



Florida Department of Environmental Protection

Jackson Blue Spring Basin Management Action Plan (BMAP)

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Topics

- BMAP Overview
- Project Updates
- Florida Springs and Aquifer Protection Act
- Nitrogen Source Inventory Loading Tool (NSILT)
- Priority Focus Area (PFA)
- BMAP Requirements
- BMAP Schedule



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BMAP Overview





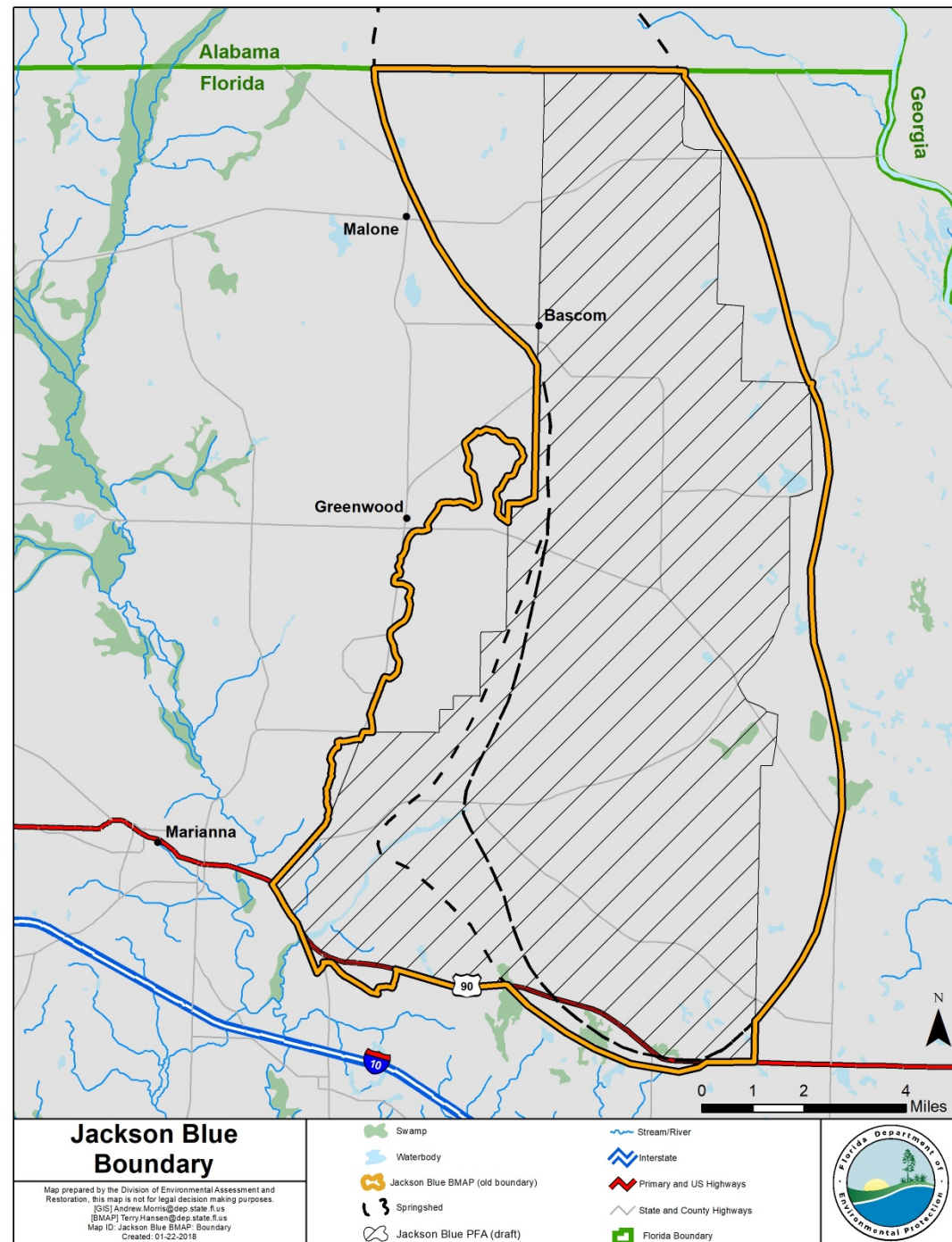
BMAP Area

Total contributing area:

154 square miles

- 8 % in Alabama
- 92 % in Florida

BMAP addresses Florida portion





Water Quality Framework

Monitor and report progress annually

Adapt and change – new statewide annual report

Collect data

Analyze and verify

List “impaired” waters

REPEAT

Measure
success
and adapt

Monitor water
quality

Determine
pollution
problems

Excessive nutrients

*Bacteria, Metals, and
Other Impairments*

Develop and
implement
restoration
plans
(BMAPs)

Work with
community
leaders

Establish
restoration
goals
(TMDLs)

Gather additional data

Evaluate water quality

Adopt pollutant reduction targets

Allocate responsibilities

Identify projects

- Infrastructure
- Best Management Practices (BMPs)

Establish schedules

Identify success criteria



BMAPs

- Florida Department of Environmental Protection (DEP) method for restoring water quality to an impaired water body
- BMAPs are adopted by DEP through a Secretarial Order
- BMAPs are enforceable
- BMAPs are reviewed annually and updated every five years



Regulatory Framework

The process for preparing BMAPs is found in:

- Section 403.067, Florida Statutes (F.S.), known as the “Florida Watershed Restoration Act”
- The 2016 Florida Springs and Aquifer Protection Act lists requirements for BMAPs for Outstanding Florida Springs (OFS)
- PFA Report and NSILT developed by DEP for Jackson Blue Spring



Jackson Blue Total Maximum Daily Load (TMDL)

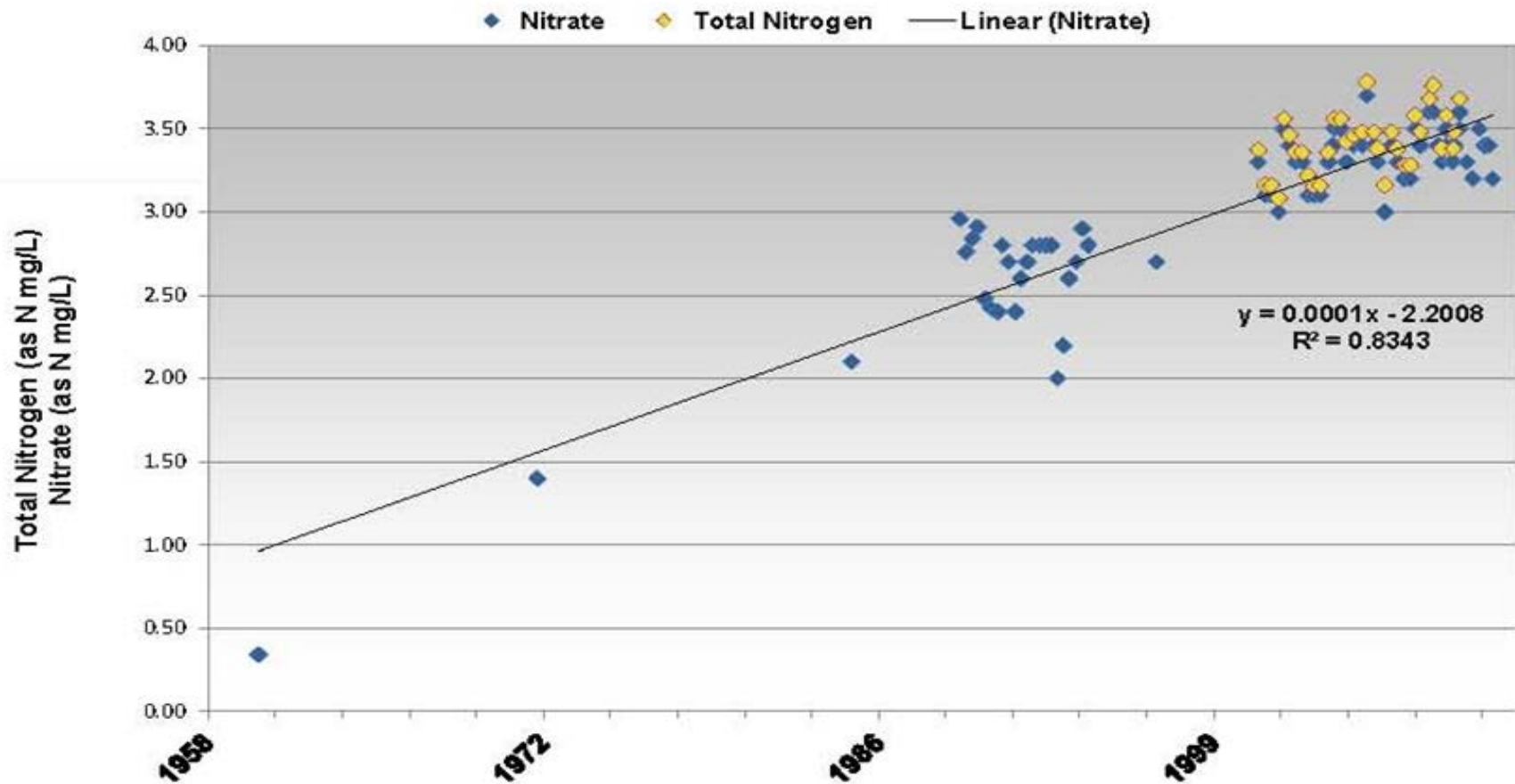
- TMDL report issued in January 2013
- Spring and Mill Pond impaired for excessive algae
- TMDL is 0.35 milligrams per liter (mg/L) nitrate as a monthly average
- BMAP goal is an unimpaired waterbody

Waterbody Identification (WBID)	Parameter	TMDL (mg/L)
Jackson Blue Spring (WBID 180Z), Merritts Mill Pond (WBID 180A)	Nitrate, as monthly average	0.35



