



Cooperative Efforts Succeed in Improving Wakulla Spring Water Quality

Florida Stormwater Association Annual
Conference
July 2020





Distribution & Characteristics of Panhandle Springs



Gator Hole Spring



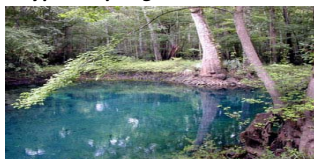
Pitt Spring



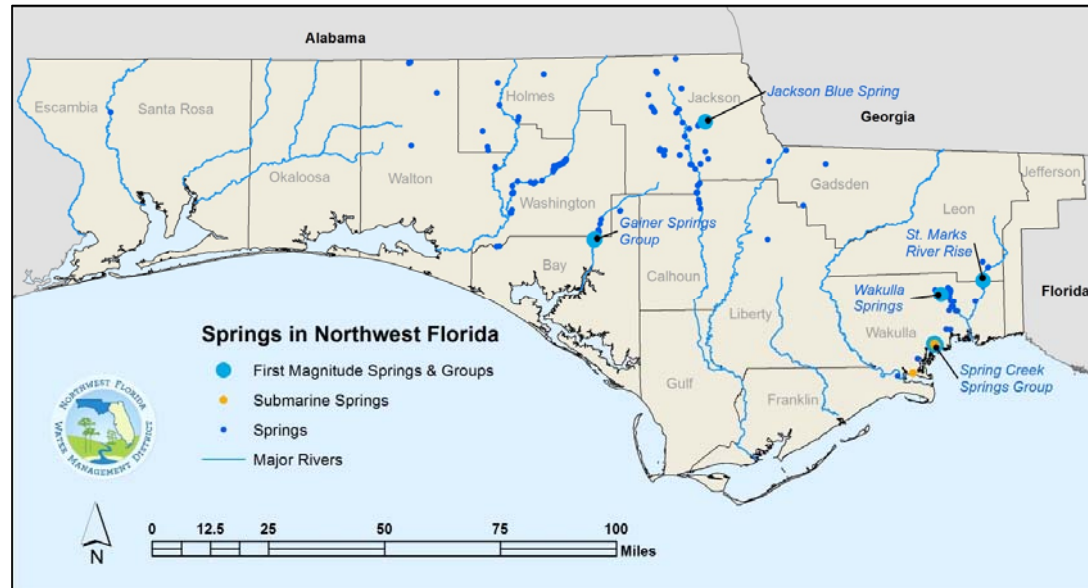
Gainer Spring Group



Cypress Spring



Jack Paul Spring



- **Over 250 springs in the District**
- **5 first-magnitude springs**
 - Wakulla Spring
 - St. Marks River Rise
 - Jackson Blue Spring
 - Gainer Springs Group
 - Spring Creek Springs Group (submarine)



Upper Wakulla River TMDL and BMAP

WBID	PARAMETER	TMDL (MG/L)	TMDL% REDUCTION
1006	Nitrate, as monthly average	0.35	56.2%

- A Basin Management Action Plan (BMAP) is the primary tool for implementing a Total Maximum Daily Load (TMDL).
- BMAP has been adopted by the FDEP for Upper Wakulla River and Wakulla Spring to implement nitrate reductions to achieve the TMDL (June 2018).
- Focuses on addressing on nitrate loading from Wastewater Treatment Facilities (WWTFs), OSTDS, fertilizer, livestock, and stormwater.
- BMAP contain management strategies and projects for achieving nitrate reductions.



