

# 2017 Lower West Coast Water Supply Plan Update

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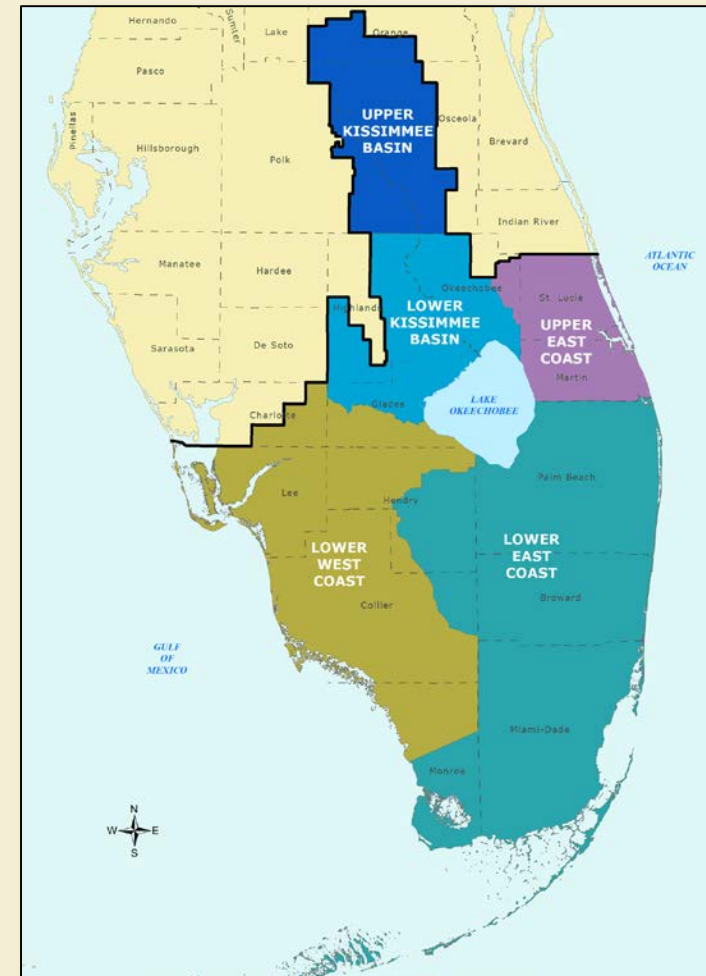
Stakeholder Workshop #3  
August 30, 2017

# Overview

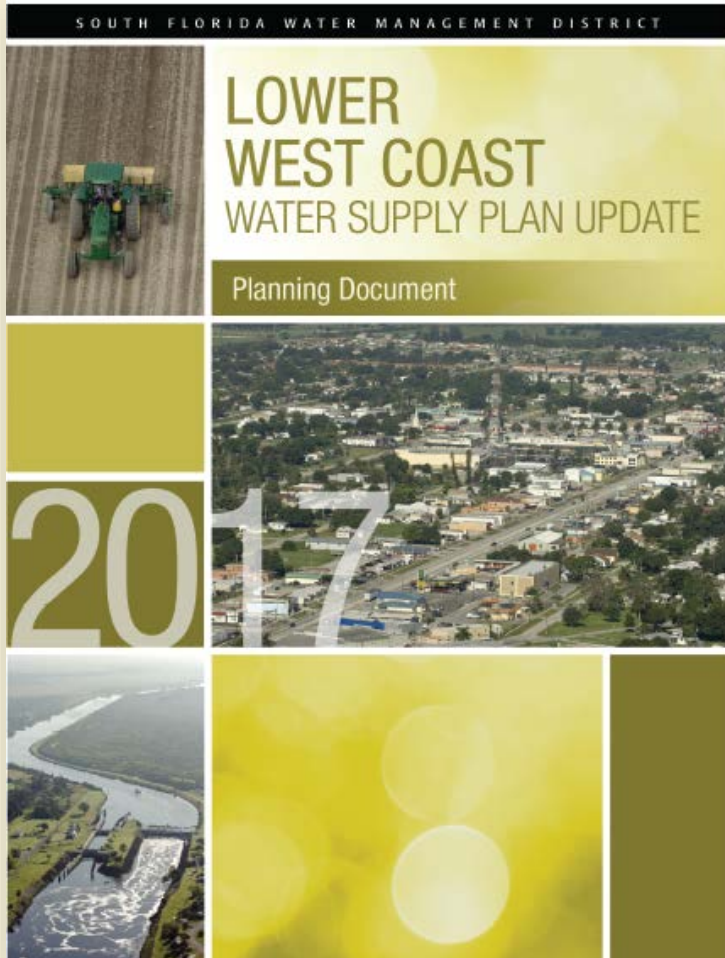
- **Opening Remarks**
- **Introduction to the 2017 LWC Water Supply Plan Update**
  - Population and Demand Projections
  - Resource Protections
  - Water Source Options
  - Water Resource and Supply Development Projects
  - Conclusions and Future Direction
- **Next Steps**

# Water Supply Plan Requirements

- **20-year planning period**
- **Demand estimates and projections**
- **Resource analyses**
- **Issues identification**
- **Evaluation of water source options**
- **Water resource development**
  - Responsibility of water management
- **Water supply development**
  - Responsibility of water users
- **Minimum Flows and Minimum Water Levels**
  - Recovery and prevention strategies



# Public Participation



- **Water Resources Advisory Commission (WRAC)**
- **Governing Board updates**
- **Three stakeholder workshops**
- **Meetings held with local government, agricultural, and utility representatives**
- **Draft LWC documents distributed/posted on August 18**
- ***Comments due back October 5***



# Goal of Water Supply Plans

*To identify sufficient water supply sources and future projects to meet existing and future reasonable-beneficial uses during 1-in-10 year drought conditions through 2040 while sustaining water resources and related natural systems.*



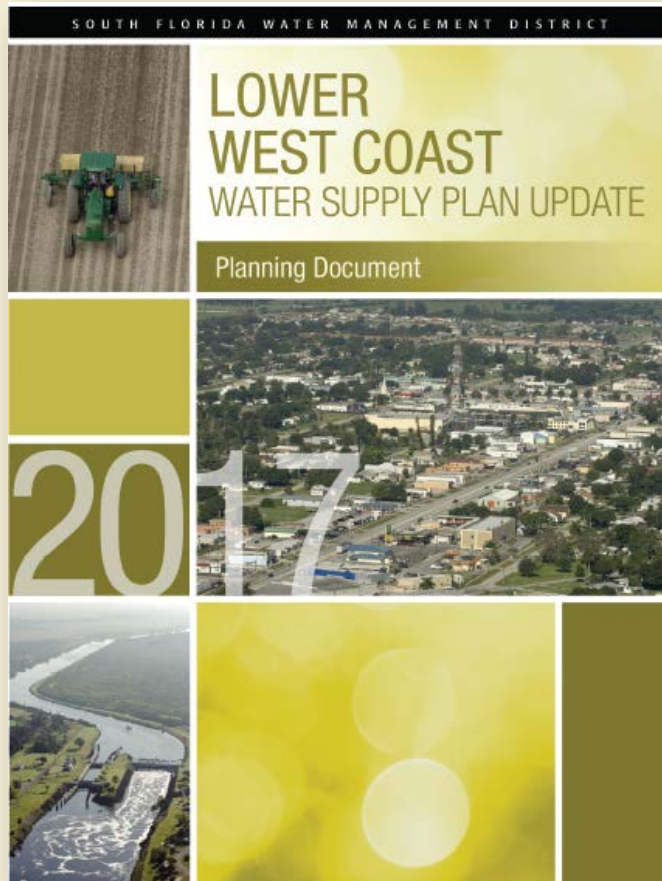
# Regional and Local Planning Linkage

- **After the District Governing Board approves the water supply plan update:**
  - All local governments must amend their Comprehensive Plan to incorporate a Water Supply Facilities Work Plan within 18 months of the plan update's approval
    - If plan update approved in November 2017, Work Plans will be due in May 2019
  - Utilities identify the projects to be developed
  - Utility annual progress reports
    - District automated WaSUP database – due annually in November

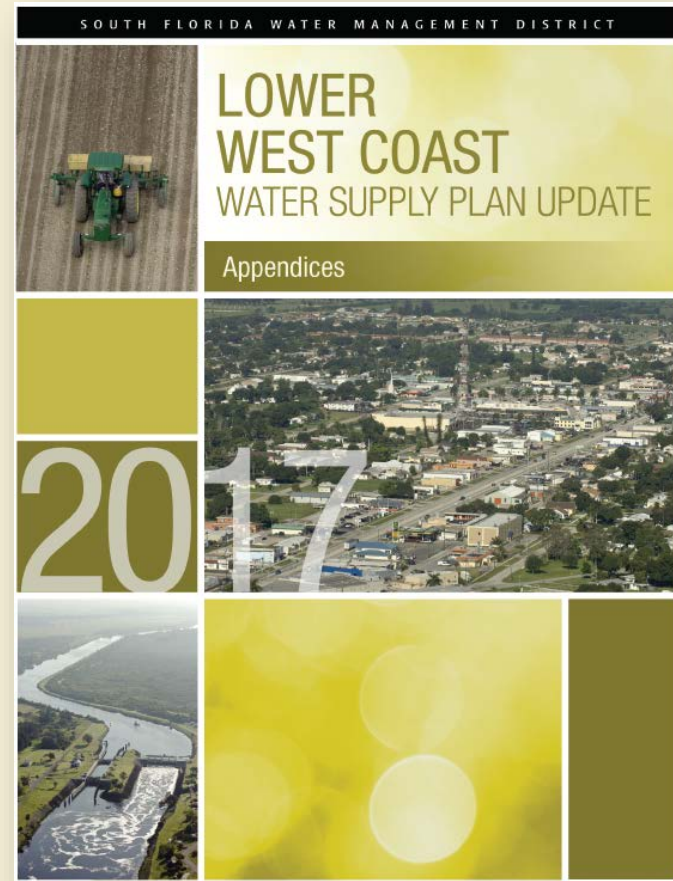


# 2017 Lower West Coast Water Supply Plan Update Documents

## Planning Document



## Appendices



Note: A support document is available also.

# Objectives of this Plan Update

- **Water Supply**
- **Natural Systems**
- **Estuarine and Riverine Systems**
- **Conservation**
- **Linkage with Local Governments**
- **Compatibility and Linkage with Other Efforts**
- **Use of Floridan Aquifer System**



# Planning Document Outline

- **Executive Summary**
- **Chapter 1:** Introduction
- **Chapter 2:** Demand Estimates and Projections
- **Chapter 3:** Demand Management: Water Conservation
- **Chapter 4:** Water Resource Protection
- **Chapter 5:** Water Source Options
- **Chapter 6:** Water Resource Issues and Analysis
- **Chapter 7:** Water Resource Development Projects
- **Chapter 8:** Water Supply Development Projects
- **Chapter 9:** Future Direction