Historic Nitrogen Trends

**Nitrate and Total Nitrogen Trends (1960- 2011)
Jackson Blue Spring - WBID 180Z**





Discharge vs. Concentration

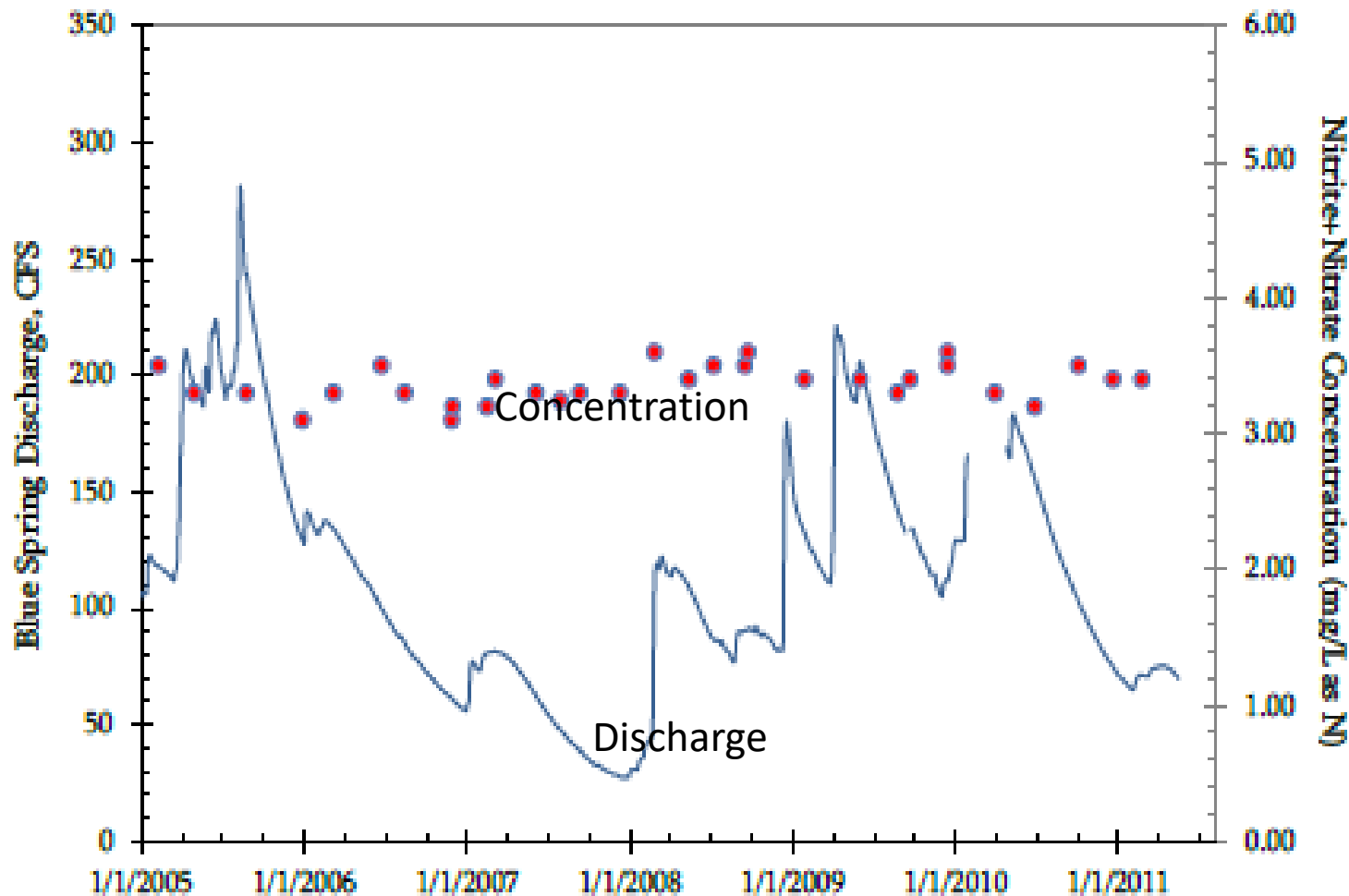


Figure 11. Discharge vs. Nitrite+Nitrate Concentration

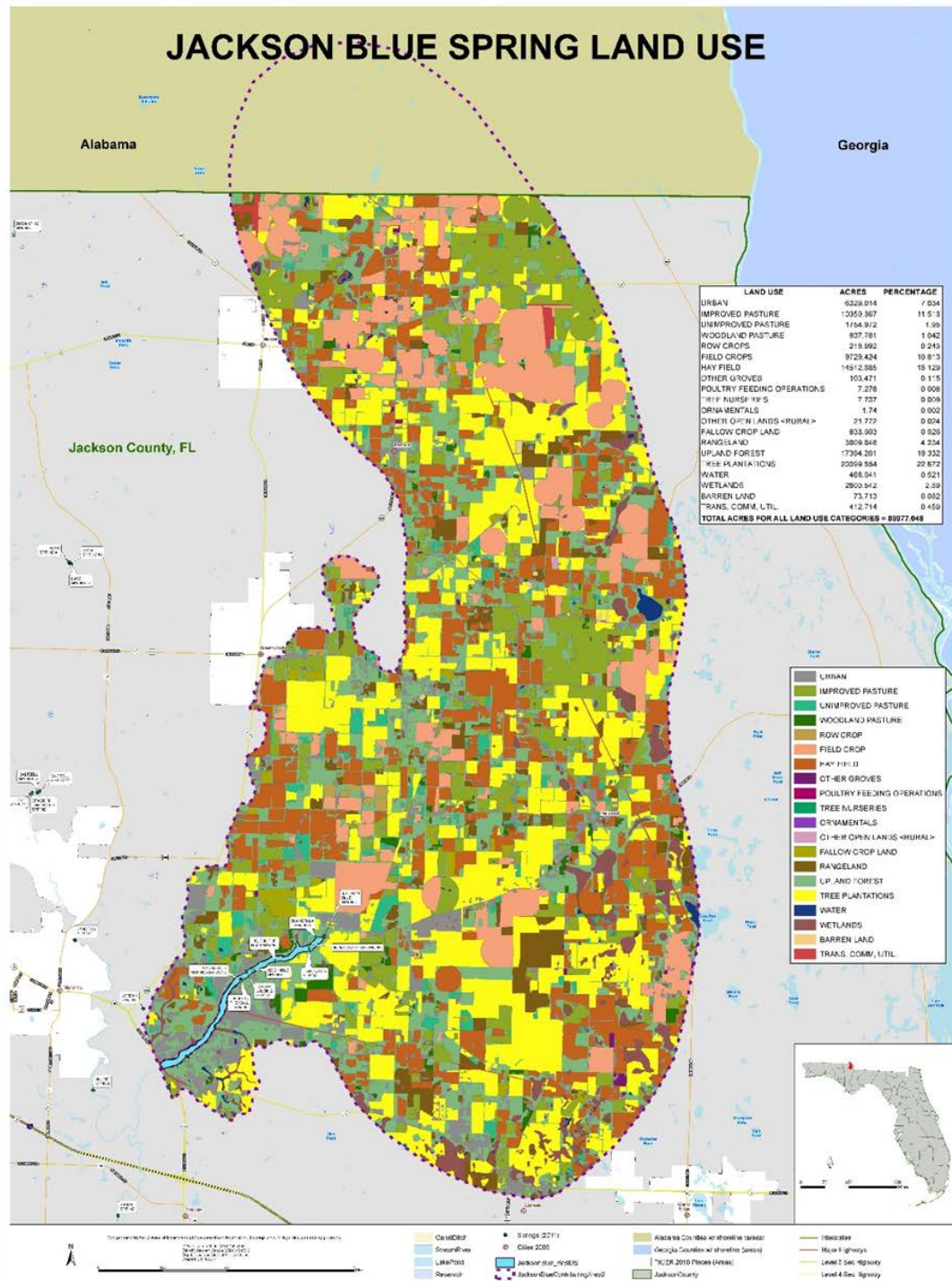


Land Use

Level 1 Land Use Code	Land Cover Description	Acres	% Total
1100	Low-Density Residential	4,250	4.72%
1200	Medium-Density Residential	1,405	1.56%
1300	High-Density Residential	52	0.06%
1400	Commercial	147	0.16%
1500	Light Industrial	4	0.00%
1600	Extractive/Quarries/Mines	186	0.21%
1700	Institutional	80	0.09%
1800	Recreational (Golf Courses, Parks, Marinas, etc.)	159	0.18%
1900	Open Land	43	0.05%
2000	Agriculture	38,489	42.78%
3000 + 7000	Rangeland	3,884	4.32%
4000	Forest/Rural Open	37,794	42.00%
5000	Water	468	0.52%
6000	Wetlands	2,600	2.89%
8000	Communication and Transportation	412	0.46%
	Total	89,977	100.00%

