



Sea Level Rise and Saltwater Intrusion into Aquifers along the Southeast Florida Coast

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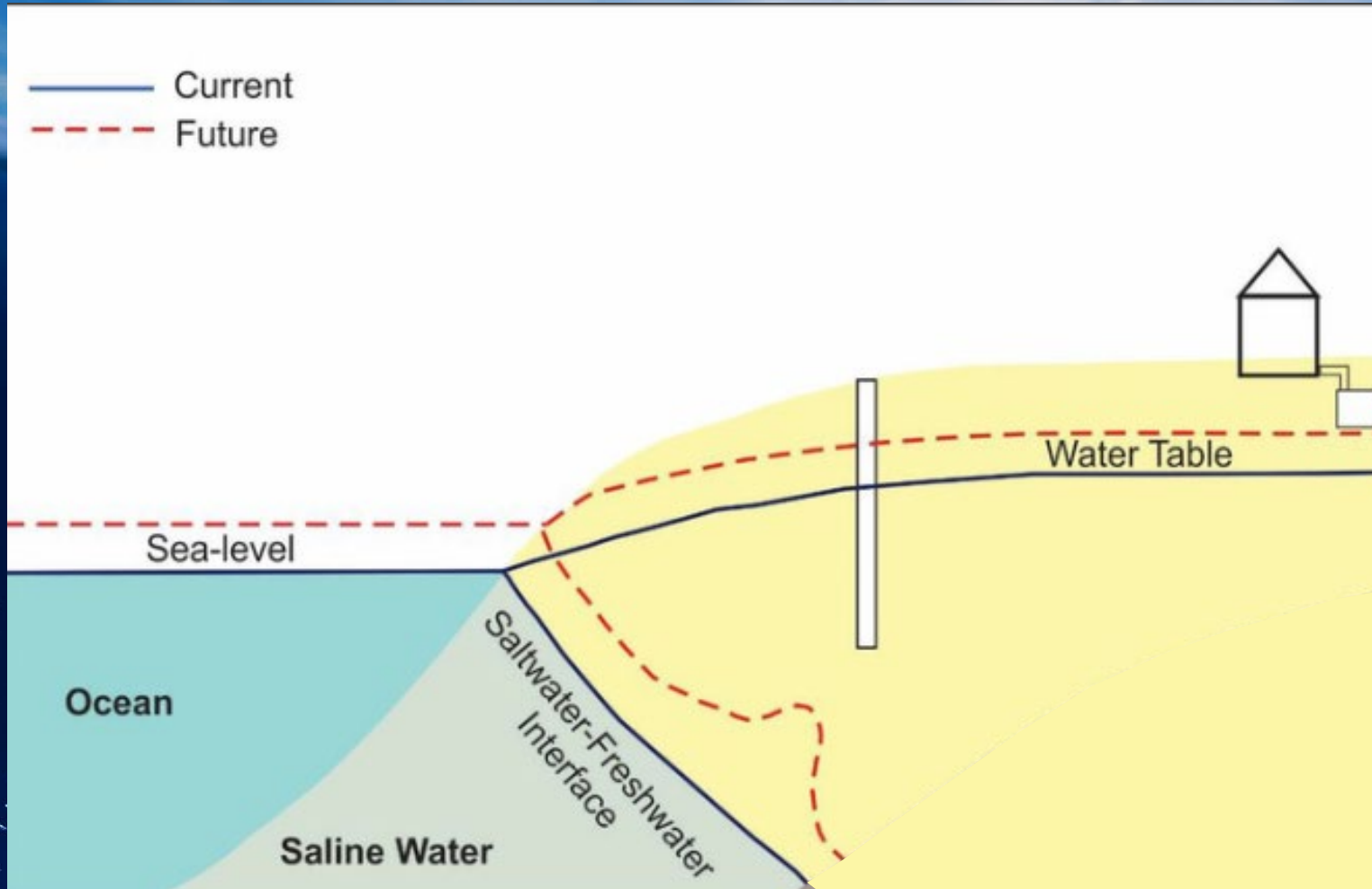
Summary



Anastasia Formation – Coral Cove Park, Jupiter, FL

- ❖ Sea level rise is impacting groundwater levels and quality
- ❖ Monitoring data tracks the changes
- ❖ Strategies to track and minimize water supply impacts

