

What's Next?

Where do we go from here?

Sarasota County is committed to providing a reliable, high-quality water supply to its customers. The county's water system is comprised of a large distribution area and several water sources which promote reliability, but also present many complex delivery and water quality challenges. In addition, it is clear that we must consider the needs of the region while developing our own plans. The county has identified projects that not only serve its own needs, but also can benefit the environment and the region. Working together, we will be able to build a better tomorrow.

How will the county continue to provide exceptional water service to its customers?

By continuing to evaluate and plan for future growth, the county will set the stage for reliable water supply development for its customers. This Master Plan is the first step in the right direction. By following its strategies, implementing the Capital Improvements Program, and updating the Master Plan regularly, the county will be able to provide consistent water quality and equal level of service to all of its customers now and in the future.

Water Supply

MASTER PLAN UPDATE

EXECUTIVE SUMMARY

FINAL DRAFT

Master Plan completed by





Message from the Sarasota County Commission

Dear Sarasota County residents:

There are many exciting things happening in Sarasota County as a result of the many opportunities that are available in our area and region. As Sarasota County and the surrounding region grow, we will need to develop new water supplies and make improvements to the drinking water supply system.



Sarasota County has historically depended on Manatee County for our water supply. We have always known that Sarasota County would have to develop our own water supplies as Manatee County grows and needs that water for their own residents. As the county brings on new water supplies, improvements such as pipelines and pump station modifications will be needed to distribute that water to our customers. In addition, as we develop new water supplies, we need to balance our needs with those of Florida's natural ecosystems.

For the past year, Sarasota County has been developing the Sarasota County Water Supply Master Plan. This Plan provides a comprehensive look at the county's water supply, including the quantity and quality of our existing raw water sources, treatment and transmission infrastructure, and system operation. The Master Plan also looks at potential new water supply sources to meet future water demands. Finally, after evaluating the feasibility, cost, advantages, and disadvantages of each potential source, the Master Plan makes some recommendations for future projects.

This Executive Summary provides an overview of the information obtained during the project. It is a compilation of the status of the water utility and its future direction. The Master Plan will provide a framework for the continuation of sustainable water supply development throughout Sarasota County. As we follow and continuously update it to reflect future changes, it will assist the county in providing an equitable, high-quality water supply to all of us who live, work, and play in Sarasota County.

The Honorable David Mills, Chair

This Water Supply Master Plan provides a framework for the continuation of sustainable water supply development throughout Sarasota County

Regional PERSPECTIVE



Sarasota County's needs are not unique. Working together improves our chances for everyone's water needs to be met.



"Regionalized systems build strong partnerships across Southwest Florida, which makes for high quality, reliable water for our customers."

— Shannon Staub,
Sarasota County Commissioner
and Peace River Authority Board member

The Master Plan is focused foremost on the needs of the county, and how to best develop water supplies to provide high-quality, reliable water to our customers. However, it also considers the regional perspective of water supply by investigating the demands and supplies of all utilities in the region in various planning scenarios. Since our water supplies span multiple political jurisdictions, we must plan together as a region.

Regional Partnerships

Partnerships and cooperation between regional members will provide the best means to meet future water demands by bringing new sources online, initiating joint projects in conjunction with other members, and buying and selling water to and from other regional groups.

Water Planning Alliance

The main goal of the Alliance is to identify long-term water supply projects for its members on a regional basis. The Alliance is a recently developed voluntary planning body whose main goal is to identify long-term water supply projects for its members on a regional basis. The Alliance is comprised of the following entities:

- ▶ Counties
 - Charlotte
 - DeSoto
 - Manatee
 - Sarasota
- ▶ Cities
 - Arcadia
 - Bradenton
 - North Port
 - Palmetto
 - Punta Gorda
 - Sarasota
 - Venice

