

## CFWI Timeline

### Ongoing



#### Technical Teams:

- Data Monitoring & Investigations
- Environmental Measures
- Groundwater Availability
- Hydrologic Analysis
- MFLs & Reservations
- Regional Water Supply Plan

**Nov. 30, 2013**

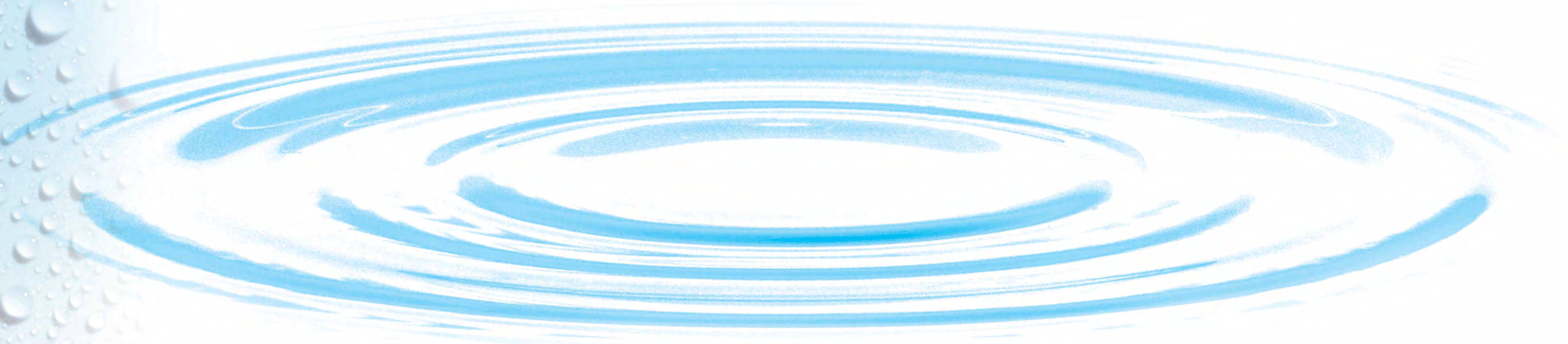
#### Technical Work:

- Findings & Conclusions
- Draft Regional Water Supply Plan

**Dec. 31, 2014**

#### Solutions Work:

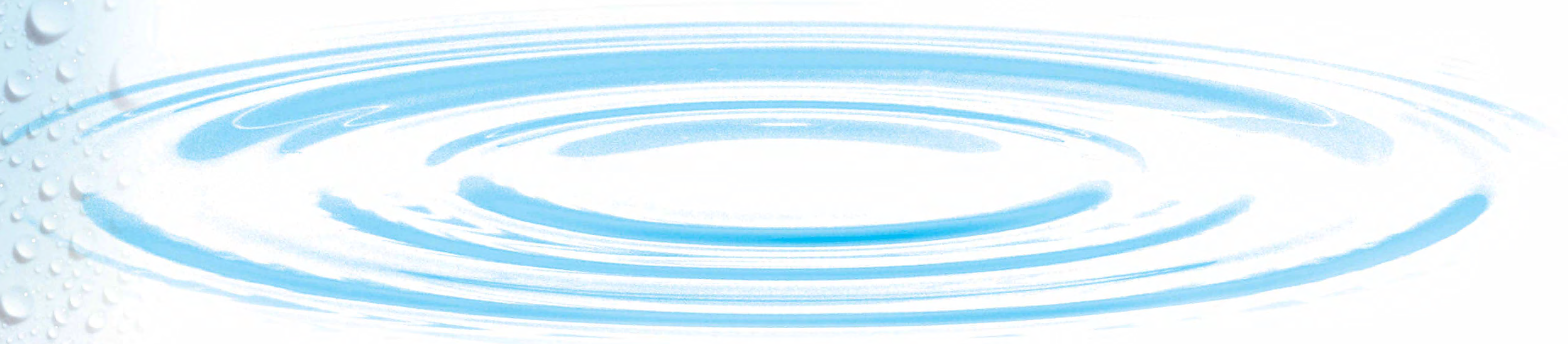
- Projects
- Regulatory
- Financing
- Monitoring



## Guiding Principles

(simplified)

1. Identify **groundwater** resources
2. Develop **strategies** to meet water demands
  - Optimize existing groundwater (withdrawn and recharge)
  - Identifying viable demand management activities
  - Identifying alternative water supplies
  - Identifying any areas that may require recovery
  - Identify areas where consistency in rules may be needed
3. Establish **consistent rules**



# Central Florida Water Initiative

## CFWI Total Population Projections

County / City	Population Projections						2010–2035 Change	2010–2035 Percent Change
	2010	2015	2020	2025	2030	2035		
City of Cocoa	173,445	183,644	194,956	205,230	215,019	224,781	51,336	30%
Lake	143,715	165,864	189,511	214,325	239,722	262,394	118,679	83%
Orange	1,145,956	1,252,000	1,377,600	1,498,600	1,612,600	1,717,700	571,744	50%
Osceola	268,685	310,400	357,800	404,000	448,000	489,000	220,315	82%
Polk	602,095	654,600	713,900	772,300	828,500	881,700	279,605	46%
Seminole	422,718	445,300	472,200	498,200	522,300	544,000	121,282	29%
<b>Total</b>	<b>2,756,614</b>	<b>3,011,808</b>	<b>3,305,967</b>	<b>3,592,655</b>	<b>3,866,141</b>	<b>4,119,575</b>	<b>1,362,961</b>	<b>49%</b>

## CFWI Public Supply Population Projections

County / City	Population Projections						2010–2035 Change	2010–2035 Percent Change
	2010	2015	2020	2025	2030	2035		
City of Cocoa	173,445	183,644	194,956	205,230	215,019	224,781	51,336	30%
Lake	130,229	149,914	171,722	193,880	216,532	237,314	107,085	82%
Orange	1,127,098	1,235,208	1,362,603	1,485,046	1,600,443	1,707,286	580,188	51%
Osceola	202,198	253,108	303,718	354,661	405,938	453,751	251,553	124%
Polk	547,344	592,082	644,124	695,952	744,727	789,760	242,416	44%
Seminole	410,787	432,451	457,116	473,558	485,070	493,333	82,546	20%
<b>Total</b>	<b>2,591,101</b>	<b>2,846,407</b>	<b>3,134,239</b>	<b>3,408,327</b>	<b>3,667,729</b>	<b>3,906,225</b>	<b>1,315,124</b>	<b>51%</b>

## CFWI Domestic Self-Supply Population Projections

County	Population Projections						2010–2035 Change	2010–2035 Percent Change
	2010	2015	2020	2025	2030	2035		
Lake	13,486	15,950	17,789	20,445	23,190	25,080	11,594	86%
Orange	18,858	16,792	14,997	13,554	12,157	10,414	-8,444	-45%
Osceola	66,487	57,292	54,082	49,339	42,062	35,249	-31,238	-47%
Polk	54,751	62,518	69,776	76,348	83,773	91,940	37,189	68%
Seminole	11,931	12,849	15,084	24,642	37,230	50,667	38,736	325%
<b>Total</b>	<b>165,513</b>	<b>165,401</b>	<b>171,728</b>	<b>184,328</b>	<b>198,412</b>	<b>213,350</b>	<b>47,837</b>	<b>29%</b>

# Central Florida Water Initiative

## CFWI Agricultural Acreage Projections

County	Total Acres Projected						2010–2035 Change	2010–2035 Percent Change
	2010	2015	2020	2025	2030	2035		
Lake	17,275	16,776	16,276	15,776	15,278	14,782	-2,493	-14%
Orange	12,748	10,501	9,218	8,043	7,306	5,895	-6,853	-54%
Osceola	28,393	52,030	52,543	53,176	54,161	54,773	26,380	93%
Polk	88,614	88,142	88,026	87,910	87,794	87,677	-937	-1%
Seminole	4,591	3,950	3,310	2,669	2,029	1,388	-3,203	-70%
<b>Total</b>	<b>151,621</b>	<b>171,399</b>	<b>169,373</b>	<b>167,574</b>	<b>166,568</b>	<b>164,515</b>	<b>12,894</b>	<b>9%</b>