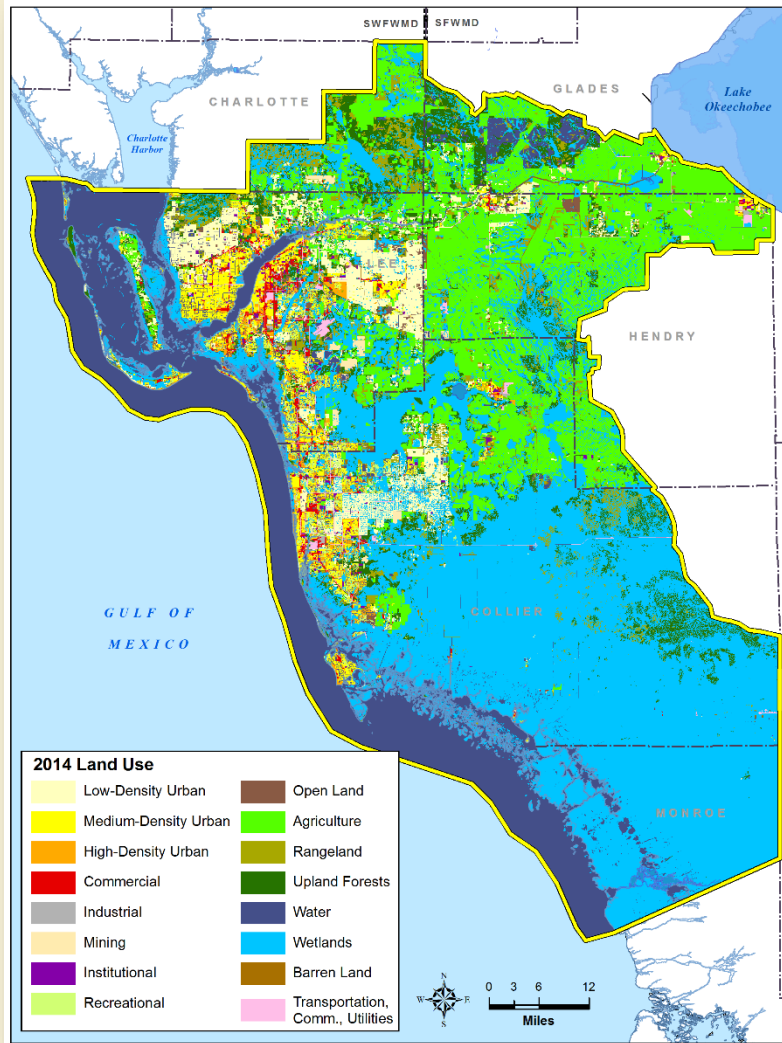
# Lower West Coast Planning Area

- Includes Collier, Lee, and portions of Charlotte, Glades, Hendry, and Monroe counties
- Population
  - 2014 1,031,924 residents
  - 2040 1,632,168 residents

*58% increase*
- Major agricultural industry
- Significant environmental features

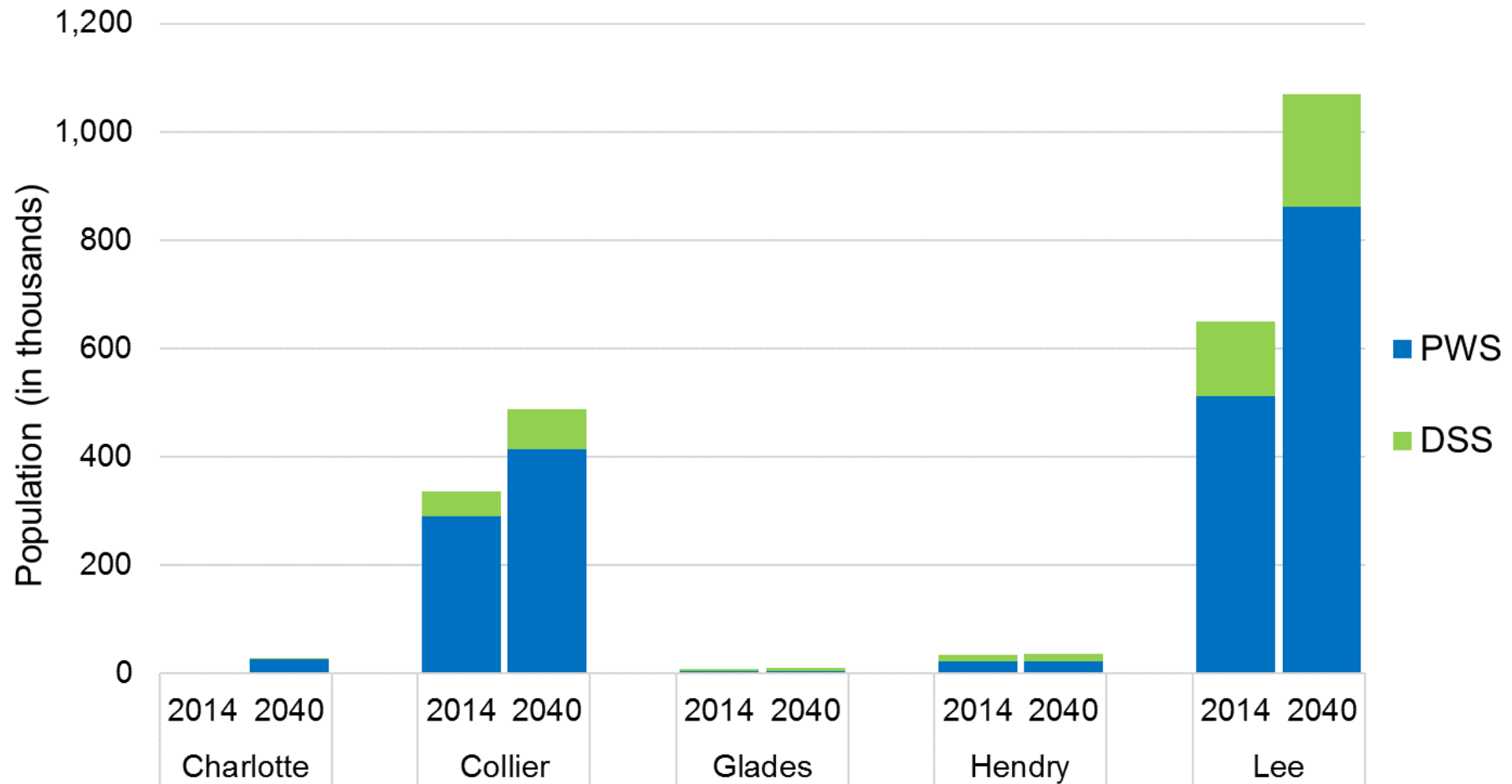


# Land Use



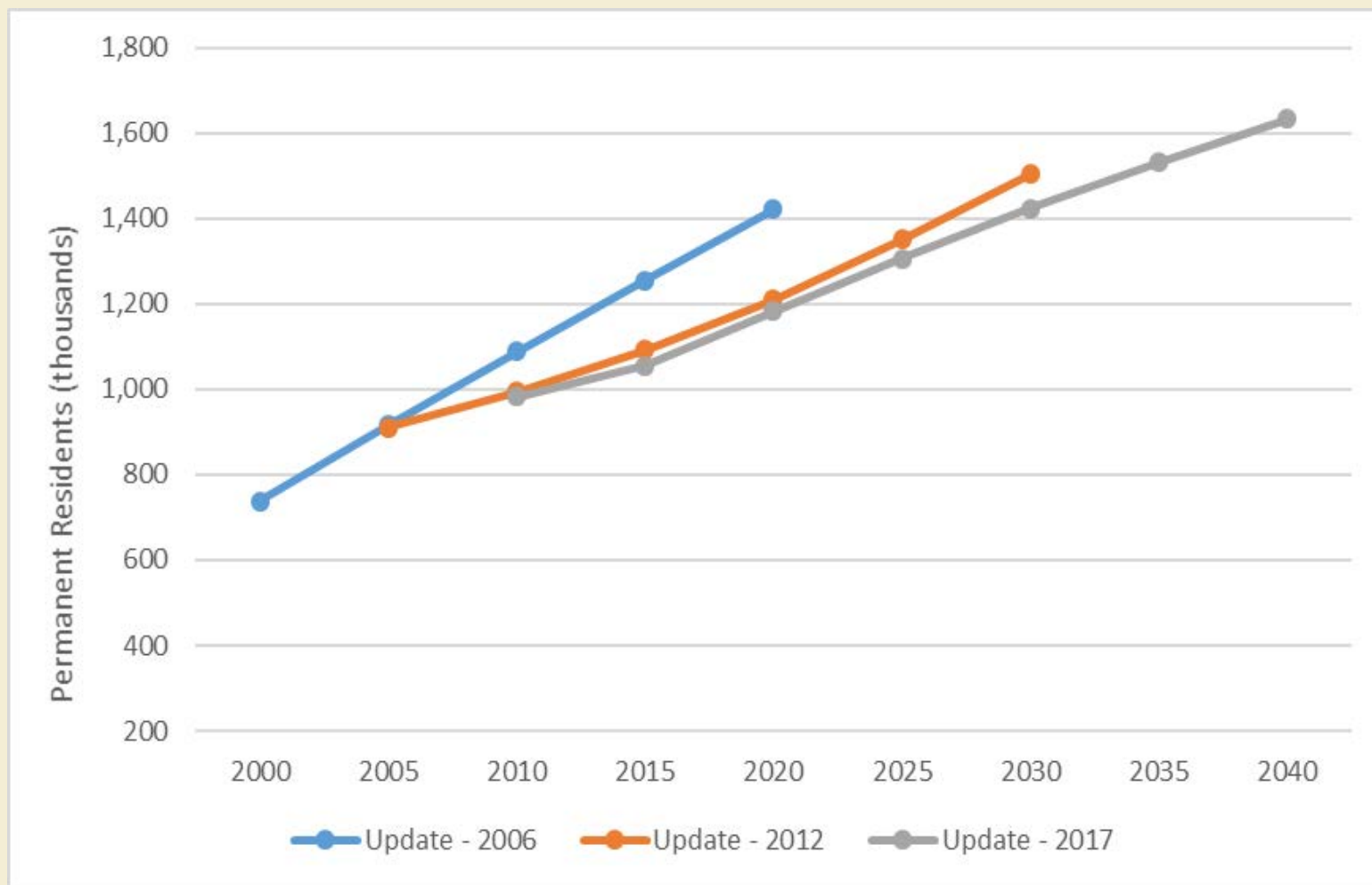
- **Glades, Hendry, and Charlotte counties**
  - Primarily agricultural land
- **Monroe County**
  - Wetlands
- **Collier County**
  - Mix of wetlands, agricultural, and urban land
- **Lee County**
  - Primarily urban

