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2. PRE-2006 STRATEGIES, ECP BASINS

This revised Part 2 describes proposed revisions to the Pre-2006 Projects for the Everglades Construction Project (ECP) basins which were included in the October 27, 2003 *Everglades Protection Area Tributary Basins Long-Term Plan for Achieving Water Quality Goals* (Long-Term Plan). The hydrologic basins addressed in this Part 2 are listed in Table 2.1; an overview of the project area is shown in Figure 2.1.

Table 2.1 Summary of ECP Basins and Receiving STAs

Hydrologic Basin	Receiving STA(s)
C-51 West	STA-1E
S-5A	STA-1W, STA-1E
S-6	STA-2
S-7/S-2	STA-3/4
S-8/S-3	STA-3/4, STA-6
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The projects in the October 27, 2003 Long-Term Plan were designed to achieve compliance with the water quality standards for the Everglades Protection Area (EPA) by December 31, 2006, based on specific assumptions and the best available information. The Long-Term Plan was submitted on December 19, 2003, to the Florida Department of Environmental Protection (FDEP) in accordance with the Everglades Forever Act (EFA) requirement (Section 373.4592 (10)(a), F.S.) as part of the District’s application for a permit modification needed to implement the Long-Term Plan. This revised Part 2 of the Long-Term Plan is being submitted to the FDEP as part of an amended application for permit modification. The application is being amended to include authorization for the proposed revisions to the projects in Part 2 of the October 27, 2003 Long-Term Plan.

As part of the *adaptive implementation process* envisioned by the Long-Term Plan, it was anticipated that further refinements to the recommended water quality improvement measures would be made at the earliest achievable dates as more scientific and engineering information was obtained. One of the key assumptions during the development of the Long-Term Plan was that Compartments B and C (see Figure 2.1) would be under consideration for use as part of the Everglades Agricultural Area (EAA) Storage Reservoir Project, a component of the



it is currently proposed to initially expand STA-2 with a new Cell 4 and to initially expand STA-5 with a new third flow-way to assist in maximizing the treatment effectiveness of the STAs in improving water quality entering the EPA. These initial expansions are proposed to be completed as soon as possible, with a target completion date for these expansions of December 31, 2006, however, that date may be optimistic in light of issues such as permitting, real estate, cultural resources, and the major construction activities being proposed.

It is also proposed to construct additional treatment areas on the remaining acreage of Compartments B and C to further assist in maximizing the effectiveness of the STAs in improving water quality entering the EPA. A regional feasibility study is proposed to determine the optimal configuration and operation of the additional treatment areas on the remaining acreage of Compartments B and C. The feasibility study will also evaluate alternatives for the optimal balance of flows and phosphorus loads to the STAs in order to optimize treatment performance, and will include cost estimates, schedules and performance projections.

It is further proposed to construct the structural and vegetation enhancements identified in the Long-Term Plan for STA-2 and STA-6 Section 1 after flow-through operation of the additional treatment cells begins.

The strength of the Long-Term Plan is the adaptive management process built into its implementation. The District and other stakeholders have continued to evaluate the inflows and phosphorus loads anticipated to enter the STAs. The first comprehensive update to this data set is expected to be complete in FY2005, with a priority being placed on the STAs discharging to the Refuge. Preliminary efforts indicate that the flows and loads entering the STAs will be considerably more than anticipated during the development of the October 27, 2003 version of the Long-Term Plan, particularly for STA-1W and STA-2. In addition, work is underway to update the STA performance projections based on updated calibration sets, including the full-scale operations of the STAs. These performance projections are also planned to be completed in FY2005.

As stated above, activities are presently underway to update the estimates of flows and phosphorus loads anticipated to enter the STAs. As part of this update, the regional simulation which formed the basis for the STA performance projections is being revised based on recent



recalibration and verification of the South Florida Water Management Model (SFWMM), improvements to the hydrologic data, addition of five more years of climatic data, and improvements to the SFWMM computer code. As a result of the recalibration and verification effort for the SFWMM, it was determined that the simulation used to develop the Long-Term Plan slightly under-predicted EAA-wide runoff for the period 1979-1995, but underestimated the historic runoff in the West Palm Beach Canal Basin upstream of S-5A pump station by more than 10%. The recalibration improved the ability of the model to match historic flows, and the simulation results will be further reviewed and compared to historic flow entering the STAs and WCAs to ensure that an appropriate data set is used to update the STA performance projections.

Also as part of the update of the STA inflows, the regional simulation is being revised to no longer include the delivery of BMP make-up water to the STAs, consistent with actual historic BMP makeup water deliveries. Should any future BMP makeup water deliveries be necessary, it is the District's operational intent that these deliveries be sent to STA-3/4 only, and not to any of the other STAs. In addition, the DMSTA calibration data sets are being updated to reflect recent performance of the STAs. The updated information will be used as part of the evaluation of alternatives for transfer of water to balance flows and phosphorus loads and to continue to optimize the design and operation of the STAs. The performance projections for the STAs will be updated when this evaluation is complete. It is anticipated that this information will also assist FDEP in establishing technology-based effluent limits.

In fulfillment of the public access and recreation requirements of the Everglades Forever Act (and as further described in 373.1391(1)(a) and (b)), recreational facilities are currently proposed at each of the STAs. The proposed recreational facilities described in this revised Part 2 shall be designed to ensure compatibility with the restoration goals of the Everglades Construction Project and the water quality and hydrological purposes of the STAs.

It is intended that all six of the STAs be operated to maximize the amount of water treated; e.g., no bypass of the STAs should be permitted except under extreme circumstances in which the hydraulic or treatment capacity of the STAs is exceeded, or unless the demand for downstream water supply deliveries necessitates delivery of untreated water. It is further intended that the operation of the STAs not negatively impact flood protection. Ancillary uses of the STAs for



purposes other than water quality improvement will be limited to those that do not negatively impact treatment performance.

2.1. STA-1E

STA-1E is situated immediately east of the Arthur R. Marshall Loxahatchee National Wildlife Refuge (WCA-1) and south of the C-51 Canal. Its primary source of inflow is the C-51 West Basin. Runoff from the C-51 West Basin will be introduced to STA-1E through Pumping Station S-319. An additional source of inflow to STA-1E is runoff from the Rustic Ranches subdivision. Although a part of the C-51 West basin, runoff from that area will be introduced to STA-1E through Pumping Station S-361. Discharges from STA-1E will be directed to WCA-1 through Pumping Station S-362. STA-1E, including those primary pumping stations, was constructed by the Jacksonville District, USACE, and was determined by the USACE to be substantially complete in June 2004. Start-up operations are presently underway and include vegetation management and initial inundation. It is anticipated that flow-through operations could begin within 18 months (December 2005). Extreme rainfall and runoff associated with Hurricanes Frances and Jeanne and the forecast of heavy rains from the remnant of Hurricane Ivan necessitated emergency pumping of runoff into STA-1E during September and out of STA-1E through early October. A schematic diagram of STA-1E reflecting its current design is presented in Figure 2.2. The hydrologic basin boundaries of areas tributary to STA-1E are shown in Figure 2.4.

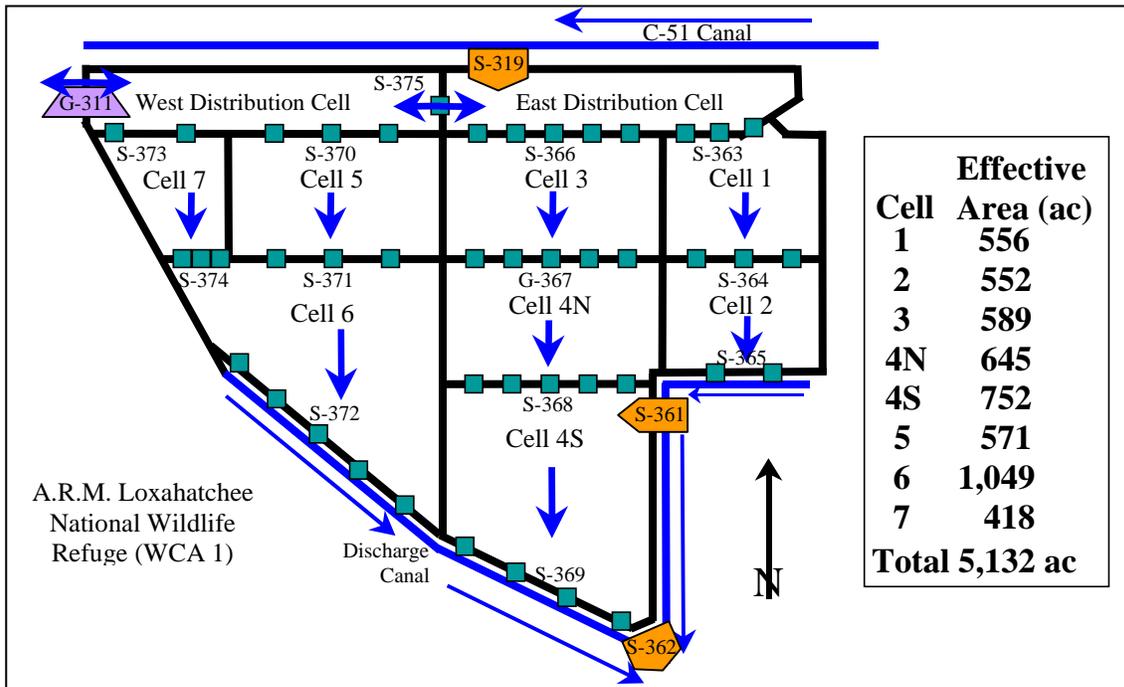


Figure 2.2 Current Design Schematic, STA-1E

The design of the STA-1 Inflow Basin is developed to permit the diversion and redirection of inflows between STA-1E and STA-1W. Structure G-311 will consist of a gated spillway constructed in Levee L-40, which forms the easterly perimeter of WCA-1. Runoff from the S-5A Basin can be directed to STA-1E through G-311; the current design and operation of STA-1W contemplates that redirection of flows whenever the discharge from Pumping Station S-5A exceeds the hydraulic or treatment capacity of STA-1W. Runoff from the C-51 West Basin can be directed to STA-1W through G-311 as well. However, the present design of STA-1E is developed such that no such redirection would be necessary as a result of hydraulic limitations in STA-1E. The construction of G-311 is presently scheduled for completion in March 2005.

STA-1E will provide a total effective treatment area of 5,132 acres, situated generally between the C-51 Canal (on the north) and WCA 1 (in the southwest), and west of Flying Cow Road. This stormwater treatment area is intended to treat inflows from the C-51 Canal (via Structure S-319), and G-311 via the Inflow Basin. Those inflows are comprised of contributions from a number of sources, including:



- Agricultural and urban runoff and discharges from the C-51 West Basin;
- Agricultural runoff and discharges from the L-101/EAA S-5A Basin (when pumpage rates at Pump Station S-5A exceed the hydraulic or treatment capacity of STA-1W);
- Supplemental (irrigation) water from Lake Okeechobee necessary to prevent dryout of the STA;
- Flow from the Rustic Ranches subdivision (a part of the C-51 West Basin) through Pumping Station S-361.

STA-1E contains three parallel flow paths, each with cells in series, preceded by distribution cells located along and parallel to the C-51 Canal. Those distribution cells encompass 1,046 acres in addition to the 5,132 acres in the treatment cells. The original basis for design of STA-1E contemplated that all treatment cells would be emergent macrophyte vegetation. As part of the start-up operations, the District is planning on establishing the downstream cells (4N, 4S, and 6) as SAV.

2.1.1. Revised Recommended Improvements and Enhancements

The design and construction of STA-1E is being accomplished by the Jacksonville District, U.S. Army Corps of Engineers (with the exception of Structure G-311, which is being constructed by the District). According to the U.S. Army Corps of Engineers, STA-1E was substantially complete in June 2004. The STA is expected to be turned over to the District for operation, with the exception of Cells 1 and 2 which will be reserved for a PSTA (Periphyton Stormwater Treatment Area) demonstration project currently being planned by the U.S. Army Corps. Little information on the PSTA demonstration project in Cell 2 (originally referenced on page 5-20 of Part 5 of the October 27, 2003) is presently available.

The recommended enhancements for STA-1E in the October 27, 2003 Long-Term Plan included the following:

- Convert Cells 2, 4N, 4S and 6 from emergent macrophyte to submerged aquatic vegetation.



The following are proposed revisions to the above recommendations:

- The addition of recreational facilities is proposed to provide public access to STA-1E. The first phase of the proposed facilities includes a parking area, improvements to approximately two miles of shell rock road connecting to an existing construction staging area, a composting toilet, and an information kiosk. Pedestrian gates, signage and fencing as needed to define public access areas and to protect sensitive equipment are also proposed for the first phase. The second phase of the proposed recreational facilities includes a viewing tower, landscaping and a picnic shelter.
- SFWMD will coordinate with the U.S. Army Corps regarding current plans for a PSTA demonstration project in Cell 2 in order to revise the vegetation conversion schedule for that cell.

A schematic diagram of STA-1E is presented in Figure 2.3.

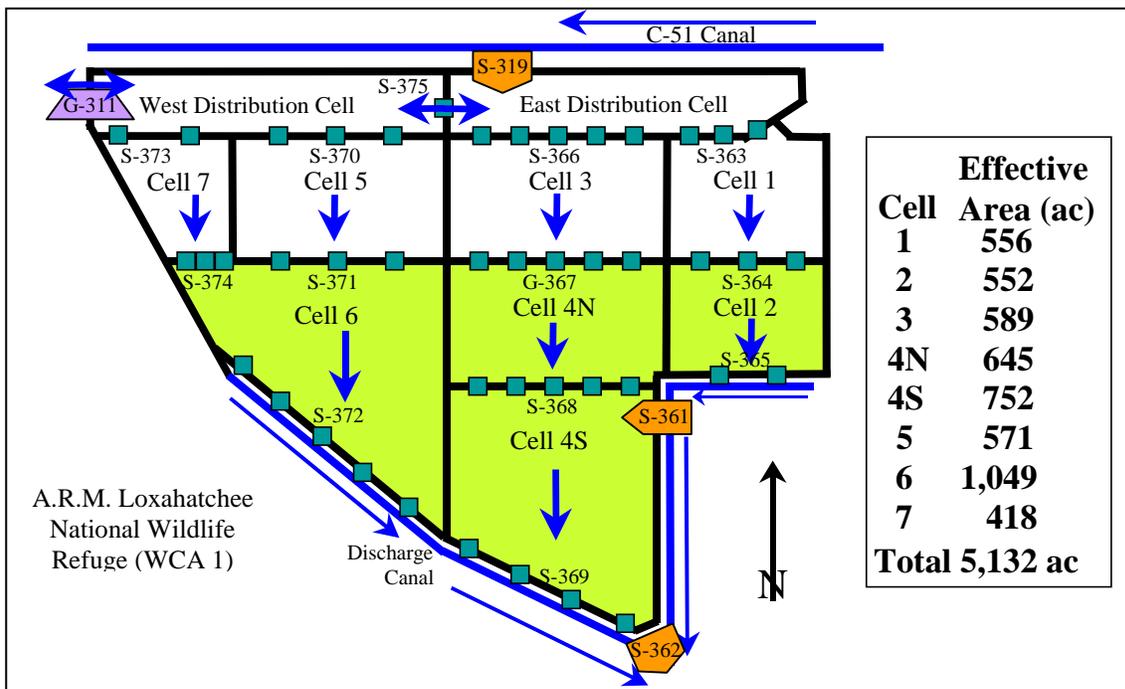


Figure 2.3 Schematic Diagram of Enhanced STA-1E

In Figure 2.3, those areas recommended for conversion to SAV are shown shaded.



Possible future modifications to STA-1E for accommodation of Acme Improvement District Basin B runoff diverted from the Loxahatchee National Wildlife Refuge to STA-1E are discussed in Part 3 of the October 27, 2003 Long-Term Plan.

2.1.2. Revised Opinion of Capital Cost

A revised opinion of the capital cost of implementing the recommended enhancements and modifications to STA-1E including the proposed recreational facilities is presented in Table 2.2. That estimate is reported in FY 2004 dollars.

Table 2.2 Revised Opinion of Capital Cost, STA-1E Enhancement

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
1	Eradication of Existing Vegetation	2,998	AC	\$200	\$599,600	Unit cost from 02/2002 STSOC for SAV/LR
2	Recreational Facilities					
2.1	2 Miles of Road Improvement / Widening (Flying Cow Rd.)	28,160.00	SY	\$20.48	\$576,717	Assume 24' wide by 10,560 l.f. Subgrade & lime rock
2.2	20 Space Parking Lot	880.00	SY	\$20.48	\$18,022	FDOT Subgrade, 6" lime rock Material and Grading / Shaping
2.3	Pedestrian Gates	3.00	Ea.	\$800	\$2,400	Fence Gate (Type B) Single 4' FDOT 0550-76-41
2.4	Information Kiosk 8' x 12'	1.00	Ea.	\$10,000	\$10,000	Allowance Based on recent S-5A boatramp project
2.5	Viewing Tower 12' (H) 20' x 20' with ADA Boardwalk	1.00	Ea.	\$30,000	\$30,000	Allowance
2.6	Compost Toilet and Trash Can	1.00	Ea.	\$40,000	\$40,000	Based on Recent similar purchase.
2.7	Protective Fencing	1.00	LS	\$10,000	\$10,000	Allowance
2.8	Signage	1.00	LS	\$5,000	\$5,000	Allowance
2.9	Picnic Shelter 12' x 20'	1.00	Ea.	\$16,000	\$16,000	Based on Comfort Stations, prefab, stock, excl. int. finish or electrical, max
2.10	Landscaping	1.00	LS	\$10,000	\$10,000	Allowance
Subtotal, Estimated Construction Costs					\$1,317,739	\$1,318,000
Planning, Engineering & Design		10 %			\$131,774	\$132,000
Construction Management		7 %			\$92,242	\$92,000
Total Estimated Cost, Without Contingency					\$1,541,755	\$1,542,000
Contingency		30 %			\$462,526	\$462,000
TOTAL ESTIMATED CAPITAL COST					\$2,004,281	\$2,004,000



2.1.3. Revised Opinion of Incremental Operation and Maintenance Cost

The following is a summary listing of the anticipated incremental operation and maintenance requirements for the recommended enhancement to STA-1E including the recreational facilities (e.g., requirements in addition to those for operation of maintenance of STA-1E as presently designed):

- Additional herbicide treatment of Cells 2, 4NS and 6 for control of invasive species and emergent macrophyte vegetation. This item includes:
 - Annual costs to spray for invasive species;
 - Additional costs for post-drought eradication of undesirable species.
- Operation and maintenance costs associated with the proposed recreational facilities.

A revised opinion of the average annual incremental operation and maintenance cost for the recommended enhancement of STA-1E including the proposed recreational facilities is presented in Table 2.3.

Table 2.3 Revised Opinion of Incremental O&M Cost, Enhanced STA-1E

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
1	Incremental Cost for Annual Vegetation Control	2,998	AC	\$30	\$89,940	
2	Recreational Facilities					
2.1	Routine Cleanup and Maintenance	12	Mos.	\$1,000	\$12,000	
2.2	Compost Toilet & Trash Collection	12	Mos.	\$1,500	\$18,000	
2.3	Additional O&M Rec Facilities				\$35,407	Estimated @ 5% Const Cost
Subtotal, Estimated Incremental Operation & Maintenance Costs					\$155,347	
Contingency		30 %			\$46,604	
TOTAL INCREMENTAL O&M COST					\$201,951	\$202,000

The estimated cost for operation, maintenance and monitoring of STA-1E as it was originally designed, i.e., with all emergent macrophyte vegetation, is discussed in Part 8 of the October 27, 2003 Long-Term Plan.



2.1.4. Revised Implementation Schedule

The vegetation management activities are scheduled to coincide with start-up activities in late FY 2004 and early FY 2005 (with the exception of the Cell 2 conversion which will occur on a different schedule as a result of the proposed PSTA demonstration project). Given that schedule, roughly one year would be available for maturation of the SAV community prior to the December 31, 2006 goal for overall completion.

The design and engineering of the first phase of the recreational facilities is proposed to occur in FY 2005 with construction proposed to occur in FY 2006. The design and engineering of the second phase of recreational facilities is proposed to occur in FY 2006 with construction proposed to occur in FY 2007.

2.1.5. Revised Projected Expenditures

A revised summary of the projected expenditures through FY 2016 (in FY 2004 dollars) for the recommended enhancement of STA-1E including the proposed recreational facilities is presented in Table 2.4.

