South Florida Water Management District
Water Conservation Program Plan

PLACEHOLDER: Chairman's Message

Sidebar/pullout: Floridians pay some of the lowest rates for water in the country. Monthly water utility bills in cities throughout Florida average $54 per month, with some as low as $25 per month. By comparison, residents of Houston average $140 per month; in Chicago the average is $127 per month; and on the west coast, Seattle and San Diego households pay an average of $63 per month.

DRAFT Executive Director message

Even a cloudless, prolonged water shortage can have a silver lining. In response to emergency restrictions imposed on outdoor irrigation, Floridians are now paying more attention to water conservation than ever before. We have learned that yards and gardens can survive with less water, that drought-tolerant plants are easy to maintain and that mulch not only holds in moisture, it also cuts down on weeds. Inside the home, we discovered that turning off the faucet for teeth brushing is not a hardship, repairing leaky fixtures makes economic sense and doing full loads of laundry makes housekeeping a little easier.

Our residents and businesses have repeatedly demonstrated their willingness to reduce water use during times of adversity. And, now, thanks to the foresight of our Governing Board, we are building on that positive momentum – actively turning a short-term challenge into an opportunity for long-term change.

With the involvement and input from a diverse group of water use representatives, we are ready to move forward with a series of recommendations and implementation strategies designed to bring about a permanent reduction in individual water use over the next decade. Strong partnerships are key to successful implementation.

Organized into regulatory, voluntary and incentive-based, and education and marketing categories, the program components are designed to build on and complement successful water conservation initiatives at the local, state and national levels. The program is dynamic and adaptable, with an on-going commitment to explore and consider additional water-saving opportunities.

Key strategies and action steps include:

- A focus on goal-based conservation planning, implementation and improved reporting for large, permitted water users
- Conservation rate structures designed to encourage water savings and discourage high volume use
- Retrofitting of outdated, water-guzzling plumbing devices
- Year-round landscape irrigation measures

- Adopting and incorporating Florida-friendly landscaping principles
- Increased public and classroom education and social marketing
- A call for governments and large users to lead by example

The cheapest gallon of water is the gallon we don't waste through efficient water use and conservation.

Sidebar/pullout: Implementation of year-round landscape irrigation measures in Charlotte, Collier and Lee counties in 2003 suggests that District-wide expansion of the landscape irrigation rules will curtail wasteful irrigation practices and may help reduce overall water demand by as much as 10 percent.

INTRODUCTION

Water is the essence that inextricably intertwines the environment, economy and quality of life in South Florida. Just as abundant water gives vitality to the region, a lack of water strains natural resources, stifles economic growth and periodically disrupts our daily routines.

Water conservation, also known as demand management, promotes permanent water use efficiencies and is a prudent component of water resource management. Demand reduction increases the available supply of water from existing sources to support new economic growth. It is also more immediate, significantly less costly and more energy efficient than developing new sources of water.

The comprehensive program embodied in this collaborative plan aims to break the current reactionary approach of focusing on the benefits of water conservation primarily in response to emergencies. The end-goal is to replace today's "as needed" thinking with a more beneficial, year-round water conservation ethic.

Successfully fostering a strong ethic of conservation will protect South Florida's sensitive water resources and help ensure a more sustainable supply of water for both natural systems and people. Achieving long-term water use reductions will require a combination of new technology, best business and management practices and behavioral changes. The public education, financial incentives and regulatory action steps included here provide the blueprint for making the transition to year-round water savings.

An added benefit of water conservation is its supporting role in environmental restoration and protection. Demand reduction decreases the competition for water between the needs of the urban and agricultural areas and the needs of the environment. Water saved can be used to meet new needs, in effect expanding current water supplies, while protecting the environment by reducing both runoff and the need for wastewater disposal. In addition to the construction of restoration projects such as constructed wetlands and storage reservoirs, consistently applied and lasting water

conservation practices will continue to be a vital component in successfully meeting the needs of the environment.

Beyond Drought - Developing a Water Conservation Program

Based on records dating back to 1932, 2006 and 2007 were the driest back-to-back calendar years on record – creating a combined cumulative rainfall deficit of more than 20 inches. Dependent on rainfall to replenish supplies, Lake Okeechobee, the 730-square mile "liquid heart" of the South Florida system, plunged to its all-time record low of 8.82 feet NGVD on July 2, 2007. As groundwater levels dropped throughout the region, saltwater threatened to move farther inland. The South Florida Water Management District took proactive steps to conserve as much water as possible in the regional water management system, and imposed progressively tighter agricultural and urban water use restrictions throughout the 16-county area.

While the public readily steps up and responds to calls for temporary cutbacks in water use during emergencies, past experience shows that once the shortage is over, the commitment to practicing water conservation is over as well. Constantly modifying expectations during emergency situations created by rainfall deficits and low water levels does little to promote enduring changes to behavior that will better protect the resource for the long-term. Replacing short-term restrictions with a clear, consistent and broader strategy for increasing the overall efficient use of water will help bring stability and predictability to the region.

To jumpstart that change in paradigm, in October 2007 the SFWMD Governing Board unanimously adopted a resolution calling for a Water Conservation Summit. The purpose of the public forum was to draw insight from the experience of other organizations having developed and implemented successful year-round water conservation programs in other regions of the country. The Summit would also serve as the kick-off for the development of a comprehensive water conservation program for South Florida.

A Collaborative Approach

Continuing the agency policy of seeking stakeholder involvement in addressing key water resource issues and recognizing the importance of partnerships in effectively implementing plan components, the Governing Board directed that a participatory approach be utilized in developing the conservation program.

Hosted by the Governing Board's Water Resources Advisory Commission (WRAC), a public Water Conservation Summit was held December 4, 2007, to gather information and input from local, state and national experts on the components of an achievable, meaningful and lasting water conservation program. Participants highlighted case studies on water conservation programs and identified practical components, successes and obstacles that the District may face in design and implementation.

The Summit also launched an intensive stakeholder-driven process to gather input from a wide variety of interests for development of a comprehensive plan. The District identified and assembled a diverse group of 21 members representing 13 water use groups and interests, including agriculture, business and industry, developers, the environment, local government and public utilities.

The stakeholder group met monthly from December 2007 through May 2008 with the goal of assisting the District in the development of a proactive and achievable water conservation program. Input and suggestions from the stakeholder representatives and the WRAC membership were considered and incorporated, where appropriate, into the recommended plan of action.

SIDEBAR (list of stakeholders/affiliations/ group represented)

Where does Florida's water come from?

According to the 1998 *Water Resources Atlas of Florida*, average annual rainfall in Florida is 53 inches, making it one of the wettest states in nation. The state's differing climate types yield much rainfall variability from region-to-region and from year-to-year. In central and South Florida, most of the rain falls during four summer months and much of the annual amount is "lost" to the natural hydrologic system through evaporation. The region is prone to wide weather extremes of flood and drought.

Nearly two-thirds of Florida's freshwater is pumped from vast underground reservoirs called aquifers. Of Florida's groundwater sources, the deep Floridan Aquifer, which spans the majority of the state, supplies 62 percent; the Biscayne Aquifer, located completely within the jurisdiction of the SFWMD *(underlies most of Miami-Dade and Broward counties; portions of Palm Beach and Monroe),* provides 17 percent; the remaining 21 percent is supplied by surficial and intermediate unnamed aquifers. The state's remaining one third of freshwater is supplied from surface waters, including lakes and rivers.

In South Florida, approximately 90 percent of the water used in homes and businesses comes from groundwater sources. The remaining 10 percent comes from surface waters. Both surface and groundwater supplies are highly dependent on rainfall for replenishment.

At the heart of the South Florida system sits Lake Okeechobee – the largest natural water body in the southeastern United States. It serves as a source of public water supply for the City of Okeechobee (16,000 utility customers) and provides a supplemental source of irrigation water to more than 700,000 acres in agricultural production. In addition, it serves as the back up water supply for more than five million residents. The massive lake also plays a critical environmental and economic role as a sport and commercial fishery, navigation/recreation waterway and natural

habitat for fish, wading birds and other wildlife, including a variety of endangered and threatened species.

While heavy rainfall throughout the region benefits and recharges underground supplies, the ability to capture and store the rainwater for future use is extremely limited. When floods threaten – even during water shortage situations – the top priority is channeling the excess water away from homes and businesses as quickly as possible. To lower the levels in coastal canals in order to accommodate direct rainfall and stormwater runoff, freshwater must oftentimes be released to the ocean or Gulf.

SIDEBAR

Adaptive Conservation: The Regional Water Management System and Restoration

Together with traditional demand management programs, efforts are under way to capture, conserve and more effectively utilize water for the natural system through environmental restoration. With limited surface water storage and a system designed for flood control, it is estimated that a staggering 1.7 billion gallons of water per day on average is "lost" due to diversion through the extensive canal system and discharge to tide.

Today, the South Florida Water Management District and the State of Florida, along with the U.S. Army Corps of Engineers and other partner agencies, are working to undo the environmental damage inadvertently caused by a century of drainage. Restoration of the historic Everglades ecosystem is the largest environmental restoration in the world. The overarching goal is to capture the fresh water that now flows unused to the ocean and the gulf and redirect it to natural areas that need it most for restoration purposes. Returning a more historic flow of water to the remnant River of Grass will not only revive the native habitat for 68 threatened and endangered species, it will also naturally replenish the underground aquifers that supply drinking water to the population.

The Regional System

The management of South Florida's water resources is made extremely complex by Florida's sub-tropical climate of extreme wet and dry periods. Compounding the natural challenges to water management in South Florida is the region's history of urban and infrastructure development. Just a century ago, water flowed – and sometimes overflowed – from the Chain of Lakes in the central part of the state, through the naturally-winding Kissimmee River into Lake Okeechobee, then spread south through the southern Everglades to the flats of Florida Bay.

While native habitats and wildlife thrived on the weather extremes of flood and drought, it was not as hospitable to people. In the mid-1800s, taming this wet wilderness was viewed as a linchpin to attracting more settlers to the state. Efforts to "dredge and drain the swamp" accelerated after the turn of the century. Drying out the wetlands created large tracts of productive farmland. Soon, cities and towns developed along the coast.