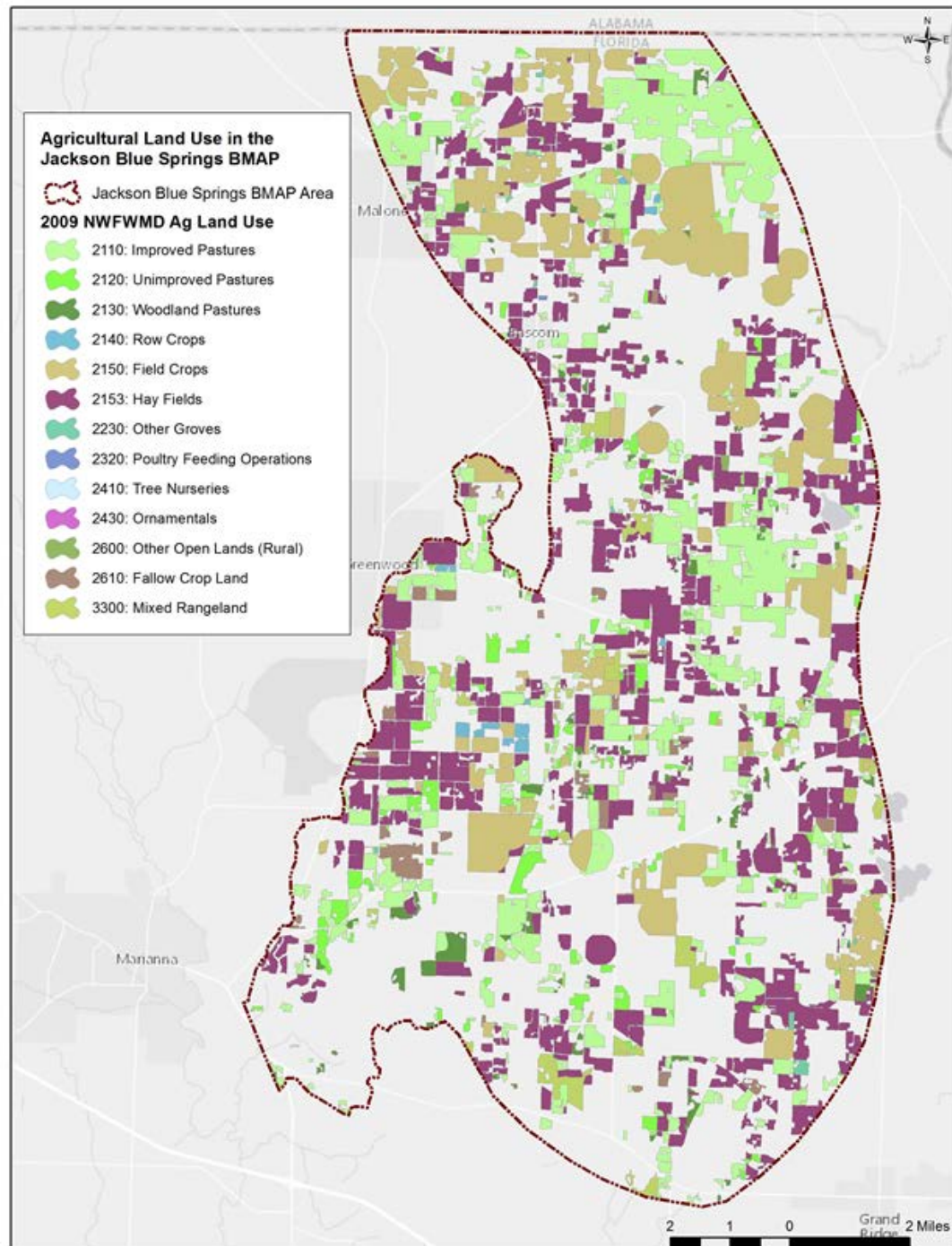


Land Use



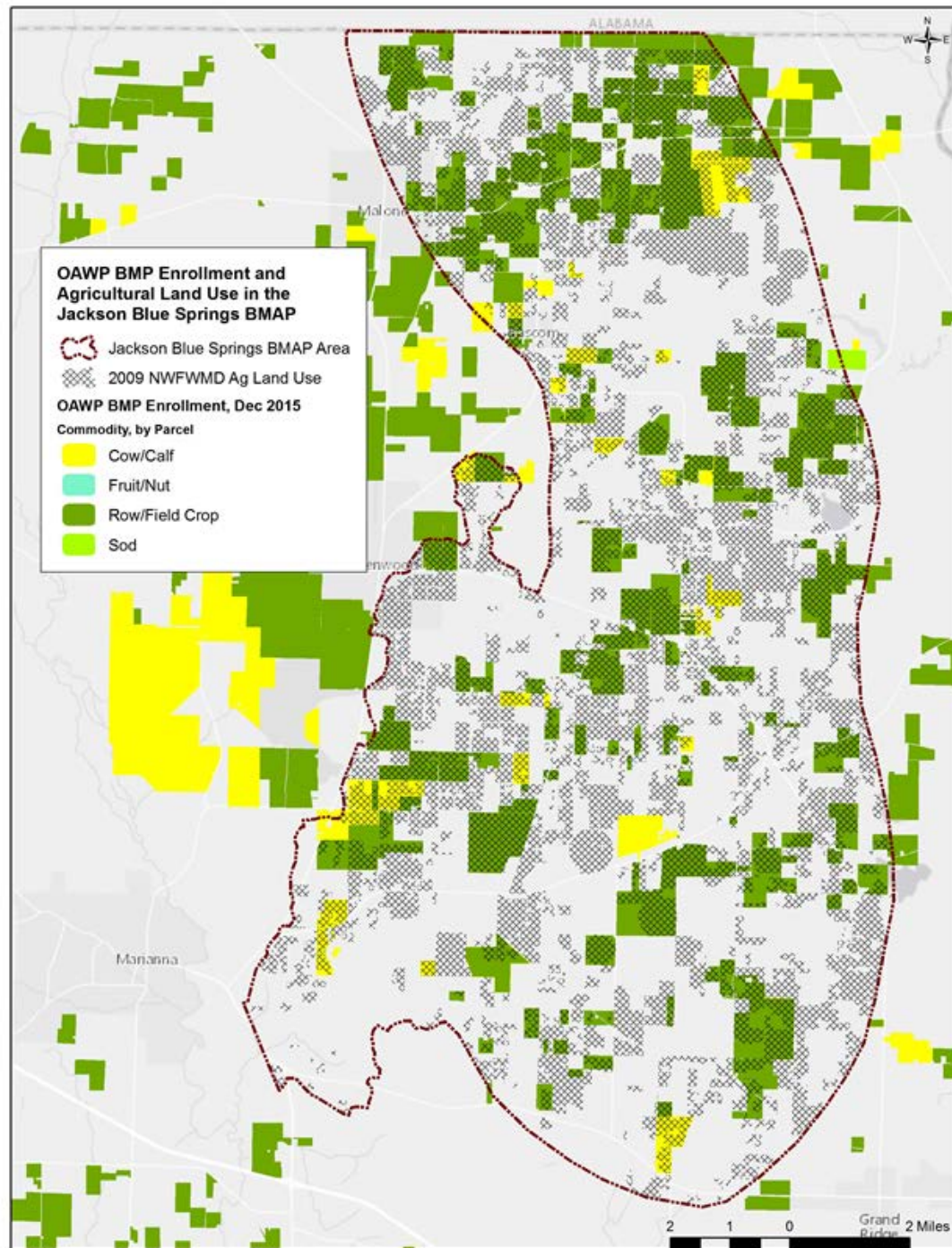


Agricultural Land Use





Agricultural BMP Enrollment





Agricultural Enrollment

2009 Northwest Florida Water Management District (NFWWMD) Land Use	2009 Acres	Related Florida Department of Agriculture and Consumer Services (FDACS) BMP Programs	Acreage Enrolled	Related Notices of Intent (NOIs)
Pasture and Rangeland	14,093	Cow/Calf	3,001	23
Row/Field/Mixed Crops	9,655	Vegetable/Agronomic Crops	16,632	44
Hay Fields	14,413	Vegetable/Agronomic Crops	N/A	N/A
Fallow Cropland	833	No enrollment needed	45	1
Other Groves	103	Specialty Fruit and Nut	N/A	N/A N/A
Tree Nurseries	8	Statewide Nursery	0.0	N/A
Ornamentals	2	Statewide Nursery	0.0	N/A
Poultry Feeding Operations	7	Conservation Plan Rule/Future Poultry Manual	0.0	N/A
Other Open Lands – Rural	22	No enrollment needed	N/A	N/A
Total	39,137	Total	19,678	68



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Projects Underway





Projects Underway

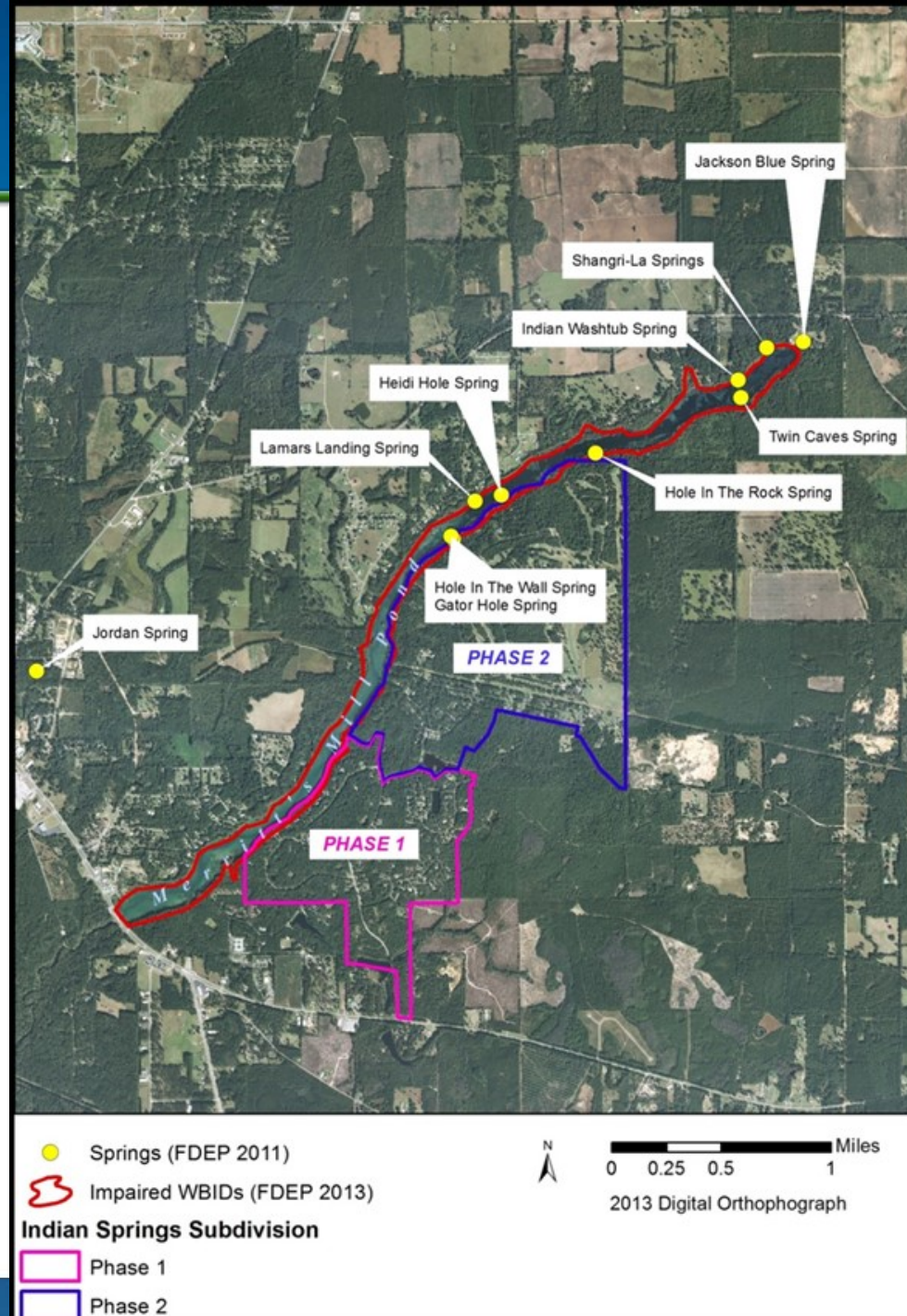
- Indian Springs Sewering Project
- Dye Trace in Jackson Blue Springshed
- Real Time Water Quality Monitoring
- Northwest Florida Water Management District (NWFWMD) Projects





Indian Springs

- Phase 1: 125 homes and 25 vacant lots in lower section of neighborhood (\$1.95 million)
- Phase 2: 175 homes
- January 2018
County/City issues
 - Rights-of-way
 - Rate structure





Sources: Esri, DEPR, Delorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, OpenStreetMap contributors, and the GIS User Community



Jackson Blue Dye Trace

Spring	RD's Sink Rhodamine & Detection Time (days)	Pelt Swallet Eosine & Detection Time (days)	Strickland East Flourescein & Detection Time (days)
Jackson Blue	3-7	ND	43-56 poor detection
Shangri-La	7-10	ND	43-56 poor detection
Indian Washtub	14-21	ND	ND
Twin Caves	ND	10-14	ND
Hole-in-the-Wall	ND	14-21	ND

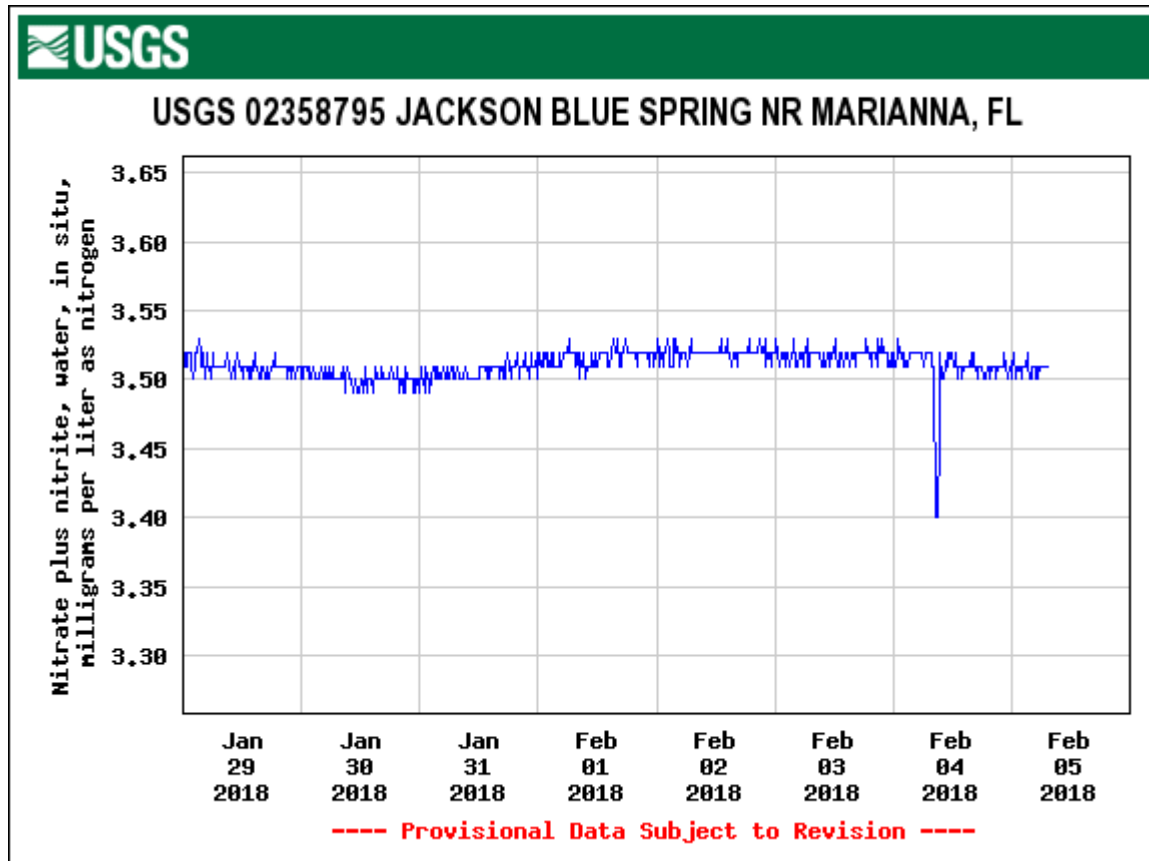
Dyes used :

- Eosine (Acid Red 87)
- Rhodamine (Acid Red 388)
- Flourescein (Acid Yellow)

ND: No detection



Real Time Water Quality Monitoring



<https://waterdata.usgs.gov/>_site number 02358795



NWFWMD Projects Underway

- Agricultural BMPs and Equipment Cost-Share Program
- Land Acquisition
- Sod-Based Crop Rotation Grant Program
- Claiborne Aquifer Water Supply
- Mobile Irrigation Labs
- IFAS Sod-based Crop Rotation (NWFWMD provides funding to IFAS for public outreach on sod-based crop rotation)





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Florida Springs and Aquifer Protection Act





Florida Springs and Aquifer Protection Act (2016-1)

- The 2016 Florida Springs and Aquifer Protection Act lists requirements for BMAPs for OFS:
 - BMAPs adopted within two years after initiation
 - Five-year incremental milestones
 - Implementation plan designed to achieve the TMDL no more than 20 years after adoption (373.807(1)(b), Florida Statutes [F.S.]





