

# Tallapoosa Watershed Project



## An Integrated Approach of Research, Outreach and Management in the Tallapoosa River Basin, Alabama

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CSREES Southern Region Water Conference  
Lexington, Kentucky  
October 25, 2005

# **A Transferable Model of Stakeholder Partnerships for Addressing Nutrient Dynamics in Southeastern Watersheds**

Three-year, integrated project funded by the USDA,  
Cooperative State Research, Education and Extension System

## **TWP Goals...**

- **Optimal technology mix for basin-level research**
- **Comprehensive aquatic science outreach to the public**
- **Transferable model for river basin management**

## **PROJECT DIRECTORS:**

**Dr. Bill Deutsch (AU)**

**Dr. David Bayne (AU)**

**Dr. Luoheng Han (UA)**

**John Glasier (LWLM)**

**Sallye Longshore (ADE)**

## **COLLABORATORS:**

**Eric Reutebuch (AU)**

**Wendy Seesock (AU)**

**Omar Romagnoli (AU)**

**Tommy Futral (ACES)**

**Dick Bronson (LWLM)**

**Stan Roark (ACES)**

## **INSTITUTIONAL PARTNERS:**

### **ADEM**

**City of Alexander City**

**Lake Watch of Lake Martin**

**Alabama Cooperative Extension**

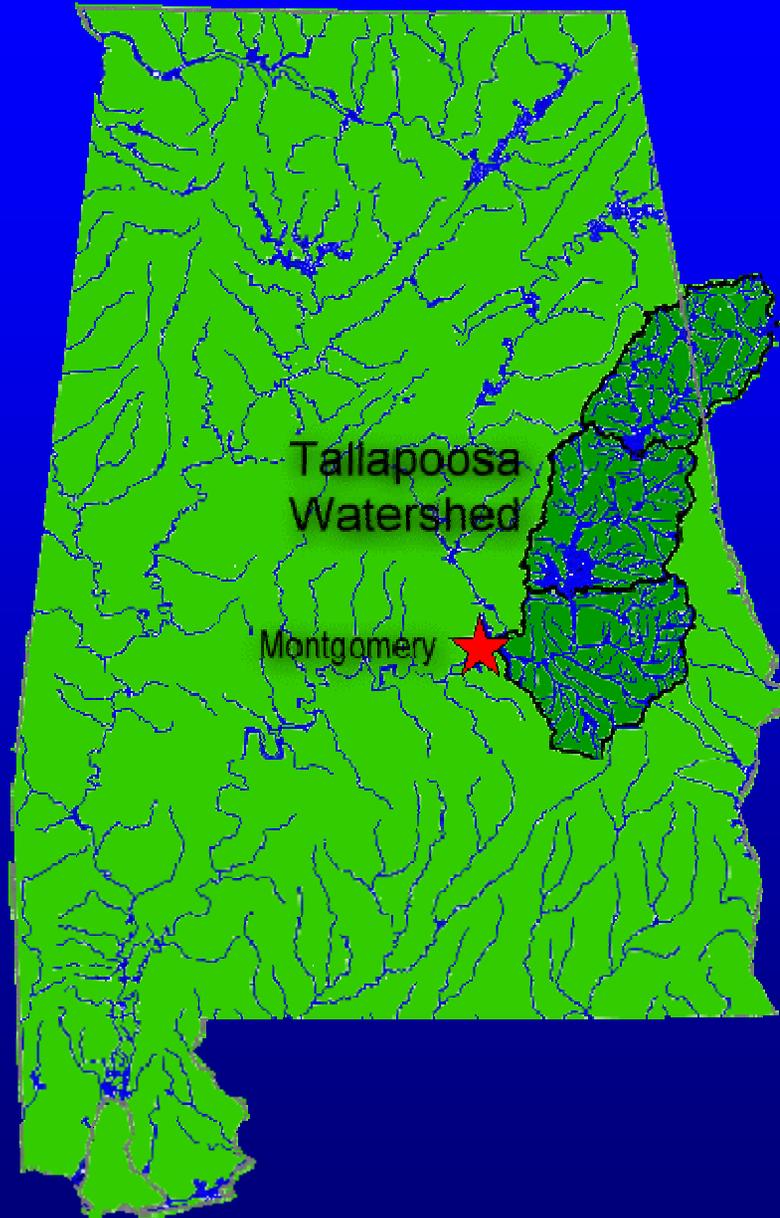
**Lake Wedowee Property Owners Association**

