Update on West Point Lake Modeling and Standards Revisions

Presented by:
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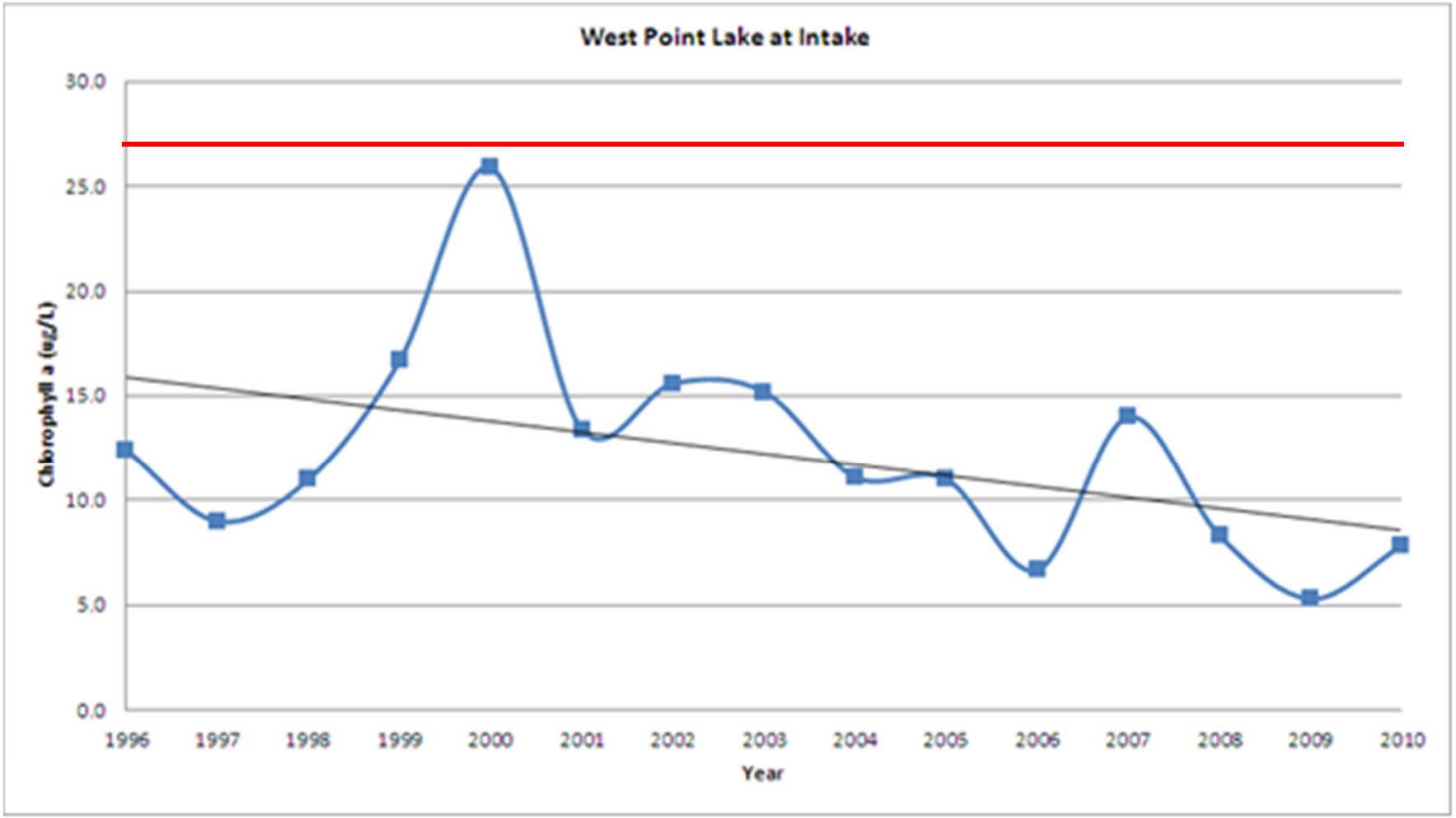

West Point Lake at Intake
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Chlorophyll a (ug/L)
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Year

Outline

- Tools and Models Used
- Data Sources
- Watershed Flow and Nutrient Calibrations
- Lake Chlorophyll Calibrations
- Lake Standard Revisions
- Next Steps
- Questions

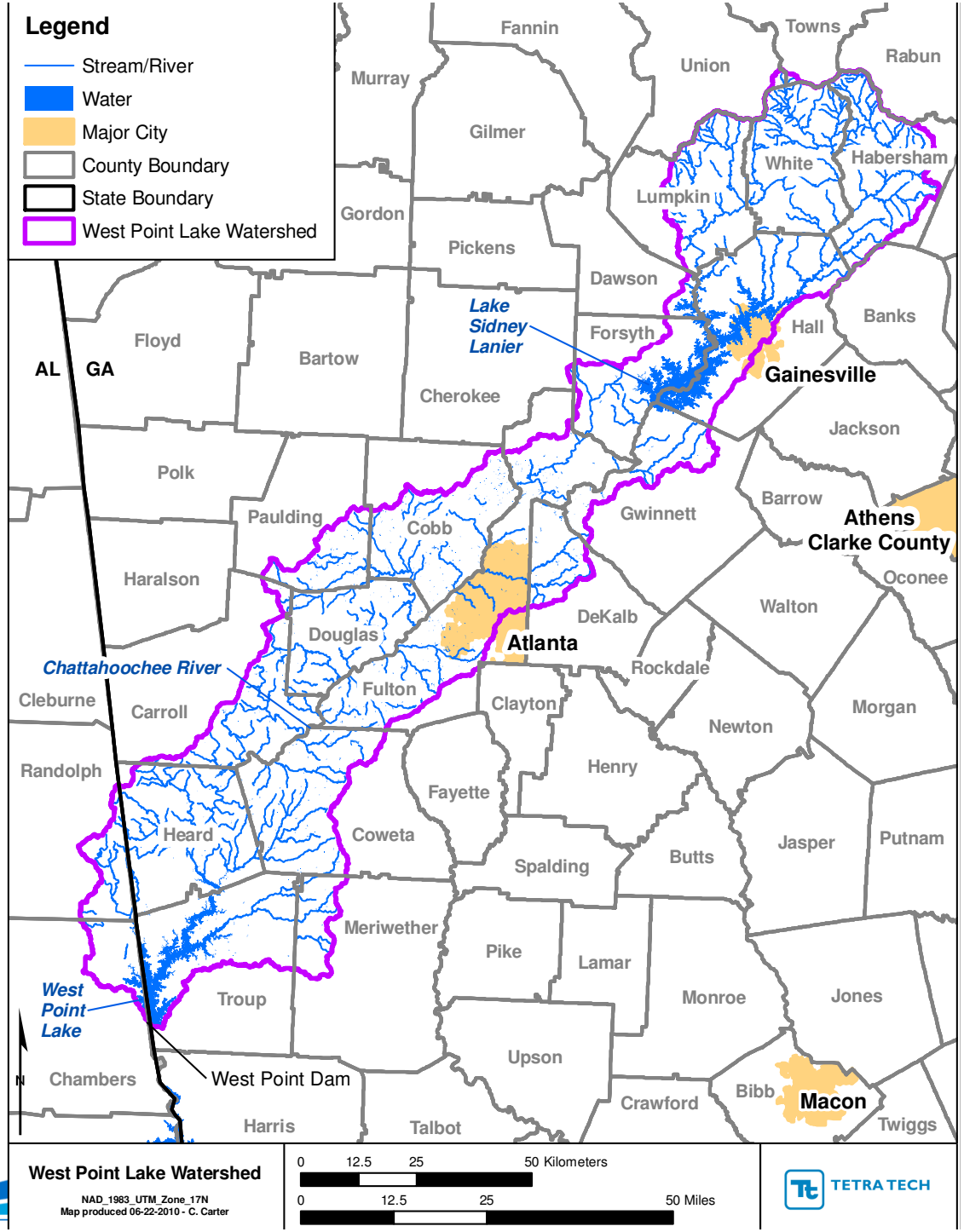
Previous Meetings

- November 5, 2010
- January 20, 2011
- February 21, 2011
- August 19, 2011
- September 13, 2011

