

Florida Department of Environmental Protection



Bureau of Watershed Restoration

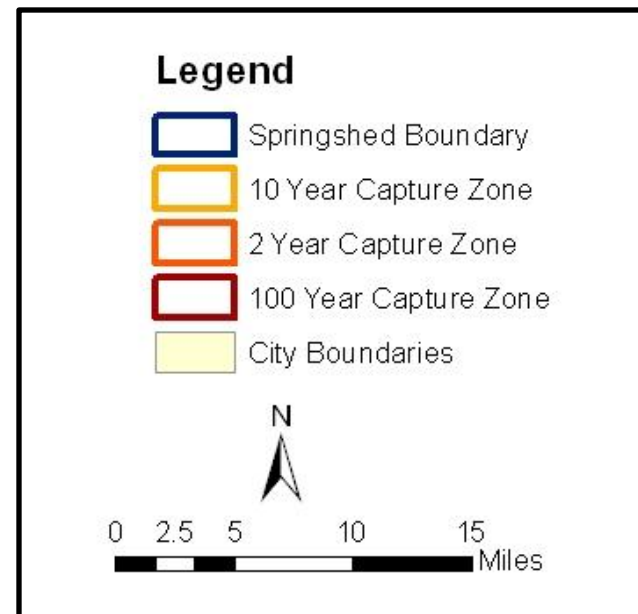
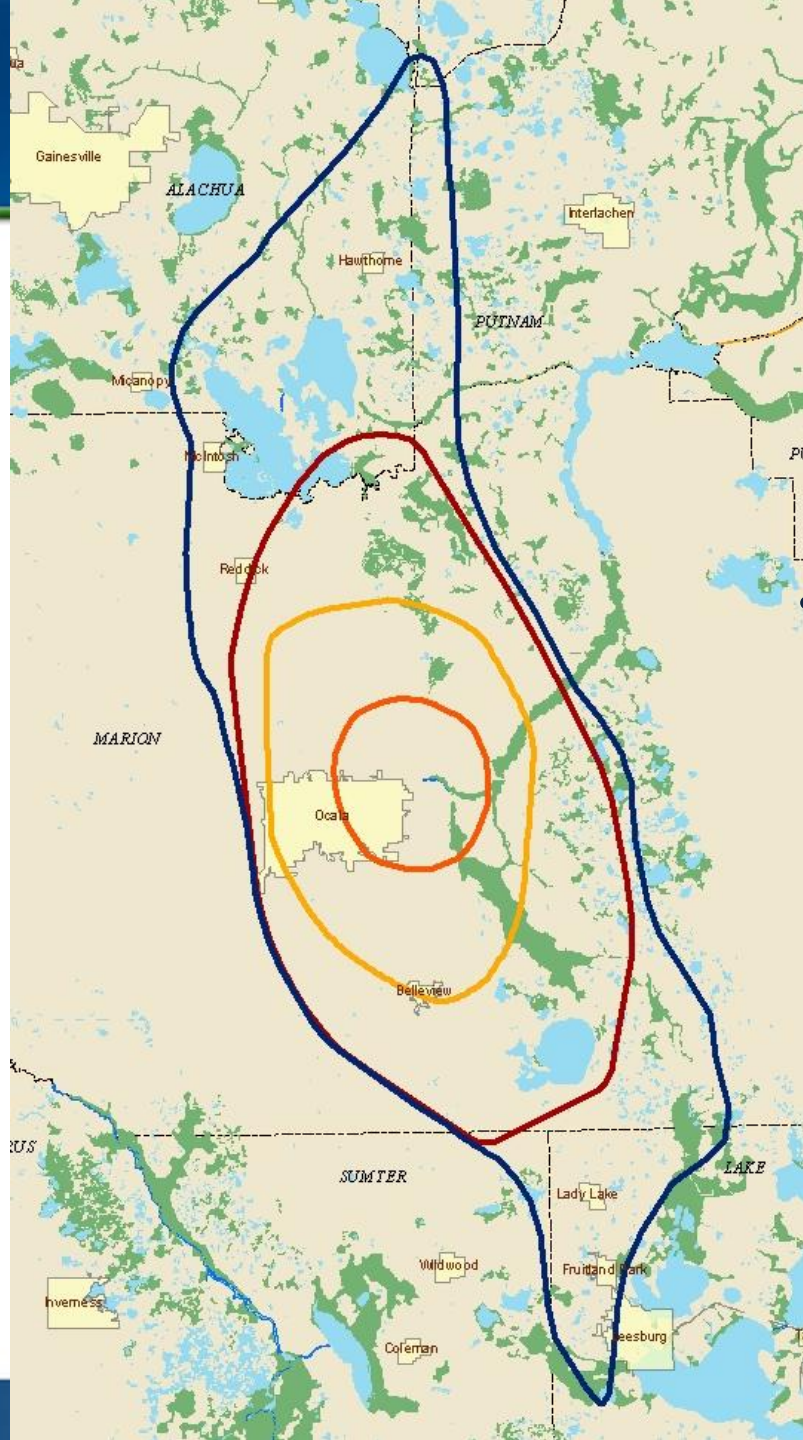
BMAP Boundary Selection for Silver Springs

