics, and pathogens, and aesthetics of the water column.

1.8.8.1 Light Penetration

During construction operations there will be a temporary insignificant reduction in light penetration in the canals and adjacent marsh in the immediate vicinity of the activity. Once construction is complete, light penetration is expected to return to pre-construction levels.

1.8.8.2 Dissolved Oxygen

During construction operations there will be a temporary reduction in the dissolved oxygen content in the water column due to organic sediment oxygen demand from the disturbed soils in the immediate vicinity of the activity. Once construction is complete, dissolved oxygen is expected to return to pre-construction levels.

1.8.8.3 Toxic Metals, Organics, and Pathogens

Generally, no toxic metals, anthropogenic organics, or pathogens are anticipated to be released by project construction.

1.8.8.4 Aesthetics of the Water Column

During construction, visual aesthetics will be temporarily, locally affected. However, after completion, aesthetics will improve due to an increase in quantity and quality of wetland habitat.

1.8.9 Effects on Biota

Effects on biota include three taxonomic groups as described in the following three sub-sections.

1.8.9.1 Primary Productivity and Photosynthesis

During construction, disposal of excavated materials will adversely affect wetlands in the immediate vicinity by destroying vegetation and smothering biota. However, project operation will improve the primary productivity and photosynthesis due to an increase in quantity and quality of wetland habitat.

1.8.9.2 Suspension/Filter Feeders

During construction there will be a temporary increase in turbidity and possibly a decrease in suspension/filter feeders due to construction activities. This temporary increase in turbidity will be short-term and should not have any long-term negative impact on these highly fecund organisms. The implantation of the project should benefit these organisms by creating a higher quality wetland habitat.

1.8.9.3 Sight Feeders

During construction there will be a temporary increase in turbidity and possibly a decrease in sight feeders due to construction activities. Because the majority of sight feeders are highly mobile and can move outside the affected area, no significant impacts to these organisms are expected. When the project is operational, sight feeders will benefit from the higher quality wetland habitat.

1.8.10 Contamination Determinations

No HTRW has been identified within the construction footprints of the L-67A gated culverts (S-631, S-632, S-633), the L-67C interim 3,000 foot levee gap, the areas identified for spoil pile removal, the east-west agricultural ditch, or the areas identified for installation of temporary pumps adjacent to the L-29 canal. Construction would not result in the discovery of HTRW.

1.8.11 Aquatic Ecosystem and Organism Determinations

No long-term adverse impacts on aquatic organisms are anticipated. The proposed project is not expected to cause or contribute to violations of state water quality standards, jeopardize the existence of any federally endangered or threatened species, nor impact a marine sanctuary. No significant degradation is expected, and all appropriate and practicable steps will be taken to avoid or minimize impacts.

1.8.11.1 Effects on Plankton

No adverse impacts to plankton are anticipated.

1.8.11.2 Effects on Benthos

No adverse impacts to benthic organisms are anticipated other than displacement of those organisms in the construction footprint of the proposed project.

1.8.11.3 Effects on Nekton

No adverse impacts to nektonic organisms are anticipated other than displacement of those organisms in the construction footprint of the proposed project.

1.8.11.4 Effects on Aquatic Food Web

Periphyton forms the base of the food web within the project area. No adverse impacts to the aquatic food web are anticipated, other than minor temporary impacts within the construction footprint of various features.

1.8.11.5 Effects on Special Aquatic Sites

Special aquatic sites include sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes. They are geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region.

1.8.11.5.1 Sanctuaries and Refuges

Construction of CEPP South Contract 1 features and implementation of interim operations defined in the 2020 CEPP and EAA Reservoir DPOM would provide additional operational flexibility at the boundary of WCA 3A with WCA3B and with WCA 3B at ENP. Construction and operation of S-631, S-632, S-633, and the L-29 canal temporary pumps, in conjunction with removal of a portion of the L-67C levee, and backfilling a portion of the east-west agricultural ditch, would improve hydrologic connectivity within the project area. Additional conveyance on the L-67A levee would enable improved sheetflow in WCA 3B over a broader flow path than current conditions aiding in the restoration of natural drainage patterns that were altered as a result of the Central and Southern Florida (C&SF) project. The proposed action would rehydrate existing portions of WCA 3B.