Florida Springs and Aquifer Protection Act (2016-1)

- Identification of point sources and nonpoint source categories with estimated load allocations (NSILT)
- Fertilizer ordinance for all local governments
- Agricultural BMPs
- PFA
 - Definition: Area or areas of a basin where the Floridan aquifer is generally most vulnerable to pollutant inputs where there is a known connectivity between ground water pathways and an OFS
 - Prohibitions within a PFA
 - Must be adopted within the BMAP
- Creation of an onsite sewage treatment and disposal system (OSTDS) Remediation Plan if OSTDS loads are greater than or equal to 20 % of nitrogen load, or determined to be needed by DEP



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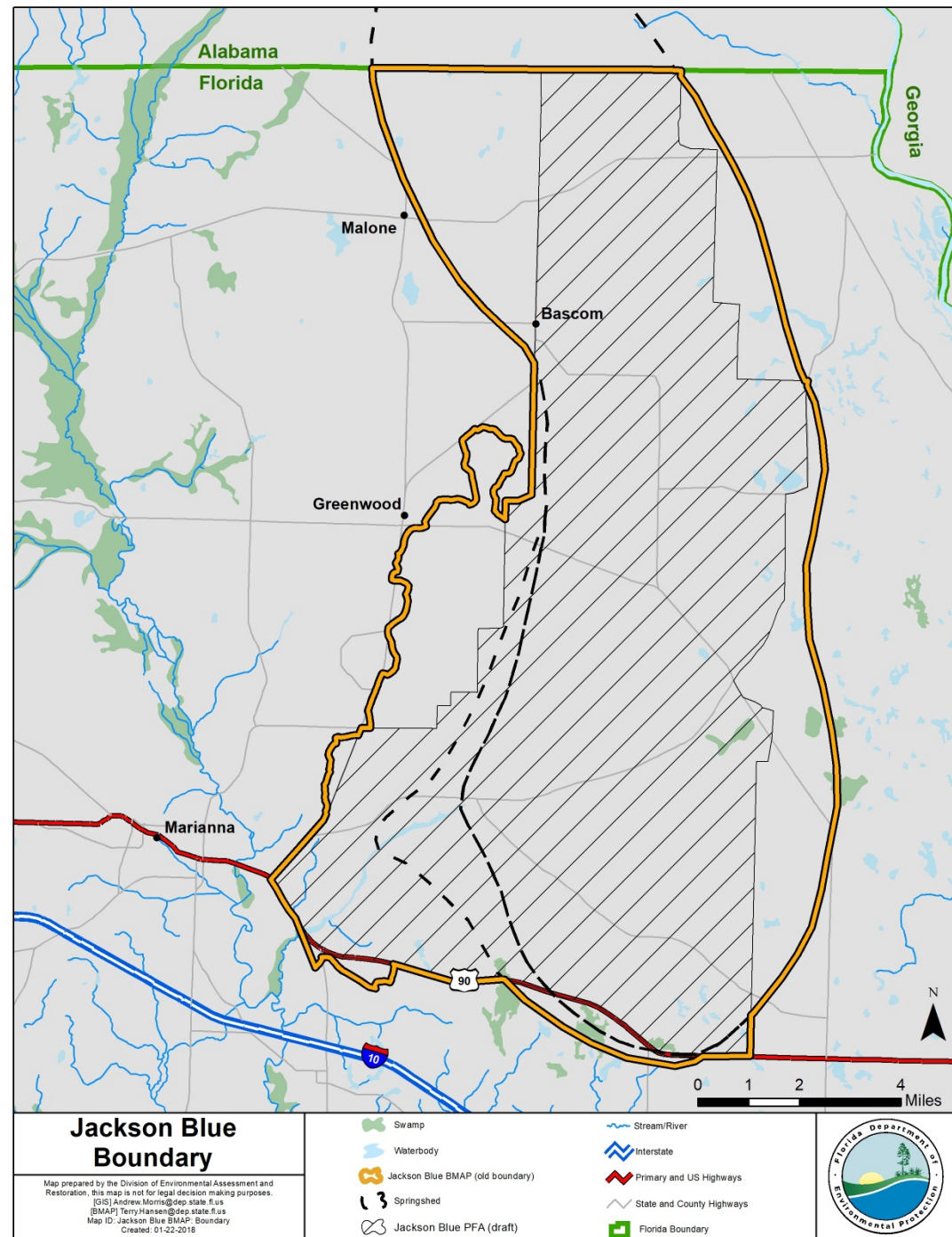
NSILT PFA BMAP





NSILT BMAP Area

BMAP Area





Basin Land Use Input

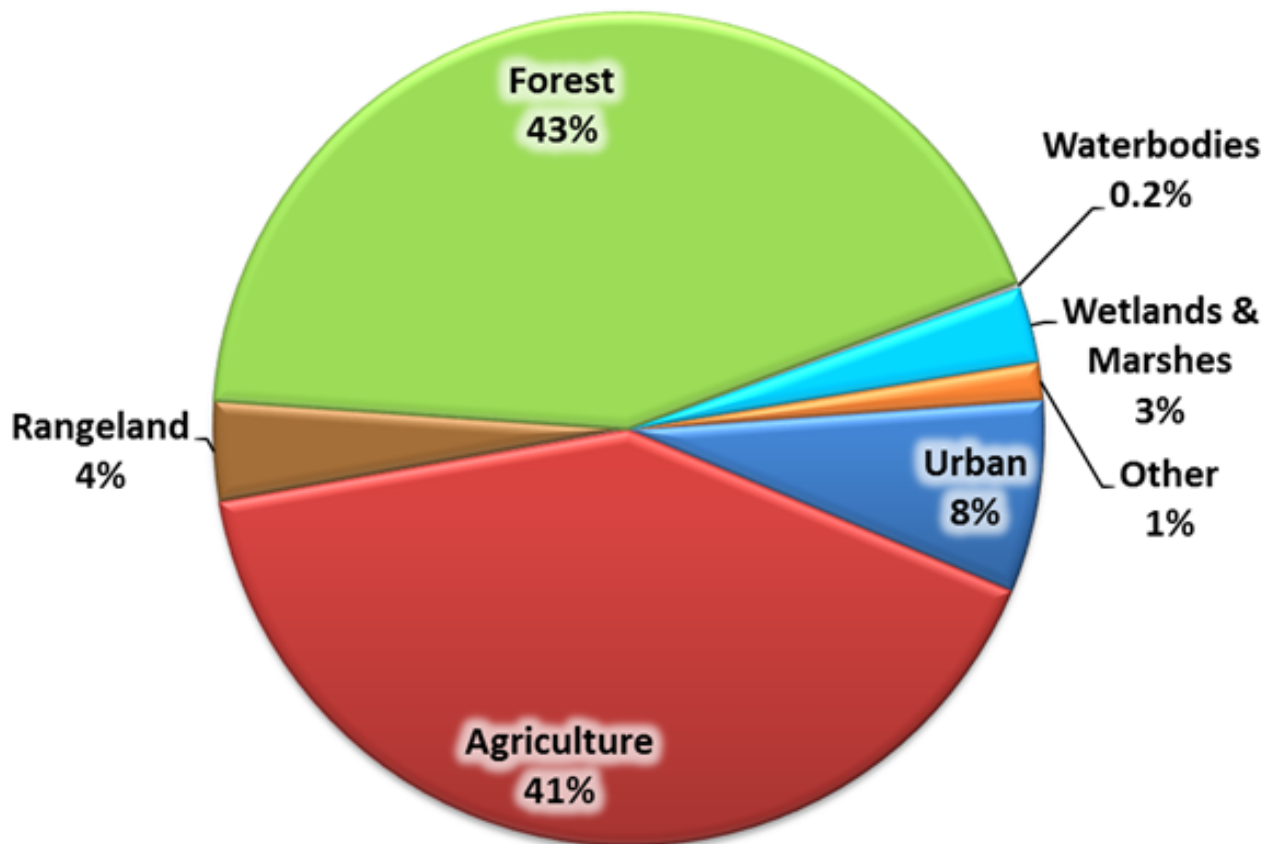
Category	Cropscape	Farm Service Agency (FSA) Aerial	Property Appraiser (PA)	NWFWMD	Florida Statewide Agricultural Irrigation Demand (FSAID) (irrigated only)	Composite
Total Crop	33,001	29,128	33,236	24,455	13,386	30,170
Total Pasture	3,705	5,899	7,258	13,051	104	12,271
Total Ag Lands	40,744	35,027	44,034	37,513	13,490	42,720

Cropscape	2014 data, annual product from the National Agricultural Statistic Service
FSAID	2014 data, field-verified land use for farming operations with consumptive use permits, created as part of a USGS/FDACS project, only irrigated acreage
FSA Aerial	2013 data, land use created from aerial imagery from FSA taken while crops were in fields
PA	2014 data, property appraiser data
NWFWMD	2012 data, NWFWMD land use data based on aerial imagery
Composite	DEP-created layer based on the above land use datasets representing an estimated average land use within 750 ft x 750 ft grid cells