Plans to further control the flow of water intensified after deadly hurricanes in the 1920s caused floods that took the lives of nearly 2,000 people living around Lake Okeechobee. By 1937, an earthen dike (later to be named the Herbert Hoover Dike) encircled the huge water body, giving it more defined boundaries than nature had originally created and reducing the lake's natural storage by a third. Following the dike's construction, a series of droughts and floods culminated in catastrophic regional flooding in the late 1940s and prompted calls for more relief. In response, the U.S. Congress authorized construction of the Central and Southern Florida Project – a massive network of canals, levees and water control structures that drastically changed the watery landscape.

Completion of the water management system allowed for tremendous population and economic growth. Originally designed to meet the needs of a projected two million people, today, more than 7.5 million live and work in the 16-county region. In addition, the population annually swells with the seasonal influx of part-time residents and year-round tourists. The region also supports a major agricultural industry and other water-dependent businesses.

The success of this engineering marvel also came at the expense of the natural environment including plant and wildlife species – shrinking the Everglades ecosystem by some two million acres and impacting water quality, natural water storage capacity and natural patterns of water flow. Today, large volumes of water are discharged to the ocean through South Florida's extensive canal system for flood control.

Restoration of America's Everglades

Recognizing that construction of the federally-built water management system resulted in unintended consequences on the natural system, Congress authorized the Restudy of the Central and South Florida Project in the early 1990s to assess the measures necessary to restore the south Florida ecosystem. During this time, a number of "Critical Restoration Projects" were identified to provide immediate, substantial, and independent benefits to the Everglades and were specifically authorized by the 1996 Water Resources Development Act.

The broader-scope Comprehensive Everglades Restoration Plan (CERP) was proposed in 1999 and was authorized in the Water Resources Development Act of 2000. The joint state-federal partnership of CERP provides a thirty-year framework to restore, protect and preserve the water resources of central and southern Florida, including the Everglades. CERP includes more than 60 elements, with the goal to capture fresh water that now flows unused to the ocean and the gulf and redirect it to natural areas that need it most. Any water resulting from the construction of restoration projects will, first and foremost, be devoted to environmental restoration.

Major components of CERP include surface water storage reservoirs; water preserve areas; management of Lake Okeechobee as an ecological resource; improved water deliveries to the St. Lucie and Caloosahatchee estuaries; underground water storage; treatment wetlands; improved water deliveries to the Everglades; removal of barriers to the natural sheetflow of water; storage of water in existing quarries; reuse of wastewater and improved water conservation.

To kick-start restoration, in 2004, the State of Florida and the South Florida Water Management District unveiled a plan to expedite the construction of a suite of projects to achieve early benefits. The expedited projects included:

- *Biscayne Bay Coastal Wetlands to restore the quantity, quality, timing and distribution of freshwater to Biscayne Bay, expand coastal wetlands, revive marine habitat and improve the health of Biscayne National Park.*
- *C-111 Spreader Canal to provide a more natural sheet-flow to Florida Bay, reduce harmful freshwater discharges and revitalize wetlands and wildlife habitat.*
- *C-43 West Storage Reservoir to capture and store stormwater runoff and freshwater releases from Lake Okeechobee to protect coastal estuaries.*
- *C-44 Reservoir/Stormwater Treatment Area to capture and treat excess stormwater runoff before it enters the St. Lucie Estuary and Indian River Lagoon.*
- *Everglades Agricultural Area Reservoir Phase 1 to protect coastal estuaries and reduce the flow of nutrients into the Everglades by capturing and storing freshwater releases from Lake Okeechobee, along with agricultural stormwater runoff, in a 190,000 acre-feet above ground reservoir.*
- *Everglades Agricultural Area Stormwater Treatment Area expansion to enhance the performance of 40,000 acres of wetlands already built by the state.*
- *Picayune Strand Restoration to restore a natural flow of water to Ten Thousand Islands National Wildlife Refuge, restore wildlife habitat, improve the quality and quantity of water delivered to coastal estuaries and maintain flood protection.*
- *Five Water Preserve Areas to provide a buffer between natural and developed areas and divert urban runoff into constructed and natural storage areas.*

Further underscoring the state's commitment to ecosystem restoration, the Florida Legislature in 2007 created the "Northern Everglades and Estuaries Protection Program" to promote a comprehensive, interconnected watershed approach to protecting Lake Okeechobee and the Caloosahatchee and St. Lucie rivers and estuaries. Ultimately, improving the natural system north of the lake will help better manage water flowing south to the Everglades.

Restoration Progress

More than half of the nearly 400,000 acres of lands needed to move forward with Everglades restoration projects are in public ownership, including all of the land needed to construct Florida's suite of expedited projects. Restoration projects to improve water quality and to reestablish more historic flow patterns and hydrologic characteristics are also under way. In addition, giant above-ground reservoirs to capture and store water have been designed, test cells have been built and monitored and construction of the EAA Reservoir – a water storage facility the size of Manhattan – is underway.

Water Use in South Florida

Floridians use approximately 6.5 billion gallons of freshwater every day. With 40 percent of the state's population and a sizable agriculture industry, South Florida consumes more than half the state total – 3.4 billion gallons.

Local government and private water utilities treat and provide water to most homes and businesses. A much smaller number of people rely on individual wells as their source for drinking and/or irrigation water. Most water uses, such as water used for public water supply, industrial purposes and agricultural irrigation, are regulated by the regional water management district through Water Use Permits. Applicants must identify the quantity, source and purpose of the water, as well as provide detailed technical information and plans for conservation and reuse.

According to the latest U.S. Geological Survey water use report, South Florida residents average 179 gallons per person per day – the highest usage in the state. The statewide average is 158 gallons. It is estimated that up to half of that goes to outdoor irrigation and more than 50 percent of the water typically applied to lawns is lost to evaporation or run-off due to overwatering.

Within the South Florida Water Management District's 16-county region, agricultural irrigation accounts for 53 percent while public supply accounts for 37 percent of overall water use. Power generation, industrial use, recreational irrigation and private water wells comprise the remaining 10 percent.

By 2025, six million new residents are projected to make Florida their home, swelling the population to more than 24 million. More than half of the new residents will settle in South Florida. At the same time, statewide demand for freshwater is projected to increase to 4.3 billion gallons per day – a 22 percent increase.

As more agricultural land is expected to be replaced with urban development, public supply is expected to overtake farming as the largest use, consuming an anticipated 54 percent of the total. While agriculture is expected to be a smaller percentage of the overall future demand – it still represents a significant slice of the water use pie and continues to be a major economic force within the state. Existing regulations calling for better on-farm water use efficiencies have produced positive results.

In total, the demand for urban and agricultural water uses is projected to increase significantly over the next 20 years. These water demands must to be met without causing harm to the environment and water resources. Regional water supply plan updates concluded that current District water sources will not be sufficient to meet projected water demands over the next 20 years. However, these plans further concluded that with appropriate management and diversification of water supply sources – including water conservation – there is sufficient water to meet the water needs during a 1-in-10 drought condition through 2025.

Existing Water Supply and Water Conservation Efforts

The South Florida Water Management District's long-standing conservation goal is to prevent and reduce wasteful, uneconomical, impractical or unreasonable uses of water resources. Traditionally, this has been addressed through a combination of planning; regulation; supply augmentation through alternative sources including the reuse of reclaimed water; demand reduction through conservation technology, best management practices and water-saving funding programs; and public education.

Regional Water Supply Planning

As mandated by Florida water law, regional water supply plans identify needs and develop strategies for meeting future water demands of urban and agricultural uses, while meeting the needs of the environment. This process highlights areas where historically used sources of water will not be adequate to meet future demands, and evaluates several water source options – including water conservation – to meet those demands. The plans are based on a 20-year planning horizon and must be updated every five years. Each regional water supply plan includes water demand estimates and projections; an evaluation of existing regional water resources; identification of water supply-related issues and options; water resource and water supply development components, including funding strategies; and, recommendations for meeting projected demands.

Sidebar: In 2005, the first overhaul of Florida's growth management laws in more than two decades strengthened the link between local government comprehensive planning and water management district water supply plans. Referred to as "concurrency," the law's requirements ensure that local governments identify how future water supply needs will be met; prepare a 10-year facilities work plan; and incorporate the work plan into state-approved local comprehensive plans. Further, the work plan must identify specific water supply projects, along with conservation and reuse efforts, for meeting existing and future water needs.

Water Use Regulation

The consumptive use of water in the State of Florida is regulated by the state's five water management districts (Chapter 373, Florida Statutes). All applications for water use are reviewed under a "three-pronged" test. First, the applicant must demonstrate that the use is "reasonable and beneficial." This standard requires the prevention of wasteful or excessive uses of water and a demonstration by the applicant of water conservation, urban demand management and high-efficiency irrigation systems in addition to the use of the lowest quality of water for intended purpose. The second prong requires the applicant to demonstrate that the use is consistent with the public interest and the third prong requires the applicant to assure that the use will not result in adverse impacts to existing legal users. The requirements for South Florida Water Management District permit issuance are found in the Water Use Basis of Review and Rules 40E-2 and 40E-20 of the Florida Administrative Code.

Associated with water use permits are standard and particular conditions for permit issuance. South Florida's water use permitting Basis of Review specifically requires planning and implementation of water conservation measures by public water suppliers, commercial/industrial users, landscape and golf users and agricultural users. Examples of existing requirements for public water suppliers include adoption of local government ordinances that affect irrigation hours, landscaping and plumbing fixtures, evaluation of the feasibility of water reuse, leak detection, conservation-based rate structures and public education.

Sidebar: In April 2007, a groundbreaking rule approved by the South Florida Water Management District went into effect that guarantees water to protect and restore America's Everglades. Known as the Regional Water Availability Rule, this first-of-its kind requirement prevents water users from tapping the River of Grass for new or additional supplies of water – setting aside the water in the Everglades for environmental restoration. The rule boldly addresses regional growth and the need to protect the natural system for future generations. Cities needing additional water supplies are now required to seek alternative sources that are not dependent on the Everglades for recharge. These alternative water supply solutions may include recycling water, using reclaimed water to recharge the Biscayne Aquifer, drawing water from the deeper Floridan Aquifer and/or water conservation.

