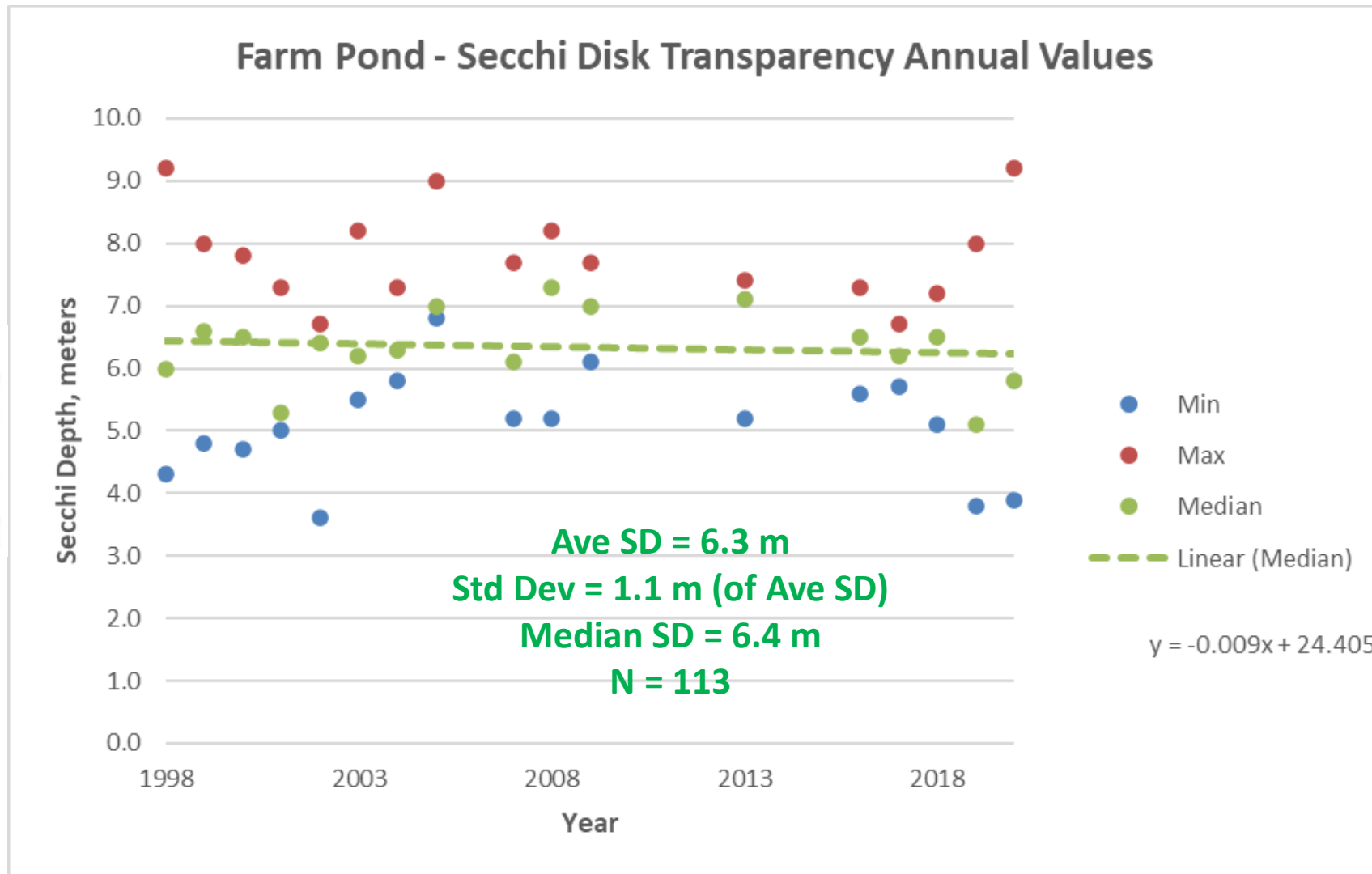


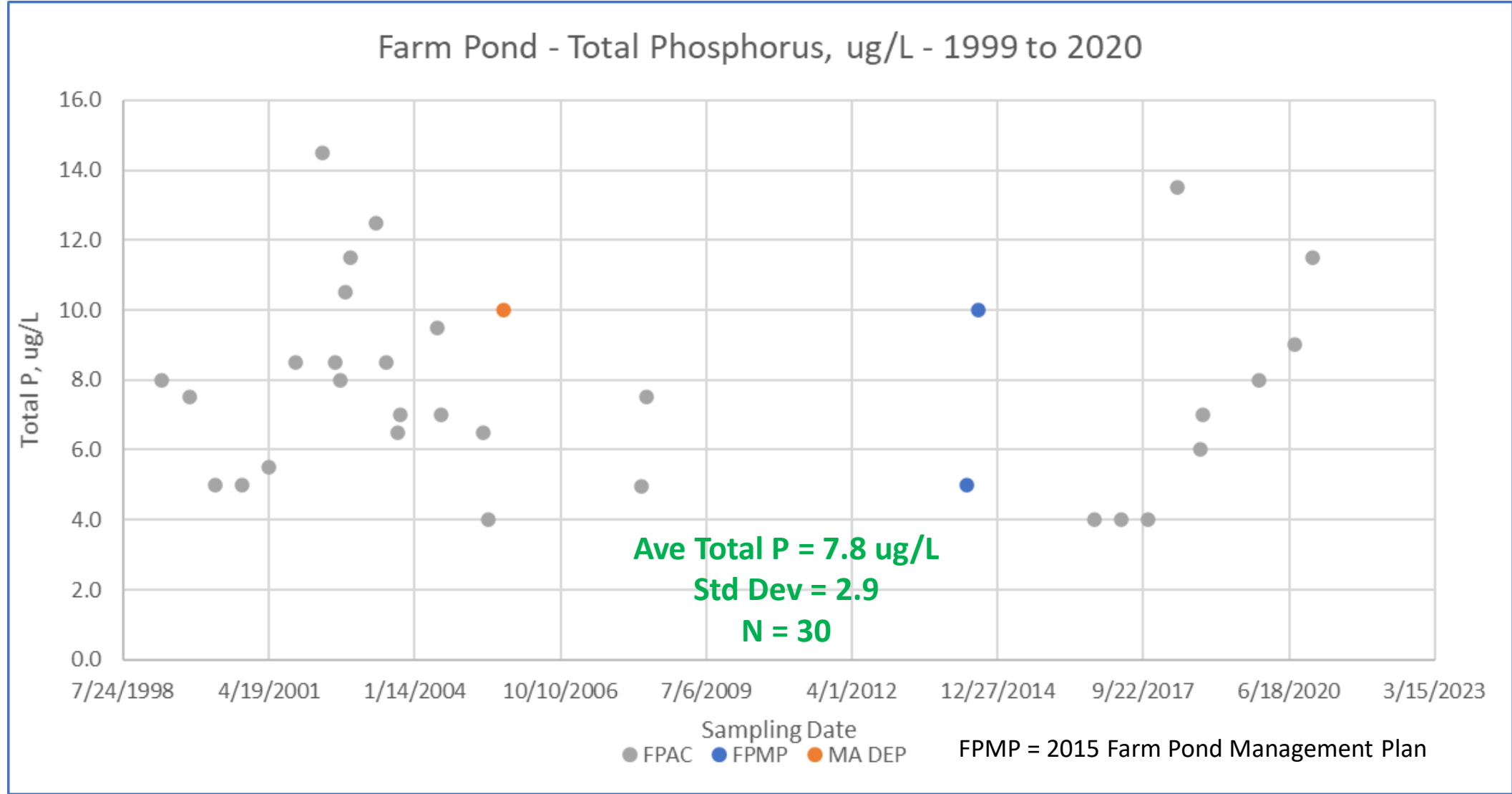
# Farm Pond Volunteer Water Quality Monitoring Program, 1998 - 2020