## CFWI Agricultural Water Demand Projections

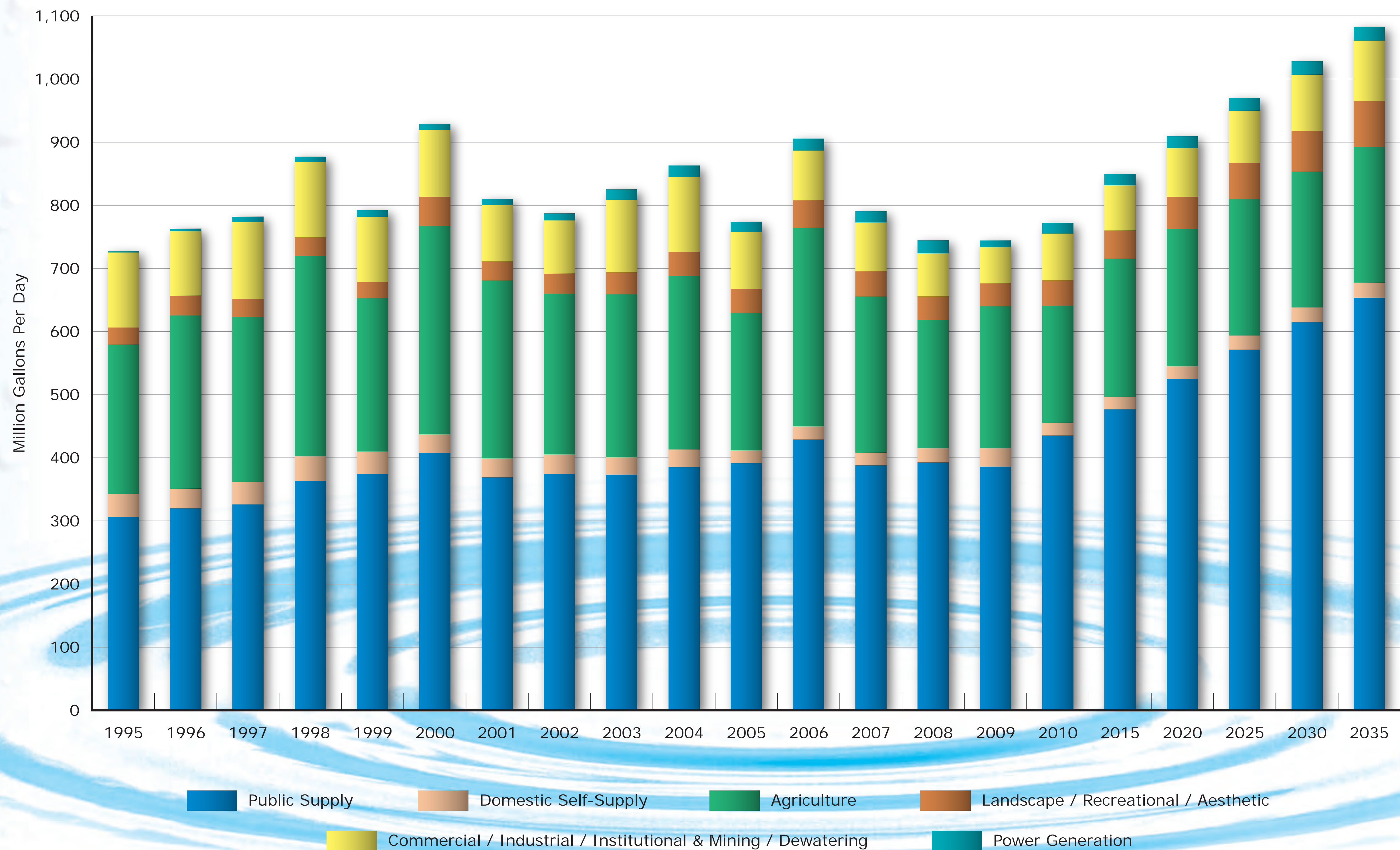
County	Demand Projections						1-in-10 Demand 2035	2010–2035 (5-in-10) Change	2010–2035 (5-in-10) Percent Change
	2010	2015	2020	2025	2030	2035			
Lake	11.17	10.83	10.38	10.04	9.70	9.35	13.62	-1.82	-16%
Orange	17.21	15.44	13.66	11.86	10.09	8.30	13.32	-8.91	-52%
Osceola	53.75	91.03	93.00	95.27	97.87	100.83	160.15	47.08	88%
Polk	95.75	95.14	94.89	94.64	94.38	94.13	130.69	-1.62	-2%
Seminole	7.36	6.34	5.31	4.28	3.26	2.23	3.40	-5.13	-70%
<b>Total</b>	<b>185.24</b>	<b>218.78</b>	<b>217.24</b>	<b>216.09</b>	<b>215.30</b>	<b>214.84</b>	<b>321.18</b>	<b>29.60</b>	<b>16%</b>

Note: Demands are shown in million gallons per day

# Central Florida Water Initiative

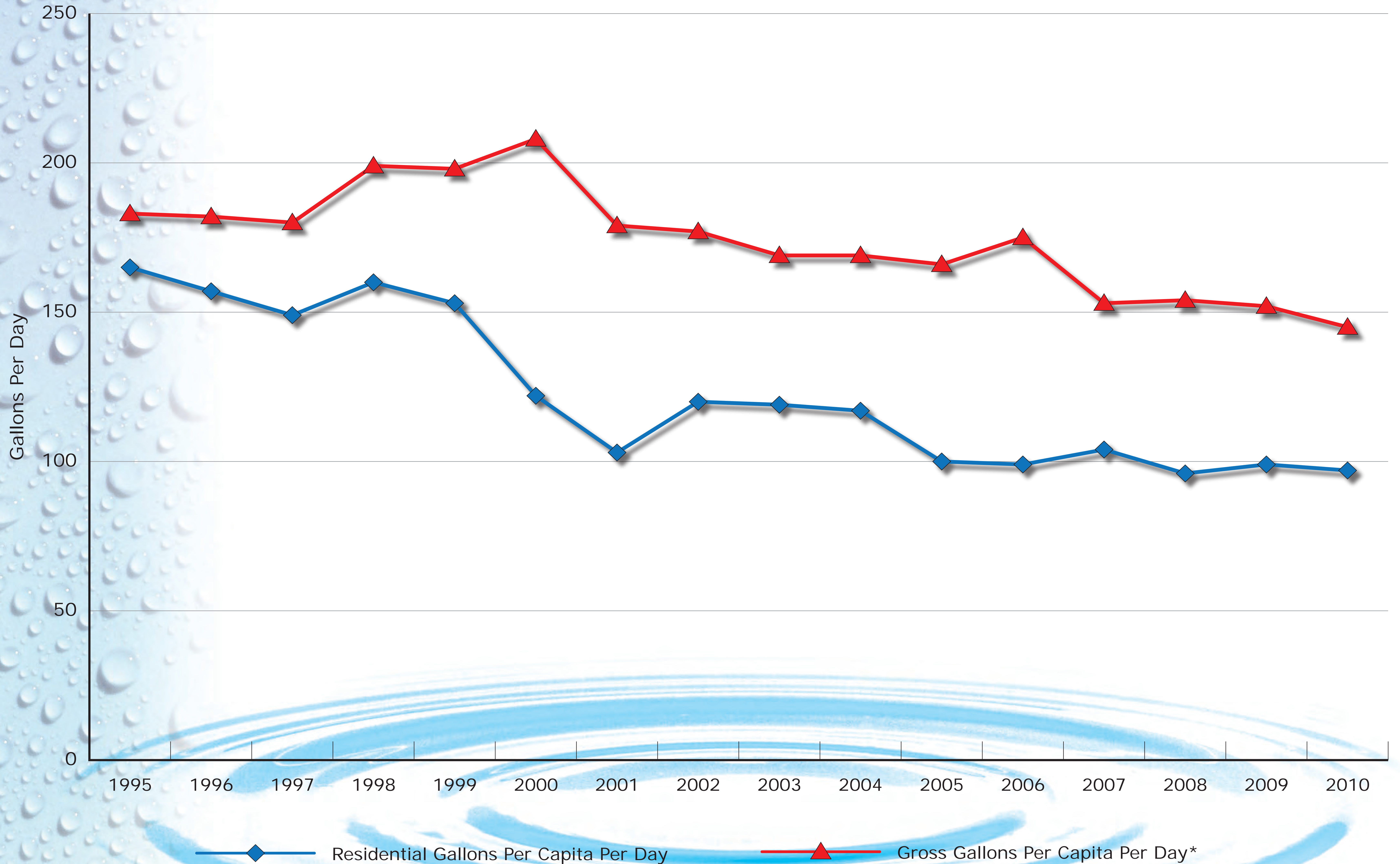
## Total Historic and Projected Water Use in the CFWI

Category	Historic Water Use in the CFWI															Projected Demand in the CFWI					
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030	2035
Public Supply	305.80	319.96	325.85	363.25	373.86	407.33	368.82	373.93	373.21	384.79	391.22	428.99	388.02	392.52	385.58	435.15	476.36	524.56	571.39	614.88	653.27
Domestic Self-Supply	36.74	31.18	35.87	38.73	35.85	29.65	30.05	31.32	27.51	28.46	20.58	20.74	20.32	22.59	29.07	20.36	20.22	20.75	21.92	23.13	24.42
Agriculture	237.17	273.98	261.28	317.74	243.26	330.38	282.14	254.51	258.33	274.71	216.92	314.74	247.31	203.50	224.97	185.24	218.78	217.24	216.09	215.30	214.84
Landscape / Recreational / Aesthetic	26.56	31.60	28.48	29.33	25.38	45.83	29.85	31.92	34.75	38.51	38.82	43.28	39.68	37.01	36.70	40.21	44.78	51.05	57.54	64.31	72.18
Commercial / Industrial / Institutional & Mining / Dewatering	118.86	102.24	121.92	119.35	103.52	106.12	89.78	84.30	114.47	118.42	90.10	78.59	77.16	68.38	57.15	74.05	71.47	76.74	82.82	89.29	95.85
Power Generation	2.34	3.88	8.48	8.45	10.25	9.47	9.38	10.89	17.06	18.02	16.19	19.28	17.98	20.64	10.87	17.20	17.93	18.93	20.00	21.18	22.41
<b>Total Water Use</b>	<b>727.45</b>	<b>762.84</b>	<b>781.88</b>	<b>876.85</b>	<b>792.12</b>	<b>928.78</b>	<b>810.02</b>	<b>786.86</b>	<b>825.32</b>	<b>862.91</b>	<b>773.83</b>	<b>905.62</b>	<b>790.48</b>	<b>744.64</b>	<b>744.34</b>	<b>772.21</b>	<b>849.54</b>	<b>909.27</b>	<b>969.76</b>	<b>1,028.09</b>	<b>1,082.97</b>



# Central Florida Water Initiative

## Per Capita Water Use



\*Gross gallons per capita = Total water use divided by population

# Central Florida Water Initiative

## Agricultural Water Conservation BMP in the CFWI

### Irrigation Decision-Making and Management Practices

- Water table observation wells
- Soil moisture sensors
- Weather stations and information
- Irrigation scheduling tools

### Irrigation System Maintenance

- Frequent Mobile Irrigation Laboratory (MIL) evaluations for optimum performance
- Manufacturer-recommended repair and maintenance activities
- Record keeping of repair and maintenance activities