Table 2.4 Revised Projected Expenditures, STA-1E Enhancement

Fiscal Year	Planning, Eng. & Design	Const. Mgmt.	Construction	Land Acquisition	Project Contingency	Total Capital Cost	Incremental O&M Cost	Fiscal Year Expenditure (FY 2004 \$)
2004		\$0				\$0	\$0	\$0
2005	\$126,400	\$88,080	\$599,861		\$209,933	\$1,024,274	\$0	\$1,024,274
2006	\$5,600	\$3,920	\$662,139		\$232,411	\$904,070	\$116,922	\$1,020,992
2007			\$56,000		\$19,656	\$75,656	\$202,000	\$277,656
2008						\$0	\$202,000	\$202,000
2009						\$0	\$202,000	\$202,000
2010						\$0	\$202,000	\$202,000
2011						\$0	\$202,000	\$202,000
2012						\$0	\$202,000	\$202,000
2013						\$0	\$202,000	\$202,000
2014						\$0	\$202,000	\$202,000
2015						\$0	\$202,000	\$202,000
2016						\$0	\$202,000	\$202,000
Total	\$132,000	\$92,000	\$1,318,000	\$0	\$462,000	\$2,004,000	\$2,136,922	\$4,140,922



2.2. STA-1W

STA-1W and STA-1E are hydraulically connected through the STA-1 Inflow Basin, situated adjacent to the extreme northerly end of the Loxahatchee National Wildlife Refuge. The design of the STA-1 Inflow Basin was developed to permit the diversion and redirection of inflows between STA-1E and STA-1W. Structure G-311 will consist of a gated spillway constructed in Levee L-40, which forms the easterly perimeter of WCA-1. Runoff from the S-5A Basin can be directed to STA-1E through G-311; the current design and operation of STA-1W contemplates that redirection of flows whenever the discharge from Pumping Station S-5A exceeds the hydraulic capacity of STA-1W. Runoff from the C-51 West Basin can also be directed to STA-1W through those same works. The relative locations of STA-1W and STA-1E, as well as depiction of the overall boundaries of their tributary areas, are shown in Figure 2.4.

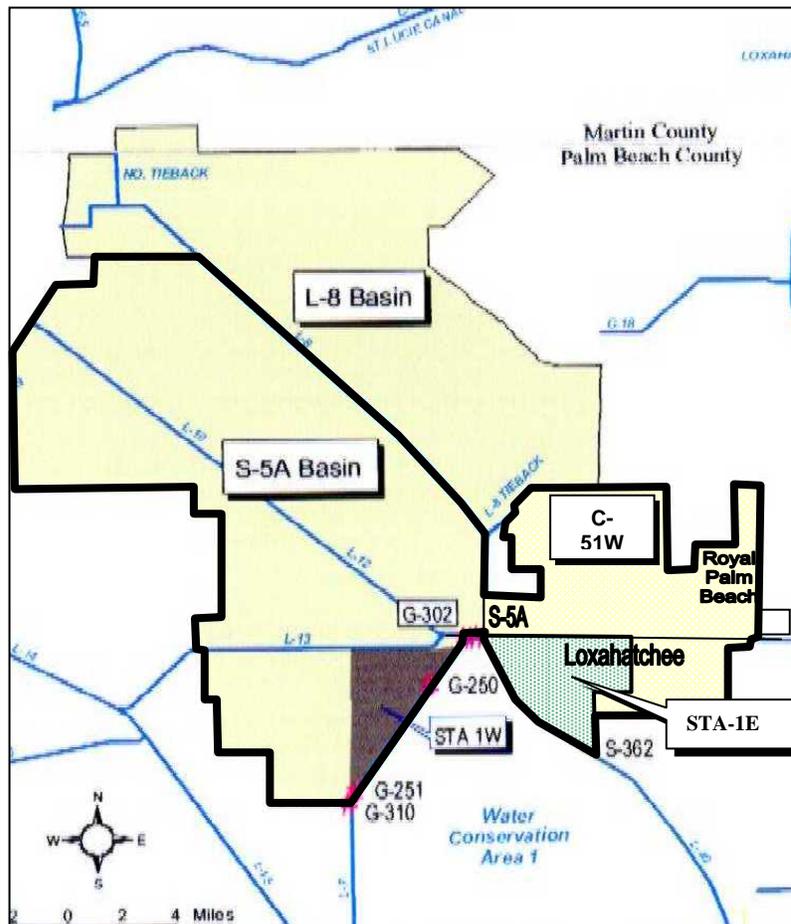


Figure 2.4 Basins Tributary to STA-1E and STA-1W



- Agricultural runoff and discharges from the S-5A Basin;
- Discharges from certain Chapter 298 drainage districts diverted from Lake Okeechobee;
- West Palm Beach Canal Best Management Practices Makeup Water;
- Supplemental (irrigation) water from Lake Okeechobee necessary to prevent dryout of the STA;
- Water supply releases from Lake Okeechobee necessary for urban or environmental purposes;
- Stormwater runoff from the L-8 Basin (Interim period prior to completion of the L-8 Basin CERP Project).

STA-1W has three flow paths, each developed with cells in series. The northern path flows in a westerly direction and the eastern and western paths flow in a southerly direction. Cells 1 through 4 comprise the original Everglades Nutrient Removal (ENR) project. All cells are nominally developed in emergent macrophytic vegetative communities except Cells 4 and 5B, which have been developed in submerged aquatic vegetation (SAV).

Ongoing data analyses indicate that the flows and phosphorus loads leaving the S-5A basin will be considerably more than anticipated during the development of the October 27, 2003 version of the Long-Term Plan, possibly as much as twice the earlier estimates. The magnitude of these additional inputs to the STAs is currently being assessed, and should be completed shortly. Nevertheless, the District and other stakeholders are already developing alternative operational and structural measures needed to remedy the situation, including the potential for diversion of flows to other STAs and construction of additional treatment area. These additional measures are described further in later sections of this revised Part 2 which cover the Regional Feasibility Study and the treatment areas on Compartment B.

2.2.1. Revised Recommended Improvements and Enhancements

The following improvements and enhancements recommended for STA-1W in the October 27, 2003 LTP are proposed to proceed as follows:

- Construction of a small seepage pumping station (designated as G-327B) near the northwest corner of Cell 5B, included in the design to permit withdrawal from the



seepage canal to maintain stages in the SAV Cell 5B. (Note that during the detailed design phase, the proposed location of this pump station was revised from the northeast corner of Cell 5B as shown in the October 27, 2003 Long-Term Plan, to the northwest corner.) The station is assigned a preliminary capacity of 65 cfs (equal to a maximum daily evaporation rate of 0.24"/day in Cell 5A and 5B, and an estimated seepage loss from the cell of 0.30"/day).

- Herbicide treatment of Cell 3 for removal of emergent macrophyte vegetation to permit development of SAV. That treatment was considered as applicable to the entire 1,026-acre nominal area of Cell 3, despite limiting the effective area to 700 acres in the analysis;
- Replacement of existing Structure G-255 with a fully operable control structure (nominal capacity of approximately 850 cfs). It will also be necessary to extend power from G-303 to the new structure;
- Construction of a new levee across Cell 2, together with a series of culverts for improved flow distribution;
- Construction of a new levee across Cell 1, together with a series of fully operable control structures. The nominal combined capacity of those structures would be 1,105 cfs; they are expected to consist of the hydraulic equivalent of four gated 8'x8' reinforced concrete box culverts (RCBs). The construction of a new power line would be required for those structures;
- Herbicide treatment in those parts of Cells 1 and 2 to be converted to SAV.

The following are improvements and enhancements proposed to be implemented in addition to those in the October 27, 2003 Long-Term Plan described above:

- Addition of a new water control structure (G-307) from Cell 4 into the Discharge Canal. G-256 is the current discharge structure from Cell 4 into Cell 3. It is an old 5-barrel culvert with stop logs built as part of the original ENR project in 1993. In order to maintain desired water levels in Cell 3 higher than in Cell 4, the structure will have to be closed most of the time, yet open during storm events. This is highly problematic as it requires manual operation (stop logs). The design capacity is 150 cfs, approximately



equal to each of the G-306 structures from Cell 5. It is recommended to locate the new structure in the western levee of Cell 4 and discharge directly into the discharge canal.

- Increase the conveyance capacity of the C-6 canal upstream of the G-308 structure. G-308 is the designated as the primary structure for discharging Cells 3 and 4 into the discharge canal upstream of G-310. However, due to limited conveyance capacity of the marsh and canal system upstream of G-308, G-309 is opened more frequently than desired, causing short-circuiting of Cell 4 treatment. It is recommended to increase the cross section of this canal along the eastern portion to the same cross section as the western reach of this canal.
- Removal of flow obstructions is also proposed in Cells 2 and 4 to improve flow distribution within the treatment cells.
- Modified water control structures in the new Cell 2 levee. The October 27, 2003 Long-Term Plan anticipated six (6) 84-inch diameter corrugated metal culverts with stop log risers in the new levee. This was changed during the detailed design to eight (8) each 8-ft wide by 4-ft high concrete box culverts with stop log risers.
- Addition of remote operation of the G-304 gates. In order to maintain uniform allocation of flows and loads to each flow-way, and in order to maintain desired water levels between storm events in Cell 5 that are lower than the desired water levels in Cell 1, it is necessary to automate the operation of the gates in the ten (10) G-304 structures.
- Removal of vegetative tussocks in an approximate 230-acre area in Cell 2.
- Revised location for proposed pump station G-327B as described above.
- The addition of recreational facilities is proposed to provide public access to STA-1W. The proposed facilities include an asphalt parking area on the south side of CR 880 and associated road improvements such as an acceleration and deceleration land in the vicinity of the entrance to the parking lot. The proposed facilities include a canoe launching site and a boardwalk for access to the seepage canal north of the STA. A footbridge is also proposed across the seepage canal to provide pedestrian access to the existing leveled area adjacent to the north end of the limerock berm in Cell 5B. An information kiosk, a viewing tower, a composting toilet, a picnic shelter and landscaping are proposed at this location. Pedestrian gates, signage and fencing as needed to define public access areas and to protect sensitive equipment are also proposed.



A revised schematic diagram of STA-1W, modified as recommended herein, is presented in Figure 2.6.

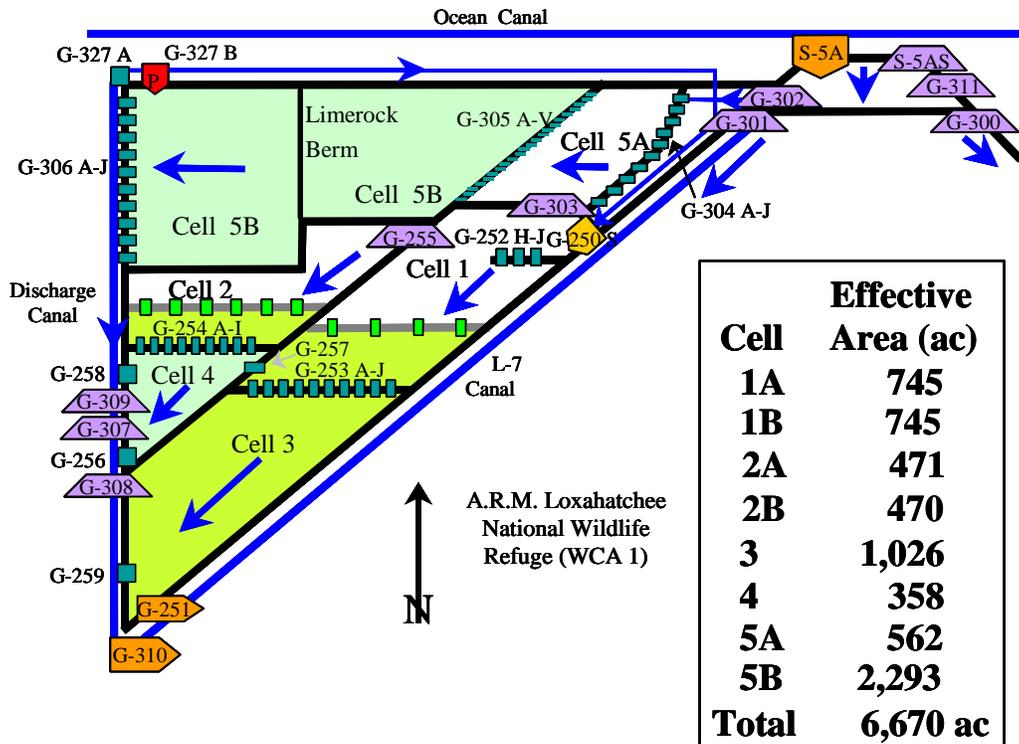


Figure 2.6 Revised Schematic Diagram of Enhanced STA-1W

In Figure 2.6, those areas presently developed in SAV are shown lightly shaded; those additional areas recommended for conversion to SAV are shown in slightly darker shading.

2.2.2. Revised Opinion of Capital Cost

A revised opinion of the capital cost of implementing the revised recommended enhancements and modifications to STA-1W including the proposed recreational facilities is presented in Table 2.5. That estimate is reported in FY 2004 dollars.



Table 2.5 Revised Opinion of Capital Cost, STA-1W Enhancement

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
1	New Water Control Structures in Cell 1 G-248 A thru D	4	Ea.	\$376,993	\$1,507,972	Based on 2004 Escalated Cost per ENR Index of Increases Adjusted for 2004 Industry Increases.
2	New (4' x 8') Water Control Structures in Cell 2 G-249 A thru H	8	Ea.	\$259,831	\$2,078,648	Based on 2004 Escalated Cost per ENR Index of Increases Adjusted for 2004 Industry Increases.
3	Replacement Structure G-255	1	Ea.	Allowance	\$502,688	Based on 2004 Escalated Cost per ENR Index of Increases Adjusted for 2004 Industry Increases.
4	Water Control Structure Electrical (Includes Telemetry) G-248 A thru D, G-255, G-307	8	Ea.	\$49,450	\$395,600	Based on 2004 Escalated Cost per ENR Index of Increases Adjusted for 2004 Industry Increases.
5	Stilling Wells (Includes Electrical and Telemetry)	4	Ea.	\$12,938	\$51,750	Based on 2004 Escalated Cost per ENR Index of Increases Adjusted for 2004 Industry Increases.
6	Pumping Station, Cell 5 G-327B	65	CFS	\$12,736	\$827,856	Based on 2004 Escalated Cost per ENR Index of Increases Adjusted for 2004 Industry Increases.
7	Cell 4 Discharge Structure G-307	1	Ea.	\$298,471	\$298,471	Based on 2004 Escalated Cost per ENR Index of Increases Adjusted for 2004 Industry Increases.
8	G-304 Structures A-J: Electric Gate Operators	10	Ea.	\$20,000	\$200,000	Per Construction Department Input
9	G-304 Structures A-J: Water Control Structure Electrical (Includes Telemetry)	10	Ea.	\$43,000	\$430,000	Per Construction Department Input
10	G-304 Structures A-J: Stilling Wells (Includes Electrical and Telemetry)	2	Ea.	\$9,000	\$18,000	Per Construction Department Input
11	Electric Power Distribution (G-304, G-327B, G-248, misc)	4	Mi.	\$80,000	\$320,000	Per Construction Department Input
12	G-304 Structures A-J: Control Buildings	10	Ea.	\$15,000	\$150,000	Per Construction Department Input
13	Earthwork	1	LS	\$1,764,000	\$1,764,000	Summary Rollup of detailed Estimate
14	Tussock removal (Cell 2)	1	LS	\$140,300	\$140,300	Summary Rollup of detailed Estimate
15	Recreational Facilities					
15.1	Compost Toilet and Trash Cans	1.00	Ea.	\$40,000	\$40,000	Based on Recent similar purchase.
15.2	Acceleration Lane, Deceleration Lane	14,080	SY	\$25.48	\$358,758	Assume 12' wide by 10,560 l.f. Subgrade & lime rock, Paving
15.3	40 Space Parking Lot - 10 Tractor Trailer - 20 Vehicle	1,760.00	SY	\$25.48	\$44,845	FDOT Subgrade, 6" lime rock Material and Grading / Shaping/ Paving
15.4	Canoe Launching Site	1.00	Ea.	\$15,000	\$15,000	Added
15.5	Foot Bridge	1.00	Ea.	\$90,000	\$90,000	Added
15.6	Boardwalk 10' X 40'	1.00	Ea.	\$65,000	\$65,000	Added
15.7	Information Kiosk 8' x 12'	1.00	Ea.	\$10,000	\$10,000	Allowance Based on recent S-5A boatramp project
15.8	Viewing Tower 12' (H) with ADA Boardwalk	1.00	Ea.	\$30,000	\$30,000	Added
15.9	Picnic Shelter 12' x 20'	1.00	Ea.	\$16,000	\$16,000	Based on Comfort Stations, prefab, stock, excl. int. finish or electrical, max
15.10	Pedestrian Gates	3.00	Ea.	\$800	\$2,400	Fence Gate (Type B) Single 4' FDOT 0550-76-41
15.11	Protective Fencing	1.00	Ea.	\$10,000	\$10,000	Allowance
15.12	Signage	1.00	Ea.	\$5,000	\$5,000	Allowance
15.13	Landscaping	1.00	LS	\$10,000	\$10,000	Allowance
Subtotal, Estimated Construction Costs					\$9,382,288	\$9,382,000
Planning, Engineering & Design		10 %		\$938,229		\$938,000
Construction Management		7 %		\$656,760		\$657,000
Total Estimated Cost, Without Contingency					\$10,977,277	\$10,977,000
Contingency		30 %		\$3,293,183		\$3,293,000
TOTAL ESTIMATED CAPITAL COST					\$14,270,461	\$14,270,000

2.2.3. Revised Opinion of Incremental Operation & Maintenance Cost

The following is a summary listing of the anticipated incremental operation and maintenance requirements for the revised recommended enhancements to STA-1W (e.g., requirements in addition to those for operation and maintenance of STA-1W as it presently exists):

- Operation and maintenance of a new seepage return pumping station G-327B at Cell 5A.

The pumps in this station are assumed driven by electric motors. The pump station



operating costs are estimated using a power cost of \$0.08/kw-hr; an assumed total head of 6 feet; an overall efficiency of 85%; and an assigned utilization equal to 10% of the overall time. The resultant power consumption is 0.43 kw/cfs, or 3,770 kw-hr/cfs/yr, which yields an approximate average annual cost of \$300/yr/cfs;

- Additional herbicide treatment of Cell 1B, 2B and 3 for control of invasive species and emergent macrophyte vegetation. This item includes both:
 - Annual costs to spray for invasive species;
 - Additional costs for post-drought eradication of undesirable species.
- Costs for maintenance of the additional levees and control structures
- Operation and maintenance costs associated with the proposed recreational facilities.

A revised opinion of the average annual incremental operation and maintenance cost for the revised recommended enhancement of STA-1W including the proposed recreational facilities is presented in Table 2.6.

Table 2.6 Revised Opinion of Incremental O&M Cost, Enhanced STA-1W

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
1	New Internal Levees	2.2	Mi.	\$3,300	\$7,260	
2	New Gated Culverts in Cell 1	4	Ea.	\$8,000	\$32,000	
3	New Structure G-255	1	Ea.	\$18,000	\$18,000	Similar to gated spillway
4	New Culverts in Cell 2	8	Ea.	\$5,000	\$40,000	Remote operated culverts with risers
5	Mech. Maintenance, Pumping Station, Cell 5A, 2 units assumed	2	Ea.	\$10,000	\$20,000	Unit cost from Evaluation Methodology
6	Power Consumption, Pumping Station, Cell 5A	65	CFS	\$300	\$19,500	See text for basis of estimated unit cost
7	Incremental Cost for Annual Vegetation Control	2241	AC	\$30	\$67,230	
8	Incremental Cost for G-304	10	Ea.	\$8,000	\$80,000	
9	Incremental Cost for New Cell 4 Discharge Structure G-307	1	Ea.	\$10,000	\$10,000	
10	Recreational Facilities					
10.1	Compost Toilet & Trash Collection	12	Mos.	\$1,500	\$18,000	
10.2	Routine Cleanup and Maintenance	12	Mos.	\$1,000	\$12,000	
10.3	Additional O&M Rec. Fac.				\$34,350	Estimated @ 5% Const. Cost
Subtotal, Estimated Incremental Operation & Maintenance Costs					\$358,340	
Contingency 30 %					\$107,502	
TOTAL INCREMENTAL O&M COST					\$465,842	\$466,000



The estimated cost for operation, maintenance and monitoring of STA-1W as it presently exists is discussed in Part 8 of the October 27, 2003 Long-Term Plan.

2.2.4. Revised Implementation Schedule

STA-1W is complete and in full operation. The engineering, plans and specifications for the recommended enhancements for STA-1W that were described in the October 27, 2003 LTP were completed in FY 2004. The construction of the new levee and control structures in Cell 2, the new discharge structure for Cell 4 (G-307), the tussock removal in Cell 2, canal conveyance capacity improvements associated with the western flow-way, the replacement of Structure G-255 and conversion of the newly created Cell 2B to SAV, is scheduled to occur during the dry season in Fiscal Year (FY) 2005.

