



Overview of the Draft 2010 Water Supply Assessment Report

Suwannee River Water Management District



Elements of the Water Supply Assessment

- SRWMD 2010 Water Supply Assessment
 - Statutory Requirements
 - Water Use Demand Projections
 - Assessment of Current and Projected Water Resource Impacts
 - Regional groundwater pumpage impacts
 - Identification of areas where flow constraints for priority water resources are predicted to be exceeded
 - Alternative water source availability assessment
- Close coordination with the St. Johns River Water Management District



Water Supply Planning Statutory Requirements

- The Districts shall develop Water Supply Assessments in accordance with the provisions of Florida Statutes (Section 373.036(2)(b)4)
 - Assessment updated every 5 years / 20 year planning period
 - Are existing sources of water (groundwater) adequate for all use categories while protecting natural systems?
 - If not, affected areas shall be designated as “Water Supply Planning Regions”
 - A Regional Water Supply Plan shall be developed for the areas
 - These areas shall be designated as “Water Resource Caution Areas” within 1 year



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Water Use Demand Projections (2010 – 2030)

- Water Use Categories
 - Public Supply
 - Domestic Self Supply
 - Agriculture
 - Industrial/Commercial/Institutional
 - Thermo-Electric Power Generation
 - Recreation



Water Use Demand Projections (2010 – 2030)

- Low Range
 - Conservative
 - Based on certainties
 - Tendency is to under-estimate demand
- High Range
 - Less conservative
 - Based on reasonable speculation
 - Tendency is to over-estimate demand



Water Use Demand Projections 2010-2030 (mgd)

Water Use Categories	Low Range Demand			High Range Demand		
	2010	2030	Increase	2010	2030	Increase
Public Water Supply	23.30	27.37	4.08	23.30	33.8	10.49
Domestic Self-Supply	18.87	23.76	4.98	18.87	23.85	4.98
Agricultural	127.46	127.46	0.00	134.54	163.85	29.31
Industrial, Commercial, & Institutional	84.72	85.70	0.97	84.80	89.13	4.33
Thermo-Electric Power Generation	0.07	0.07	0.00	0.07	13.38	13.31
Recreational	1.81	2.20	0.40	1.81	2.20	0.39
Totals	256.23	266.56	10.33	263.39	326.20	62.81



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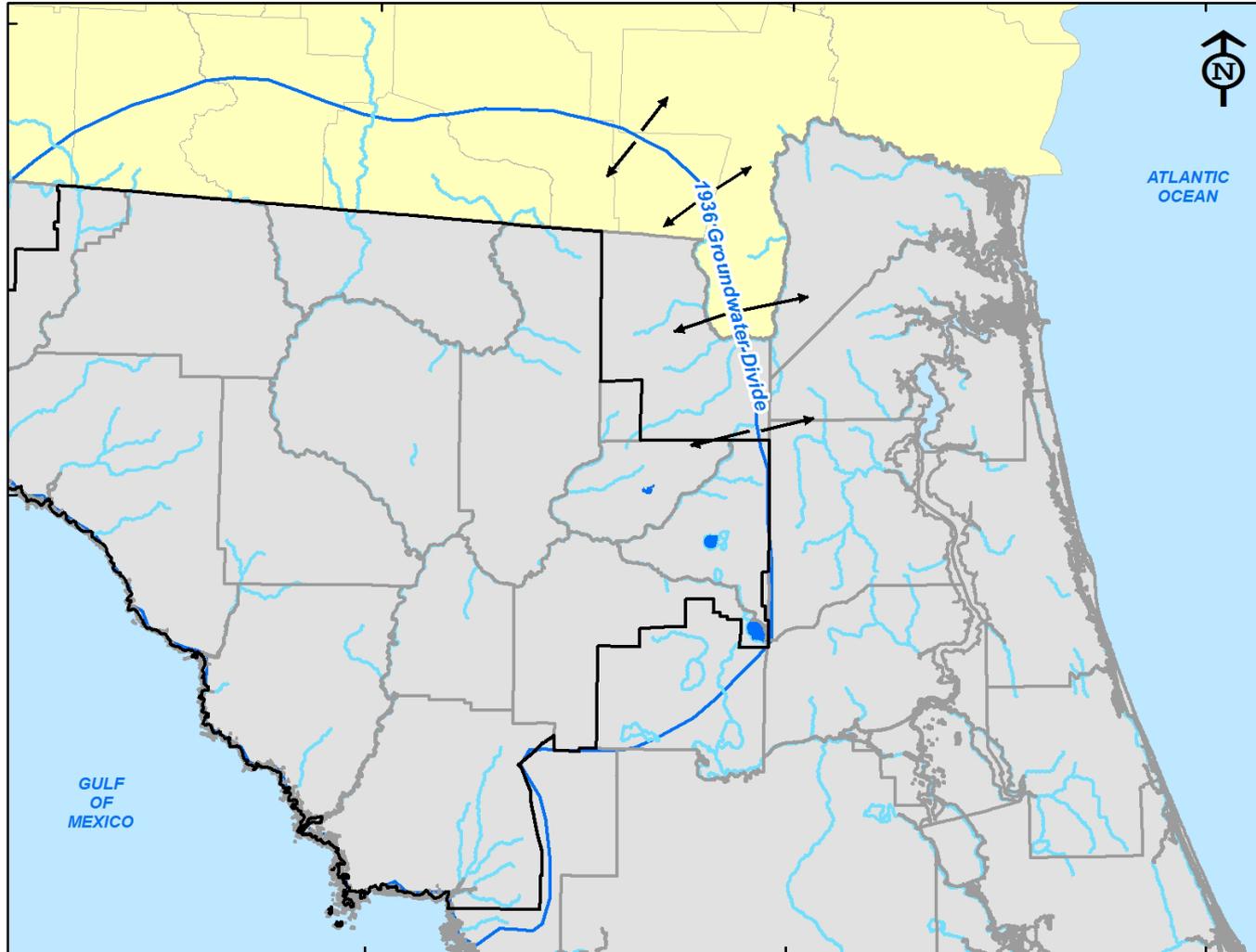


Current Water Resource Impacts

- Regional groundwater withdrawals have caused Upper Floridan aquifer levels to decline by over 10 feet in certain portions of the northeastern SRWMD

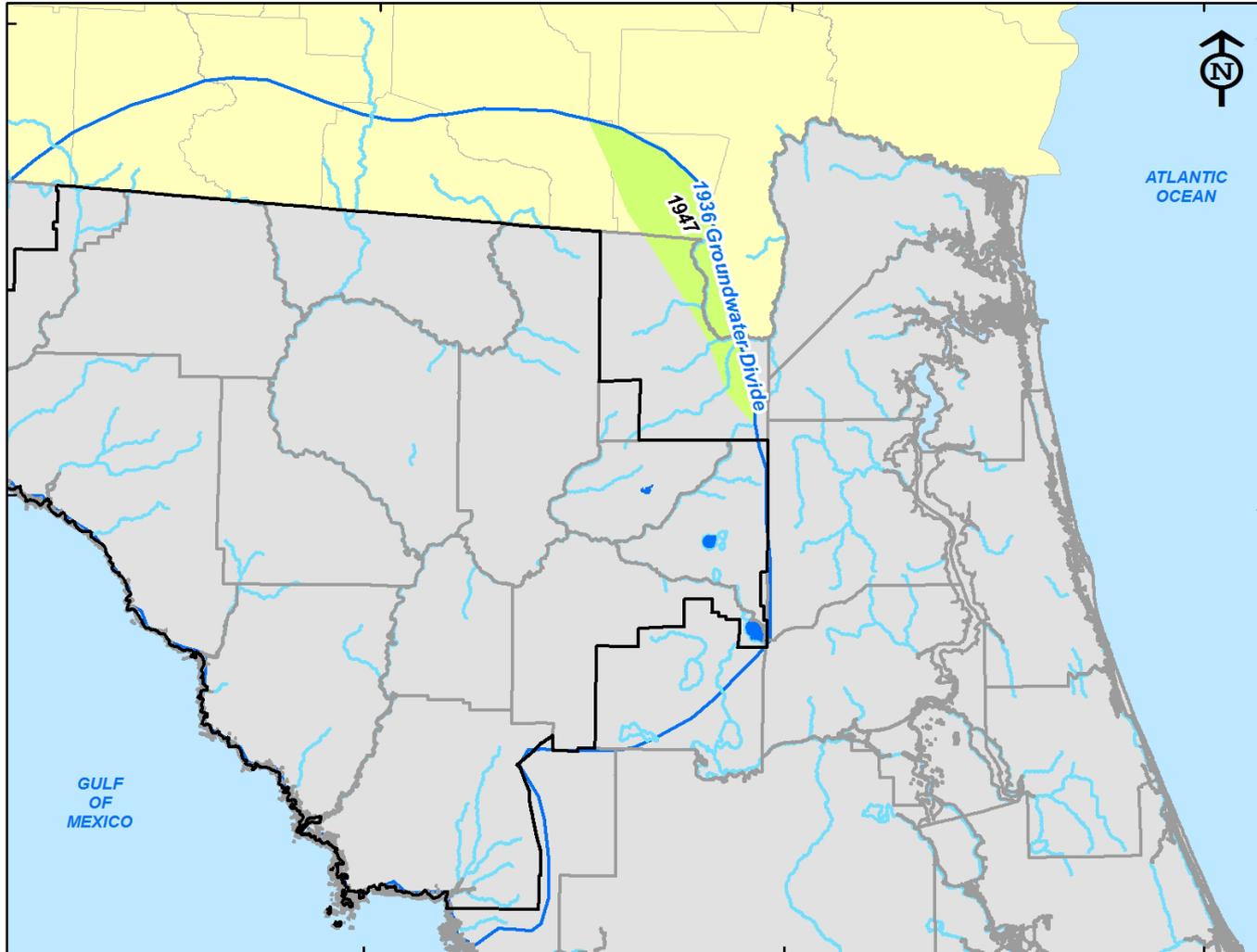


Migration of the Groundwater Flow Divide (1936-2005)