#### For pressurized irrigation systems

- Repair and/or replace leaks and damaged emitters
- Clean and maintain filtration equipment
- Flush irrigation lines to maximize even water distribution

#### For non-pressurized irrigation systems

- Maintain all ditches and swales, to maximize even water distribution
- Maintain water control structures, to avoid leaks and maximize even water distribution

### Special-Case Irrigation Measures

#### For frost/freeze protection

- Measure wet bulb temperature
- Use tools to know when to shut off irrigation

#### During drought

- Irrigate at night or during low evaporation periods

## Urban Water Conservation Best Management Practices Used In Estimation Of Water Conservation Potential

### Plumbing Fixture Retrofits

- Replacement of older, high-volume fixtures with newer, high-efficiency models
- Plumbing fixtures include toilets, showerheads and faucets
- Newer plumbing fixtures use significantly less water than older models

### Irrigation System Evaluations

- On-site evaluations of irrigation systems
- Designed to educate urban water users on how to irrigate efficiently
- Provides recommendations on potential efficiency improvements

### Irrigation System Controllers

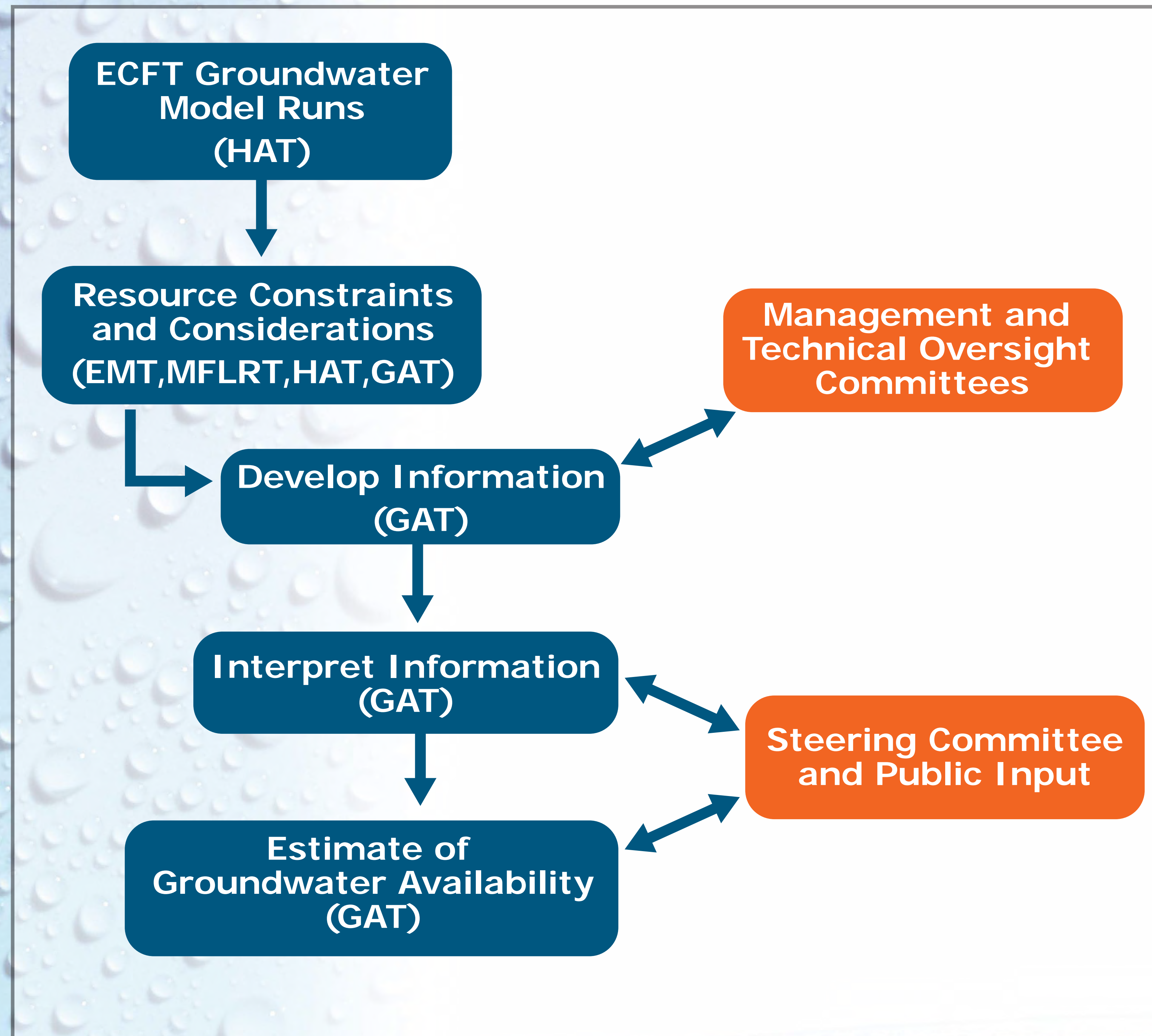
- Designed to override unnecessary scheduled irrigation events
- Rain sensors are typically used, but Smart Irrigation technologies have a greater potential for improving efficiency
- Smart Irrigation technologies include soil moisture sensors, evapotranspiration sensors and weather-based shutoff devices

### Commercial/Industrial/Institutional

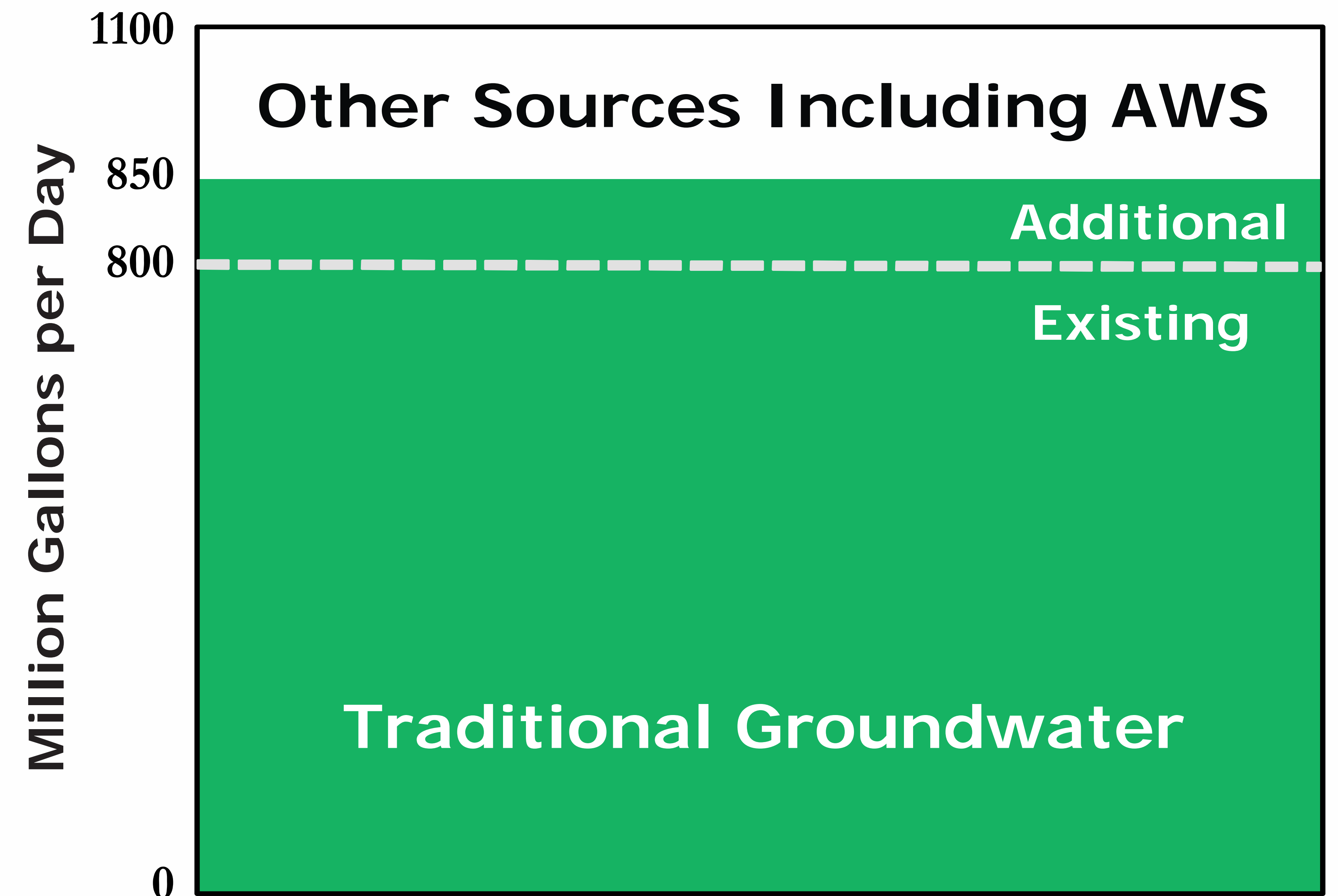
- Replacements of pre-rinse spray valves, toilets, showerheads, faucets and urinals
- Site-specific water audits for commercial and industrial processes

