CANAL 111 (C-111) SOUTH DADE
SOUTH DADE COUNTY, FLORIDA

ENVIRONMENTAL ASSESSMENT AND
PROPOSED FINDING OF NO SIGNIFICANT IMPACT

MODIFICATIONS TO THE C-111 SOUTH DADE PROJECT, L-31W

US Army Corps of Engineers **July 2016**
Jacksonville District

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PROPOSED FINDING OF NO SIGNIFICANT IMPACT

Modifications to the C-111 South Dade Project
Environmental Assessment
South Dade County, Florida

Based on the information analyzed and presented in the Environmental Assessment (EA) attached hereto, dated June 2016, reflecting pertinent information obtained from agencies having jurisdiction by law and/or special expertise, I conclude that the proposed action will not significantly impact the quality of the human environment and does not require an Environmental Impact Statement. Reasons for this conclusion are, in summary:

- The project will not adversely affect existing fish and wildlife habitat.

- Adverse impacts to protected species are not anticipated. Special measures will be incorporated during project construction to avoid or minimize adverse effects on any listed endangered, threatened, or species of special concern that may be present (see Environmental Compliance and Commitments in Section 5). Consultation began May 18, 2016 on an extensive list of endangered and threatened species known to be present in Miami-Dade County. No incidental take of protected species is anticipated.

- The proposed project will cause no adverse effect on any sites of cultural or historic significance. It will be in compliance with the National Historic Preservation Act when coordination of this EA is complete.

- The project is in compliance with the Clean Water Act. A Water Quality Certificate for this project will be acquired from Florida Department of Environmental Protection. All State water quality requirements will be followed.

- The U.S. Army Corps of Engineers (Corps) is coordinating a consistency determination under the guidelines of the Coastal Zone Management Act (CZMA) through the circulation of this Environmental Assessment. The Corps has determined that the proposed action is consistent with the State of Florida Coastal Management Program. The evaluation can be referenced in Appendix C of this report.

- The project will directly benefit wetlands and fish and wildlife habitat in Everglades National Park through rehydration and restoration of more natural (longer) hydroperiods.

- This finding is being coordinated with the public and agencies in accordance with 40 CFR 1501.4(e) and Engineer Regulation ER 200-2-2 (part 11 and Appendix A). The point of contact is Barbara Cintron at 904-232-1692 or Barbara.B.Cintron@usace.army.mil.

In view of the above, and after consideration of public and agency comments received on the project, I have concluded that the proposed action for modifications to the L-31 West Borrow Canal and associated features will not result in a significant adverse effect on the human environment. This finding incorporates by reference all discussions and conclusions contained in the Environmental Assessment attached hereto.

_____ _____

Jason A. Kirk, P.E.
Colonel, U. S. Army
District Commander

Date

ENVIRONMENTAL ASSESSMENT
MODIFICATIONS TO THE C-111 SOUTH DADE PROJECT
MIAMI DADE COUNTY, FLORIDA

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ENVIRONMENTAL ASSESSMENT FOR MODIFICATIONS TO THE C-111 SOUTH DADE PROJECT MIAMI DADE COUNTY, FLORIDA

1.0 PROJECT PURPOSE AND NEED

The purpose of this Environmental Assessment (EA) is to update National Environmental Policy Act (NEPA) evaluation for a modification to the Canal-111 South Dade (C-111 SD) Project, South Dade County, Florida, part of the Central and Southern Florida (C&SF) Project, as authorized under the Water Resources Development Act (WRDA) of 1996. Original NEPA documentation for habitat restoration actions authorized under this law was provided in the Final Integrated General Reevaluation Report and Final Environmental Impact Statement dated 1994 (referred to as the 1994 GRR/EIS). Additional evaluation of potential environmental consequences are assessed within the Interim Operating Plan Final Supplemental Environmental Impact Statement (FSEIS 2006, ROD 2007) and the 2012 and 2016 Environmental Assessments. Please refer to Section 1.7 for further details. This EA evaluates the options for backfill and/or placement of plugs within the existing L-31W canal and modifying existing features, including the gap in the L-31W Levee. This EA is intended to cover the final construction and modifications of the 1994 GRR/EIS Plan, with the exception of western culverts in the SDA and the connector canal from C-111 to Taylor Slough, which will be further evaluated after more field observations and/or modeling analyses are available to determine if and where such structures may be needed.

1.1 PROJECT AUTHORITY

The C-111 South Dade Project was built as part of the Everglades National Park (ENP)–South Dade Conveyance Canals Project authorized by the Flood Control Act (FCA) of 1968 (Public Law (PL) 90-483). This Act authorized modifications to the existing Central and Southern Florida (C&SF) Project as previously authorized by the FCAs of 1948 (PL 80-858) and 1962 (PL 87-874). The original purpose of the C-111 Canal was to reduce or mitigate flooding in the agricultural drainage basin immediately east of existing borders of ENP; to provide agricultural and other water supply, and to favor habitat restoration in ENP. Changes to the existing C-111 Project as described in the 1994 GRR/EIS were authorized as an addition to the C&SF Project in the Water Resources Development Act (WRDA) of 1996 (PL 104-303). The 1994 GRR/EIS marked a major additional purpose for the C-111 Canal, largely in response to the addition of nearly 200,000 acres of former agricultural lands and wetlands to the eastern side of ENP, and recognition that this area was over-drained. The 1989 Everglades National Park Protection and Expansion Act (PL 101-229) had authorized acquisition of the over 109,000 acres of ENP from approximately the location of the L-67 Extension Levee/Canal eastward to the current ENP boundary, and changed the purpose of land management in the expanded ENP to habitat restoration. Modifications to the C-111 South Dade Project were designed to reverse or inhibit gravity drainage previously provided by the canal in lands that became ENP. In contrast, it was desirable to maintain their wetland character, while providing flood mitigation features on adjacent lands in the eastern basin. The GRR/EIS described a conceptual plan for five pump stations and levee-bounded water retention areas (currently referred to as the C-111 SDA) to be built west of the L-31N Borrow Canal between the 8.5 Square Mile Area and the Frog Pond Area (currently referred to as the S-332D Detention Area)

to its south. These pump stations and retention areas would hold water and thereby reduce seepage out of ENP, while providing flood mitigation to agricultural lands to the east. The configuration of the original proposed structural features is described in detail in the 1994 GRR/EIS. Modifications to detain additional water were built as described in the 2006 Interim Operational Plan for Protection of the Cape Sable Seaside Sparrow (IOP) Final Supplemental EIS (Alternative 7R). The plan as proposed in the 1994 GRR/EIS included infrastructure to enable direct discharge westward from the retention/detention area to ENP through a series of culverts and an emergency discharge weir.

1.2 PROJECT LOCATION

The project is located in southern Miami-Dade County in southeastern Florida (Figure 1). It is situated within the C-111 basin, consisting of both natural wetlands and agricultural and residential lands in the Homestead/Florida City area. The project is located immediately east of ENP and discharges water to Taylor Slough, the eastern panhandle of ENP, Florida Bay, Manatee Bay and Barnes Sound.

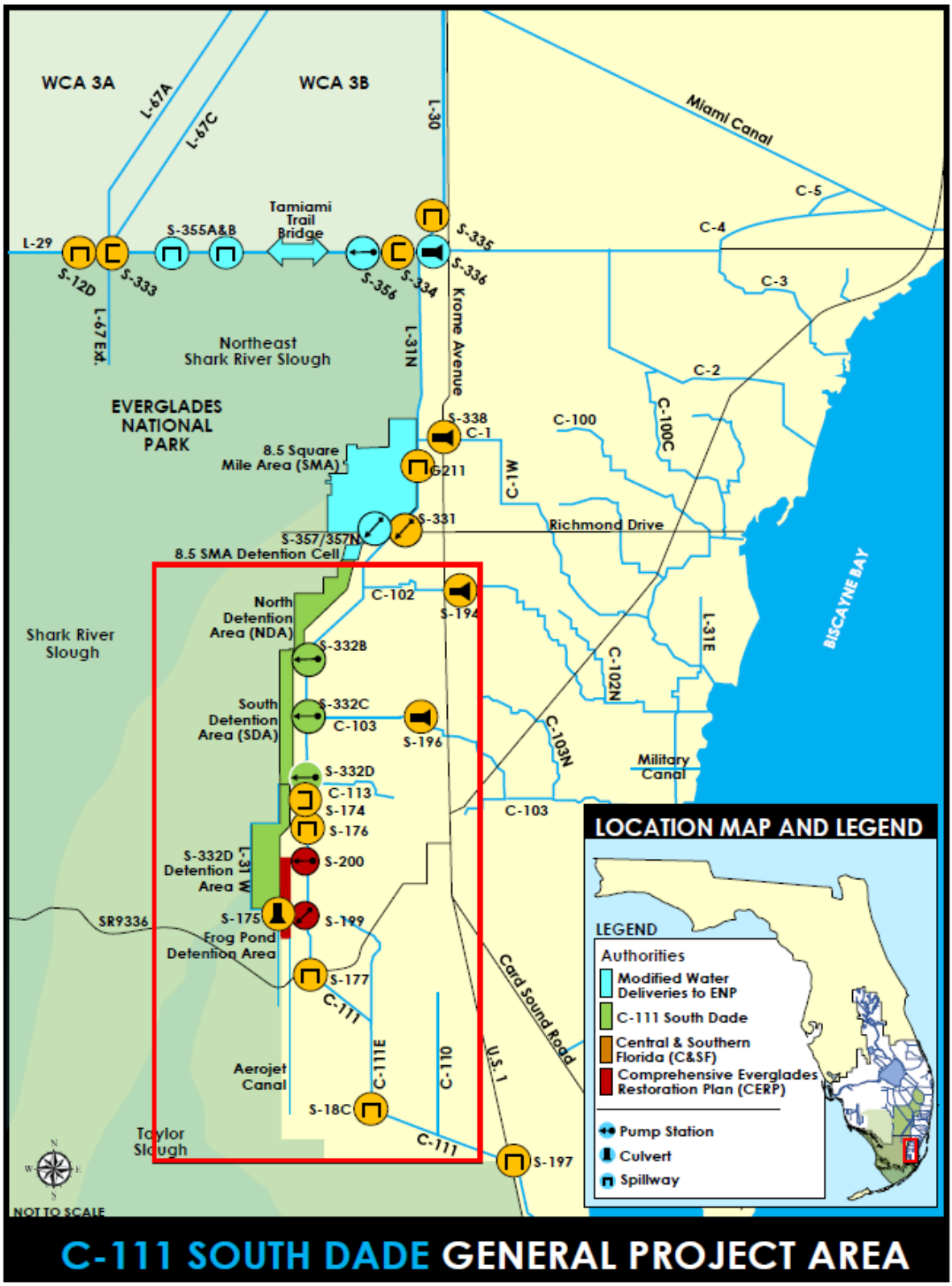


Figure 1. Project Location Map

1.3 PROJECT HISTORY

The C-111 system was first built under authorization of FCA of 1962 as an addition to the C&SF Project. It was later enlarged (deepened and widened) as SDCS, authorized by Congress in 1968. The SDCS purpose was to provide water to urban and agricultural interests in southern Dade County, as well as to ENP. Its management was largely focused on flood mitigation with a lesser amount of water provided to ENP, prior to passage of the Everglades Protection and Expansion Act of 1989, which authorized addition of over 109,000 acres of the "East Everglades" to ENP lands. These newly acquired lands were in the C-111 Canal drainage, and some structural changes to the C-111 project were proposed to prevent over-drainage of the new ENP lands. The 1994 GRR/EIS was the response of USACE to the needed revisions to the C-111 Canal Project in accordance with its dual purpose, flood protection and ENP habitat improvement.

1.3.1 Experimental Program of Water Deliveries

The C-111 system was managed between 1985 and 1999 under an Experimental Program of Water Deliveries to ENP, a series of water management tests providing progressively more water to ENP. In February 1999, the U.S. Fish and Wildlife Service (USFWS) determined that continued operations under the Experimental Program were likely to cause "jeopardy" to the endangered Cape Sable seaside sparrow (CSSS). The USFWS Jeopardy Biological Opinion (BO) effectively ended the Experimental Program and required additional efforts to improve habitat conditions in sparrow nesting populations inside ENP.

1.3.2 Interim Structural and Operational Plan (ISOP) And IOP

Due to the need to comply with the reasonable and prudent alternatives within the 1999 Jeopardy Biological Opinion, the U.S. Army Corps of Engineers (Corps) implemented modifications to the Canal 111 SD Project. These structural modifications included expanded detention reservoirs to create areas that would hold more water above ground level east of ENP's boundary and, by creating a hydraulic "head", detain seepage out of ENP.

In additional to structural modifications, responding to the Jeopardy BO, the Corps also undertook operational modifications to promote suitable conditions for the CSSS. This operations plan, termed the Interim Structural and Operational Plan (ISOP) (USACE 2000) was designed to meet the conditions of the USFWS Reasonable and Prudent Alternatives (RPAs) included in the USFWS Jeopardy BO beginning in March 2000 until implementation of the Interim Operational Plan (IOP) for the Protection of the CSSS in 2002. The Record of Decision (ROD) for IOP was signed in July 2002, and IOP was implemented to continue USFWS RPA protective measures for the CSSS. Components within IOP included a 215 acre Northern Detention Area (also referred to as the S-332B NDA, or Partial NDA) that was expected to inhibit seepage out of the ENP just east of a Critical Habitat area. By an order issued in March 2006 by the U.S. District Court for the Southeastern District of Florida Miami Division, resolving a lawsuit by the Miccosukee Tribe regarding NEPA compliance and other matters related to IOP, the Corps was required to issue a supplement to its 2002 Final EIS, which resulted in a new, November 2006, BO which was incorporated into the December 2006 Final Supplemental EIS (FSEIS) for IOP for the Protection of the CSSS. A ROD for the December 2006 FEIS was signed in May of 2007. The BO has been revised several times, most recently in 2010 (with an addendum dated 2012) with the development of the Everglades

Restoration Transition Plan (ERTP) which superseded the IOP. Because ERTP is an operational plan still in refinement, it will not be discussed in detail in this document, which addresses current and proposed construction activities only. ERTP, as well as its predecessor operational plans ISOP and IOP, have been fully coordinated under separate EIS documents.

1.4 CURRENT STUDIES

1.4.1 Comprehensive Everglades Restoration Plan

The Comprehensive Everglades Restoration Plan (CERP) provides a framework and guide to restore, protect and preserve the water resources of central and southern Florida, including ENP. It covers 16 counties over an 18,000-square-mile area and centers on an update of the C&SF Project. The goal of CERP is to restore the Everglades through capturing fresh water that currently flows unused to the ocean and the gulf and redirect it to areas that need it the most. The majority of the water will be devoted to environmental restoration, reviving a degenerating ecosystem. The remaining water will benefit cities and farmers. CERP was authorized in WRDA of 2000. It includes more than 60 elements, will take more than 30 years to construct and will cost an estimated $10.4 billion (2015 Price Levels). There are several elements in CERP that are interrelated with some of the features of the C-111 Project.

The closest element involves the CERP C-111 Western Spreader Canal Project, documented in a Project Implementation Report (PIR) dated 2011, largely built by SFWMD using State funds and authorized under the 2014 Water Resources Reform and Development Act (WRRDA 2014) The CERP C-111 SC Project extends the hydraulic ridge to the south of the C-111 SD features and has been in operation by SFWMD since 2012. Additional information may be found at: See http:// 141.232.10.32/pm/projects/proj_29_c111.aspx.

Another CERP project, the Central Everglades Planning Project (CEPP) is a long term plan that may ultimately provide additional water to the ENP, but has yet to be authorized by Congress. The ROD for CEPP was signed on August 31, 2015.

1.4.2 Everglades Restoration Transition Plan

The purpose of ERTP, an operational plan, is to establish water management operating criteria for the C&SF project features, the currently constructed features of the Modified Water Deliveries (MWD), and C-111 South Dade projects until the expiration of the ERTP Biological Opinion in 2016 or until another operating plan is approved.

The objective of ERTP is to improve conditions in Water Conservation Area (WCA) 3A for the endangered Everglade snail kite, threatened wood stork and other wading bird species including their habitat, while maintaining protection for the endangered CSSS and its habitat and congressionally authorized purposes of the C&SF project. ERTP is still under consultation with USFWS at the time this EA is being coordinated.

1.5 PROJECT NEED

It is generally recognized that hydrologic conditions are unfavorably dry in Taylor Slough, the eastern panhandle of ENP, Manatee Bay, and Barnes Sound, while agricultural and residential interests continue requiring flood mitigation within the C-111 basin as authorized in WRDA

of 1996. The L-31W Canal, especially the segment south of S-332D Pump Station, still receives large volumes of seepage water from the eastern part of ENP. Water drained into the L-31W borrow canal, which is immediately adjacent to ENP, flows as groundwater and surface flow to the south and east, raising groundwater and C-111 levels and impeding drainage of lands east of C-111. Backfill or plugging in L-31 W, along with modifications to the L-31W levee gap, are expected to provide additional rehydration benefits to lands in eastern ENP and is in addition to the expansion of NDA and construction of flowways in both NDA and SDA, which were discussed in the Corps' June 24, 2016 EA/FONSI.