- ▶ Town of Longboat Key
- ▶ Englewood Water District

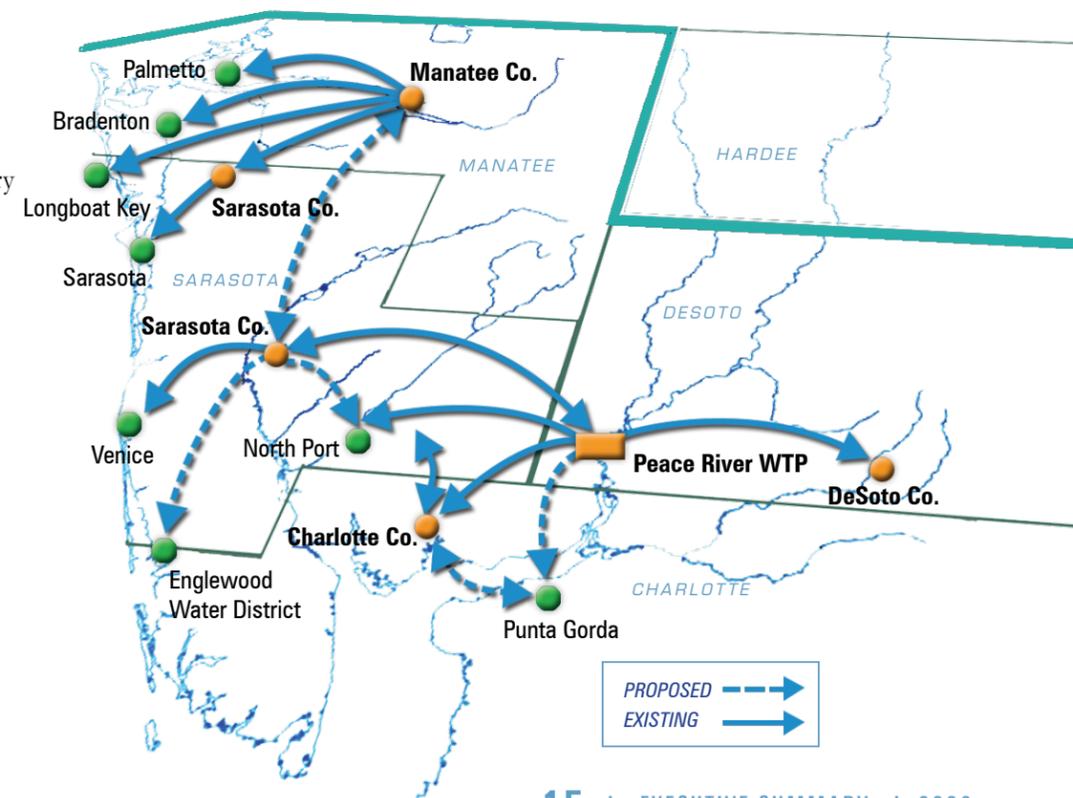
Regional Pipelines

Another benefit of a regionally connected system is to construct distribution system interconnections between various utilities, providing backup water supplies during emergencies or connection points for bulk water sales. Sarasota County is currently connected to several surrounding utilities including the Peace River Authority, Manatee County, and the cities of Sarasota and Venice. The county is also in the process of constructing other interconnects to provide additional points for water transfer during emergencies and to further the scope of regional sharing.

Regional Funding

Another motivation for developing regional projects arises from the government decision to consider regional collaboration as a criterion for providing financial assistance. Some of the considerations for providing funding include reducing competition for water resources and implementing a multi-jurisdictional water supply entity.

The Southwest Florida Water Management District (SWFWMD) provides guidance and resources to assist in the development of regional water supply projects.



Capital Improvements PROGRAM

Fiscal stewardship is essential when proposing projects for facility upgrades, system repairs, and new supply development

Based on the recommended projects for facility upgrades, system repairs, and development of new supplies, a Capital Improvements Program was developed. The timing of these projects was discussed among county staff, the consulting engineers, and regional partners. The projects were scheduled based on relative priority, fiscal considerations and constraints, and the time required to bring new sources online to meet future water demands. The Capital Improvements Program for the largest recommended improvements is shown in the table. Technical Memorandum No. 5 in the full Master Plan provides a complete listing of all projects, including project descriptions, cost estimate breakdowns, and justification of each project.

How will the projects be paid for?

Utility rates and connection fees are collected to pay off previous water project debt, to fund capital improvements, and to pay for water system operations and maintenance costs. Connection fees are typically charged when new customers are added to the system to recover the cost for facilities needed to service new developments. When project costs are too high to be paid up front by base rates and connection fees, utility loans (or bonds) are issued to finance the project costs. These costs are then assessed to the county and its customers over a longer period of time, similar to a home mortgage. Further analyses by county staff will determine funding strategies and impacts on customer rates.

Will our rates change?

The cost of water production increases similar to other goods and services, mainly due to increased cost of electricity, treatment chemicals, labor, and raw materials for upgrades or new construction. Most utilities experience a nominal rate increase every few years that reflects these increased costs. When large-scale capital improvements are made and bonds are issued, the county makes every effort to pay for these projects in a manner that is most equitable and least costly to its customers. It is expected that customers will not experience a rate increase that is substantially different than the normal annual rate change.