The construction of the seepage return pump station in Cell 5B, the new levee and control structures in Cell 1, canal conveyance capacity improvements associated with the eastern flow-way, as well as the conversion of the vegetation in Cells 1B and 3 from emergent macrophyte to SAV, would occur in FY 2006, and should be conducted during the dry season (e.g., complete in April 2006). Given that schedule, roughly seven months would be available for grow-in and maturation of the SAV community prior to the December 31, 2006 goal for overall completion.

The design, engineering and construction of the automation of the G-304 structures is proposed to occur in FY 2005.

The design and engineering for the recreational facilities is proposed to occur in FY 2005 with construction proposed to occur in FY 2006.

2.2.5. Revised Projected Expenditures



A revised summary of the projected expenditures through FY 2016 (in FY 2004 dollars) for the revised recommended enhancement of STA-1W including the proposed recreational facilities is presented in Table 2.7.

Table 2.7 Revised Projected Expenditures, STA-1W Enhancement

Fiscal Year	Planning, Eng. & Design	Const. Mgmt.	Construction	Land Acquisition	Project Contingency	Total Capital Cost	Incremental O&M Cost	Fiscal Year Total (FY 2004 \$)
2004	\$69,700	\$0				\$69,700		\$69,700
2005	\$868,300	\$492,750	\$7,036,500		\$2,469,750	\$10,867,300		\$10,867,300
2006		\$164,250	\$2,345,500		\$823,250	\$3,333,000	\$0	\$3,333,000
2007						\$0	\$466,000	\$466,000
2008						\$0	\$466,000	\$466,000
2009						\$0	\$466,000	\$466,000
2010						\$0	\$466,000	\$466,000
2011						\$0	\$466,000	\$466,000
2012						\$0	\$466,000	\$466,000
2013						\$0	\$466,000	\$466,000
2014						\$0	\$466,000	\$466,000
2015						\$0	\$466,000	\$466,000
2016						\$0	\$466,000	\$466,000
Total	\$938,000	\$657,000	\$9,382,000	\$0	\$3,293,000	\$14,270,000	\$4,660,000	\$18,930,000

2.3. STA-2

STA-2 provides a total effective treatment area of 6,430 acres, and is situated immediately west of the L-6 Borrow Canal, with Water Conservation Area 2A (WCA-2A) to its east, and three miles north of Pump Station S-7. Roughly two-thirds of STA-2 is situated on the former Brown’s Farm Wildlife Management Area. This stormwater treatment area treats inflows from the Hillsboro Canal (via Pumping Station S-6). Those inflows are comprised of contributions from a number of sources, including:

- Agricultural runoff and discharges from the S-6/S-2 Basin;
- A partial diversion of runoff from the S-5A Basin via the Ocean and Hillsboro Canals;
- Chapter 298 drainage districts situated on the easterly shore of Lake Okeechobee;
- Supplemental (irrigation) water from Lake Okeechobee necessary to prevent dryout of the STA and Best Management Practice Makeup Water;
- Water supply releases from Lake Okeechobee meant for delivery to the Lower East Coast.

The general boundary of the area tributary to STA-2 is shown in Figure 2.7.

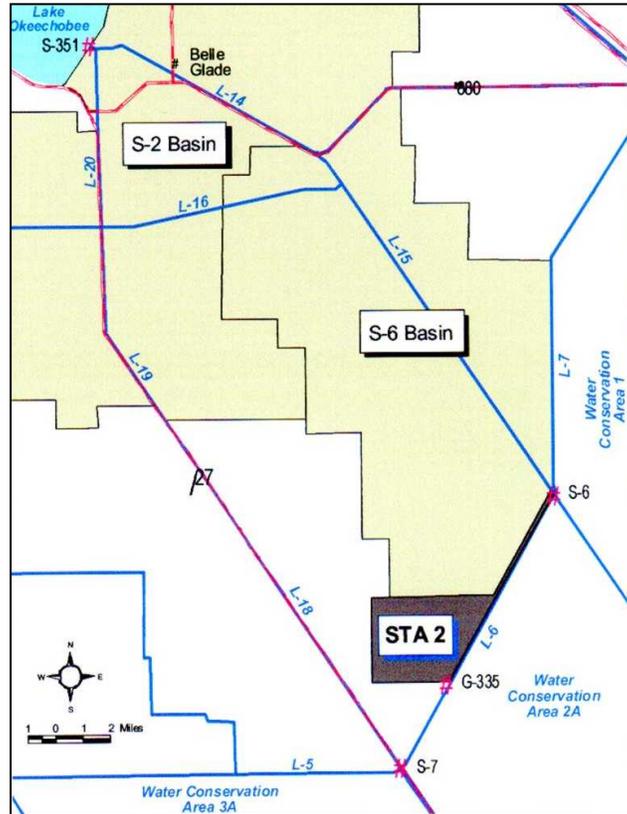


Figure 2.7 Area Tributary to STA-2

STA-2 is now complete and in full operation. It is developed in three parallel flow paths, each with a southerly flow direction. Cells 1 and 2 are at present populated primarily with emergent macrophytic vegetative communities; Cell 3 is primarily submerged aquatic vegetation (SAV), although there are approximately 500 acres of emergent vegetation (former Brown's Farm Wildlife Management Area, or WMA, lands) in the southeasterly corner of the cell. A schematic of STA-2 as it presently exists is shown in Figure 2.8.

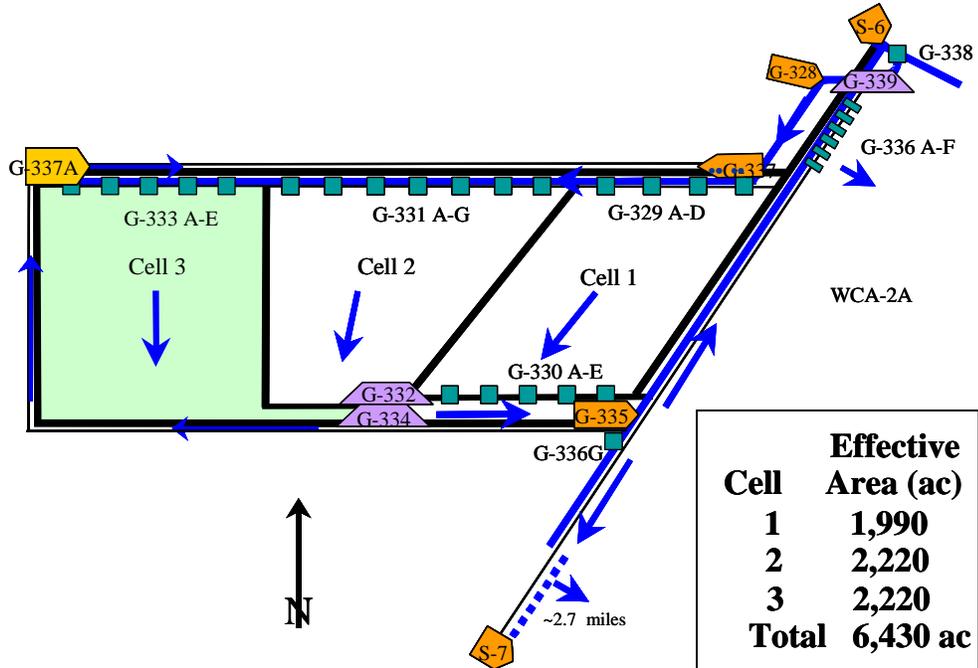


Figure 2.8 Schematic of Existing STA-2

In Figure 2.8, those areas presently developed in SAV (Cell 3) are shown shaded; there are approximately 500 acres in the southeasterly corner of Cell 3 that are at present emergent vegetation.

2.3.1. Revised Recommended Improvements and Enhancements

The October 27, 2003 Long-Term Plan included recommendations for structural, vegetative and operational enhancements for STA-2 to improve hydraulic distribution and phosphorus removal performance. These enhancements included a new levee and associated water control structures within each treatment cell. Conversion of emergent vegetation to SAV was also recommended in the downstream portions of Cells 1 and 2.

The recommended enhancements to STA-2 in the October 27, 2003 Long-Term Plan included the following component elements:



- Construction of approximately 3.3 miles of interior levee, subdividing Cell 1 into Cells 1A and 1B, Cell 2 into Cells 2A and 2B, and Cell 3 into 3A and 3B;
- Construction of additional water control structures through the new levee between cells in series. In the October 27, 2003 Long-Term Plan, four control structures were assigned to each cell, and assumed to be equivalent in number and character to STA-3/4's G-381 Structures [8' x 8' gated reinforced concrete box culverts (RCBs), with telemetric control]. Note that in the detailed design phase for the STA-2 enhancements, these structures were modified to 8' x 10' gated RCBs with telemetric control;
- Extension of an overhead power distribution line along the westerly perimeter of Cell 3 from the northwesterly corner of the treatment area (or, alternatively, from the general location of Structure G-332 along the interior levee between Cells 2 and 3) to the westerly end of the new levee across Cell 3, and then east along the new levee across Cells 1, 2 & 3 (total length of approximately 4.8 miles);
- One small forward-pumping station along the new interior Cell 2 levee to permit withdrawal from upstream emergent marsh cell to maintain stages in the downstream SAV cell. This station pumping from Cell 2A to Cell 2B is assigned a preliminary capacity of 14 cfs (equal to a maximum daily evaporation rate from Cell 2B of 0.24"/day);
- Herbicide treatment of Cells 1B, 2B and 500 acres of 3A/3B (conversion of remaining emergent vegetation) for removal of emergent macrophyte vegetation to permit development of SAV.

In addition to the above recommended improvements, as a result of the recent availability of land adjacent to STA-2, it is proposed to initially expand STA-2 with a new parallel treatment cell, i.e., Cell 4. The following assumptions were used to develop a conceptual plan for this initial expansion of STA-2; if any of these assumptions are incorrect, unavoidable delays to the project could result:

- The entire 1,233 acres of the former Carroll property directly west of STA-2 is available for immediate use.
- Approximately 782 acres of the Okeelanta lease, located immediately west of the southwest corner of STA-2, along with a 500-ft strip of land adjacent to the southern



- boundary of STA-2, could be available for use within 6 months of notification by the District.
- The Woerner South Farm 2 property (approximately 4,275 acres) will not be available in time for incorporation into an expanded treatment area by December 2006. However, a 200-ft strip of land adjacent to the northwestern reach of the seepage collection canal may be needed in association with extending the inflow canal south to the new Cell 4.
 - It was assumed that no additional inflows (beyond those included in the October 27, 2003 Long-Term Plan analyses) would be sent to the expanded treatment area during the near-term (i.e., prior to December 31, 2008). The Regional Feasibility Study described in Section 2.8.3. of this revised Part 2 will include evaluation of sending additional inflows to the expanded STA-2 in concert with the full build-out of treatment areas on Compartment B.
 - The existing STA-2 inflow and discharge infrastructure can be utilized at its present capacity.
 - Design can proceed utilizing an existing engineering contract.
 - Construction can proceed without delay upon completion of the detail design.
 - The Florida DEP and the U.S. Army Corps of Engineers will be part of the development team to ensure expedited review, approval and issuance of all necessary permits or permit modifications so as not to delay construction or operation.
 - There will be no delays due to remediation of hazardous material resulting from prior land use.
 - The recommendations will require revisions to the October 27, 2003 Long-Term Plan; it is assumed that the FDEP review and approval process will be completed expeditiously so as not to delay construction or operation.

The following conceptual layout of the expanded STA-2 will be further refined during subsequent design activities. Refinements to this conceptual layout will be communicated to the FDEP when available.

A contiguous parcel of approximately 2,015 acres located between STA-2 and the North New River Canal is proposed for construction of a new Cell 4 for STA-2. Assuming 10% of the area will be required for levees, canals and water control structures, approximately 1,813 acres will be developed as effective treatment area. The existing STA-2 inflow canal will be extended south and west along the top of the new treatment cell, and five (5) inflow structures will introduce the



water to the north end of Cell 4. The eastern levee of the North New River Canal will serve as the new Cell 4 western levee. Cell 4 will be developed as an SAV cell identical to Cell 3, and a new discharge canal will convey treated water south of the existing Cell 3 by expanding the existing seepage collection canal. A new Cell 4 outlet control structure (similar to G-334) will be constructed at the confluence of this new discharge canal and the existing canal immediately east and downstream of G-334. The need for seepage control will be evaluated in light of the scheduled cessation of farming on adjacent lands. If needed, seepage control will be provided by collection canals along the northern and southern boundaries of Cell 4 with direct connections to the North New River Canal. Approximately 2.5 miles of perimeter levees, six gated water control structures and one spillway will comprise the major construction features. A schematic of the expanded and enhanced STA-2 is provided in Figure 2.9.

STA-2 is currently performing much better than was anticipated during the original design. Flow-weighted mean outflow concentrations have been averaging 16 ppb for the last three water years, which is actually better than the projected long-term average flow-weighted mean concentration with the enhancements recommended in the Long-Term Plan. Disrupting the operation of the STA to construct the recommended enhancements (the new internal levees, structures and vegetation conversion shown in the October 27, 2003 Long-Term Plan) prior to expansion may cause short-term bypass of phosphorus to the Everglades and may jeopardize the exceptional long-term performance of this STA. Therefore, the vegetation conversion and construction of the new interior levees in STA-2 will be initiated as soon as possible after the flow-through operation of Cell 4 commences. The details of the additional stormwater treatment areas to be constructed on the areas labeled "Compartment B Build-out Additional Treatment Area" in Figure 2.9 will be developed during the Regional Feasibility Study described in Section 2.7.

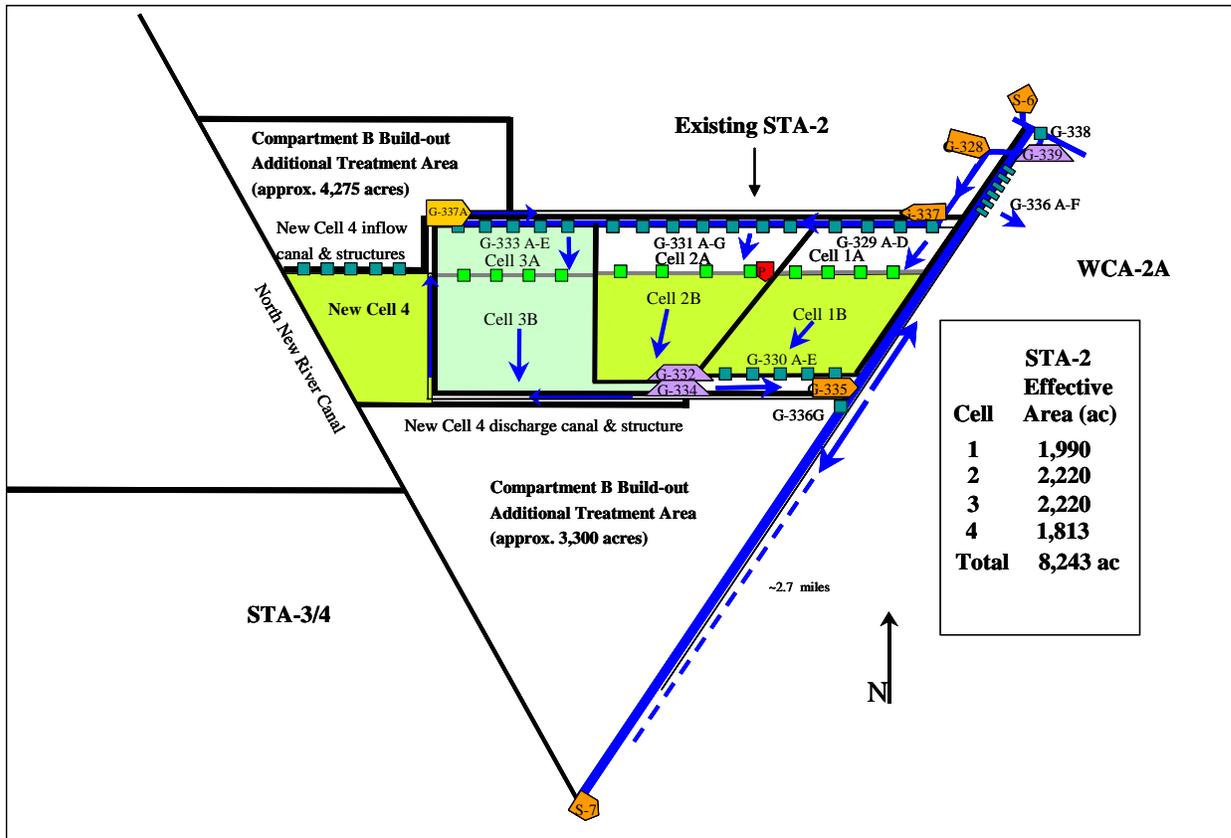


Figure 2.9 Schematic of Enhanced STA-2

In Figure 2.9, those areas presently developed in SAV are shown lightly shaded; those additional areas recommended for conversion to SAV, including the new Cell 4, are shown in slightly darker shading.



In addition to the revised enhancements and the initial expansion of STA-2, recreational facilities are proposed to provide public access to STA-2. The first phase of the proposed recreational facilities includes a parking area along the east side of U.S. Highway 27, an information kiosk, a composting toilet and a canoe launching site for access to canals and deepwater areas outside the treatment footprint of the STA. Pedestrian gates, vehicle gates, signage and fencing as needed to define public access areas and to protect sensitive equipment are also proposed with this first phase. The second phase of proposed recreational facilities for STA-2 includes a viewing tower, landscaping, and a picnic shelter. It was assumed during the development of the cost estimates for the recreational facilities that the existing Okeelanta property bridge located south of the proposed recreational facilities would provide access from U.S. Highway 27 to the recreational facilities.

2.3.2. Revised Opinion of Capital Cost

A revised opinion of the capital cost for implementing the revised recommended improvements to STA-2 including the proposed new Cell 4 and the proposed recreational facilities is presented in Table 2.8. The revised cost opinion is reported in FY 2004 dollars.