Groundwater Stages and Saltwater Intrusion



Sea level rises

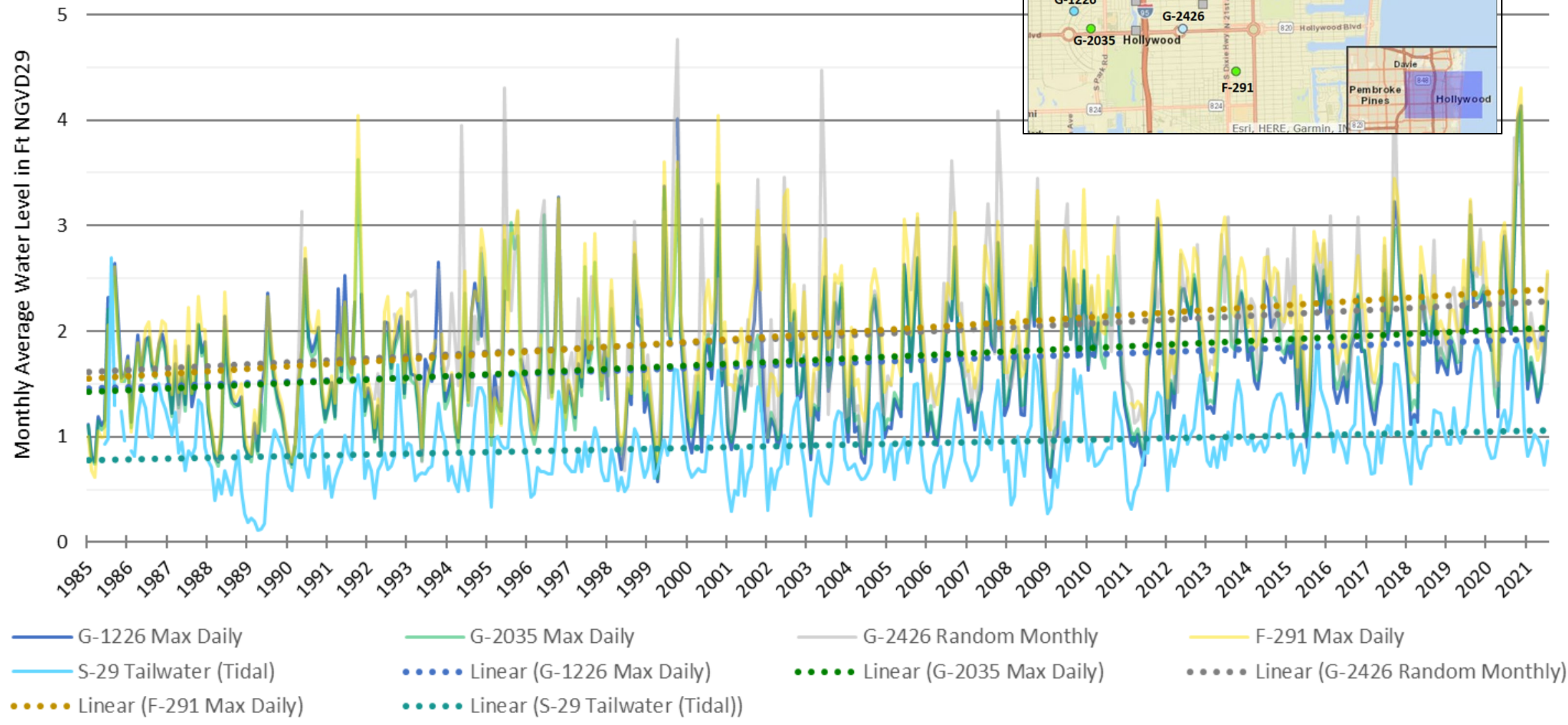
Interface moves inland

Dense saltwater pushes up lighter Water Table

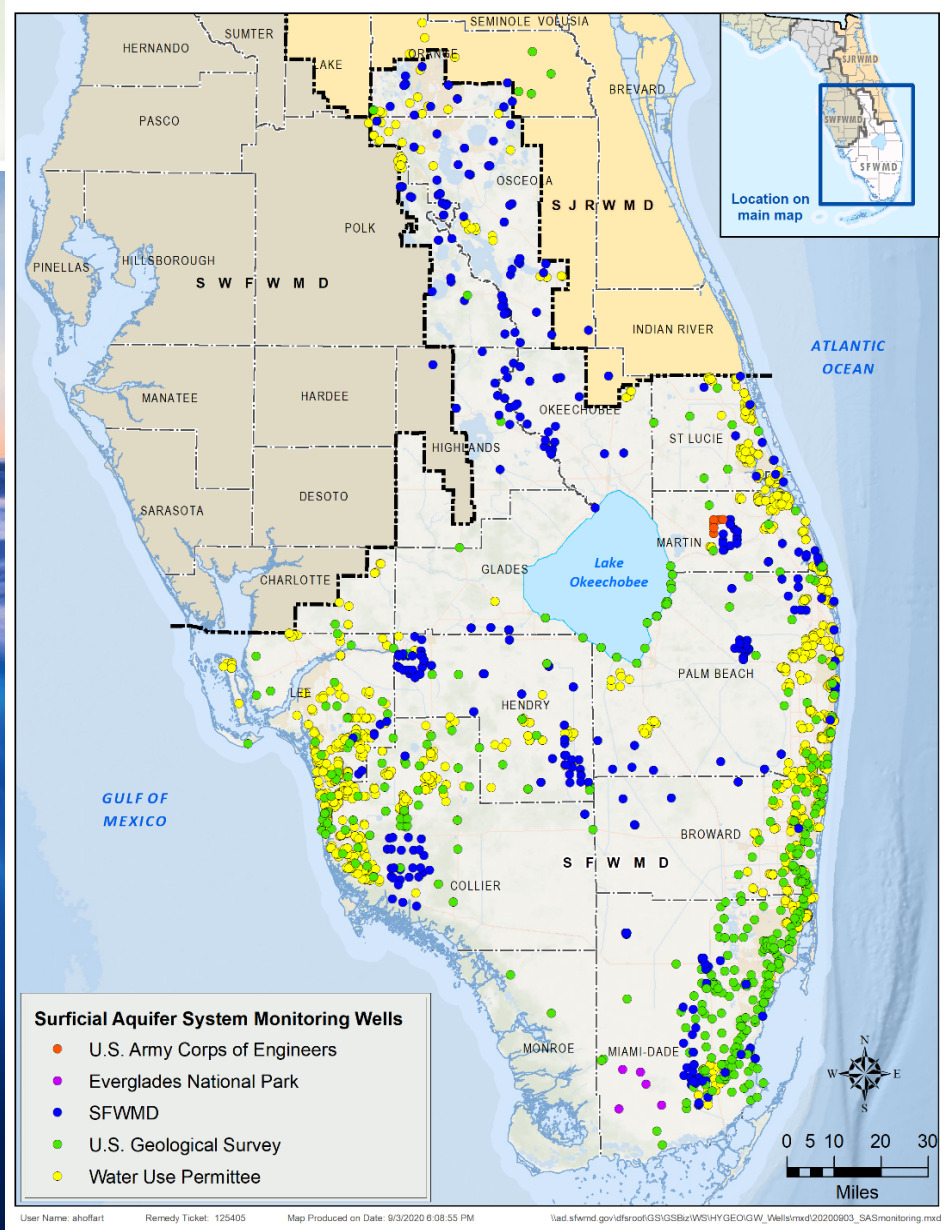
Impacts

- Saline water further inland pulled into wells
- Inland flooding from higher groundwater, reduced storm water storage capacity

