

Chapter 5A: Restoration Strategies – Design and Construction Status of Water Quality Improvement Projects

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SUMMARY

To address water quality concerns associated with existing flows to the Everglades Protection Area (EPA), the South Florida Water Management District (SFWMD or District), Florida Department of Environmental Protection (FDEP), and United States Environmental Protection Agency (USEPA) engaged in technical discussions starting in 2010. The primary objectives were to establish a water quality based effluent limit (WQBEL) that would achieve compliance with the State of Florida’s numeric total phosphorus (TP) criterion in the EPA and to identify a suite of additional water quality improvement projects to work in conjunction with the existing Everglades Stormwater Treatment Areas (STAs) to meet the WQBEL (SFWMD 2012b). Based on this collaborative effort, a suite of projects (**Figure 5A-1**) was identified that would achieve the WQBEL, as documented in the *Restoration Strategies Regional Water Quality Plan* (SFWMD 2012a).

On September 10, 2012, FDEP issued SFWMD an Everglades Forever Act (EFA) watershed permit (FDEP 2012b, 2017b) and a National Pollutant Discharge Elimination System (NPDES) watershed permit (FDEP 2012a, 2017a) along with associated consent orders for operations of the Everglades STAs and to outline the additional facilities and structures required to achieve the WQBEL. The consent orders contain specific activities for each project identified in the *Restoration Strategies Regional Water Quality Plan* and include deadlines for each activity. In addition, the consent orders recognize that Everglades STA discharges are not anticipated to meet the WQBEL until all the consent order activities are complete and sufficient discharge data exists to assess WQBEL compliance. In August 2017, FDEP issued SFWMD renewed EFA and NPDES Watershed permits with expiration dates of September 9, 2022.

Under the District’s Restoration Strategies Program, the water quality improvement projects have been divided into three flow paths—Eastern, Central, and Western—that are delineated by the source basins that are tributary to the existing Everglades STAs. The identified projects primarily consist of flow equalization basins (FEBs), STA expansions, and associated infrastructure and conveyance improvements. The primary purpose of FEBs is to attenuate peak stormwater flows, temporarily store stormwater runoff, and improve inflow delivery rates to downstream STAs, thereby providing enhanced operation and phosphorus treatment performance. FEBs may also be able to assist in maintaining minimum water levels and reducing the frequency of dryout conditions within STAs. The primary purpose of STAs is to utilize biological processes to reduce phosphorus concentrations to achieve the WQBEL.

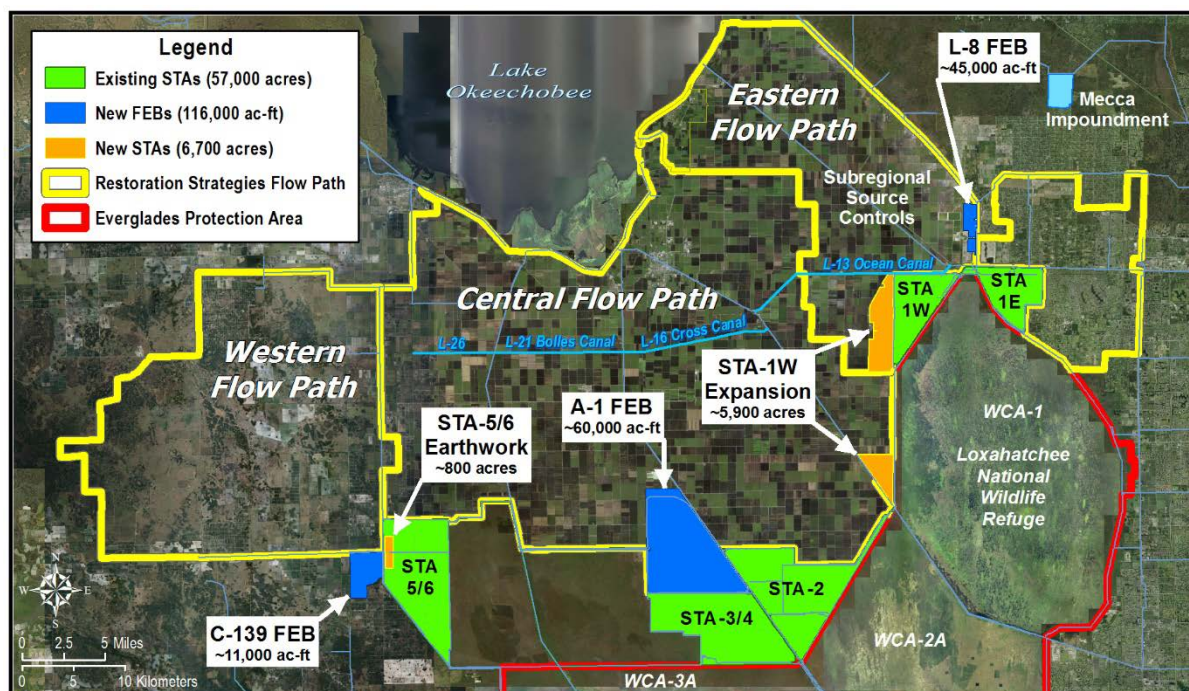


Figure 5A-1. Key projects of the *Restoration Strategies Regional Water Quality Plan*. (Note: ac-ft – acre-feet; STA-1E – STA-1 East; STA-1W – STA-1 West; and WCA – Water Conservation Area.)