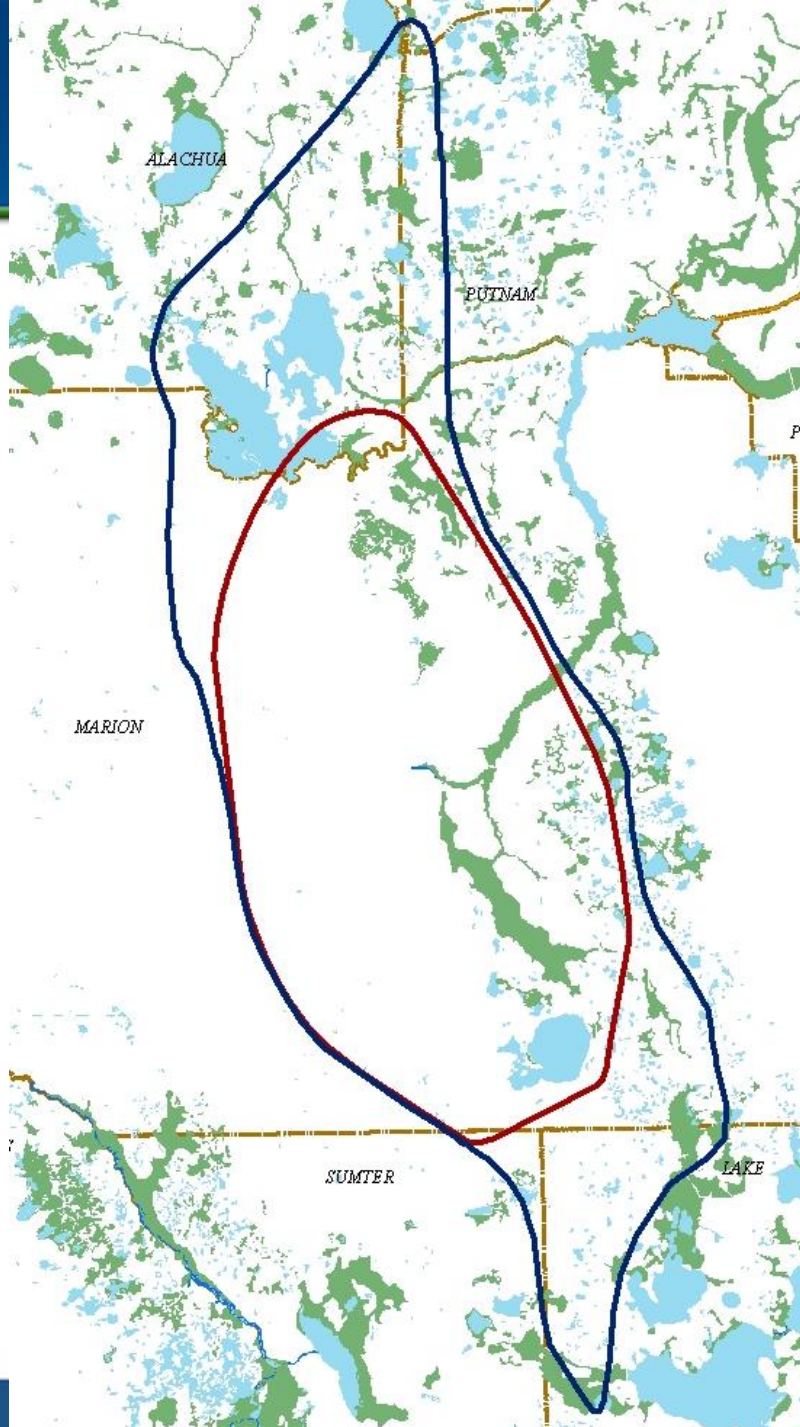
April 11, 2013



Silver Springshed and Capture Zones

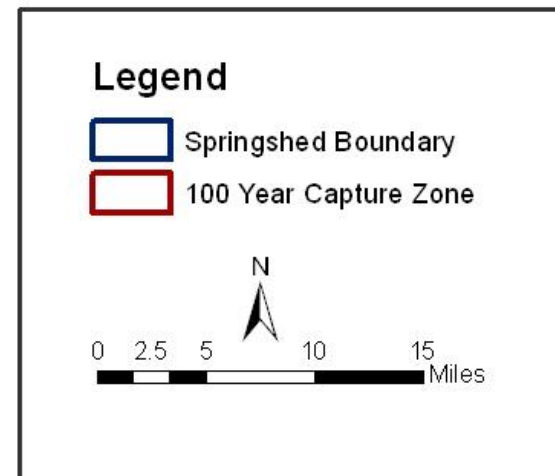
- All were considered in selection of focus area.





Selected Boundaries

- Springshed boundary approximates 1000 year capture zone.
- Springshed boundary similar to boundary created from potentiometric surface.
- TMDL focused on 100 year capture zone.
- Started with 100 year capture zone as focus area.





Why Focus Areas

- Springshed is large and aquifer is not homogeneous in makeup.
- Aquifer vulnerability is greater in western Marion County than eastern Marion County.
- Aquifer condition is comparatively semi to unconfined in the western part of the springshed.
- Purpose of focus area is to target efforts during the first iteration of the BMAP.
 - This is the first 5 years.
 - Priority is remediation activities.
 - Goal is to obtain achievable results through projects or activities that will reduce nitrate levels in spring.

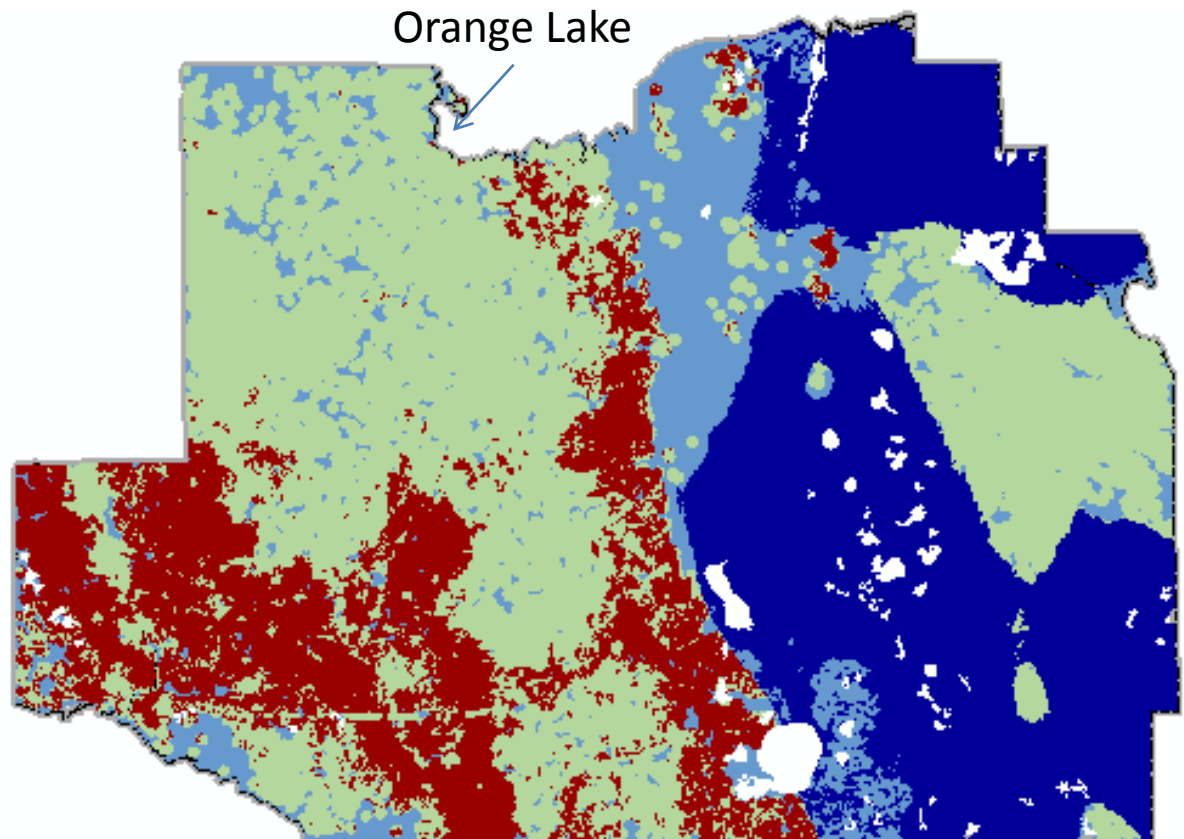
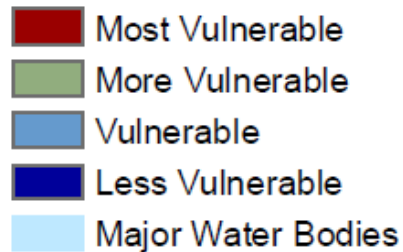


