

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

Patrick Martin

INTRODUCTION

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. Accordingly, this chapter presents the Five-Year Water Resource Development Work Program for Fiscal Year 2014–2018 (FY2014–FY2018) (October 1, 2013–September 30, 2018). 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 373.709, F.S. 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 supply development projects and water resource development projects. Water supply development projects generally involve public or private facilities for water collection, treatment, and transmission and are the responsibility of local water users. Water resource development is defined in Section 373.019(24), 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; development of regional water resource implementation programs; 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. 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.

WATER SUPPLY PLANNING OVERVIEW

In accordance with Chapters 163 and 373, F.S., the District is required to update regional water supply plans every five years for a future 20-year planning horizon to ensure the availability of water to meet all existing and future reasonable-beneficial water needs and to protect natural systems from harm up to and during a 1-in-10 year drought event. The SFWMD consists of four planning areas: the Upper East Coast (UEC), the Kissimmee Basin (KB), the Lower West Coast (LWC), and the Lower East Coast (LEC). Beginning in 2011 for planning purposes, the Kissimmee Basin region has been divided into two basins — the Lower and Upper

Kissimmee basins—which are addressed in two separate water supply efforts. The Lower Kissimmee Basin (LKB) includes Glades, Highlands, and Okeechobee counties. The Upper Kissimmee Basin is a part of the Central Florida Water Initiative (CFWI), with its planning region covering southern Lake, Orange, Osceola, Seminole, and Polk counties. The CFWI water supply plan is currently being developed by three districts: the SFWMD, Southwest Florida Water Management District (SWFWMD), and St. Johns River Water Management District (SJRWMD). A key component of the CFWI’s mission is to implement a long-term approach to water resource management in Central Florida. Both the Lower Kissimmee Basin and the CFWI water supply plans have a planning horizon of 2035 and will be presented to the Governing Board in 2014 for approval.

Current water supply plan updates project demands through 2030. Most recently, the 2011 Upper East Coast, 2012 Lower West Coast, and 2013 Lower East Coast water supply plan updates were approved by the District’s Governing Board in March 2011, November 2012, and September 2013, respectively.

District-wide population in 2013 is 7.9 million with the 2030 population expected to increase to approximately 10 million people as projected in the most recent water supply plan updates. The raw water demand in 2010 was 3.2 billion gallons per day (bgd) and is estimated to increase to approximately 4 bgd in 2030. As the regional water supply plans are being updated, results have shown that the rate of population growth has slowed and associated water supply demands have decreased significantly from previous plan projections.

WATER SUPPLY DEVELOPMENT PROJECTS

Regional water supply plans identify water supply projects that public water supply utilities are proposing to meet their future increases in demand. The plans indicate public water supply demands are projected to increase by 389 million gallons per day (mgd) over the next 20 years (2010 demand vs. projected 2030 demand) with 99 future water supply projects having an estimated cost of \$4.1 billion anticipated to be constructed. While most of these projects will meet future demand increases, some will also support changes in water treatment processes or utilize other water sources. These projects include both potable and nonpotable water (i.e., reclaimed water and storm water). The capacity of these proposed projects exceeds the projected needs. Construction of these water supply development projects are primarily the responsibility of the utilities in the respective localities. The District assists and supports local utilities and other water users that construct alternative water supply projects through its Alternative Water Supply (AWS) funding program. The evaluation of increases in projected demand from 2010 to 2030 for individual utilities, compared to current allocations and water treatment capacity, indicates that allocations and treatment facilities are currently in place to meet 83 percent of the projected increase in demand. Further information on the AWS program is presented in the *Alternative Water Supply (DE)* section of this chapter and Chapter 5B of this volume.

DISTRICT-WIDE WATER RESOURCE DEVELOPMENT PROJECTS

Most water resource development projects support and enhance water supply development projects but do not themselves yield specific quantities of water. For example, project-related hydrologic investigations, groundwater monitoring and modeling provide important information about aquifer characteristics (e.g., hydraulic properties and water quality) but do not result in an increase of water availability. Information derived from these water resource development projects supports water supply development projects (i.e., developing appropriate facility design, identifying safe aquifer yields, and evaluating the economic viability of projects). District-wide water resource development projects benefit the entire region while regional water resource

development projects are specific to a particular planning region or basin located within the District.

Water resource development projects are discussed in Chapter 5 of the 2011 UEC and 2012 LWC plan updates and in Chapter 4 of the 2013 LEC Plan Update. Previously, District-wide and region-specific water resource development projects were identified in Chapter 6 (Water Resource Development Projects) of the 2005–2006 Plan Update for the KB planning region, but starting in 2014, the KB planning region will be covered in two separate water supply plans, CFWI and LKB, as explained previously, which are still in development. It should be noted that District projects that provide water supply primarily for the environment are presented in the South Florida Environmental Report Consolidated Project Report Database, which is accessible at www.sfwmd.gov/sfer.

With respect to District-wide water resource development projects, it is important to understand the SFWMD's history and functions, which are closely linked to water resource development activities such as hydrologic investigations and groundwater monitoring and modeling. In 1948, the U.S. Congress authorized the Central and Southern Florida Project (C&SF). This was followed by the creation of the Central & Southern Florida Flood Control District (C&SFFCD) by the Florida legislature in 1949 to act as the C&SF Project local sponsor. In 1972, the SFWMD was established by the Florida legislature to succeed the C&SFFCD and assume responsibility for operation and maintenance of the C&SF Project. The authorized purposes of the C&SF Project are flood control, water supply, navigation, and protection and enhancement of ecosystems.

The SFWMD is responsible for managing and protecting the water resources of South Florida by balancing and improving water quality, flood control, natural systems and water supply. Currently, region-wide water management is accomplished by the SFWMD's operation and maintenance of 1,959 miles of canals, 2,820 miles of levees and berms, 667 water control structures, 722 culverts and 68 pump stations. As an essential part of the agency's core mission, providing water supply for agriculture, urban uses, and natural resource needs and preventing saltwater intrusion are a routine part of operation and maintenance. For example, normal water supply operations such as delivering water from Lake Okeechobee for supplemental irrigation requirements to over 614,000 acres of agriculture in the Everglades Agricultural Area, Caloosahatchee and St. Lucie watersheds are also considered water supply-related activities. Examples of other water supply-related activities include installing temporary portable pumps at the southern end of Lake Okeechobee when water levels are low to provide supplemental water supply deliveries to urban and agriculture areas; operating Water Conservation Areas to provide recharge to the Biscayne and surficial aquifers in the Lower East Coast (Palm Beach, Broward, and Miami-Dade counties); maintaining and operating major coastal salinity control structures to prevent saltwater intrusion into drinking water aquifers; delivering water from the regional system through a network of canals to maintain water levels in the coastal canal network to prevent salt water intrusion and recharge public potable water wellfields; and delivering regional water through the South Dade canal system to be used for supplemental water supply for South Dade agriculture, recharging public drinking water wellfields, preventing saltwater intrusion, and reducing seepage out of Everglades National Park. Importantly, dedicated funds for such projects are critical to assist the SFWMD to satisfy the authorized water supply purpose of the C&SF Project while meeting water supply needs of the natural system, as a preference to more costly alternative water supply sources. The District's FY2014 operation and maintenance budget is \$208 million, of which approximately 50 percent (more than \$104 million) is allocated to providing water supply to the region. When combined with the \$9 million allocated in FY2014 to water resource development projects as provided in **Table 5A-1**, this equates to approximately \$113 million that is planned to be spent in FY2014 on ensuring water supply for the region.

The water resource development projects described in this report—rulemaking for MFLs, AWS, comprehensive water conservation program, drilling and testing, groundwater monitoring and groundwater modeling—are primarily District-wide projects. For more detail, refer to the *District-wide Water Resource Development Projects (DC, DD, DE, DF)* section of this chapter. Implementation schedules and projected costs for FY2014–FY2018 are summarized in **Table 5A-1**.