The design and construction of Restoration Strategies projects is ongoing with completion of all projects expected by December 2025. In Water Year 2018 (WY2018; May 1, 2017–April 30, 2018), four consent order milestones were completed on four projects: (1) L-8 FEB, (2) STA-1 West (STA-1W) Expansion #1, (3) STA-1W Expansion #2, and (4) STA-1 East (STA-1E) Repairs and Modifications. Construction of the L-8 FEB was completed in July 2017. A construction status report for STA-1W Expansion #1 was completed in February 2018. The acquisition of land for STA-1W Expansion #2 was completed in January 2018. STA-1E Repairs and Modifications were completed in June 2017. A detailed overview of current Restoration Strategies projects, including status and activities completed during WY2018, is summarized below.

RESTORATION STRATEGIES PROJECTS

In accordance with the EFA and NPDES permits and associated consent orders, the following section describes the WY2018 status of Restoration Strategies projects within the Eastern, Central, and Western flow paths. Specific activities, associated deadlines and completion dates during the WY2018 reporting period are summarized in **Table 5A-1**. **Tables 5A-2, 5A-3, and 5A-4** provide deadlines and completion dates for all consent order projects and activities for the Eastern, Central, and Western Flow Paths, respectively. Financial reporting for the Restoration Strategies Program and projects during Fiscal Year 2017-2018 (October 1, 2017–September 30, 2018) is provided in Appendix 1-3 of this volume.

Table 5A-1. Restoration Strategies project activities completed during WY2018.

Project and Activities	Consent Order Deadline	Date Completed
Eastern Flow Path		
L-8 FEB - Complete construction	12/31/2016	7/14/2017
STA-1W Expansion #1 - Construction status report	3/1/2018	2/23/2018
STA-1W Expansion #2 - Complete land acquisition	3/31/2018	1/31/2018
STA-1E Repairs and Modifications - Culvert repairs complete	12/31/2022	6/07/2017

Table 5A-2. Restoration Strategies Eastern Flow Path project activities, deadlines, and completion dates.

Project	Activity	Consent Order Deadline	Date Completed
STA-1W Expansion #1	Complete land acquisition	9/30/2013	4/23/2014
	Initiate design	9/30/2013	9/17/2013
	Submit state and federal permit applications	7/30/2014	7/22/2014
	Complete design	7/30/2015	6/22/2015
	Initiate construction	1/31/2016	11/12/2015
	Construction status report	3/1/2017	2/21/2017
	Construction status report	3/1/2018	2/23/2018
	Complete construction	12/31/2018	
	Initial flooding and optimization period complete	12/31/2020	
S-375 Expansion	Initiate design	9/30/2013	3/4/2013
	Complete design	7/30/2015	7/22/2015
	Initiate construction	1/31/2016	11/12/2015
	Complete construction	12/31/2018	4/3/2017
L-8 Divide Structure	Initiate design	10/1/2012	9/10/2012
	Complete design	9/30/2014	3/5/2014
	Initiate construction	10/1/2016	9/11/2014
	Complete construction	9/30/2018	7/7/2016
S-5AS Modifications	Initiate design	10/1/2012	9/10/2012
	Complete design	9/30/2014	4/17/2014
	Initiate construction	10/1/2014	9/11/2014
	Complete construction	9/30/2016	5/28/2016
STA-1W Expansion #2	Complete land acquisition	3/31/2018	1/31/2018
	Initiate design	10/1/2018	
	Submit state and federal permit applications	8/1/2019	
	Complete design	7/31/2020	
	Initiate construction	11/30/2020	
	Construction status report	3/1/2021	
	Construction status report	3/1/2022	
	Complete construction	12/31/2022	
	Initial flooding and optimization period complete	12/31/2024	

Table 5A-2. Continued.