Supply Augmentation – Alternative Water Supply program
Since 1996, the SFWMD has provided funding to local governments for both stormwater management and water supply capital projects. To date, almost half of the funded water supply projects are water reuse facilities and expansions, and about a quarter of the projects process brackish water sources for potable blending and reverse osmosis treatment; the remainder are aquifer storage and recovery, and "other" projects such as stormwater use, and brackish water irrigation of salt tolerant grass in golf course applications. To further encourage the development of alternative water supplies as a growth management tool, the Florida Legislature in 2005 created the Water Protection and Sustainability Trust Fund through new legislation, increasing funding for local alternative water supply projects.

Sidebar: Over the last three years, the Water Protection and Sustainability program has provided $212 million statewide to develop alternative water supplies, with close to $64 million going to communities in South Florida. The South Florida Water Management District added $50 million to this cost-share effort to help create more water capacity.

Sidebar: Highlight AWS project

The Reuse of Reclaimed Water
Water reuse is an integral part of overall efforts to manage water resources. The reuse of reclaimed water is the utilization of highly treated domestic wastewater for beneficial purposes such as: irrigation of yards, agriculture, golf courses, and other green space; industrial purposes such as cooling water and process water; ground water recharge;

toilet flushing; dust control and environmental restoration. Reuse reduces the reliance on ground water, surface water and potable water for these uses. The SFWMD has developed a comprehensive approach to water reuse, including water supply planning, funding, regulation, outreach, and education.

Sidebar: During the past 19 years, Florida has risen to be recognized as a national leader in water reuse. Approximately 637 million gallons per day (mgd) of reclaimed water was reused for beneficial purposes in 2004. The total reuse capacity of Florida's domestic wastewater treatment facilities has gone from 362 mgd in 1986 to 1,273 mgd in 2004 -- 252 percent increase! In 2006, almost 229 million gallons per day of reclaimed water was reused in South Florida for many uses, including irrigation of 80,813 residential lots, 168 golf courses, 113 parks and 52 schools.

In 2008, the Florida Legislature authorized the elimination of the six remaining ocean outfalls in Florida. This legislation requires the utilities that currently utilize ocean outfalls as a wastewater disposal method to go to advanced wastewater treatment by 2018; to eliminate the discharges (except for wet weather) by 2025; and to achieve, at a minimum, 60 percent reuse of the facility's actual annual flow by December 31, 2025. The elimination of ocean outfalls -- all of which are located along Florida's southeast coast within the South Florida Water Management District's boundaries – will generate an estimated 300 MGD of reclaimed water for use within some of those most heavily populated areas of South Florida. To assist in the application of this reclaimed water, the bill also requires the District to include water supply development projects that support the reuse of this treated wastewater in its regional water supply plans and to require its beneficial use through consumptive use permits.

Demand Reduction – WaterSIP program
Established in 2002, the South Florida Water Management District annually provides matching funds of up to $50,000 to individual water providers and users for installing hardware and water saving technology, such as low-flow plumbing fixtures, rain sensors, and fire hydrant flushing devices through its Water Savings Incentive Program, or WaterSIP. These funds are available to cities, public utilities and water providers, homeowners' associations, schools and commercial facilities. Special assistance is granted to qualified economically disadvantaged communities.

Sidebar: To date, WaterSIP has committed over $2.3 million in cooperative funding for more than 70 projects, resulting in an estimated water savings of 1.56 billion gallons per year. An example of an innovative project funded through the WaterSIP grant is Hunter's Creek in Orange County. Using a state-of-the-art irrigation system including a weather station and soil moisture sensors, managers of this community can determine when and where irrigation is needed, and water only those areas in time of need. Hunter's Creek has saved an estimated 90 million gallons of water annually since 2004 through its new irrigation system.

Demand Reduction - Mobile Irrigation Labs

Of all water used in South Florida, nearly 90 percent is used for lawn and agriculture irrigation. Mobile irrigation labs perform evaluations and provide recommendations for efficient outdoor water use. These specialized labs-on-wheels evaluate the effectiveness of agricultural and homeowner irrigation systems and then make recommendations on how the existing system can be made more efficient. The result is a savings in water, energy, time, and money for the user.

Mobile irrigation labs underscore the benefits of partnerships. The South Florida Water Management District, in partnership with the Florida Department of Agriculture and Consumer Services, the National Resources Conservation Service and the Soil and Water Conservation Districts, share not only funding, but technical expertise and public education programs.

Public Education
Over the last two decades, the District has developed a wide range of materials and engaged in a number of multi-media campaigns to share information with the public about water conservation – from billboards to printed publications and public service announcements. Emphasis has also been placed on teacher training and school-based curricula to ensure that the region's future leaders and decision-makers are informed and educated on the importance of conserving water. Participation in District-wide community and environmental-appreciation events also provide venues for information sharing with various audiences throughout the region.

Since 1985, the SFWMD has also engaged in seven media campaigns, including the "Turn It Off" campaign used in 1990 and 2000, and "Florida's Water, It's Worth Saving" in 2003 in coordination with the St. Johns River Water Management District. Not surprisingly, each of these campaigns has coincided with a water shortage.

Recognizing the broad reach and immediacy of the internet as a source of information for all ages, the SFWMD recently designed and launched a comprehensive web site that speaks to all audiences about water conservation (www.savewaterfl.com).

Statewide Water Conservation Initiatives: Conserve Florida – A Strong Foundation
Through the years, the State of Florida has responded to sustained droughts with a variety of initiatives. In early 2000, the Florida Department of Environmental Protection (FDEP) led a statewide Water Conservation Initiative that resulted in the 2002 publication "*Florida Water Conservation Initiative*", which identified ways to improve efficiency in all categories of water use.

The *Water Conservation Initiative* evolved into a statewide effort known as *Conserve Florida* with three main program elements:

- Develop and implement standardized public water supply conservation definitions and standardized quantitative and qualitative performance measures for an overall system of assessing and benchmarking the

effectiveness of water conservation programs and practices. *(Completed March 2005.)*

- Establish a clearinghouse and pilot applications for water conservation programs and practices that will provide an integrated statewide database for the collection, evaluation and dissemination of quantitative and qualitative information about water conservation programs and practices and their effectiveness. *(Under contract with the FDEP and the University of Florida.)*
- Develop and maintain a Florida-specific water conservation guidance document, including a standardized process to assist public water suppliers in the design and implementation of goal-based, utility-specific water conservation plans. *(Completed May 2006.)*

The Water Conservation Clearinghouse, hosted by the Department of Engineering Sciences at the University of Florida, provides information and associated online resources. The mission of the clearinghouse is to collect, analyze, catalog and make available research information. In addition, the clearinghouse provides technical assistance to public water supply utilities and water managers for use in developing effective and efficient water conservation programs. The clearinghouse evaluates conservation programs, promotes continuous, long-term improvement in water conservation practices, and provides potential methods to utilities seeking to implement conservation programs.

In addition, a guidance document aids utilities in developing goal-based water conservation programs, and includes a standard methodology and process for a utility water use profile and measuring conservation results. Many of the strategies and action items outlined in this collaborative document acknowledge and build on the groundwork and resource tools developed through the Conserve Florida program.

Sidebar: In response to the 2007 drought, the Florida Department of Environmental Protection, in coordination with the Department of Agriculture and Consumer Services, the South Florida Water Management District and the Florida Division of Emergency Management, produced the Florida Drought Action Plan. The agencies worked closely with Conserve Florida to develop the Action Plan recommendations. Among the tasks in that plan is the development of practical recommendations and policy changes to alleviate the severity of future droughts in Florida. The Florida Drought Action Plan focuses on improving water use efficiency through agricultural operations; public water supply; and commercial and industrial practices and programs.

SEE APPENDIX FOR MORE DETAILS ON WATER CONSERVATION MILESTONES/DROUGHT TIMELINE.

A 2020 Water Conservation Program for South Florida

Vision

Create and implement a comprehensive and enduring water conservation program for South Florida. This successful program achieves a measurable reduction in water use, inspires governments, citizens and businesses to value and embrace a conservation ethic and serves as a national model for water conservation.

Program Initiatives and Strategies

To realize the vision of the South Florida Water Management District's water conservation program, the plan is organized into three program initiatives: **regulatory**, **voluntary and incentive-based**, and **education and marketing**. Each of these major initiatives has a corresponding goal, implementation strategies and a schedule of action steps.

The plan's goals and implementation strategies are designed to establish a proactive water conservation program that ensures, in conjunction with other District initiatives, an adequate and reliable supply of water to both protect the health of the ecosystem and satisfy current and future water demands. The overall program is built on a set of core values identified by the District's stakeholder group and is designed to be sustainable, science-based, measurable, goal-based, environmentally-protective and equitable wherever possible and practicable.

Implementation

Developing a reliable and sustainable funding strategy is essential for institutionalizing the components of the water conservation program. To this end and to ensure Floridians realize the most benefit from their investment in water conservation, implementation of strategies will take into account cost, ease of implementation, and potential water savings. Based on the availability of funding and the collective and collaborative actions of the South Florida citizenry, the program is designed to be implemented over ten years through immediate, short-term, mid-term and long-term action steps.

The program recognizes and bases decisions on the premise that water conservation is the least costly and most readily available source of water. It also intended as a fluid program that may evolve over time based on the latest laws, technologies, scientific research, best business practices, partnerships and available funding.

Regulatory Initiatives

From consumptive use permitting and local landscape ordinances to year-round irrigation conservation measures, rules and regulations have a role in advancing water use efficiency, promoting water conservation as the least-cost source of new water and

protecting the natural environment. Reducing water use through a combination of regulations and voluntary initiatives will help to sustain our limited water supplies.

Regulatory tools can not only increase water use efficiency, they can lead to significant water savings by requiring conservation practices in water use permits.

Together with State regulations, local government ordinances can also result in reductions of water use through landscape irrigation measures, assuring the planting of low-water-using vegetation and incorporating a sensible water use ethic for communities.

Goal
In partnership with utilities and local governments, adopt and implement goal-based water conservation regulations, local ordinances and utility practices to promote water efficiencies, further advance water management and achieve measurable reductions in public and private water use.

Strategies

I-A Public Water Supply

1. Require utilities to establish conservation plans with a numeric goal for water savings that is achievable.
    a. *Short-Term Action Step:* Modify the District's Water Use Basis of Review through rulemaking to require utility-specific goal-based conservation plans.
    b. *Short-Term Action Step:* Use the Conserve Florida Guide, or similar tools with equivalent conservation standards, to assist utilities in developing a conservation plan to achieve goals.
    c. *Short-Term Action Step:* Provide technical assistance to utilities for using the Conserve Florida Guide.
    d. *Mid-Term Action Step:* Work with utilities to develop goal-based conservation plans in three phases – large, medium, then small utilities.

