

***Project Update:
Wekiwa and Rock Springs
Minimum Flows and Levels Review***

***Presentation to
Wekiva River Basin Commission***

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St. Johns River Water Management District***

October 16, 2007



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Background: Wekiva Protection Act

- Section 373.415[3], Florida Statutes [1988] directed SJRWMD to establish MFLs for the Wekiva River System & minimum water levels for the aquifer underlying the Wekiva Basin, no later than March 1, 1991
- SJRWMD developed and adopted minimum flows and levels (MFLs) for the system in 1991 (Hupalo et al. 1994)



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Black Water Creek & Wekiva River MFLs

System Name	County	Minimum Level	Level (ft NGVD)	Flow (cfs)	Duration (days)	Return Interval (years)
Black Water Creek at the SR 44 Bridge	Lake	Infrequent High	27.0	340	7	5
		Frequent High	25.8	145	30	2
		Average	24.3	33	180	1.7
		Frequent Low	22.8	2.5	90	15
		Infrequent Low	21.9	0.0	7	100
Wekiva River at the SR46 Bridge	Seminole and Lake	Infrequent High	9.0	880	7	5
		Frequent High	8.0	410	30	2
		Average	7.6	240	180	1.7
		Frequent Low	7.2	200	90	3
		Infrequent Low	6.1	120	7	100



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MFLs for 8 springs

Spring Name	County	Hydraulic Head (ft NGVD)	Minimum Mean Annual Flow (cfs)
(a) Messant Spring	Lake	32	12
(b) Miami Spring	Seminole	27	4
(c) Palm Spring	Lake	27	7
(d) Rock Spring	Orange	31	53
(e) Sanlando Spring	Seminole	28	15
(f) Seminole Spring	Lake	34	34
(g) Starbuck Spring	Seminole	31	13
(h) Wekiva Spring	Orange	24	62



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Wekiva Parkway and Protection Act

- Section 369.318(7), F.S. (2003) directed SJRWMD to update the MFLs standards for Rock and Wekiwa springs by December 1, 2007



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Rock Springs

- OFW
- Unique aquatic resources
- Important recreational resources



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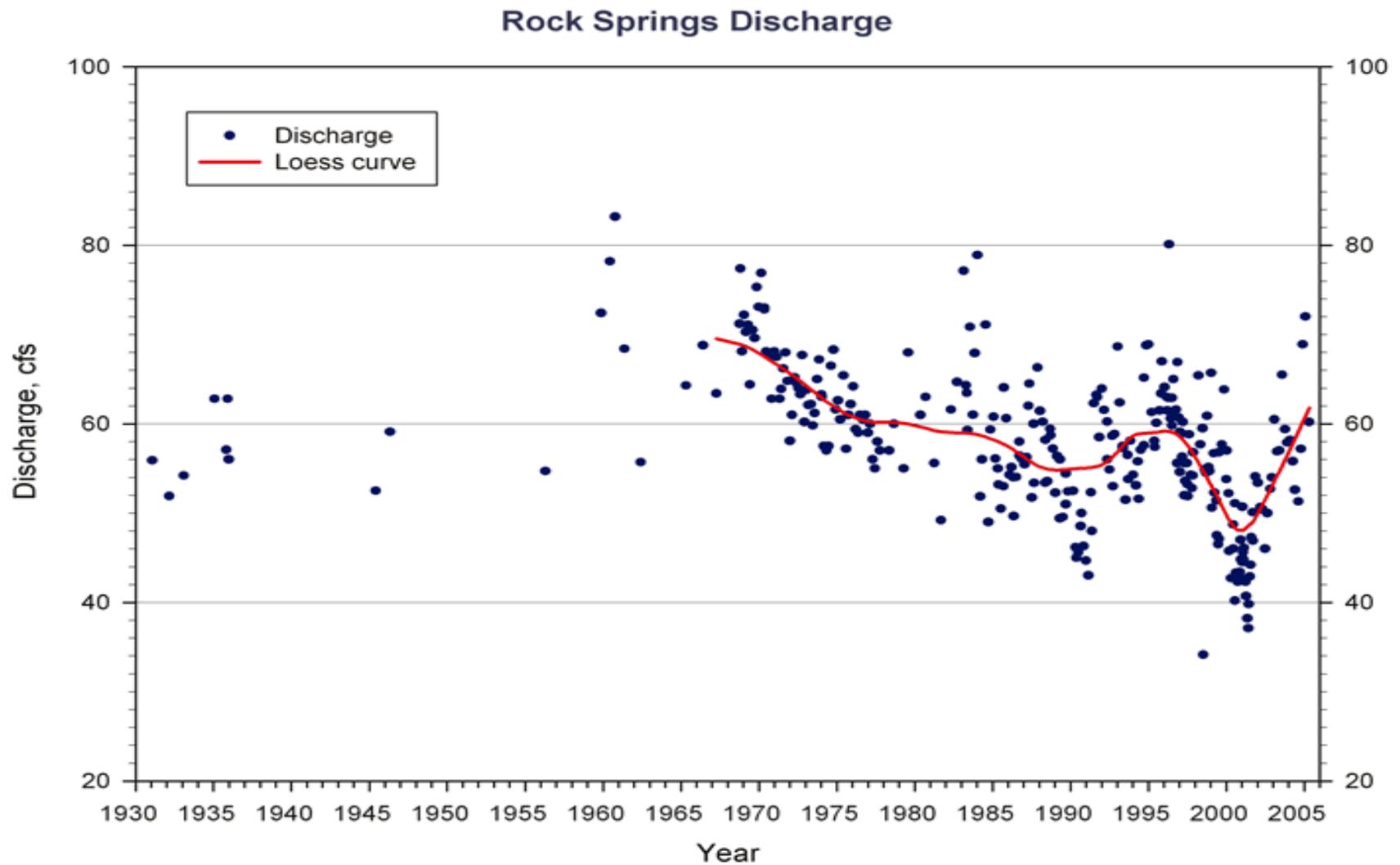
Wekiwa Springs