1.6 PROJECT GOAL OR OBJECTIVE

The C-111 South Dade project is designed to maintain levels of flood protection for areas east of L-31N and C-111 and to restore natural hydrologic conditions within the western C-111 basin and throughout eastern ENP. This objective remains the same as the 1994 GRR/EIS:

> *"the purpose of this General Reevaluation Report (GRR) is restoration of the Ecosystem in Taylor Slough and the eastern panhandle of ENP that were affected by construction of the flood control project in the C-111 basin. The study also focuses on preserving the current level of flood protection for the agricultural activities in the C111 basin…..to provide restoration of the ecological integrity of Taylor Slough and the eastern panhandle of the ENP and flood protection for the agricultural interests adjacent to the C-111."*

1.7 RELATED ENVIRONMENTAL DOCUMENTS

The Corps has documented a number of actions relevant to the proposed action:

- *General Design Memorandum and Environmental Impact Statement, Modified Water Deliveries to Everglades National Park*, U.S. Army Corps of Engineers, Jacksonville District, June 1992.
- *1994 C-111 General Reevaluation Report and Environmental Impact Statement,* U.S. Army Corps of Engineers. ROD, November 1994.
- *1999 Central and Southern Florida Project Comprehensive Review Study and Environmental Impact Statement (Restudy)* – U.S. Army Corps of Engineers. ROD, December 2000.
- *2000 Final Environmental Assessment, 2000 Emergency Actions to Protect the Cape Sable Seaside Sparrow* (*ISOP)* U.S. Army Corps of Engineers, 2000.
- *2000 8*.5 *Square Mile Area General Reevaluation Report and Final Supplemental Environmental Impact Statement.* ROD, December 2000.
- *2002 Interim Operating Plan (IOP) for the Protection of the Cape Sable Seaside Sparrow Final Supplemental EIS.* U.S. Army Corps of Engineers. ROD, January 2002.
- *2006 Interim Operating Plan for the Protection of the Cape Sable Seaside Sparrow Final Supplemental Environmental Impact Statement.* ROD, May 2007.
- *2011 Environmental Assessment for Proposed Interim Operation Criteria for 8.5 Square Mile Area Project,* U.S. Army Corps of Engineers, Jacksonville District, June 2011.
- *2012a CERP C-111 Spreader Canal Western Project Final Integrated Project Implementation Report and Environmental Impact Statement,* U.S. Army Corps of Engineers, Jacksonville District, January 2011. ROD, 2012.

- *2012b Environmental Assessment; Design Refinement for the 8.5 Square Mile Area*, Miami-Dade County, Jacksonville, Florida, U.S. Army Corps of Engineers, Jacksonville, August 2012.
- *2012c Environmental Assessment and FONSI for Expansion of Canal 111 (C-111) Detention Area and Associated Features, South Miami-Dade County,* Florida. U.S.Army Corps of Engineers, Jacksonville.(North Detention Area).
- *2012d Everglades Restoration Transition Plan Final Environmental Impact Statement*, U.S. Army Corps of Engineers, Jacksonville District, October 19, 2012.
- *2012e Environmental Assessment, Central and South Florida Project: Water Control Plan for Water Conservation Areas, Everglades National Park, and ENP-South Miami-Dade Conveyance System*. U.S. Army Corps of Engineers, Jacksonville, Florida, October 2012.
- *2015 G-3273 Environmental Assessment, Constraint Relaxation/S-356 Field Test and S-357N Operational Strategy*, U.S. Army Corps of Engineers, May 27, 2015. This is referred to throughout this EA as the MWD Increment 1 field test..
- *2016 Environmental Assessment and proposed FONSI for Modifications to the C-111 South Dade North and South Detention Areas and Associated Features.* USACE, Jacksonville, Florida, January 29, FONSI, June 24, 2016.

1.8 DECISION TO BE MADE

The Corps must modify the design and build elements of the authorized project contained in the 1994 GRR/EIS, in response to earlier modifications under IOP, completion of components described in the 2012 EA for the C-111 South Dade NDA, and completion of components described in the 2016 EA for connection of the 8.5 SMA Detention Cell and the NDA, which also included internal flowways along the west side of the NDA and SDA. Construction must be consistent with the original purpose of the project and with the terms and conditions of the ERTP Biological Opinion to avoid jeopardy to the species protected under the Endangered Species Act.

2.0 ALTERNATIVE DEVELOPMENT

Background

An interdisciplinary team comprised of the U.S. Environmental Protection Agency (EPA), ENP, USFWS, Florida Fish and Wildlife Conservation Commission (FFWCC), Florida Department of Environmental Protection (FDEP), and SFWMD collaborated in the preparation of the 1994 alternatives evaluation and final GRR/EIS. Construction of the features described in the 1994 GRR/EIS was authorized under WRDA of 1996. Several features of the original plan authorized in WRDA of 1996 (1994 GRR/EIS) have been adjusted in subsequent years. The resulting modifications have been built and operated as described in previous documentation in the Corps' 2007 Final Supplemental Environmental Impact Statement – Interim Operational Plan (IOP) for the Cape Sable Seaside Sparrow (2007 IOP FEIS) and in five previous EAs for construction of C-111 South Dade features, operational changes and modifications to structures associated with the 8.5 SMA (2012a, b, c, d and e) and 2016 in the list above).

Early History of proposed fill in Canal L-31W

The 1994 GRR/EIS authorized plan recommended complete backfill of the northern portion of the L-31 W Canal, beginning in the north at the S-174 Structure located just west of S-332D Pump Station on C-111 Canal, extending west, south and west again around the north side of the Frog Pond, and turning southward and extending to the S-332 Pump Station. The plan is illustrated in Figure 3. The purpose of filling this segment of L-31W was to reduce gravity-induced seepage of surface and ground water out of ENP into the Canal, from which it could be observed flowing down the Canal to the south. Reducing seepage loss from this segment of ENP became even more urgent after the identification of significant CSSS habitat immediately adjacent to the Frog Pond inside ENP.

Subsequent construction and modifications to the C-111 South Dade project, as well as prior regional operational studies, led to various iterations of plans for backfilling or plugging L-31W, as described briefly below.

2.1 ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Evaluation of the No Action Alternative is a requirement of NEPA. The No Action Alternative includes all features of the C-111 South Dade project that are built or currently under construction and coordination. These include features of the 2007 IOP FEIS, features currently under construction, and those features planned for future construction that were covered in prior NEPA documents identified in Section 1.7. The No Action Alternative includes two existing plugs located in the northern segment of the L-31W Canal at the junctions with the east (400 feet length) and west (1100 feet length) perimeter levees of the SDA. The No Action Alternative also includes an existing 2,100 foot gap in the L-31W Levee, immediately north of the S-332 pump station. The gap was completed during 2003 to provide a pathway for surface water deliveries from the S-332D pump station to the S-332D Detention Area and from there into the L-31W Canal and headwaters of Taylor Slough. No further construction actions would be pursued under this alternative.

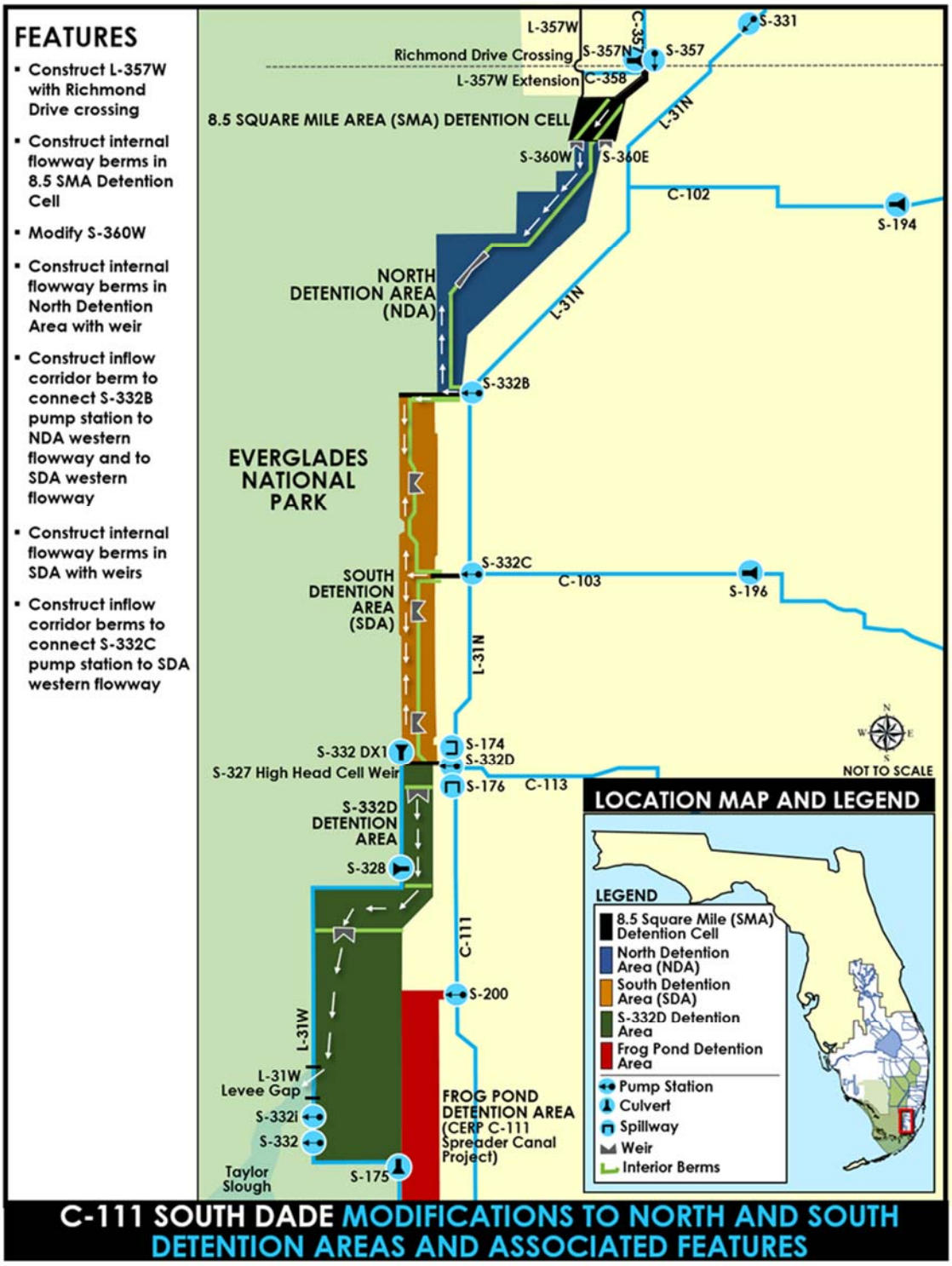


Figure 2. No Action Alternative (Alternative 1)

2.2 ALTERNATIVE 2 - ORIGINAL 1994 GRR/EIS PLAN

This alternative was the preferred alternative in the 1994 C-111 GRR/EIS and was authorized in WRDA of 1996. Of the features not currently built or modified through previous NEPA

documentation, the 1994 GRR/EIS additionally included L-31W Canal backfill for 25,500 linear feet from S-174 to S-332 and 24 western-discharging culverts and an emergency spillway to allow for emergency overflow from the SDA into ENP (Figure 3). The culverts were proposed for the SDA, north of S-332D Pump Station, extending the length of the SDA up to the latitude of S-332B, with one overflow weir along the tieback levee of the SDA. The proposed NDA (refer to Figure 2) was not identified as a detention area in the 1994 GRR/EIS, as this area was originally designed to receive direct surface discharges from the proposed S-332A pump station, and therefore, no culverts or weirs were identified within this portion of the C-111 South Dade project area. The Alternative 2 backfill option would require approximately 876,000 cubic yards of suitable material for the L-31W Canal backfill. The material estimate includes a 'bulking factor' of 20% to account for subsidence of the fill after it is deposited within the remnant L-31W Canal.

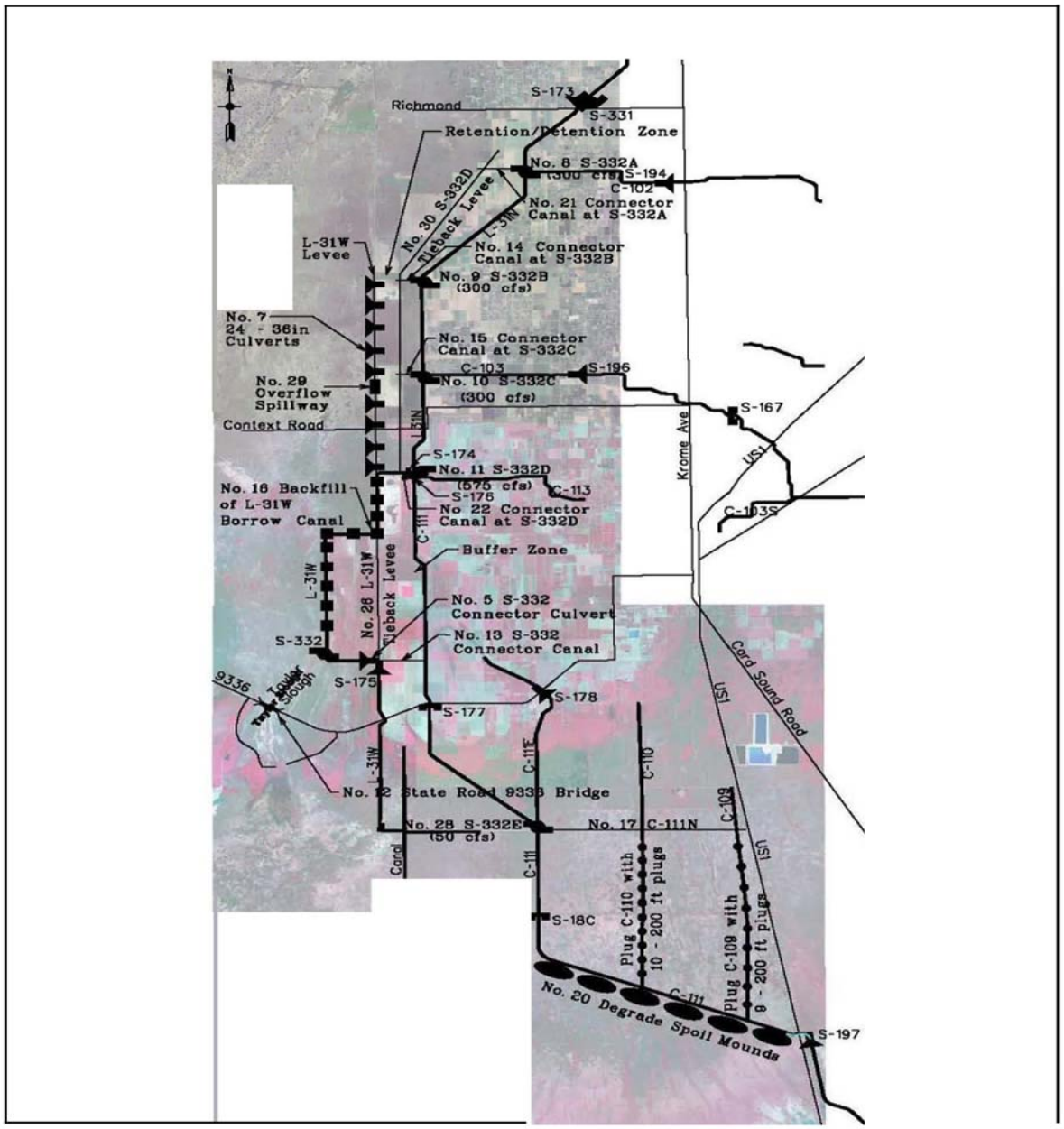


Figure 3. Alternative 2 - 1994 GRR Plan, backfill down to S-332 in L-31W, west-discharging culverts, and an overflow spillway along the west side of the SDA

2.3 ALTERNATIVE 3- PARTIAL BACKFILL OR SHALLOWING AS DEVELOPED IN 2008

This alternative requires complete plugging of a segment and partial backfill of additional lengths of the L-31W Canal. Figure 4 shows the location of fill recommended for the reach of the L-31W Canal located south of S-174. Partial backfill of the L-31W Canal is included for the proposed L-31W modifications south of S-175. This plan includes some L-31W backfill between S-332 and S-175 and north and south of State Road 9336, farther south than identified in the 1994 GRR/EIS Recommended Plan. The Alternative 3 backfill option would require

approximately 1,440,000 cubic yards of suitable backfill material for the L-31W Canal. This proposed alternative was never recommended in a final design report or NEPA document. Of the alternatives discussed in this EA, this alternative would require the largest volume of acceptable fill material.