"SWFWMD cooperatively funds regional such as the Peace River Plant and Regional Loop system, thereby reducing costs to the local government and promoting regional cooperation."

– Tom Dabney,
SWFWMD Governing Board

Project Description	Total Estimated Cost (\$)	Potential Grants & Outside Funding	Estimated Cost to Sarasota County (\$)
PART 1 - EXPANSION OF THE SARASOTA COUNTY WATER SYSTEM			
Raw Water Development			
Dona Bay Preliminary Design Study	1,500,000	50%	750,000
Dona Bay Water Supply Project	100,000,000	75%	25,000,000
Carlton Wellfield Expansions	5,970,000		5,970,000
Water Treatment Facilities			
Venice Gardens Reverse Osmosis Expansion	2,850,000		2,850,000
Carlton Facility Expansion	14,000,000		14,000,000
University Reverse Osmosis Facility	4,950,000		4,950,000
Storage and Pumping Facilities			
Carlton High Service Pump Station	3,050,000		3,050,000
Carlton 5 MG Ground Storage Tank	2,870,000		2,870,000
Transmission and Distribution			
Regional Loop Phase 1	35,000,000	50%	17,500,000
Crossing to County System from Regional Loop	4,400,000		4,400,000
Iona to Palmer Connection	500,000		500,000
TOTAL PART 1	175,087,000		81,837,000
PART 2 - WATER SYSTEM MODIFICATIONS AND IMPROVEMENTS			
Venice Gardens Standby Generators	1,480,000		1,480,000
Venice Gardens Deep Injection Well	3,000,000		3,000,000
Carlton Treatment Facility Upgrades	520,000		520,000
University Treatment Facility Upgrades	670,000		670,000
Pump Station Modifications & Standby Power	1,390,000		1,390,000
SCADA System Upgrade	1,000,000		1,000,000
Venice Gardens Onsite Wastewater Lift Station	290,000		290,000
University Site Improvements	200,000		200,000
TOTAL PART 2	8,550,000		8,550,000
TOTAL 10-YEAR CAPITAL IMPROVEMENTS	183,600,000		90,400,000

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What is a Water Supply Master Plan and Why Do We Need One?

A quick explanation of what we're doing and why we're doing it

The Sarasota County Water Utility operates three water treatment facilities to provide water to our customers: the Carlton, University, and Venice Gardens facilities. The county's water supply includes a combination of ground and surface water sources. The county also purchases water from Manatee County and the Peace River/Manasota Regional Water Supply Authority.

Current population projections for Sarasota County indicate that new water supplies will be needed by 2018. The county has already started to develop these sources through aquifer and watershed studies. Starting early to understand the natural system needs of our estuaries and aquifers will allow us to develop supplies in concert with the needs of natural systems. In addition, the county will soon purchase more water from the Peace River Authority and decrease the amount of water purchased from Manatee County. Improvements such as pipelines and pump stations will be needed to convey this water to our distribution system.

In light of these requirements, the county commissioned a Water Supply Master Plan. This Plan defines the current water supplies and infrastructure needs in the county as well as the timing of needed improvements.

The Master Plan will compile updated water demand projections for a planning horizon through 2050. It will evaluate the existing water supply facilities and analyze the current treatment capacity of all facilities, as well as potential future capacity that may become available after system upgrades such as plant expansions, pump replacements, and additional water storage. It also identifies and evaluates potential new water supply projects and proposes a 10-year Capital Improvements Program for water supply and major transmission, pumping, and storage upgrades.



"Master planning in Sarasota County is needed for various reasons, the most important being the changing nature of our water supply system as we continue to provide high quality water to our customers. As the county's water sources change and new supplies are developed to meet growing demands, it is vital that the county develop a well-formed plan to implement water supply and transmission projects in a timely and cost-effective manner."

— Jim Ley,
Sarasota County Administrator

Planning as Part of a Region

The Sarasota County Water Utility provides water supply services to more than 200,000 residents in unincorporated areas of the county. In addition, the county is part of an evolving regional perspective with the growing presence of the Water Planning Alliance, a regional water planning group that is focused on regional efforts for sources, storage, and supply. Water does not recognize our political boundaries; therefore, we must recognize the need to plan on a larger "regional" basis. By diversifying sources, a regionalized system provides many advantages including enhanced reliability, funding partnerships, and drought tolerance.