Groundwater Flow Divide (1947)



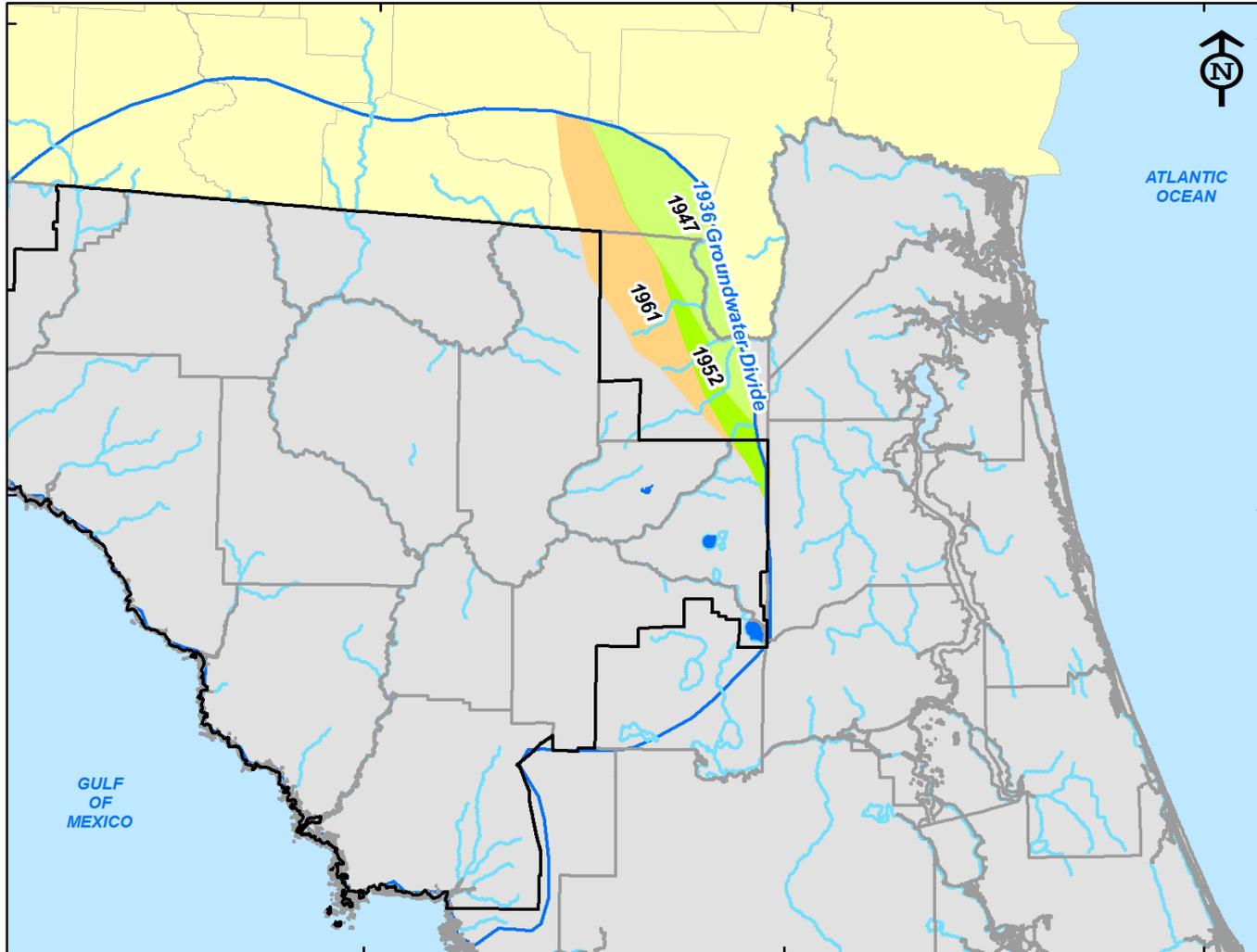


Groundwater Flow Divide (1952)



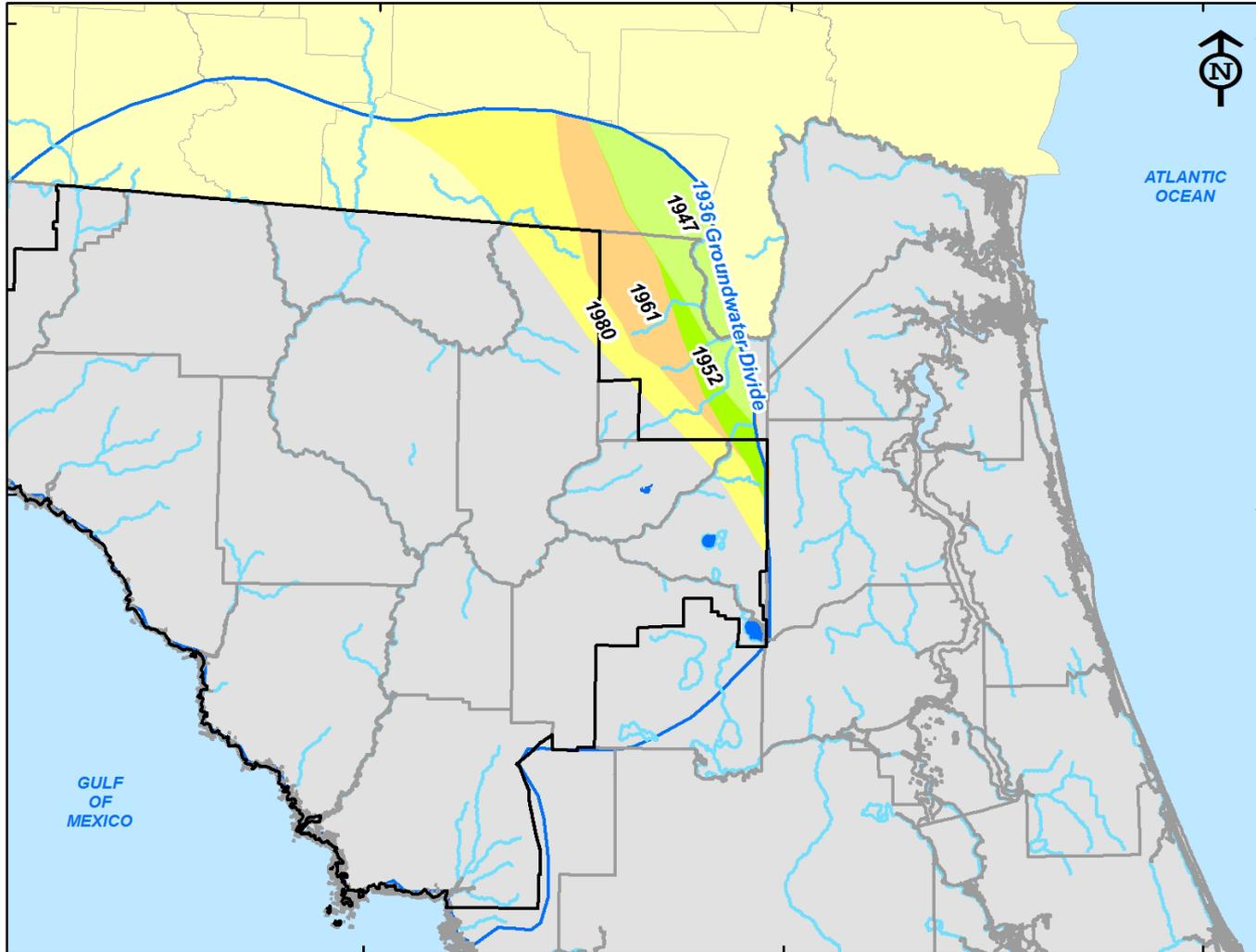


Groundwater Flow Divide (1961)



