

Water Resources of Southwest Florida

RLSA Restudy Public Workshop

September 27, 2018

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Presentation Summary

- Water Resource Planning
- Water Use Permitting



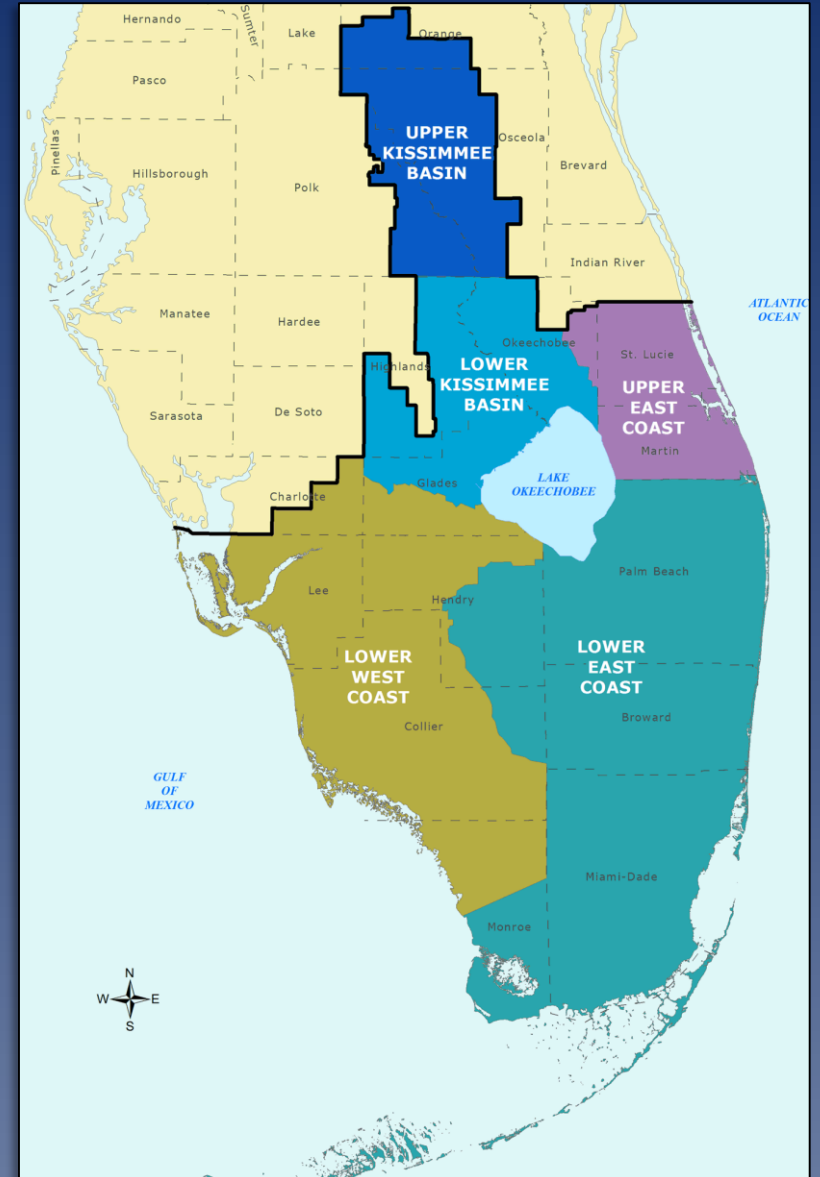
Water Resource Planning

- Water Supply Plans
- Sources (Supply)
- Demand
- Is there enough supply to meet demand?

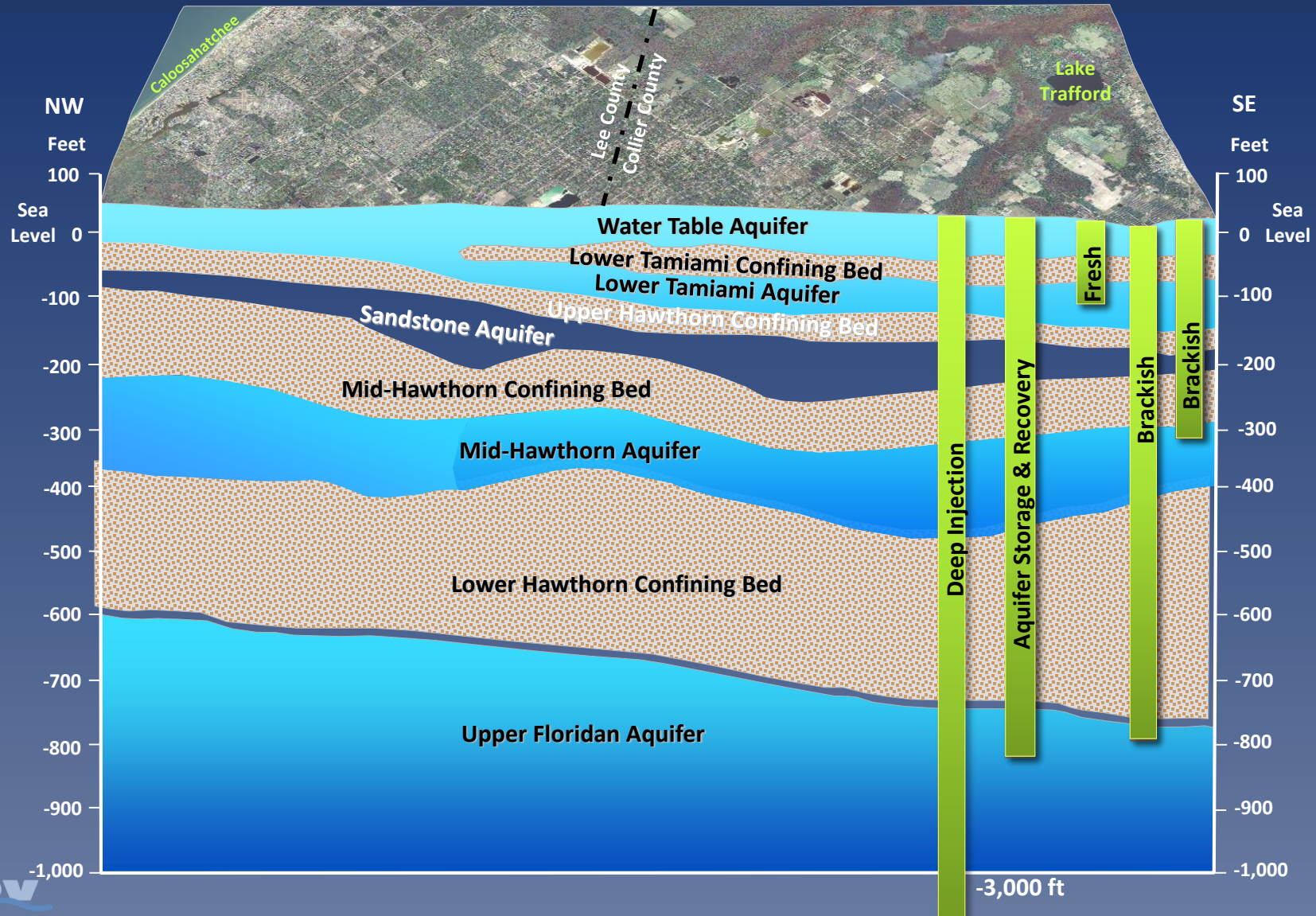


Regional Water Supply Plans within the SFWMD

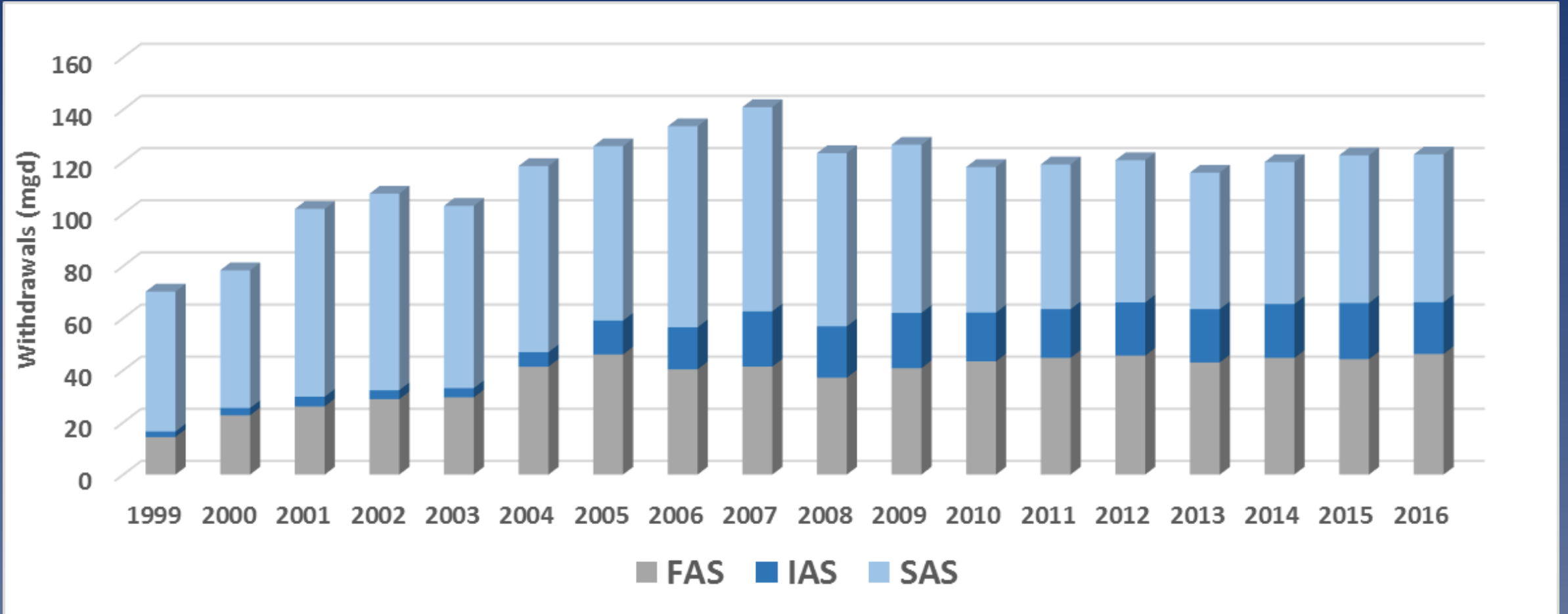
- SFWMD is divided into five regional areas
- Current and future look at water needs
- 20-year planning horizon
- Strategies and sources to meet future water demands
- Updated every 5 years (LWC plan was updated in 2017 and the following information comes from the 2017 update)