Sidebar: In 2007, the Miami-Dade Water & Sewer Department (WASD) launched a goal-based water conservation program based on the Conserve Florida Guide. The plan was approved by the SFWMD as a condition of WASD's 20-Year Water-Use Permit. The Miami-Dade Water Use Efficiency Plan includes a combination of quantifiable best management practices, such as rebates and retrofits, as well as public education and outreach, and policy measures amending the building code to require the highest-efficiency water fixtures in new construction. The program reported first year water savings of 1,156,446 gallons per day, exceeding the established goal of 963,000 gallons per day by more than 20 percent. A total projected savings of 19.8 million gallons per day is expected to be achieved by 2026 – helping the utility to improve overall water use efficiency, accommodate projected growth and defer capital expenditures for the development of alternative water supplies.

2. Require utilities to adopt rate structures that promote conservation as part of their conservation plan to achieve their water savings goal.
    a. *Short-Term Action Step:* Work with utilities to identify and define minimum standards for water conservation rate structures.
    b. *Short-Term Action Step*: Modify the District's Basis of Review to adopt minimum standards for water conservation rate structures.

Sidebar: Population growth (more than 75 percent in the 1980s), along with drought conditions, spurred the Irvine Ranch Water District (IRWD) in California to employ conservation measures to meet the growing demand for water. In June 1991, IRWD implemented a five-tiered rate structure that included a low-volume user discount as well as progressively expensive rates for excessive uses of water. Rates for each account were individualized based on landscape square footage, number of residents, any additional needs of individual customers (such as for medical uses), and daily climactic demands. The new structure served to alert residents to leaks and excessive use and allowed for the removal of penalty rates if adjustments to systems, such as leak repairs, were made. As a result, landscape irrigation in 1991/1992 dropped by close to 45 percent (or 20 billion gallons), as compared to 1990/1991. Over the next six years, IRWD invested approximately $5 million in other conservation programs. These efforts collectively avoided $33.2 million in water purchases. IRWD was also able to avoid raising water rates for five years.

3. Require utilities to adopt retrofit programs as part of their conservation plan to achieve their water savings goal.

    a. *Short-Term Action Step*: Adopt a consistent definition for the term "non-revenue" or "unaccounted-for" water.
    b. *Short-Term Action Step*: Develop a database of non-revenue water by utility throughout the District.
    c. *Short-Term Action Step:* Work with utilities to develop and implement leak-detection programs when "non-revenue water" exceeds permit requirements.
    d. *Short-Term Action Step*: Develop guidelines and technical assistance for determining water savings of retrofit programs, such as indoor plumbing enhancements.
    e. *Mid-Term Action Step:* Work with local governments and utilities to determine and evaluate water savings from potential retrofit programs and implement programs within the service area where economically feasible.

Sidebar: Retrofit programs for water-using appliances and fixtures are a vital component of conservation programs due to the tremendous water savings potential they offer. In 1994, the City of New York set out to replace 1 million older toilets with 1.6 gallon per flush high-efficiency models. By April 1997, 1.3 million toilets had been replaced through a residential and

commercial rebate program. The toilet replacement element of New York's water conservation program alone accounted for 70 to 80 million gallons of water saved per day. This drop in consumption was a strong component of an overall reduction of 14.4 percent in per capita use from 1991 to 1998. Savings in total water and wastewater bills realized by customers ranged from 20 to 40 percent. A 2000 study in Seattle, Washington found that full retrofit of all indoor water appliances and fixtures in a typical residence can cut consumption by more than 35 percent.

Success Indicator: Achievement of utility-specific water saving goals through adopted goal-based water conservation plans, which include conservation-based rate structures, retrofit programs and education and outreach.

I-B Agricultural Irrigation

4. Maintain current irrigation requirements for new agriculture development.
    a. *Immediate Action Step:* Continue to require new agricultural development to incorporate accepted and crop-specific standard irrigation systems as part of the Water Use Permitting process.

Success Indicator: Water use efficiency achieved through incorporation of high efficiency irrigation systems in new agricultural development.

I-C Landscape Irrigation

5. Establish district-wide requirements for consistent, year-round landscape irrigation.
    a. *Short-Term Action Step:* Complete rule development and adopt a year-round landscape irrigation rule.
    b. *Short-Term Action Step*: Develop a model year-round landscape irrigation ordinance for adoption by local governments.
    c. *Short-Term Action Step*: Provide information and conduct workshops for local governments and enforcement officials regarding the landscape irrigation rule.

Sidebar: Following implementation of the SFWMD's year-round landscape irrigation measures for Lee, Collier and Charlotte counties in 2003, the City of Cape Coral adopted a more stringent, two-day-a-week schedule by local ordinance. Today, the City's per capita consumption is less than 110 gallons per person per day, compared to the District average of 179. Cape Coral also boasts a dedicated reuse system supplied by two water reclamation facilities serving nearly 40,000 irrigation system utility customers.

The City of Tampa implemented a conservation program that included an increasing-block rate structure, irrigation restrictions, voluntary and mandatory landscaping measures and public education. Tampa's "Sensible Sprinkling Irrigation Evaluation Program" emphasized water efficient landscaping and irrigation, and reported a 25 percent drop in water use in the 915 facilities that received evaluations and implemented water saving solutions through 2002.

6. Require local governments, where applicable, to update local ordinances to incorporate landscape designs consistent with Florida-friendly landscapes.
    a. *Short-Term Action Step*: Modify the District's Water Use Basis of Review to incorporate landscape standards consistent with Florida-friendly design.
    b. *Mid-Term Action Step:* Work with local governments to adopt a model landscape ordinance consistent with the "Landscape Irrigation and Florida-friendly Design Committee" (section 373.228, Florida Statutes).

Success Indicator: Reduction in outdoor water use through year-round landscape irrigation conservation requirements.

I-D Industrial, Commercial and Institutional Uses

7. Improve compliance reporting by permitted Industrial, Commercial and Institutional users.
    a. *Short-Term Action Step*: Expand the District's web-based e-permitting tool to facilitate timely self-reporting of the implementation of conservation plans for Industrial, Commercial and Institutional Uses.

Success Indicator: Electronic compliance reporting by permitted Industrial, Commercial and Institutional users.

I-E Golf Courses

8. Maintain current technology and landscape requirements in water conservation plans for existing golf courses.
    a. *Short-Term Action Step:* Confirm that appropriate technology, such as rain sensors or soil moisture sensors, are installed and operational on existing golf courses.

9. Use technology and design to improve water conservation for golf courses.
    a. *Short-Term Action Step:* Modify the District's Water Use Basis of Review to require new golf courses and those requesting additional water to use landscape design consistent with Florida-friendly landscaping.
    b. *Short-Term Action Step:* Modify the District's Water Use Basis of Review to require new golf courses and those requesting additional water to install integrated rain sensor/weather station systems.

10. Improve reporting of compliance with permit requirements by golf courses.
    a. *Short-Term Action Step*: Expand the District's web-based e-permitting tool to facilitate timely self-reporting of the implementation of conservation plans for golf courses.

Sidebar: The Boca Rio Golf Club utilizes some of the most modern rain sensor technology to keep greens green while adhering to water-saving practices. Rain and ET (evapotranspiration) sensors dot the landscape, while feeding information to a dedicated irrigation control room,

where staff can monitor conditions in any area of the 7,100 yard course. Most importantly, the course was designed with water conservation in mind, including drought-tolerant or native landscaping and Bermuda grass. Additionally, there is little water in play on the entire course; interesting bunkering patterns, as opposed to water hazards, guide the strategy.

Success Indicator: Enhanced water conservation at golf courses.

Voluntary and Incentive-Based Initiatives

Voluntary and incentive-based initiatives, including financial assistance, technical assistance and recognition programs, often surpass the effectiveness of the traditional command and control approach to business, industry and individual practices. Rather than solely relying on rules, cooperative public-private partnerships can supplement regulations and build goodwill, leverage investments, bring wider environmental benefits and significantly improve the quality of life of our communities. In today's environment, businesses along with governments and consumers recognize the cost-savings associated with best management and conservation practices. Consequently, individuals and commercial enterprises are voluntarily changing behaviors and adopting environmentally-conscious and best management practices not only for the social value but also because of the economic returns.

Goal

Expand voluntary government and industry partnerships and strengthen economic incentives to encourage public and private investments in water conservation. Create and make available to water using sectors incentive programs and technical assistance for water conservation projects and programs.

Strategies

II-A Leading by Example

1. Reduce water use at District facilities.
    a. *Short-Term Action Step:* Conduct water audits, update water conservation plans and implement recommendations for District facilities.

Sidebar: Investing now in a greener future, the South Florida Water Management District is making environmentally focused changes to improve energy efficiency, reduce water use and take advantage of alternative fuels. Facility upgrades include switching to high-efficiency lighting, retrofitting air conditioner chillers to remove ozone-depleting refrigerants and installing more low-flow, waterless and dual flush bathroom fixtures. Already the District has reduced its water use by over 750,000 gallons per year.

2. Reduce water use at public facilities.
    a. *Mid-Term Action Step:* Provide technical assistance to State and local governments, including school districts and park and recreation programs, to develop and conduct water audits and implement conservation plans for public facilities.

b. *Mid-Term Action Step*: Create a web-based repository for water savings data and water audit results for District and participating public facilities.

Sidebar: For more than 20 years, the Palm Beach County School District has taken a leadership role in energy and water conservation and has reaped financial savings as a result. The school district recently mandated that lavatories use 0.5 gallons per minute faucets, 1.6 gallon per flush toilets and waterless urinals in all newly constructed schools. In a 2003 retrofit initiative, 40 three-gallon- per-flush urinals in one high school were replaced with waterless urinals at a cost of $350 each. Through this effort alone, that school has saved $6,000 per year in water bills. However, the school district's greatest water conservation efforts can be attributed to aggressive monitoring of water consumption for leaks. Actual savings from these concerted efforts to identify and quickly repair leaks are difficult to determine, but are conservatively estimated to be in the millions of gallons a year.

