Florida Department of Environmental Protection

Orange Creek Basin

BMAP Work Plan and Schedule

March 31, 2015
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General Meeting Structure

- Basin Working Group (BMAP) meetings.
- Technical discussions meetings.
  - More focused discussion.
  - Help gather and sort out data.

Revised BMAP is scheduled to be complete by March 2016.

Schedule Overview

April to May 2015 Goals:

- Technical Discussions:
  - Nutrient sources.
  - Problems that may hinder implementation of total maximum daily load (TMDL).
  - Regional treatment approaches or new technologies.
  - Credits for existing projects.
  - Allocation strategies.
  - Stakeholder engagement strategies.
- June BMAP meeting topics:
  - Stakeholder engagement.
  - Allocation of loading reductions to lakes.
  - BMAP revision process to include new projects and Lochloosa Lake TMDL.

Schedule, continued

June to July 2015 Goals:

- Annual report compilation.
- Technical discussions:
  - Lake nutrient budgets
  - New project information for each lake.
  - Collect project information.
  - Project crediting procedures
  - Potential loading reduction strategies including estimated loading reductions.
  - Refining allocation and stakeholder engagement strategies.

Schedule, continued

August to September 2015 goals:

- Annual BMAP Meeting in August.
- Technical discussions:
  - Allocation and stakeholder engagement processes.
  - Lake management strategies and watershed loading reduction strategies.
  - Crediting approached for projects lacking a method.
- Meet with individual stakeholders to discuss projects.

Schedule, continued

October to November 2015 goals:

- BMAP meeting in October.
- Technical discussions:
  - Outline of revised BMAP.
  - Additional investigative studies needed to direct restoration activities.
  - Evaluation of monitoring plan.
- Meetings with individual stakeholders, as needed, to refine projects.

Schedule, continued

December 2015 to January 2016 Goals:

- BMAP meeting in December 2015.
- Technical discussions:
  - Finalize list of projects.
  - Monitoring plan revisions as needed.
  - Elements of FWC Orange Lake Management Plan for inclusion or reference in BMAP.
- Department drafts the BMAP document.
- BMAP meeting in January 2016.

Schedule, continued

- **February 2016 BMAP meeting.**
  - Present draft BMAP for review.
  - Review Steps for adoption of BMAP.
  - Preparations for adoption of BMAP.
    - Briefings to local governments and others.
- **March 2016 BMAP meeting.**
  - Present final monitoring plan.
  - Final project and investigative studies incorporated into BMAP (includes Florida Fish and Wildlife Conservation Commission [FFWCC] Orange Lake management plan).
  - Revise BMAP based on stakeholder comment.

Schedule, continued

- Public meeting to be held in March 2016.
- April to May 2016.
  - Department prepares BMAP for adoption and obtains approvals.

Meeting Logistics

- What day to hold meeting?
  - Traditionally met first Thursday of a month.
- What time of day?
  - Morning or afternoon.

BMAP Meeting Dates

- March 31, 2015
- June 4, 2015.
- August 6, 2015 (annual meeting).
- October 1, 2015.
- December 3, 2015.
- January 7, 2016.*
- February 2016
- March 2016

** May need to change meeting date because of holidays.*

Florida Department of Environmental Protection

Water Quality Restoration Program

Orange Creek Basin Lake Nutrient Issues and Sources March 31, 2015

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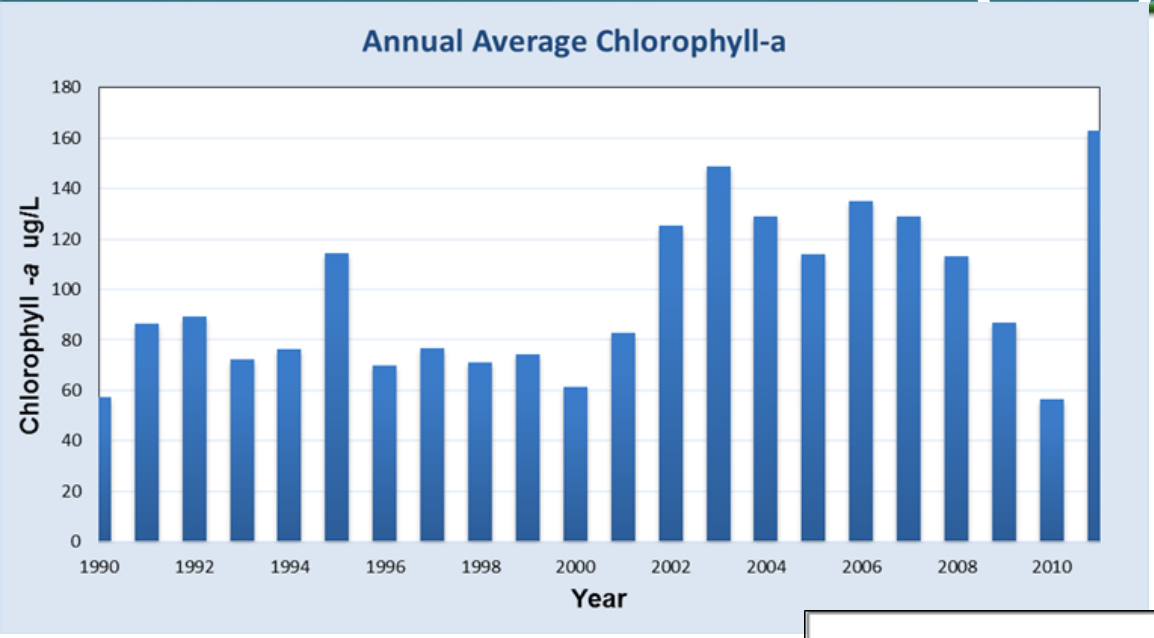
Lake Wauberg Existing Loading