## Groundwater Availability

### GAT Process



### Sources to Meet 2035 Demands

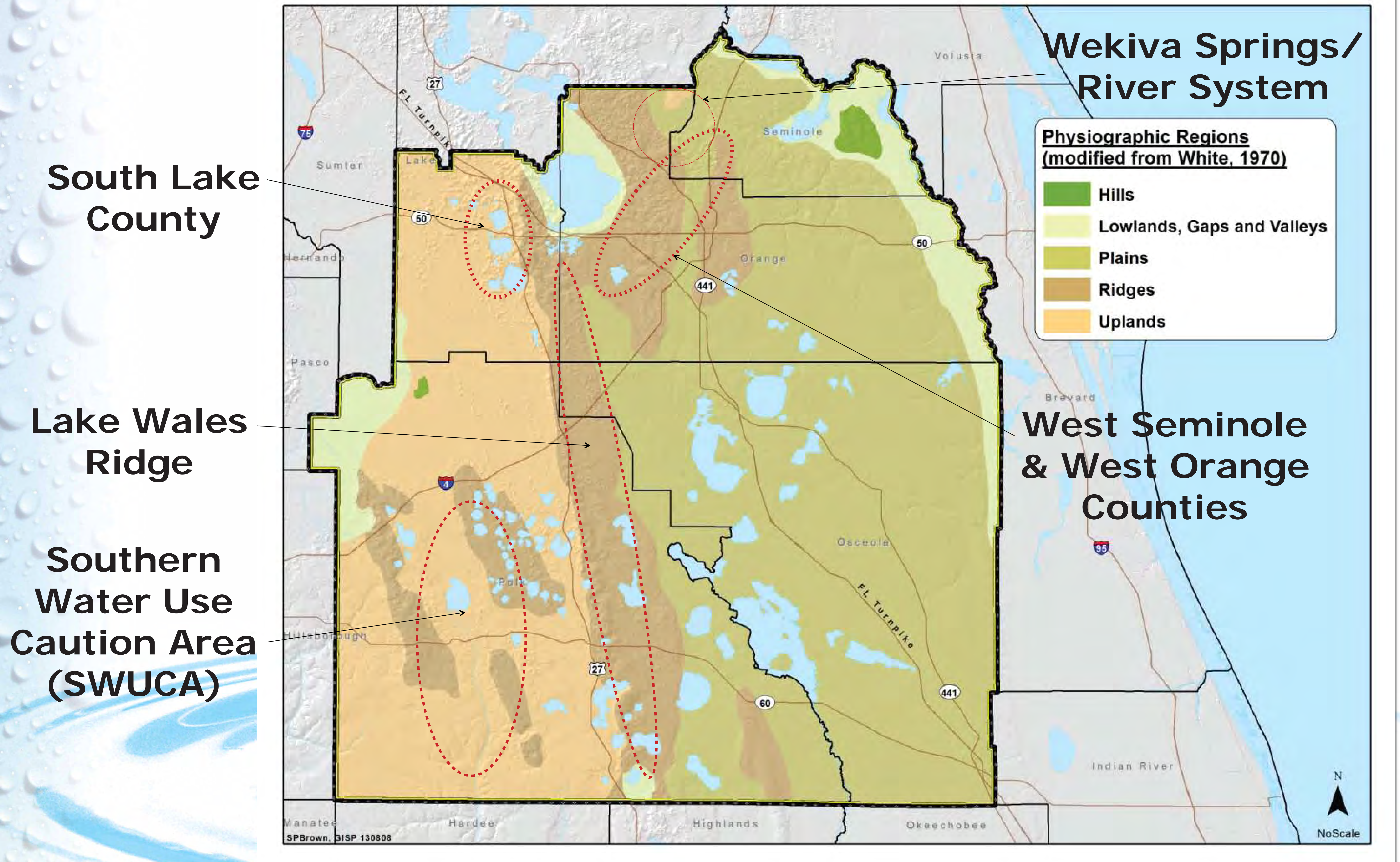


### Acronyms Legend

- AWS = Alternative Water Sources
- ECFT = East Central Florida Transient
- EMT = Environmental Measures Team
- GAT = Groundwater Availability Team
- HAT = Hydrologic Analysis Team
- MFLRT = Minimum Flows and Levels and Reservations Team

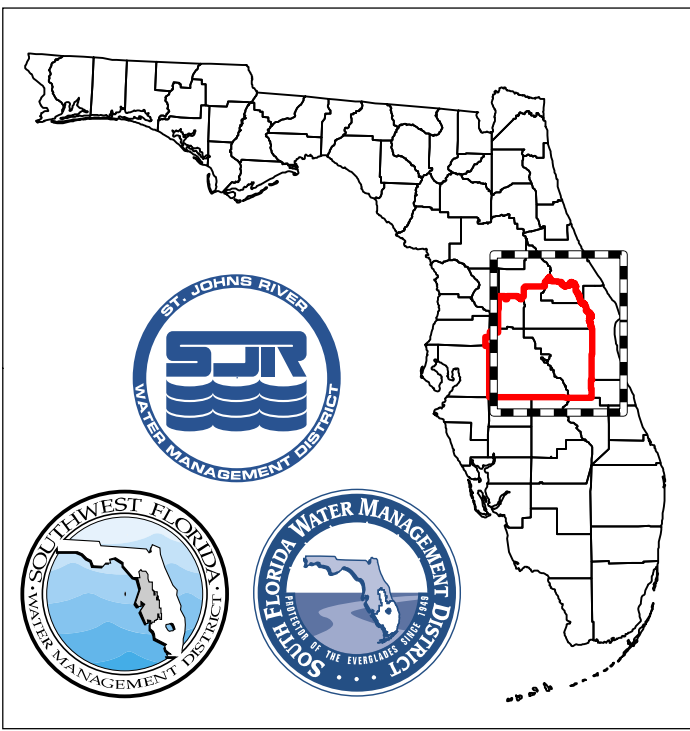
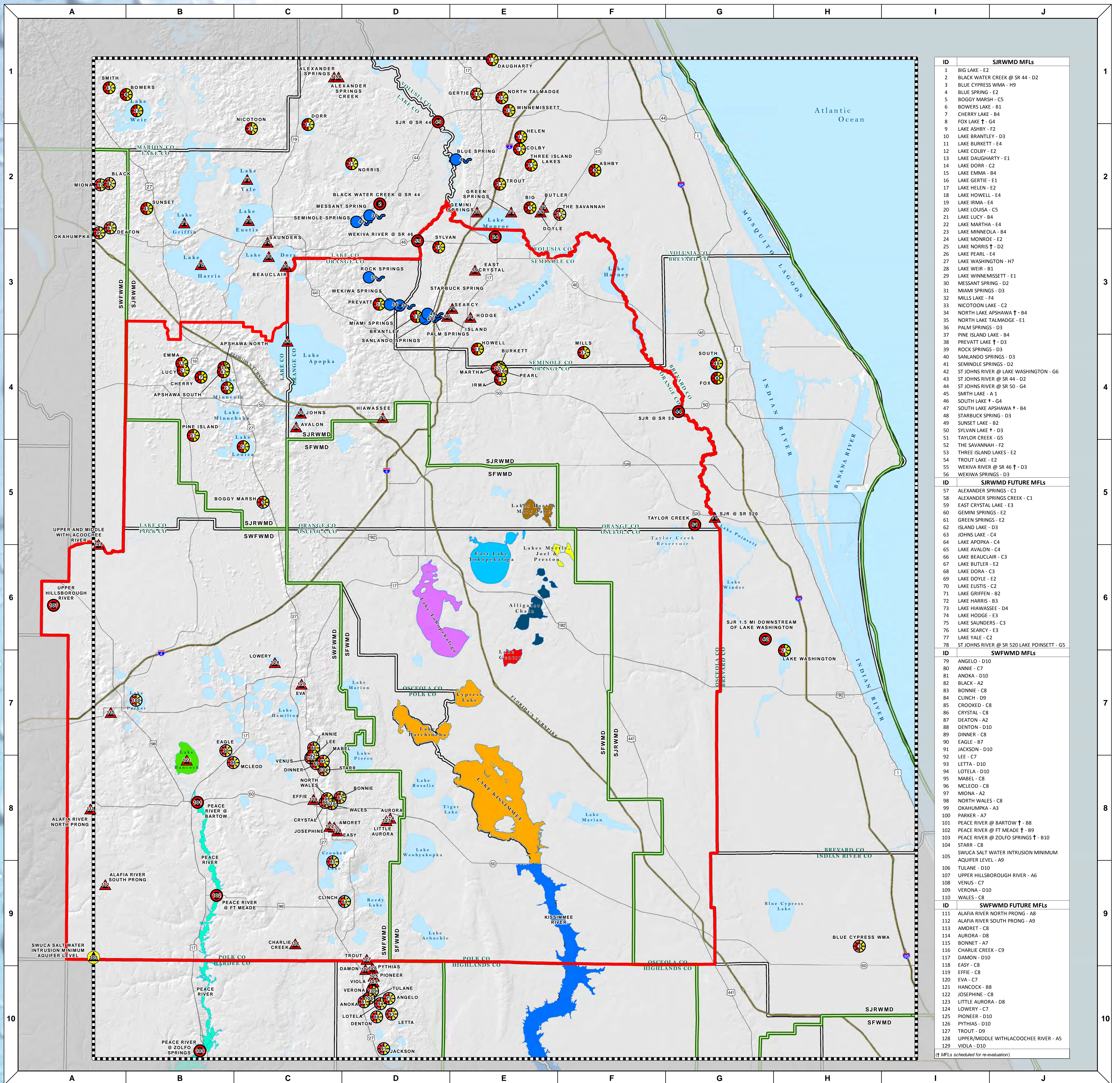