Land Use Summary

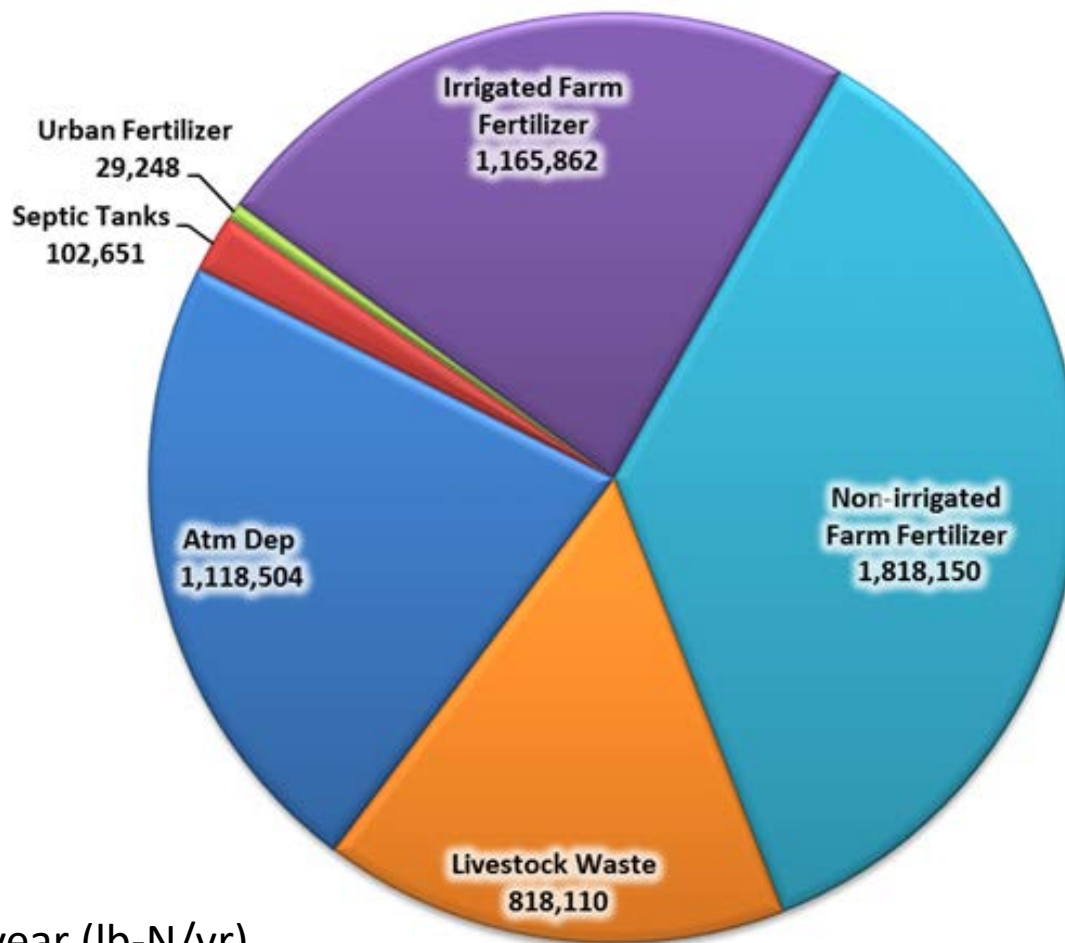
Jackson Blue BMAP Area Landuse Summary





Nitrogen Input to Land Surface

Total BMAP Area

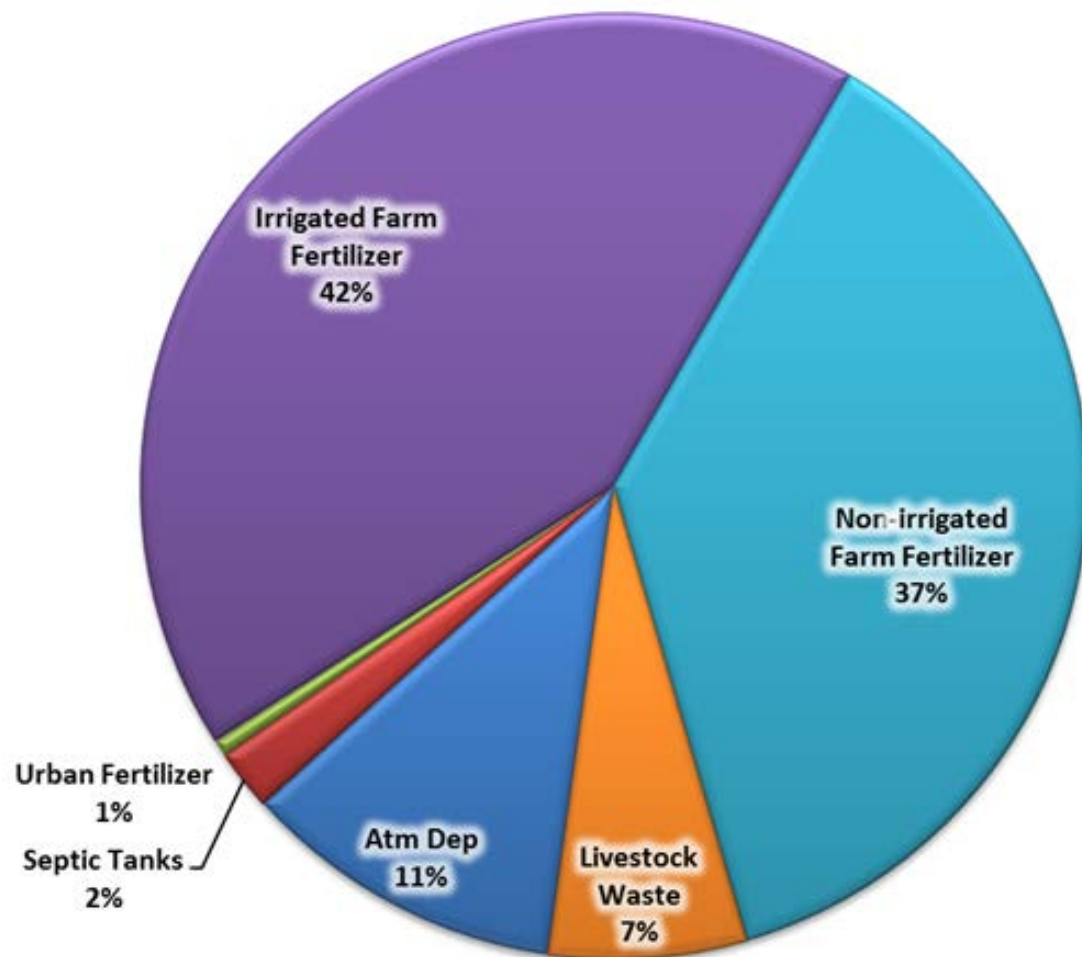


Units:
Pounds of nitrogen/year (lb-N/yr)



Nitrogen Load to Groundwater

Total BMAP Area



Determine Vent/TMDL Loads:

- Average discharge
- Average concentration
- TMDL concentration

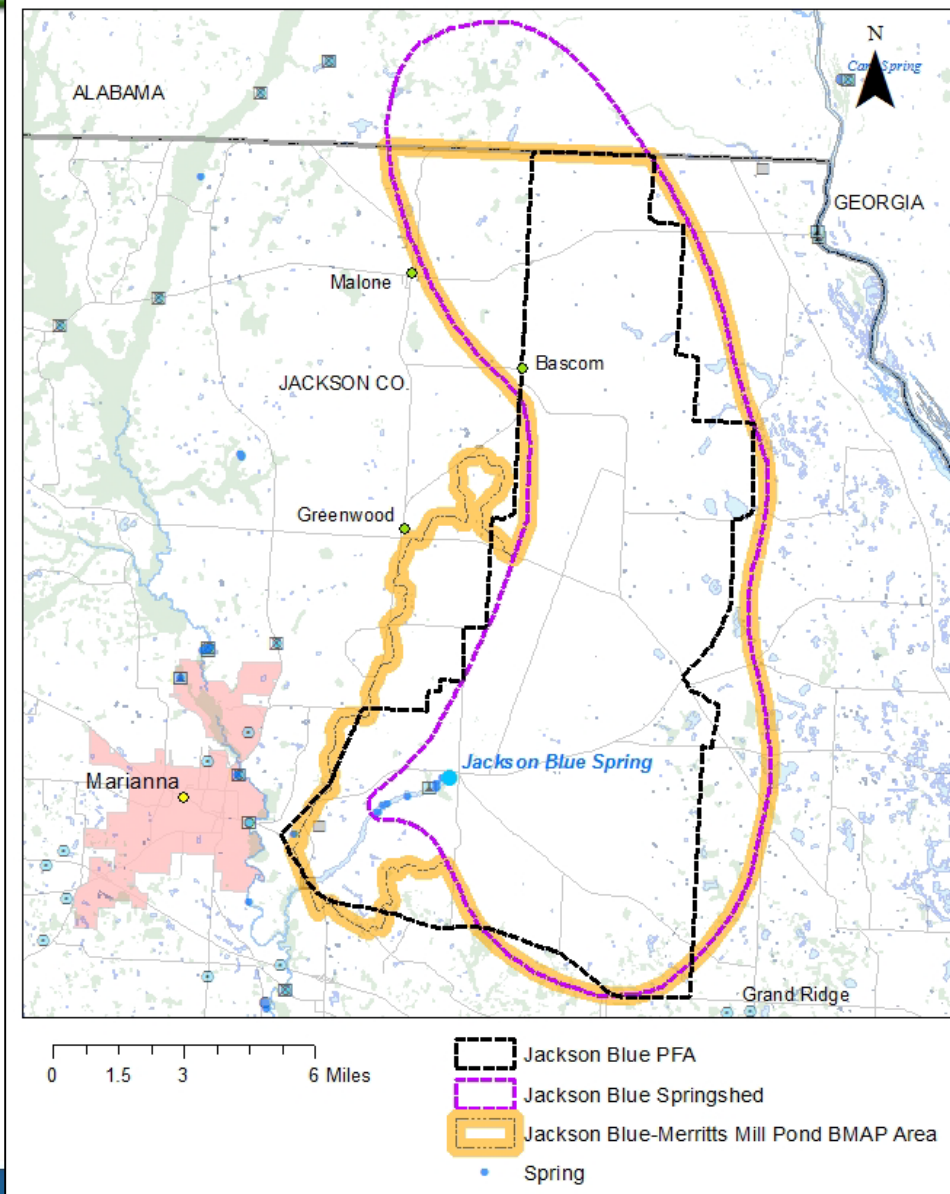
Calculate load to reduce



PFA

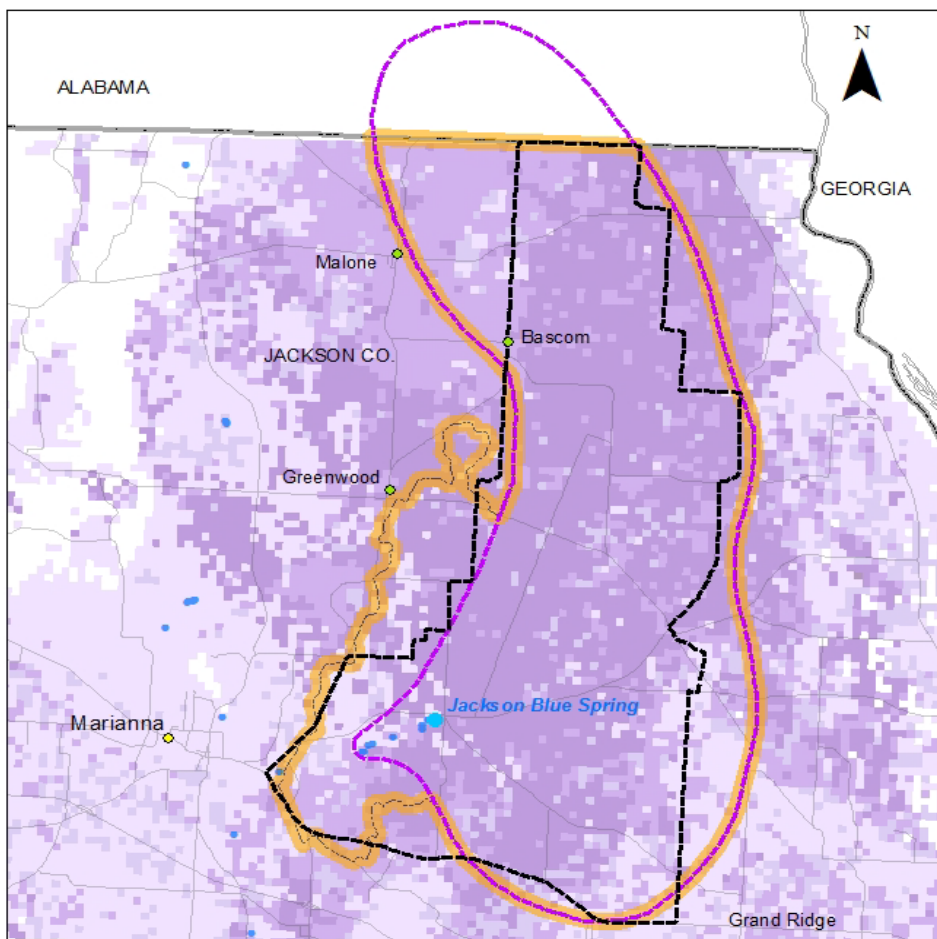
Consider:

- Recharge
- Vulnerability
- Closed Depressions
- Soil leaching Potential
- Conservation Lands
- Land Use
- WWTP & OSTDS
- Roads and boundaries