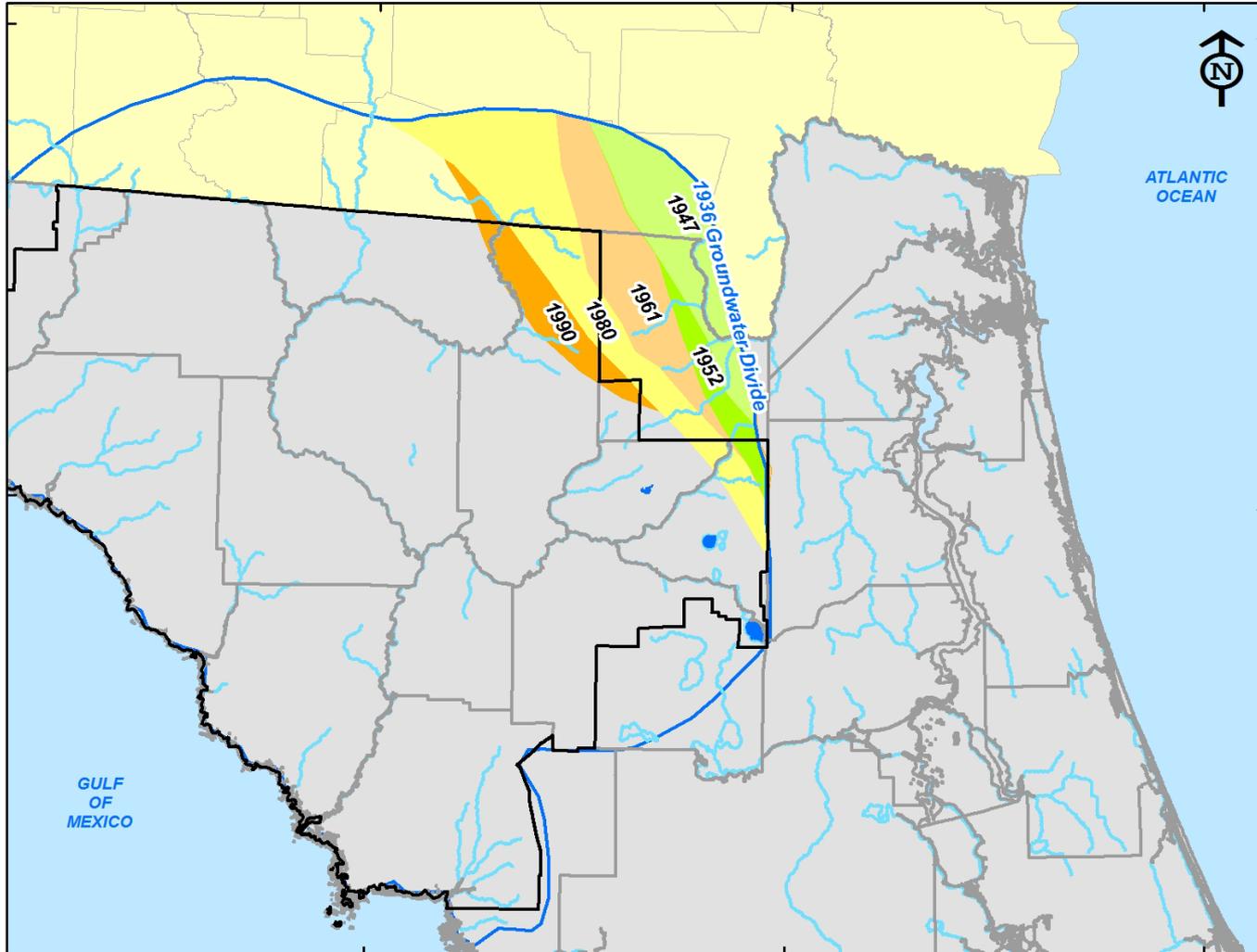


Groundwater Flow Divide (1980)



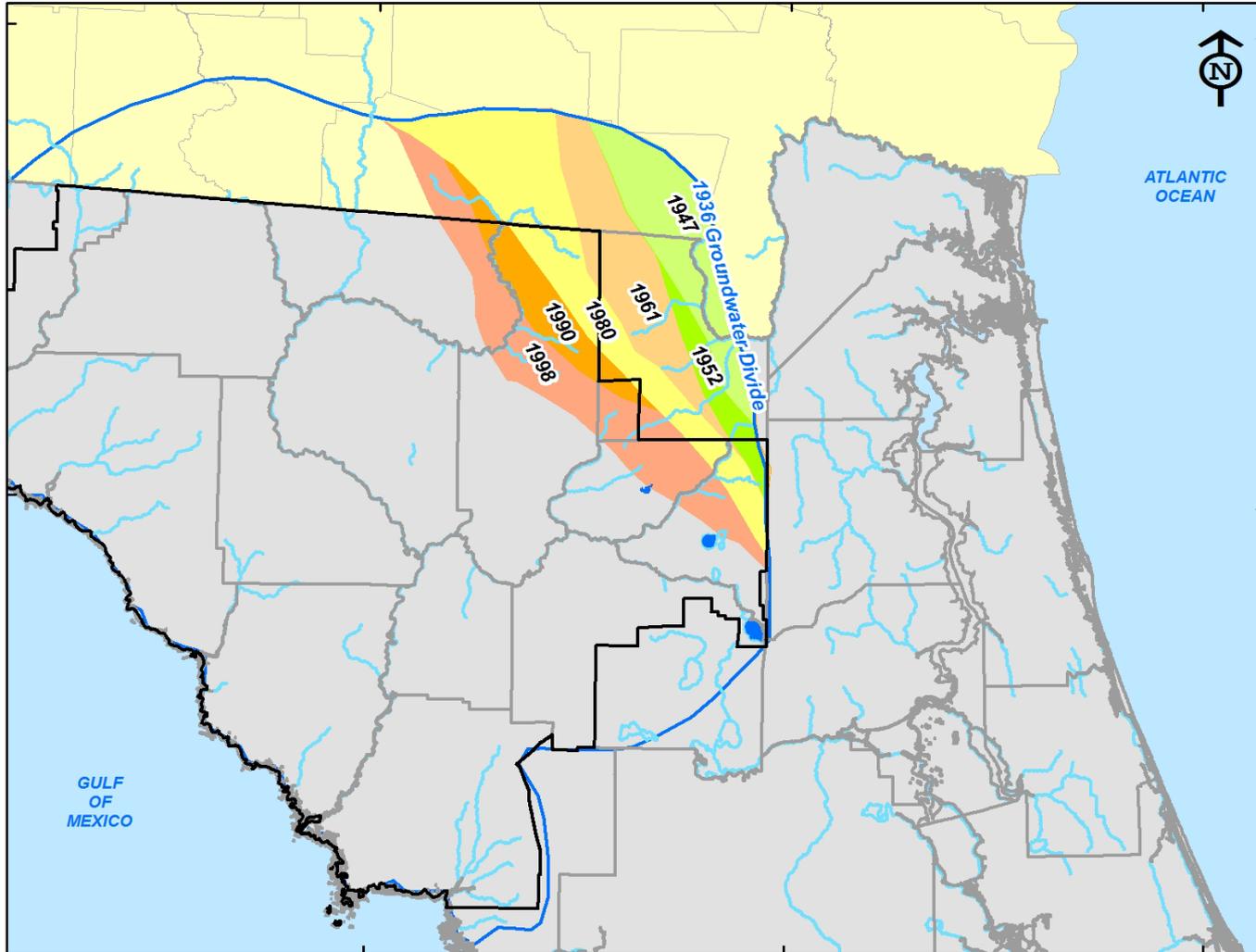


Groundwater Flow Divide (1990)



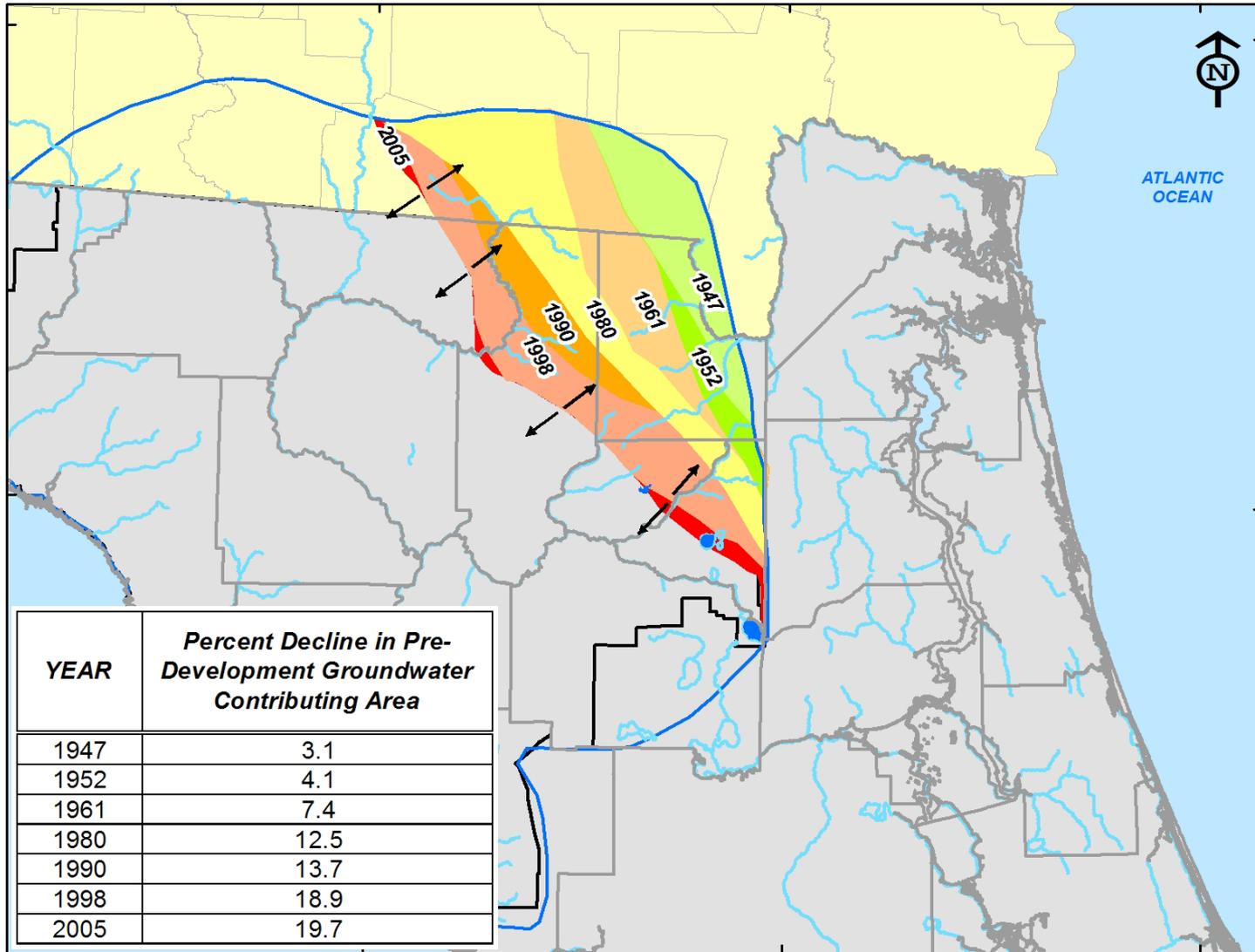


Groundwater Flow Divide (1998)