MCAVA

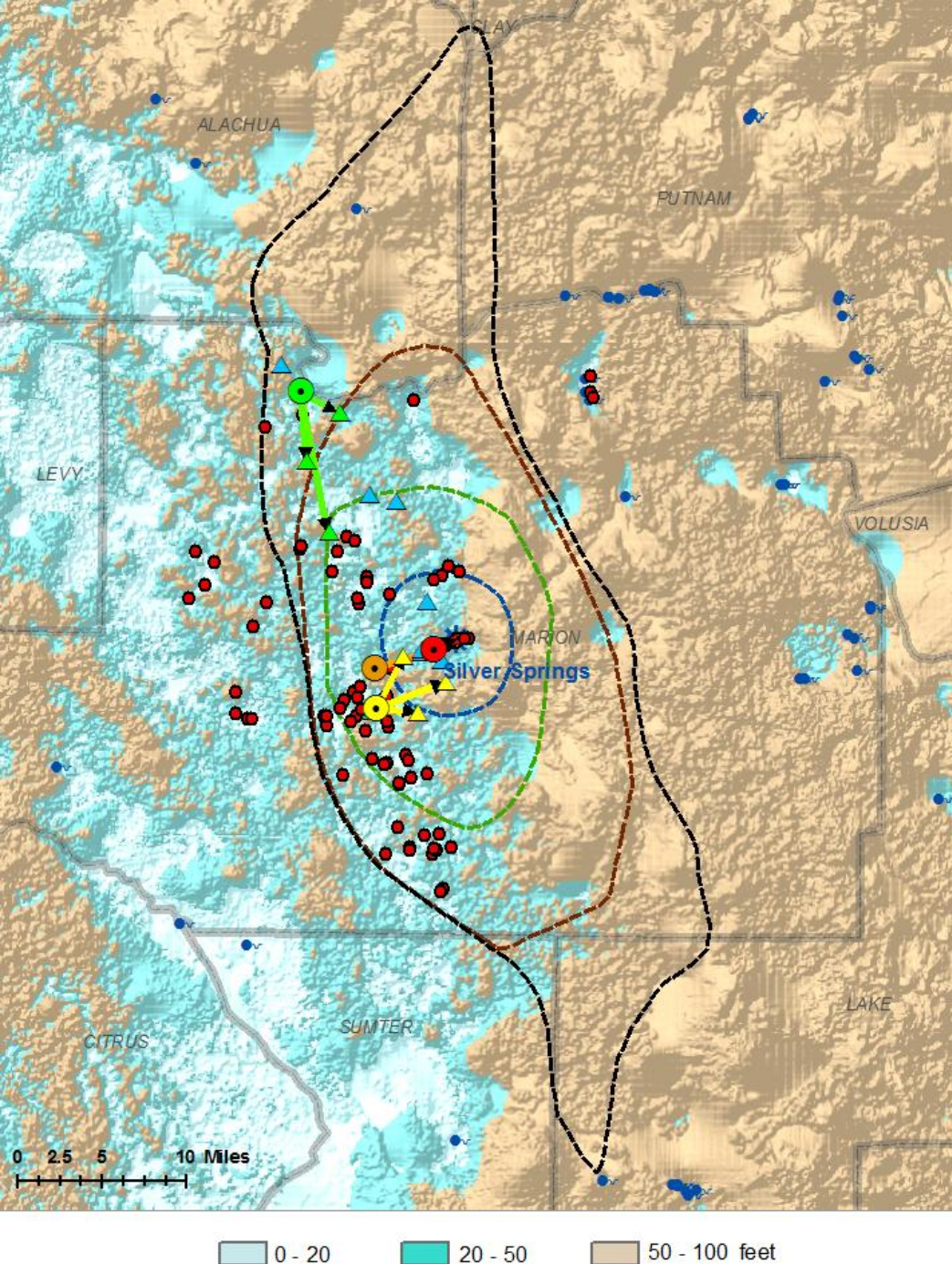
Marion County Aquifer Vulnerability

- Characterizing the natural vulnerability of the Floridan Aquifer System.