Annual Data Report Summary  
2/23/21

# Plot of Farm Pond annual min, max, and median Secchi Disk (SD) values, 1998 to 2020

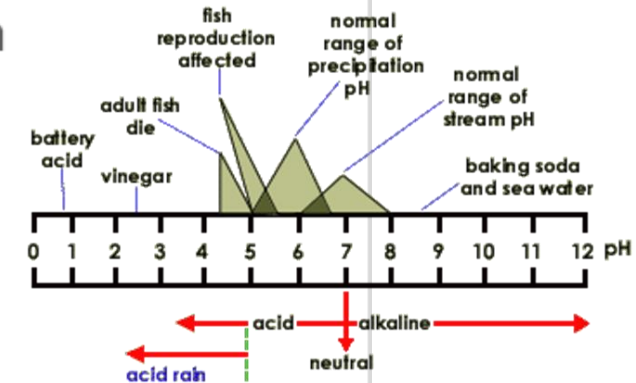
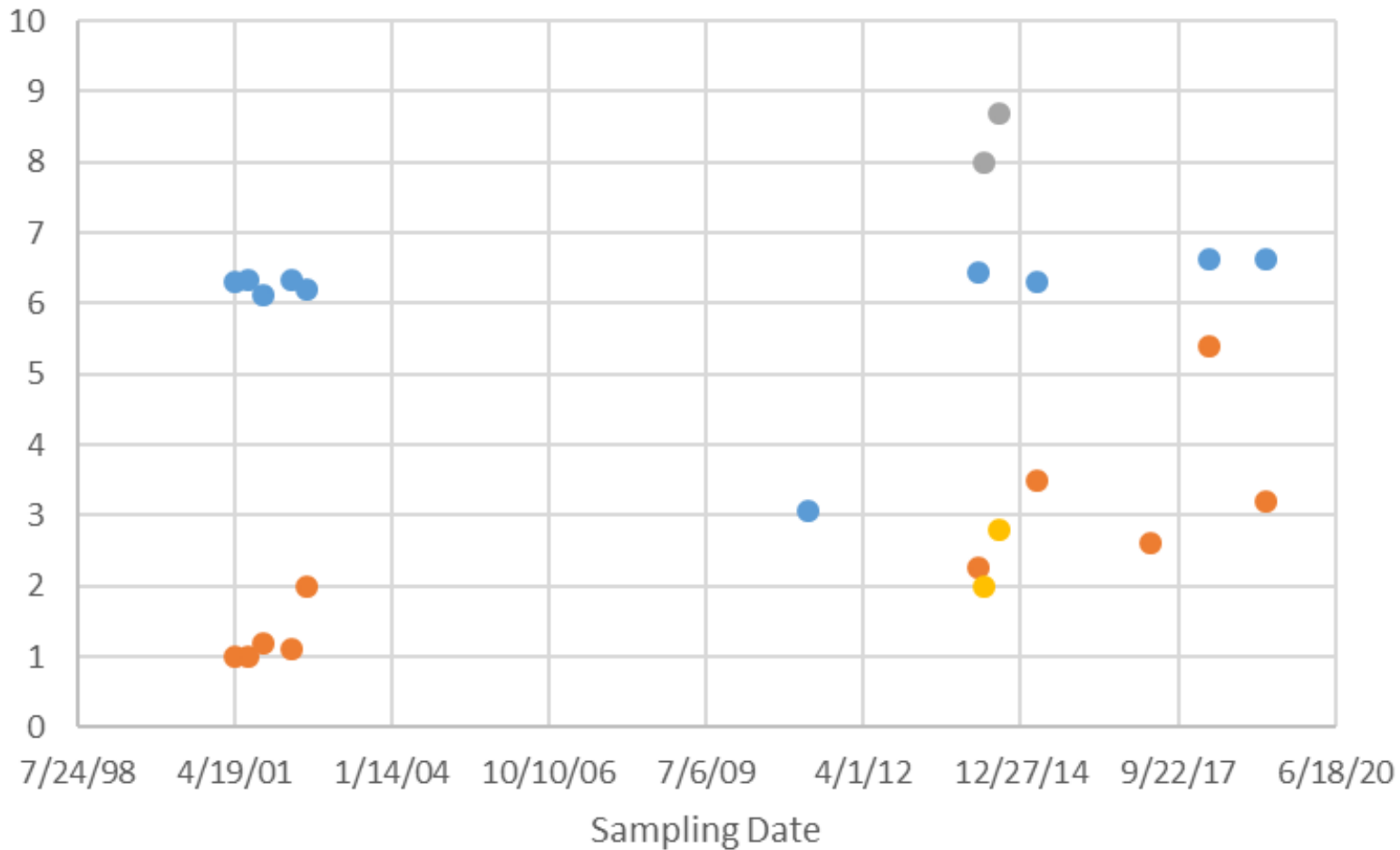


**Note: Trend line of SD median values is now on a slight negative trend, but water clarity near constant over last 22 years).**



Samples taken at 0.5 M depth; FPAC samples analysed by UMASS WRRC; Ave Total P calculated for FPAC samples only. Note: for samples exhibiting results < method detection limits a value of ½ the detection limit was substituted (not “zero”) for graph and for calculations of average and std dev. For FPAC values method det limit (UMASS WRRC) was < 8.0 ug/L for most years.