- OFW
- Unique aquatic resources
- Important recreational resources

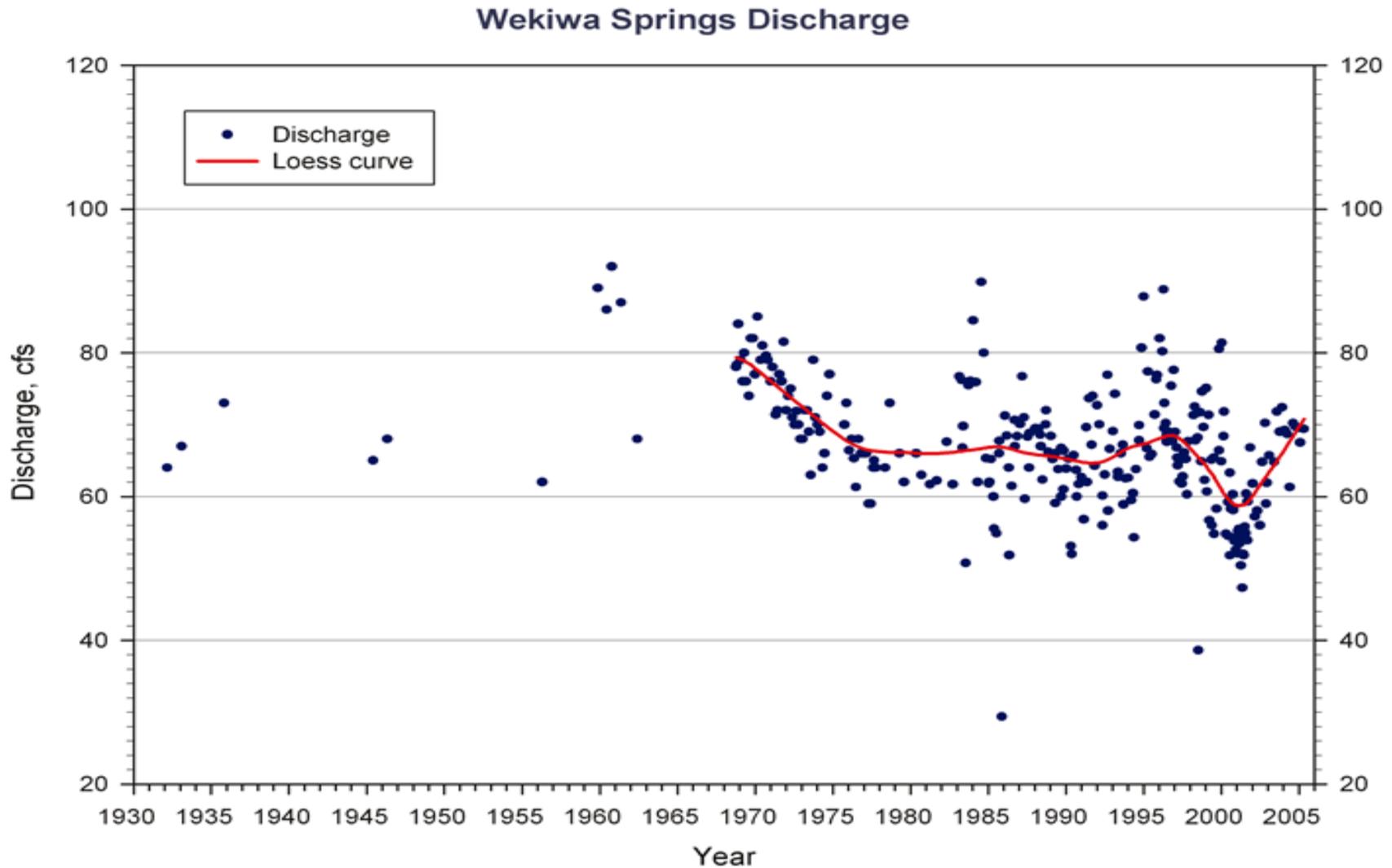


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Rock Springs Discharge



Wekiwa Springs Discharge



Impacts of Groundwater Withdrawals

Spring	County	Estimated Mean Annual Flow (cfs)	Projected 2013 Flow (cfs)	Minimum Flow (cfs)
Rock	Orange	59	54	53
Wekiwa	Orange	69	65	62

Source: INTERA (2007) SJRWMD - East Central Florida regional groundwater model



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Primary Tasks

Two tasks were completed to address Legislative directive:

Task 1

Assess whether hydrologic conditions defined by adopted MFLs for Rock & Wekiwa springs protect water resource and human use values (Section 62-40.473, *F.A.C.*)



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Water Resource Values

62-40.473 Minimum Flows and Levels

(1) In establishing MFLs consider natural seasonal fluctuations, nonconsumptive uses, and environmental values including:

- (a) Recreation in and on the water;
- (b) Fish and wildlife habitats and the passage of fish;
- (c) Estuarine resources;
- (d) Transfer of detrital material;
- (e) Maintenance of freshwater storage and supply;
- (f) Aesthetic and scenic attributes;
- (g) Filtration and absorption of nutrients and other pollutants;
- (h) Sediment loads;
- (i) Water quality; and
- (j) Navigation.



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Primary Tasks

Task 2

Evaluate whether MFLs established at S.R. 46 Bridge are being achieved



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Results

Task 1 Draft report completed:

Wetland Solutions Inc. 2007. Human Use and Ecological Water Resource Values Assessments of Rock and Wekiwa Springs (Orange County, Florida) Minimum Flows and Levels

Findings:

- *Relevant WRVs protected*
- *Apparent declining trends in some ecological / human-use parameters evaluated – however statistically inconclusive*
- *Regional ground water model indicates approaching MFLs for Rock and Wekiwa springs*
- *Recommend expanded ecological monitoring*



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Results

Task 2 Draft report completed:

Rao. 2007. An Evaluation of Minimum Flows and Levels for the Wekiva River at the State Road 46 Bridge, Florida, Using the 1935-2004 USGS Streamflow Data.