Relative Vulnerability



Thickness of Sediments Overlying Upper Floridan Aquifer with Cave Locations and Capture Zones



• Caves

1000-year Capture Zone

100-year Capture Zone

10-year Capture Zone

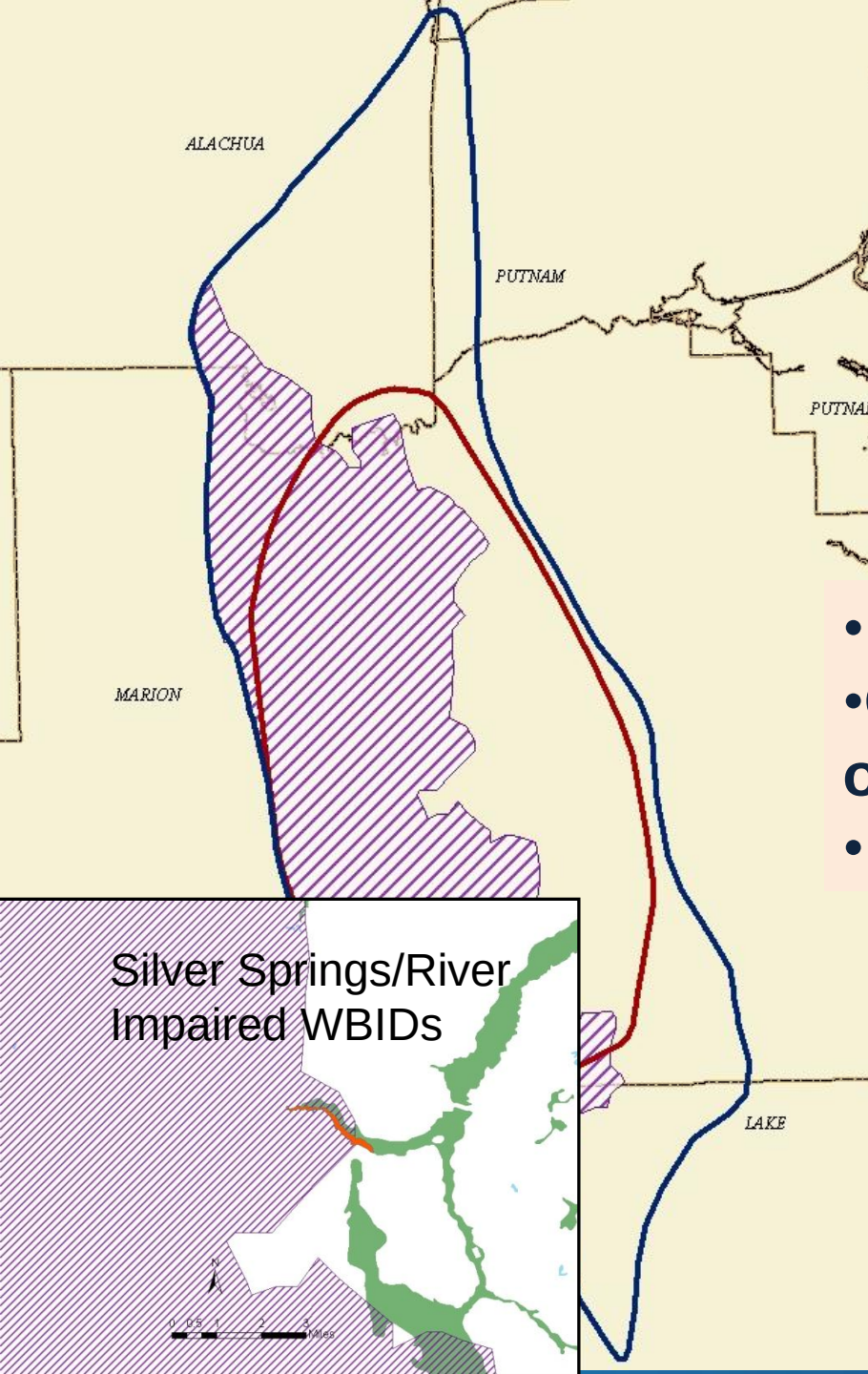
2-year Capture Zone

▲ Sulforhodamine B

▲ Eosine

▲ Fluorescein

▲ dye not detected



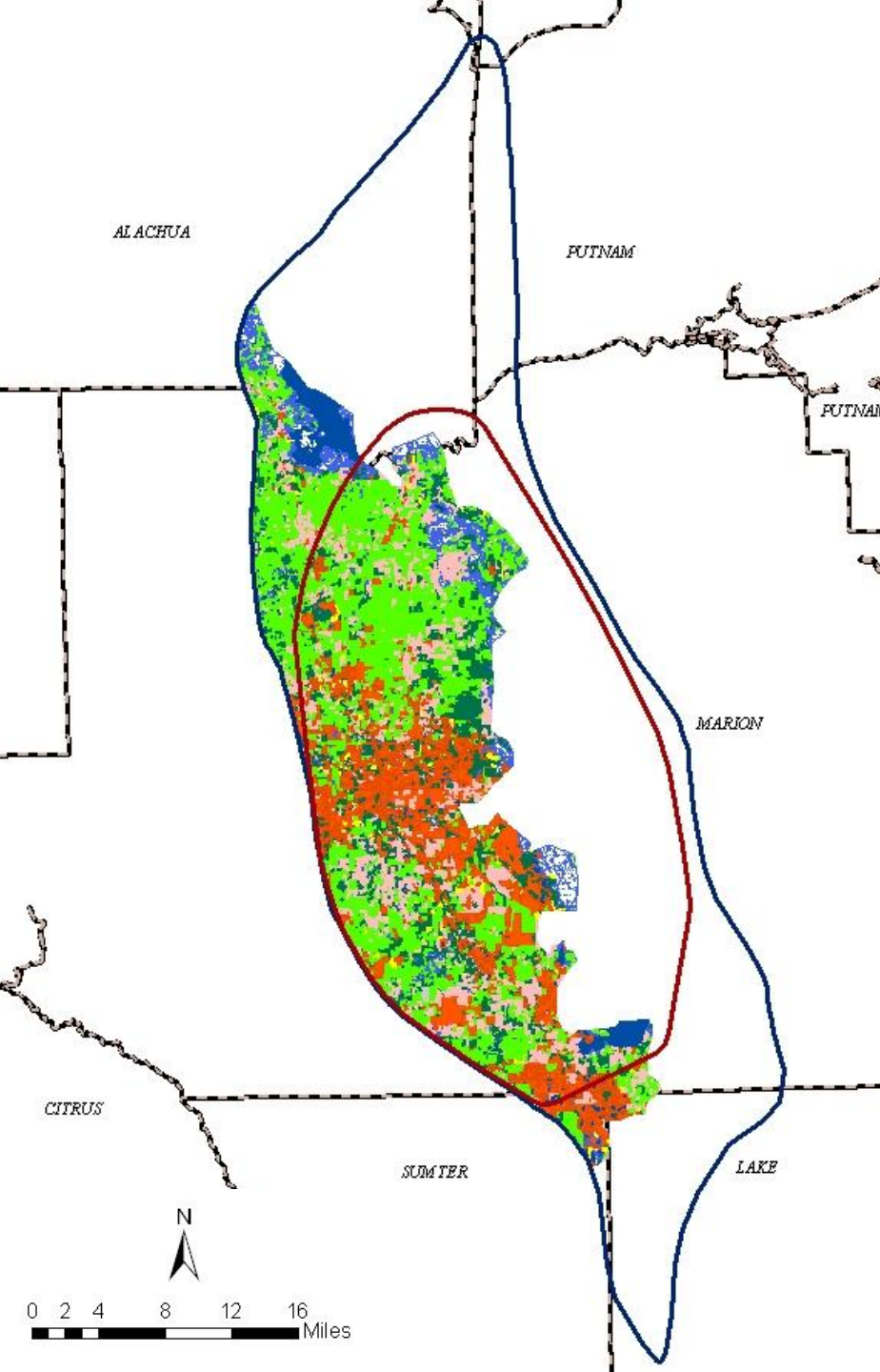
Refined Focus Area: Semi to Unconfined Aquifer Conditions

