Brown AND Caldwell

UNRBA Path Forward Committee

Monitoring Program

Status Update

April 25, 2018

Routine Monitoring Update

April 2018

Brown AND Caldwell

Routine Monitoring Status

Date	Sample Collection	Sample Analysis	Data Review	Posted to Database
Aug – Dec 2014	✓	✓	✓	✓
Jan – Dec 2015	✓	✓	✓	✓
Jan – Dec 2016	✓	✓	✓	✓
Jan – Dec 2017	✓	✓	✓	✓
January 2018	✓	✓	✓	✓
February 2018	✓	✓		
March 2018	✓	✓		
April 2018	✓			
May 2018				
June 2018				

The UNRBA has now generated 44 months, 3 full growing seasons, and 3 full calendar years of water quality data.

Only 6 months remaining in the planned data collection window for the modeling effort of the re-examination.

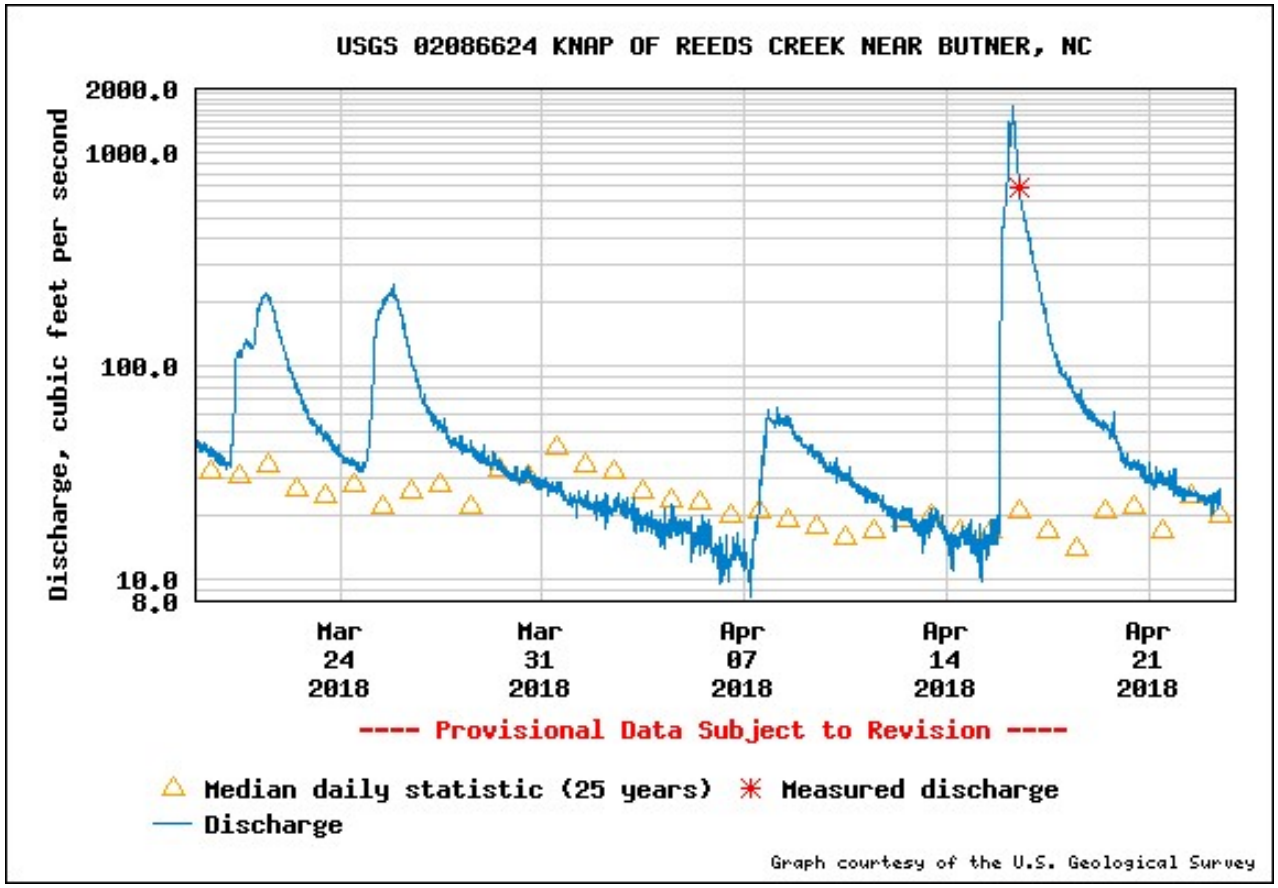
Special Studies Update

April 2018

Brown AND Caldwell

High Flow Sampling

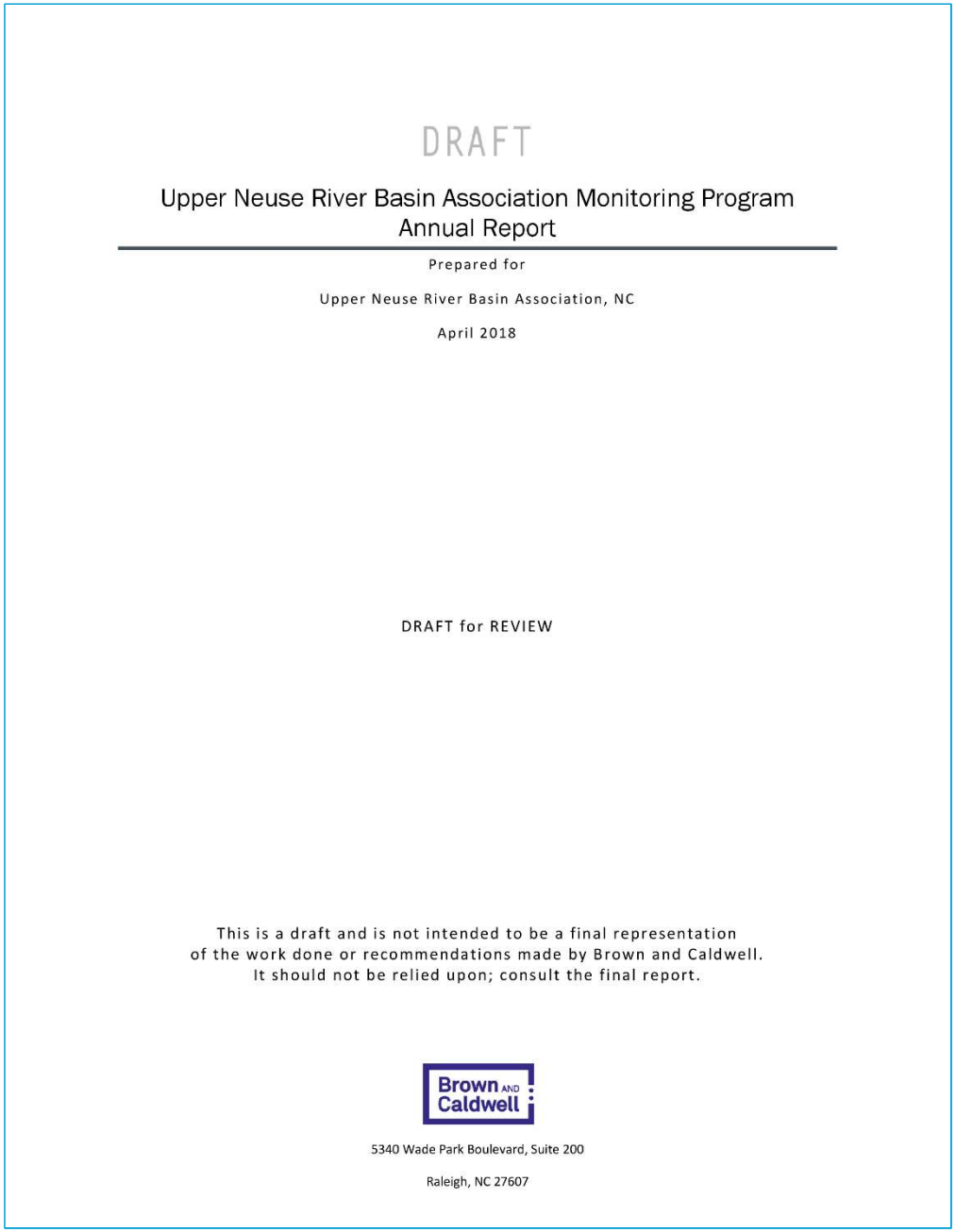
- Four events so far in FY2018
  - January 23
  - January 29
  - March 21
  - April 16



Sediment Study

- Dr. Marc Alperin (UNC) is completing his report on sediment sampling and analysis
  - Summarized in the Annual Report
- Results to be provided to the modeling team
- Recommendations provided by Dr. Alperin, Dynamic Solutions, Jay Sauber, and BC on sediment chamber study locations for EPA