Our Main Efforts Through 2020

Recommended projects will be implemented throughout the next 15 years to upgrade and expand existing facilities and provide new water supplies to meet the county's water needs. Additional projects will be initiated in the future to meet demands resulting from ongoing growth and required repairs and maintenance.

Small projects are continually done to maintain and upgrade existing infrastructure. These projects are done to replace outdated equipment, serve new customers, and make general facility improvements. Because these projects are part of on-going maintenance, they are not shown on this timeline.

Some projects in the timeline, such as the Dona Bay Watershed projects, may be shared with other local area entities. Partnering with regional utilities and organizations can provide a means to share project costs and produce a diverse, reliable water supply.

Expand the Carlton Wellfield and Treatment Facility to provide additional 2 mgd

Construct the University Reverse Osmosis Treatment Facility to produce about 2 mgd

2015 - 2019

2020 & Beyond



Bring Dona Bay Watershed Treatment Facility online to supply Sarasota County and other regional utilities

Expand Dona Bay Treatment Facility

The Water TIMELINE

“We will bring new sources online and complete necessary infrastructure improvements to meet our county’s future needs.”

— Dave Cash,
General Manager of Water Operations

Planning improvements with an adaptable schedule provides flexibility to respond to future changes

Expand and upgrade Venice Gardens to produce additional 2 mgd

Construct additional storage tank at the Carlton Facility

Bring Peace River expansion online to provide additional water to Sarasota County and other area utilities

2006 - 2009

2010 - 2014



Expand the Carlton Wellfield to provide additional raw water supply for 3 mgd increase in production for regional partners

Expand Carlton Pump Station capacity

Complete a major transmission pipeline to increase system reliability and accommodate growth of the water system



The Master Plan tasks included the following Technical Memoranda:

TM1 - Water Demand Projections: Updates the county’s water demand projections

TM2 - Water System Assets: Assesses existing facilities and infrastructure

TM3 - Water Supply Projects: Identifies and investigates new water supply projects

TM4 - 2050 Water Supply Scenarios: Establishes a plan to meet water demands to 2050

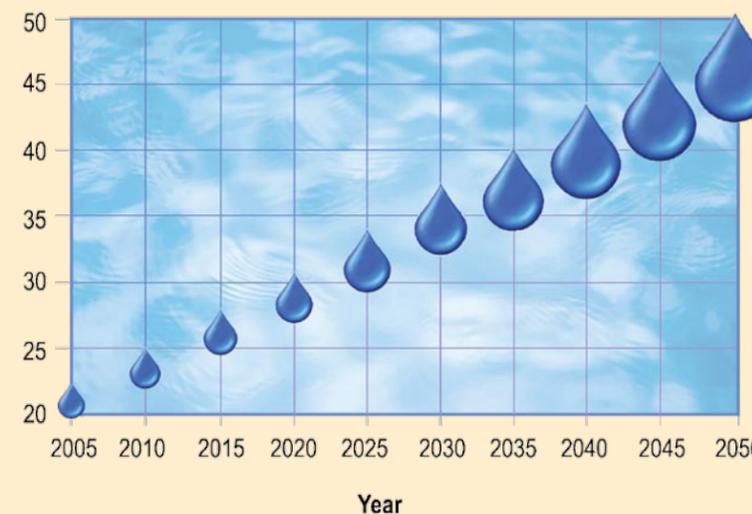
TM5 - 10-Year Capital Improvements Program: Develops a budget and timeline to complete projects

Guiding Principles

In a Regional Context

- Provide reliability in water supply treatment processes and distribution
- Optimize existing resources
- Develop new water supplies in a sustainable and environmentally beneficial manner
- Assure environmental stewardship and compliance
- Provide high quality drinking water at sufficient pressure to assure community safety for fire flow needs
- Assure financial accountability of improvements and projects

Projected Demand (million gallons per day)