3. Use recognition programs to encourage water conservation beyond regulatory requirements.
    a. *Short-Term Action Step*: Identify, evaluate and support existing successful water conservation recognition programs to reduce overlap and duplication.
    b. *Short-Term Action Step*: Provide technical assistance to support and expand appropriate water conservation recognition programs, such as but not limited to the Florida Department of Environmental Protection's Green Lodging Program, the St. Johns River Water Management District's Florida Water Star, and the Florida Farm Bureau's County Alliance for Responsible Environmental Stewardship (CARES) Program.
    c. *Mid-Term Action Step*: Work with industries and associations to develop criteria and standards for new recognition programs to reward water users that achieve water savings through conservation. Recognition programs may include utilities, government, commercial and industrial users, golf courses, builders, restaurants and lodging establishments.
    d. *Mid-Term Action Step*: Develop or support existing water conservation programs that designate and recognize "Florida Water Wise" homes, communities or cities similar to Certified Florida Yards.
    e. *Mid-Term Action Step:* Explore integration of water audits into complementary recognition programs and initiatives for energy conservation, hurricane mitigation and green building.

Success Indicator: Reduction in water consumption at District and public facilities.

Sidebar: Florida Water Star^{SM} is a point-based, new home certification program, similar to the federal Energy Star® program. The St. Johns River Water Management District certified the first Florida Water Star^{SM} homes in July 2006. Florida Water Star^{SM} workshops educate people who build homes about water-efficient appliances, irrigation systems, landscaping, and about

practices that reduce the chances for mold, mildew and water damage. This gives homeowners peace of mind and saves them money while protecting the state's water resources.

Sidebar: Launched in 2004 by the Florida Department of Environmental Protection, the Florida Green Lodging Program establishes environmental guidelines for hotels and motels to conserve natural resources and prevent pollution. To become a designated member of the Florida Green Lodging Program, hotels must follow certain green practices, including water conservation measures through low-flow plumbing fixtures and a linen reuse program. As reward for designation, the State recommends designated properties in the Florida Green Lodging Program to companies and trade organizations seeking environmentally conscious lodging and convention facilities. In addition, new state energy-use policies require state agencies to hold meetings and conferences only at hotels with Florida Green Lodging designation. As of May 2008, the program has 183 designated properties and more than 345 applicants.

II-B Financial Incentives

4. Strengthen existing and identify new financial incentives for water conservation.
    a. *Immediate Action Step:* Support continued funding and technical assistance for development of alternative water supplies including reclaimed water, use of brackish and/or seawater sources, and aquifer storage and recovery (ASR).
    b. *Short-Term Action Step:* Identify opportunities to expand the Water Savings Incentive Program (WaterSIP).
    c. *Short-Term Action Step:* Work with local governments and other entities to increase funding for agricultural and urban mobile irrigation labs.
    d. *Short-Term Action Step:* Identify opportunities for public/private partnerships to fund water conservation projects and programs.

Examples: Using WaterSIP funding, the City of Marco Island implemented a leak detection program for its drinking water system. The program reported a savings of 215 million gallons per year at a total project cost of $135,000. In Orange County a rebate program in 2006 exceeded its goal of issuing 500 rebates for high-efficiency toilets. In total, 600 rebate vouchers were paid out at a total program cost of $73,000 and an estimated water savings of 4.8 million gallons per year.

Success Indicator: Water savings achieved through grant-funded projects and incentive programs.

II-C Alternative Water Sources

5. Encourage the diversification of water supply and reduce dependence on regional freshwater resources through development of alternative water supplies.
    a. *Immediate Action Step*: Assist municipalities, utilities and other water users with the installation and expansion of reclaimed water systems, where appropriate.

b. *Immediate Action Step*: Allow special provisions in the year-round landscape irrigation rule for water users that utilize an alternative water supply.
c. *Immediate Action Step*: Allow special provisions during water shortages for water users that utilize an alternative water supply.

Sidebar: Alternative water sources include nontraditional water supplies such as saltwater and brackish groundwater, surface water captured during wet weather and expansion of reclaimed water systems. In South Florida, close to $170 million has been invested for the construction of almost 400 projects yielding about 700 million gallons of alternative water supply capacity. Of note, half of the funded projects to date are reclaimed water projects and account for about 250 million gallons per day of the overall increase in alternative water supply capacity.

Success Indicator: Increased diversification of water supply and reduced dependence on regional freshwater resources through development of alternative water supplies.

II-D Public Water Supply

6. Work with individual utilities to improve implementation of water conservation plans.

a. *Short-Term Action Step*: Encourage utilities to establish a water conservation officer or empower a senior staff member to facilitate implementation of the conservation plan and to serve as the primary liaison with the District to improve coordination.
b. *Short-Term Action Step*: Work with utilities to implement water audit programs and water conservation plans for high volume water users.
c. *Short-Term Action Step:* Work with bulk customers and secondary users to identify and implement conservation opportunities.

Sidebar: Placeholder - Utility implemented water audit programs for high volume users

7. Work collaboratively with utility representatives to develop regional opportunities to enhance water conservation.

a. *Short-Term Action Step:* Promote information sharing and best management practices among utilities, which will facilitate implementation of individual water conservation plans.

8. Encourage utilities to use the most effective and efficient water conservation technologies.

a. *Short-Term Action Step*: Encourage utilities to use automatic line flushing devices to reduce water waste during maintenance operations for water quality.
b. *Mid-Term Action Step*: Encourage utilities to use automated meter reading devices, or other appropriate technologies to detect high-water usage, where feasible and appropriate.

Sidebar: In addition to high-efficiency plumbing fixtures and irrigation systems, new technologies are emerging that have already begun saving water outside of the traditional areas. Automatic Hydrant Flushing Devices (AHFD) are one such technology. AHFDs are routinely used to maintain acceptable water quality within delivery lines by turning over stagnant water. AHFD's automatically flush supply lines at critical points within the distribution system on a set time interval and low flow rate. This is more efficient than the conventional method of line flushing, which requires a worker to manually open a hydrant and release larger volumes of water. The City of Pompano Beach recently installed seven AHFDs and estimates a water savings of 40,000 gallons per year per device.

Success Indicator: Implementation of the best available water saving technologies and management practices.

II-E Agricultural Irrigation

9. Collaborate with the Florida Department of Agriculture and Consumer Services, the University of Florida's Institute of Food and Agricultural Sciences, federal agencies and the agricultural industry to implement agricultural water conservation programs and best management practices.

    a. *Immediate Action Step*: Utilize agricultural mobile irrigation labs to conduct follow-up inspections to confirm implementation and determine effectiveness of water conservation recommendations.
    b. *Short-Term Action Step*: Work with the agricultural industry and agencies to expand the availability of agricultural mobile irrigation labs.
    c. *Short-Term Action Step:* Encourage higher efficiency agricultural irrigation systems, where applicable and appropriate for the crop type.
    d. *Mid-Term Action Step:* Develop a District-wide database to catalog soil type, primary crop, irrigation method and source of irrigation supply for the major agricultural areas within the District.

c. *Mid-Term Action Step:* Identify and promote new, more efficient irrigation technologies and best management practices for agriculture, including technologies to more accurately measure agricultural water use.

Sidebar: Through advancements in science and technology, farmers and ornamental plant nurseries have been able to maximize production per acre, while improving water use efficiency and reducing environmental impacts. For instance, the transition to micro-irrigation by the citrus industry alone jumped from 53 percent in 1991 (an annual savings of 52 billion gallons) to 80 percent by 2001 (an annual 90 billion gallons in savings). Additional conversions could save up to another 20 billion gallons per year.

Success Indicator: Water savings through expanded agricultural water conservation programs and best management practices.

II-F Landscape Irrigation

10. Work with local governments and utilities to maximize the use of urban mobile irrigation labs.

a. *Short-Term Action Step*: Work with utilities and local governments to identify potential high water users and expand the availability of urban mobile irrigation labs.
b. *Short-Term Action Step*: Utilize urban mobile irrigation labs to conduct follow-up inspections to confirm implementation and determine effectiveness of water conservation recommendations.
c. *Mid-Term Action Step*: Promote indoor conservation by offering simple, high-efficiency indoor devices with information on installation as a complement to urban mobile irrigation labs.

Sidebar: Since 2000, the 11 Mobile Irrigation Labs currently in operation in South Florida have saved more than 4.7 billion gallons per year. This is more than the average 4.5 billion gallons per year used by the average Florida city of 70,000 people.

Sidebar: Florida-friendly Landscaping is much more than a listing of suggested native species for use in yard landscapes. It represents a comprehensive suite of principles that guide homeowners in the design and maintenance of a beautiful yard tailored to Florida's subtropical climate and unique beauty while protecting its natural resources. Nine principles provide guidance on plant selection and care, proper irrigation and fertilizer applications, pest management, planting for waterway protection, proper use and care of lawn or turf space, and the reduction of stormwater runoff.

In 2006, Venetian Bay's 22 waterfront and 51 non-waterfront town homes undertook a major effort to reduce monthly water consumption. This entailed a water audit, funded by the City of St. Petersburg, of their landscape irrigation system and the implementation of Florida-friendly Landscaping techniques. Through these efforts, Venetian Bay realized an average monthly water savings of 45 percent or almost 200,000 gallons per month from July 2006 to July 2007. This reduced their annual water bill by $30,000.

11. Identify alternative practices to improve water conservation for landscape irrigation.

a. *Short-Term Action Step*: Explore the use of cisterns or other rain collection devices to replace the use of potable water for irrigation and supplement other sources of water.
b. *Short-Term Action Step*: Collaborate with the University of Florida's Institute of Food and Agricultural Sciences on research of turf grass and evaluations of science based irrigation methods.

Sidebar: Rainharvesting technology can be traced back more than 3,000 years. It has been employed continuously in many parts of the world, including parts of Florida, as a supplemental source for both indoor and outdoor water consumption and has recently begun a wide-spread renaissance in drought-prone areas in the United States. A one-inch rain over a typical single

family home (2000 ft^2 roof catchment area) will collect 1000 gallons at an initial cost of $670 (1000 gallon tank and pump). The same one inch rain over a city of 10,000 would capture 10 million gallons of water. Multi-family and commercial structures could fill a 10,000 gallon tank with as little as a half inch of rain for an initial cost of $7,500 (tank, pumps and site prep). When considering Florida's average rainfall of 53 inches per year, the conservation potential and return on investment become strikingly apparent.