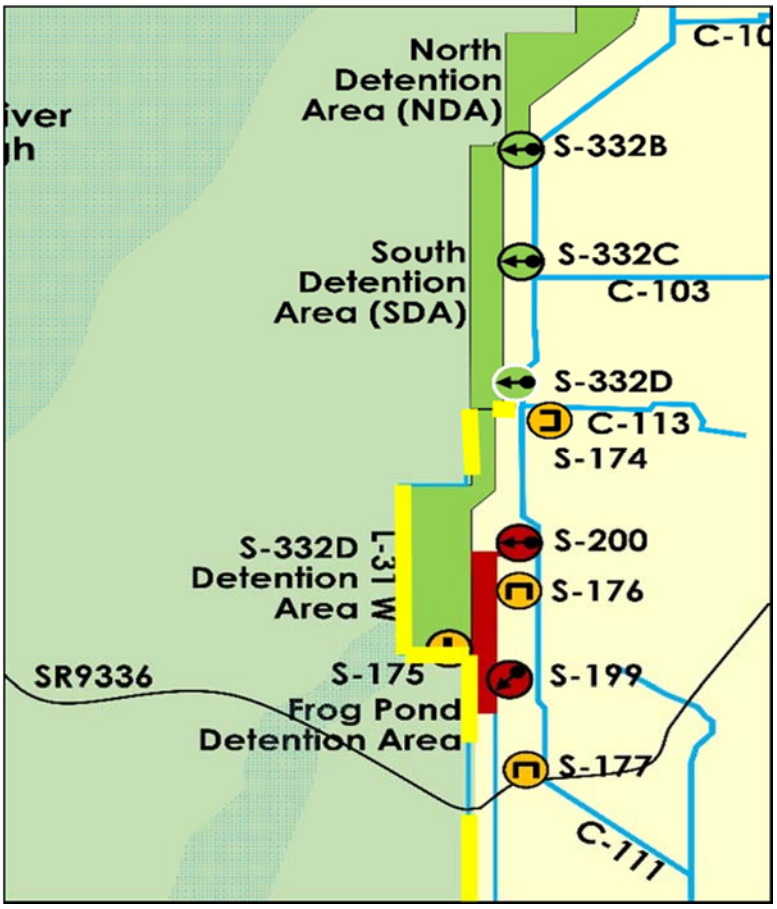
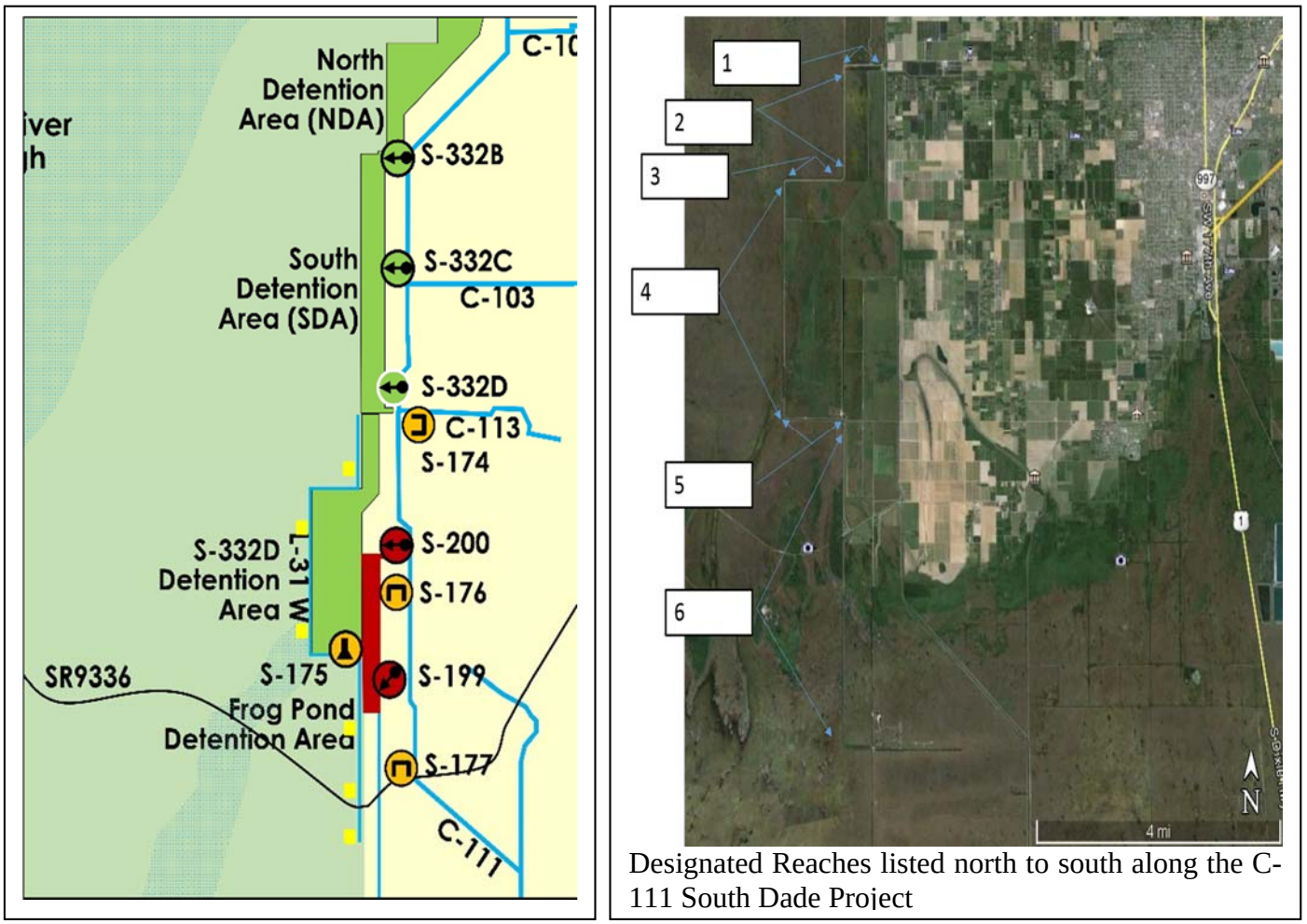


Figure 4. Alternative 3, developed in 2008. Backfill and partial backfill over a total of 47,000 linear feet of L-31W.

2.4 ALTERNATIVE 4 –"MINIMUM" BACKFILL PLAN

The Minimum Backfill plan was developed in 2012 through interagency coordination when the quantity of available backfill material located on-site adjacent to the L-31W Canal was not considered as a source for L-31W backfill. A minimal backfill plan was developed by an interagency team based on a 2012 survey of the verified volume of fill from the SFWMD stockpile located immediately north of S-175 within the S-332D Detention area footprint (also referred to as Borrow Area 1). The "minimum" backfill plan of 2012 consisted of two (2) 1,000 foot long plugs (at the two northern plug locations in Reach 2) and four (4), 500 foot long plugs located along L-31W (shown as yellow dots on Figure 5). This plan includes L-31W plugs south of S-175, north and south of State Road 9336 and farther south than identified in the 1994 GRR/EIS Recommended Plan. This plug configuration would provide a backfill option to achieve the minimum acceptable threshold for benefits resulting from L-31W backfill, including minimal benefits to reduce seepage losses from the adjacent ENP wetlands and reduce refugia for exotic species available within the existing L-31W Canal. These

invasive species would lose their full route to invasion of ENP waters after partial plugs are installed. The Alternative 4 backfill option would require approximately 138,000 cubic yards of suitable backfill material for the proposed L-31W Canal plugs.



Designated Reaches listed north to south along the C-111 South Dade Project

Figure 5. Alternative 4 - Minimum backfill plan (2012) and Reaches Identified

2.5 ALTERNATIVE 5 – "CSOP" PLAN

This alternative arose based on modeling and observations completed for the proposed "Combined Structural and Operational Plan" (CSOP) developed between 2003 and 2005. Though the plan was developed using early modeling and assumptions that came from developing MWD Project, some of which have changed significantly, it proposed a modified backfill scheme for L-31W for reasons that appear to still be valid. The CSOP proposal included a tiered list of backfill location priorities, with the expectation that the availability of suitable backfill material and project budget considerations would be used to identify the final configuration for L-31W Canal backfill. Many of the backfill priorities from this plan have not significantly changed since 2005. However, consideration of the completed features of the CERP C-111 Spreader Canal Project (refer to Section 1.4.1), which was designed and

constructed after development of this plan, would result in a lowered priority for L-31W backfill components located south of S-175. This point provides an explanation for the revised priority listing. Figure 6 and Table 1 illustrate the Alternative 5 proposal; canal reaches referenced in Table 1 are indicated in Figure 5. This plan includes some L-31W backfill north and south of State Road 9336, farther south than identified in the 1994 GRR Recommended Plan. To address all six indicated priority areas, the Alternative 5 backfill option would require approximately 430,000 cubic yards of suitable backfill material for the L-31W Canal.

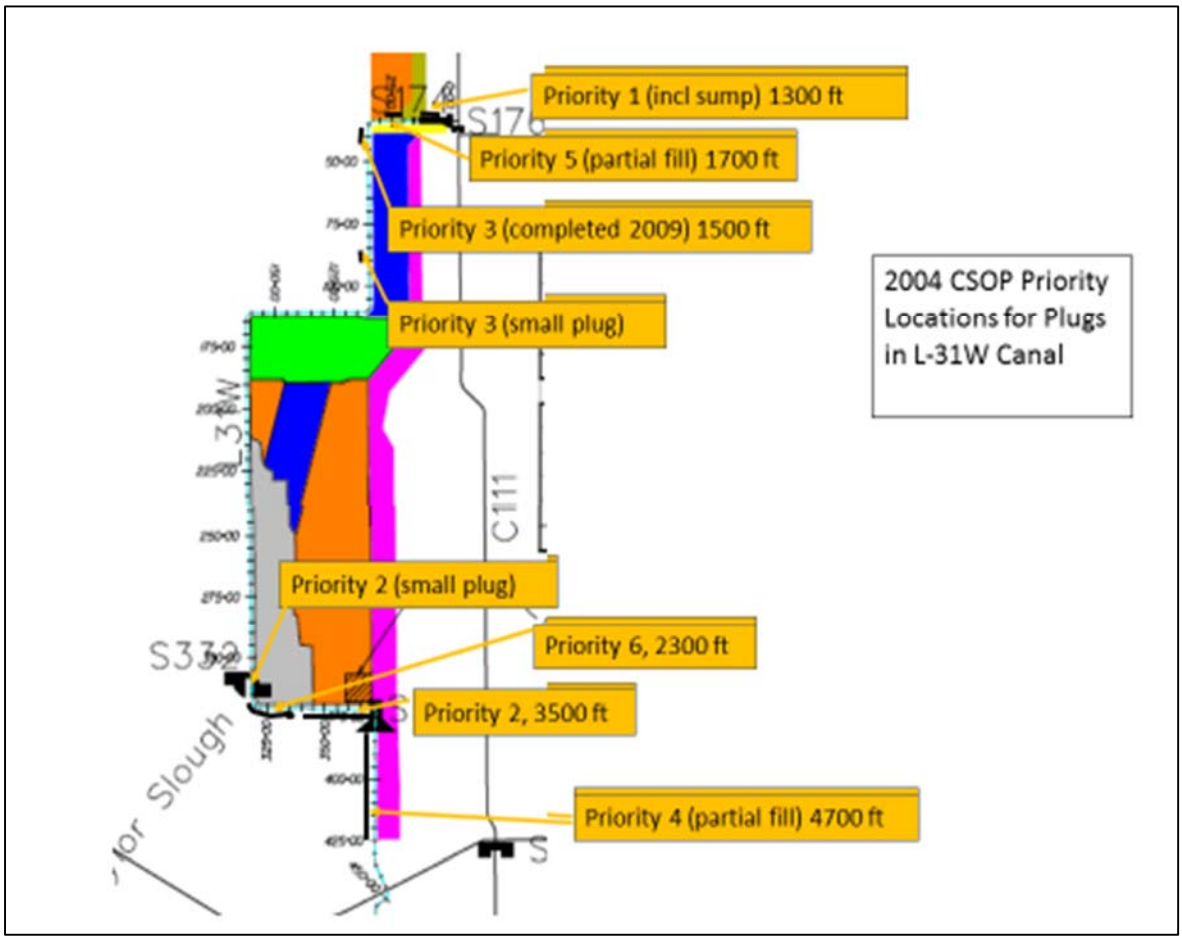


Figure 6. Priorities for fill placement under "CSOP"

Table 1. Fill locations in the CSOP Plan

Priority-Location	Reason
1.Complete backfill east and west of S-174, 1300 ft. of reach 1 (northern East-West segment of L-31W).	Reduce return seepage back to L-31N Canal and C-111 Canal.
2. Complete backfill along the Lower L-31W Canal, 3500 ft. of East-West segment up to S-175. Small plug south of the existing gap, at the south end of reach 4/west end of reach 5).	High potential for seepage to C-111 Canal and to the lower L-31W Canal south of S-175 (west to east surface water conveyance); allows water that should go

Priority-Location	Reason
	into Taylor Slough to flow east rather than southwest.
3. Plug along L-31W opposite Cell 1 inside S-332D Detention Area (approximately one mile south of the northern limit of the high head cell), along the North-South reach (reach 2) of L-31W Canal	One or more small plugs to inhibit loss from ENP to S-332D Detention Area. One small plug at West end of High head cell was completed in 2009, to complete the western perimeter levee of the SDA.
4. Partial fill in L-31W south of S-175 (Reach 6- shallowing)	Reduce cross-section of canal; will reduce conveyance to the south, particularly during dry hydrologic conditions.
5. Partial fill in East-West upper end of L-31W Canal (reach 1) west of Priority 1 fill.	Further reduce return seepage from S-332D High Head Cell to L-31N Canal and C-111 Canal. The original location did not consider the future completion of the S-332DX1 structure.
6. Additional backfill in the East-West segment of L-31W Canal from S-332 to S-175 (reach 5)	Reduce volume of seepage to the east.

2.6 ALTERNATIVE 6 - FLEXIBLE ALTERNATIVE

One of the uncertainties affecting prior formulation of alternatives was lack of information quantifying the amount of available fill material. The Corps completed a survey of excess material along the L-31W Levee in April-May of 2016, and developed an estimate of material available on-site for backfill or plugging the L-31W Canal. Additionally, in consultation with SFWMD, ENP, FDEP and resource agencies, an updated table of priorities was developed to indicate preferred locations for L-31W Canal backfill and/or plugs based on consideration of the survey results and other new information available since the development of the Alternative 5 prioritization. Commercial fill is not recommended because the cost is approximately seven times higher than locally available fill. To be acceptable, fill must be free of contaminants and fine material.

The survey quantified the volume of excess material located along the L-31W Levee. The stockpiled spoil material located adjacent to the L-31W levee and excess material from the maintenance berm adjacent to the L-31W Levee (the berm is wider than required for the levee design template) contains approximately 683,000 cubic yards (cy) of excess material that may be available for use as a source of backfill material.

Alternative 6 proposes to construct backfill and/or plugs in the L-31W Canal using this excess spoil material located on-site and includes a 'bulking factor' of 20% to account for subsidence of the backfill after it is deposited within the L-31W Canal.

The specific priority locations identified in the CSOP plan were modified in 2016 to incorporate recent hydrologic monitoring data and input from technical experts of SFWMD and ENP, adding high seepage locations along the L-31W Canal based on ENP observations and group knowledge of seepage areas (Figure 7). Field measurements of the L-31W water

budget provided by ENP indicate that certain locations along L-31W are most directly contributing to drainage of the adjacent ENP wetland areas. Figure 7 provides a flow map to demonstrate areas of seepage (Source: ENP 2016). Green dots indicate relative flow volumes out of ENP, while blue dots indicate flow from the L-31W Canal into ENP lands. The relative magnitude of seepage out of ENP (green) and outflows from the S-332D Detention Area to ENP (blue) along L-31W are indicated by the relative size of the circles. Since the green dots indicate surface water and groundwater (seepage) flows from the adjacent ENP wetlands, this is where additional plugs of varying sizes (depending on the amount of fill) would be added to previous priority sites indicated in Alternative 5 (illustrated in Figure 6) under this alternative.

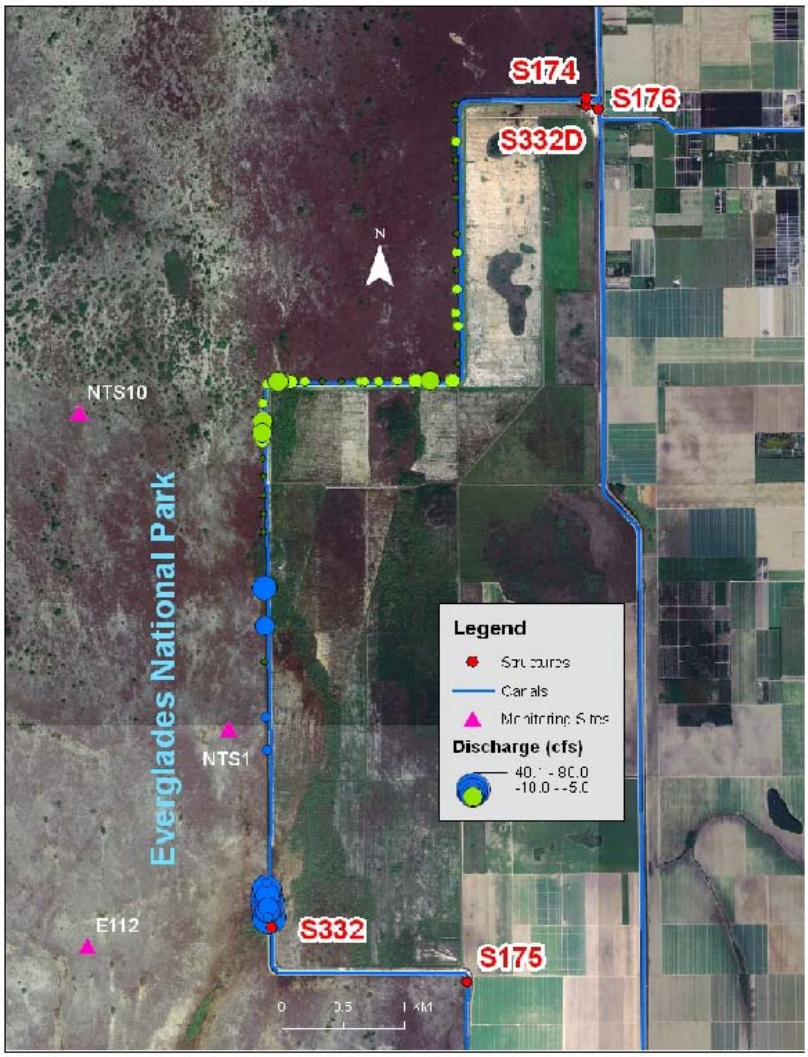


Figure 7. Alternative 6. Green dots indicate flow out of ENP into L-31W (seepage); blue dots indicate outflow from the L-31W Canal into ENP. Pink triangles are monitoring gauges.

The seepage information provided by ENP scientists was added to the re-evaluated "CSOP" priorities list to develop a consolidated plugging list. Interagency discussions led recognition of additional seepage areas and a recommendation of a minimum length of 1,000 feet for plugs. Figure 8 shows the recommended plug locations.