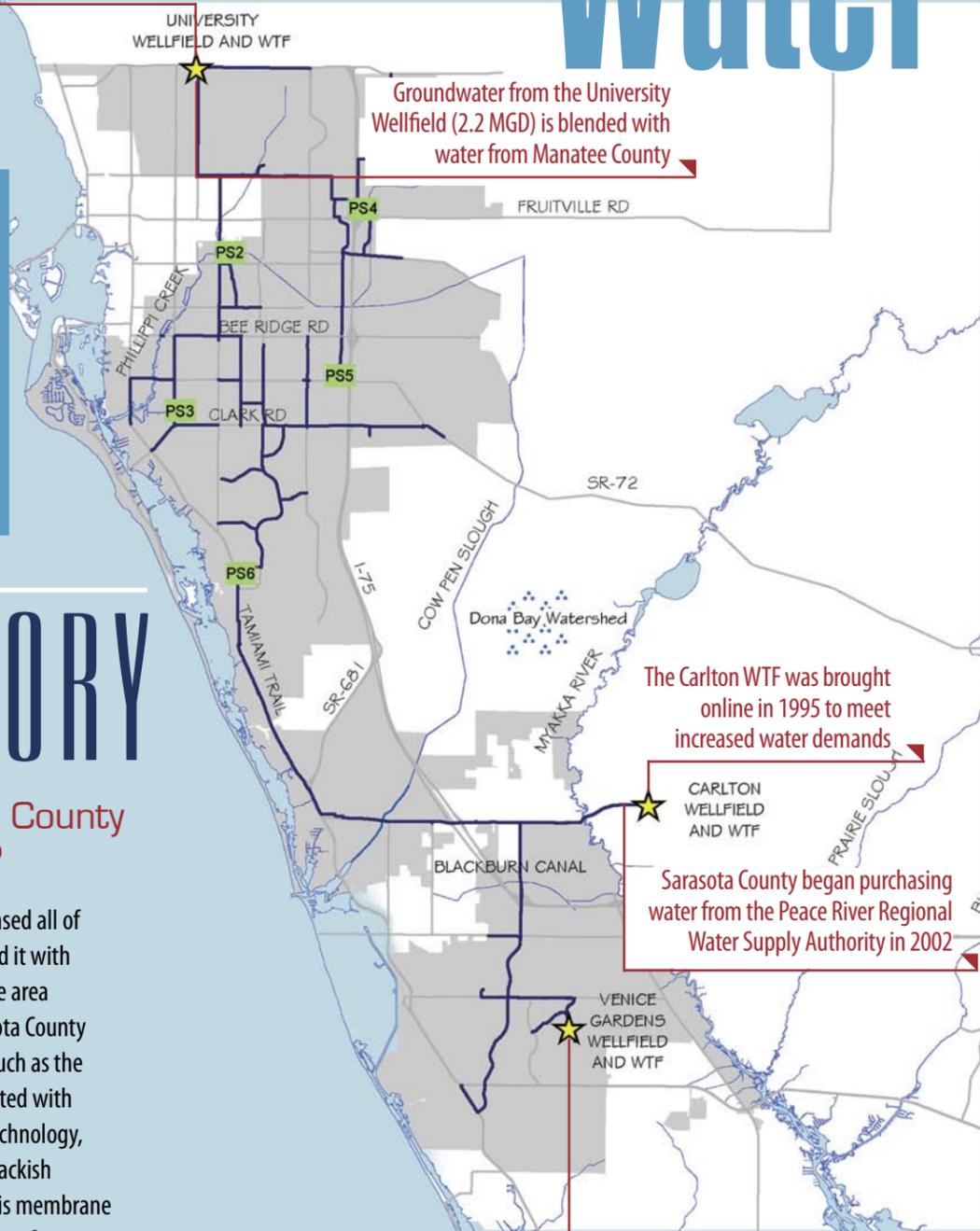


Water

Manatee County supplied all of Sarasota County's water until 1991. Manatee County still supplies about 8 MGD to the county

Who is your water provider:

- ◆ City of Sarasota?
 - ◆ City of Venice?
 - ◆ City of North Port?
 - ◆ Englewood Water District?
 - ◆ Sarasota County?
- All operate their own water facilities.



OUR HISTORY

Where does Sarasota County get its drinking water?

Sarasota County Utilities historically purchased all of its water from Manatee County and blended it with water from the University Wellfields. As the area grew and water demands increased, Sarasota County began developing its own water supplies such as the Carlton Reserve, a groundwater source treated with electro dialysis reversal (EDR) membrane technology, and the Venice Gardens Wellfield, where brackish groundwater is treated with reverse osmosis membrane technology. The county also purchases some of its water from the Peace River/Manasota Regional Water Supply Authority. Our current water system is comprised of:

- Five water sources
- Three water treatment facilities
- Five pump stations
- Twenty-six million gallons of storage

GLOSSARY

WTF = Water Treatment Facility
MGD = Million Gallons per Day
PS = Pump Station
MG = Million Gallons

The Venice Gardens WTF was upgraded in 2002 and supplies a small quantity of water to the southern portion of the system

The Carlton WTF was brought online in 1995 to meet increased water demands

Sarasota County began purchasing water from the Peace River Regional Water Supply Authority in 2002

IRRVATION Helps



A person can live about a month without food, but only about a week without water.