### **MTCWP**

**Camp ASCCA**

**Alexander City Schools**

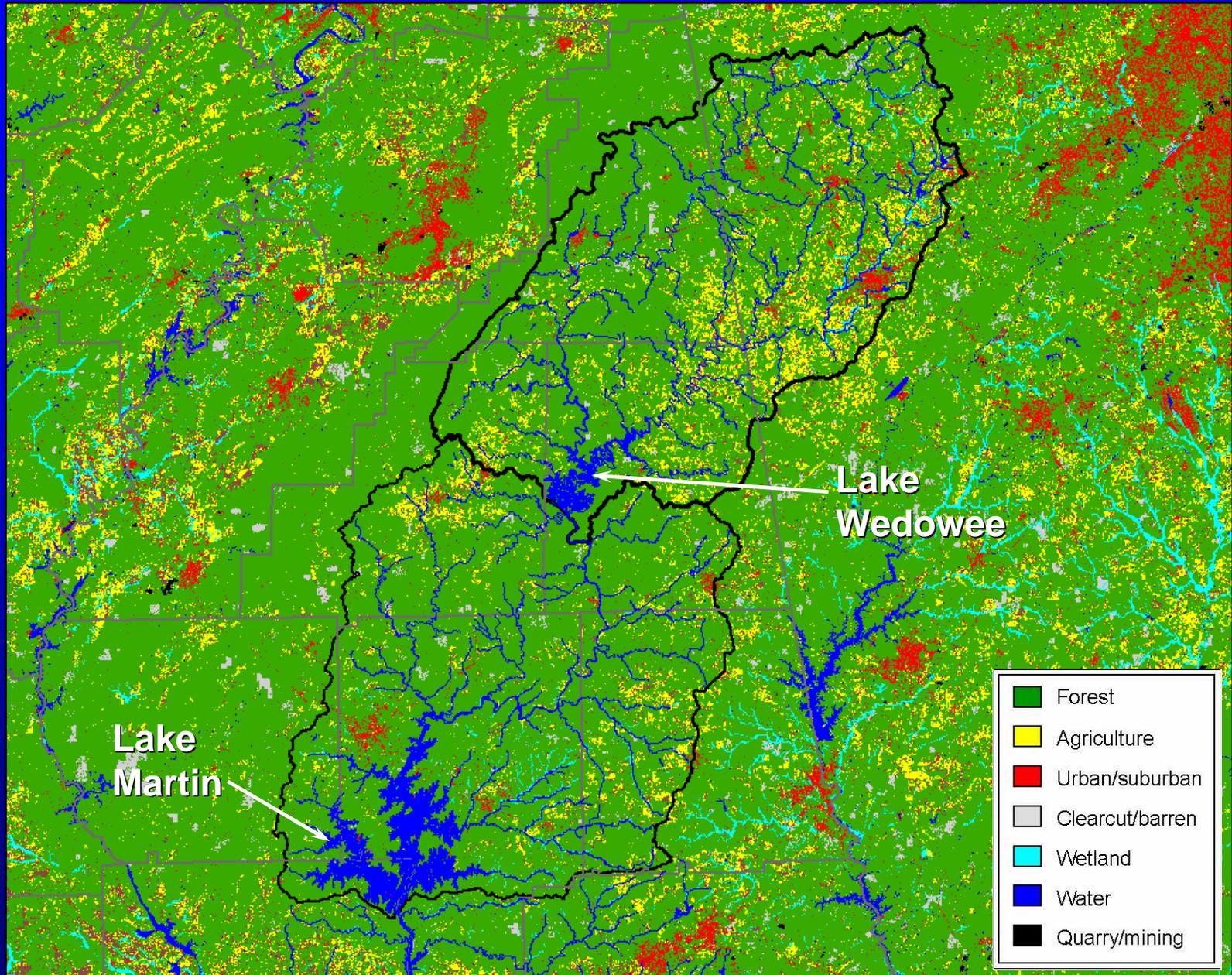
**Tallapoosa County Schools**



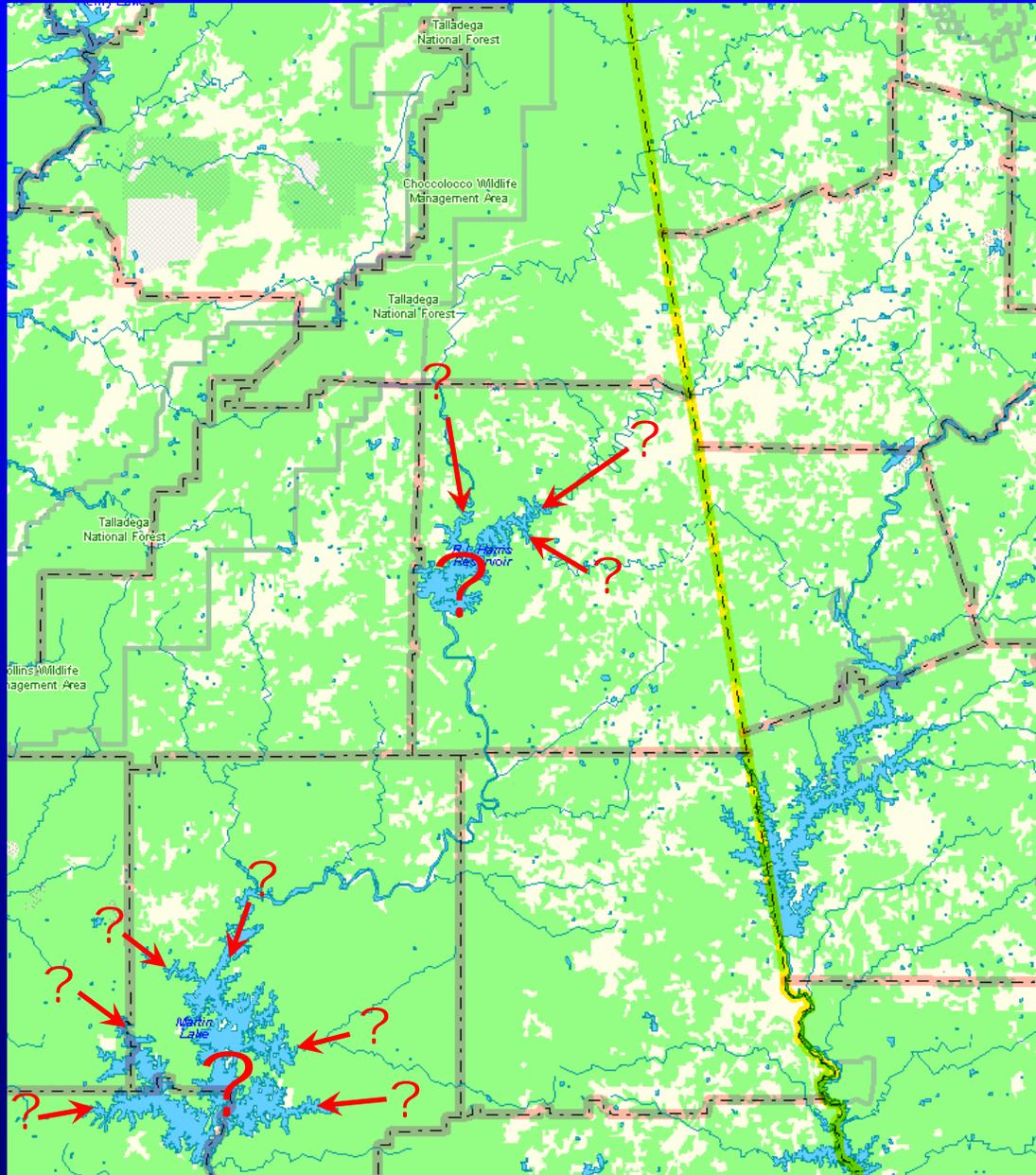
Tallapoosa  
Watershed

Montgomery

# TALLAPOOSA WATERSHED



# Land Use Effects on Lake Quality



# ***TWP LAKE SAMPLING***

***Determine Lake Trophic Status***

***NH<sub>3</sub>***

***PO<sub>4</sub>***