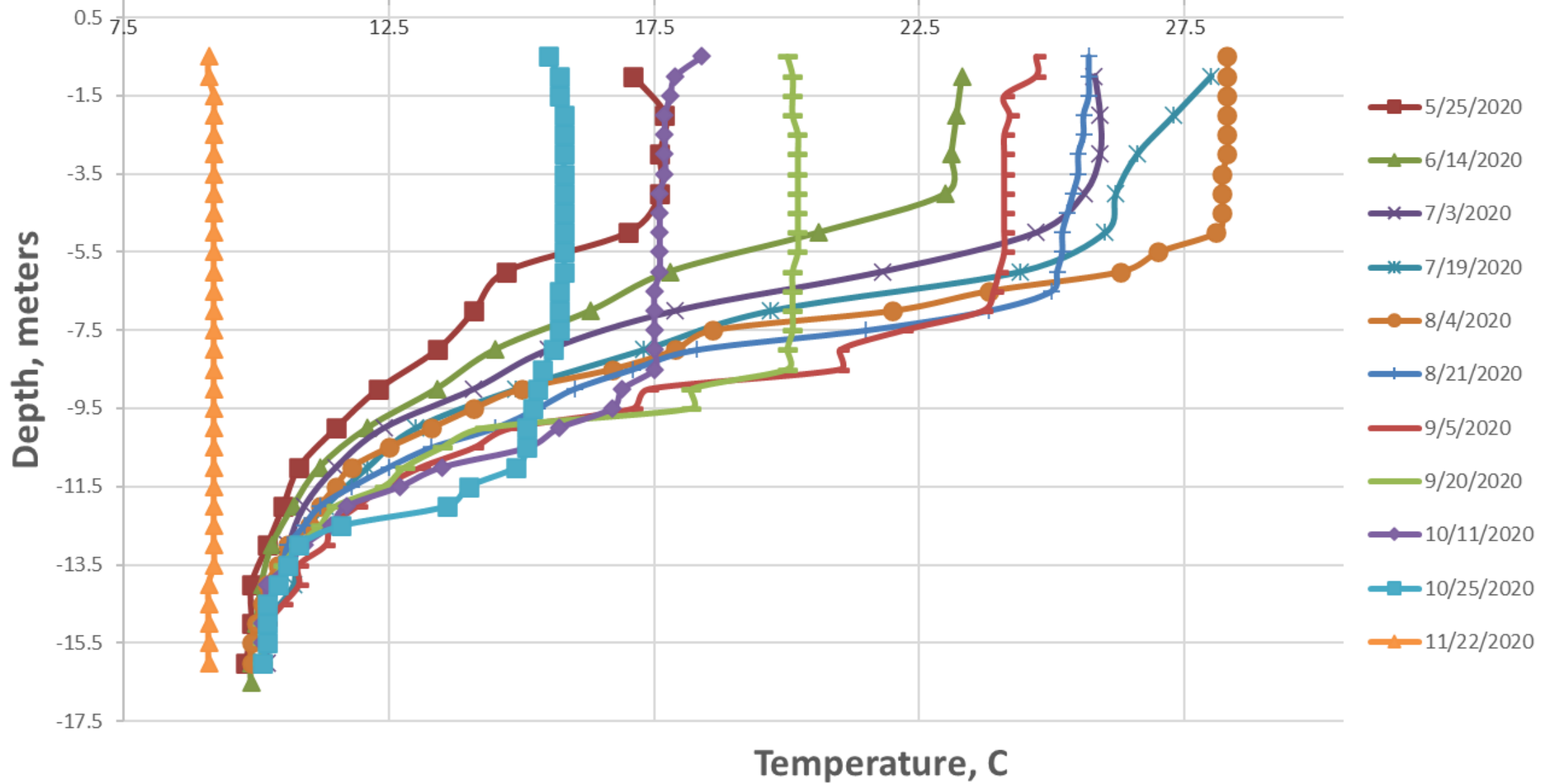
# Farm Pond - UMASS Acid Rain Monitoring Program



