

Chapter 5A: Five-Year Water Resource Development Work Program

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INTRODUCTION

This chapter presents the Five-Year Water Resource Development Work Program, as mandated by state law. Section 373.536(6)(a)4 of the Florida Statutes (F.S.) requires each water management district to prepare an annual Five-Year Water Resource Development Work Program. This document describes the agency's implementation strategy for the water resource development component of each approved regional water supply plan developed or revised under Section 373.0361, F.S. In addition, Section 373.1961(2), F.S., requires each water management district to submit an annual report to the Florida legislature and governor on Alternative Water Supply (AWS) funding, which is provided in Chapter 5B of this volume. Further information on the South Florida Water Management District's (SFWMD or District) role in managing the region's water resources is available at www.sfwmd.gov/watersupply.

Florida water law identifies two types of projects to meet water needs: Water Resource Development projects and Water Supply Development projects. Water resource development is defined in Section 373.019(22), F.S., as the formulation and implementation of regional water resource management strategies, including the collection and evaluation of surface water and groundwater data; structural and nonstructural programs to protect and manage water resources; the development of regional water resource implementation programs; the construction, operation, and maintenance of major public works facilities to provide for flood, surface, and underground water storage and groundwater recharge augmentation; and related technical assistance to local governments and to government-owned and privately owned water utilities. These types of projects are regional in nature and are primarily the SFWMD's responsibility. These projects support water supply development at the local level and are intended to assure the availability of adequate water supplies for all competing uses deemed reasonable and beneficial and to maintain the functions of natural systems. Water Supply Development projects generally involve public or private facilities for water collection, treatment, and transmission and are the responsibility of local water users. The Five-Year Water Resource Development Work Program provides an implementation update of the water resource development component of the District's regional water supply plans. Pursuant to Chapter 373, F.S., regional water supply plans encompass a 20-year planning horizon and are updated every five years.

PLANNING REGION OVERVIEW

The SFWMD comprises four planning areas that cumulatively cover the entire District: the Upper East Coast (UEC), the Kissimmee Basin (KB), the Lower West Coast (LWC), and the Lower East Coast (LEC). The goal of the regional water supply plans is to ensure an adequate supply of water to meet the needs of all existing and future reasonable-beneficial uses, and to protect natural systems from harm during a 1-in-10 year drought event. Water Supply Plan

updates identify the Water Resource Development and Water Supply Development projects expected to meet the needs of all reasonable-beneficial uses for the year 2030 during a 1-in-10 year drought event while sustaining water resources and related natural systems.

Regional water supply plans for these planning areas were completed in 2000, except for the UEC, which was completed in 1998. The UEC Water Supply Plan was updated in 2004 (2004 UEC Water Supply Plan Update) and amended in 2006 (2006 UEC Plan Amendment). The 2000 LWC and KB Water Supply plans were updated in 2006 (2005–2006 LWC Water Supply Plan Update and 2005–2006 KB Water Supply Plan Update), and the 2005–2006 update to the 2000 LEC Water Supply Plan was completed in early 2007 (2005–2006 LEC Water Supply Plan Update). The SFWMD is currently in the process of updating the UEC and LWC plans, with the 2011 UEC Water Supply Plan Update and the 2011 LWC Water Supply Plan Update expected to be completed in the spring of 2011.

As noted in last year's report, the District-wide population was projected to reach 10.6 million by 2025 that cumulatively represented a population increase of approximately 91 percent in the KB Planning Area, 53 percent in the UEC Planning Area, 74 percent in the LWC Planning Area, and 31 percent in the LEC Planning Area. The associated utility public water supply raw water demand was projected to increase District-wide from 3.4 billion gallons per day (bgd) in 2005 to 4.3 bgd in 2025. During the process of updating the four regional water supply plans, results have shown that the population growth and associated water supply demand have slowed significantly. These projections will be formalized in the Water Supply Plan updates and are expected to be included in the *2013 South Florida Environmental Report – Volume II*.

WATER RESOURCE DEVELOPMENT PROJECTS

The Water Resource Development projects described in this report — drilling and testing, groundwater and wetland monitoring, groundwater and evapotranspiration (ET) assessments, District-wide feasibility studies, comprehensive water conservation — are primarily District-wide projects. In addition, this report describes regional Water Resource Development projects that are specific to each planning area. Implementation schedules and costs are summarized in **Tables 5A-1** and **5A-2**.

Table 5A-1. Fiscal Year 2011–2015 (FY2011–FY2015)
(October 1, 2010–September 30, 2015) Implementation Schedule and
Costs for District-wide Water Resource Development Projects.

District-wide Water Resource Development Projects	Plan Implementation Schedule and Costs (\$ in thousands)					
	FY2011	FY2012	FY2013	FY2014	FY2015	Total
	\$	\$	\$	\$	\$	\$
Drilling and Testing Est. start date: 1990 Est. finish date: ongoing	1,770	0	0	0	0	1,770
Groundwater and ET Assessments Est. start date: 1954 and 2002, respectively Est. finish date: ongoing	0	0	0	0	0	0
Groundwater and Wetland Monitoring Est. start date: 2002 Est. finish date: ongoing	619	619	619	619	619	3,095
District-wide Feasibility Studies Est. start date: 2001 Est. finish date: ongoing	0	0	0	0	0	0
Modeling Est. start date: 1998 Est. finish date: ongoing	Staff Time	Staff Time	Staff Time	0	0	0
Comprehensive Water Conservation Program Est. start date: 1977 Est. finish date: ongoing	515	515	515	515	515	2,575
MFL and Water Reservation Activities Est. start date: 1995 Est. finish date: ongoing	105	0	0	0	0	105
Total	3,009	1,134	1,134	1,134	1,134	7,545

ET – Evapotranspiration

FY – Fiscal Year (for the District, October 1 through September 30)

MFL – Minimum Flow and Level

Table 5A-2. FY2011–FY2015 Implementation Schedule and Costs for Regional Water Resource Development Projects.

Regional Water Resource Development Projects	Plan Implementation Schedule and Costs (\$ in thousands)					
	FY2011	FY2012	FY2013	FY2014	FY2015	Total
	\$	\$	\$	\$	\$	\$
Central Florida Water Supply Planning (KB)	500	0	0	0	0	500
Central Florida Coordination Area Project Facilitator (KB)	25	25	5	0	0	55
C-51 Reservoir Project Facilitator (LEC)	33	0	0	0	0	33
Central Florida Aquifer Recharge Feasibility Study (KB) Est. start date: 2008 Est. finish date: 2012	0	0	0	0	0	0
Kissimmee Chain of Lakes Long-Term Management Plan/KB Modeling & Operations Study (KB) Est. start date: 2004 Est. finish date: 2011	TBD	TBD	0	0	0	TBD
Central Florida Water Supply Coordination (KB) Est. start date: 2006 Est. finish date: 2013	Staff Time	Staff Time	Staff Time	0	0	0
Total	558	25	5	0	0	588

KB – Kissimmee Basin Planning Area
LEC – Lower East Coast Planning Area

Most Water Resource Development projects support and enhance Water Supply Development projects, but do not by themselves yield specific quantities of water. For example, projects such as hydrologic investigations and groundwater monitoring and modeling all provide important information about aquifer characteristics (such as hydraulic properties and water quality), but do not provide water. Information derived from these Water Resource Development projects is used in support of Water Supply Development projects (e.g., in developing an appropriate facility design, identifying safe aquifer yields, evaluating the economic viability of projects, etc.).

District-wide and region-specific Water Resource Development projects are identified in Chapter 6 (Water Resource Development Projects) of the 2005–2006 Plan updates. Water Resource Development projects specific to the UEC Planning Area are discussed in the 2004 UEC Plan Update and 2006 UEC Plan Amendment. In the 2011 UEC and LWC Plan updates, District-wide and region-specific Water Resource Development projects will be addressed in Chapter 5: Water Resource Development Projects.

Projects that provide water supply primarily for the environment are excluded from this report and were not included in Chapter 6 of the 2005–2006 Plan updates and the 2006 UEC Plan Amendment.

COMPREHENSIVE WATER CONSERVATION PROGRAM

The SFWMD's Comprehensive Water Conservation Program was approved in September 2008 and developed in conjunction with stakeholders through the District's Water Resources Advisory Commission. The Comprehensive Water Conservation Program is a series of implementation strategies designed to create a year-round conservation ethic and permanent reduction in individual water use. The program is organized into (1) regulatory, (2) voluntary and incentive-based, and (3) education and marketing initiatives. Water savings achieved through conservation measures are the most cost-efficient way to expand current water supplies. Two significant efforts identified in the Comprehensive Water Conservation Program are the Water Savings Incentive Program (WaterSIP) and the Mobile Irrigation Lab (MIL) Program. Implementation of the WaterSIP and MIL programs are included in this report. For more detailed information about the Comprehensive Water Conservation Program, see the *Conservation (DD)* section of this chapter.