Everglades Protection Area Tributary Basins
 Long-Term Plan for
 Achieving Water Quality Goals

Table 2.8 Revised Opinion of Capital Cost, STA-2 Enhancement

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
1	Cells 1, 2 & 3: New Internal Levee, 7' height (Excludes Blasting Costs)	3.3	Mi.	\$448,500	\$1,480,050	Unit cost from Evaluation Methodology Adj. For 2004 increase
2	Cells 1, 2 & 3: Blasting for New Levee and Canals	3.3	Mi.	\$55,200	\$182,160	Allow Approx.\$1/cy Adj. For 2004 increase
3	Cells 1, 2 & 3: New Water Control Structures (8'x8')	12	Ea.	\$218,500	\$2,622,000	Unit cost from June 2001 Estimate for STA-3/4, Esc. Adj. For 2004 increase
4	Cells 1, 2 & 3: Water Control Structure Electrical (Includes Telemetry)	12	Ea.	\$49,450	\$593,400	Unit cost from June 2001 Estimate for STA-3/4, Esc. Adj. For 2004 increase
5	Cells 1, 2 & 3: Stilling Wells (Includes Electrical and Telemetry)	6	Ea.	\$10,350	\$62,100	Unit cost from June 2001 Estimate for STA-3/4, Esc. Adj. For 2004 increase
6	Cells 1, 2 & 3: Electrical Power Distribution	4.8	Mi.	\$92,000	\$441,600	Unit cost from Evaluation Methodology Adj. For 2004 increase
7	Pumping Station, Cell 2A-2B	14	cfs	\$8,740	\$122,360	Unit cost from Evaluation Methodology Adj. For 2004 increase
8	Eradication of Existing Vegetation Cells 1, 2, 3	2940	ac	\$230	\$676,200	Unit cost from 02/2002 STSOC for SAV/LR Adj. For 2004 increase
CELL 4 EFFORT						
9	Cell 4 -NE Inflow Canal & Levee	100,000	CY	\$ 3.19	\$319,000	Added
10	Cell 4 - North Perimeter Levee & Canal	450,000	CY	\$ 3.19	\$1,435,500	Added
11	Cell 4 - Degrading Farm Roads & Plug	70,000	CY	\$ 2.25	\$157,500	Added
12	Cell 4 - Clear & Grub	210	AC	\$ 500	\$105,000	Added
13	Cell 4 - So. Perimeter Levee & Canal	250,000	CY	\$ 3.19	\$797,500	Added
14	Cell 4 - Inflow Structures 8' X 8'	5	EA	\$ 190,000	\$950,000	Added
15	Cell 4 - Outflow Structures	1	EA	\$ 2,000,000	\$2,000,000	Added
16	Cell 4 - Power Distribution	3.3	MI	\$ 80,000	\$264,000	Added
17	Cell 4 - Telemetry	6	EA	\$ 9,000	\$54,000	Added
18	Cell 4 - Stripping Muck	80,000	CY	\$ 2.00	\$160,000	Added
19	Cell 4 - Blasting	800,000	CY	\$ 1.69	\$1,352,000	Added
20	Cell 4 - Eradication of Existing Vegetation	2,000	AC	\$ 230	\$460,000	Added
Recreational Facilities						
21.1	Compost Toilet and Trash Cans	1.00	Ea.	\$40,000	\$40,000	Based on Recent similar purchase.
21.2	20 Space Parking Lot with Site for Info Kiosk and 10 trailers	440.00	SY	\$25.48	\$11,211	FDOT Subgrade, 6" lime rock Material and Grading / Shaping/ Paving
21.3	Canoe Launching Site	1.00	Ea.	\$15,000	\$15,000	Added
21.4	10 Space Parking Lot for Car / Trailer Parking	220.00	SY	\$25.48	\$5,606	FDOT Subgrade, 6" lime rock Material and Grading / Shaping/ Paving
21.5	Vehicle Gates	3.00	Ea	\$1,000	\$3,000	Added
21.6	Pedestrian Gates	2.00	Ea	\$800	\$1,600	Fence Gate (Type B) Single 4' FDOT 0550-76-41
21.7	Picnic Shelter 12' x 20'	1.00	Ea.	\$16,000	\$16,000	Based on Comfort Stations, prefab, stock, excl. int. finish or electrical, max
21.8	Information Kiosk 8' x 12'	1.00	Ea.	\$10,000	\$10,000	Allowance Based on recent S-5A boatramp project
21.9	Viewing Tower 12' (H) 20' x 20' with ADA Boardwalk	1.00	Ea.	\$30,000	\$30,000	Added
21.10	Protective Fencing	1.00	LS	\$10,000	\$10,000	Allowance
21.11	Signage	1.00	LS	\$5,000	\$5,000	Allowance
21.12	Landscaping	1.00	LS	\$10,000	\$10,000	Allowance
Subtotal, Estimated Construction Costs					\$14,391,787	\$14,392,000
Planning, Engineering & Design				10 %	\$1,439,179	\$1,439,000
Construction Management				7 %	\$1,007,425	\$1,007,000
Total Estimated Cost, Without Contingency					\$16,838,391	\$16,838,000
Contingency				30 %	\$5,051,517	\$5,052,000
TOTAL ESTIMATED CAPITAL COST					\$21,889,908	\$21,890,000

2.3.3. Revised Opinion of Incremental Operation & Maintenance Cost

The following is a revised summary listing of the anticipated incremental operation and maintenance requirements for the recommended enhancements to and expansion of STA-2 including the recreational facilities (e.g., requirements in addition to those for operation and maintenance of STA-2 as it now exists):



- Maintenance of approximately 3.3 additional miles of interior levee in Cells 1, 2, and 3;
- Operation and maintenance of the additional water control structures through the new levee subdividing Cell 1 into Cells 1A and 1B, Cell 2 into Cells 2A and 2B, and Cell 3 into 3A and 3B;
- Operation and maintenance of one small forward-pumping station along the interior levee in Cell 2 between cells in series, included in the design to permit withdrawal from upstream emergent marsh cells to maintain stages in the downstream SAV cells. The pump in this station is assumed to be driven by electric motor. The unit operating costs are estimated using a power cost of \$0.08/kw-hr; an assumed total head of 6 feet; an overall efficiency of 85%; and an assigned utilization equal to 10% of the overall time. The resultant power consumption is 0.43 kw/cfs, or 3,770 kw-hr/cfs/yr., yielding an approximate average annual cost of \$300/yr/cfs;
- Additional herbicide treatment of Cells 1B, 2B and 500 acres of 3A/3B (conversion of remaining emergent vegetation) for control of invasive species and emergent macrophyte vegetation. This item includes both:
 - Annual costs to spray for invasive species;
 - Additional costs for post-drought eradication of undesirable species.
- Maintenance of approximately 2.5 additional miles of exterior levee for new Cell 4.
- Operation and maintenance of the additional water control structures in Cell 4 (five new inflow structures and one outflow structure);
- Additional herbicide treatment of Cell 4 for control of invasive species and emergent macrophyte vegetation. This item includes both:
 - Annual costs to spray for invasive species;
 - Additional costs for post-drought eradication of undesirable species.
- Operation and maintenance costs associated with the proposed recreational facilities.



A revised opinion of the average annual incremental operation and maintenance cost for the revised recommended enhancement of STA-2 including the proposed recreational facilities is presented in Table 2.9.

Table 2.9 Revised Opinion of Incremental O&M Cost, Enhanced STA-2

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
1	New Internal Levees Cells 1, 2, 3	3.3	Mi.	\$3,300	\$10,890	
2	New Water Control Structures Cells 1, 2, 3	12	Ea.	\$8,000	\$96,000	Gated Culverts
3	Mech. Maintenance, Pumping Station, Cell 2A-2B, 1 unit assumed	1	Ea.	\$10,000	\$10,000	
4	Power Consumption, Pumping Station, Cell 2A-2B	14	CFS	\$300	\$4,200	
5	Incremental Cost for Annual Vegetation Control	3170	AC	\$30	\$95,100	
6	Recreational Facilities					
6.1	Compost Toilet & Trash Collection	12	Mos.	\$1,500	\$18,000	
6.2	Routine Cleanup and Maintenance	12	Mos.	\$1,000	\$12,000	
6.3	Additional O&M Rec. Fac.				\$7,371	Estimated @ 5% const. cost
	Cell 4 Additional O&M					
7	Incremental Vegetation Control Cell 4	2000	AC	\$30	\$60,000	
8	New Levees Cell 4	3.3	Mi.	\$3,300	\$10,890	rough estimate
9	New Cell 4 Water Control Structures	6	Ea.	\$8,000	\$48,000	rough estimate
10	New Cell 4 Discharge Structure	1	Ea.	\$18,000	\$18,000	gated spillway
Subtotal, Estimated Incremental Operation & Maintenance Costs					\$390,451	
Contingency		30 %			\$117,135	
TOTAL INCREMENTAL O&M COST					\$507,586	\$508,000

The estimated cost for operation, maintenance and monitoring of STA-2 as it now exists is discussed in Part 8 of the October 27, 2003 LTP. The estimated monitoring costs in that Part 8 also included the additional costs for monitoring of the recommended enhancements in the October 27, 2003 Long-Term Plan. Costs associated with the additional monitoring of the new Cell 4 are not included in this Part 2, and therefore will need to be included in a subsequent revised Part 8.

2.3.4. Revised Implementation Schedule



STA-2 is currently in full operation. The engineering, plans, and specifications for the recommended enhancements for STA-2 that were included in the October 27, 2003 Long-Term Plan were completed during FY 2004. It is anticipated that all engineering, planning and design for the new Cell 4 will be completed in FY 2005. The following construction should occur in FY 2005 and 2006:

- Excavation and stockpiling of borrow materials for levee construction. It is presently anticipated that the source of the borrow material would be enlargement of the North New River Canal in selected reaches;
- Construction of the new Cell 4 external levees;
- Construction of the five (5) new inflow water control structures and the one (1) new outflow structure for Cell 4, complete with electrical/telemetry work and stilling wells;
- Construction of new power lines to serve the five new inflow water control structures and the new outflow structure for Cell 4;

The schedule for construction of the Cell 3 levee is subject to the growth of the new SAV in the new Cell 4 sufficient to demonstrate (1) a net improvement in phosphorus levels relative to the inflow pump stations (S-6 and G-328) and (2) mercury levels within the cell are not significantly greater than the corresponding mercury levels in inflows. It is anticipated that flow-through operation may take 6-18 months following completion of Cell 4, or June 2007 – June 2008. The 12-month period for new levee construction and vegetation conversion in Cell 3 would then commence, with a target flow-through operation of Cell 3B of 6-18 months following construction, or December 2008 – December 2010. Construction of the new levees in Cells 1 and 2, as well as the corresponding vegetation conversion, would then commence in a phased approach over two consecutive dry seasons. Depending on the actual time associated with achieving flow-through operation for Cell 3 and Cell 4 as described above, construction of the new levee in Cell 2 would have a target commencement date of December 2008 – December 2010 with a target completion date of December 2009 – December 2011. The Cell 1 work would then commence in December 2009 – December 2011 with a target completion date of December 2010 – December 2012.

The design and engineering of the first phase of the recreational facilities is proposed to occur in FY 2005 with construction proposed to occur in FY 2006. The design and engineering of the



second phase of recreational facilities is proposed to occur in FY 2006 with construction proposed to occur in FY 2007.

2.3.5. Revised Projected Expenditures

A summary of the revised projected Expenditures through FY 2016 (in FY 2004 dollars) for the revised recommended enhancement of STA-2 including the proposed recreational facilities is presented in Table 2.10.

Table 2.10 Revised Projected Expenditures, STA-2 Enhancement

Fiscal Year	Planning, Eng. & Design	Const. Mgmt.	Construction	Land Acquisition	Project Contingency	Total Capital Cost	Incremental O&M Cost	Fiscal Year Total (FY 2004 \$)
2004	\$160,000	\$0				\$160,000	\$0	\$160,000
2005	\$1,273,400	\$281,784	\$4,027,250		\$1,413,679	\$6,996,113	\$0	\$6,996,113
2006	\$5,600	\$288,880	\$4,128,667		\$1,449,279	\$5,872,426	\$0	\$5,872,426
2007		\$75,985	\$1,085,978		\$381,209	\$1,543,173	\$508,000	\$2,051,173
2008		\$216,201	\$3,089,935		\$1,084,655	\$4,390,791	\$508,000	\$4,898,791
2009		\$72,082	\$1,030,191		\$361,626	\$1,463,900	\$508,000	\$1,971,900
2010		\$72,067	\$1,029,978		\$361,552	\$1,463,597	\$508,000	\$1,971,597
2011						\$0	\$508,000	\$508,000
2012						\$0	\$508,000	\$508,000
2013						\$0	\$508,000	\$508,000
2014						\$0	\$508,000	\$508,000
2015						\$0	\$508,000	\$508,000
2016						\$0	\$508,000	\$508,000
Total	\$1,439,000	\$1,007,000	\$14,392,000	\$0	\$5,052,000	\$21,890,000	\$5,080,000	\$26,970,000

2.4 STA-3/4

STA-3/4 is now complete and in operation. STA-3/4 provides a total effective treatment area of 16,543 acres, situated generally between U.S. Highway 27 (on the east) and the Holey Land Wildlife Management Area (on the west), lying immediately north of the L-5 Borrow Canal. This stormwater treatment area treats inflows from the Miami Canal (via Pumping Station G-372) and the North New River Canal (via Pumping Station G-370). Those inflows are comprised of contributions from a number of sources, including:

- Agricultural runoff and discharges from the North New River Canal Basin (S-7/S-2 Basin);



- Agricultural runoff and discharges from the Miami Canal Basin (S-8/S-3 Basin);
- Lake Okeechobee. Anticipated inflows from Lake Okeechobee include:
 - Regulatory releases to both the Miami Canal and North New River Canal;
 - Best Management Practice (BMP) makeup water for both the Miami Canal and North New River Canal basins;
 - Supplemental (irrigation) water necessary to prevent dryout of the STA (considered as delivered to the Miami Canal).
- Agricultural runoff and discharges from the C-139 Basin (episodic inflows through Structure G-136 and the L-1E Canal to the Miami Canal);
- Pumping Station S-236 discharges to be diverted from Lake Okeechobee to the Miami Canal for delivery to STA-3/4;
- Storm runoff and discharges from the South Shore Drainage District, to be diverted from Lake Okeechobee to the Miami Canal for delivery to STA-3/4.

The general boundaries of STA-3/4's primary tributary basins are shown in Figure 2.10.

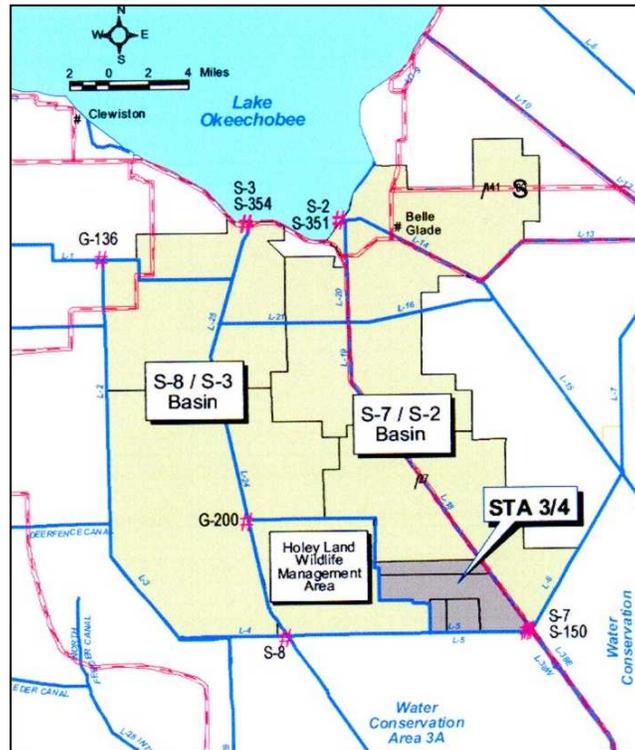


Figure 2.10 Areas Tributary to STA-3/4

STA-3/4 consists of three parallel flow paths. The most easterly flow path (Cells 1A and 1B in series) treats inflows from the North New River Canal. The two westerly flow paths (Cells 2A and 2B in series, Cell 3 in parallel) treat inflows from the Miami Canal. A schematic of the present design of STA-3/4 is shown in Figure 2.11.

A large-scale PSTA demonstration project is currently being constructed in Cell 2B of STA-3/4. Additional information on this project can be found on page 5-20 through page 5-24 of Part 5 of the October 27, 2003 Long-Term Plan.

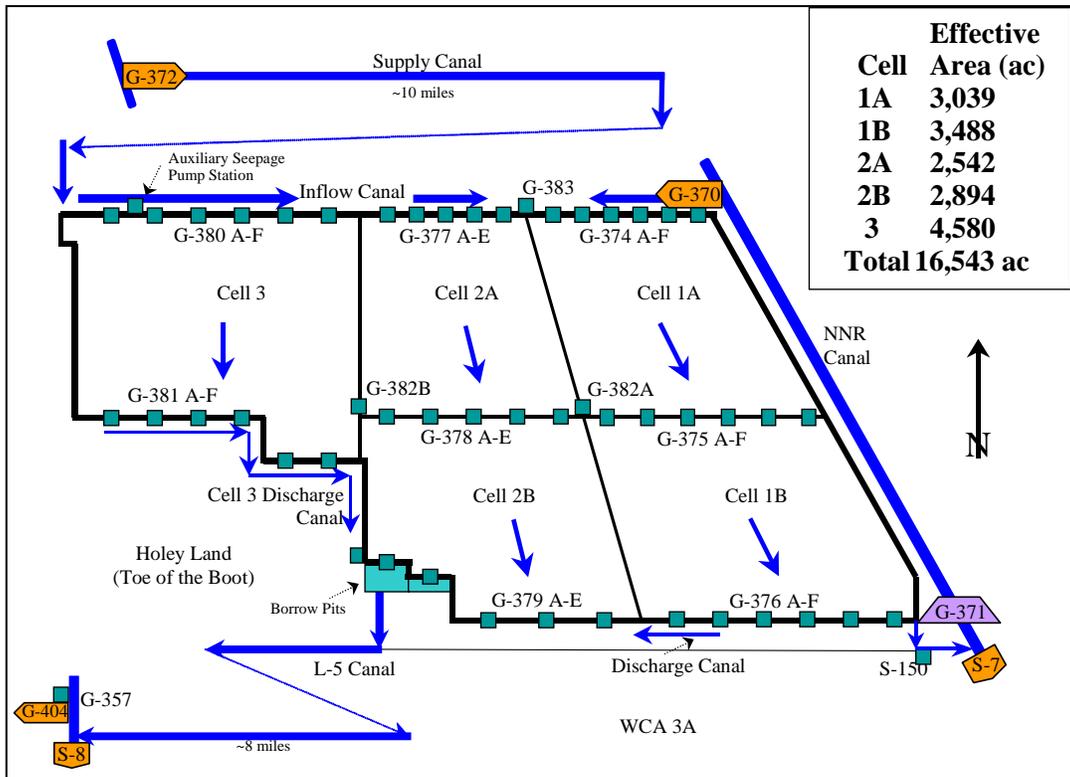


Figure 2.11 Current Design Schematic, STA-3/4

2.4.1 Revised Recommended Improvements and Enhancements

The engineering, plans and specifications for the following improvements and enhancements recommended in the October 2, 2003 Long-Term Plan were completed in FY 2004 and construction is scheduled to commence in early FY 2005:

- Construction of approximately 3.3 miles of interior levee, subdividing Cell 3 into Cells 3A and 3B;
- Construction of additional water control structures through the new levee subdividing Cell 3 into Cells 3A and 3B.
- Extension of an overhead power distribution line from the intersection of Interior Levee 3 and Interior Levee 4, extending north along Interior Levee 4 to the new levee across Cell



- 3, and then west along the new levee across Cell 3 (total length of approximately 3.6 miles);
- Small forward-pumping stations along the interior levees between cells in series to permit withdrawal from upstream emergent marsh cells to maintain stages in the downstream SAV cells. Three stations are anticipated. The station pumping from Cell 1A to Cell 1B is assigned a preliminary capacity of 54 cfs (equal to a maximum daily evaporation rate from Cell 1B of 0.24"/day, and an estimated seepage loss from Cell 1B of 0.13"/day). The stations pumping from Cell 2A to Cell 2B and from Cell 3A to Cell 3B are assigned preliminary capacities equal to 0.24"/day of evapotranspiration over the downstream cell (29 cfs in Cells 2, 24 cfs in Cells 3). Supplemental flows can be transferred from Cell 2A to Cell 1A through Structure G-382A, and between Cell 2A and Cell 3B through Structure G-382B;
 - Herbicide treatment in the downstream cells for removal of emergent macrophyte vegetation to permit development of submerged aquatic vegetation (SAV).

The following improvements and enhancements are proposed in addition to those in the October 27, 2003 Long-Term Plan:

- Recreational facilities are proposed to provide public access to STA-3/4. The first phase of the proposed recreational facilities includes road improvements, an asphalt parking area, an information kiosk, and a composting toilet. Two boat ramps are proposed (one in each of the two rock pits located south and downstream of treatment cell 2B). Pedestrian gates, vehicle gates, signage and fencing as needed to define public access areas and to protect sensitive equipment are also proposed. The second phase includes a viewing tower, landscaping and a picnic shelter.

A schematic diagram of STA-3/4, enhanced as recommended herein, is presented in Figure 2.12.

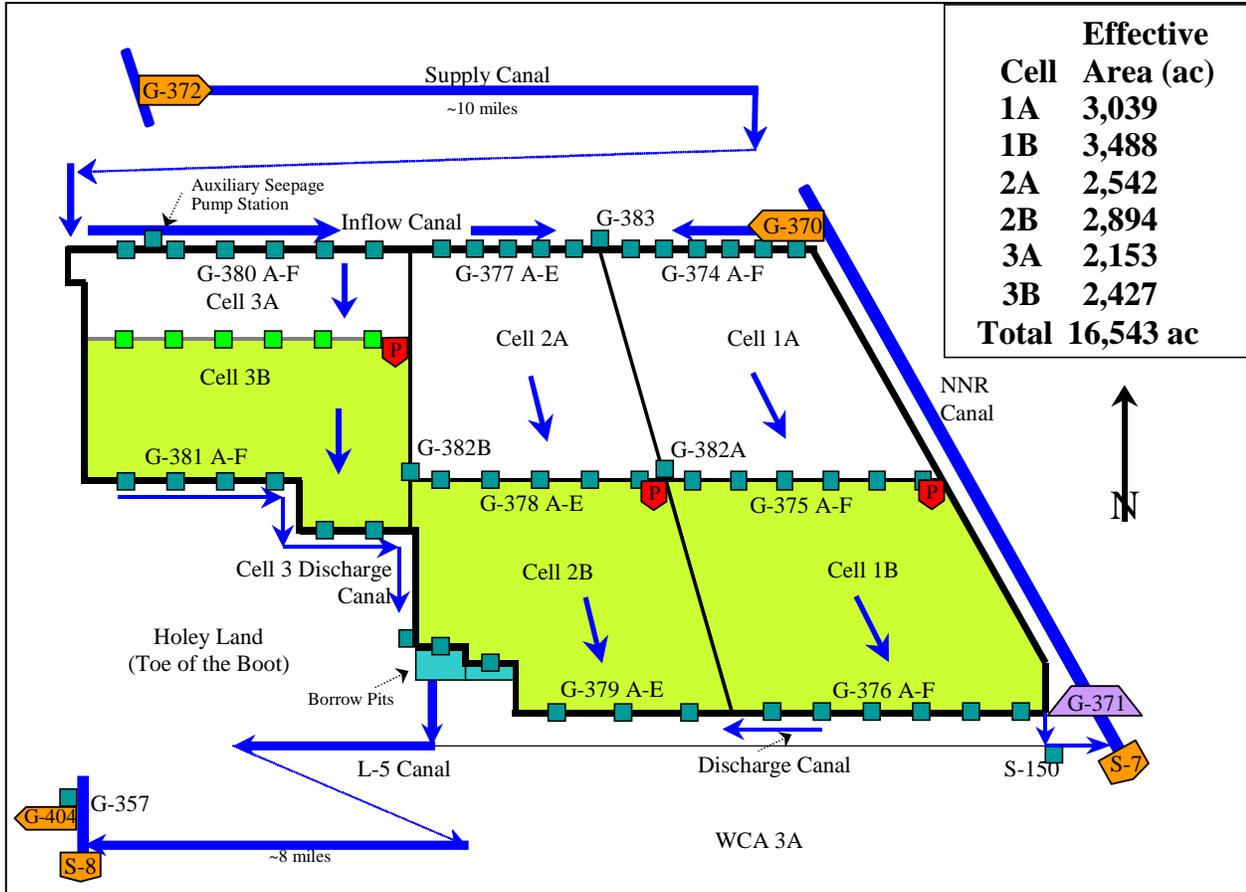


Figure 2.12 Schematic Diagram of Enhanced STA-3/4

In Figure 2.12, those areas recommended for conversion to SAV are shown shaded.