- Includes 100 year capture zone.
- Overburden thickness is 50 feet or less (hatched area) on map).
- Most vulnerable areas.

Legend

-  Springshed Boundary
-  100 Year Capture Zone
-  Semi -Unconfined Aquifer

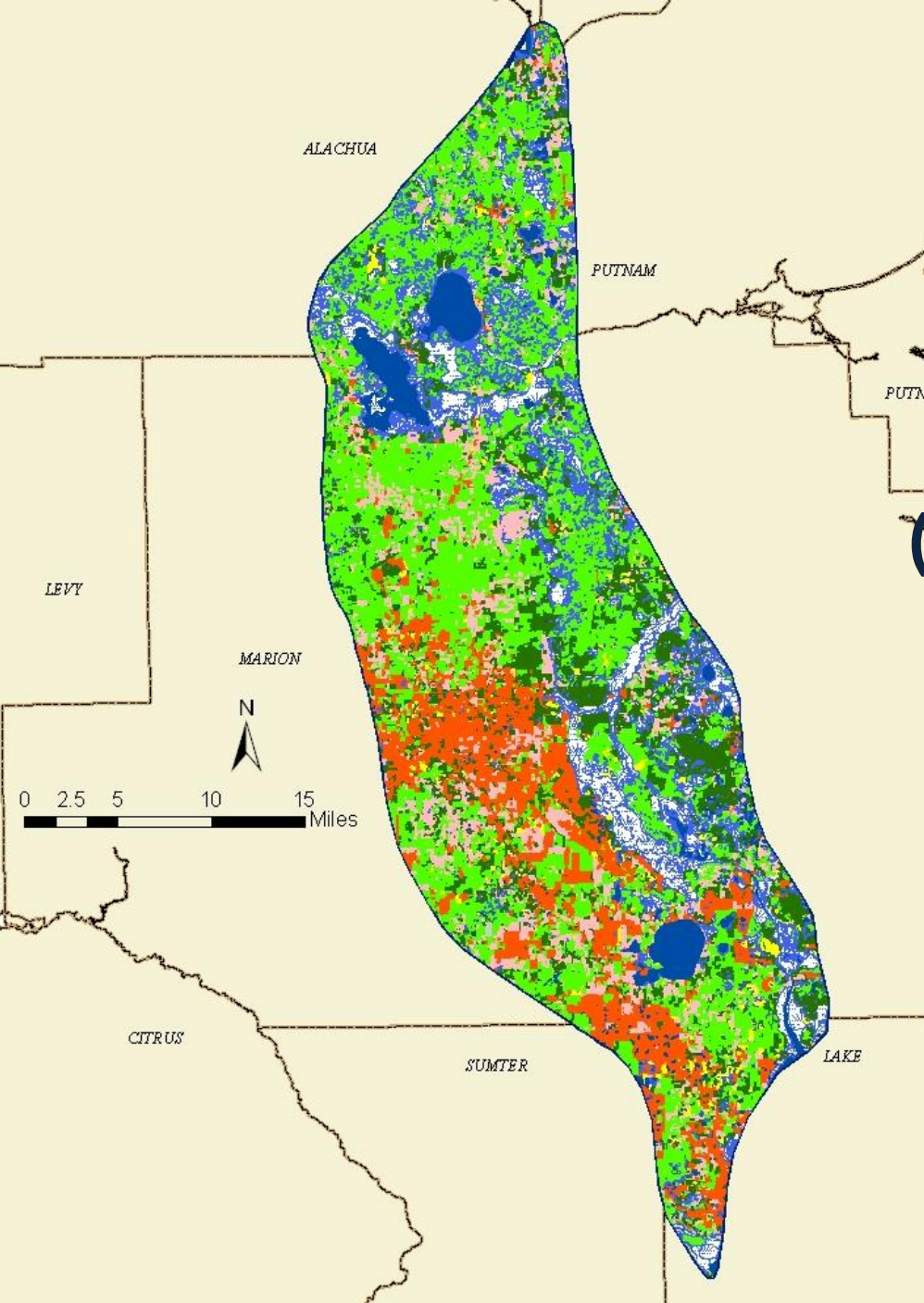
Semi to Unconfined Portion of Springshed with 2009 LandUse



Legend

Category

- Agriculture and Silviculture
- Disturbed Land or Rural Land in Transition
- Forest
- Low Density Residential
- Upland Non-forested
- Urban, Transportation, and Utilities
- Water
- Wetland
- Orange Creek Boundary
- 100 Year Capture Zone
- Springshed Boundary

