Real-Time Monitoring Buoy in Mystic River Watershed

- Access to the data has been through a password protected site http://www.ysieconet.com/

Project Assistance:
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Tim Bridges
Dick Siscanaw

Charles and Mystic River Real-Time Monitoring
EPA New England Regional Laboratory

The Real-Time Monitoring Buoys are off-line for the season

Purpose:

Environmental Protection Agency (EPA) has established monitoring buoys in the Charles and Mystic Watersheds. These buoys collect and transmit water quality data that is available to the public. EPA has established these buoys to help with the tracking of cyanobacteria blooms and water quality conditions.

Note: All water quality measurements are collected 1 meter below the water's surface

Last Sonde Verification: 9/30/2010

Click here

Project Partners:

Community Boating Inc. Boston

MyRWA Mystic River Watershed Association *your community • your watershed*

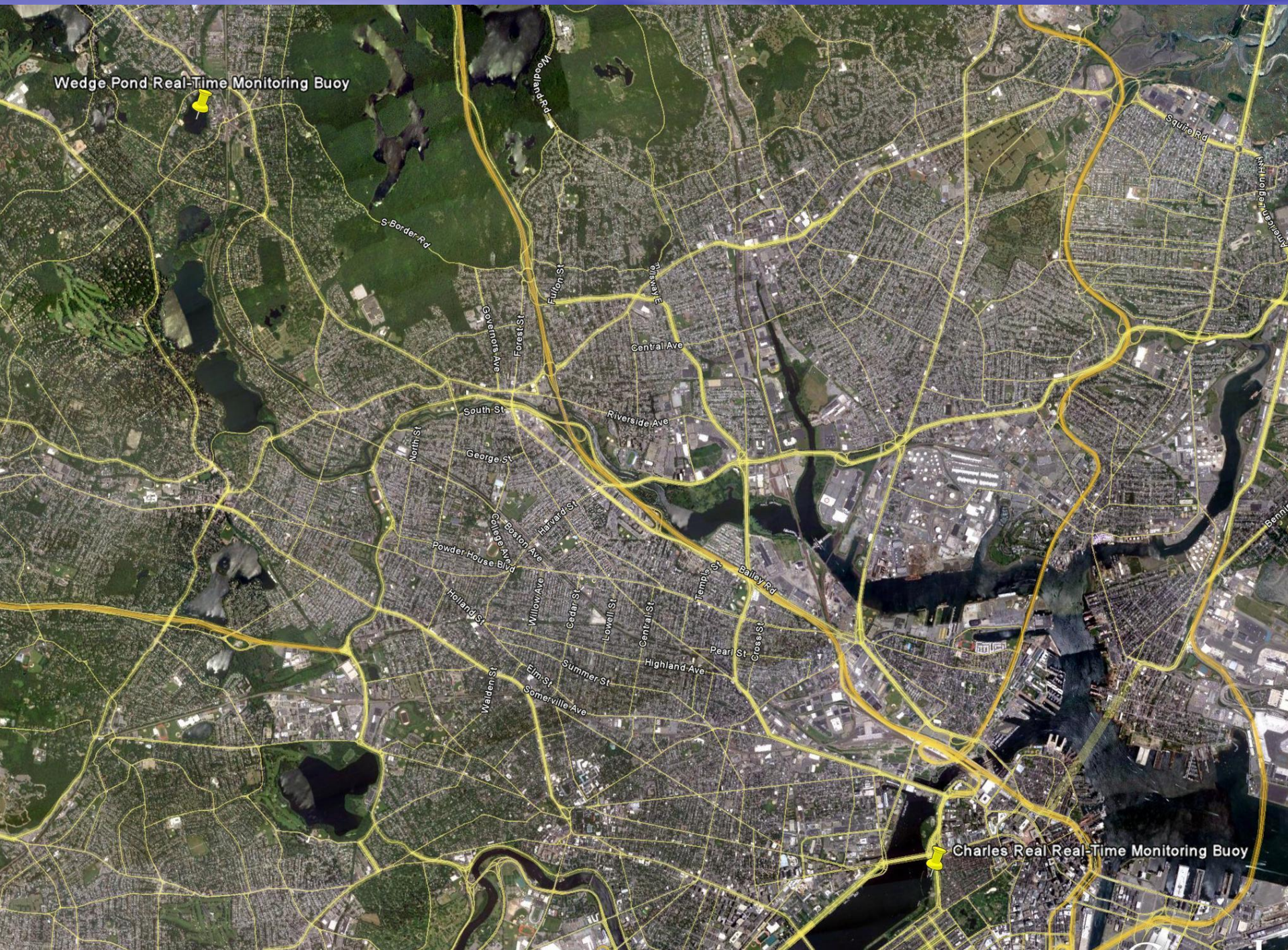
Commonwealth of Massachusetts Department of Public Health

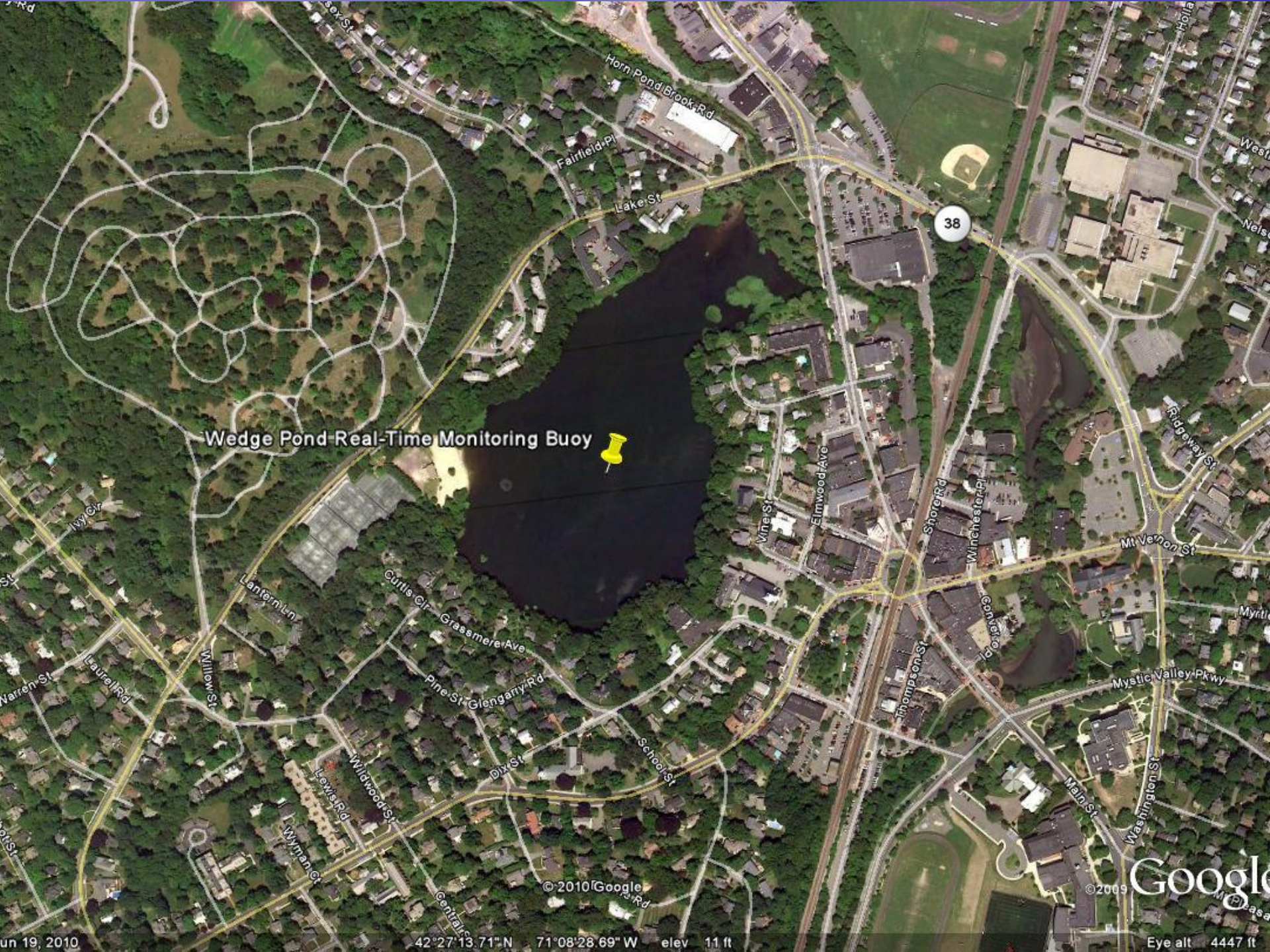
CRWA

dcr

Disclaimer:

The data presented on this website is considered preliminary data and may be subject to future revision or qualifiers. The data from this site is transmitted directly from the instrument with no or little review. Inaccuracies may be presented because instrument malfunction or physical changes at buoy location.