REGIONAL WATER RESOURCE DEVELOPMENT PROJECTS

Water supply plan updates describe proposed water supply projects, water resource projects, and implementation strategies for the planning period. Full-time employee (FTE) costs to develop these plans are captured in element *DA Water Supply Planning* while FTE costs to implement these plans are captured in *DB Water Supply Implementation* of the District’s budget. For more detailed information, refer to the *Regional Water Resource Development Projects (DA, DB, FA)* section of this chapter.

The regional water resource development projects described in this report—Central Florida Water Supply Planning, Central Florida Water Initiative, and Kissimmee Basin Modeling and Operations Study—are currently focused in the Kissimmee Basin region. For more detailed information about these projects, see the *Regional Water Resource Development Projects (DA, DB, FA)* section of this chapter.

FY2014–FY2018 implementation schedules and projected costs for *DA* and *DB* programs are summarized in **Table 5A-1**.

Table 5A-1. Fiscal Years 2014–2018 (FY2014–FY2018)
(October 1, 2013–September 30, 2018) implementation schedule
and projected costs for water resource development projects.

Regional Water Resource Development Projects	Plan Implementation Costs (\$ in thousands)					Total
	FY2014	FY2015	FY2016	FY2017	FY2018	
STOPR/Orange County Settlement Agreement (DA03)						
Est. finish date: 2014	296	0	0	0	0	296
Central Florida Water Initiative Project Facilitator (DA03)						
Est. finish date: 2014	25	0	0	0	0	25
Central Florida Water Initiative Water Supply Planning Project (DA03)						
Est. finish date: 2015	287	425	0	0	0	712
Kissimmee Chain of Lakes Long-Term Management Plan/KB Modeling & Operations Study¹ (FA09)						
Est. start date: 2004 Est. finish date: TBD	138	0	0	0	0	138
Sub-Total	746	425	0	0	0	1,171

KB – Kissimmee Basin Planning Area

STOPR – St. Cloud, Toho, Orange County, Polk County, Reedy Creek

¹ FY2014 expenditures and future proposed expenditures are reflected in the Kissimmee Watershed Program

Table 5A-1. Continued.

District-wide Water Resource Development Projects	Plan Implementation Costs (\$ in thousands)					Total
	FY2014	FY2015	FY2016	FY2017	FY2018	
Water Supply Planning (DA01) Est. finish date: Ongoing	1,330	1,000	1,200	1,300	1,300	6,130
Water Supply Implementation (DB01) Est. finish date: Ongoing	325	325	325	325	325	1,625
MFL, Water Reservation Activities and Restricted Allocation Areas (DC01, DC05, DC08, DC09) Est. start date: 1995 Est. finish date: Ongoing (refer to Chapter 3 of this volume)	637	401	380	380	380	2,178
Comprehensive Water Conservation Program (DD01, DD07, DD08) Est. start date: 1977 Est. finish date: Ongoing	668	395	395	395	395	2,248
Alternative Water Supply (DE01, DE02) Est. start date: 1997 Est. finish date: Ongoing	2,629	1,050	1,050	1,050	1,050	6,829
Drilling and Testing (DF01, DF05) Est. start date: 1990 Est. finish date: Ongoing	287	20	20	20	20	367
Groundwater Monitoring (DF01, DF06) Est. start date: 2002 Est. finish date: ongoing	1,465	1,400	1,400	1,400	1,400	7,065

Table 5A-1. Continued.

District-wide Water Resource Development Projects (continued)	Plan Implementation Costs (\$ in thousands)					Total
	FY2014	FY2015	FY2016	FY2017	FY2018	
Groundwater Modeling (DF02, DF07)						
Est. start date: 1997						
Est. finish date: ongoing	1,127	575	775	775	775	4,027
Estimated Portion of C&SF Operation and Maintenance Budget Allocated to Water Supply²	104,000	104,000	104,000	104,000	104,000	520,000
Sub-Total	112,468	109,166	109,545	109,645	109,645	550,469
Total	113,214	109,591	109,545	109,645	109,645	551,640

MFL – Minimum Flows and Levels

² Approximated based on 50 percent of the FY2014 Operation & Maintenance budget

COMPREHENSIVE WATER CONSERVATION PROGRAM

Approved in 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 an enduring conservation ethic and permanent reduction in water use. The program is organized into regulatory, voluntary and incentive-based, and educational and marketing initiatives. Water savings achieved through conservation measures are the most cost-efficient way to reduce demands on current water supplies. One of the primary financial incentives identified in the Comprehensive Water Conservation Program is the Water Savings Incentive Program (WaterSIP). This program provides funding for the implementation of technology-based water conservation projects. Big Cypress Basin (BCB) has also provided funding for the Florida Department of Agriculture and Consumer Services (FDACS) Mobile Irrigation Lab (MIL) Program. The program promotes water conservation through water efficiency audits on irrigation systems. Implementation of the WaterSIP and BCB 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.

As shown in **Table 5A-2**, the District's Comprehensive Water Conservation Program is estimated to result in 1.23 mgd of measurable additional available water in FY2014 and 1 mgd of measurable additional available water each year for FY2015–FY2018. From FY2014–FY2018, the estimated measureable additional water made available through this program is projected to be 5.23 mgd.

Table 5A-2. Estimated additional water made available (million gallons per day, or mgd) during FY2014–FY2018 through the Comprehensive Water Conservation Program.

Conservation Program	FY2014	FY2015	FY2016	FY2017	FY2018	Total
WaterSIP	0.23 ¹	0 ²	0 ²	0 ²	0 ²	0.23
Mobile Irrigation Labs	1.00	1.00	1.00	1.00	1.00	5.0
Total	1.23	1.00	1.00	1.00	1.00	5.23

¹ Based on projected savings of FY2014 funded projects

² WaterSIP funding not anticipated for FY2015–FY2018

FUNDING

The SFWMD has allocated \$113 million in FY2014 for water resource development projects, which includes 50 percent of C&SF operation and maintenance that is estimated to provide water supply. For FY2014–FY2018, the SFWMD anticipates spending \$551.6 million on water resource development projects (**Table 5A-1**). These allocations include \$668K for the Comprehensive Water Conservation Program during FY2014 and \$2.2 million from FY2014–FY2018.

It should be noted that funding for environmental projects, capital improvement projects in the Big Cypress Basin, Aquifer Storage and Recovery, and projects not identified in Chapter 4 of the 2013 LEC update, Chapter 6 of the 2005-2006 KB Plan update and Chapter 5 of the 2011

UEC and 2012 LWC Water Supply Plan updates are not included in this chapter. Funding described in this report also does not include projects associated with the Comprehensive Everglades Restoration Plan (CERP), restoration strategies and other restoration projects; they are captured in other sections of the SFER. This is the second year the report includes FTE costs including salaries, retirement contributions, taxes, and insurance for each element that received funding in FY2014. To provide a more comprehensive accounting of District-related expenditures for water resource development projects, estimated FTE costs are also included in each element for the projected budgets from FY2015–FY2018.