# Population Projections

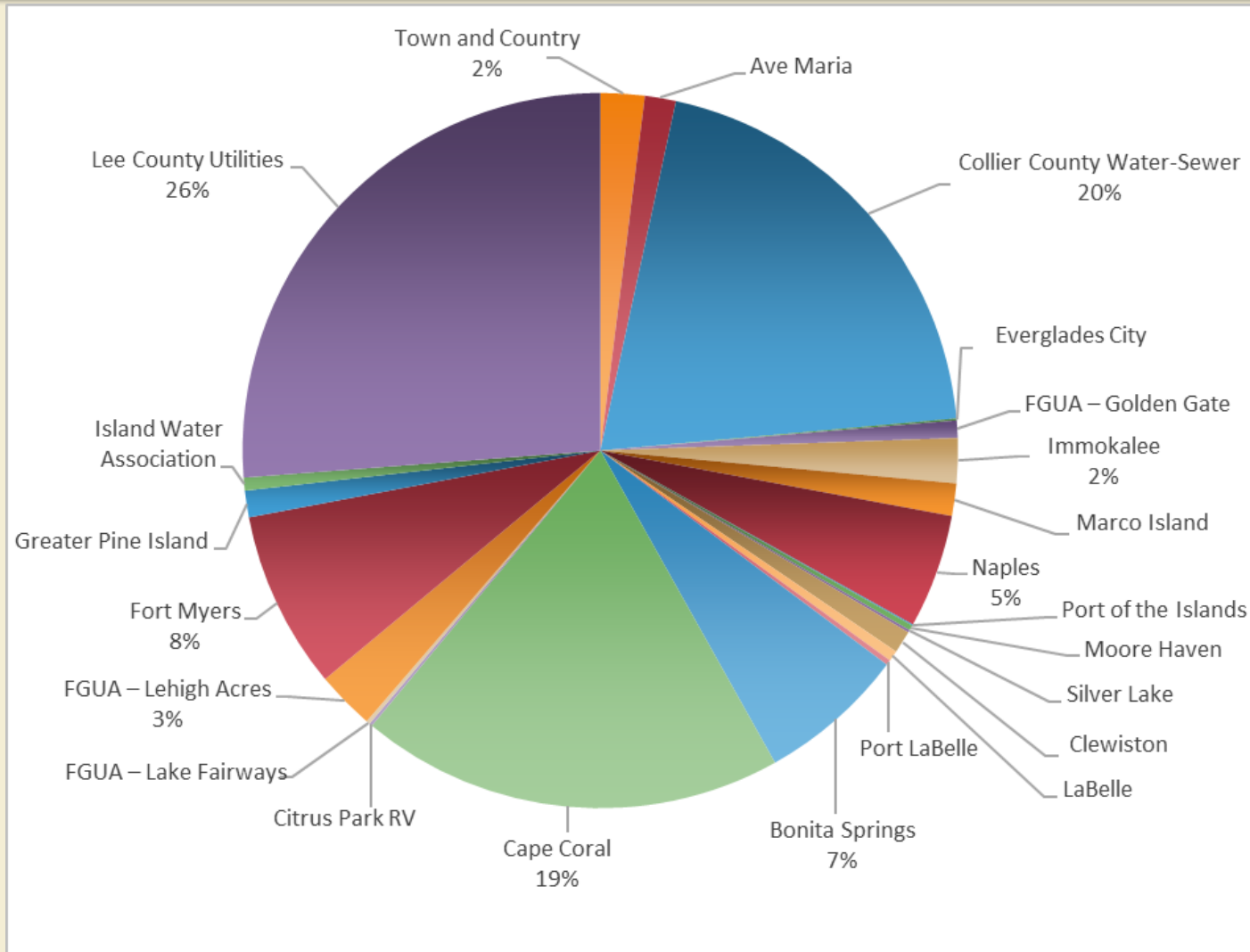




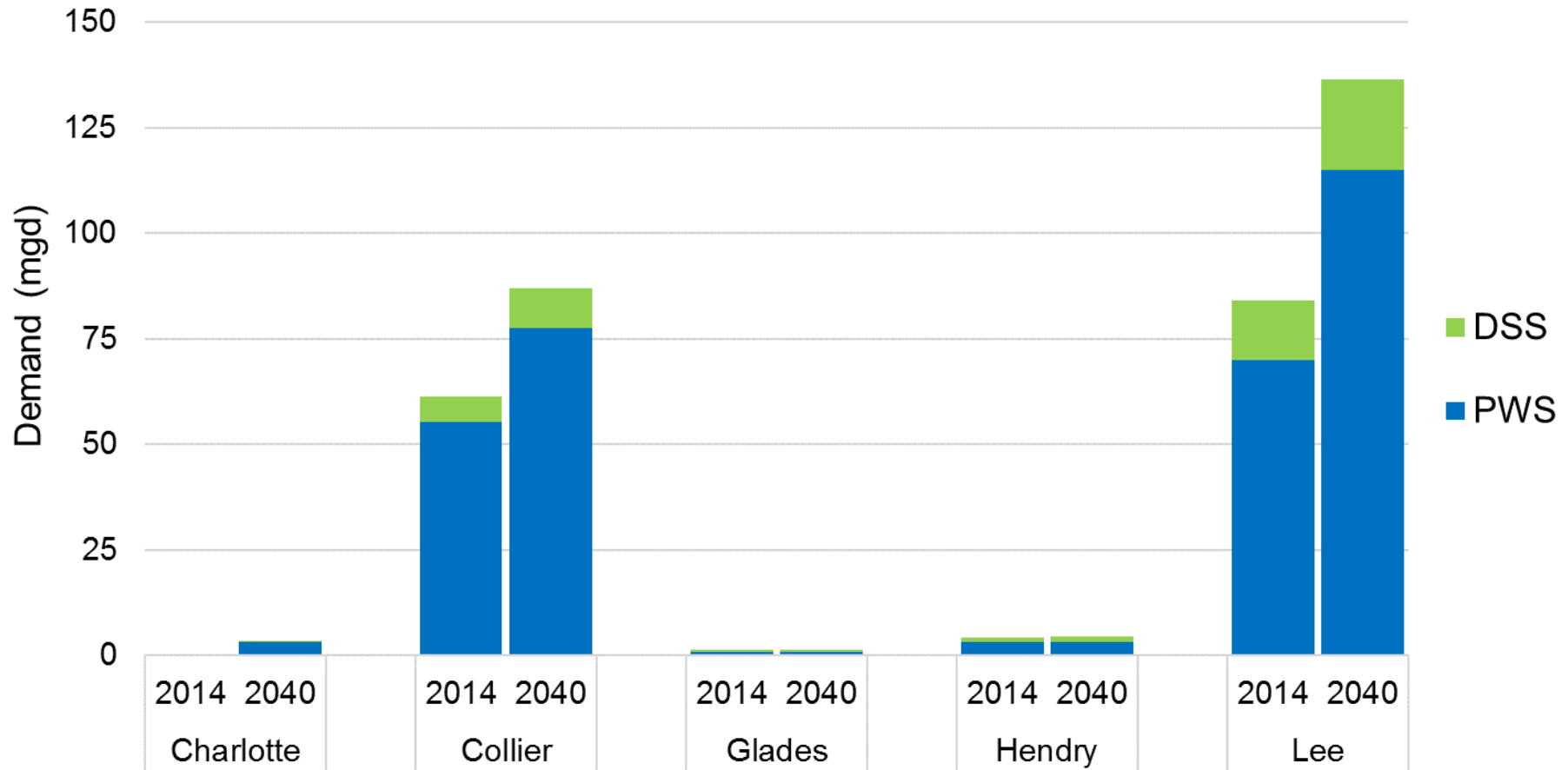
# Population Projection Comparison



# 2040 Population Served by Utilities

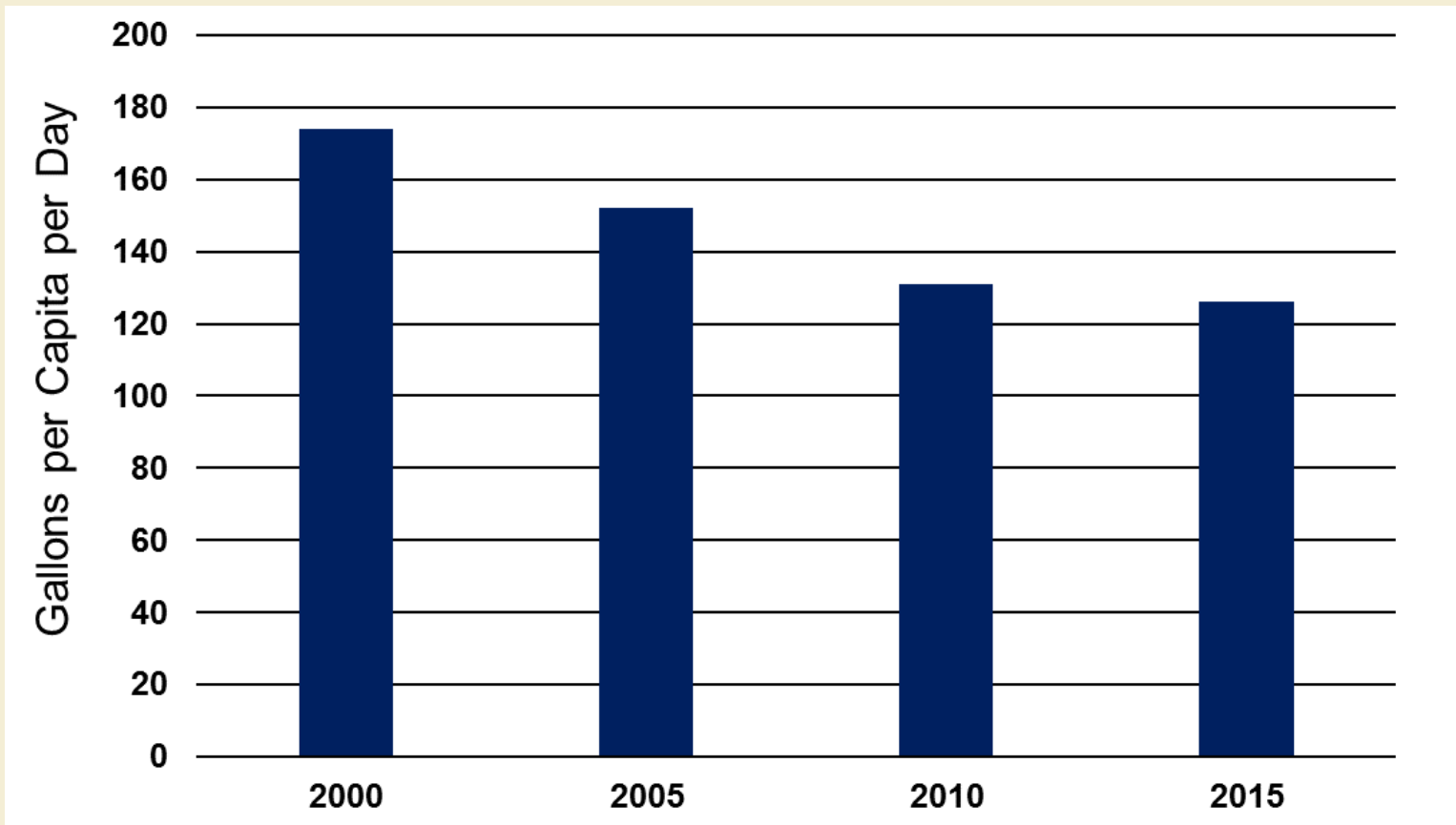


# PWS and DSS Demand Projections



# Water Conservation

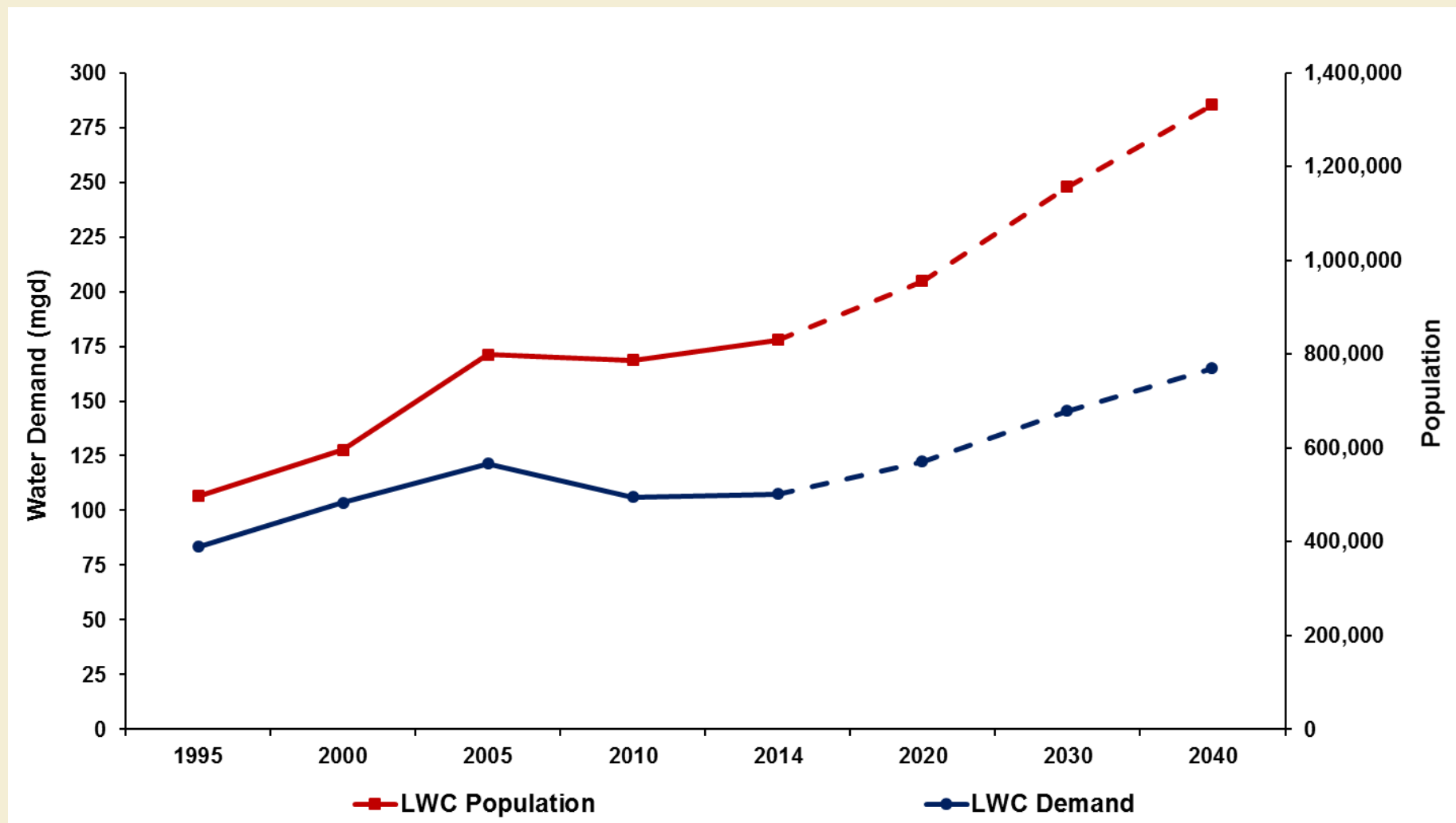
## ➤ LWC finished water (PWS) per capita use rate



