Northwest Florida Water Management District

Solutions for Springs

Spring Management Challenges

Jackson Blue Spring

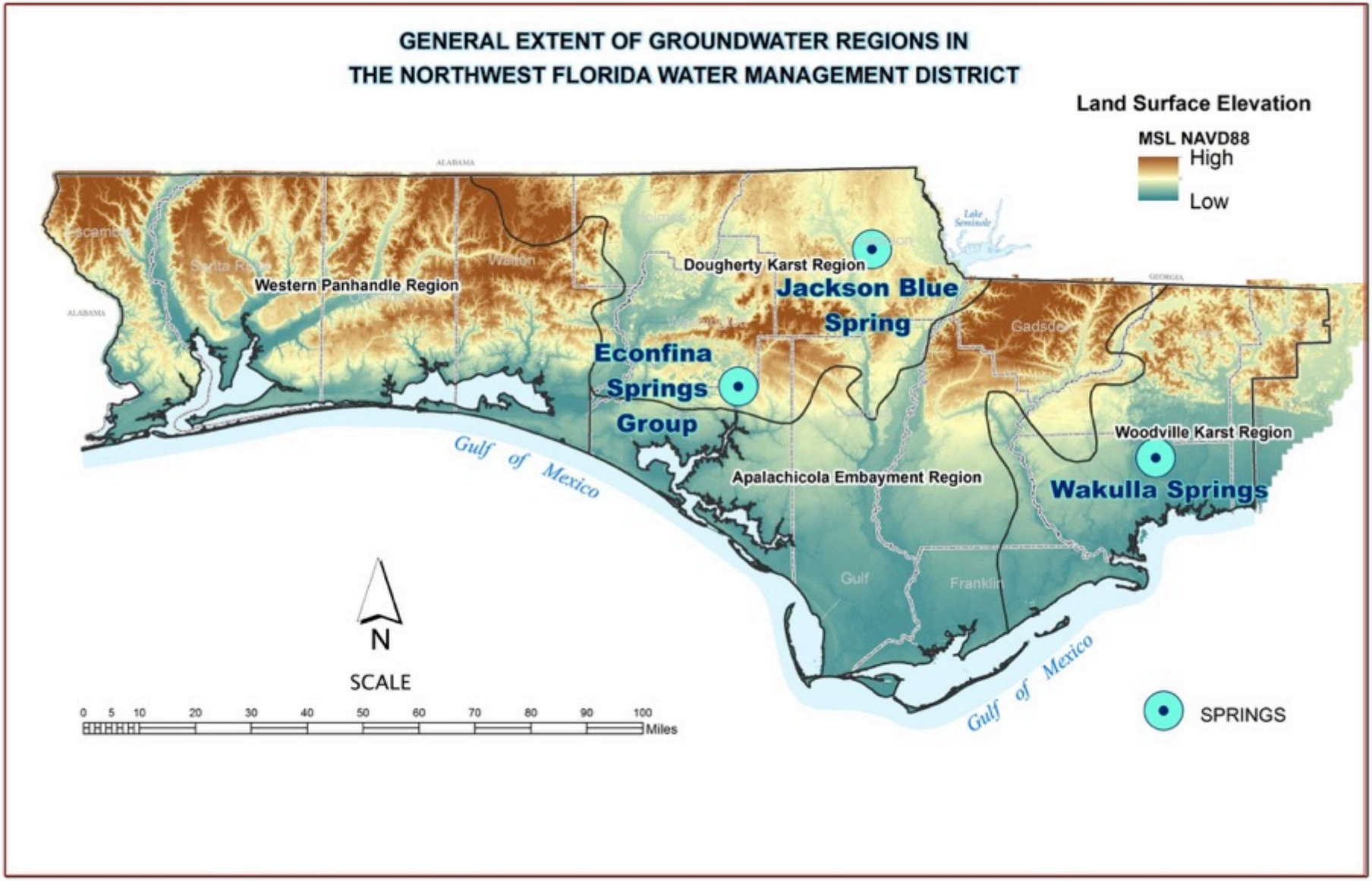
- Nutrient pollution from agriculture
- Agricultural irrigation consumptive use demands on spring
- MFL study initiated in 2014

Wakulla Springs

- Nutrient pollution from wastewater and stormwater runoff
- Evaluation of future consumptive use demands on spring
- MFL study initiated in 2013

