

Florida Department of Environmental Protection



Water Quality Restoration Program

BMAP Updates

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Nitrogen Inventory

- Since our last meeting in December, 2013:
 - DEP met with the Farm Bureau, DACS, Marion County Extension, Marion County, and agriculture producers.
 - Meetings on January 9 and March 5
 - Presented inventory approach.
 - Received comments about agriculture numbers used for cattle.



Outcome

- DEP has separated cattle into categories that better represent actual loadings.
- There are reasons for this categorization:
 - All cows treated as adults, while in reality about 40% are calves
 - Better estimates of total numbers of cattle
 - Refinements in estimates of animal waste loading
 - Refinements in estimates of fertilizer usage



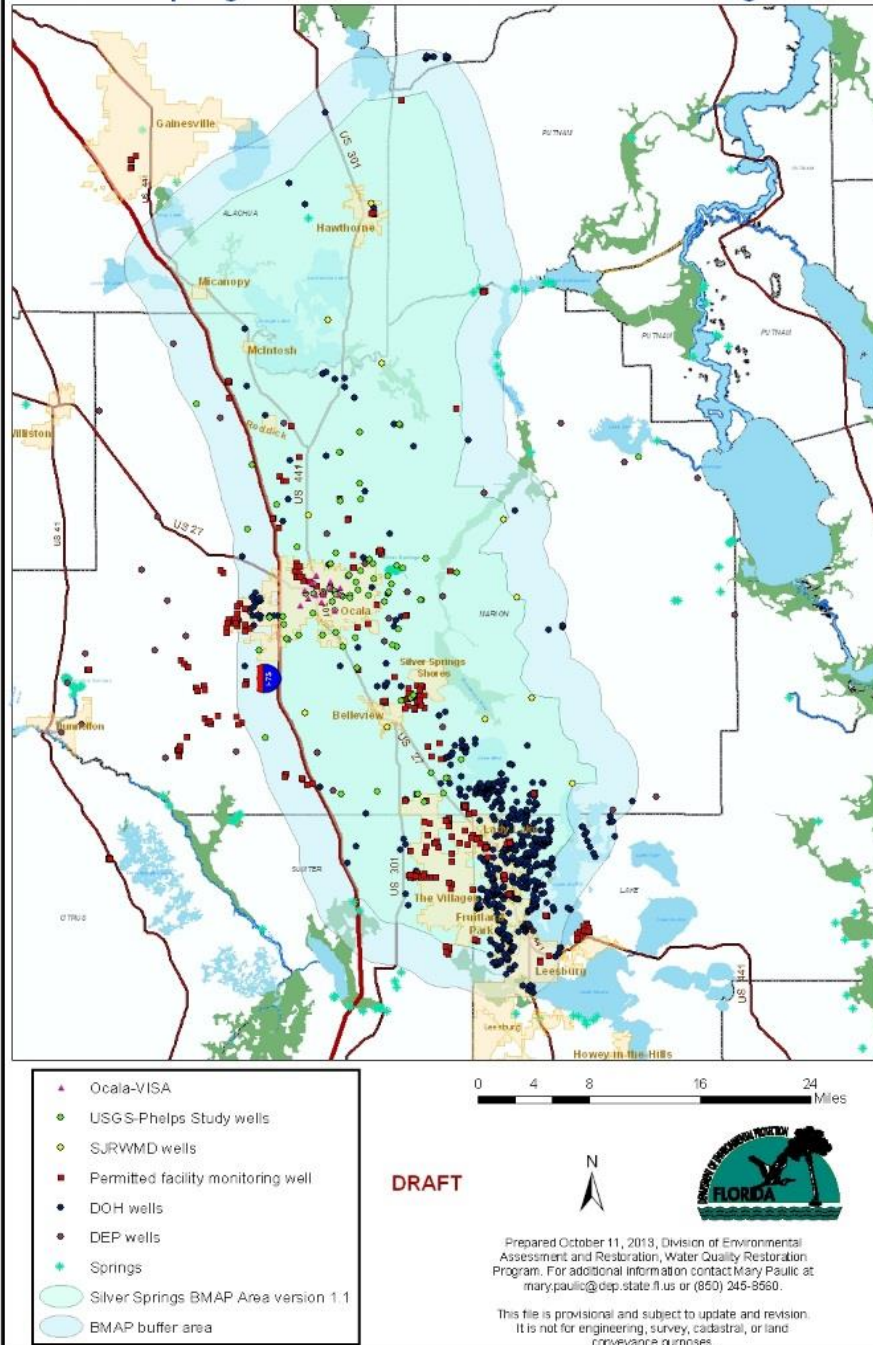
Other Inventory Changes

- Currently total number of septic systems is used without regard to the density of septic systems. Contribution is calculated solely by recharge rate.
- Revising inventory to separate septic systems into low density rural land uses and medium/high density land uses.