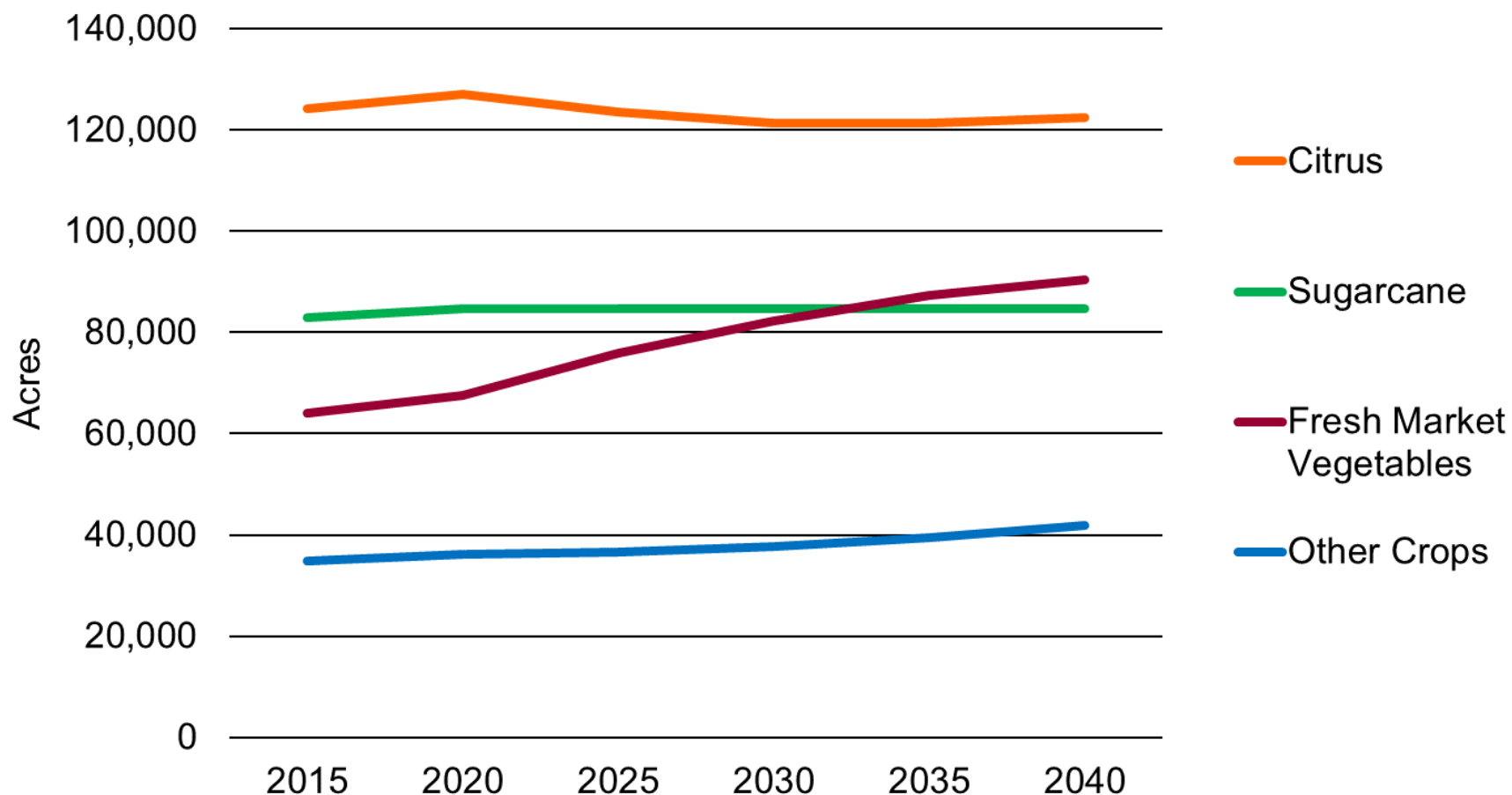
*The cheapest gallon of water is the gallon we don't use*



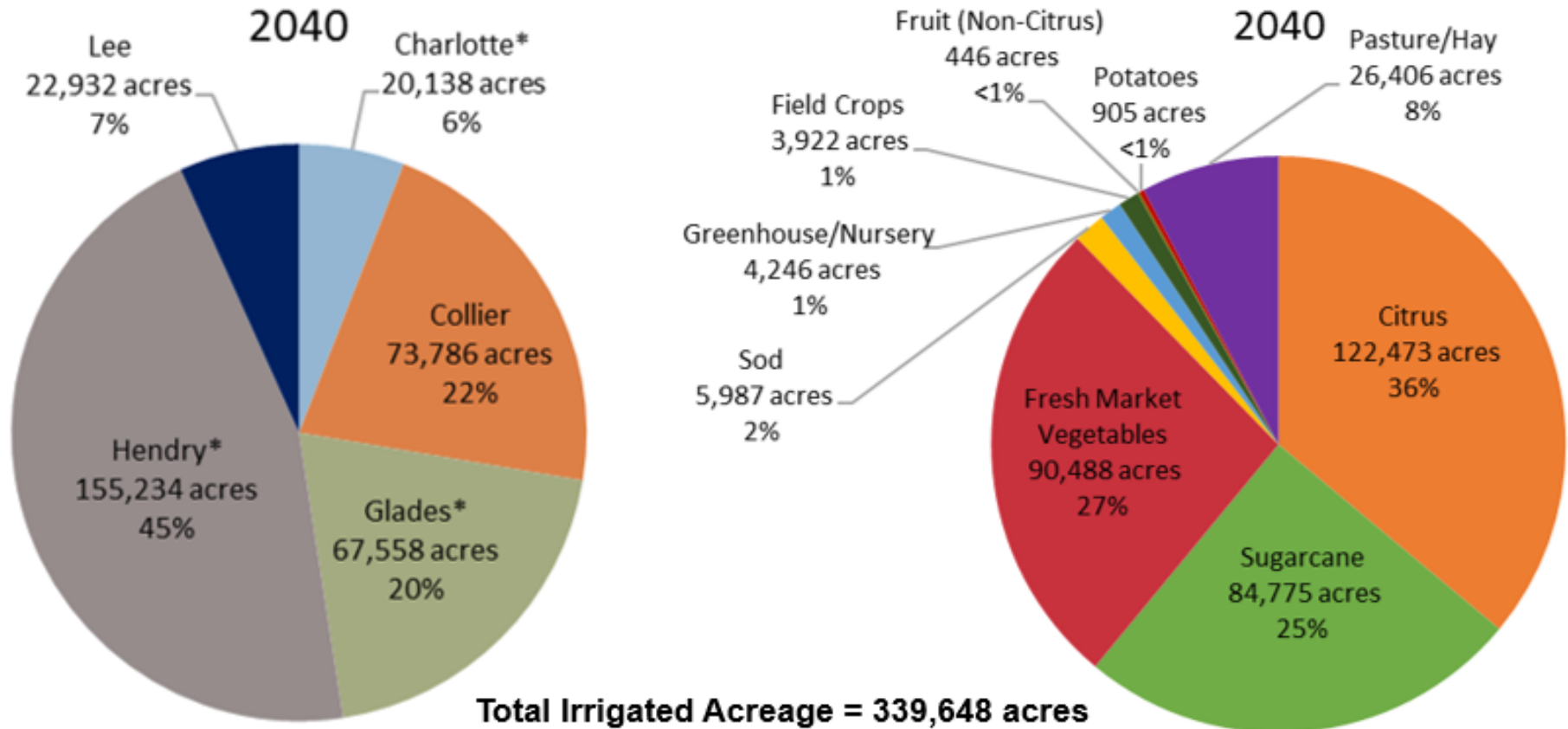
# Historical PWS Populations and Finished Water Demands



# Agricultural Acreage (FSAID III)



# 2040 Agricultural Acreage



Note: Acreages are estimated from the FSAID III report.

\* Values listed for Charlotte, Glades, and Hendry counties are only for the areas within the LWC Planning Area.

# Agricultural Demand Summary

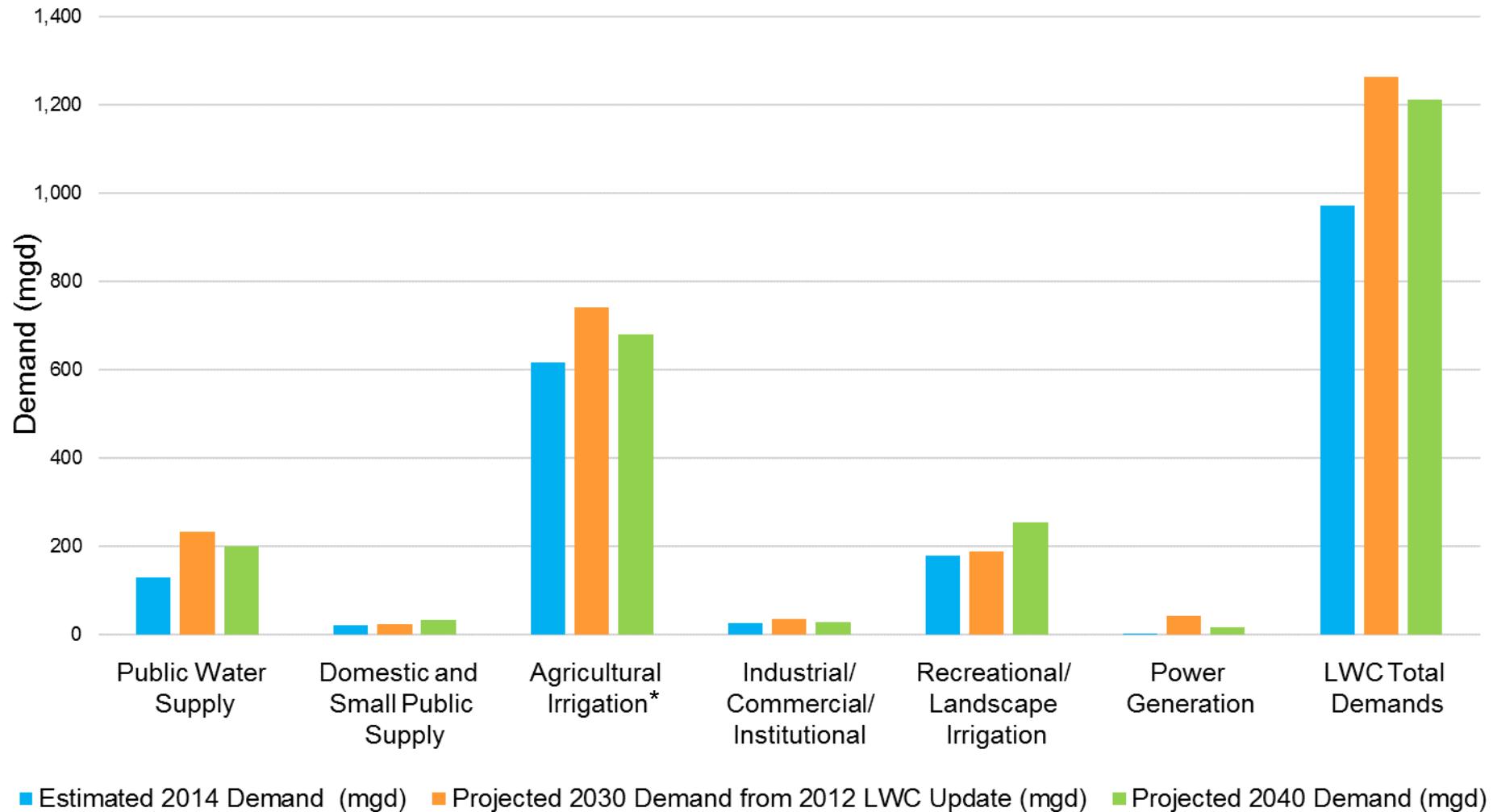
Crop Type	2014		2040	
	Acres	Demand (mgd)	Acres	Demand (mgd)
Citrus	124,319	195.74	122,473	194.88
Sugarcane	82,959	210.04	84,775	214.18
Fresh Market Vegetables	63,967	130.02	90,488	174.49
Other Crops*	34,874	79.95	41,912	95.28
<b>Total</b>	<b>306,119</b>	<b>615.75</b>	<b>339,648</b>	<b>678.83</b>

\* Other crops includes sod, greenhouse/nursery, field crops, fruit (non-citrus), potatoes, pasture/hay, and livestock (demand only).

mgd = million gallons per day.