***NO<sub>2</sub>***

***NO<sub>3</sub>***

***K***

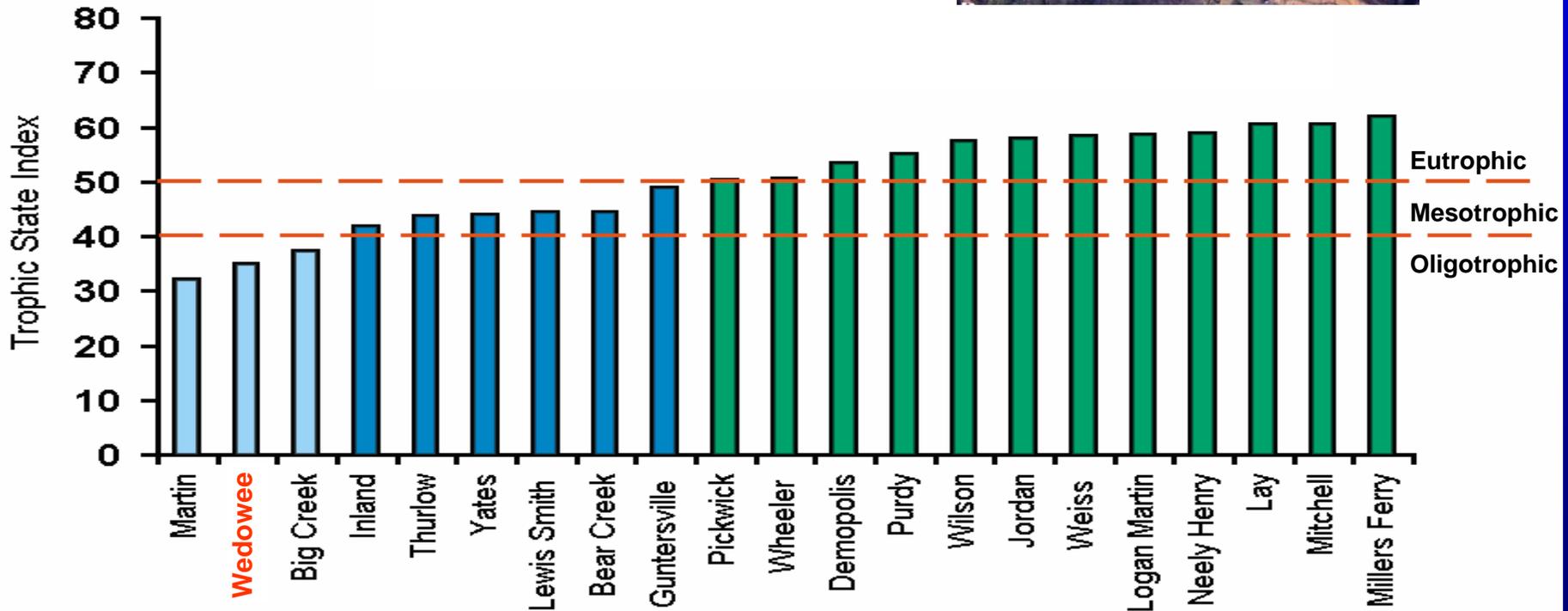
# THE TROPHIC STATE INDEX

**OLIGOTROPHIC**

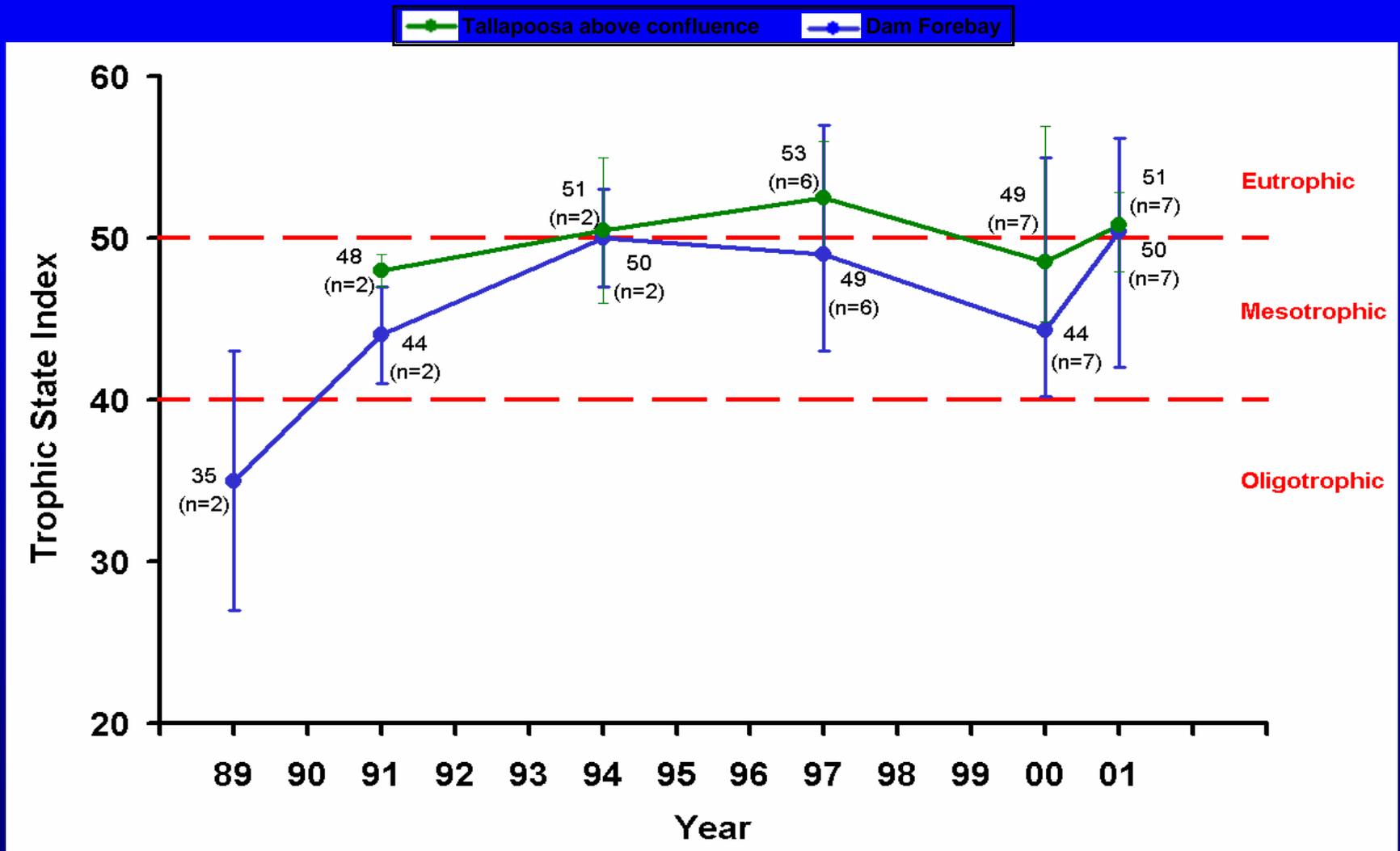


*enrichment* →

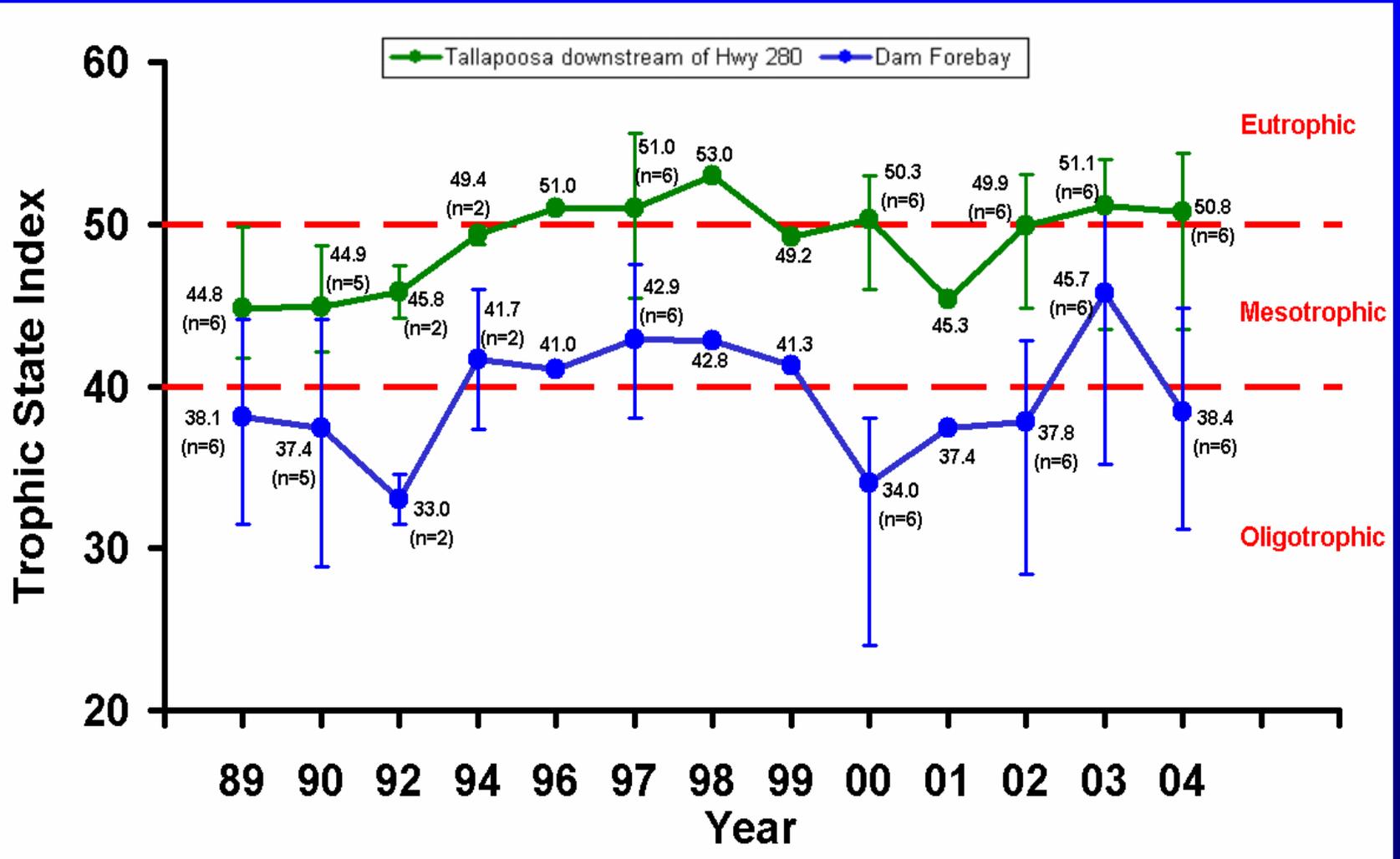
**EUTROPHIC**



# LAKE HARRIS TROPHIC STATE INDEX 1989-2001



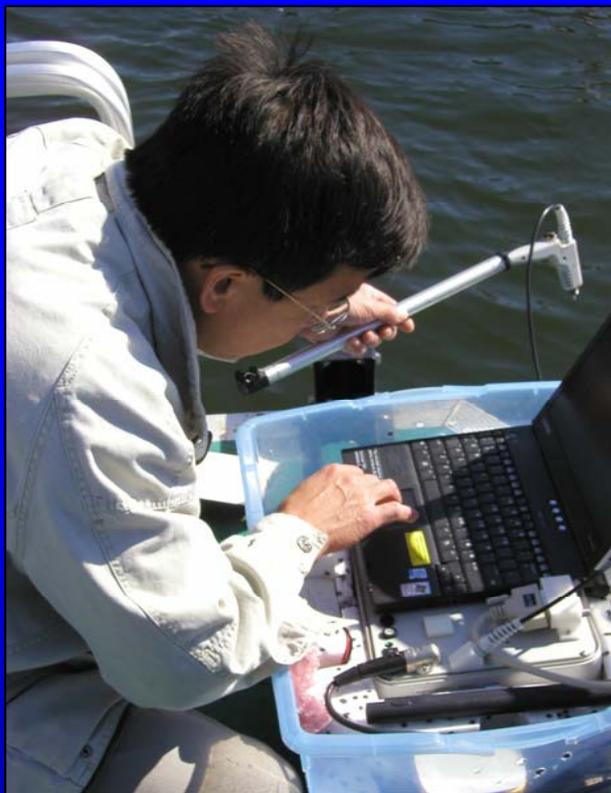
# LAKE MARTIN TROPHIC STATE INDEX 1989-2004