WATER MADE AVAILABLE

The Water Resource Development projects described in this report do not directly provide additional water for consumptive use. The District's Comprehensive Water Conservation Program is estimated to result in 1.83 million gallons per day (mgd) of additional available water in Fiscal Year 2011 (FY2011) (October 1, 2010–September 30, 2011) and 2.0 mgd of additional available water in FY2012. During FY2011–FY2015, the estimated additional water made available through this program is 9.83 mgd (**Table 5A-3**). Funding levels for WaterSIP have hovered between \$400,000 and \$500,000 per year for the last several years, except for FY2009 when the program received over \$1 million. The FY2010 program funding was \$460,000. The FY2011 funding level of \$300,000 is reflective of the budget constraints state and local governments are experiencing. Projected water savings in **Table 5A-3** for WaterSIP assume future funding remains between \$400,000 and \$500,000.

Table 5A-3. Estimated additional water made available (million gallons per day or mgd) during FY2011–FY2015 through the Comprehensive Water Conservation Program.

Conservation Program	FY2011	FY2012	FY2013	FY2014	FY2015	Total
WaterSIP	0.63	0.80	0.80	0.80	0.80	3.83
Mobile Irrigation Labs	1.20	1.20	1.20	1.20	1.20	6.0
Total (mgd)	1.83	2.00	2.00	2.00	2.00	9.83

FUNDING

The SFWMD has allocated \$3.6 million in FY2011 for Water Resource Development projects. During the FY2011–FY2015 time frame, the SFWMD anticipates spending \$8.1 million on Water Resource Development projects (the total amount of **Tables 5A-1** and **5A-2**). These allocations include \$515,000 in funding for the Comprehensive Water Conservation Program during FY2011 and \$2.6 million for FY2011–FY2015.

The funding described in this report does not include projects associated with the Comprehensive Everglades Restoration Plan (CERP) or Expedited Everglades Restoration projects or costs associated with staff time.

The funding allocation for FY2011 is more than the funding allocation for FY2010, and the funding projected for FY2011–FY2015 is less than what was projected for FY2010–FY2014. Funding for primarily environmental projects, such as capital improvement projects in the Big Cypress Basin (BCB), Aquifer Storage and Recovery (ASR), and projects not identified in Chapter 6 of the 2005–2006 plan updates and 2006 UEC Plan Amendment are not included in this report.

The District’s Water Supply Program, for budget purposes, is currently divided into seven elements. In order to better match up the budgeted projects within this chapter to the actual budget spreadsheets, this report is organized to follow the Water Supply Program’s elements with associated projects for each element. Crosswalk tables that correspond to water supply plans, Water Resource Development projects, and funding with internal order numbers, program elements, and SFER sections are found in **Tables 5A-4** and **5A-5**, respectively. The Water Supply Program’s elements are as follows:

- **Planning (DA)** [Regional Coordination (DA01) and Local Coordination (DA02)].
- **Implementation Projects (DB)** [Implementation (DB01)].
- **Rulemaking (DC)** [Minimum Flows and Levels (DC01), Initial Water Reservations (DC02), Project Reservations (DC03), and Lake Okeechobee Water Shortage Management (DC04)].
- **Conservation (DD)** [Conservation (DD01), WaterSIP (DD02), and MILs (DD03)].
- **Alternative Water Supply (DE)** [Alternative Water Supply (DE01) and BCB Alternative Water Supply (DE02)].
- **Resource Evaluation (DF)** [Hydrogeology (DF01) and Modeling (DF02)].
- **Program Support (DZ)** [Program Support (DZ00)].

Table 5A-4 identifies all the Water Resource Development projects contained in the regional water supply plans, and **Table 5A-5** identifies specific projects funded by the District during the current fiscal year to implement the water resource development components of the regional water supply plans.

Table 5A-4. Crosswalk for Water Supply plans, Water Resource Development projects, and *2011 South Florida Environmental Report* (SFER) sections of this chapter.

Supply Plan	Recommended Projects	Status	SFER Section	Coverage Area
2004 UEC	Aquifer Storage and Recovery	Ongoing	N/A (CERP Project)	District-wide
2004 UEC	Mobile Irrigation Labs	Ongoing	Water Conservation Program	District-wide
2004 UEC	Water Conservation Rulemaking	Complete	Water Conservation Program (Year-Round Rule Adopted March 2010)	District-wide
2004 UEC	Water Savings Incentive Program	Ongoing	Water Conservation Program	District-wide
2004 UEC	Water Conservation Outreach and Education	Ongoing	Water Conservation Program	District-wide
2004 UEC	Comprehensive Regional Floridan Aquifer Monitoring Well Network	Ongoing	Groundwater and Wetland Monitoring	District-wide
2004 UEC	Floridan Aquifer Density-Dependent Flow Model	Ongoing	Modeling (conducting peer review in FY2011)	District-wide
2004 UEC	Floridan Aquifer Exploratory Well Program	On Hold	Drilling and Testing Program	District-wide
2004 UEC	Floridan Aquifer Tracer Test	On Hold	Drilling and Testing Program (currently unfunded)	District-wide
2004 UEC	Floridan Aquifer Well Inventory	Ongoing	Groundwater and Wetland Monitoring	District-wide
2004 UEC	Reclaimed Water Interconnects	Ongoing	N/A (no current projects)	District-wide
2004 UEC	Efficient Use of Reclaimed Water	Ongoing	N/A (no current projects)	District-wide
2004 UEC	Mandatory Reuse Zones	Ongoing	N/A (no current projects)	District-wide
2004 UEC	Northern Palm Beach County Comprehensive Water Management Plan	Ongoing	N/A (CERP Project)	Regional
2004 UEC	CERP North Palm Beach County Project – Part 1	Ongoing	N/A (CERP Project)	Regional
2004 UEC	Loxahatchee River Restoration Plan	Complete	N/A (CERP Project) (completed 2006)	Regional
2004 UEC	Initial Reservation for Northwest Fork of Loxahatchee River	Complete ¹	Protected through District BOR Section 3.2.1 E	Regional
2004 UEC	Review MFL for Northwest Fork of Loxahatchee River	Ongoing ¹	MFL and Reservation Activities	Regional
2004 UEC	Establish MFLs for Northwest Fork of Loxahatchee River Tributaries	Complete ¹	MFL and Reservation Activities	Regional

Table 5A-4. Continued.

Supply Plan	Recommended Projects	Status	SFER Section	Coverage Area
2004 UEC	Ten Mile Creek	Complete	N/A (CERP Project)	Basin-specific
2004 UEC	CERP Indian River Lagoon – South	Ongoing	N/A (CERP Project)	Basin-specific
2004 UEC	C-25 to C-52 Basin Connectivity Study	Complete	District-wide Feasibility Studies (completed in FY2010)	District-wide
2004 UEC	Surficial Aquifer Modeling	On Hold	Modeling (currently unfunded)	District-wide
2004 UEC	Coordinate UEC Water Supply Plan with Other Efforts	Ongoing	N/A (no current projects)	Basin-specific
2004 UEC	Coordinate Land Use and Water Supply Planning	Ongoing	N/A (no current projects)	District-wide
2004 UEC	Alternative Water Supply Program	Ongoing	Alternative Water Supply	District-wide
2006 UEC	Sub-Regional Feasibility Study of Water Supply Integration for St. Lucie County	Complete	Regional Water Resource Development Project (completed in FY2007)	Regional
2006 KB	Floridan Aquifer Exploratory Well Program	Ongoing	Drilling and Testing Program	District-wide
2006 KB	Surficial Aquifer Well Pairing Network	Ongoing	Groundwater and Wetlands Monitoring (unfunded FY2011)	Regional
2006 KB	Wetlands Monitoring Network	On Hold	Groundwater and Wetlands Monitoring	District-wide
2006 KB	USGS Water Quality Module	Ongoing	Groundwater and ET Assessments	District-wide
2006 KB	ET Measurement Project	Ongoing	Groundwater and ET Assessments	District-wide
2006 KB	Comprehensive Water Conservation Program	Ongoing	Water Conservation Program	District-wide
2006 KB	Water Savings Incentive Program	Ongoing	Water Conservation Program	District-wide
2006 KB	Mobile Irrigation Labs	On Hold	Water Conservation Program (currently unfunded)	District-wide
2006 KB	Water User and Supply Cost Relationship Study	Complete	District-wide Feasibility Studies (completed in FY2007–FY2008)	District-wide
2006 KB	Lower Kissimmee Basin Model Upgrade	Ongoing	Modeling (anticipated completion summer FY2011)	Basin-specific
2006 KB	Upper Kissimmee Basin Transient Groundwater Model	Ongoing	Modeling [aka East Central Florida Transient Model (ECFT)]	Basin-specific
2006 KB	Floridan Aquifer System Groundwater Model and Database Development	On Hold	Modeling (currently unfunded)	District-wide

Table 5A-4. Continued.