Sidebar: The SFWMD has contracted with the University of Florida's Institute of Food and Agricultural Sciences (IFAS) on a number of applied research projects, including turf grass irrigation scheduling and breeding. IFAS plant breeders are developing new varieties of several crops, including turf grass, that are more drought-tolerant and need less irrigation.

Success Indicator: Increased use of water efficient lawn and landscape irrigation practices.

II-G Industrial, Commercial and Institutional Water Uses

12. Work with Industrial, Commercial and Institutional water users to reduce water use.
    a. *Short-Term Action Step:* Identify an appropriate entity to implement a water audit program for Industrial, Commercial and Institutional water users.
    b. *Short-Term Action Step:* Explore partnerships with energy providers that capitalize on the relationship between energy efficiency and water conservation.
    c. *Short-Term Action Step:* Encourage Leadership in Environmental Energy and Design (LEED) certification of new construction of Industrial, Commercial and Institutional facilities.

13. Reduce water use for heating, ventilation and air-conditioning (HVAC) cooling towers for Industrial, Commercial and Institutional water users.
    a. *Short-Term Action Step*: Work with organizations that promote water conservation strategies to refine and recommend water conservation methods to reduce water use in HVAC cooling towers for Industrial, Commercial and Institutional water users.
    b. *Short-Term Action Step*: Collaborate with industrial, commercial and institutional water users to implement reuse in HVAC cooling towers.
    c. *Mid-Term Action Step:* Create a web based tool to demonstrate potential water and financial savings by reducing water use in HVAC cooling tower systems.
    d. *Mid-Term Action Step*: Encourage retrofit or replacement of inefficient HVAC cooling tower systems for Industrial, Commercial and Institutional water users.

Sidebar: Most air conditioning systems in large office buildings, hospitals, and schools typically use one or more cooling towers. Cooling towers use the evaporative cooling effect to transfer heat

from a process heat source (warm interior air, in the case of office buildings) to the atmosphere. During this process, large volumes of water are consumed. However, through system modifications and improved maintenance, the amount of water consumption by such a system can be greatly reduced. In 1999, the Pinellas County Courthouse in Clearwater began using a modified operating procedure for their 500-ton cooling tower that reduced their "condensed" water loss close to 90 percent. The modifications cost the Courthouse $6,285 in start up costs and an additional $600 per month. Since the modifications were introduced, the Courthouse has saved an estimated 24.3 million gallons of water and a cumulative savings of $315,600, after accounting for initial and monthly expenses. Water savings from more efficient cooling tower operations holds more potential in Florida than any other place, as 15 percent of all cooling towers in the United States (estimated at 90,000) are in Florida, with Miami-Dade County holding the title of "Cooling Tower Capital of the World."

Success Indicator: Reduction in water use by Industrial, Commercial and Institutional water users.

II-H Golf Courses

13. Work with golf courses to enhance water conservation.
    a. *Short-Term Action Step*: Encourage the most appropriate water efficient ground covers for golf courses.
    b. *Short-Term Action Step:* Encourage existing golf courses to use landscape design consistent with Florida-friendly landscaping.

Sidebar: The City of Miami Beach's Normandy Shores Golf Course installed a dual-source irrigation system to take advantage of the property's brackish water ponds. The grounds have been replanted with Paspalum grass, a warm season grass, which can tolerate the brackish water with occasional flushing on salts with the City's water system. This ground cover conversion enables the golf course to use the onsite water brackish water source and reduce its potable water usage by 713,000 gallons per day.

Sidebar: Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses reflects the collaborative efforts of the Florida Department of Environmental Protection, the Florida Golf Course Superintendents Association, the University of Florida and many private sector partners to develop non-regulatory guidelines for minimizing pollution and conserving Florida's precious water resources. The manual provides superintendents and golf course operators with sound management strategies to maintain a golf course in a positive manner with respect to environmental protection, water quality protection and conservation.

Success Indicator: Enhanced water conservation measures at golf courses.

II-I New Development

15. Work with contractors, state agencies and local governments to promote the use of best available water efficient technologies in new development.

a. *Short-Term Action Step:* Encourage Leadership in Environmental Energy and Design (LEED) certification of new development.
b. *Short-Term Action Step:* Develop and provide a model ordinance to local governments requiring new development to install high efficiency water saving devices that go beyond requirements of the Florida Building Code.

Sidebar: Sheridan Stationside Village in Hollywood is one of six projects across Florida registered for the U.S. Green Building Council's new Leadership in Energy and Environmental Design - Neighborhood Development (LEED ND) certification program. LEED for Neighborhood Development integrates the principles of smart growth, new urbanism and green building into the design and development of sustainable communities for people of all income levels. Sheridan Stationside Village is a mixed-use transit-oriented development centered around the Sheridan Street Tri-Rail station.

Success Indicator: Increased integration of best available water efficient technologies in new development.

II-J Hospitality

16. Work with the Florida Department of Business and Professional Regulation, local governments and hospitality associations to improve water efficiency at restaurants and lodging establishments.

a. *Short-Term Action Step*: Assist hospitality associations in creating a water auditing program for restaurants and lodging establishments.
b. *Immediate Action Step*: Encourage the use of pre-rinse spray valves and other high-efficiency devices at restaurants and lodging establishments.

Sidebar: The South Florida Water Management District's Big Cypress Basin hosts an annual water symposium to showcase "green" efforts – targeting a different industry each year to learn about water and energy conservation, waste reduction and air quality issues. In 2008, the District joined with the Florida Restaurant and Lodging Association and a local restaurant to focus on green practices for the restaurant industry. Several local restaurants have already taken steps to be more environmentally-conscious in their day-to day activities. These include greater water conservation efforts, recycling of waste oils to power business vehicles, establishment of a business "Green Team" and purchase of locally-grown and environmentally-friendly products.

Sidebar: The Walt Disney World Resort is recognized as an industry leader in water conservation. All irrigation is controlled by a centralized computer system linked to weather stations that constantly measure environmental factors to determine the appropriate run time of sprinklers. The irrigation rates reflect the recommended minimum rates established by the University of Florida's Institute of Food and Agricultural Services and 80 percent of irrigation needs are met with reclaimed water. An aggressive leak detection and correction program and other water conservation initiatives have resulted in a 20 percent reduction in potable water use since 2000. These include recirculating decorative and interactive fountains, widespread use of reclaimed water (e.g. vehicle fleet washing) and two day per week irrigation, among others. All

the hotels at the resort have attained Green Lodging certification by the State of Florida, and are thereby committed to saving water. One example is the guests' option to reuse towels.

Success Indicator: Increased water efficiency at restaurants and lodging establishments.

III. Education and Marketing Initiatives

Education, outreach and social marketing are essential for accomplishing a measurable change in water conservation and instilling a lasting conservation ethic in South Florida businesses and communities. Public information and involvement, along with education partnerships and support for existing successful local and statewide programs, are also critical to the success of South Florida's water conservation program. Targeted education, public information and social marketing provide opportunities for building a conservation culture, instilling a stewardship ethic and permanently reducing individual, industrial and commercial water use.

Goal

Collaborate and coordinate with regional partners to educate and inform residents and visitors about their environmental, economic and social responsibility, foster a culture of conservation and position the State of Florida as a recognized leader in water conservation.

Strategies

III-A School-Based Education

1. Build on existing programs and initiatives to institute educational water conservation programs in public schools, educate school-aged children on the benefits of water conservation and create a consciousness for conservation for future generations.
    a. *Immediate Action Step*: Inventory existing elementary, middle and high school-based education programs in the district, across the state and throughout the nation.
    b. *Immediate Action Step:* Expand the District's water conservation web site (www.savewaterfl.com) to include a one-stop repository where teachers and students can download existing water conservation educational resources.
    c. *Immediate Action Step:* Through the school districts, inform teachers and students about the availability of water conservation educational resources.
    d. *Short-Term Action Step*: Work collaboratively with local governments and other regional organizations to identify, promote, support and, where appropriate, expand the reach of existing and successful school-based water conservation education curriculums and lessons, including the Great Water Odyssey, The Everglades: An American Treasure, Project WET, WET in the City, NatureScape and others.
    e. *Short-Term Action Step:* Expand the District's Great Water Odyssey educational program. The computer-based interactive curriculum for 3rd, 4th

and 5th grade students is an existing multidisciplinary education experience that correlates to Florida's Sunshine State Standards with a focus on water conservation.

f. *Short-Term Action Step:* Offer Great Water Odyssey teacher training workshops annually in each of the District's sixteen counties to promote water conservation in schools.
g. *Mid-Term Action Step:* Evaluate the effectiveness of the Great Water Odyssey curriculum in supporting the educational requirements and goals of the Florida Comprehensive Assessment Test (FCAT).
h. *Mid-Term Action Step*: Create a Water-Wise School program for high schools and ambassadorship opportunities by tapping into required community service hours. The program would encourage students to follow water conservation criteria and conduct water conservation indoor retrofits and outdoor landscaping measures to receive Water-Wise designation.

Success Indicator: School-based water conservation education in all 16 counties.

Sidebar: The Great Water Odyssey is a computer-based curriculum for 3rd, 4th and 5th grade students developed by the St. Johns River Water Management District and now being used by the three largest of the state's five water management districts. The creative, interactive lessons educate students about the importance of our water resources, with special emphasis on the importance of protecting and conserving Florida's water. The curriculum is designed to meet the Florida Sunshine State Standards and help prepare students for the Florida Comprehensive Achievement Test (FCAT). To-date, the South Florida Water Management District's pilot program has sponsored 40 teacher workshops attended by more than 800 teachers and reaching more than 8,000 students.

Sidebar: In November 2007, the South Florida Water Management District launched a comprehensive web site, www.savewaterfl.com, that provides residents, businesses, utilities, local governments and educators with a one-stop shop for information about water conservation. The web site is designed to provide all Floridians with an online tool for learning about ways to save water and help protect our region's resources. The site also features a water conservation opinion survey to encourage public feedback on water conservation awareness, individual water use habits and for suggestions on water-related issues. During its first six months, the site has been visited more than 60,500 times.