## Primary Areas Susceptible to Groundwater Withdrawals

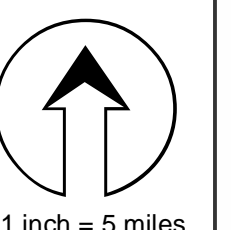


# Central Florida Water Initiative

## Minimum Flows and Levels and Reservations

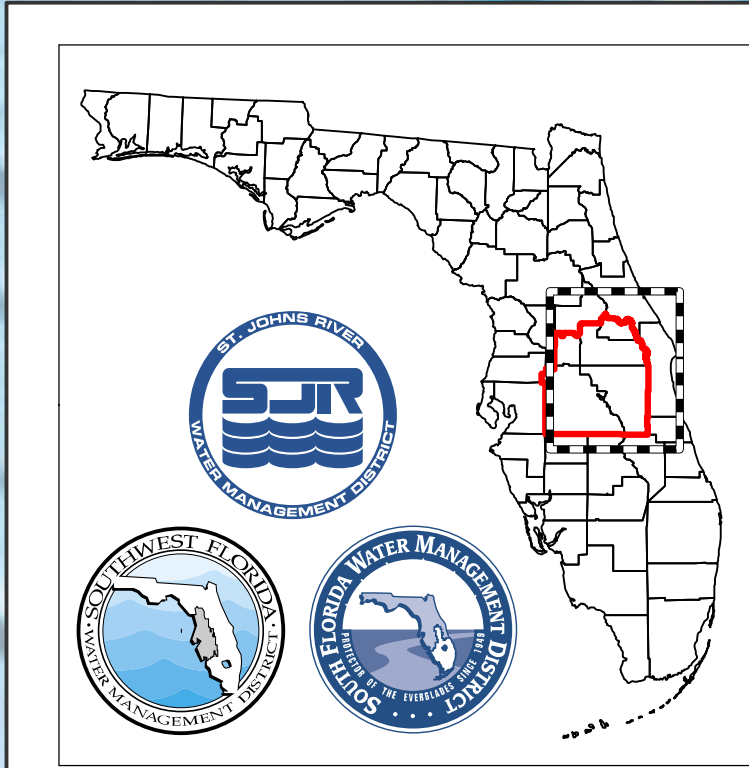
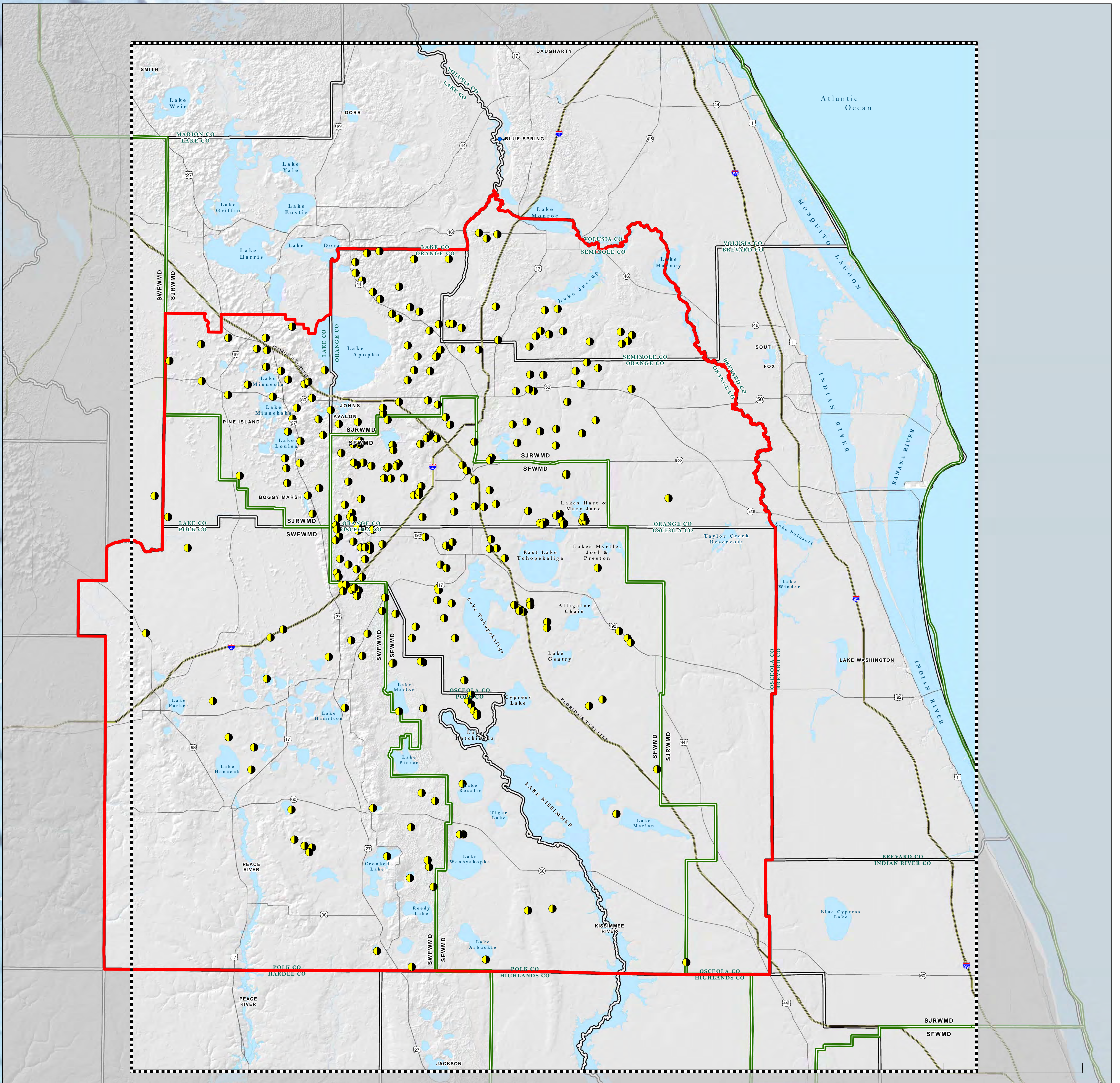


- |  |   |  |
|--|---|--|
| <p><b>MFLs</b></p> <ul style="list-style-type: none"> <li> Adopted MFL Lake/Wetland</li> <li> Adopted MFL River/Creek</li> <li> Adopted MFL Spring</li> <li> Adopted Aquifer MFL</li> <li> Future MFL</li> </ul> | <p><b>SFWMD - SFWMD Future Reservations</b></p> <ul style="list-style-type: none"> <li> East Lake Tohopekalia</li> <li> Alligator Chain Group</li> <li> Kissimmee Group</li> <li> Gentry</li> <li> Hancock</li> <li> Hart &amp; Mary Jane</li> <li> Myrtle, Joel &amp; Preston</li> <li> Tohopekalia</li> <li> Kissimmee River</li> <li> Peace River</li> </ul> | <ul style="list-style-type: none"> <li> CFWI Boundary</li> <li> ECFT Boundary</li> <li> Water Management Boundary</li> <li> County Boundary</li> </ul> |
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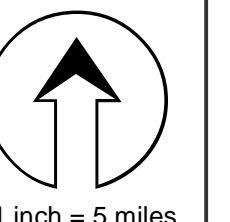
# Central Florida Water Initiative

## Wetland Assessment Sites



● EMT Wetland Assessment Site

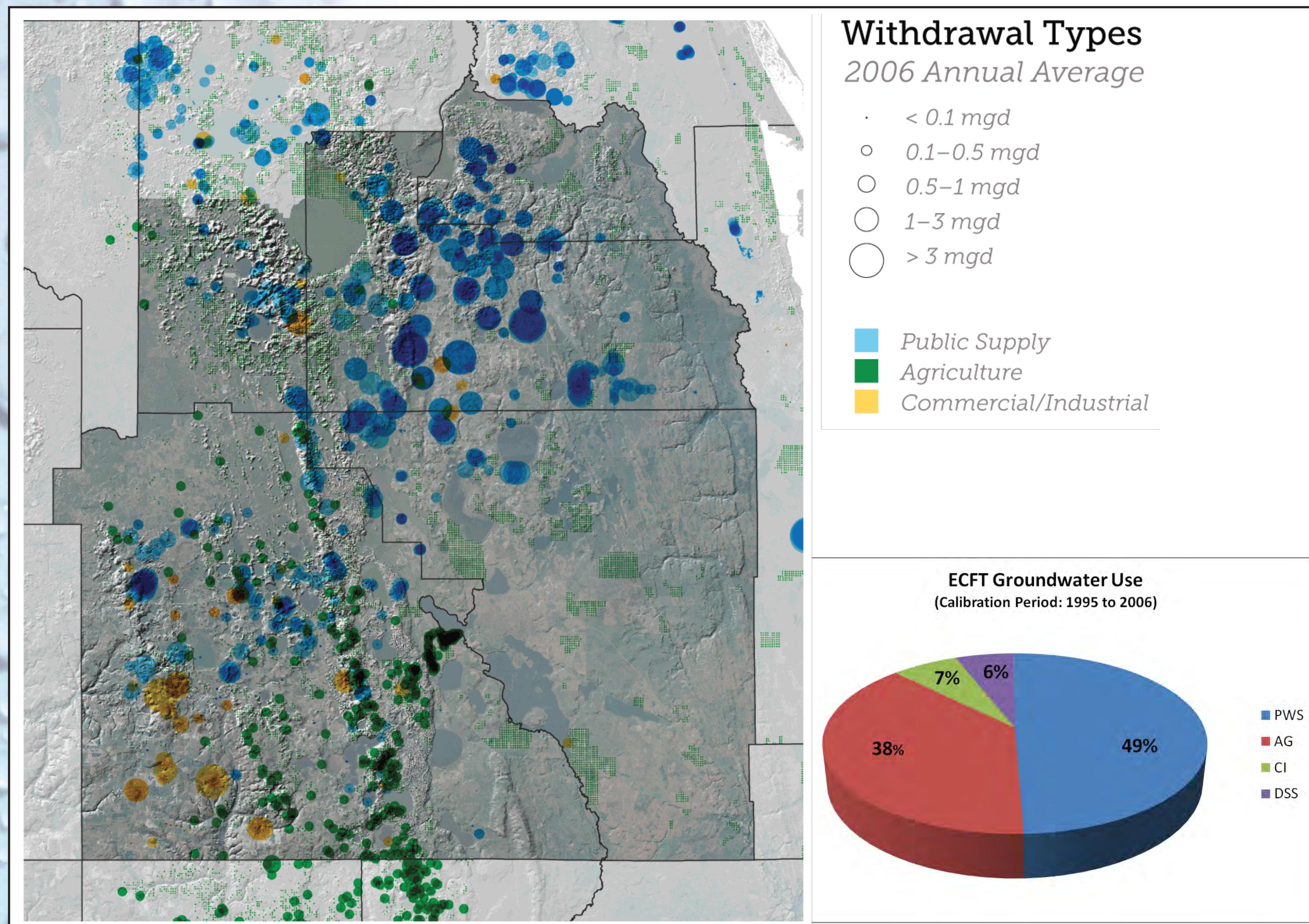
- CFWI Boundary
- ECFT Boundary
- Water Management Boundary
- County Boundary