Supply Plan	Recommended Projects	Status	SFER Section	Coverage Area
2006 KB	MFL Activities	Ongoing ²	MFL and Reservation Activities	District-wide
2006 KB	Reservation Activities	Ongoing ²	MFL and Reservation Activities for Kissimmee River/Chain of Lakes	District-wide
2006 KB	Central Florida Aquifer Recharge Feasibility Study	On Hold	Regional Water Resource Development Project (currently unfunded)	Basin-specific
2006 KB	Modeling for Kissimmee Chain of Lakes Management Plan	Ongoing	Regional Water Resource Development Project	Basin-specific
2006 KB	Central Florida Coordination Area Action Plan	Ongoing	Regional Water Resource Development Project	Basin-specific
2006 LWC	Floridan Aquifer Exploratory Well Program	On Hold	Drilling and Testing Program	District-wide
2006 LWC	Groundwater Monitoring	Ongoing	Groundwater and Wetlands Monitoring	District-wide
2006 LWC	Wetlands Monitoring Network	On Hold	Groundwater and Wetlands Monitoring	District-wide
2006 LWC	USGS Water Quality Module	Complete	Groundwater and ET Assessments	District-wide
2006 LWC	ET Measurement Project	Ongoing	Groundwater and ET Assessments (USGS to finalize report in FY2011; will maintain sites after District ceases funding)	District-wide
2006 LWC	Comprehensive Water Conservation Program	Ongoing	Water Conservation Program	District-wide
2006 LWC	Water Savings Incentive Program	Ongoing	Water Conservation Program	District-wide
2006 LWC	Mobile Irrigation Labs	Ongoing	Water Conservation Program	District-wide
2006 LWC	Water User and Supply Cost Relationships	Complete	District-wide Feasibility Studies (completed in FY2007–FY2008)	District-wide
2006 LWC	Co-Located Desalination Feasibility Study	Complete	District-wide Feasibility Studies (completed in FY2007)	District-wide
2006 LWC	Modeling for MFLs	Complete	N/A (completed in FY2006)	District-wide
2006 LWC	Modeling for Regional Irrigation Distribution System	Complete	N/A (project has been cancelled)	District-wide

Table 5A-4. Continued.

Supply Plan	Recommended Projects	Status	SFER Section	Coverage Area
2006 LWC	Surficial, Intermediate, and Floridan Aquifer Model Development	Ongoing	Modeling (incorporating peer review comments in FY2011)	District-wide
2006 LWC	MFL Activities	Ongoing	MFL and Reservation Activities	District-wide
2006 LWC	Reservation Activities	Complete	MFL and Reservation Activities (Water Reservation for the Picayune Strand/ Fakahatchee Estuary effective July 2, 2009)	District-wide
2006 LWC	Reservation Activities	Ongoing	MFL and Reservation Activities for the Caloosahatchee Estuary	District-wide
2006 LEC	Floridan Aquifer Exploratory Well Program	On Hold	Drilling and Testing Program	District-wide
2006 LEC	Groundwater Monitoring	Ongoing	Groundwater and Wetlands Monitoring	District-wide
2006 LEC	Wetlands Monitoring Network	Ongoing	Groundwater and Wetlands Monitoring	District-wide
2006 LEC	USGS Water Quality Module	Ongoing	Groundwater and ET Assessments	District-wide
2006 LEC	ET Measurement Project	Ongoing	Groundwater and ET Assessments	District-wide
2006 LEC	Comprehensive Water Conservation Program	Ongoing	Water Conservation Program	District-wide
2006 LEC	Water Savings Incentive Program	Ongoing	Water Conservation Program	District-wide
2006 LEC	Mobile Irrigation Labs	Ongoing	Water Conservation Program	District-wide
2006 LEC	Water User and Supply Cost Relationships	Complete	District-wide Feasibility Studies (completed in FY2007-FY2008)	District-wide
2006 LEC	Reuse Feasibility Study	Complete	District-wide Feasibility Studies (completed in FY2008)	District-wide
2006 LEC	Groundwater Replenishment via Canal Recharge Augmentation Study	Complete	District-wide Feasibility Studies (completed in FY2007)	District-wide
2006 LEC	Modeling for MFLs	Ongoing	Modeling	District-wide
2006 LEC	Floridan Aquifer System Model and Database Development	Ongoing	Modeling (conducting peer review in FY2011)	District-wide
2006 LEC	MFL Activities	Complete	MFL and Reservation Activities	District-wide

Table 5A-4. Continued.

Supply Plan	Recommended Projects	Status	SFER Section	Coverage Area
2006 LEC	Reservation Activities	Ongoing	MFL and Reservation Activities	District-wide

BOR – Basis of Review for Water Use Permit Applications

CERP – Comprehensive Everglades Restoration Plan

ET – Evapotranspiration

KB – Kissimmee Basin

LEC – Lower East Coast

LWC – Lower West Coast

MFL – Minimum Flow and Level

N/A – Not Applicable

UEC – Upper East Coast

USGS – U.S. Geological Survey

Complete¹ – The 2007 Regional Water Availability Rule provides an additional tool for limiting water use in the Loxahatchee Basin

Ongoing¹ – The 2007 Regional Water Availability Rule provides an additional tool for limiting water use in the Loxahatchee Basin

Ongoing² – KB Water Reservation Rule under development; peer review completed in FY2009

Table 5A-5. Crosswalk for FY2011 budget, Water Resource Development projects, and SFER sections.

Budget Line Item	Internal Order/ Functional Area	Program Element	Sub-program Element	Amount	Project	SFER Section
23629	DA03100557	Planning	Planning	\$25,000	Central Florida Coordination Area Facilitator	Regional Water Resource Development Project
23631	DA03100557	Implementation	Implementation	\$500,000	Central Florida Coordination Area – STOPR Agreement	District-wide Feasibility Studies
24049*	DB01	Implementation	Implementation	\$33,500	Regional Water Storage and Supply	Regional Water Resource Development Project
23639	DC01100673	Water Reservations – Kissimmee	Water Reservations	\$35,000	KB Water Reservations	MFL and Water Reservation Activities
23640	DC01100673	Water Reservations- Kissimmee	Water Reservations	\$10,000	KB Water Reservations	MFL and Water Reservation Activities
23641	DC01100673	Water Reservations – Kissimmee	Water Reservations	\$60,000	KB Water Reservations – SERC	MFL and Water Reservation Activities
23915	DD02100571	Conservation	WaterSIP	\$300,000	Water Savings Incentive Program	Comprehensive Water Conservation
21345	DD02	Conservation	WaterSIP	\$250	Water Savings Incentive Program- Advertising	Comprehensive Water Conservation
23624	DD03100513	Conservation	MIL	\$55,000	Mobile Irrigation Lab – BCB	Comprehensive Water Conservation

Table 5A-5. Continued.

Budget Line Item	Internal Order/ Functional Area	Program Element	Sub-program Element	Amount	Project	SFER Section
24044	DD04100614	Conservation	Conservation	\$100,000	Florida Automated Weather Network (FAWN)	Comprehensive Water Conservation
24047	DD05100549	Conservation	Conservation	\$25,000	Orange County Conservation Study	Comprehensive Water Conservation
20728	DD07	Conservation	Conservation	\$20,000	FGCU Wings of Hope – BCB	Comprehensive Water Conservation
20720	DD10	Conservation	Conservation	\$7,800	Display/Meetings – BCB	Comprehensive Water Conservation
20732	DD10	Conservation	Conservation	\$6,940	Conferences/Fairs/ Exhibits – BCB	Comprehensive Water Conservation
22237	DF01	Resource Evaluation	Hydrogeology	\$37,966	ORL USGS GW Kissimmee Basin Floridan Monitoring	Groundwater and Wetland Monitoring ^{WQ}
22240	DF01	Resource Evaluation	Hydrogeology	\$16,058	ORL USGS GW Monitoring: Potentiometric	Groundwater and Wetland Monitoring ^{WQ}
22244	DF01	Resource Evaluation	Hydrogeology	\$327,040	FTL USGS GW Core Network Monitoring	Groundwater and Wetland Monitoring ^{GM}
23091	DF01	Resource Evaluation	Hydrogeology	\$35,000	Regional Floridan Groundwater	Groundwater and Wetland Monitoring ^{GM}

Table 5A-5. Continued.

Budget Line Item	Internal Order/ Functional Area	Program Element	Sub-program Element	Amount	Project	SFER Section
23148	DF01	Resource Evaluation	Hydrogeology	\$63,492	Floridan Well Maintenance	Groundwater and Wetland Monitoring ^{GM}
23442	DF01	Resource Evaluation	Hydrogeology	\$50,000	Emergency Wellhead Repairs	Groundwater and Wetland Monitoring ^{GM}
23443	DF01	Resource Evaluation	Hydrogeology	\$25,000	Parts & Supplies – Field Equipment	Groundwater and Wetland Monitoring ^{GM}
23444	DF01	Resource Evaluation	Hydrogeology	\$20,000	Geophysical Logging	Drilling and Testing
23445	DF01	Resource Evaluation	Hydrogeology	\$15,000	Hydrogeologic Database Improvements	Groundwater and Wetland Monitoring ^{GM}
23446	DF01	Resource Evaluation	Hydrogeology	\$49,800	Monthly GW Level Measurements	Groundwater and Wetland Monitoring ^{GM}
24164*	DF05	Resource Evaluation	Hydrogeology	\$1,750,000	Lower Floridan Aquifer Modeling	Drilling and Testing

* Project Funded for First Time

BCB – Big Cypress Basin

FGCU – Florida Gulf Coast University

FTL – Fort Lauderdale

GW – Groundwater

GM – Groundwater Monitoring

KB – Kissimmee Basin (Water Reservation includes

Kissimmee River and its floodplain and Kissimmee Chain of Lakes)

SERC – Statement of Estimated Regulatory Costs

MIL – Mobile Irrigation Lab

ORL – Orlando

STOPR – St. Cloud, Tohopekaliga Water Authority, Orange County, Polk County, and Reedy Creek

Improvement District

USGS – U.S. Geological Survey

WaterSIP – Water Savings Incentive Program

WQ – Water Quality Monitoring

DISTRICT-WIDE WATER RESOURCE DEVELOPMENT PROJECTS

The following section provides project descriptions of the District-wide Water Resource Development efforts funded through the District's Water Supply Program by budget element for FY2011. Additional information, including the implementing entities, activities proposed for FY2011, estimated completion dates, and funding sources, is presented in each project summary.