# ***NUTRIENT STANDARDS IN ALABAMA***

- *AFA EUTROPHICATION COMMITTEE*
- *2001 GOVERNOR'S EXECUTIVE ORDER*
- *WATER WARS*

# TWP Research



High Tech  
Alternative



Low Tech  
Alternative



Standard Methods

# ***AU STANDARD METHODS***

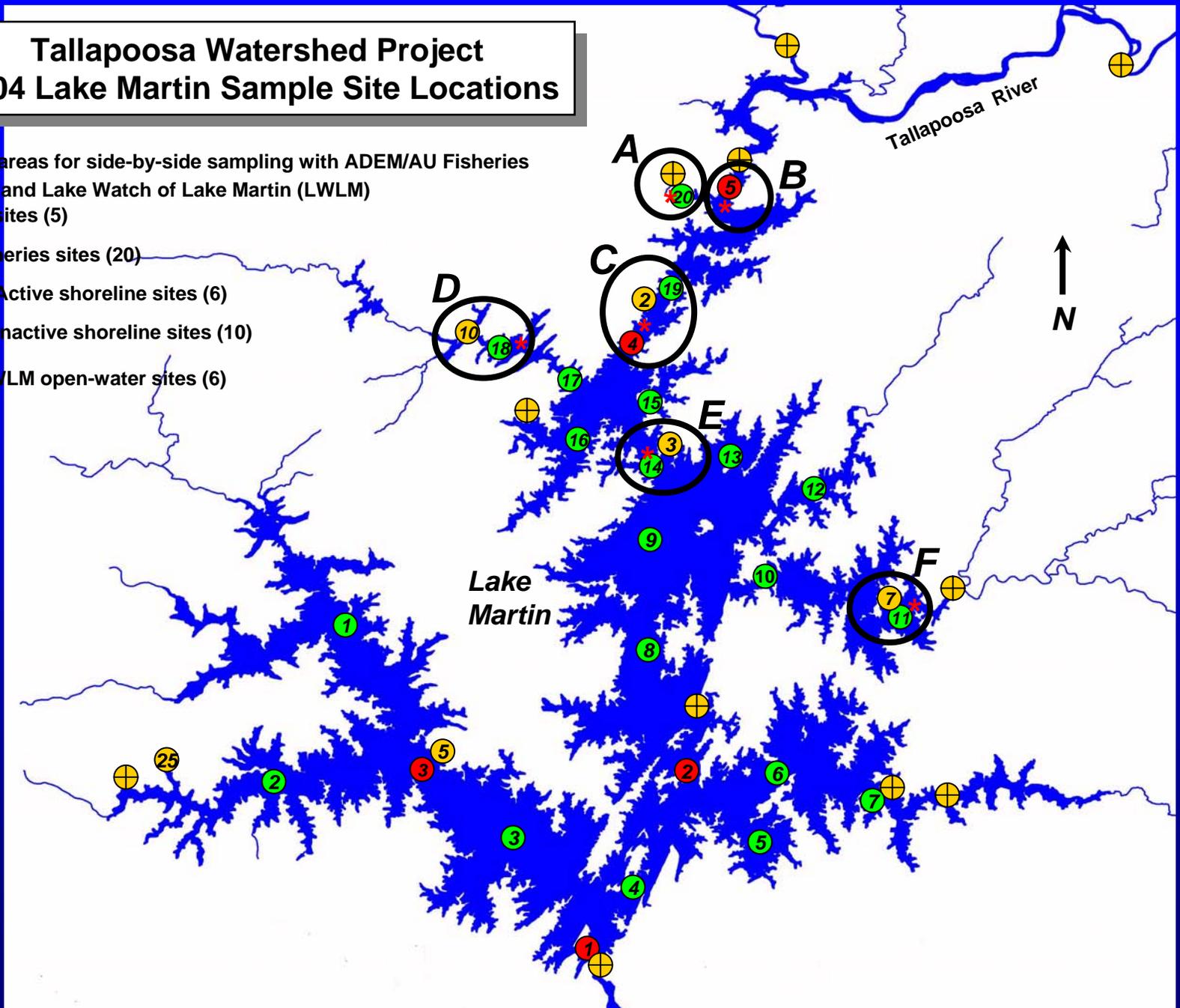
## ***SAMPLING ON LAKE MARTIN***



# Tallapoosa Watershed Project 2004 Lake Martin Sample Site Locations

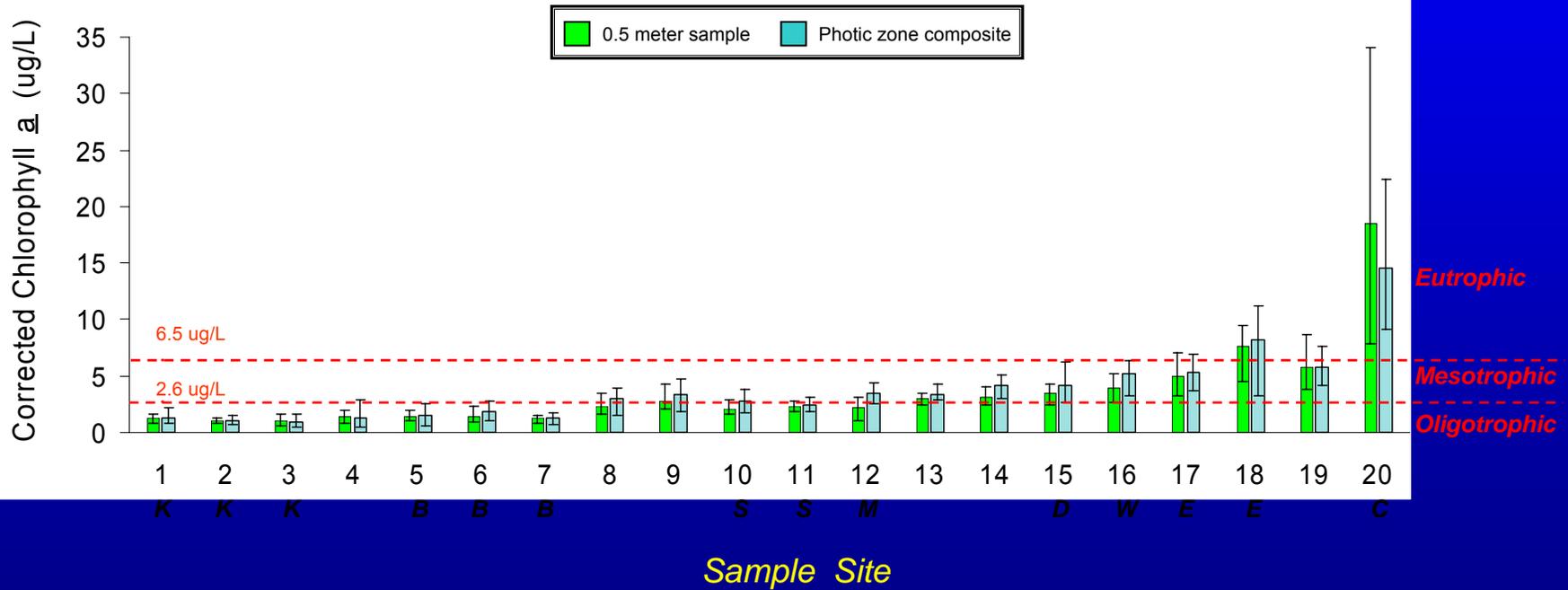
**A - F** - areas for side-by-side sampling with ADEM/AU Fisheries and Lake Watch of Lake Martin (LWLM)

- - ADEM sites (5)
- - AU Fisheries sites (20)
- - LWLM Active shoreline sites (6)
- ⊕ - LWLM inactive shoreline sites (10)
- ★ - New LWLM open-water sites (6)