# Gross Demand Projections



\*Does not account for return flow.

# Comparison with Previous Projections

- **2040 demands are projected to be lower than the 2030 demands projected in the last plan update.**

Water Use Category	2012 LWC Plan Update 2030 Demand (mgd)	2017 LWC Plan Update 2040 Demand (mgd)	Percent Difference
PWS	232.1	199.88	-14%
DSS	24.0	33.18	38%
AGR	695.9 to 740.9	678.83	-3% to -8%
PWR	42.1	15.40	-63%
REC	188.5	254.32	35%
ICI	35.3	29.07	-18%
<b>Total</b>	<b>1,217.9 to 1,262.9</b>	<b>1,210.52</b>	<b>-1% to -4%</b>

# Water Supply Issues

- **Limited opportunity to increase surficial and intermediate aquifer use**
- **Surface water availability (storage) is limited**
  - Lake Okeechobee Regulation Schedule (LORS 2008)
  - LOSA Restricted Allocation Rule
- **Fresh water discharges are affecting the health of coastal resources**
- **Fresh water sources alone are inadequate to meet water needs**
- **Long-term sustainability of brackish water sources**



# Regulatory Protection of Water Resources



- **Water use permitting**
- **Minimum Flows and Minimum Water Levels (MFLs)**
- **Water Reservations**
- **Water Shortage**
- **Restricted Allocation Areas**
- **Monitoring Programs**



# Water Resource Protections

## ➤ Water Reservations

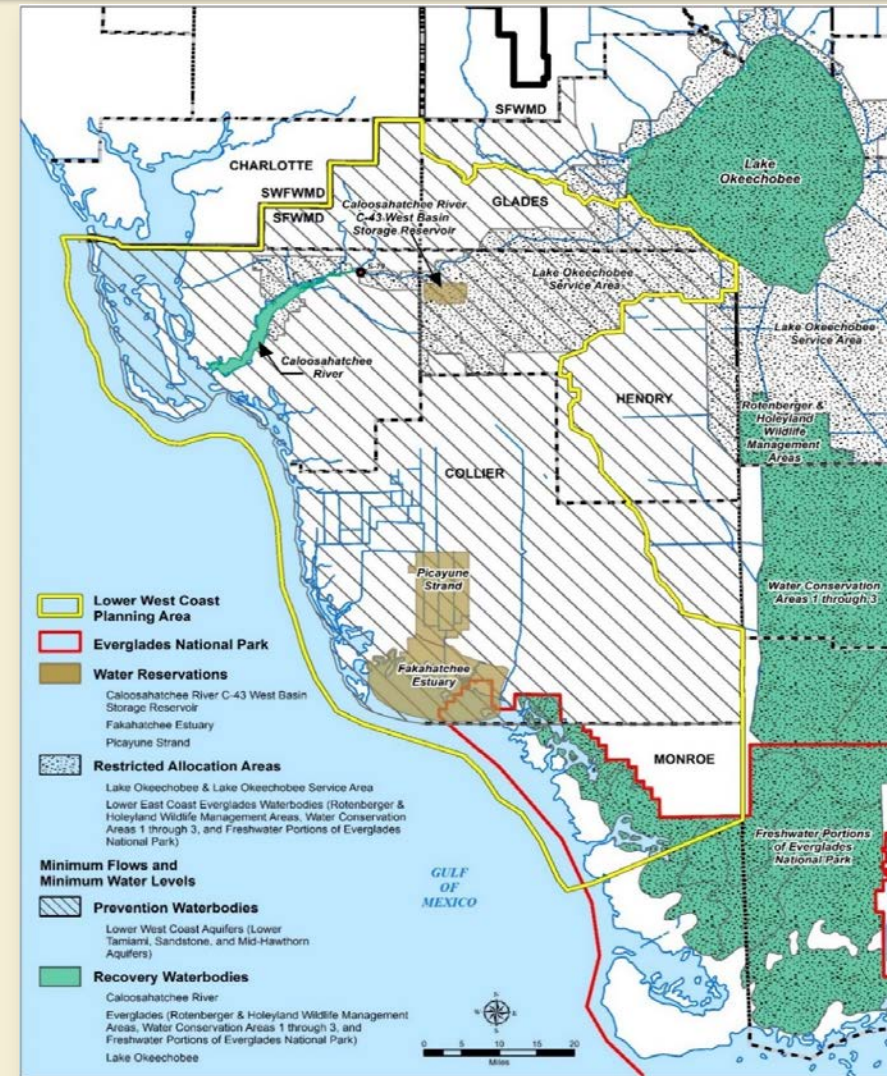
- C-43 West Basin Reservoir
- Fakahatchee Estuary
- Picayune Strand

## ➤ Minimum Flows and Minimum Water Levels

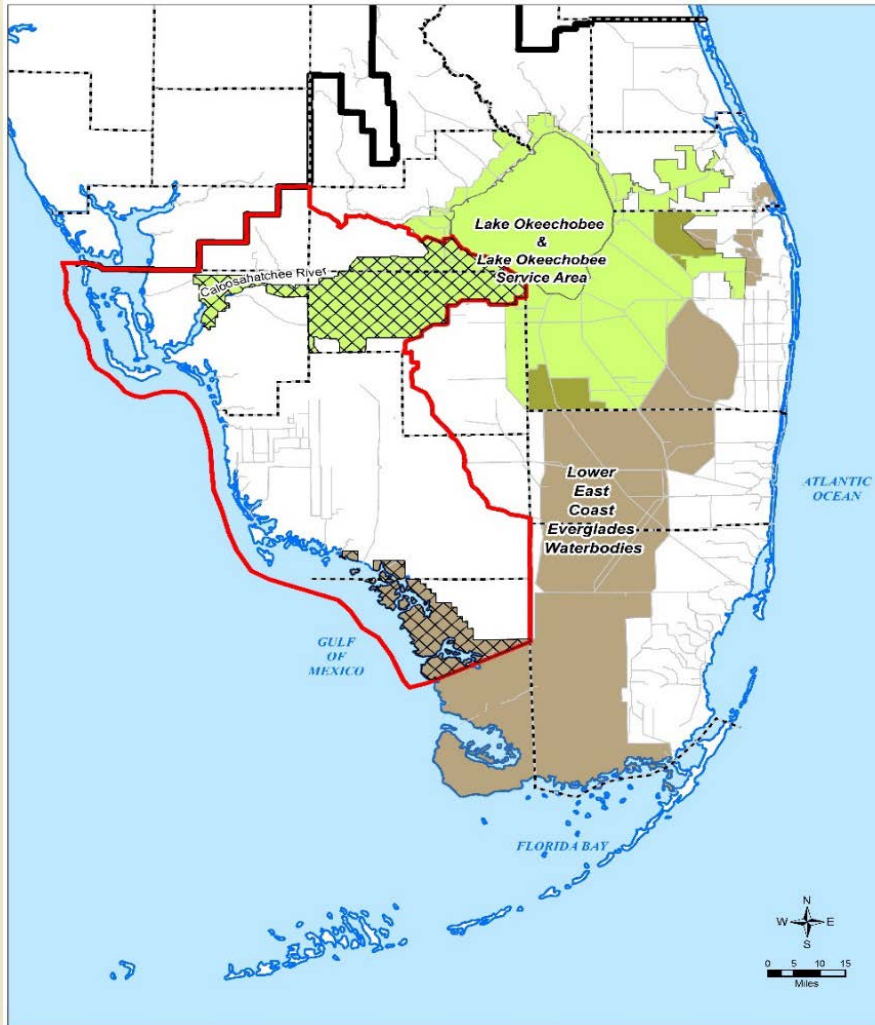
- Lower West Coast Aquifers
- Caloosahatchee River
- Everglades
- Lake Okeechobee

## ➤ Restricted Allocation Areas

- Lake Okeechobee Service Area



# Lake Okeechobee Service Area

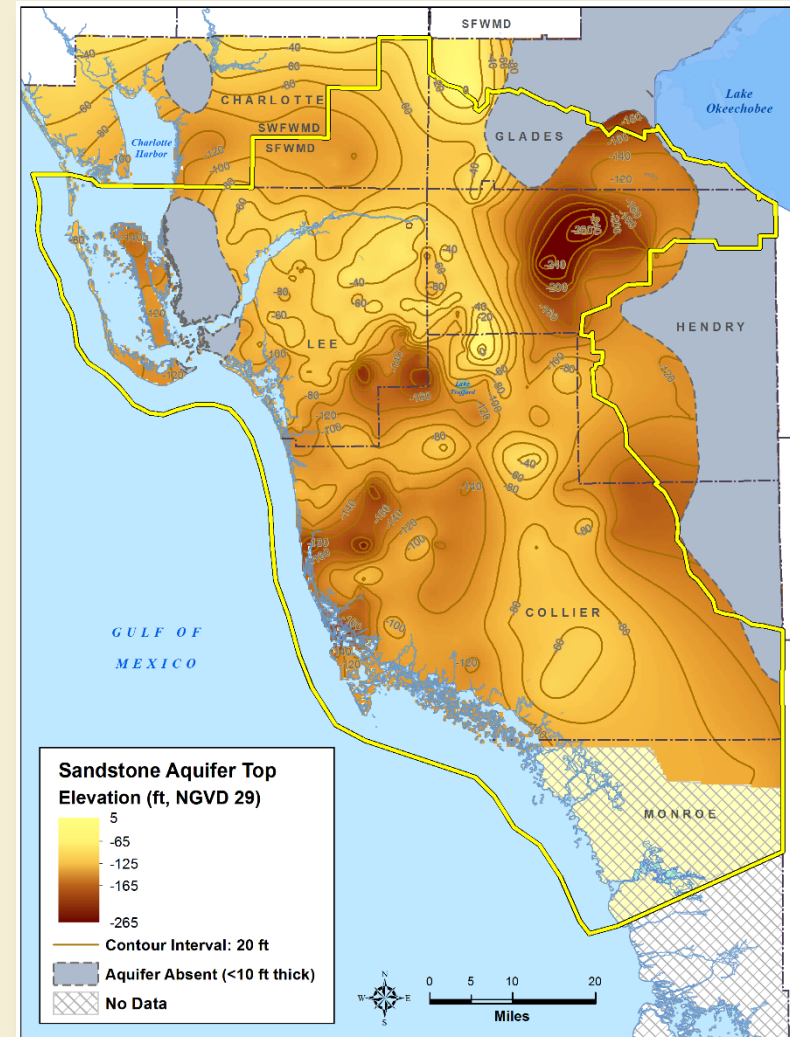


## ➤ Lake Okeechobee and Lake Okeechobee Service Area

- Surface water allocations are limited to base condition water uses that occurred between April 1, 2001 and January 1, 2008
- 1-in-6 year level of certainty
- Increased level of certainty to 1-in-10 possible with revision of Lake Okeechobee Regulation Schedule (Herbert Hoover Dike repair)