1.8.11.5.2 Wetlands

Reference Section 1.5. Based on the UMAM, the total wetland impact will be 8.85 acres with a functional loss of 5.92; however the total wetland gain will be 36.18 acres with a functional gain of 7.90. The amount of functional gain obtained from construction of CEPP South Contract 1 exceeds the functional loss incurred, therefore no additional mitigation is required. Installation of the L-29 temporary pumps would result in temporary wetland impacts of 0.046 acres from the construction of collection sumps that would need to be installed immediately adjacent and north of the L-29 levee. Two sets of temporary pumps, rated at combined 100 cfs at each location, are expected to be installed. When the pumps are removed in advance of the L-29 levee segment removal under CEPP South Contract 5, the sump excavations would be returned to the pre-installation condition. Implementation of the proposed action is expected to result in an overall net increase in wetland function throughout the project area through improved hydrology. Efforts to avoid and minimize impacts to wetlands through direct disturbance were considered when defining the limits of construction. Furthermore, the contractor would be required to keep construction activities under surveillance, management, and control to avoid pollution of surface, ground waters, and wetlands. The contract specifications would require the contractor to employ best management practices (BMPs) with regard to erosion and turbidity control.

1.8.11.5.3 Mud Flats

There are no mud flats within the project footprint, therefore, none should be impacted by the proposed project.

1.8.11.5.4 Vegetated Shallows

No adverse impacts to submerged aquatic vegetation are anticipated, other than minor temporary impacts within the construction footprint of various features. Construction of and implementation of interim operations defined in the 2020 CEPP and EAA Reservoir DPOM would allow benefits to existing

wetlands to be achieved by improving sheetflow within the Blue Shanty Flowway. Wetland function is expected to improve in this area.

1.8.11.5.5 Hardground and Coral Reef Communities

There are no hard bottom or coral reef communities within the project footprint, therefore, none should be impacted by the proposed project.

1.8.11.5.6 Riffle and Pool Complexes

There are no riffle or pool complexes within the project footprint, therefore, none should be impacted by the proposed project.

1.8.11.6 Threatened and Endangered Species

Federally listed threatened and endangered species are present potentially in the project area. The Corps is consulting with the U.S. Fish and Wildlife Service (USFWS) on effects determinations for these federally listed species within the project area. A Biological Assessment is included in **Appendix D.1** of the EA to document potential effects to threatened and endangered species. Consultation is ongoing.

1.8.12 Proposed Disposal Site Determinations

Excavated material from CEPP South Contract 1 will be used to fill approximately 1.36 miles of the East-West Agricultural ditch and any remaining material may be used to fill up to 0.5 miles of the L-67 Extension Canal. There will be no long-term adverse impacts to the project area resources as a result of the placement of excavated material.

1.8.13 Mixing Zone Determination

It is expected that implementation of best management practices will avoid the need for a mixing zone downstream of project features. Where material is placed to backfill existing ditches or other excavated areas, discharged material will not cause unacceptable changes to water quality requirements as specified by the State of Florida's water quality certification permit procedures. No adverse impacts related to depth, current velocity, direction and variability, degree of turbulence, stratification, or ambient concentrations of constituents are expected from implementation of the project.

1.8.14 Determination of Compliance with Applicable Water Quality Standards

CEPP complies with water quality standards applicable to the project and adjacent waters. Proposed features are located in and adjacent to waters designated as Class III by the State of Florida. In accordance with Florida Administrative Code (F.A.C.) Rule 62-302 ("Surface Water Quality Standards"), the use classification of Class III waters is "Recreation, Propagation, and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife." In addition to the minimum and general criteria for surface waters found in Section 62-302.500(1) F.A.C., there are numerous water quality criteria for specific parameters for Class III waters listed in Section 62-302.530, F.A.C. Although the proposed plan is not expected to affect most of the parameters listed in this rule, certain parameters (e.g., turbidity, dissolved oxygen and nutrients) listed in the criteria may be affected by construction and operations activities. The construction and operation of the proposed project components will comply with federal and state water quality standards.

The Corps will comply with conditions specified in the Section 401 State water quality certification obtained for the CEPP South Contract 1 project.

1.8.15 Potential Effects on Human Use Characteristics

These evaluations presented in the following subsections address municipal and private water supply, recreational and commercial fisheries, water related recreation, aesthetics, parks and preserves.

1.8.15.1 Municipal and Private Water Supply

No municipal or private water supplies would be adversely impacted by the implementation of the project.