2.4.2. Revised Opinion of Capital Cost

A revised opinion of the capital cost for implementing the recommended enhancements and modifications to STA-3/4 including the proposed recreational facilities in FY 2004 dollars is presented in Table 2.11.



Table 2.11 Revised Opinion of Capital Cost, STA-3/4 Enhancement

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
1	New Internal Levee, 7' height (Excludes Blasting Costs)	3.3	Mi.	\$448,500	\$1,480,050	Unit cost from Evaluation Methodology Adj. for 2004 increase.
2	Blasting for New Levee & Canals	3.3	Mi.	\$55,200	\$182,160	Allow Approx.\$1/cy Adj. for 2004 increase.
3	New Water Control Structures (8'x10' similar to G-381, Gated)	6	Ea.	\$218,500	\$1,311,000	Estimate for STA-3/4, Esc. Adj. for 2004 increase.
4	Water Control Structure Electrical (Includes Telemetry)	6	Ea.	\$49,450	\$296,700	Unit cost from June 2001 Estimate for STA-3/4, Esc. Adj. for 2004 increase.
5	Stilling Wells (Includes Electrical and Telemetry)	2	Ea.	\$10,350	\$20,700	Unit cost from June 2001 Estimate for STA-3/4, Esc. Adj. for 2004 increase.
6	Electrical Power Distribution	3.8	Mi.	\$92,000	\$349,600	Unit cost from Evaluation Methodology Adj. for 2004 increase.
7	Pumping Station, Cell 1A-1B	54	CFS	\$11,385	\$614,790	Unit cost from Evaluation Methodology Adj. for 2004 increase.
8	Pumping Station, Cell 2A-2B	29	CFS	\$8,740	\$253,460	Unit cost from Evaluation Methodology Adj. for 2004 increase.
9	Pumping Station, Cell 3A-3B	24	CFS	\$8,740	\$209,760	Unit cost from Evaluation Methodology Adj. for 2004 increase.
10	Eradication of Existing Vegetation	8,809	AC	\$230	\$2,026,070	Unit cost from 02/2002 STSOC for SAV/LR Adj. for 2004 increase.
11	Recreational Facilities					Added
11.1	0.5 Miles of Road Improvement / Widening	7,040.00	SY	\$25.48	\$179,379	Assume 24' wide by 2,640 lf Subgrade & lime rock, Pv'g
11.2	20 Space Parking Lot with Site for Info Kiosk	440.00	SY	\$25.48	\$11,211	Added
11.3	Information Kiosk 8' x 12'	1.00	Ea.	\$10,000	\$10,000	Allowance Based on recent S-5A boatramp project
11.4	Compost Toilet and Trash Cans	1.00	Ea.	\$40,000	\$40,000	Based on Recent similar purchase.
11.5	10 Space Parking Lot for Car/Trailer Parking	220.00	SY	\$25.48	\$5,606	Added
11.6	Boat Ramp	2.00	Ea.	\$150,000	\$300,000	Added
11.7	Vehicle Gates	4.00	Ea.	\$1,000	\$4,000	Added
11.8	Pedestrian Gates	2.00	Ea.	\$800	\$1,600	Fence Gate (Type B) Single 4' FDOT 0550-76-41
11.9	Picnic Shelter 12' x 20'	1.00	Ea.	\$16,000	\$16,000	Based on Comfort Stations, prefab, stock, excl. int. finish or electrical, max
11.10	Viewing Tower 12' (H) 20' x 20' with ADA Boardwalk	1.00	Ea.	\$30,000	\$30,000	Added
11.11	Protective Fencing	1.00	LS	\$10,000	\$10,000	Allowance
11.12	Signage	1.00	LS	\$5,000	\$5,000	Allowance
11.13	Landscaping	1.00	LS	\$10,000	\$10,000	Allowance
Subtotal, Estimated Construction Costs					\$7,367,086	\$7,367,000
Planning, Engineering & Design		10	%		\$736,709	\$737,000
Construction Management		7	%		\$515,696	\$516,000
Total Estimated Cost, Without Contingency					\$8,619,491	\$8,620,000
Contingency		30	%		\$2,585,847	\$2,585,000
TOTAL ESTIMATED CAPITAL COST					\$11,205,338	\$11,205,000



Planning, engineering and design of enhancements to STA-3/4 were initiated in FY 2003. A total of \$207,000 was expended in FY 2003 for those purposes, and is excluded from subsequent projections of expenditures in FY 2004 through FY 2016.

2.4.3. Revised Opinion of Incremental Operation and Maintenance Cost

The following is a revised summary listing of the anticipated incremental operation and maintenance requirements for the recommended enhancement to STA-3/4 (e.g., requirements in addition to those for operation and maintenance of STA-3/4 as presently designed):

- Maintenance of approximately 3.3 additional miles of interior levee;
- Operation and maintenance of the additional water control structures through the new levee subdividing Cell 3 into Cells 3A and 3B;
- Operation and maintenance of the three small forward-pumping stations along the interior levees between cells in series, included in the design to permit withdrawal from upstream emergent marsh cells to maintain stages in the downstream SAV cells. The pumps in these stations are assumed to be driven by electric motors. The unit operating costs are estimated using a power cost of \$0.08/kw-hr; an assumed total head of 6 feet; an overall efficiency of 85%; and an assigned utilization equal to 10% of the overall time. The resultant power consumption is 0.43 kw/cfs, or 3,770 kw-hr/cfs/yr., yielding an approximate average annual cost of \$300/yr/cfs;
- Additional herbicide treatment of Cells 1B, 2B and 3B for control of invasive species and emergent macrophyte vegetation. This item includes both:
 - Annual costs to spray for invasive species;
 - Additional costs for post-drought eradication of undesirable species.
- Operation and maintenance costs associated with the proposed recreational facilities.



A revised opinion of the average annual incremental operation and maintenance cost for the recommended enhancement of STA-3/4 including the proposed recreational facilities is presented in Table 2.12.

Table 2.12 Revised Opinion of Incremental O&M Cost, Enhanced STA-3/4

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
1	New Internal Levee	3.3	Mi.	\$3,300	\$10,890	
2	New Water Control Structures	6	Ea.	\$8,000	\$48,000	Gated culverts
3	Mech. Maintenance, Pumping Station, Cell 1A-1B, 2 units assumed	2	Ea.	\$10,000	\$20,000	
4	Mech. Maintenance, Pumping Station, Cell 2A-2B, 1 unit assumed	1	Ea.	\$10,000	\$10,000	
5	Mech. Maintenance, Pumping Station, Cell 3A-3B, 1 unit assumed	1	Ea.	\$10,000	\$10,000	
6	Power Consumption, Pumping Station, Cell 1A-1B	54	CFS	\$300	\$16,200	
7	Power Consumption, Pumping Station, Cell 2A-2B	29	CFS	\$300	\$8,700	
8	Power Consumption, Pumping Station, Cell 3A-3B	24	CFS	\$300	\$7,200	
9	Incremental Cost for Annual Vegetation Control	8,809	AC	\$30	\$264,270	
10	Recreational Facilities					
10.1	Comp Toilet & Trash Collection	12	Mos.	\$1,500	\$18,000	
10.2	Routine Cleanup and Maintenance	12	Mos.	\$2,000	\$24,000	
10.3	Additional O&M Rec. Facilities				\$30,640	Estimated @ 5% const. Cost
Subtotal, Estimated Incremental Operation & Maintenance Costs					\$467,900	
Contingency 30 %					\$140,370	
TOTAL INCREMENTAL O&M COST					\$608,270	\$608,000

The estimated cost for operation, maintenance and monitoring of STA-3/4 as it is presently constructed is discussed in Part 8 of the October 27, 2003 Long-Term Plan. The estimated monitoring costs in Part 8 of the October 27, 2003 include the additional costs for monitoring of the recommended enhancements.

2.4.4 Revised Implementation Schedule

The planning, engineering and design of the enhancements to STA-3/4 were completed in FY 2004. The following enhancements are scheduled to be completed by December 2006:



- Construction of the new interior levee subdividing Cell 3 into Cells 3A and 3B;
- Construction of the additional water control structures through the new levee subdividing Cell 3 into Cells 3A and 3B;
- Extension of the overhead power distribution line;
- Construction of the small forward-pumping stations along the interior levees between cells in series;
- Herbicide treatment of Cells 1B, 2B and 3B for removal of emergent macrophyte vegetation to permit development of submerged aquatic vegetation (SAV).

Herbicide treatment of Cell 2B was conducted in FY 2004, and it is presently recommended that the herbicide treatment of Cells 1B and 3B be scheduled for FY 2006. By staggering the treatment of the downstream cells in this fashion, STA-3/4 can be kept in at least partial operation throughout the period 2004-2006. Cell 1B was taken out of agricultural production in 1994, and was operated as the Terrytown Wildlife Management Area (WMA) until construction of STA-3/4.

The design and engineering of the first phase of the recreational facilities is proposed to occur in FY 2005 with construction proposed to occur in FY 2006. The design and engineering of the second phase of recreational facilities is proposed to occur in FY 2006 with construction proposed to occur in FY 2007.

2.4.5. Revised Projected Expenditures

A revised summary of the projected Expenditures through FY 2016 (in FY 2004 dollars) for the recommended enhancement of STA-3/4 including the proposed recreational facilities is presented in Table 2.13.



Table 2.13 Revised Projected Expenditures, Enhanced STA-3/4

Fiscal Year	Planning, Eng. & Design	Const. Mgmt.	Construction	Land Acquisition	Project Contingency	Total Capital Cost	Incremental O&M Cost	Fiscal Year Total (FY 2004 \$)
2004	\$674,720	\$0				\$674,720		\$674,720
2005	\$56,680	\$343,404	\$4,902,454		\$2,366,399	\$7,668,936	\$249,000	\$7,917,936
2006	\$5,600	\$168,676	\$2,408,546		\$198,945	\$2,781,767	\$249,000	\$3,030,767
2007		\$3,920	\$56,000		\$19,656	\$79,576	\$608,000	\$687,576
2008						\$0	\$608,000	\$608,000
2009						\$0	\$608,000	\$608,000
2010						\$0	\$608,000	\$608,000
2011						\$0	\$608,000	\$608,000
2012						\$0	\$608,000	\$608,000
2013						\$0	\$608,000	\$608,000
2014						\$0	\$608,000	\$608,000
2015						\$0	\$608,000	\$608,000
2016						\$0	\$608,000	\$608,000
Total	\$737,000	\$516,000	\$7,367,000	\$0	\$2,585,000	\$11,205,000	\$6,578,000	\$17,783,000

2.5. STA-5

STA-5 provides a total effective treatment area of 4,110 acres, situated generally on lands between L-2 Borrow Canal (on the west) and Rotenberger Wildlife Management Area (on the east), immediately northeast of the confluence of the Deer Fence Canal with the L-2 Borrow Canal. This stormwater treatment area treats inflows from the L-2 Borrow Canal (via Structure G-342). These inflows are comprised of contributions from the following:

- Agricultural runoff and discharges from the C-139 Basin (partial, see STA-6 discussion);
- Supplemental (irrigation) water from Lake Okeechobee necessary to prevent dryout of the STA.

The area tributary to STA-5 is shown in Figure 2.13.

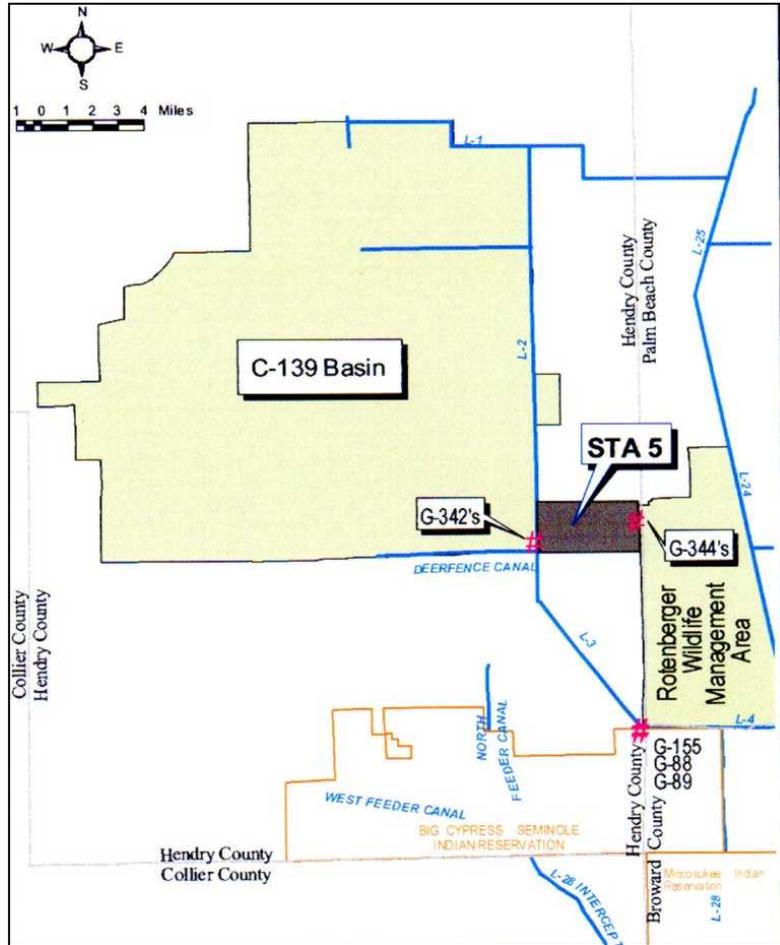


Figure 2.13 STA-5 Tributary Basin

Discharges from STA-5 may be directed either to the Miami Canal (through the STA-5 Discharge Canal along the north line of the Rotenberger Wildlife Management Area) or to the Rotenberger Wildlife Management Area (WMA) via the G-410 Pump Station. Discharges to the Rotenberger WMA are for the purpose of hydrologic restoration of the (approx.) 29,000-acre WMA.

STA-5 is now complete and in full operation. A schematic diagram of STA-5 as it exists is presented in Figure 2.14.

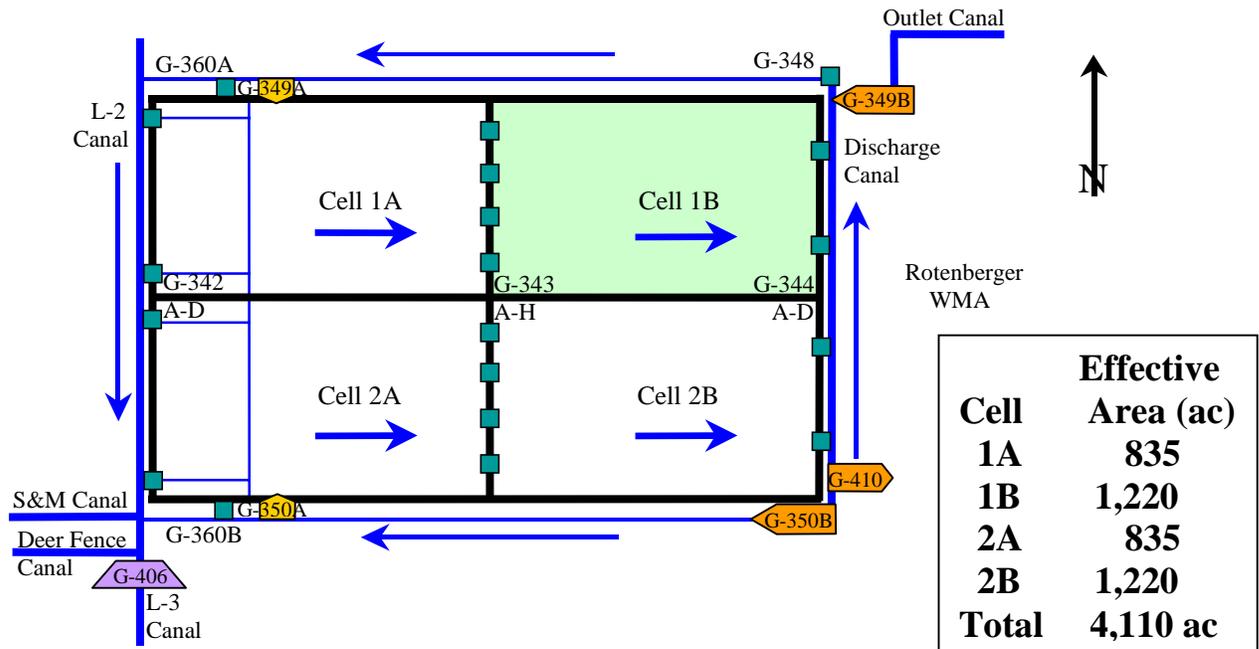


Figure 2.14 Schematic of Existing STA-5

STA-5 has two parallel flow paths, each developed with two cells in series, each with an easterly flow direction. With the exception of Cell 1B, STA-5 has been developed in emergent macrophytic vegetative communities; Cell 1B has been developed as a submerged aquatic vegetation (SAV) community (shown shaded in Figure 2.14).

2.5.1. Revised Recommended Improvements and Enhancements

The recommended enhancements for STA-5 in the October 27, 2003 LTP consisted of the conversion of Cell 2B from emergent macrophyte vegetation to submerged aquatic vegetation (SAV) as well as the modification of the G-343 Structures. It was also recommended that additional seepage return pumping stations be constructed near the northwest corner of Cell 1B and the southwest corner of Cell 2B. Each of those stations was expected to provide a nominal capacity of 45 cfs each, similar to the capacity of existing pumping stations G-349A and G-350A. In addition, it was recommended to construct an additional canal level control culvert in each of the seepage collection canals.



STA-5 has been experiencing higher than anticipated nutrient loading and as a result, outflow concentrations have not been as low as was anticipated during the original design. The availability of the land between STA-5 and STA-6 provides an opportunity to re-evaluate the water quality treatment measures in and around STA-5.

The following revisions are proposed to the October 27, 2003 Long-Term Plan recommended enhancements and improvements:

- Removal of flow obstructions in Cells 1B and 2B observed directly upstream of the G-344 structures;
- Construction of a third flow-way (one-mile wide immediately south of existing flow-way 2) on a 2,560-acre portion of Compartment C. Assuming the same topographic limitations as in the existing STA, approximately 2,055 acres could be developed as effective treatment area. One spillway of the existing G-406 diversion structure could be utilized as the inflow structure for the new flow-way, with a new inflow distribution canal excavated. Interior water control structures could be installed in a new levee that would separate the 835-acre upstream cell (Cell 3A) from the 1,220-acre downstream Cell 3B. Cell 3A could be developed as an emergent marsh and Cell 3B could be developed as an SAV cell identical to Cell 1B and 2B, and new Cell 3B outlet control structures (similar to G-344A-D) could be constructed. A new discharge canal could convey treated water either north to the existing STA-5 discharge canal or south along the western boundary of the Rotenberger Wildlife Management Area to the existing STA-6 discharge canal. Additional discharge capability in the STA-6 discharge canal, as well as a possible new pump station to move water into WCA-3A may be required.
- Deletion of the additional seepage return pump station and the canal level control culvert in the southern seepage control canal. Because farming operations are now scheduled to permanently cease on Compartment C by the end of 2004, it is now proposed to construct the seepage return pump station near the northwest corner of Cell 1B only.