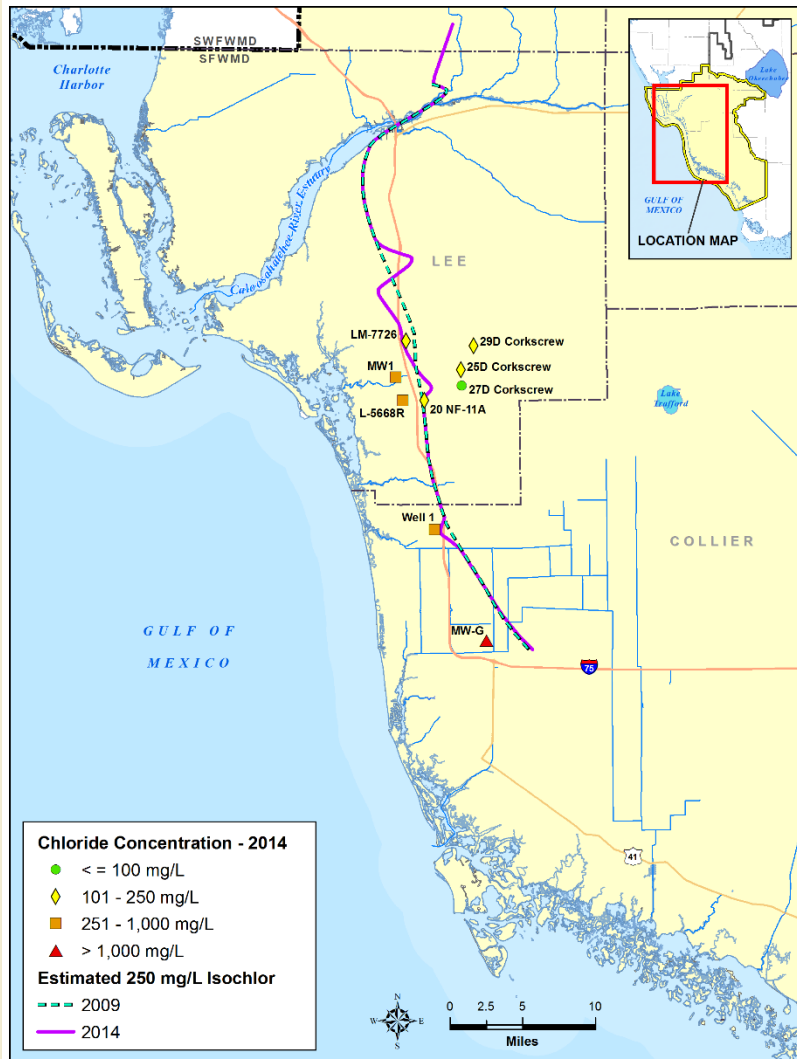
# Hydrogeologic Mapping of LWC Aquifers with MFLs

- Updated maps of Lower Tamiami, Sandstone, and Mid-Hawthorn aquifers
- Review of groundwater levels and salinities in the surficial, intermediate and Floridan aquifer systems



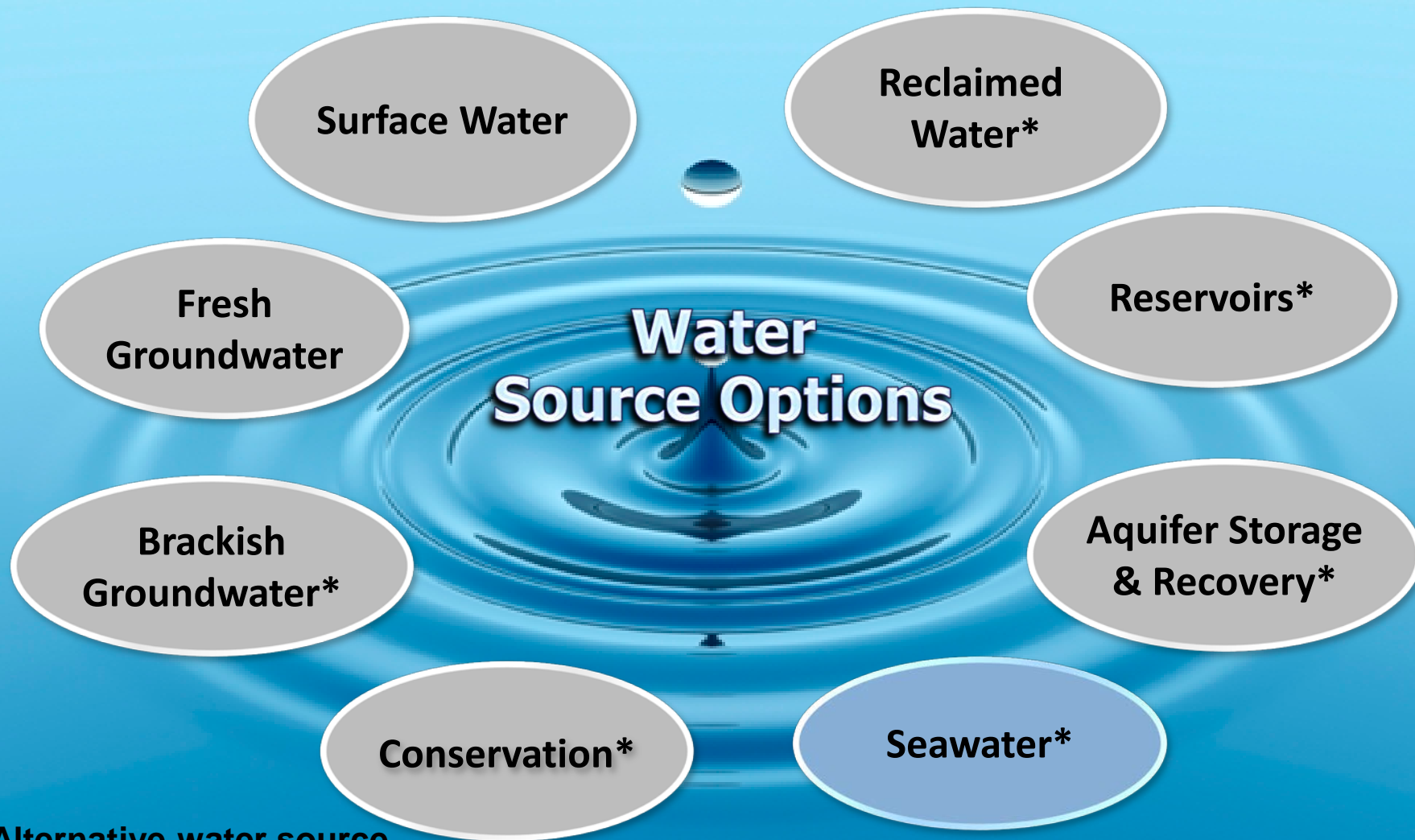


# 2014 Saltwater Interface Update



- Update and comparison to 2009 mapping effort
- Multiple PWS wellfields completed in the Water Table, Lower Tamiami, and Sandstone aquifers
- No major changes to interface location