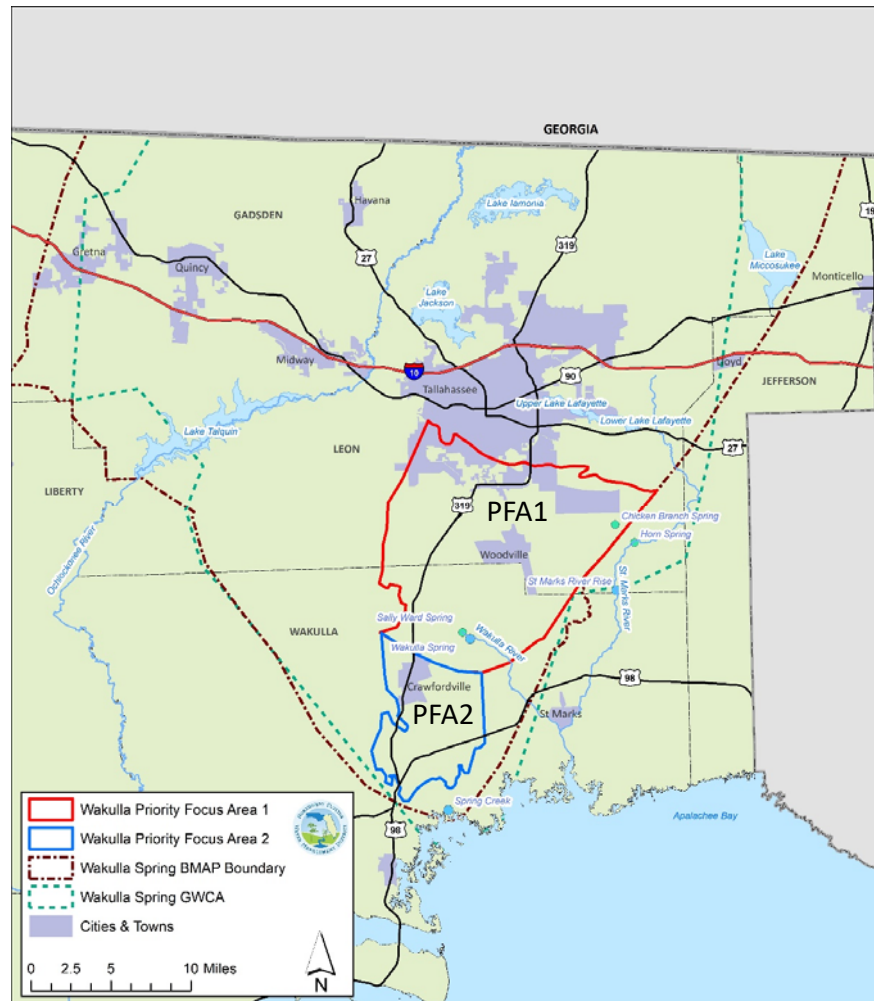
Upper Wakulla River and Wakulla Springs Basin

The BMAP Priority Focus Areas (PFAs) represent the areas where the aquifer is:

- 1) most vulnerable to pollutant inputs
- 2) where groundwater travels the fastest
- 3) where there is a known connectivity between ground water pathways and Wakulla Spring

PFA1: continually contributes to the spring

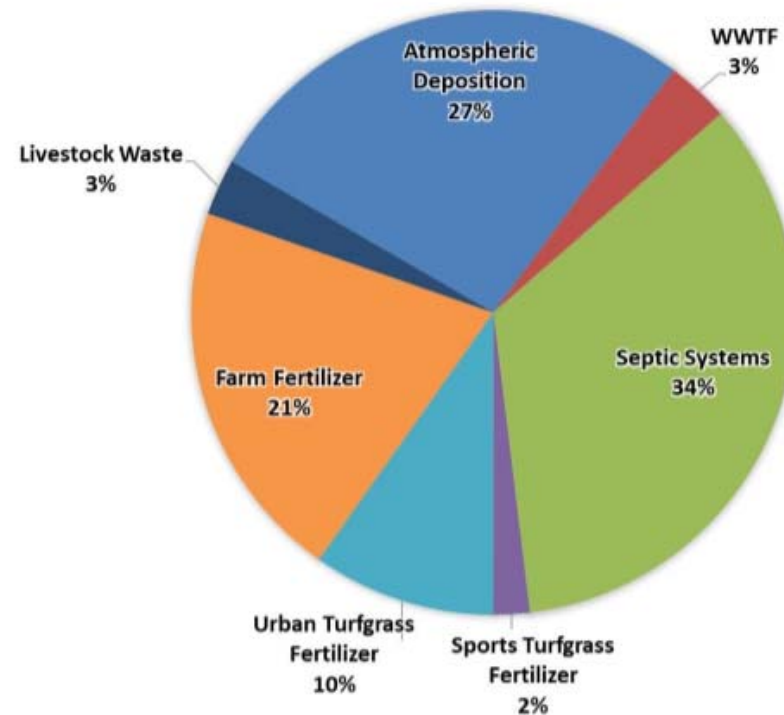
PFA2: intermittently contributes to the spring