Project	Activity	Deadline	Date Completed
L-8 FEB	Submit state and federal permit applications	1/31/2014	5/13/2013
	Construction status report	3/1/2014	2/25/2014
	Construction status report	3/1/2015	2/26/2015
	Complete construction (multi-purpose operation begins)	12/31/2016	7/14/2017
	Long-term operations commence	12/31/2022	
G-341 Conveyance Improvements	Initiate design	10/1/2020	12/15/2014
	Submit state and federal permit applications	8/1/2021	4/17/2015
	Complete land acquisition (if required)	9/30/2021	
	Complete design	7/31/2022	
	Initiate construction	11/30/2022	8/13/2015
	Construction status report	3/1/2023	
	Construction status report	3/1/2024	
	Complete construction	12/31/2024	
STA-1E Repairs and Modifications	Periphyton stormwater treatment area decommissioning complete	Prior to long-term operations commencing	8/21/2014
	Culvert repairs complete	Prior to long-term operations commencing	6/7/2017
	Cell 5 and 7 improvements complete	Prior to long-term operations commencing	

Table 5A-3. Restoration Strategies Central Flow Path project activities, deadlines, and completion dates.

Project	Activity	Deadline	Date Completed
STA-2 Expansion: Compartment B	Initial flooding and optimization period complete	5/31/2014	5/30/2014
A-1 FEB	Initiate design	4/1/2012	12/16/2010
	Submit state and federal permit applications	12/1/2012	9/17/2012
	Design status report	3/1/2013	2/1/2013
	Complete design	8/1/2013	7/24/2013
	Initiate construction	6/30/2014	10/10/2013
	Construction status report	3/1/2015	2/26/2015
	Construction status report	3/1/2016	12/4/2015
	Complete construction	7/30/2016	11/19/2015
	Operational monitoring and testing period complete	7/29/2018	

Table 5A-4. Restoration Strategies Western Flow Path project activities, deadlines, and completion dates.

Project	Activity	Deadline	Date Completed
STA-5/6 Expansion: Compartment C	Initial flooding and optimization period complete	5/31/2014	5/30/2014
STA-5/6 Internal Improvements	Initiate design	10/31/2019	4/27/2018
	Submit state and federal permits	8/30/2020	
	Complete design	10/31/2021	
	Initiate construction	1/31/2022	
	Construction status report	3/1/2023	
	Construction status report	3/1/2024	
	Complete construction	12/31/2024	
	Initial flooding and optimization period complete	12/31/2025	
C-139 FEB	Initiate design	10/31/2018	
	Submit state and federal permits	8/30/2019	
	Complete design	10/31/2020	
	Initiate construction	1/31/2021	
	Construction status report	3/1/2021	
	Construction status report	3/1/2022	
	Construction status report	3/1/2023	
	Complete construction	12/31/2023	
	Operational monitoring and testing period complete	12/31/2024	

EASTERN FLOW PATH

Restoration Strategies projects in the Eastern Flow Path include the following: STA-1W Expansion #1, STA-1W Expansion #2, S-375 Expansion (G-716), L-8 FEB, L-8 Divide Structure (G-541), S-5AS Modifications, G-341 Related Conveyance Improvements, and STA-1E Repairs and Modifications (**Figures 5A-2** and **5A-4**). The S-375 Expansion (G-716), L-8 Divide Structure (G-541), and S-5AS Modifications are complete and not included in this report. For more information on these projects, see Volume 1, Chapter 5A of the *2018 South Florida Environmental Report* (McBryan 2018) or www.sfwmd.gov/restorationstrategies.



Figure 5A-2. Eastern Flow Path project components: L-8 FEB, L-8 Divide Structure (G-541), S-5AS Modifications, and STA-1W Expansion #1. Names preceded with an S denote structures constructed by the United States Army Corps of Engineers. Names preceded with a G denote structures constructed by the District. (Note: WCA-1 – Water Conservation Area 1.)

STA-1W Expansion #1

The STA-1W Expansion project, a 6,500-acre (2,630-hectare) expansion of STA-1W—consisting of 5,900 acres (2,390 hectares) of effective treatment area—works in conjunction with the existing STA-1W and the other Eastern Flow Path projects to assist in achieving the WQBEL. The STA-1W Expansion project is being designed and constructed in two phases. Expansion #1 (**Figure 5A-3**), currently under construction, consists of approximately 4,300 acres (1,740 hectares) of effective treatment area on 4,600 acres (1,860 hectares) of land located adjacent to and directly west of STA-1W. Both expansions were conceptualized during the design of Expansion #1, but Expansion #1 was permitted, designed, and is being constructed separately. The design of STA-1W Expansion #1 integrated the existing STA-1W and the associated infrastructure, configuration, and operational protocols needed to utilize both facilities in series to optimize performance. The design of Expansion #1 also incorporated the best available information to ensure appropriate vegetation partitioning and water depths.

Project Status: Construction is ongoing.

WY2018 Update: A construction status report was completed and submitted to FDEP in February 2018 and construction is expected to be completed by the consent order deadline of December 31, 2018.