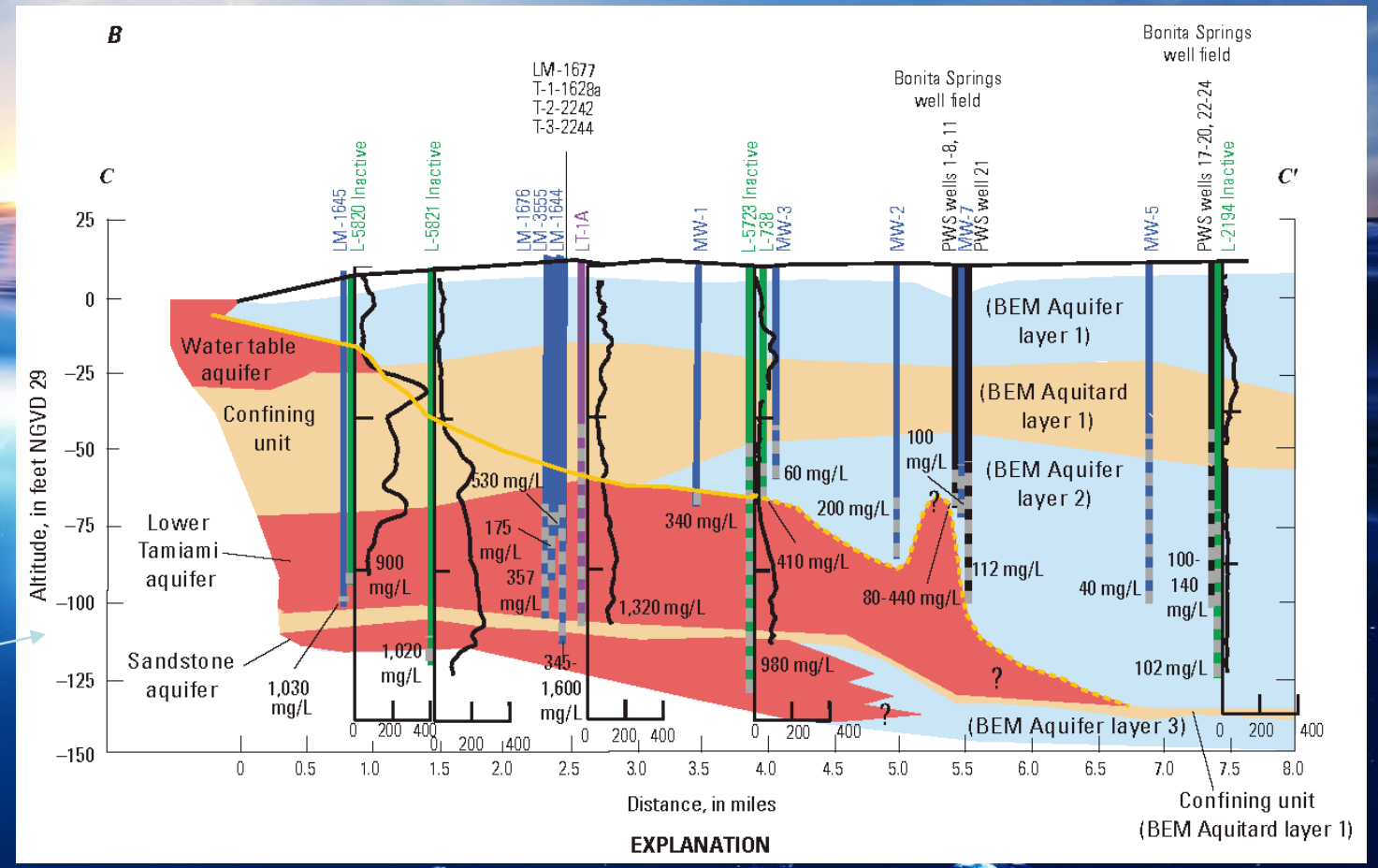
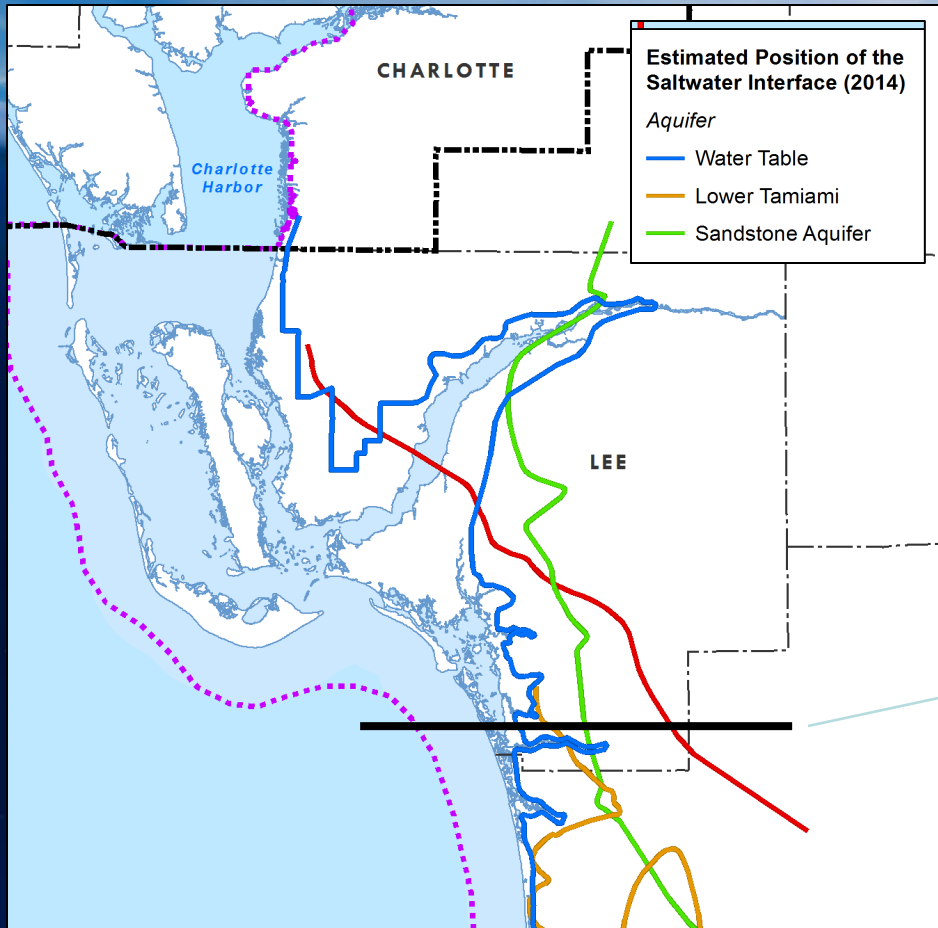
Groundwater and Tidal Stages - Hollywood Area