Wedge Pond Real-Time Monitoring Buoy
Charles Real Real-Time Monitoring Buoy
Squire Rd
Mystic Lake Drive
Woodland Rd
S Border Rd
Fulton St
Alewife E
Central Ave
Governors Ave
Forest St
South St
Riverside Ave
North St
George St
Harvard St
Boston Ave
College Ave
Powder House Blvd
Temple St
Bailey Rd
Holland St
Willow Ave
Cedar St
Lowell St
Central St
Pearl St
Cross St
Highland Ave
Walden St
Elm St
Summer St
Somerville Ave


Wedge Pond Real-Time Monitoring Buoy
Horn Pond Brook Rd
Fairfield Pl
Lake St
38
Ridgeway St
Mt Vernon St
Mystic Valley Pkwy
Vine St
Elmwood Ave
Shore Rd
Winchester Pl
Converse Pl
Thompson St
Main St
Washington St
Lantern Ln
Curtis Cir
Grassmere Ave
Pine St
Glengarry Rd
Willow St
Laurel Rd
Warren St
Dix St
School St
Wildwood St
Lewis Rd
Wyman Ct
Ivy Cir
© 2010 Google
©2009 Google
un 19, 2010
42°27'13.71" N 71°08'28.69" W elev 11 ft
Eye alt 4447 ft

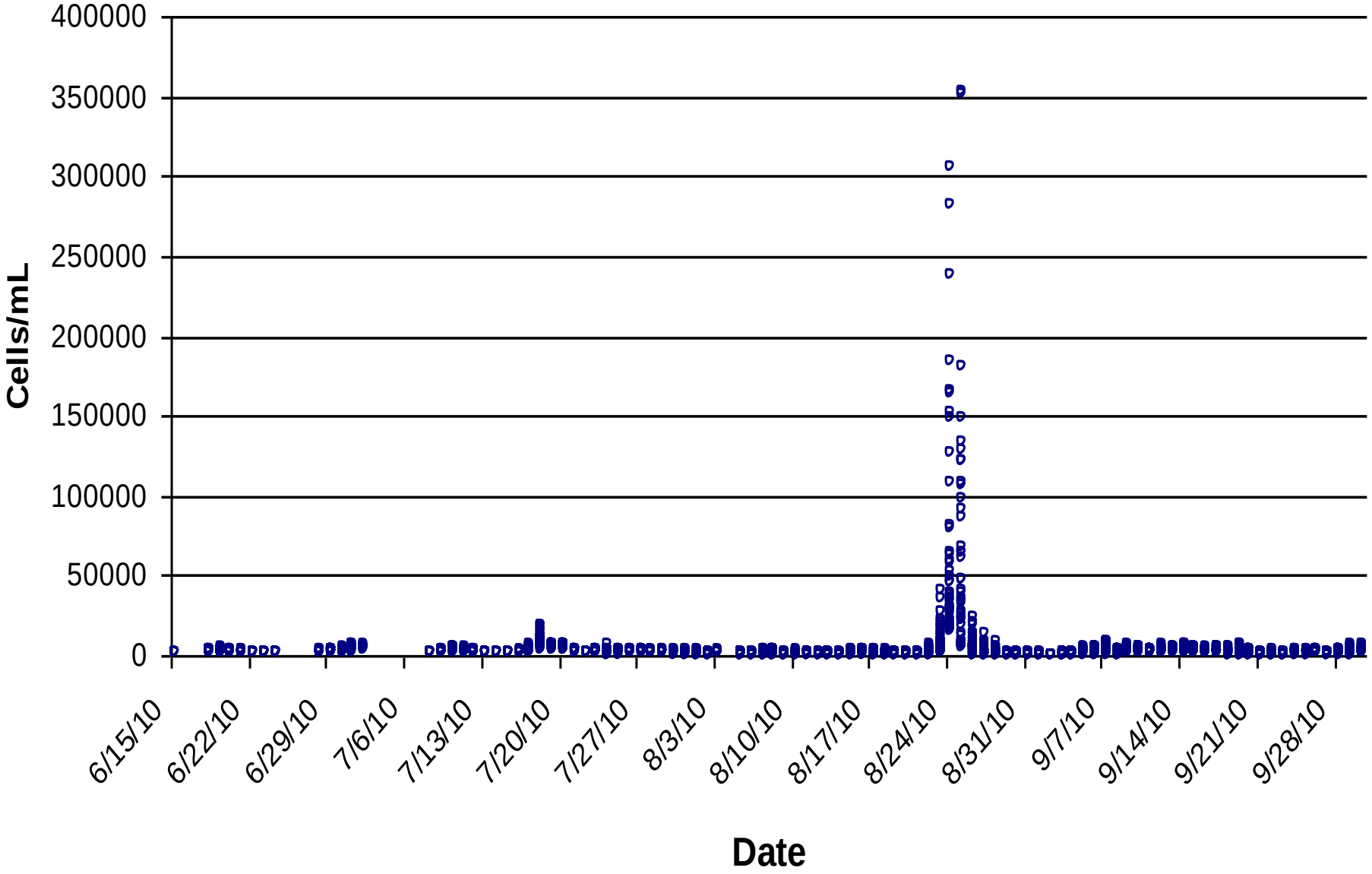
Wedge Pond Sonde Measurements

- Recorded every 15 minutes
- Measurement period 6/15-9/30/10
- Measurements collected at 1 meter depth
- Parameters
  - Temperature,
  - Conductivity
  - pH
  - Dissolved oxygen
  - Chlorophyll
  - Phycocyanin