Ground Water Quality Data

- Goal: Map and evaluate concentration of nitrate in ground water.(if possible both spatial and temporal elements)
 - Serves as a check on the nitrogen source inventory and loading study.
 - Serves as check on contribution from different land uses.
 - May help identify locations with high levels of nitrate in aquifer and associated N sources.
 - May serve as check on historical land use.



Wells

- There are numerous data collection efforts in the basin.
- There are data associated with several different time limited ground-water quality studies.
- There are data collected for regulatory purposes.

Data Sources



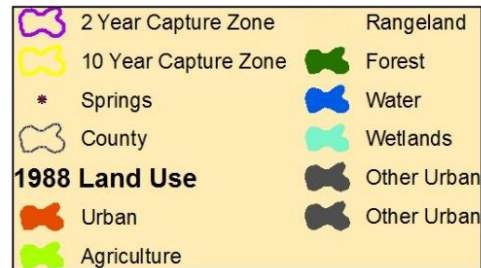
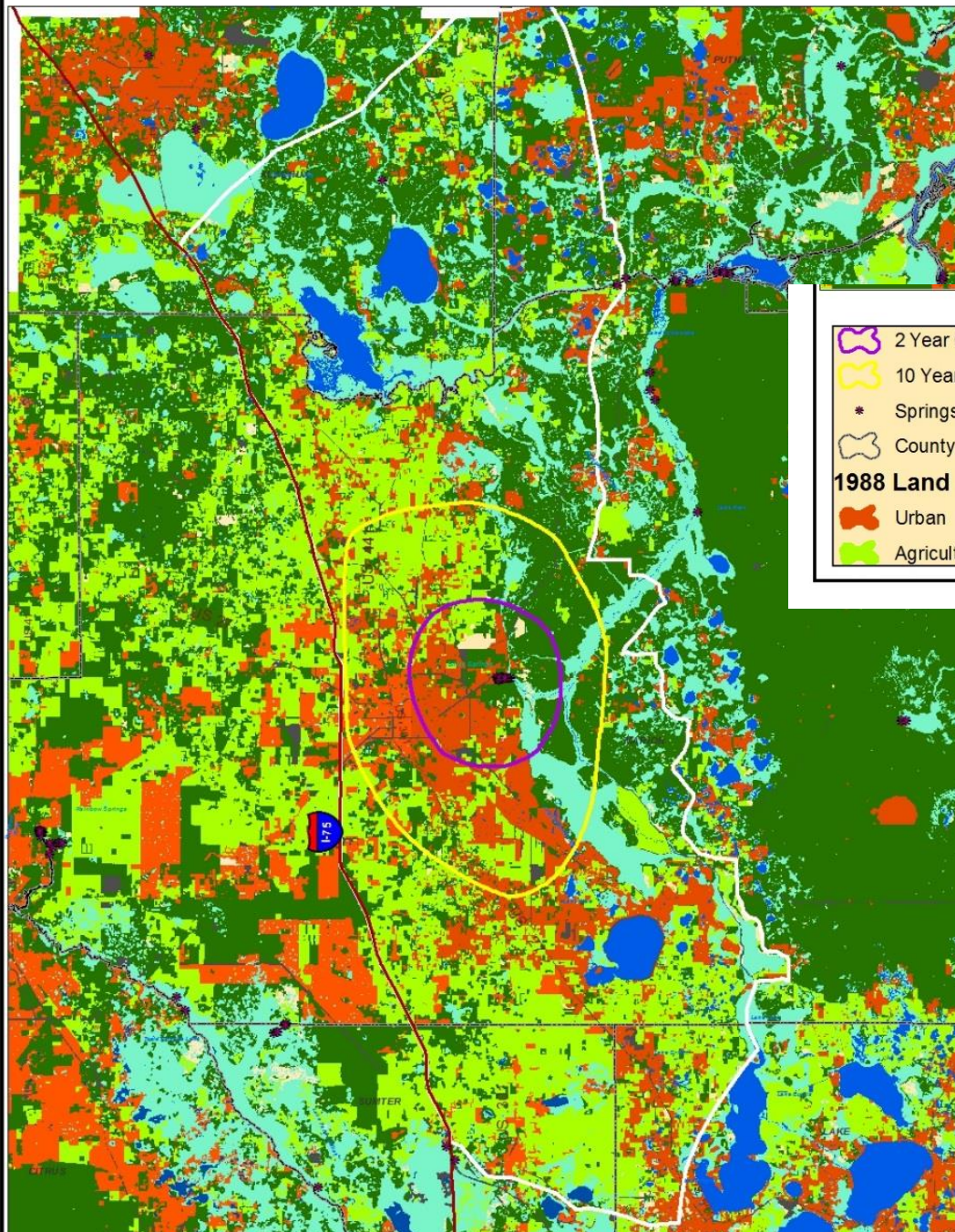
- Wastewater facility monitoring wells;
- Private well sampling by DOH for contaminants;
- SJRWMD, DEP, and USGS monitoring networks; and
- Private drinking water well testing by DOH.