1.8.15.2 Recreational and Commercial Fisheries

No recreational resources or commercial fisheries would be adversely impacted by the implementation of the project.

1.8.15.3 Water Related Recreation

No recreational resources or commercial fisheries would be adversely impacted by the implementation of the project.

1.8.15.4 Aesthetics

Construction of permanent structures would result in modifications to existing C&SF project features. Potential impacts to aesthetics within the project area would be construction-related and temporary, lasting only for the duration of construction. Some vegetation may be disturbed or removed during construction. Reference **Section 1.5** for a discussion of potential wetland impacts resulting from construction.

1.8.15.5 Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves

Construction of CEPP South Contract 1 features and implementation of interim operations defined in the 2020 CEPP and EAA Reservoir DPOM would provide additional operational flexibility at the boundary of WCA 3A with WCA3B and with WCA 3B at ENP. The proposed action would rehydrate existing portions of WCA 3B. Reference **Section 1.8.11.5.1**.

1.8.16 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, Congress define Essential Fish Habitat (EFH) as “...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Essential fish habitat includes all types of aquatic habitat—wetlands, coral reefs, seagrasses, and mangroves—where fish spawn, breed, feed, or grow to maturity. Three fishery management councils (FMC)—the Gulf of Mexico, South Atlantic, and U.S. Caribbean—are responsible for identifying EFH for federally managed species in the southeast United States. The definition of EFH may include habitat for an individual species or an assemblage of species, whichever is appropriate within each FMC.

1.8.16.1 Essential Fish Habitat in the Area**1.8.16.2 Assessment of Effects on Hard bottom and Coral Reef Communities**

This project is not expected to affect coral reefs or hard bottom communities. Coral reefs and hard bottom communities are located offshore of waters affected by the project.

1.8.16.3 Assessment of Effects on Sanctuaries and Refuges

Construction of CEPP South Contract 1 features and implementation of interim operations defined in the 2020 CEPP and EAA Reservoir DPOM would provide additional operational flexibility at the boundary of WCA 3A with WCA3B and with WCA 3B at ENP. The proposed action would rehydrate existing portions of WCA 3B. Reference **Section 1.8.11.5.1**.

1.8.16.4 Assessment of Effects on Wetlands

While there would be minor impacts to wetlands due to construction of the CEPP South features (approximately 8.85 acres of loss and 36.18 acres of gain), construction of and implementation of interim operations defined in the 2020 CEPP and EAA Reservoir DPOM would allow benefits to existing wetlands to be achieved by improving sheetflow within the Blue Shanty Flowway. Wetland function is expected to improve in this area. The proposed action would help enhance environmental conditions in the region. Reference **Section 1.5**.

1.8.16.5 Assessment of Effects on Mud Flats

There are no mud flats within the project footprint, therefore, none should be impacted by the proposed project.

1.8.16.6 Assessment of Effects on Vegetated Shallows

No adverse impacts to submerged aquatic vegetation are anticipated, other than minor temporary impacts within the construction footprint of various features. Construction of and implementation of interim operations defined in the 2020 CEPP and EAA Reservoir DPOM would allow benefits to existing wetlands to be achieved by improving sheetflow within the Blue Shanty Flowway. Wetland function is expected to improve in this area.

1.8.16.7 Assessment of Effects on Riffle and Pool Complexes

There are no riffle or pool complexes within the project footprint, therefore, none should be impacted by the proposed project.

1.8.16.8 Assessment of Effects on Plankton

No adverse impacts to plankton are anticipated.

1.8.16.9 Assessment of Effects on Benthos

No adverse impacts to benthic organisms are anticipated other than displacement of those organisms in the construction footprint of the project.

1.8.16.10 Assessment of Effects on Nekton

No adverse impacts to nektonic organisms are anticipated other than displacement of those organisms in the construction footprint of the proposed project.

1.8.16.11 Determination of Effects on Essential Fish Habitat

The project area with the potential to be directly affected by construction the L-67A gated culverts (S-631, S-632, S-633), the L-67C interim 3,000 foot levee gap, spoil pile removal, backfill of the east-west agricultural ditch, and installation of the temporary pumps adjacent to the L-29 canal does not contain EFH, as defined by the Magnuson-Stevens Fishery Conservation and Management Act. Implementation of interim operations for CEPP South Contract 1 as defined in the 2020 CEPP and EAA Reservoir DPOM would have no effect on EFH. There is no EFH within the project footprint, therefore, none should be impacted by the proposed project.