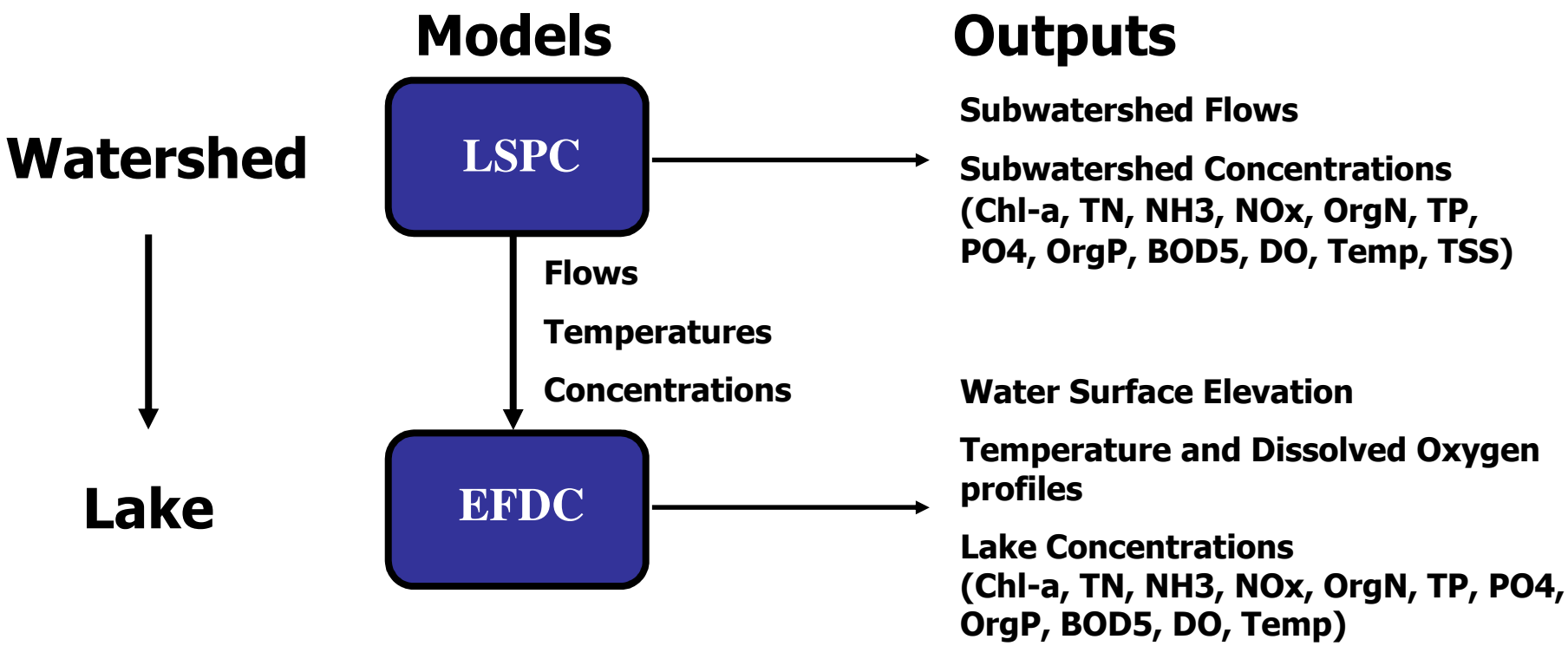
Database and Models Used

- Database Management
  - Water Resources Database (WRDB)
- Watershed Model
  - Loading Simulation Program C++ (LSPC)
- Hydrodynamic Model
  - Environmental Fluid Dynamics Code (EFDC)
- Water Quality Model
  - Environmental Fluid Dynamics Code (EFDC)