FY2018 Annual Report



DRAFT

Upper Neuse River Basin Association Monitoring Program
Annual Report

Prepared for

Upper Neuse River Basin Association, NC

April 2018

DRAFT for REVIEW

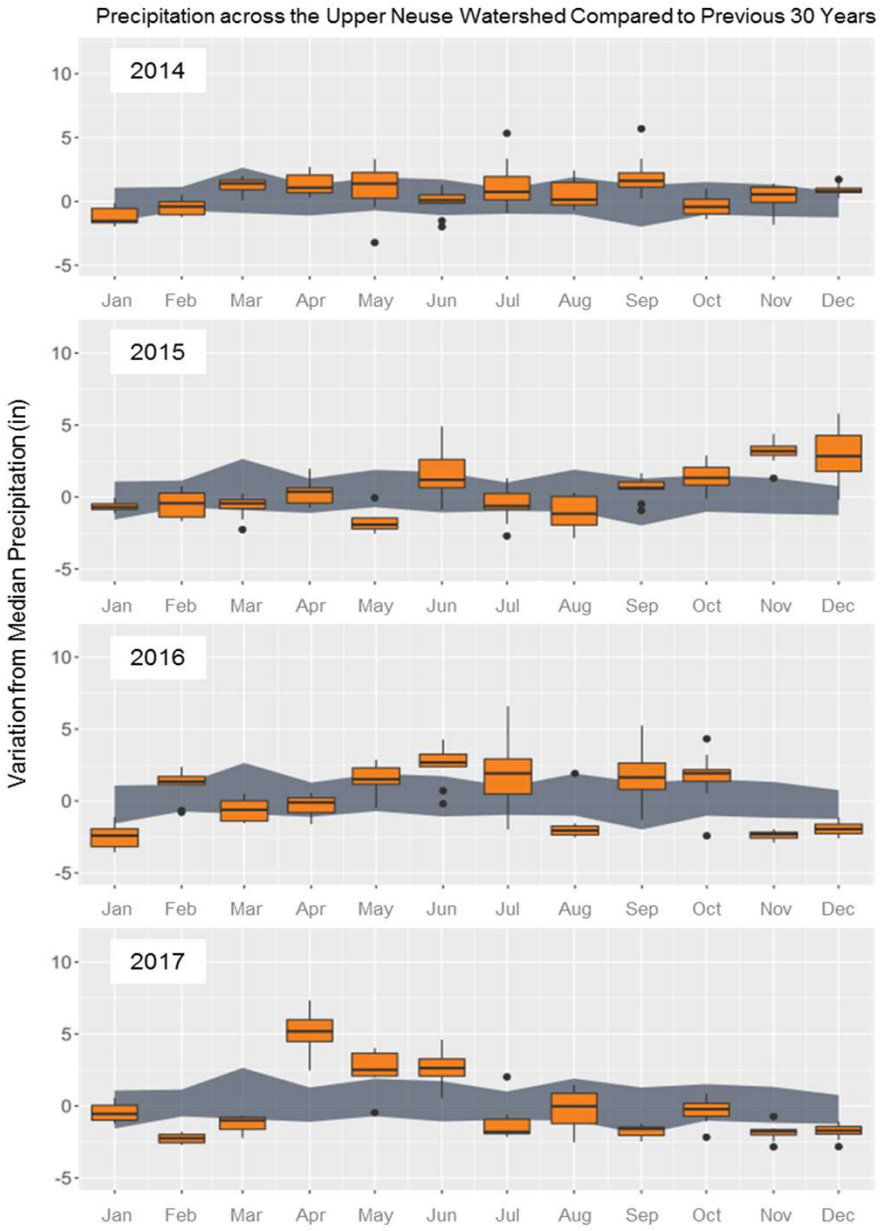
This is a draft and is not intended to be a final representation
of the work done or recommendations made by Brown and Caldwell.
It should not be relied upon; consult the final report.