PFA

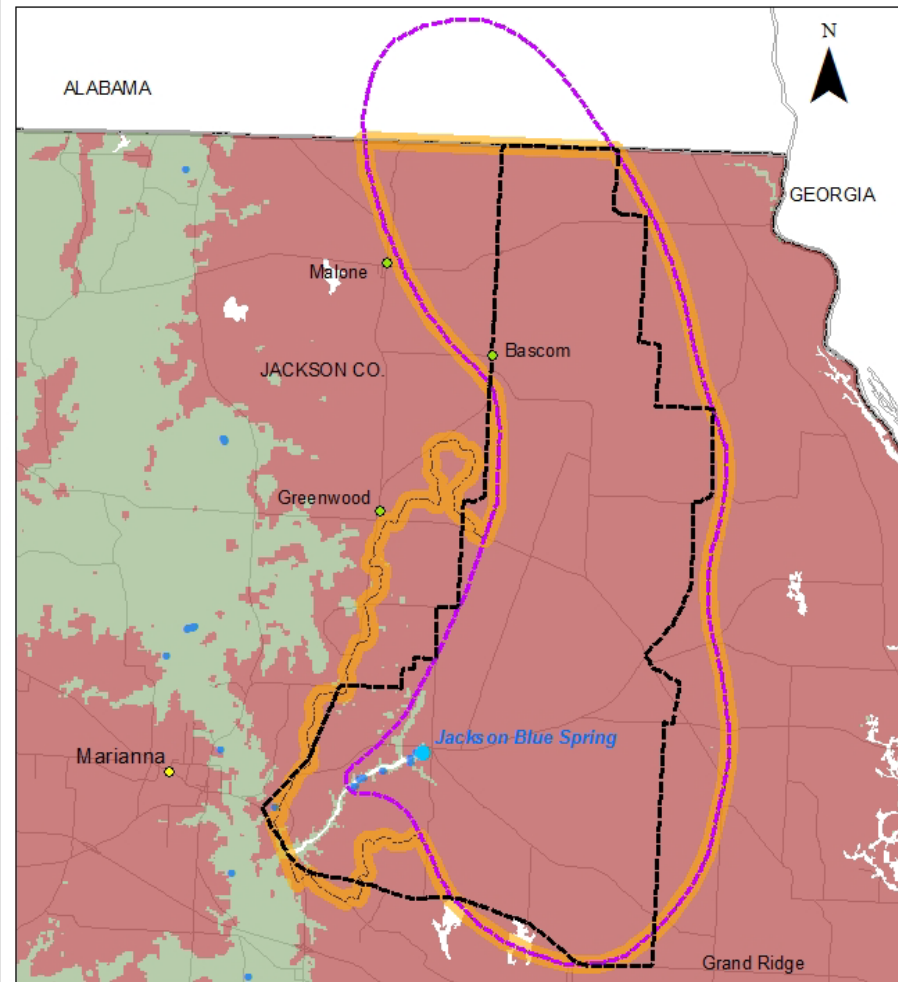


0 1.5 3 6 Miles

- Jackson Blue PFA
- Jackson Blue Springshed
- Jackson Blue-Merritts Mill Pond BMAP Area
- Spring

Aquifer Recharge-Based Priority

- Priority 1- Highest
- Priority 2
- Priority 3
- Priority 4
- Priority 5
- Priority 6



0 1.5 3 6 Miles

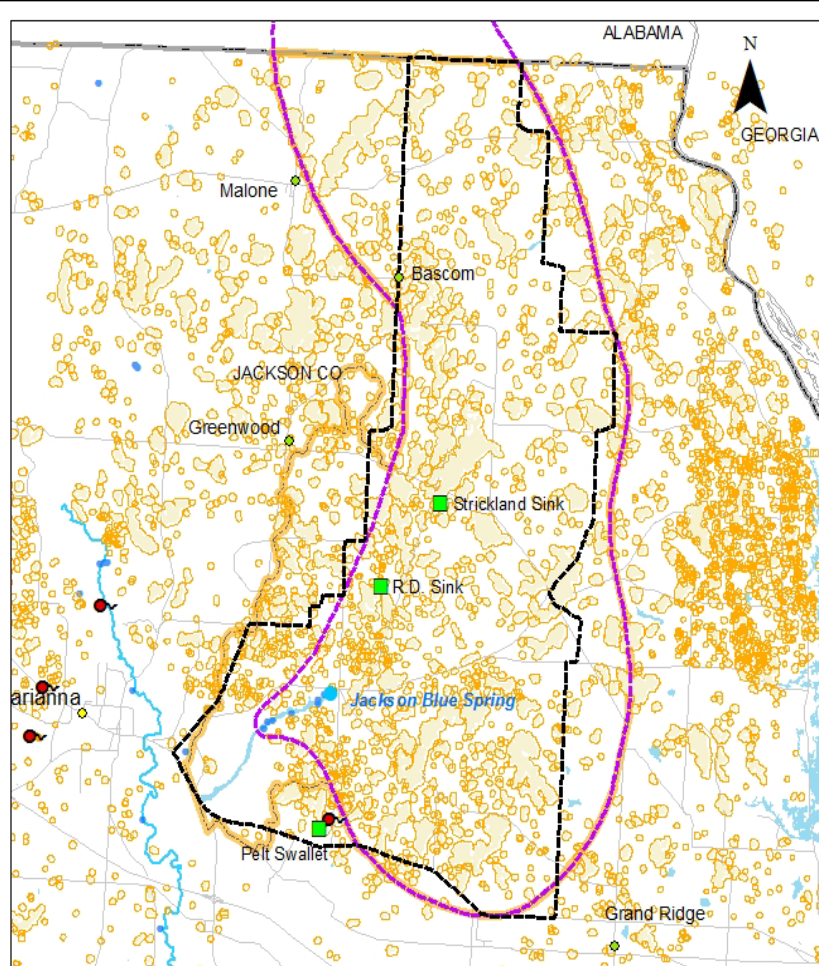
- Jackson Blue PFA
- Jackson Blue Springshed
- Jackson Blue-Merritts Mill Pond BMAP Area
- Spring

Aquifer Vulnerability

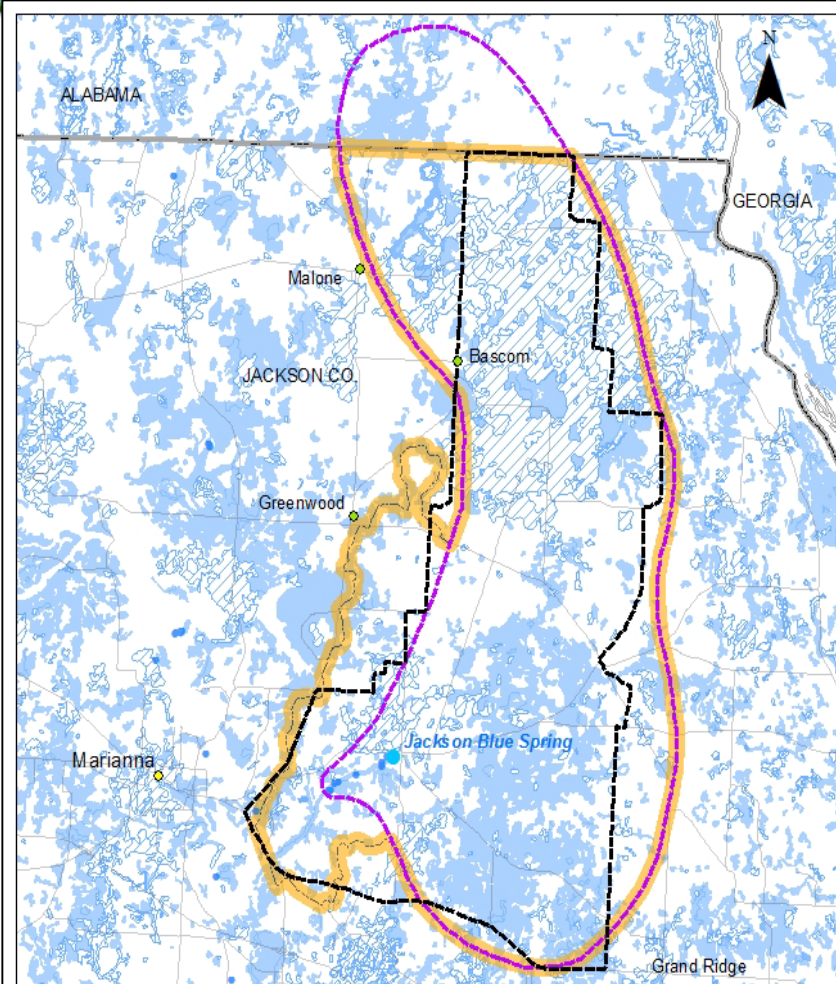
- More Vulnerable
- Vulnerable
- Less Vulnerable



PFA



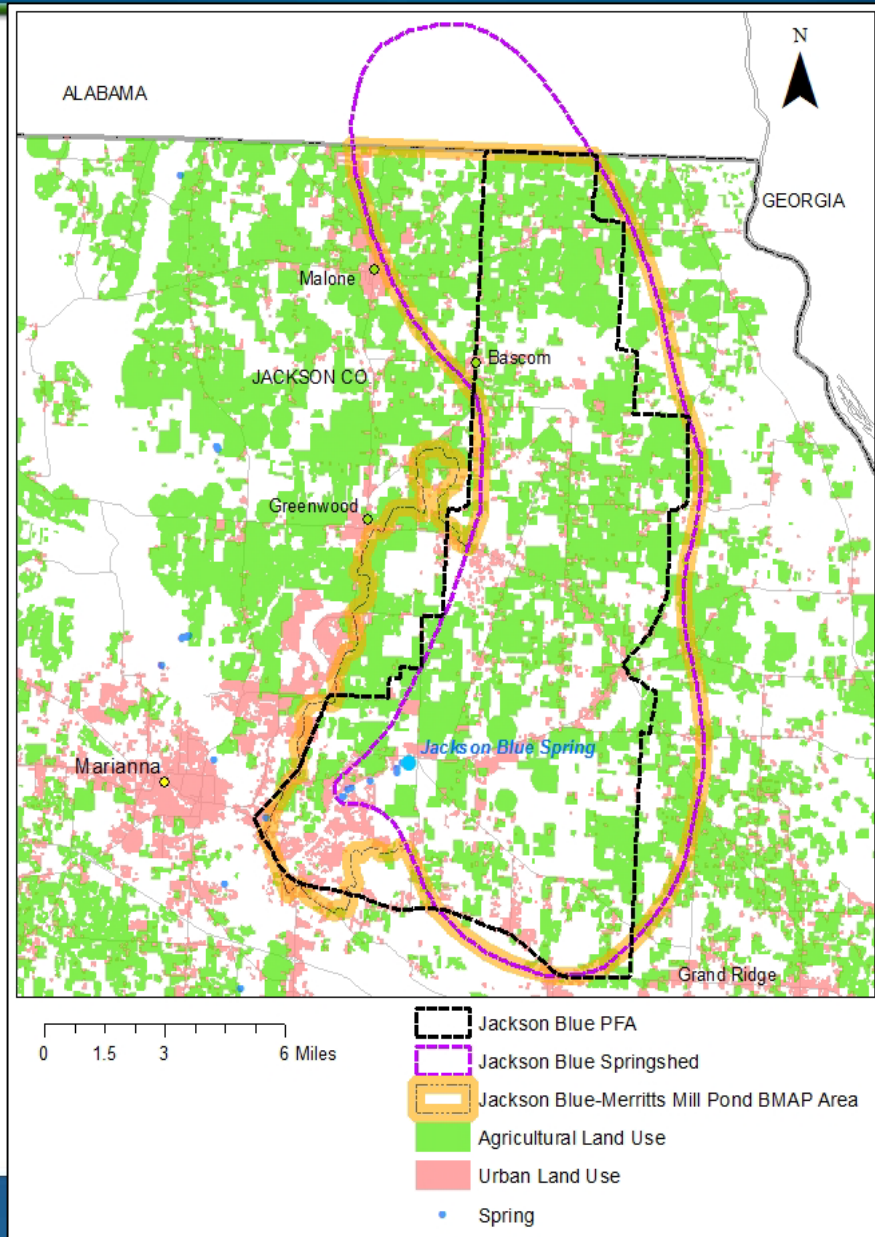
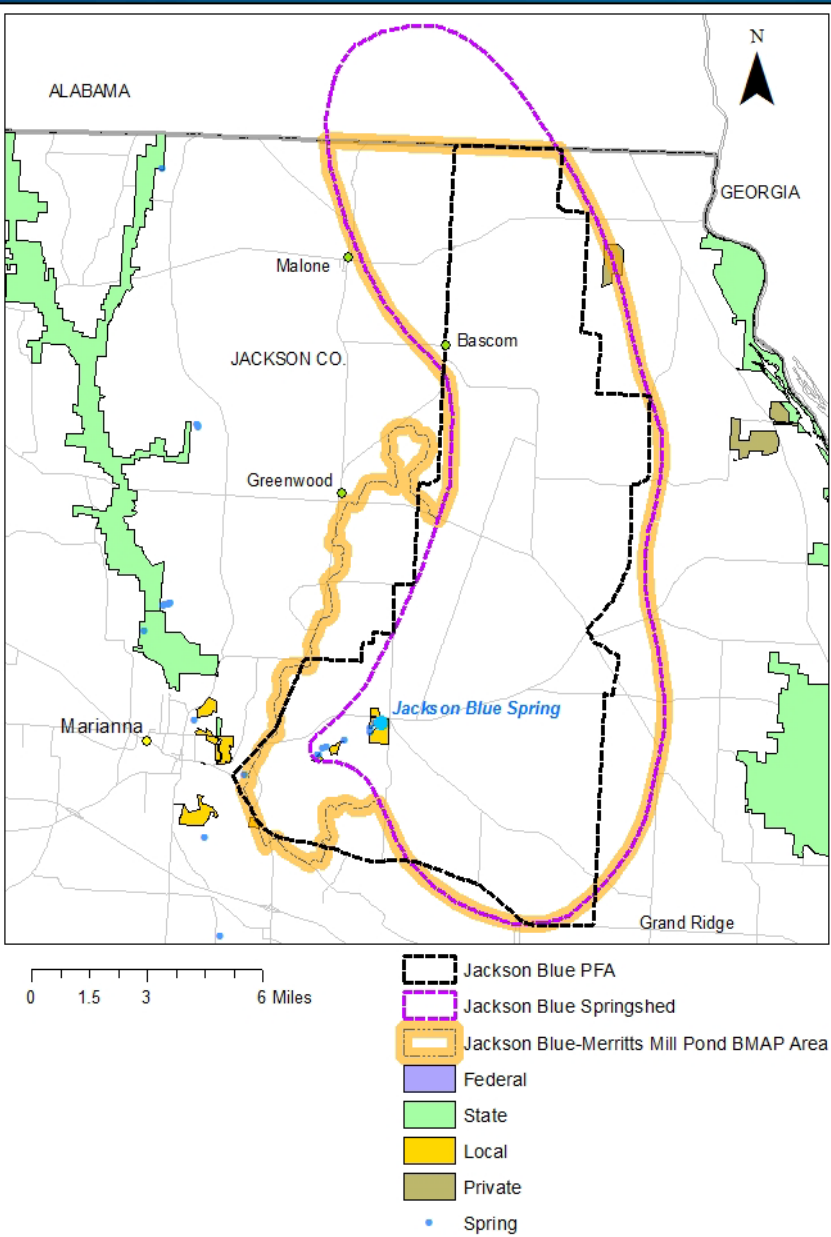
- Jackson Blue PFA
- Jackson Blue Springshed
- Closed Depression
- Jackson Blue-Merritts Mill Pond BMAP Area
- Spring
- FGS Swallets
- Dye Trace Injection Site