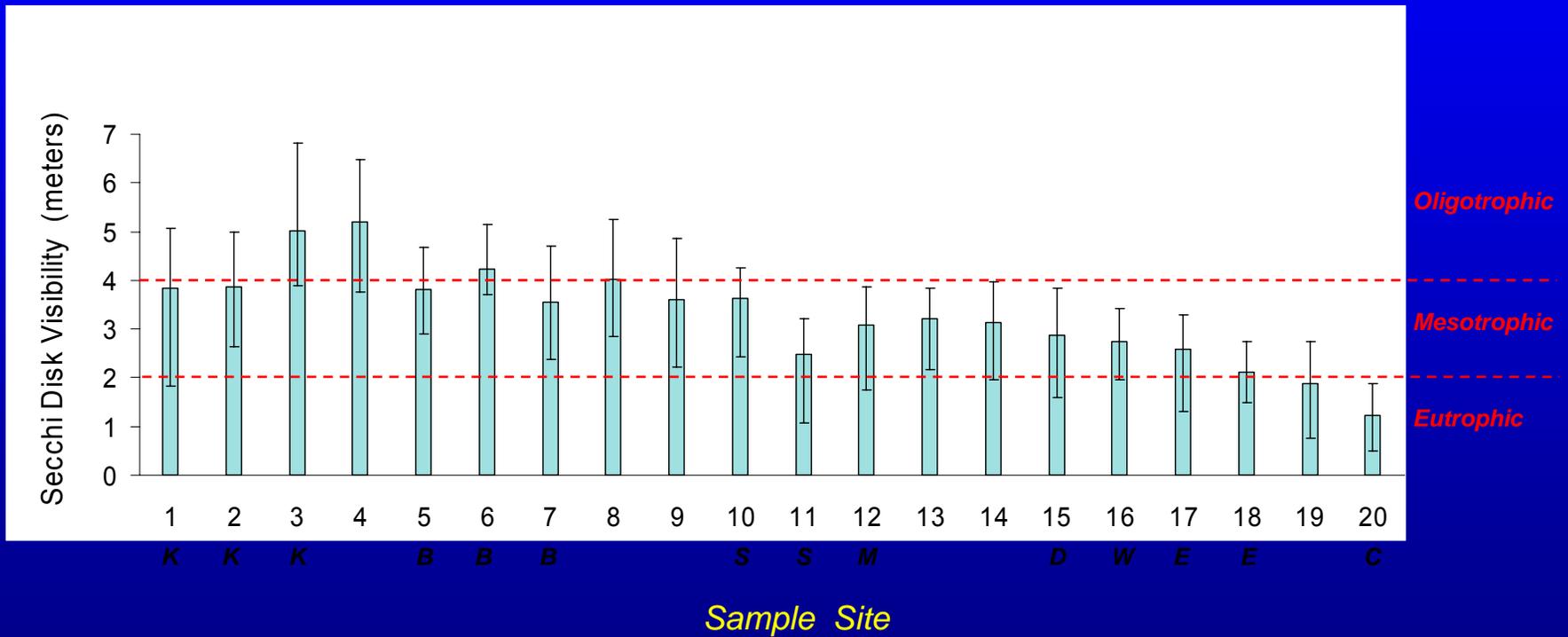
# CHLOROPHYLL a - LAKE MARTIN

## April-October 2004

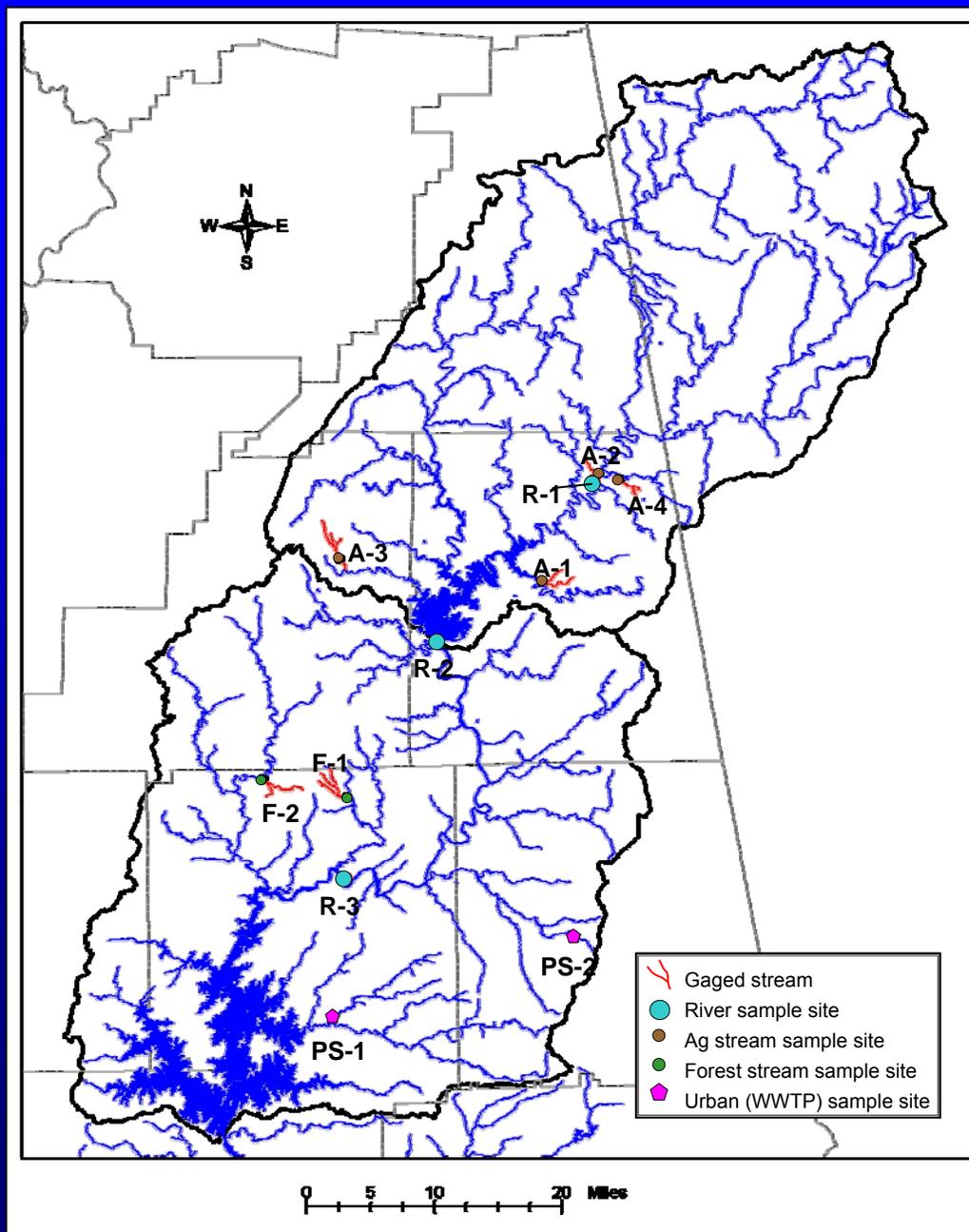


# SECCHI DISK VISIBILITY - LAKE MARTIN

## April-October 2004



# WATERSHED SAMPLE SITES



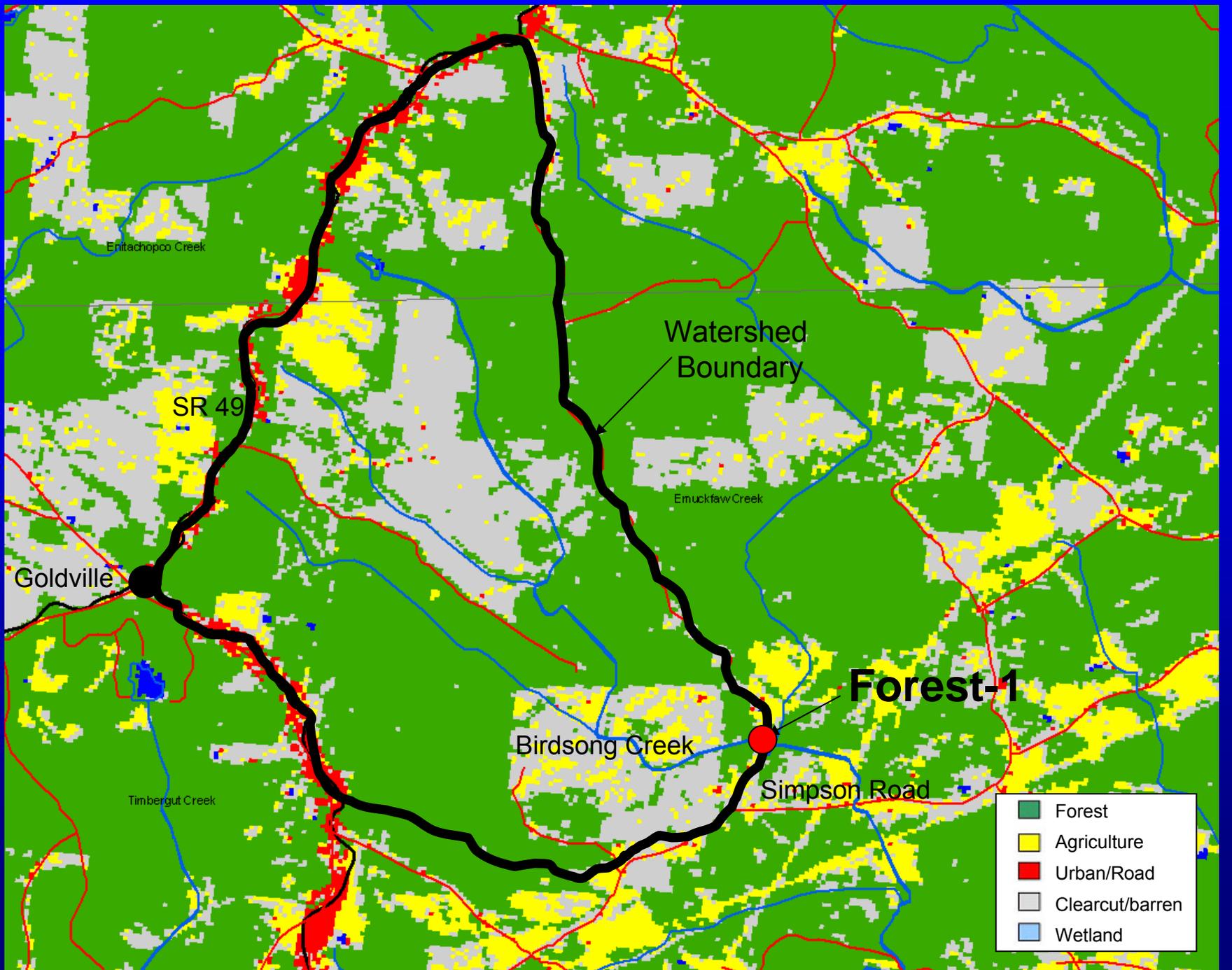
# ***GAGED STREAMS***

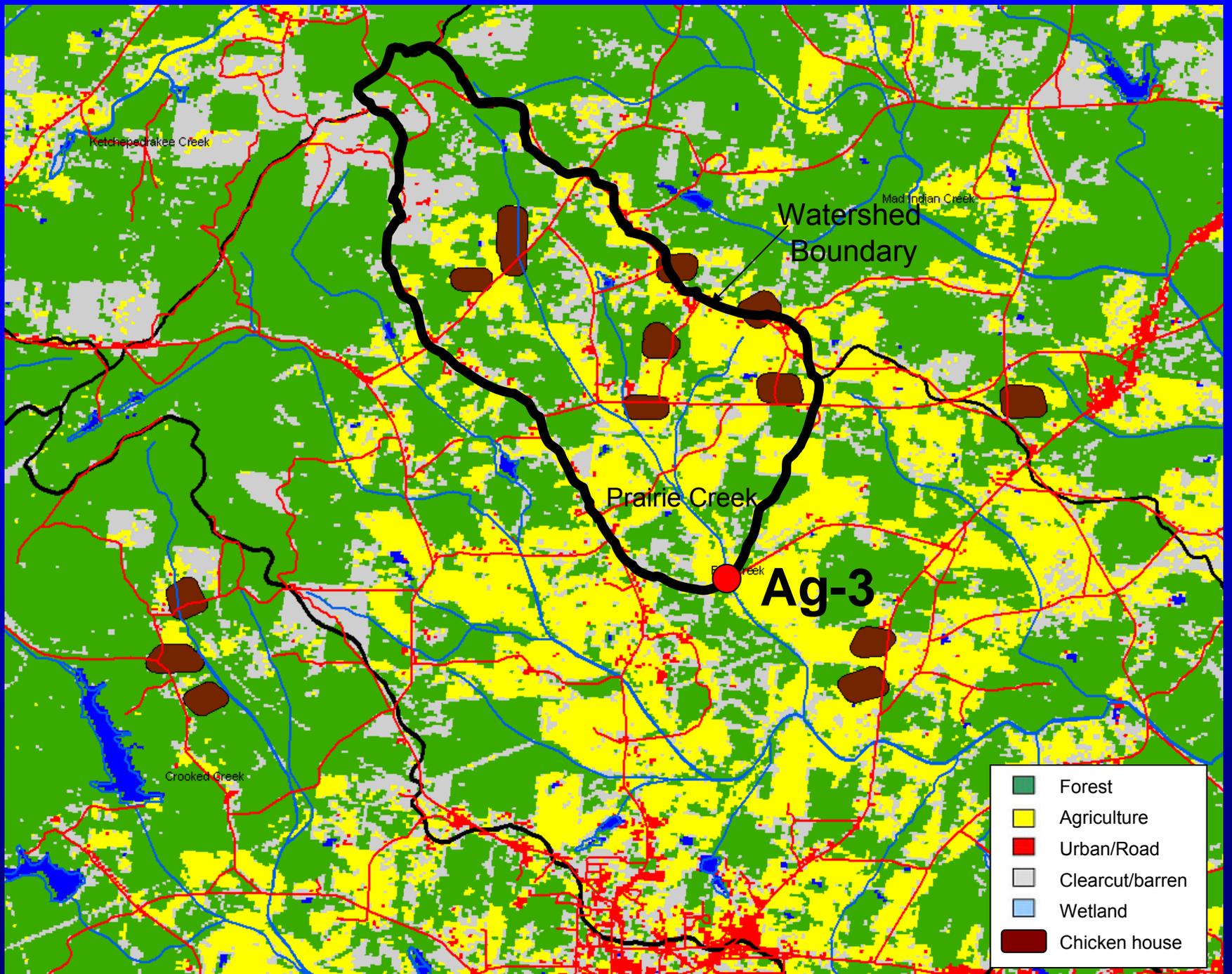