# Water Source Options



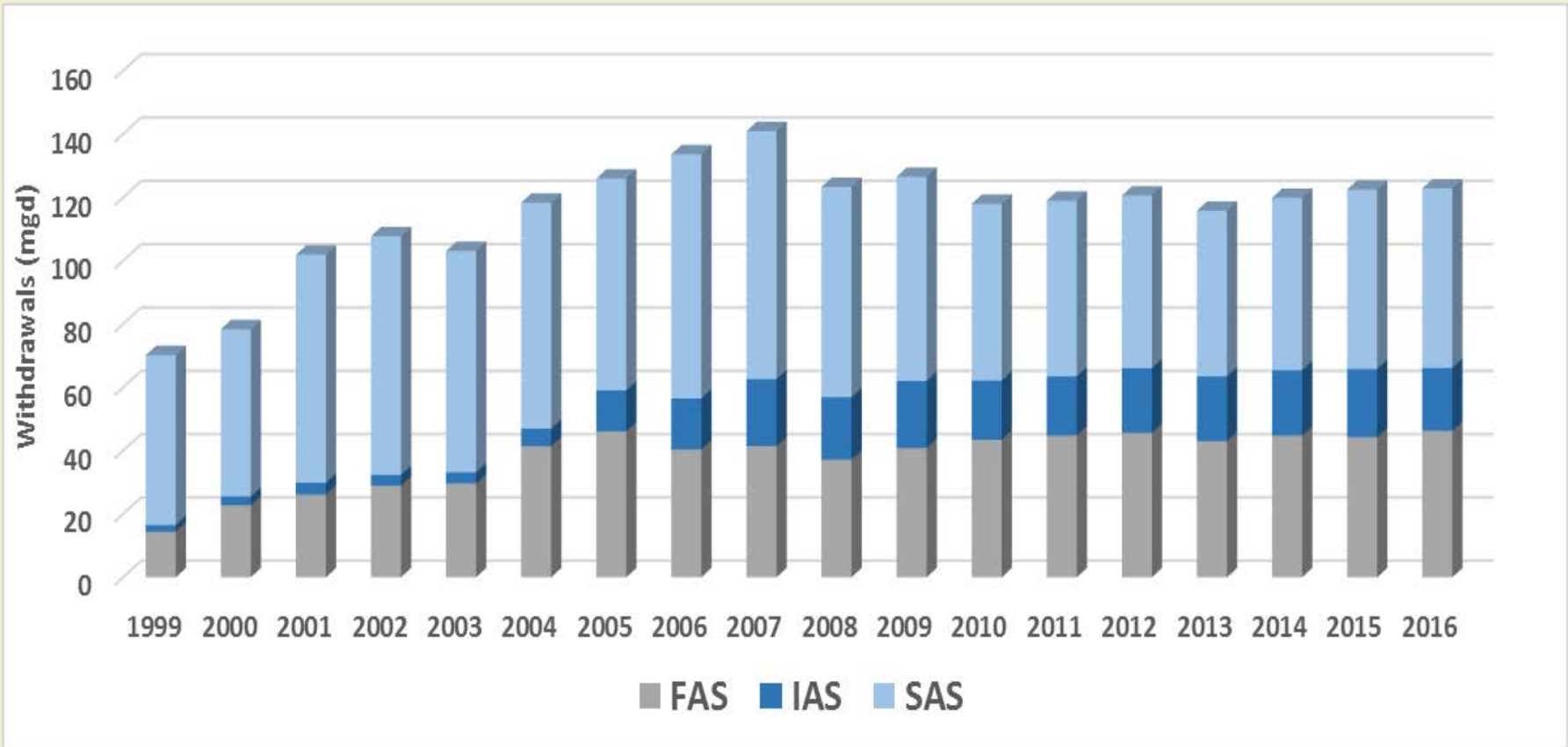
\* Alternative water source

# General Hydrogeologic Cross-Section

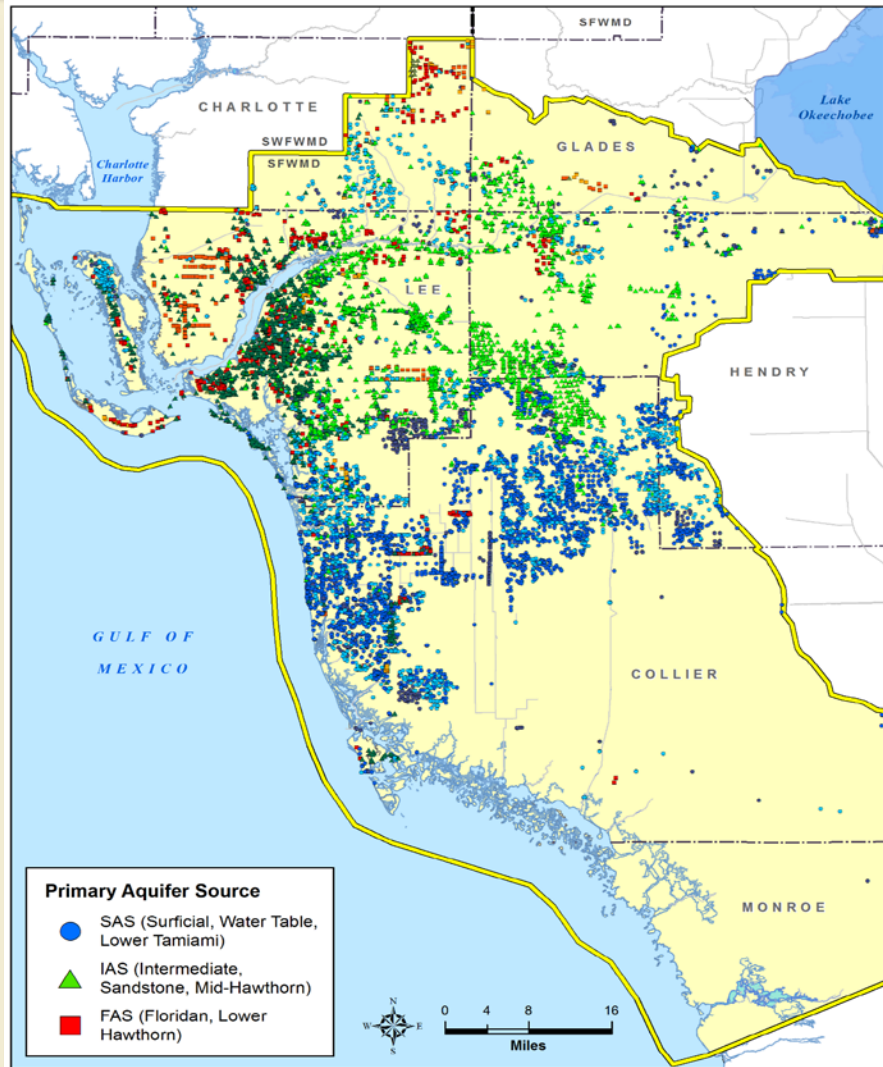




# Public Water Supply Surficial, Intermediate, and Floridan Use



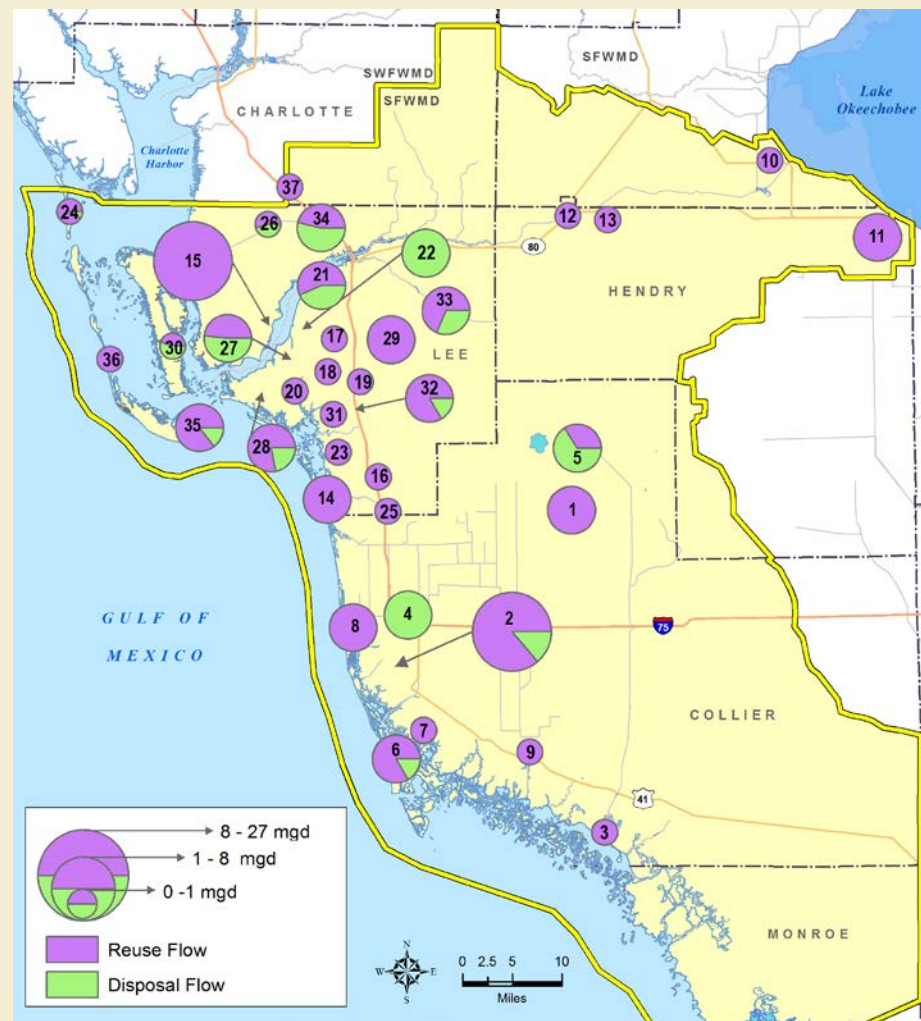
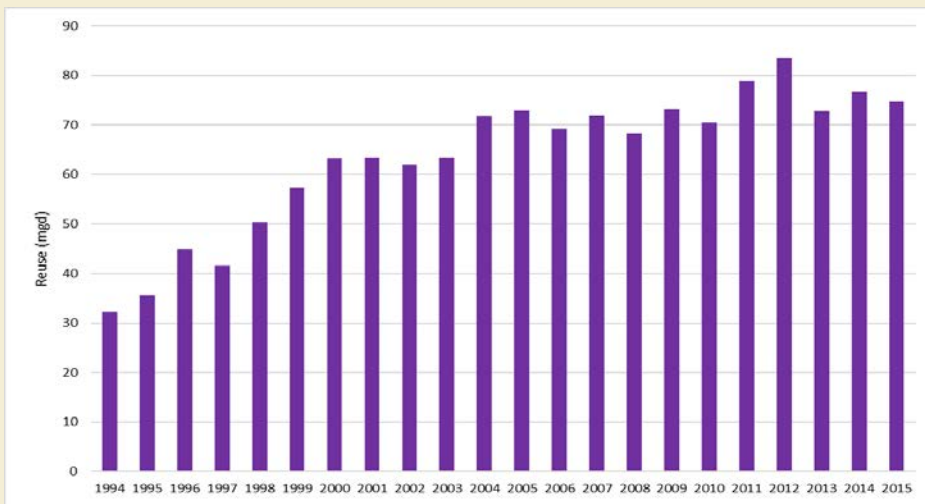
# Groundwater Use



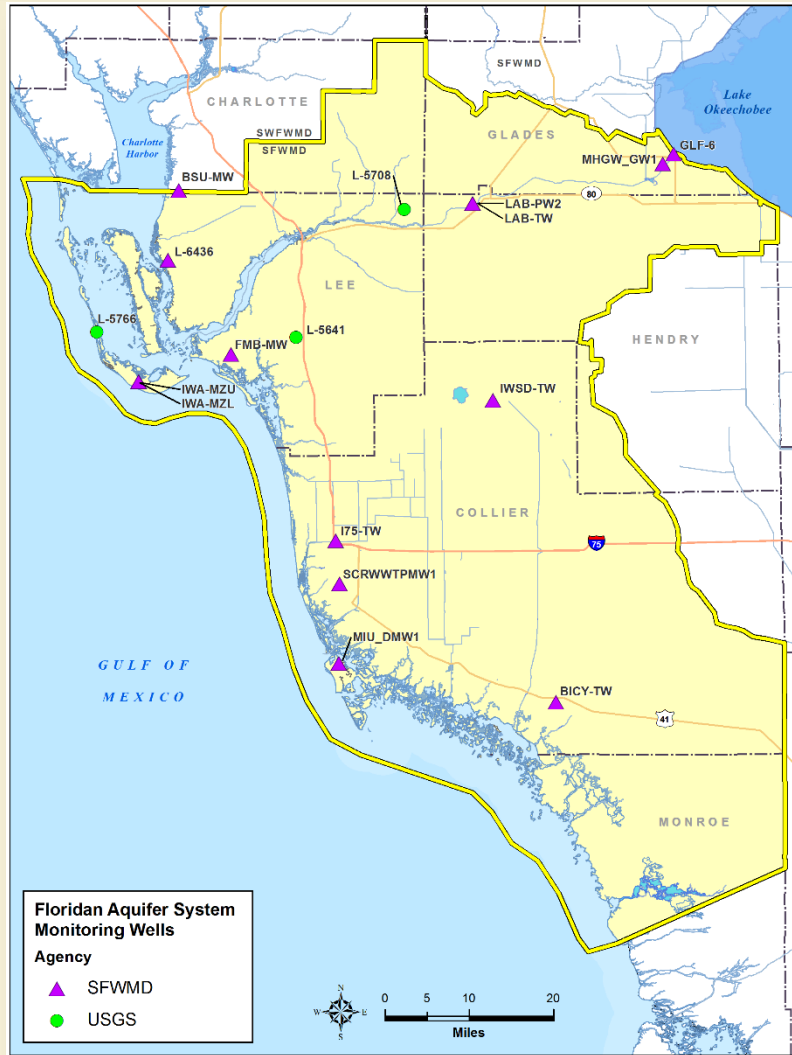
- Multi-layered aquifer system
- Different parts of the planning area tap different layers of the aquifer system
- MFLs established for shallow and intermediate aquifers

# Water Reuse

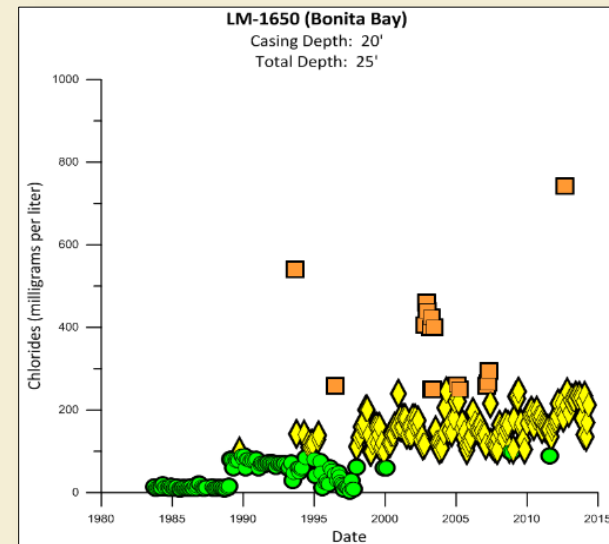
- Currently, approximately 80 mgd reused
- For irrigation of residential lots, golf courses, parks, and other green space



# Water Resource Issues and Analyses



- **Surficial and intermediate aquifer system**
  - Groundwater levels and salinities
- **Floridan aquifer system**
  - Regional water levels and salinities
  - Local wellfield operations