Figure 5A-3. STA-1W Outflow Pump Station G-310 with structures and canals being constructed as part of STA-1W Expansion #1, looking northwest (photo by SFWMD, May 2018).

STA-1W Expansion #2

The STA-1W Expansion project is being designed and constructed in two phases (**Figure 5A-4**). Expansion #2 is anticipated to provide at least 1,600 acres (650 hectares) of effective treatment area within approximately 2,130 acres (860 hectares) of land located north of pump station S-6. Both expansions were conceptualized during the design of Expansion #1, but Expansion #2 will be permitted, designed, and constructed separately. The design of STA-1W Expansion #2 will integrate the existing STA-1W and the associated infrastructure, configuration, and operational protocols needed to utilize both facilities in series to optimize performance. The design of Expansion #2 will also incorporate the best available information to ensure appropriate vegetation partitioning and water depths.

Project Status: Design of Expansion #2 will start by October 2018.

WY2018 Update: Land acquisition for Expansion #2 was completed in January 2018 and design of Expansion #2 will start by October 2018.

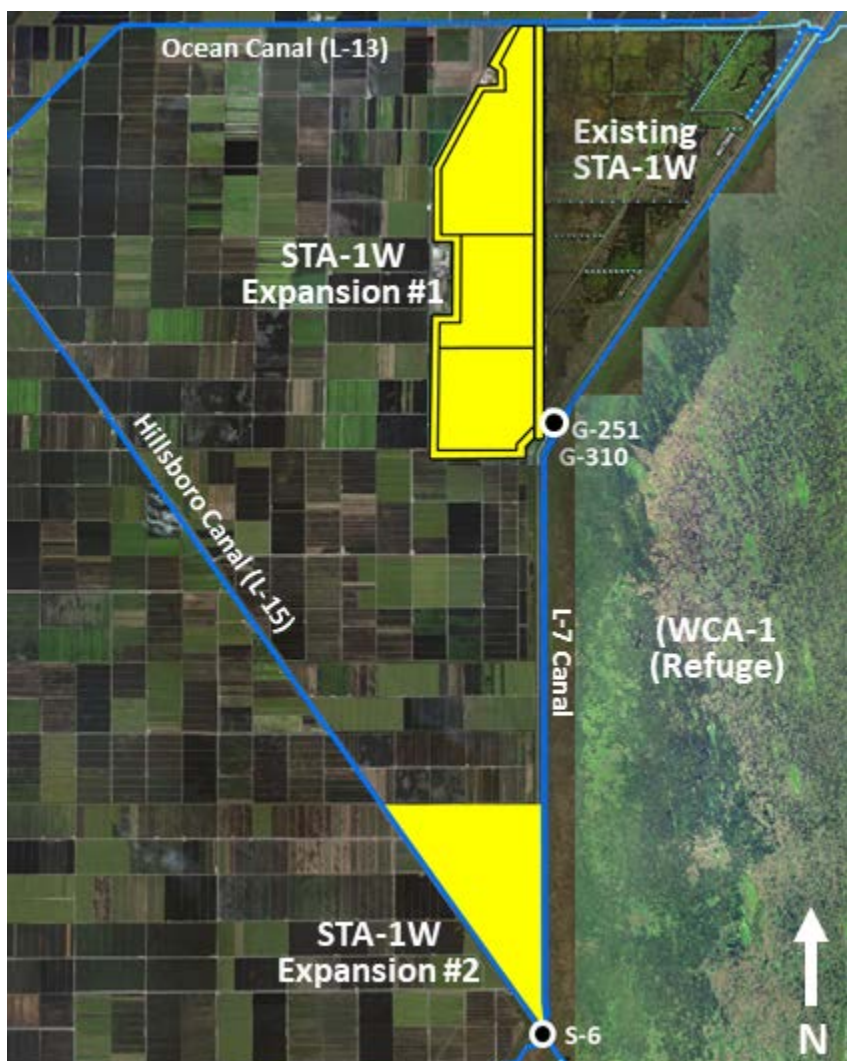


Figure 5A-4. STA-1W Expansion #2 location.