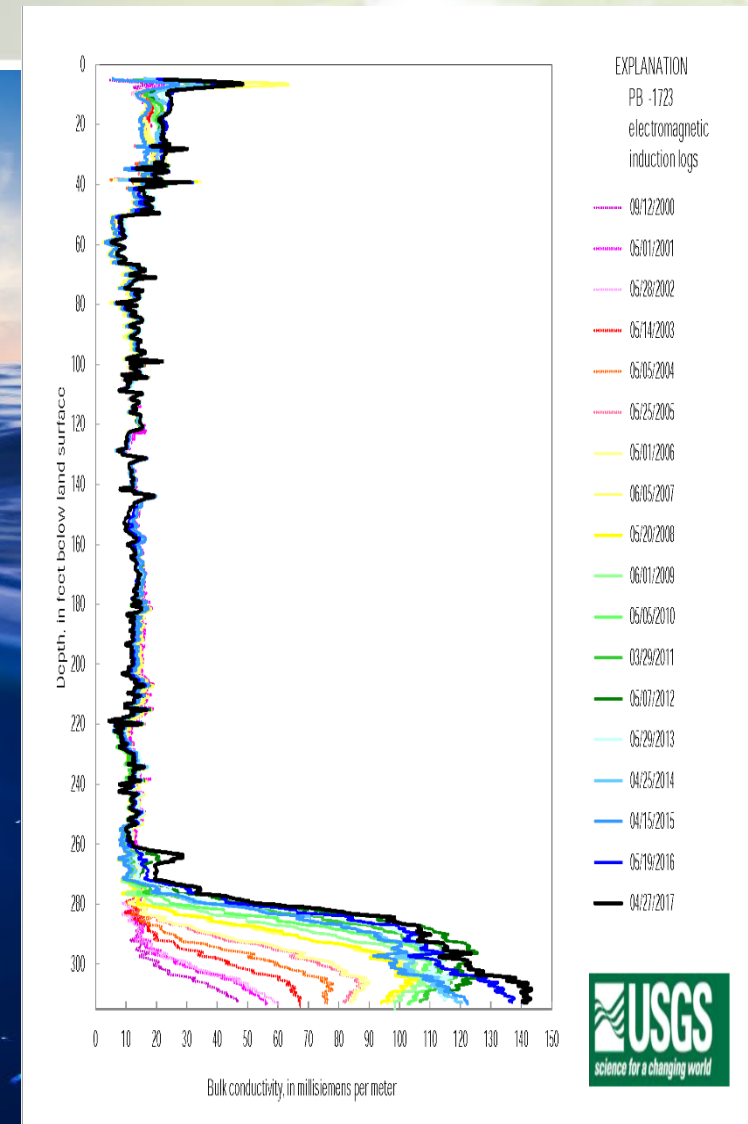
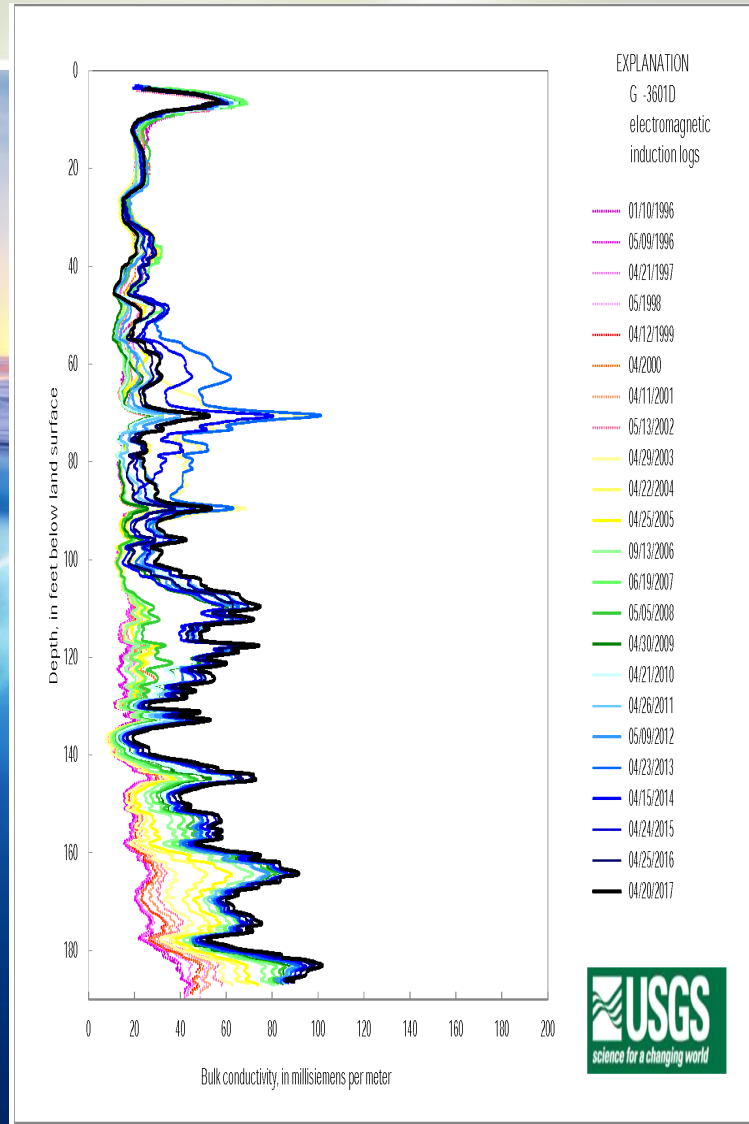
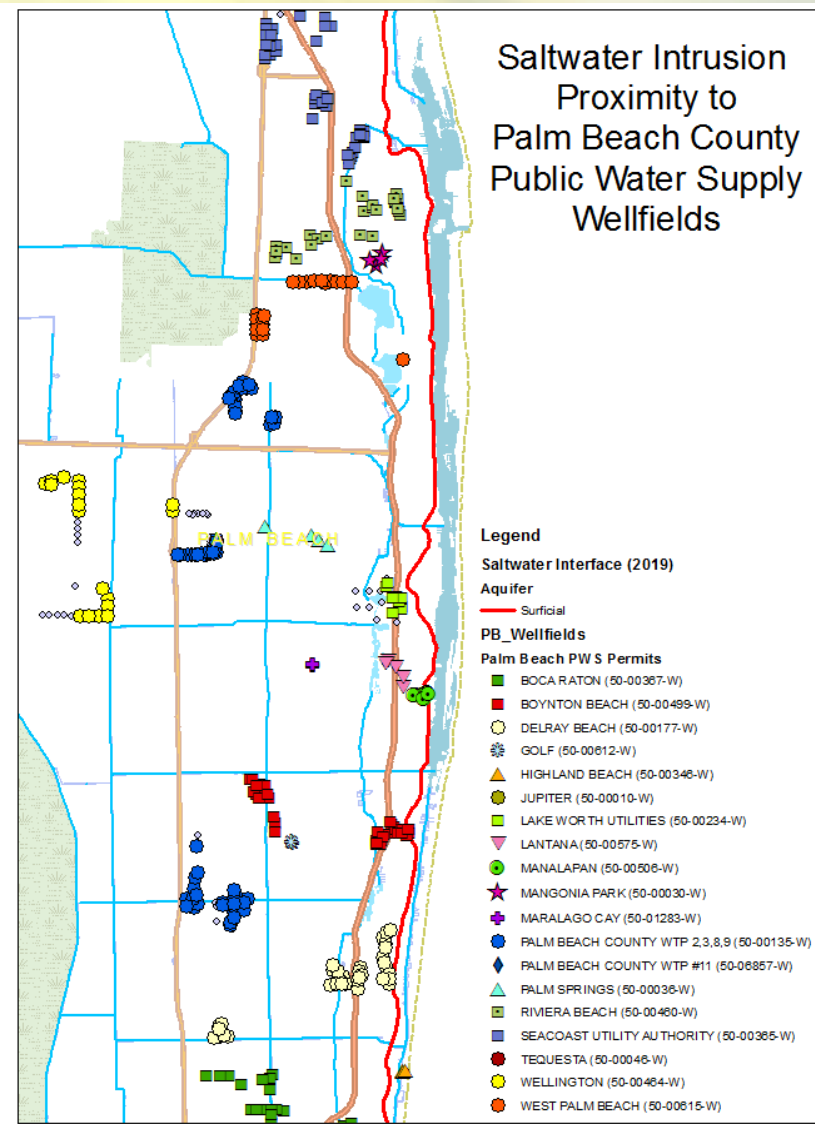
Groundwater Monitoring