The District's Water Supply Program is currently divided into seven elements in the District's budget of which six were allocated funding in FY2014. In addition, elements FA09 of the Kissimmee Watershed Program and P104 of the Comprehensive Everglades Restoration Plan are included since they reflect regional water resource development projects that are required to be included in this report. The relevant elements that are funded in the FY2014 budget are as follows:

- **Planning (DA)** [Water Supply Planning (DA01) and Central Florida Coordination (DA03)]
- **Implementation Projects (DB)** [Water Supply Plan Implementation (DB01)]
- **Rulemaking (DC)** [Water Reservations – Kissimmee (DC01), Biscayne Bay MFL Rulemaking (DC05), Florida Bay MFL Update (DC08), Caloosahatchee MFL Update (DC09) and Caloosahatchee River (C-43) West Basin Storage Reservoir Water Reservation (P104)]
- **Conservation (DD)** [Regulatory Initiatives (DD01), WaterSIP (DD01), Education & Marketing Initiatives – School (DD07), and Outreach, Education and Marketing (DD08)]
- **Alternative Water Supply (DE)** [Alternative Water Supply (DE01) and BCB Alternative Water Supply (DE02)]
- **Resource Evaluation (DF)** [Hydrogeologic Data Gathering & Analysis (DF01), Sub-Regional Water Supply (DF02), Inter-District Evaluation (DF05), South Miami-Dade Hydrologic Analysis (DF06), and Post Processing Model Run (DF07)]
- **Kissimmee Watershed Program (FA)** [Kissimmee River Restoration & Headwaters Revitalization (FA09)]
- **Comprehensive Everglades Restoration Plan Program (P)** [CERP Projects (P104)]

To align 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. **Table 5A-3** provides a list of water resource development projects from the regional water supply plans, and **Table 5A-4** shows the water resource development projects being funded in FY2014 and the related chapter sections with more detail. It should be noted that **Table 5A-4** does not include FTE costs, as the District's budget presents FTE costs by functional area, not by project.

Table 5A-3. Crosswalk for water supply plans, water resource development projects, and 2014 South Florida Environmental Report (SFER) – Volume II.
[Note: All section references are for this chapter unless noted otherwise.]

Water Supply Plan	Recommended Projects	Status	SFER Section	Coverage Area
2011 UEC	Floridan Aquifer System Model & Database Development (East Coast Floridan Aquifer System Model (ECFM))	Ongoing	Modeling (Completed peer review in FY2011; Incorporated peer review comments, recalibrated, and ready for application in FY2014)	District-wide
2011 UEC	Saltwater Intrusion Monitoring	Ongoing	Monitoring	District-wide
2011 UEC	MFL Activities	Ongoing	MFL and Reservation Activities	District-wide
2011 UEC	Comprehensive Water Conservation Program	Ongoing	Water Conservation Program	District-wide
2011 UEC	Water Savings Incentive Program	Ongoing	Water Conservation Program	District-wide
2011 UEC	Alternative Water Supply Program	Ongoing	Alternative Water Supply (see Volume II, Chapter 5B)	District-wide
2011 UEC	Floridan Aquifer Exploratory Well Program	Ongoing	Drilling and Testing Program	District-wide
2006 KB	Floridan Aquifer Exploratory Well Program	Ongoing	Drilling and Testing Program	District-wide
2006 KB	Surficial Aquifer Well Pairing Network	On Hold	Groundwater and Wetlands Monitoring (not funded in FY2012, FY2013 and FY2014)	Regional
2006 KB	Wetlands Monitoring Network	Complete	Groundwater and Wetlands Monitoring	District-wide
2006 KB	USGS Water Quality Module	Complete	Groundwater and ET Assessments	District-wide
2006 KB	ET Measurement Project	Complete	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	Alternative Water Supply Program	Ongoing	Alternative Water Supply (see Volume II, Chapter 5B)	District-wide
2006 KB	Mobile Irrigation Labs	On Hold	Water Conservation Program (not funded in FY2014)	District-wide
2006 KB	Water User and Supply Cost Relationship Study	Complete	District-wide Feasibility Studies (completed in FY2007–FY2008)	District-wide

Table 5A-3. Continued.

Water Supply Plan	Recommended Projects	Status	SFER Section	Coverage Area
2006 KB	Lower Kissimmee Basin Model Upgrade	Ongoing	Modeling (recalibrated in FY2013, predictive runs to be completed in FY2014)	Basin-specific
2006 KB	Upper Kissimmee Basin Transient Groundwater Model	Complete	Modeling [Central Florida Water Initiative (CFWI)/East Central Florida Transient Model Runs] completed September 2013	Basin-specific
2006 KB	Floridan Aquifer System Groundwater Model and Database Development	Ongoing	Modeling (funded through CFWI in FY2014)	Basin-specific
2012 LWC	Surficial & Intermediate Aquifer System Model & Database Development	Complete	Modeling (incorporating Intermediate Aquifer System & peer review comments in FY2014/FY2015)	Basin-specific
2012 LWC	Florida Aquifer System Model & Database Development	Ongoing	Modeling (peer reviewed and calibrated FY2011 and is ready for application)	District-wide
2012 LWC	Saltwater Intrusion Monitoring	Ongoing	Monitoring	District-wide
2012 LWC	MFL Activities	Ongoing	MFL and Reservation Activities (Caloosahatchee River Estuary: collect & analyze data and develop models to evaluate MFL criteria in FY2014)	District-wide
2012 LWC	Reservation Activities	Complete	MFL and Reservation Activities (Water Reservation for the Picayune Strand/ Fakahatchee Estuary, effective July 2, 2009)	Basin-specific
2012 LWC	Reservation Activities	Ongoing	MFL and Reservation Activities (CERP Water Reservation Rule FY2014) for the Caloosahatchee River (C-43) West Basin Storage Reservoir (present draft rules to GB for adoption in 2014)	Basin-specific
2012 LWC	Comprehensive Water Conservation Program	Ongoing	Water Conservation Program	District-wide
2012 LWC	Water Savings Incentive Program	Ongoing	Water Conservation Program	District-wide
2012 LWC	Alternative Water Supply Program	Ongoing	Alternative Water Supply (see Volume II, Chapter 5B)	District-wide

Table 5A-3. Continued.

Water Supply Plan	Recommended Projects	Status	SFER Section	Coverage Area
2013 LEC	Floridan Aquifer Exploratory Well Program	Ongoing	Drilling and Testing Program	District-wide
2013 LEC	Groundwater Monitoring	Ongoing	Groundwater and Wetlands Monitoring	District-wide
2013 LEC	Comprehensive Water Conservation Program	Ongoing	Water Conservation Program	District-wide
2013 LEC	Water Savings Incentive Program	Ongoing	Water Conservation Program	District-wide
2013 LEC	MFL Activities	Ongoing	MFL and Reservation Activities (Florida Bay: completed technical evaluation in FY2013- consider MFL criteria rule to be updated in 2014)	District-wide
2013 LEC	Floridan Aquifer System Model & Database Development (East Coast Floridan Aquifer System Model (ECFM))	Ongoing	Modeling (Completed peer review in FY2011; Incorporated peer review comments, recalibrated, and ready for application in FY2014)	District-wide
2013 LEC	Alternative Water Supply Program	Ongoing	Alternative Water Supply (see Volume II, Chapter 5B)	District-wide

ET – Evapotranspiration
 GB – Governing Board
 KB – Kissimmee Basin
 LEC – Lower East Coast
 LWC – Lower West Coast
 MFL – Minimum Flows and Levels
 UEC – Upper East Coast
 USGS – U.S. Geological Survey

Table 5A-4. Crosswalk for FY2014 budget, water resource development projects, and sections of this chapter.

Budget Line Item	Element (Functional Area)	Program Element	Functional Area Name	Amount ¹	Project	Chapter Section
19707	DE01	Alternative Water Supply	Alternative Water Supply	\$345,700	Alternative Water Supply	Alternative Water Supply
19242	DE02	Alternative Water Supply-BCB	Alternative Water Supply	\$2,200,000	Alternative Water Supply-BCB	Alternative Water Supply
19708	DD01	Conservation	Regulatory Initiatives	\$250,000	Water Savings Incentive Program (WaterSIP)	Comprehensive Water Conservation
18527	DD01	Conservation	Regulatory Initiatives	\$55,000	Mobile Irrigation Lab – BCB	Comprehensive Water Conservation
20259	DD01	Conservation	Regulatory Initiatives	\$20,000	Conserve Florida	Comprehensive Water Conservation
18530	DD08	Conservation	Education & Marketing Initiative	\$5,000	Water Symposium	Comprehensive Water Conservation
19946	DD08	Conservation	Education & Marketing Initiative	\$15,000	Great Water Odyssey	Comprehensive Water Conservation
18391	DF01	Resource Evaluation	Hydrogeologic Data Gathering	\$3,000	Training & Conferences	Groundwater Monitoring
18805	DB01	Implementation Projects	Water Supply Plan Implementation	\$3,000	Training & Conferences	Groundwater Monitoring
18497	DF01	Resource Evaluation	Hydrogeologic Data Gathering	\$313,002	FTL USGS GW Core Network Monitoring	Groundwater Monitoring
20257	DB01	Implementation Projects	Water Supply Plan Implementation	\$25,000	WateReuse Foundation (Reclaimed Water)	Groundwater Monitoring
19714 ²	DC09	Rulemaking	MFL Water Reservation Rule	\$30,000	Caloosahatchee MFL Update – Benthic Macrofauna	Rulemaking
19716 ²	DC09	Rulemaking	MFL Water Reservation Rule	\$55,000	Caloosahatchee MFL Update – Quantifying Tape Grass	Rulemaking

Table 5A-4. Continued.