L-8 FEB

The L-8 FEB is in a 950-acre (385 hectares) former rock mine in central Palm Beach County located north of STA-1E and STA-1W and adjacent to and west of the L-8 canal (see **Figures 5A-2** and **5A-3**). The site has a unique geology, can store approximately 45,000 acre-feet of water, and is designed to attenuate peak stormwater flows and improve STA-1E and STA-1W inflow delivery rates. To fully utilize the L-8 FEB, additional project features—inflow structure, outflow pump station, embankment protection measures, and cell connection improvements—were required. Inflow structure G-538 has a capacity of approximately 3,000 cubic feet per second (cfs) and can fill the reservoir to its maximum water level of +16.5 feet (ft) North American Vertical Datum of 1988 (NAVD88) (+18.0 ft National Geodetic Vertical Datum of 1929 [NGVD29]). Outflow pump station G-539 has a design capacity of approximately 450 cfs for delivery of flows from the L-8 FEB to the L-8 canal. The outflow pump station can drawdown the FEB to an elevation of -37.0 ft NAVD88 (-35.5 ft NGVD29), which is approximately 5 ft above the bottom of the FEB. In addition, cell connection improvements create a configuration that maximizes the exchange of water among cells. **Figure 5A-5** is an aerial photo of the L-8 FEB.

Project Status: Operational.

WY2018 Update: Construction was completed July 14, 2017, approximately 6 months after the consent order deadline of December 31, 2016. The construction deadline was not met primarily due to the result of the construction contractor's failure to successfully complete outflow pump station G-539. The consent orders that mandate construction of the L-8 FEB contain stipulated penalties for missed deadlines. In lieu of cash payment for stipulated penalties, FDEP determined that the civil penalty may be offset through implementation of an FDEP-approved in-kind project. As such, SFWMD will be conducting a geophysical seismic, "proof of concept" study to better understand the geology and physical attributes of deep strata such as the Floridan Aquifer and the Boulder Zone. The study is expected to be complete by May 2019.



Figure 5A-5. L-8 FEB, looking north (photo by SFWMD, January 2016).

STA-1E Repairs and Modifications

STA-1E is a 5,000-acre treatment wetland located east of Water Conservation Area 1, also known as the Arthur R. Marshall Loxahatchee National Wildlife Refuge, in western Palm Beach County. STA-1E was authorized as a component of the C-51 West End Flood Control Plan in Section 315 of the Water Resources Development Act of 1996 and was constructed by the United States Army Corps of Engineers (USACE).

STA-1E repairs and modifications include the decommissioning of the periphyton-based stormwater treatment area (PSTA) research infrastructure in Cell 2, repairs to STA-1E culverts, and improvements to Cells 5 and 7.

In 2007, USACE initiated a water quality research project in STA-1E Cell 2 to investigate the efficacy of PSTA technology. As documented by an independent USACE contractor in an October 2011 report, the results of the research were insufficient to independently support full-scale PSTA design due to multiple and pervasive problems with data quality, completeness, and other project measurements. In other words, the STA-1E PSTA research project provided very little usable information for predicting future long-term

performance of large-scale PSTA systems (Wetland Solutions, Inc. and ANAMAR Environmental Consulting, Inc. 2011). In March 2012, USACE completed an environmental assessment and finding of no significant impact regarding the decommissioning of the STA-1E PSTA project. Decommissioning of the project was completed by USACE in August 2014.

There are 44 concrete culvert structures that control the flow of water at STA-1E. In March 2008, several sinkholes were discovered adjacent to Structure S-375 located within STA-1E. Dive inspection of the gated box culverts revealed differential settlement and gaps between many of the box culvert segments. Subsequent monitoring revealed evidence of continuing progressive failure necessitating repairs. Also, in 2008, similar issues were discovered at Structures S-365A and S-365B (STA-1E Cell 2 outflow culverts). As a result, USACE repaired and/or replaced each of the 44 concrete box culvert structures in STA-1E (Figure 5A-6).

Each of the concrete box culverts at STA-1E contains an aluminum slide gate assembly that is fastened to the concrete culverts using stainless steel fasteners. The original project specifications required isolation between the aluminum assembly and the concrete culvert using a coat of bituminous paint. This work was not performed during construction of STA-1E, and as a result, corrosion of the aluminum slide gate assembly frames occurred. Due to the potential risk of the slide gate assemblies disconnecting from the culverts and becoming inoperable, USACE repaired and/or replaced each of the culvert's slide gate assembly. All culvert repairs were completed by USACE on June 7, 2017.

Project Status: PSTA decommissioning and culvert repairs are complete.

WY2018 Update: Culvert repairs were completed by USACE on June 7, 2017.



Figure 5A-6. STA-1E Culvert Repairs.

G-341 Related Conveyance Improvements

The G-341 Related Conveyance Improvements project is a multi-phase and multi-year project intended to improve conveyance within the eastern Everglades Agricultural Area (EAA), specifically in the Bolles East (Figure 5A-7), Ocean, and Hillsboro canals. The original design intent of structure G-341, which is in the Ocean Canal just north of the northwest corner of STA-1W, was to enable the conveyance of up to 600 cfs of stormwater runoff from the western portion of the S-5A basin west via the Ocean Canal to the Hillsboro Canal for treatment in STA-2. Due to various constraints, the full intent of the G-341 has not been able to be implemented. Design, permitting, and construction activities of the G-341 Related Conveyance Improvements are occurring in several phases with all construction activities mandated to be complete by December 2024.