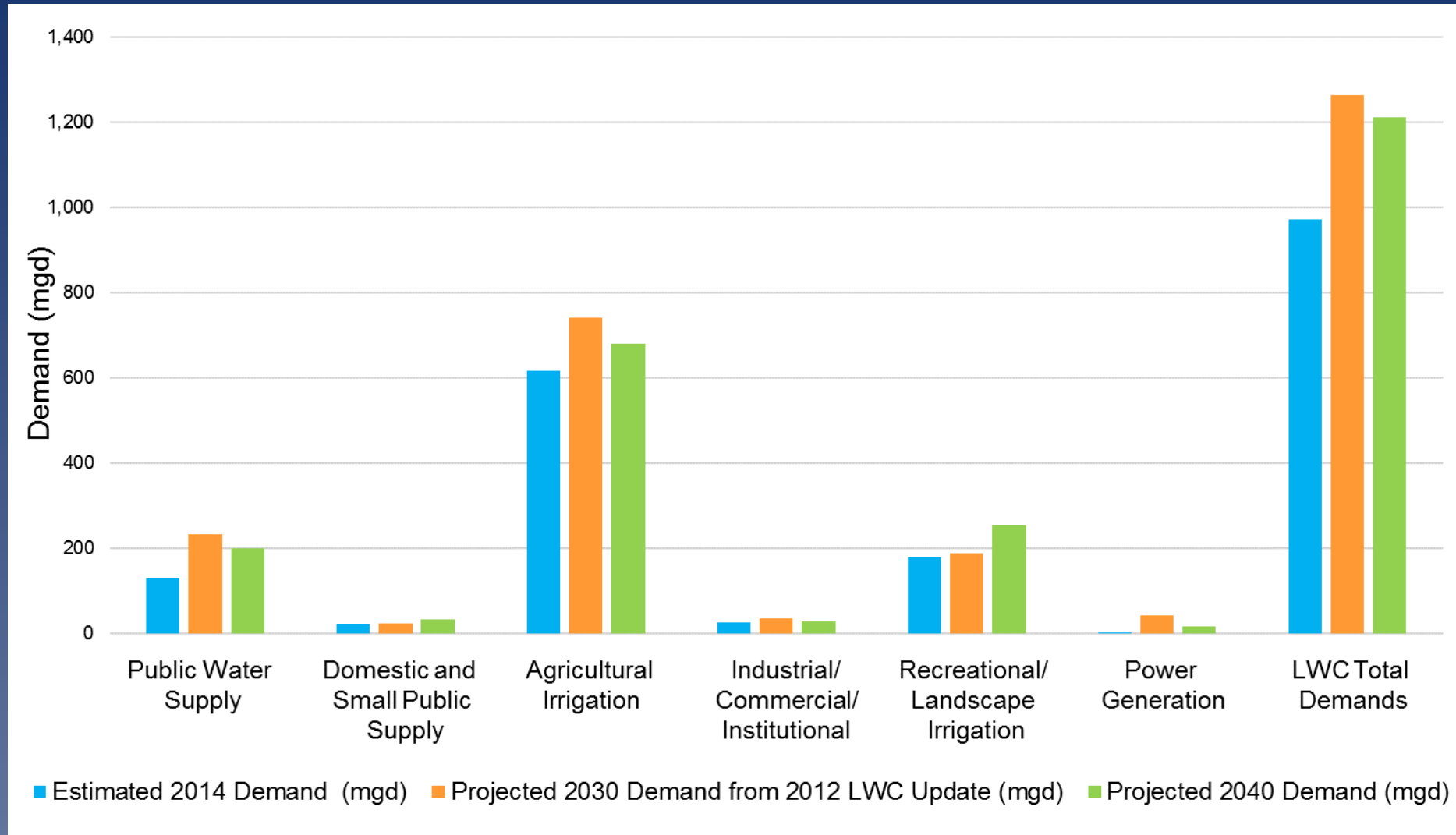
General Hydrogeologic Cross-Section (Sources)