Brown AND Caldwell

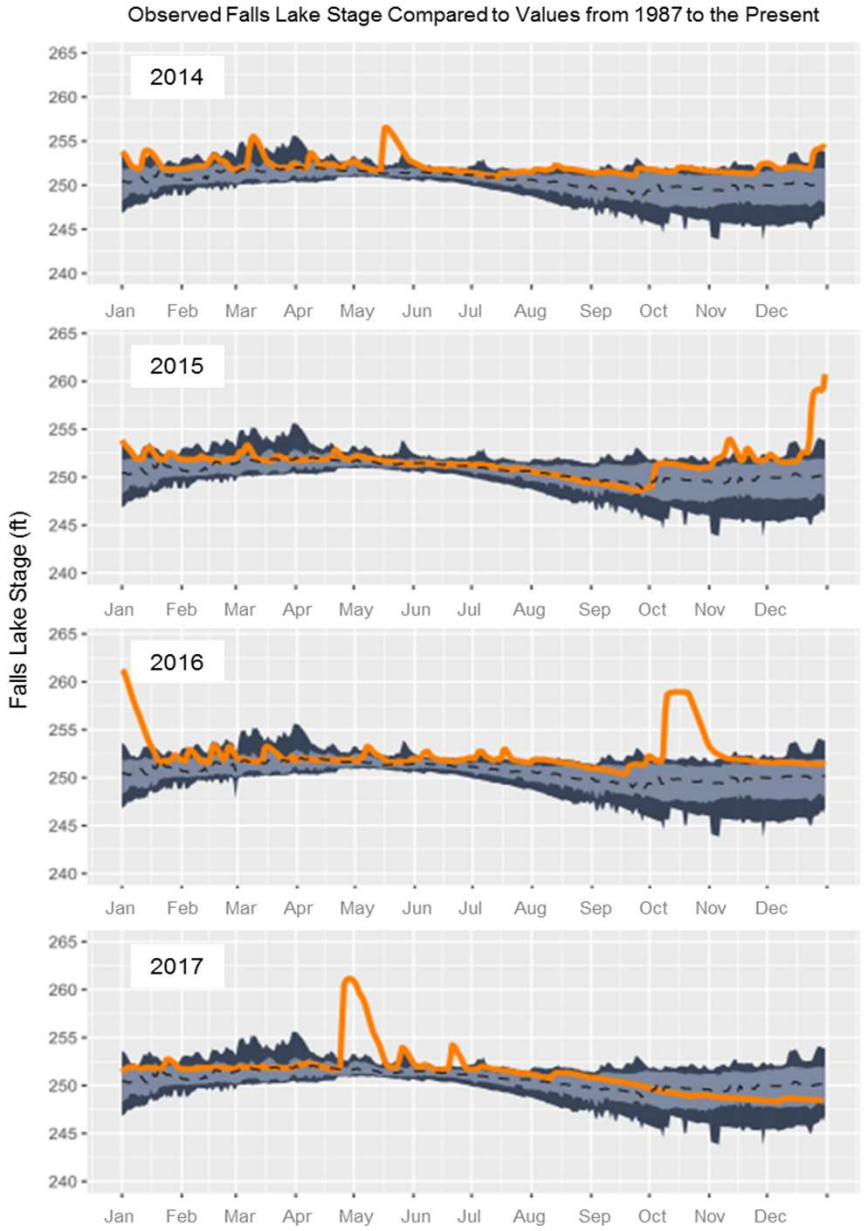
5340 Wade Park Boulevard, Suite 200

Raleigh, NC 27607

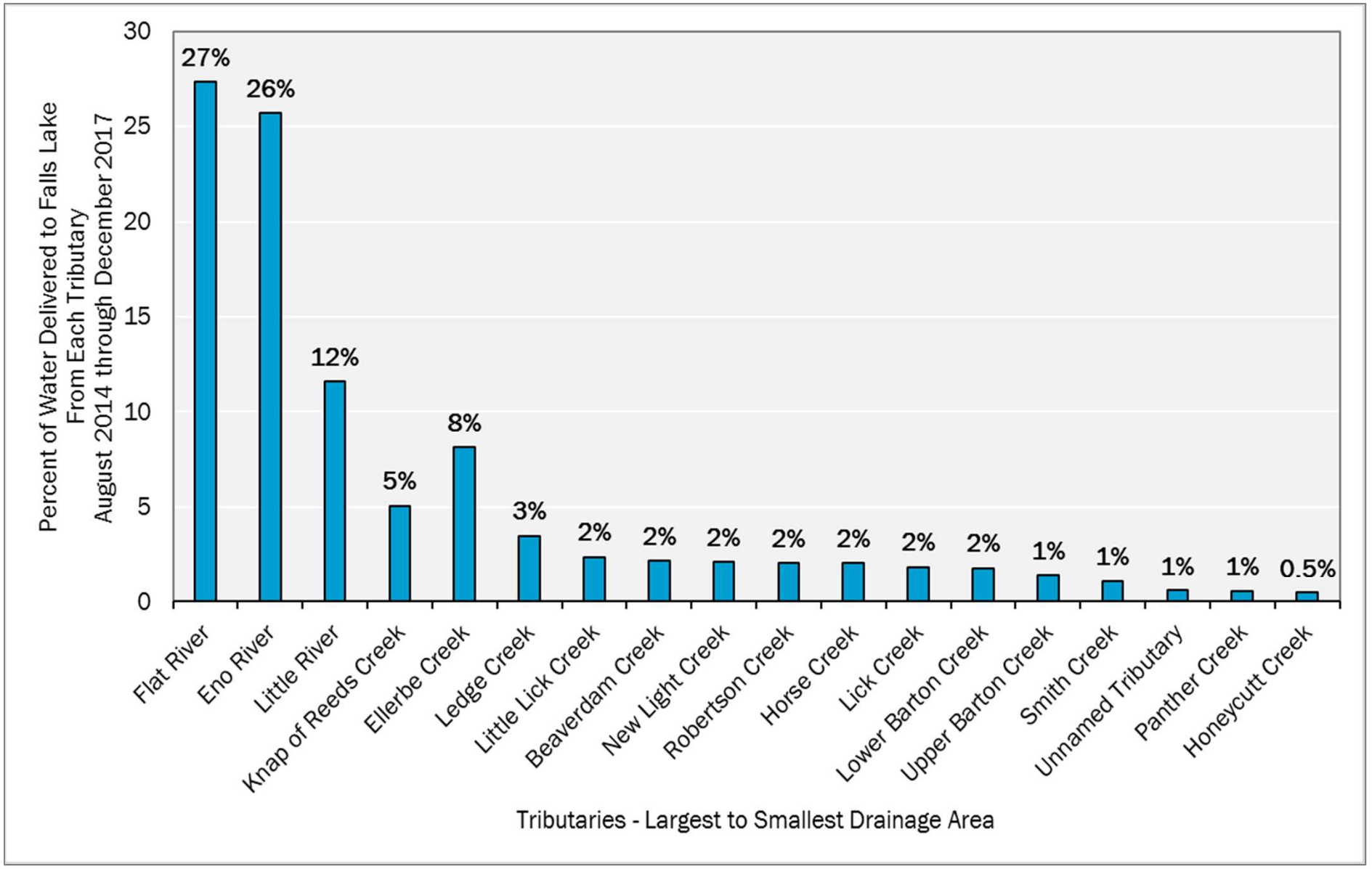
Rainfall



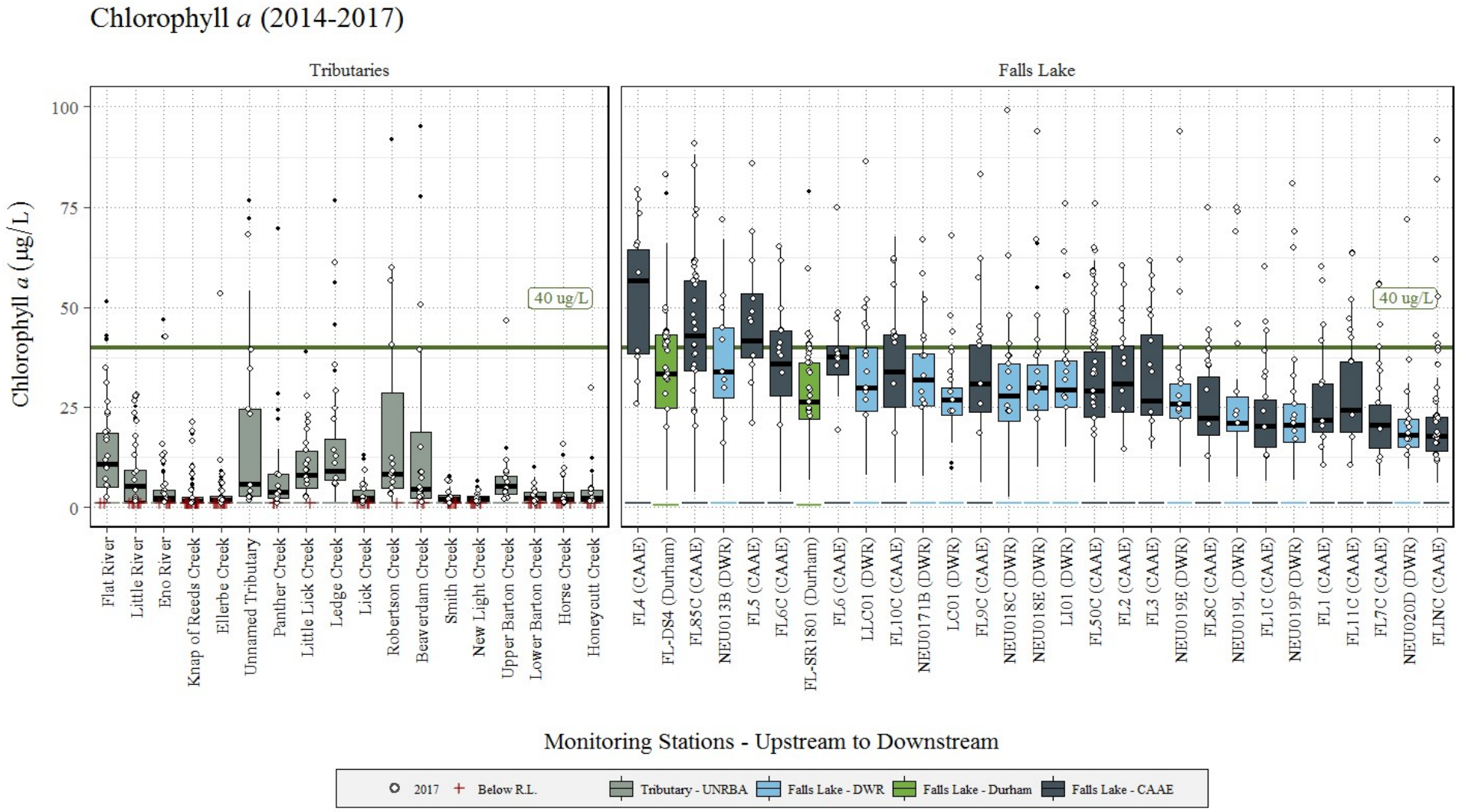
Lake Level



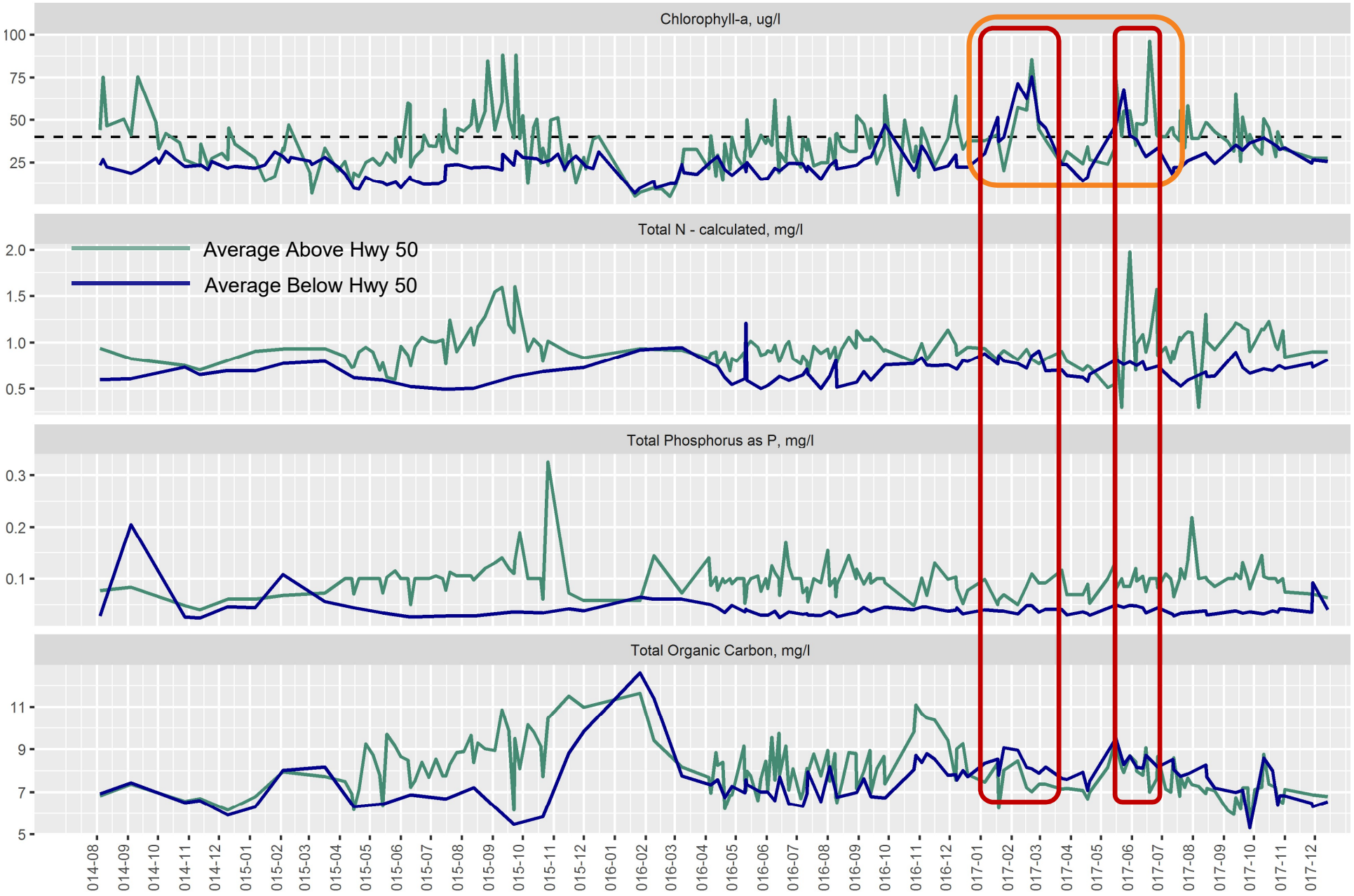
Hydraulic Loading from Tributaries