- Jackson Blue PFA
- Jackson Blue Springshed
- Jackson Blue-Merritts Mill Pond BMAP Area
- Soils with Moderate Leaching Potential
- Soils with High Leaching Potential
- Spring

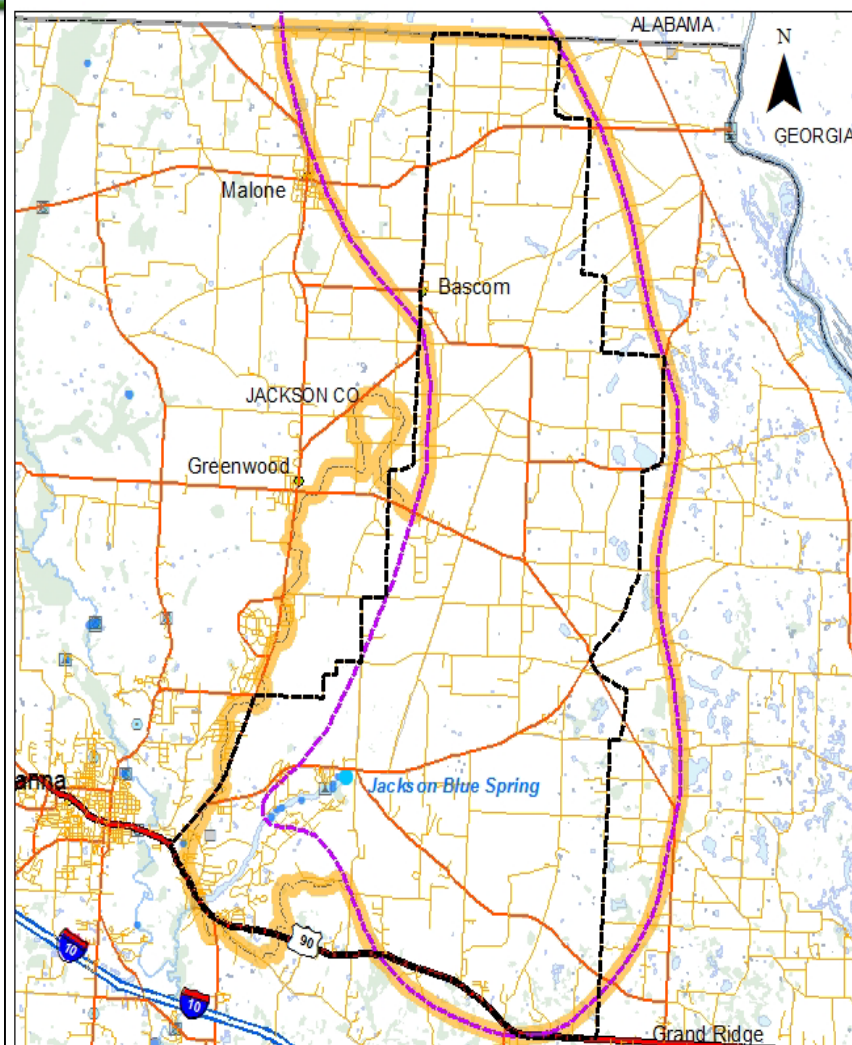
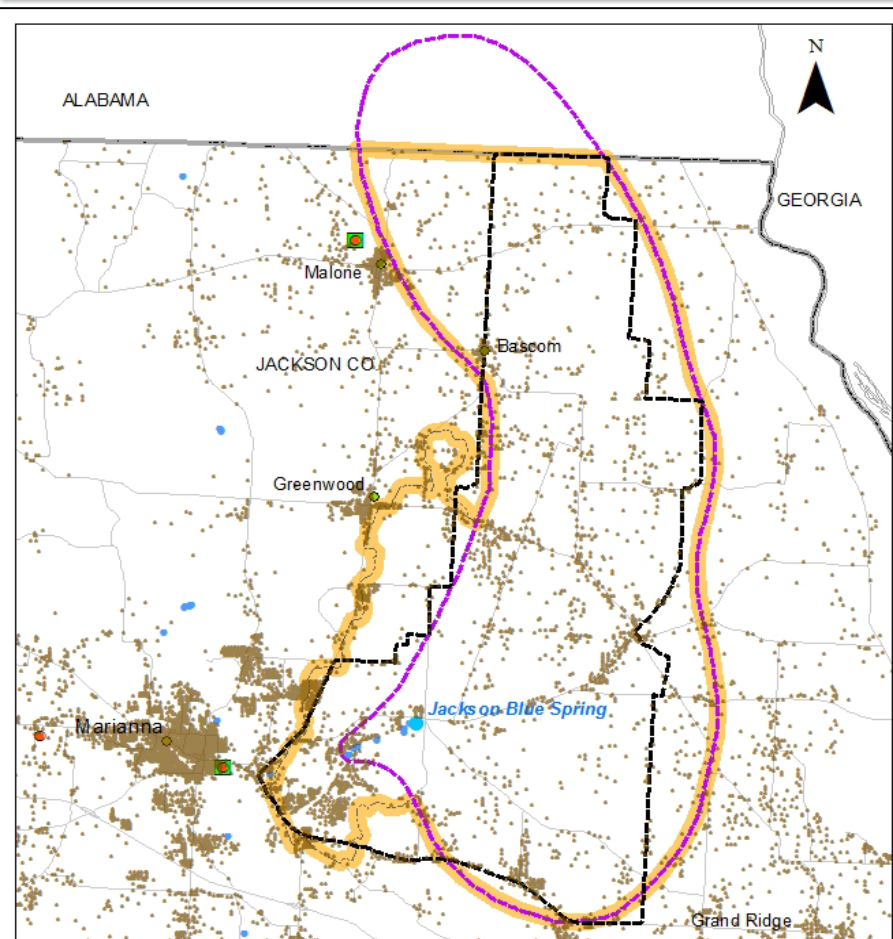