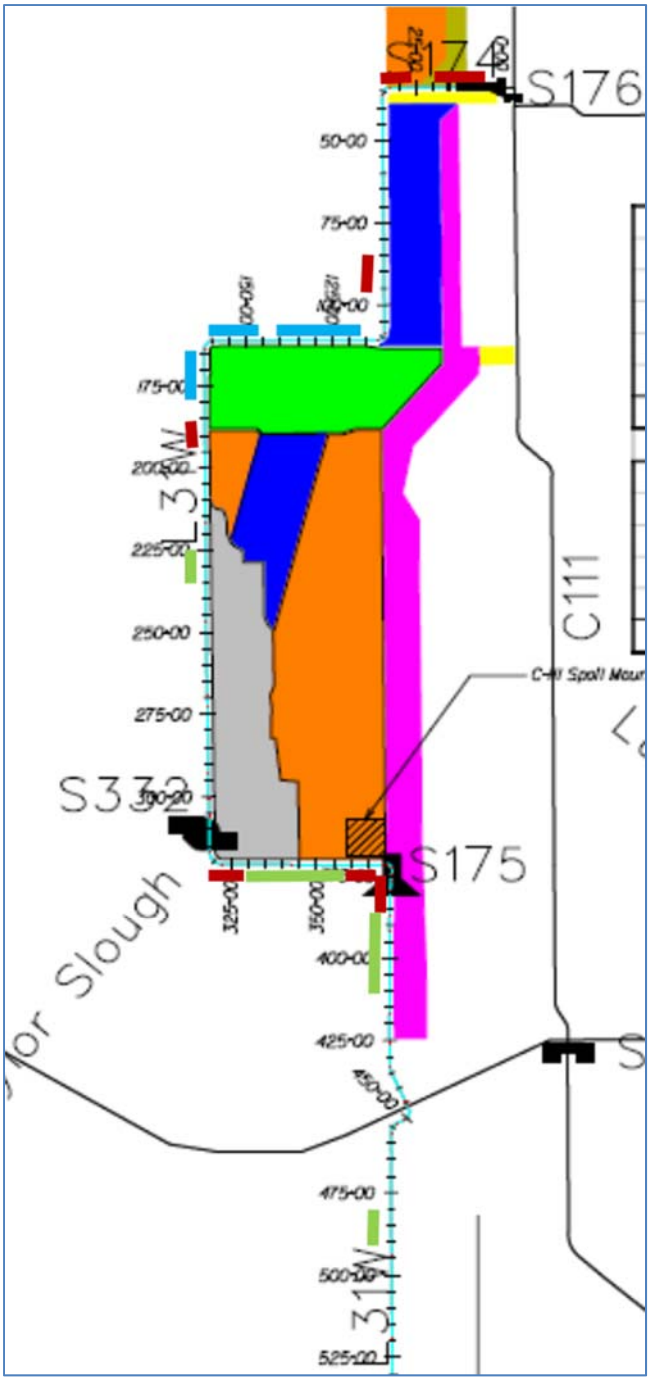


Figure 8. Recommended plug/fill alternative for L-31W

High priority locations (Priority 1 in Table 2) include red plugs (as required to decommission existing water control structures S-174/S-175 or as recommended by CSOP studies). Secondary priority plug locations (Priority 2 in Table 2) are shown in green. Tertiary priority plug locations (Priority 3) are shown in blue; these backfill locations would provide incremental ecological benefits, but the seepage reduction along reach 3 and reach 4 are partially addressed by the Priority 1 plug at the north end of reach 4. Highest priority plugs is along the northernmost East-West reach (Reach 1), from S-174 to the first southward turn of

the canal, as well as the southern East-West stretch between S-332 and S-175 (Reach 5). The three blue plugs correspond to high seepage areas indicated on Figure 7.

Stationing, length and cumulative disposal material volume in cubic yards (cy) for the proposed plugs is tabulated below. Plugs are listed in order of priority in Table 2.

Table 2. Proposed Plug Location (Station), Length, And Cumulative Fill Used

Station (approx.)	Station (approx.)	Description and Priority	Feet	CY	Cumulative feet	Cumulative CY
Priority 1						
00+00	35+00	Reach 1 (less DX1, existing plug, Cnt 8 levee crossing), 3 segments	2,000	57,120	1,000	57,120
85+00	95+00	Reach 2	1,000	28,560	2,000	85,680
185+00	195+00	Reach 4, cell 2	1,000	28,560	3,000	114,240
320+00	330+00	Reach 5, west	1,000	28,560	4,000	142,800
365+00	375+00	Reach 5, east	1,000	28,560	5,000	171,360
375+00	385+00	Reach 6, near S-175	1,000	28,560	6,000	199,920
Priority 2						
385+00	410+00	Reach 6, N of woods	2,500	71,400	8,500	271,320
480+00	490+00	Reach 6, S of woods	1,000	28,560	9,500	299,880
225+00	235+00	Reach 4, btwn gap & cell 2	1,000	28,560	10,500	328,440
330+00	365+00	Reach 5, all of center	3,000	85,680	13,500	414,120
Priority 3						
115+00	140+00	Reach 3, east end	2,500	71,400	16,000	485,520
145+00	160+00	Reach 3, west end	1,500	42,840	17,500	528,360
165+00	180+00	Reach 4, north	1,500	42,840	19,000	571,200

The quantity of material required to complete all of the backfill reaches and/or plugs identified in Table 2 is less than shown by the recent Corps surveys, but calculations do not include fill that will potentially be required to address the existing L-31W Levee gap. It appears that there is sufficient material available on-site to construct all of the plugs in Table 2; the decision on how many and where to build may be based on priorities and cost, as well as consideration of public and agency input. The decision on how many of the listed plugs will be completed by

the C-111 South Dade project has not been finalized at the time this EA was written. The plug locations indicated in red represent the minimum configuration of L-31W backfill/plugs that the interagency technical team believes would achieve the ecological objectives of the C-111 South Dade project to improve hydroperiods within ENP adjacent to Taylor Slough. These Priority 1 locations (refer to Figure 8 and Table 2) along the L-31W Canal would be backfilled/plugged by the C-111 South Dade project. Additional backfill/plugs (Priority 2 and/or Priority 3 locations) would be pursued based on the prioritization indicated in Figure 8, if sufficient backfill material and project funding is available. All locations would be considered in terms of their potential beneficial environmental effects and agency priorities.

A 2,100 foot long gap in the L-31W Levee (located just north of the S-332 Pump Station in the S-332D Detention Area) was built in 2003 as a component of IOP to maximize conveyance of water into Taylor Slough through the S-332D pump station and the S-332D Detention Area. Alternatives to the existing gap were evaluated by the Corps with input from technical experts of SFWMD and ENP. Alternatives considered included: (1) no modification to existing gap; (2) vegetation removal and geotextile gravel overlay across the existing gap footprint; and (3) a narrower gap with or without a raised weir. The design cross-section for the L-31W Levee could be re-constructed to reduce the width of the gap from its current 2,100 feet, and a weir could be built to raise the elevation of the gap using either an Articulated Concrete Block Mat (ACBM) or a geotextile gravel overlay. The design cross-section for the L-31W Levee requires a top elevation of approximately 7.4-7.5 feet NAVD88 vertical datum (9.0 feet NGVD29), a crest width of 10 feet, and 3H:1V side slopes.

Alternative 6 proposes to reduce the gap width to 500 feet and construct an ACBM weir set initially at +2 feet above ground level (ground elevation is approximately 2.5 feet NAVD88, or 4.0 feet NGVD29), with the degraded levee segment to be rebuilt along the remaining 1,600 feet across the existing gap length. The ACBM weir would be located near the center of the existing gap, and the minimum width of the ACBM weir would be 24 feet to provide for safe vehicle crossing, if vehicle access is required for maintenance. The minimum transition slope from the re-constructed portion of the L-31W Levee to the ACBM would be 10H:1V This proposed structure would avoid water loss from Taylor Slough into the S-332D Detention Area when surface water levels in ENP are higher than inside the S-332D Detention Area flowway.

2.7 ALTERNATIVES ELIMINATED FROM FURTHER EVALUATION

Initial evaluation of alternatives developed in prior planning and NEPA documents led to elimination of Alternatives 2, 4, and 5 in this assessment. Alternatives 2 and 5, unmodified, have been identified as somewhat inflexible and too large to construct (Alternative 2 would require 876,000 cubic yards of suitable backfill material) within funding and resource availability. Since Alternative 3 requires the greatest amount of fill at 1,440,000 cubic yards, this alternative was analyzed throughout this EA in Section 4. However, the conclusion of the analysis in Section 4 results in preferring Alternative 6 over Alternative 3 because most of the benefits remain similar between the two alternatives with a significant cost difference. Alternative 6 provides more benefits by including the partial fill of the levee gap as well. Alternative 5, the "CSOP" alternative, formed the basis for prioritizing fill sites under the Recommended Plan, using a minimum plug length of 1,000 feet, but would not have addressed areas of high seepage reported by ENP (Fig. 7). Alternative 4 was identified as providing

minimal hydroperiod benefits to adjacent ENP wetlands, insufficient seepage reduction and insufficient reduction of refugia for exotic species within the existing L-31W Canal to meet the objectives and goals of the C-111 South Dade project, as envisioned in the 1994 GRR Recommended Plan. Therefore, Alternatives 3 and 6 (Flexible Alternative) will be carried forward for further evaluation, along with the No Action Alterantive.

2.8 WESTERN DISCHARGING CULVERTS

The 1994 GRR/EIS and the authorized plan included a bank of western discharging culverts and a spillway along the west side of the SDA to provide additional surface water inflows to ENP and to achieve the flood mitigation requirements of the C-111 South Dade project. At this time it is uncertain whether, or how many, western-discharging culverts (or other water control structures) would be needed to ensure the completed C-111 South Dade project also maintains authorized pre-project flood rotection for the South Dade basin. Culverts would provide operational flexibility to close when releases from the SDA are not needed or if releases may result in adverse impacts to the downstream areas within ENP. The final operating plan for the completed C-111 South Dade project will be developed in a future operational planning study, the Combined Operating Plan (COP). The COP study will re-examine these authorized features, including consideration of additional information collected from operational experience with the completed C-111 South Dade NDA and SDA features (currently estimated to be completed in 2017-2018). Operational constraints within the future operating plan could include maximum depth limits within the NDA and/or SDA or other limiting criteria in response to CSSS requirements or other system constraints, and operational constraints within the COP could also limit discharges from the South Dade basin to Manatee Bay/Barnes Sound and/or Biscayne Bay. Regardless of potential constraints, the C-111 South Dade project requires the Corps to maintain the pre-project level of flood protection for the South Dade basin, and western discharges from the NDA and/or SDA towards ENP may be recommended in the future to ensure this requirement is achieved with the completed project features.

There is no plan to construct or analyze these culverts as part of the actions under consideration within this EA. However, field data collected from Increment 1 and Increment 2 of the MWD field tests, and/or modeling for the COP, may indicate that culverts are needed. If the need for these culverts is verified, these culverts would be coordinated separately under a new NEPA document.

2.9 IDENTIFICATION OF THE RECOMMENDED PLAN

Alternative 6 (Flexible Plan) is the current Recommended Alternative for plugs/backfill. This Alternative includes priority areas of plugs within the L-31W canal and a reduction in the size of the levee gap along the North-South segment (Reach 4) of the remnant L-31W Canal. The reason priorities for backfill/plugs were determined was due to potential funding and unknown availability of clean, free fill to use for the construction of the L-31W backfill/plugs.

3.0 AFFECTED ENVIRONMENT

The affected environment of the C-111 basin was most recently described in the Final EIS for ERTP (2011) and CEPP (2014). The Final CEPP EIS can be viewed at the following location: http://141.232.10.32/pm/projects/docs_51_cepp.aspx

Additional descriptions of current project hydrology and operations are provided in the 2016 Corps EA titled *Modifications To The C-111 South Dade North and South Detention Areas And Associated Features, USACE, Jan.2016* (located under Dade County-http://www.saj.usace.army.mil/About/Divisions-Offices/Planning/Environmental-Branch/Environmental-Documents). The lands acquired by the SFWMD as buffer lands for the C-111 Project were largely former marshland, some converted to agriculture, in the Rocky Glades region of western Dade County. Lands were prepared for agriculture by rock-plowing (grinding rocky outcrops between swales into a more uniform surface) and providing drainage. Seasonal agricultural activities on these lands prior to their acquisition for the project included mostly winter (dry season) vegetable crops. Lands are characterized as low relief, with occasional outcrops of limestone or lower, wet areas that may support tree islands.

3.1 CURRENT CONSTRUCTION STATUS OF THE C-111 SOUTH DADE PROJECT

The following is a description of the features that have been constructed on the C-111 project to date. This includes constructed features authorized under the 1994 GRR/EIS and modifications to the project authorized under ISOP and IOP. Collectively, these changes represent the existing C-111 South Dade project conditions (Figure 2).

The S-332D pump station was completed in 1996. During the design phase, the pump station capacity was increased from 300 cubic feet per second to 575 cubic feet per second.

The removal of the C-111 spoil mounds in the southern part of the project was completed in 1996. The spoil mounds were located on the south bank of the lower C-111 and were removed to provide better sheet flow into the panhandle of ENP. The material was relocated and stockpiled north of L-31W and southeast of L-329 (north of S-175 within the S-332D Detention Area) for future use on another C-111 South Dade portion of the project. The Taylor Slough Bridge was constructed in 1999 to establish historic sheet flow patterns in Taylor Slough. Interim pump stations S-332B and S-332C were constructed in 2000 and 2003, respectively, under ISOP and IOP, as well as the SDA and partial NDA. The C-109 was backfilled as proposed in the 1994 GRR. Under the CERP project C-111 Western Spreader Canal, the C-110 was plugged.

The 8.5 SMA Detention Cell was built in 2012 but cannot operate under normal operating conditions to receive the full design discharge rate from the S-357 pump station until the NDA and its internal flowways are built. C-111 South Dade construction Contract 8 (awarded October 2015) will complete the construction of the NDA perimeter levees and emergency discharge structures, providing the storage capacity to accept discharges from the 8.5 SMA. Current construction activity will establish the L-357 Extension Levee from the 8.5 SMA Detention Cell to the southern limits of Richmond Drive, but will not complete the Richmond Drive Levee crossing. Planned future construction activities anticipated under C-111 South Dade construction covered under the recent 2016 signed FONSI for Modifications to the C-111 South Dade Project (expected contract award in September 2016) will construct internal flowway berms in the NDA and the SDA, complete the levee crossing at Richmond Drive, provide a hydraulic connection between the 8.5 SMA Detention Cell and the NDA, partially

demolish S-174 and S-175, and decommission the S-332 and S-332I pump stations. Completion of the above features is currently projected during 2017-2018.

3.2 CLIMATE

The subtropical climate of south Florida, with its distinct wet and dry seasons, high rate of evapotranspiration, and climatic extremes of floods, droughts, and hurricanes, represents a major physical driving force that sustains the Everglades while creating water management challenges for water supply and flood control issues in the agricultural and urban areas of the basin.

Seasonal rainfall patterns in south Florida resemble the wet and dry season patterns of the humid tropics more than the winter and summer patterns of temperate latitudes. Of the 53 inches of rain that south Florida receives on average annually, 75 percent falls during the wet season months of May through October. During the wet season, thunderstorms that result from easterly tradewinds and land-sea convection patterns occur almost daily. Wet season rainfall follows a bimodal pattern with peaks during May through June and September through October. Tropical storms and hurricanes also provide major contributions to wet season rainfall with a high level of interannual variability and low level of predictability. During the dry season (November through April), rainfall is governed by large-scale winter weather fronts that pass through the region approximately weekly. However, due to the variability of climate patterns (La Niña and El Niño), dry periods may occur during the wet season and wet periods may occur during the dry season. High evapotranspiration rates in south Florida roughly equal annual precipitation. Recorded annual rainfall in south Florida has varied from 37 to 106 inches, and interannual extremes in rainfall result in frequent years of flood and drought.

3.3 GEOLOGY AND SOILS

Reference the 2014 CEPP EIS for a description of surrounding soils in the area. The hydrology of these former Everglades soils has been impacted by prior agricultural practices (e.g. ditching, rock plowing, etc.) and regional water management. The majority of the project area could be best described as prior converted cropland no longer in agricultural production.

3.4 HYDROLOGY

The major characteristics that influence the movement of water within South Florida are local rainfall, evapotranspiration, canals and water control structures, flat topography, and the highly permeable surficial aquifer. Surface water that is not removed from the land surface by evapotranspiration and seepage to the aquifer is drained to coastal water bodies via sheet flow from wetlands or via project canals, due to lower stages maintained in canals than the adjacent marsh. Natural groundwater flow direction is generally northwest to southeast in the project area, following surface topography. Due to lower stages being maintained in the C&SF South Dade Conveyance System (SDCS) canals, groundwater in the shallow aquifer inside ENP tends to seep out into the L-31 and C-111 Canals, which were enlarged and deepened during construction of the South Dade Conveyance System in the 1960s. The direction of groundwater flow can be altered on a local scale due to influences of rainfall, canal operations, well-field pumping, or other project features, including surface water impoundments. Fluctuations in groundwater levels are seasonal. Where there is no impermeable formation above the aquifer, surface water recharges the system and the groundwater level can rise freely. In times of heavy

rainfall, the aquifer fills and the water table rises above the land surface, contributing to seasonal inundation patterns throughout the area.