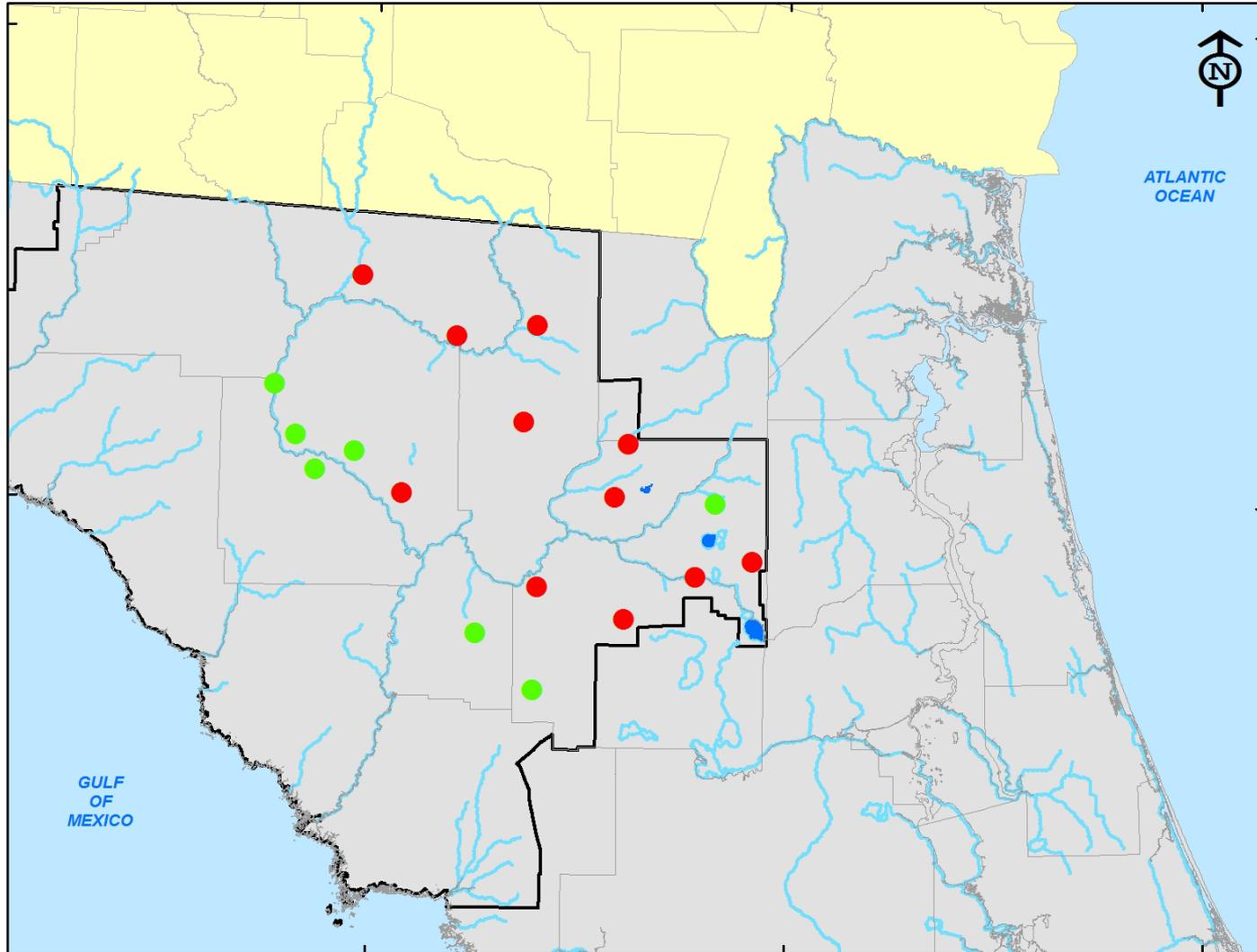


Current Water Resource Impacts: Migration of the Groundwater Flow Divide (1936-2005)



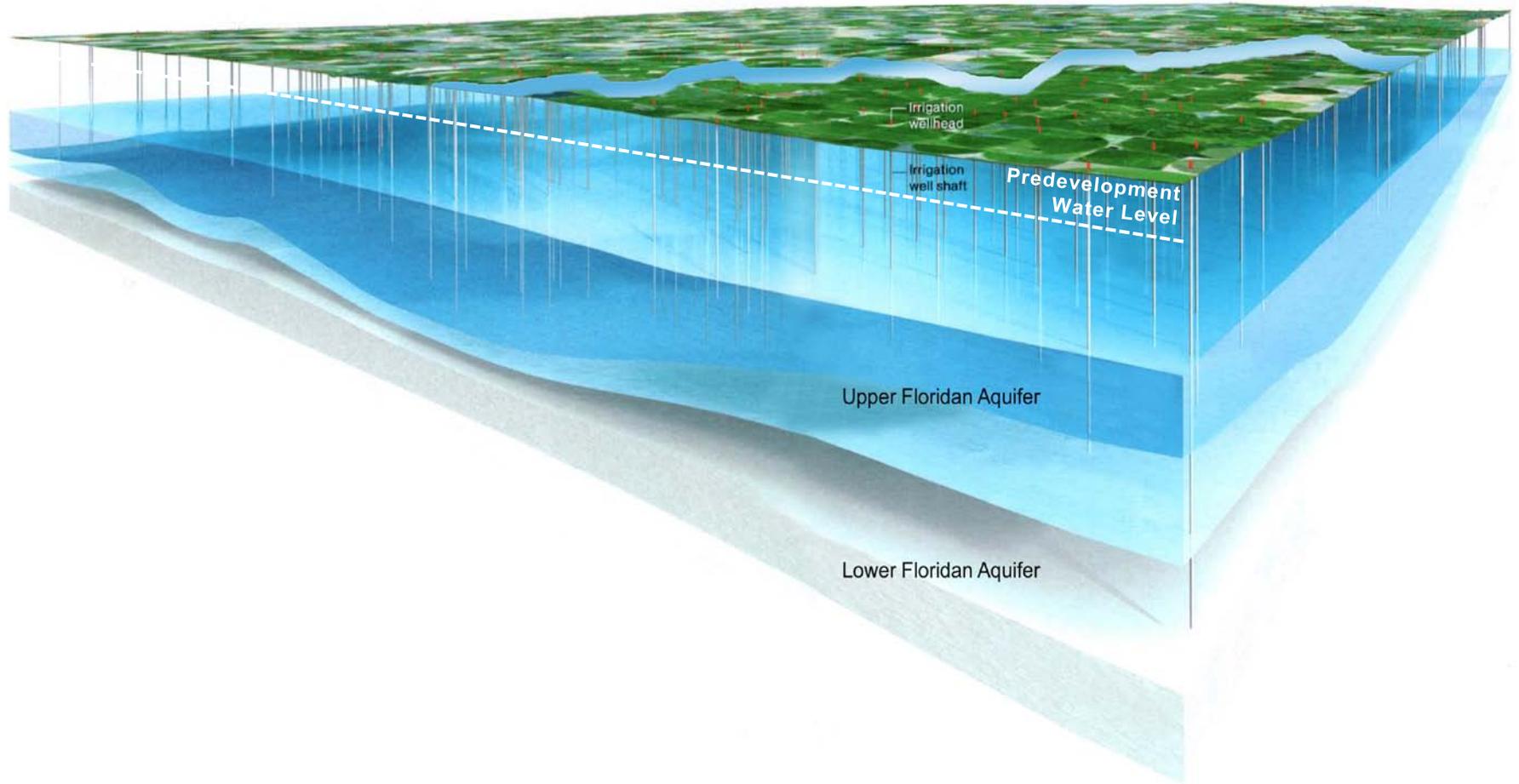


Upper Floridan Aquifer Sentinel Wells (Statistically Significant Declining Trends in Red)