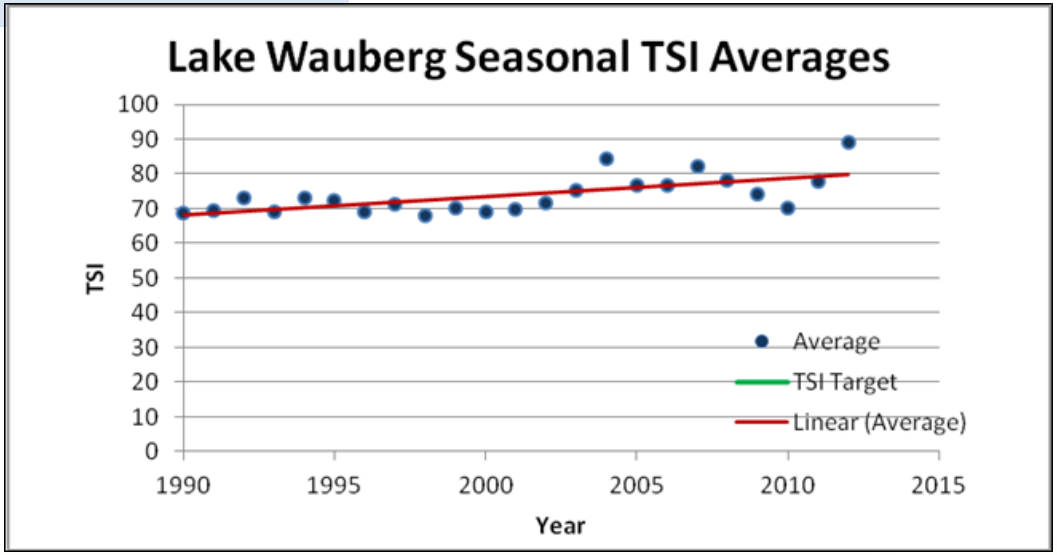
Parameter	TMDL Allowable Loading lbs/year	Loading Reduction lbs/year	Percent Reduction
Total Phosphorus	373.7	374.3	50%

Parameter	TMDL Allowable Loading lbs/year	Loading Reduction lbs/year	Percent Reduction
Total Nitrogen	2,062.4	2,001.6	51%

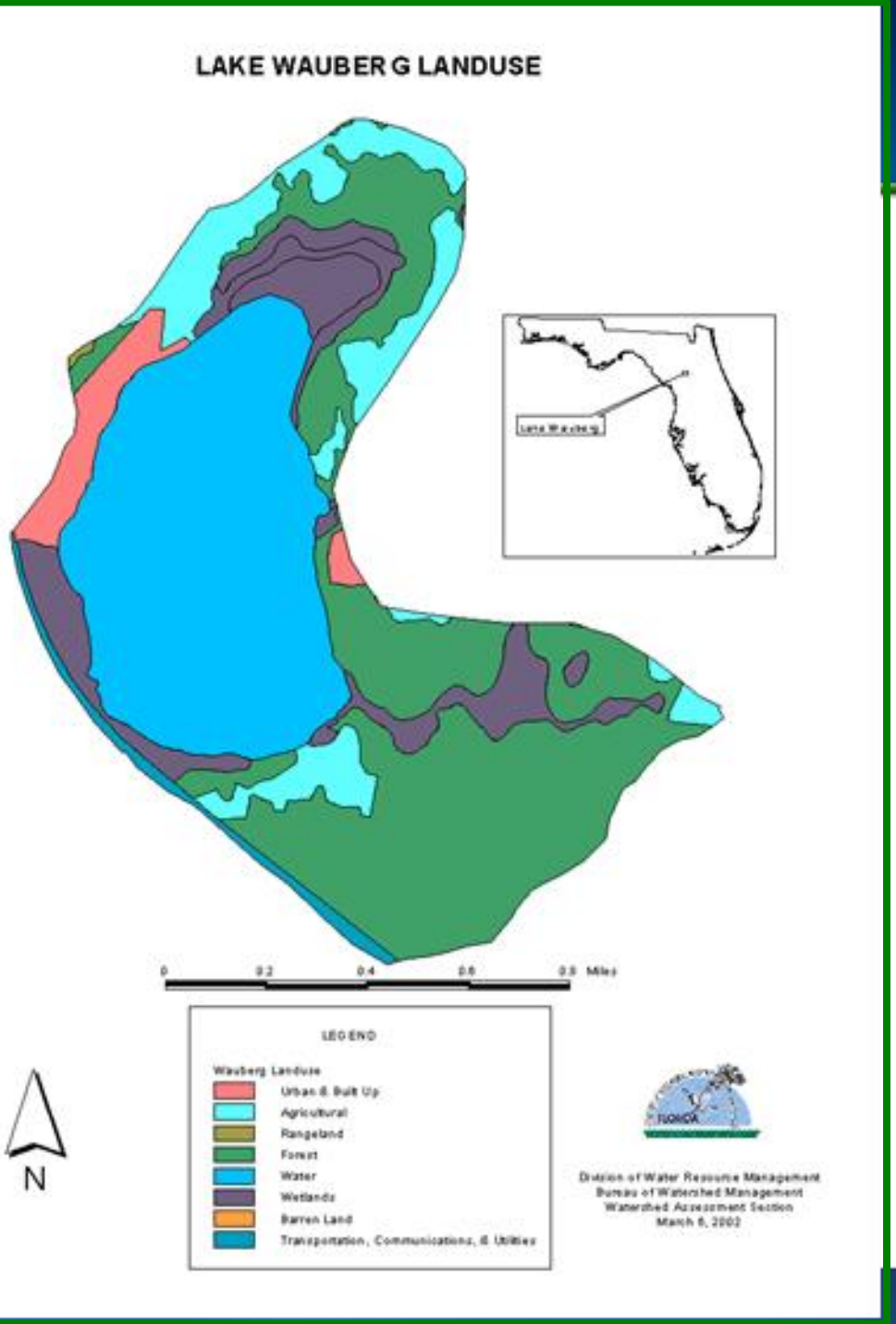
- On-site sewage and disposal systems (OSTDS) loading is 32% of existing loading for both TP and TN.