Coastal Saltwater Intrusion – Southwest Florida



Coastal Saltwater Intrusion – Southeast Florida



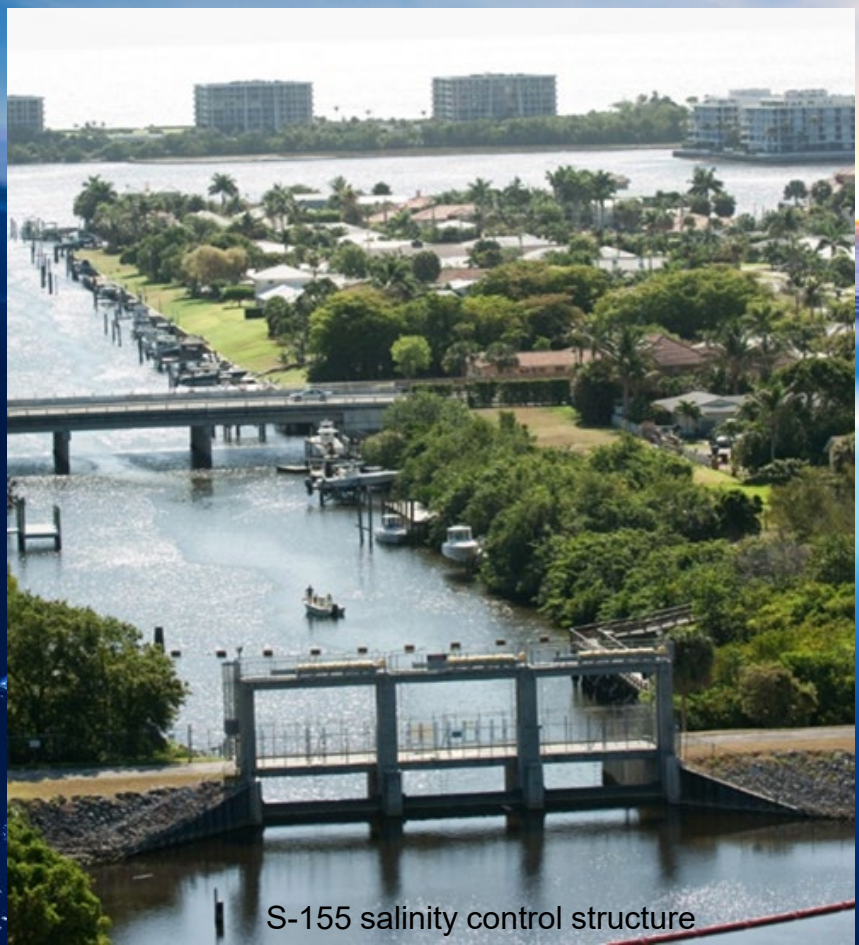
Tracking Water Supply Impacts from Saltwater Intrusion