West Point Lake Watershed



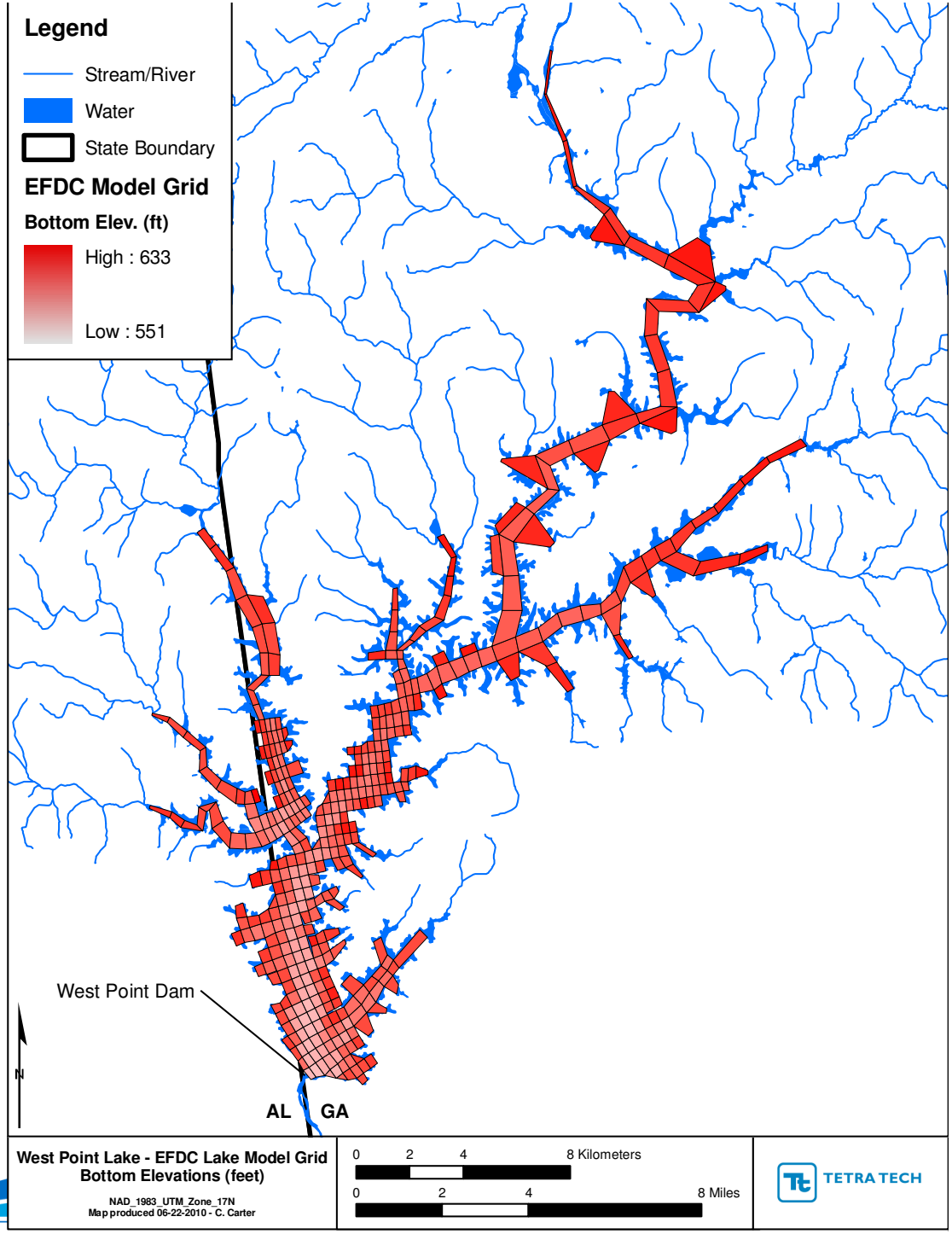
Model Linkage



Data Sources

- US Army Corps of Engineers
  - Water Surface Elevation
  - West Point Dam Flows
- Kingfisher Maps, Inc.
  - Lake Bathymetry
- US EPA Region IV
  - Algal Growth Potential Test

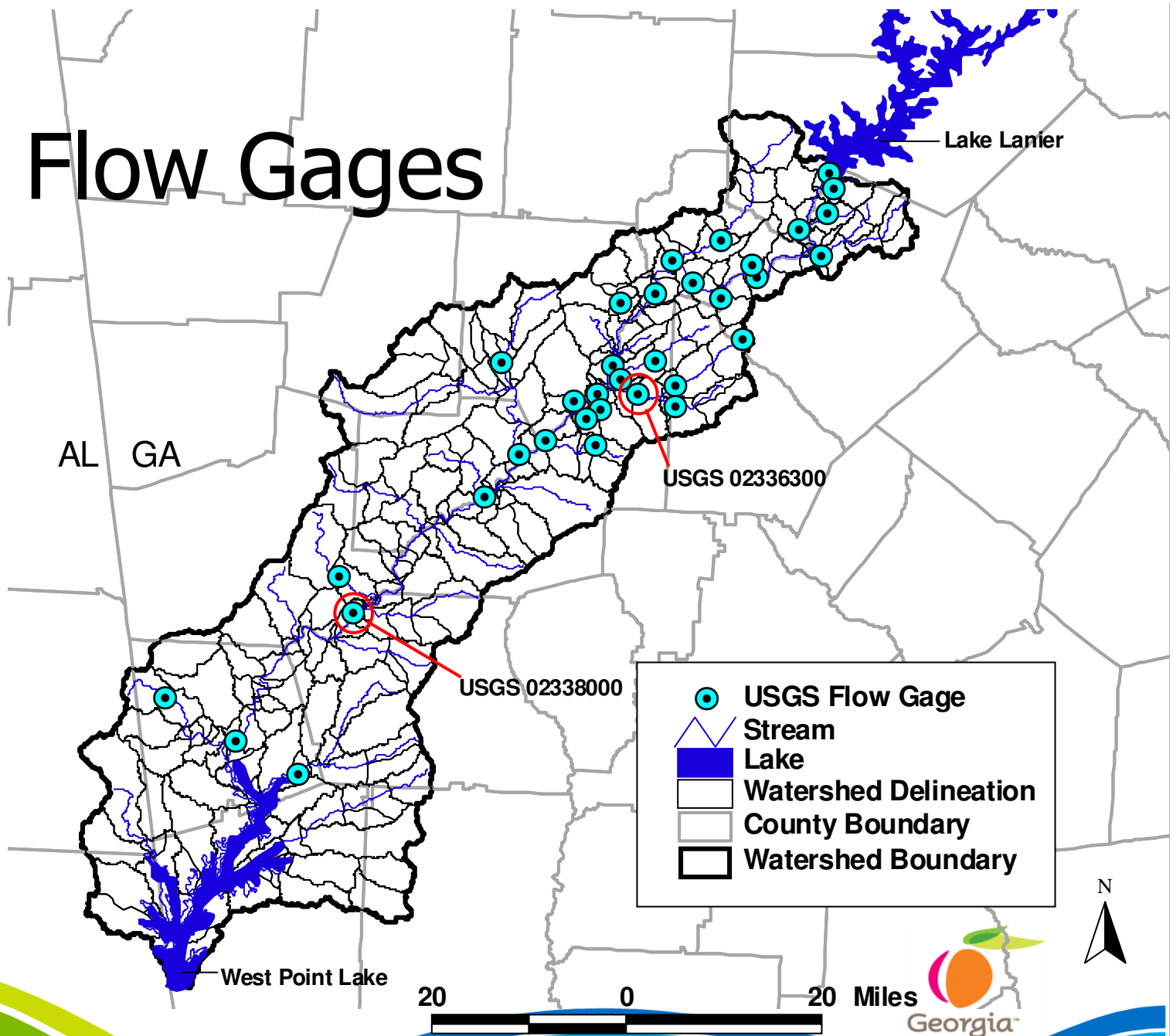
Lake Model Grid



Data Sources

- USGS
  - Stream Flow
  - Temperature
  - Dissolved Oxygen
- UGA–NARSAL GA Land Use Trends (GLUT)
  - 2005 Land Cover