Relative Contribution of Major Sources of Nitrogen Loading to Groundwater

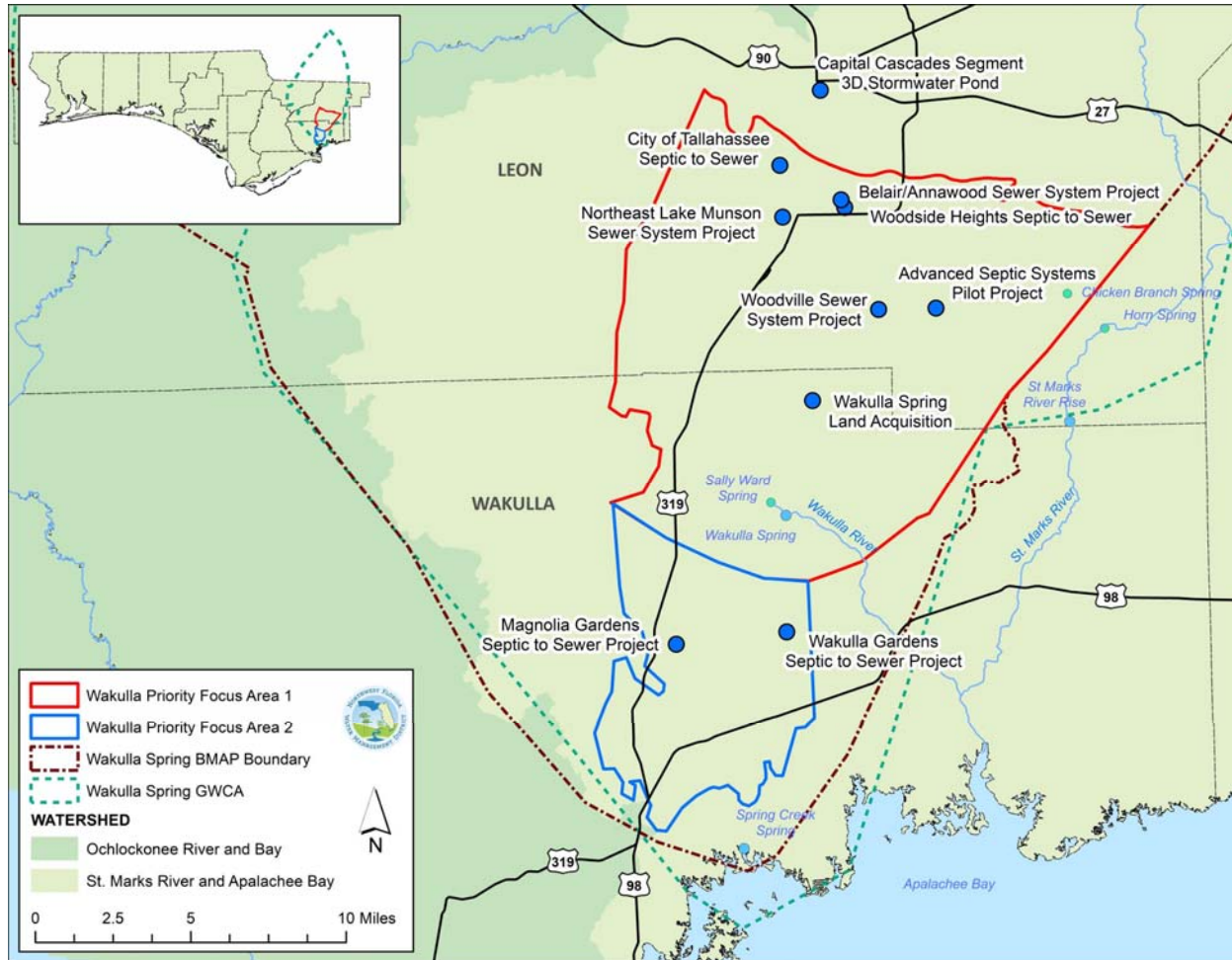
- Septic Systems are the largest contributors of nitrate to groundwater
- There are approximately 11,917 septic systems in PFA1 and PFA2.