Data Evaluation

- Compare median concentrations by decade.
- Do a basinwide before and after comparison, establish before BMAP period and compare to future BMAP monitoring network.
- Trends in a subset of wells at specific locations, possibly by land use, over time.
- Consideration given to well depth, very shallow and very deep public water supply wells will not be used.

1988 Land Use in the Silver Springs BMAP Area



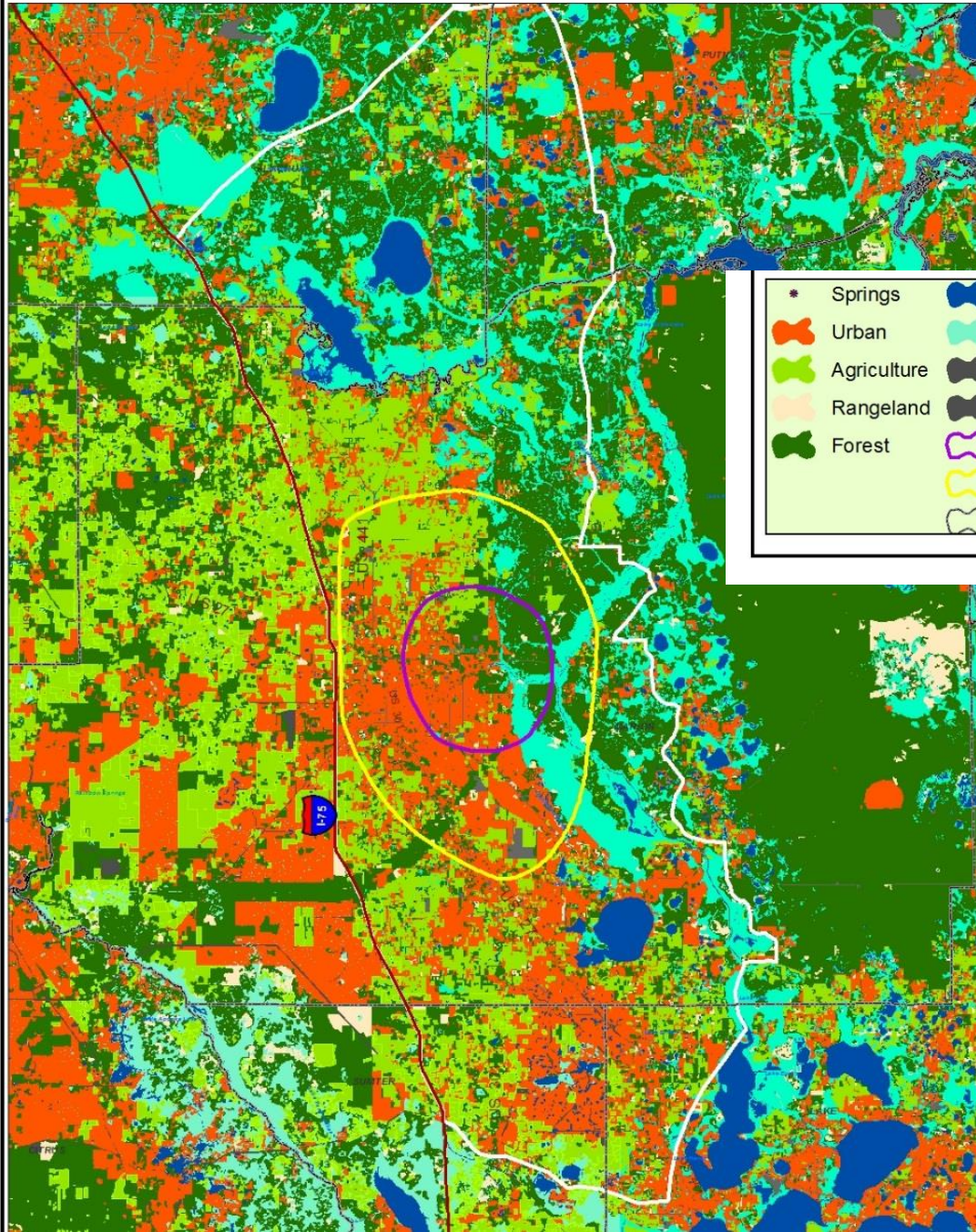
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Prepared March 4, 2014, Division of Environmental Assessment and Restoration, Water Quality Restoration Program. For additional information contact Mary Paulic at mary.paulic@dep.state.fl.us or (850) 245-8560.