**Birdsong Creek**



**Jones Creek**





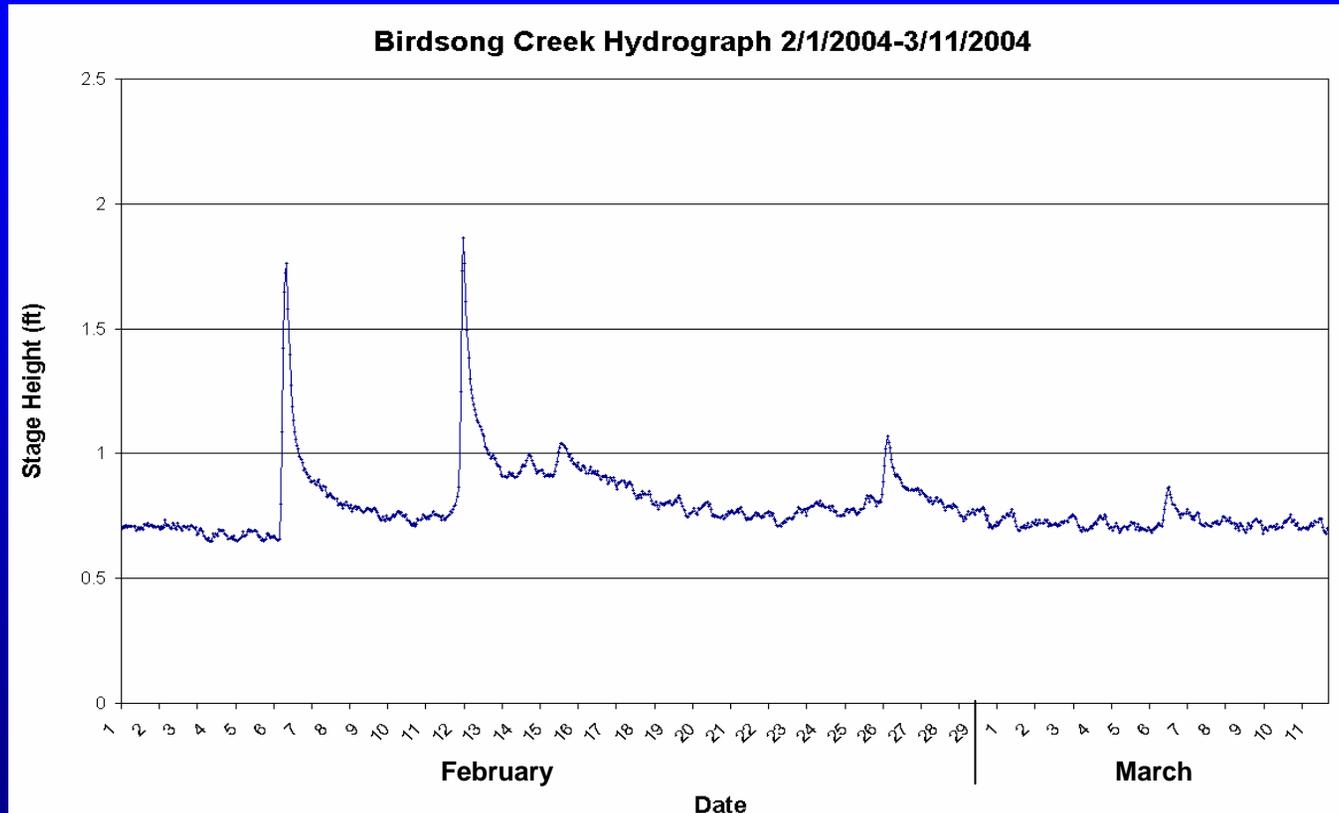


# ***DOWNLOADING GAGE DATA***

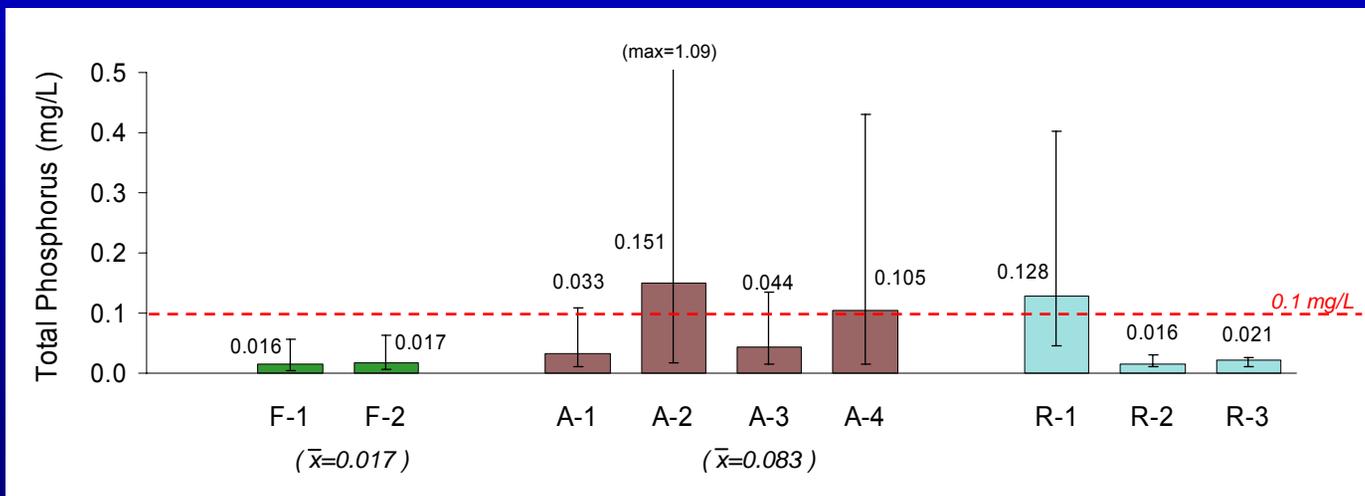
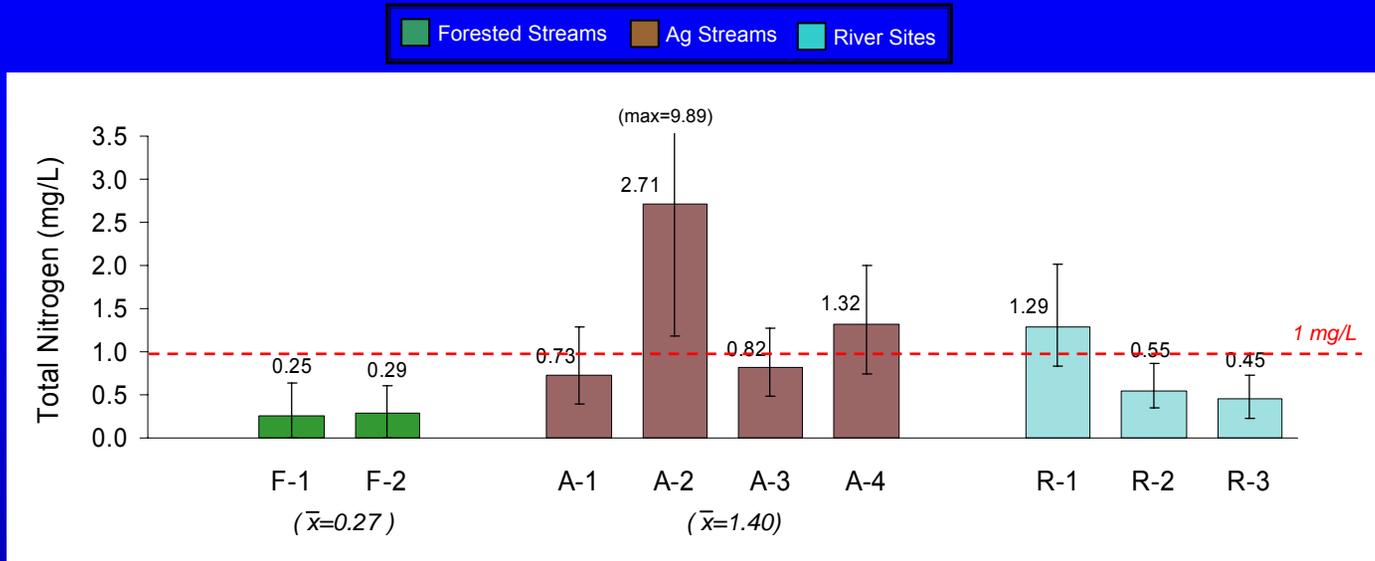


Rice Branch near Hawk, AL

# ***GAGE DATA***



# NUTRIENT CONCENTRATIONS



Data are means (values above bars) of 11 sample dates from 2/12/04 to 10/12/04. Bracket on bar represents minimum and maximum values.