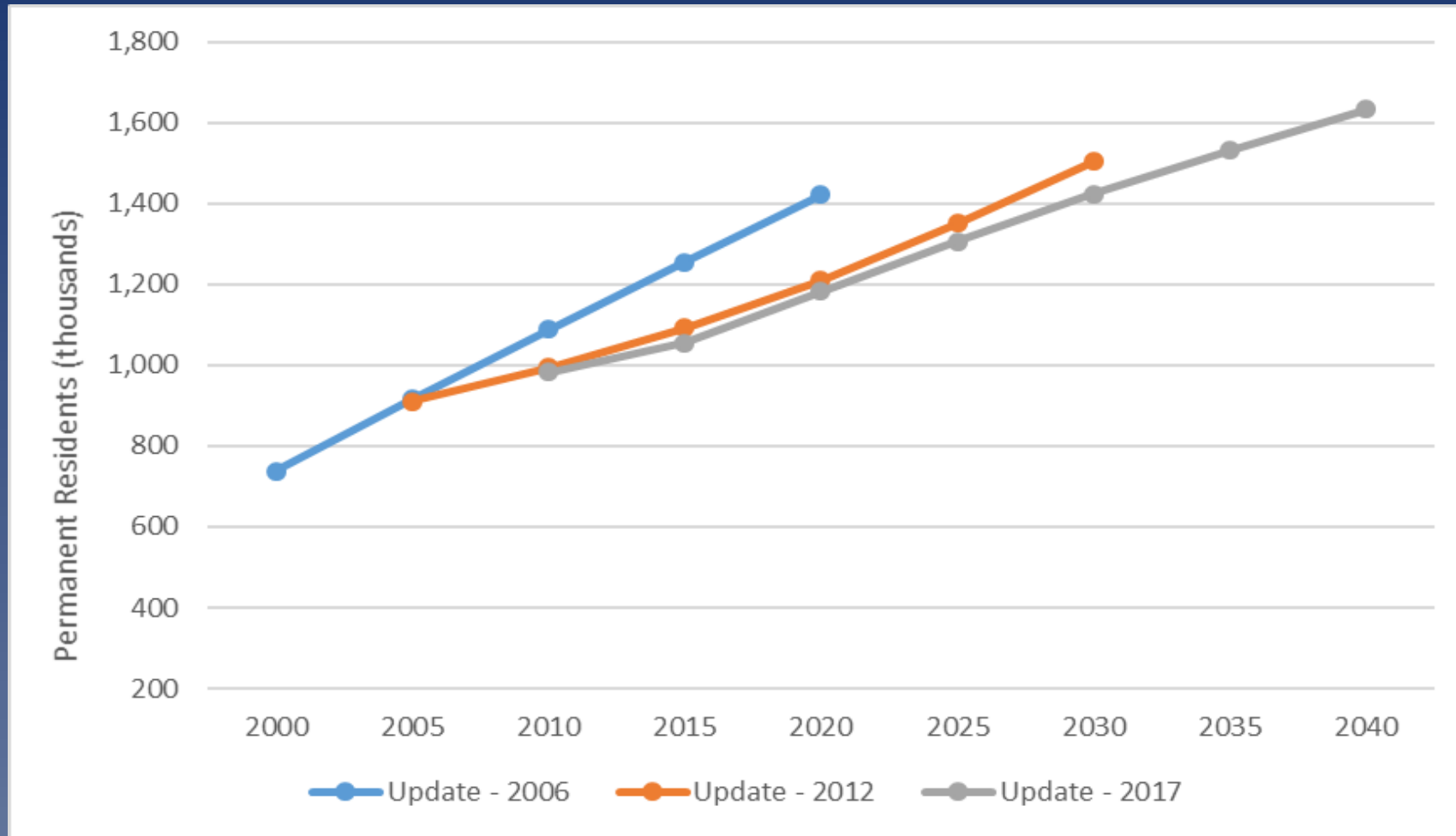
LWC Groundwater Supply



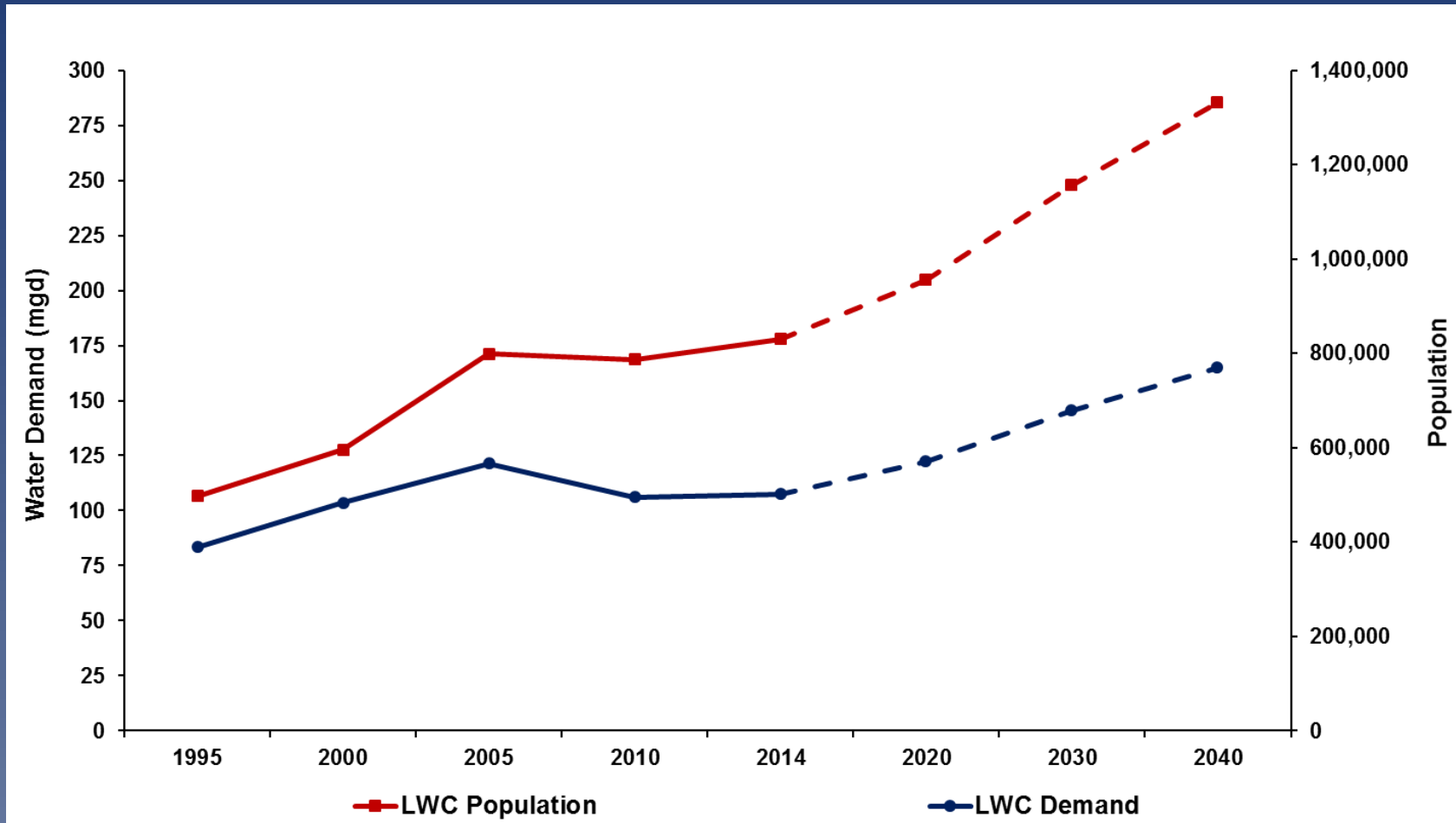
LWC Demand Projections



Population Projection Comparison



Historical PWS Population & Finished Water Demand



Water Conservation and Reuse

➤ Conservation

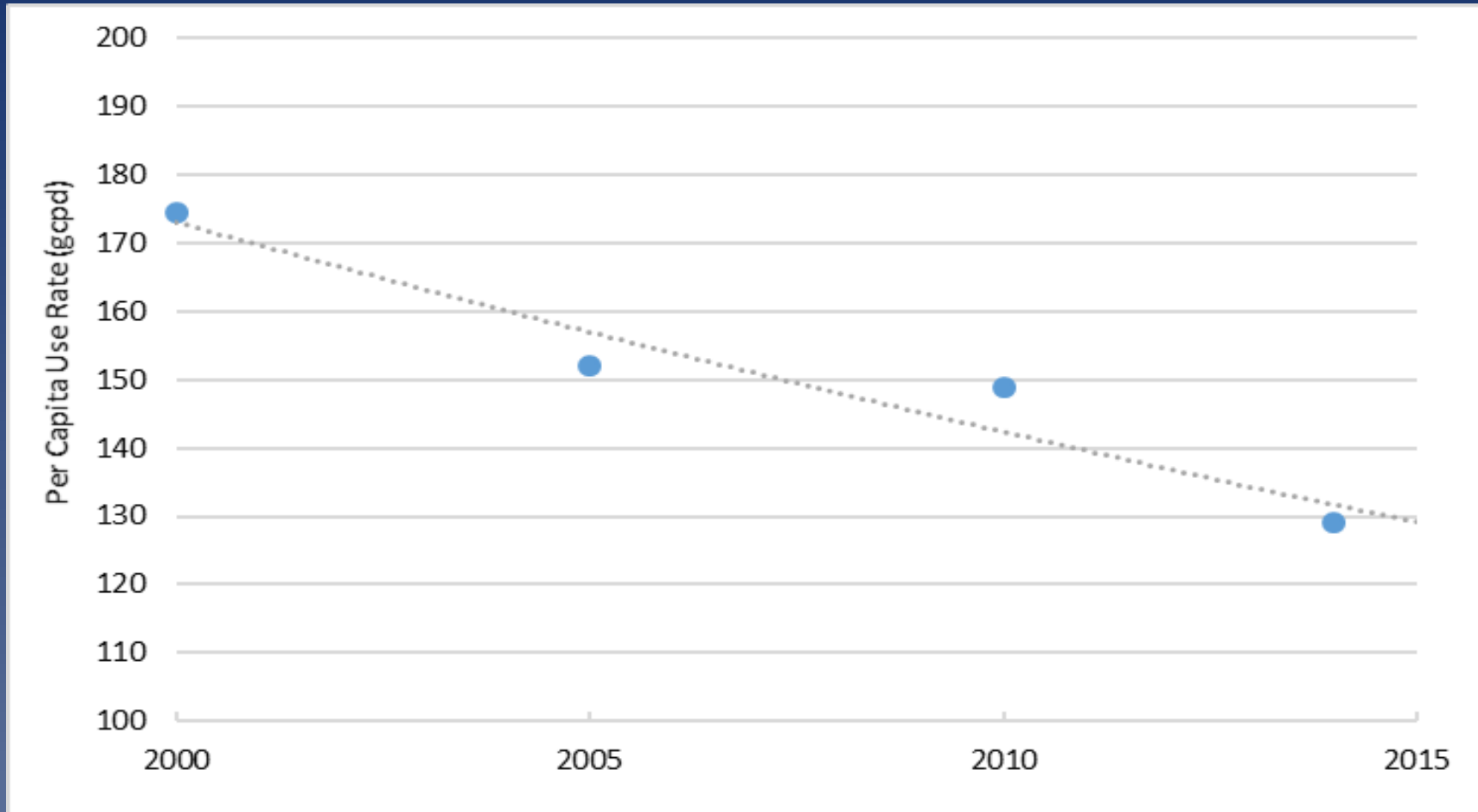
- Block rate structures
- More efficient fixtures
- Irrigation days and times

➤ Reuse for Irrigation

- Treated wastewater
- Conveyed using “purple pipes”
- Also known as reclaimed water
- Can be used in place of other sources