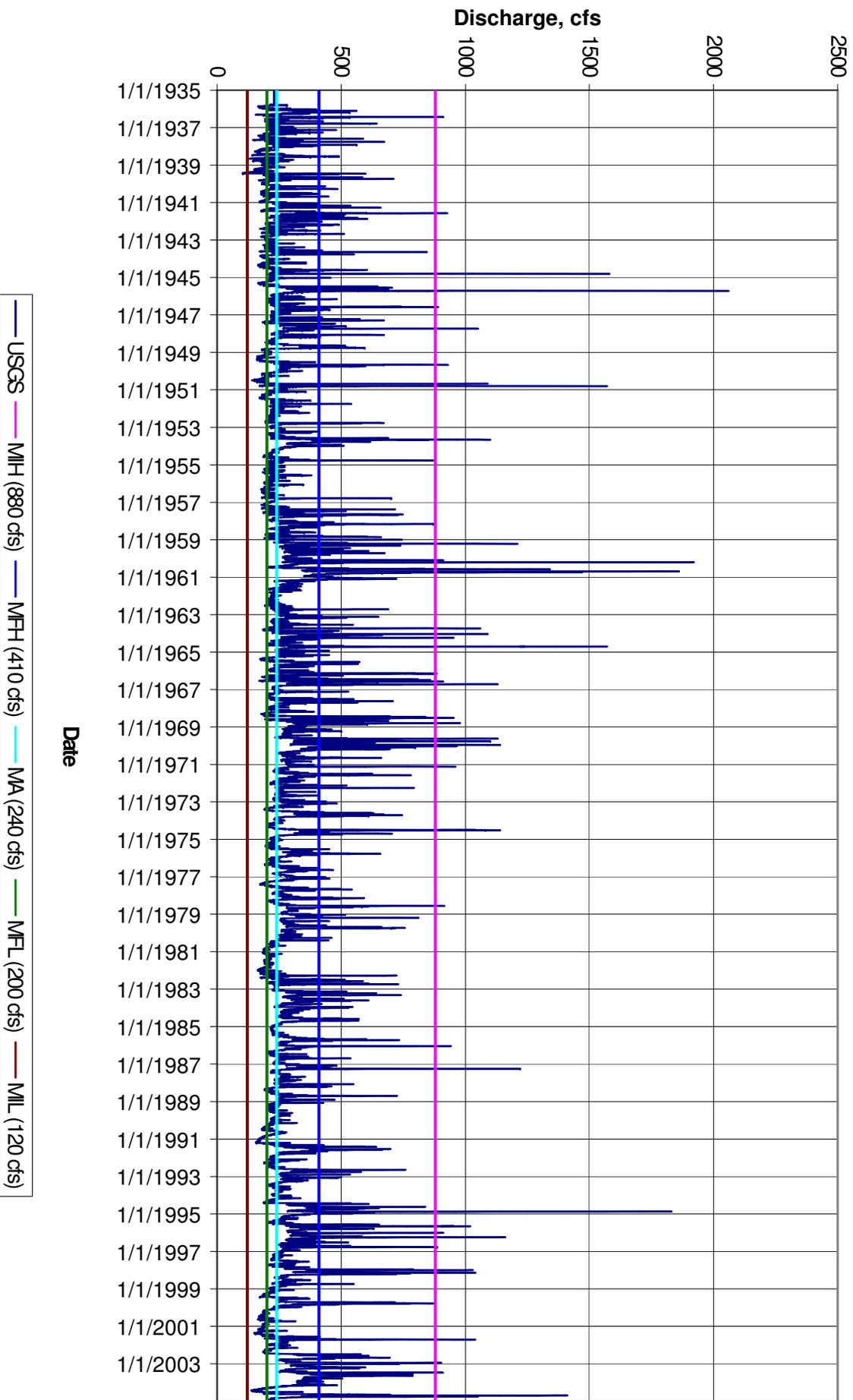
Findings:

- *Verified that minimum flows at SR46 are being achieved*
- *Verified that minimum stages at SR46 are not achieved due to local down-cutting of river channel*

