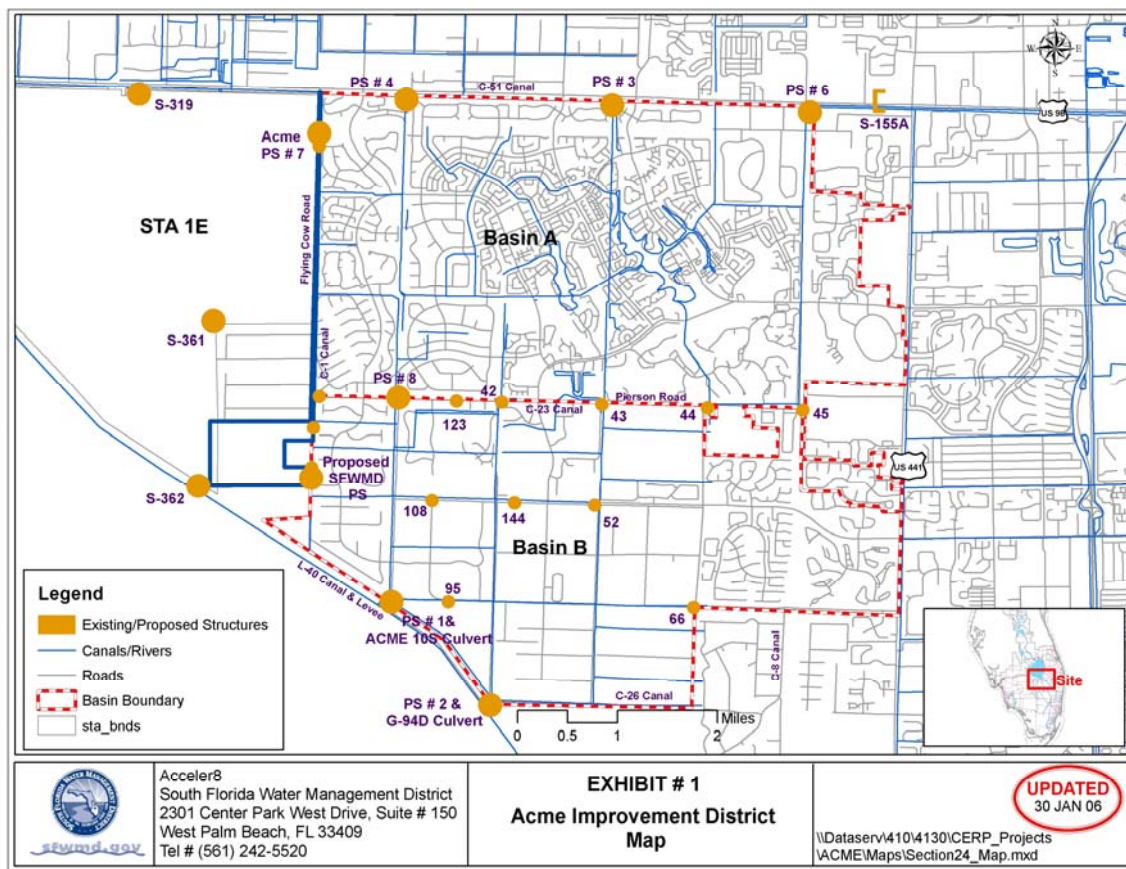


**March 2006 Proposed Revisions to Section 3.1 of Part 3 of the October 27, 2003  
Long-Term Plan**

**3.1. Acme Improvement District, Basin B**

The Acme Improvement District (ACME) covers an area of about 19,000 acres in Central Palm Beach County that generally comprises the jurisdictional limits of the Village of Wellington. Recently, ACME was reorganized to become a dependent district of the Village. The boundaries of ACME are illustrated in Figure 3-2.



**Figure 3.2 Acme Improvement District**

Generally, the area is bounded by Southern Boulevard and Canal C-51 on the north; Flying Cow Road and Canal C-1 on the west; Levee L-40 and Canal C-26 on the south; and Canal C-8 on the east. Stormwater Treatment Area (STA) 1 East borders the area to the west and the Arthur R. Marshall Loxahatchee National Wildlife Refuge (Refuge, Water Conservation Area 1 or WCA-1) borders the area to the southwest.