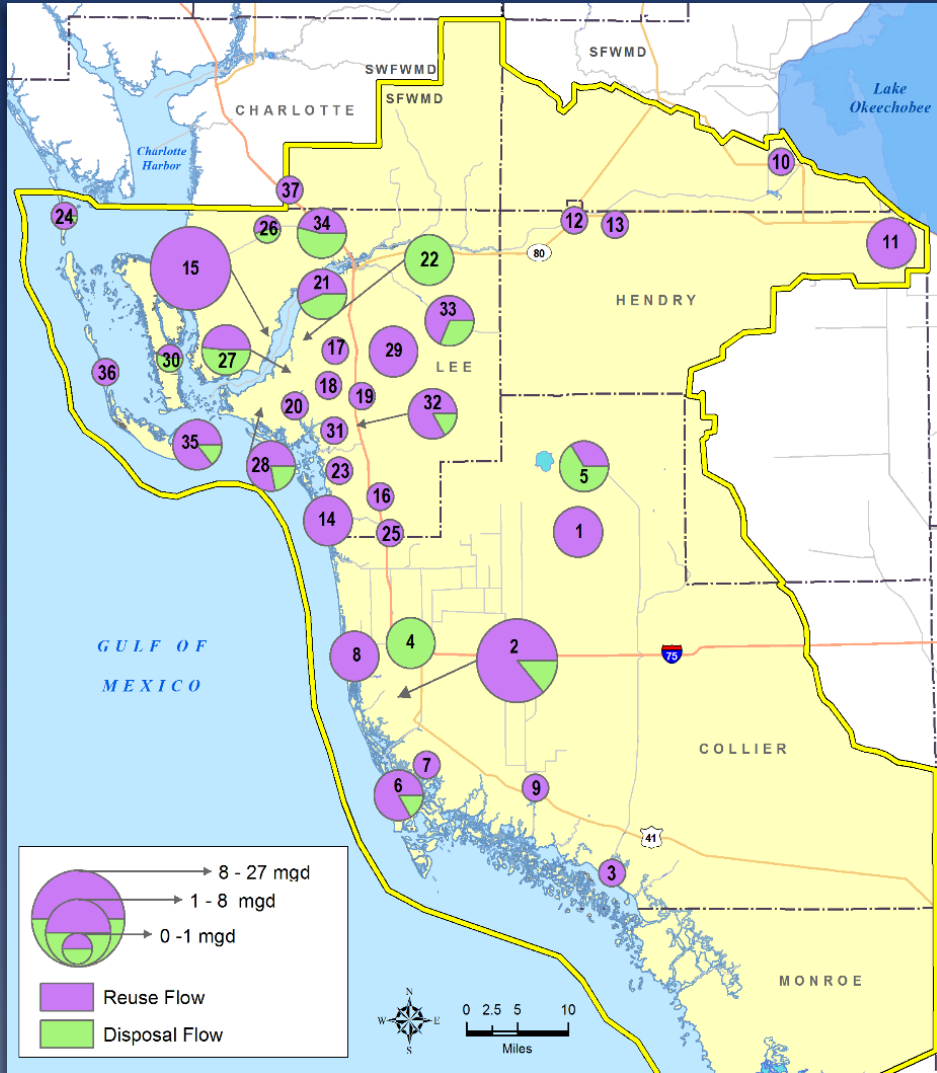


Water Conservation in the LWC

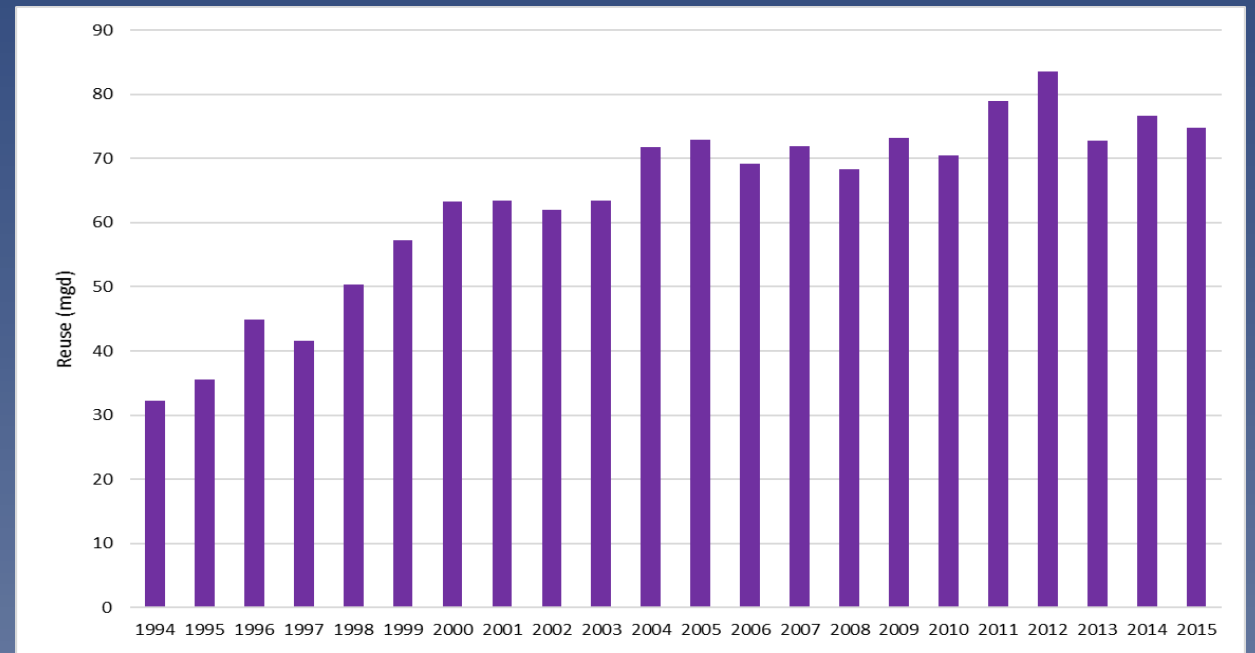


Net (finished) PWS water per capita use rate
(in gallons per capita per day) within the LWC Planning Area

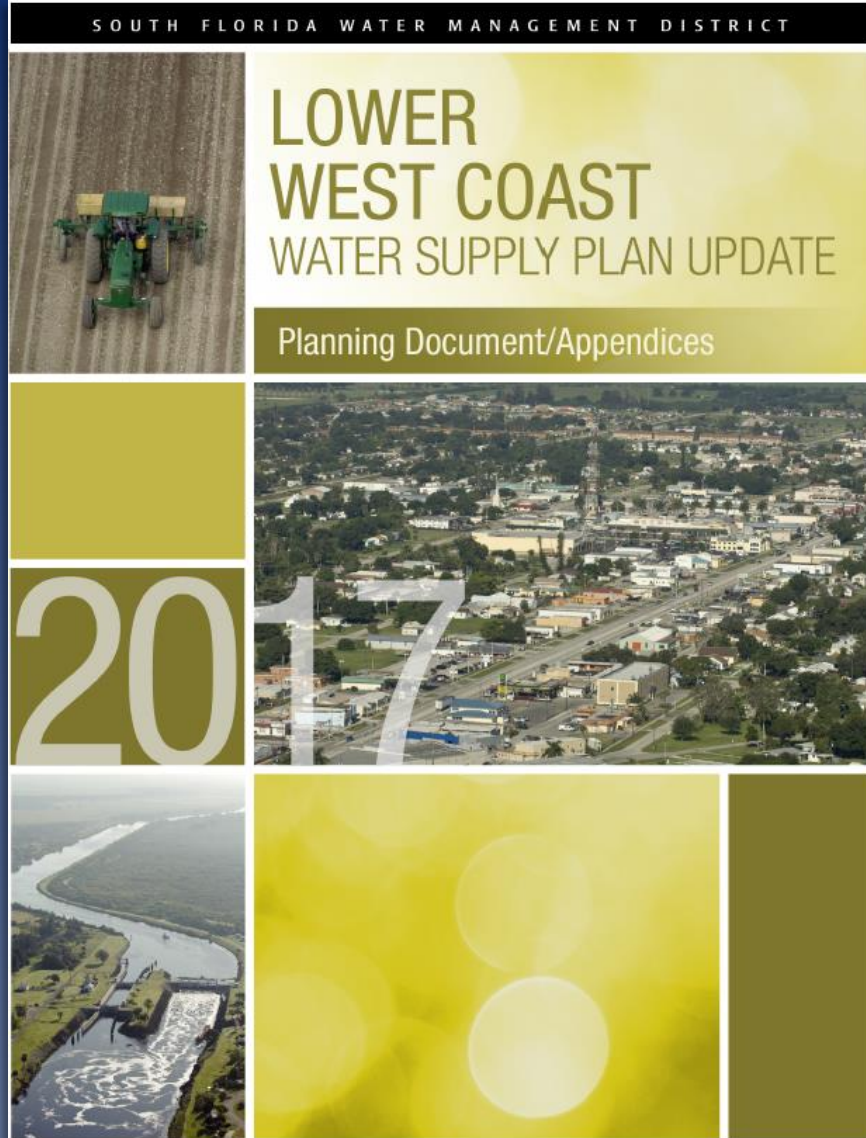
Water Reuse



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



2017 LWC Water Supply Plan Conclusions



- PWS utilities can meet 2040 demands by implementing additional water supply projects
- Future water demands of the LWC can be met through 2040 with appropriate management, conservation, & implementation of projects identified in the 2017 LWC plan update

LWC Water Supply Plan

The screenshot displays the website for the South Florida Water Management District. The top navigation bar includes links for 'WHO WE ARE', 'OUR WORK', 'DOING BUSINESS WITH US', 'COMMUNITY & RESIDENTS', 'SCIENCE & DATA', and 'NEWS & MEETINGS'. A left sidebar menu lists various categories such as 'Flood Control', 'Water Supply Planning', 'Water Quality Improvement', 'Ecosystem Restoration - By Region', 'Ecosystem Restoration - Projects and Programs', 'Land Management', and 'Local Projects and Programs'. The main content area features a large photograph of a waterfront building complex. Below the photo is the title 'Lower West Coast Water Supply Plan' and a detailed text description of the plan's scope and purpose. To the right of the text is a map of the Lower West Coast Planning Area, highlighting Lee, Collier, and Monroe counties. The website's logo and the URL 'sfwmd.gov' are visible at the bottom.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

WHO WE ARE | OUR WORK | DOING BUSINESS WITH US | COMMUNITY & RESIDENTS | SCIENCE & DATA | NEWS & MEETINGS

Water Supply Planning

- Overview
- Upper Kissimmee Basin (CFWI) Plan
- Lower Kissimmee Basin Plan
- Upper East Coast Plan
- Lower East Coast Plan
- Lower West Coast Plan
- Alternative Water Supply
- Water Supply Facilities Work Plans

Water Quality Improvement

- Ecosystem Restoration - By Region
- Ecosystem Restoration - Projects and Programs
- Land Management
- Local Projects and Programs

Lower West Coast Water Supply Plan

The **Lower West Coast** Water Supply Planning Area includes Lee County and portions of Charlotte, Collier, Glades, Hendry and Monroe counties. The South Florida Water Management District is developing the 2017 Update to the Lower West Coast Water Supply Plan (LWC Update) to assess projected water demands and potential sources of water for the period from 2014 to 2040. This plan update is used by local governments, water users and utilities to update and modify local comprehensive plans, facility work plans and ordinances.

The **Lower West Coast** Planning Area has a growing population and limited freshwater resources, in many areas, especially coastal areas

sfwmd.gov

- Plan information can be found at:
www.sfwmd.gov/lwcplan
- 212 page planning document
- 196 pages of appendices

Consumptive Use Permit (CUP) Program

Florida Water Law:

- Water Management Districts given exclusive authority to regulate the consumptive use of water by the Legislature
- No property right to water
- Users must obtain a water use permit to have a water right
- Permits expire; must be renewed



Water Use Permitting Authority

- Florida Statutes - Chapter 373 (Water Resources)
- SFWMD Rules - Chapter 40E-2, Florida Administrative Code
- Water Use Applicant's Handbook

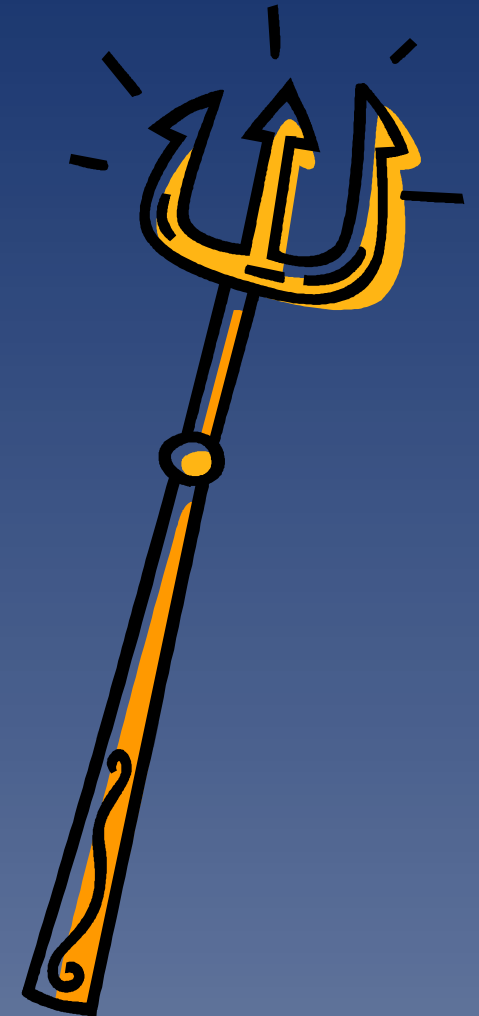


“Three-Pronged” Test

(Chapter 373.223 F.S.)