More than 50% of our water is used for irrigation. Learn more about Florida-friendly landscaping by contacting the Extension Service at 861.5000 and asking for landscaping advice.

What can we do to conserve water?

- ◆ Retrofit water-wasting fixtures by installing low-flow showerheads and replacing high-flow toilets with ones that use 1.6 gallons or less per flush.
- ◆ When shopping for a new clothes washer consider a front-loading model which uses about 50 percent less water per load.
- ◆ Know your landscape irrigation day and don't water if the landscape doesn't need it.
- ◆ Check your automatic sprinkler shut-off device to ensure it is working properly and does not water during rain events.
- ◆ Visit the Florida House to see indoor and outdoor water-conserving measures at work. Call 861.5000 for hours for tours and classes.

"In the end, we will conserve only what we love; we will love only what we understand; and we will understand only what we have been taught."

— Baba Dioum, Senegalese environmentalist

What is Water Conservation?

Conservation simply means reducing the demand for drinking water.

To encourage the most efficient use of drinking water, Sarasota County first implemented conservation programs more than 12 years ago with a strategy that combines education, regulation, and implementation. Our community embraced the conservation ethic, and daily demand for water dropped from 150 gallons per person per day in 1992 to fewer than 90 gallons per person today! This is one of the lowest per capita use rates in the state of Florida.

Education and Outreach

Programs including media advertising, brochures, speaking engagements, and workshops for residents and teachers have combined to significantly reduce water use in Sarasota County. Teaching residents to use Florida-friendly landscaping and water conservation principles results in saving almost 625 million gallons of water every year.

In partnership with the Southwest Florida Water Management District and other regional utilities, an outreach program with hotel and motel housekeeping staff is underway. By guests choosing not to have their linens washed every day, the average 100-room hotel can save up to 30 percent of its laundry costs per year.

Regulation

Sarasota County has implemented building codes and ordinances that promote conservation. An innovative Sarasota landscape ordinance became effective in January 2002 that applies to all landscapes in new construction with central irrigation systems. The ordinance focuses on two elements: irrigation system efficiency and plant selections that require little supplemental irrigation.

Another ordinance requires low-flow toilets and showerheads in all new construction and requires the installation of automatic rain shut-off devices on all central irrigation systems. To ensure that existing homes and businesses also adopt water-efficient practices, the county offered rebates on the installation of low-flow toilets. More than 10,000 were replaced, saving an estimated 100 million gallons a year. Through the showerhead exchange program, a similar number of old water-wasting showerheads were replaced with more efficient models.

Implementation

Through its water conservation rate structure, Sarasota County introduced a simple concept – the more you use, the more you pay. Because of this tiered rate structure, customers who practice good conservation can – and do – save money on their water bills.

Since 2000 Sarasota County has maintained one-day-a-week landscape water restrictions with no apparent degradation of landscapes.

Indoor and outdoor water conservation principles have been incorporated in new county facilities where they serve as working demonstrations for visitors every day.

“To me, conservation is important, not only because saving water is good for the environment, but also because it saves us all money.”

– Jo Hanson,
Water and Sewer Advisory Council Chair

How CONSERVATION

Water Facts

did you know...

- Only 1% of the Earth's water is drinkable. About 97% is salt water.
- A dripping faucet can waste more than 25 gallons of water a day or about 9,000 gallons per year.

System

OUR FUTURE

A discussion of our water supply challenges and what we are doing to address them

Sarasota County's water system covers a large distribution area with several water sources, which presents the county with a very reliable system, but also a number of delivery and water quality challenges. The system has grown substantially in the past 20 years and will continue to be expanded and upgraded to meet future population growth and comply with increasingly stringent future regulations. Some of the key challenges faced by the county include the following:

- **Changing use** – The distribution strategy has changed in the past 10 to 15 years. Historically, all water was purchased from Manatee County and pumped south. Over the past 10 years, new supplies in the south have been brought online, reversing the distribution water flow direction. Several of our older pump stations are essentially “facing the wrong way,” making them under-utilized assets.
- **Blending** – The county currently blends water from five water sources. Blending different types of water can cause water quality issues such as poor taste and odors, corrosion, and improper pH.
- **Steady growth** – Our population expansion has required a new raw water supply development. There are significant challenges in balancing supply sustainability and the environment.