ACME's drainage area is divided into two basins, Basin A and Basin B. Pierson Road and Canal C-23 divide the two basins. Basin A is characterized by low and medium-density residential development, whereas Basin B is predominated by rural land uses. Drainage from Basin A is routed north and discharged to Canal C-51. Drainage from Basin B is routed south and discharged to the Refuge. During very large storm events, drainage from Basin A overflows into Basin B. This Part 3 addresses only that drainage which is generated from ACME Basin B and discharged to the Refuge, including any overflows from Basin A. Basin A is included in the C-51 West Basin, which is tributary to STA-1E and, as a result, is addressed in Part 2 of the October 27, 2003 Long-Term Plan, as well as the November 2004 and November 2005 approved revisions to the Long-Term Plan.

ACME Basin B encompasses an area of about 8,800 acres south of Pierson Road and Canal C-23 in the Village of Wellington. Land use consists primarily of rural residential development and agriculture. There are also a number of horse farms and other equestrian facilities in the basin.

Drainage from ACME Basin B is collected in a network of interconnected lakes and canals that are operated by ACME to provide water supply and flood protection throughout the basin. Two pumping stations, both located along the L-40, are used to discharge water into the L-40 borrow canal inside the Refuge. ACME Pump No. 1 conveys water from Canals C-2, C-25 and C-27 through the ACME IDS structure into the Refuge. ACME Pump No. 2 conveys water from Canals C-4 and C-26 through the South Florida Water Management District's (District's) G-94D Structure to the Refuge. Pump No. 1 has a permitted capacity of 100,000 gallons per minute (gpm) or 222 cubic feet per second (cfs). Pump No. 2 has a permitted capacity of 120,000 gpm or 267 cfs.

In 2000, the Village of Wellington passed a BMP ordinance as part of the Village's cooperative efforts with the District to improve water quality in discharges to the Everglades. The ordinance places controls on the storage and application of fertilizer and includes an educational component on the proper use of fertilizers and irrigation practices. Of particular importance in ACME Basin B are requirements for the storage, handling and transport of waste materials from livestock operations, including horse farms and equestrian

facilities. It is likely that high TP concentrations in runoff from these facilities have contributed significantly to the overall phosphorus load entering the refuge from this basin. Since the Village of Wellington BMP ordinance has been in effect for only a short time, water quality improvements resulting from its implementation have yet to be quantified. During the development of the 2003 Long-Term Plan, it was assumed that implementation of source controls would (1) have no effect on the 31-year baseline flows simulated by the District, and (2) would reduce the annual TP load in runoff from ACME Basin B by 25 percent. These assumptions were applied uniformly to the evaluation of all alternatives and had the net effect of reducing the flow-weighted mean TP concentration in runoff from ACME Basin B from 94 ppb to 71 ppb. In the subsequent EAA Regional Feasibility Study (EAARFS) completed in late 2005, the ACME Basin B runoff flow and load estimates were updated using water quality data that included water years 1990-2004 (an additional five years compared to the earlier study that used data from water years 1990-1999). The resulting flow-weighted mean TP concentration for the ACME Basin B runoff used for the EAARFS was 113 ppb.

#### ***3.1.1. Recommended Improvements and Strategies***

The projects in the October 27, 2003 *Everglades Protection Area Tributary Basins Long-Term Plan for Achieving Water Quality Goals* (Long-Term Plan) were designed to achieve compliance with the water quality standards for the Everglades Protection Area (EPA) based on specific assumptions and the best available information. One of the key assumptions during the development of the October 2003 Long-Term Plan was that the strategy for ACME Basin B, as well as determination of its implementation schedule, would be accomplished through the CERP planning process.

Subsequent to completion of the Long-Term Plan, it was determined that the overall timeframe associated with the CERP planning process might impact the ability to complete the ACME Basin B project by the originally planned date of December 31, 2006, and within the original budget. Also subsequent to the completion of the Long-Term Plan, it was confirmed that the optimal plan for addressing ACME Basin B discharges would include discharging to the C-51W Canal for eventual treatment in STA-1E.

As part of the *adaptive implementation process* envisioned by the Long-Term Plan, it was anticipated that further refinements to the Long-Term Plan would be made as more scientific and engineering information was obtained.

In order to complete the ACME Basin B project within the approximate timeframe of the originally planned completion date, and in order to facilitate better coordination with STA-1E, the planned destination for this basin's runoff, it is now proposed to incorporate the ACME Basin B project into the Long-Term Plan. This revision will facilitate the completion of the ACME Basin B project by providing a dedicated funding source through the Everglades Trust Fund.

Acme Pumps #1 and #2 currently discharge stormwater runoff from ACME Basin B directly into the Arthur R. Marshall Loxahatchee Wildlife Refuge (Refuge), part of the Everglades Protection Area. The purpose of the ACME Basin B project is to divert stormwater runoff from ACME Basin B to the C-51 West Canal and then to STA-1E for treatment prior to discharge to the Refuge. Excess available water may be used to meet water supply demands in central and southern Palm Beach County.