Budget Line Item	Element (Functional Area)	Program Element	Functional Area Name	Amount ¹	Project	Chapter Section
18498	DF01	Resource Evaluation	Hydrogeologic Data Gathering	\$95,380	ORL USGS GW Core Network Monitoring	Groundwater Monitoring
19762	DF06	Resource Evaluation	South Miami Dade Hydrogeologic Analysis	\$94,000	3-D Hydrogeology Model	Groundwater Monitoring
17385	DF01	Resource Evaluation	Hydrogeologic Data Gathering	\$50,000	Emergency Wellhead Repairs	Groundwater Monitoring
17386	DF01	Resource Evaluation	Hydrogeologic Data Gathering	\$25,000	Parts & Supplies – Field Equipment	Groundwater Monitoring
17387	DF01	Resource Evaluation	Hydrogeologic Data Gathering	\$20,000	Geophysical Logging	Drilling and Testing
17388	DF01	Resource Evaluation	Hydrogeologic Data Gathering	\$15,000	Hydrogeologic Data Archiving	Groundwater Monitoring
17389	DF01	Resource Evaluation	Hydrogeologic Data Gathering	\$18,800	Monthly Groundwater Level Measurements	Groundwater Monitoring
18537	DF01	Resource Evaluation	Hydrogeologic Data Gathering	\$34,090	Groundwater RTU Maintenance/Repair	Groundwater Monitoring
20293 ²	DC08	Rulemaking	Florida Bay MFL Update	\$26,242	Florida Bay MFL Peer Review	Rulemaking
19941	DF06	Resource Evaluation	South Miami Dade Hydrogeologic Analysis	\$50,000	Technical Review – FPL (Isotope Data Interpretation)	Groundwater Monitoring
17153	DF02	Resource Evaluation	Sub Regional Water Supply	\$75,000	Groundwater Model Peer Reviews	Groundwater Monitoring

¹Does not include FTE costs
² Project funded for first time
 BCB – Big Cypress Basin
 FTL – Fort Lauderdale
 FPL – Florida Power & Light
 GW – Groundwater

MFL – Minimum Flows and Levels
 ORL – Orlando
 RTU – Remote Terminal Units
 USGS – U.S. Geological Survey

REGIONAL WATER RESOURCE DEVELOPMENT PROJECTS (DA, DB, FA)

WATER SUPPLY PLANNING (DA01)

Though regional water supply plans are updated every five years, there is ongoing work undertaken each year to support the update (i.e., modeling, saltwater intrusion mapping, population and demand projections and receive, review and compile annual utility status reports). In addition, the regional plans are approved in varying years, which require annual staff time to be spent on water supply planning. The table below shows the amount of budgeted FY2014 FTE costs and future estimated costs for *DA* water supply planning efforts:

Activities completed for FY2013:

- Approval of LEC Water Supply Plan Update

Activities proposed for FY2014:

- Approval of CFWI Water Supply Plan
- Approval of LKB Water Supply Plan
- Initiate the 2016 UEC Water Supply Plan Update
- CFWI Solutions and Regulatory Team Meetings

Estimated completion date: Ongoing

Funding sources: District staff time

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

Total spent to date: Ongoing

Total project cost: Ongoing

Proposed expenditures:

Cost	FY2014	FY2015	FY2016	FY2017	FY2018	Total
(\$ in thousands)	1,330 ¹	1,000 ²	1,200 ²	1,300 ²	1,300 ²	6,130

¹ \$1,330K FTEs

² FTE costs only

WATER SUPPLY IMPLEMENTATION (DB01)

Regional water supply plans include specific recommendations and implementation strategies to ensure availability of future water supplies. Implementation, coordination and facilitation of water resource development projects, operational changes, consumptive use permitting, conservation programs and rulemaking associated with the plans is a multi-year process that involves working closely with other agencies, local governments, utilities, the agricultural industry and environmental interests. The District budgets annual staff time to be spent on water supply implementation.

Activities completed for FY2013:

- 2013 LEC Water Supply Plan Update approved by Governing Board
- 2012 LWC Water Supply Plan Update approved by Governing Board

Activities proposed for FY2014:

- Approval of CFWI Water Supply Plan
- Approval of LKB Water Supply Plan
- Initiate the 2016 UEC Water Supply Plan Update

Estimated completion date: Ongoing**Funding sources:** District staff time**Cost per thousand gallons:** Project is not designed to make water available**Total spent to date:** Ongoing**Total project cost:** Ongoing**Proposed expenditures:**

Cost	FY2014	FY2015	FY2016	FY2017	FY2018	Total
(\$ in thousands)	325 ¹	1,625				

¹\$320K FTEs and \$5K other

The following are project descriptions of region-specific water resource development efforts funded by the District's Water Supply Program for FY2014. Additional information, such as the implementing entities, activities proposed for FY2014, estimated completion dates, and funding sources are included in each project summary.

CENTRAL FLORIDA WATER SUPPLY PLANNING (DA03) (KISSIMMEE BASIN PLANNING AREA)

STOPR/Orange County Settlement Agreement

The intent of the St Cloud, Toho, Orange County, Polk County, Reedy Creek (STOPR) Study is to complete a portion of a utility-specific water supply strategy for those portions of Central Florida within the SFWMD and surrounding areas. This study is the result of a settlement agreement with Orange County and the City of St. Cloud. The proposed effort will develop a conceptual design of a "water wheeling" system intended to optimize transmission and distribution of water from the recently permitted Cypress Lakes wellfield to multiple Central Florida utilities.

Implementing entity: SFWMD**Estimate of quantity of water produced by project:** Project is not designed to produce water. These funds were appropriated as a result of a settlement agreement related to a consumptive use permit challenge and must be used to develop a comprehensive water supply plan for the region**Activities completed for FY2013:** Scope of work drafted, contract executed and first deliverable received**Activities proposed for FY2014:** Anticipate receipt of final deliverable and contract completion**Estimated completion date:** FY2014**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: \$171,773

Total project cost: TBD

Proposed expenditures:

Cost	FY2014	FY2015	FY2016	FY2017	FY2018	Total
(\$ in thousands)	296 ¹	0	0	0	0	296

¹ \$293,231 contractual costs (amount remaining from the \$465K PO) and \$3K FTE costs

Central Florida Water Initiative Project Facilitator

The District will continue to provide funding for a facilitator to coordinate with the SJRWMD, SWFWMD, and Florida Department of Environmental Protection (FDEP) to develop a regional water strategy in the CFWI that crosses all three water management district lines. The facilitator will schedule meetings, provide documentation of meetings, develop presentations, and provide additional similar services

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: Continued regular meetings of the steering committee and technical teams. A calibrated groundwater model was delivered by the U.S. Geological Survey (USGS) (see the *Groundwater Modeling (DF02)* section above for details) and planning level simulations were conducted.

Activities proposed for FY2014: Continue regular meetings of the steering committee and technical teams. Approve regional water supply plan and convene Solutions and Regulatory Team.