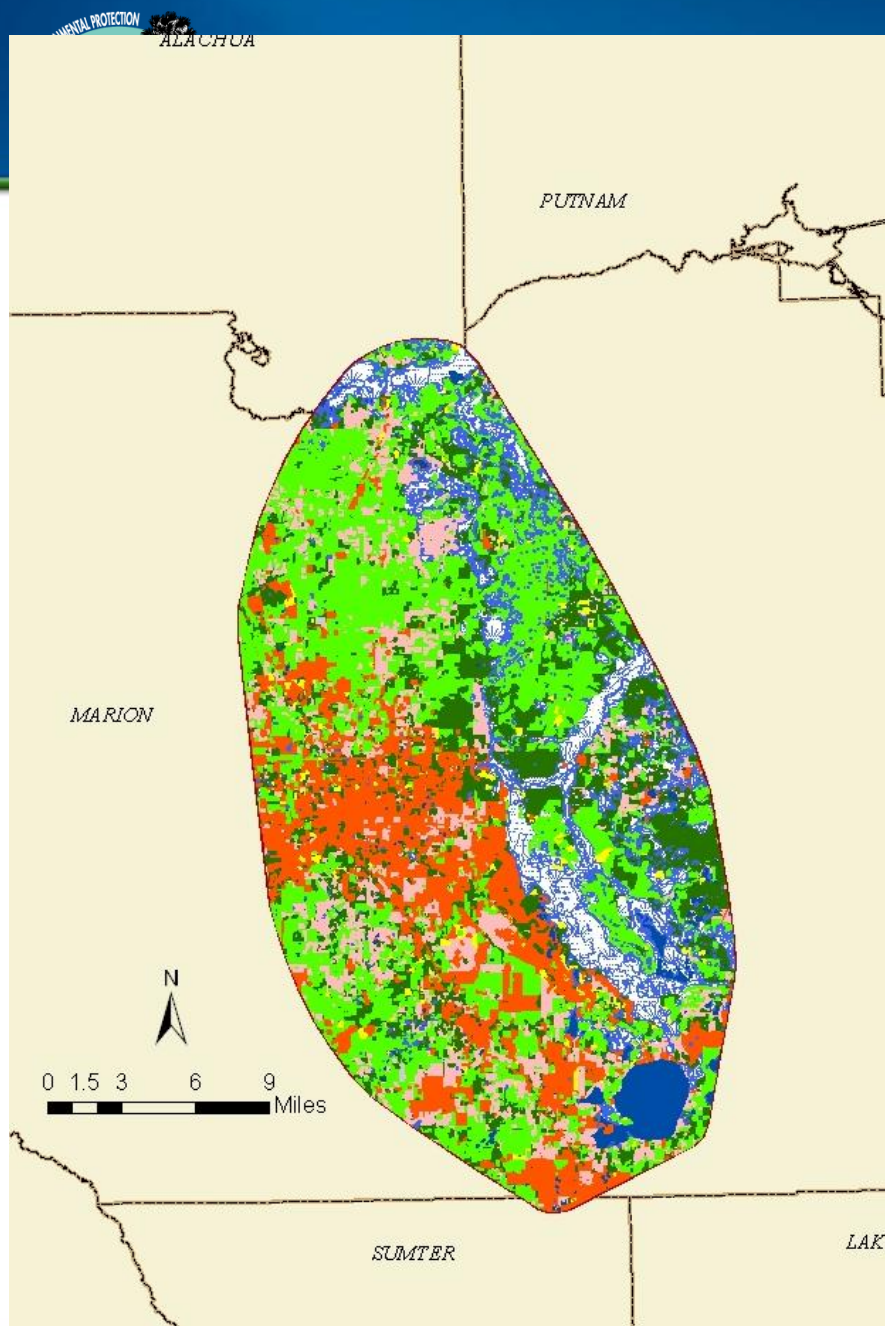


2009 LandUse Within Silver Springs Springshed (~1000 year Capture Zone)

Legend

Category

-  Agriculture and Silviculture
-  Disturbed Land or Rural Land in Transition
-  Forest
-  Low Density Residential
-  Upland Non-Forested
-  Urban, Transportation, and Utilities
-  Water
-  Wetlands
-  Springshed Boundary



2009 Land Use Within 100 Year Capture Zone

Legend

Category

- Agriculture and Silviculture
- Disturbed Land or Rural Land in Transition
- Forest
- Low Density Residential
- Upland Non-Forested
- Urban, Transportation, and Utilities
- Water
- Wetlands
- 100 Year Capture Zone



Comparison of LandUses

	100 Year Capture	Refined Focus Area $\leq$ 50 feet of over burden	Springshed
Category	Percent Area	Percent Area	Percent Area
Agriculture and Silviculture	33.7	37.4	36.2
Distrubed Land or Rural Land in Transition	0.2	0.3	0.2
Forest	16.8	13.2	14.9
Low Density Residential	11.7	13.9	10.0
Upland Non-Forested	1.5	1.1	1.5
Urban, Transportation, and Utilities	18.2	23.7	14.3
Water	3.0	3.6	5.0
Wetlands	14.9	6.8	17.9
Total Area in Acres	316,877.3	244,275.1	552,833.9

*Low density residential – 1 dwelling on 2 or more acres



Why Focus Areas?

- Most urban land uses are within 100 year capture zone and semi to unconfined aquifer conditions; most agriculture is within area of semi to unconfined aquifer conditions.
- For future land use impacts the entire springshed will be considered.
- Ensure that projects are undertaken in focus area.
- Expect greatest benefit in water quality improvement from projects located in the focus area.



Some Questions to Answer

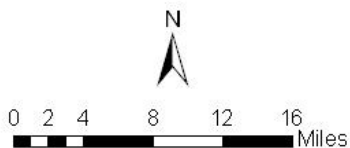
- Who are the Silver Springs stakeholders?
- Need to consider Silver River surface drainage and include all of it.
- Currently there is a void between the Rainbow and Silver Springsheds.
 - Where to place Ocala
 - In 2 springsheds
 - Keep completely in Silver?
- Overlap with Orange Creek Basin BMAP area.
 - TMDL for TP for Orange Lake.
 - Recommend agriculture priority area south and west of Orange Lake.