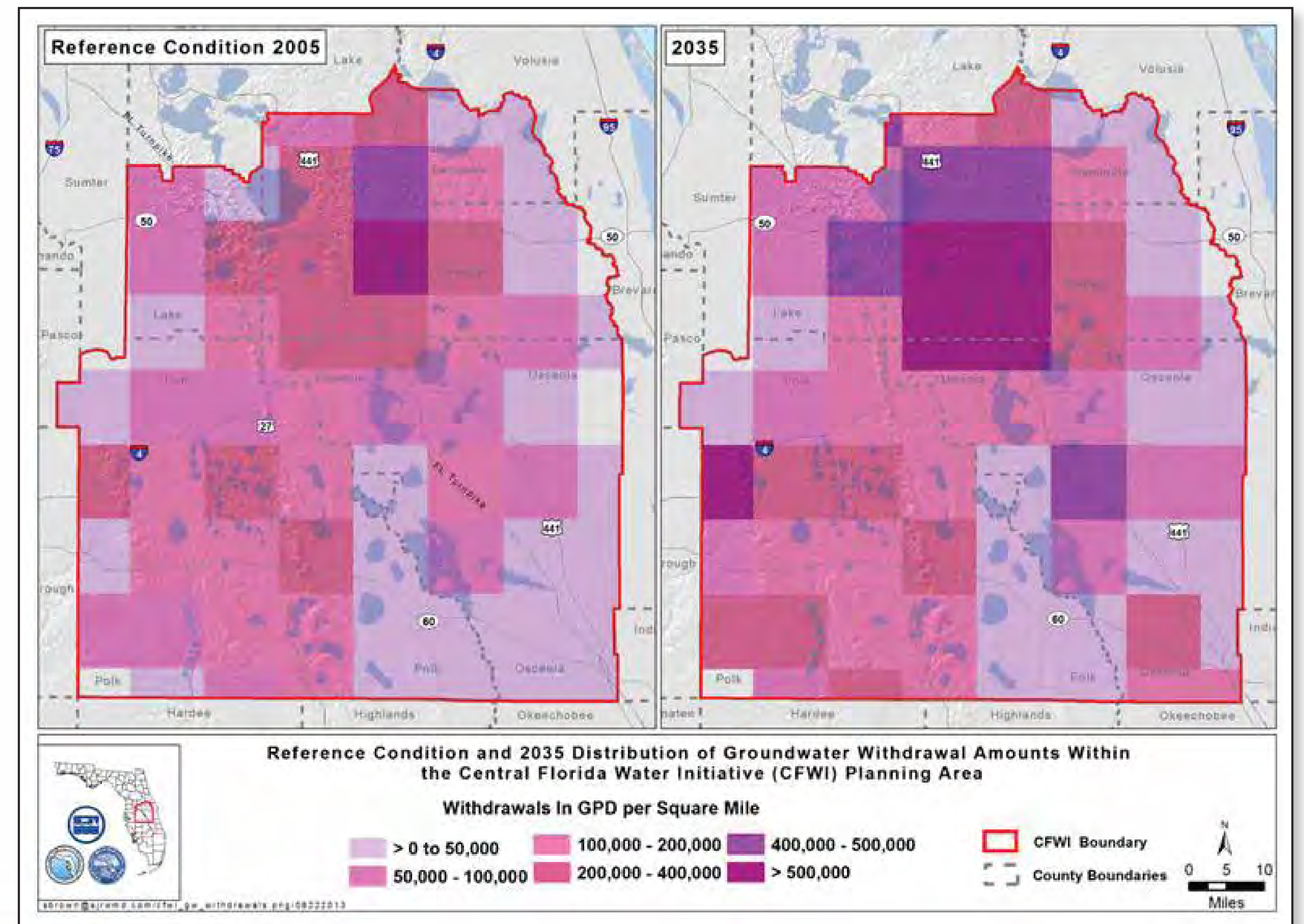
1 inch = 5 miles

## Groundwater Withdrawals in the CFWI

### Withdrawal Types 2006 Annual Average



### Reference Condition (RC) and 2035 Withdrawal Condition

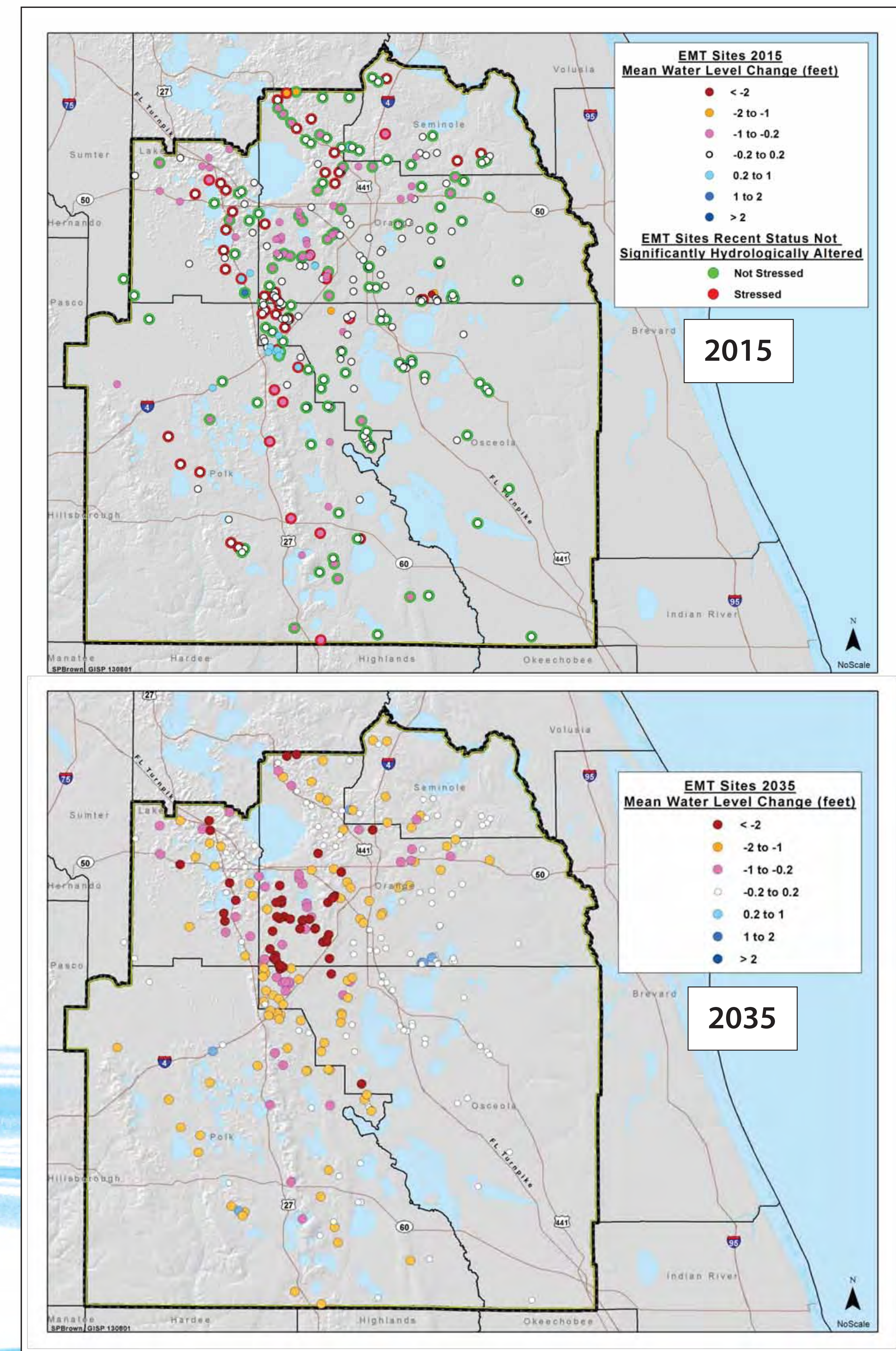
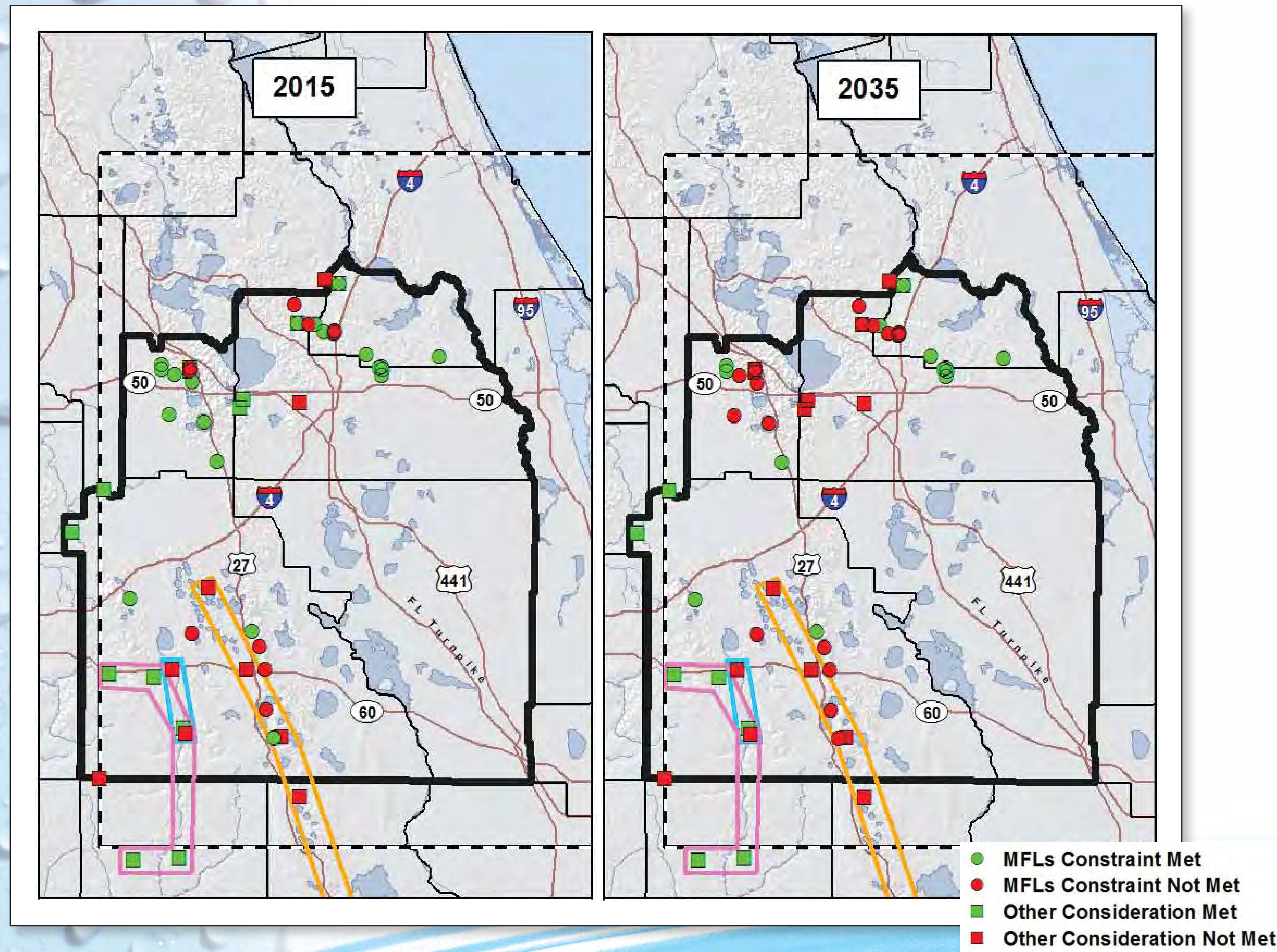