Estimated completion date: FY2014

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:¹ \$50,000

Total project cost: TBD

Proposed expenditures:

Cost	FY2014	FY2015	FY2016	FY2017	FY2018	Total
(\$ in thousands)	25 ²	0	0	0	0	25

¹ consists of \$25K each year for FY12 and FY13

²\$25K was budgeted in FY13 for FY14

Central Florida Water Initiative Water Supply Planning Project

This project encompasses development of the CFWI regional water supply plan development in cooperation with SJRWMD, SWFWMD, FDEP, FDACS, and regional public water supply utilities.

Implementing entity: SFWMD, SJRWMD, SWFWMD, FDEP, and FDACS

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

Completed implementation activities:

- Held a series of Steering Committee meetings composed of representatives from the water management districts, FDEP, FDACS, and public water supply utilities
- Completed model development by USGS
- Continued facilitator contract and initiated stakeholder workshops
- Applied calibrated groundwater model from USGS
- Determined groundwater availability
- Continued stakeholder workshops

Activities proposed for FY2014:

- Continue Steering Committee meetings
- Approve CFWI Regional Water Supply Plan
- Continue facilitator contract
- Initiate Solution Development Team activities
- Initiate Regulatory Team activities

Estimated completion date: FY2015

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: \$498,585

Total project cost: Contractual costs plus District staff time related to planning, implementation, MFL, hydrogeology, and modeling projects

Proposed expenditures:

Cost	FY2014	FY2015	FY2016	FY2017	FY2018	Total
(\$ in thousands)	287 ^{1,3}	425 ^{2,3}	0 ⁴	0 ⁴	0 ⁴	712

¹ FTE costs

² \$225K contractual costs and \$200K FTEs (note: includes \$200K FTE costs from DF02 Groundwater Modeling for this year only)

³ Some CFWI support is captured under Water Supply Planning (DA01)

⁴ FY2016-FY2018 activities captured under Water Supply Planning (DA01)

KISSIMMEE BASIN MODELING AND OPERATIONS STUDY (FA09)

The Kissimmee Basin Modeling and Operations Study (KB MOS) is the first comprehensive review of water management operations for the Kissimmee Basin in more than 30 years. Its goal is to evaluate alternative procedures for the C&SF Project water control structures throughout the Kissimmee Basin. It also will align upstream and downstream operations with the Kissimmee River Restoration Project (KRRP) headwater discharges at S-65 and enhance/sustain habitat conditions for fish and wildlife throughout the Kissimmee Chain of Lakes (KCOL). Due to cost-

crediting issues associated with the greater KRRP, KBMOS activities associated with the U.S. Army Corps of Engineers (USACE), flood analyses and the evaluation of the top four alternative plans are being closed out and the Study put on hold until the issues are resolved. The 2005–2006 Kissimmee Basin Water Supply Plan Update recognizes the need for the completion of these activities as a critical part of identifying water supply availability and to support agency work to develop a plan for improving the health and sustainability of the KCOL.

Implementing entity: SFWMD with federal, state, and local government support

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

Completed implementation activities:

- Completed recalibration and base conditions simulations using improved evapotranspiration 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 the USACE and SFWMD to help verify and refine flood control performance of top performing alternative plans
- Completed calibration of flood routing model
- Initiated USACE flood analyses of top performing alternative plans
- Update base condition model to reflect projected 2014 water uses
- Completed preliminary flood analysis of the base condition
- Initiated evaluation and reporting on top performing alternative plans

Activities proposed for FY2014:

- All activities have been placed on hold pending resolution of the greater Kissimmee River Restoration Project cost-crediting issues, though funding is budgeted in FY14 (FA09, \$138,000).

Estimated completion date: TBD

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

Proposed expenditures (reflected in the Kissimmee Watershed Program budget):

Cost	FY2014	FY2015	FY2016	FY2017	FY2018	Total
(\$ in thousands)	138 ¹	0 ²	0 ²	0 ²	0 ²	138

¹ \$14K contractual costs, \$121K FTEs, and \$3K other

² As of the beginning of FY2014, activities associated with the greater Kissimmee River Restoration Project are being placed on hold due to cost-crediting issues between the District and USACE. As a result, future budgets are projected to be \$0 and will be updated in future years to reflect both the schedule and anticipated expenditures for those years.

DISTRICT-WIDE WATER RESOURCE DEVELOPMENT PROJECTS (DC, DD, DE, DF)

This section provides project descriptions for the District-wide water resource development efforts funded through the District's Water Supply Program by budget element for FY2014. Additional information, including the implementing entities, FY2014 activities proposed, estimated completion dates, and funding sources, is presented in each project summary.

RULEMAKING (DC01, DC05, DC08, DC09)

Minimum Flows and Levels, Water Reservation Activities and Restricted Allocation Areas

Minimum Flows and Levels (MFLs) are developed pursuant to Sections 373.042 and 373.0421, F.S., and are part of a comprehensive water resource management approach to assure the sustainability of South Florida's water resources. An MFL is a minimum threshold below which further water withdrawals will cause significant harm to water resources or the ecology of the area. MFL implementation activities include conducting research to set scientifically based criteria for defining significant harm, conducting voluntary independent scientific peer review of the associated science where needed, gaining stakeholder input in the process, and completing rulemaking. Prevention or recovery strategies are developed concurrently with MFLs to either maintain (prevention strategy) or achieve (recovery strategy) compliance with established MFLs.

The Governing Board has the ability to authorize rule development to establish Water Reservations in accordance with Section 373.223(4), F.S. A Water Reservation is a legal mechanism to reserve water from consumptive uses that is needed to protect fish and wildlife or public health and safety. Water Reservations are adopted to support CERP objectives and used to aid in a recovery or prevention strategy for established MFLs. Establishment of a Water Reservation is required for the District and the USACE to enter into a Project Partnership Agreement, as required by the Water Resources Development Act of 2000 for construction of CERP project components such as reservoirs or Stormwater Treatment Areas. Priority water bodies, which include both MFLs and water reservations, are required to be approved annually by the Governing Board and submitted to FDEP. Additional information on MFLs and Water Reservations is presented in Chapter 3 of this volume.

Implementing entity: SFWMD with federal and state government support

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

Activities proposed for FY2014:

- **Caloosahatchee River Estuary MFL Reevaluation – Quantifying Tape Grass:** continue collecting and analyzing data for the Tidal Basin and its tributaries; develop models to evaluate resource responses to MFL criteria. Quantification of tape grass is contingent upon finding suitable habitat to conduct the evaluation (DC09, \$55,000).
- **Caloosahatchee River Estuary MFL Reevaluation – Benthic Macrofauna:** investigate effects of MFL flows on oysters, benthic macrofauna, zooplankton, and ichthyoplankton. Continue evaluating and using existing data to develop models for evaluating MFL criteria as indicated above (DC09, \$30,000).

- **Florida Bay MFL Reevaluation – Peer Review:** finalize updated technical analysis and report, determine if any revisions are needed to existing MFL criteria and submit technical report to FDEP. Report will include an integrated review of the hydrologic and ecological changes since the rule adoption in 2006. Peer review will be conducted if necessary (DC08, \$26,242).
- **Caloosahatchee River (C-43) West Basin Storage Reservoir CERP Project Water Reservation:** Finalize technical document for public review. Finalize rule development process and public workshop(s). Present draft rule to Governing Board to consider for Notice of Proposed Rulemaking (P104, FTEs only).
- **Kissimmee Basin Water Reservation:** Evaluate timing of reservation development and begin update of previous technical analysis if necessary (DC01, FTEs only).