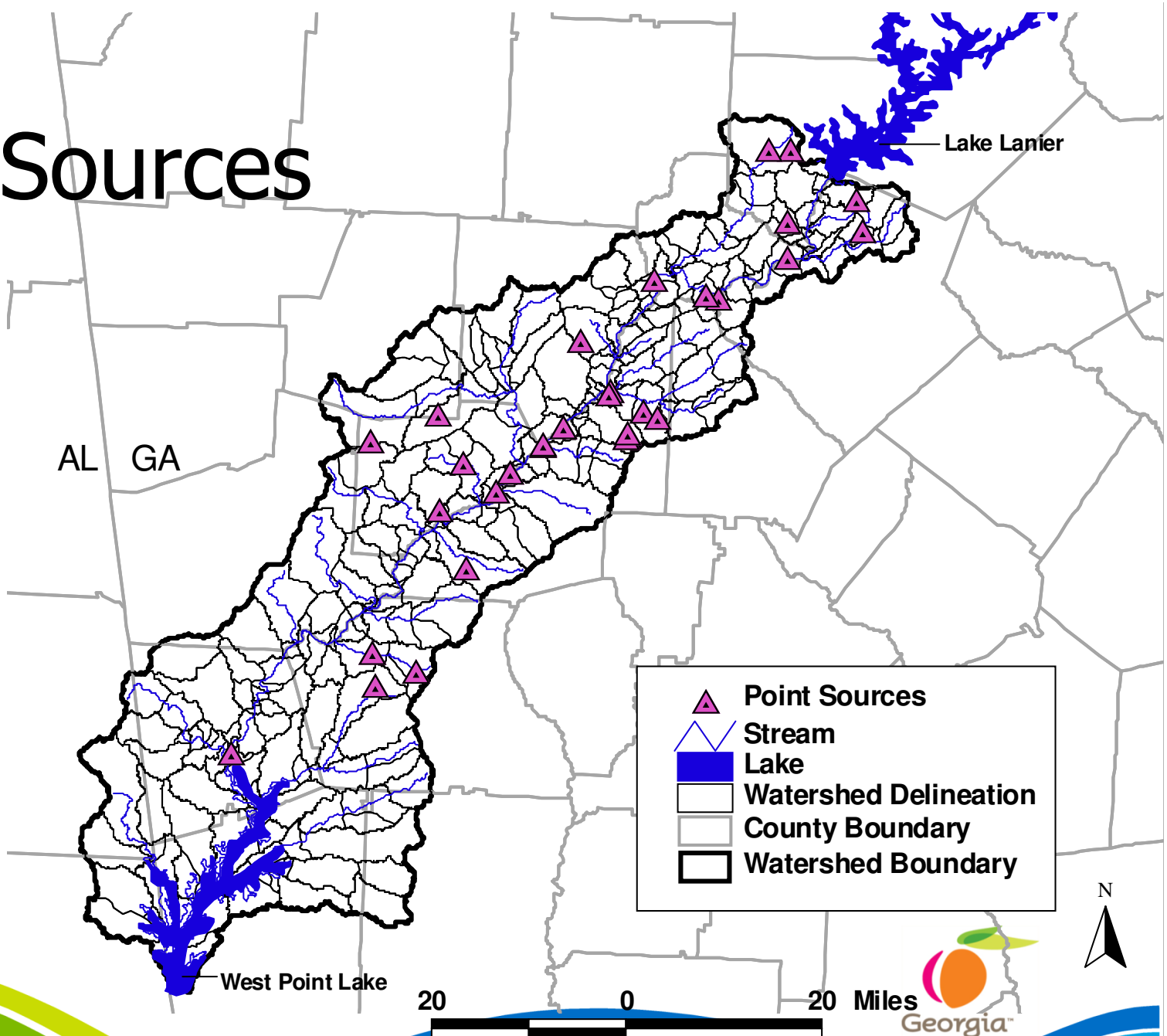
USGS Flow Gages



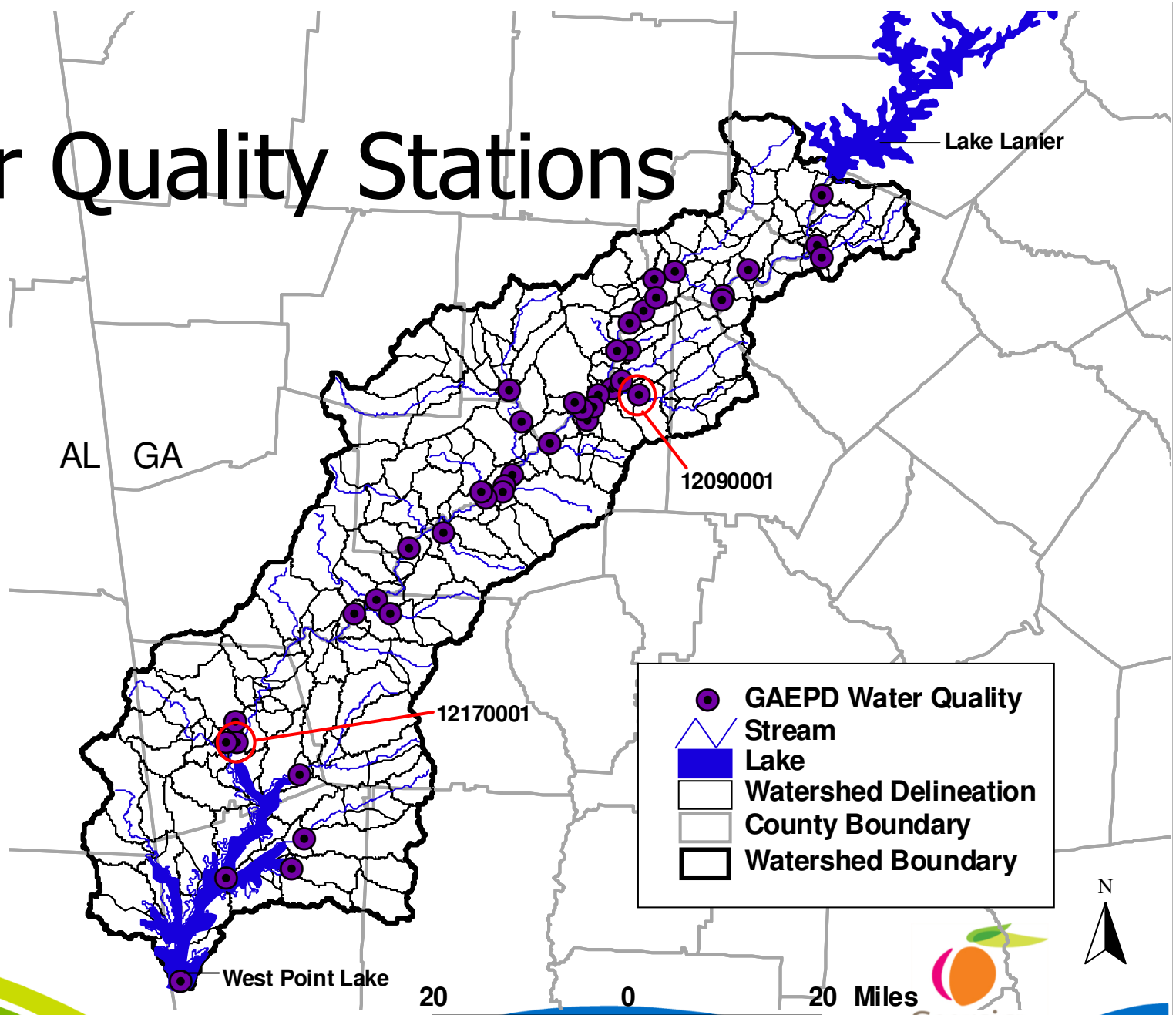
Data Sources

- GA EPD
  - Point Source Discharge
  - Water Withdrawals
  - Temperature Profiles
  - Dissolved Oxygen Profiles
  - River and Lake Water Quality
  - GIS Coverages