Project Status: Construction of Bolles East (L-16) Canal Segments 1 and 2 (Figure 5A-8) conveyance improvements and a new Duda Road bridge is complete. Segment 3 construction and Segment 4 design are ongoing.

WY2018 Update: Segment 3 (~3.2 miles) construction started in May 2017, was approximately 50% complete as of April 2018 and is expected to be complete by February 2019. Design of Segment 4 is ongoing and Segment 4 construction is expected to start by February 2019.

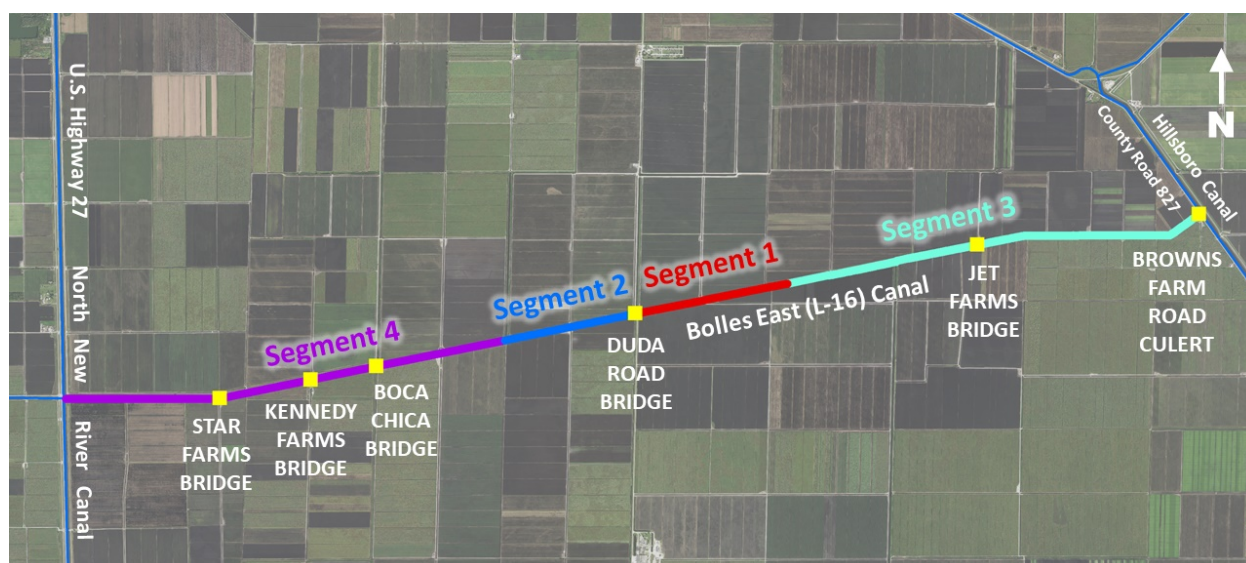


Figure 5A-7. Bolles East (L-16) Canal Conveyance Improvement segments and bridges.



Figure 5A-8. Bolles East (L-16) Canal, Segment 3 (photo by SFWMD, July 2018).

CENTRAL FLOW PATH

Restoration Strategies projects in the Central Flow Path include the A-1 FEB and STA-2 Expansion: Compartment B (**Figure 5A-9**). These projects are complete and not discussed in this report.



Figure 5A-9. A-1 FEB, Everglades STAs, and related canals and structures. Names preceded with an S denote structures constructed by the USACE. Names preceded with a G denote structures constructed by the District. (Note: WCA – Water Conservation Area.)

A-1 FEB

The A-1 FEB is a shallow, aboveground impoundment with a capacity of approximately 60,000 acre-feet at an approximate maximum operating depth of 4 ft located adjacent to and directly north of STA-3/4 (**Figure 5A-10**). The primary purpose of the A-1 FEB is to attenuate peak stormwater flows, temporarily store stormwater runoff from the central EAA, collected by the North New River (NNR) and Miami canals, and improve inflow delivery rates to STA-2 (including Compartment B) and STA-3/4, thereby providing enhanced operation and phosphorus treatment performance to assist in achieving state water quality standards in the EPA. By managing basin runoff in the Central Flow Path in a more advantageous manner, the impacts of storm-driven events would be reduced at STA-2 and STA-3/4. The A-1 FEB project may also be used to assist in maintaining minimum water levels and reducing the frequency of dryout conditions within STA-2 and STA-3/4, which will also sustain phosphorus treatment performance (**Figure 5A-10**).