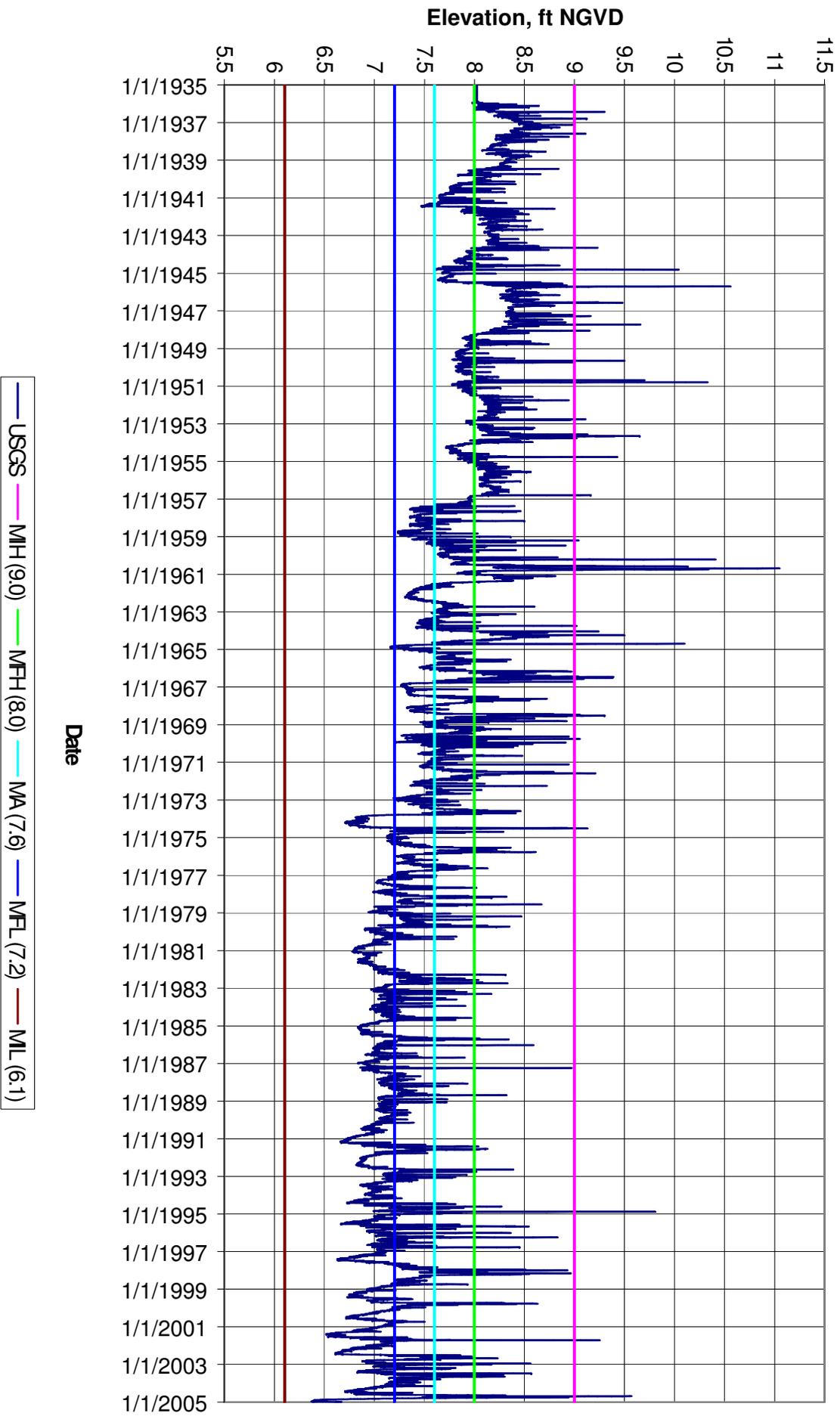


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Wekiva River Discharge at SR46 (1935 – 2004)



Wekiva River Water Level at SR46 (1935 – 2004)



Conclusions

- Recommend no changes to Rock and Wekiwa springs MFLs
- Expand monitoring of ecological parameters to ensure MFLs are protective
- Re-locate and re-establish MFLs for the Wekiva River