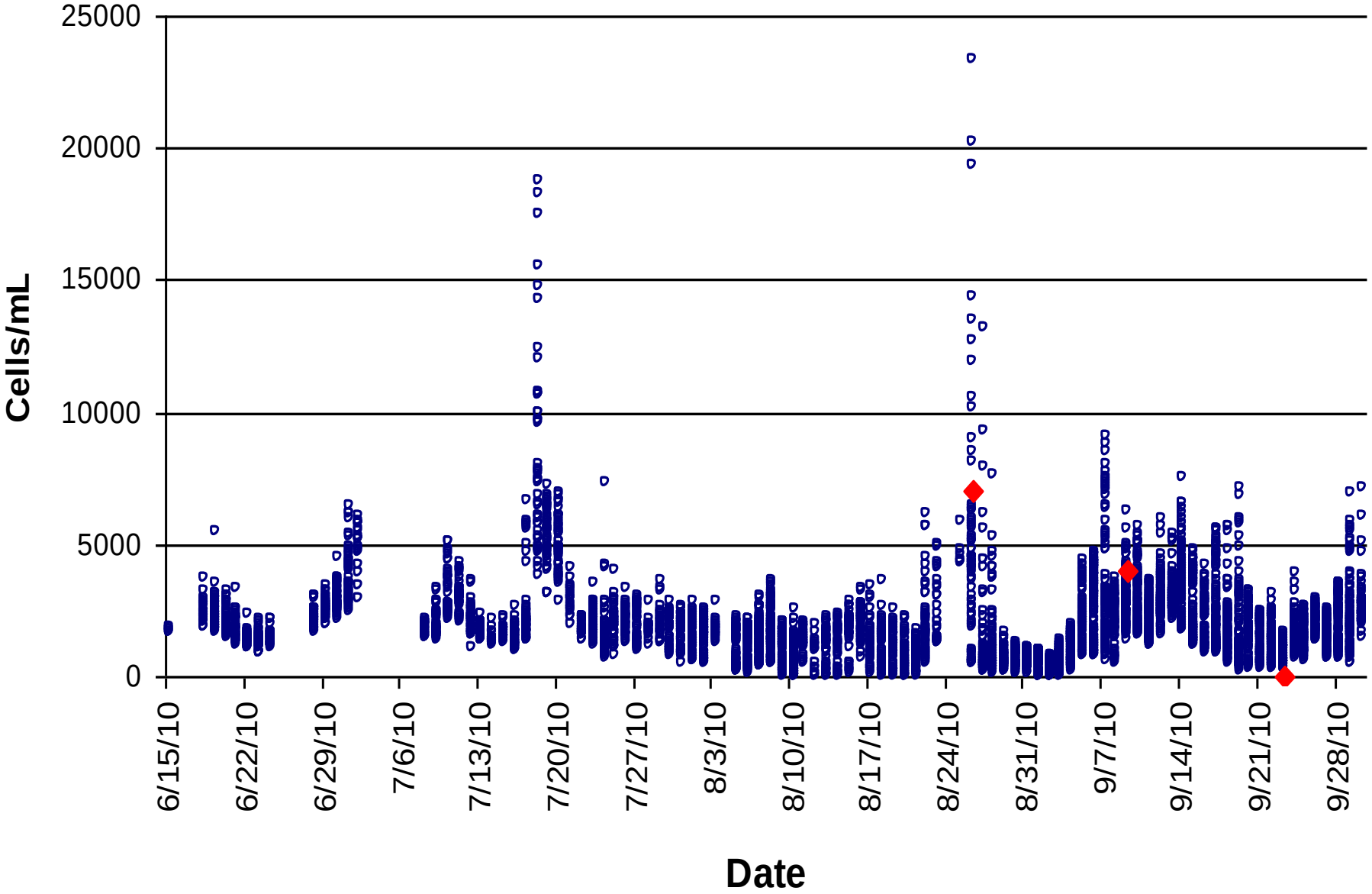
Buoy chlorophyll and phycocyanin correlated with Lab data

- Chlorophyll a
  - EPA Contract lab
  - DPH contract lab (Charles only)
- Cyanobacteria cell counts
  - EPA Contract lab
  - DPH contract lab (Charles only)
  - Roger Frymire