The following assumptions were used to develop a conceptual plan for adding additional treatment area to STA-5; if any of these assumptions are incorrect, unavoidable delays to the project could result:



- The majority of the 8,800 acres of the former USSC Unit 2 property is available for immediate use; the balance, approximately 3,000 acres, will be available by April 2005.
- Existing STA-6 Section 1 and planned Section 2 would receive runoff from C-139 Annex and approximately 12 inches of runoff per year from the fallow portion of Compartment C.
- Additional inflows (beyond those included in the Long-Term Plan analyses) will be sent to the expanded treatment area. The increase is a result of updated information on the flow volumes and phosphorus concentrations from the C-139 Annex and the southern C-139 Basin.
- Design can proceed utilizing an existing engineering contract.
- Construction can proceed without delay.
- The Florida DEP and U.S. Army Corps of Engineers will be part of the development team to ensure expedited review, approval and issuance of all necessary permits or permit modifications so as not to delay construction or operation.
- There will be no delays due to remediation of hazardous material resulting from prior land use (responsibility of prior landowner).
- The recommendations will require revisions to the Long-Term Plan; it is assumed that the FDEP review and approval process will be completed expeditiously so as not to delay construction or operation.

It is proposed to immediately expand STA-5 by adding a third parallel flow-way which will reduce the phosphorus load on the current STA-5 footprint and increase operational flexibility for the STA. Approximately 4 miles of perimeter levee, 2 miles of inflow canal, 5 miles of a new discharge canal, and six gated water control structures will comprise the major construction features for the expanded STA-5. A revised schematic of STA-5, expanded as recommended herein is presented in Figure 2.15. STA-5 will be further expanded using the remaining land in Compartment C as depicted in Figure 2.15. The details of this additional treatment acreage are to be developed concurrently with the design of the new third flow-way for STA-5.

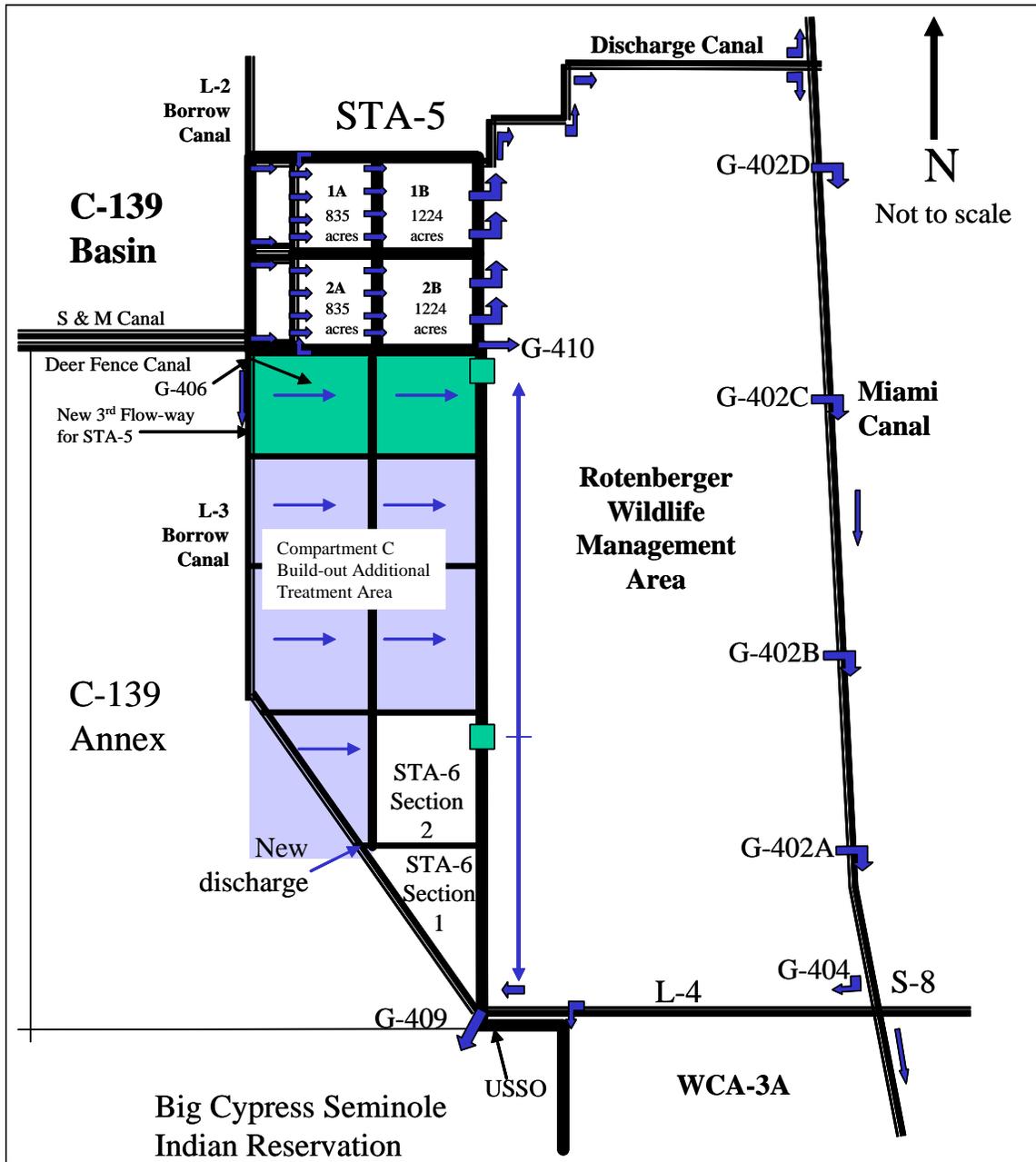


Figure 2.15 Revised Schematic of Enhanced STA-5

In addition to the above recommendations, recreational facilities are proposed to provide public access to STA-5. The first phase of the proposed recreational facilities includes a parking area, a composting toilet and an information kiosk. Pedestrian gates, signage and fencing as needed to



define public access areas and to protect sensitive equipment are also proposed. The second phase includes a viewing tower, landscaping and a picnic shelter.

2.5.2. Revised Opinion of Capital Cost

A revised opinion of the capital cost for implementing the revised recommended enhancement of STA-5 including the proposed expansion and the proposed recreational facilities is presented in Table 2.14. That estimate is reported in FY 2004 dollars.



Everglades Protection Area Tributary Basins
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Table 2.14 Revised Opinion of Capital Cost, STA-5 Enhancement

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
1	New Gates for Exist. G-343 Structures	8	Ea.	\$51,750	\$414,000	Unit cost from June 2001 Estimate for STA-3/4, Esc. Adj. for 2004 increase.
2	Water Control Structure Electrical (w/ Telemetry) for Modified G-343	8	Ea.	\$49,450	\$395,600	Unit cost from June 2001 Estimate for STA-3/4, Esc. Adj. for 2004 increase.
3	Stilling Wells (Includes Electrical and Telemetry) at N-S Interior Levees	2	Ea.	\$10,350	\$20,700	Unit cost from June 2001 Estimate for STA-3/4, Esc. Adj. for 2004 increase.
4	Electrical Power Distribution for N-S Interior Levee (G-343)	2.0	Mi.	\$92,000	\$184,000	Unit cost from Evaluation Methodology Adj. for 2004 increase.
5	New Seepage Return Pump Station, Cell 1B	45	CFS	\$10,925	\$491,625	Unit cost from Evaluation Methodology Adj. for 2004 increase.
6	Eradication of Existing Vegetation	1,220	AC	\$230	\$280,600	Unit cost from 02/2002 STSOC for SAV/LR Adj. for 2004 increase.
7	Control buildings for G-343 gates/electrical	8	Ea.	\$23,000	\$184,000	Unit cost from 02/2002 STSOC for SAV/LR Adj. for 2004 increase.
8	Replace RACU with MOSCAD at inflow and outflow structures	8	Ea.	\$34,500	\$276,000	Unit cost from 02/2002 STSOC for SAV/LR Adj. for 2004 increase.
3rd Flow-way Addition						
7	3rd Flow-way Addition: Eradication of Existing Vegetation	2940	AC	\$200	\$588,000	Order of Magnitude estimate
8	3rd Flow-way Addition: Inflow Canal & Levee	100,000	CY	\$3.19	\$319,000	Order of Magnitude estimate
9	3rd Flow-way Addition: North Perimeter Levee & Canal	450,000	CY	\$3.19	\$1,435,500	Order of Magnitude estimate
10	3rd Flow-way Addition: Degrading Farm Roads & Plug	70,000	CY	\$2.25	\$157,500	Order of Magnitude estimate
11	3rd Flow-way Addition: Clear & Grub	210	AC	\$500.00	\$105,000	Order of Magnitude estimate
12	3rd Flow-way Addition: Perimeter Levee & Canal	250,000	CY	\$3.19	\$797,500	Order of Magnitude estimate
13	3rd Flow-way interior levee	1	Mi.	\$390,000	\$390,000	Order of Magnitude estimate
14	3rd Flow-way Addition: Inflow Structures 8' X 8'	2	EA	\$190,000	\$380,000	Order of Magnitude estimate
15	3rd Flow-way interior structures	4	EA			Order of Magnitude estimate
16	3rd Flow-way Addition: Outflow Structures	1	EA	\$2,000,000	\$2,000,000	Order of Magnitude estimate
17	3rd Flow-way Addition: Power Distribution	3.3	MI	\$80,000	\$264,000	Order of Magnitude estimate
18	3rd Flow-way Addition: Telemetry	6	EA	\$9,000	\$54,000	Order of Magnitude estimate
19	3rd Flow-way control buildings	10	EA	\$20,000	\$200,000	Order of Magnitude estimate
20	3rd Flow-way Addition: Stripping Muck	80,000	CY	\$2.00	\$160,000	Order of Magnitude estimate
21	3rd Flow-way Addition: Blasting	800,000	CY	\$1.69	\$1,352,000	Order of Magnitude estimate
Flow Obstruction Removal:						
22	CELLS 1B & 2B Flow Obstruction Removal: Clear & Grub	8	AC	\$500.00	\$4,000	Added
23	CELLS 1B & 2B Flow Obstruction Removal: Degrade and Haul	13,000	CY	\$2.25	\$29,250	Added
24	G-406 MODIFICATIONS	1	LS	\$250,000	\$250,000	modify existing structure to serve as inflow to new flow way
Recreational Facilities first phase - 2006 Construction						
25.1	20 Space Parking Lot	880.00	SY	\$20.48	\$18,022	FDOT Subgrade, 6" lime rock Material and Grading / Shaping
25.2	Information Kiosk 8' x 12'	1.00	Ea.	\$10,000	\$10,000	Allowance Based on recent S-5A boatramp project
25.3	Pedestrian Gates	3.00	Ea.	\$800	\$2,400	Fence Gate (Type B) Single 4' FDOT 0550-76-41
25.4	Protective Fencing	1.00	LS	\$10,000	\$10,000	Added
25.5	Signage	1.00	LS	\$5,000	\$5,000	Added
25.6	Compost Toilet and Trash Cans	1.00	Ea.	\$40,000	\$40,000	Based on Recent similar purchase.
Recreational Facilities second phase - 2007 Construction						
25.7	Picnic Shelter 12' x 20'	1.00	Ea.	\$16,000	\$16,000	Based on Comfort Stations, prefab, stock, excl. int. finish or electrical, max
25.8	Viewing Tower 12' (H) 20' x 20' with ADA Boardwalk	1.00	Ea.	\$30,000	\$30,000	Added
25.9	Landscaping	1.00	LS	\$10,000	\$10,000	
Subtotal, Estimated Construction Costs					\$10,873,697	\$10,874,000
Planning, Engineering & Design			10 %		\$1,087,370	\$1,087,000
Construction Management			7 %		\$761,159	\$761,000
Total Estimated Cost, Without Contingency					\$12,722,226	\$12,722,000
Contingency			30 %		\$3,816,668	\$3,817,000
TOTAL ESTIMATED CAPITAL COST					\$16,538,894	\$16,539,000



2.5.3. Revised Opinion of Incremental Operation & Maintenance Cost

The following is a summary listing of the anticipated incremental operation and maintenance requirements for the recommended enhancements to STA-5 including the proposed recreational facilities (e.g., requirements in addition to those for operation and maintenance of STA-5 as it presently exists).

- Additional operation and maintenance requirements for the modified G-343 structures;
- Maintenance of one new seepage return station, in which the two pumps are anticipated to be driven by electric motors. As the total volume of seepage return is not expected to increase, no additional power consumption is anticipated;
- Maintenance of exterior levees associated with new third flow-way;
- Operation and maintenance of the additional water control structures/pump stations in new third flow-way;
- Additional herbicide treatment of new third flow-way for control of invasive species and emergent macrophyte vegetation. This item includes both:
 - Annual costs to spray for invasive species;
 - Additional costs for post-drought eradication of undesirable species.
- Additional herbicide treatment of Cell 2B for control of invasive species and emergent macrophyte vegetation. This item includes both:
 - Annual costs to spray for invasive species;
 - Additional costs for post-drought eradication of undesirable species.
- Operation and maintenance costs associated with the proposed recreational facilities.



A revised opinion of the average annual incremental operation and maintenance cost for the revised recommended enhancement of STA-5 including the proposed expansion and the proposed recreational facilities is presented in Table 2.15.

Table 2.15 Revised Opinion of Incremental O&M Cost, Enhanced STA-5

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
1	Additional Maintenance of Gates at Modified G-343 Structures	8	Ea.	\$8,000	\$64,000	Unit cost from Evaluation Methodology, Applied at 1/2
2	Mech. Maintenance, New Seepage Pump Station, per unit	2	Ea.	\$10,000	\$20,000	Unit cost from Evaluation Methodology
3	Incremental Cost for Annual Vegetation Control, SAV Cells	1,220	AC	\$30	\$36,600	
4	Recreational Facilities					
4.1	Additional O&M Rec. Fac.				\$6,571	Estimated @ 5% of Const. Cost
4.2	Comp Toilet & Trash Collection	12	Mos.	\$1,500	\$18,000	
4.3	Routine Cleanup and Maintenance	12	Mos.	\$2,000	\$24,000	
5	3rd Flow-way and other work					
5.1	Additional O&M for 3rd flow-way and other added work				\$447,288	Estimated @ 5% of Const. Cost
Subtotal, Estimated Incremental Operation & Maintenance Costs					\$616,459	
Contingency		30 %			\$184,938	
TOTAL INCREMENTAL O&M COST					\$801,396	\$801,000

The estimated cost for operation, maintenance and monitoring of STA-5 as it now exists is discussed in Part 8 of the October 27, 2003 LTP. The estimated monitoring costs in that Part 8 also included the additional costs for monitoring of the recommended enhancements in the October 27, 2003 Long-Term Plan. Costs associated with the additional monitoring of the new third flow-way are not included in this Part 2, and therefore will need to be included in a subsequent revised Part 8.

2.5.4. Revised Implementation Schedule

Planning, engineering and design of the enhancements to STA-5 shown in the October 27, 2003 Long-Term Plan took place in FY 2004. The conversion of Cell 2B from emergent macrophyte vegetation to SAV is scheduled to be conducted in the dry season of Fiscal Year (FY) 2005, and the construction of the STA-5 enhancements are to be conducted during FY 2005 and FY 2006.



Planning, engineering and design of the new third flow-way and the build-out of treatment areas on Compartment C is proposed to be completed in FY 2005 and construction will be completed as soon as possible, subject to the time constraints of land availability, design, permitting, and construction.

The design and engineering of the first phase of the recreational facilities is proposed to occur in FY 2005 with construction proposed to occur in FY 2006. The design and engineering of the second phase of recreational facilities is proposed to occur in FY 2006 with construction proposed to occur in FY 2007.

2.5.5. Revised Projected Expenditures

A revised summary of the projected expenditures through FY 2016 (in FY 2004 dollars) for the recommended enhancement of STA-5 including the proposed expansion and the proposed recreational facilities is presented in Table 2.16.

Table 2.16 Revised Projected Expenditures, STA-5 Enhancement

Fiscal Year	Planning, Eng. & Design	Const. Mgmt.	Construction	Land Acquisition	Project Contingency	Total Capital Cost	Incremental O&M Cost	Fiscal Year Total (FY 2004 \$)
2004	\$50,000	\$0				\$50,000		\$50,000
2005	\$1,031,400	\$566,830	\$8,155,500		\$2,862,750	\$12,616,480		\$12,616,480
2006	\$5,600	\$190,250	\$2,662,500		\$934,594	\$3,792,944	\$400,500	\$4,193,444
2007		\$3,920	\$56,000		\$19,656	\$79,576	\$801,000	\$880,576
2008						\$0	\$801,000	\$801,000
2009						\$0	\$801,000	\$801,000
2010						\$0	\$801,000	\$801,000
2011						\$0	\$801,000	\$801,000
2012						\$0	\$801,000	\$801,000
2013						\$0	\$801,000	\$801,000
2014						\$0	\$801,000	\$801,000
2015						\$0	\$801,000	\$801,000
2016						\$0	\$801,000	\$801,000
Total	\$1,087,000	\$761,000	\$10,874,000	\$0	\$3,817,000	\$16,539,000	\$8,410,500	\$24,949,500

2.6 STA-6

STA-6 Section 1 currently provides a total effective treatment area of 870 acres, situated on lands between L-3 Borrow Canal (on the west) and Rotenberger Wildlife Management Area (on the east), immediately north of the confluence of the L-3 and L-4 Borrow Canals. Section 1 is now



complete and in operation. The Everglades Construction Project also includes the construction of Section 2, which will provide an additional total effective treatment area of approximately 1,400 acres, immediately north of Section 1. The construction of Section 2 is presently scheduled for completion prior to December 31, 2006.

Inflows to STA-6 are comprised of contributions from a number of sources, including:

- Agricultural runoff and discharge from the United States Sugar Corporation's (USSC) Southern Division Ranch, Unit 2;
- Agricultural runoff and discharges from the USSC Southern Division Ranch, Unit 1 (the "C-139 Annex");
- Agricultural runoff and discharges from the C-139 Basin (high flows diverted from STA-5 through Structure G-406);
- Supplemental (irrigation) and BMP water from Lake Okeechobee necessary to prevent dryout of the STA (at present, no physical means are in place to introduce the supplemental water to STA-6).

The basins tributary to STA-6 are shown in Figure 2.16.

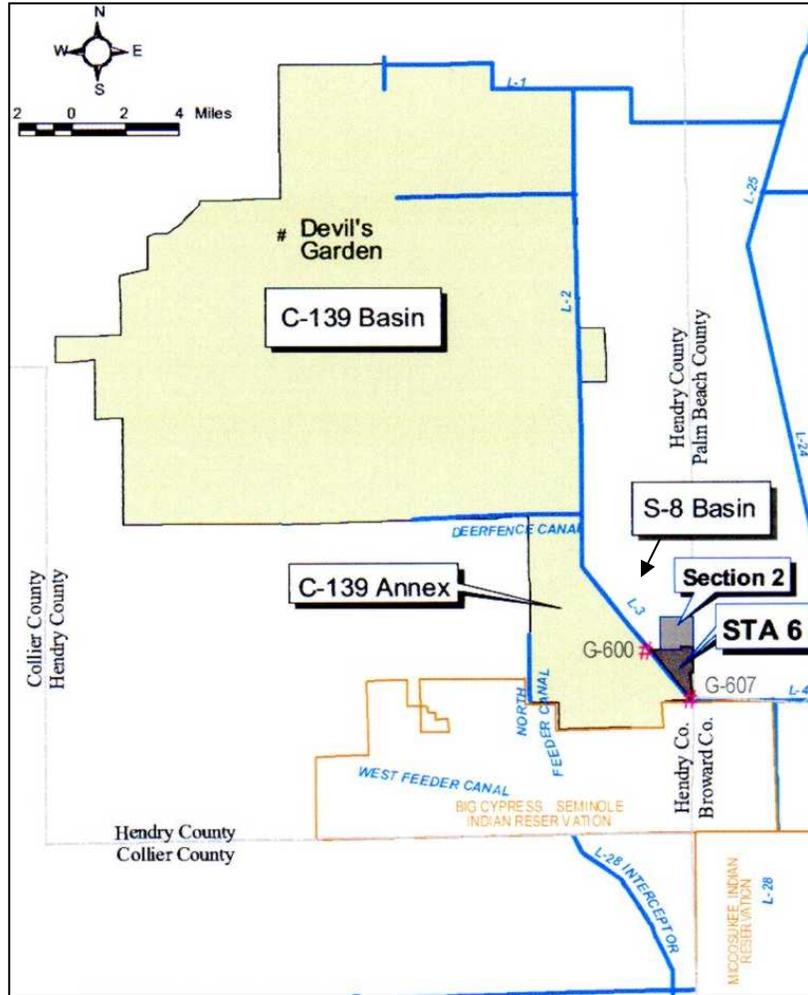


Figure 2.16 Basins Tributary to STA-6

A schematic diagram of STA-6, including both Section 1 and Section 2, is presented in Figure 2.17.