Source: FDEP 2018



Water Quality Restoration Projects





Wakulla Spring - Projects

FY	Project	Cooperator	State Funding	Match	Total Funding	Project Type	Description
14-15 15-16	Woodside Heights	Leon County	\$2,450,000	\$2,450,000	\$4,900,000	Septic-to-Sewer	200 connections
14-15 15-16 17-18 18-19 19-20	Wakulla Gardens	Wakulla County	\$14,202,415	\$3,856,600	\$18,059,015	Septic-to-Sewer	616 connections
14-15 15-16 18-19	Magnolia Gardens	Wakulla County	\$7,051,811	\$3,856,600	\$10,908,411	Septic-to-Sewer	416 connections
16-17 18-19	Tallahassee Septic to Existing Sewer	City of Tallahassee	\$1,081,000	\$2,937,000	\$4,018,000	Septic-to-Sewer	180 connections
16-17 19-20	Woodville Sewer System	Leon County	\$5,250,000	\$5,250,000	\$10,500,000	Septic-to-Sewer	1,000 connections



Wakulla Spring – Projects Continued

FY	Project	Cooperator	State Funding	Match	Total Funding	Project Type	Description
17-18	Belair/Annawood Sewer System	Leon County	\$1,750,000	\$1,750,000	\$3,500,000	Septic-to-Sewer	113 connections
17-18	Northeast Lake Munson Sewer System	Leon County	\$2,750,000	\$2,750,000	\$5,500,000	Septic-to-Sewer	260 connections
16-17 19-20	Advanced Septic Systems Upgrade	Leon County	\$2,000,000	\$500,000	\$2,500,000	Advanced Septic Treatment	150 connections
17-18	Wakulla Springs Land Acquisition	NFWFMD	\$2,400,000	\$0	\$2,400,000	Land Acquisition	Land acquisition within Priority Focus Areas 1 & 2
18-19	Capital Cascades Segment 3D Stormwater Pond	Blueprint	\$500,000	\$3,700,000	\$4,200,000	Stormwater	Construct regional stormwater treatment facility
Total			\$39,435,226	\$27,050,200	\$66,485,426		



Septic to Sewer Projects - \$34.5 million

PFA 1 and PFA 2	Number of Septic Tanks	Estimated Nitrate Savings (lb/yr)
Completed	738	7,926
Ongoing Projects	1,836	18,723
Total	2,574	26,649

Septic Tanks in PFA 1 and 2	11,917
Total septic tanks	2,574 (22%)





Wakulla Spring Restoration – Current Success

Advanced Septic Treatment Pilot Project - \$2.0 million

- Sewer may not work everywhere
- Projects needed in rural neighborhoods
- Several different options considered
- Partnerships with DEP, DOH, Leon County