Inflows from the Miami Canal are conveyed to the A-1 FEB via the new operable water control structure G-720 in conjunction with existing pump station G-372. Inflows from the NNR Canal are conveyed to the A-1 FEB via the new operable water control structure G-721 in conjunction with existing pump station G-370. After inflows are conveyed to the north end of the FEB, water sheet flows from north to south. The former STA-3/4 seepage canal (with improvements) now serves as a collection and conveyance canal and assists in directing FEB outflows to the NNR Canal via new operable water control structure G-722 and the STA-3/4 inflow canal via new operable water control structures G-724A through G-724J.

Project Status: Operational.

WY2018 Update: The operational monitoring and testing period was completed in July 2018. More information will be provided in the *2020 South Florida Environmental Report*.



Figure 5A-10. A-1 FEB, Pump Station G-370, and STA-2, looking north (photo by SFWMD, September 2017).

WESTERN FLOW PATH

Restoration Strategies projects in the Western Flow Path include the C-139 FEB, STA-5/6 Internal Improvements, and STA-5/6 Expansion: Compartment C (**Figure 5A-11**). The initial flooding and optimization period for STA-5/6 Expansion: Compartment C was completed in May 2014 and is not included in this report. Design of the C-139 FEB began in August 2018, approximately 2 months before the consent order deadline of October 31, 2018. More information will be provided in the *2020 South Florida Environmental Report*.

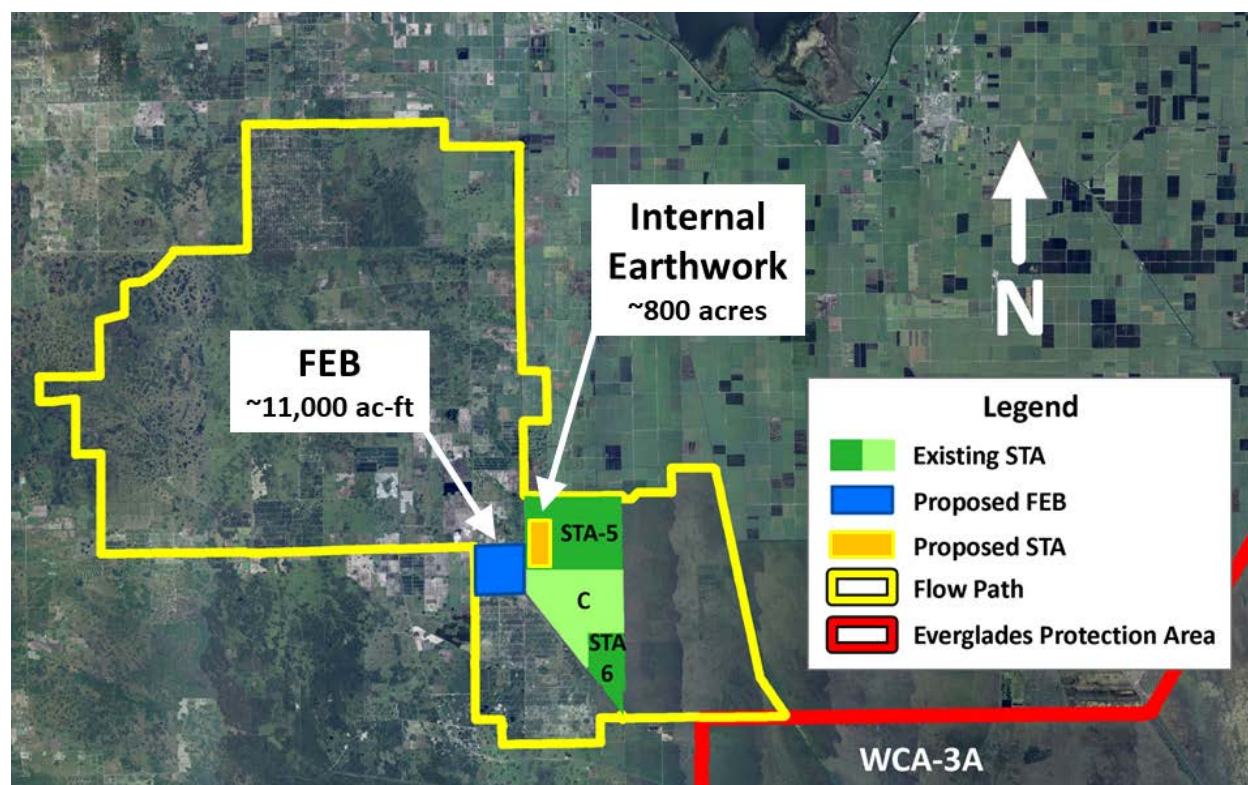


Figure 5A-11. Western Flow-path Project Components: C-139 FEB, STA-5/6 Internal Improvements, and STA-5/6 Expansion: Compartment C.