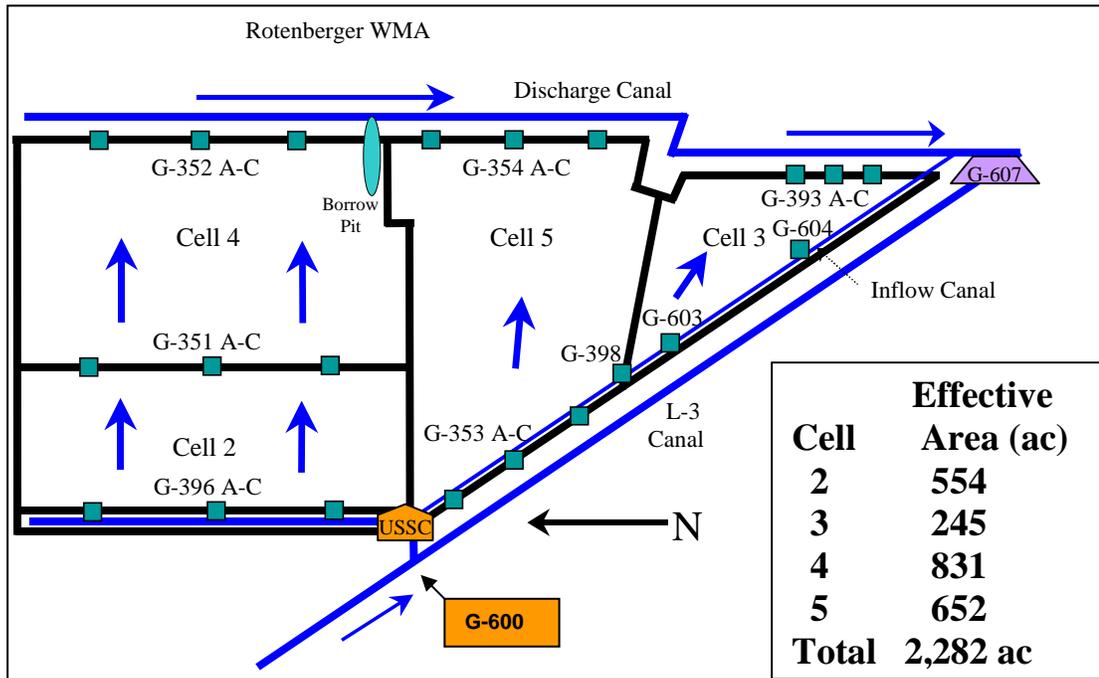


Figure 2.17 Schematic of STA-6, Sections 1 and 2

Cells 3 and 5 comprise the existing Section 1. Cells 2 and 4 comprise the proposed Section 2. It should be noted that the general configuration of Cells 2 and 4 vary from the original design of Section 2 which was carried to a 90% level of completion in 1997. Section 2 has been rearranged to facilitate the proposed enhancements to STA-6 recommended herein. In essence, the original design reflected two cells in parallel, but in the October 27, 2003 Long-Term Plan, the design was modified to two cells in series. Upon full completion, STA-6 will consist of three parallel flow paths; the most northerly path will consist of two cells in series. Section 1 is presently developed in emergent macrophyte vegetation.

2.6.1. Revised Recommended Improvements and Enhancements

The October 27, 2003 Long-Term Plan recommended conversion of emergent vegetation to SAV in the downstream portion of Cell 5 of STA-6 Section 1. Construction of STA-6 Section 2 was included in the Long-Term Plan with recommended enhancements including an internal levee and



SAV in the downstream cell. The improvements and enhancements for STA-6 in the October 27, 2003 Long-Term Plan included the following recommendations:

- Construction of approximately 0.8 miles of interior levee, subdividing Cell 5 into Cells 5A and 5B;
- Construction of additional water control structures through the new levee subdividing Cell 5 into Cells 5A and 5B. These structures are assumed to be equivalent in number and character to Structures G-381 (two 8'x8' gated RCBs with telemetric control);
- Extension of an overhead power distribution line from Interior Levee 4, then north along the new levee across Cell 5 (total length of approximately 0.8 miles);
- Herbicide treatment of Cells 4 and 5B for removal of emergent macrophyte vegetation to permit development of SAV;
- Construction of a new water supply pumping station (G-401) for irrigation of STA-6. That pumping station is assigned a preliminary capacity of 30 cfs, roughly equivalent to a supply rate of 0.30" per day over the entire surface area of STA-6;
- Replacement of Structure G-603 (presently an uncontrolled weir at the inflow to Cell 3).

The following revisions to the above recommended enhancements are proposed:

- Recreational facilities are proposed to provide public access to STA-6. The proposed facilities include a parking area, landscaping, pedestrian gates, signage and fencing as needed to define public access areas and to protect sensitive equipment.
- In light of the availability of land to the west and north of STA-6, a review of the proposed enhancements to STA-6 Section 1 will be conducted to assess whether revisions are justified to improve performance or system efficiency, or to avoid redundant or unnecessary features. At a minimum, features to be evaluated include the inflow structures and the levee separating Cells 2 and 4.

A schematic diagram of STA-6, enhanced and modified as recommended herein, is presented in Figure 2.18.

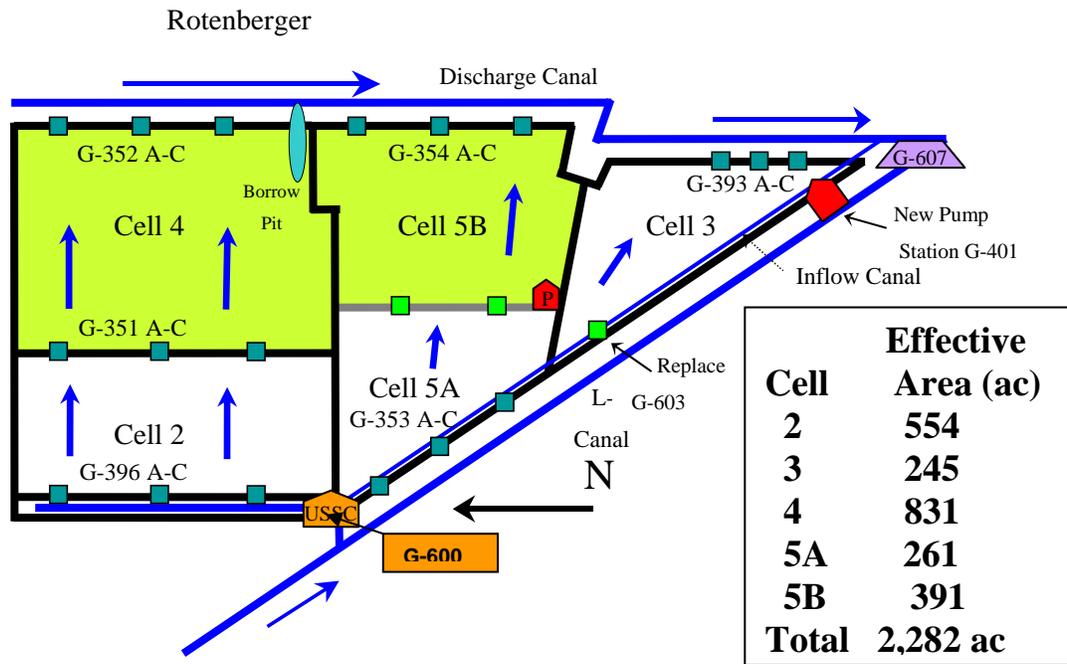


Figure 2.18 Schematic of Enhanced STA-6

In Figure 2.18, those areas to be converted to SAV are shown shaded.

2.6.2. Revised Opinion of Capital Cost

A revised opinion of the capital cost for implementing the recommended enhancements and modifications to STA-6 including the proposed recreational facilities is presented in Table 2.17. That estimate is reported in FY 2004 dollars.



Table 2.17 Revised Opinion of Capital Cost, STA-6 Enhancement

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
1	New Internal Levee, 7' height (Excludes Blasting Costs)	0.8	Mi.	\$448,500	\$358,800	Unit cost from Evaluation Methodology Adj. for 2004 increase.
2	New Water Control Structures (10'x8', Gated)	3	Ea.	\$230,000	\$690,000	Unit cost from June 2001 Estimate for STA-3/4, Esc. Adj. for 2004 increase.
3	Water Control Structure Electrical (Includes Telemetry)	3	Ea.	\$49,450	\$148,350	Unit cost from June 2001 Estimate for STA-3/4, Esc. Adj. for 2004 increase.
4	Stilling Wells (Includes Electrical and Telemetry)	3	Ea.	\$10,350	\$31,050	Unit cost from June 2001 Estimate for STA-3/4, Esc. Adj. for 2004 increase.
5	Electrical Power Distribution	0.8	Mi.	\$92,000	\$73,600	Unit cost from Evaluation Methodology Adj. for 2004 increase.
6	Water Supply Pumping Station	30	CFS	\$10,925	\$327,750	Unit cost from Evaluation Methodology Adj. for 2004 increase.
7	Eradication of Existing Vegetation	1,222	AC	\$230	\$281,060	Unit cost from 02/2002 STSOC for SAV/LR Adj. for 2004 increase.
8	Recreational Facilities					
8.1	5 Space Parking Lot	220	SY	\$20.48	\$4,506	FDOT Subgrade, 6" lime rock Material and Grading / Shaping
8.2	Pedestrian Gates	3.00	Ea.	\$800	\$2,400	Fence Gate (Type B) Single 4' FDOT 0550-76-41
8.3	Protective Fencing	1.00	LS	\$10,000	\$10,000	Allowance
8.4	Signage	1.00	LS	\$5,000	\$5,000	Allowance
8.5	Landscaping	1.00	LS	\$10,000	\$10,000	Allowance
Subtotal, Estimated Construction Costs					\$1,942,516	\$1,943,000
Planning, Engineering & Design		10 %			\$194,252	\$194,000
Construction Management		7 %			\$135,976	\$136,000
Total Estimated Cost, Without Contingency					\$2,272,743	\$2,273,000
Contingency		30 %			\$681,823	\$682,000
TOTAL ESTIMATED CAPITAL COST					\$2,954,566	\$2,955,000

2.6.3. Revised Opinion of Incremental Operation & Maintenance Cost

The following is a revised summary listing of the anticipated incremental operation and maintenance requirements for the recommended enhancement to STA-6 including the recreational facilities (e.g., requirements in addition to those for operation and maintenance of STA-6 as presently constructed and planned):

- Maintenance of approximately 0.8 additional miles of interior levee;



- Operation and maintenance of the additional water control structures through the new levee subdividing Cell 5 into Cells 5A and 5B;
- Operation and maintenance of the new water supply pumping station (G-401). The pumps are assumed to be driven by electric motors. The unit operating costs are estimated using a power cost of \$0.08/kw-hr; an assumed total head of 6 feet; an overall efficiency of 85%; and an assigned utilization equal to 10% of the overall time. The resultant power consumption is 0.43 kw/cfs, or 3,770 kw-hr/cfs/yr., yielding an approximate average annual cost of \$300/yr/cfs;
- Operation and maintenance of the new water control structure replacing the inflow weir to Cell 3 (G-603);
- Additional herbicide treatment of Cells 4 and 5B for control of invasive species and emergent macrophyte vegetation. This item includes both:
 - Annual costs to spray for invasive species;
 - Additional costs for post-drought eradication of undesirable species.
- Operation and maintenance costs associated with the proposed recreational facilities.

A revised opinion of the incremental operation and maintenance cost for the recommended enhancement of STA-6 including the proposed recreational facilities is presented in Table 2.18.

Table 2.18 Revised Opinion of Incremental O&M Cost, Enhanced STA-6

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
1	New Internal Levee	0.8	Mi.	\$3,300	\$2,640	
2	New Water Control Structures	3	Ea.	\$8,000	\$24,000	
3	Mech. Maintenance, Water Supply Pumping Station, Each Unit	2	Ea.	\$10,000	\$20,000	
4	Power Consumption, Water Supply Pumping Station	30	CFS	\$300	\$9,000	
5	Incremental Cost for Annual Vegetation Control	1222	AC	\$30	\$36,660	
6	Recreational Facilities					
6.1	Routine Cleanup and Maintenance	12	Mos.	\$2,000	\$24,000	
6.2	Additional O&M for rec. facilities				\$1,095	Estimated @ 5% const. Cost
Subtotal, Estimated Incremental Operation & Maintenance Costs					\$117,395	
Contingency 30 %					\$35,219	
TOTAL INCREMENTAL O&M COST					\$152,614	\$153,000



The estimated cost for operation, maintenance and monitoring of STA-6 as it is presently planned is discussed in Part 8 of the October 27, 2003 Long-Term Plan. The estimated monitoring costs in Part 8 of the October 27, 2003 Long-Term Plan include the additional costs for monitoring of the recommended enhancements.

2.6.4. Revised Implementation Schedule

In the October 27, 2003 Long-Term Plan, STA-6 Section 2 and the recommended enhancements to Section 1 were scheduled for completion in late 2006. A concern was subsequently identified that taking Cell 5 off-line for construction of the new levee simultaneously with the construction of Section 2 would increase the likelihood of potential bypass of untreated water to the Everglades. Hence, the revised recommendation is to complete construction of STA-6 Section 2, and to then construct the Cell 5 levee and conduct the vegetation conversion after flow-through operation commences in STA-6 Section 2. The schedule for levee construction and vegetation conversion is subject to the growth of the new SAV in STA-6 Section 2 Cell 4 sufficient to demonstrate a net improvement in phosphorus and mercury levels relative to the inflow monitoring stations. It is anticipated that flow-through operation may take 6-18 months following completion of Cell 4, or June 2007 – June 2008. The 12-month period for new levee construction and vegetation conversion in Cell 5 would then commence (i.e., in FY07 at the earliest), with a target flow-through operation of Cell 5B of 6-18 months following construction, or December 2008 – December 2010.

The planning, engineering and design of the enhancements to STA-6 are anticipated to be completed concurrently with the redesign of STA-6, Section 2. One component of the engineering and design effort is to evaluate STA-6 Section 2 and the STA-6 Section 1 Enhancements for consistency with the proposal to build-out the remaining acreage of Compartment C with treatment areas, and to identify potential redundant or otherwise unnecessary features. The final design will also include evaluating the necessity for the levees and structures separating Cell 2 from Cell 4, and the proposed levee, structures and vegetation conversion in Cell 5.



The design and engineering for the proposed recreational facilities is proposed to occur in FY 2005 with construction proposed to occur in FY 2006.

2.6.5. Revised Projected Expenditures

A revised summary of the projected expenditures through FY 2016 (in FY 2004 dollars) for the recommended enhancement of STA-6 including the proposed recreational facilities is presented in Table 2.19.

Table 2.19 Revised Projected Expenditures, STA-6 Enhancement

Fiscal Year	Planning, Eng. & Design	Const. Mgmt.	Construction	Land Acquisition	Project Contingency	Total Capital Cost	Incremental O&M Cost	Fiscal Year Total (FY 2004 \$)
2004	\$150,000	\$0				\$150,000		\$150,000
2005	\$44,000	\$0				\$44,000		\$44,000
2006		\$46,160	\$659,500		\$247,400	\$953,060		\$953,060
2007		\$68,000	\$971,500		\$341,000	\$1,380,500	\$0	\$1,380,500
2008		\$21,840	\$312,000		\$93,600	\$427,440	\$0	\$427,440
2009						\$0	\$153,000	\$153,000
2010						\$0	\$153,000	\$153,000
2011						\$0	\$153,000	\$153,000
2012						\$0	\$153,000	\$153,000
2013						\$0	\$153,000	\$153,000
2014						\$0	\$153,000	\$153,000
2015						\$0	\$153,000	\$153,000
2016						\$0	\$153,000	\$153,000
Total	\$194,000	\$136,000	\$1,943,000	\$0	\$682,000	\$2,955,000	\$1,224,000	\$4,179,000

2.7 Revised Summary Opinion of Expenditures STA Enhancements

A revised summary opinion of the total estimated expenditures, in FY 2004 dollars, for the proposed enhancements to the STAs of the Everglades Construction Project including the proposed recreational facilities is presented in Tables 2.20 and 2.21.

Table 2.20 presents a revised listing of estimated expenditure by fiscal year and location for the incremental operation and maintenance costs projected to result from the enhancements.

Table 2.21 presents a revised listing of estimated expenditure by fiscal year and location for the capital costs associated with the enhancements.



Table 2.20 Revised Projected Expenditures, Incremental O&M for Enhanced STAs including Recreational Facilities

Fiscal Year	Projected Incremental O&M Expenditure by Location in FY 2004 \$						Fiscal Year Total Expenditure
	STA-1E	STA-1W	STA-2	STA-3/4	STA-5	STA-6	
2004	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2005	\$0	\$0	\$0	\$249,000	\$0	\$0	\$249,000
2006	\$116,922	\$0	\$0	\$249,000	\$400,500	\$0	\$766,422
2007	\$202,000	\$466,000	\$508,000	\$608,000	\$801,000	\$0	\$2,585,000
2008	\$202,000	\$466,000	\$508,000	\$608,000	\$801,000	\$0	\$2,585,000
2009	\$202,000	\$466,000	\$508,000	\$608,000	\$801,000	\$153,000	\$2,738,000
2010	\$202,000	\$466,000	\$508,000	\$608,000	\$801,000	\$153,000	\$2,738,000
2011	\$202,000	\$466,000	\$508,000	\$608,000	\$801,000	\$153,000	\$2,738,000
2012	\$202,000	\$466,000	\$508,000	\$608,000	\$801,000	\$153,000	\$2,738,000
2013	\$202,000	\$466,000	\$508,000	\$608,000	\$801,000	\$153,000	\$2,738,000
2014	\$202,000	\$466,000	\$508,000	\$608,000	\$801,000	\$153,000	\$2,738,000
2015	\$202,000	\$466,000	\$508,000	\$608,000	\$801,000	\$153,000	\$2,738,000
2016	\$202,000	\$466,000	\$508,000	\$608,000	\$801,000	\$153,000	\$2,738,000
Total*	\$2,136,922	\$4,660,000	\$5,080,000	\$6,578,000	\$8,410,500	\$1,224,000	\$28,089,422

- Notes: 1. All estimated expenditures are in FY 2004 dollars and exclude cost escalation.
 2. Table includes new Cell 4 of STA-2 and new 3rd Flow-way of STA-5.
 3. Table does not include STA-6 Section 2.

Table 2.21 Revised Projected Capital Expenditures, STA Enhancements including Recreational facilities

Fiscal Year	Projected Capital Expenditure by Location, in FY 2004 \$						Program Mgmt.	FY Total (2004 \$)
	STA - 1E	STA - 1W	STA - 2	STA - 3/4	STA - 5	STA - 6		
2004	\$0	\$69,700	\$160,000	\$674,720	\$50,000	\$150,000	\$33,133	\$1,137,553
2005	\$1,024,274	\$10,867,300	\$6,996,113	\$7,668,936	\$12,616,480	\$44,000	\$1,176,513	\$40,393,617
2006	\$904,070	\$3,333,000	\$5,872,426	\$2,781,767	\$3,792,944	\$953,060	\$529,118	\$18,166,386
2007	\$75,656	\$0	\$1,543,173	\$79,576	\$79,576	\$1,380,500	\$94,754	\$3,253,235
2008	\$0	\$0	\$4,390,791	\$0	\$0	\$427,440	\$144,547	\$4,962,778
2009	\$0	\$0	\$1,463,900	\$0	\$0	\$0	\$43,917	\$1,507,817
2010	\$0	\$0	\$1,463,597	\$0	\$0	\$0	\$43,908	\$1,507,505
2011	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2012	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2013	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2014	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2015	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2016	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total*	\$2,004,000	\$14,270,000	\$21,890,000	\$11,205,000	\$16,539,000	\$2,955,000	\$2,065,890	\$70,928,890

- Notes: 1. All estimated expenditures are in FY 2004 dollars and exclude cost escalation.
 2. Table includes new Cell 4 of STA-2 and new 3rd Flow-way of STA-5.
 3. Table does not include STA-6 Section 2.



2.8 Stormwater Treatment Areas on Compartments B and C

As part of the *adaptive implementation process* envisioned by the Long-Term Plan, it was anticipated that further refinements to the recommended water quality improvement measures would be made as more scientific and engineering information was obtained. In light of the recent availability of land in Compartments B and C, it is proposed to construct additional stormwater treatment areas (in addition to the new Cell 4 for STA-2 and the new third flow-way for STA-5) on the remaining acreage of Compartments B and C to further assist in maximizing the effectiveness of the existing STAs in improving water quality entering the EPA. This revised Part 2 includes conceptual configurations and preliminary cost estimates for the construction, operation and maintenance of STAs on Compartments B and C; these conceptual configurations and preliminary cost estimates are to be refined during the Regional Feasibility Study described further in Section 2.8.3 of this revised Part 2, and will be further refined during the subsequent design phase.

2.8.1 Compartment B Build-out

In addition to the new Cell 4 for STA-2, it is also proposed to construct additional treatment areas on the remaining acreage of Compartment B. A conceptual schematic of these new treatment areas is shown in Figure 2.19. The details of this additional treatment acreage, including necessary operational modifications to accommodate transfers of STA inflows, are to be evaluated in the Regional Feasibility Study described in Section 2.8.3.