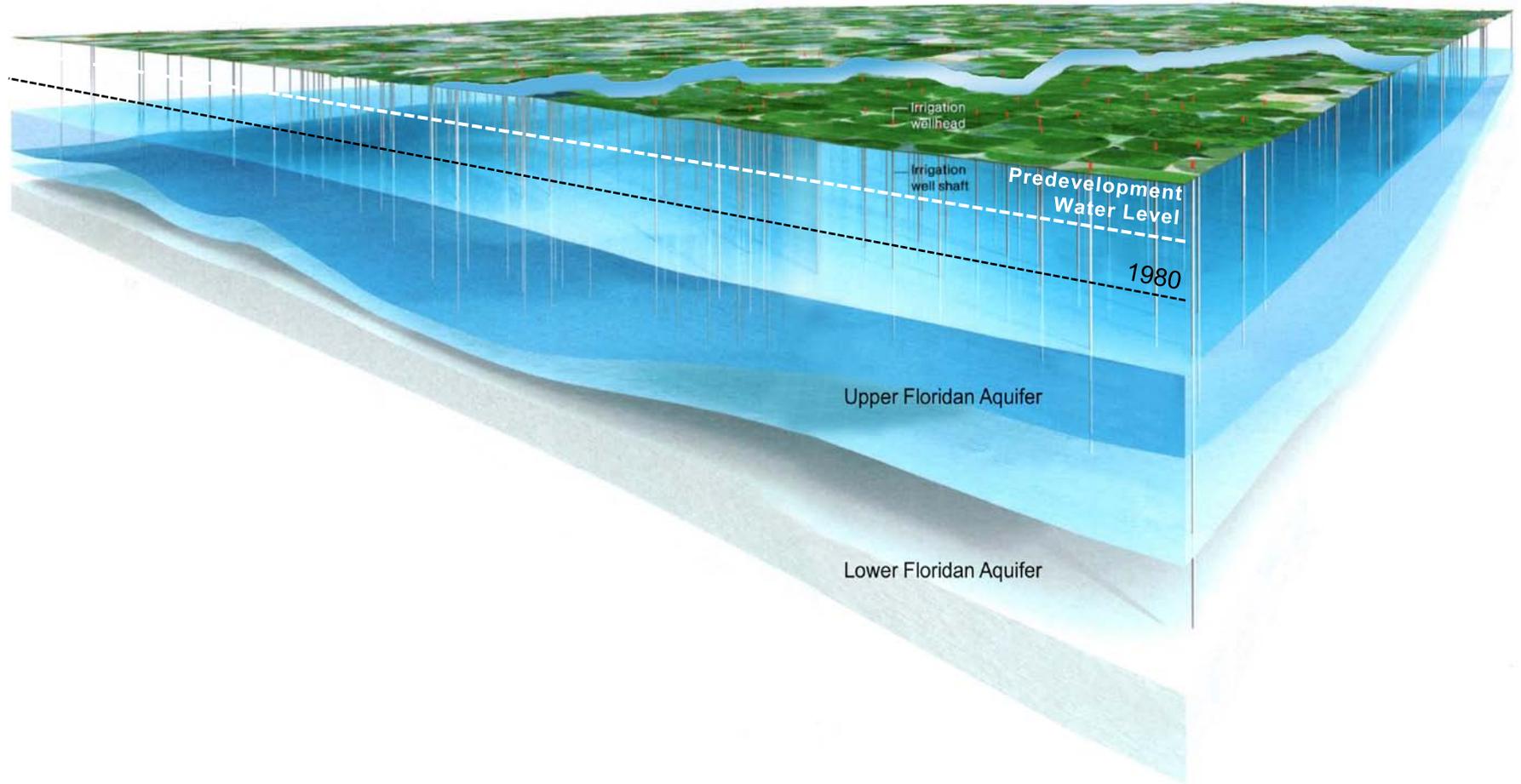


Vertical Expression of the Groundwater Flow Divide Migration



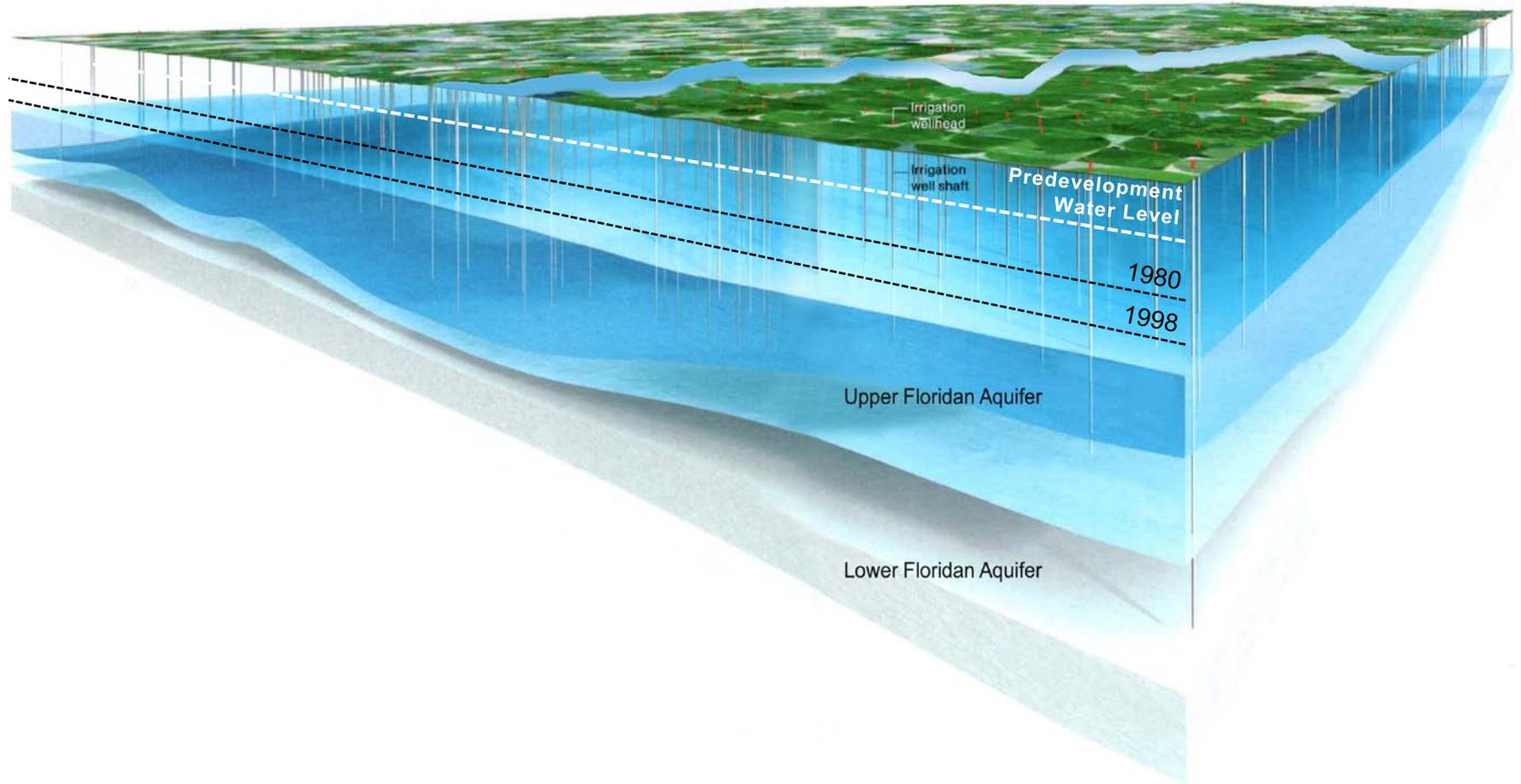


Vertical Expression of the Groundwater Flow Divide Migration





Vertical Expression of the Groundwater Flow Divide Migration





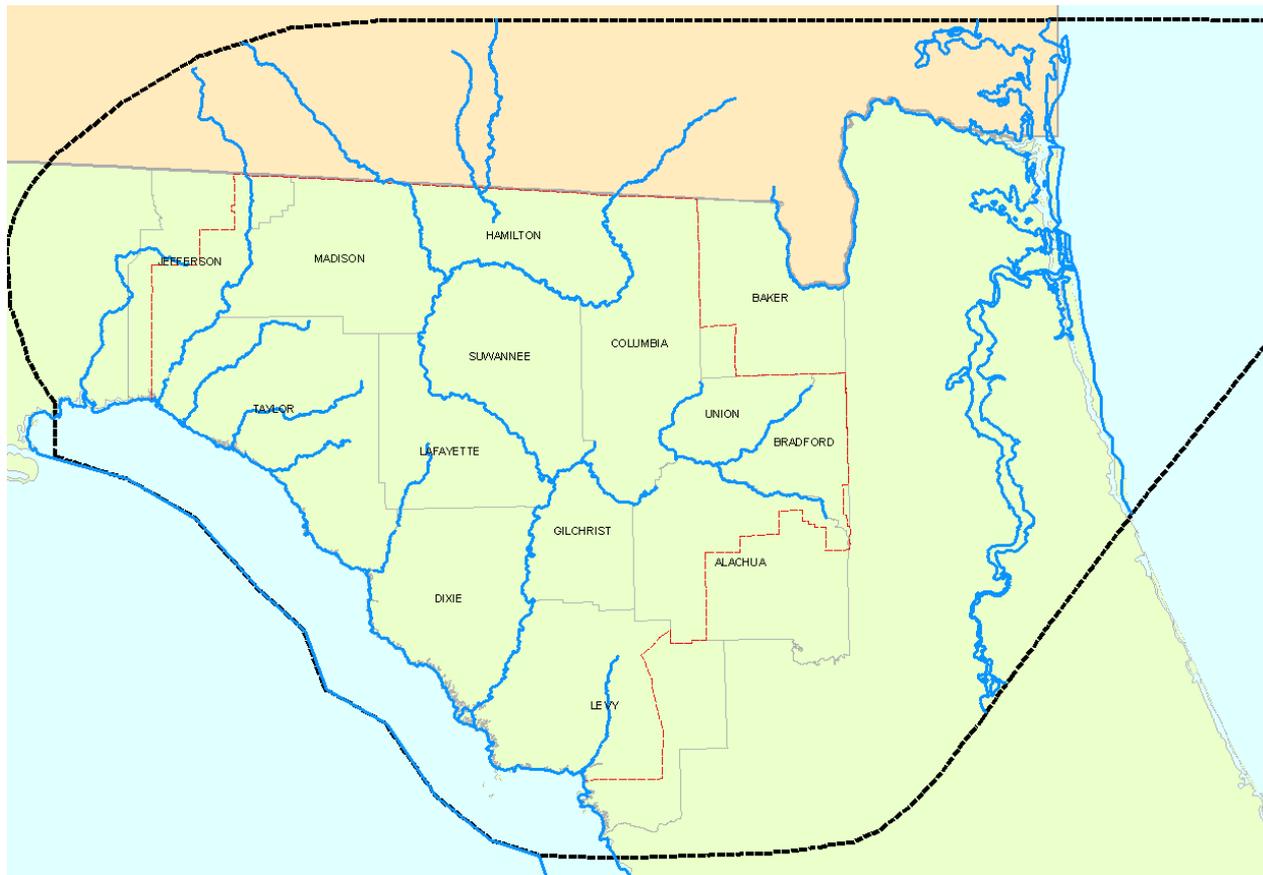
Implications of the Groundwater Flow Divide Migration

- Area contributing groundwater into the northeastern SRWMD has been reduced by nearly 2,000 square miles
- Resulting water resource impacts include decreased river and spring flow