BACKWARD LOOKING: Utility Wellfield	wells abandoned since 2000
DEERFIELD BEACH PWS	2
DANIA BEACH PWS	1
BROWARD COUNTY 3A/3B Wellfields	9
BROWARD COUNTY 2A Wellfield	3
HOLLYWOOD - North & Plant Wellfields	10
LAKE WORTH UTILITIES east of I-95	7
MANALAPAN PWS	3

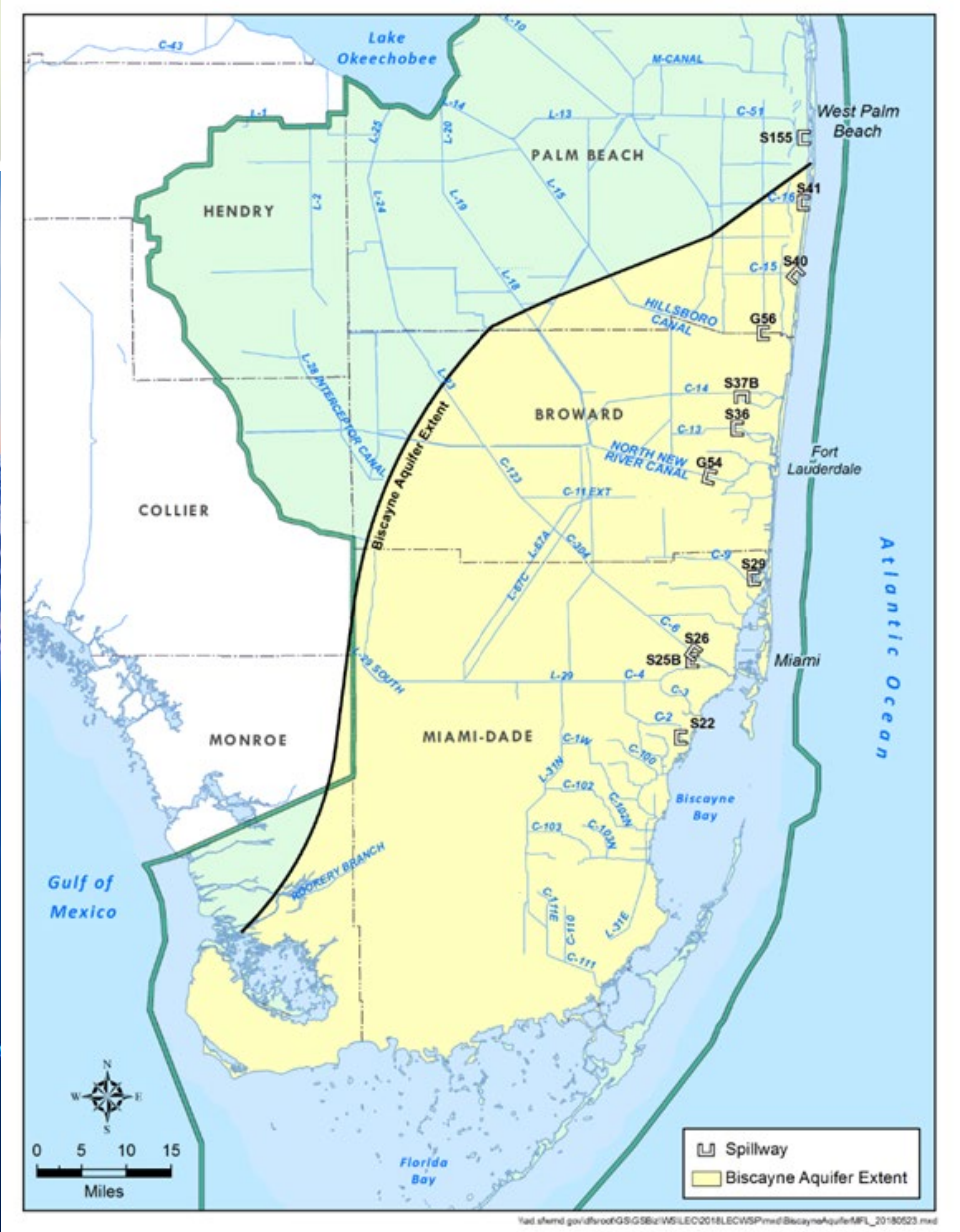
Regional Groundwater Monitoring
 Groundwater Modeling
 Water Supply Planning
 Water Use Regulation
 Minimum Flows and Minimum Water Levels

FORWARD LOOKING	Utilities Identified in Most Recent Water Supply Plan		
	Total Utilities	More Vulnerable (no alternative supply source)	Vulnerable (with alternative supply source)
Water Supply Planning Region			
Lower East Coast (2018)	52	6	8
Lower West Coast (2017)	22	0	4
Upper East Coast (2021)	17	0	4