Conditions for a water use permit:

- Reasonable - Beneficial Use - The use of water in such quantity as is necessary for economic and efficient utilization for a purpose and in the manner which is both reasonable and consistent with the public interest
- Not interfere with presently existing legal uses of water
- Consistent with the public interest



Primary Water Use Classes

- Public Water Supply
- Mining/Dewatering
- Industrial/Commercial
- Irrigation
 - Agricultural
 - Nursery
 - Golf Course
 - Landscape



Uses Exempt from Permitting

- Private Domestic Use (such as single family home & duplex wells)
- Fire Protection
- Reclaimed Water
- Sea Water
- No “Grandfathering”



Water Use Permit Types

➤ Noticed General Permit

- Use less than 100,000 gpd unless from a restricted aquifer, which is less than 10,000 gpd
- Up to a 20-year permit duration

➤ Individual Permits

- Three tiers depending on allocation
- Allocations over 100,000 gpd have reporting requirements (pumpage, may also include water level, water quality, and/or environmental reporting)
- 5-year duration for new uses
- Up to 20-year duration for renewals

Consumptive Use Permitting (aka Water Use Permitting)

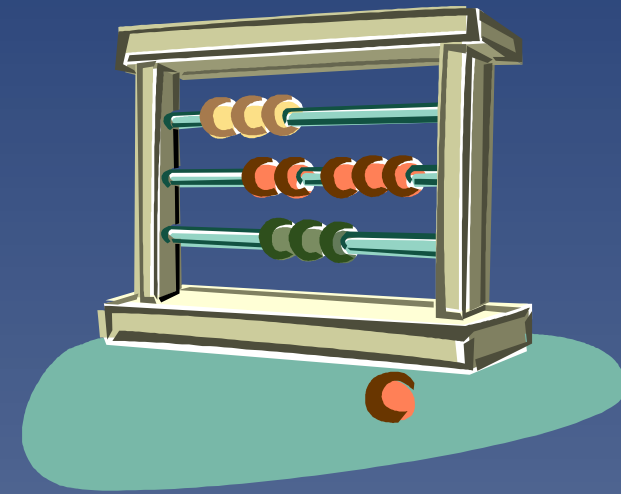
- How water use permit applications are evaluated



Demand Calculations

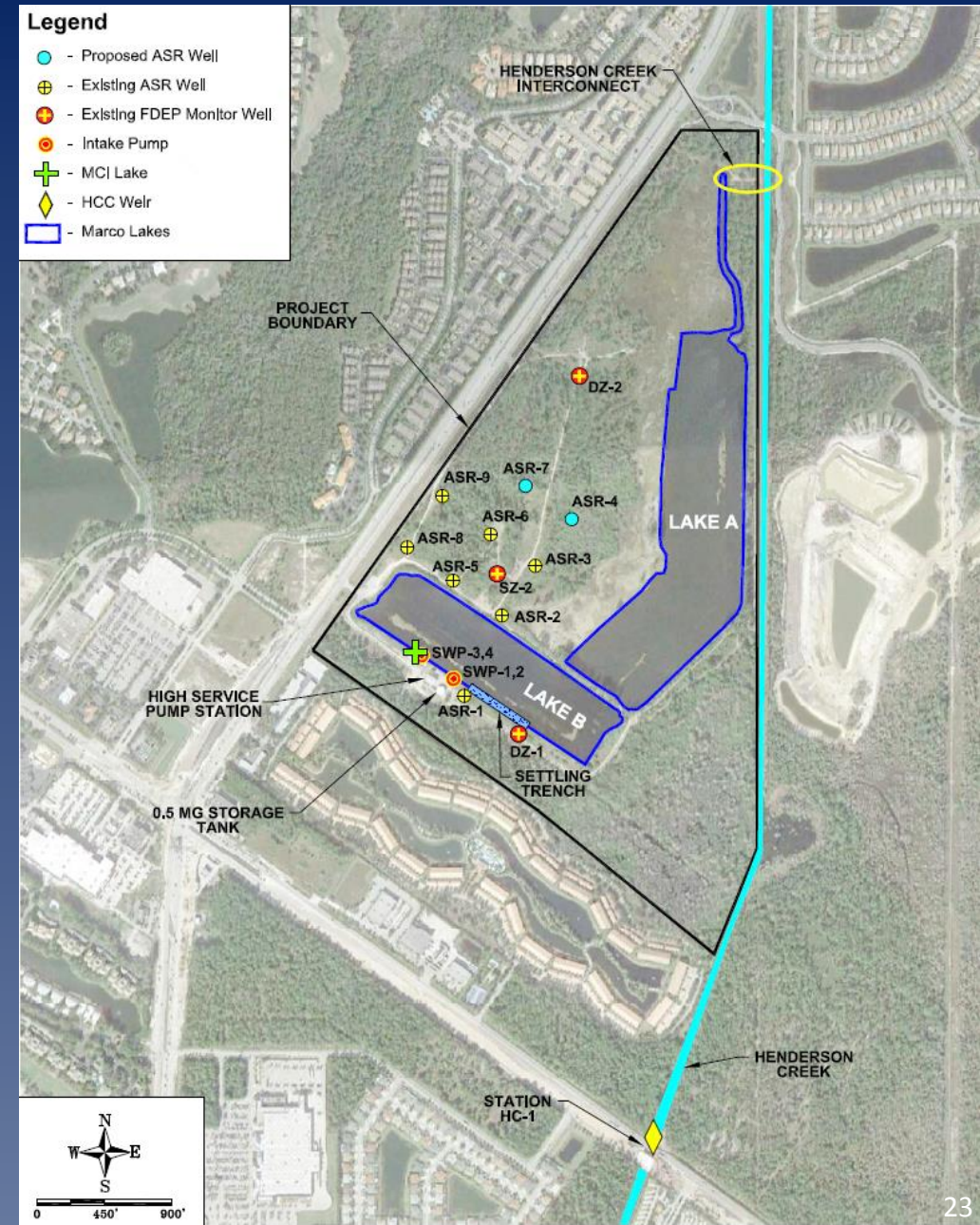
(how much water is needed?)

- Irrigation demand via Blaney-Criddle equation
 - Effective rainfall (1-in-10)
 - Soil type
 - Crop
 - Irrigated acreage
 - Irrigation system efficiency
- PWS demand via population and per capita use
- Other use types (industrial, mining, dewatering) use project-specific calculations



Other Information

- Site map with pumping facilities
- Specific facility (wells/pumps) information
- Legal control
 - deed, tax record, lease agreement
- >100,000 gpd permits
 - Reclaimed water availability
 - Water use accounting
- Application processing fee



Impact Assessment included for proposed uses >3 MGM

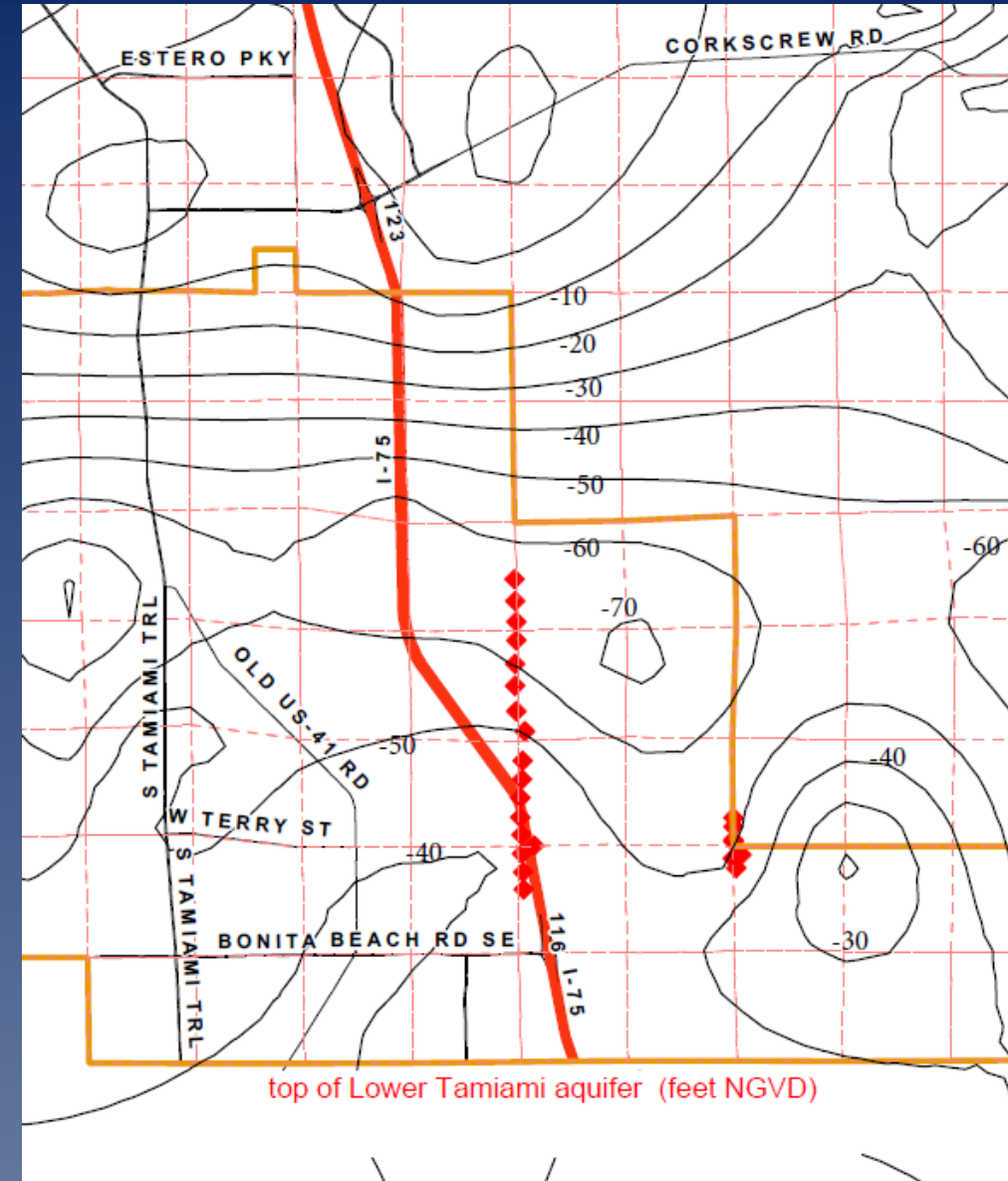
➤ Impact Analysis:

- Water Resource Availability
- Existing Legal Users
- Existing Domestic Users
- Saline Intrusion/Upconing
- Wetland Environments
- Contamination/Pollution Movement



Water Resource Availability

- Evaluate Maximum Developable Limit (MDL) which applies to LTA, SSA, and MHA – the potentiometric head shall not be allowed to drop to less than 20 feet above the top of the uppermost hydrogeologic strata that comprises the aquifer during a 1 in 10 drought condition



Water Resource Availability

- Determine top of aquifer elevation (source is generally the District's hydrostratigraphic layer report)
- Determine historical water levels near the project in the aquifer of interest (source is generally USGS monitoring well)
- Check status of MDL

Application Number: 100216-12

Source: Lower Tamiami aquifer

Project: Lely Resort Community

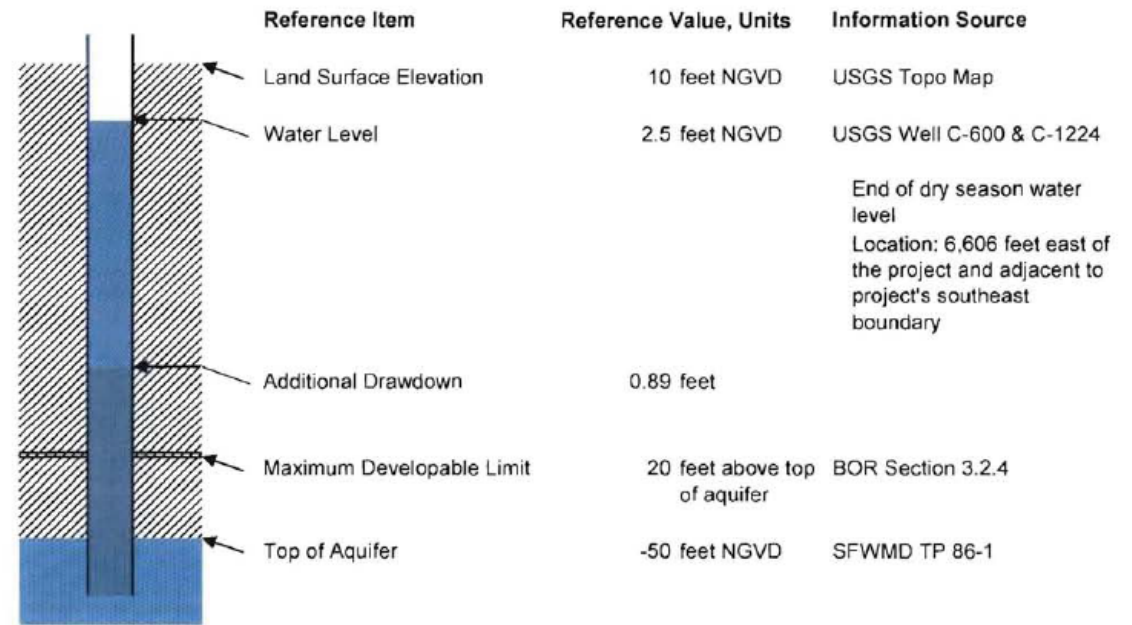


Illustration not to scale

Remaining Head Above MDL 31.61 feet

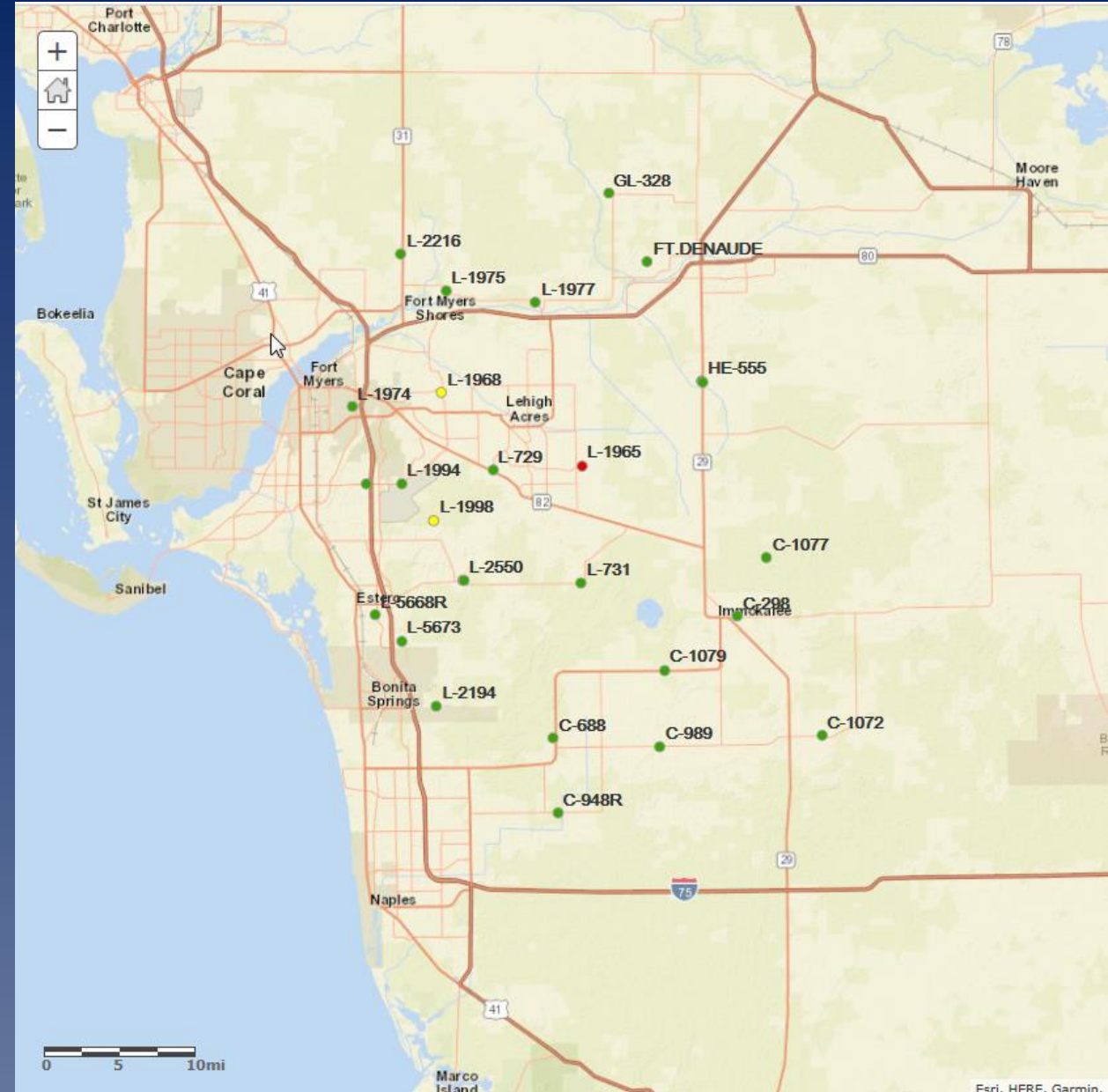
Elevation of Water level -
Additional Drawdown -
(Elevation of Aquifer Top +
Maximum Developable Limit)