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2009 Land Use in the Silver Springs BMAP Area



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Percent Land Use

10 year time of travel

1988 Land Use

Urban	34%
Agriculture	25.50%
Forest	30%

2009 Land Use *

Urban	34
Agriculture	20.40%
Forest	30%

*Range and wetland increased

BMAP Area

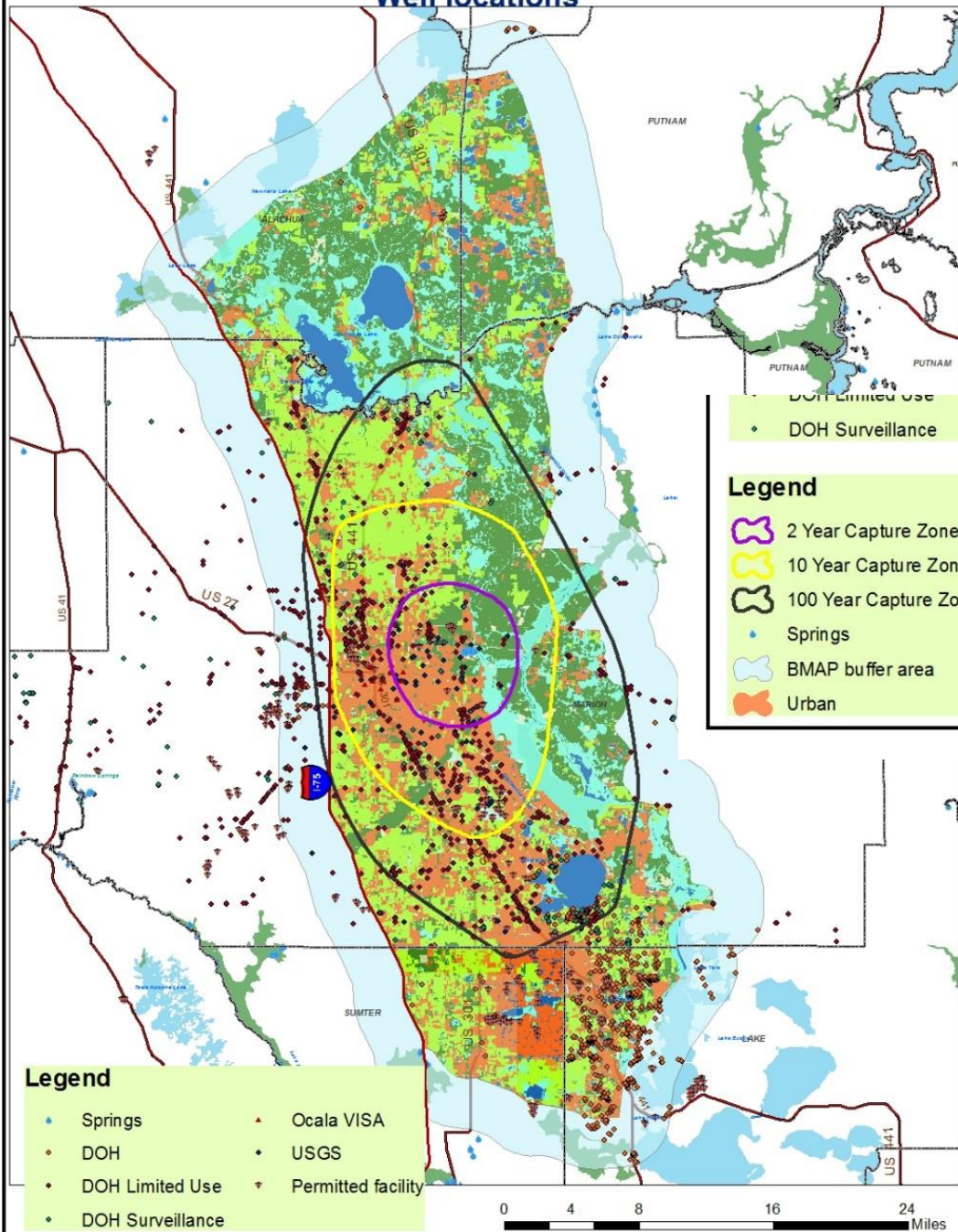