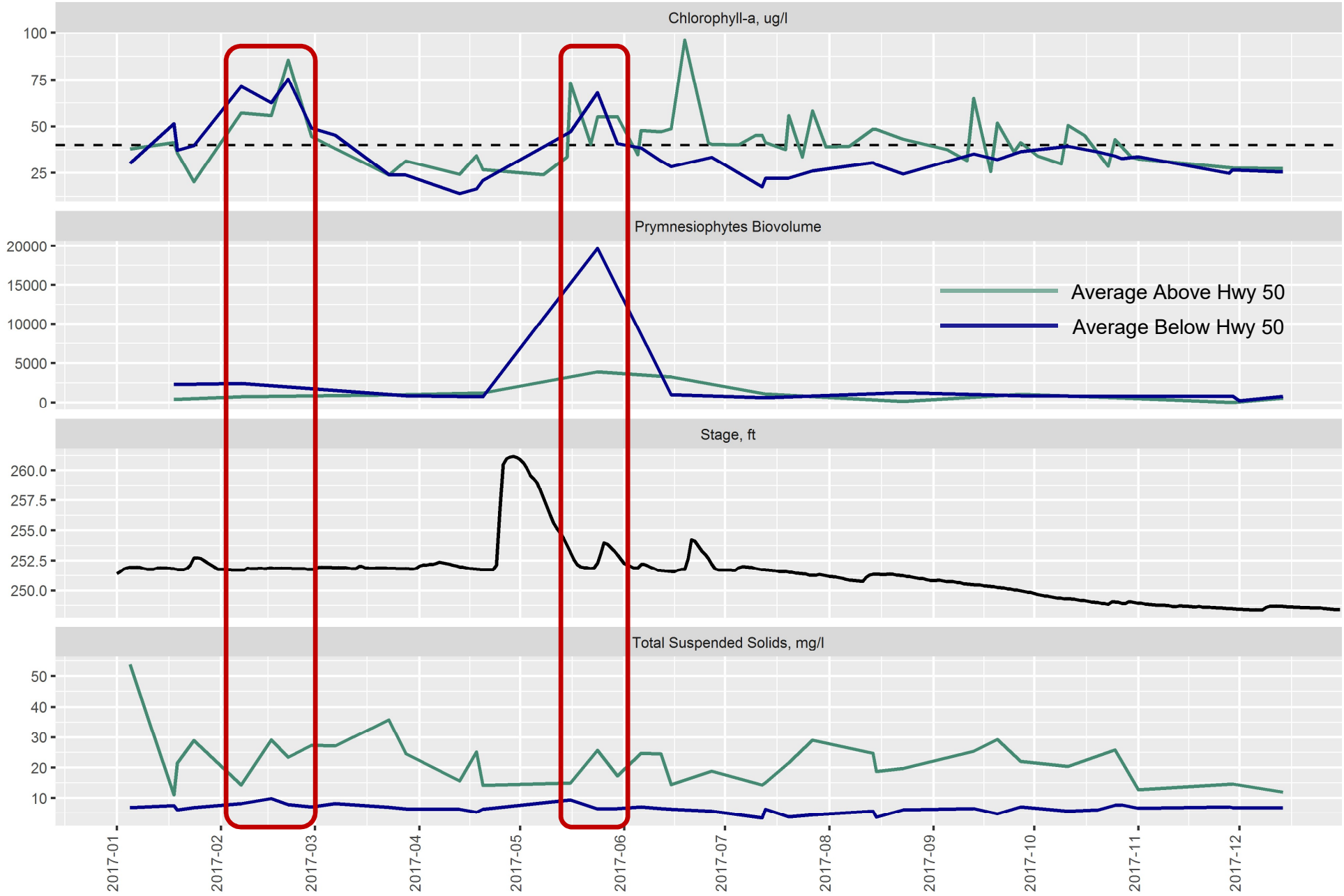
Chlorophyll *a*

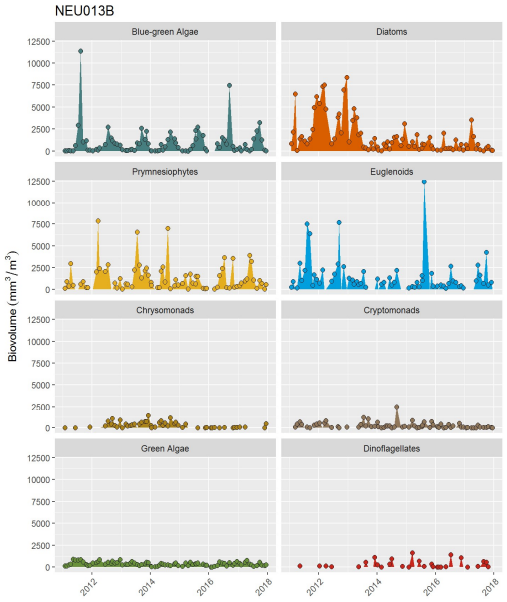


2017 Chlorophyll *a* Peaks

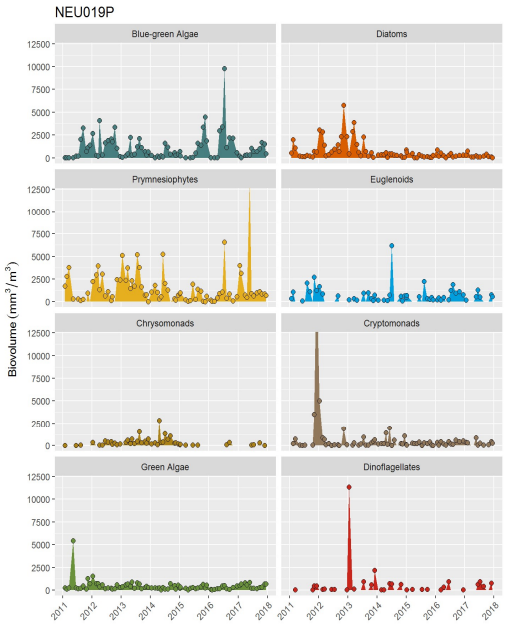


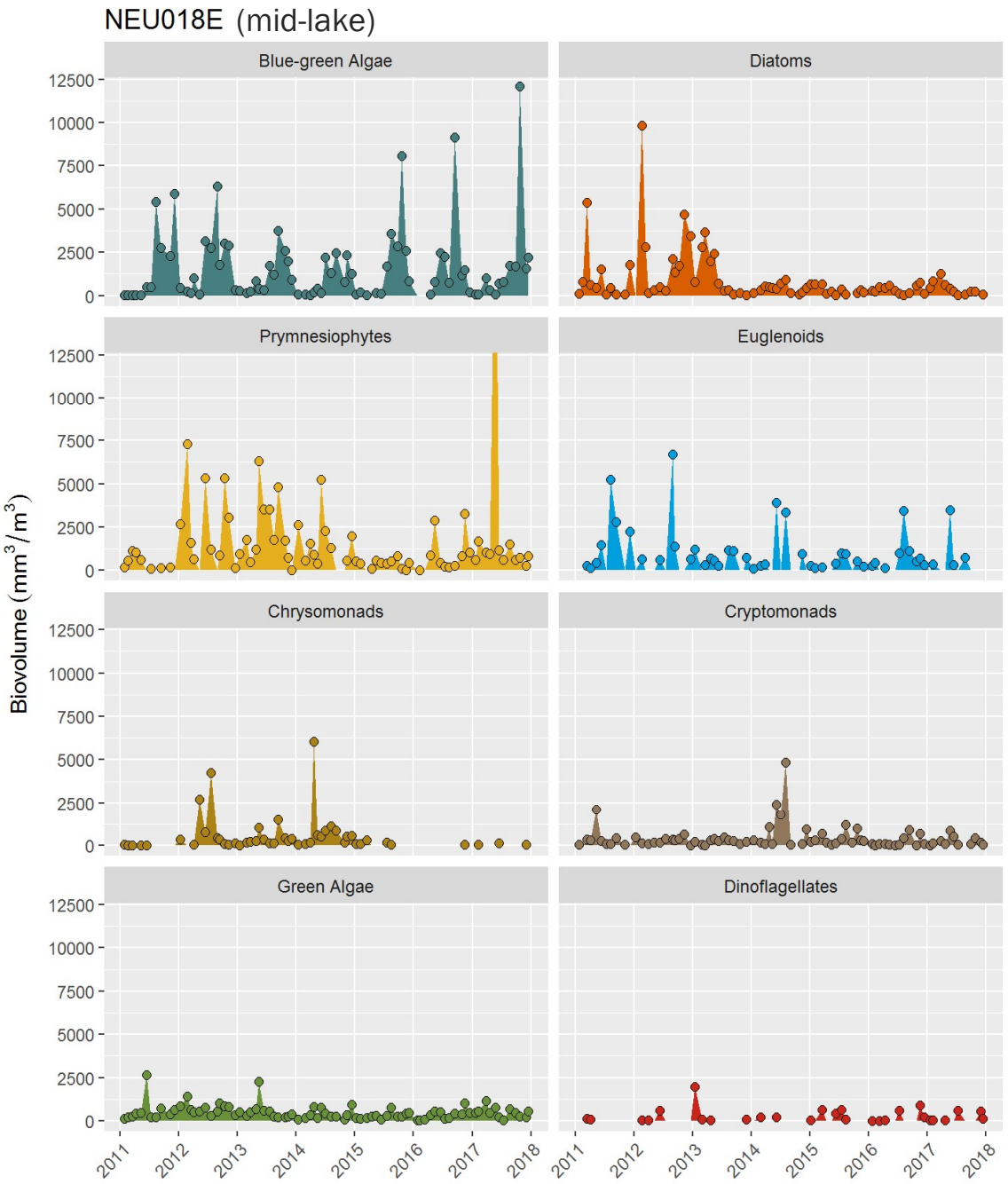
2017 Chlorophyll *a* Peaks



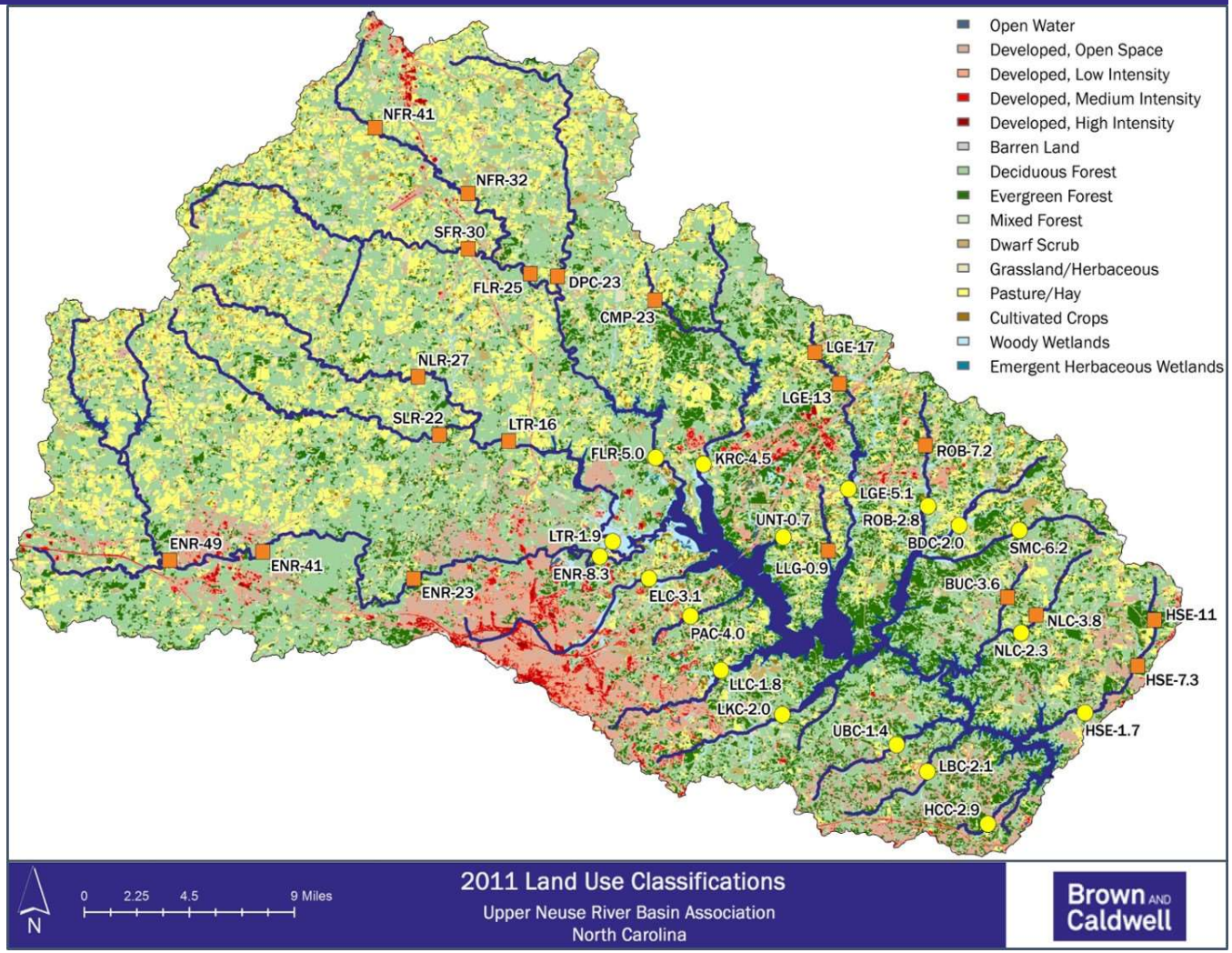