# Central Florida Water Initiative

## Examples of Measuring Stick Results

### Wetlands

#### MFLs and Other Consideration



# Central Florida Water Initiative

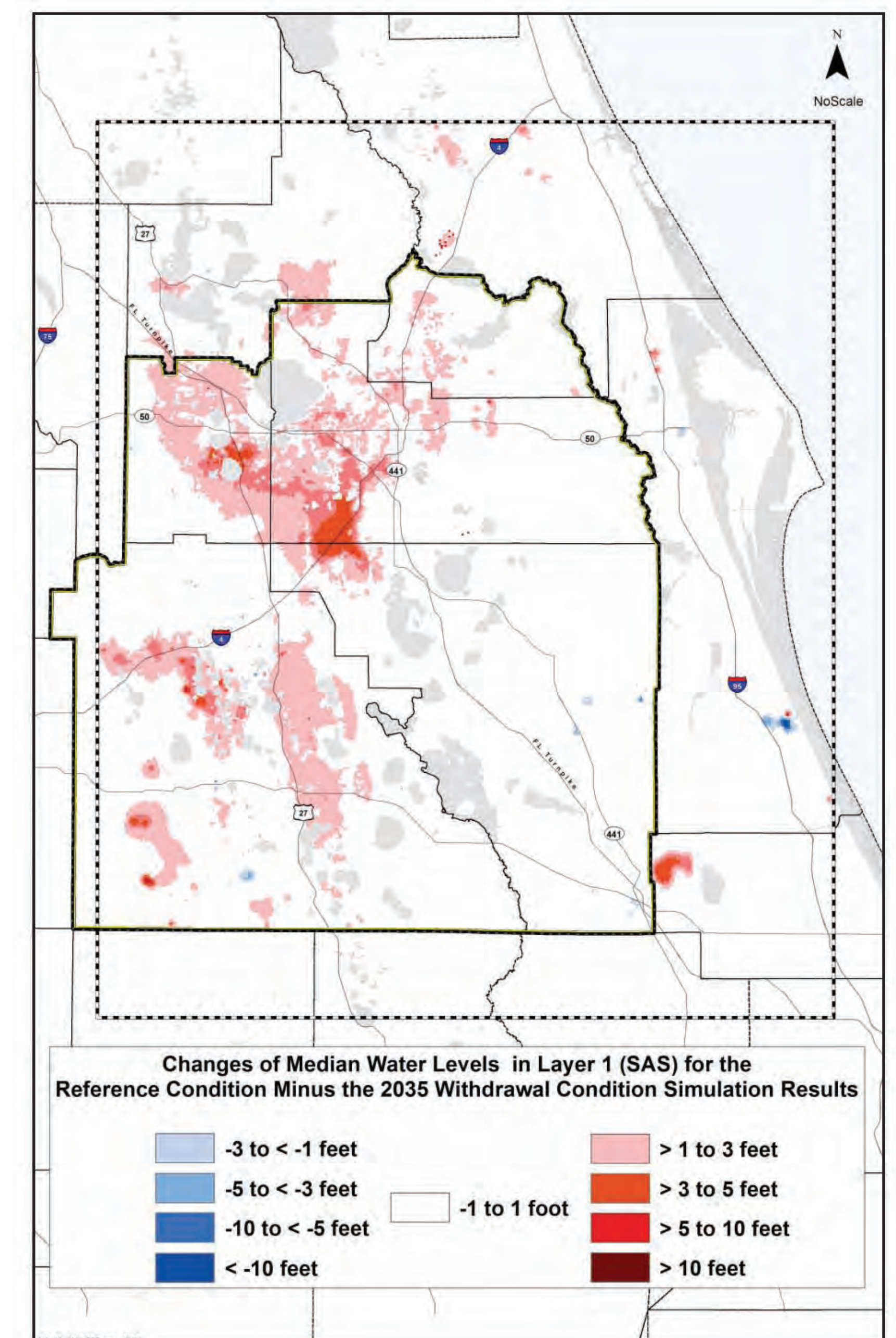
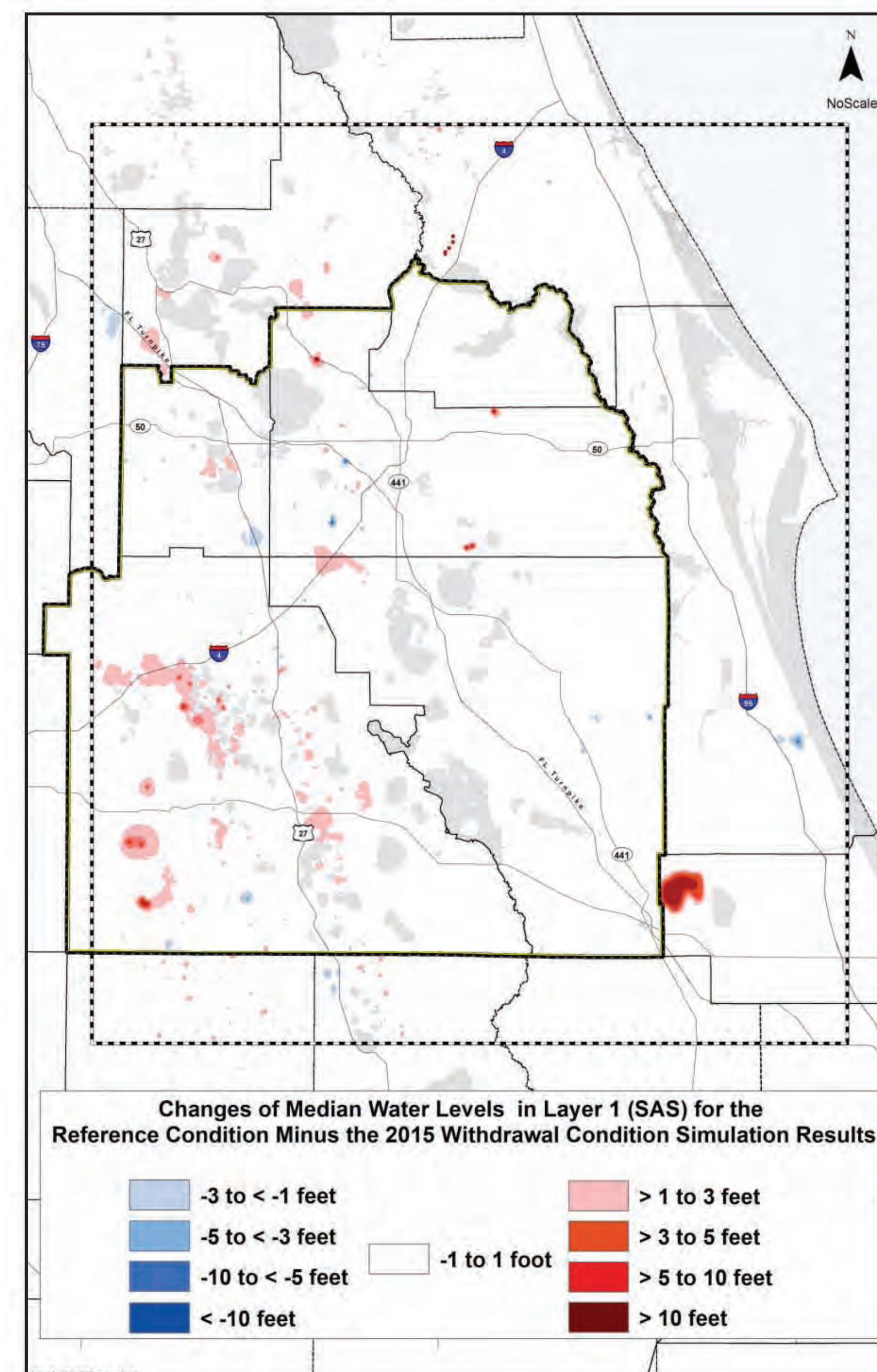
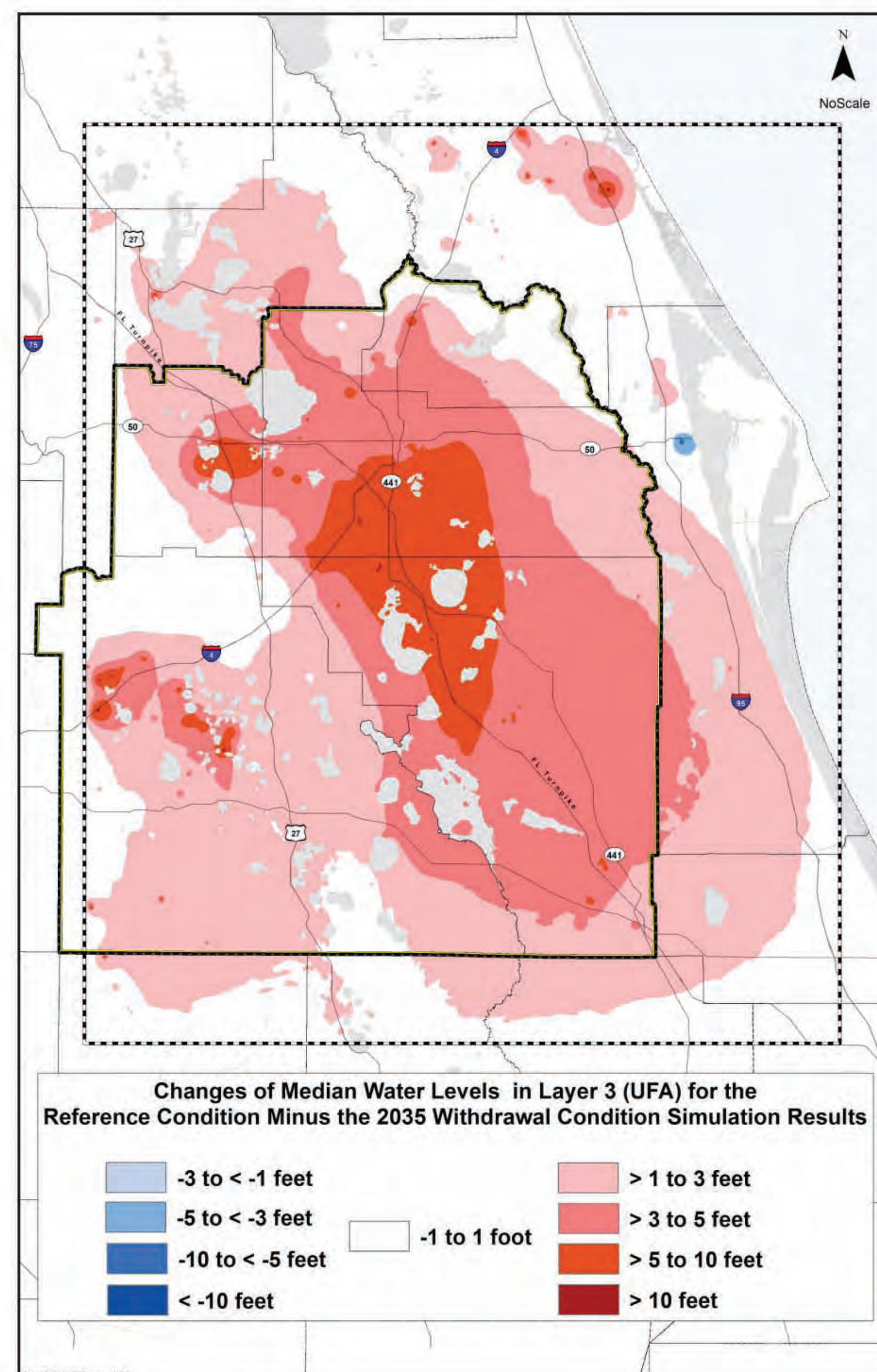
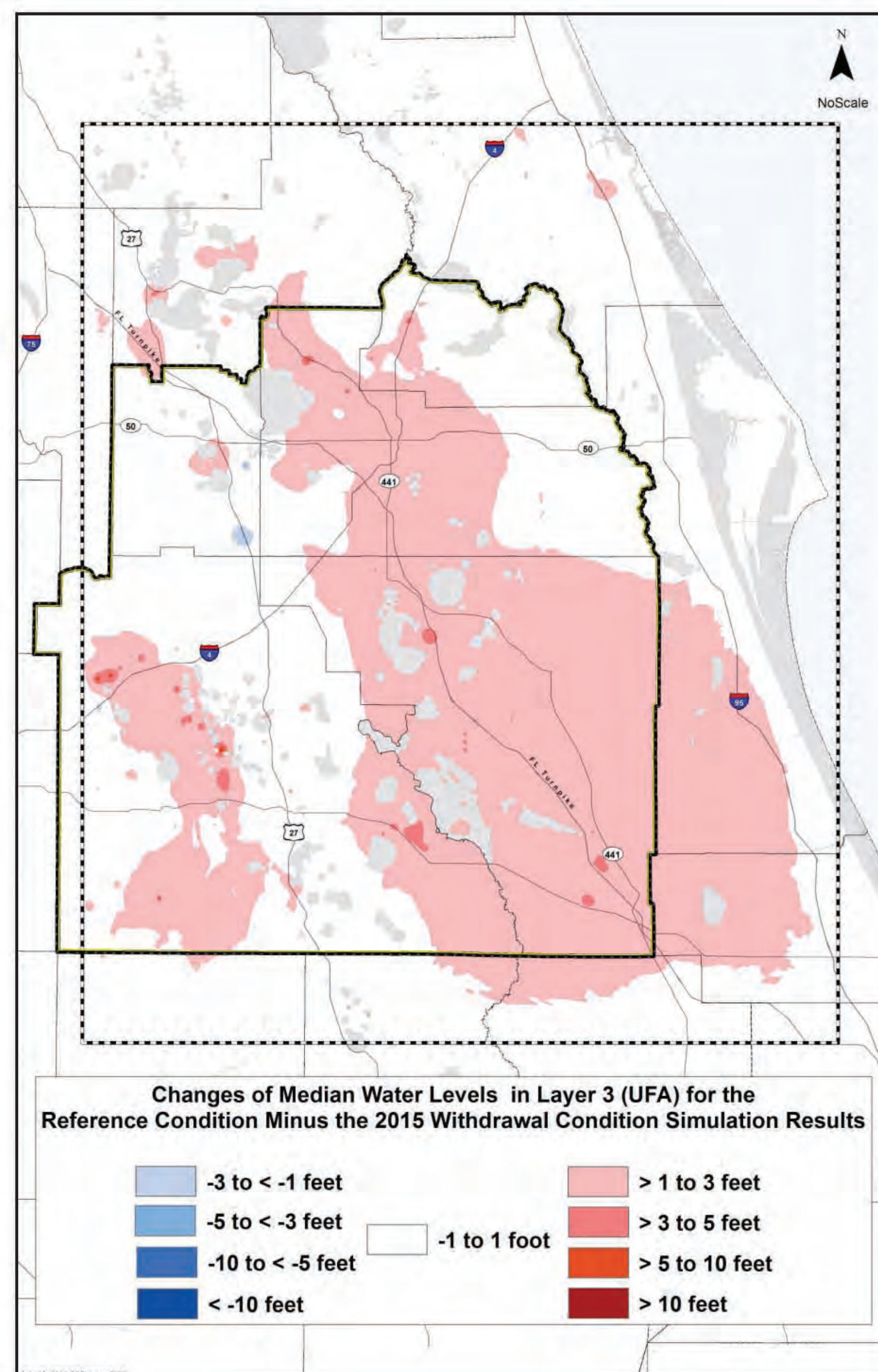
## Example Model Drawdown Results

Reference Condition vs.  
2015 Upper Floridan Aquifer (UFA)

Reference Condition vs.  
2035 (UFA)

Reference Condition vs.  
2015 Surficial Aquifer System (SAS)

Reference Condition vs.  
2035 (SAS)



# Central Florida Water Initiative

## Water Supply Options

### Water Supply Projects Identified

County	Reclaimed Water	Brackish Water	Surface Water	Management Strategies	Total
Orange	52	10	47	0	<b>109</b>
Osceola	28	17	29	0	<b>74</b>
Polk	19	48	15	6	<b>88</b>
Lake (southern)	7	0	5	0	<b>12</b>
Seminole	16	0	92	0	<b>108</b>
<b>Total</b>	<b>122</b>	<b>75</b>	<b>188</b>	<b>6</b>	<b>391</b>

Million gallons per day  
Conservation potential = 42 mgd