Chlorophyll-a and Trophic State Index (TSI)



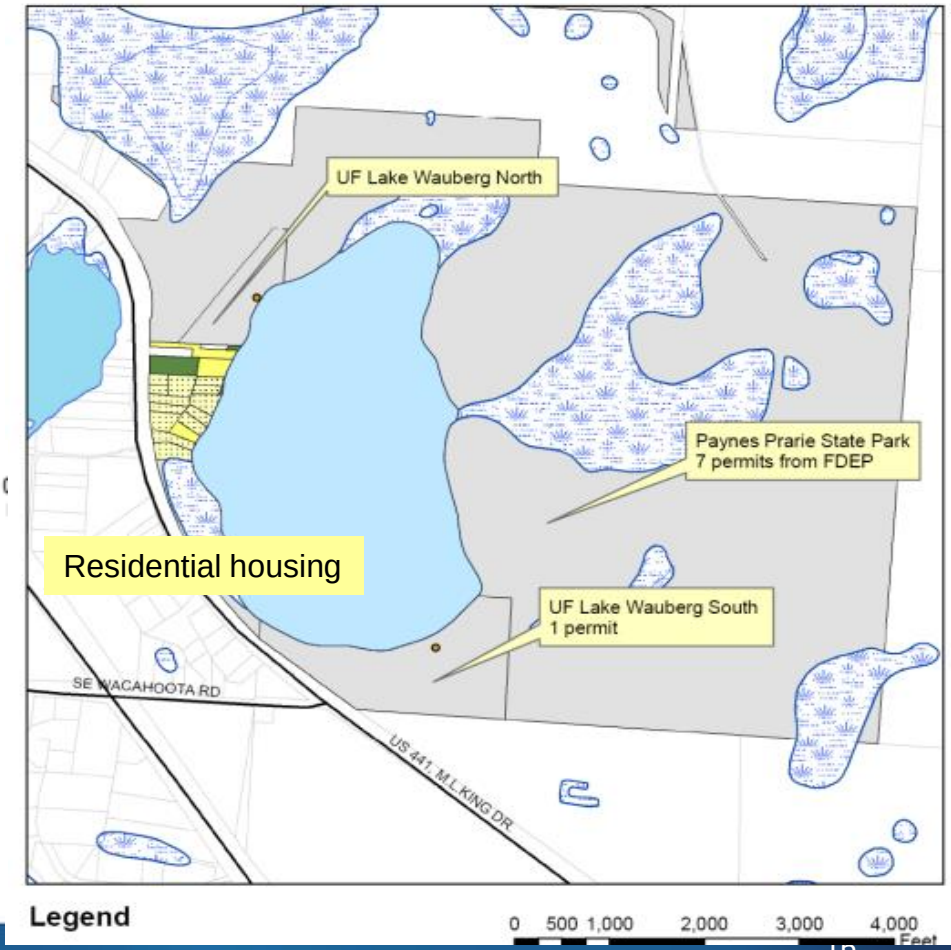


- 717 acres
  - 274 acres forest
  - 236 acres lake
  - 87 acres wetland
  - 79 acres agriculture
  - 39 acres urban



Lake Wauberg Sources of Nutrients

- Potential ArcNLET modeling.
- Check recreational area and park usage records.
- Maintenance of OSTDS.
- Major land use change not expected.