1.8.17 Determination of Cumulative Effects on the Aquatic Ecosystem

Construction of CEPP South Contract 1 features and implementation of interim operations defined in the 2020 CEPP and EAA Reservoir DPOM would provide additional operational flexibility at the boundary of WCA 3A with WCA3B and with WCA 3B at ENP. Construction and operation of S-631, S-632, S-633, and the L-29 canal temporary pumps, in conjunction with removal of a portion of the L-67C levee, and backfilling a portion of the east-west agricultural ditch, would improve hydrologic connectivity within the project area. Additional conveyance on the L-67A levee would enable improved sheetflow in WCA 3B over a broader flow path than current conditions aiding in the restoration of natural drainage patterns that were altered as a result of the C&SF project. The proposed action would rehydrate existing portions of WCA 3B. The proposed action would help enhance environmental conditions in the region. The overall benefit to the regional system is expected to be far greater than localized adverse effects resulting from construction of CEPP South Contract 1 features, design refinements, and L-29 temporary pumps. Wetland function is expected to improve in this area.

1.8.18 Determination of Secondary Effects on the Aquatic Ecosystem

No adverse secondary impacts on the aquatic ecosystem will occur due to construction. During construction the sites will be contained with sedimentation barriers. Erosion will be controlled by appropriate erosion control techniques. Sedimentation will be controlled during construction. An ecological and water quality monitoring plan will be implemented during and after construction and specific environmental commitments, engineering and design commitments, and operational commitments will be incorporated to avoid, minimize, and/or mitigate for adverse effects. Permit compliance monitoring will be conducted to characterize project impacts to water quality. A water quality monitoring plan was submitted to FDEP with the application for water quality certification.

1.9 Findings of Compliance or Non-compliance with the Restrictions on Discharge

No significant adaptations of the guidelines were made relative to this evaluation.

At this time, no practicable alternatives exist which have less adverse impact on the aquatic ecosystem. Potential effects to the aquatic ecosystem expected to occur for each of the action alternative not eliminated from detailed evaluation (i.e. Alternative B2 (ALTB2) and Alternative B4 (ALTB4)) are described in Section 4 of the main report of the EA. Environmental effects of the above mentioned design

refinements (i.e. backfill of the east-west agricultural ditch) and CEPP South Contract 1 features are the same scope and size as identified in the 2014 CEPP Final PIR/EIS. Therefore, potential effects associated with their construction remain within the range identified in the prior NEPA document. Information pertaining to the construction and installation of the design refinements and CEPP South Contract 1 features (e.g. construction footprint (acres)) is mentioned in this Appendix for reference. These design refinements and features function to redistribute the existing water from WCA 3A into WCA 3B and eastern ENP. Section 4.6 of the main report of the EA further describes both temporary and permanent impacts to existing wetlands as a result of interim operations of CEPP South features under each action alternative. Installation of the L-29 temporary pumps would result in temporary wetland impacts of 0.046 acres from the construction of collection sumps that would need to be installed immediately adjacent and north of the L-29 levee. Two sets of temporary pumps, rated at combined 100 cfs at each location, are expected to be installed. When the pumps are removed in advance of the L-29 levee segment removal under CEPP South Contract 5, the sump excavations would be returned to the pre-installation condition. The no action alternative does not include the construction or interim operation of features associated with CEPP South, therefore temporary and/or permanent impacts to the aquatic ecosystem would not be expected to occur under this alternative. Implementation of the no action alternative would not achieve the objectives identified in the 2014 CEPP Final PIR/EIS to improve the quantity, quality, timing, and distribution of water flows to the central Everglades, including WCA 3 and ENP as outlined in the main report of the EA.

The discharge of fill materials is not anticipated to cause or contribute to violations of any applicable state water quality standards for Class III waters or Outstanding Florida Waters where applicable. The discharge operation is not anticipated to violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

The placement of fill materials in the project area is not anticipated to jeopardize the continued existence of any species listed as threatened and endangered or result in the likelihood of destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973, as amended.

The placement of fill material is not anticipated to result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic species and other wildlife is not anticipated to be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values are not anticipated.

Based on the guidelines, the proposed discharge site for the discharge of fill and/or dredged material is specified as complying with the requirements of these guidelines.

This page intentionally left blank