Levees and canals constructed under the Central and Southern Florida (C&SF) Project have divided the former Everglades into areas designated for development and areas for fish and wildlife benefits, natural system preservation, and water storage. The C-111 South Dade project is located within south Miami-Dade County (adjacent to ENP) and is operated as part of the SDCS, which was authorized for the purpose of improving the supply and distribution of water to agriculture, ENP, flood control, and for meeting the expanding urban and agricultural water supply needs. Eastern portions of the ENP are influenced by the canals and structures that provide flood control and water supply for agricultural and developed areas. Optimum and design water levels in the project canals are established on the basis of desirable water control conditions in each area, such as optimum groundwater levels, intake and/or discharge structure elevations and removal rates for flood control. Water discharged from the C-111 basin is comprised of water from some or all of the following sources: deliveries from the Water Conservation Areas (WCAs), seepage from ENP, and local runoff from the South Dade basin that is adjacent to L-31N and C-111 Canals. Occasional freshwater discharges from C-111 to the coast are typically due to excessive rainfall, which may negatively impact the salinity in Manatee Bay/Barnes Sound.

3.4.1 Lower East Coast Area

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

3.4.2 8.5 Square Mile Area

The 8.5 SMA is a primarily residential area adjacent to, but west of, the L-31N Canal. The 8.5 SMA, which is also known as Las Palmas community, is bordered on both the west and north by NESRS. The community has water management infrastructure consisting of a perimeter levee, two internal seepage collection canals (C-357 and C-358), a pump station (S-357), and a detention area (8.5 SMA Detention Cell) to collectively provide flood mitigation for the effects resultant from higher water levels within ENP following implementation of the MWD Project (USACE 2000). An additional gated water control structure (S-357N) is being constructed along the southern boundary of the 8.5 SMA at the junction of the C-358 and C-357 Canals (along Richmond Drive) as part of the MWD Project, with construction presently planned for completion in December 2016.

3.4.3 Northeast Shark River Slough

NESRS is a complex area located in the northeast corner of ENP. It is currently the northern terminus of Shark River Slough, which is aligned from the northeast to southwest across ENP. Tamiami Trail is the northern boundary, the L-31N Canal the eastern boundary, and the L-67 Extension Canal the western boundary of the NESRS. Prior to construction and operation of the C&SF Project in the 1960s-1970s, NESRS would have been characterized as wet most of the year, but regional developments impacted historic freshwater routes into the area. Hydrologic restoration of the ENP NESRS is a primary objective of the MWD project.

Water enters NESRS primarily from WCA 3A via S-333 which discharges to the L-29 Borrow Canal. Several sets of culverts and the one-mile Tamiami Trail bridge (completed as part of the MWD Project in 2013) under Tamiami Trail deliver water from the L-29 Borrow Canal into the NESRS wetlands. In addition, S-355A and S-355B may also be used to deliver water from WCA 3B to the L-29 Canal for subsequent passage through the culverts and bridge to NESRS. The discharges made from WCA 3A through the S-12 structures and S-333 are target flows determined from the Rainfall Plan. Under the Rainfall Plan, water deliveries are computed and operations adjusted weekly, if necessary based on the sum of two components: a rainfall response component and a WCA 3A regulatory component. The prescribed Rainfall Plan operational target flow distribution is 55% through the S-333 into NESRS and 45% through the S-12 structures into ENP west of the L-67 Extension, although normal operations are conducted to maximize inflows to NESRS. Eastern portions of the ENP are also influenced by the system of canals and structures that provide flood control and water supply for the LEC urban and agricultural areas.

3.4.4 Taylor Slough

Taylor Slough is in the southeast quadrant of ENP. The area through the Rocky Glades and Taylor Slough is higher in elevation compared to ground levels north, south, or west. Because of this characteristic, the area is normally drier than other areas in the ENP. The Rocky Glades and Taylor Slough are somewhat like an island or a peninsula extending from the canals into the ENP. Under ERTP, specified C-111 basin canal water levels/ranges and S-332D pump station operations have resulted in Taylor Slough being provided water from the C-111 Basin mainly during the wet season. During the dry season, under ERTP, water deliveries from S-332D to Taylor Slough are limited to provide conditions conducive to CSSS Sub-population C nesting (up to 325 cfs from December 1 – January 31; up to 250 cfs from February 1 – July 14). Since completion of the S-332D Detention Area in 2003, maximum surface water flows observed at the Taylor Slough bridge (approximately 1.8 miles downstream of the existing L-31W gap and the remnant S-332/S-332I pump stations) typically range between 250 and 550 cfs during the wet season months of June to October. The flow at Taylor Slough includes contributions from the S-332D Detention Area and flowway, southerly flow within the remnant L-31W Canal (including significant seepage inflows from the S-332D Detention Area), and drainage from the adjacent ENP wetlands. The S-332D Detention Area includes the High Head Cell, the Cell 1 detention area, the Cell 2 detention area, and the flowway cell. Figures 9 and Figure 10 provide an overview of the S-332D Detention Area and the northern reaches of the L-31W Canal, including prevalent surface water flow pathways (indicated by green arrows) and seepage/groundwater flow pathways (indicated by blue arrows). Figure 11 and Figure 12 provide an overview of surface water flows within the southernmost reach of the L-31W Canal, south of the S-175 gated culvert. Backfill and/or plugs within the remnant segments of the L-31W Canal will reduce seepage losses from the S-332D Detention Area to the L-31W Canal, reduce drainage of the adjacent ENP wetlands by the L-31W Canal, and promote increased sheetflow to Taylor Slough.

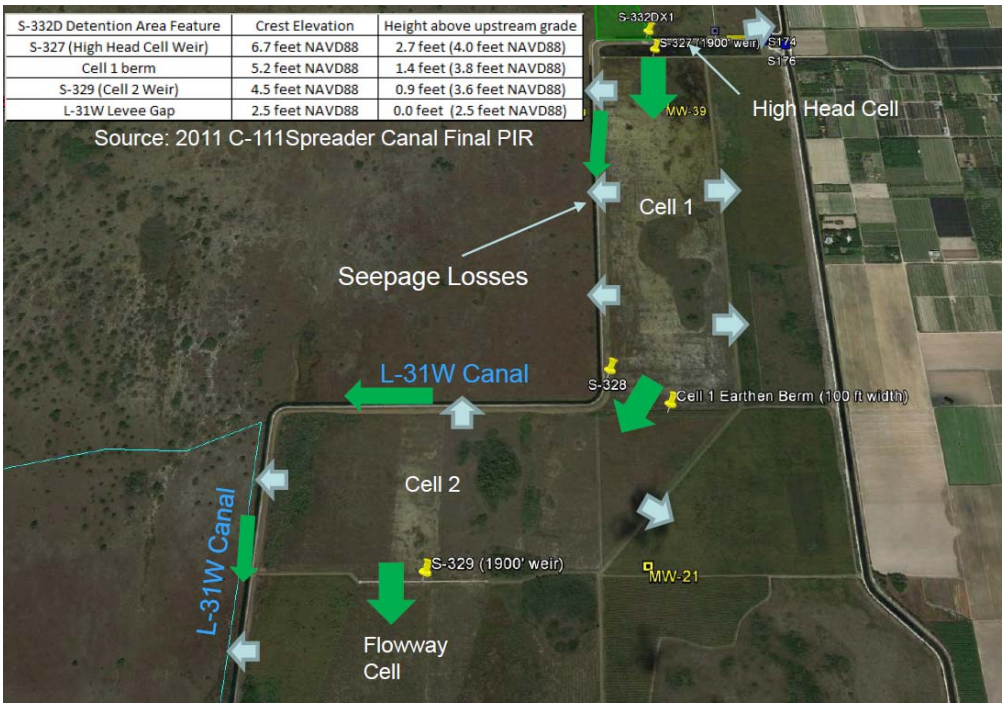


Figure 9. Northern S-332 Detention Area

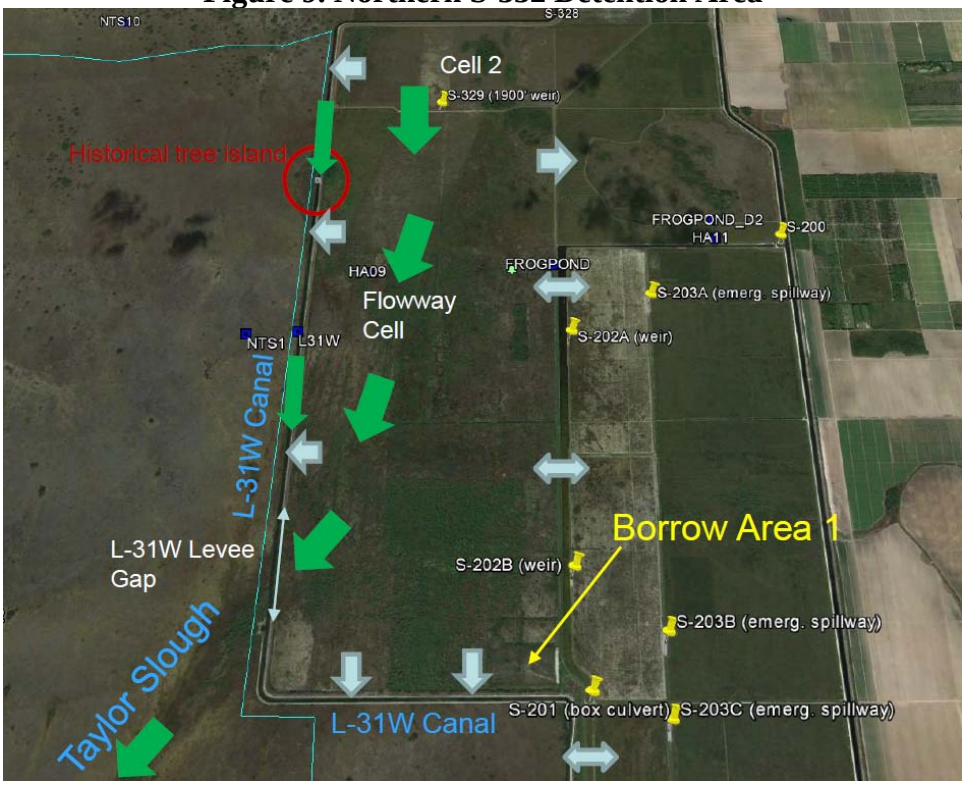


Figure 10. Southern S-332 Detention Area

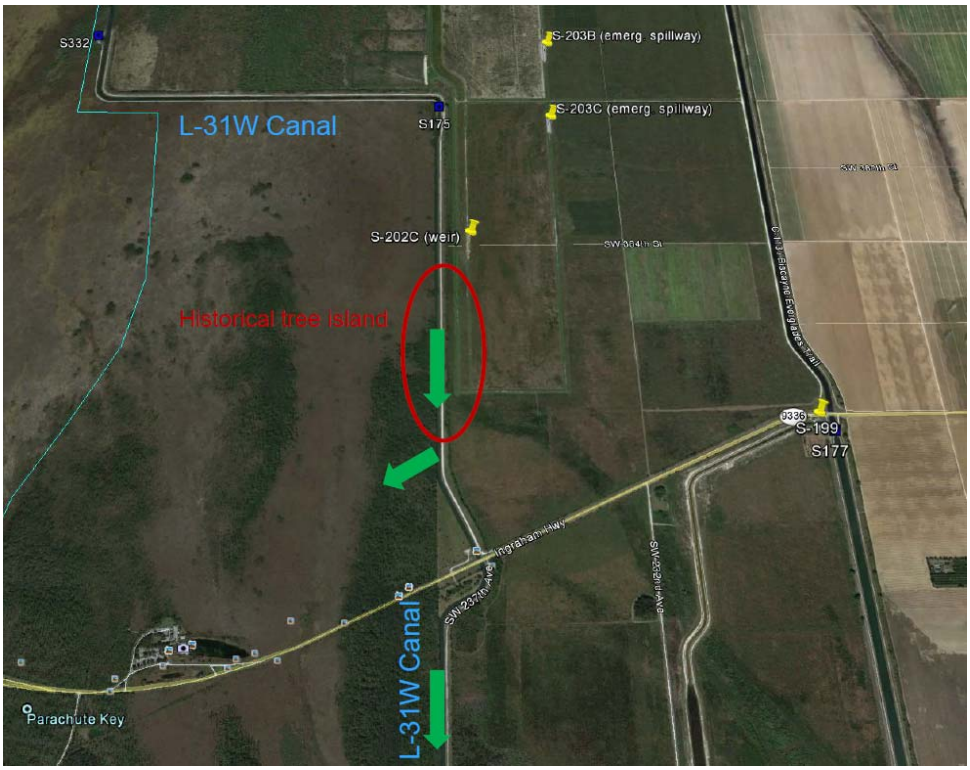


Figure 11. Southern Reach of L-31W Canal, North of State Road 9336

Figure 12. Southern Reach of L-31W Canal, South of State Road 9336

3.5 WATER QUALITY

The Corps has determined that the surface water from the L-31N canal within this portion of the C-111/L-31 W system has a low phosphorus concentration. This is based on the last 5 years of Settlement Agreement calculations showing compliance with the Taylor Slough/Coastal basin target of a flow weighted mean of 11 parts per billion (ppb). Sample readings have been in the 5-6 ppb range for total phosphorus. Quality of the water impounded within the Detention areas is regularly checked. Pesticide levels in this canal system (surface water and sediment) are routinely checked by the SFWMD and there is no indication of a pesticide problem in the surface water or the ground water in this project area. Trace levels of endosulfan are occasionally found in the canal surface water but this pesticide is ubiquitous at trace levels throughout Florida. The extensive ground water sampling conducted for the C-111 project area has not indicated any ground water problem in the project area either before the C-111 project features were built or after construction and operation. The Miami-Dade Department of Environmental Resource Management (DERM) conducts a routine and very thorough sampling program of the ground water and the surface water in this area and this program also indicates that the project ground water and surface water is generally of very good quality.

3.6 FLOOD RISK MANAGEMENT

Water management and flood risk management is achieved in south Florida through a variety of canals, levees, pumping stations, and control structures within the Water Conservation Areas (WCAs) and ENP SDCS. The WCAs provide a detention reservoir for excess water from the Everglades Agricultural Area (EAA) and parts of the east coast region, and for flood discharge from Lake Okeechobee to the sea. The WCAs provide levees to prevent the Everglades floodwaters from inundating the east coast urban areas, provide water supply for the east coast areas and ENP, improve water supply for east coast communities by recharging underground freshwater reservoirs, reduce seepage, ameliorate salt-water intrusion in coastal well fields, and provide high quality habitat for fish and wildlife in the Everglades.

The East Coast Canals are flood control outlets located from St. Lucie County southward through Martin, Palm Beach and Broward counties to Dade County. The East Coast Canal watersheds encompass the primary canals and water control structures located along the lower east coast of Florida and their hydrologic basins. The main design functions of the C&SF project canals and structures in the East Coast Canal area are to protect the adjacent coastal areas against flooding; store water in conservation areas west of the levees; control water elevations in adjacent areas; prevent salt-water intrusion and over-drainage; provide freshwater to Biscayne Bay and provide for water conservation and public consumption. There are 40 independently operated canals, one levee, and 50 operating structures, consisting of 35 spillways, 14 culverts, and one pump station. The C&SF project operates to prevent major flood damage; however, due to urbanization, the existing surface water management system now has to handle greater peak flows than in the past.

The coastal canal system, including the SDCS, was overlaid on top of the existing flood control system. Many of these canals are used to remove water from interior areas to tidewater in times of excess water. One of the primary purposes of the SDCS portion of the C&SF Project is flood protection. The project was authorized to remove 40-percent of the Standard Project Flood

(SPF) flows. This purpose remains an important objective because of the remaining agriculture within the basin. The South-Dade County basin (south of the S-331 pump station) is provided flood protection by operation of the S-332B/S-332C/S-332D pump stations completed under the C-111 South Dade Project and through operation of the L-31N and C-111 Canal control structures (S-176, S-177, S-18C, and S- 197). The S-200 and S-199 pump stations, located between S-176 and S-177 along the C-111 Canal, are currently operated by the SFWMD as components of the C-111 Spreader Canal CERP Project to manage stages within the lower C-111 Canal while providing hydroperiod benefits to the adjacent wetlands including eastern ENP. The South-Dade County basin may also receive inflows from upstream basin drainage through the S-331 pump station and the adjacent S-173 gated culvert structure. Within the SDCS, S-331/S-173 releases are the result of water management operations to: (1) maintain target L-31N Canal stages; (2) provide flood damage reduction to the 8.5 SMA eastern areas when sufficient capacity is available at S-357 and maintain flood damage reduction for the 8.5 SMA when S-357 operational capacity is limited; and (3) WCA 3A regulatory releases to the SDCS from S-334 during ERTP Column 2 operations.

The MWD Increment 1 field test hydrologic monitoring will aid in quantifying both long-term and intra-annual/seasonal effects of increased stages within NESRS. Development of the COP will be informed by the MWD Increment 1 and Increment 2 field tests. The COP will conduct regional hydrologic modeling in order to balance the ecological restoration objectives of the MWD and C-111 South Dade projects while demonstrating compliance with the project constraints, which will include requirements to maintain the mitigation for project induced flood damages in the 8.5 SMA and to maintain the level of flood damage reduction associated with the 1994 C-111 GRR Recommended Plan.