Wauberg Source Unknowns

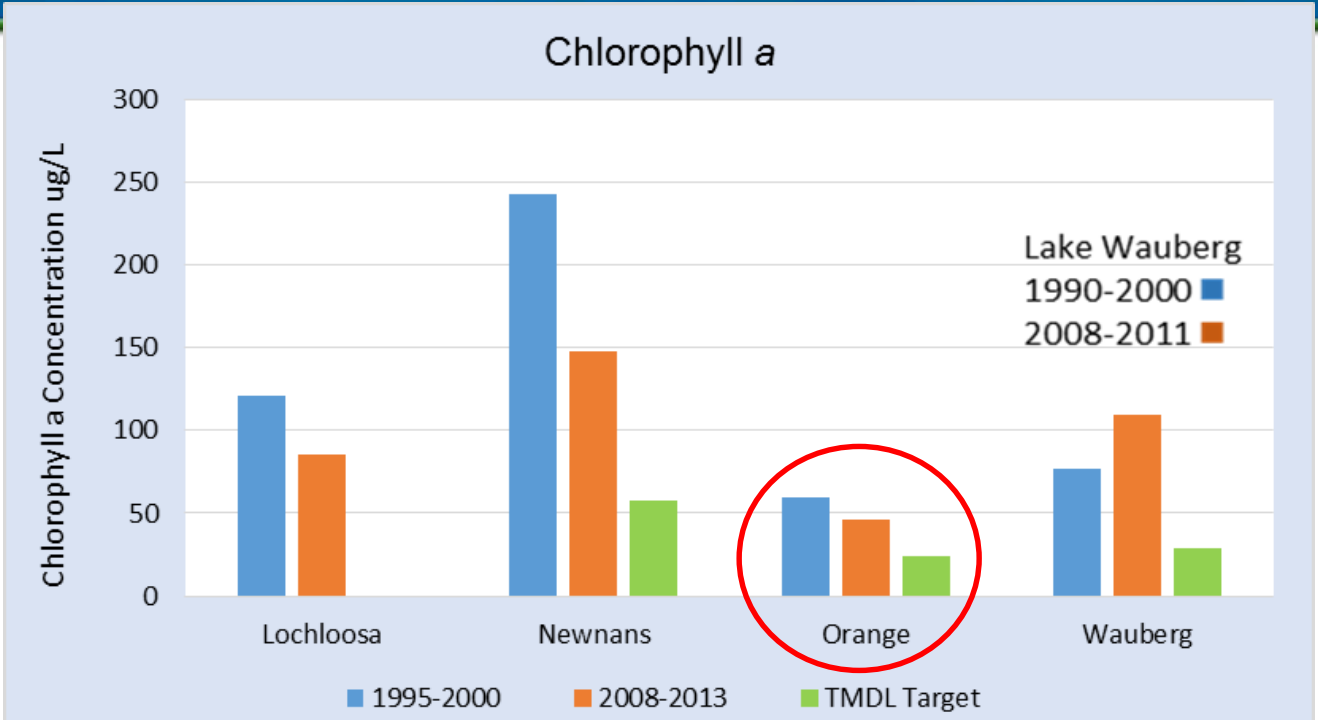
- Atmospheric deposition.
  - Large lake area relative to watershed area.
  - Checking delineation of watershed boundary.
- Natural areas.
- Hawthorn group.
- Wildlife.
- Ground water inputs.
- Phytoplankton community analysis.

Orange Lake Existing Loading

Parameter	TMDL Allowable Loading (lbs/yr)	Percent Reduction	Load Reduction (lbs/yr)
Total Phosphorus	15,262	45%	12,627

- 5,000 to 14,700 acre surface area of lake.
- Connected to Floridan aquifer.