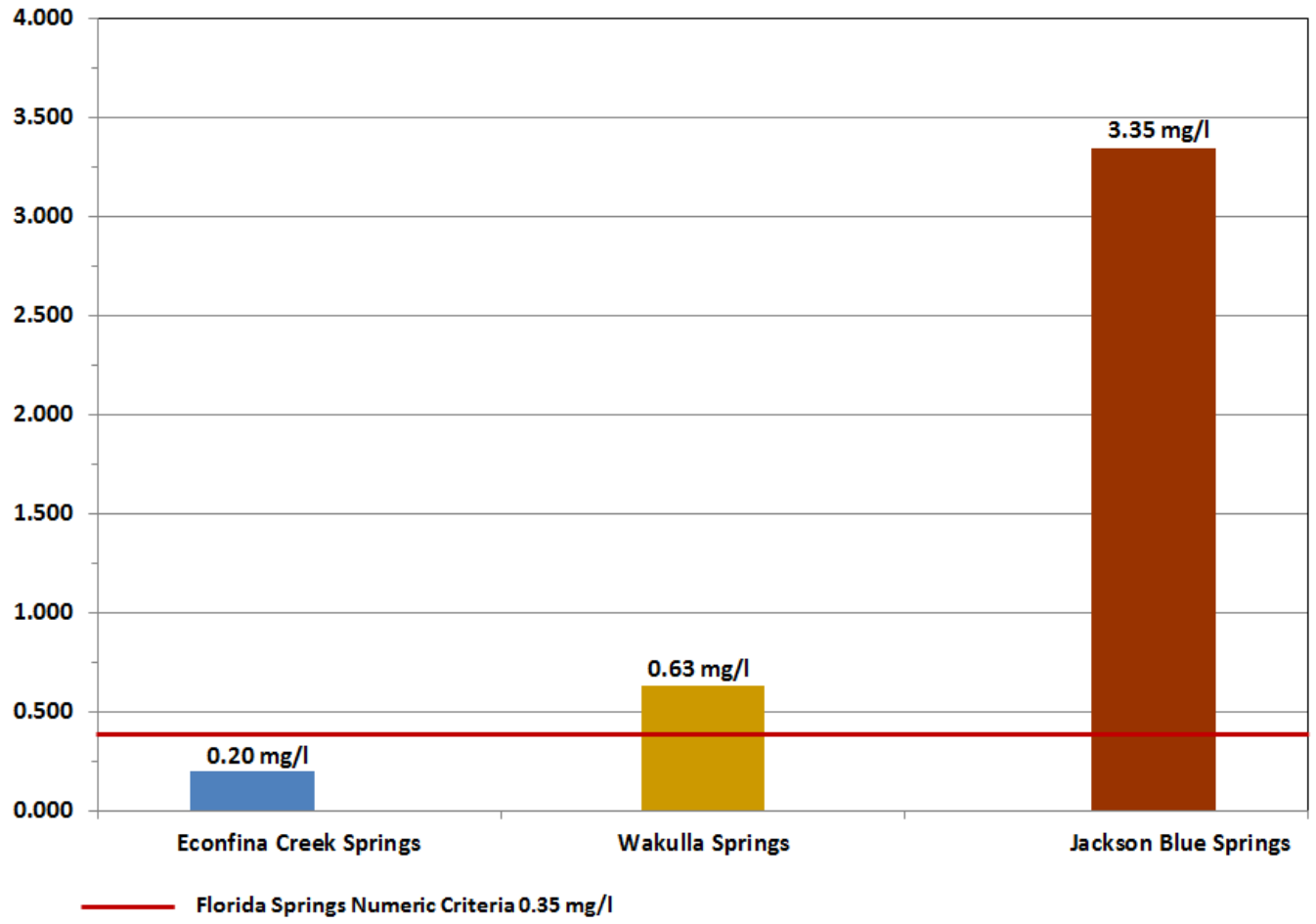
Econfina Creek Springs Complex

- Groundcover/habitat restoration
- Managing recreational use

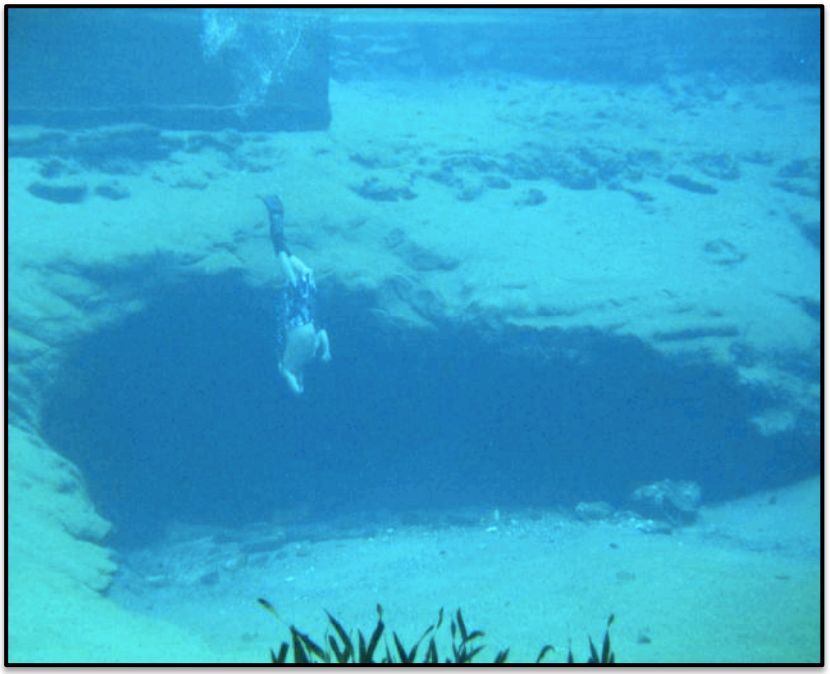

GENERAL EXTENT OF GROUNDWATER REGIONS IN
THE NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Land Surface Elevation
MSL NAVD88
High
Low
Western Panhandle Region
Dougherty Karst Region
Jackson Blue Spring
Econfina Springs Group
Apalachicola Embayment Region
Woodville Karst Region
Wakulla Springs
Gulf of Mexico
Gulf of Mexico
N
SCALE
0 5 10 20 30 40 50 60 70 80 90 100
Miles
SPRINGS

Average Nitrate Concentrations in Springs

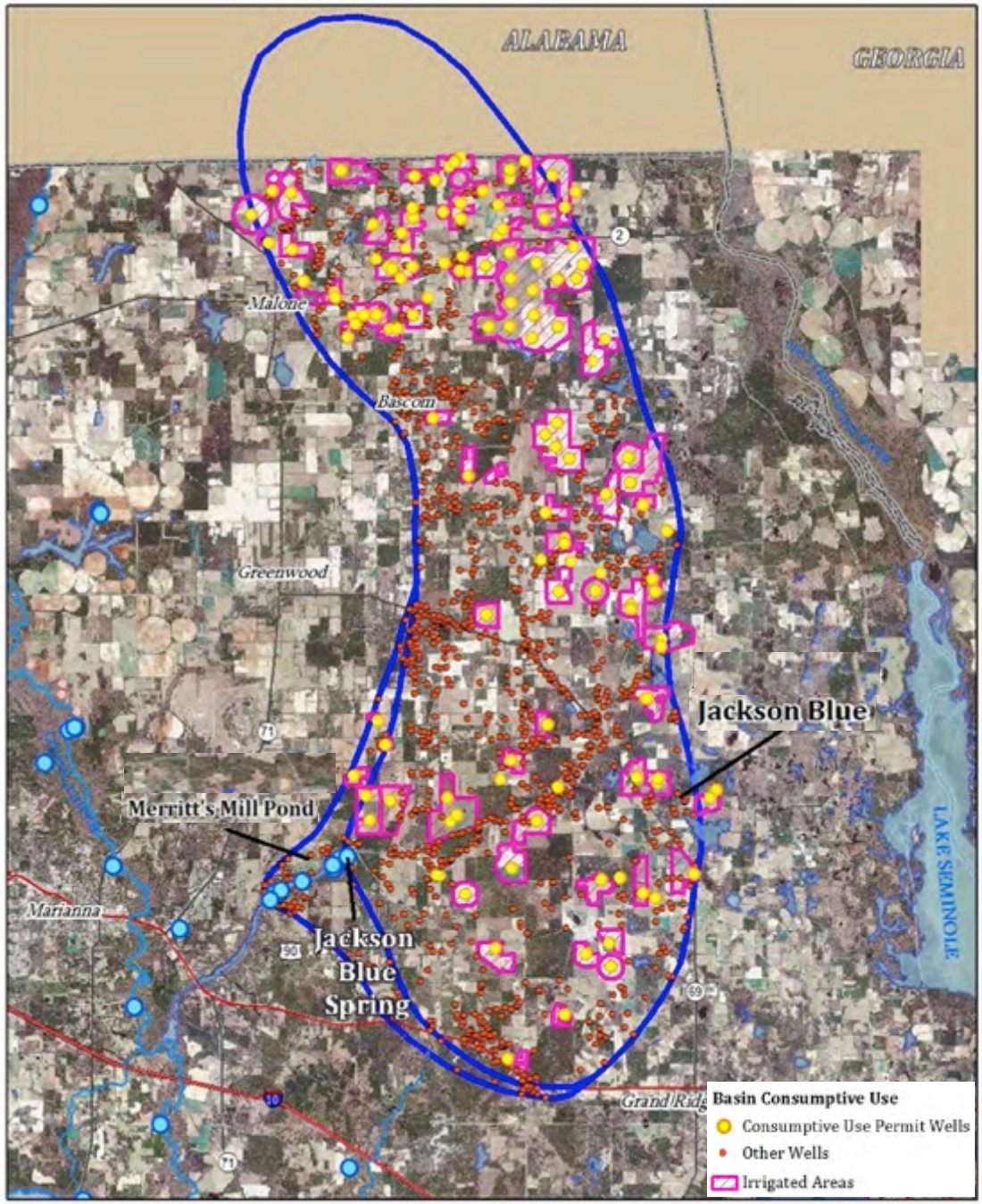
2001-2013 (mg/L)