III-B Public Information

2. Collaborate and coordinate with governments, non-governmental organizations and regional partners to inform and educate elected and community leaders, businesses and industry, along with visitors, permanent and seasonal residents, on the benefits of water conservation.
    a. *Immediate Action Step*: Work collaboratively with local governments and other state, local and regional organizations and subject-matter experts to inventory and utilize water conservation public information materials and "how to"

guides, including publications on water efficiency, water conservation, the use of water saving products, Florida-friendly landscaping and water efficient urban enhancements.

b. *Immediate Action Step*: Work with the U.S. Environmental Protection Agency (EPA) to become a WaterSense promotional partner; encourage local governments to become WaterSense promotional partners. EPA is building WaterSense as a national brand for water efficiency that encourages water-efficient behaviors and the purchase of quality products that use less water. Becoming a promotional partner provides free marketing tools and resources and strengthens water-efficiency outreach efforts by utilities, state and local governments with a credible, national brand and a strong, consistent message.
c. *Immediate Action Step*: Continue to develop the District's water conservation web site (www.savewaterfl.com) as a central repository and portal for public information on water conservation and existing programs.
d. *Immediate Action Step*: Continue to work in partnership with the news media and local government programming to assist in the dissemination of water conservation public information.
e. *Short-Term Action Step*: Work collaboratively with local governments and other state, local and regional organizations and subject-matter experts to develop and distribute public information materials on reclaimed water.
f. *Short-Term Action Step*: Work collaboratively with governments, utilities and state, local and regional organizations to integrate water conservation with energy conservation in public information campaigns and materials.
g. *Short-Term Action Step*: Partner with the University of Florida's Institute of Food and Agricultural Sciences (IFAS), the Florida Department of Environmental Protection and the State's Water Management Districts to create, support, promote and distribute one comprehensive guide to Florida-friendly landscaping.
h. *Short-Term Action Step*: Partner with the University of Florida's IFAS Extension -- a partnership between state, federal, and county governments to provide scientific knowledge and expertise to the public -- to utilize an existing network of scientists, educators and volunteers, support Florida-friendly landscaping programs and educate the public about water-wise irrigation practices.
i. *Short-Term Action Step*: Work with nursery and grower commodity groups to develop water wise signage for Florida-friendly plants in nurseries and other retail outlets, promote their benefits and increase consumer knowledge and success in plantings.
j. *Short-Term Action Step*: Work collaboratively with the Governor's Office, the Department of Environmental Protection, water management districts, local governments and other appropriate organizations to encourage consistency in the branding, messaging and public information collateral used to promote water use efficiency and conservation across the state.

k. *Short-Term Action Step:* Based on any identified public information needs, develop any additional necessary collaterals in collaboration and partnership with the Department of Environmental Protection, water management districts, local governments and other appropriate organizations; ensure public information materials can be readily adapted and adopted and replicated in all regions of the state.
l. *Short-Term Action Step*: Maximize resources by engaging community colleges and university students in the development of water conservation public service announcements for broadcast, if needed.
m. *Short-Term Action Step*: Collaborate and coordinate with local governments to develop consistent and effective public information to promote compliance with landscape irrigation restrictions.
n. *Short-Term Action Step*: Identify utilities that are implementing informative billing; work with large, medium and small utilities to encourage informative billing on water use, where possible.

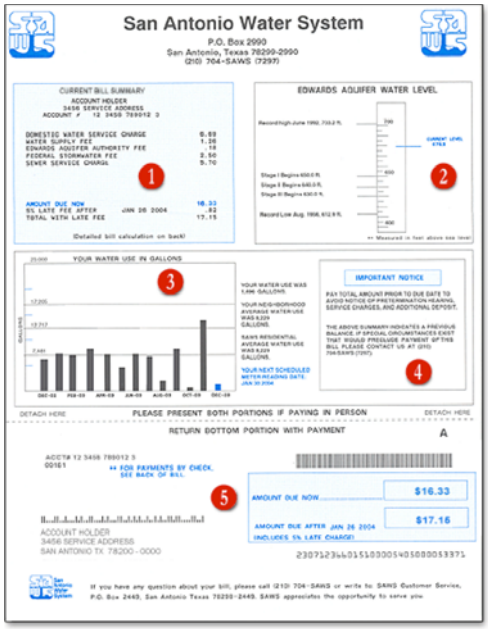
Success Indicator: Number and percent of population reached through print, broadcast and electronic water conservation public information

Sidebar: Broward County's NatureScape educates residents about creating Florida-friendly landscapes that conserve water, protect water quality and create wildlife habitat. The program works with homeowners, businesses and schools to encourage the use of native plants in landscaping, which are uniquely adapted to grow in South Florida and require less watering once established. More than 2,000 certified NatureScapes can be found within Broward County.

Sidebar: The Florida Yards & Neighborhoods program is a partnership of the University of Florida/Institute of Food and Agricultural Sciences (UF/IFAS), Florida's water management districts, the Florida Department of Environmental Protection, the National Estuary Program, the Florida Sea Grant College Program, concerned citizens, members of private industry and numerous other nongovernmental agencies. FYN addresses problems associated with stormwater runoff, water shortages and habitat loss by enlisting Floridians in the development and implementation of solutions. The program, which is implemented through the counties' UF/IFAS Cooperative Extension Service, provides education and outreach activities in the community to help residents reduce pollution, conserve water and enhance their environment by improving home and landscape management.

The Florida Yards & Neighborhoods handbook is one tool for providing helpful concepts, tools and techniques for creating a Florida-friendly Yard. The publication in wide circulation imparts the basics of designing a landscape that features carefully selected plants suited to climate, soil and wildlife. Tips on cost-saving, energy-efficient landscape maintenance are also included to help reduce water, fertilizer and pesticide use.

Sidebar: Informative Billing



From postcards and bill stuffers to sophisticated computer-based billing systems, informative billing has the potential to directly reach utility customers with useful information about personal use and individual water conservation.

The San Antonio Water System (SAWS) serves 326,000 water customers, and provides through its billing information to each customer on current levels of the Edwards Aquifer in comparison to record high and low levels, as well as water restriction stages; graphic displays of homeowner water consumption for the past year, the neighborhood average consumption and the SAWS system-wide average consumption. In addition, the informative billing includes a personalized message customized for each customer based on water use.

III-C Professional Development

3. Offer voluntary training and certifications, where appropriate, to business and industry sectors (e.g. turf and landscape industries, plumbing, general contractors, educators, HVAC) on implementing conservation changes, water efficiencies and best management practices.
    a. *Short-Term Action Step*: Work with the U.S. Environmental Protection Agency (EPA) and/or industry groups to encourage landscape irrigation professionals (including irrigation designers, irrigation contractors, golf irrigation auditors, landscape irrigation auditors and landscapers) to become certified through a WaterSense labeled, or equivalent, certification program and to implement water-efficiency best practices.
    b. *Short-Term Action Step*: Work with the U.S. Environmental Protection Agency to promote WaterSense landscape irrigation professionals including designers, auditors, and installation and maintenance professionals that are certified to implement water efficiency best practices.
    c. *Short-Term Action Step*: Inventory existing programs in the district, across the state and throughout the nation.
    d. *Mid-Term Action Step:* Work with professional organizations, including the Florida Section American Waterworks Association and the Alliance for Water Efficiency, to develop conservation courses for CEUs, and other continuing educational credits for water conservation professionals, planners, design, building and landscape professionals.
    e. *Long-Term Action Step*: Partner with trade schools, colleges and service industries to provide water conservation certifications to professionals.

Success Indicator: Increased number of business and industry professionals trained and certified in water conservation/water efficiency best practices.

Sidebar: A partnership program sponsored by EPA, WaterSense seeks to protect the future of our nation's water supply by promoting water efficiency and enhancing the market for water-efficient products, programs, and practices. WaterSense helps consumers identify water-efficient products and programs. It is also partnering with irrigation professionals and irrigation certification programs to promote water-efficient landscape irrigation practices. In addition, WaterSense is collaborating with manufacturers, retailers and distributors and utilities to bring WaterSense products to the marketplace and make it easy to purchase high-performing, water-efficient products.

III-D Social Marketing

4. Develop and implement an effective social marketing campaign that inspires an enduring water conservation ethic. Different to public information, social marketing uses the principles of commercial marketing to influence social behaviors and bring about permanent behavior change.
    a. *Immediate Action Step*: Identify government, corporate and institutional partners.
    b. *Immediate Action Step*: Inventory existing social marketing campaigns centered on water conservation in the district, across the state and throughout the nation. As appropriate and available, the inventory would include messages, market share, sponsors, paid and earned media tools, budget, funding sources and empirical data demonstrating success.
    c. *Immediate Action Step:* Make existing resources available on www.savewaterfl.com.
    d. *Immediate Action:* Assess adaptability of messages and tools employed in existing campaigns to Florida markets.
    e. *Immediate Action Step:* Collaborate with the Department of Environmental Protection and the State's Water Management Districts to evaluate the potential for partnership and consistency in branding and messaging at the state and regional level.
    f. *Short-Term Action Step:* Identify target audiences.
    g. *Short-Term Action Step*: Conduct market research to understand the audience, identify barriers to change ways to eliminate the obstacles to adopting everyday, individual water conservation habits.
    h. *Short-Term Action Step:* Set goals for behavioral change within each target group based on market research.
    i. *Short-Term Action Step*: Develop water conservation messages; select mediums (including print, electronic and broadcast media) and tools for inspiring behavioral change.
    j. *Short-Term Action Step*: Pre-test the campaign.
    k. *Short-Term Action Step*: Implement a multi-media social marketing campaign to effect individual behavior change.

l. *Short-Term Action Step*: Maximize earned media.
m. *Mid-Term Action Step*: Develop and incorporate a voluntary water conservation challenge, encouraging Floridians to reduce their water use as a part of the social marketing campaign.
n. *Mid-Term Action Step*: Evaluate the results and adapt the campaign as new information and data on the effectiveness of the campaign becomes available.

Success Indicator: Region-wide public recognition of individual water use and the value of water conservation as a result of a successful social marketing campaign; adoption of individual water conservation behaviors.

Sidebar: Social marketing uses many of the principles of commercial marketing to influence social behaviors and bring about behavior change. Up-front research provides a window into how to best motivate water users to adopt water conservation habits. The greater access people have to the new behavior (like installing a low-flow showerhead or using a commercial car wash to clean the car) and the easier it is to do, the better chance that people will implement the change.