Orange Lake Water Quality

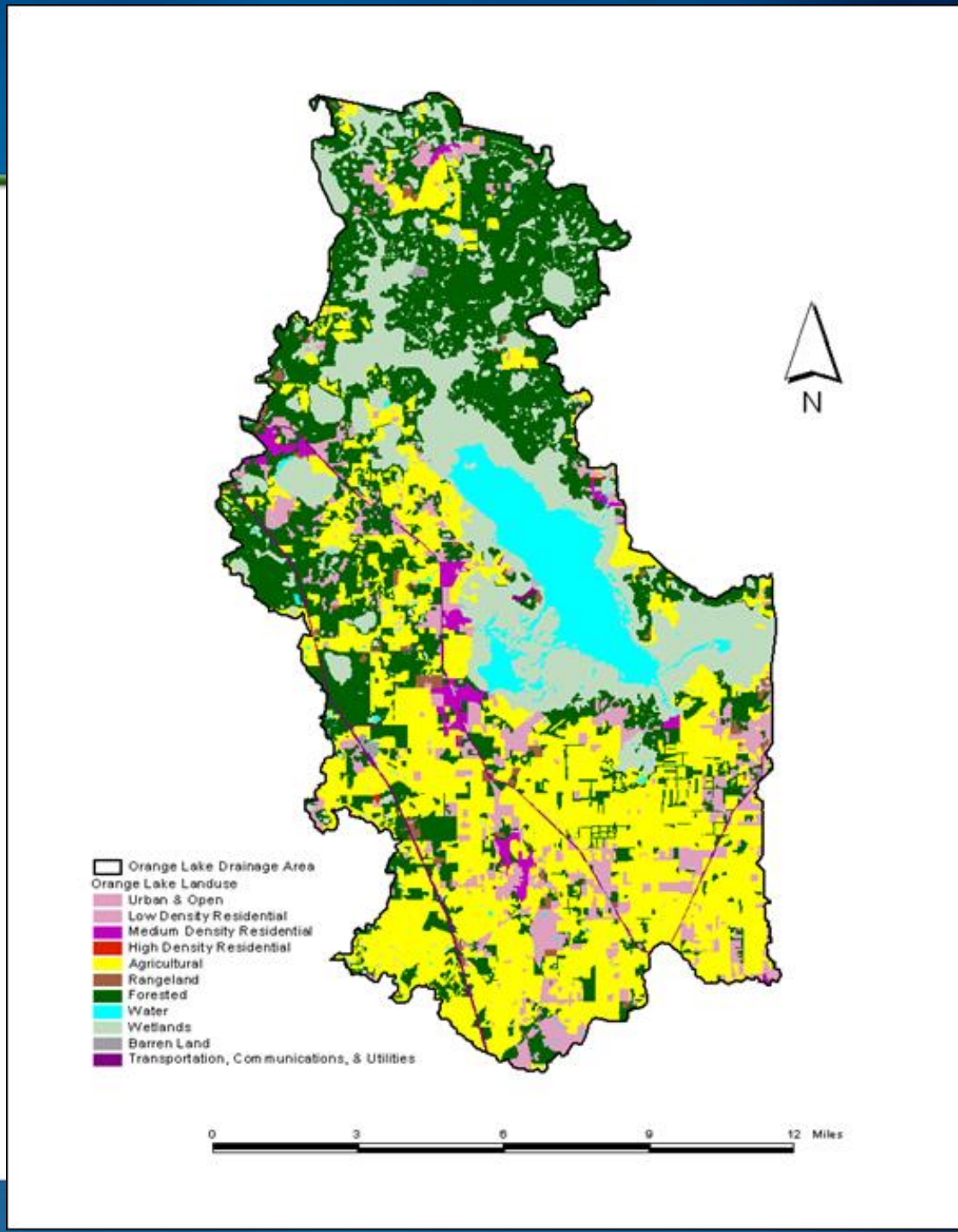


Lake	Cyanophyta (Blue-green algae)	Bacillariophyceae (Diatoms)	Chlorophyta (Green algae)	Other Taxa	Data Period
Lochloosa Lake	76%	12%	8%	4%	2003-2009
Newnans Lake	80%	8%	8%	4%	2003-2011
Orange Lake	71%	11%	11%	7%	2003-2009

Land Use

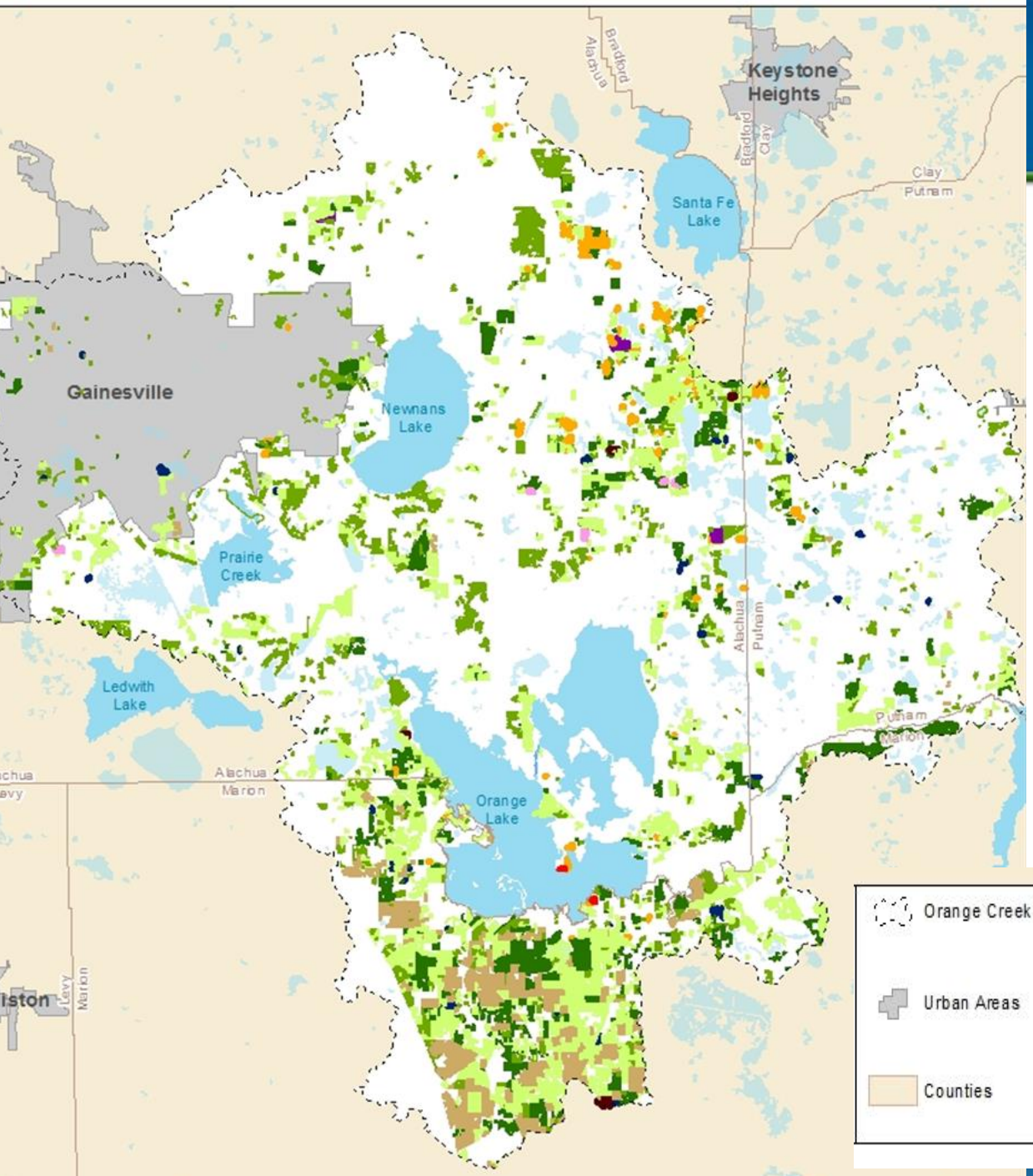
Sources

87,000 acre watershed



Orange Lake Agriculture

- **2009 data.**
- **Silviculture not included.**



Orange Lake Sources

- Camps Canal / Cross Creek – ~49% of current TP loading.
- Agriculture – ~21.5% of current TP loading.
- Stormwater / OSTDS – only ~4.7% of current TP loading of Orange Lake sub-basin.