Jackson Blue Spring

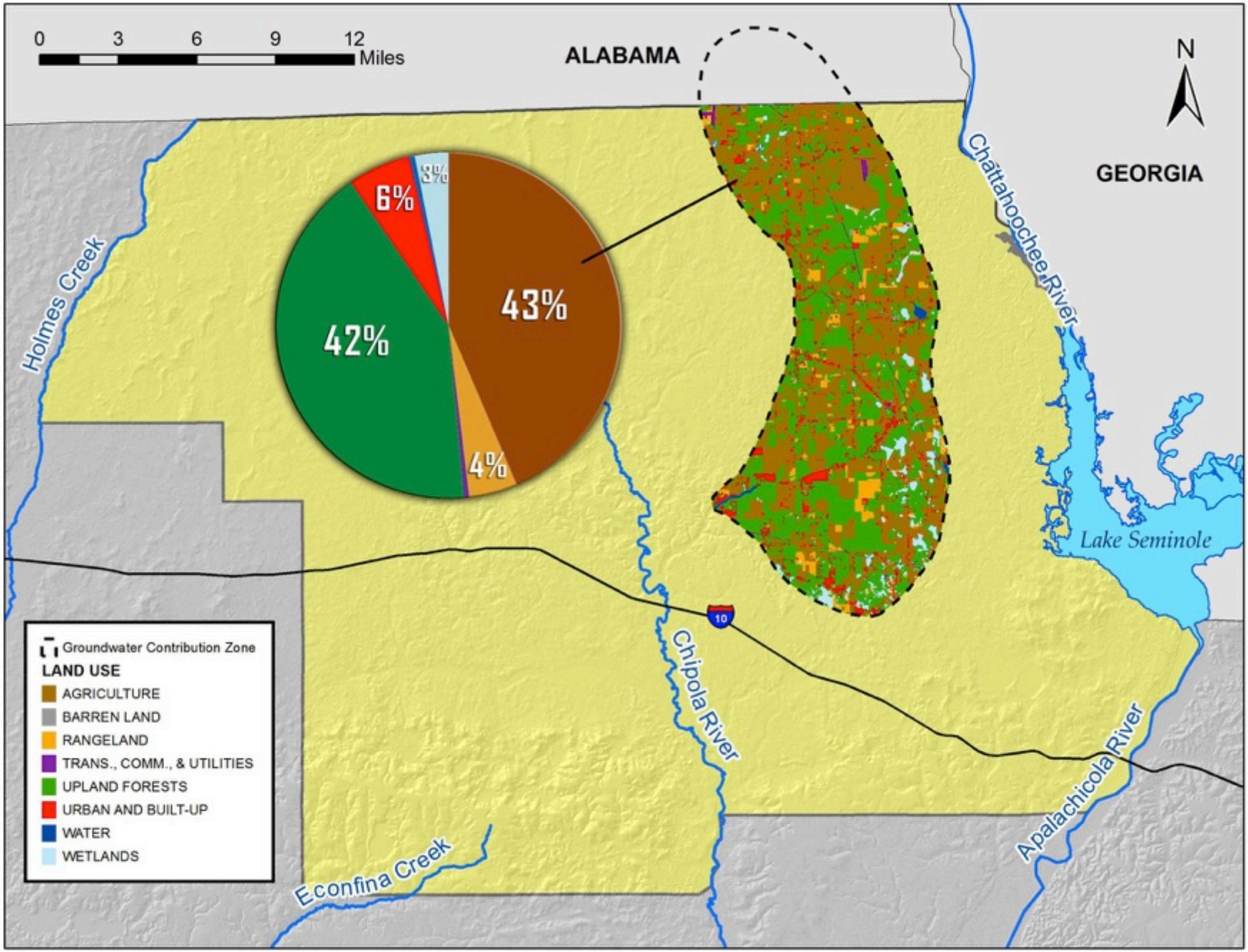


- Average Daily Flow – 130 cfs (84 mgd)
- High nitrates from agricultural fertilizer application
- EDB (Ethylene Dibromide, a crop fumigant) in Floridan Aquifer in NE Jackson County



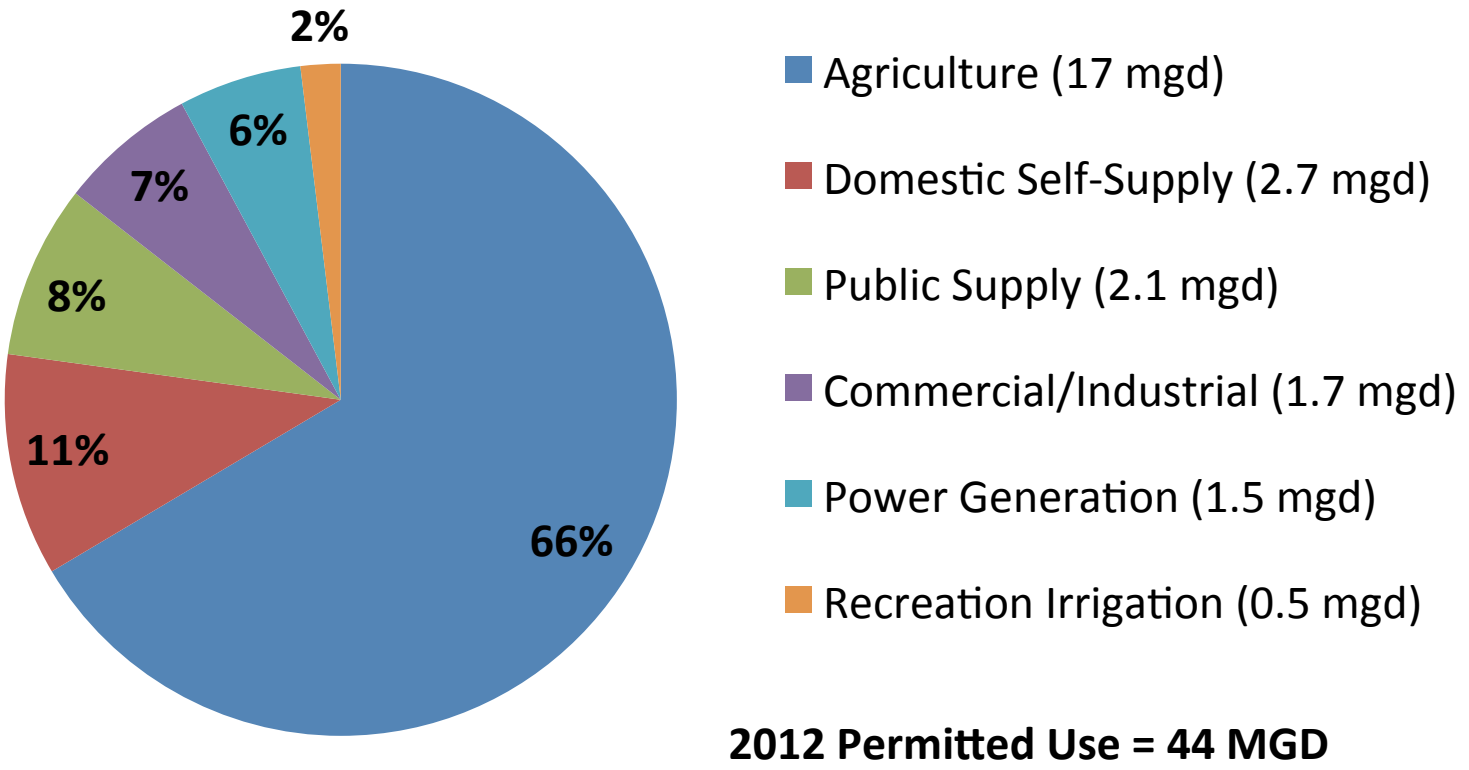
Location of Water Supply Wells and Irrigated Farm Land in Jackson Blue Groundwater Contribution Area

Jackson Blue Spring Groundwater Contribution Area

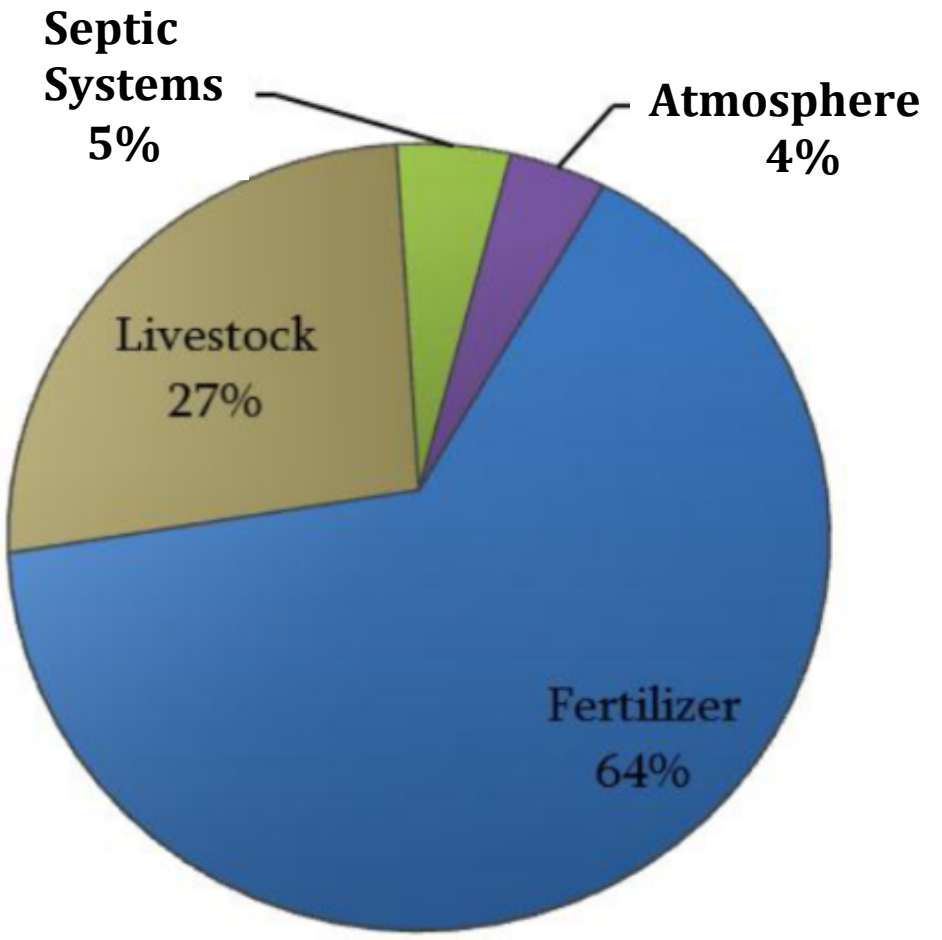


Jackson County Water Use in 2012

25.5 MGD



2012 Permitted Use = 44 MGD



Nutrients leaching into groundwater represents fertilizer lost to growers and increased nitrate levels in the springs and Merritt's Mill Pond.