Point Sources



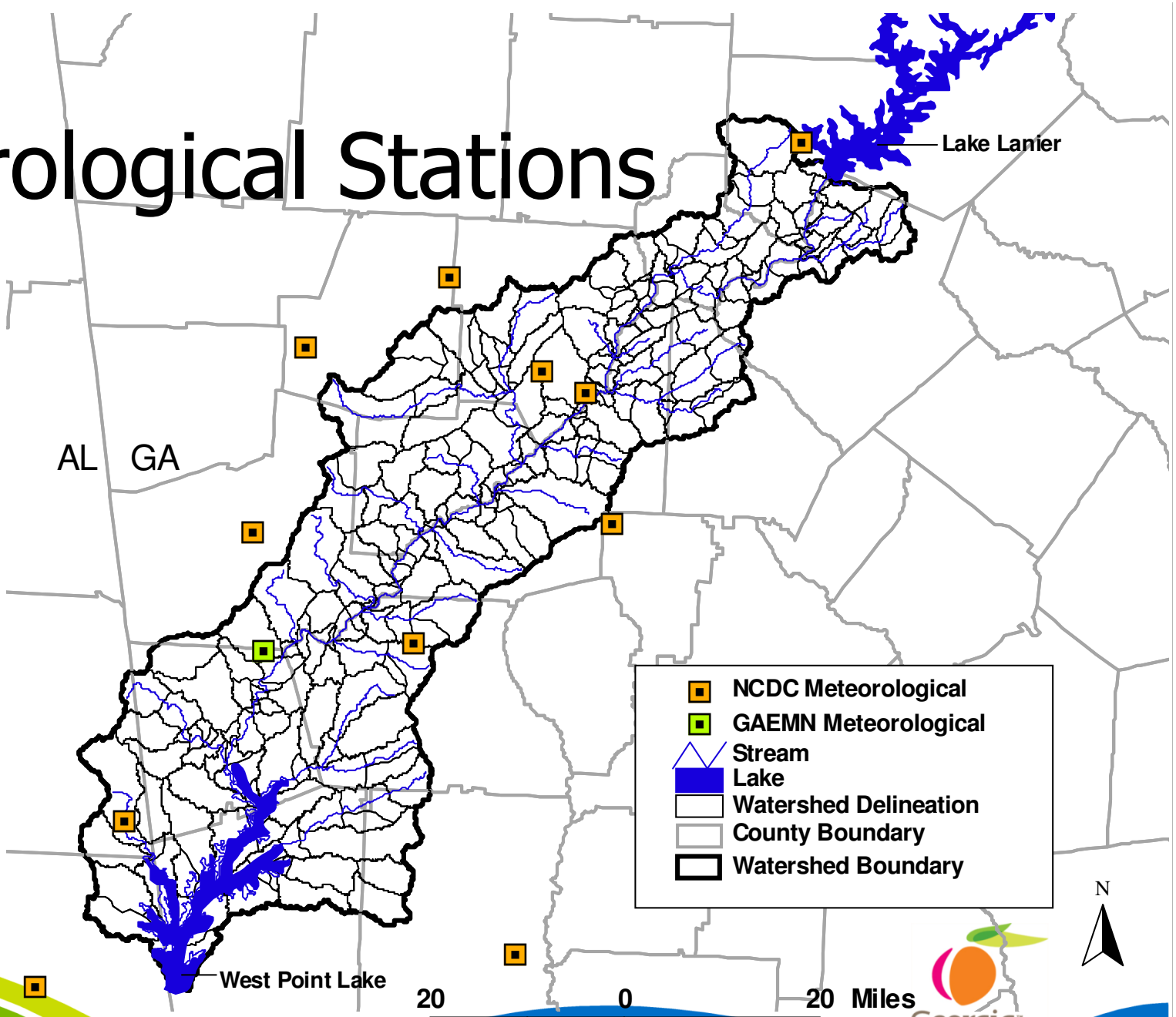
Water Quality Stations



Data Sources

- County Health Departments
  - Septic Data
- GA Automated Environmental Monitoring Network
  - Meteorological Data
- National Climatic Data Center
  - Meteorological Data