1988 Land Use

Urban	19%
Agriculture	30%
Forest	29.60%

2009 Land Use

Urban	23.5
Agriculture	21
Forest	30

Well locations



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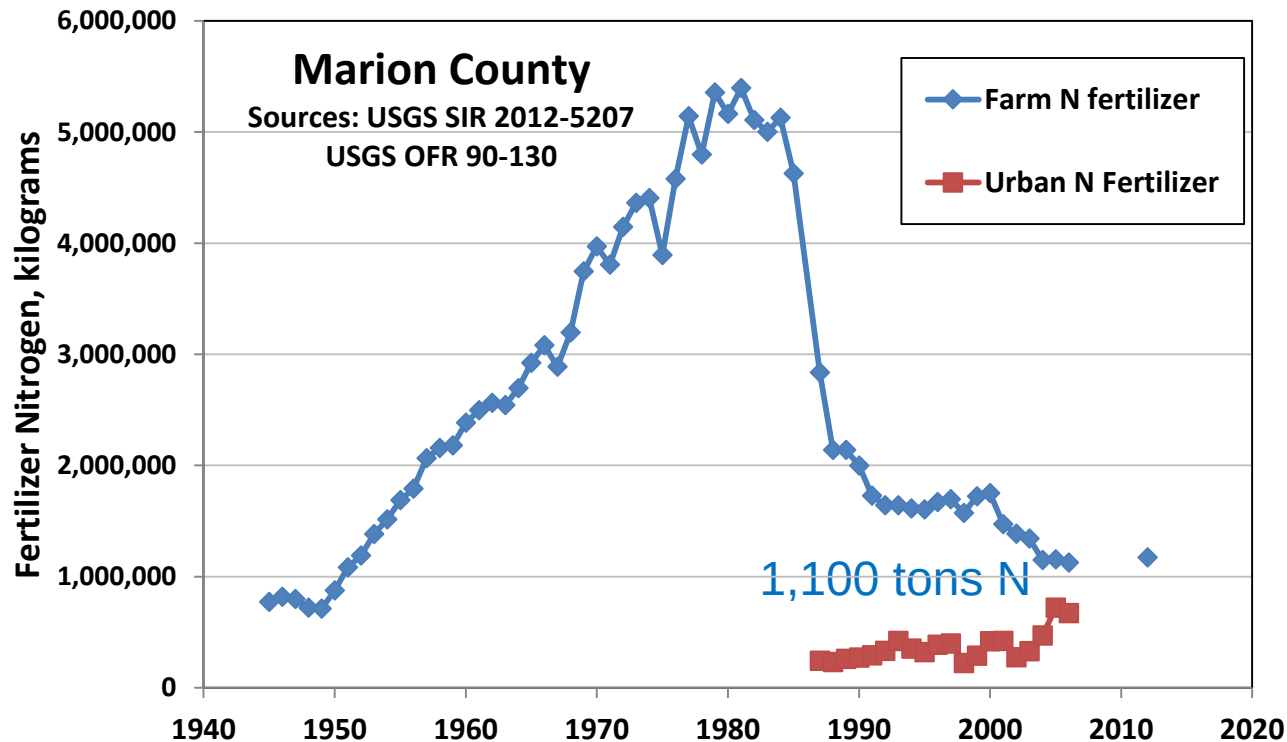
Legend

- | | |
|------------------|--------------------|
| Springs | Ocala VISA |
| DOH | USGS |
| DOH Limited Use | Permitted facility |
| DOH Surveillance | |