Estimated Fertilizer Loss:
580 tons fertilizer/year
~ $174,000 Economic Loss

Estimated Nitrogen Sources in Jackson Blue Spring (1)

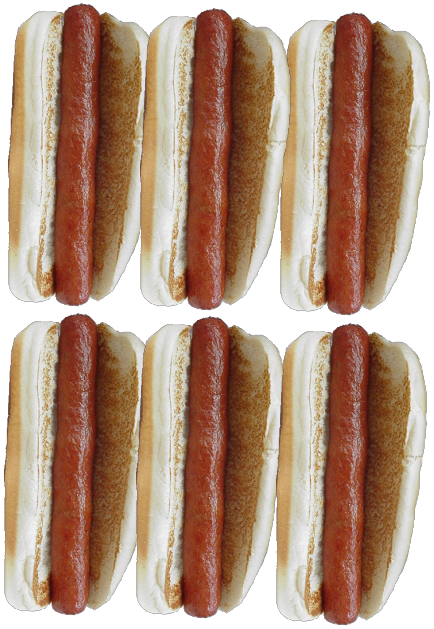
(1) Nitrate Sources of Springs Discharging to Merritt's Mill Pond, Jackson Co. Technical Report 2011-01

Maximum drinking water standard for nitrate is 10 mg/l. There is about 0.22 mg of nitrate in one hot dog.

The current Nitrate concentration of Jackson Blue Spring water is about 3.5 mg/L, equal to about 1.3 mg N per 16oz glass of water.

Jackson Blue Spring water

=



*Nitrate in **SIX** hot dogs!*

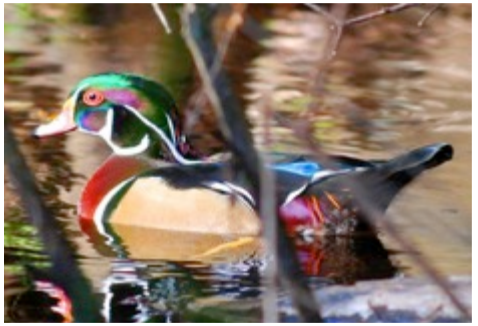
Springs Protection

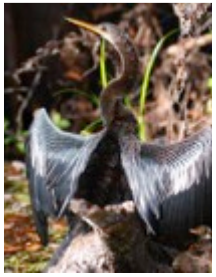
Jackson Blue Spring Protection Total - $752,000

- $71,125 Mobile Irrigation Lab to evaluate the efficiency of pivot irrigation systems
- $680,875 for Agricultural BMP Equipment Cost Share Grant Program
  - 36 producers enrolled
  - 2 executed contracts
  - 118 pending applications