The re-routing of ACME Basin B runoff to the C-51 West Canal requires numerous infrastructure changes within the Village's system. As part of those changes the District will be responsible for completing the following features:

- Improvements to C-1 canal to increase conveyance capacity and connect the C-1 canal to the C-51 West Canal
- Construction of new pump station AcmePS7 to pump from C-1 canal into C-51 West Canal
- Construction of detention area in Section 24 for temporary offline storage
- Construction of new pump station AcmePS24 to fill the Section 24 detention area

The District's project will pump stormwater runoff from ACME Basin B into a temporary detention area where it will be attenuated and discharged back into ACME Basin B canal system at a rate matching evapotranspiration. The detention area will provide water quality treatment while recharging the canal systems and resulting in a reduction of seepage losses from the Refuge; reductions in discharges from ACME Basin B into the C-51 West Canal as well as reductions in water supply demands from the Refuge. The flows that are not retained in the Village of Wellington's water management system will be routed north through the C-

1 canal which will be connected to the C-51 West Canal via the ACME PS7 and ultimately flowing to STA-1E for treatment prior to discharging to the Refuge.

The project design is based on the Basin Specific Feasibility Studies which included evaluations by Brown & Caldwell in the October 23, 2002, *Basin Specific Feasibility Studies, Everglades Stormwater Program Basins* and the Burns & McDonnell in the October 23, 2002 *Evaluation of Alternatives for the ECP Basins*. In these studies, five alternatives were evaluated with the fifth alternative (identified as Alternative No. 2 in the *Evaluation of Alternatives for the ECP Basins*) recommended as the basis for the project.

The District's ACME Basin B project is divided into two design packages.

**Package 1: C-1 Canal Improvements and Pump Station AcmePS7**

- C-1 Canal Improvements:
  - 3 miles of modified section for 67 to 220 cfs conveyance capacity
  - Two 84" culverts at FPL crossing
  - Realignment and setback requirements for Flying Cow Road
- Pump Station AcmePS7
  - Connects C-1 to C-51 canal
  - 220 cfs (98,736 gpm) consisting of three 110 cfs diesel pumps with one reserved as a backup
  - Includes gravity discharge bay

**Package 2: Section 24 Detention Area and Pump Station AcmePS24**

- Section 24 Detention Area
  - Converts 365 acres of agricultural land to impoundment with upland areas and tree islands
  - Storage of up to 5 feet of water (1,028 ac-ft)
  - Two gated culverts (100 cfs each) for inflow/outflow
- Pump Station AcmePS24
  - Section 24 Detention Area Inflow pump station
  - 200 cfs (89,760 gpm) consisting of three 100 cfs diesel pumps with one reserved as a backup
  - 50 cfs (22,440 gpm) seepage pump consisting of three 25 cfs electric pumps with one reserved as a backup

In addition to the features to be completed by the District, the Village of Wellington (Village) will also be designing and constructing project features. The Village improvements are detailed in the current Memorandum of Understanding, Number CN051212, between the District and the Village of Wellington. The improvements to be completed by the Village are as follows:

Memorandum of Understanding CN051212 dated May 31, 2005, states that the Village will evaluate, design and construct or modify by December 31, 2006 the following local features that are consistent with the District's Project:

- Replace and reconfigure the Village's six control structures along Pierson Road at the Village's canals C-1, C-2, C-4, C-6, C-7 and C-8, water control structures 40, 123, 42, 43, 44 and 45 respectively. Additional modifications will be made to ACME Basin B water control structures 108, 144, 52, 95 and 66;
- Use of the backup pumps and modifications to the Village's Pump Station Numbers 3, 4 and 6 in the Village's C-2, C-7 and C-8 Canals. The nominal capacities of those backup pumps are 60,000 gpm, 60,000 gpm and 62,000 gpm, respectively.
- New Pump Station Number 8 with a capacity of 125 cfs (56,100 gpm) at Pierson Road and the C-2 canal.

The Village is in the permitting process with the District to modify the Acme Improvement District system to divert Basin B discharges to the C-51 West Canal. The intent is that the Village's existing network of canals and lakes be utilized to move water from Basin B to and through Basin A, pumping into the C-51 West Canal at four locations. These locations are the existing Pump Station Numbers 3, 4 and 6 with the fourth Pump Station being constructed under the ACME Basin B project. Additionally, the District's project is consistent with the Village's overall water management system. The Village has modeled the District's project features as part of their overall water management system and submitted the results as part of their permit modification application with the District. As described previously, the Village improvements are detailed in the current Memorandum of Understanding, Number CN051212, between the District and the Village of Wellington.