Biscayne Aquifer Minimum Flows and Minimum Water Levels

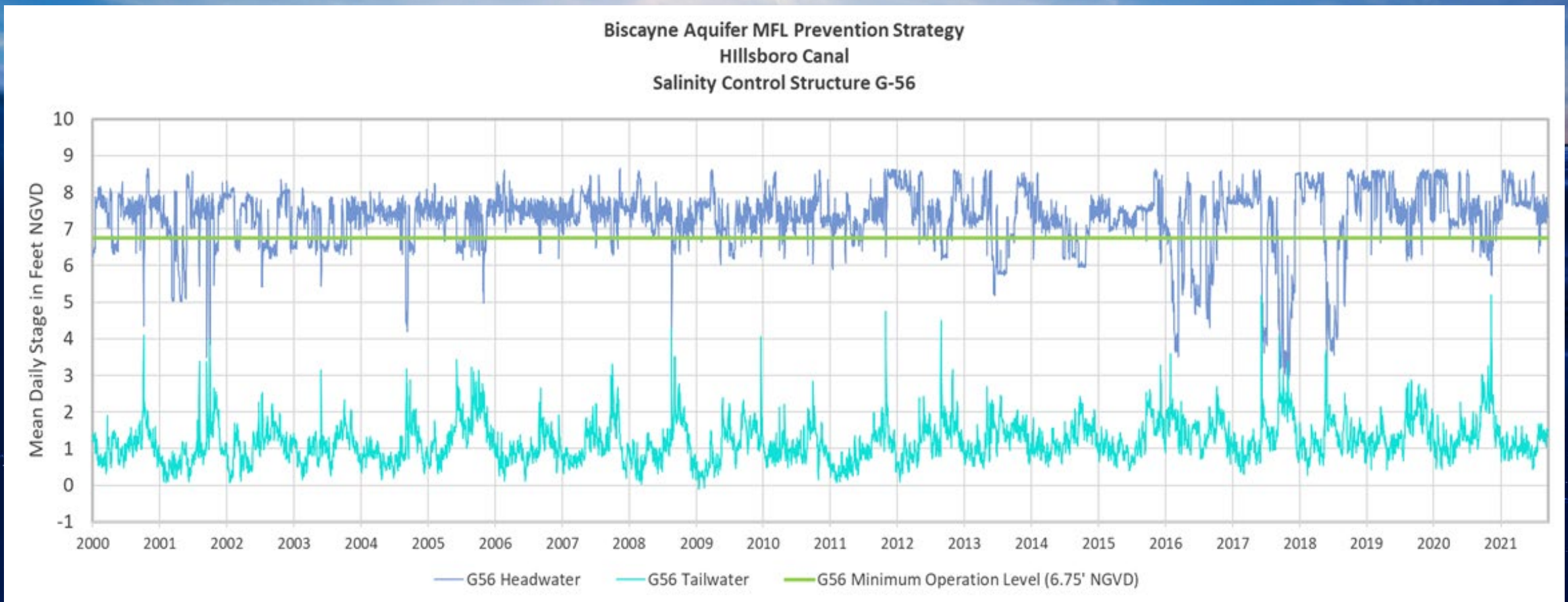


S-155 salinity control structure



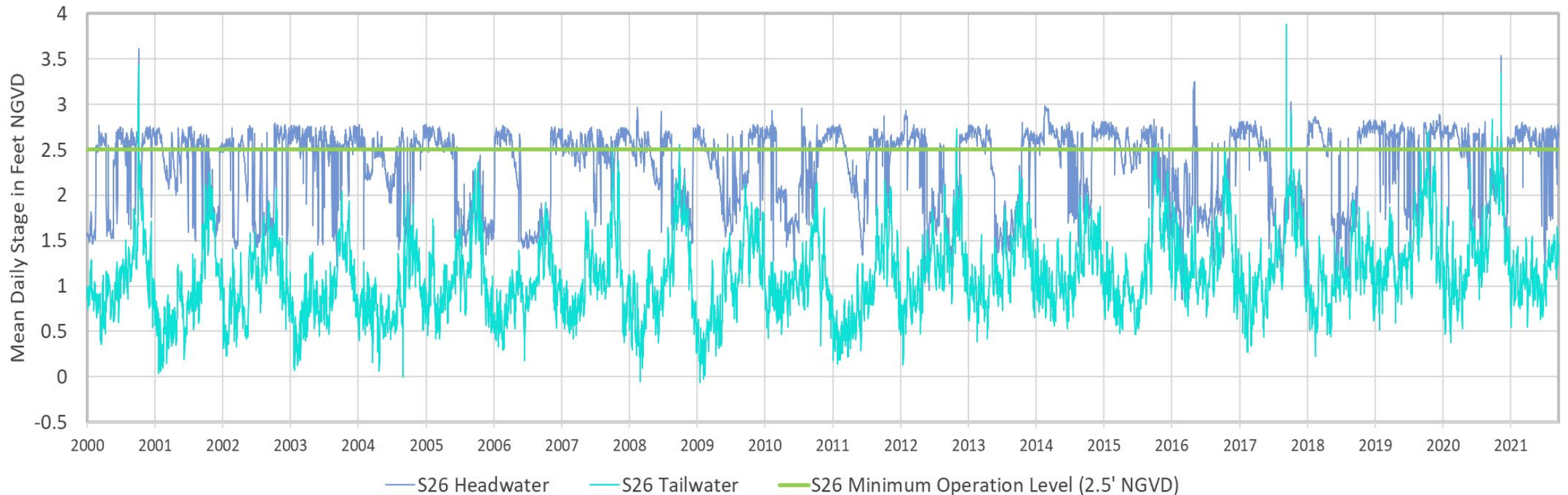
Spillway
Biscayne Aquifer Extent

Biscayne Aquifer Minimum Flows and Minimum Water Level




Biscayne Aquifer Minimum Flows and Minimum Water Level

Biscayne Aquifer MFL Prevention Strategy
Miami (C-6) Canal
Salinity Control Structure S-26



Sources of Information from SFWMD

 Resilience Metrics Hub



Regional Rainfall

Changes in rainfall patterns will impact people and ecosystems by altering the amount of water in our region throughout t...



Elevations at Coastal Structures and Sea Level Rise

Tailwater and headwater elevations at coastal structures represent how sea level rise affects stormwater discharge capacity in South...



Saltwater Intrusion in Coastal Aquifers

The inland migration of saltwater poses a threat to water supply and critical freshwater habitats.



Salinity in the Everglades

The salinization of previously freshwater systems poses threats to several factors.



Estuarine and Mangrove Inland Migration

Trends in Estuarine Inland Migration provide insights to the impacts of sea level rise in coastal areas and the Everglades.