PLANNING (DA)

There are no District-wide Water Resource Development projects currently planned or budgeted for the Water Supply Program's Planning element.

IMPLEMENTATION PROJECTS (DB)

District-Wide Feasibility Studies (DB01 and DB02)

The SFWMD is performing feasibility studies to determine the viability of water resource development options in order to increase water supply through water resource alternatives. This effort involves collecting and analyzing data and modeling.

Implementing entity: SFWMD in partnership with local water utilities.

Estimate of quantity of water produced by project: Projects are not designed to make water available.

Activities proposed for FY2011:

In the FY2011 District budget, the Central Florida Coordination Area (CFCA) – STOPR Agreement is categorized as a District-wide Feasibility Study. STOPR is an acronym for the five utilities (City of St. Cloud, Toho Water Authority, Orange County, Polk County, and Reedy Creek Improvement District) involved in the study. For the purposes of this report, information about this study can be found in the *Regional Water Resource Development Projects* section of this chapter.

Funding sources: SFWMD and cost share with local water utilities.

Cost per thousand gallons: Feasibility study projects are not designed to make water available.

Total spent to date:

- Lake Worth Drainage District (LWDD) C-51 Pump Replacement: FY2008 — \$300,000.
- C-25 Reconnection Feasibility Study: FY2006–FY2009 — \$175,000.
- Upper Kissimmee Basin Regional Studies: FY2007–FY2009 — \$1,000,000.
- L-40 Funding: FY2007–FY2008 — \$200,000.
- Water Supply Cost Estimation Study: FY2007–FY2008 — \$200,000.
- Advanced Wastewater Studies and Pilot Projects: FY2007–FY2008 — \$775,000.
- Project Culvert-15 Operations Protocol Development: FY2009 — \$24,000.
- Desalination Initiatives: FY2002–FY2009 — \$735,000.

Total project cost: FY2002–FY2009 — \$3,409,000.

Proposed expenditures:

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	0	0	0	0	0	\$0

RULEMAKING (DC)

MFL and Water Reservation Activities (DC01–DC04)

Minimum Flows and Levels (MFLs) are developed pursuant to the requirements contained in Sections 373.042 and 373.0421, F.S. MFLs are part of a comprehensive water resources management approach to assure the sustainability of South Florida’s water resources. Activities include producing technical documents that set scientifically based criteria for defining significant harm, conducting independent external peer reviews of the science, and completing rulemaking. The District conducts assessments to determine whether MFL criteria are being met, and if the criteria are not being met, develops and implements a recovery strategy. If the criteria are being met, the District develops and implements a prevention strategy.

The Governing Board has the ability to authorize rule development to establish Water Reservations in accordance with Section 373.223(4), F.S. Water Reservations protect the water needed for fish and wildlife resources. Establishment of a Water Reservation is also required in order for the District and the U.S. Army Corps of Engineers (USACE) to enter into a Project Partnership Agreement (PPA) as required by the Water Resources Development Act of 2000. This agreement enables construction of Comprehensive Everglades Restoration Plan (CERP) project components, such as reservoirs, Stormwater Treatment Areas, and water diversion structures as outlined in Project Implementation Reports. Additional information on MFLs and Water Reservations is presented in Chapter 3 of this volume.

Implementing entity: SFWMD.

Estimate of quantity of water produced by project:

- Water Reservation rules will reserve quantities of water for the protection of fish and wildlife and will support CERP project implementation.
- MFLs define the flow or level below which significant harm would occur to the water body, and which are used to identify regulatory criteria to prevent significant harm. MFL rules are not intended to make water available.

Completed implementation activities:

- A Water Reservation for the Kissimmee River and Kissimmee Chain of Lakes (KCOL) is currently in rule development.
- Completed U.S. Geological Survey (USGS) monitoring for Loxahatchee MFL station. Data posted to USGS website; District uses data to determine if violations of MFL rule established in 2003 have occurred.
- Completed monitoring of wetlands that supported CFCA rulemaking. Final deliverable summarizing work completed under contract to be provided to District in FY2011.
- Adopted Water Reservation rule for the North Fork of the St. Lucie River in support of the CERP Indian River Lagoon (IRL) – South project.

- Initiated rule development to reserve water for the Caloosahatchee Estuary.
- Continued monitoring of previously established MFLs.

Activities proposed for FY2011:

- Continue rule development for the Caloosahatchee Estuary Water Reservation in support of the CERP C-43 Reservoir Project. This includes the completion of a technical report to support the rule and its peer review. Public workshops will begin in FY2011, which is anticipated to result in a draft rule for Governing Board consideration (P104; \$108,000*).
- Development of Water Reservation rule for the Kissimmee River and KCOL, which includes the completion of a technical report to support the rule and its peer review. Public workshops will begin in FY2011, which is anticipated to result in a draft rule for Governing Board consideration (DC01; \$105,000).
- Development of Water Resource Protection rule for the CERP IRL – South, which may include the completion of a technical report to support the rule and its peer review. Public workshops will begin in FY2011, which is anticipated to result in a draft rule for Governing Board consideration (P107; \$50,000*).
- Development of Restricted Allocation Area rule for the Biscayne Bay Coastal Wetlands (BBCW), which includes the completion of a technical report to support the rule and its peer review. Public workshops will begin in FY2011, which is anticipated to result in a draft rule for Governing Board consideration (P128; \$110,000*).

Estimated completion date:

- Continue rule development for the Caloosahatchee Estuary, Kissimmee River, KCOL, CERP IRL – South, and BBCW, which may include completion of technical reports and peer review in FY2011.
- Monitoring of established MFLs is ongoing with no completion date.

Funding source: SFWMD.

Cost per thousand gallons: Cannot be estimated prior to completion of projects.

Total spent to date: Previous Years – FY2010 — \$978,876.

Total project cost: Ongoing.

Proposed expenditures:

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	105	0	0	0	0	105

*CERP funds; not part of **Tables 5A-1** and **5A-2**. Proposed future expenditures for CERP projects are reported in the CERP Annual Report.

CONSERVATION (DD)

Comprehensive Water Conservation Program

The SFWMD's overall water conservation goal is to prevent and reduce wasteful, uneconomical, impractical, or unreasonable uses of water resources. Since the Comprehensive Water Conservation Program was approved by the District's Governing Board in September 2008, programs have been implemented during FY2010 in all three initiative areas: (1) regulatory, (2) voluntary and incentive-based, and (3) educational and marketing, with water saving benefits expected in the future. The program is a decade-long, comprehensive demand management effort aimed at reducing water use to the lowest level feasible. From a regulatory perspective, a greater emphasis has been placed on water conservation requirements in the Consumptive Use Permitting process that will require municipalities to adopt and enforce effective conservation measures. From local landscape ordinances to year-round irrigation conservation measures, new regulatory measures put in place will advance water use efficiency, promote water conservation as the least-cost source of new water, protect the natural environment, and result in quantifiable water savings. Voluntary and incentive-based initiatives, including financial assistance, technical assistance, and recognition programs, will supplement regulations and build goodwill, leverage investments, bring wider environmental benefits, and significantly improve the quality of life in the District's communities. Education, outreach, and social marketing will complement and sustain these efforts by instilling a lasting conservation ethic in South Florida businesses and communities. Further information is available from the District's website at www.sfwmd.gov/watersupply. Through WaterSIP, the SFWMD provides reimbursement up to 50 percent or \$50,000 to water providers and users (i.e., cities, utilities, industrial groups, schools, hospitals, and homeowners associations) for water-saving technologies. These technologies include low-flow plumbing fixtures, rain sensors, fire hydrant flushing devices, and other hardware. The MIL Program conducts efficiency audits of agricultural and urban irrigation systems. The MILs are operated by the Soil and Water Conservation Districts, a subdivision of the State of Florida created under Chapter 582, F.S.

In addition to the District's Comprehensive Water Conservation Program, the state-wide Water Conservation Program, known as Conserve Florida Water Clearinghouse, provides information and tools to improve water conservation through the development of utility-specific, goal-based water conservation programs. Further information is available at Conserve Florida Water Clearinghouse's website at www.conservefloridawater.org.