Determination of Future Impacts from Regional Groundwater Pumping

- The District's North Florida Groundwater Model was used to predict impacts from 2010-2030



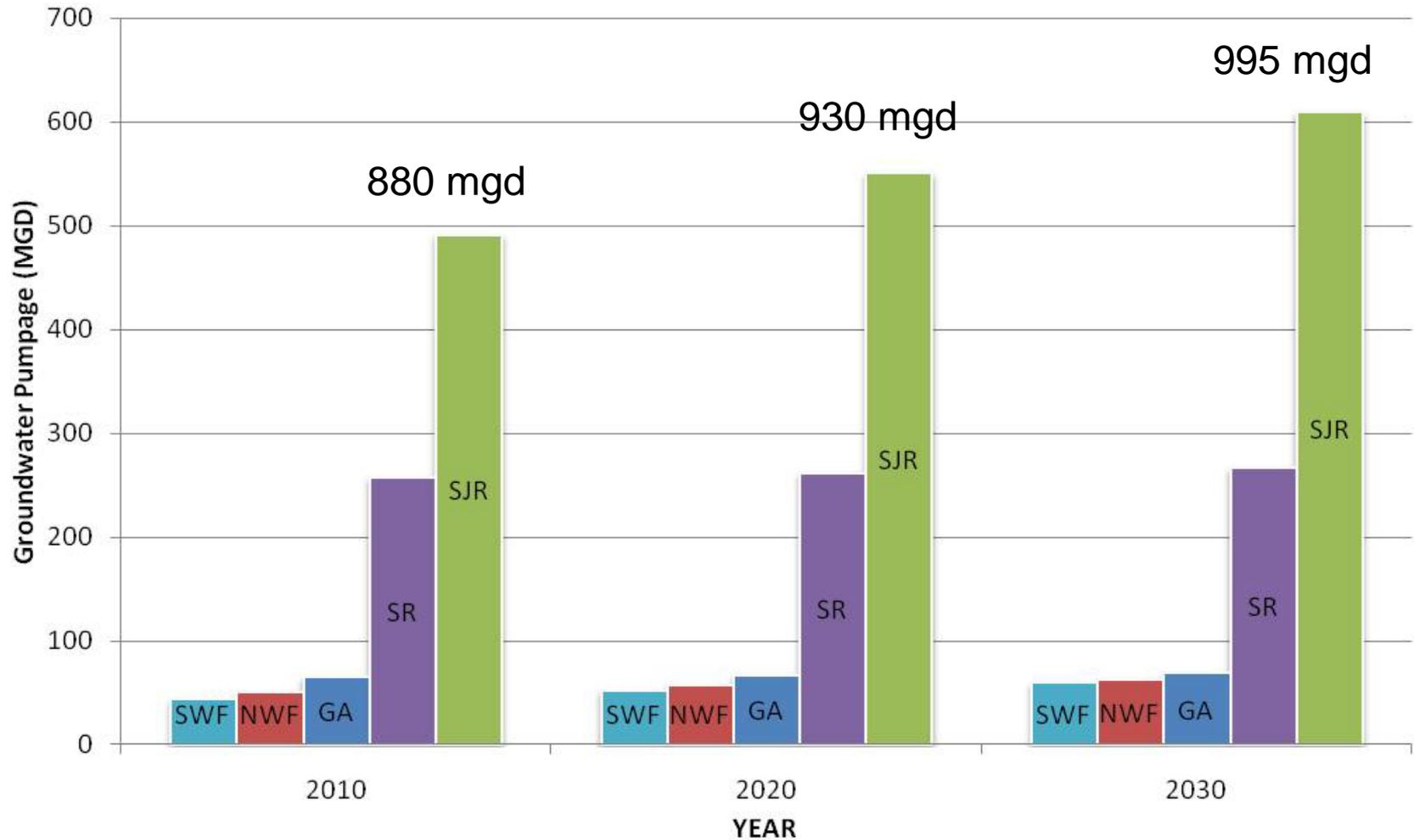


Determination of Future Impacts from Regional Groundwater Pumping

- The model was run with the current level of groundwater withdrawals and those projected through 2030
- Areas where current and projected groundwater withdrawals are causing or predicted to cause impacts to natural systems were identified