Sarasota County is addressing these challenges by:

- **Developing a Master Plan and updating it on a regular basis.**
- **Upgrading existing infrastructure to best utilize existing assets.**
- **Creating a balance of groundwater and surface water for a reliable water supply.**
- **Adding new facilities and pipelines to accommodate change.**

- **Few large transmission mains** – The nature of the water system's expansion means there are very few large diameter transmission mains. Instead, the system is made up of numerous small- to medium-sized distribution pipes, resulting in low pressures in some areas of the system.
- **Large distribution area with many “dead-end” pipes** – As water travels through the distribution system, it is pulled off for use in various locations. In areas where the pipes are oversized, they can carry too much water. In addition, at the low-demand ends of the distribution system, water is not used up fast enough, creating “old water” quality concerns.

- **Refurbishment and Replacement** – As our distribution system ages, equipment and treatment facilities must be updated or replaced.
- **Storage** – Surface water supplies can be susceptible to drought, requiring large surface water storage reservoirs or backup groundwater sources during dry months/years.
- **Emergency Supplies** – Reliable backup supplies are needed for emergencies such as hurricanes. Emergency supplies in Sarasota County are brought in through interconnects with utilities such as Manatee County, the City of Sarasota, the Peace River Authority, and the City of Venice. These must be preserved and maintained in case of natural or other disasters.



Recommended Projects

The watershed approach and how we blend different supplies to create a sustainable system.

SUPPLY

Sarasota County Supplies Current and Future

- Peace River Authority
- Manatee County
- Carlton Facility
- University Facility
- Venice Gardens Facility
- Dona Bay

TOTAL SUPPLIES about 40 mgd

2020 Average demand about 29 mgd

This mix of water supplies provides a very reliable system that will meet Sarasota County's water demands well into the future.

What have we done to our estuaries?

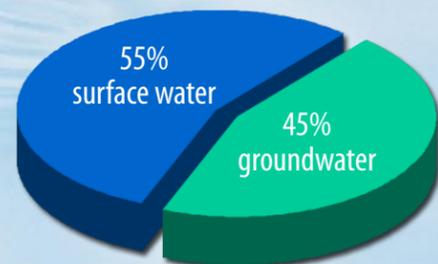
Years ago, when the focus of the county was to make the land suitable for agriculture and to control mosquitoes, several large channelization projects were completed to make drainage more efficient. At the time, the projects were essential to protect homeowners and farmers from flooding. The effect of these projects was a substantial increase in volume and the alteration of timing of flow to the estuaries. The volume and timing of freshwater flow is critical to the estuaries to assure that the proper mix of fresh and salt water occurs as juvenile fish look for specific salinity levels at different times of their lives.

We have opportunities to restore a more natural freshwater flow to the estuaries through storing water in the watershed

and releasing water to the estuary as it is needed. Because of the efficiency of the drainage system, we can capture substantial amounts of water for use within our own water supply system, while still allowing enough water flow to the estuary to sustain the ecosystem. This potential to simultaneously restore estuary health and wetlands, while developing water supply, is the premise behind watershed management: balancing the water needs of people and nature.

Due to the channelization of Cow Pen Slough and Blackburn Canal, the Dona and Roberts Bay estuaries both receive substantially more water now than they once did. By storing water within the watershed and utilizing it for water supply, as well as pairing the surface water with the groundwater supply at the Carlton Facility, we help achieve a strong, drought-resistant water supply.

Finding the Right Mix



A combination of both groundwater and surface water provides a drought-resistant, reliable supply without overstressing aquifers. With the completion of the projects recommended in the Master Plan, the county's 2020 water supply will be approximately 45 percent groundwater and 55 percent surface water.