75% Paid by Grant

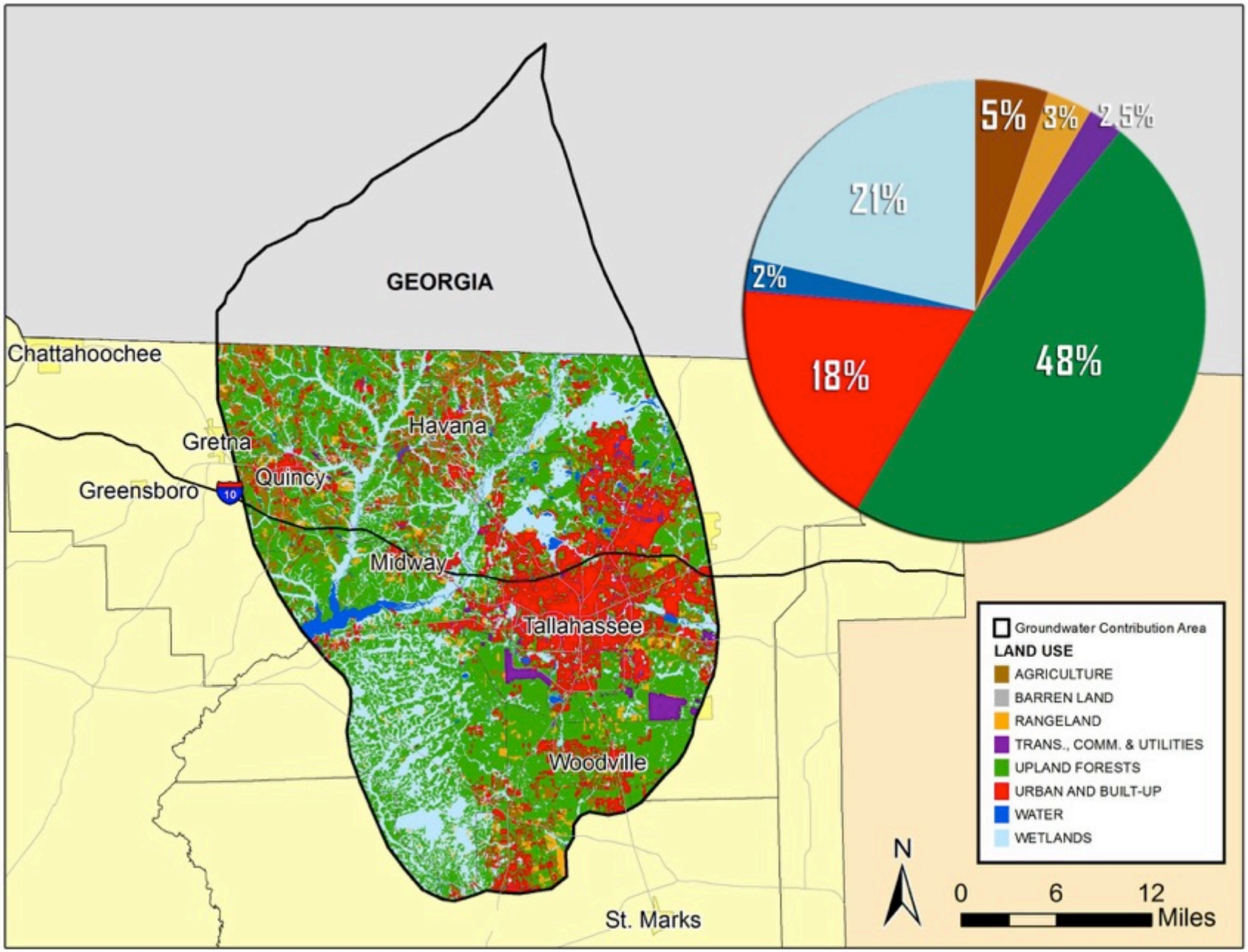
25% Paid by Producers





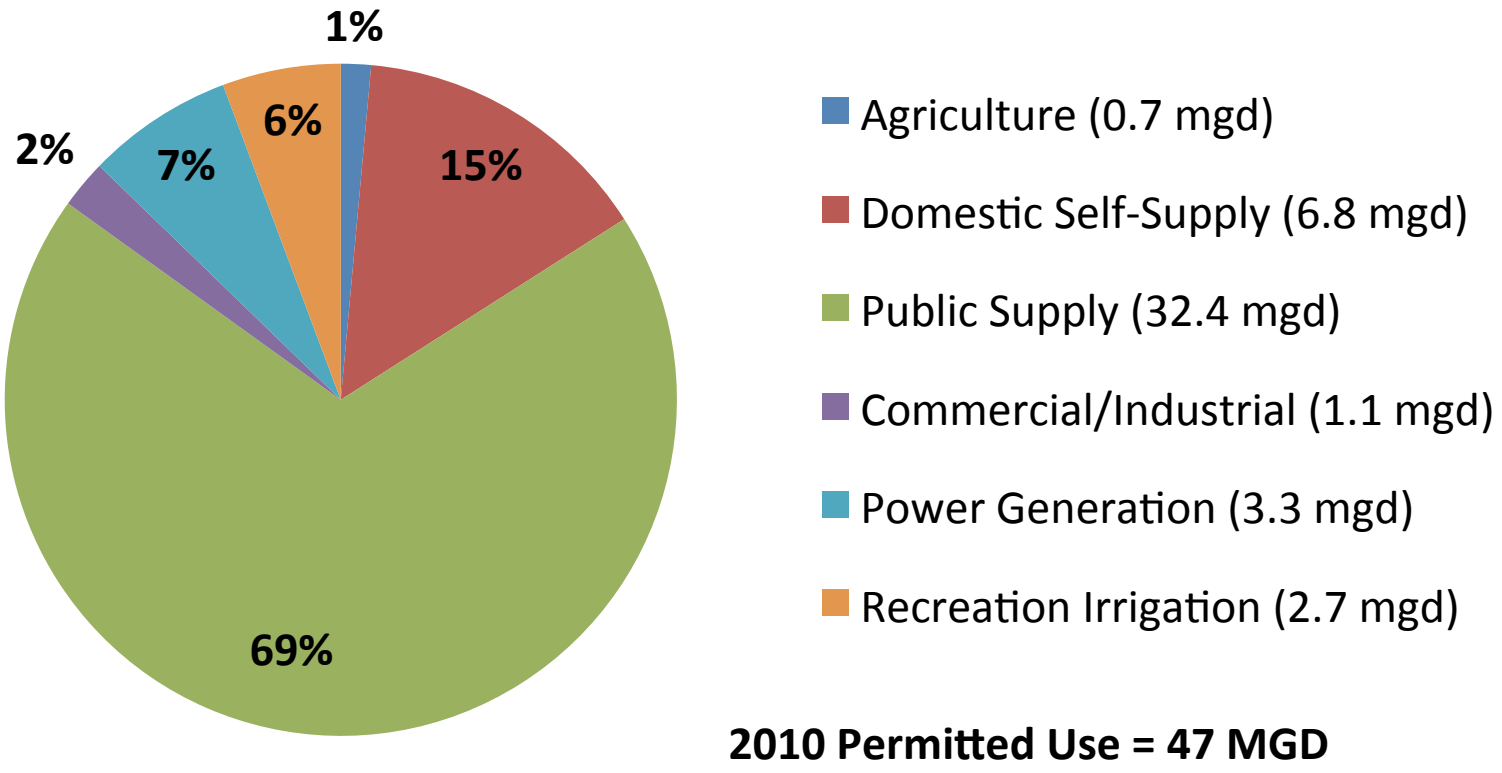
WAKULLA SPRINGS

Wakulla Springs Groundwater Contribution Area



Leon & Wakulla Counties Water Use in 2010

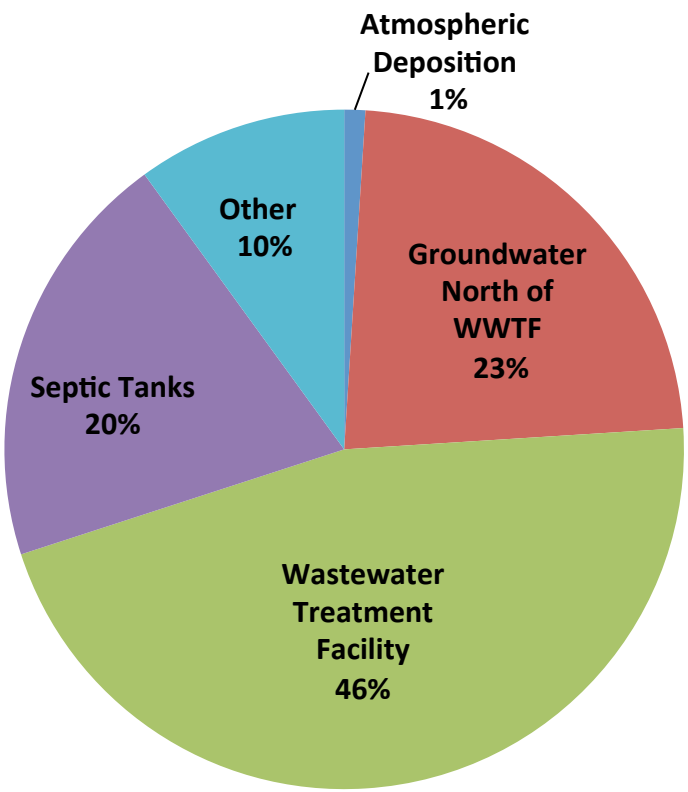
47.0 MGD

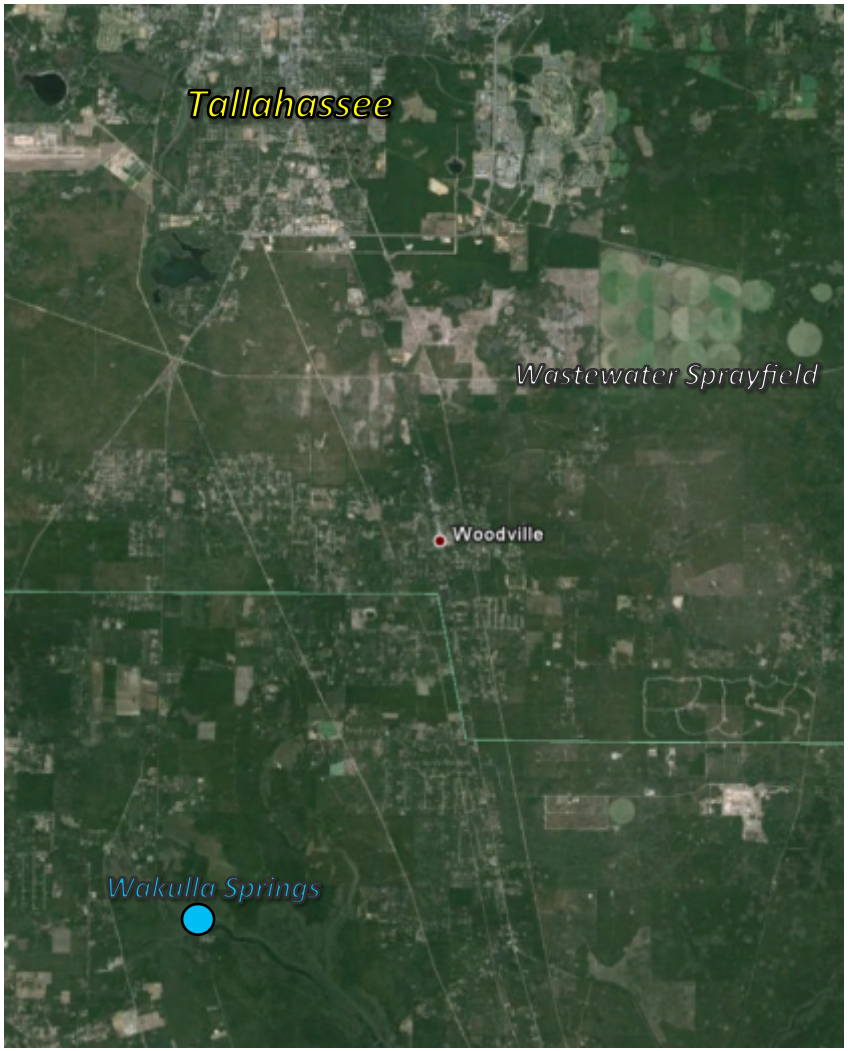


2010 Permitted Use = 47 MGD

Relative Sources of Nitrogen in Wakulla Springs Contributory Area

(Estimated 2007 Sources [1])