- Continue to monitor flow/water levels at SR46



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Priority Water Resource Caution Areas

Areas where proposed sources of water cannot sustain proposed uses through 2025 without unacceptable impacts to water resources and related natural systems



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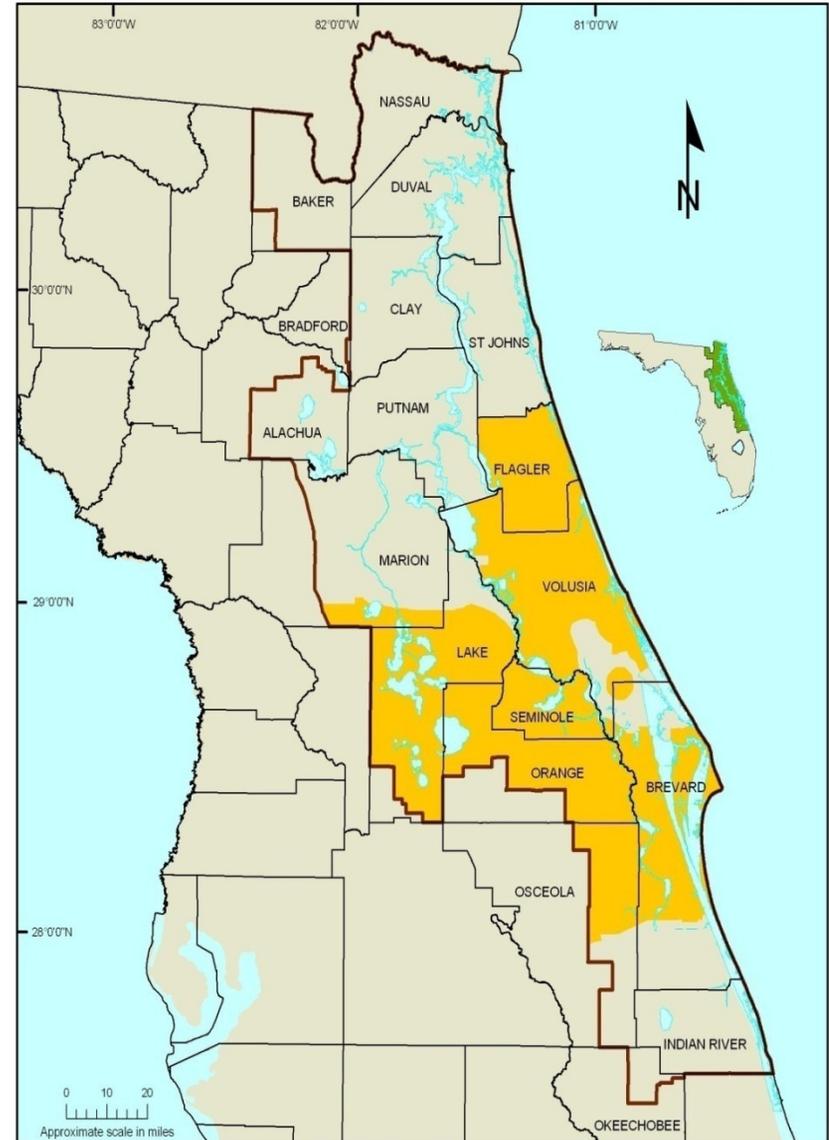
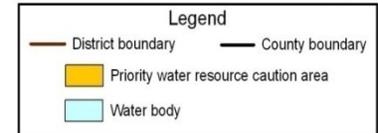