Upon completion of the above modifications to the Village's system, existing Pump Station Number 1 would be retired from drainage service. It is presently anticipated that an existing two-way pump at Pump Station Number 2 and culverts at both pumping stations would remain in use for water supply withdrawals from the Refuge. As such, the Village's master system ERP permit which covers these two pumps will be modified to state that Pump Station Number 1 will be dismantled and Pump Station Number 2 can only be used for water supply purposes, and if in the future Pump Station 2 is required for discharges from the Village, a permit modification or Emergency Order would be required.

As a part of the overall plan of improvement in the C-51 West Basin, the Jacksonville District, U.S. Army Corps of Engineers recently completed canal enlargement along the C-51 West Canal (a flood protection improvement under the Central & Southern Florida Flood Control Project). That enlargement resulted from the need to redirect flow in the C-51 West Canal to the west, leading to the STA-1E inflow Pumping Station S-319. The above-described modifications to the Village of Wellington's discharges to the C-51 West Canal will not have adverse impacts to the C-51 West Canal enlargement as shown in the July 2005 evaluation using the C-51 Basin Rule Reevaluation Study C-51 Rule model.

### **3.1.2.            *Reservation of Use, Section 24 T44S R40E***

The water quality analyses and treatment performance estimates presented in the October 27 2003 Long-Term Plan suggest that STA-1E, enhanced as described in Part 2 of the Long-Term Plan and subsequent approved revisions, may provide adequate capacity for accommodating the additional inflows diverted from ACME Basin B. However, there remains uncertainty in both the projected inflows to STA-1E and in the performance of the recommended submerged aquatic vegetation (SAV) community in the downstream cells of STA-1E. The purpose of the Process Development and Engineering (PDE) activities recommended in Part 5 of the Long-Term Plan is to address those uncertainties, and identify the required nature and extent of further enhancements (if any) to STA-1E necessary to assure compliance with water quality standards.

One possible further enhancement to STA-1E would be an expansion in its effective treatment area through addition of lands in Section 24, Township 44 South, Range 40 East (e.g., lands situated immediately south of the Rustic Ranches subdivision and west of Flying Cow Road). A discussion of that possible enhancement is included in Part 6 of the Long-Term Plan dated October 27, 2003.

The SFWMD presently owns 365 acres in Section 24. It is recommended that no irreversible use or development of those lands be permitted until at least such time as the PDE activities have progressed to the point that the potential need for those lands can be fully assessed. This reservation in use should extend at least through December 31, 2008.

As part of the current ACME Basin B project, recreational facilities are proposed to be constructed on the Section 24 property. Should it be determined at a later date that these

lands are needed for expanded STA-1E treatment area, the recreational facilities will be modified as needed to ensure the lands can be used in accordance with the requirements of this section.

### **3.1.3. Opinion of Capital Cost**

A revised opinion of the capital cost for implementing the ACME Basin B project is presented in Table 3.2. The opinion of cost does not include the portion of the project being completed and funded by the Village of Wellington, and the opinion of cost varies from that presented in the October 27, 2003, Long-Term Plan.

**Table 3.2 Opinion of Capital Cost, ACME Basin B Project**

<b>Item No.</b>	<b>Description</b>	<b>Estimated Quantity</b>	<b>Unit</b>	<b>Estimated Unit Cost</b>	<b>Estimated Total Cost</b>
1	C-1 Canal Improvements and Flying Cow Road Improvements (excess fill removal)	Job	Lump	Sum	\$4,000,000
2	Pump Station at C-1 canal and C-51 Canal (220 cfs)	Job	Lump	Sum	\$5,000,000
3	Section 24 Detention Area, Pump Station, Structures and Seepage Control (270 cfs)	Job	Lump	Sum	\$14,600,000
4	Recreation: includes connection to west & parking area for approximately 5 cars	Job	Lump	Sum	\$500,000
5	Water Quality Monitoring Stations	Job	2	\$56,275	\$112,550
<b>Subtotal, Estimated Construction Costs</b>					<b>\$24,212,550</b>
	Planning, Engineering & Design	10	%		\$2,421,255
	Program & Construction Management	7	%		\$1,694,879
	Interim Operations During Construction	14	%		\$3,389,757
	<b>Total Estimated Cost, Without Contingency</b>				<b>\$31,718,441</b>
	Contingency	5	%		\$1,585,922
	<b>TOTAL ESTIMATED CAPITAL COST</b>				<b>\$33,304,363</b>



The above opinion of capital cost is stated in FY 2006 dollars and was obtained from the Acceler8 Design Reports for the ACME Basin B project.