MDL Monitoring

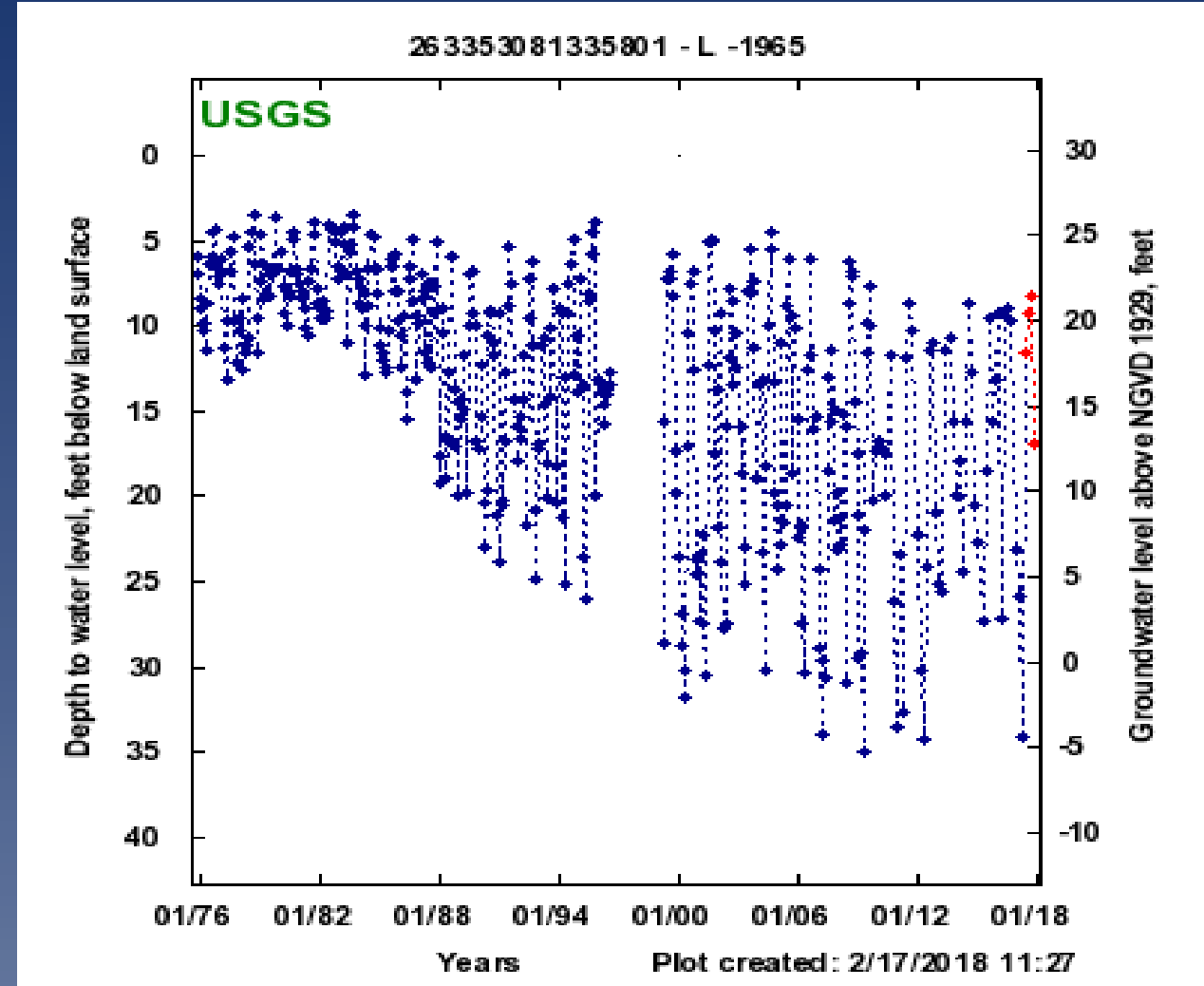
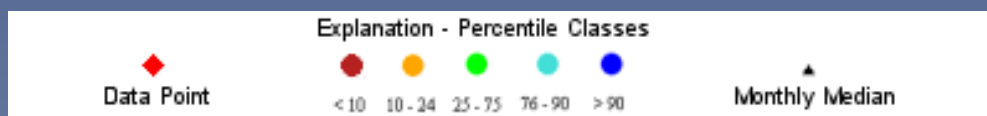
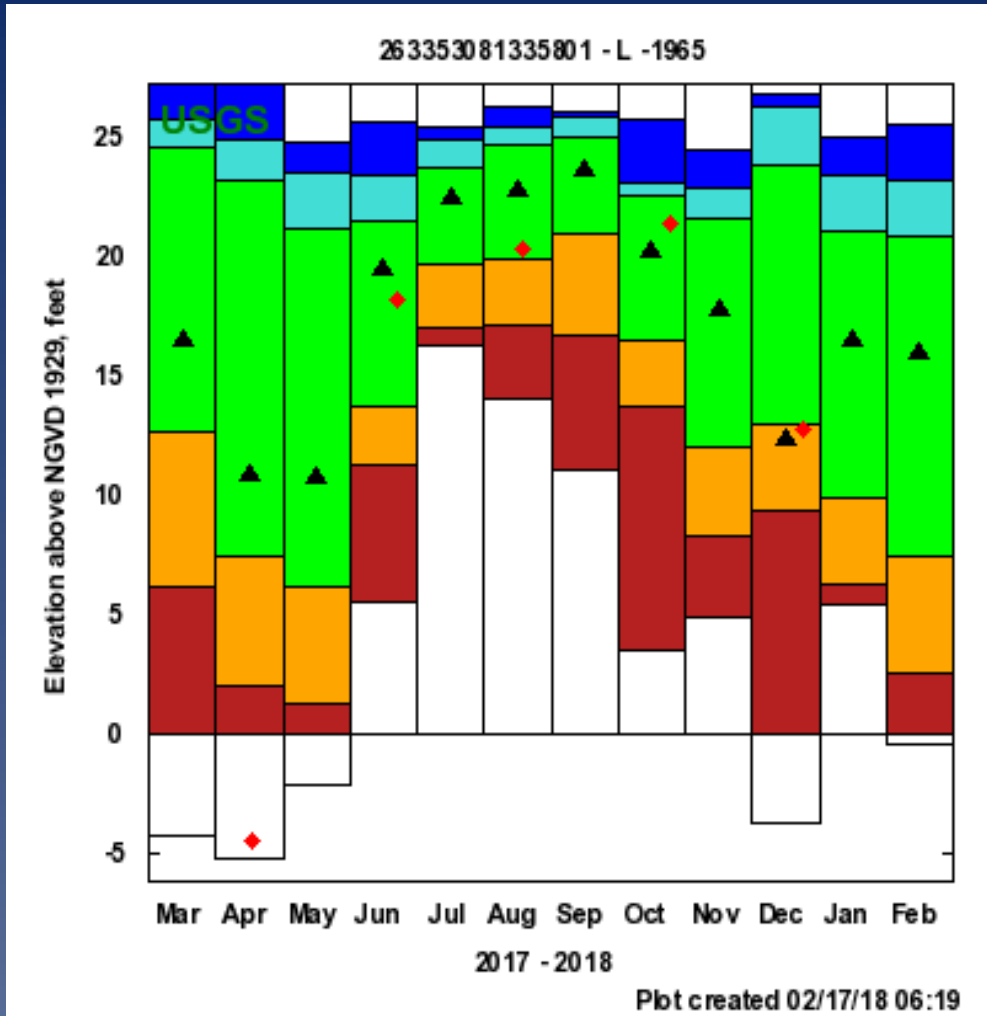
Sandstone aquifer
June 5, 2017 (end of dry season)

KEY

	More than 20 ft above MDL
	Between 10 - 20 ft above MDL
	Less than 10 ft above MDL



USGS Well L-1965 (SSA)



Water Resource Availability

Existing Legal Users

- Groundwater modeling to estimate drawdown
- Based on aquifer hydraulic parameters, pumpage rate
- Rules require 90-day, no-recharge pumping scenario (conservative)

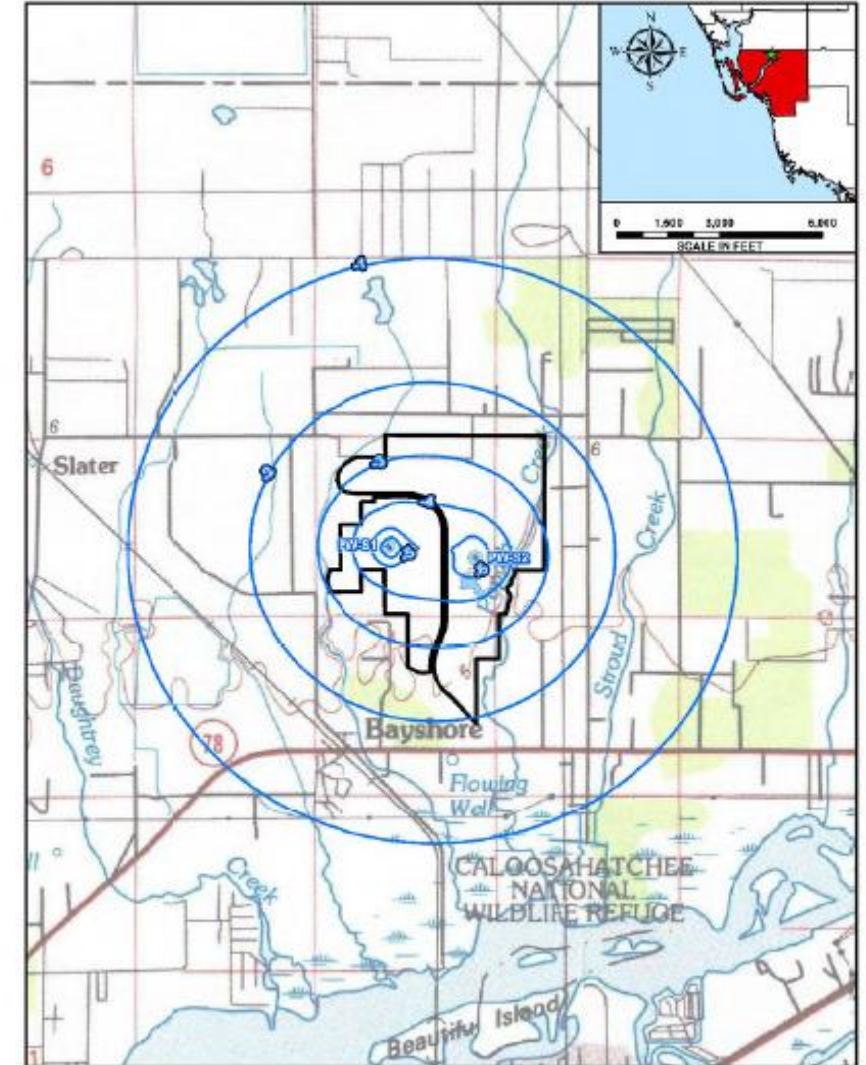
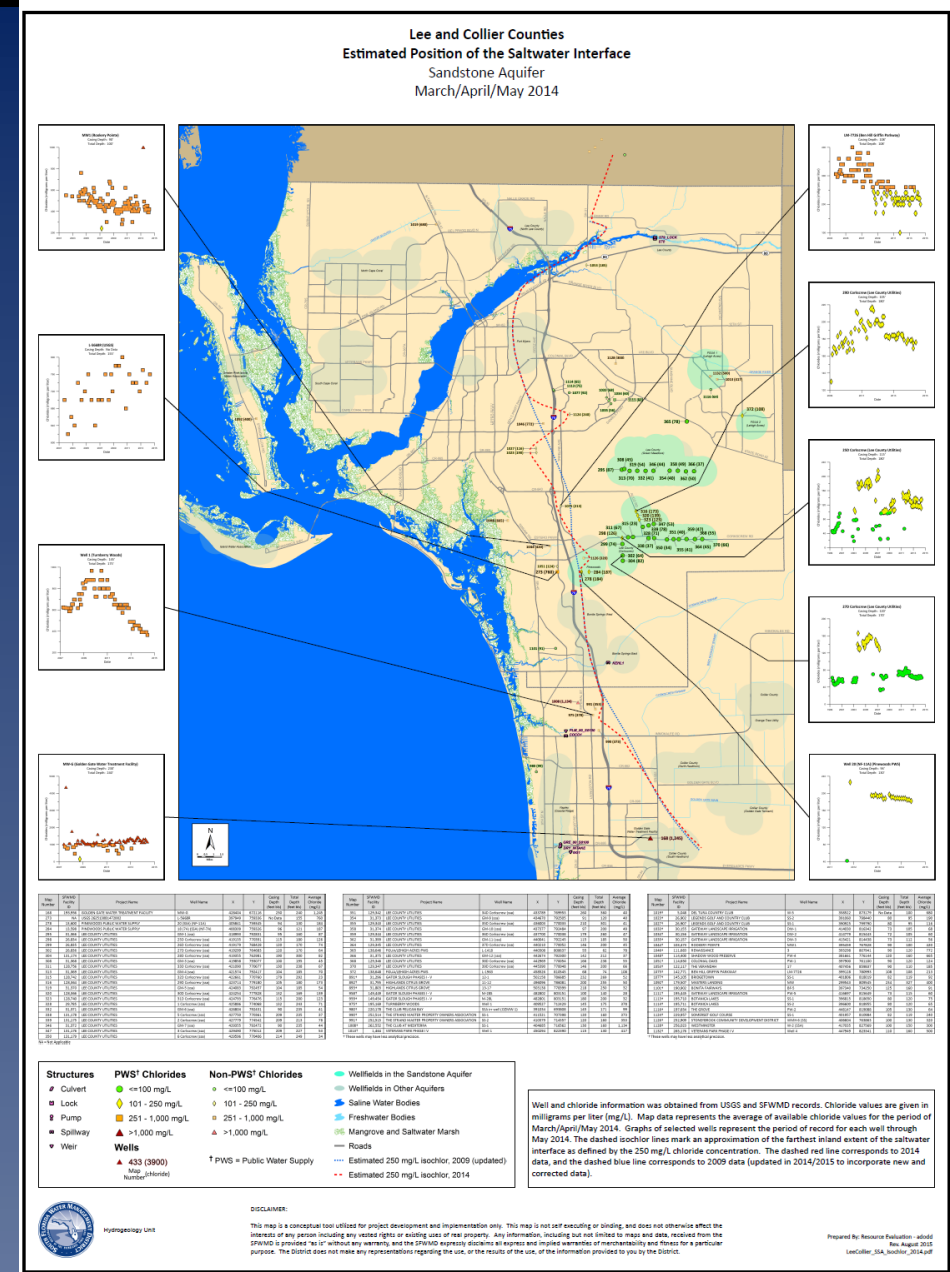