Estimated completion date: FY2014

Funding source: SFWMD

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

Proposed expenditures:

Cost	FY2014	FY2015	FY2016	FY2017	FY2018	Total
(\$ in thousands)	637 ¹	401 ²	380 ³	380 ³	380 ³	2,178

¹ \$111K total contractual costs and \$526K FTEs (elements DC01, DC05, DC08, DC09, P104)

² \$401K FTEs (elements DC01 and DC09)

³ \$380K FTEs (element DC09)

CONSERVATION (DD01, DD07, DD08)

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 as stated in the District’s 2008 Comprehensive Water Conservation Program. Programs have been implemented during FY2014 in all three initiative areas—regulatory, voluntary and incentive-based, and 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 and creating an enduring conservation ethic. From a regulatory perspective, emphasis has been placed on water conservation requirements in the Consumptive Use Permitting process that require municipalities to adopt and enforce effective conservation measures. From local landscape ordinances to year-round irrigation conservation measures, these regulatory measures will advance water use efficiency, promote water conservation as the least-cost source of new water, 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 and bring wider environmental benefits. 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 at www.sfwmd.gov/watersupply, under the *Water Conservation* link.

Through WaterSIP, the SFWMD provides reimbursement up to 50 percent or a maximum of \$50,000 to water providers and large users (i.e., cities, utilities, industrial groups, schools, hospitals, and homeowners/condominium associations) for installing water-saving hardware and

technologies. These technologies include high efficiency plumbing fixtures, advanced irrigation controllers, automatic line flushing devices, and other hardware.

In addition to the District's Comprehensive Water Conservation Program, the statewide Conserve Florida Water Clearinghouse (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 www.conservefloridawater.org. The Clearinghouse is funded by the FDEP and the state's three largest water management districts. It is supported through the University of Florida (UF) and serves as a centralized information repository. It is equipped with tools to assist the efforts of utilities and other stakeholders to achieve their water conservation goals. UF also operates the Florida Automated Weather Network (FAWN), a statewide research and data program that provides accurate and timely weather data to a wide variety of users.

Implementing entity:

- WaterSIP: SFWMD
- MIL Program: BCB, FDACS, and the Soil and Water Conservation Districts
- Conserve Florida Water Clearinghouse: SFWMD, FDEP, UF, and other water management districts
- FAWN: SFWMD, UF, FDACS, other water management districts, and other entities
- Orange County Conservation Study: SFWMD, Orange County Utilities, SJRWMD, and the Water Research Foundation
- The Great Water Odyssey: SFWMD
- Big Cypress Basin Conservation Outreach: SFWMD and BCB Service Center
- Water Symposium of Florida, Inc.: SFWMD and BCB Service Center

Estimate of quantity of water saved by project:

- **WaterSIP:** During FY2003–FY2013, 161 funded projects cumulatively saved 7.32 mgd of water and, in FY2013, 0.16 mgd of water was saved. For FY2014, eleven funded projects are anticipated to save 0.23 mgd of water (see **Table 5A-2**).
- **MIL Program:** The MIL Program was created in 1989. The MILs estimate 4,196 million gallons (mg) of water have been accounted for as actual water savings between FY2003 and FY2013, or 1.28 mgd. In FY2013 alone, approximately 365 mg of water was saved (1.0 mgd), For FY2014, 1.0 mgd is estimated to be saved. The quantity of water anticipated to be saved during FY2014–FY2018 is 1,825 mg (5.0 mgd) (see **Table 5A-2**).
- **Comprehensive Water Conservation Program:** This program is organized into three initiatives: regulatory, voluntary and incentive-based, and educational and marketing. Strategies have been implemented in all three categories during FY2014, with water saving benefits expected in the future.
- **FAWN:** UF calculates all estimates of water savings on a statewide basis.

Completed implementation activities:

- **WaterSIP:** Funded 161 projects District-wide between FY2003 and FY2013.
- **MIL Program:** Six MILs are operating within the District; four agricultural and two urban. The four agricultural labs are located in Miami-Dade, Palm Beach, Broward, and Martin/St. Lucie counties and the two urban MILs are located in Broward County and the BCB Service Area (District-funded).

- **FAWN:** Funded from FY2004–FY2013; activities included maintenance of weather stations, development of a mobile application, and continued enhancement of the FAWN system.
- **Orange County Conservation Study:** Purchase and installation of equipment for residential properties was complete. Irrigation data has been collected to evaluate the water conservation potential of soil moisture sensors and evapotranspiration (ET) irrigation controllers on landscapes in Orange County compared to typical irrigation control methods. In FY2013, 167 residential participants and one commercial property in each of the residential clusters have been selected for the study. UF has completed surveys and site evaluations for these properties, and has determined that all commercial properties will have ET controllers installed on their irrigation systems.
- **The Great Water Odyssey (FY2013 Wal-Mart Online Teacher Training Program):** This web-based, interactive online water resource teacher training was provided to public elementary school teachers, home schoolers, private school elementary teachers, and others teaching within the SFWMD. The curriculum was offered free of charge to teachers located in St. Lucie, Martin, Palm Beach, Broward, Miami-Dade, Monroe, Collier, Lee, Charlotte, Osceola, Orange, Highlands, Polk, Glades, Hendry, and Okeechobee counties. The training reached 180 teachers, which resulted in the curriculum being taught to more than 4,100 third, fourth, and fifth grade students.
- **Water Symposium of Florida, Inc. – Big Cypress Basin:** During 2013, the Water Symposium of Florida, Inc. (WSF) investigated sediment accumulation in various subdivisions in Collier County to determine their life span and the effectiveness of retaining and filtering stormwater. A workshop was also held for 70 homeowner’s and condominium associations on how to save water through Florida Friendly Landscaping (FFL) utilizing the local MIL to assess their irrigation systems as well as to maintain their stormwater systems and stay in compliance with their District permit. In addition, participants were taught the steps they can take to improve water quality in their stormwater ponds, which ultimately drains to Naples Bay.

Activities proposed for FY2014:

- **Conserve Florida Water Clearinghouse:** This program, which started receiving funding in FY2004, collects, analyzes, and provides technical assistance to public water supply utilities and water managers for use in developing effective and efficient water conservation programs. Money is provided in the FY2014 budget, which is the final phase of funding for operations and maintenance activities (DD01, \$20,000)
- **WaterSIP:** Eleven projects will receive funding in FY2014 (DD01, \$250,000)
- **MIL Program (BCB):** One urban MIL in the BCB will continue to be funded (DD01, \$55,000)
- **FAWN:** The District entered into a 10-year memorandum of understanding for the installation, operations, and maintenance of two FAWN FDACS-funded weather stations on District property in Wellington and Okeechobee.
- **Orange County Conservation Study:** Irrigation data will continue to be collected during FY2014 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 final report on equipment installations and status will be submitted along with quarterly financial reports. The contract was extended until February 15, 2015, to allow more time to collect data during the study period. The District will not provide additional funds during FY2014.

- **The Great Water Odyssey (FY2014 Wal-Mart Online Teacher Training Program):** The web-based, interactive online water resource teacher training will be available to public elementary school teachers, home schoolers, private school elementary teachers, and others teaching within the SFWMD. The program is planned to reach from 75–125 educators this year (DD08, \$15,000)
- **Water Symposium of Florida, Inc. – Big Cypress Basin (WSF):** Service center staff will partner with WSF to hold outreach seminars on water conservation and water quality for homeowners associations, civic groups, and businesses. These seminars are among the BCB’s and 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. In addition, the water conservation aspect supports the basin’s efforts with the restoration of Naples Bay. WSF will continue their work with FFL and stormwater pond improvements by continuing their research and monitoring the effectiveness of using floating plant islands to control algae, thus eliminating the use of copper to maintain neighborhood lakes (DD08, \$5,000).

Estimated completion date: Ongoing.

Funding sources:

- WaterSIP: SFWMD, utilities, homeowners associations, and other project partners
- MIL Program: SFWMD, BCB, and FDACS
- FAWN: SFWMD, UF, FDACS, and other water management districts
- Conserve Florida Water Clearinghouse: SFWMD, FDEP, UF, and other water management districts
- Orange County Conservation Study: SFWMD, Orange County Utilities, and other water management districts
- The Great Water Odyssey: SFWMD, Wal-Mart
- Water Symposium of Florida, Inc.: SFWMD

Total spent to date: FY2003–FY2013; \$11,148,084 (includes the Comprehensive Conservation Program, \$3,798,962; WaterSIP, \$3,077,349; and MIL Program, \$4,271,773)

Total project cost: Ongoing

Proposed expenditures: Comprehensive Water Conservation Program including Conserve Florida Water Clearinghouse, WaterSIP, MIL, Great Water Odyssey, and BCB Water Symposium of Florida

Cost	FY2014	FY2015	FY2016	FY2017	FY2018	Total
(\$ in thousands)	668 ¹	395 ²	395 ²	395 ²	395 ²	2,248

¹ \$345K contractual costs and \$323K FTEs

² \$75K contractual costs and \$320K FTEs

ALTERNATIVE WATER SUPPLY (DE01, DE02)

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).