#### 3.1.4. *Opinion of Incremental Operation and Maintenance Cost*

The following is a summary listing of the anticipated incremental operation and maintenance requirements for the redirection of ACME Basin B discharges to the C-51 West Canal and STA-1E (e.g., requirements in addition to those for operation and maintenance of STA-1E and the C-51 West Canal Enlargement as presently planned). With one exception, those costs are all associated with operation and maintenance of the new outflow pumping station (AcmePS7) to the C-51 West Canal. Pumping Station S-319, which will operate in parallel with this new pump station, (AcmePS7), will be equipped with a total of five pumps ranging in capacity from 550 to 960 cfs. That exception is the inclusion of additional fuel consumption at S-362 (outflow pumping station for STA-1E) resulting from the additional discharges from ACME Basin B.

- Mechanical maintenance of the new pumping unit and diesel engine drive;
- Maintenance of the additional pump station building;
- Fuel consumption in the new pumping station (AcmePS7);
- Operating personnel (as the new pump station (AcmePS7) will operate in parallel with and in close proximity to S-319, it is anticipated that one full-time equivalent, or FTE, engine operator will need to be added to the operations team for S-319);
- Additional fuel consumption at S-362.

An opinion of the incremental operation and maintenance cost for diversion of ACME Basin B discharges is presented in Table 3.3, and is stated in FY 2006 dollars.

**Table 3.3 Opinion of Incremental O&M Cost, ACME Basin B Project**

Item No.	Description	Estimated Quantity	Unit	Estimated Unit Cost	Estimated Total Cost	Remarks
1	Mechanical Maintenance, New Pumping Unit	1	Ea.	\$77,846	\$77,846	
2	Maintenance, building	1	Ea.	\$20,037	\$20,037	Unit cost from Evaluation Methodology
3	Fuel Consumption, New Pumping Unit	38654	Ac. Ft.	\$0.88	\$34,016	Unit cost from Evaluation Methodology
4	Engine Operator/Maintenance Mechanic	1	Ea.	\$172,615	\$172,615	Unit cost from Evaluation Methodology
5	Additional Fuel Consumption at S-362	38654	Ac. Ft.	\$0.88	\$34,016	Unit cost from Evaluation Methodology
6	Water Quality Monitoring PS7 & PS24	2	Ea.	\$45,000	\$90,000	Unit cost from Evaluation Methodology
<b>Subtotal, Estimated Incremental Operation &amp; Maintenance Costs</b>					<b>\$428,529</b>	
Contingency 30 %					\$128,559	
<b>TOTAL INCREMENTAL O&amp;M COST</b>					<b>\$557,088</b>	<b>\$557,000</b>

### **3.1.5. Implementation Schedule**

The water management system will be operational with the construction of the C-1 Canal improvements and AcmePS7 (the connection to the C-51 West Canal) both of which are scheduled to be completed by December 31, 2006. The Detention Area Earthwork and Facilities are scheduled to be completed by June 2007 and will provide additional storage for the wet season. Beginning in June 2007, implementation of the vegetation and amenities for the Detention Area will begin with an estimated completion date of September 2007.

### 3.1.6 *Projected Expenditures*

A summary of the projected expenditures through FY 2016 (in FY 2006 dollars) for redirection of ACME Basin B discharges to the C-51 West Canal and STA-1E is presented in Table 3.4.

**Table 3.4 Projected Expenditures, Acme Basin B Project**

Fiscal Year	Scheduled Expenditure by Type (FY 2006 \$)						Fiscal Year Total (FY 2006 \$)
	Planning, Eng. & Design	Program & Const. Mgmt.	Construction & Interim Ops	Land Acquisition	Project Contingency	Incremental O&M Cost	
2006	\$2,421,255	\$762,695	\$8,474,393	\$0	\$555,073	\$0	\$12,213,416
2007		\$932,184	\$19,127,914		\$1,030,849	\$557,000	\$21,647,947
2008						\$573,710	\$573,710
2009						\$590,921	\$590,921
2010						\$608,649	\$608,649
2011						\$626,908	\$626,908
2012						\$645,716	\$645,716
2013						\$665,087	\$665,087
2014						\$685,040	\$685,040
2015						\$705,591	\$705,591
2016						\$726,759	\$726,759
<b>Total</b>	<b>\$2,421,255</b>	<b>\$1,694,879</b>	<b>\$27,602,307</b>	<b>\$0</b>	<b>\$1,585,922</b>	<b>\$6,385,381</b>	<b>\$39,689,744</b>