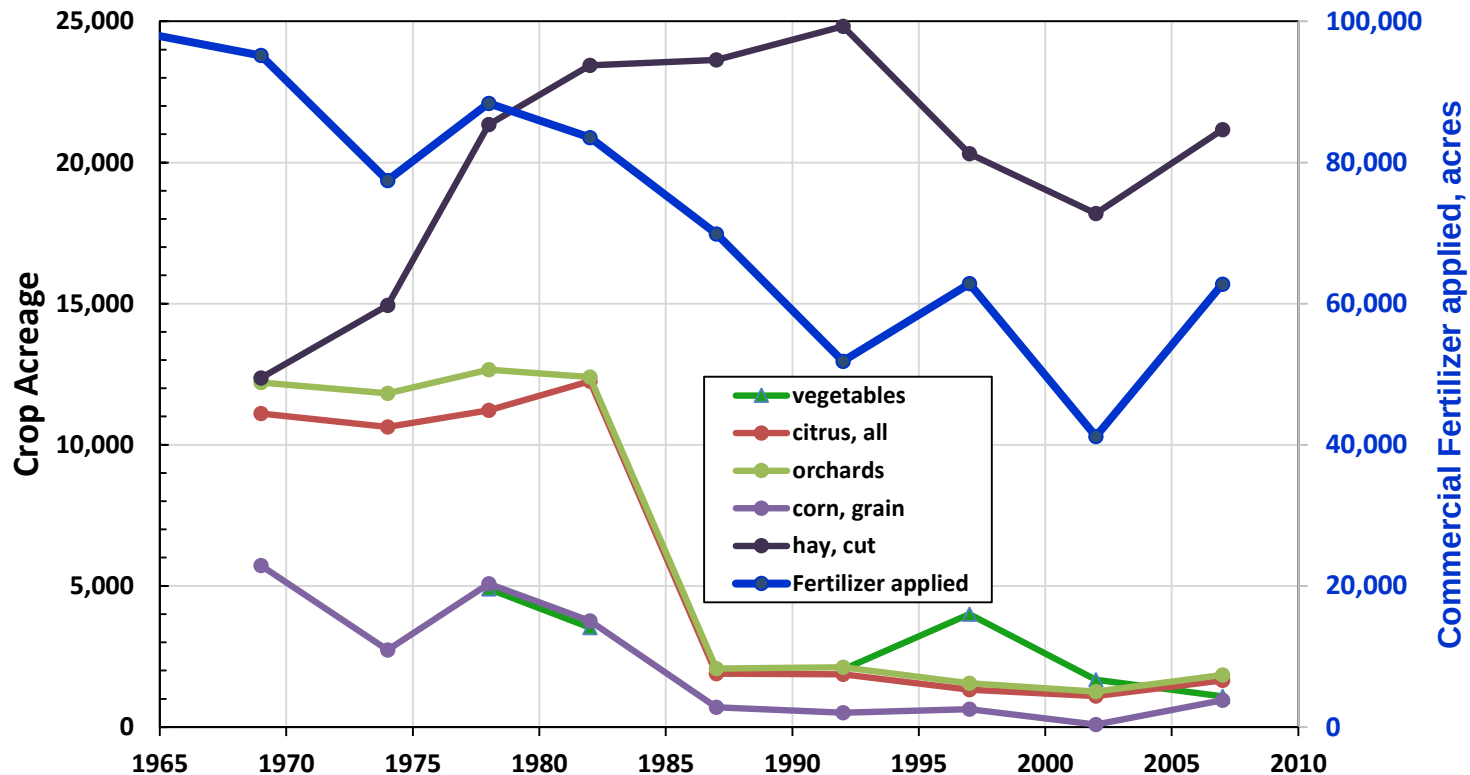
Legacy Nitrogen: Marion County Fertilizer Sales