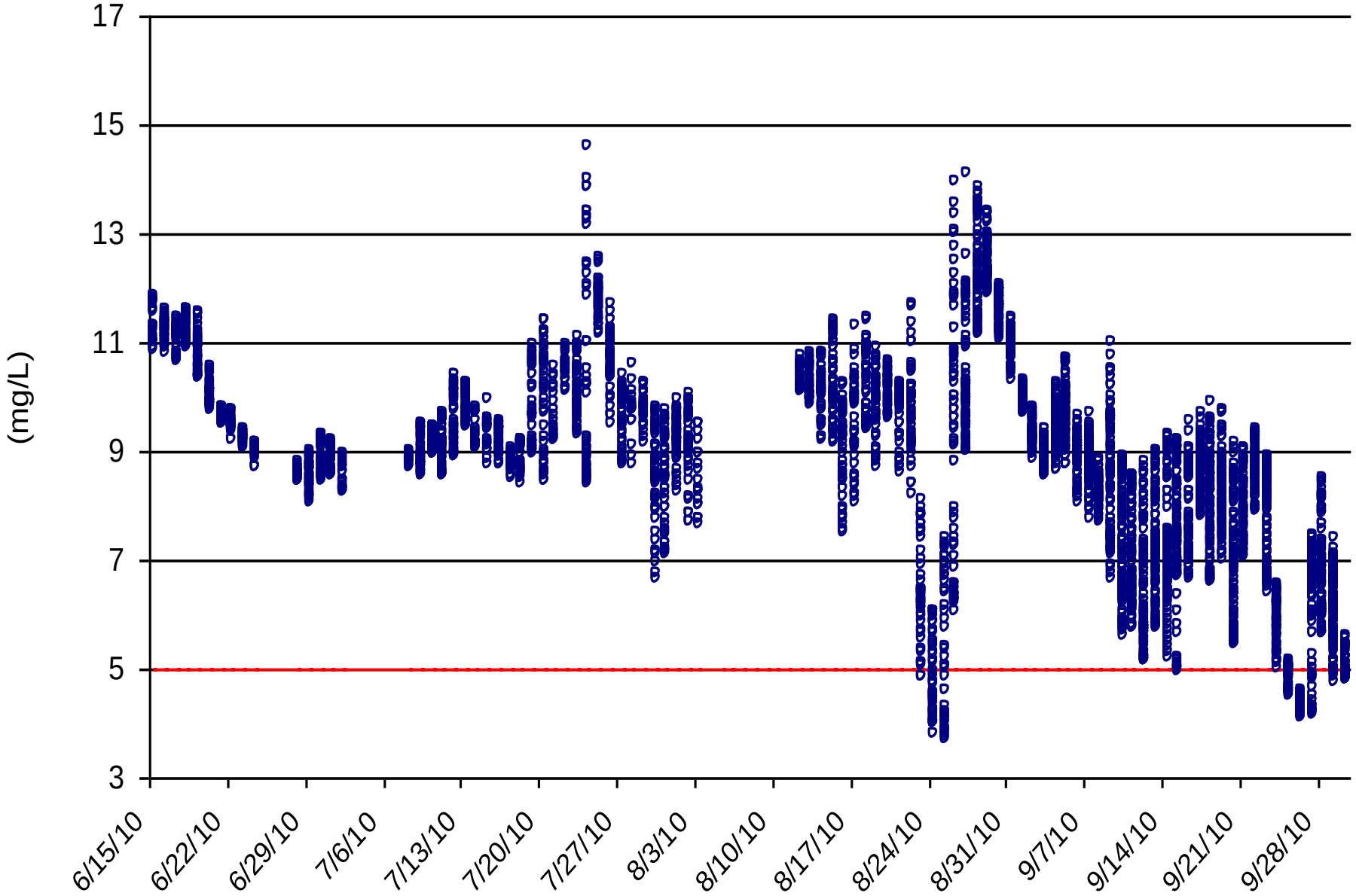
Wedge Pond Phycocyanin Concentrations



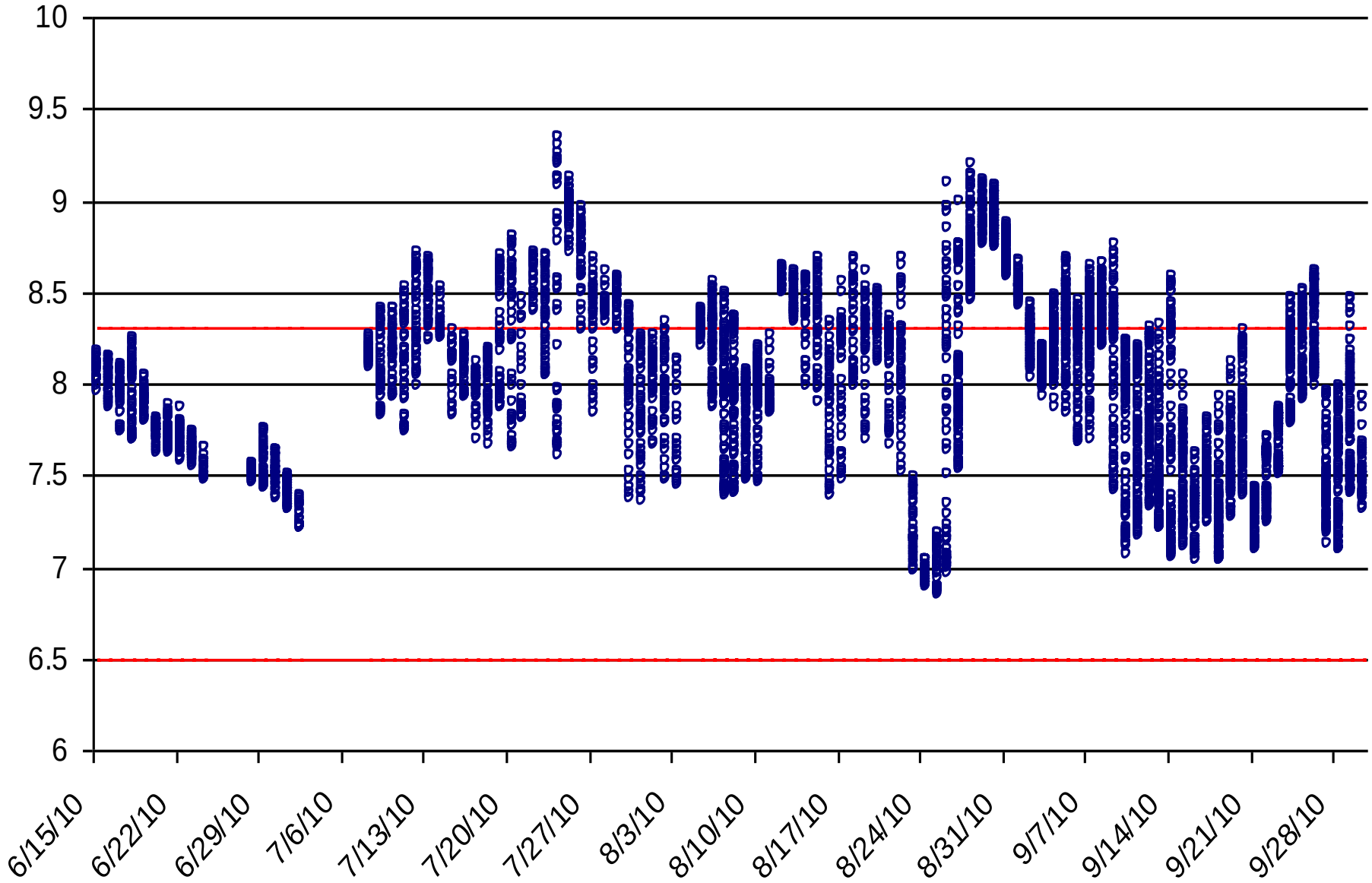
Wedge Pond Phycocyanin Concentrations

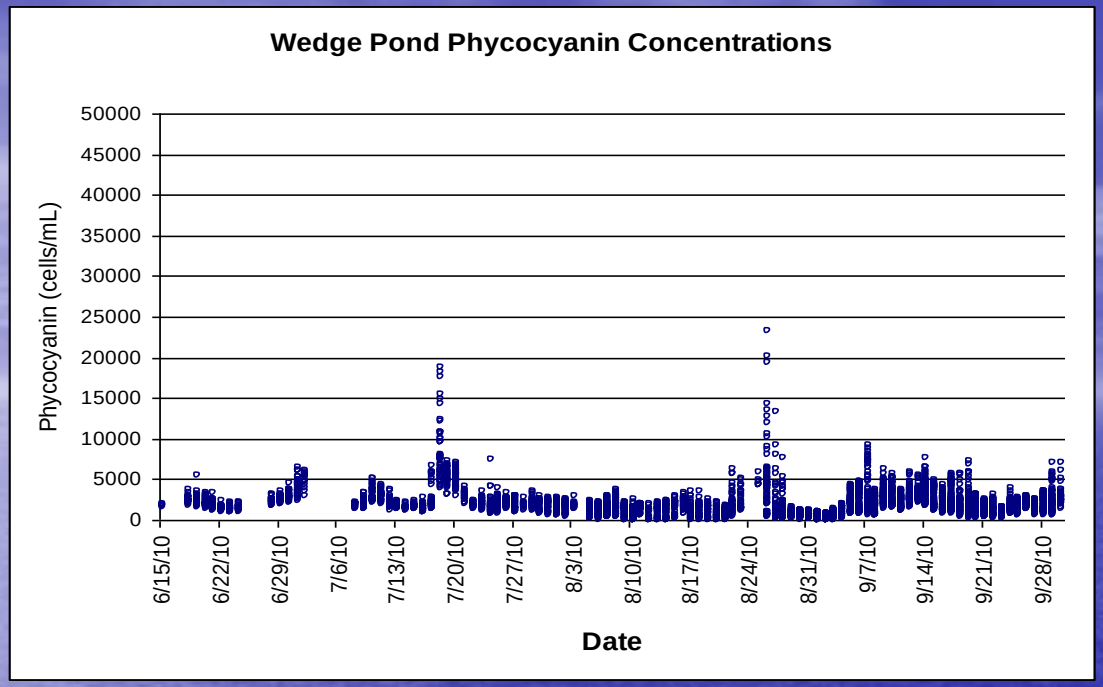


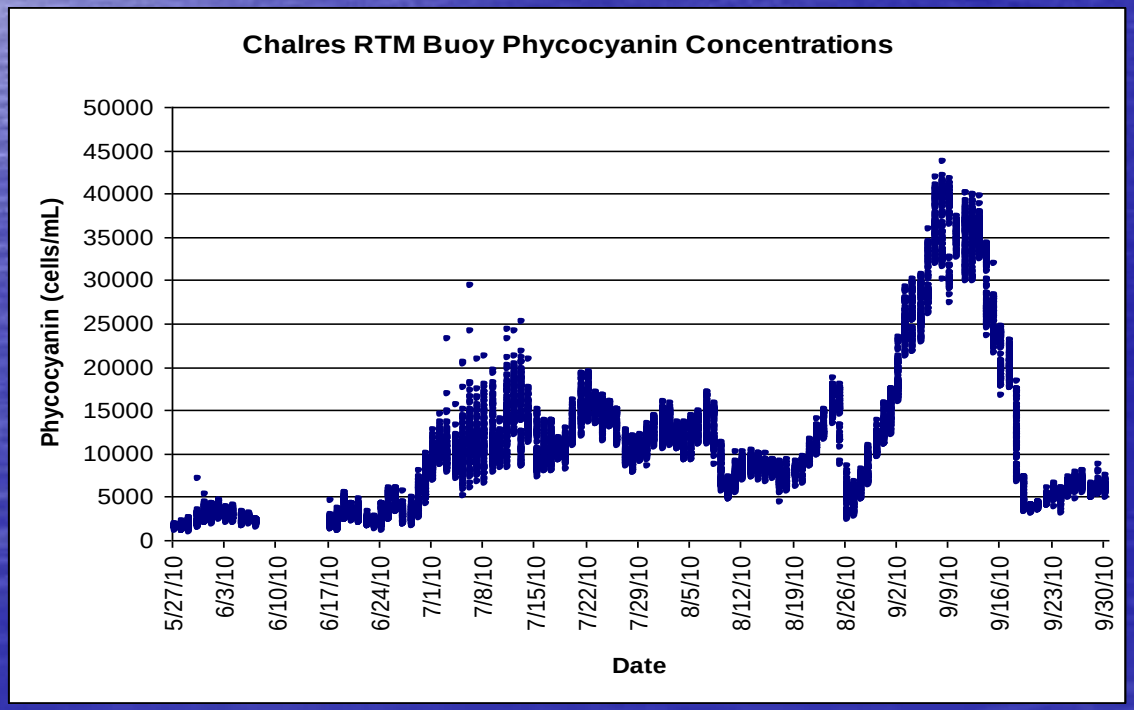
Wedge Pond Dissolved Oxygen



Wedge Pond pH Measurements




Wedge Pond Phycocyanin Concentrations
Phycocyanin (cells/mL)
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
6/15/10
6/22/10
6/29/10
7/6/10
7/13/10
7/20/10
7/27/10
8/3/10
8/10/10
8/17/10
8/24/10
8/31/10
9/7/10
9/14/10
9/21/10
9/28/10
Date


Chalres RTM Buoy Phycocyanin Concentrations
Phycocyanin (cells/mL)
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
5/27/10
6/3/10
6/10/10
6/17/10
6/24/10
7/1/10
7/8/10
7/15/10
7/22/10
7/29/10
8/5/10
8/12/10
8/19/10
8/26/10
9/2/10
9/9/10
9/16/10
9/23/10
9/30/10
Date