Algal Groups





Land Cover and Water Quality



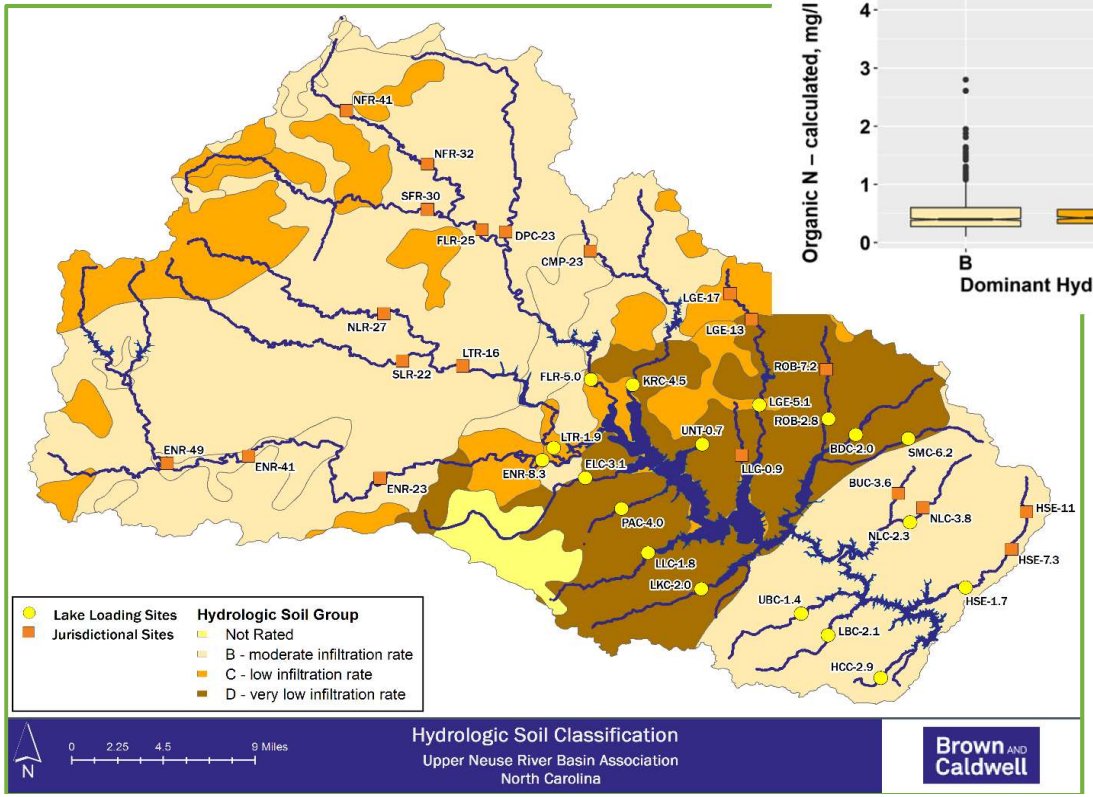
Positive correlations:

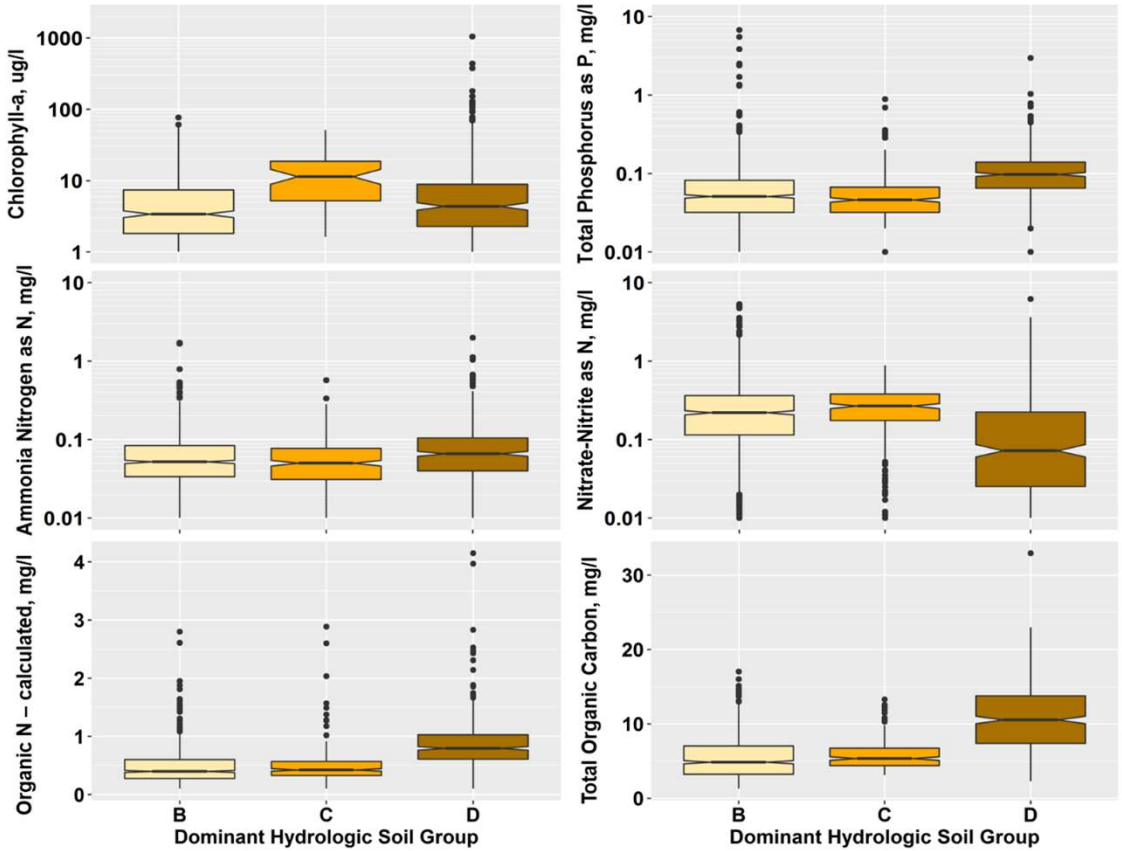
- % developed land and conductivity
- % herbaceous land and TOC
- % wetland cover and TOC, TKN and chl-a

Negative correlations:

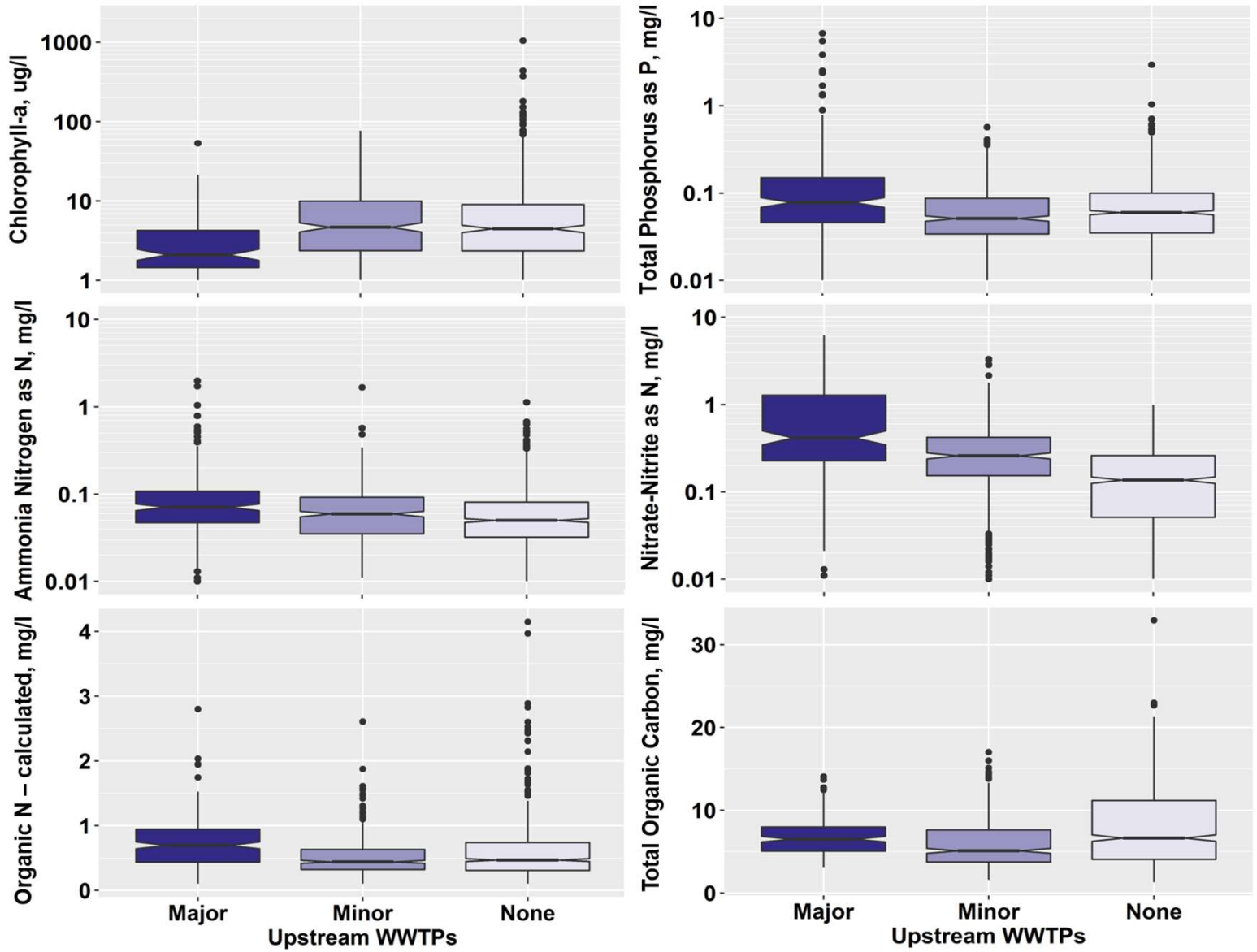
- % forested land and TOC
- % wetland cover and pH and DO