Proposed expenditures:

Cost	FY2014	FY2015	FY2016	FY2017	FY2018	Total
(\$ in thousands)	2,629 ¹	1,050 ²	1,050 ²	1,050 ²	1,050 ²	6,829

¹\$2.2M contractual costs for BCB and \$83K FTEs

²\$1M contractual costs for BCB and \$50K FTEs

RESOURCE EVALUATION (DF01, DF02, DF05, DF06, DF07)**Drilling and Testing Program (DF05)**

The District's knowledge of South Florida hydrogeology is enhanced whenever exploratory/test wells are constructed. Such increased understanding has improved the accuracy of groundwater modeling and decision making regarding the approval of consumptive use permits. Full documentation of each well site (including location, well construction details, geophysical logging, and aquifer test data) is provided in SFWMD technical publications, and this information is included in the District's hydrometeorologic database, DBHYDRO (www.sfwmd.gov/dbhydro).

Implementing entity: SFWMD

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

Completed implementation activities:

- **Geophysical Log Analysis:** Caliper and gamma logging was conducted at 47 wells in the Lower East Coast (29), Lower West Coast (11), and south Miami Dade County (7) to identify screened intervals from wells where this information does not exist in the DBHYDRO database.
- **Lower Floridan Aquifer Evaluation in the Kissimmee Basin, Site B:** Final documentation for well construction and testing was completed in FY2013. **Site C:** Well OSF-105R was used to conduct an aquifer performance test (APT) on the Avon Park Permeable Zone (APPZ) followed by drilling to 1,700 feet below land surface (ft bls) and completing it as a dual-zone monitor well of the APPZ and Lower Floridan Aquifer (LF1), followed by an APT of LF1. Final construction was completed and a first draft of the well construction and testing report was initiated in FY2013. **Site E:** Located along the border between the SFWMD and SWFWMD, Site E represents the recharge area of the FAS. The SFWMD conducted water quality sampling and analysis of geochemical tracers and isotopes from 34 new and existing FAS wells in the area in FY2013.

Activities proposed for FY2014:

- **Lower Floridan Aquifer Evaluation in the Kissimmee Basin, Site C:** Complete aquifer analysis and finalize well construction and testing report. **Site E:** Complete water quality sampling and analysis of geochemical tracers and isotopes from 4 new and existing FAS wells; complete technical analysis on water quality data collected from 34 existing wells in FY2013. Prepare final interpretation report (DF05, FTEs only).
- **Geophysical Logging:** Conduct geophysical logging on selected wells and boreholes throughout the District (DF01; \$20,000).

Estimated completion date: Ongoing

Funding source: SFWMD

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

Total spent to date: FY2000–FY2013 – \$15,957,362

Total project cost: Ongoing

Proposed expenditures:

Cost	FY2014	FY2015	FY2016	FY2017	FY2018	Total
(\$ in thousands)	287 ¹	20 ²	20 ²	20 ²	20 ²	367

¹ \$20K contractual costs and \$267K FTEs

² \$20K contractual costs

Groundwater Monitoring (DF01, DF06)

Water level and water quality monitoring at existing wells provide critical information to aid the SFWMD in the development of groundwater models, assessing groundwater conditions, and management of these resources. The District maintains extensive groundwater monitoring networks and partners with the USGS to provide additional support and funding for ongoing assessment. Data are archived in the District’s DBHYDRO database. Data from sites monitored by the USGS are archived in the USGS database and published annually.

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) – Groundwater Core Network:** Collected groundwater level data in the surficial and intermediate aquifer systems (in the LWC, LEC, and UEC) and continued recorder maintenance. This is an ongoing effort and all data are archived in the USGS database.
- **Orlando Office of the Florida Water Science Center (USGS) – Groundwater Monitoring:** Continued ongoing water level monitoring in the surficial, intermediate, and Floridan aquifer systems; Kissimmee Basin Floridan water quality monitoring, data analysis, data validation, and archiving data in the USGS database.
- **Groundwater Level Monitoring:** Continued ongoing monitoring of groundwater levels in all planning areas of the District within the surficial, intermediate, and Floridan aquifer systems and performed recorder maintenance at all locations. Data were collected, analyzed, quality-controlled, and archived in the District’s DBHYDRO database.
- **Regional Floridan Groundwater Monitoring:** Continued ongoing water quality monitoring at 20 of 60 Floridan aquifer well sites (all wells sampled and analyzed once every three years) throughout the SFWMD including data collection, data analysis and validation, and archiving data in the District’s DBHYDRO database.
- **Hydrogeologic Database Improvements:** Uploaded backlogged data and conducted miscellaneous database corrections.
- **Monthly Groundwater Level Measurements:** Continued ongoing water level monitoring at select sites, including data collection, analysis, and validation for the Hydrologic Online Well Data Inventory (HOWDI) wells, and archiving data in the District’s DBHYDRO database.

- **Floridan Aquifer Well Monitoring Equipment Maintenance:** Continued ongoing water level monitoring and maintenance at select Floridan aquifer well sites, including data collection, analysis and validation, archiving data in the District's DBHYDRO database, and data logger maintenance.
- **Emergency Wellhead Repairs:** Wellhead repairs were conducted on District-owned monitoring wells that are under artesian pressure and were in danger of flowing unexpectedly onto land surface. As an ongoing effort, sites were rehabilitated according to a prioritized list.
- **Parts and Supplies – Field Equipment:** Funds were expended for the maintenance of existing data loggers, sondes, pumps, and gauges.
- **Isotope Data Interpretation:** Funds were expended to obtain expert interpretations of isotope water quality data for age-dating and characterization of fluid movement into groundwater resources in south Miami-Dade County.

Activities proposed for FY2014:

- **Fort Lauderdale Office of the Florida Water Science Center (USGS) – Groundwater Core Network:** Continue ongoing water-level monitoring in the surficial, intermediate, and Floridan aquifer systems; recorder maintenance, and archiving data in the USGS database (DF01; \$313,002).
- **Orlando Office of the Florida Water Science Center (USGS) – Groundwater Monitoring:** Continue ongoing water level monitoring in the surficial, intermediate, and Floridan aquifer systems; Kissimmee Basin Floridan water quality monitoring, data analysis, data validation, and archiving data in the USGS database (DF01; \$95,380).
- **Groundwater Level Monitoring:** Continue ongoing monitoring of groundwater levels in all planning areas of the District within the surficial, intermediate, and Floridan aquifer systems and perform recorder maintenance at all locations. Data will be collected, analyzed, quality-controlled, and archived in the District's DBHYDRO database (DF01; FTEs only).
- **Regional Floridan Groundwater Monitoring:** Continue ongoing water quality monitoring at the next 20 of 60 Floridan aquifer well sites throughout the SFWMD, including data collection, data analysis and validation, and archiving data in the District's DBHYDRO database (DF01; FTEs only);
- **Hydrogeologic Database Improvements:** Continue uploading backlogged data and conduct miscellaneous database corrections (DF01; \$15,000).
- **Monthly Groundwater Level Measurements:** Continue ongoing water level monitoring at select sites, including data collection, analysis, and validation for the Hydrologic Online Well Data Inventory (HOWDI) wells, and archiving data in the District's DBHYDRO database (DF01; \$18,800).
- **Floridan Aquifer Well Monitoring Equipment Maintenance:** Continue ongoing water level monitoring and maintenance at select Floridan aquifer well sites, including data collection, analysis and validation, archiving data in the District's DBHYDRO database, and data logger maintenance (DF01; \$34,090).
- **Emergency Wellhead Repairs:** These funds are provided for emergency wellhead repairs in case artesian wells begin flowing unexpectedly onto land surface. If no emergency occurs, then funds are expended to repair wellheads according to a prioritized list (DF01; \$50,000).
- **Parts and Supplies – Field Equipment:** These funds are allocated for the maintenance of existing data loggers, sondes, pumps, and gauges (DF01; \$25,000).