Nitrate-N Movement in Groundwater from the Land Application of Treated Municipal Wastewater and Other Sources in the Wakulla Springs Springshed, Leon and Wakulla Counties, Florida, 1966-2018 (Davis et al. 2010)

Active Development of Minimum Flows and Levels

Prior to 2012	2012 - Present
- 0 -	- 6 -

MFL Accomplishments – FY14

- Developed Work Plans for:

  - St. Marks River Rise - Wakulla Springs -Sally Ward Spring

- Initiate Work Plan development for:

  – Jackson Blue Spring

  – Coastal Floridan Aquifer in Okaloosa, Santa Rosa & Walton counties

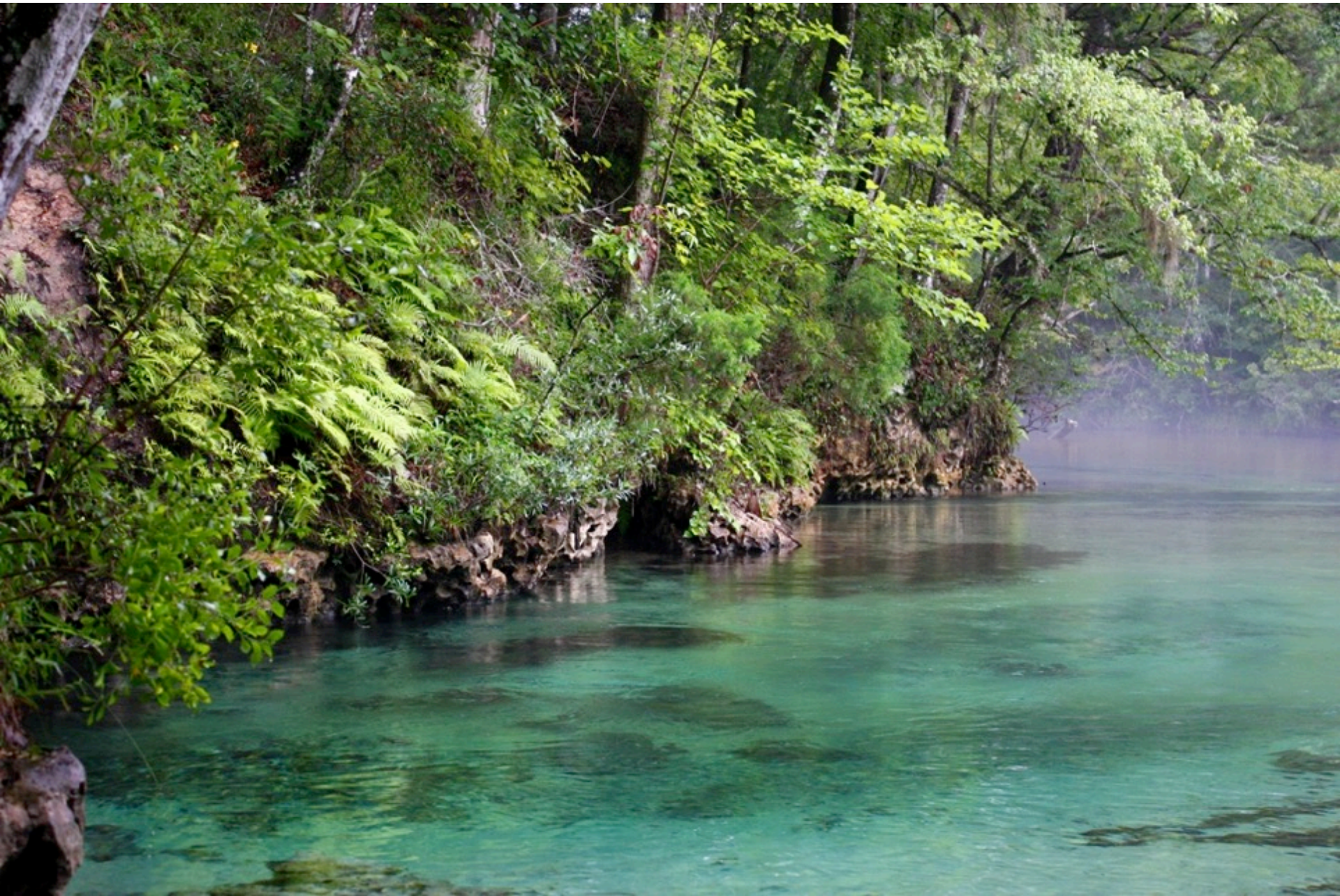
- Determined MFL strategies for Franklin Co. Floridan Aquifer
- Installed ground and surface water data collection stations
- Initiated hydrologic monitoring of the Spring Creek complex

FY14 MFL Priority List

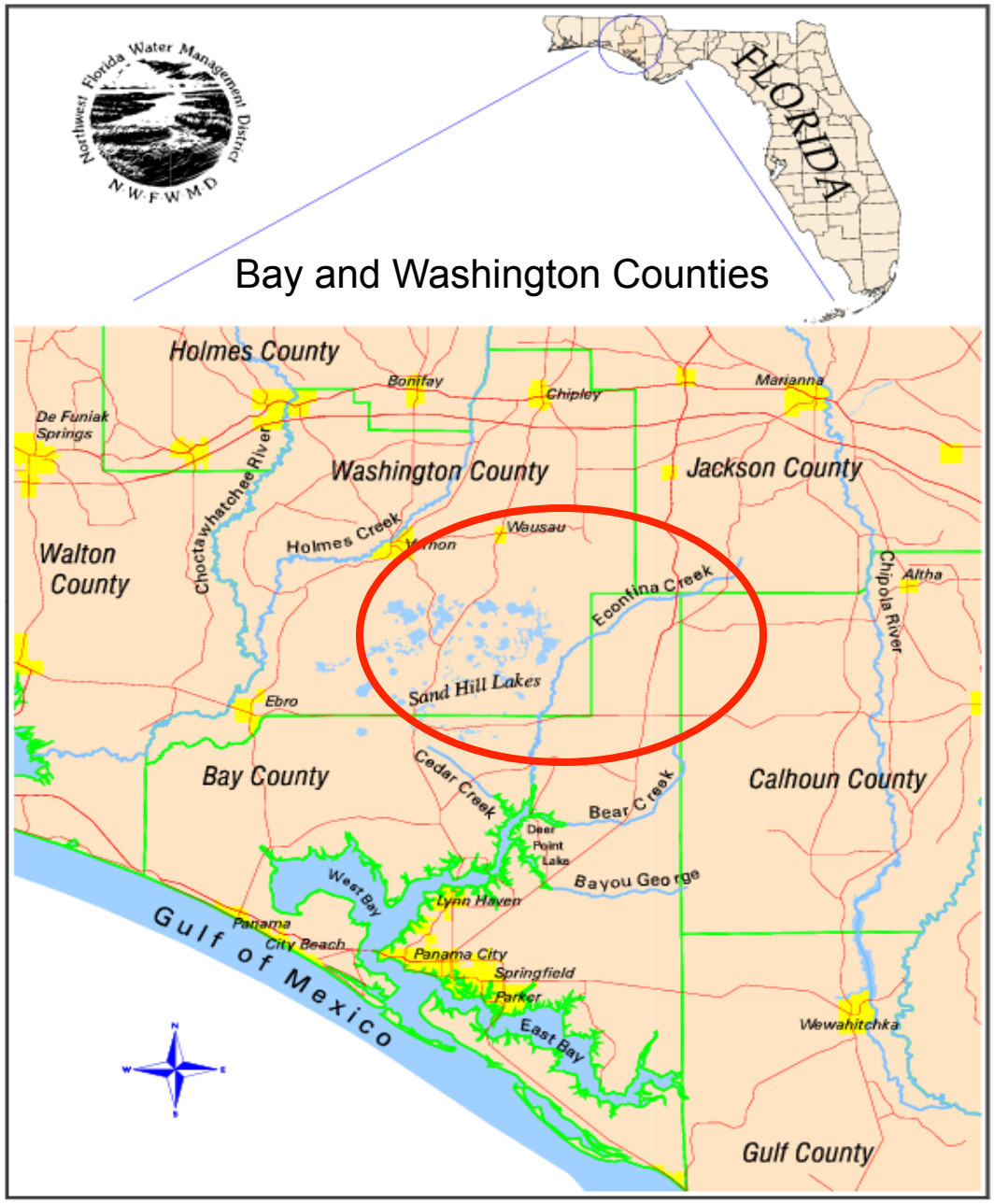
Blue font = work underway	Estimated Schedule[1] MFL Initiation	Technical Completion	Rule Adoption
St. Marks River Rise (1st mag)	2013	2018	2020
Wakulla Springs (1st mag)	2013	2021	2023
Sally Ward Spring (2nd mag)	2013	2021	2023
Floridan Aquifer – Coastal Franklin County	2014	2019	2021
Floridan Aquifer–Coastal Region II (SR, OK, WL)	2015	2020	2022
Jackson Blue Spring (1st mag)	2016	2022	2024
Floridan Aquifer – Coastal Bay County	2018	2023	2025
Econfina Creek & Spring Complex (1st & 2nd mag)	2019	2024	2026
Deer Point Lake	2020	2025	2027
Yellow River / Shoal River	2021	2026	2028
Apalachicola and Chipola Rivers	Reservations established		2006

[1] Subject to fiscal constraints, climatic extremes, data & analysis needs, peer review, rule challenge, etc.