Soil Character and Water Quality

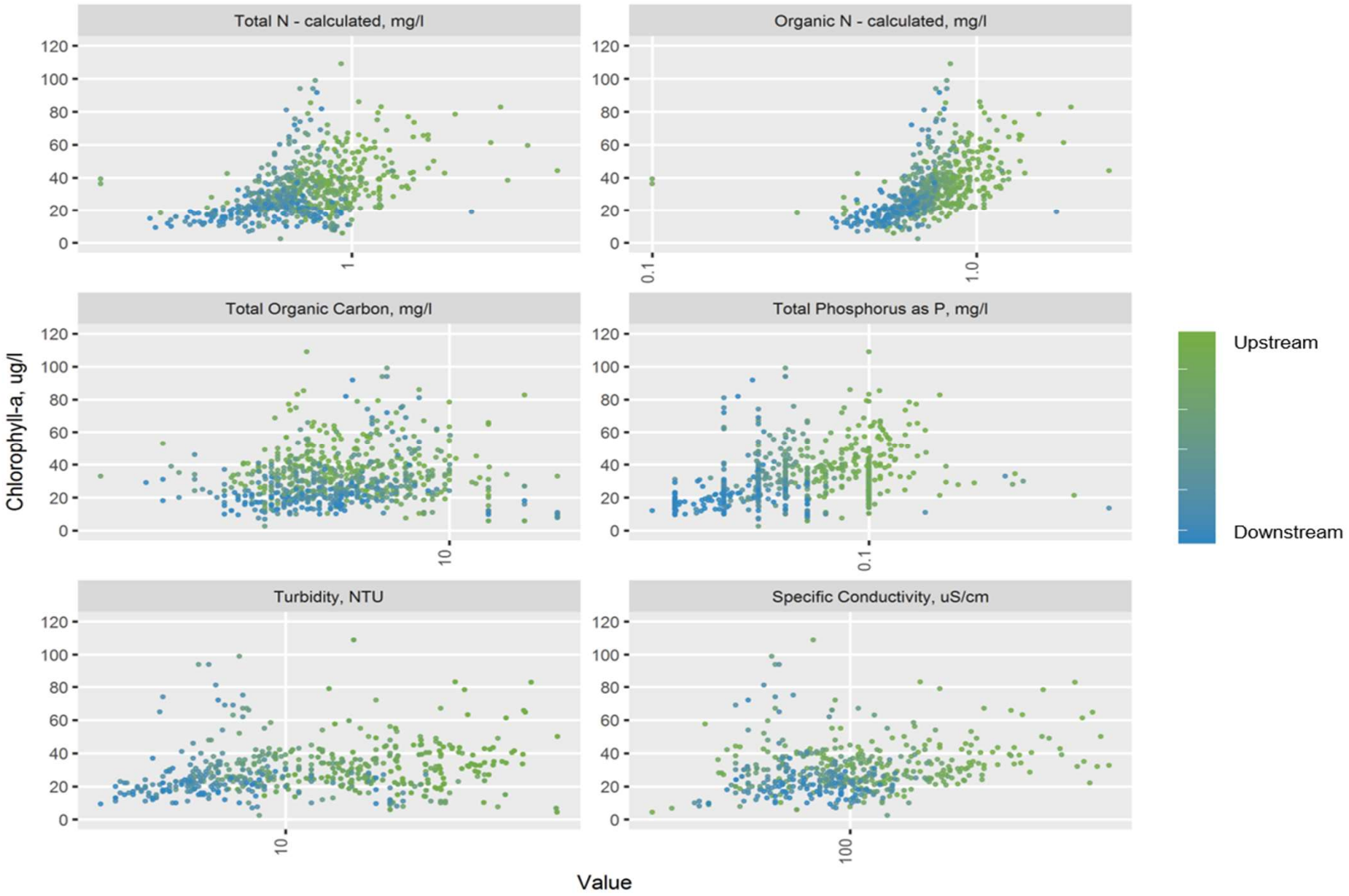




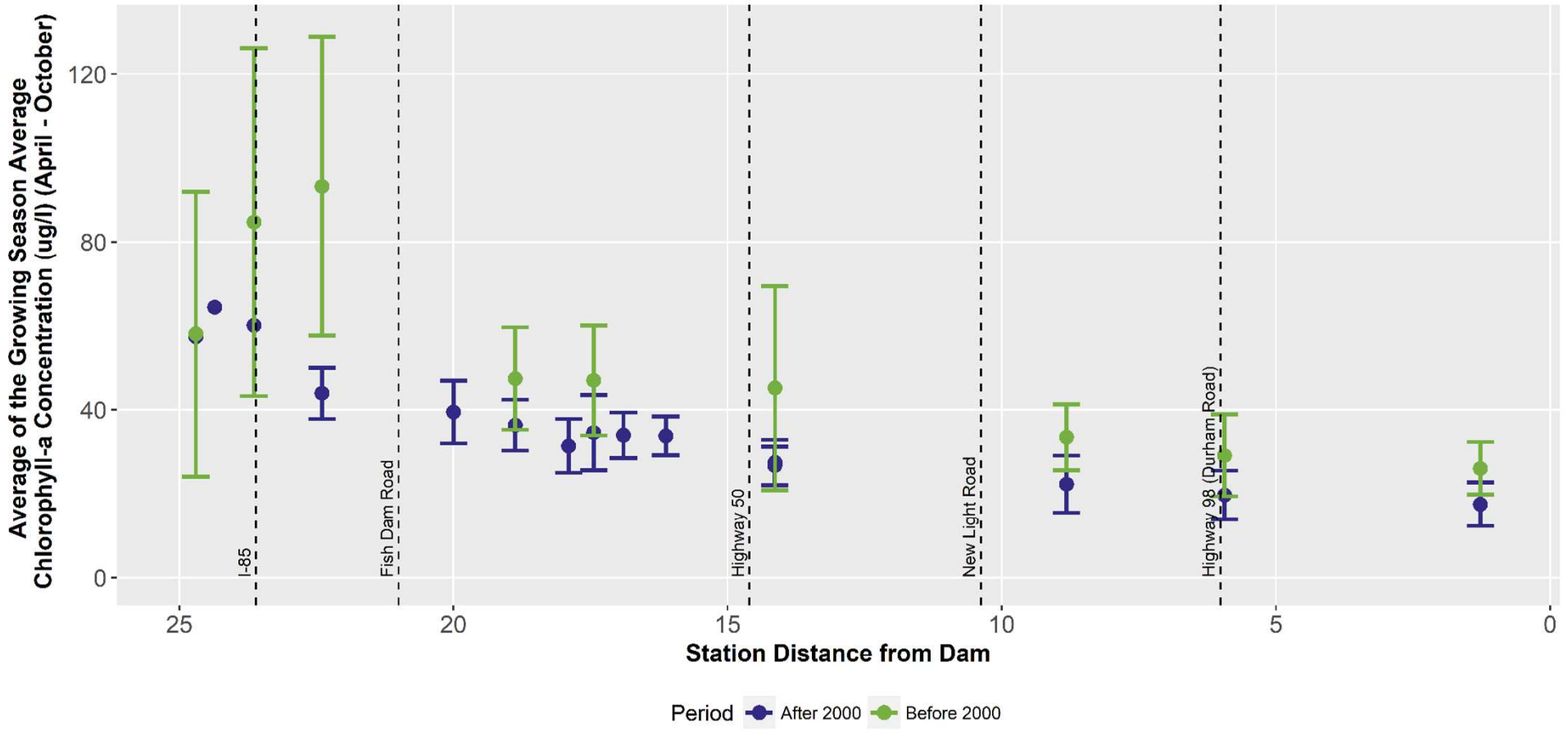
Treatment Facilities and Water Quality



Relationships between Chl *a* and other parameters

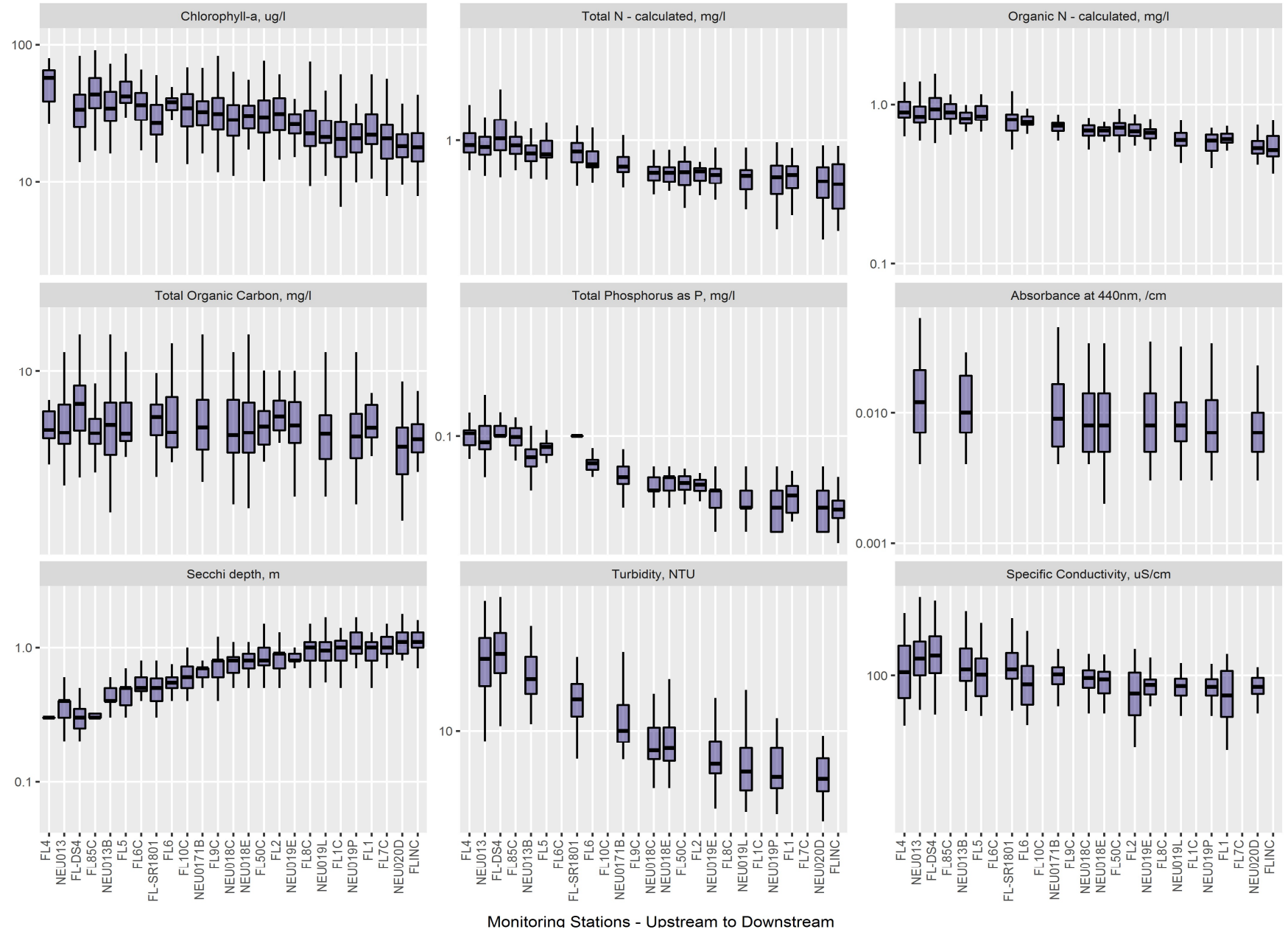


Change in Chl *a* levels over time

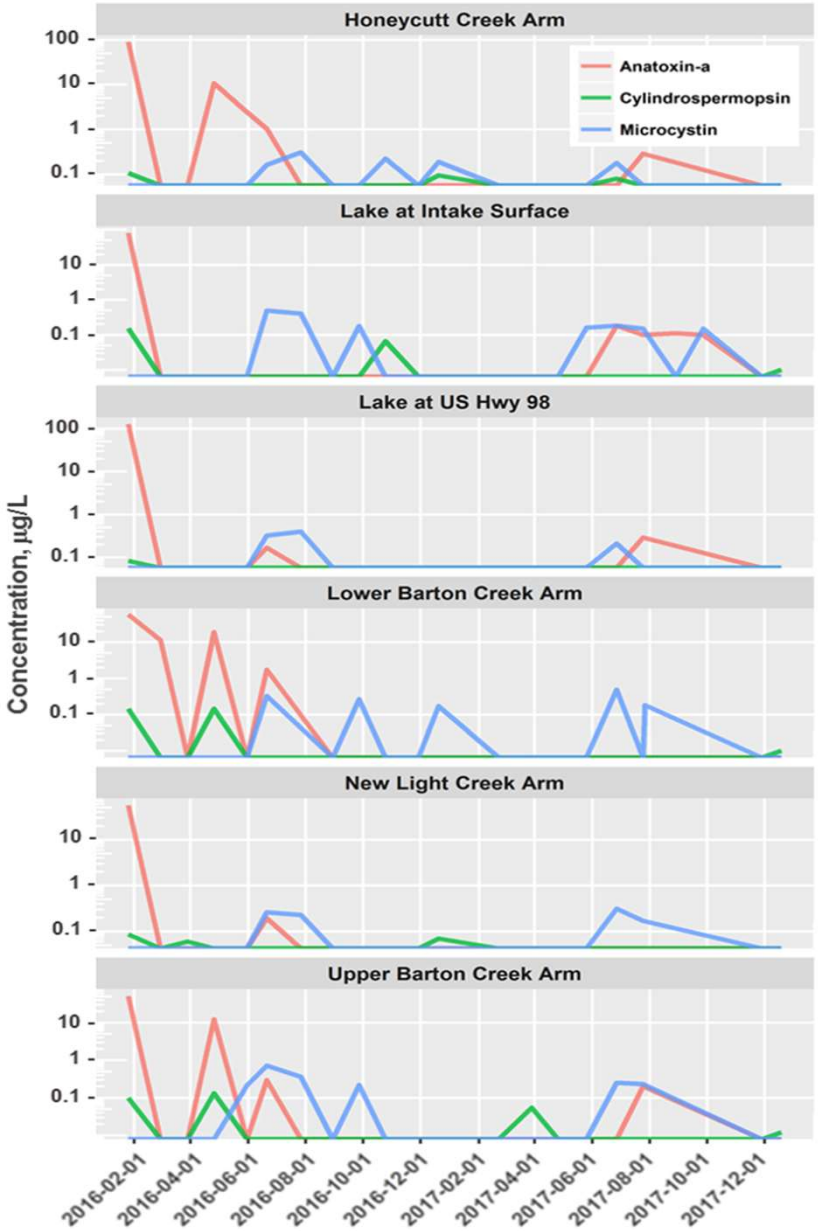


*Only Stations with at least 3 samples per season are included

Upstream to Downstream Water Quality Patterns



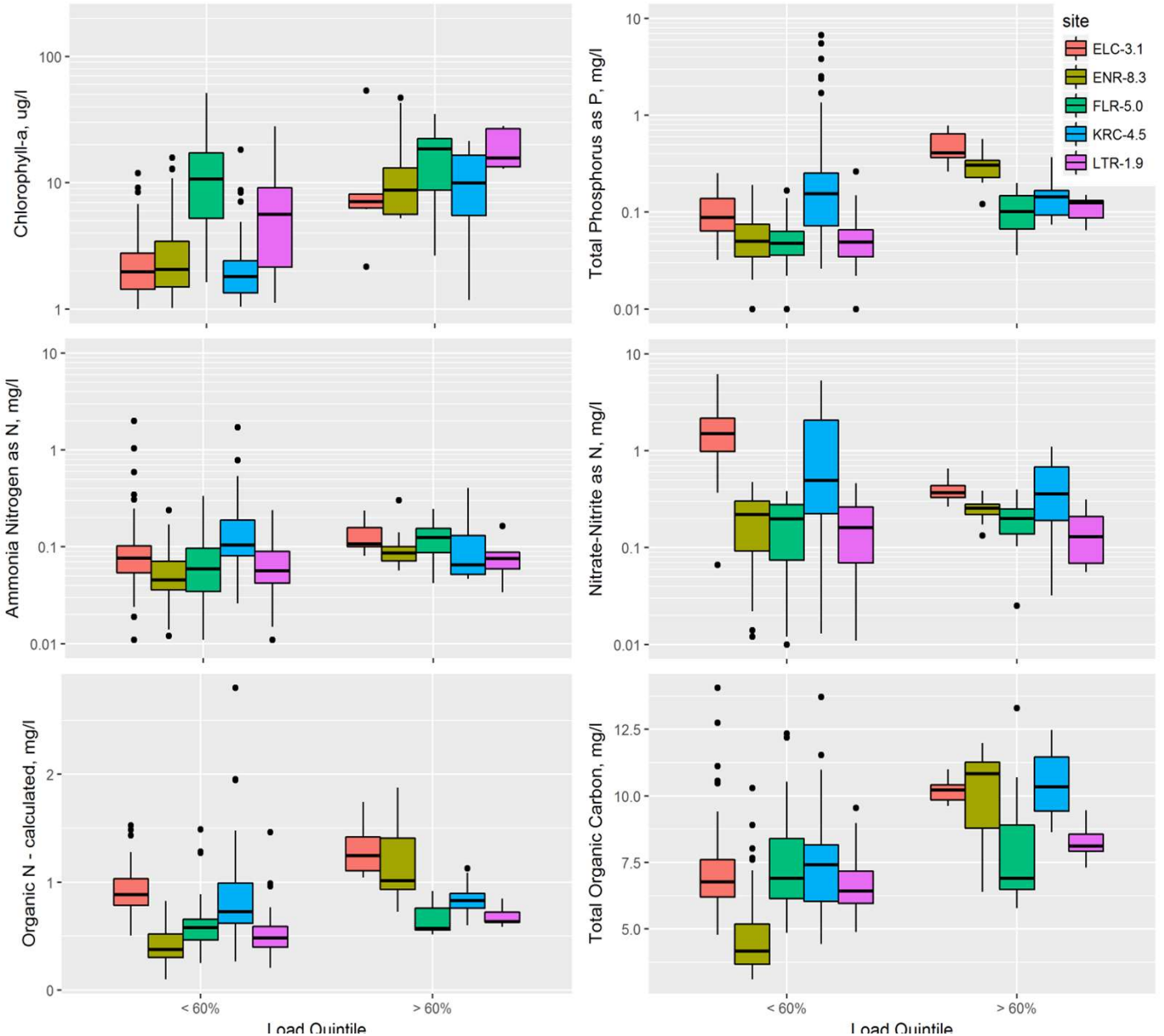
Algal Toxins in Falls Lake



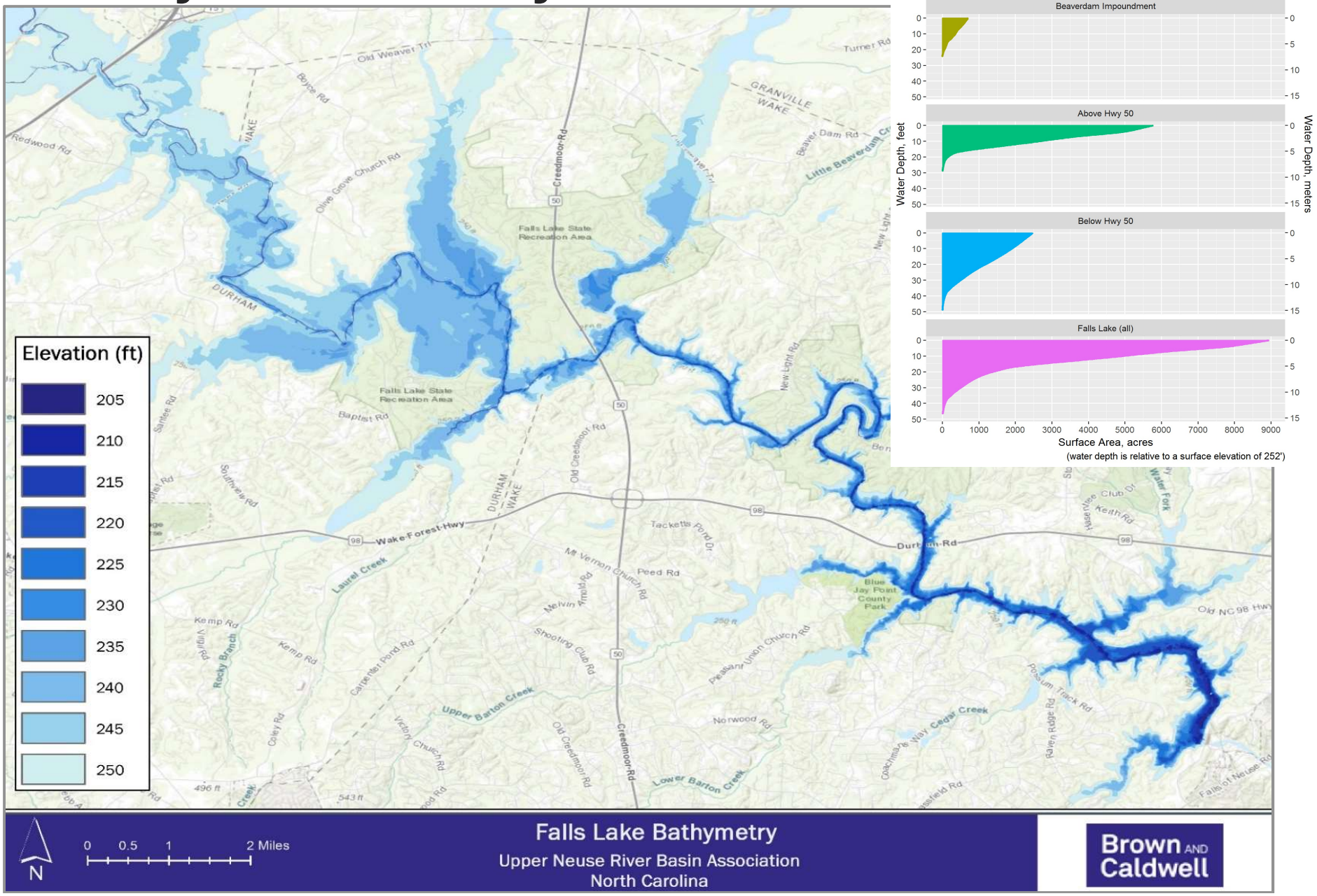
Microcystin Guidelines:

- WHO drinking water guideline - 1 ug/L
- EPA recreational uses guideline – 4 ug/L

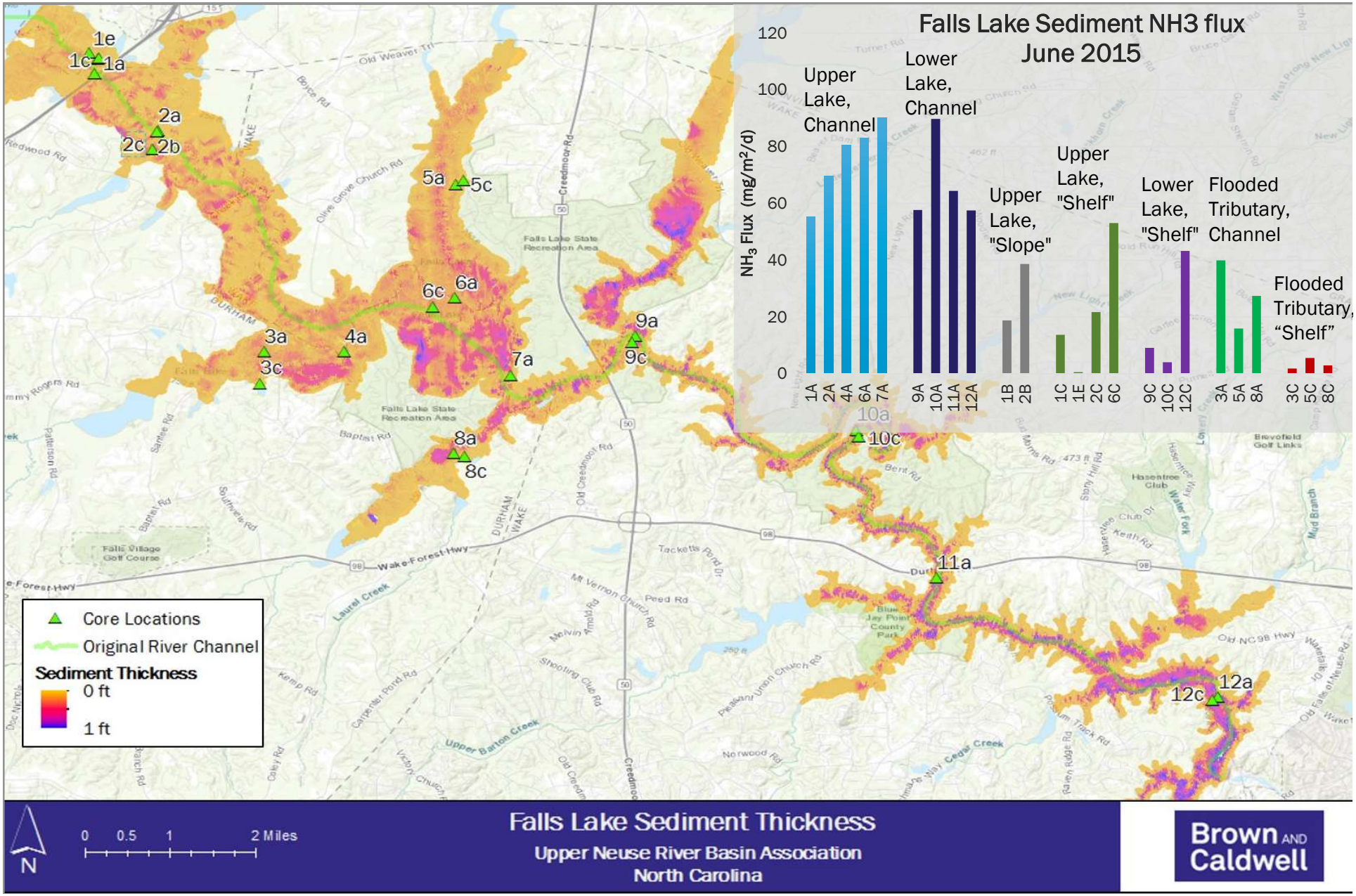
High Flows and Water Quality



Bathymetric Survey



Sediment Evaluation



Quality Assurance/Quality Control

- 94 percent of sampling events have been completed as planned
  - Most missed events were due to dry conditions
  - Some were due to inaccessibility from flooding or snow
- The Annual Report provides uncertainty statistics derived from laboratory QA data that allow users to estimate the margin of error in the monitoring results

Recommendations

- The current routine monitoring program should be continued through October 2018.
- Data acquisition for modeling support should be considered complete at that time.
- A final monitoring report for modeling use should be completed in 2019 (February-March).

The UNRBA Executive Director will establish a work group to consider the potential costs and benefits of a water quality monitoring program beyond October 2018.

The work group will examine specific objectives for any future monitoring that may be important for the UNRBA to consider.

Brown AND Caldwell