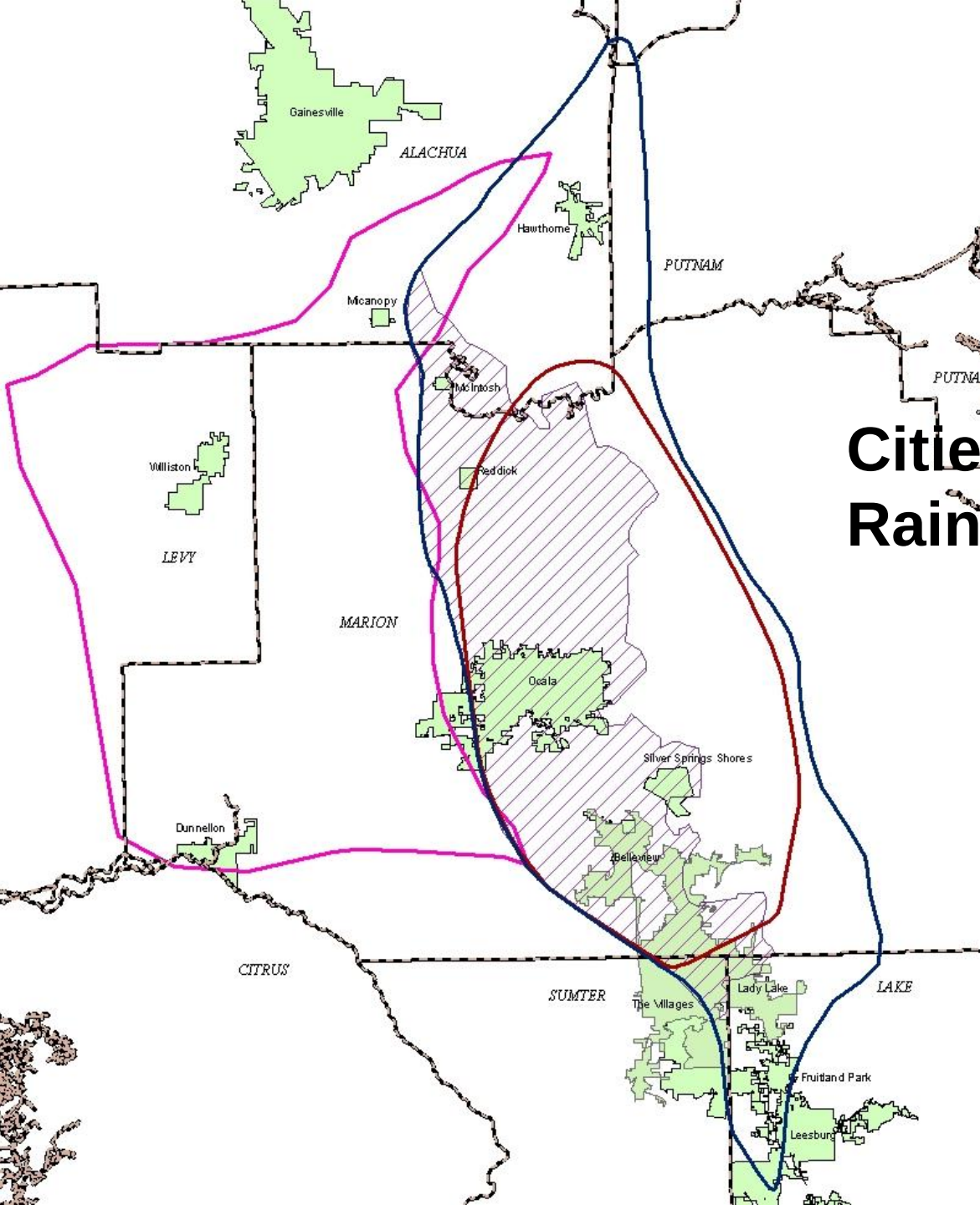
Overlap with Orange Creek Basin BMAP

Legend

Category

- Agriculture and Silviculture
- Disturbed Land or Rural Land in Transition
- Forest
- Low Density Residential
- Upland Non-forested
- Urban, Transportation, and Utilities
- Water
- Wetland
- Orange Creek Boundary
- 100 Year Capture Zone
- Springshed Boundary





Cities within Silver and Rainbow Springsheds

Legend

-  Springshed Boundary
-  100 Year Capture Zone
-  Unconfined Aquifer
-  Urban Areas
-  Rainbow Springshed