3.7 WETLANDS

The lands within the C-111 project area were historically part of the Everglades wetland system. The hydrology of these wetlands has been historically manipulated to suit agricultural interests. The South Detention Area (SDA) and S-332 D Detention Area have higher quality wetlands within the detention area that have not been previously converted to agriculture. However, this area has been impacted by water management operations since its acquisition by the government. The S-332 D Detention area (the western part of the former Frog Pond) was also largely agricultural prior to its purchase by the SFWMD. Vegetation within the proposed project area is described in the 2007 IOP FEIS. Proposed actions evaluated in this EA will be concentrated on the Canal itself, with minimal effects on the lands of the Detention Areas. Most construction activity will be along roads or levees that run along the L-31W or connect to existing pump stations

3.8 FISH AND WILDLIFE OF L-31W CANAL AND ADJACENT LAND

Canal dimensions are approximately 60 feet wide by 15 feet deep, and the Canal harbors both native and exotic fish species. A three year study of the fish fauna of canals leading to and within the Everglades was conducted for ENP by J.S. Rehage, D.A. Gandy and V. Trujillo (2014). Electrofishing led to capture and identification of 33 taxa of native fish and 16 taxa of non-native fish in L-29, L-31W and C-111 north. There is a boat ramp along the Park road (FL 9336) but the canal is accessible to boats only as far north as S-175. The segment of L-31W to the west and north of S-175 is least accessible to boat fishermen, and was one of the

canals that had the highest relative abundance of non-native fish species (47% according to Catch per Unit Effort, or CPUE). Sampling by electrofishing introduces a bias on species caught (generally, tiny fish tend to escape catch nets) but the most abundantly caught native species in the L-31W, measured as CPUE, were Florida gar, warmouth, bluegill, dollar, redear and spotted sunfish, and largemouth bass. The most common nonnative taxa were peacock bass, jaguar guapote, mayan cichlid, African jewelfish, peacock eel, Asian swamp eel, blue tilapia, spotted tilapia and unidentified cichlids. Fish specialists have also studied movement of fish from canals into ENP marshes and back, depending on the degree of connectivity between waterways and adjacent marsh (relative water levels), and consider the eastern canals (L-31W and C-111) major pathways for potential introduction of new non-native species, as well as a warm water refuge for introduced exotics during unusually cold weather. Cold-sensitive exotics of tropical origin can survive during winter cold snaps by moving into the depths of deep canals like L-31W, where the cold does not penetrate, and then re-enter ENP marshes as temperatures rise and the onset of the wet season re-connects marshes with canals. ENP biologists recommend filling or shallowing Canal L-31W to reduce the "refugium" effect on exotic species introductions. A water depth sufficient to allow chilling of the water column below 15^{o} C was considered adequate (Joel Trexler, personal communication).

There are no reports of significant wildlife or fish habitat in or along the L-31W Canal. Native fish species are common and typical of fresh water species found in South Florida canals.

Wildlife in and adjacent to the L31W canal could include alligator, otter and aquatic birds. The Canal banks are near-vertical and offer little foraging potential for long-legged wading birds. Water control structures impede access by wide-ranging species such as the West Indian Manatee. Portions of the canal may include foraging habitat for the Florida Bonneted Bat, a large species that hawks insects, often over water.

3.9 ESSENTIAL FISH HABITAT

The L-31W region of the C-111 South Dade canal system is located inland and is only freshwater-influenced. During coordination of the 2016 USACE EA for *Modifications To The C-111 South Dade North and South Detention Areas And Associated Features, (FONSI, June 24, 2016)* the Corps coordinated a determination with the National Marine Fisheries Service (NMFS) that no essential fish habitat was present in the L-31W region of the C-111 Canal System. By letter dated 29 March 2016, NMFS concurred with this determination.

3.10 THREATENED AND ENDANGERED SPECIES

Many threatened or endangered terrestrial plant and animal species are known to occur within Miami-Dade (South Dade) County. The land in the area of the C-111 basin originally consisted of relatively natural Everglades features including sloughs, tree islands, marshes, and coastal mangrove fringe. An extensive list of terrestrial species was coordinated with the U.S. Fish and Wildlife Service (FWS) in relation to the land-based construction proposed for Contract 8 (2012) and North and South Detention Area Features (2016). In contrast, the L-31W Canal itself supports a lesser number of species of fish or invertebrate species. In addition to the native largmouth bass, sunfish of several species, gar and bowfin, canal waters harbor exotics like Mayan cichlids, peacock bass, African jewelfish and several Tilapia species. The West Indian Manatee, an endangered species, once had access to parts of the C-111 Canal system,

but spillways and pump stations built both north and south of L-31W make it inaccessible to manatees at present.

Prior consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service for the 2016 *"C-111 South Dade North and South Detention Area Features)"* (USACE, 2016a) led to concurrence with the Corps' determinations, with FWS determinations of "no effect" on all plant species and most animal species, and determinations of "May Affect, not likely to adversely affect" for the endangered Florida Panther, endangered Cape Sable Seaside Sparrow, threatened Eastern indigo snake, and, as recommended by the Service, the endangered Florida bonneted bat. Service concurrence with these determinations was received on March 30, 2016. The Corps has re-initiated consultation with FWS for this EA, beginning in May, 2016. The Corps also determined that proposed construction would not affect species under the purview of the National Marine Fisheries Service (marked by asterisk in Table 3). By letter dated March 29, 2016, NMFS agreed that the project area did not support marine or estuarine habitat or Essential Fish Habitat, but could indirectly benefit those habitats. Upon completion of review of this EA, NMFS consultation will be complete. The Corps also determined that the proposed construction would not affect State-listed species. There are no known designated threatened or endangered species in the canal segments proposed for backfill and therefore the Corps determinations are "May Affect, Not Likely to Adversely Affect" and "No Effect" for the proposed action, for the respective land species as shown in Table 3.

Table 3. Federal and State listed species known to occur in Miami-Dade County, Florida, and USACE Assessments of Effect.

Common Name	Scientific Name	Status	May Affect, Not Likely to Adversely Affect	No Effect
Florida panther	*Puma concolor coryi*	E	X	
Florida manatee	*Trichechus manatus latirostris*	E, CH		X
Florida bonneted bat	*Eumops floridanus*	E		X
Cape Sable seaside sparrow	*Ammodramus maritimus mirabilis*	E, CH	X	
Everglade snail kite	*Rostrhamus sociabilis plumbeus*	E, CH		X
Piping plover	*Charadrius melodus*	T		X
Red-cockaded woodpecker	*Picoides borealis*	E		X
Roseate tern	*Sterna dougallii Dougallii*	T		X
Wood stork	*Mycteria americana*	T		X
American Alligator	*Alligator mississippiensis*	T, SA		X
American crocodile	*Crocodylus acutus*	T, CH		X
Eastern indigo snake	*Drymarchon corais couperi*	T	X	
Green sea turtle*	*Chelonia mydas**	E		X

Hawksbill sea turtle*	*Eretmochelys imbricata**	E		X
Kemp's Ridley sea turtle*	*Lepodochelys* kempii*	E		X
Leatherback sea turtle*	*Dermochelys coriacea**	E		X
Loggerhead sea turtle*	*Caretta caretta**	E		X
Smalltooth sawfish*	*Pristis pectinata**	E, CH		X
Bartram's hairstreak butterfly	*Strymon acis bartrami*	E		X
Elkhorn coral *	*Acropora palmata**	T, CH		X
Florida leafwing butterfly	*Anaea troglodyta floridalis*	E		X
Miami blue butterfly	*Cyclargus thomasi bethunebakeri*	E		X
Schaus swallowtail butterfly	*Heraclides aristodemus ponceanus*	E		X
Staghorn coral*	*Acropora cervicornis**	T, CH		X
Stock Island tree snail	*Orthalicus reses* (not incl. *nesodryas*)	T		X
Crenulate lead plant	*Amorpha crenulata*	E		X
Deltoid spurge	*Chamaesyce deltoidea* spp. *Deltoidea*	E		X
Garber's spurge	*Chamaesyce garberi*	T		X
Johnson's seagrass*	*Halophila johnsonii*	E, CH		X
Okeechobee gourd	*Cucurbita okeechobeensis* ssp. *okeechobeensis*	E		X
Small's milkpea	*Galactia smallii*	E		X
Tiny polygala	*Polygala smallii*	E		X
Big pine partridge pea	*Chamaecrista lineata* var. *keyensis*	Pr E		X
Blodgett's silverbush	*Argythamnia blodgettii*	Pr T		X
Cape Sable thoroughwort	*Chromolaena frustrata*	E, CH		X
Carter's small-flowered flax	*Linum carteri* var. *carteri*	E, CH		X
Everglades bully	*Sideroxylon reclinatum* spp. *Austrofloridense*	C		X
Florida brickell-bush	*Brickellia mosieri*	E, CH		X
Florida bristle fern	*Trichomanes punctatum* spp. F*loridanum*	E		X
Florida pineland crabgrass	*Digitaria pauciflora*	C		X
Florida prairie-clover	*Dalea carthagenensis* var. *floridana*	C		X
Florida semaphore cactus	*Consolea corallicola*	E		X
Pineland sandmat	*Chamaesyce deltoidea* ssp. *Pinetorum*	C		X
Sand flax	*Linum arenicola*	Pr E		X

American alligator is currently federally designated for *Similarity of Appearance to a Threatened Taxon (SAT).*

Table 4. State Endangered, Threatened, and Special Concern Species

Species	Scientific Name	State Status
	MAMMALS	
Everglades mink	*Neovison vison evergladensis*	T
Florida mouse	*Podomys floridanus*	SC

	BIRDS	
Snowy plover	*Charadrius nivosus*	T
American oystercatcher	*Haematopus paliatus*	SC
Brown pelican	*Pelecanus occidentalis*	SC
Black skimmer	*Rynchops niger*	SC
Least tern	*Sterna antillarum*	T
White-crowned pigeon	*Patagioenas leucocephala*	T
Limpkin	Aramus *guarauna*	SC
Little blue heron	*Egretta cerulea*	SC
Tricolored heron	*Egretta tricolor*	SC
Snowy egret	*Egretta thula*	SC
Reddish egret	*Egretta rufescens*	SC
White ibis	*Eudocimus albus*	SC
Roseate spoonbill	*Platalea ajaja*	T
	FISH	
Mangrove gambusia	*Gambusia rhizophorae*	SC
Mangrove rivulus	*Rivulus marmoratus*	SC
	INVERTEBRATES	
Florida tree snail	*Liguus fasciatus*	SC
	PLANTS	
Pine-pink orchid	*Bletia purpurea*	T
Lattice vein fern	*Thelypteris reticulata*	E
Eaton's spikemoss	*Selaginella eatonii*	E
Wright's flowering fern	*Anemia Wrightii*	E
Tropical fern	*Schizaea pennula*	E
Mexican vanilla	*Vanilla mexicana*	E

State Species of Special Concern (SC) is a species, subspecies, or isolated population that is facing a moderate risk of extinction in the future.

3.11 AIR QUALITY

EPA's AirData database contains measurements of air pollutant concentrations for the entire United States. The measurements include both criteria air pollutants and hazardous air pollutants and are compared against the National Ambient Air Quality Standards (NAAQS) specified by the EPA. The ambient air monitoring network in Florida reflects the state's population growth, new air monitoring technologies, and concern for health. The monitoring equipment has improved and become easier to operate, while analysis methods have become more precise and reliable. The monitoring effort has concentrated on the six criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide and particle pollution. In 2012, there were 203 ambient monitors in the statewide air monitoring network. In 2012 , Florida continued to be in attainment for all criteria pollutants,except for the lead nonattainment area in Hillsborough County. A survey of the 2012 criteria ambient monitoring results shows that the project area is currently in attainment (FDEP Air Monitoring Report 2012).

3.12 RECREATION

Boat fishing is practiced wherever there are boat launch ramps and the canals are not physically blocked. The best boat access point along the L-31W Canal is the ramp along the ENP access road (SR 9336). The segment of L-31W south of the Park Road is fully accessible by boat whereas north of the Park road the canal can be accessed only up to S-175. To the north of the S-175 water control structure, bank fishing is possible by walking along the eastern canal bank along the levee, but the access roads (levees) are fenced and gated and therefore not generally accessible.

3.13 NOISE

Within the major natural areas of south Florida, external sources of noise are limited and of infrequent occurrence. Rural areas typically have noise levels in the range of 34 to 70 decibels, and urban areas may attain noise levels of 90 decibels or greater. Noise levels within ENP are associated predominantly with the natural undeveloped landscape, with recreational traffic and occasional air traffic contributing intermittent higher levels.

Noise levels are associated with surrounding land use. There are no significant noise generating land users within the project area of the C-111 Detention Cells; however, there is periodic boat and airboat activity in the canals, where accessible. An un-muffled airboat, frequently powered by a V-8 car engine, registers between 115 to 130 decibels at 50 feet, according to University of Florida researchers. Fishing boats have lower noise levels. For the roads adjacent to and cutting through the project area, sound levels typical for automobile, motorcycle and truck traffic could be as high as 90 decibels but typically are lower, in the range of 75 decibels at 50 feet.

3.14 AESTHETICS

The visual characteristics of south Florida can be described according to the three dominant land use categories (natural areas, agricultural lands, and urban areas). The natural areas consist of a variety of upland and wetland ecosystems, including lakes, ponds, vast expanses of flat marsh and wet prairie, with varying vegetative components. Tree islands may project above the overall uniform marsh surface, dotting the landscape. Agricultural fields are often irrigated during the dry season; tree crops present a constant panorama resembling a woodland, whereas tropical vegetables and fruit crops may present bare soil after harvest or early planting. Large extensions of agricultural land are planted to ornamental palms and other tree crops.

3.15 LAND USE

The project area consists predominantly of prior converted agricultural lands and freshwater marsh. Subsequent acquisition of agricultural land for the project by SFWMD has been followed by partial succession of some prior agricultural land to marshy characteristics.

3.16 SOCIOECONOMICS

Florida's economy is characterized by strong wholesale and retail trade, government, and service sectors. The economy of south Florida is based on services, agriculture, and tourism. Florida's warm weather and extensive coastline attract vacationers and other visitors and help make the state a significant retirement destination. The three counties that comprise the LEC

(Palm Beach, Broward, and Dade) are heavily populated, and it is estimated that over 6.9 million people will reside in this region by the year 2050.

A complete socioeconomic description of the C&SF Project area was completed in the Comprehensive Review Study (1999). In addition, the 1994 GRR/EIS describes socioeconomic conditions specific to the C-111 Project area.

3.17 AGRICULTURE

The lands in the S-332D Detention Area were classified in the 1999 FLUCCS map as agriculture; however, these lands were acquired by SFWMD from the previous owner and have not been used for agricultural practices in more than 20 years. Agriculture exists on the eastern border of the project area, along the eastern side of the L-31N and C-111 Canals. A variety of fruits, vegetables, and ornamentals are grown within this region and include many tropical and subtropical crops that are grown year-round. The most active growing season is between September and May. Because of the wet and dry rainy seasons in the area, planting times are controlled by the elevation of groundwater.

3.18 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

Hazardous, toxic, and radioactive waste (HTRW) surveys have been conducted as part of EAs and EISs prepared as part of the prior C-111 basin restoration efforts and indicated no problems or occurrence of HTRW levels of contaminants. There is a low potential of occurrence of HTRW within the proposed project area based on the current and past activity in this area. The SFWMD conducted a phase 1 HTRW assessment that was completed in 2007. This assessment indicated no presence of contaminants at HTRW levels. The SFWMD also completed a soils sampling survey in 2008 of the project area construction footprint to address the potential for ecosystem risk (potential negative impacts to sensitive endangered species via bioaccumulation of agricultural amendments). Only trace amounts of agricultural amendments were found throughout the project area. The SFWMDrecently completed (2016) an HTRW survey of the material to be used for canal fill. SFWMD has obtained concurrence from the FDEP South East Waste Clean Up Section that this fill is acceptable for placement.

3.19 CULTURAL RESOURCES

Two water control structures (S-174 and S-175) are located within the project area. These structures were constructed following standardized construction design plans, and do not embody distinctive characteristics of a type, period, or method of construction. According to the *1970 Annual Report of the Chief of Engineers (Volume 2)*, the L-31W Canal, S-174, and S-175 were constructed beginning July 1968 and completed in 1970; therefore, these project features are modern, and are not historic properties considered eligible for inclusion in the National Register of Historic Places (NRHP). Consultation in accordance with *Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations in 36 CFR Part 800: Protection of Historic Properties* is ongoing in coordination with the Florida State Historic Preservation Office regarding these project components. No recorded archaeological sites exist along the L-31W canal or in its bed. The entire project footprint has been previously disturbed by construction. All fill material that will be utilized for partial backfilling and plugging of the L-31W canal is in disturbed context and aligned adjacent to the canal. Two tree islands identified from modern and historical aerial imagery are transected by

the L-31W Canal (see Figures 9-12). No backfilling or plugging of the L-31 Canal will occur at these tree island locations. Only existing roads will be utilized for project ingress and egress. The Corps has determined that project design modifications to the C-111 South-Dade L-31W Canal and associated features would have no adverse effect on historic properties.

3.20 NATIVE AMERICANS

There are two federally recognized tribes (Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida) that are located within the region of the project area (Figure 13). Both tribes maintain strong connections within south Florida and shared use of the region which may have historically included the project area.

Members of both Tribes continue to rely upon the Everglades to support their cultural, medicinal, subsistence, and commercial activities. However, while uses are known throughout the region, there are no known uses of the specific project area. Prior consultation under section 106 of the National Historic Preservation Act on various aspects of the project for construction purposes over the last decade have not indicated any historic uses although that certainly remains possible. The specific issues impacting each tribe have been different over the last few decades, but they are all related to impacts due to man-made changes to the Everglades ecosystem. A request for project consultation with the Seminole Tribe of Florida regarding modifications to the C-111 South Dade Project L-31W Canal was initiated by formal letter dated May 11, 2016. The Miccosukee Tribe of Indians of Florida were contacted via phone on May 2, 2016, and expressed no concern for the demolition or decommissioning of S-174 and S-175 and no concern for modifications to the L-31W Canal as long as project activities are confined to the previously disturbed project footprint. Consultation with the tribes is in progress and ongoing.