The Conserve Florida Water Clearinghouse is funded by the Florida Department of Environmental Protection (FDEP) and the state's largest water management districts. The clearinghouse is supported through the University of Florida (UF) and serves as a centralized information repository. It is equipped with tools to facilitate the efforts of utilities and other stakeholders to achieve their water conservation goals. The University of Florida also operates the Florida Automated Weather Network (FAWN), a state-wide research and data program to provide accurate and timely weather data to a wide variety of users.

Implementing entity:

- WaterSIP: SFWMD.
- MIL Program: SFWMD, Florida Department of Agriculture and Consumer Services (FDACS), and the Soil and Water Conservation Districts.
- Conserve Florida Water Clearinghouse: SFWMD, FDEP, other water management districts, and UF.
- FAWN: SFWMD, UF, FDACS, other water management districts, and other entities.

- Florida Gulf Coast University (FGCU) Wings of Hope: SFWMD and Big Cypress Basin through FGCU.
- Orange County Conservation Study: SFWMD, Orange County Utilities, St. John's River Water Management District (SJRWMD), and the Water Research Foundation.
- The Great Water Odyssey: SFWMD.
- Big Cypress Basin Conservation Outreach: SFWMD and Big Cypress Basin Service Center.
- Water Symposium: SFWMD and Big Cypress Basin Service Center.

Estimate of quantity of water produced by project:

- **WaterSIP.** During FY2003–FY2010, 129 projects cumulatively saved 6.4 mgd of water, and in FY2010, 0.65 mgd of water was saved. For FY2011, 13 proposed projects are anticipated to save 0.55 mgd of water, and 4 mgd is expected to be conserved between FY2011 and FY2015.
- **MIL Program.** The MIL Program was created in 1989. An estimated 3,711 million gallons (mg) of water have been accounted for as actual water savings between FY2003 and FY2010, which is equivalent to 1.3 mgd. In FY2010, approximately 447 mg of water was saved (1.22 mgd), and for FY2011, 1.2 mgd is estimated to be saved. The quantity of water anticipated to be saved during FY2011–FY2015 is 2,190 mg (an average of 1.2 mgd per year).
- **Comprehensive Water Conservation Program.** This program is organized into three initiatives: (1) regulatory, (2) voluntary and incentive-based, and (3) educational and marketing. Strategies have been implemented in all three categories during FY2010, with water saving benefits expected in the future.
- **FAWN.** UF calculates all estimates of water savings on a state-wide basis.

Completed implementation activities:

- Conserve Florida Water Clearinghouse. Funded from FY2004–FY2010.
- **WaterSIP.** Funded 129 projects District-wide from FY2003–FY2010.
- **MIL Program.** There are four agricultural MIL and one urban MIL operating District-wide, all cost-shared by the District through 2010.
- **FAWN.** Funded from FY2004–FY2010; activities included maintenance of weather stations, development of a mobile application, and continued enhancement of the FAWN network.
- **Orange County Conservation Study.** Work completed in FY2010 includes the following reports: 1) an outdoor water use report; 2) determination of required water use by plants from potential cooperators; 3) a report on the surveyed customers, recruited sites, and irrigation evaluations; and 4) a report on equipment installation and update on status of irrigation controller installations and programming comparisons.
- **FGCU Wings of Hope.** In FY2010, the program provided 440 FGCU students with knowledge of Southwest Florida wildlife species, habitats, water conservation, and environmental sustainability. The students in turn taught what they learned to approximately 4,000 fourth- and fifth-grade pupils in Lee and Collier counties at FGCU. Additionally, the Wings of Hope Program was taught to approximately 1,000 fourth- and fifth-grade students at outlying schools. Other FY2010 activities

- included: (1) during the spring, introduced fourth- and fifth-grade students to the Corkscrew Regional Ecosystem Watershed (CREW) Environmental Educational Hiking Trails Program to learn about wildlife, their habitats, water conservation as well as the importance of CREW, (2) “Nature Rocks,” an activity involving student discussions about what nature means to them, (3) the “Water Umbrella Resource” Poster Contest, allowing students to display their creative posters in libraries, government buildings, colleges, and the state capital, and (4) Wildlife & Water Scavenger Hunt Environmental Education Activity posters and activity forms were distributed to over 1,500 Lee County elementary school students.
- **The Great Water Odyssey.** A newly developed online, pilot teacher training workshop was designed and launched in fall 2010 in the Palm Beach and Collier county school districts. In addition, 33 workshops provided hands-on teacher training in FY2010 within 14 counties of the District’s service areas (Polk and Orange counties are not included) for 432 third-, fourth- and fifth-grade teachers. In turn, these teachers brought this computer-based interactive curriculum with a focus on water conservation to 9,936 students. The Great Water Odyssey provides a multidisciplinary educational experience consistent with Florida’s Sunshine State Standards. and assists students for the successful completion of the Florida Comprehensive Assessment Test.
 - **Panther Posse – LWC.** Offered through FGCU’s Wings of Hope Program, this environmental education project allowed college students to work one-on-one with Posse students during FY2010 and throughout the school year. The goal of the program was to build confidence and assist participants in understanding nature. The program was taught to 500 Lee County fourth-grade students at remotely located schools.
 - **Water Symposium – Big Cypress Basin.** During FY2010, Water Symposium of Florida, Inc. (WSF) and BCB partnered with the City of Naples, City of Marco Island, and Everglades City to showcase three demonstration projects focusing on water quality and water conservation as follows:
 - **City of Naples.** Installed a rain garden that was designed to improve the water quality of Moorings Bay by two methods: (1) filtering the runoff through plant uptake of nutrients or other pollutants, or (2) by percolation through the soil. The area, which measures 30 feet (ft) x180 ft, was selected because of its close proximity to the bay and installed through partnerships with a local church, Naples high school students, and several nurseries and landscape companies.
 - **City of Marco Island and Everglades City.** WSF partnered with local governments in Collier County, landscape nurseries, and design professionals to demonstrate how to save money on roadway landscaping and water costs to create scenic roadways. Existing landscape was removed and medians were redesigned using Florida-friendly principles. In preparing for the projects, WSF and BCB reached out to over 500 people to gain grass-roots support for the projects. These redesigned, water saving medians are located in the center of each town, where hundreds of people pass by each day. Over the next year, these medians will be monitored for water conservation as well as reduced maintenance costs. A final report will be created and shared with local governments.

- **Water Audit Leading by Example.** Conducted indoor and outdoor water audits of all District facilities consistent with the action step known as “Leading by Example” outlined in the Comprehensive Water Conservation Program. Twelve District facilities were audited by Water Management, Inc. and by the Soil and Water Conservation Districts for indoor and outdoor audits, respectively. The audits ascertained current water use at each location and provided advice on conserving water, reducing costs, and return on investment for recommendations detailed in the water audit report. Follow-up information based on the recommendations from the outdoor water audits was gathered between November 2009 and June 2010.

Activities proposed for FY2011:

- **Conserve Florida Water Clearinghouse.** This continuing program collects, analyzes, and provides research information and technical assistance to public water supply utilities and water managers for use in developing effective and efficient water conservation programs. This work is part of a multiyear, \$150,000 contract and was included in the FY2010 budget.
- **WaterSIP.** Thirteen projects will receive funding in FY2011 (DD02100571, \$300,000).
- **MIL Program (BCB).** One urban MIL in the BCB will continue to be funded (DD03100513, \$55,000).
- **FAWN.** Continued enhancement of the FAWN network will include site field tests, a half-day irrigation school, incorporating additional sources of data within the District from existing data or a new site installation, mobile device and other management tool enhancements, and development of a tropical fruit and/or vegetable irrigation scheduling tool (DD04, 100614, \$100,000).
- **Orange County Conservation Study.** Irrigation data will be collected to evaluate the water conservation potential of soil moisture sensors and ET irrigation controllers on landscapes in Orange County compared to typical irrigation control methods. A report on this study will be submitted in FY2011, which will include an analysis of preliminary survey information (DD05, 100549, \$25,000).
- **FGCU Wings of Hope – Big Cypress Basin.** The Wings of Hope Program is an integral part of FGCU’s Environmental Humanities curriculum and service learning. University students will continue to be introduced to native Southwest Florida wildlife species, habitats, water conservation, and environmental sustainability. The students will share this knowledge with younger students in fourth and fifth grades through science-based environmental education programs at public and private schools in Collier County. Elementary school students are either transported to FGCU to participate in the programs or participate in the programs at their respective schools (DD07, \$20,000).
- **Big Cypress Basin Conservation Outreach.** FY2010 funds allocated to the Collier Education Environmental Consortium were not spent due to a change to the program. The District will continue to partner with an educational facility in FY2011. The program is currently being modified, and the revamped curriculum will be finalized during FY2011. The program will continue to encourage environmental awareness and focus on water conservation, recycling, environmental field studies, hosting guest speakers from environmental organizations, and other environmental topics (DD10, \$7,800).

- **Water Symposium – Big Cypress Basin.** Service center staff will partner with WSF to hold outreach seminars on water supply/water conservation for homeowners associations, civic groups, and businesses. These seminars are among the BCB/District's ongoing efforts to create a year-round water conservation ethic that can help protect the area's water supply from South Florida's weather extremes (DD10, \$6,940).
- **Water Audit Leading by Example.** During FY2011, a quarterly report will be created that will provide information regarding irrigation system improvements at District facilities based on recommendations from the outdoor water audit conducted during FY2010.