Meteorological Stations

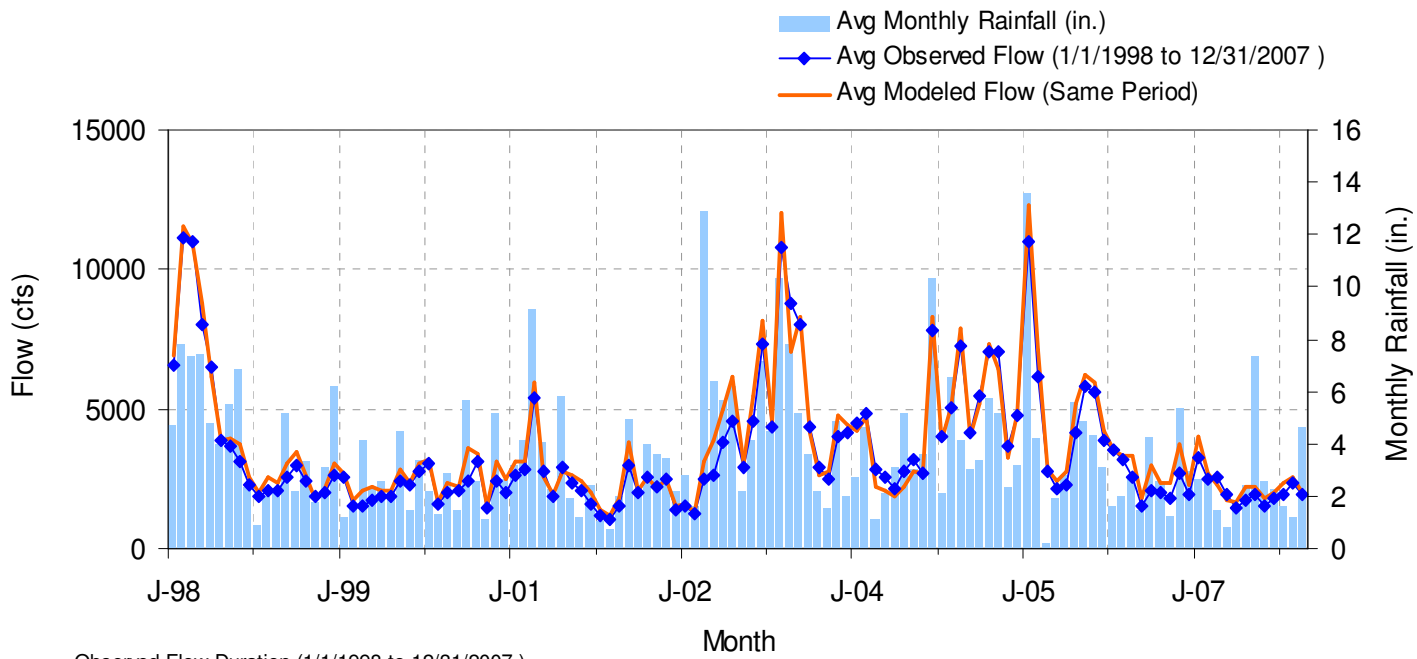


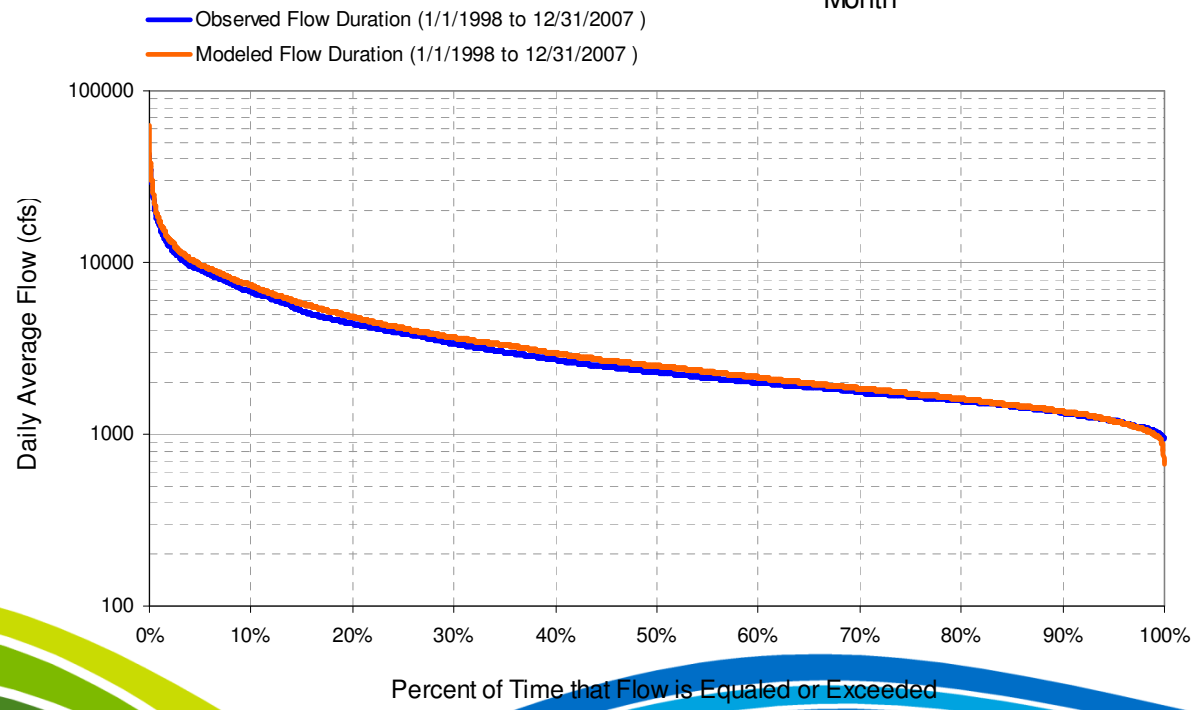
Scenarios

- Calibration
- Full Permit
  - All Point Sources input at Current Permitted Flows & Concentrations
  - Land Use Unchanged
  - Septics Unchanged
  - West Point Dam Water Surface Elevation and Flows