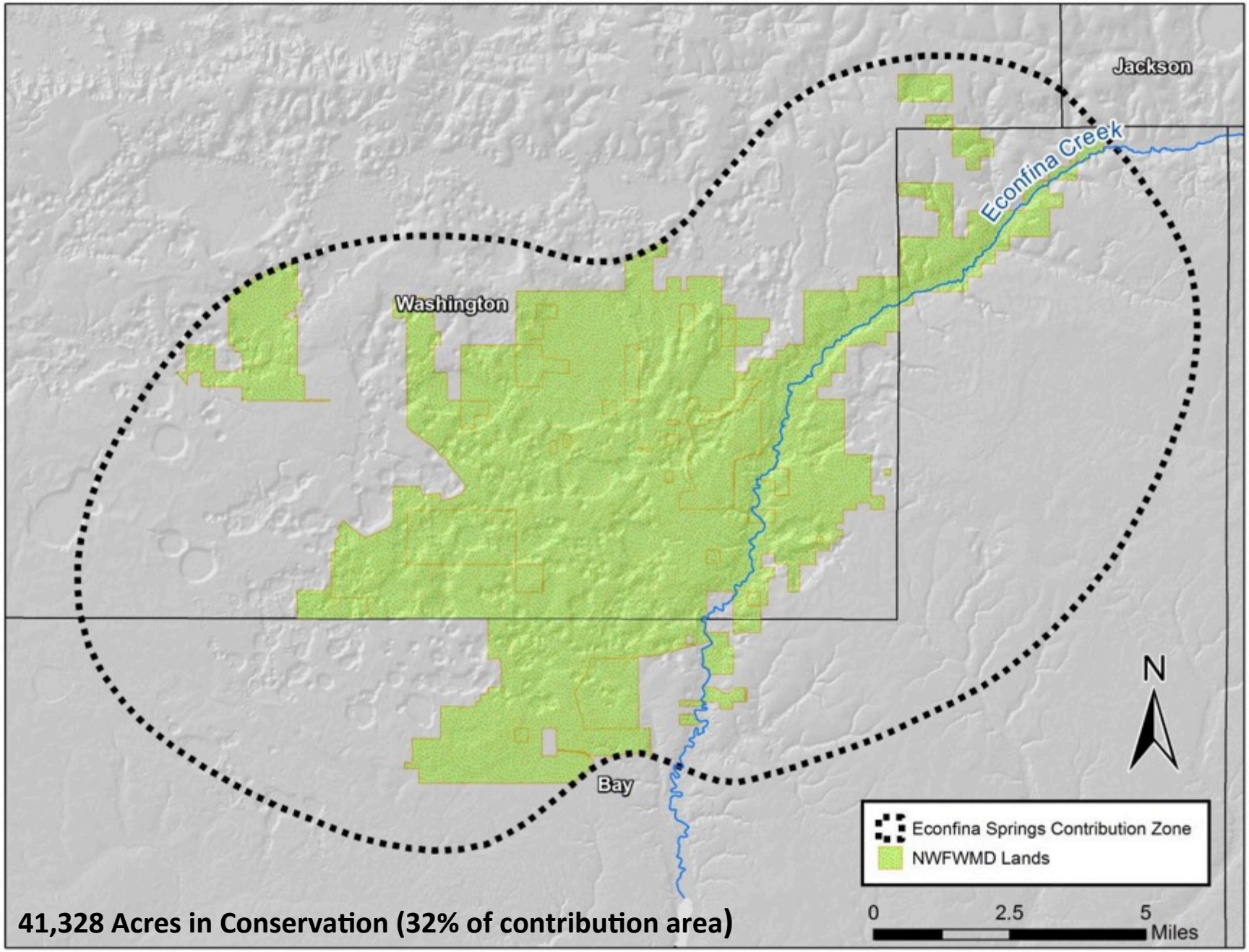
Econfina Creek Springs



Econfina Creek Watershed Area

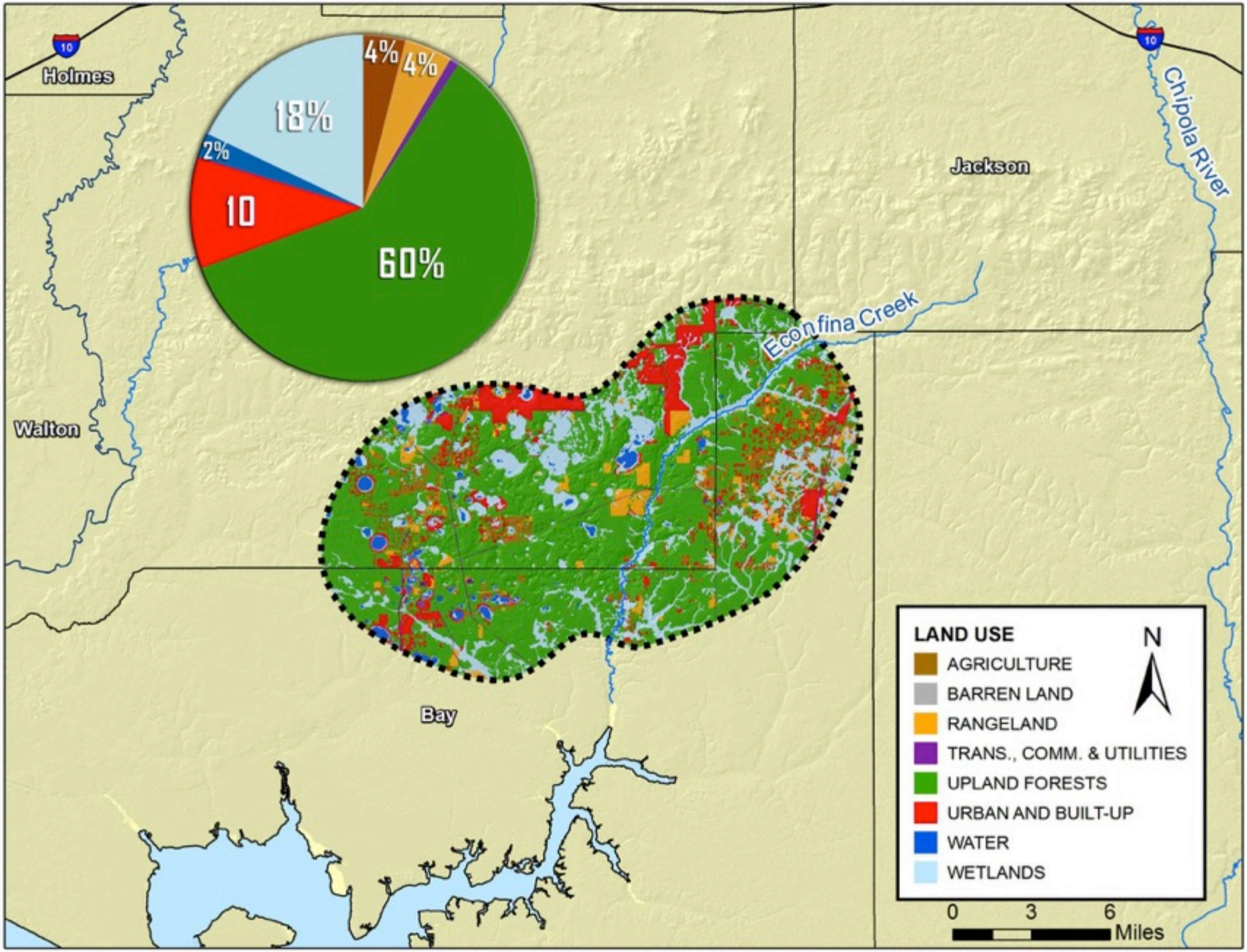


Econfina Watershed Conservation Lands



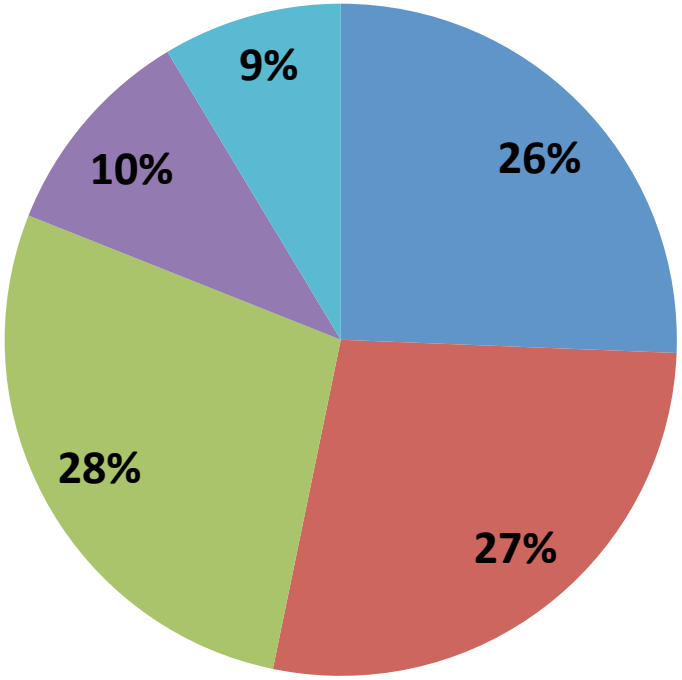
41,328 Acres in Conservation (32% of contribution area)

Econfina Creek Springs Complex Groundwater Contribution Area



Washington County Water Use in 2010

4.06 MGD



- Agriculture (1 mgd)
- Domestic Self-Supply (1.1 mgd)
- Public Supply (1.1 mgd)
- Commercial / Industrial (0.4 mgd)
- Recreation Irrigation (0.4 mgd)

2010 Permitted Use = 4.8 MGD

Econfina Springs Discharge

(2003-2004)

Gainer Spring Group: 165 cfs (107 mgd)

Glowing Spring: 34 cfs (22 mgd)

Devils Hole: 32 cfs (21 mgd)

Willford Spring: 29 cfs (19 mgd)