Estimated completion date: Ongoing.

Funding sources:

- WaterSIP: SFWMD, utilities, homeowners associations, and other project partners.
- MIL Program: SFWMD, Big Cypress Basin, and FDACS.
- FAWN: SFWMD, UF, FDACS, and other water management districts.
- Water Audit Leading by Example: SFWMD.
- FGCU Wings of Hope: SFWMD.
- Water Conservation Program: SFWMD.
- Big Cypress Basin Outreach: SFWMD.
- Conserve Florida Water Clearinghouse: SFWMD, FDEP, other water management districts, and UF.
- Orange County Conservation Study: SFWMD, Orange County Utilities, and other water management districts.

Total spent to date: FY2003–FY2010 — \$10,002,739 (includes the Conservation Program, \$3,441,972; WaterSIP, \$2,453,994; and MIL Program, \$4,106,773).

Total project cost: Ongoing.

Proposed expenditures: Comprehensive Water Conservation Program including WaterSIP, MIL, FAWN, Water Audit Leading by Example, FGCU Wings of Hope, and Big Cypress Basin Outreach.

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	515	515	515	515	515	2,575

ALTERNATIVE WATER SUPPLY (DE)

A full description of Alternative Water Supply-related projects and associated funding is contained in the District's Alternative Water Supply Annual Report, prepared pursuant to Section 373.707(7), F.S. (see Chapter 5B of this volume).

RESOURCE EVALUATION (DF)

Drilling and Testing Program (DF01)

A District-wide Drilling and Testing Program is providing an improved understanding of the geology and hydrology of the aquifers in South Florida as new exploratory/test wells are constructed. This improved understanding has enabled more accurate results from groundwater models and better decisions regarding the issuance of new Consumptive Use Permits. Full documentation of each well site (including location, well construction details, geophysical logging, and aquifer testing data) is provided in SFWMD technical publications, and this information has been loaded into the District's hydrometeorologic database, DBHYDRO.

Implementing entity: SFWMD.

Estimate of quantity of water produced by project: Project is not designed to make water available.

Completed implementation activities:

- **South East Polk County Well Construction.** Polk County has completed four wells: (1) a Lower Floridan test production well, (2) a dual-zone monitor well (Lower Floridan and a composite Upper Floridan, Avon Park Permeable Zone, and Upper Floridan), (3) a surficial monitor well, and (4) a well to monitor the upper zone of the Upper Floridan only. A final report was issued April 2010. This work is part of a multiyear, \$250,000 contract and was included in the FY2009 budget.
- **Aquifer Performance Test (APT) Support.** Completed an unbudgeted APT at the Avon Park Bombing range site. Documented two full-scale APTs at the Oak Island site (wells OSF-103 and OSF-108) and the Kissimmee Basin Floridan Aquifer Testing Project (wells OSF-70 and POF-26).
- **Geophysical Log Analysis.** Optical imaging logging was conducted at well OKF-105 and was documented in a draft report entitled Hydrogeologic Investigation of the Floridan Aquifer System S-65C Site Okeechobee County, Florida. The final report is expected to be completed by December 2010.
- **Lithologic/Stratigraphic Formation Description Manual.** Work under this multiyear purchase order is complete, and the manual describing various geologic formations, lithostratigraphic layers, and hydrogeological units is expected to be completed in December 2010.
- **Lehigh Acres Sandstone Aquifer Well Drilling.** The District funded drilling and coring of two sandstone aquifer wells in the Lehigh Acres area adjacent to monitoring wells L-2186 and L-729 to better develop lithologic descriptions of the aquifer that will be used in defining the top of the aquifer. Top-of-aquifer elevations are used in determining the sandstone aquifer's associated Maximum Developable Limits (MDLs).

Activities proposed for FY2011:

- **Lower Floridan Aquifer Evaluation in the Kissimmee River Basin.** The SFWMD proposes to construct and test three wells. The first well (POF-27) will be drilled to an estimated depth of 1,400 ft below land surface (bls), then completed as a dual-zone monitor well of the uppermost production zone and Avon Park producing zone of the Floridan aquifer system. Drilling and testing (geophysical logging) of POF-27 will be used to establish the exact depths of the monitoring intervals.

The second well (POF-28) will be constructed less than 100 ft from POF-27. During initial construction, POF-28 will serve as a production well for an APT of the Avon Park producing zone. Once testing is complete, the Avon Park producing zone will be cased off, and exploratory drilling will continue in this well to a depth of 2,700 ft bls to identify all discrete productive horizons to the base of the Floridan aquifer system. Testing at this well (APT, geophysical logging, packer testing, and water quality sampling with depth), will be used to identify potential productive horizons within the Lower Floridan aquifer. Based on testing results, POF-28 will then be completed as a tri-zone monitor well of the Avon Park producing zone, and the first two production zones of the Lower Floridan aquifer (LF1 and LF2).

Pending the results from POF-28, a third well (POF-29) is planned to be constructed in three stages as a production well for discrete APT of the uppermost FAS producing zone (stage 1), and first (stage 2), and second (stage 3) producing zones of the Lower Floridan aquifer (DF05; \$1,750,000).

- **Geophysical Logging.** Conduct geophysical logging on selected wells and boreholes throughout the District (DF01; \$20,000).
- **Aquifer Performance Test Support.** District staff time will be utilized to document and analyze one full-scale APT at the Avon Park Bombing range site.

Estimated completion date: Ongoing.

Funding source: SFWMD.

Cost per thousand gallons: Project is not designed to make water available.

Total spent to date: FY2000–FY2010 — \$12,910,500.

Total project cost: Ongoing.

Proposed expenditures:

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	1,770	0	0	0	0	1,770

Groundwater and Evapotranspiration Assessments (DF01)

A number of specialized hydrogeologic studies were completed by the USGS in cooperation with the SFWMD. The information provided from these studies is required to enhance the understanding of aquifers and ET rates within the southern portions of the District. Typically, each project requires several years of focused effort by USGS professionals, giving a continuity and focus unique to the USGS. Some projects have the cooperation of other water management districts or other governmental agencies. The USGS reports, maps, and data are peer-reviewed and highly respected in the industry, making these resources valuable references for groundwater modeling and environmental assessments as well as policy and decision making.

Implementing entity: SFWMD and USGS.

Estimate of quantity of water produced by project: Project is not designed to make water available.

Completed implementation activities:

- **USGS – Hydrogeology and Groundwater Quality of Highlands County, Florida.** The report, titled Hydrogeology and Groundwater Quality of Highlands County, Florida, has been completed and is published electronically on-line at <http://pubs.usgs.gov/sir/2010/5097/pdf/sir2010-5097.pdf>.
- **USGS Evapotranspiration Study.** All tasks have been completed under this four-year contract, which consisted of the following work during monthly site visits: data downloading, cleaning instrumentation, measuring depth-to-water, and troubleshooting instrumentation performance. Raw data were downloaded into spreadsheets where Quality Assurance/Quality Control calculations were performed, relationships were developed between ET and climatic variables, and relations used to fill missing data gaps in ET records. Reviewed data were uploaded into the USGS database. Documentation of the data validation work started in FY2010 and is scheduled to be completed by the USGS in FY2011 under a separate funding source within the USGS. The finalized data files will be delivered to the District in December 2010 for uploading to the District’s DBHYDRO database.

Activities proposed for FY2011:

- **USGS Evapotranspiration Study.** Data validation work that was finished in FY2010 will be submitted as a USGS Scientific Investigations Report with a draft scheduled for completion by the end of FY2011 and a final USGS report slated for publication by FY2012.

Estimated completion date: FY2012.

Funding sources: USGS.

Cost per thousand gallons: Project is not designed to make water available.

Total spent to date: FY2000–FY2010 — \$2,754,181.

Total project cost: Remaining contributions/funding sources from the USGS have not been identified completely at the time of the document finalization.

Proposed expenditures:

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	0	0	0	0	0	0

Groundwater and Wetland Monitoring (DF01)

Well construction and monitoring efforts provide information about geology, aquifer characteristics, and water-level conditions to aid the SFWMD in the development of groundwater models, assessing groundwater conditions, and management of this resource. The District maintains extensive groundwater monitoring networks and partners with the USGS to provide additional support and funding for ongoing monitoring. Data are archived in the District’s DBHYDRO database. Data from sites monitored by the USGS are published annually by the USGS. Due to lack of funding, the District will not monitor its network of wetland sites during FY2011.

Implementing entity: SFWMD and USGS.

Estimate of quantity of water produced by project: Project is not designed to make water available.