Flow Calibration

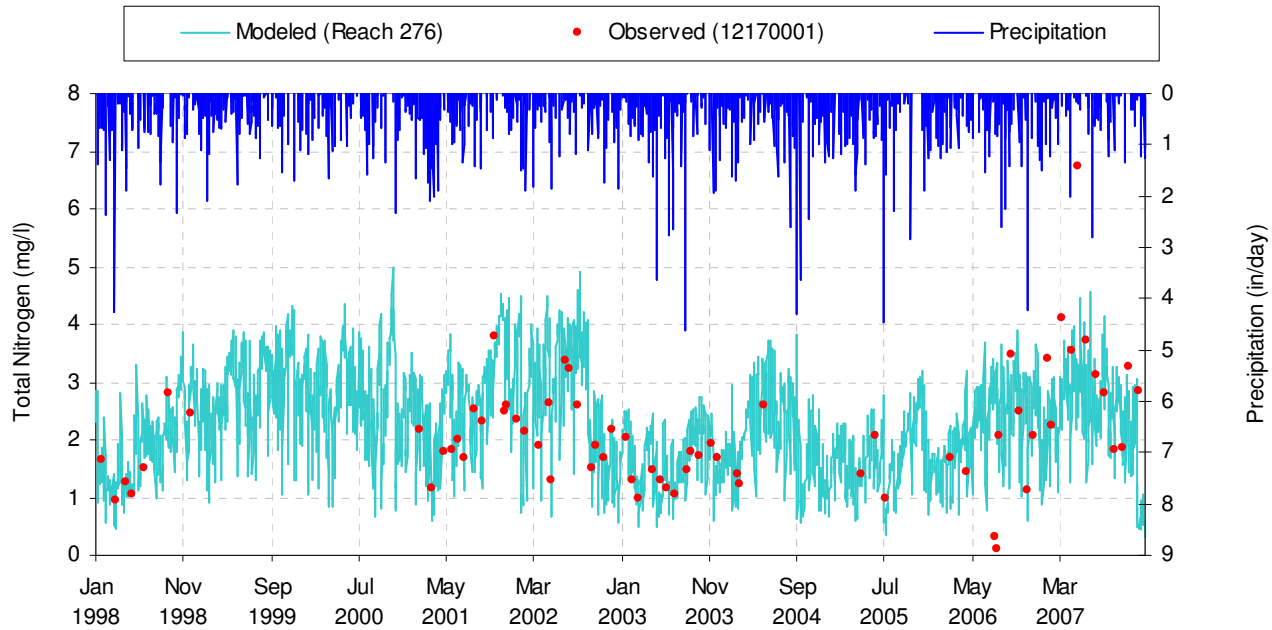
Chattahoochee near Whitesburg

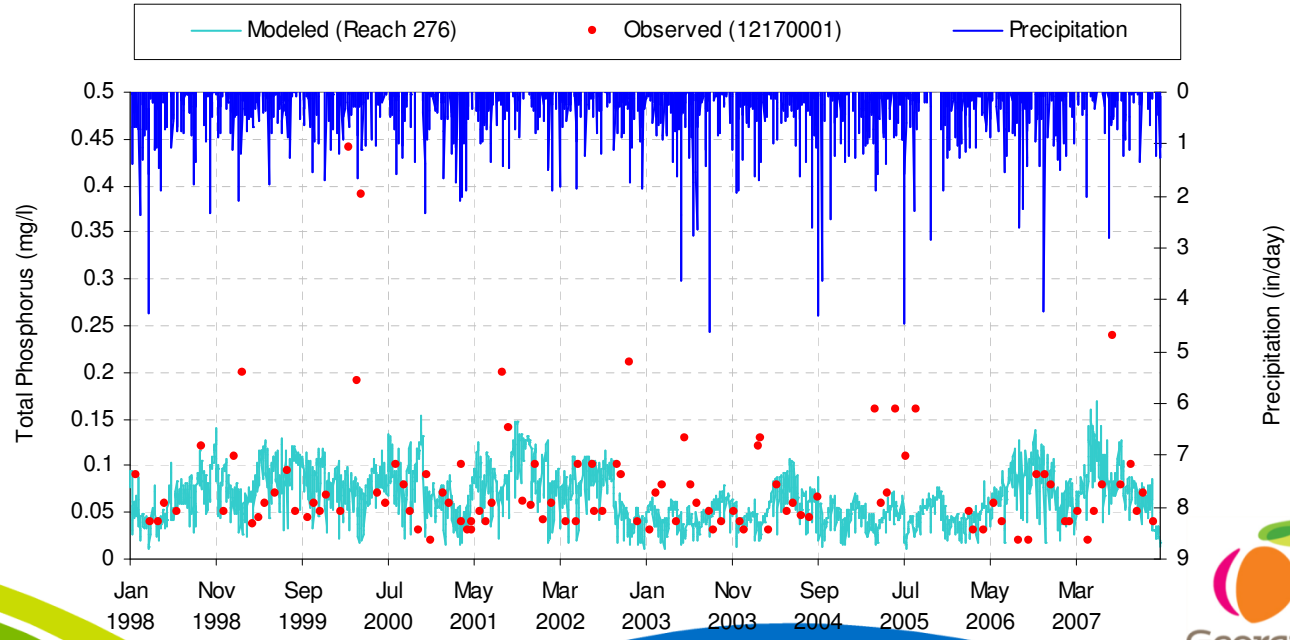




Nutrient Calibration

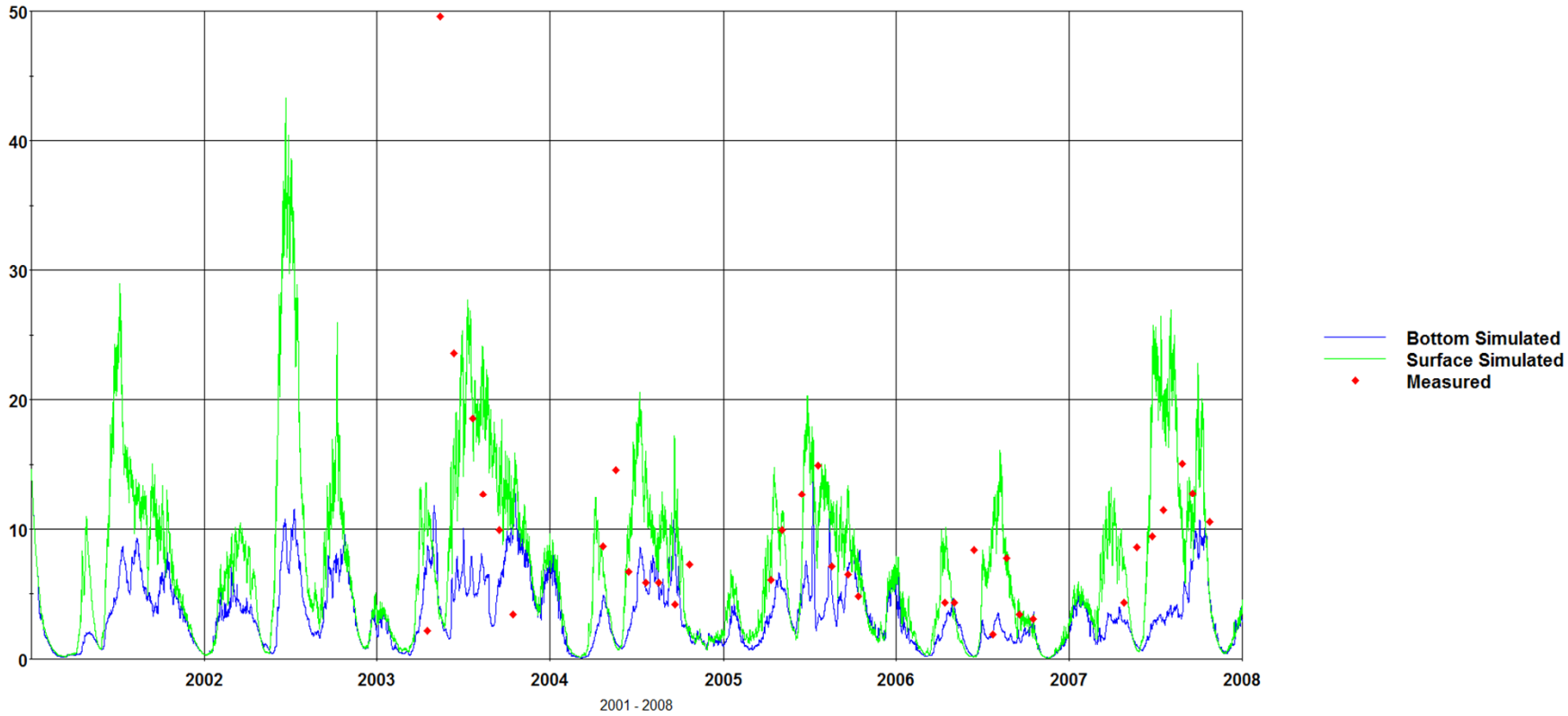
Chattahoochee at U.S. 27 near Franklin, GA





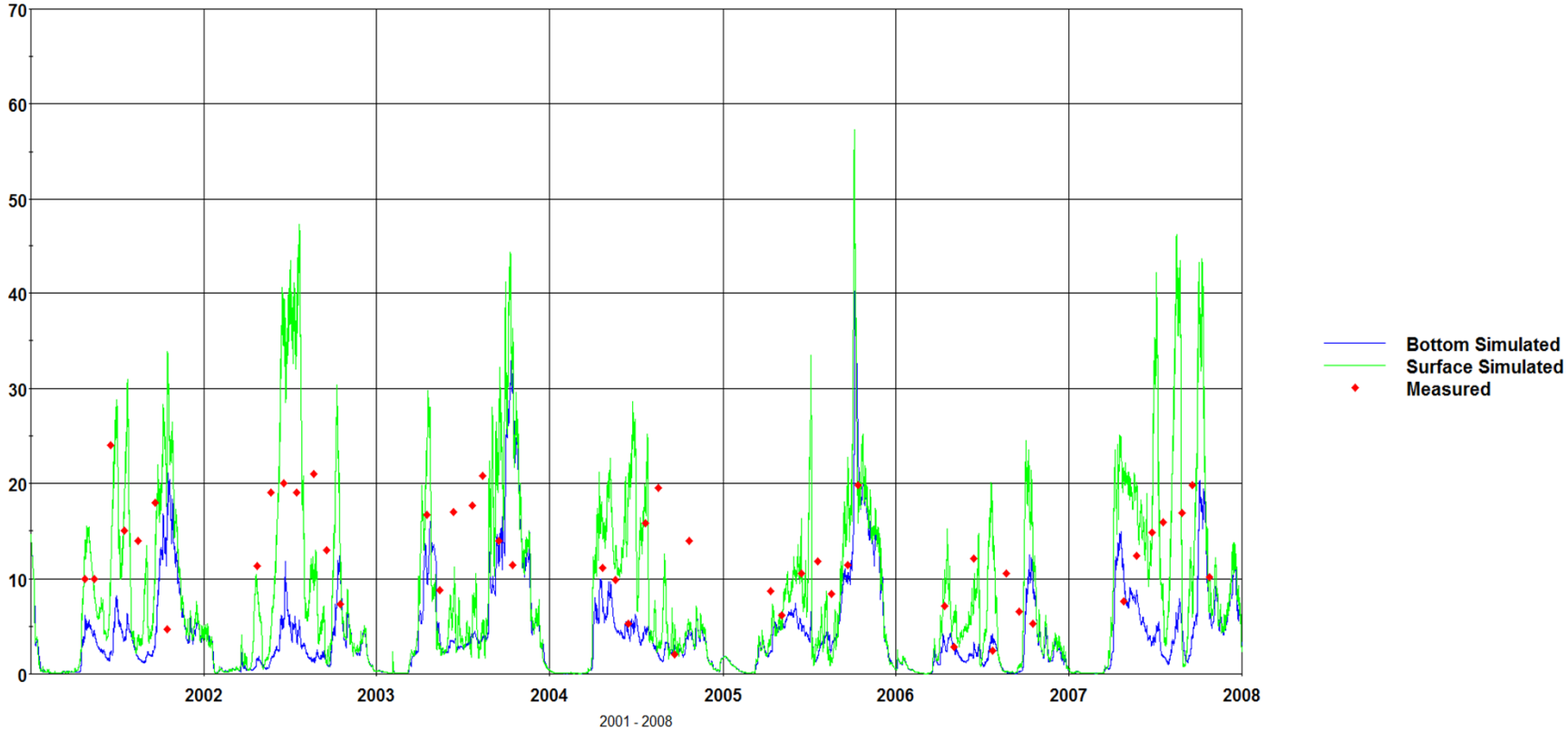
Final Calibrations of the Lake Chlorophyll a