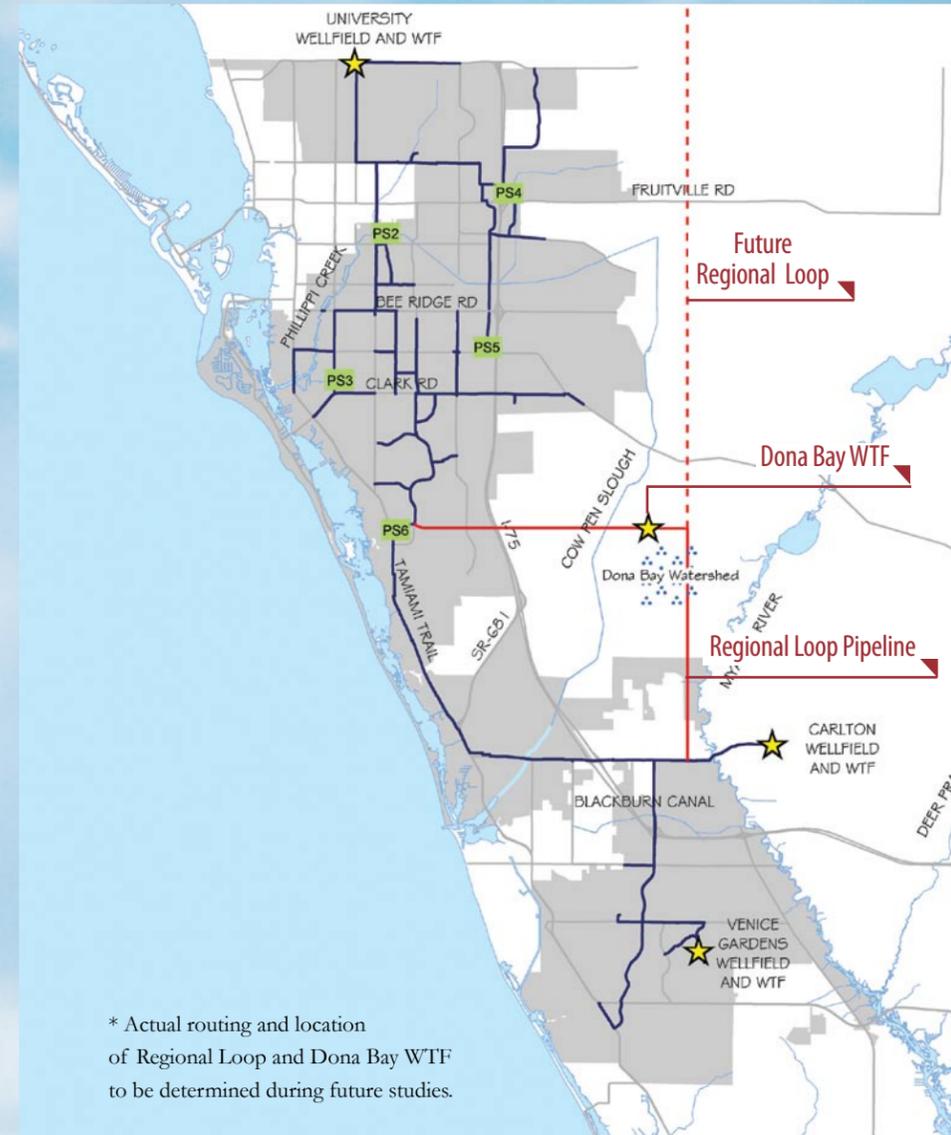
The Regional Loop will be the basis of an integrated regional water system in the future, connecting supplies all the way from Manatee to Charlotte Counties.

TRANSMISSION

The Master Plan project included hydraulic modeling of the water distribution system to simulate how water moves through the miles of distribution pipes from the treatment plants to your homes. Computer modeling is an excellent tool to look at "what if" scenarios in the future and to determine which areas may need more pipes, bigger pipes, or pump stations to boost system pressure.

Many scenarios of different pipelines and pump stations were analyzed to determine their ability to meet the anticipated future conditions of the distribution system. During this evaluation, it was determined that one pipeline in particular - the "Regional Loop" - was critical in maintaining normal water pressure in the distribution system in the future, especially during times of high water demand or fire flow. The construction of this pipeline is expected to greatly improve the water pressure in the northern part of the distribution system and provide an acceptable water pressure to all county residents. Other pipeline projects were identified during the modeling analysis, and they will be constructed as needed farther into the future to continue to provide system reliability, improve water quality, and maintain ample water pressure for all customers.

The Regional Loop will also be the basis of an integrated regional water system in the future, connecting supplies all the way from Manatee to Charlotte Counties. This portion of the Regional Loop will not only provide an essential backbone to Sarasota County's distribution infrastructure, but will also will enhance the reliability of the regional water system as a whole.



* Actual routing and location of Regional Loop and Dona Bay WTF to be determined during future studies.

Expanding our network of water distribution pipes will increase the reliability of our system.