Sidebar: In 1999, the city of Mesa set about creating a social marketing campaign that would truly motivate change. Since then, Water - Use It Wisely has become one of North America's most comprehensive water conservation campaigns, with over 350 private and public partners. Water - Use It Wisely has experienced success because of its ability to identify and break down behavioral barriers by giving consumers the tools needed for a wiser approach to water use. Interestingly, pre-campaign research, a key component of social marketing, identified severe drought as a high motivational factor for personal water conservation.

The campaign catalogues more than 100 water-saving devices including, "Use a broom instead of a hose to clean your driveway and sidewalk and save up to 80 gallons of water", or "Turn off the water while you brush your teeth and save 4 gallons a minute." The most important water saving device, however, has been highlighted as the consumers themselves with a campaign theme: "There are a number of ways to save water, and they all start with you". Follow-up surveys conducted every two years to evaluate success determined that, after four years, Water - Use It Wisely had achieved an 80 percent market penetration regarding awareness, and that 33 percent of those surveyed said they had made the desired behavior changes to use water more wisely due to the campaign.

Sidebar: San Antonio Water System's Season to Save Community Challenge enlists non-profit organizations to promote water conservation awareness in the community. The Challenge encourages non-profit members to team up, conserve water, and earn funds to support their specific projects. Funding for projects are earned two ways. Non-profit entities can sign up members to replace their old toilets with newer model "low-flow" toilets, earning $25 for each member. Additional project money can also be earned when these groups meet their own water use reduction goals. In 2003, 40 non-profit organizations (about 3,000 families) partnered with SAWS to achieve their conservation goals. The result of this cooperative effort was that 4,000 inefficient toilets were exchanged for low-flow models saving more than 25 million gallons of

water in five months, while earning fundraising groups approximately $100,000. Additionally, this initiative projects a 10-year water savings of about 371 million gallons.

III-E Volunteer Activities

5. Augment District water conservation education, public information and outreach efforts by developing a grassroots, volunteer corps of "water ambassadors" that will leverage available resources and strengthen the District's ability to reach different water using audiences about the value of water conservation.
    a. *Immediate Action Step*: Inventory existing programs in the district, across the state and throughout the nation.
    b. *Immediate Action Step*: Support existing and successful local volunteer programs that promote water conservation, where appropriate.
    c. *Immediate Action Step*: Identify the scope, target audience for a pilot volunteer initiative and professional/educational requirements for volunteers.
    d. *Short-Term Action Step*: Identify a District program coordinator.
    e. *Short-Term Action Step*: Develop a recruitment strategy, training curriculum and implementation strategy for the pilot program.
    f. *Short-Term Action Step*: Recruit first corps of volunteers.
    g. *Short-Term Action Step*: Conduct "water academies" to develop the knowledge base of recruited volunteer water ambassadors.
    h. *Mid-Term Action Step*: Task trained ambassadors with supplementing the District's outreach activities and engaging and sharing information with their peers, communities and business sectors.
    i. *Mid-Term Action Step:* Evaluate the effectiveness of the pilot volunteer initiative; adapt initiative as necessary and expand based on public/industry outreach needs.

Success Indicator: Number of volunteers participating in a "water ambassadors" program; number of water conservation outreach events and engagements participated in by volunteers.

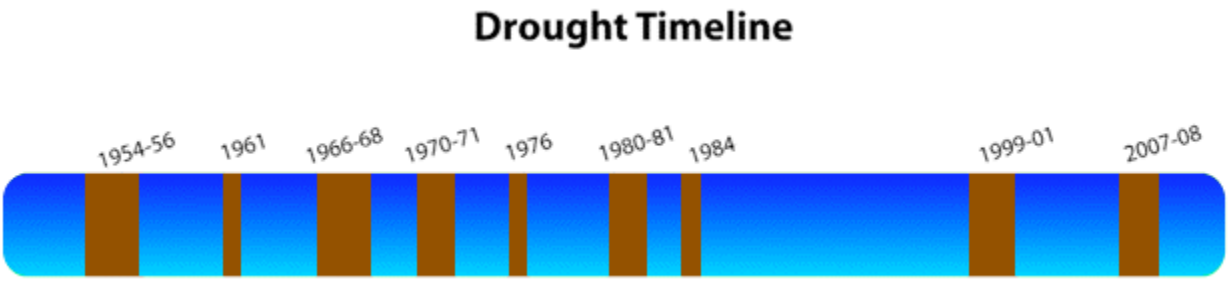
Sidebar: The St. Johns River Water Management District's Watershed Action Volunteer Program and has given hundreds of individuals the opportunity to personally help their communities and protect the water resources of Central and Northeast Florida. The program is active in 14 of the District's 18-county service area. It matches committed individuals with Watershed Action Volunteer coordinators to train and equip volunteers for a variety of important tasks so that each volunteer can help make a difference in their community. Watershed Action Volunteers are also trained to prepare and give educational presentations to school groups, civic associations, clubs and other organizations. Currently, there are 673 registered volunteers in the program participating, on average, in more than 1,600 special events and presentations annually.

<u>NOTE</u>: Implementation plan/schedule to be added after discussion/approval of Governing Board.

<u>Additional Background / Appendices (attached)</u>

- **Governing Board resolution**
- **Drought & Water Conservation timeline**

Governing Board Resolution



Drought Management and Water Conservation

While it is important to differentiate between emergency water use restrictions and longer-term water conservation practices, in many cases, major periods of drought prompted significant state or regional water resource protection actions. The following milestones highlight key drought management and conservation/demand management-related initiatives over the last 30+ years.

1970-1972: Statewide severe drought provides impetus for September 1971 Governor's Conference on Water Management. In response, Florida enacts Water Resources Act in 1972 creating the state's five regional water management districts. That landmark law also established a permit system regulating consumptive use of water based on 3-pronged reasonable-beneficial use criteria.

1980-81: Severe drought leads to development of South Florida Water Management District (SFWMD) Water Shortage Plan which provides specific guidelines for water restrictions based on type of use and severity of drought – ranging from 15% to 60% cutbacks. The Lake Okeechobee Supply-Side Management methodology for allocating releases to lake users was also developed and implemented.

1985: SFWMD launches water conservation campaign on the lower west coast. Due to differences in underground geologic make-up, this area is more vulnerable to rainfall deficits and was experiencing water shortages every two years *(in contrast, regional shortages were averaging every 10 years.)*

SFWMD development of a Model Xeriscape™ Landscape Code for Local Governments, which became the precursor of the statewide 1991 "Xeriscape (Florida-friendly) Landscape Law. " Xeriscape is water efficient landscaping that emphasizes the right plant in the right place.

1988: SFWMD begins partnering with the U.S. Department of Agriculture–Natural Resources Conservation Service, the Florida Department of Agriculture and Consumer Services, and various soil and water conservation districts to share funding and technical expertise in support

of Mobile Irrigation Labs (MILs). These specialized labs on wheels audit water use for agriculture and urban irrigation systems.

1990-91: Drought conditions prompt activation of residential, business and agricultural water use restrictions based on Water Shortage Plan and Lake Okeechobee Supply-Side Management. SFWMD begins focusing on the benefits of water-conserving landscape practices.

1993: SFWMD formalizes rules for incorporating conservation into the Water Use Permit process; Chapter 40E-2 Basis of Review for Water Conservation adopted as Florida Administrative Code.

1996: SFWMD establishes initial Alternative Water Supply grant program to assist local governments with construction of projects that create alternative supplies to help supplement limited "traditional" supplies.

1999-2001: Drought/water shortage, again prompts residential and agricultural water use restrictions per Water Shortage Plan. Based on "lessons learned" and resource needs, days and times for residential and business watering are modified based on water conditions. Methodology for Lake Okeechobee allocations also tweaked and modified.

2002: The Florida Department of Environmental Protection (FDEP) launches the Florida Water Conservation Initiative to identify ways to improve efficiency in all categories of water use. The initiative called for the inclusion of conservation into the water supply planning, regulatory and utility facilities planning processes.

SFWMD creates the Water Savings Incentive Program (WaterSIP) cost-sharing program to assist in the funding of technology-based water conservation projects that help reduce water use. Examples include installation of rain shutoff devices for irrigation systems, plumbing retrofits and pressure stabilization valves.

2003: SFWMD adopts year-round water use guidelines for outdoor irrigation specific to lower west coast counties *(Lee, Collier, and Charlotte counties).*

2004: FDEP, the five water management districts, the Florida Public Service Commission, the Utility Council of the American Water Works Association, the Florida Water Environment Association and the Florida Rural Water Association enter into an agreement to implement the recommendations of the Florida Water Conservation Initiative. Florida enacts House Bill 293 to encourage efficient, effective and affordable water conservation measures, and identifies the goals to be

addressed as part of the program. In addition, it encourages conservation by utilities, and gives the statewide program legislative backing.

The cooperative effort evolves into *Conserve Florida* which develops a standardized method of assessing water conservation programs and practices, establishes an information clearinghouse and an interactive web-based tool to measure and model goal-based conservation programs.

2005: The Florida Legislature enacts the Water Protection and Sustainability Program which encourages cooperation between municipalities, counties and the water management districts in protecting and developing water supplies as well as promoting alternative water supply projects.

2006 At the Governor's direction, FDEP leads interagency effort to develop short-term "Drought Action Plan." As a follow-up to one of the recommended action steps, FDEP also convenes several work groups to consider *Conserve Florida* conservation measures that could provide immediate benefits. That effort yields the "Being Drought Smart - Recommendations for a Drought Resistant Florida" report.

2007 SFWMD Governing Board adopts Regional Water Availability Rule restricting withdrawals from the Everglades to meet future water needs

In response to severe drought, varying degrees of modified water use restrictions are imposed on Lake Okeechobee users and residents throughout all SFWMD 16 counties. For the first time, the agency declares Phase III (45%) cutbacks in multiple areas. New methodology for allocating Lake Okeechobee water approved and put into place. Numerous other actions are undertaken to address the multi-year rainfall deficit and to assist communities in continuing to meet demands.

Calls for consistency and year-round measures prompt the SFWMD Governing Board to convene a Water Conservation Summit and a stakeholder process for exploring and developing a comprehensive water conservation program.

2008 In response to the continuing water shortage, one-day-a-week landscape irrigation restrictions temporarily go into effect across the SFWMD region.

SFWMD and stakeholder group build on and strengthen existing initiatives; explore new options; and identify recommended action steps for "A 2020 Conservation Program for South Florida."