PFA



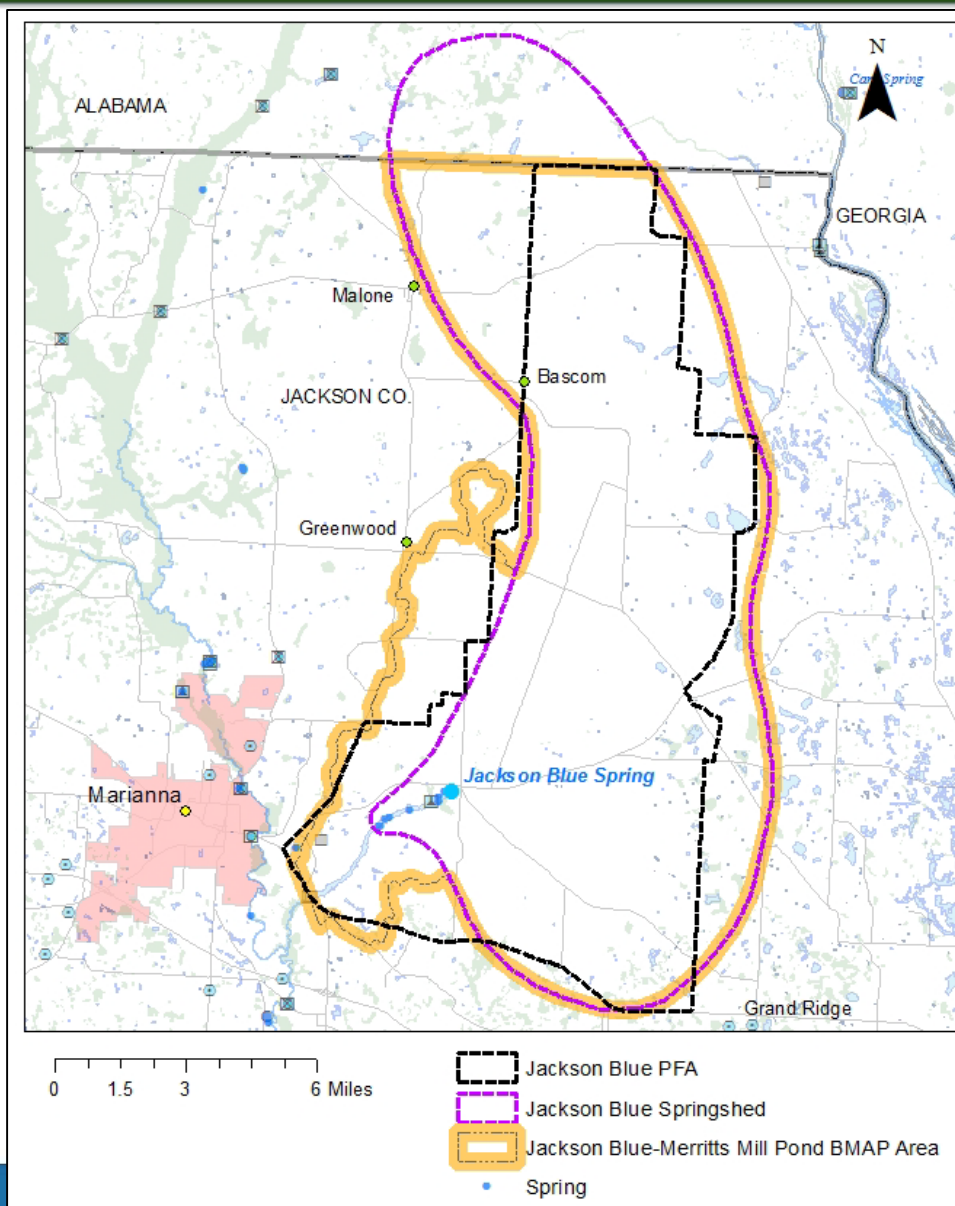


PFA





PFA





TMDLs / BMAP

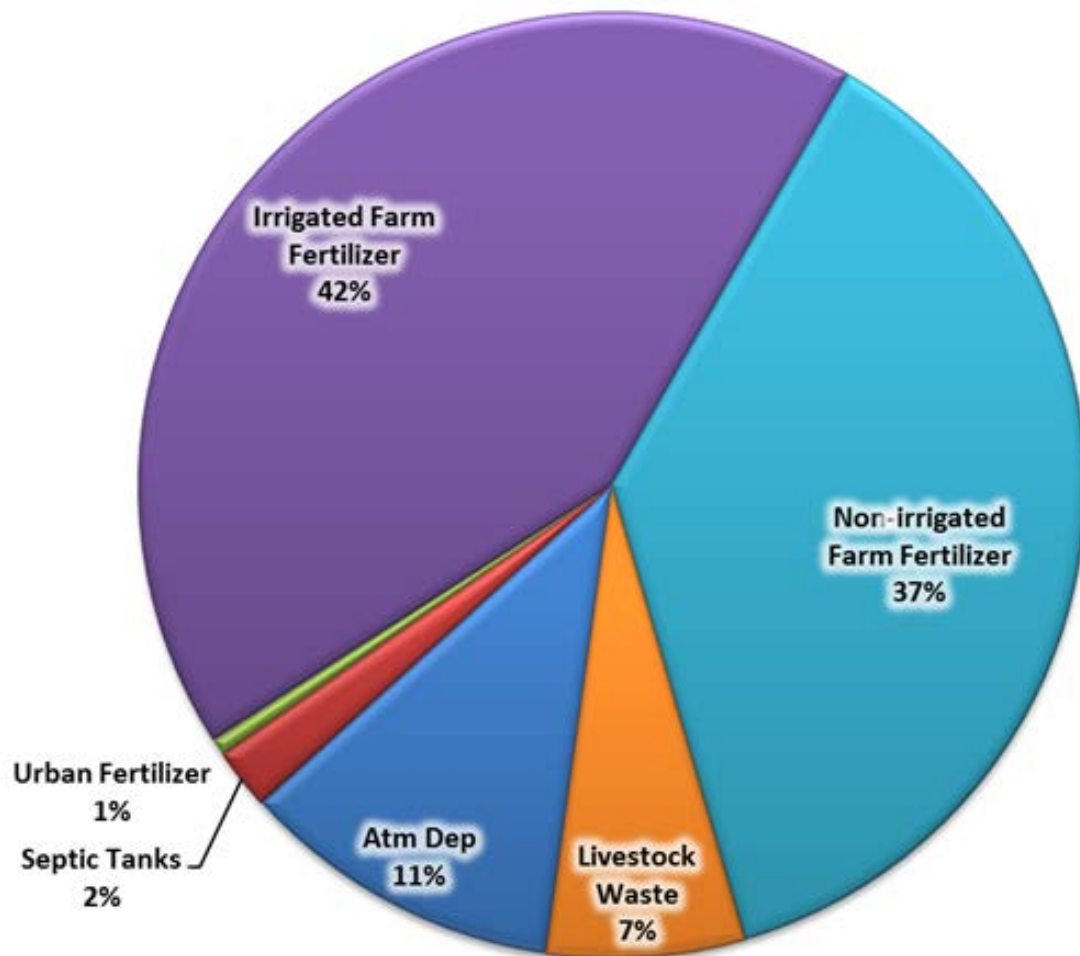
- To achieve the TMDLs, BMAP implementation will be a 20-year process
- Plan will define nitrogen reduction milestones:
 - 30% reduction within 5 years
 - 50% reduction within 10 years
 - 20% reduction within 15 years
 - Use last 5 years to finish up and see results





Nitrogen Load to Groundwater

Total BMAP Area



Determine Vent/TMDL Loads:

- Average discharge
- Average concentration
- TMDL concentration

Calculate load to reduce



Gap Analysis

Nitrogen Source	Credits Based on Project Tables (lb-N/yr)	Description
OSTDS	(2%)	Credits identified for stakeholder OSTDS projects (enhancement or sewer)
Urban Turf Fertilizer	(1%)	DEP approved credits (up to 6%) for public education activities as well as credits identified for stakeholder stormwater projects
Atmospheric Deposition	(11%)	No reduction
Farm Fertilizer (FF)	(79%)	15% BMP credit on FF load to groundwater, assuming 100% owner-implemented BMPs on all fertilized lands
Sports Turf Fertilizer (STF)	(<1%)	6% BMP credit for sports fields and 10% BMP credit for golf courses on STF load to groundwater, assuming 100% BMP implementation on golf courses and sports fields
Livestock	(7%)	10% BMP credit on load to groundwater, assuming 100% owner-implemented BMPs at all livestock facilities
Wastewater Treatment Facility	(<1%)	Achieved by BMAP WWTF policy (achieving 3 or 6 mg/L)
Total Credits		
Required Reduction		Load Remaining:



OSTDS

- BMAP will contain an OSTDS remediation plan
- DEP and Florida Department of Health (FDOH) will work together to implement it
- To be most successful, local funding needs to be available to homeowners:
 - For example: grant programs for assisting homeowners, with costs administered by county
 - Best if administered at the local level
 - State funding for such grant programs is available



OSTDS Options

- **OSTDS enhancement** (defined as 65+ % nitrogen reduction)
- FDOH-approved options in Florida:
 - Units capable of meeting the NSF 245 Standard
 - Passive nitrogen-reducing, in-tank systems tested by FDOH study:
Florida Onsite Sewage Passive Nitrogen Reduction Strategies Study
- FDOH innovative system testing process is evaluating more options, such as:
 - Performance based treatment systems (PBTS)
 - Media filter systems
 - <http://www.floridahealth.gov/environmental-health/onsite-sewage/products/documents/pbts-components.pdf>
- **OSTDS sewerage**
 - BMAP has new wastewater disposal requirements for nitrogen



OSTDS Remediation Plan

- Which systems must be enhanced or sewerred?
 - Meet the DoH Definition (64E-6F.A.C.) of new system
 - Unless sewer is available or described as becoming available in a BMAP project
- What is the deadline for enhancing or sewerering?
 - Backstop: In areas where enhancement or sewer is required, all OSTDS loads must be reduced no later than 20 years after BMAP adoption
- When does this start?
 - As soon as the BMAP is adopted
 - By law, BMAP must be adopted before July 1, 2018



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BMAP Schedule



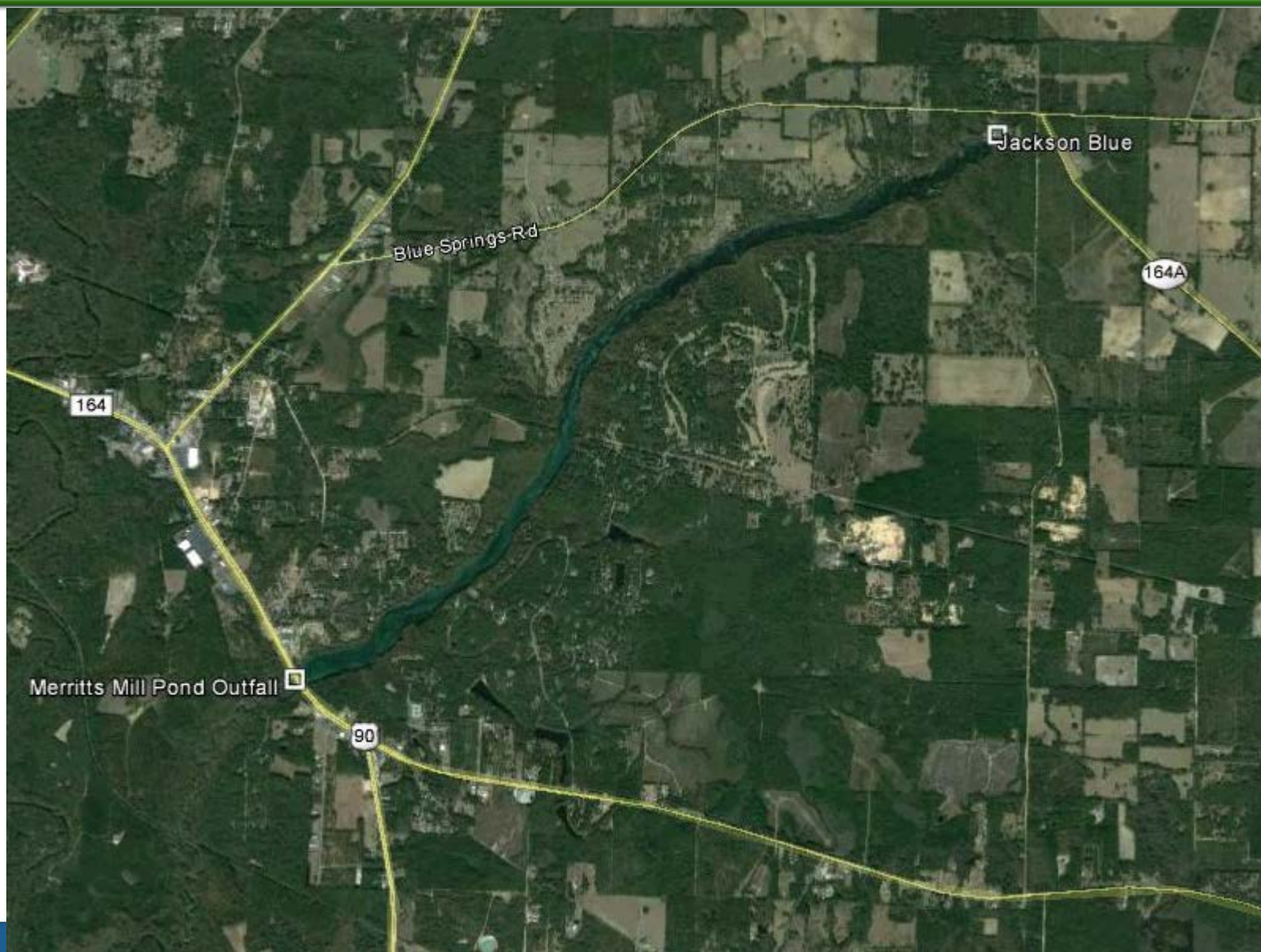


Summary

- BMAP is being revised to comply with the Florida Springs and Aquifer Protection Act
- Additional meetings are scheduled for:
 - March 7, 2018 – Technical meeting
 - More info on BMAP revisions
 - March 28, 2018 - Newspaper-noticed public meeting
- My contact info: Terry.Hansen@dep.state.fl.us



Questions?





OSTDS Remediation Plan

- Which systems must be enhanced?
 - Meet the DoH Definition (64E-6F.A.C.) of new system

New

- An OSTDS that is installed on a property where one has not previously been installed.
- An OSTDS that is installed to replace an illegal system.
- An OSTDS that is installed to replace an existing onsite sewage treatment and disposal system where the existing system cannot be altered to conform to regulatory modification requirements.
- An OSTDS that is installed in addition to an existing onsite sewage treatment and disposal system to address wastewater generated by additional structures or addition to a structure.