Figure 3. Priority water resource caution areas in the St. Johns River Water Management District, 2003



Current Water Supply Activities

- CUPs
 - CFWA – 2013 limit on groundwater withdrawals
 - All CUPs reviewed for MFLs compliance
- Alternative water supplies
 - Project scoping under way
 - Design scheduled to begin January 2008
 - Project completion by 2013

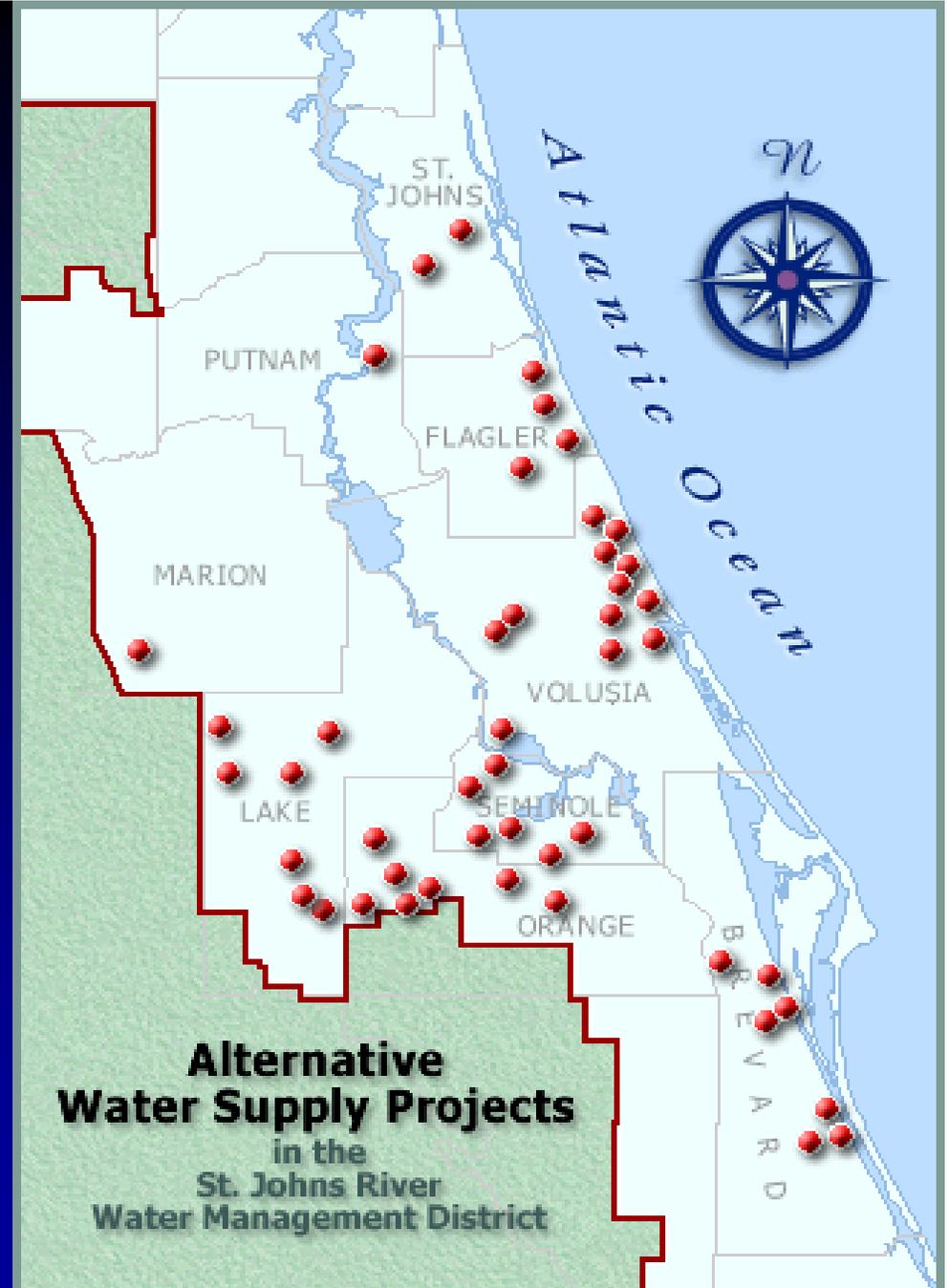


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Approved Alternative Water Supply Projects



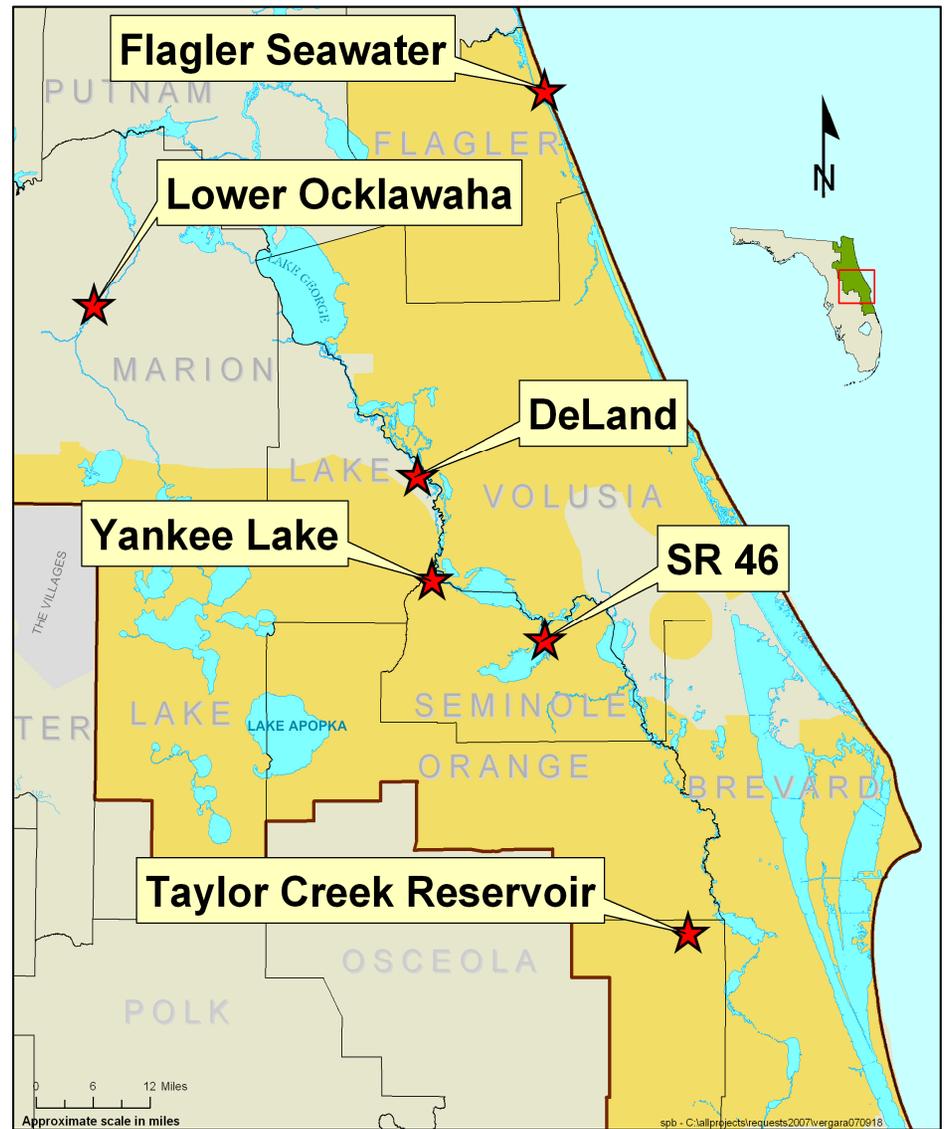
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Priority Alternative Water Supply Projects