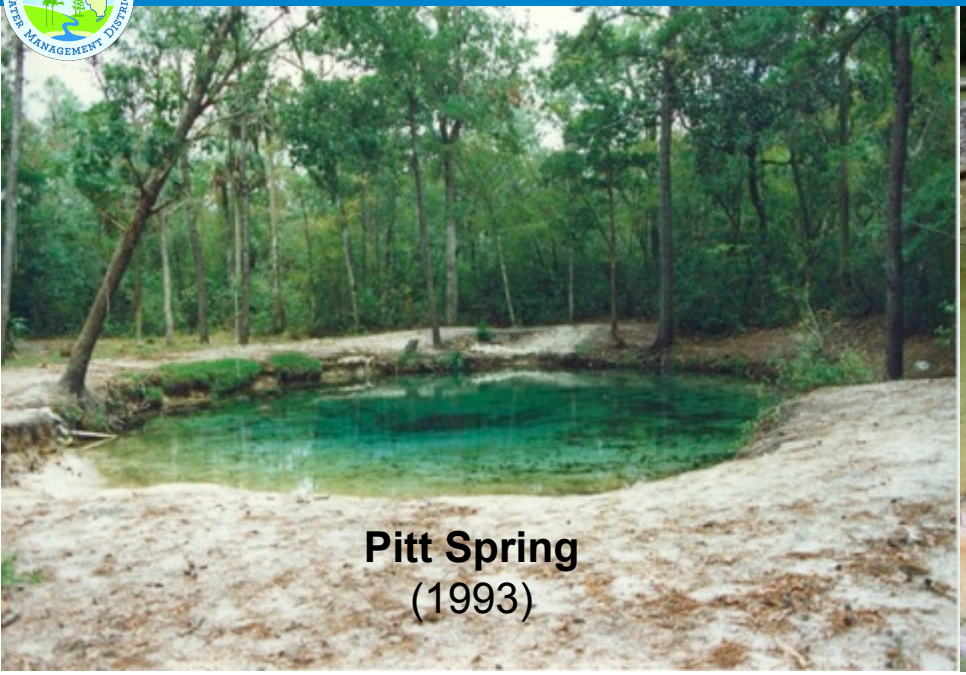
Sylvan Spring: 17 cfs (11 mgd)

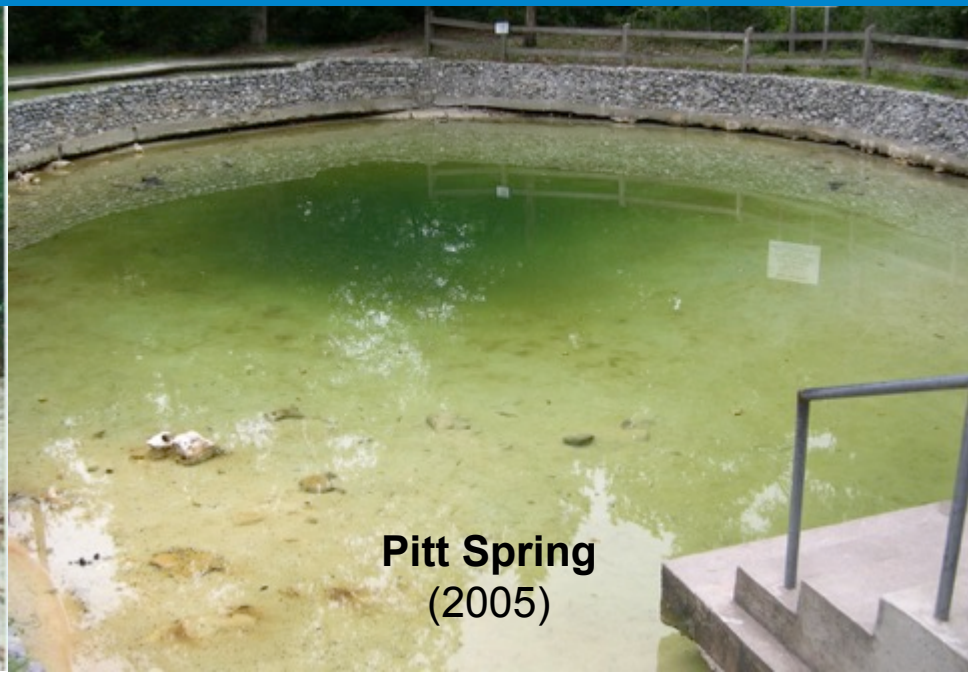
Bluff, Fenceline, Barking, Bathtub, Strickland, Pitt, Blue, Tupelo, Palm Springs: 1 to 10 cfs (0.6 -6.5 mgd)

Mean Econfina Creek: 538 cfs (348 mgd)

Groundcover Habitat Restoration is Management Priority to Maximize Recharge

Econfina Recreational and Restoration Challenges





Econfina Springs Complex
Restoration & Protection
Challenges and Successes

Public Access & Recreation Impacts
(Econfina Creek – Class I Waterbody)

Spring restored, erosion and stormwater runoff problems fixed

Williford Spring Restoration Project

$1.5 million project

Thank you

Jon Steverson
Executive Director
Northwest Florida Water Management District
(850) 539-5999