Summary of Use and Results

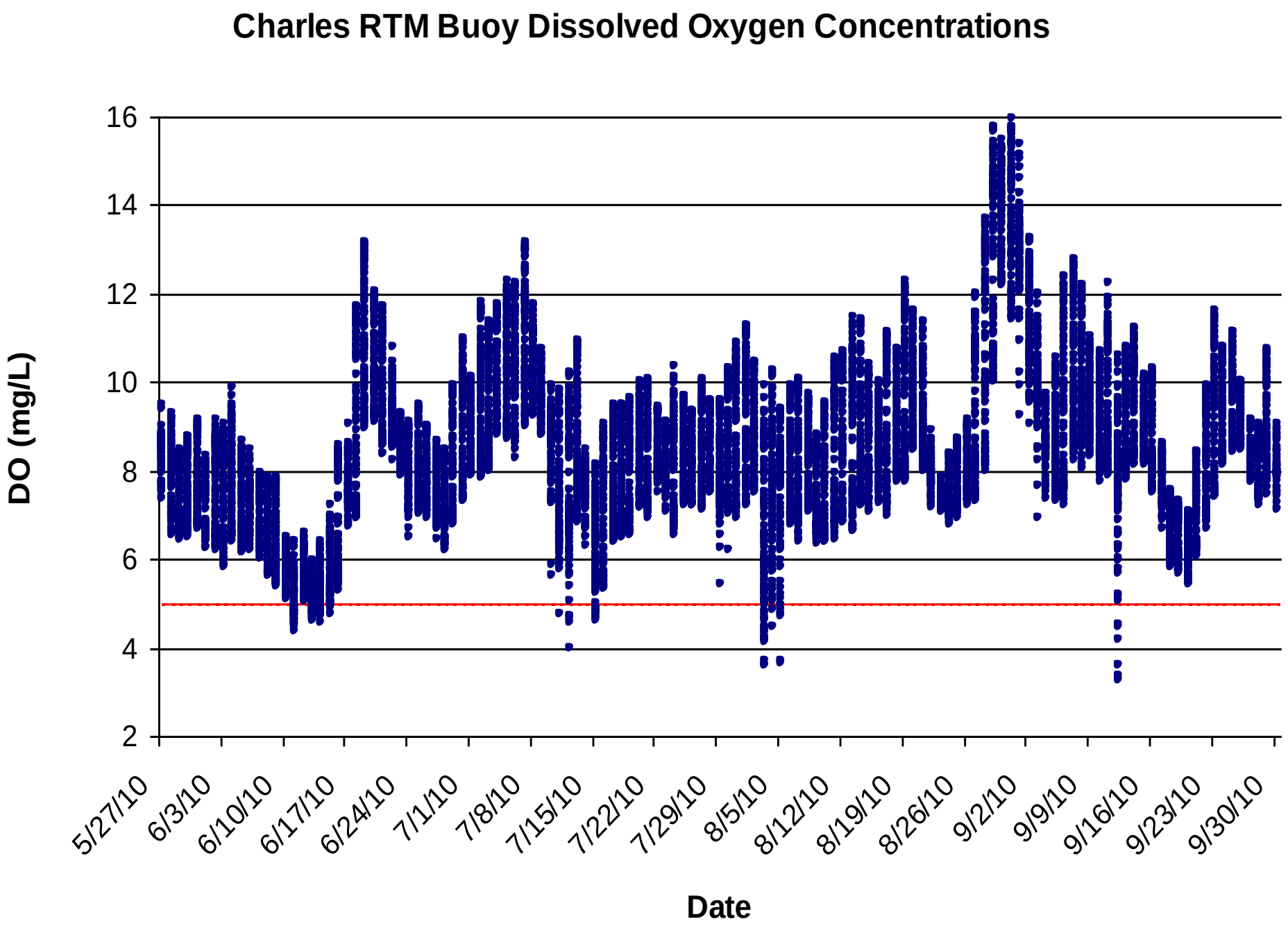
- Evaluation user feedback was positive
  - Most interest in tracking cyanobacteria blooms
  - Relocating Mystic Buoy
- Good probe performance against calibration standards
- Chlorophyll probe correlated poorly with laboratory Chlorophyll a method
- Phycocyanin correlated good with DPH Lab and Roger Frymire but poorly with EPA contract lab.