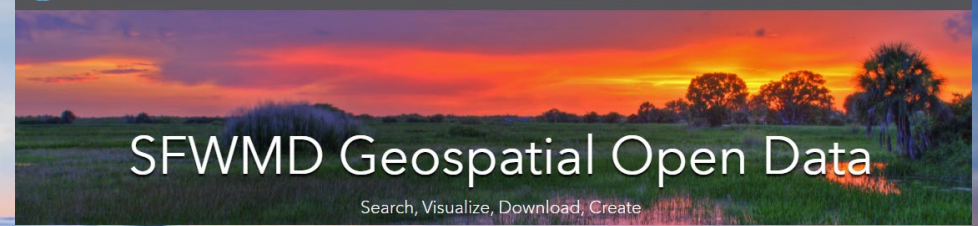


Soil Subsidence in South Florida

Maintaining soil elevations within coastal and intertidal habitats, as sea level changes, is an indicator of long-term stability of coastal.



 South Florida Water Management District  





Current Conditions at site G54

@ Feb 18, 2022 10:06:18 AM

Upstream

*black line = historic value on this day

4.05 ft NGVD29

Water level is Steady

Rainfall

Last 72 hours

Radar
0.12 Inches

Gauge
0.15 Inches

Downstream

*black line = historic value on this day

2.19 ft NGVD29

Water level is Steady

Flow

Current Flow Rate: **387 cfs**

7 Day Flow Volume: **441 Acre-Ft**
Midnight Minus 7 Days

The values below are from the most recent grab samples. * indicates Provisional data.

Parameter	Date	Value	12 Month Average
PHOSPHATE, TOTAL AS P	2007-06-05 11:40	0.013 mg/L	0.01 mg/L

G-54 (SEWEL LOCKS) ON NORTH NEW RIVER CANAL

Latitude: 26.094845
Longitude: -80.229462

Active
[Go to structure](#)

NORTH NEW RIVER CANAL WEST NORTH NEW RIVER CANAL EAST

C-11 EAST State of Florida, Maxar, Microsoft | SFWMD ... esri

All parameters

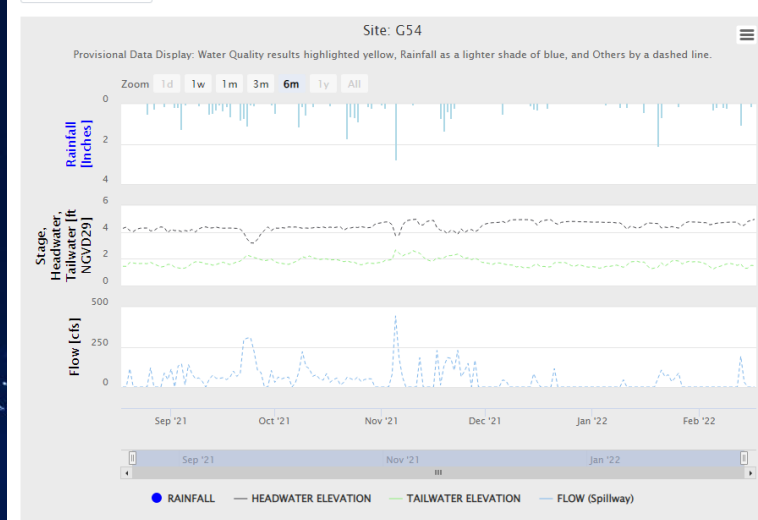
[Get Data](#)

Hydrologic / Other	Start Date	End Date
DISSOLVED CHLORIDE	10/5/1917	7/22/2003
DISSOLVED OXYGEN	4/29/1968	10/10/1980
FLASHBOARD WEIR ELEVATION	1/6/1987	4/21/1992
FLOW	1/1/1940	2/17/2022
GAGE HEIGHT ABOVE DATUM	10/1/1969	4/14/1992
GATE OPENING	4/21/1992	2/7/2022
KJELDAHL NITROGEN, TOTAL	1/2/1980	10/10/1980
NITRATE+NITRITE-N	1/2/1980	10/10/1980

Water Quality	Start Date	End Date	Samples
ALKALINITY, TOT, CaCO3	6/11/1974	7/24/1975	23
AMMONIA-N	6/11/1974	7/24/1975	26
CALCIUM	6/11/1974	7/24/1975	27
CHLORIDE	6/11/1974	7/24/1975	27
DISSOLVED OXYGEN	6/28/1974	7/11/1975	23
HARDNESS AS CaCO3	6/11/1974	7/24/1975	27
KJELDAHL NITROGEN, TOTAL	6/11/1974	7/24/1975	26
MAGNESIUM	6/11/1974	7/24/1975	27

Graph Table Statistics

Past 6 Months



Multimedia

Filename	Type	Date	Description
G54 ASBUILT 1990	ASBUILT	1990-10-15	G54, SEWELL CONTROL STRUCTURE, INSTALL
G54-G56 PLANSET 1949	PLAN SET	1949-12-31	ASBUILTS, (COE) 1949 SEWELLS LOCK; ASBUILTS, (COE) 1950 SEWELLS LOCK; ASBUILTS, (COE) 1949, SEWELLS LOCK; ASBUILTS, (COE) 1950, SEWELLS LOCK
G54 ASBUILT 1991	ASBUILT	1991-12-31	ASBUILTS, (SFWMD), 1991, G054
G54-G56 PLANSET 1949	PLAN SET	1949-12-31	ASBUILTS, (COE) 1949 SEWELLS LOCK; ASBUILTS, (COE) 1950 SEWELLS LOCK; ASBUILTS, (COE) 1949, SEWELLS LOCK; ASBUILTS, (COE) 1950, SEWELLS LOCK

An underwater photograph showing a sunburst effect from the surface, with rays of light filtering through the water. Numerous bubbles are visible, rising from the bottom. The overall color palette is a range of blues, from deep navy to bright cyan.

DISCUSSION