Sources, continued

- Natural Areas – ~14.2% of current TP loading.
- Atmospheric deposition onto lake-- ~10.5% of current TP loading.
- FWCC Orange Lake Management Plan--Effects of aquatic plant management activities on nutrient loading not known.

Orange Lake Source Unknowns

- External loads of TN and TP to lake.
- Nitrogen fixation rates for Orange Lake not defined.
- Quantified load reductions from proposed lake management, such as habitat restoration.
- Quantified loading reductions from proposed upstream lake restoration actions.

Lochloosa Lake / Cross Creek

TMDL proposed for Lochloosa Lake:

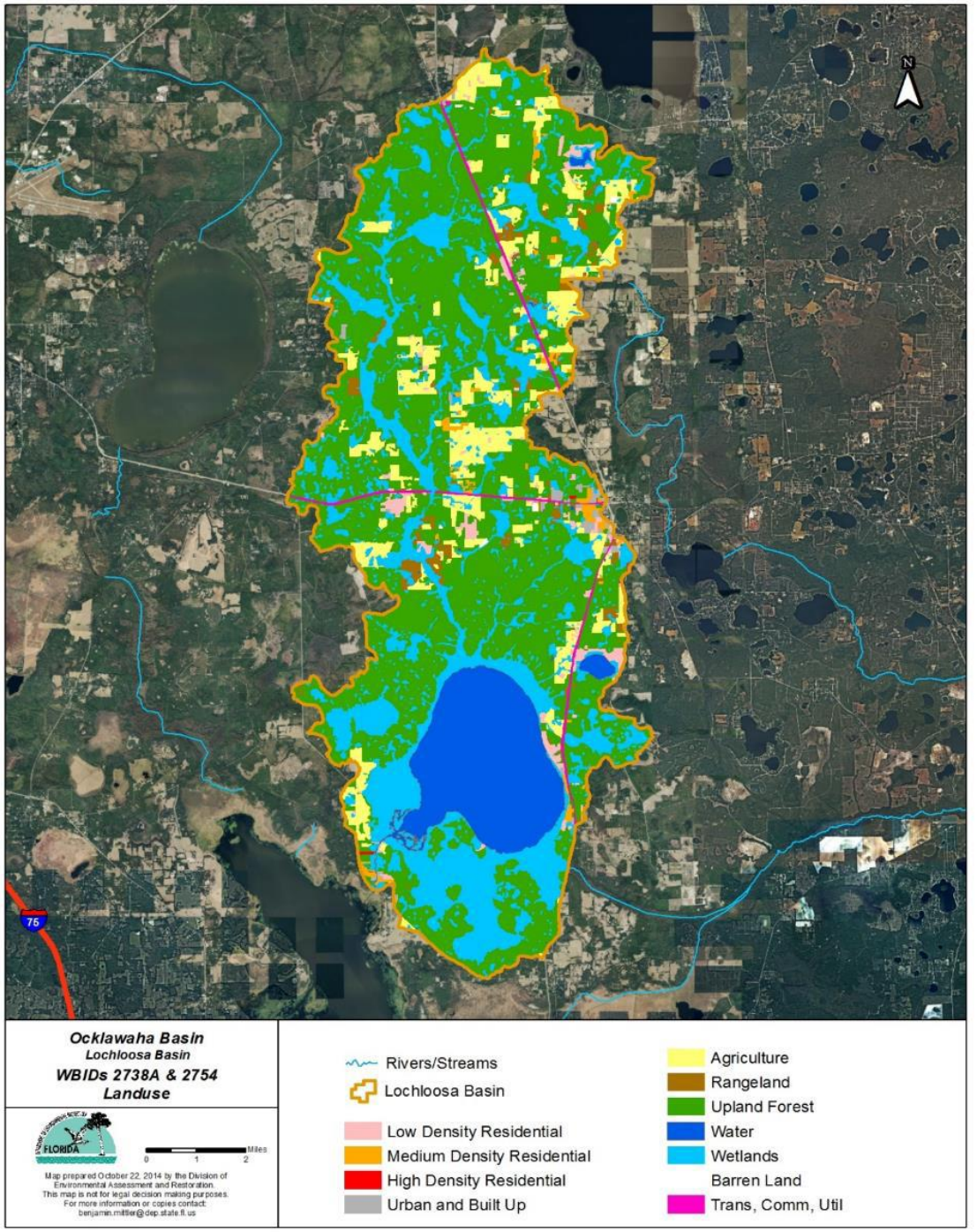
Parameter	TMDL (lbs/yr)	Percent Reduction
Total Nitrogen	212,711	47%

Parameter	TMDL (lbs/yr)	Percent Reduction
Total Phosphorus	12,330	38%

Lochloosa Lake Land Use

- 2009 Land use.
- 56,186 acre watershed.