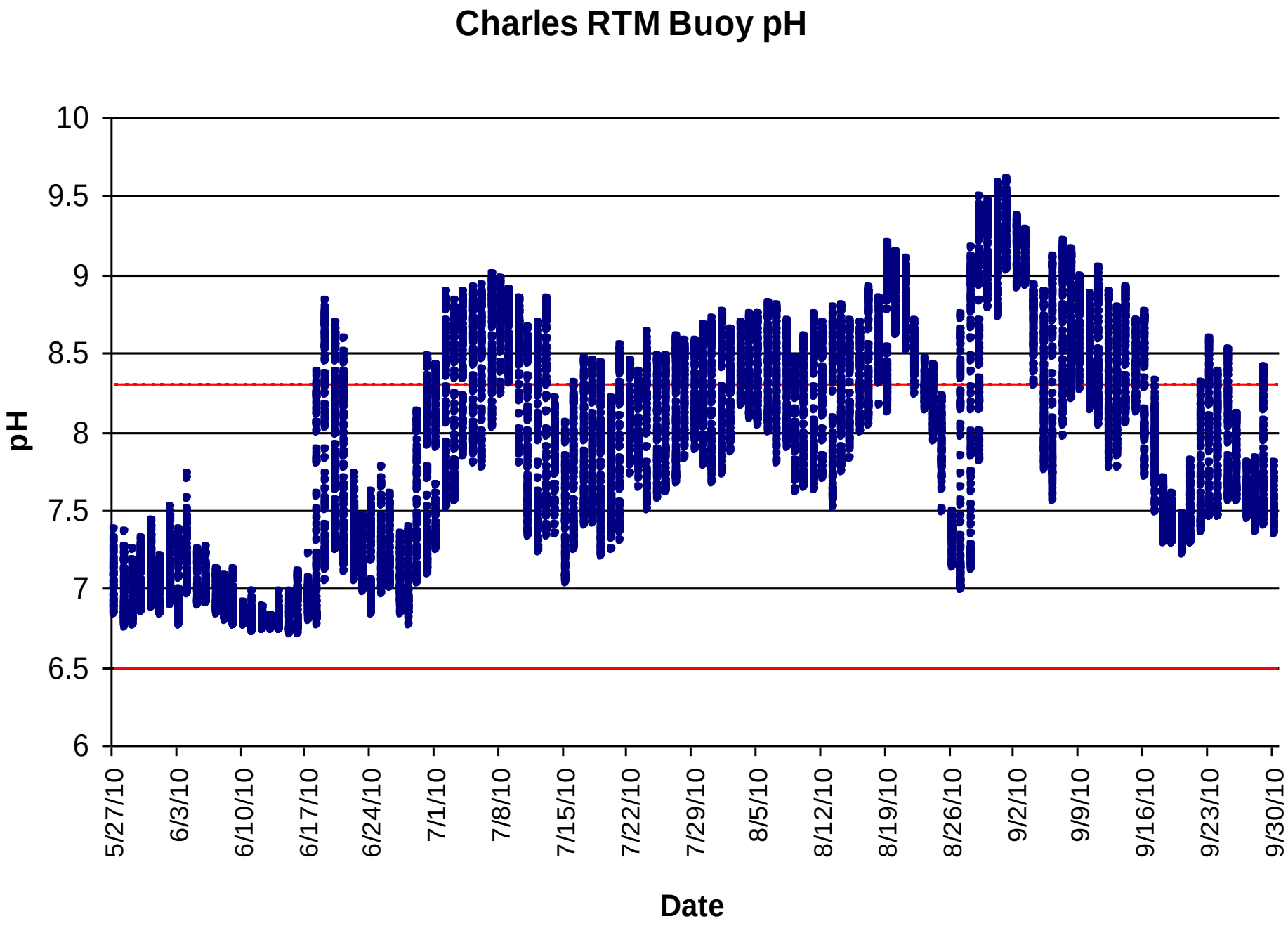
Next steps for RTM Buoy Project

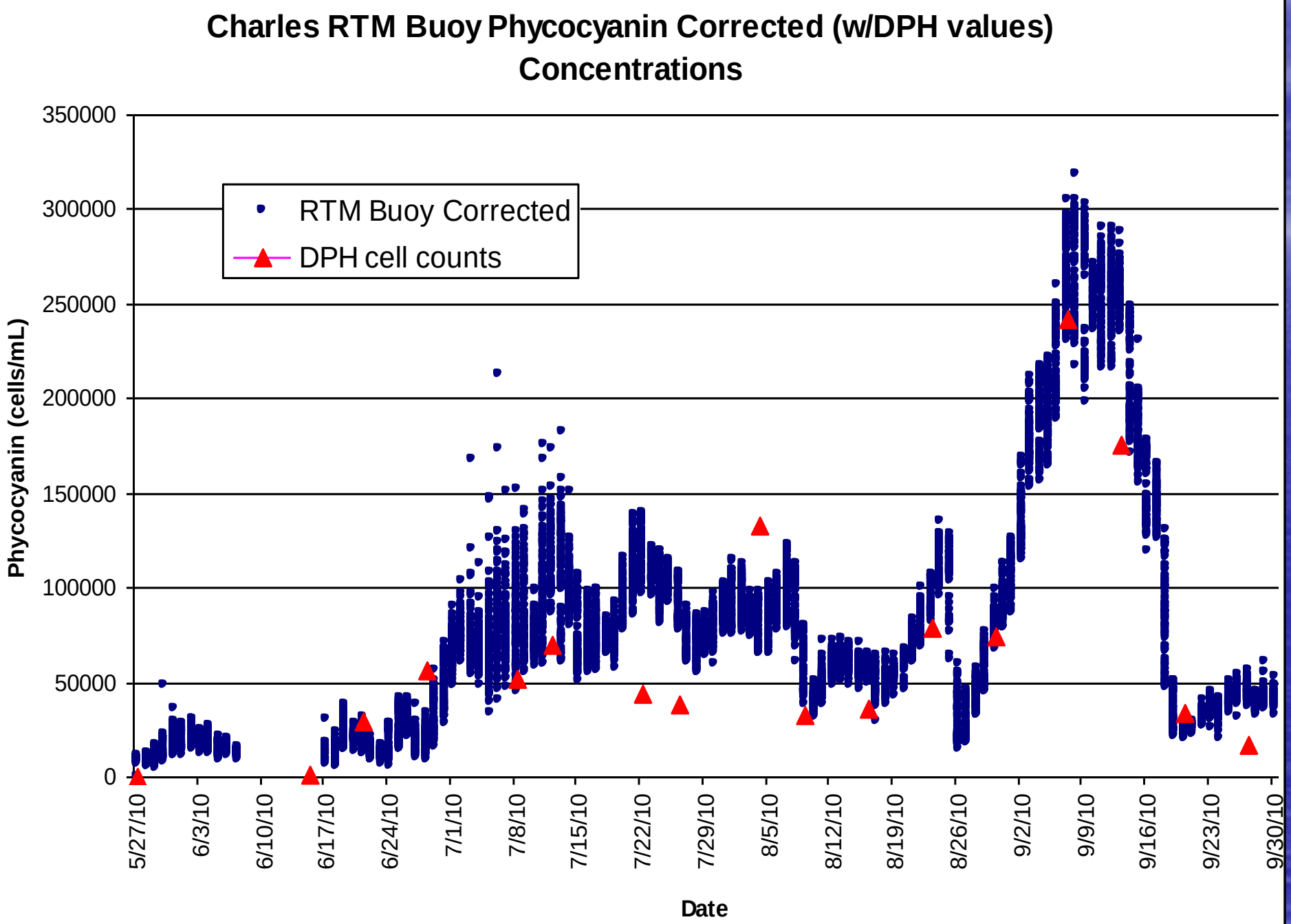
- Finalize and report out the validated data
- Plan on deploying again in the Mystic and Charles next summer
- Find a new location for the Mystic Buoy
- Investigate different calibration methods for chlorophyll and phycocyanin
  - Cultured cells for phycocyanin
- Investigate Public website

Questions?

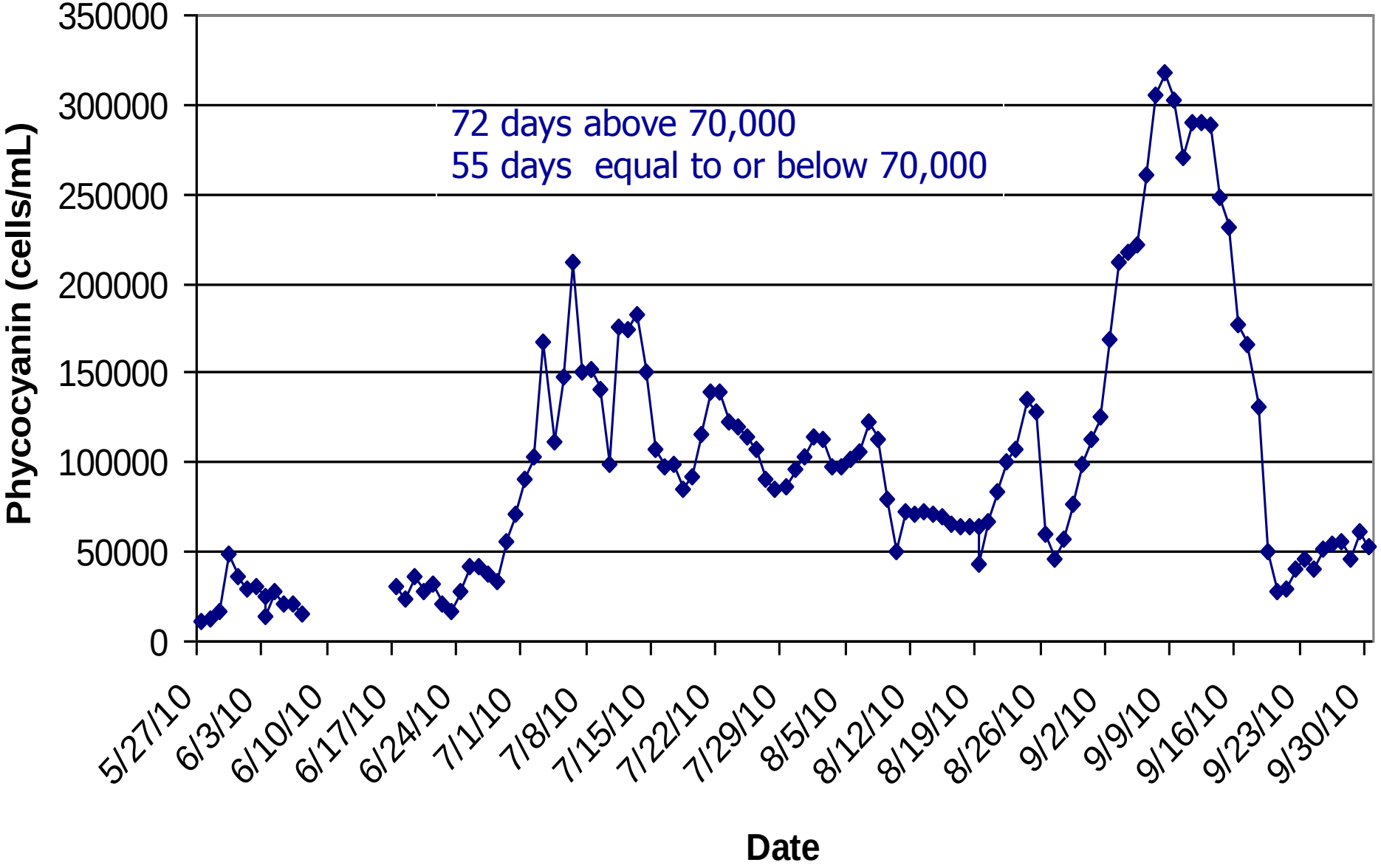
Use 8 C-size alkaline batteries
Model 6600-M
I.N. 6600-02
SN: 01F0490 AB