Completed implementation activities:

- **Fort Lauderdale Office of the Florida Water Science Center (USGS).** Collected data from groundwater level monitoring in the surficial aquifer and continued recorder maintenance. The groundwater monitoring network was reduced in FY2010 due to budgetary constraints, loss of sites, well destruction, and equipment damage. This is an ongoing continuous effort. All data are archived in the USGS database.
- **Orlando Office of the Florida Water Science Center (USGS) – Kissimmee Basin Floridan.** Monitored water level at select sites, including data collection, data analysis and validation, and archived data in the USGS database. This is an ongoing continuous effort.
- **Orlando Office of the Florida Water Science Center (USGS) – Groundwater Monitoring: Potentiometric Surface Mapping Project.** Continued water-level monitoring at select sites, including data collection, data analysis and validation, and archived data in the USGS database. Regional wet and dry season Floridan water-level maps were not created this year due to budgetary shortfalls. Data collection is an ongoing continuous effort.
- **Groundwater Monitoring.** Monitored groundwater in all planning areas of the District within the surficial aquifer system, the intermediate aquifer system, and the Floridan aquifer system, including isolated wetlands, and performed recorder maintenance at all locations. Data were collected, analyzed, quality-controlled, and archived in the District's DBHYDRO database. All data are available to internal and external users through the District's website at www.sfwmd.gov/dbhydro.

Activities proposed for FY2011:

- **Orlando Office of the Florida Water Science Center (USGS) – Groundwater Kissimmee Basin Floridan Monitoring.** Continue water-level monitoring at select sites, including data collection, data analysis and validation, and archiving data in the USGS database. This is an ongoing continuous effort (DF01; \$37,966).
- **Orlando Office of the Florida Water Science Center (USGS) – Groundwater Monitoring: Potentiometric Surface Mapping.** Continue water-level monitoring at select sites, including data collection, data analysis and validation, and archiving data in the USGS database. This is an ongoing continuous effort (DF01; \$16,058).
- **Fort Lauderdale Office of the Florida Water Science Center (USGS) – Groundwater Core Network.** Continue water-level monitoring in the surficial aquifer system, the intermediate aquifer system, and the Floridan aquifer system recorder maintenance, and archiving data in the USGS database (DF01; \$327,040).
- **Regional Floridan Groundwater Monitoring.** Continue water-level monitoring at select sites, including data collection, data analysis and validation, and archiving data in the District's database. This is an ongoing continuous effort (DF01; \$35,000).
- **Hydrogeologic Database Improvements.** This line item is designed to fill the need for programming support for miscellaneous database corrections (DF01; \$15,000).

- **Monthly Groundwater Level Measurements.** Continue water-level monitoring at select sites, including data collection, data analysis and validation for the Hydrologic Online Well Data Inventory (HOWDI) wells, and archiving data in the District’s database. This is an ongoing continuous effort (DF01; \$49,800).
- **Floridan Aquifer Well Maintenance.** Continue water-level Floridan monitoring at select sites, including data collection, data analysis and validation, and archiving data in the District’s database. This is an ongoing continuous effort (DF01; \$63,492).
- **Emergency Wellhead Repairs.** This fund is provided for emergency wellhead repairs (DF01; \$50,000).
- **Parts and Supplies-Field Equipment.** This fund is allocated for the maintenance of existing data loggers, sondes, and gauges (DF01; \$25,000).

Estimated completion date: These projects, which monitor water levels and stages, are an ongoing effort in cooperation with the USGS.

Funding sources: SFWMD and USGS.

Total cost: Ongoing.

Cost per thousand gallons: Project is not designed to make water available.

Total spent to date: FY2000–FY2010 — \$7,338,550.

Proposed expenditures:

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	619	619	619	619	619	3,095

Modeling (DF02)

The Water Supply Program is currently undertaking three modeling efforts, which are described below. No contract monies were designated in the FY2011 budget for these activities, and all work will be performed by District staff.

Lower West Coast Floridan Aquifer Model, Incorporation Of Peer-Review Comments

During FY2008, the District retained three independent groundwater modeling experts to conduct a technical peer review of its draft Lower West Coast Floridan Aquifer Model, which used the SEAWAT-2005 code. Independent peer reviews are conducted per policy direction to ensure that models are developed under established groundwater modeling procedures and meet industry standards. The peer-review panel completed its report in August 2008, and the District began the process of incorporating the panel’s recommendations, which will extend into FY2011.

Implementing entity: SFWMD.

Estimate of quantity of water produced by project: Project is not designed to make water available, but to evaluate potential future sources of water and their impacts.

Activities completed for FY2010:

- Completed pre-development model, a first step in characterizing the groundwater flow system per the peer-review panel.

Activities proposed for FY2011:

- Use pre-development model to establish boundary conditions and develop revised Lower West Coast Floridan Model, including updated model domain, aquifer systems, and updated datasets for calibration purposes.
- Funding source: SFWMD.
- Cost per thousand gallons: Project is not designed to make water available.
- Total spent to date: FY2006 — \$170,000 [Florida Atlantic University (FAU)]; FY2007 — \$150,000 (FAU); FY2008 — \$200,000 [full-time employees (FTEs) and includes \$80,000 for peer reviewers]; FY2009 — \$40,000 (FTEs); FY2010 — \$60,000 (FTEs and consultants).
- Total project cost: \$620,000.
- Proposed expenditures:

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	Staff Time	Staff Time	Staff Time	0	0	0

Lower East Coast Subregional Model, Model Calibration

The Lower East Coast Subregional (LECsR) Model was developed by the SFWMD based on the USGS's MODFLOW code. This model simulates groundwater flow in the SFWMD's Lower East Coast region and is used for planning and regulatory purposes. A peer review was conducted on the LECsR Model and a report prepared by the peer-review panel in June 2006. Since then, the model has been updated to reflect peer-review comments. The tool and variations of the tool are presently being used to address a number of site-specific issues including Water Use, Permitting, and several CERP projects. A final version of the tool is not anticipated this coming fiscal year due to staffing restrictions.

Implementing entity: SFWMD.

Estimate of quantity of water produced by project: Project is not designed to make water available, but to evaluate potential future sources of water and their impacts.

Activities completed for FY2010: None.

Activities proposed for FY2011:

- Begin incorporating variations of the tool into a single tool and begin modifying documentation.

Funding source: SFWMD.

Cost per thousand gallons: Project is not designed to make water available.

Total spent to date: FY2006 — \$300,000 (FTEs and peer-review panel); FY2007 — \$150,000 (FTEs); FY2008 — \$150,000 (FTEs).

Total project cost: \$600,000.

Proposed expenditures:

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	Staff Time	Staff Time	Staff Time	0	0	0

Central Florida Coordination Area/East Central Florida Transient Model Runs Peer Review

Predictive simulations (i.e., model runs) will be conducted in FY2011 that estimate water demands and the effects of these water withdrawals on wetlands, springs, lakes, saltwater intrusion, and existing legal users of water in the CFCA. Six modeling scenarios are being developed and will be conducted in FY2011. Once an estimate of groundwater availability is made, solutions development model runs will be conducted in FY2011 and FY2012 in an attempt to meet water demands in the CFCA. Peer review of these model runs will be conducted by staff from the Southwest Florida Water Management District (SWFWMD) and SJRWMD.

Implementing entity: SFWMD.

Estimate of quantity of water produced by project: Project is not designed to make water available, but to evaluate potential future sources of water.

Completed implementation activities:

- Four of six predictive scenarios were completed during FY2010, models updated, and re-calibrated incorporating new data from recently completed APT including the Southeast Polk APT.
- Presented completed work at workshops during year for public comment and met with potential users of model.

Activities proposed for FY2011:

- Continue work on the six predictive scenarios and estimation of groundwater availability. Completion of this work is expected in FY2011.

Estimated completion date: FY2013.

Funding source: SFWMD.

Cost per thousand gallons: Project is not designed to make water available.

Total spent to date: FY2006 — \$170,000 (consultant); FY2007 — \$150,000 (consultant); FY2008 — \$300,000 (FTEs and peer-review panel); FY2009 — \$200,000 (FTEs for model recalibration); \$35,000 for stage recorder installation; FY2010 — \$200,000 (FTEs for modeling the six predictive scenarios).

Total project cost: \$1,055,000.

Proposed expenditures:

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	Staff Time	Staff Time	Staff Time	0	0	0

PROGRAM SUPPORT (DZ)

There are no District-wide water resource development efforts currently planned for the program support element.

REGIONAL WATER RESOURCE DEVELOPMENT PROJECTS

The following are project descriptions of region-specific water resource development efforts funded by the District's Water Supply Program for FY2011. Additional information, such as the implementing entities, activities proposed for FY2011, estimated completion dates, and funding sources, is included in each project summary.

CENTRAL FLORIDA WATER SUPPLY PLANNING (KISSIMMEE BASIN PLANNING AREA)

STOPR Comprehensive Water Supply Plan Agreement

The intent of the STOPR Study is to complete a comprehensive water supply plan for those portions of Central Florida within the SFWMD and surrounding areas. The plan is the result of a settlement agreement between Orange County and the City of St. Cloud. The proposed plan will identify water supply projects and a strategy for developing and permitting these projects such that the needs of Orange County and the City of St. Cloud are timely met (DA03100557, \$500,000).

Implementing entity: SFWMD.

Estimate of quantity of water produced by project: Project is not designed to produce water.

Activities completed for FY2010: The identification of short- and long-term water supply projects was to occur during FY2010, but no agreement was reached with utilities during this period to complete this task.

Activities proposed for FY2011: If an agreement can be reached with the utilities involved during FY2011, then the identification of short- and long-term water supply projects will occur.