STA-5/6 Internal Improvements

STA-5/6 is located in Hendry County, bordered to the east by Rotenberger Wildlife Management Area; to the south and west by SFWMD-owned (e.g. C-139 Annex) and privately-owned land; and to the north by privately-owned lands. STA-5/6 consists of eight (8) flow-ways. The STA-5/6 internal improvements project primarily consists of internal earthwork and re-grading activities within the western portions of STA-5/6 Cell 5-2A in Flow-way 2 and Cell 5-3A in Flow-way 3 necessary to lower the higher than desirable areas down to approximately match the ground elevation of the adjacent effective treatment areas to the east. The western portions of these cells are at elevations that prevent routine inundation and therefore inhibits the expansion of emergent wetland vegetation. As a result, these areas have previously been considered “non-effective treatment areas”. This activity will create a more uniform ground elevation within the cells, which is expected to improve hydraulics, enable recruitment of desirable treatment wetland vegetation, increase the effective treatment area, and improve treatment performance.

Project Status: Design is ongoing.

WY2018 Update: Design of STA-5/6 internal improvements started in April 2018.

ADDITIONAL COMPONENTS

Subregional Source Controls

The objective of Restoration Strategies subregional source control projects is to build upon the success of the District's existing Best Management Practice (BMP) Regulatory Program by focusing on projects with the greatest potential to further improve water quality in the S-5A basin thereby reducing phosphorus loads to the STAs (SFWMD 2012a). These projects are intended to be primarily situated downstream of onsite BMP implementation under the SFWMD regulatory program per Works of the District permits issued pursuant to Chapter 40E-63, Florida Administrative Code.

Potential subregional source control projects within the S-5A basin are being considered based on a combination of factors, including water quality of their discharges, proximity and potential impact to STAs, potential positive impact to the Arthur R. Marshall Loxahatchee National Wildlife Refuge (also known as Water Conservation Area 1) and having willing local participants.

An initial subregional source control project, through a three-year cooperative agreement from 2013 to 2015, consisted of implementing a subregional canal cleaning demonstration project within the East Beach Water Control District (EBWCD), which is located in the northwest portion of the S-5A basin. The intent was to build upon encouraging preliminary results of comprehensive canal management research conducted by the University of Florida. However, review of available data indicates that it may be difficult to assess the canal cleaning project's water quality benefits. Factors confounding the evaluation include the effect of varying hydrologic conditions on TP concentration and load, and the need for a more robust baseline data set. Nevertheless, available data suggest a lesser incidence of particulate phosphorus peak concentrations after canal cleaning activities. Continued water quality monitoring and analysis of TP, orthophosphate, and total dissolved phosphorus, together with long-term tracking of canal cleaning activities within EBWCD will be necessary to capture the long-term water quality benefits of canal cleaning methods (CH2M 2016a). Review of phosphorus data for WY2018 in comparison to historical data is ongoing.

A subregional source control project completed in 2017 was the summarization and documentation of water quality data and activities for the S-5A basin. The consolidation of historical information is an essential element for project formulation and consultation with stakeholders (CH2M 2016b, 2017). Accordingly, S-5A basin flow, phosphorus load, and phosphorus concentration data from WY1980 to WY2016 (May 1, 1979–April 30, 2016) were evaluated. Data sets included the S-5A basin boundary structures and G-341 (Ocean Canal divide structure), monitoring stations within the West Palm Beach Canal, and permitted subbasins discharging into the West Palm Beach and Ocean canals. Data sets were evaluated to quantify apparent trends and variation in the data across water years, wet and dry seasons, pre- and post-BMP implementation (WY1980–WY1988 and WY1996–WY2016, respectively) and pre- and post-diversion of EBWCD discharges from Lake Okeechobee to the STAs (WY1996–WY2000 and WY2001–WY2016, respectively). These analyses also evaluated the portion of dissolved and particulate phosphorus fractions in S-5A basin inflows, S-5A basin outflows, and runoff generated within the S-5A basin. The analyses indicate that phosphorus levels in S-5A basin runoff have improved historically and particulate phosphorus is the predominant fraction in Lake Okeechobee inflows to the S-5A basin, while dissolved phosphorus is higher in S-5A basin outflows. The analysis also shed light on phosphorus transport and cycling in the West Palm Beach Canal during different conditions including Lake Okeechobee pass-through events. Findings document lower TP concentrations in the southern portion of the West Palm Beach Canal, as compared to the northern portion of the canal (CH2M 2017).

Project Status: Conceptual project planning and monitoring phase.

WY2018 Update: Based on the results of the analyses performed to date, SFWMD continued development of preliminary subregional source control concepts, to seek participation from S-5A basin stakeholders. Additional concepts are expected to be developed as these discussions continue. More information is available in Appendix 4-1 of this volume.

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