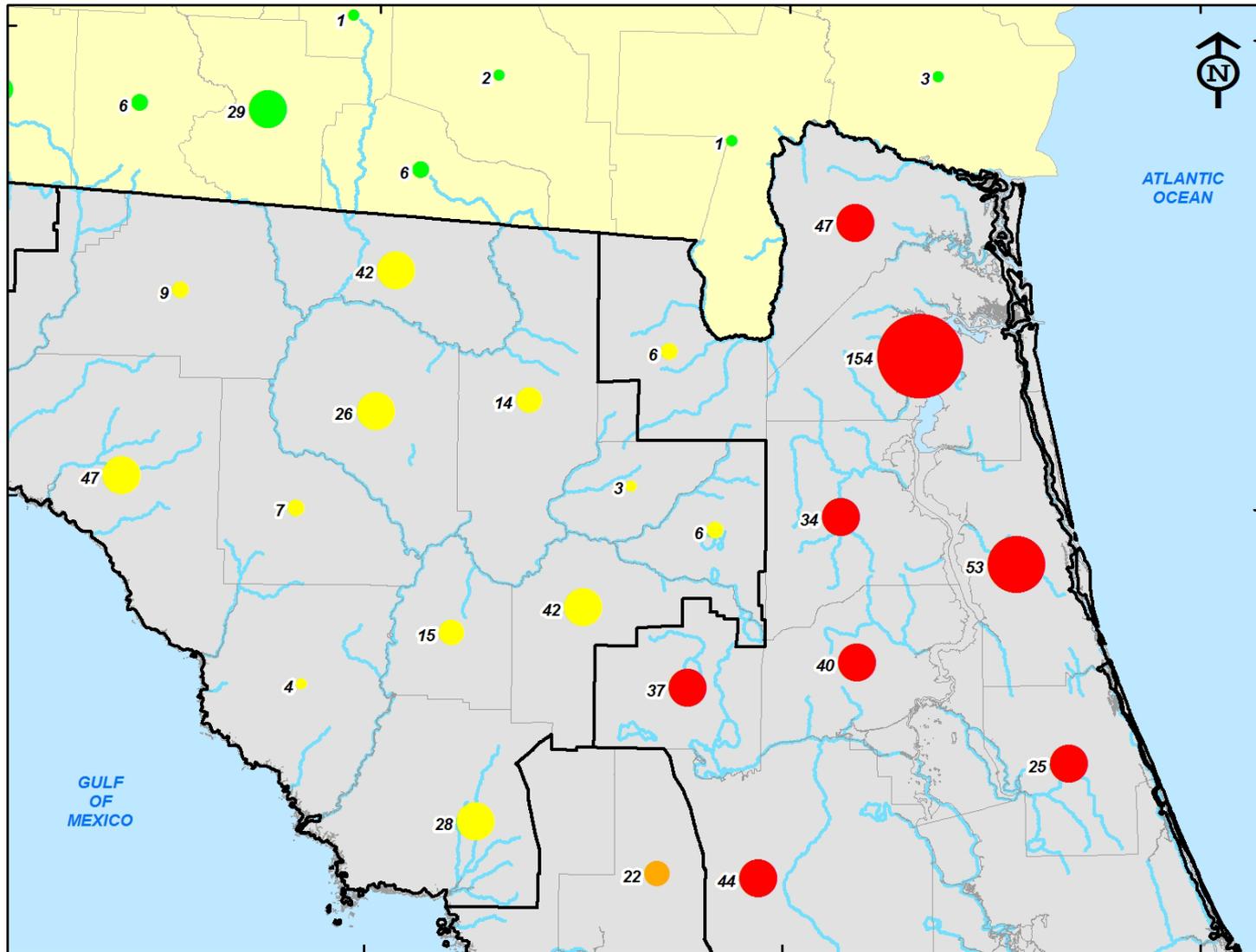


Current and Projected Groundwater Withdrawals in the Model Area



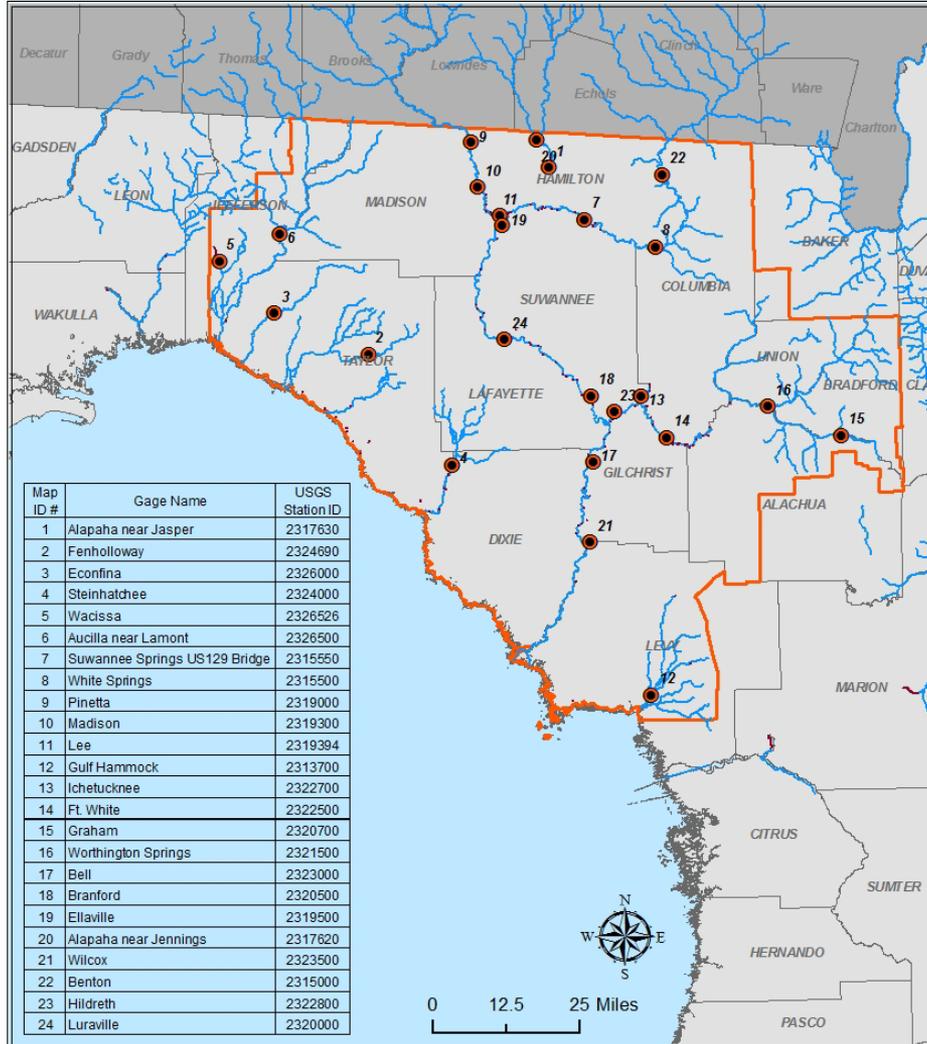


Estimated Water Use by County (2000)





River Gages Assessed for Impacts from Projected Groundwater Withdrawals



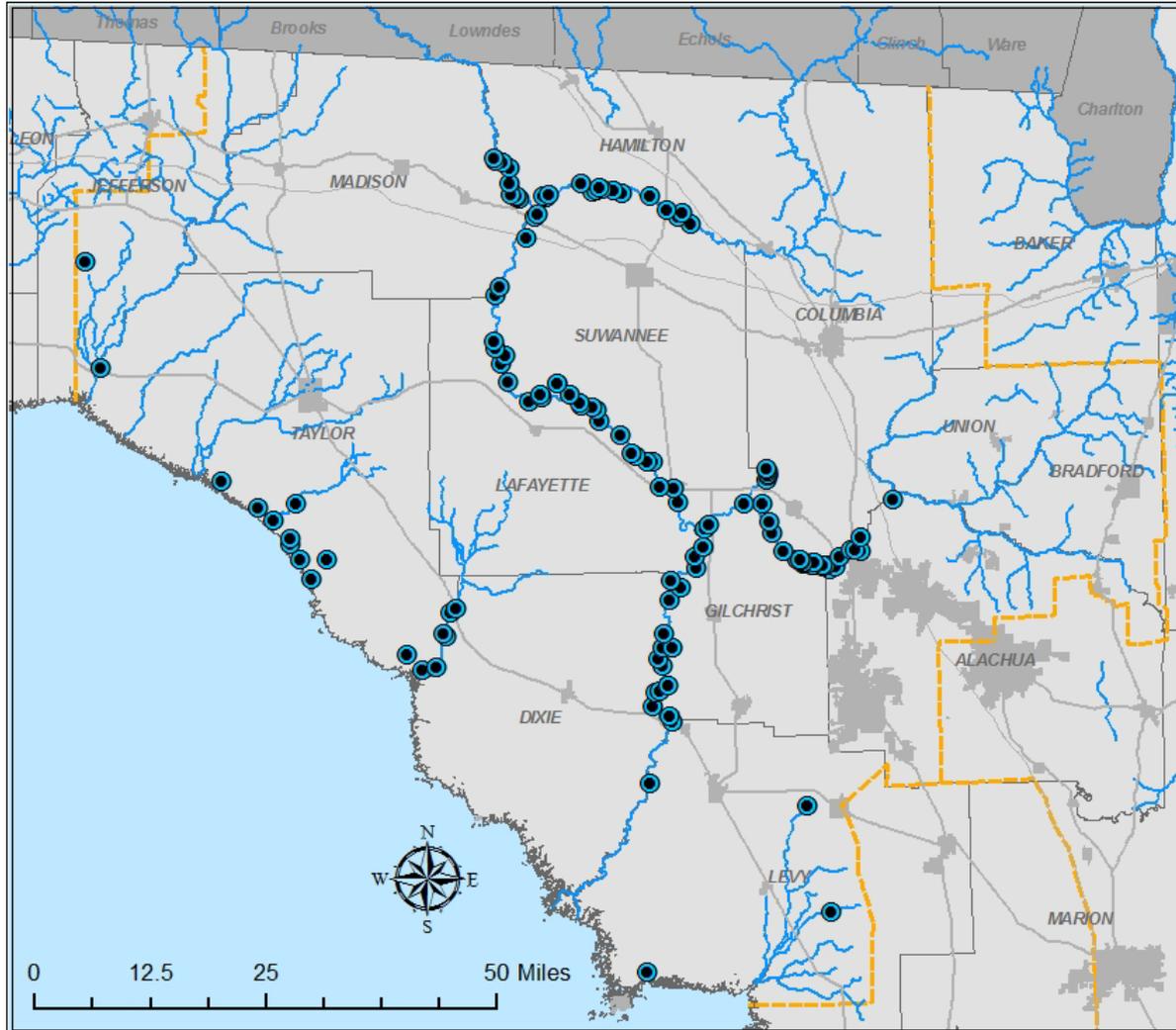


River Gages where Flow Constraints are Predicted to be Exceeded due to Groundwater Withdrawals

River Gage	Allowable Percent Decline	Time Increment When Flow Constraint Exceeded
Suwannee R. White Springs	3.1	2005 – 2010
Alapaha R. Jennings	0.0	2005 – 2010
Santa Fe R. Graham	0.0	Not exceeded but no additional impacts allowed
Santa Fe R. Worthington Springs	0.0	2005 - 2010
Santa Fe R. Ft. White	4.7	2025 - 2030



Springs Assessed for Impacts from Projected Groundwater Withdrawals





Springs where Flow Constraints are Predicted to be Exceeded due to Groundwater Withdrawals

Spring Name	Allowable Percent Decline	Time Increment when Flow Constraint Exceeded
Columbia Spring	4.7	2020-2025
Hornsby Spring	4.7	2005-2010
Santa Fe River Rise	4.7	2015-2020
Treehouse Spring	4.7	2020-2025



Identification of Water Supply Planning Regions

- Areas where groundwater cannot meet the 20-year projected demand without exceeding flow constraints must be designated “Water Supply Planning Regions”
- Regional Water Supply Plans must be developed for these areas