- **Isotope Data Interpretation:** These funds are allocated to retain experts to interpret isotope water quality data for age-dating and characterization of fluid movement into groundwater resources (DF01; \$50,000).
- **3D Hydrologic Model:** Development and application of a three-dimensional transient density-dependent groundwater model in south Miami-Dade County to evaluate scenarios of future conditions and permitting decisions (DF06; \$94,000).
- **Saltwater Intrusion Maps:** Compiling chloride concentrations from wells in regulatory and DBHYDRO databases and the USGS database and prepare maps displaying the estimated location of the 250 milligram per liter (mg/L) isochar indicating the position of the saltwater interface in the surficial aquifer system along coastal counties in SFWMD (DF06; FTEs only).

Estimated completion date: These ongoing projects, which monitor water levels and stages, are 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–FY2013 – \$8,806,122

Proposed expenditures:

Cost	FY2014	FY2015	FY2016	FY2017	FY2018	Total
(\$ in thousands)	1,465 ¹	1,400 ²	1,400 ²	1,400 ²	1,400 ²	7,065

¹ \$698K contractual costs and \$767K FTEs

² \$700K contractual costs and \$700K FTEs

Groundwater Modeling (DF02, DF07)

The Water Supply Bureau is currently undertaking several modeling efforts that are described below. In FY2014, contractual funds are allocated to conduct peer review of a revised Lower West Coast Surficial/Intermediate Aquifer System Model; all other modeling work is expected to be performed by the SFWMD staff.

Lower West Coast Floridan Aquifer Model

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 computer 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 extended into FY2012. The model is now available to be used for predictive scenarios in support of future water supply planning efforts but none are anticipated in FY2014.

Implementing entity: SFWMD

Estimate of quantity of water produced by project: Project is not designed to make water available, but to evaluate potential use of the Floridan aquifer and its impacts.

Activities completed in FY2013: None

Activities proposed for FY2014: None

Estimated completion date: N/A

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 [FTEs and includes \$80,000 for peer reviewers]; FY2009 – \$40,000 (FTEs); FY2010 – \$60,000 (FTEs and consultants); FY2011 – \$245,000 (FTEs and consultants); FY2012 – \$0; FY2013 – \$0

Total project cost: To be determined (TBD)

Lower West Coast Surficial/Intermediate Aquifer Systems Model, Model Development

During FY2006, the District retained a consultant to develop a groundwater flow model using the USGS MODFLOW computer code of the surficial aquifer system in the SFWMD Lower West Coast planning region. The Lower West Coast Surficial Aquifer System Model (LWCSAS) was completed in 2006 by Marco Engineering and has been used sparingly to evaluate specific consumptive use permits but has not been used for planning purposes. The SFWMD intends to (1) update the model with improved hydrostratigraphic interpretation, (2) add additional wells and the associated longer period of record data sets, and (3) add the intermediate aquifer system (IAS) to the model (DF02, \$75,000).

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 in FY2013: Compiled existing water and hydrogeologic data and developed hydrostratigraphic surfaces to support development of numerical model.

Activities proposed for FY2014: Conceptual and numerical models will be developed and the updated LWCSIAS model will be documented and peer review will be initiated (DF02; \$75,000).

Estimated completion date: FY2015

Funding source: SFWMD

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

Total spent to date: FY2006 – \$150,000 [Marco Engineering]; FY2013 - \$250,000 (FTEs only)

Total project cost: TBD

East Coast Floridan Aquifer System Model (ECFM)

During FY2011, the District retained three independent groundwater modeling experts to conduct a technical peer review of its Phase II East Coast Floridan Aquifer Model, which used the USGS's SEAWAT-2005 computer 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 report was completed in June 2011 and the District began incorporating the panel's recommendations in FY2012 and continued into FY2013.

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 in FY2013: Finalized steady-state model and developed first version of transient, density-dependent versions of model.

Activities proposed for FY2014: The transient, density-dependent version of the model will be completed.

Estimated completion date: FY2014

Funding source: SFWMD

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

Total spent to date: FY2006 – \$150,000 [HydroGeoLogic, Inc.]; FY2007 – \$110,000 (Golder Associates, Inc.); FY2008 – \$10,000 [Golder Associates, Inc.]; FY2011 – \$85,000 [peer-review panelists]; FY2012 – \$150,000 (FTEs and consultants); FY2013 - \$150,000 (FTEs only)

Total project cost: TBD

Lower East Coast Subregional Model, Model Calibration

The Lower East Coast Subregional (LECsR) Model was developed by the SFWMD using the USGS's MODFLOW code (McDonald and Harbaugh, 1988¹). 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 the peer-review report was completed in June 2006. Subsequently, the model was updated to reflect most primary peer-review comments. The tool and variations of the tool have been used to evaluate specific consumptive use permits, select CERP projects, and water resource development projects.

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 FY2013: Due to other project priorities, no work was completed on the LECsR Model in FY2013

Activities proposed for FY2014: Due to other project priorities, no work is anticipated to be completed during FY2014.

Estimated completion date: N/A

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); FY2011 – \$115,000 (FTEs); FY2012 – \$0; FY2013 - \$0

Total project cost: TBD

¹ McDonald, M.G. and A.W. Harbaugh. 1988. A Modular Three-Dimensional Finite-Difference Ground-Water Flow Model: Techniques of Water-Resources Investigations of the United States Geological Survey, Book 6, Chapter A1, 586 p.

Central Florida Water Initiative/East Central Florida Transient Model Runs

SFWMD groundwater modeling staff is supporting the Central Florida Water Initiative (CFWI) through the use of the updated version of the East Central Florida Transient (ECFT) Model. This model was used to estimate groundwater availability in the CFWI in FY2013 while considering the effects of groundwater withdrawals on wetlands, springs, lakes, saltwater intrusion, and existing legal users of water.

Implementing entity: SFWMD, SWFWMD, and SJRWMD

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

Activities completed in FY2013:

- Revised ECFT model to implement CFWI-specific model improvements
- Completed six scenario runs with the updated model to estimate groundwater availability
- Completed additional runs as requested by the CFWI Groundwater Availability Team
- Provide assistance to the SFWMD regarding select consumptive use permits as needed

Activities proposed for FY2014:

Staff will prepare detailed documentation of model improvements and description of scenario development. Staff will also conduct additional model improvements and conduct additional model runs to (1) optimize quantification of groundwater availability and (2) evaluate alternative water supply projects (i.e., brackish groundwater, ASR, etc.) in support of the CFWI Solutions Planning Team.

Estimated completion date: FY2015

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); FY2011 – \$265,000 (FTEs for modeling four of the six predictive scenarios); FY2012 – \$202,000 (FTEs only), FY2013 - \$200,000 (FTEs only)

Total project cost: TBD

Total for all Groundwater Modeling (DF02) Proposed expenditures:

Cost	FY2014	FY2015	FY2016	FY2017	FY2018	Total
(\$ in thousands)	1,127 ¹	575 ²	775 ³	775 ³	775 ³	4,027

¹ \$75K contractual costs and \$1,052K FTEs

² \$75K contractual costs and \$500K FTEs (Note: FTE costs have been reduced by \$200K and included in Central Florida Water Initiative Project DA03 for CFWI modeling work this year only)

³ \$75K contractual costs and \$700K FTEs

PROGRAM SUPPORT (DZ)

There are no water resource development efforts currently planned for the Program Support element.