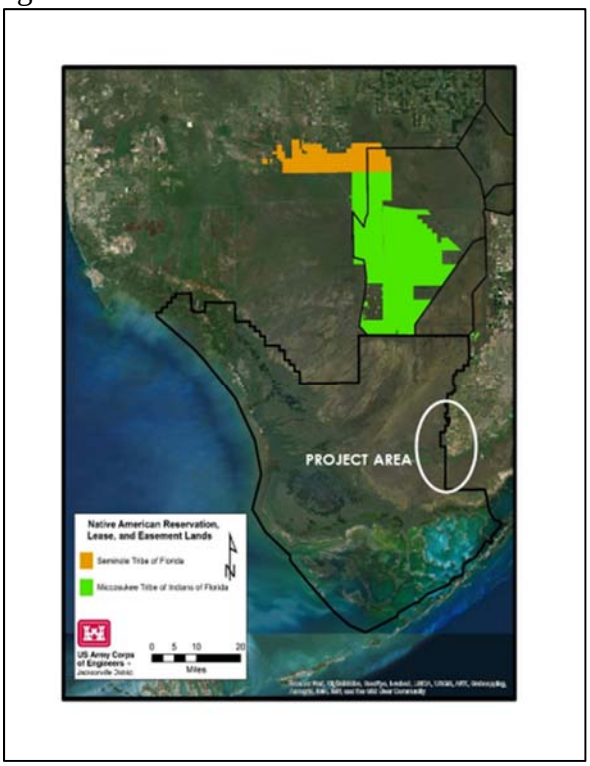


Figure 13. Seminole Tribe of Indians and Miccosukee Tribe of Indians of Florida Lands

4.0 ENVIRONMENTAL EFFECTS

Environmental effects resulting from new modifications that have not been addressed in previous NEPA documents (i.e. 1994 GRR/EIS, 2000 ISOP EA, 2002 IOP EIS, and 2007 IOP FEIS; 2012 EAs and 2016 EA) will be addressed within this EA. No significantly adverse effects on environmental resources are expected as a result of the proposed construction.

4.1 GEOLOGY AND SOILS

4.1.1 No Action Alternative

The No Action Alternative would not cause any additional effects on the geology and soils of the area. Impacts would be as described in the 1994 GRR/EIS

4.1.2 Alternative 3 and Alternative 6 (Preferred Alternative)

Both Alternatives would utilize clean excavated material and levee overbuild areas to fill or plug the L-31W Canal and narrow the existing gap. Degrading overfill material currently deposited along the levee, and partially filling the levee gap would not alter the geology or soils in the area; however, they would meet the project purpose to provide reduced seepage. This would not result in adverse effects.

4.2 HYDROLOGY

4.2.1 No Action Alternative

The No Action Alternative would provide the continued hydrologic functions currently in place and described within the 2016 EA for the North and South Detention Areas. This hydrologic function includes continued unnatural drainage and shortened hydroperiods within the ENP wetlands adjacent to the L-31W Canal.

4.2.2 Alternative 3

The Alternative 3 backfill option would result in a reduction of seepage losses from the S-332D Detention Area to the L-31W Canal and promote increased sheetflow to Taylor Slough. Seepage into the L-31W canal from the adjacent ENP wetlands would be impeded by partial or complete plugs or fill, therefore leading to longer hydroperiods within ENP. Groundwater flow eastward from the S-332D High Head Cell and from the southern reaches of the L-31W Canal (south of S-175) towards the C-111 Canal and adjacent agricultural lands would be reduced, leading to reduction of over-drainage out of ENP.

4.2.3 Alternative 6 (Preferred Alternative)

The recommended locations for backfill and/or plugs within the remnant segments of the L-31W Canal would reduce seepage losses from the S-332D Detention Area to the L-31W Canal and promote increased sheetflow to Taylor Slough. Seepage into the L-31W canal from the adjacent ENP wetlands would be impeded by partial or complete plugs or fill, therefore leading to longer hydroperiods within ENP. Groundwater flow eastward from the S-332D High Head Cell and from the southern reaches of the L-31W Canal (south of S-175) towards the C-111 Canal and adjacent agricultural lands would be reduced, leading to reduction of over-drainage out of ENP. The proposed ACBM weir and partial levee re-construction across the existing L-31W gap would prevent surface water losses from Taylor Slough into the S-332D Detention Area when surface water levels in ENP are higher than inside the S-332D Detention Area

flowway, providing increased hydroperiods within the ENP wetlands adjoining Taylor Slough during the transition months between the wet season and the dry season.

4.3 WATER QUALITY

4.3.1 No Action Alternative

The water quality in the C-111 basin will remain as current conditions under the No Action Alternative. No additional effects on groundwater or surface water are expected with this Alternative.

4.3.2 Alternative 3 and Alternative 6 (Preferred Alternative)

Water quality is not presently a concern in the L-31 canal system with respect to phosphorus (based on the past few years of Settlement Agreement calculations). There is currently no phosphorus criterion/constraint for ground water; only surface water is presently regulated for phosphorus content. Initial deposition of fill in L-31W and construction actions to partially fill the levee gap may lead to temporary increases in water turbidity in un-filled or un-plugged areas. Water quality should return to normal after fill activities are complete.

4.4 FLOOD RISK MANAGEMENT

4.4.1 No Action Alternative

Levels of flood risk management are expected to remain the same with no action.

4.4.2 Alternative 3 and Alternative 6 (Preferred Alternative)

Both Alternatives would be expected to provide a reduction in ground water seepage out of ENP, most notably from the S-332D High Head Cell and from the southern reaches of the L-31W Canal (south of S-175). Reduced return seepage by shortening the gap in the levee (Preferred Alternative) towards the C-111 Canal may provide minor benefits to adjacent agricultural lands to the east of the C-111 Canal by enabling increased efficiency with operation of the S-332D, S-199, and S-200 pump stations to provide flood risk reduction.

4.5 4.5 WETLANDS

4.5.1 No Action Alternative

No wetland impact is expected with the No Action Alternative. Wetland impacts that resulted from the implementation of the C-111 South Dade Project have been discussed in previous NEPA documents.

4.5.2 Alterantive 3 and Alternative 6 (Preferred Alternative)

The L-31W Canal itself is not a wetland; its average depth is 15-17 feet, making it a deep water habitat. Material proposed for L-31 Canal backfill is on uplands, either within existing levees or in separate stockpiles; it is coarse and rocky. The Alternatives do not have any existing wetlands present within the footprints. Once complete, the C-111 South Dade Project is expected to provide benefit to 1,155 square miles of wetlands in ENP, including 128 square miles in Taylor Slough and 1,027 square miles in Shark River Slough (USACE 1994). Wetlands within ENP are expected to benefit from the restoration of more natural hydroperiods due to implementation of Alternatives. Restoration of the natural hydroperiods and burning patterns would result in more historic vegetation within these wetlands.

4.6 VEGETATION

4.6.1 No Action Alternative

Vegetation would not be altered due to the No Action Alternative beyond what was discussed in the previous cited NEPA documents. Exotic/invasive vegetation is managed by SFWMD, the land owner of lands adjacent to the levees.

4.6.2 Alternative 3 and Alternative 6 (Preferred Alternative)

Vegetation growing upon levees or stockpiles would be removed. This vegetation includes many exotic and nuisance plants such as *Pennisetum purpureum* (elephant grass). Vegetation in the levee gap includes weedy and shrubby plant species, and would be removed.

4.7 FISH AND WILDLIFE RESOURCES

4.7.1 No Action Alternative

The No Action Alternative would remain the same as the existing conditions explanation in Section 3.8.

4.7.2 Alternative 3 and Alternative 6 (Preferred Alternative)

Both Alterantives would block access of native and non-native fish and other species within the stretches of canal that would be filled. Scientists agree that partial fill or full backfill would benefit efforts to the reduce suitable habitat and reduce the spread of exotic species. If a very limited number of L-31W plugs were implemented, similar to Alternative 4, conditions would remain similar to the No Action Alternative, but future introduction of more exotic species into ENP would be inhibited by interruption of the open canal.

4.8 THREATENED AND ENDANGERED SPECIES

4.8.1 No Action Alternative

The No Action Alternative would not impact any threatened and endangered species due to no change within the project area.

4.8.2 Alternative 3 and Alternative 6 (Preferred Alternative)

The Corps has determined that Alternative 3 and Alternative 6 are not likely to adversely affect any of the federally listed species known to occur within the project area. All monitoring and survey of endangered species onsite would be conducted in accordance with survey protocol from the USFWS South Florida Ecological Services Office.

C-111 South Dade Consultation History

In May of 2006, the USFWS concurred with the Corps' determination that IOP would have "no affect" on the Okeechobee gourd, Everglade snail kite, and the red cockaded woodpecker. The USFWS also concurred with the Corps' determination of "may affect, not likely to adversely affect" the West Indian manatee and its critical habitat, the Florida panther, the bald eagle, the American crocodile and its critical habitat, the eastern indigo snake, the wood stork, the Cape Sable Seaside Sparrow, and the Garber's spurge (USFWS 2006). Consultation was conducted again in 2012 for the construction of the NDA and related structures, and again in 2015 for the"*C-111 South Dade North and South Detention Area Features).*" Concurrence with Corps determinations was received on 29 March 2016 for the most recent consultation

that was conducted for the development of the features within the June 24 2016 EA/FONSI for the NDA and SDA.

The Corps re-initiated consultations on threatened and endangered species with the Fish and Wildlife Service for the Preferred Alternative, beginning on May 18, 2016. A corrected species list was received from FWS on June 6, 2016. No adverse effects on listed species are anticipated as a result of the proposed fill activities in L-31W Canal or the gap closure (See Appendix A).

The proposed activities would affect only the waters of L-31W and adjoining levees and spoil piles, and a "no effect" determination for all plant species and the endangered West Indian Manatee, as well as "May Affect, Not Likely to Adversely Affect" determinations for the endangered Florida panther, endangered Cape Sable Seaside Sparrow, endangered Florida Bonneted Bat and the threatened indigo snake are being coordinated with the U.S. Fish and Wildlife Service.

The following special measures would be incorporated during project construction to minimize effects on any listed species that may be present:
a) Standard construction protection measures for the eastern indigo snake;
b) Management Guidelines for the Bald Eagle in the Southeast Region and Bald Eagle Standard Local Operating Procedures for Endangered Species;
c) Habitat Guidelines for the Wood Stork in the Southeast Region;

Consultation under Section 7 of the Endangered Species Act with the USFWS will continue throughout the project duration.

4.9 AIR QUALITY

4.9.1 No Action Alternative

Effects on air quality under the No Action Alternative would be as described in the 1994 GRR/EIS and subsequent NEPA documents. Not implementing a project would not impact air quality. The pump stations will continue to discharge the same quantity of diesel exhaust products into the project area with or without this project.

4.9.2 Alternative 3 and Alternative 6 (Preferred Alternative)

Construction activities associated with implementing the backfill and/or gap reduction activities would temporarily increase dust and engine emissions within the project area. Best management practices to control dust would be implemented during construction; and the contractor would be required to operate its machinery in compliance with all emissions standards. It is not expected that implementing the project would permanently affect air quality.

4.10 NOISE

4.10.1 No Action Alternative

No noise impacts are expected under the No Action Alternative. Existing operational pump stations S-332 B, C and D would continue to operate.

4.10.2 Alternative 3 and Alternative 6 (Preferred Alternative)

Noise impacts associated with implementation of the Alterantives would not permanently increase within the project area. Temporary increases in noise level, caused by engines of earth-moving machinery, would be expected during construction activities; however, this would be limited to the immediate area of construction. All construction activities would occur from the Detention Area side of the Canal and levees.

4.11 AESTHETICS

4.11.1 No Action Alternative

Selection of the No Action Alternative would not affect aesthetics. Normal operations of pump stations would continue under the No Action Alternative.

4.11.2 Alternative 3 and Alternative 6 (Preferred Alternative)

Construction of either alternative would cause some temporary adverse effects such as access restrictions, noise and vehicle exhaust associated with construction sites, but these are not expected to last for a sustained period of time. Access restrictions, noise and exhaust associated with construction sites will interfere to an extent with enjoyment of the area and may disturb wildlife in the immediate area of work. Once work is completed, wildlife will once again inhabit the area around the construction sites and restrictions on access will be lifted. Vegetation will quickly become established on disturbed soil areas and within a year will cover any remaining signs of construction activities.

4.12 LAND USE

4.12.1 No Action Alternative

The No Action Alternative would not be expected to provide any changes to current land use.

4.12.2 Alternative 3 and Alternative 6 (Preferred Alternative)

Both Alternatives would degrade some levees and degrade existing stockpiles of material stored along the L-31W Canal from prior actions in order to use the stockpiles for fill. No change in land use would result. All adjacent lands are either ENP (west of L-31W) or owned by SFWMD.

4.13 RECREATIONAL USE

4.13.1 No Action Alternative

There is limited boat access and bank access, to the north and south of the boat ramp on the ENP road (SR 9336). The northern limit is the S-175 gated culvert. Access would not change with the No Action Alternative.

4.13.2 Alternative 3 and Alternative 6 (Preferred Alternative)

Depending on the extent of the backfill or plugs installed in the L-31W Canal, there may be permanent loss of some fishing access by water. Access by boat is currently restricted to short reaches north and south of the boat ramp on SR 9336 (ENP road); the Preferred Alternative would leave at least one mile of open canal north of the ENP road, and a similar or greater length to the south of the boat ramp. After discussions with ENP biologists, it was determined that recreational use by fishermen in this stretch is limited to small boats with low-horsepower

engines. Plugging or backfilling portions of the canal would increase flows through Taylor Slough, potentially increasing recreational opportunities within that area.

4.14 SOCIOECONOMICS

4.14.1 No Action Alternative

The No Action Alternative would not cause any changes to socioeconomics in the area.

4.14.2 Alternative 3 and Alternative 6 (Preferred Alternative)

Both Alternatives would not be expected to change any socioeconomic impacts. The SFWMD currently owns the project lands and the project benefits to ENP could increase recreational opportunities, therefore encouraging more tourism for the area.

4.15 AGRICULTURE

4.15.1 No Action

Agricultural practices are not expected to change due to the No Action Alternative.

4.15.2 Alternative 3 and Alternative 6 (Preferred Alternative)

No active agricultural lands are immediately adjacent to L-31W. In Alternative 3 and Alternative 6, reduced return seepage towards the C-111 Canal may provide minor benefits to adjacent agricultural lands to the east of the C-111 Canal by enabling increased efficiency with operation of the S-332D, S-199, and S-200 pump stations to provide flood risk reduction.

4.16 HAZARDOUS, TOXIC OR RADIOACTIVE WASTE

4.16.1 No Action Alternative

Selection of the No Action alternative would not have any HTRW consequences for this project area.

4.16.2 Alternative 3 and Alternative 6 (Preferred Alternative)

The SFWMD has conducted phase 1 HTRW assessments for this project area. The assessments conducted approximately 5-10 years ago indicated no presence of contaminants at active levelsThis area was primarily used for agriculture . This type of use is normally considered to be relatively low risk for HTRW problems as compared to what could be expected at industrial, residential, or former military sites. The SFWMD completed an HTRW assessment and screening level ecosystem risk analysis (SLERA, a soil sampling and analysis program conducted in a method coordinated with USFWS) of this project area in 2008. There was no evidence of HTRW levels of contaminants and only trace levels were found of residual agricultural amendments. A recent (2016) HRTW assessment conducted by the SFWMD, of the potential fill material (consisting of the limestone excavated from the L31w canal template), found this material to be suitable for placement in the L31W canal. Depositing levee overbuild material in the Canal would not expected to mobilize any contaminants.

4.17 CULTURAL RESOURCES

4.17.1 No Action Alternative

Selection of the No Action alternative would cause no adverse effect on cultural resources. The previous NEPA documents covered the SDA and the current S-332B NDA with a determination of no adverse effect on cultural resources.

4.17.2 Alternative 3 and Alternative 6 (Preferred Alternative)

Selection of the either alternative would have no effect on historic properties. There are no known historic properties present within the previously disturbed project footprint, and undiscovered cultural resources are not likely to be present. Two tree islands have been identified from modern and historical aerial imagery as transected by the L-31W Canal. While resources have been previously identified from the orginal cutting of the canal, there remains some probability that resources could contain unknown cultural resources within tree islands; therefore, no plugging or backfilling of the L-31W Canal will occur at these locations to avoid any potential affects. A determination of no effect on historic properties affected is currently being coordinated with the Florida SHPO and federally recognized tribes.

4.18 CUMULATIVE IMPACTS

The project area has been subject to Federal involvement for many years. The need for flood damage reduction, water supply, recreation, and fish and wildlife enhancement has provided a difficult task of balancing various and sometimes-conflicting needs for the region. In the early years of the C&SF Project, flood control was the overriding goal, and eventually the need for additional water supplies for south Florida required additional modification to the project. The Everglades National Park Protection and Expansion Act of 1989 directed the Corps:

> *"to construct modifications to the Central and Southern Florida Project to improve water deliveries into the park and shall, to the extent practicable, take steps to restore the natural hydrological conditions within the park."*

Since that time, a number of Federal actions have been authorized and implemented that have attempted to improve the flow of water to the ENP without compromising the other needs of the region (i.e., flood control, water supply). The cumulative effects of these actions have been mostly positive. However, some adverse effects have occurred; specifically, active agricultural lands were acquired and taken out of agriculture in the Frog Pond and parts of the NDA and SDA for the C-111 Project. The CERP (USACE 1999a) has already addressed cumulative effects of lost agricultural land use with the expansion of publicly owned lands in the region.

Cumulative impacts in terms of hydrology, water quality, and natural resources have occurred with the many Federal projects implemented over the years. However, this proposed action, coupled with other recent and future projects, should eventually restore the hydrology of the ENP to a more historic natural condition, while maintaining the pre-project level of flood protection.