- Percent of total acres.
  - Urban = 6%
  - Agriculture = 10%
  - Forest = 50%
  - Wetland = 23%



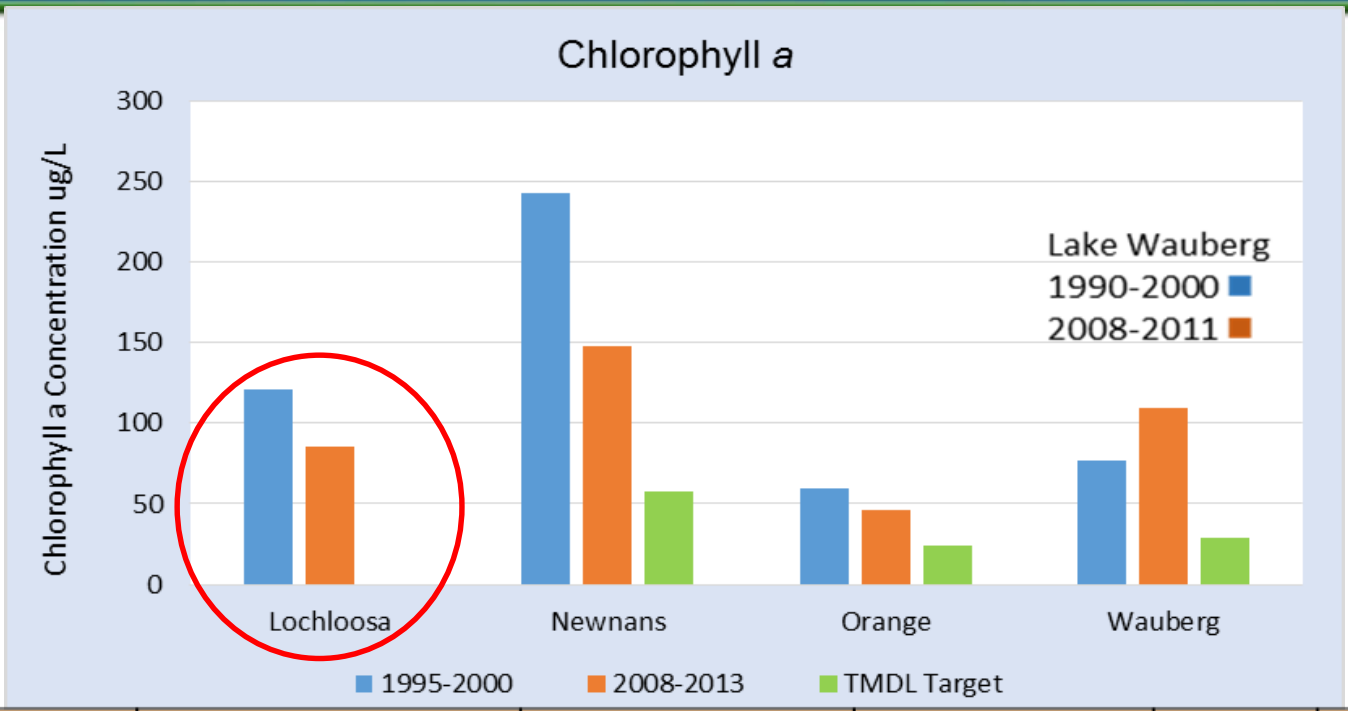
Lochloosa Lake Sources

Average TN	Existing Watershed Load (lbs/year)	Existing Internal Load (lbs/year)	Atmospheric Deposition (lbs/year)
2004-2010	104,202.6 (23.5%)	266,655 (60.1%)	72,824.6 (16.4%)

Average TP	Existing Watershed Load (lbs/year)	Existing Internal Load (lbs/year)	Atmospheric Deposition (lbs/year)
2004-2010	11,966.6 (55.3%)	5,425.5 (25.1%)	4,248.3 (19.6%)

More detailed nutrient budget in development by the Department.

Lochloosa Lake Water Quality



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Lochloosa Source Unknowns

- Macrophyte-dominated system (1995-2001), now more an open water system.
- Effects of aquatic plant treatment not fully known.

Newnans Lake

74,730 acre watershed.

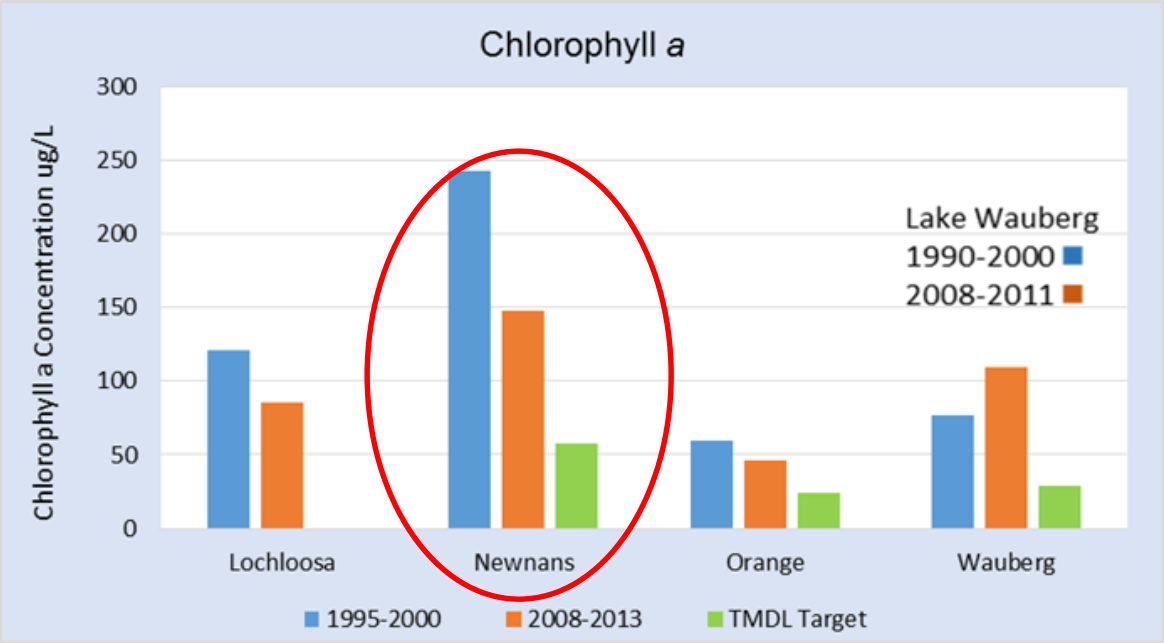
Parameter	TMDL loading (lbs/yr)	Percent Reduction	Load Reduction (lbs/yr)
Total Nitrogen	85,470	74%	230,040