***CITIZEN VOLUNTEER DATA***

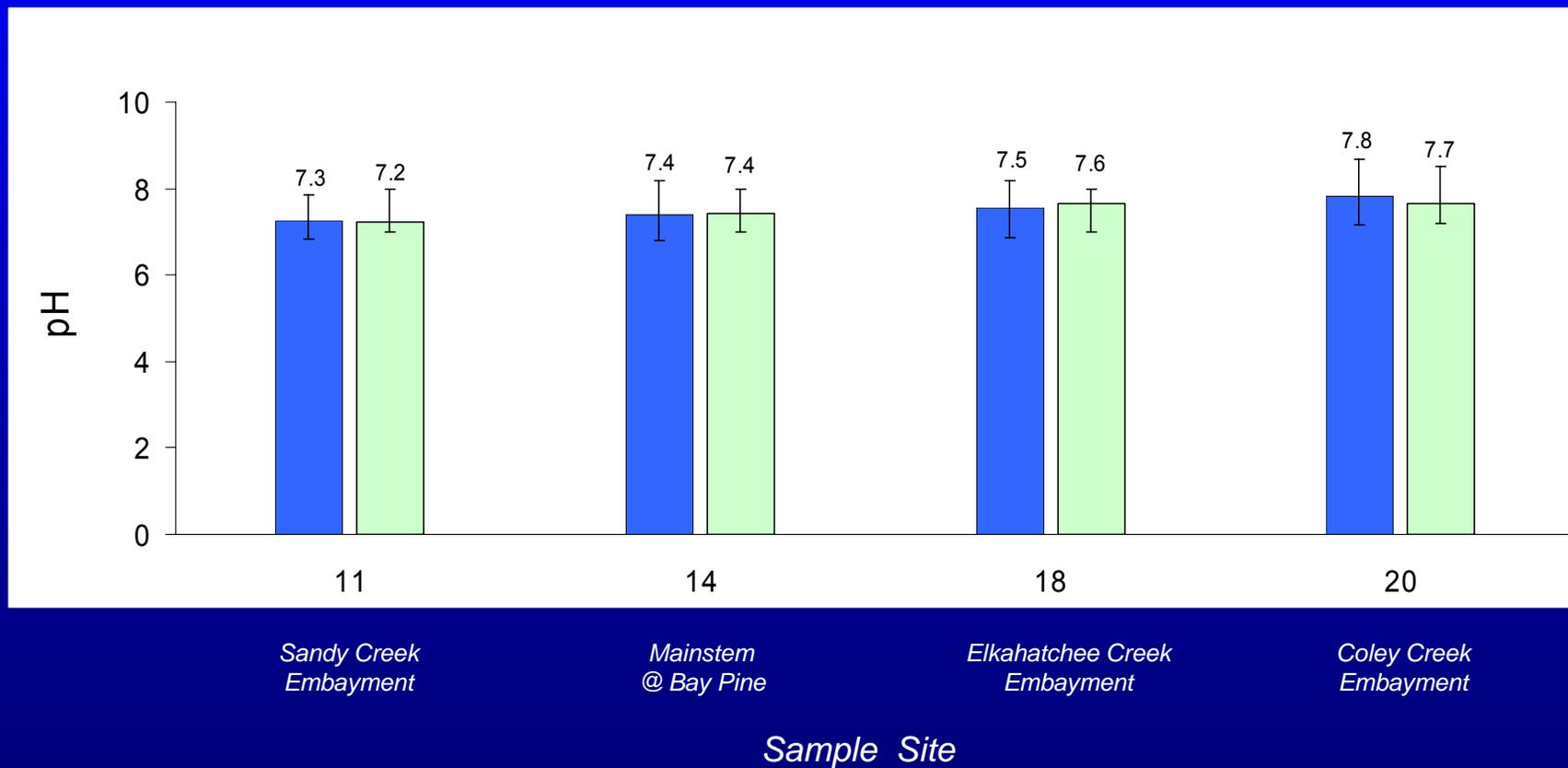
***versus***

***AU STANDARD METHODS DATA***



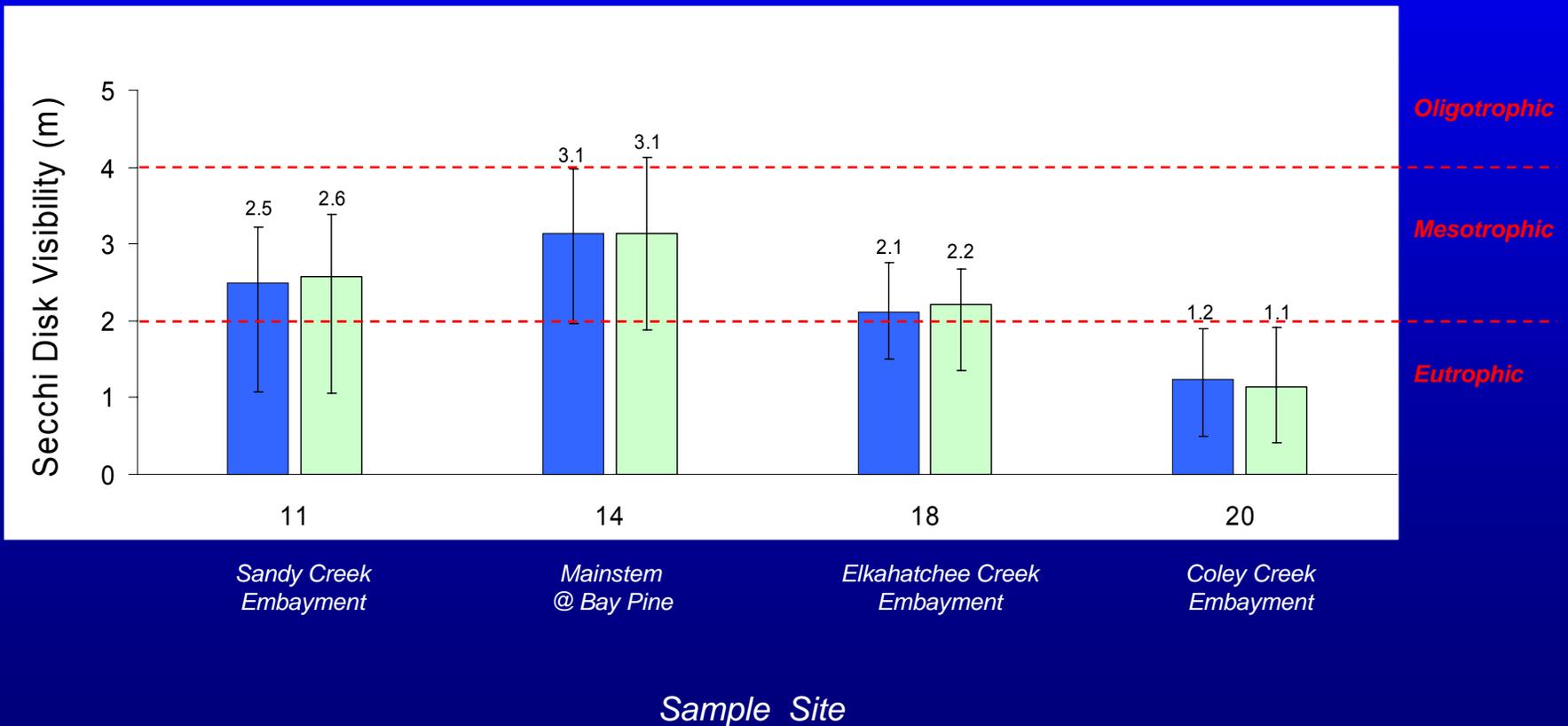
# ***pH - LAKE MARTIN***

## ***AU vs. LWLM, April-October 2004***



# Secchi Disk Visibility - LAKE MARTIN

AU vs. LWLM, April-October 2004

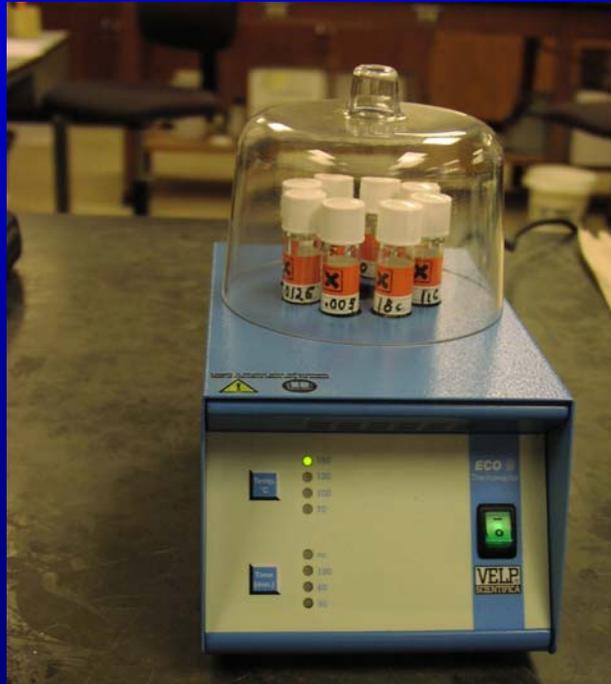


# TOTAL PHOSPHORUS TESTING



Reagents

Digestion



Reading in  
Colorimeter

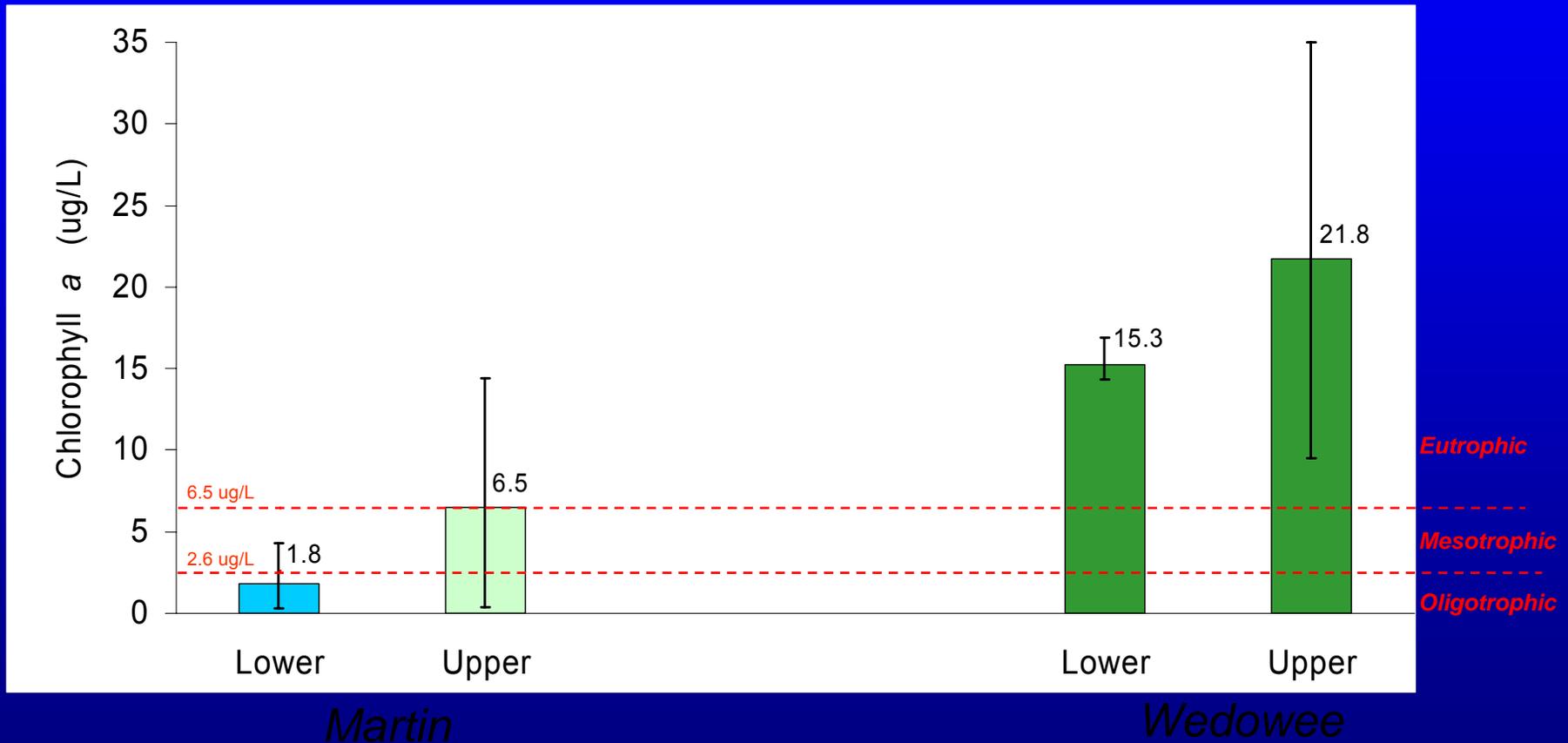
# ***LAKE SAMPLING***

## ***2005***



Lake Wedowee – April 2005

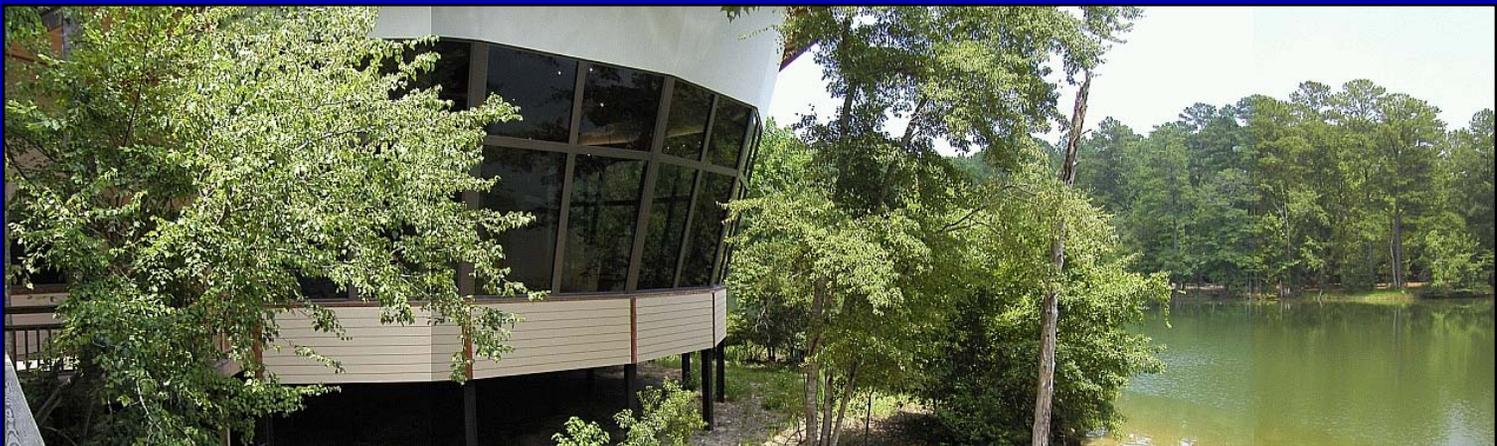
# CHLOROPHYLL *a* - MARTIN versus WEDOWEE



Martin lower lake mean is of AU site 4, ADEM sites 1 and 2 for Apr-Oct, 2004 (n=42); Martin upper lake mean is of AU site 19, ADEM sites 4 and 5 for Apr-Oct, 2004 (n=42). Wedowee lower lake mean is of AU sites 1, 3 and 5 for Apr 2005 (n=3); Wedowee upper lake mean is of AU sites 8, 9 and 11 for Apr 2005 (n=3).

# TWP Education and Extension

- Teacher Workshops
- Aquatic Science Curricula
- Camp ASCCA Displays
- “State of Our Watershed” Conference
- TWP Website



# Linking Alabama Water Watch Volunteers to Classrooms for Improved Aquatic Science Education

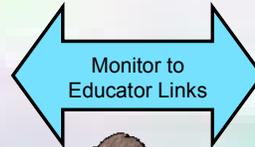
A project funded by the Auburn University Environmental Institute



AWW offers workshops in Water Chemistry, Bacteriological and Stream Macroinvertebrate Monitoring.

## Water Watch Volunteers

- Resource Persons for Aquatic Science Introduction
- In-classroom Demos of Stream Monitoring
- Outdoor Activities: Living Streams, Critters in the Creek



## Future Teachers and Current Educators

- Utilize AWW Education Manuals
- Opportunities for Outdoor Classroom
- AWW Data in Classroom Exercises
- Energize Students to Protect Natural Resources



Educational versions of each AWW workshop type will soon be available for Alabama educators, primarily for middle school students.

## AWW Program

- Training and Technical Support for Volunteers
- Data Management and Dissemination
- Online Aquatic Science Resources for Teachers and Adult Groups
- Training Future Science Teachers at AU