4.19 IRRETRIEVABLE OR IRREVERSIBLE COMMITMENT OF RESOURCES

Irretrievable and irreversible commitment of resources would occur with the backfill of parts of the L-31W Canal. Resources committed would also include State and Federal funds to purchase lands, labor, energy, and project materials to build, operate, and maintain the project.

4.20 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Localized short-term disturbances to fish and wildlife are expected from construction activities but are not expected to be permanent upon completion of construction.

4.21 COMPATIBILITY WITH FEDERAL, STATE, AND LOCAL OBJECTIVES

The Corps has partnered with the SFWMD on this project. The proposed action is consistent with the overall goals and objectives of the C-111 South Dade Project. It is expected that the proposed action will be consistent with Federal, State and local plans and objectives.

4.22 ENVIRONMENTAL COMMITMENTS

The Corps, the non-federal sponsor (SFWMD), and contractors commit to avoiding, minimizing, or mitigating for adverse effects during construction activities by taking the following actions:

1. Employ best management practices with regard to erosion and turbidity control. Prior to construction, the construction team should examine all areas of proposed erosion/turbidity control in the field, and make adjustments to the plan specified in the plan control device as warranted by actual field conditions at the time of construction.

2. The contract specifications will prohibit the contractor from dumping oil, fuel, or hazardous wastes in the work area and will require that the contractor adopt safe and sanitary measures for the disposal of solid wastes. The contractor will be required to prepare a spill prevention plan.

3. Demolition debris would be transported to a landfill or otherwise disposed of in accordance with Federal, State, and local requirements. Concrete or paving materials would be disposed of in accordance with Federal, State, and local requirements.

4. The Contractor must include a wildlife observer on staff to: inform contractor personnel of the potential presence of threatened and endangered species in the project area, the need for precautionary measures and the ESA prohibition on taking listed species.

5. Incorporate any commitments required by the appropriate regulatory agencies identified during the NEPA and ESA process.

6. The contractor will prepare an environmental protection plan for listed species onsite.

7. Construction activities will avoid impacting existing tree islands.

4.23 COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

4.23.1 National Environmental Policy Act of 1969

Environmental information on the project has been compiled and this EA has been prepared in compliance with NEPA. Full compliance with the Act will be achieved with the coordination and circulation of this EA.

4.23.2 Endangered Species Act of 1973 Section 7

The Corps has consulted with the USFWS with "no effect" and "May affect, not likely to adversely affect" determinations for listed species. Provided that standard conditions for census of CSSS and protection of indigo snakes are followed, the project will be in full compliance with this law upon receipt of FWS concurrence. The Corps has also coordinated a Determination of "no effect" with the National Marine Fisheries Service for marine species.

4.23.3 Fish and Wildlife Coordination Act of 1958

The C-111 South Dade Project has been extensively coordinated with the USFWS. Fish and Wildlife Coordination Act (FWCA) reports were submitted by the USFWS for the 1994 GRR, 2002 IOP EIS, 2007 IOP FEIS, 2012 NDA EA, and the 2016 EA. This project is in compliance with the Act.

4.23.4 National Historic Preservation Act

The Proposed Action is in compliance with Section 106 of the National Historic Preservation Act, as amended (Public Law 89-665). As part of the requirements and consultation process contained within the National Historic Preservation Act implementing regulations of 36 CFR 800, this project is also in compliance through ongoing consultation with the Archaeological and Historic Preservation Act, as amended (Public Law 93-29), Archeological Resources Protection Act (Public Law 96-95), American Indian Religious Freedom Act (Public Law 95-341), Native American Graves Protection and Repatriation Act (NAGPRA, Public Law), Executive Order 11593, 13007, and 13175, the Presidential Memo of 1994 on Government to Government Relations, and appropriate Florida Statutes. Consultation with the Florida State Historic Preservation Office, appropriate Federally recognized Tribes, and other interested parties has been initiated and is ongoing. The Proposed Action will be in compliance with the goals of this Act upon completion of coordination of the undertaking.

4.23.5 Clean Water Act of 1972

A 404(b)(1) Evaluation has been prepared (Appendix B) and will be coordinated along with this EA. Full compliance with this Act will be achieved upon the issuance of a Water Quality Certification (WQC) and National Pollutant Discharge Elimination System permits by the State of Florida.

4.23.6 Clean Air Act of 1972

Full compliance of this Act will be achieved through the coordination and review of this EA with the Environmental Protection Agency and the issuance of any required permits. No air permit will be required for the construction of these new detention areas. Though not anticipated, if the contractor has to perform any onsite burning activity associated with the clearing and grubbing activity, any required permits will be acquired by the contractor.

4.23.7 Coastal Zone Management Act of 1972

A Federal consistency determination in accordance with 15 CFR 930 Subpart C is included in this EA as Appendix C. The State's consistency review for this project is being performed during the coordination of this EA. Full compliance will occur with the issuance of the Water Quality Certificate (WQC) by the State of Florida.

4.23.8 Farmland Protection Policy Act of 1981

The Corps consulted with the Natural Resource Conservation Service (NRCS) in 2012 to determine whether prime or unique farmland would be impacted by implementation of this project. This project is in compliance with the Act.

4.23.9 Wild and Scenic River Act of 1968

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

4.23.10 Marine Mammal Protection Act of 1972

The West Indian manatee is not believed to occur adjacent to the project area, due to the presence of blocking structures at both ends of the canal. Incorporation of the safeguards used to protect threatened and endangered species during construction would protect any animals in the area. Coordination with USFWS will continue as construction and operational guidelines are incorporated to avoid impacts to this species; however, the L-31W canal is blocked from access by manatees in the project area. The project is in full compliance with this Act upon review of this EA by the USFWS.

4.23.11 Estuary Protection Act of 1968

No designated estuary would be affected by project construction activities however; operations of the project may benefit Florida Bay. The project is in full compliance with this Act upon review of this EA by the NMFS.

4.23.12 Federal Water Project Recreation Act

The principles of the Federal Water Project Recreation Act, (PL 89-72) as amended, have been fulfilled by complying with the recreation cost sharing criteria as outlined in Section 2 (a), paragraph (2).

4.23.13 Submerged Lands Act of 1953

The project would not occur on submerged lands of the State of Florida. This Act does not apply.

4.23.14 Coastal Barrier Resources Act and Coastal Barrier Improvement Act of 1990

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

4.23.15 Rivers and Harbors Act of 1899

The proposed work would not obstruct navigable waters of the United States. The project is in full compliance.

4.23.16 Anadromous Fish Conservation Act

Anadromous fish species would not be affected by this project. This Act is not applicable.

4.23.17 Gold and Bald Eagle Protection Act

During Section 7 consultation with the USFWS for the IOP, the USFWS concurred with the Corps' determination that construction and operation of the project was not likely to adversely affect the Bald Eagle. Standard construction specs will be followed to protect this species. This fulfils the Corps' commitments under the Bald Eagle protection Act. The project is in compliance with the Act.

4.23.18 Migratory Bird Treaty Act and Migratory Bird Conservation Act

No migratory birds would be adversely affected by project activities. The project is in compliance with these Acts upon review of this EA by the USFWS.

4.23.19 Magnuson-Stevens Fishery Conservation and Management Act

This project is located inland and not expected to adversely affect Essential Fish Habitat. Completion of construction on the C-111 South Dade Project does not include water management changes, but it will facilitate improvements in management of seepage waters out of ENP that now reach the lower C-111 Canal through groundwater flow. A greater proportion of this water will be retained in ENP, reaching Florida Bay through Taylor Slough. Essential fish habitat in Florida Bay includes seagrasses, estuarine mangroves, intertidal flats, the estuarine water column, live/hard bottoms, and coral reefs. Project construction activities should have no effect on the nearshore communities or essential fish habitat downstream of the project area. However, this project is expected to have a beneficial indirect effect by increasing overland flow into Florida Bay through Taylor Slough. The increased flow is anticipated to stabilize the water quality and salinities required to improve and sustain nearshore biological communities. The project is in full compliance of this Act upon review of this EA by the NMFS.

4.23.20 Marine Protection, Research and Sanctuaries Act (MPRSA)

The term "dumping" as defined in the Act (3[33 USC. 1402] (f)) does not apply to this project. Therefore, the MPRSA does not apply.

4.23.21 Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response Compensation and Liability Act (CERLA), Toxic Substances Control Act of 1976.

A preliminary Phase I HTRW assessment was conducted in August 1998 to address the potential for the occurrence of HTRW on lands within the full scope of the C&SF project in the study area. No specific sites were identified within the footprint of the structures. Lands related to the C-111 project were also surveyed for HTRW by SFWMD prior to that agency's transfer and certification of lands to the Federal Government. The project is in compliance with these Acts. An HTRW assessment (2016) of the fill material conducted by the SFMWD concluded that this fill was acceptable for placement in the L31W canal. This conclusion was concurred on by the FDEP SE Waste Clean Up Section.

4.23.22 E.O. 11988, Flood Plain Management.

Guidance on compliance with this E.O. requires an eight step process: Review of existing Management activities and development constraints revealed that management of the floodplain is shared among the Federal Emergency Management Agency, the County of Miami-Dade (secondary canals), the USACE and the South Florida Water Management District. The following questions were considered:

1. Is the proposed activity located in the base flood plain? Yes, The C-111 Canal, a mixed flood mitigation and habitat improvement project, is located in the base flood plain. Actions (construction) evaluated in this EA are improvements to the function of a pre-existing project.
2. Are there practicable alternatives that are outside the flood plain? No, There are no practicable alternatives to the location, as the project was built beginning in 1968, and protects both agricultural interests and ENP. This is the borrow canal for the "East Coast Protective Levee" in southern Miami-Dade County. The entire project area and surrounding ENP is a flood plain.
3. Would the proposed action (modifications to C-111) induce development? No; lands to the west are part of a National Park; while lands to the east are developed for residences, agriculture and other uses. The L-31 Levee is a dividing line between conservation lands and development.
4. Impacts or effects of the proposed construction include: improved wet-season flood mitigation for existing land uses: agriculture, residences and businesses; improved groundwater retention in ENP due to plugging that will reduce seepage; avoiding over-drainage of the eastern boundary lands inside ENP, including CSSS critical habitat.
5. Measures available to minimize adverse effects on natural or beneficial floodplain values: Plugging the canal as proposed would mitigate adverse effects of seepage. It will benefit ENP lands by retaining water while reducing flooding on lands adjacent to C-111 to the east.
6. Modification or re-evaluation of alternatives based on application of the above critieria or questions: Plugging the L-31 Canal is a beneficial modification of the original project.
7. Adverse effects, described elsewhere in this EA, would include temporary wildlife disturbance; irreversible loss of lands under the footprint of levee overbuild to be used for plugging.
8. Conclusion: The areas to be modified under WRDA '96 authorization within the C-111 project are part of the base floodplain. The purpose of the E.O. is to discourage federally induced development in floodplains. The C-111 Project is part of the Central and Southern Florida Project for Flood Control and other Purposes. Commitment of lands to the C-111 Project occurred many years ago as summarized in Sections 1.3 and 1.4. This project is in compliance with the intent of this E.O. as its major purpose is to build and maintain a hydraulic ridge that can reduce groundwater seepage out of the eastern ENP lands, improving their value as natural habitats. The proposed construction is being coordinated with the public and agencies during a 60 day period beginning on June 20, 2016.

4.23.23 E.O. 12898, Environmental Justice

This E.O. directs Federal agencies to provide for full participation of minorities and low-income populations in the Federal decision-making process and further directs agencies to fully disclose any adverse effects of plans and proposals on minority and low-income populations. This was fully coordinated during the IOP NEPA process. Subsequent construction of the NDA

was re-coordinated during the NDA NEPA process in 2012 and in 2016. Since the design modifications addressed in this EA will be operated under the ERTP modifications to IOP the results of that coordination are still valid. The operations of the structures would benefit all population groups of southern Miami-Dade County by providing flood damage reduction, drinking water supply protection, and restoration of wetlands and other natural resources inside and outside of the ENP. There are no residents in the project lands. The project would not cause disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. The project is in compliance with this E.O.

4.23.24 E.O. 13045, Protection of Children

Executive Order 13045, requires each Federal agency to "identify and assess environmental risks and safety risks [that] may disproportionately affect children" and ensure that its "policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks." This project has no environmental or safety risks that may disproportionately affect children. The project is in compliance.

4.23.25 E.O. 13089, Coral Reef Protection

No coral reefs will be impacted by this project, which is located entirely in the freshwater segment of Canal-111. This E.O. does not apply.

4.23.26 E.O. 13112, Invasive Species

The project will help reduce the abundance and variety of invasive exotic fish species in the project area. Under the Comprehensive Everglades Management Program and cooperative agreements with ENP, SFWMD already conducts an extensive exotic invasive plant species control program. Best management practices will be implemented during the construction phase to preclude the introduction of additional invasive species. The project is in compliance with this E.O.

4.23.27 E.O. 13186 Responsibilities of Federal Agencies to Protect Migratory Birds

The project has been coordinated with the USFWS concerning migratory birds. The project is expected to benefit migratory birds by improved habitat and increased availability of forage species (amphibians, fish, aquatic invertebrates) for wading birds. The project is in compliance with this E.O.

5.0 LIST OF PREPARERS

5.1 PREPARERS & REVIEWERS

The following individuals listed were responsible for contributing to the preparation, review and technical editing of the EA and proposed Finding of No Significant Impact (FONSI):

Name	Role
Ms. Barbara Cintron	Biologist, NEPA Coordination
Mr. Marc Tiemann	Cultural Resources
Mr. Jim Riley	Water Quality and HTRW
Mr. Rafael Velez	Engineering Design

Mr. Dan Crawford	Hydrology/Engineering
Mr. Andrew Loschiavo	Document Review
Mr. Michael Drog	Project Management

6.0 PUBLIC INVOLVEMENT

The C-111 South Dade project features have been extensively coordinated with the public. A GRR/EIS was completed in 1994. Project features described in the 1994 GRR/EIS were modified as a result of the IOP. The IOP Supplemental Final EIS was completed in 2002 and another IOP Supplemental Final EIS was completed in 2007. There were also two more EAs to address design modifications to the 1994 GRR in 2012 and 2016. Finally, this EA and proposed FONSI are being circulated for a minimum 60-day review to concerned agencies, organizations, and the interested public, beginning on July 1, 2016.

Upon completion of public review, a table of comments and responses will be added to this section.

6.1 LIST OF RECIPIENTS

The following agencies, groups, and individuals were sent copies of this EA and proposed FONSI:

Native American Tribes
Miccosukee Tribe of Indians of Florida
Seminole Tribe of Florida

Federal Agencies
Federal Emergency Management Agency
US Environmental Protection Agency
US Department of Agriculture, Forest Service
Natural Resources Conservation Service
US Department of Commerce
National Oceanic and Atmospheric Administration
Florida Keys National Marine Sanctuary
National Marine Fisheries Service
US Department of Housing and Urban Development
US Department of the Interior
Bureau of Indian Affairs
US Fish and Wildlife Service
US Geological Survey
National Park Service
Office of Environmental Policy and Compliance
US Coast Guard
US Department of Transportation
Federal Highway Administration
US Public Health Service

State Agencies
Florida Department of Agriculture and Consumer Services
Florida Department of Community Affairs
Florida Department of Environmental Protection
Florida State Clearinghouse
Florida Fish and Wildlife Conservation Commission
Florida Department of Transportation
Florida Division of Historical Resources - SHPO
South Florida Water Management District

Regional Governments
South Florida Regional Planning Council

County Governments
Miami-Dade County

Municipalities
Miami, Florida
Florida City
Homestead, Florida

Groups

Audubon Society of the Everglades
Biodiversity Legal Foundation
Miami-Dade County Farm Bureau
Dairy Farmers, Inc.
Defenders of Wildlife
Environmental Coalition of Broward County
Environmental Defense Fund
Everglades Coordinating Council
Everglades Foundation
Florida Audubon Society
Florida Biodiversity Project
Florida Defenders of the Environment
Florida League of Anglers, Inc.
Florida Power and Light Company
Florida Sportsman Conservation Association
Florida Wetlands
Florida Wildlife Federation
Friends of Florida
Friends of the Everglades
Izaak Walton League of America, Inc.
Lake Worth Drainage District
League of Women Voters
National Audubon Society
National Parks and Conservation Association
National Park Trust
National Resources Defense Council
National Sierra Club
National Parks Conservation Association
National Wildlife Federation
Save the Manatee Club
Sierra Club, Florida Chapter
South Florida Agricultural Council
South Florida Anglers for Everglades Restoration, Inc.
The Environmental Coalition
The Nature Conservancy
The Wilderness Society
Tropical Audubon Society
Trust for Public Lands
World Wildlife Fund

Individuals

A complete list of individuals who received the EA and proposed FONSI is on file in the Jacksonville District of the Corps.

7.0 REFERENCES

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USACE. 2012b. Environmental Assessment for Expansion of Canal 111 (C-111) Detention Area and Associated Features South Miami-Dade County, Florida, Jacksonville, Florida, May 2012.

USACE. 2012c. Central and South Florida Project:Water Control Plan for Water Conservation Areas, Everglades National Park, and ENP-South Miami-Dade Conveyance System. Jacksonville, Florida, October 2012.

USACE. 2012d. 2012d Everglades Restoration Transition Plan Final Environmental Impact Statement, U.S. Army Corps of Engineers, Jacksonville District, October 19, 2012.

USACE. 2012e. Environmental Assessment, Central and South Florida Project: Water Control Plan for Water Conservation Areas, Everglades National Park, and ENP-South Miami-Dade Conveyance System. U.S. Army Corps of Engineers, Jacksonville, Florida, October 2012.

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