0 1.5 3 6 9 12 Miles



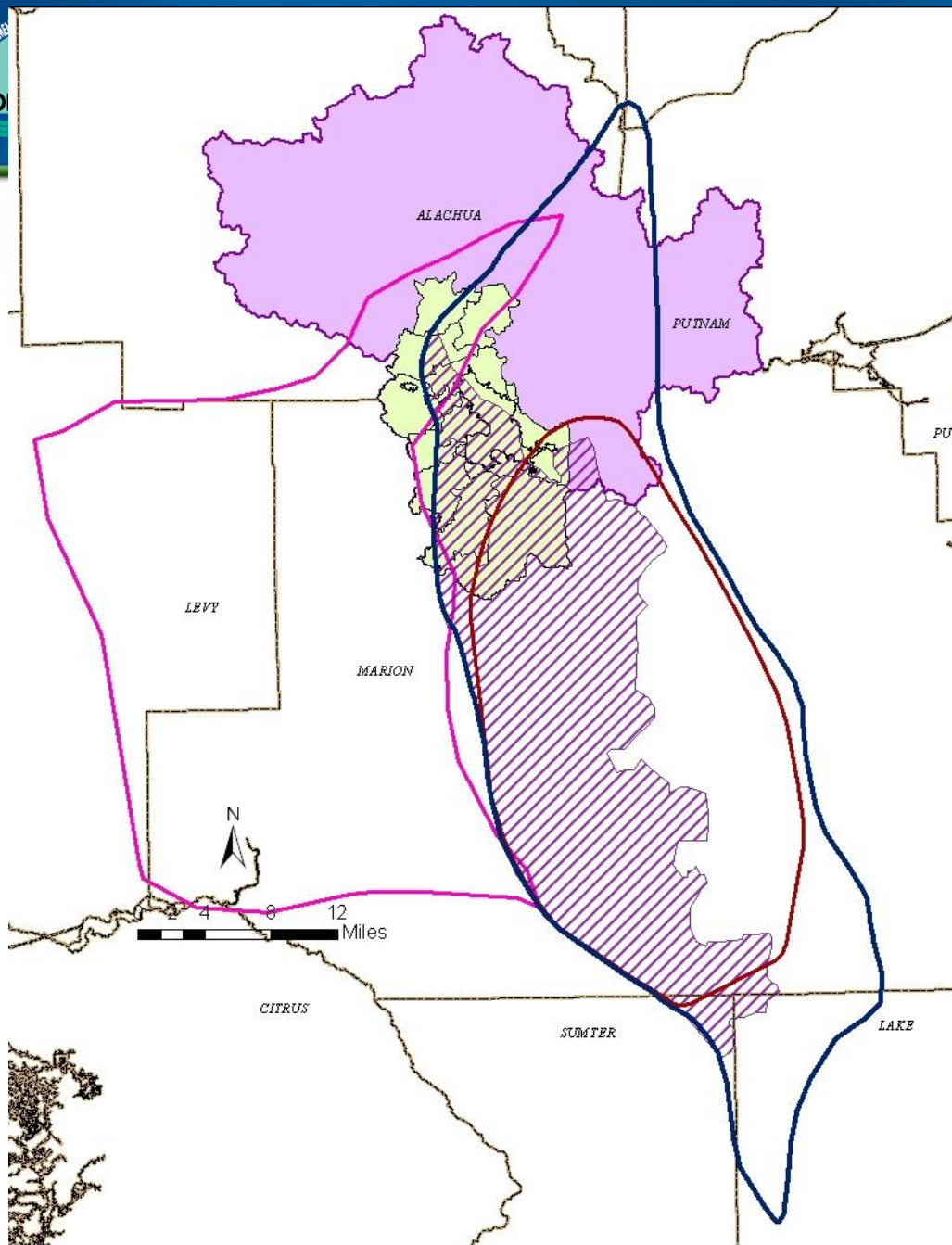
Local Government Stakeholders

- *Focus Area*

- Ocala
- Silver Springs Shores
- Belleview
- The Villages
- Reddick
- McIntosh
- Alachua County
- Marion County
- FDOT District 5

- *Springshed*

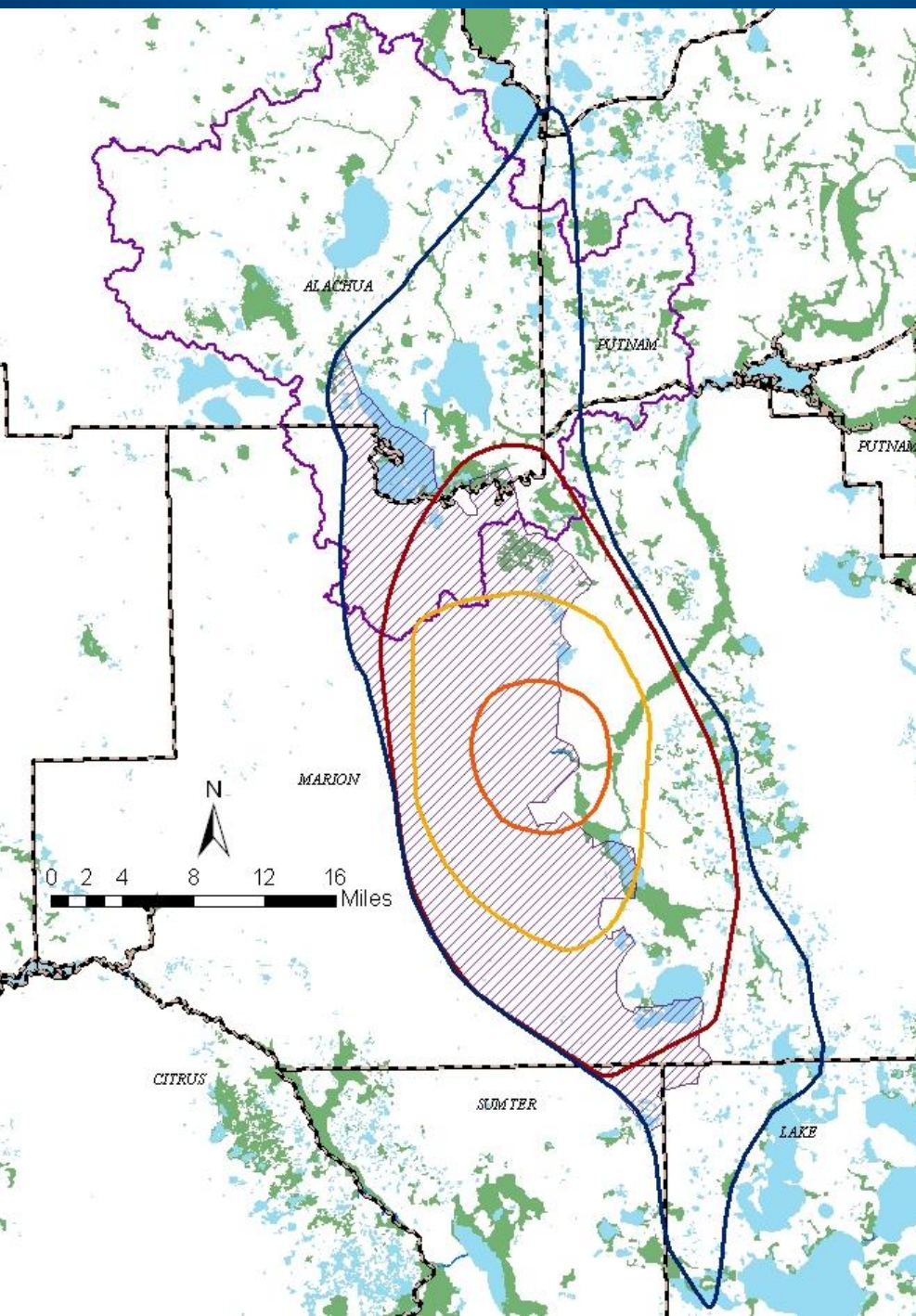
- Hawthorne
- Lady Lake
- Fruitland Park
- Lake County



Legend

-  Springshed Boundary
-  100 Year Capture Zone
-  Semi-Unconfined Aquifer
-  Rainbow Springshed
-  Orange Creek Boundary

Silver Springs Basin Capture Zone Boundaries



Legend

-  2 Year Capture Zone
-  10 Year Capture Zone
-  100 Year Capture Zone
-  Springshed Boundary
-  Unconfined Aquifer
-  Orange Creek Boundary