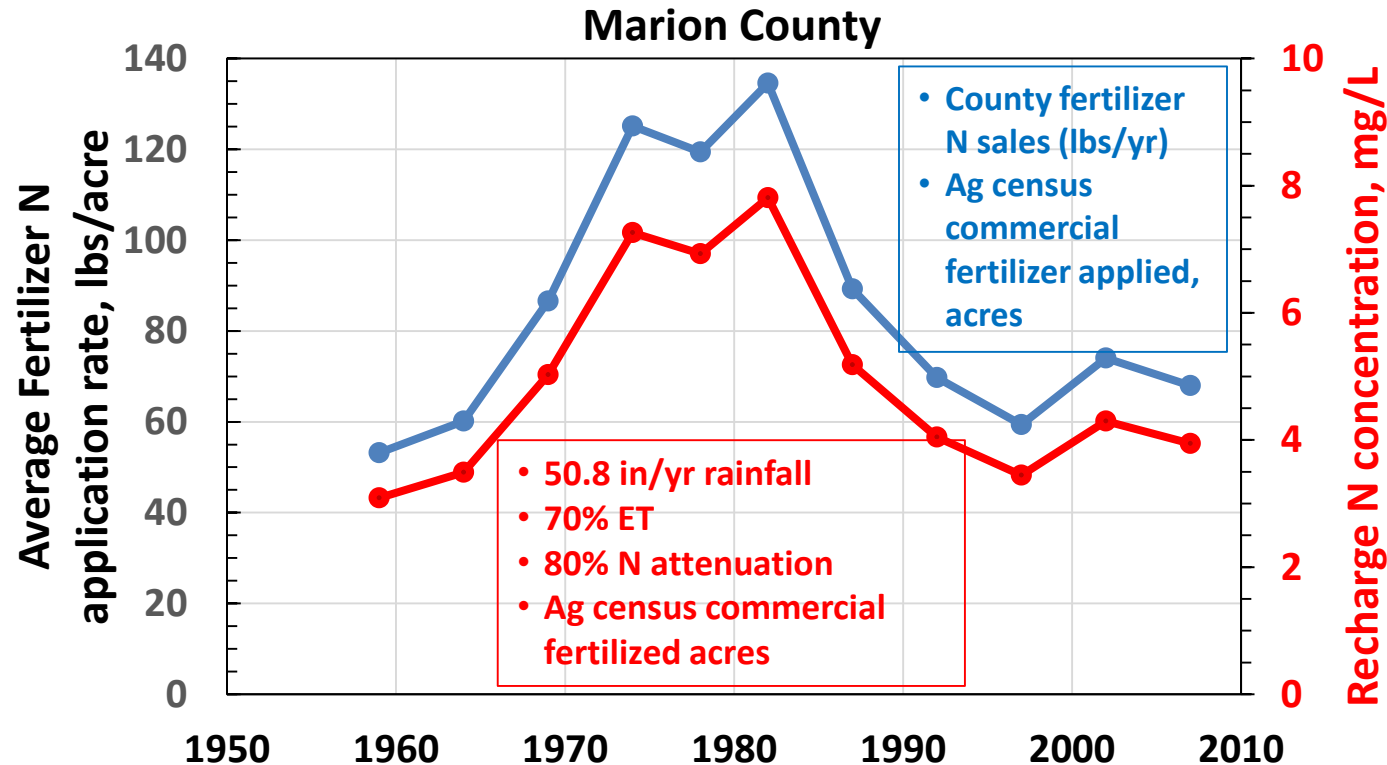
**** Legacy nitrate from fertilizer applications several decades ago could still be in the subsurface and moving toward springs.**

Historical Crop Acreage and Commercial Fertilizer Applications

Marion County; USDA Census Data

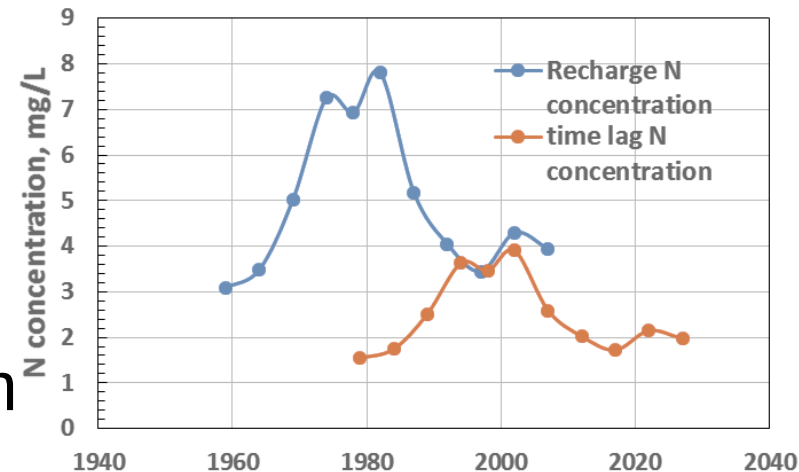
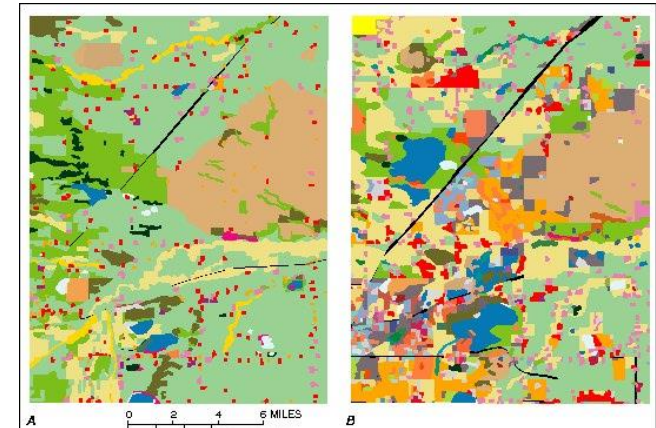