# Information Sources

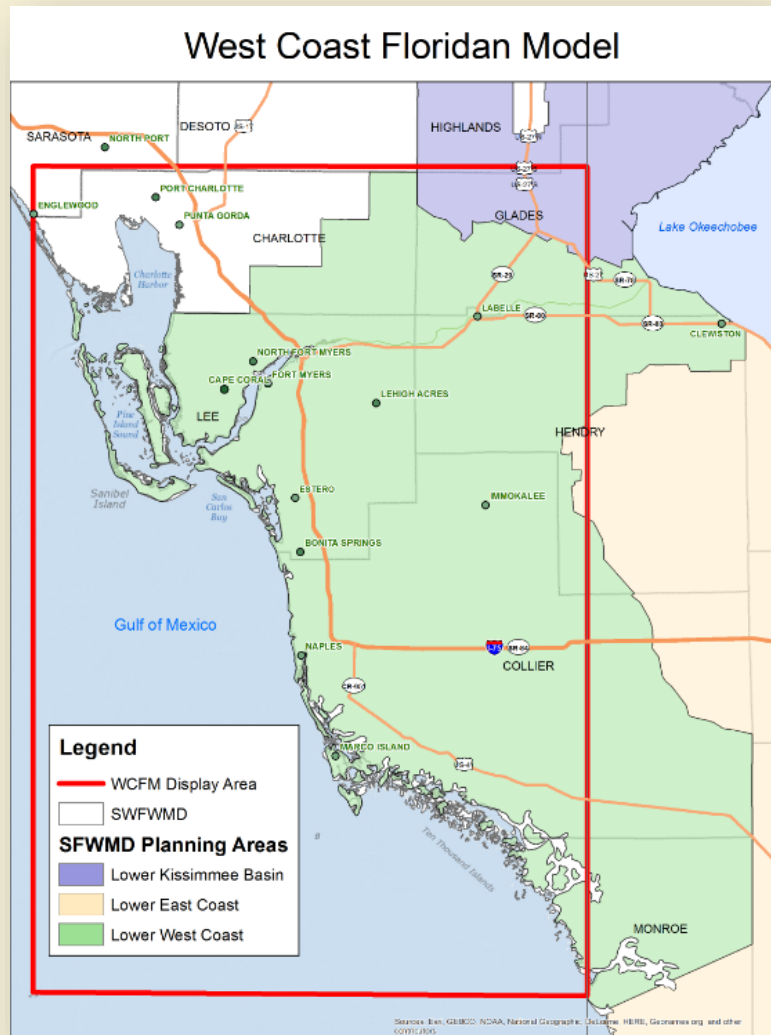
- **Analyses from previous water supply plan updates**
- **Stakeholder and public input**
- **Water Supply Work Plans and Capital Imp. Plans**
- **Activities since the 2012 LWC Plan Update**
- **Water Use Permits and permit applications**
- **Water supply demand projections**
- **Hydrologic monitoring data from SAS/IAS/FAS**
- **Updated saltwater interface maps**
- **Everglades Restoration Plan (CERP) progress**
- **Status of Herbert Hoover Dike repairs**
- **Analyses performed during the 2008 LORS revision**

# Water Resource Development

- **Water resource development project**
  - Regional in nature and typically the responsibility of a water management district
- **Hydrogeology**
  - Groundwater and wetland monitoring, drilling, and testing
- **Modeling**
  - SAS/IAS Groundwater Model
  - West Coast Floridan Model
- **Comprehensive Everglades Restoration Plan (CERP)**
  - Caloosahatchee River (C-43) West Basin Storage Reservoir, Southern Corkscrew Regional Ecosystem Watershed (CREW), and Picayune Strand Restoration Project



# Groundwater Model Development

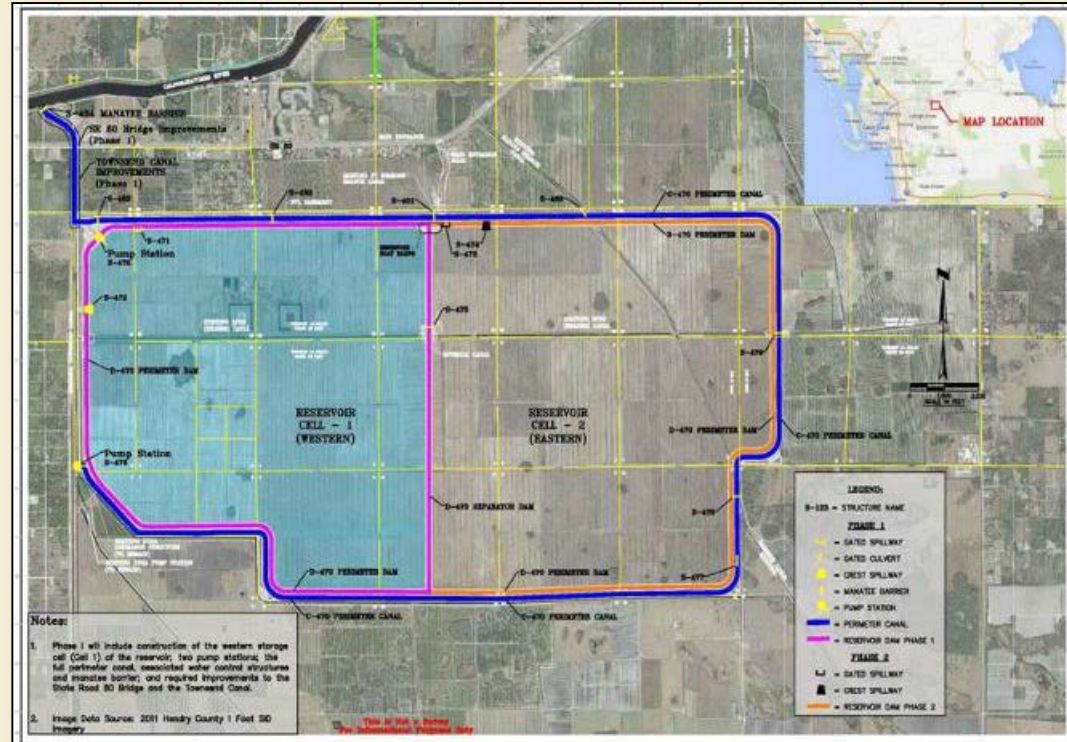


- **West Coast Floridan Model**
  - Improved model with water quality
  - Baseline and 2040 scenarios
  - Expect simulations in 2018-2019
- **Surficial and Intermediate Aquifer Systems Model**
  - Improved hydrostratigraphy
  - Baseline and 2040 scenarios
  - Expect simulations in 2018-2019

# Everglades Restoration

## ➤ Construction Projects

- Southern CREW (2018)
- Picayune Strand (2020)
- C-43 Reservoir (2022)
  - Recover strategy for Caloosahatchee River MFL



*C-43 Reservoir*

## ➤ Planning Efforts\*

- Lake Okeechobee Watershed Restoration Project
- Western Everglades Restoration Project

\*Outside of the LWC Planning Area

# Water Supply Development

- **Projects proposed by utilities**
- **Potable**
  - Majority of utilities have sufficient capacity and permit allocations to meet 2040 demands
  - 11 utilities proposed projects
  - Only 2 out of 22 utilities need projects to meet 2040 demand projections or treatment requirements
- **Nonpotable**
  - 9 reclaimed water distribution projects



# Water Supply Project Summary

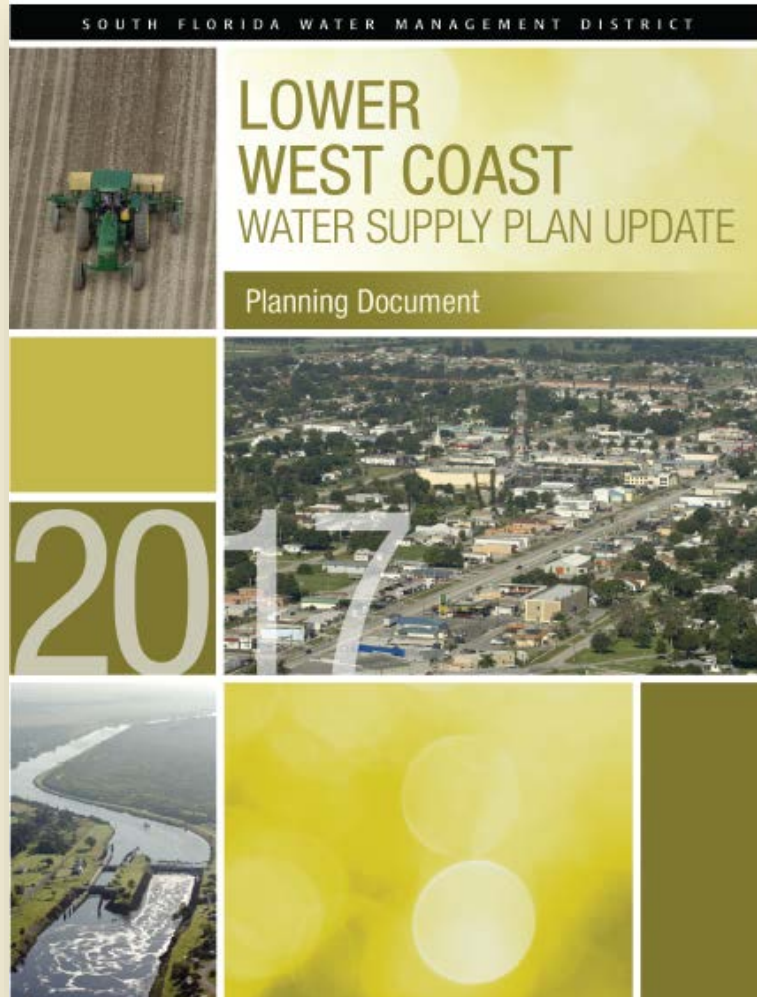
Source	Number of Projects	Capacity (mgd)
Surface water	0	0.00
Surficial aquifer system	2	5.00
Intermediate aquifer system	3	4.85
Floridan aquifer system	5	51.50
Aquifer storage and recovery	1	3.40
Reclaimed water	9	52.65
<b>Total</b>	<b>20</b>	<b>117.40</b>

# Future Direction

- Continue diversification of water supply sources through development of alternative water supplies
- Continue implementation of robust water conservation programs
- Implement long-term management measures of the Floridan aquifer system in coordination with Public Water Supply utilities
- Evaluate aquifer monitoring programs and enhance as necessary
- Continue implementation of the Comprehensive Everglades Restoration Plan (CERP)
- Evaluate potential impacts of sea level rise and climate trends
- Coordinate with local governments, utilities, and adjacent water management districts



# Plan Conclusion



The future water demands of the region can continue to be met through the 2040 planning horizon with appropriate management, conservation, and implementation of projects in this 2017 LWC Plan Update

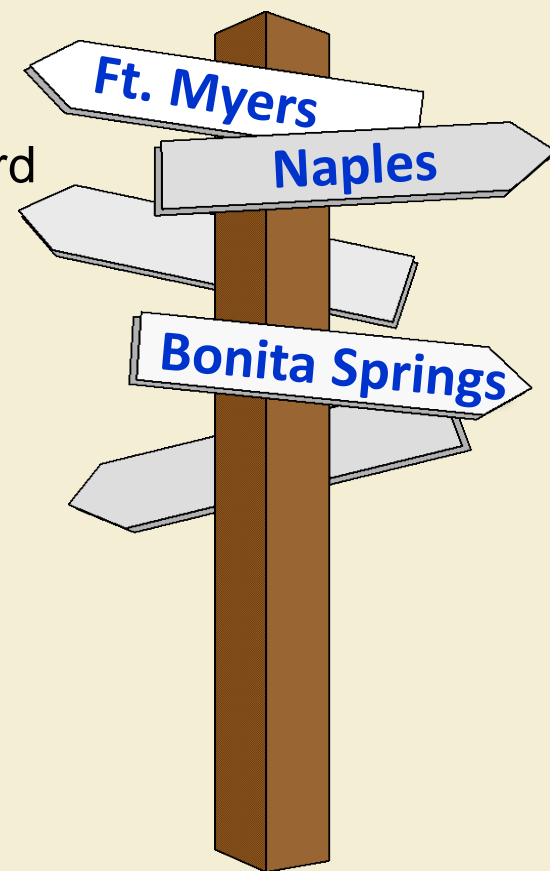
Dependent on completion of:

- Identified CERP components and other projects to meet environmental needs
- Water supply development projects by 2 utilities



# Next Steps

- *August 30*                      *Stakeholder Meeting #3*
- September 7                      Presentation to WRAC
- September 14                      Presentation to Governing Board
- October 5                          Deadline for external comments
- November 9                      Final Plan to Governing Board for approval



# Need Water Supply Plan Information?



- Plan information can be found at [www.sfwmd.gov](http://www.sfwmd.gov)
  - Our Work → Water Supply Planning → Lower West Coast Plan
- Workshop announcements sent by email

# Thank You

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