## Department of Curriculum and Teaching

- Future Teachers Exposed to Aquatic Science Programs: Project Wet, Project Learning Tree, AWW
- Correlate AWW materials to Alabama Course of Study
- Place Future Teachers in Schools with Aquatic Science Projects

" A statewide, volunteer water monitoring program coordinated through Auburn University.

" 75 groups actively monitoring streams and lakes in Alabama.

" 1600 sites monitored on 600 waterbodies.

### For more information:

888-844-4785  
 aww@aces.edu  
[www.alabamawaterwatch.org](http://www.alabamawaterwatch.org)



The AWW series, *Citizen Guide to Alabama Rivers*, will have an interactive Jeopardy Game for teachers to use in the classroom and will eventually be made available online.

### Contributors:

Bill Deutsch, Wendi Hartup, and Len Vining of Department of Fisheries and Allied Aquacultures  
 Charles Eick, Mitzie Sowell, and Virginia Wilcox of Department of Curriculum and Teaching

" 25-35 new science teachers graduate from AU per year.

" Science Education Program works closely with neighboring schools implementing NSF-sponsored curriculum featuring inquiry.

" System of Interns in east Alabama.

# *Living Streams Field Work*



# *High School Students Observe TWP Research*



# State of Our Watershed Conference – 2005





The Project Research Education Extension

## TWP News

### State of Our Watershed Conference

[The Conference took place at Camp ASCCA on May 5&6](#)

[The Outlook comments, May 9 2005](#)

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This project is funded by the  
Cooperative State Research Education and Extension System  
(CSREES) of the US Department of Agriculture

For more information about other CSREES  
projects and Water Quality in Alabama  
click on the map



A  
Transferable  
Model  
of  
Stakeholder  
Partnerships  
for  
Addressing  
Nutrient  
Dynamics  
in  
Southeastern  
Watersheds





## Plans for 2005-07

- Watershed Modeling of Nutrients/Sediments
- Aquatic Science Curricula Development
- Cost-Efficiency Study (optimal technology mix)
- 2<sup>nd</sup> “State of Our Watershed” Conference
- Broad-based Extension of Research Findings

[www.twp.auburn.edu](http://www.twp.auburn.edu)