Potential Legacy Nitrogen in Ground Water Recharge From Commercial Fertilizer Applications



Next Steps

- Compare historical land use information from past GIS datasets
- Analyze nitrate data from multiple agencies to look at changes and trends in nitrate concentrations in ground water over time
- Estimate the time required for legacy nitrate to discharge from ground-water system





Farm Tour

- Try again to visit Adena South when weather conditions improve, ideally later this month.
- Organize another tour for April to view equine, cow/calf, pasture management, and maybe row crop BMPs.



Small Farms BMPs

- DEP has developed an equine BMP manual that is appropriated for “hobby farms”
- Talking with DACS about potential implementation mechanisms
- Two teleconferences held since December
- This would not be a “Notice of Intent” type sign up program – not regulatory
- Two areas of concern:
 - Pasture (land) management
 - Manure management



Future Meetings

- Schedule meetings for the rest of the year.
 - April meeting dates
 - Presenting the updated nitrogen inventory
 - Focus areas
 - Agriculture tour in the afternoon.
 - Public education and outreach
 - Monitoring network
- May, June, and July tentative meeting dates to work on identifying focus areas and projects.
- Tentative date for draft BMAP is September.



BMAP Template

- ACKNOWLEDGMENTS
- LIST OF ACRONYMS AND ABBREVIATIONS
- SUMMARY
- CHAPTER 1 : CONTEXT, PURPOSE, AND SCOPE OF THE PLAN
 - 1.1 Goals and Objectives
 - 1.2 Regional Setting of the Silver Springs Basin
 - 1.3 BMAP Development Process
 - 1.4 TMDLs
 - 1.5 Water Quality Summary
- CHAPTER 2 : FOCUS AREAS and FUTURE GROWTH
 - 2.1 BMAP Assumptions and Considerations
 - 2.2 Role of Focus Areas



BMAP Template

- CHAPTER 3 : REGULATORY LINKS AND OVERALL MANAGEMENT STRATEGIES
- 3.1 Regulatory Links to BMAP Enforcement
- 3.2 Focus Area Loading and Recharge Rates
- 3.3 Overview of Management Strategies
- 3.3 Agricultural BMP Implementation
 - 3.3.1 Agricultural BMPs
 - 3.3.2 BMP Enrollment
 - 3.3.3 FDACS OAWP Role in BMP Implementation and Follow-Up
 - 3.3.4 Florida Forest Service Role in BMP Implementation and Monitoring



BMAP Template

- CHAPTER 4: ASSESSING PROGRESS AND MAKING CHANGES
 - 4.1 Monitoring Objectives
 - 4.1.1 Water Quality Indicators
 - 4.1.2 Monitoring Network
 - 4.1.4 Quality Assurance/Quality Control (QA/QC) Mechanisms
 - 4.1.5 Data Management Mechanisms for Data Storage and Retrieval
 - 4.1.6 Tracking and Follow-up Actions
 - 4.2 Commitment to Plan Implementation
- APPENDIX A: REFERENCES

Questions?





Website and FTP Addresses

- <http://www.dep.state.fl.us/water/watersheds/bmap.htm> - website for meeting announcements.
- http://www.dep.state.fl.us/water/tmdl/final_tmdl.htm - website for TMDL documents, under Ocklawaha Basin.
- http://publicfiles.dep.state.fl.us/DEAR/BMAP/Silver_springs/ - FTP site for meeting notes and presentations.