Land Acquisition - \$2.4 million

- Willing sellers within PFAs
- Focus on Conservation Easements



Stormwater - \$500,000

- Stormwater treatment



Wakulla Spring Restoration and Protection

Total Investment: More than \$422 million

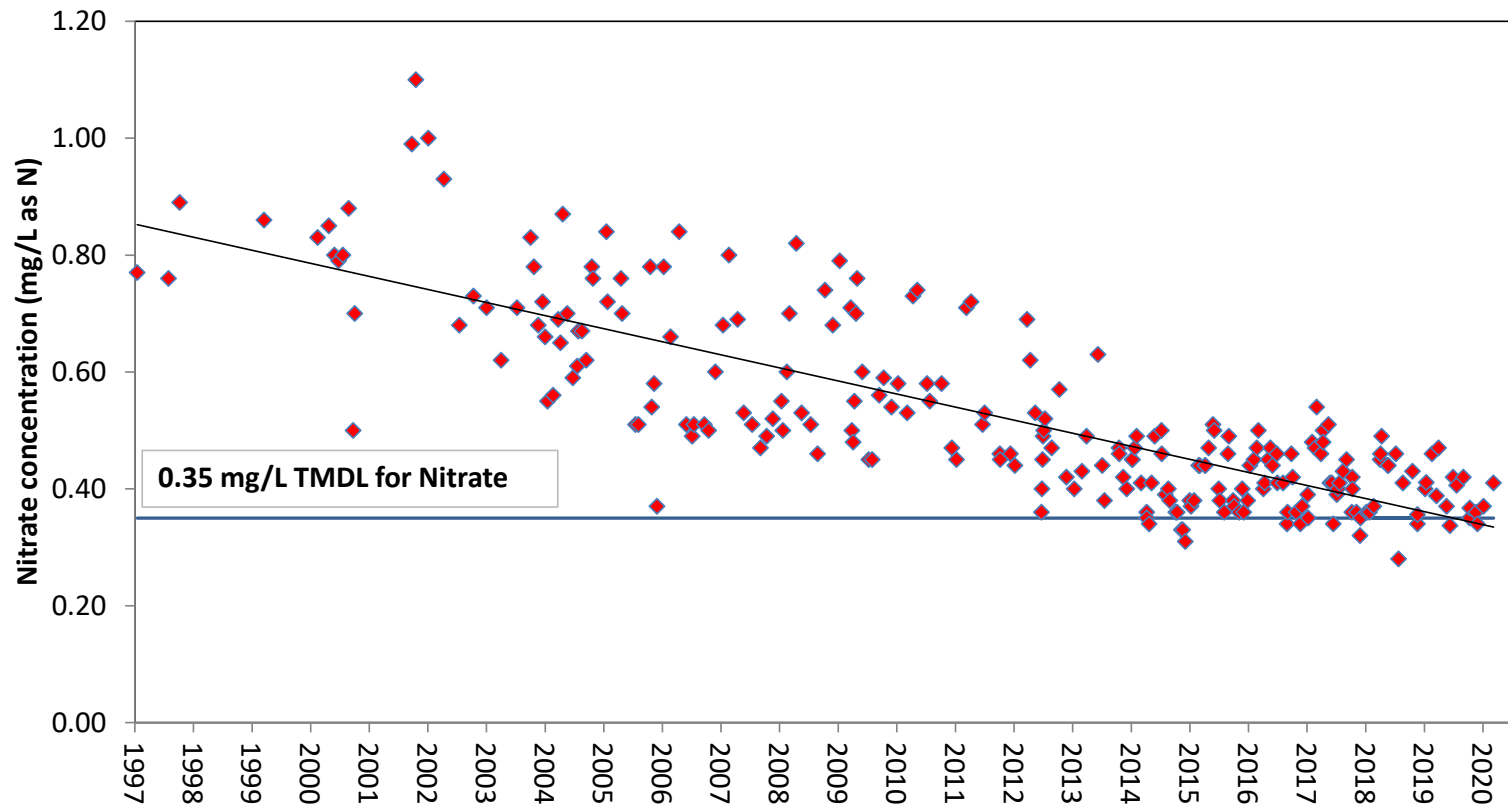
- 6 Partners/Cooperators
- \$66.5 million in total Springs Restoration grant funding, including local match through FY 19-20
- 2,574 septic tank conversions to central sewer completed/planned
- Reduce nitrogen loading by more than 26,649 lbs/year
- TMDL of 0.35 mg/L nearly achieved





Wakulla Spring Nitrate Trend

Wakulla Spring Nitrate Trend (1997-present)





What's next?

- Continued implementation of water quality improvement projects
- Identify future project opportunities
- Continue water quality and biological monitoring
- Monitor continued success toward achieving TMDL of 0.35 mg/L nitrate