Estimated completion date: FY2012.

Funding sources: SFWMD and cost share with local utilities.

Cost per thousand gallons: Project is not designed to make water available.

Total spent to date: \$0.

Total project cost: \$500,000.

Proposed expenditures:

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	500	0	0	0	0	500

CENTRAL FLORIDA COORDINATION AREA PROJECT FACILITATOR (KISSIMMEE BASIN PLANNING AREA)

The District will continue to provide funding for a facilitator to coordinate with three neighboring water management districts (SFWMD, SJRWMD, and SWFWMD) and the FDEP to develop a regional water strategy that crosses all three water management district lines. The facilitator will provide the following services: schedule meetings, provide documentation of meetings, develop presentations, etc. (DA03100557, \$25,000).

Implementing entity: SFWMD, SWFWMD, and SJRWMD.

Estimate of quantity of water produced by project: Project is not designed to make water directly available.

Completed implementation activities: The three water management districts held three public workshops, four management team meetings, numerous staff technical meetings, and updated governing board members on project status.

Activities proposed for FY2011: Continue coordination of meetings between three water management districts and the FDEP.

Estimated completion date: FY2013.

Funding sources: SFWMD (other water management districts provide matching funds).

Cost per thousand gallons: Project is not designed to make water available.

Total spent to date: \$15,000.

Total project cost: \$105,000.

Proposed expenditures:

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	25	25	5	0	0	\$55

C-51 RESERVOIR PROJECT FACILITATOR (LOWER EAST COAST PLANNING AREA)

The facilitator will promote dialogue and explore potential for a partnership to oversee evaluation of a water storage facility in the Palm Beach County L-8 Basin. The facility would have the capacity to meet environmental restoration, water quality, and regional water supply needs. The facilitator will provide the following services: monthly status reports, meetings with the executive director to discuss reports and findings, produce an initial partnership concept report, and recommendations for project partnership structure (DB01, \$33,500).

Implementing entity: SFWMD.

Estimate of quantity of water produced by project: Further analysis will be required to estimate the quantity of water the project will produce.

Completed implementation activities: Completed the facilitator procurement process in FY2010 and initial discussions with utilities and other interested parties.

Activities proposed for FY2011: Final Recommendation Report for project partnership structure.

Estimated completion date: FY2011.

Funding sources: SFWMD.

Cost per thousand gallons: TBD.

Total spent to date: \$0.

Total project cost: \$0.

Proposed expenditures:

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	33	0	0	0	0	\$33

CENTRAL FLORIDA AQUIFER RECHARGE FEASIBILITY STUDY

Part of the effort in studying the KCOL supply availability is a feasibility assessment of how best to use the available water from the system. The availability of supply from the KCOL and Shingle, Boggy, and Reedy creeks is projected to be highly variable. As such, surface water from these systems may, in part, be a product of opportunity rather than a consistent daily alternative source. While this makes direct use more difficult, it offers opportunities to use surface water for aquifer recharge to offset some of the projected groundwater withdrawal impacts during periods of high availability. Because the western portions of Central Florida are high recharge areas to the Floridan aquifer, rapid infiltration basins may be a feasible means of using surface water from these sources for implementing aquifer recharge. Similar studies have been completed in Orange County for the use of reclaimed water for aquifer recharge. An effort is proposed to expand this study into parts of Osceola, Polk, and Lake counties to determine opportunities for aquifer recharge.

Implementing entity: SFWMD.

Estimate of quantity of water produced by project: Project is not designed to make water directly available.

Completed implementation activities: The priority of work tasks in the project plan for the Central Florida Recharge Project has been reorganized to allow for the determination of surface water availability in the KCOL and Kissimmee River. The initial determination of availability from local surface water sources shows minimal availability of surface water; therefore this study has been put on indefinite hold. The District is proceeding with Water Reservation rule development for the Kissimmee River and its floodplain and the KCOL for the protection of fish and wildlife.

Activities proposed for FY2011: There are no activities planned for this project during FY2011. Since it was determined there is minimal availability of surface water from this system, this study has been placed on indefinite hold. The District is proceeding with Water Reservation rule development for the Kissimmee River and its floodplain and KCOL.

Estimated completion date: On hold.

Funding sources: SFWMD, Toho Water Authority, Orange County Utilities, Reedy Creek Improvement District, City of St. Cloud, and Polk County Utilities.

Cost per thousand gallons: Project is not designed to make water directly available.

Total spent to date: \$0.

Total project cost: \$100,000.

Proposed expenditures:

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	0	0	0	0	0	0

KISSIMMEE CHAIN OF LAKES LONG-TERM MANAGEMENT PLAN/KISSIMMEE BASIN MODELING AND OPERATIONS STUDY

A recommendation in the 2005–2006 KB Water Supply Plan Update directed water supply planning efforts to support work within the District to develop a plan for improving the health and sustainability of the KCOL. The Kissimmee Basin Modeling and Operations Study (KB MOS), initiated as a spin-off from the KCOL Long-Term Management Plan (LTMP), is a District initiative to identify alternative water control structure operating criteria for the Kissimmee Basin and its associated water resource projects. The KB MOS is independent of, but closely related to the KCOL LTMP. The KB MOS will define the required water control structure operations needed to meet the hydrologic requirements of the Kissimmee River Restoration Project, while also achieving a more acceptable balance between water resource management objectives associated with flood control, water supply, aquatic plant management, and the natural resource requirements of the KCOL. A set of modeling tools, including an advanced hydrologic/hydraulic model, has been developed as part of the study. Model construction was completed in 2008. The study is constrained to evaluating operating criteria modifications of the existing water control infrastructure and lands; however, the performance metrics and tools developed for this purpose are being applied in the Kissimmee Basin Water Reservation rule development effort to identify water required for the protection of fish and wildlife and water in excess of that quantity that potentially could be made available for consumptive uses. This effort is being managed through the District’s Everglades Restoration and Capital Project Program. This project supports and has a direct linkage to the KB Water Supply Plan efforts to identify surface water within the basin.

Implementing entity: SFWMD with state and local government support.

Estimate of quantity of water produced by project: Project is not designed to make water available, but will address potential availability of supply for consumptive uses.

Completed implementation activities:

- Completed recalibration and base conditions simulations using improved ET data in FY2009.
- Completed screening of proposed operating criteria and initiated MIKE 11 hydraulic evaluations of top alternative plans in FY2009.
- Applied recalibrated model and base condition to identify water required for the protection of fish and wildlife as part of the Kissimmee Basin Water Reservation rule development effort in FY2009.
- Completed preliminary calibration of a flood routing model requested by USACE and SFWMD for use in verifying and refining flood control performance of top performing alternative plans.

Activities proposed for FY2011:

- Complete calibration of flood routing model.
- Initiate USACE flood analyses of top performing alternative plans.
- Identify criteria (from Kissimmee Basin Water Reservations) to be used to produce content describing potential water availability under top performing alternative plans.

- Flood analysis work is expected to continue into FY2011 and will be followed by final evaluation, promotion, and reporting on alternative plan performance.

Estimated completion date: FY2012.

Funding sources: SFWMD and USACE through Kissimmee River Restoration Project Cooperation Agreement.

Cost per thousand gallons: Project is not designed to make water directly available.

Total spent to date: FY2003–FY2008 — \$2,215,257.

Total project cost: \$0

Proposed expenditures:

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	TBD	TBD	0	0	0	0

CENTRAL FLORIDA WATER SUPPLY COORDINATION

Hydrologic groundwater basins do not follow water management district boundaries; therefore, coordination among the SFWMD, SJRWMD, and SWFWMD is critical to the water supply permitting and planning process. This is particularly true in the region of Orange, Osceola, Polk, and southern Lake counties. Efforts to continue and improve this coordination in the areas of planning, permitting, and assessment tool development are important to the consistent implementation of water resource projects across the three districts. These districts have reached agreement on a set of guiding principles to help direct these coordination efforts in the future and have developed a work plan of tasks that will address inconsistencies in the areas of water supply planning, permitting, and assessment tool development. The effort includes coordination and joint studies of water supply alternatives needed for the region.

Implementing entity: SFWMD, SJRWMD, and SWFWMD.

Estimate of quantity of water produced by project: Project is not designed to make water directly available.

Completed implementation activities:

- Coordination meetings held among the three districts and FDEP.
- Initiated the assessment of groundwater availability within the CFCA.
- Continued facilitator contract and initiated stakeholder workshops.

Activities proposed for FY2011:

- Continue to hold coordination meetings among the three districts and the FDEP.
- Continue work on the assessment of groundwater availability within the CFCA.
- Initiate solution development activities.
- Continue facilitator contract.
- Initiate stakeholder workshops.

Estimated completion date: FY2013.

Funding source: SFWMD.

Cost per thousand gallons: Project is not designed to make water directly available.

Total spent to date: \$0.

Total project cost: Staff time only (linkage to FY2010 planning, implementation, MFL, hydrogeology, and modeling projects).

Proposed expenditures:

Cost	FY2011	FY2012	FY2013	FY2014	FY2015	Total
Dollars (\$1,000)	Staff Time	Staff Time	Staff Time	0	0	0