Charles RTM Buoy Dissolved Oxygen Concentrations
DO (mg/L)
16
14
12
10
8
6
4
2
5/27/10
6/3/10
6/10/10
6/17/10
6/24/10
7/1/10
7/8/10
7/15/10
7/22/10
7/29/10
8/5/10
8/12/10
8/19/10
8/26/10
9/2/10
9/9/10
9/16/10
9/23/10
9/30/10
Date

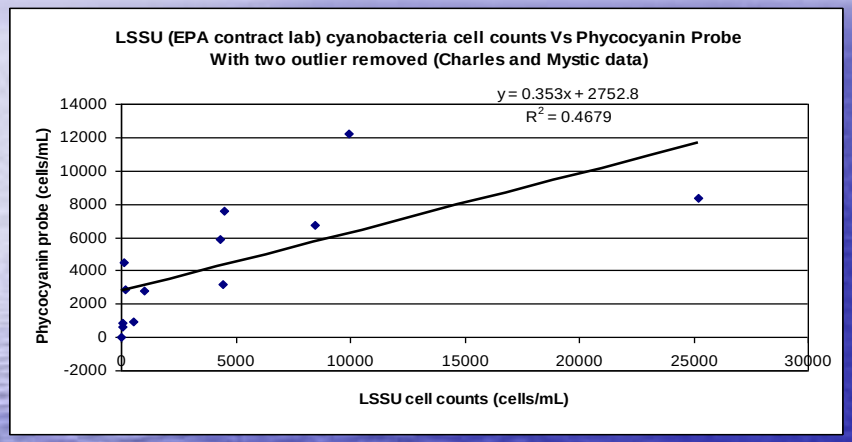

Charles RTM Buoy pH
10
9.5
9
8.5
8
7.5
7
6.5
6
pH
5/27/10
6/3/10
6/10/10
6/17/10
6/24/10
7/1/10
7/8/10
7/15/10
7/22/10
7/29/10
8/5/10
8/12/10
8/19/10
8/26/10
9/2/10
9/9/10
9/16/10
9/23/10
9/30/10
Date

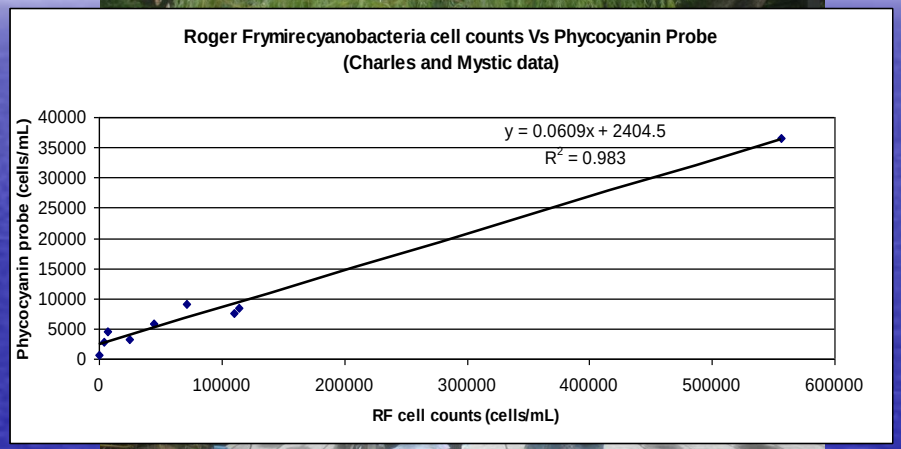

Charles RTM Buoy Phycocyanin Corrected (w/DPH values) Concentrations
RTM Buoy Corrected
DPH cell counts
Phycocyanin (cells/mL)
350000
300000
250000
200000
150000
100000
50000
0
5/27/10
6/3/10
6/10/10
6/17/10
6/24/10
7/1/10
7/8/10
7/15/10
7/22/10
7/29/10
8/5/10
8/12/10
8/19/10
8/26/10
9/2/10
9/9/10
9/16/10
9/23/10
9/30/10
Date

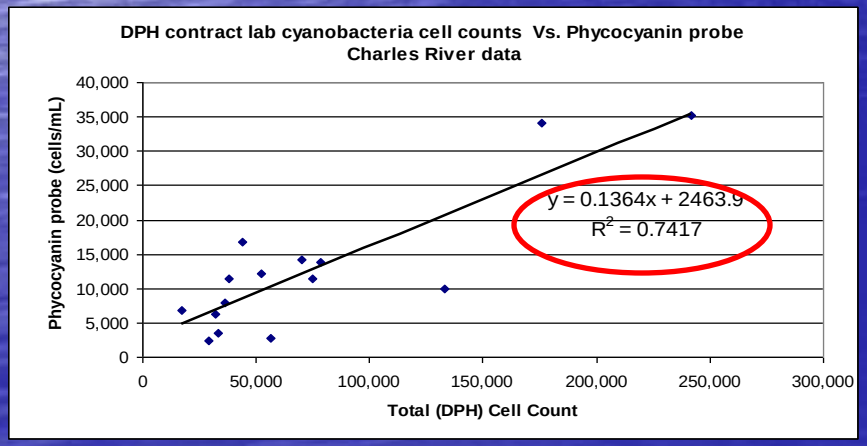
Charles RTM Buoy Daily Max Phycocyanin corrected (DPH) values