Figure 3. Simulated Sandstone aquifer drawdown.

Saline Water Evaluation

- Estimated position of the 250 mg/L isochlor
- District has maps for each aquifer based on monitoring data
- Evaluate the potential for saline intrusion via lateral migration or upconing



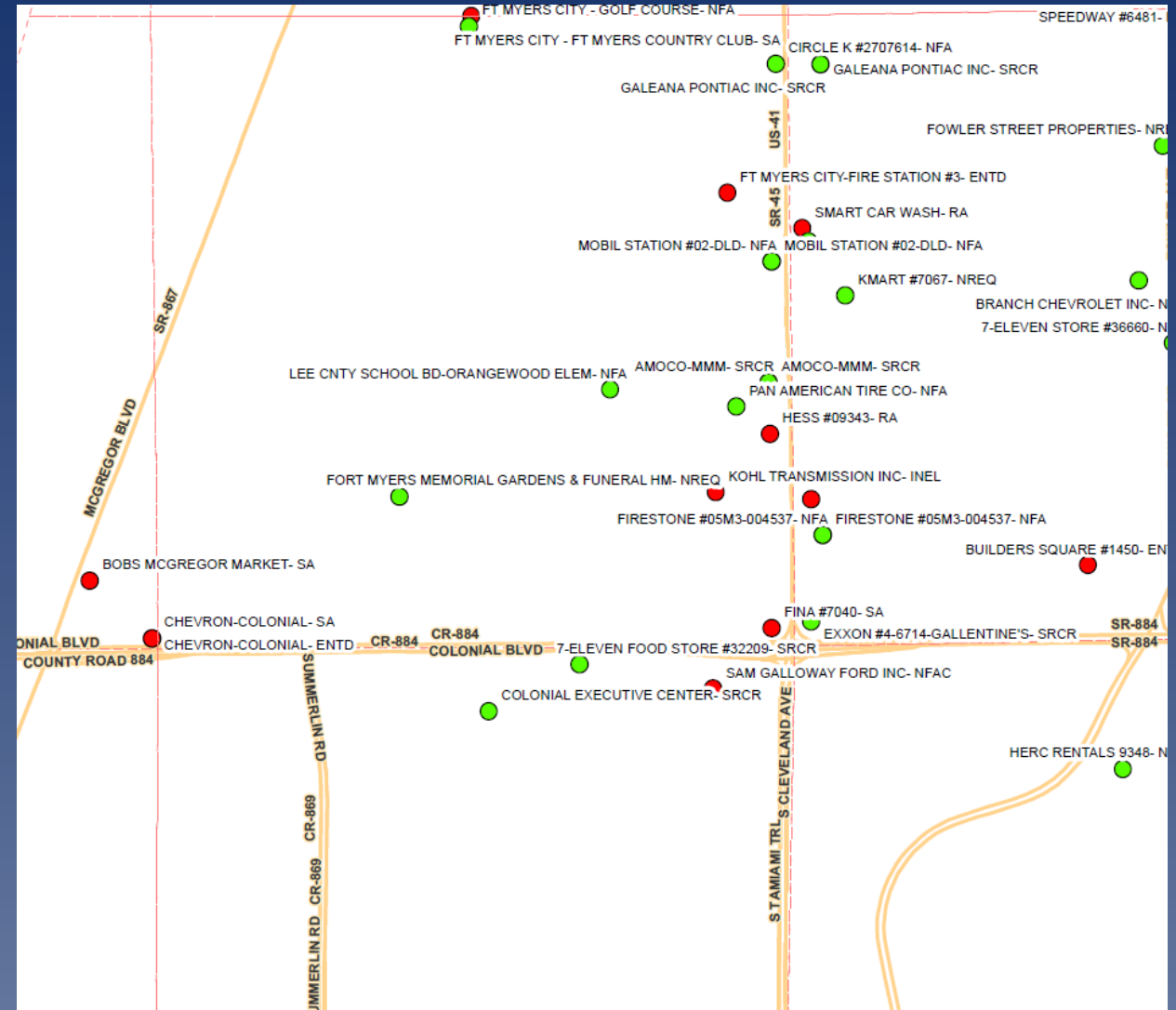
Wetlands Evaluation

- Evaluate water level drawdown impact to wetlands
- May include water level monitoring to provide assurances of no harm
- In some cases, a shallow supply source (lake) is recharged by a deeper, hydraulically separated source to replace withdrawals



Soil/Groundwater Contamination

- Evaluate potential for contamination migration as a result of the water use
- FDEP database provides sites and status:
 - Brownfields
 - Dry Cleaning
 - National Priorities
 - Petroleum (see figure)
 - Solid Waste
 - Superfund
 - Institutional Controls



Water Use Permit

➤ Allocation

- Annual
- Maximum Month

➤ Duration

➤ Withdrawal Facilities

➤ Permit Conditions

- Irrigation Hours
- Water Use Accounting
- Saline Water Monitoring
- Wetland Monitoring
- Other specific restrictions

SPECIAL PERMIT CONDITIONS

1. This permit is issued to:

Vista Palms, Inc.
1035 Collier Center Way, #7
Naples, FL 34110

2. This permit shall expire on May 23, 2037.

3. Use classification is:

Landscape Irrigation

4. Source classification is:

Groundwater from:
Lower Tamiami Aquifer

Surface Water from:
On-site Lake(s) / Pond(s)

5. Allocation:

Total annual allocation is 4.23 million gallons (MG). (11,589 GPD)

Total maximum monthly allocation is 0.52 million gallons (MG).

These allocations represent the amount of water required to meet the water demands as a result of a rainfall deficit during a drought with the probability of recurring one year in ten. The Permittee shall not exceed these allocations in hydrologic conditions less than a 1-in-10 year drought event. Compliance with the annual allocation is based on the quantity withdrawn over a 12-month time period. Compliance with the maximum monthly allocation is based on the greatest quantity withdrawn in any single month. The annual allocation expressed in GPD or MGD is for informational purposes only.

More Information

➤ Web page: www.sfwmd.gov

- What We Do
- Permitting
- Water Use/Consumptive Use
- Application Forms & Rules

The screenshot displays the website for the South Florida Water Management District. The main header features the district's logo and navigation links: "SOUTH FLORIDA WATER MANAGEMENT DISTRICT", "WHO WE ARE", "OUR WORK", "DOING BUSINESS WITH US", "COMMUNITY & RESIDENTS", "SCIENCE & DATA", and "NEWS & MEETINGS". A search bar is located in the top right corner.

The main content area is dominated by a large aerial photograph of the Everglades Agricultural Area. Overlaid on this image is the text "Everglades Agricultural Area Storage Reservoir Project" and a sub-headline: "Get the latest information on how SFWMD is implementing Senate Bill 10." A "MORE" button is positioned below the sub-headline.

Below the main image is a section titled "Current Water Conditions" which contains three circular data points:

- LEVELS** (02-26-2018): Lake Okeechobee, 14.93ft (NGVD29). Includes a "MORE" link.
- RAINFALL** (02-23-2018): Month to date, 0.48in. Normal monthly average is 1.53. Includes a "MORE" link.
- STORAGE** (02-26-2018): View map of major storage areas and available capacity. Includes a "MORE" link.

The browser's address bar shows the URL "https://www.sfwmd.gov/". The bottom right corner of the page indicates a zoom level of 75%.

Thank you!