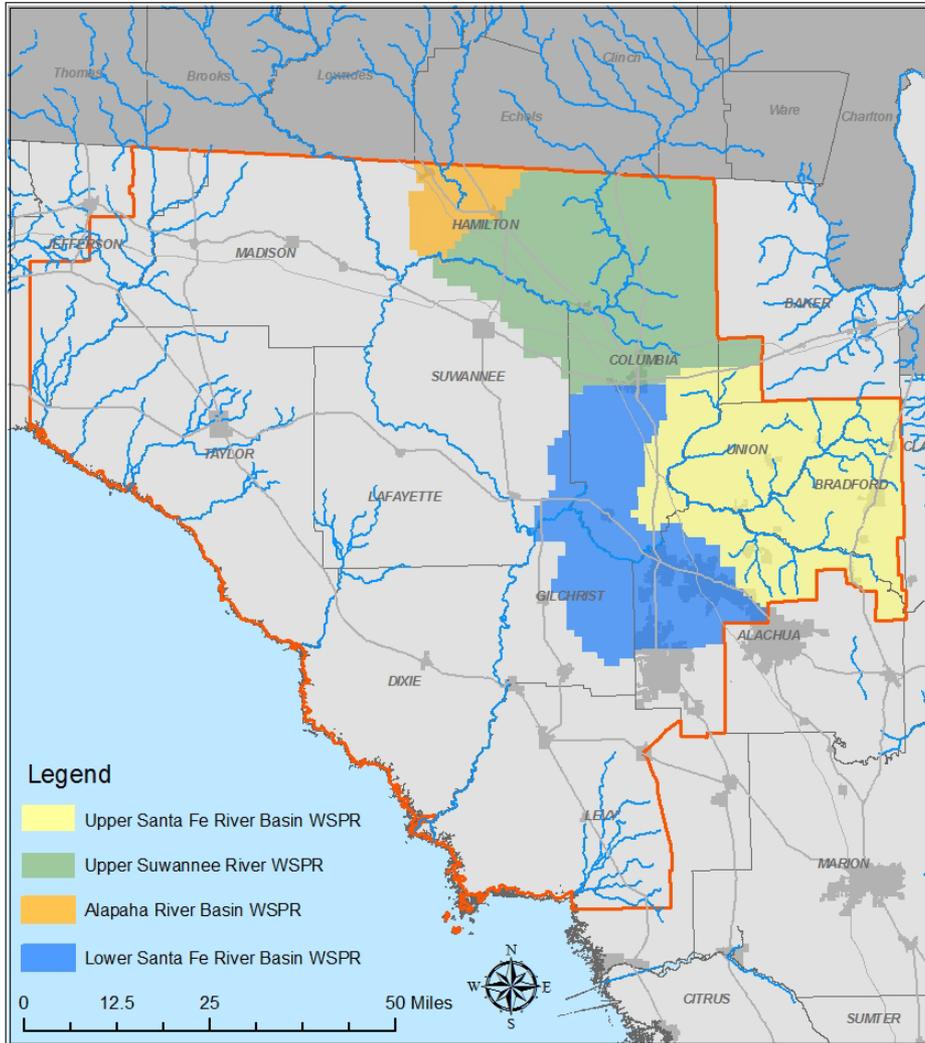


Regional Water Supply Plan Content

- Recovery and prevention strategies for water resources that exceed flow constraints
- Evaluate alternative water supplies and water resource development projects
- Conservation options
- Funding mechanisms



Existing and Proposed Water Supply Planning Regions



- **Upper Santa Fe River Basin (existing)**
- **Lower Santa Fe River Basin (proposed)**
- **Upper Suwannee River Region (proposed)**
- **Alapaha River Basin (proposed)**



Designation of Water Supply Planning Regions - Justification

- **Upper Santa Fe River Basin**
 - Decline in Upper Floridan aquifer levels in northeastern portion of basin exceeds 10 feet
 - Established minimum flow at Worthington Springs currently exceeded
 - Any additional decline in flow on Upper Santa Fe River at Graham will cause established minimum flow to be exceeded
- **Lower Santa Fe River Basin**
 - Proposed minimum flow for Hornsby Spring currently exceeded
 - Proposed minimum flow for Santa Fe River Rise predicted to be exceeded between 2015 and 2020
 - Proposed minimum flows for Treehouse and Columbia Springs predicted to be exceeded between 2020 and 2025



Designation of Water Supply Planning Regions - Justification

- **Upper Suwannee River Region**
 - Historic decline in Upper Floridan aquifer level exceeds 10 feet in places
 - Historic decline in Upper Floridan aquifer level major contributing cause for significant reductions in flow at White Springs
 - Flow constraint for Suwannee River measured at White Springs currently exceeded
- **Alapaha River Basin**
 - Proposed minimum flow for the Alapaha River at Jennings currently exceeded



Elements of the Water Supply Assessment

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 - Assessment of current and projected water resource impacts
 - Alternative Water Source Availability Assessment



Alternative Water Source Availability Assessment

- Brackish Groundwater (Lower Floridan aquifer)
- Surface Water (rivers)
- Reclaimed Water
- Water Conservation



Alternative Water Source Availability Assessment

- Brackish Groundwater
 - Potential use of brackish groundwater from the Lower Floridan aquifer for cooling of industrial facilities and power plants
 - Feasibility of using brackish groundwater would be determined at each new industrial or power plant site



Alternative Water Source Availability Assessment

- Surface Water
 - Identify potential users
 - Identify options for use of surface water
 - Identify storage mechanisms
 - Off-stream reservoirs, aquifer storage and recovery, aquifer recharge
 - Available quantities from each river will be determined when MFL establishment is complete



Alternative Water Source Availability Assessment

- Reclaimed Water
 - Availability of reclaimed water in the SRWMD by 2030 is approximately 5.0 mgd
 - The most practical uses include agriculture, irrigation of golf courses, parks, sports fields, and institutional non-potable supply



Alternative Water Source Availability Assessment

- Water Conservation
 - Non-Agricultural (public supply, industrial)
 - Agricultural



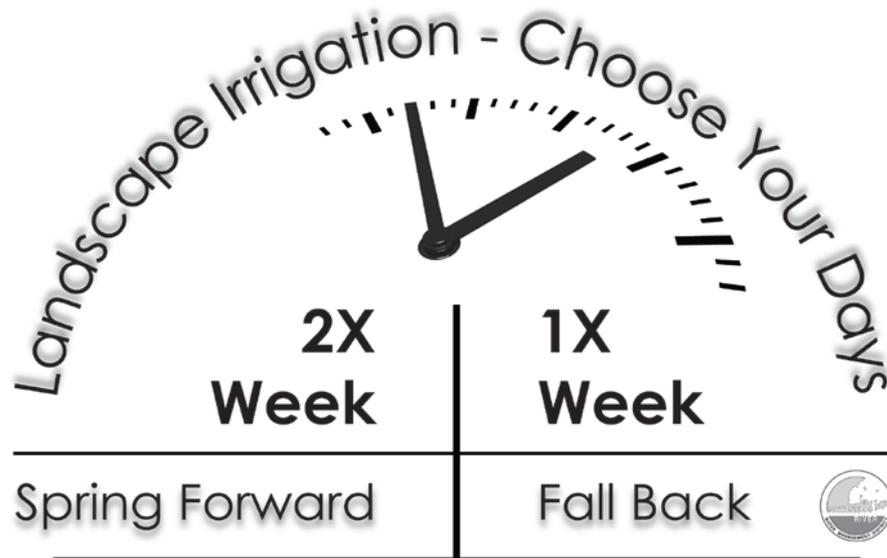
Non-Agricultural Water Conservation Potential

Water-Use Category	2030 Water Conservation Potential (mgd)
Public Supply	3.7
Domestic Self Supply	4.75
Prisons	0.81
Industrial, Commercial, Institutional	4.1
Recreational (golf course)	0.31
Total	13.7



SRWMD Conservation Initiative

Choose Your Days





Alternative Water Source Availability Assessment

- Water Conservation
 - Non-Agricultural (public supply, industrial)
 - Agricultural



Agricultural Water Conservation Potential

Agricultural Water Use in the SRWMD	Overhead Irrigation Use	10% Reduction in Overhead Irrigation Use
127.4 mgd	111.3 mgd	11.1



Summary - Alternative Water Source Availability Assessment (2030 Potential)

Alternative Water Source/Conservation	2030 Potential Water Availability (mgd)
Brackish Groundwater	To be determined
Surface Water	To be determined
Reclaimed Water	5.0
Non-Agricultural Water Conservation	13.7 +
Agricultural Water Conservation	11.1 +



Summary – Water Supply Assessment Report Overview

- Regional groundwater pumping has caused flow constraints for a number of water resources to be exceeded in the northeastern SRWMD
- Based on pumping projected to occur between 2010 and 2030, flow constraints for additional water resources are predicted to be exceeded
- To mitigate current impacts and avoid future impacts, the District is proposing to establish the following Water Supply Planning Regions:
 - Upper Santa Fe River Basin (currently established)
 - Lower Santa Fe River Basin
 - Upper Suwannee River Region
 - Alapaha River Basin



Summary – Water Supply Assessment Report Overview (cont.)

- Regional Water Supply Plans will be developed for the planning regions
- The SRWMD will continue to work with the SJRWMD to insure that the water supply planning efforts of the Districts are closely coordinated



Questions / Contacts



- mysuwanneeriver.com (*“water supply planning”* link)
- Carlos Herd, P.G. (Senior Hydrogeologist / Water Supply Program Leader)
- Dale Jenkins, P.G. (Senior Hydrogeologist)