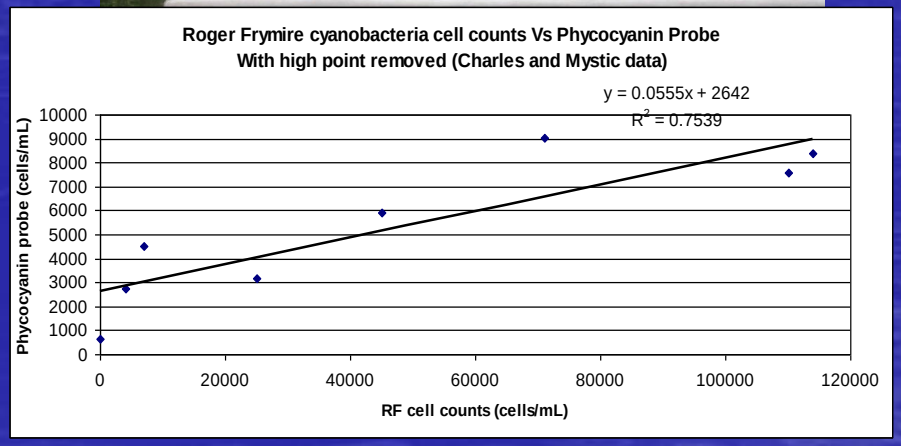


Phycocyanin probe correlation with Laboratory Cyanobacteria cell counts



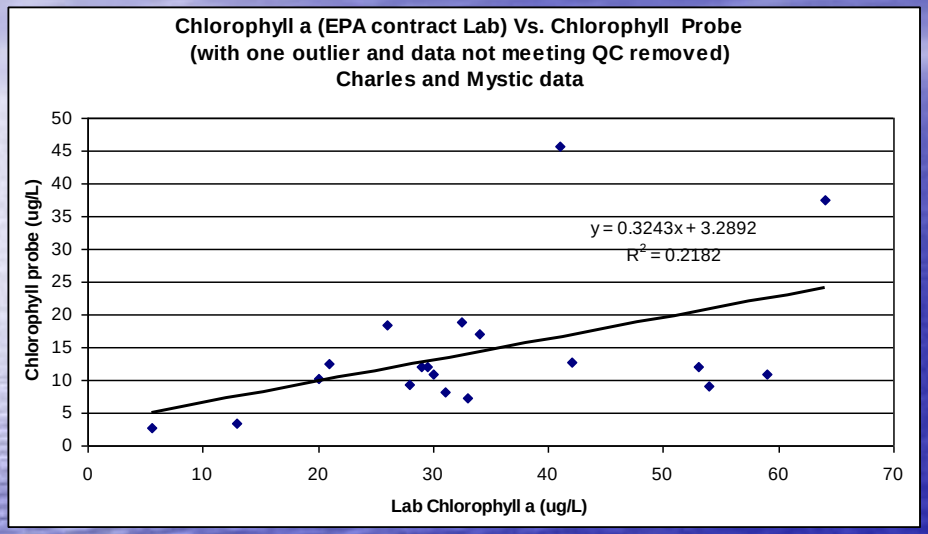


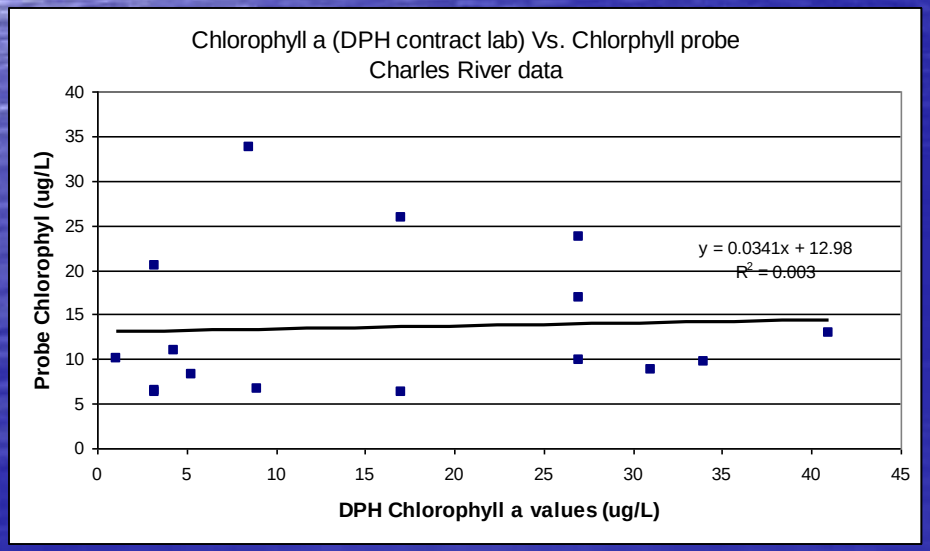
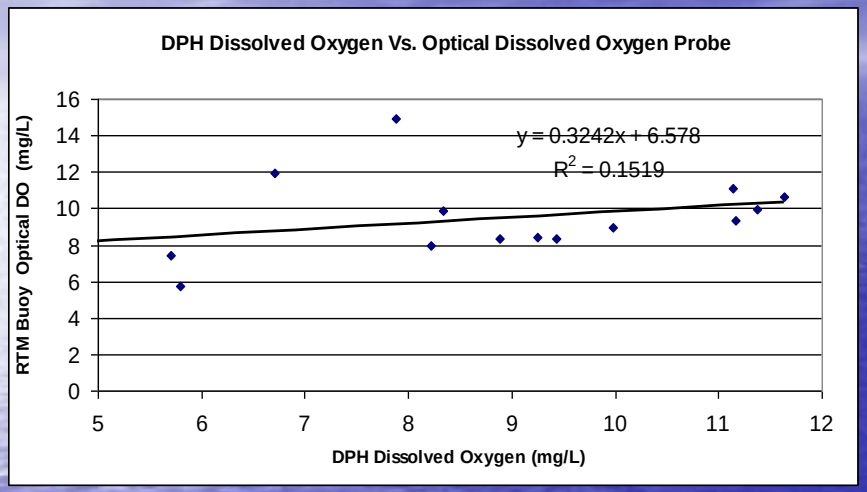
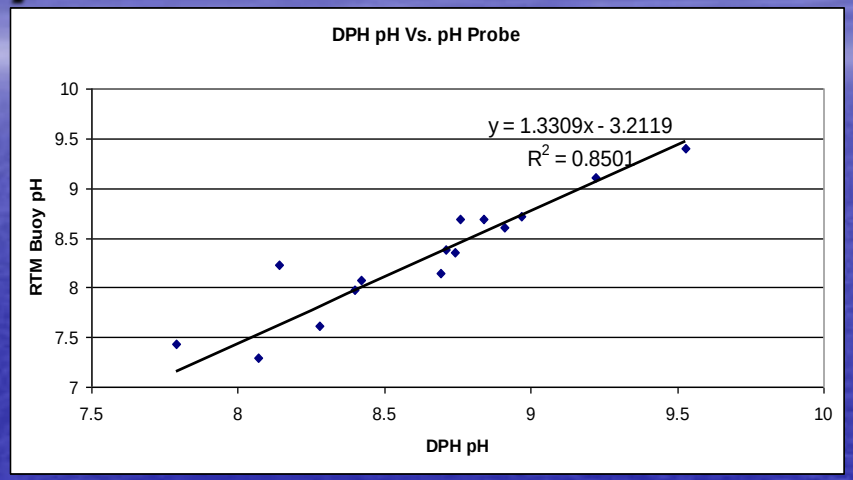
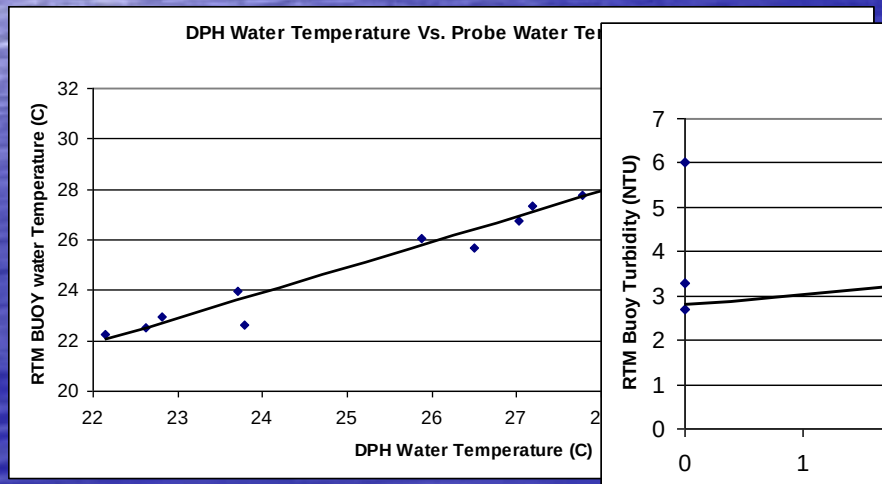
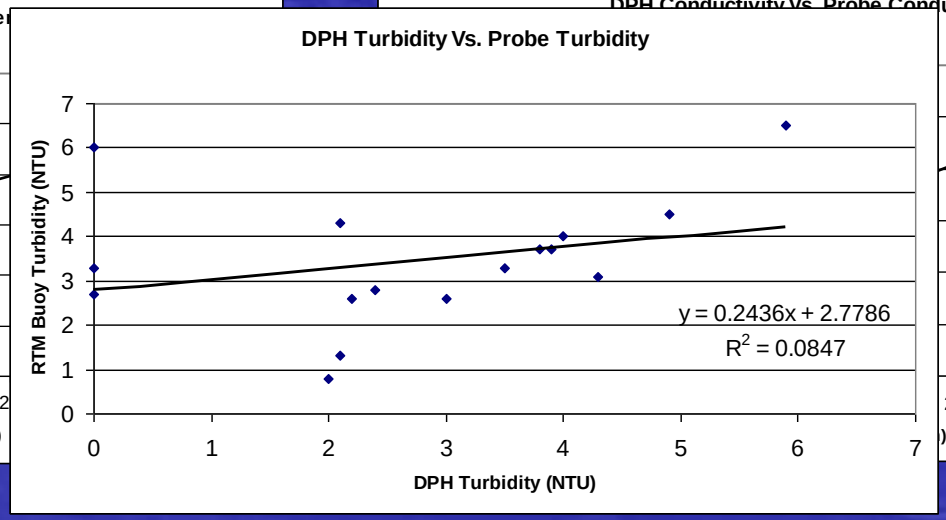




Note: DPH samples collected ~35 feet away at dock 6" deep

Chlorophyll probe had poor correlation with Laboratory data





Other parameter comparisons with DPH and RTM Buoy