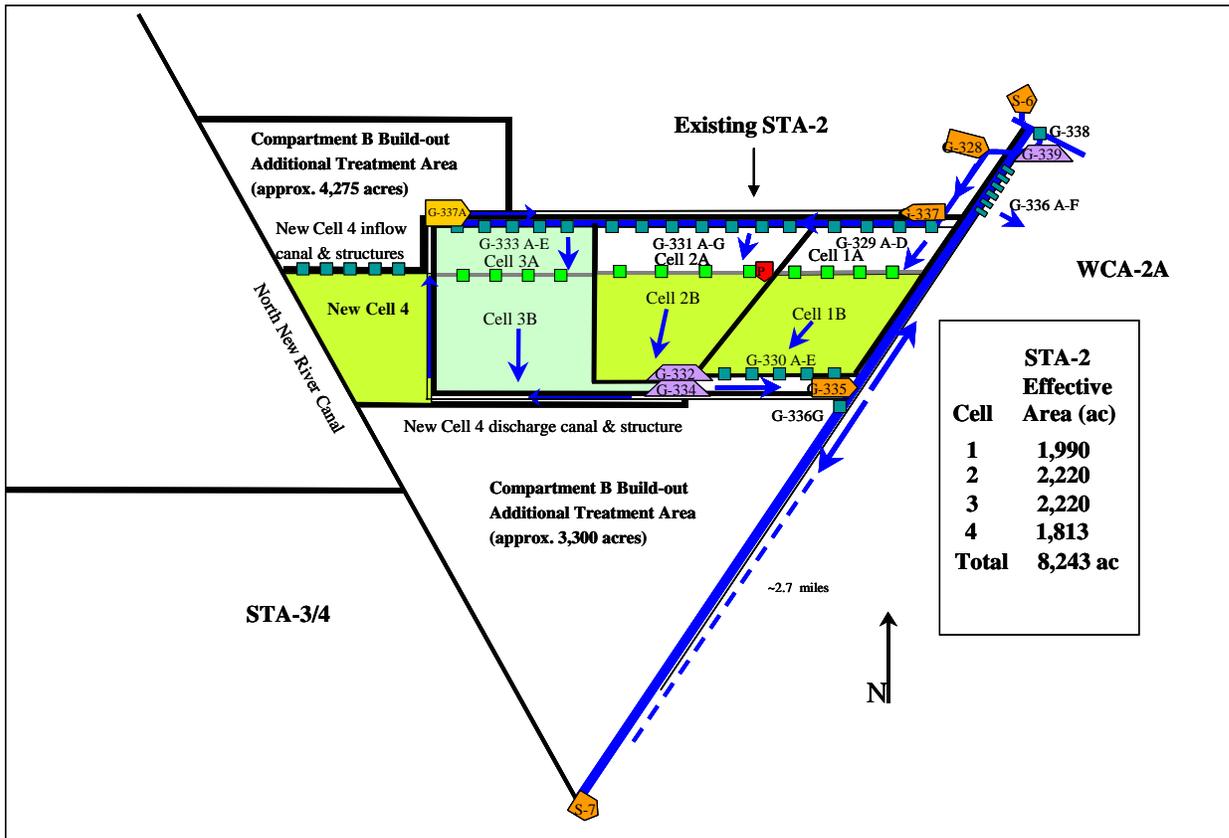


Figure 2.19 Schematic of Compartment B Build-out of Additional Treatment Area

Capital Cost for Compartment B Build-out

An opinion of the capital cost for implementing the proposed build-out of treatment areas on Compartment B is presented in Table 2.22. That estimate is reported in FY 2004 dollars. The capital cost estimate shown is preliminary and will be revised during the Regional Feasibility Study described in Section 2.8.3.



Table 2.22 Opinion of Capital Cost, Compartment B Build-out

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
Compartment B Buildout South Portion						
1	FPL Divider Levee	123,200	CY	\$1.50	\$184,800	cy/mile (place & compact) Haul cost is in farm road degrade
2	FPL Divider Levee	106,800	CY	\$1.50	\$160,200	material, haul material from cell B outflow collection canal excavation
3	Cell B Inflow Levee, Spreader	100,000	CY	\$3.19	\$319,000	cy/mile
4	Inflow Structures, Cell B	4	Ea.	\$200,000	\$800,000	(8' x 8')
5	Structure Telemetry and power, Cell B	4	Ea.	\$45,000	\$180,000	
6	Inflow pump station	1	Ea.	\$4,000,000	\$4,000,000	500 cfs @ \$8,000 / cfs
7	Outflow pump station	1	Ea.	\$4,000,000	\$4,000,000	500 cfs @ \$8,000 / cfs
8	Outflow structure	1	Ea.	\$1,000,000	\$1,000,000	
9	Cell B Outflow collection canal	106,800	CY	\$3.25	\$347,100	1 mile - haul fill to FPL Levee
10	Fill North/south ditches	40,000	CY	\$2.25	\$90,000	8 miles (5,000 cy / mile)
11	Demo farm pump stations	3	Ea.	\$50,000	\$150,000	
12	Build up east conservation area levee	50,000	CY	\$3	\$162,500	1 mile @ 50,000 cy / mile, load, haul and place
13	Blasting	256,100	CY	\$1.69	\$432,809	canal
14	Degrade east and west farm roads	123,200	CY	\$3.25	\$400,400	cost
15	Muck stripping	20,782	CY	\$2	\$41,564	approx 10% of levees
16	Stilling Wells	6	Ea.	\$9,000	\$54,000	
17	Power Distribution	2	Mi.	\$80,000	\$160,000	1 mile cell B intake and 1 mile misc.
18	Clear and grub	895	AC	\$500	\$447,500	
Compartment B Buildout North Portion						
1	East Levee	100,000	CY	\$3.19	\$319,000	cy/mile
2	North Inflow Canal, Levee, Spreader	880,000	CY	\$3.19	\$2,807,200	cy/mile
3	Inflow Structures	9	Ea.	\$200,000	\$1,800,000	1 every 0.5 miles (8' x 8')
4	Structure Telemetry and power	9	Ea.	\$45,000	\$405,000	
5	Inflow pump station	1	Ea.	\$8,000,000	\$8,000,000	1,000 cfs @ \$8,000 / cfs
6	West Levee	0	CY	\$3.19	\$0	existing - 2.4 miles
7	Fill North/south ditches	30,000	CY	\$2.25	\$67,500	6 miles (5,000 cy / mile)
8	South Levee - degrade muck berm	11,500	CY	\$2.25	\$25,875	2.3 miles @ 5,000cy / mile
9	Demo Vacant Shop Area	2	Ea.	\$50,000	\$100,000	
10	Demo farm pump stations	2	Ea.	\$50,000	\$100,000	
11	Plug east seepage / supply canal	135,000	CY	\$0	\$0	1 mile (\$1.00 added to unit rate of east/west farm road degrade for haul)
12	Outflow structures	2	Ea.	\$1,000,000	\$2,000,000	
13	Blasting	980,000	CY	\$1.69	\$1,656,200	use levee cy
14	Degrade east and west farm roads	135,000	CY	\$3.25	\$438,750	9.6miles x 2 sides (7,000cy / mile), plus haul cost
15	Muck stripping	98,000	CY	\$2	\$196,000	approx 10% of levees
16	Stilling Wells	6	Ea.	\$9,000	\$54,000	
17	Power Distribution	4	Mi.	\$80,000	\$320,000	
18	Clear and grub	690	AC	\$500	\$345,000	
Subtotal, Estimated Construction Costs					\$31,564,398	
Planning, Engineering & Design					\$3,156,440	\$31,564,398
Program & Construction Management					\$3,156,440	\$3,156,440
Total Estimated Cost, Without Contingency					\$37,877,278	\$37,877,278
Contingency					\$11,363,183	\$11,363,183
TOTAL ESTIMATED CAPITAL COST*					\$49,240,461	\$49,240,461

Notes: 1. All estimated expenditures are in FY 2004 dollars and exclude cost escalation.
 2. Total cost based on preliminary estimate to be revised during Regional Feasibility Study.
 3. Table does not include new Cell 4 of STA-2.

Annual O&M for Compartment B Build-out

An opinion of the annual operation and maintenance cost for the proposed build-out of treatment areas on Compartment B is presented in Table 2.23. The annual operation and maintenance cost estimate shown is preliminary and will be revised during the Regional Feasibility Study described in Section 2.8.3.



Table 2.23 Opinion of Annual O&M Cost, Compartment B Build-out

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
	Order of Magnitude, Incremental Cost for Annual O&M				\$1,578,220	Estimated @ 5% Const. Estimate* Approx. \$200/acre
Subtotal, Estimated Incremental Operation & Maintenance Costs					\$1,578,220	
	Contingency		30 %		\$473,466	
TOTAL INCREMENTAL O&M COST					\$2,051,686	\$2,052,000

Notes: 1. All estimated expenditures are in FY 2004 dollars and exclude cost escalation.
 2. Total cost based on preliminary estimate to be revised during Regional Feasibility Study.
 3. Table does not include new Cell 4 of STA-2.

Implementation Schedule for Compartment B Build-out

It is anticipated that all engineering, planning and design for the additional treatment areas on the remainder of Compartment B will be initiated in FY 2005 following the completion of the Regional Feasibility Study. Construction is proposed to be completed as soon as possible subject to the time constraints of land availability, design, permitting, and construction.

2.8.2. Compartment C Build-out

In addition to the proposed STA-5 enhancements, the new third flow-way for STA-5 described in Section 2.5 of this revised Part 2, and the construction of STA-6 Section 2 it is also proposed to construct additional treatment areas on the remaining acreage of Compartment C. A conceptual schematic of these new treatment areas is shown in Figure 2.20. The details of this additional treatment acreage are to be developed consecutively with the design of the new third flow-way for STA-5.

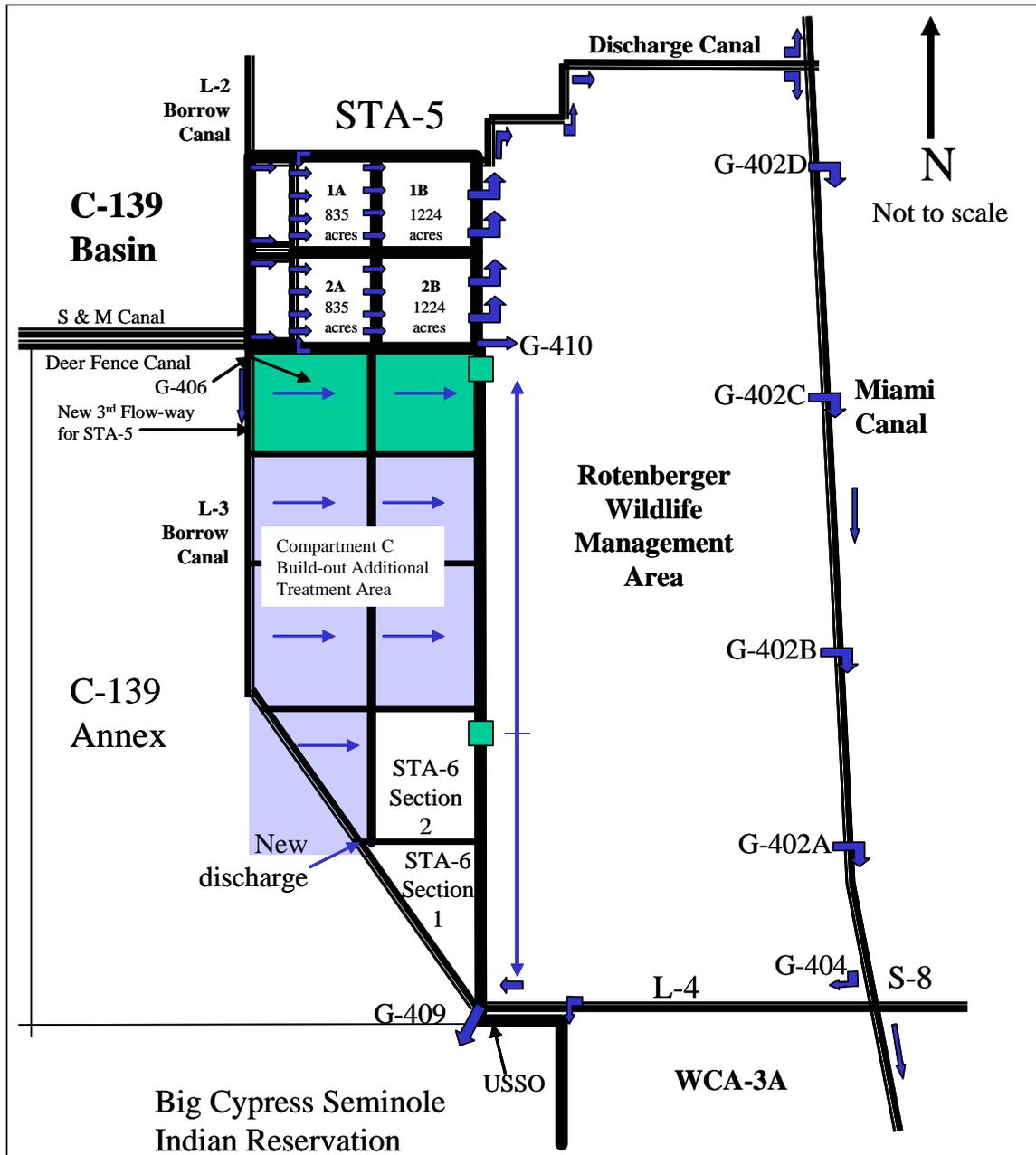


Figure 2.20 Schematic of Compartment C Build-out of Additional Treatment Area



Capital Cost for Compartment C Build-out

An opinion of the capital cost for implementing the proposed build-out of treatment areas on Compartment C is presented in Table 2.24. That estimate is reported in FY 2004 dollars.

Table 2.24 Opinion of Capital Cost, Compartment C Build-out

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
1	Site prep (Veg. Mgt. & Demo Ag. Fac.)	7380	AC	\$200	\$1,476,000	
2	North Perimeter Levee & Spreader Canal	3	Mi.	\$625,000	\$1,875,000	
3	South Perimeter Levee	3	Mi.	\$625,000	\$1,875,000	
4	Internal Levees	3	Mi.	\$390,000	\$1,170,000	
5	Control STR. (6 inflow, 6 outflow)	12	Ea.	\$325,000	\$3,900,000	
6	Diversion @ G-406	1	Ea.	\$100,000	\$100,000	
7	North Inflow Canal Improvement	2.5	Mi.	\$200,000	\$500,000	
8	2 Major 2 Bay Control Structures	2	Ea.	\$2,000,000	\$4,000,000	
9	Road Degradation / Fill Farm Canals	24	Mi.	\$35,000	\$840,000	
10	East Inflow Canal Improvements	6	Mi.	\$200,000	\$1,200,000	
11	New outflow pump station	1000	CFS	\$8,000	\$8,000,000	
12	Upgrade G-600 USSC Pump Station	500	CFS	\$4,000	\$2,000,000	
13	Electrical Distribution	6	Mi.	\$80,000	\$480,000	
Subtotal, Estimated Construction Costs					\$27,416,000	\$27,416,000
Planning, Engineering & Design		10 %			\$2,741,600	\$2,741,600
Program & Construction Management		10 %			\$2,741,600	\$2,741,600
Total Estimated Cost, Without Contingency					\$32,899,200	\$32,899,200
Contingency		30 %			\$9,869,760	\$9,869,760
TOTAL ESTIMATED CAPITAL COST*					\$42,768,960	\$42,768,960

- Notes: 1. All estimated expenditures are in FY 2004 dollars and exclude cost escalation.
 2. Total cost based on preliminary estimate to be revised during Regional Feasibility Study.
 3. Table does not include new 3rd Flow-way of STA-5.

Annual O&M for Compartment C Build-out

An opinion of the annual operation and maintenance cost for the proposed build-out of treatment areas on Compartment C is presented in Table 2.25.

Table 2.25 Opinion of Annual O&M Cost, Compartment C Build-out

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
	Order of Magnitude, Incremental Cost for Annual O&M				\$1,370,800	Estimated @ 5% Const. Estimate* Approx. \$200/acre
Subtotal, Estimated Incremental Operation & Maintenance Costs					\$1,370,800	
Contingency		30 %			\$411,240	
TOTAL INCREMENTAL O&M COST					\$1,782,040	\$1,782,000

- Notes: 1. All estimated expenditures are in FY 2004 dollars and exclude cost escalation.
 2. Total cost based on preliminary estimate to be revised during Regional Feasibility Study.
 3. Table does not include new 3rd Flow-way of STA-5.

Implementation Schedule for Compartment C Build-out

Planning, engineering and design of the new third flow-way and the build-out of treatment areas on Compartment C is proposed to be completed in FY 2005 and construction will be completed



as soon as possible, subject to the time constraints of land availability, design, permitting, and construction.

2.8.3. Regional Feasibility Study

A Regional Feasibility Study is proposed to be conducted during FY 2005 to determine the optimal configuration and operation of the additional treatment areas to be constructed on the remaining acreage of Compartments B and C. The Regional Feasibility Study will also evaluate alternatives for the optimal balance of flows and phosphorus loads to the STAs in order to optimize treatment performance, and will include cost estimates, schedules and performance projections. The Regional Feasibility Study will take into account the anticipated flows and phosphorus loads to the existing STAs, the currently planned STA expansions and enhancements, the EAA Canal Improvements, the Everglades Agricultural Area Storage Reservoir Project and other currently planned improvements in the Everglades Agricultural Area (EAA) region resulting from CERP implementation. The Regional Feasibility Study will include evaluation of alternatives for optimizing STA performance as well as optimizing usage of the EAA Storage Reservoir Project. The Regional Feasibility Study will also include determining the optimal improvements to the EAA Canals for the optimal balance of flows and phosphorus loads to the STAs. The evaluations will include but not be limited to cost estimates, schedules and performance projections.

Because the EAA Storage Reservoir and the EAA Canal Improvements Projects have specific goals and objectives, the Regional Feasibility Study shall be conducted in a manner to ensure that these goals are not impacted in the alternatives development and evaluation phases. Similarly, achieving compliance with the goals and objectives of the Everglades Construction Project, the Long-Term Plan and CERP shall be ensured during the conduct of the Regional Feasibility Study. Close coordination between staff and consultants working on the EAA Storage Reservoir, the EAA Canal Improvements, the Everglades Construction Project, the Long-Term Plan, and the Regional Feasibility Study will be critical.

The Regional Feasibility Study will be conducted in increments, with the initial focus being an operational analysis of the optimal balance of flows and associated phosphorus loads from the eastern EAA basins (e.g., the S-5A basin) to the central and western areas of the EAA. This



operational analysis will identify potential changes to the District's canal system and structures to meet the water quality improvement goals. Specific areas to be evaluated in this initial phase include:

- Providing operational flexibility to redirect STA-1W inflows and/or outflows to the Hillsboro Canal and then to either STA-2 via the S-6 pump station, or to Compartment B and/or STA-3/4 via the North New River Canal.
- Movement of water between STA-1W and STA-1E.
- Balancing flows and loads across the STAs taking into account the proposed Bolles and Cross Canal Improvements and the recently completed Ocean Canal conveyance improvements.

Subsequent tasks of the Regional Feasibility Study will include an evaluation of the following potential projects, improvements, and operational modifications:

- Optimizing the configuration of stormwater treatment areas on Compartments B and C with the objective of assisting the STAs in improving water quality in the EPA.
- Optimizing usage of the EAA Storage Reservoirs with the objective of achieving this project's goals including providing flow equalization for the STAs.
- Adding redundancy to current STA treatment facilities by providing the ability to take treatment cells off line for maintenance, construction of enhancements, or other purposes.
- Minimizing potential for overloading the STAs during times of higher than normal runoff or Lake Okeechobee releases.
- Improving the phosphorus removal performance of the STAs or otherwise reducing the risk associated with uncertainties in treatment performance projections in the Long-Term Plan.
- Integrating the 1,200-acre Snail Farm property into the regional water quality treatment system, assuming successful conclusion of land acquisition.
- Providing a hydraulic connection of STA-5, STA-6 and Compartment C to the Miami Canal (and Lake Okeechobee).
- Adding a pump at G-136 to deliver water supply from the Miami Canal (and Lake Okeechobee) to the C-139 Basin (assuming the pump would provide water with lower phosphorus than groundwater, which is the current source of irrigation water supply).
- Improving the L-7 and L-40 conveyance to minimize potential adverse water quality impact to the interior of Refuge.

It is anticipated that the Regional Feasibility Study will include alternatives development and evaluation, capital and O&M cost estimates, implementation schedules, maps, environmental and cultural resource concerns and remediation, real estate acquisition schedules and costs, recommendations for interim land management activities, vegetation management activities, flood impact and protection analyses, environmental benefits, water quality performance projections for the STAs, and a funding analysis.