Intake

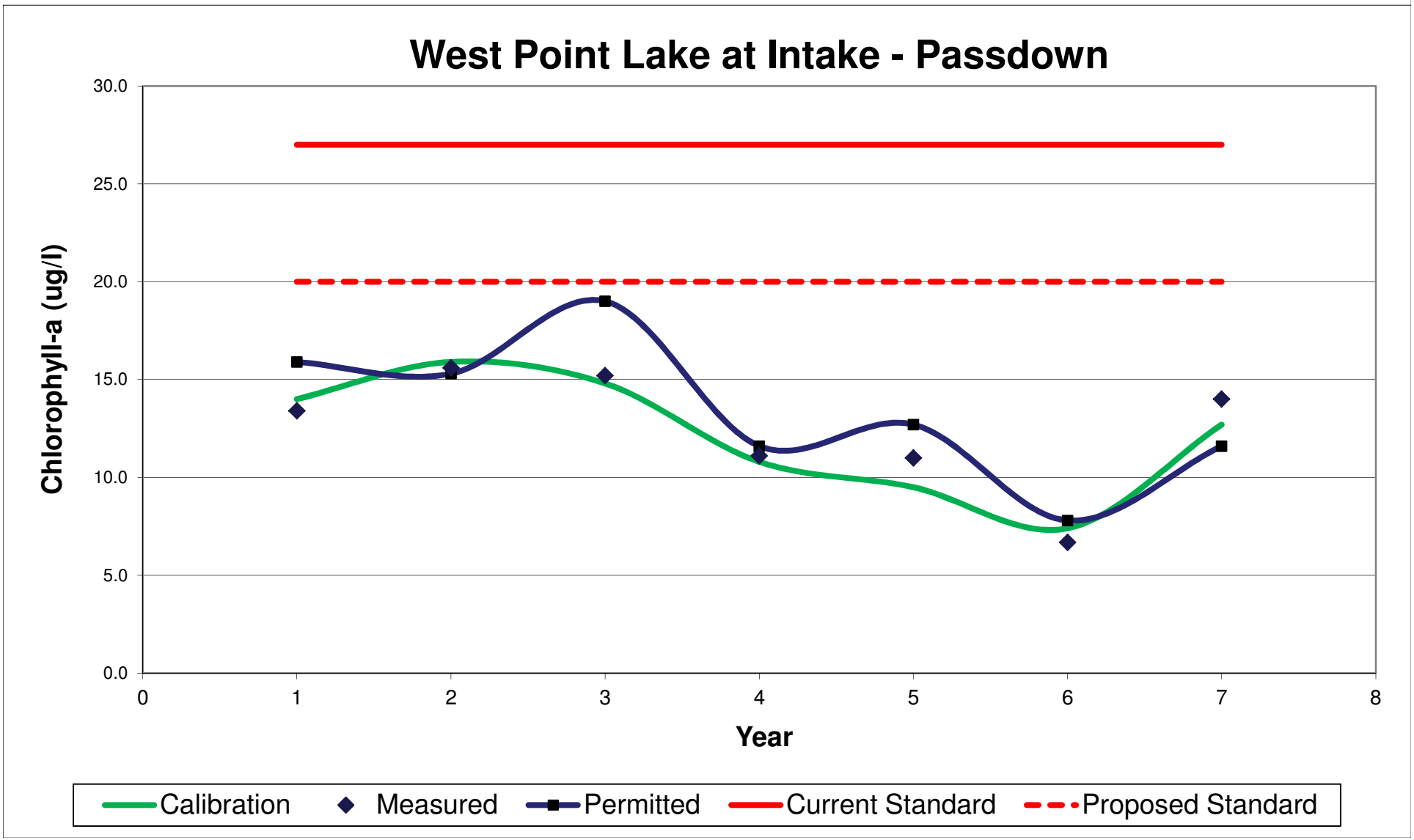


Final Calibrations of the Lake Chlorophyll a

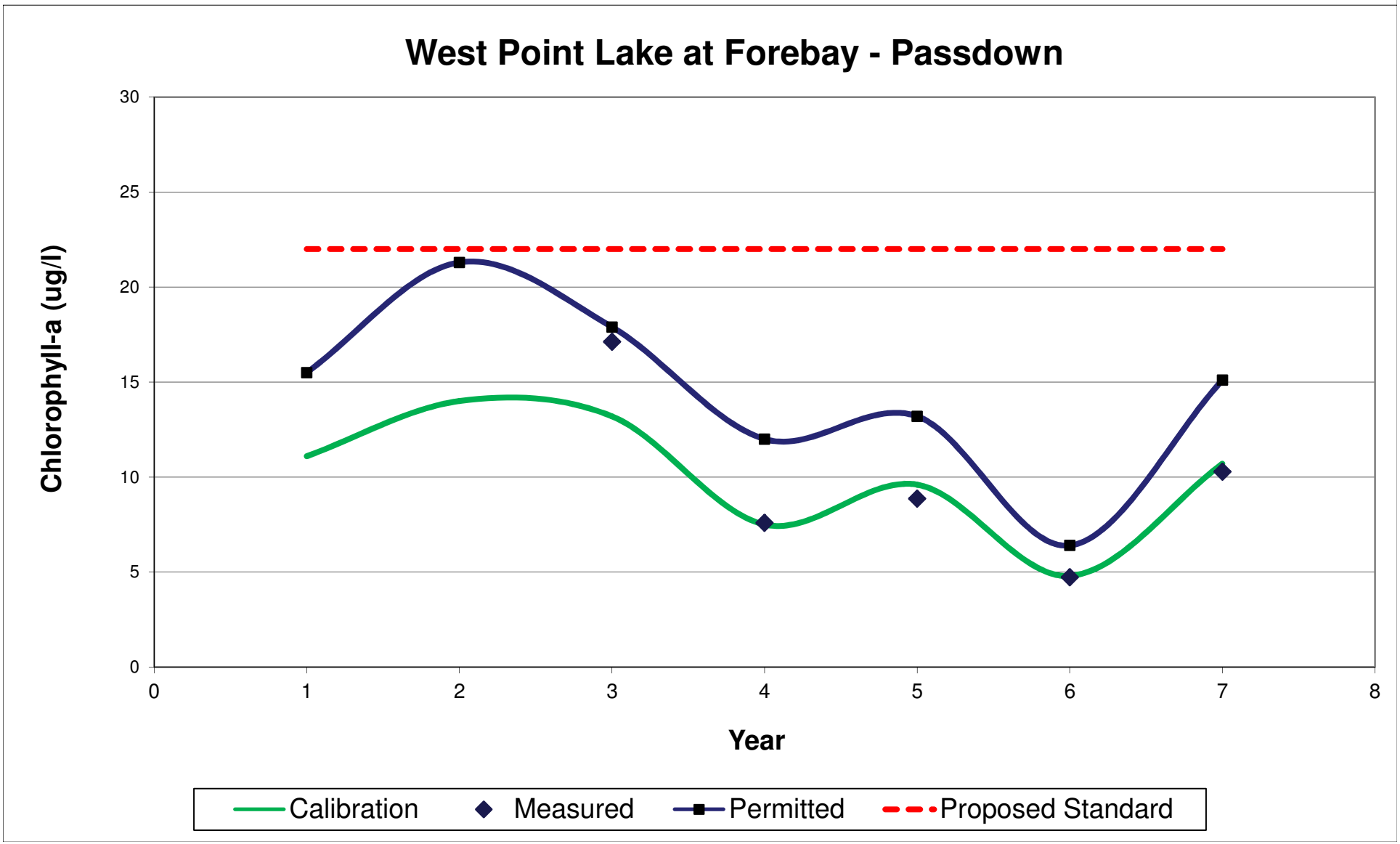
Dampool



Growing Season Average Chlorophyll a



Growing Season Average Chlorophyll a



Revised Chlorophyll a

- Chlorophyll a: For the months of April through October, the average of monthly photic zone composite samples shall not exceed the chlorophyll a concentrations at the locations listed below more than once in a five-year period:

1. LaGrange Water Intake	20 ug/L
2. Upstream from the dam in the forebay	22 ug/L

Next Steps

Questions?

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