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Potential Alternative Water
Supply Projects

Legend

- District boundary
- County boundary
- Priority water resource caution areas
- Water body
- Water supply planning project

Contact Information

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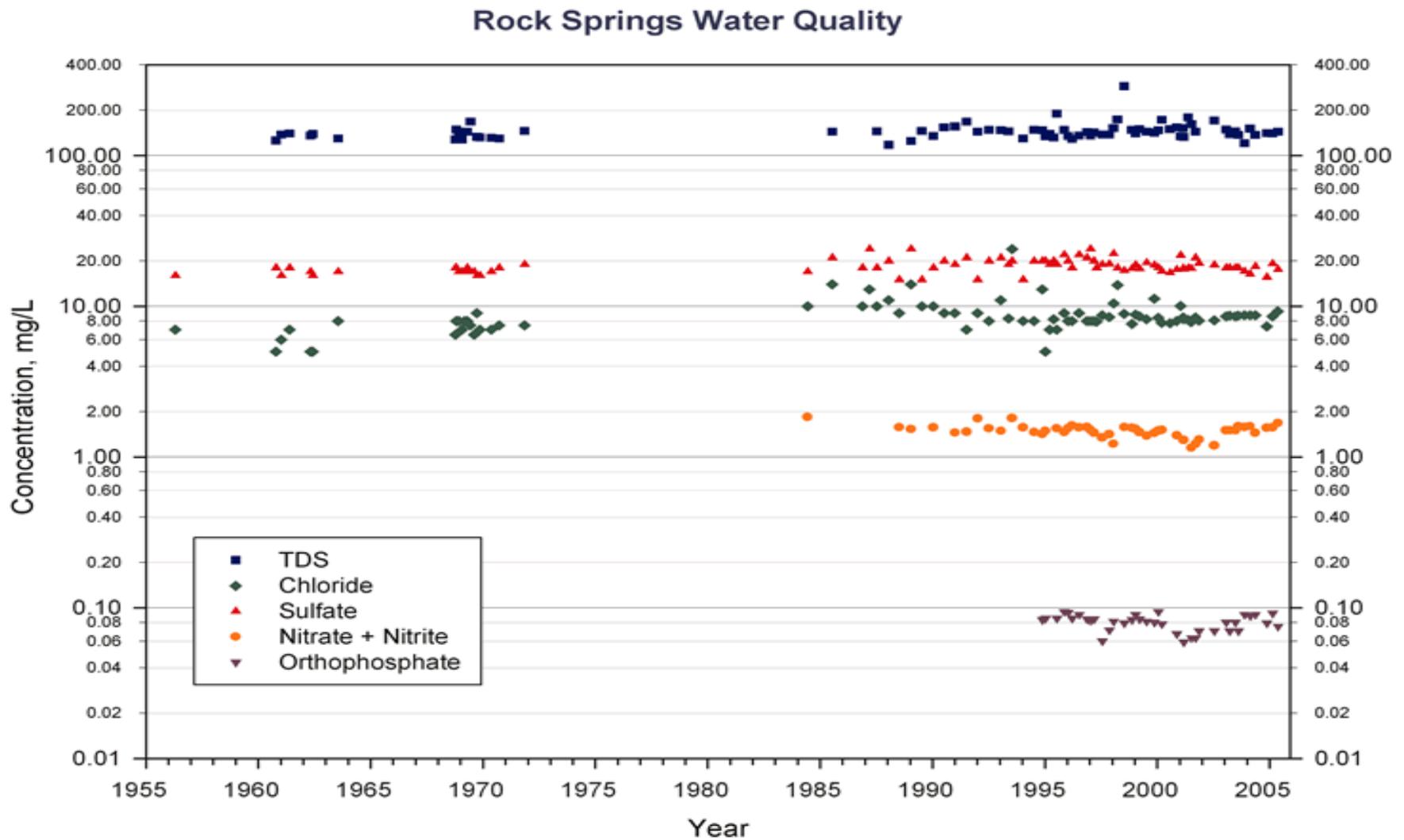
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Rock Springs Water Quality



Wekiwa Springs Water Quality