Parameter	TMDL Loading (lbs/yr)	Percent Reduction	Load Reduction (lbs/yr)
Total Phosphorus	25,732	59%	14,808

Newnans Lake Sources

- Internal recycling – large part of loading.
  - 52.4% TP load and 71.8% TN load.
- Watershed loading.
  - 34.4% TP loading and 26% TN loading.
- Tributary inflows portion of watershed loading.
  - 22% TP load and 21% TN load.
  - Urban and agriculture runoff in loading.
  - More detailed nutrient budget for tributary watersheds (FDEP).
- Atmospheric deposition on lake surface.
  - 12.4% TP load and 2% TN load.

Newnans Lake Water Quality



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Newnans Source Unknowns

- In-lake recycling.
- Nitrogen fixation rates.
- Load reductions from proposed management actions, gizzard shad harvest.
- Wildlife contributions.
- Hydrologic alterations.
- Hydrologic alteration of wetlands (e.g. Gum Root Swamp system).

Newnans Lake Activities

- Identify projects to reduce legacy agriculture loads on east side of lake.
- Develop solutions based on tributary water quality studies completed in 2008 and 2010.
- Draw solutions from the City of Gainesville Little Hatchett and Lake Forest Creek Watershed Management Plans.
- Draw solutions from Alachua County proposed activities.


Any comments or questions???

Florida Department of Environmental Protection

Allocation and Stakeholders

Mary Paulic





Background

- Watershed Restoration Act requires an allocation of reductions for loadings.
- Currently the BMAP allocates to the entire watershed for each TMDL.
- For second phase of BMAP we need to determine how to make an allocation of loading reduction responsibilities to each stakeholder.

Fundamentals of Allocation

- Achieve loading reductions specified in each TMDL.
- Apportion responsibilities for loading reductions among stakeholders.
- Consideration given to TMDL factors including types of sources.
  - Level of detail can vary by TMDL.
  - Local intergovernmental coordination is important.
    - Gainesville Clean Water Partnership.

Sources

- Types of sources:
  - Point Sources.
  - Urban Stormwater.
  - Agricultural Stormwater.
    - Growers are responsible for implementing BMPs or performing water quality monitoring.
    - FDACS manages the BMP program and the enrollment process.
  - Aquaculture.
  - Silviculture.

Benefits

- Each stakeholder has defined reductions or responsibilities assigned to them.
  - Promotes participation from all parties.
- Encourages collaboration and cooperation among stakeholders.
  - Focus of efforts finding viable solutions to restore water quality.
  - Different approaches for different situations.

Crediting Factors

- A project has value for restoring water quality, and is needed, but may not have an established method to calculate load reductions.
  - Requires developing provisional crediting scheme – one more factor that needs to be taken into account.
  - Examples are habitat restoration or restoring ecological function – elements of this basin.

Promote Collaboration

- Intergovernmental organizational structure can provide a structure for an allocation approach.
  - Gainesville Clean Water Partnership is an example, provides for coordinated planning and implementation of MS4 permits.
  - Coordination was an important component of fecal coliform protocol development.

What do we do next?

Stakeholders

- Newnans Lake
  - Gainesville
  - Alachua County
  - FDOT
  - FDACS
  - FDOH
  - Rayonier
  - Plum Creek
  - Paynes Prairie Preserve
  - Gainesville Regional Airport
  - FWCC
  - Community interests
  - Florida Forestry Association

Stakeholders

- Orange Lake
  - Alachua County
  - Marion County
  - McIntosh
  - FDOT
  - FDACS
  - Micanopy
  - Community Interests
  - FDOH (Marion and Alachua counties)
  - Plum Creek
  - Rayonier
  - FWCC
  - Florida Forestry Association

Stakeholders

- Lake Wauberg
  - University of Florida
  - Paynes Prairie
  - FDOT
  - FDACS
  - FDOH
  - Alachua County
- Lochloosa Lake
  - Alachua County
  - Hawthorne
  - FDOH
  - FDOT
  - FDACS
  - Plum Creek
  - FWCC
  - Community Interests
  - Florida Forestry Association

Next Steps

- Future technical discussions planned.
  - Stakeholder engagement strategy.
  - Detailed nutrient budgets for each lake.
  - Allocation approaches.

Questions?