- pH - ARM
- Alkalinity - ARM
- pH - FPMP
- Alkalinity - FPMP

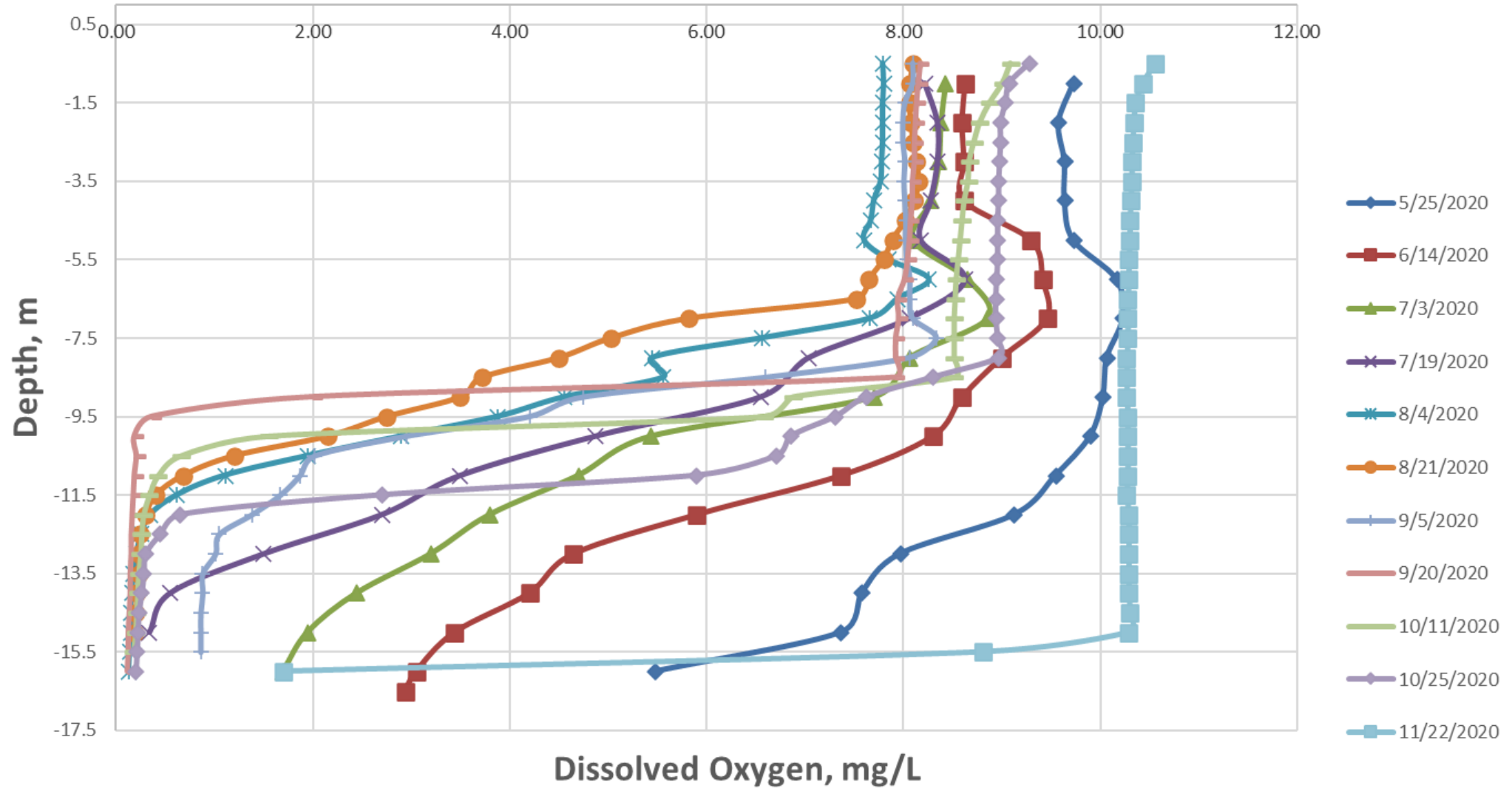
**ARM – data from UMASS ARM project; FPMP – data from 2015 Farm Pond Management Plan. No ARM sampling in 2020 due to COVID-19.**

Farm Pond – 2020 Temperature vs Depth Profiles



Note: Starting on 8/4/20 changed to 0.5 m data collection intervals from original 1.0 m intervals.

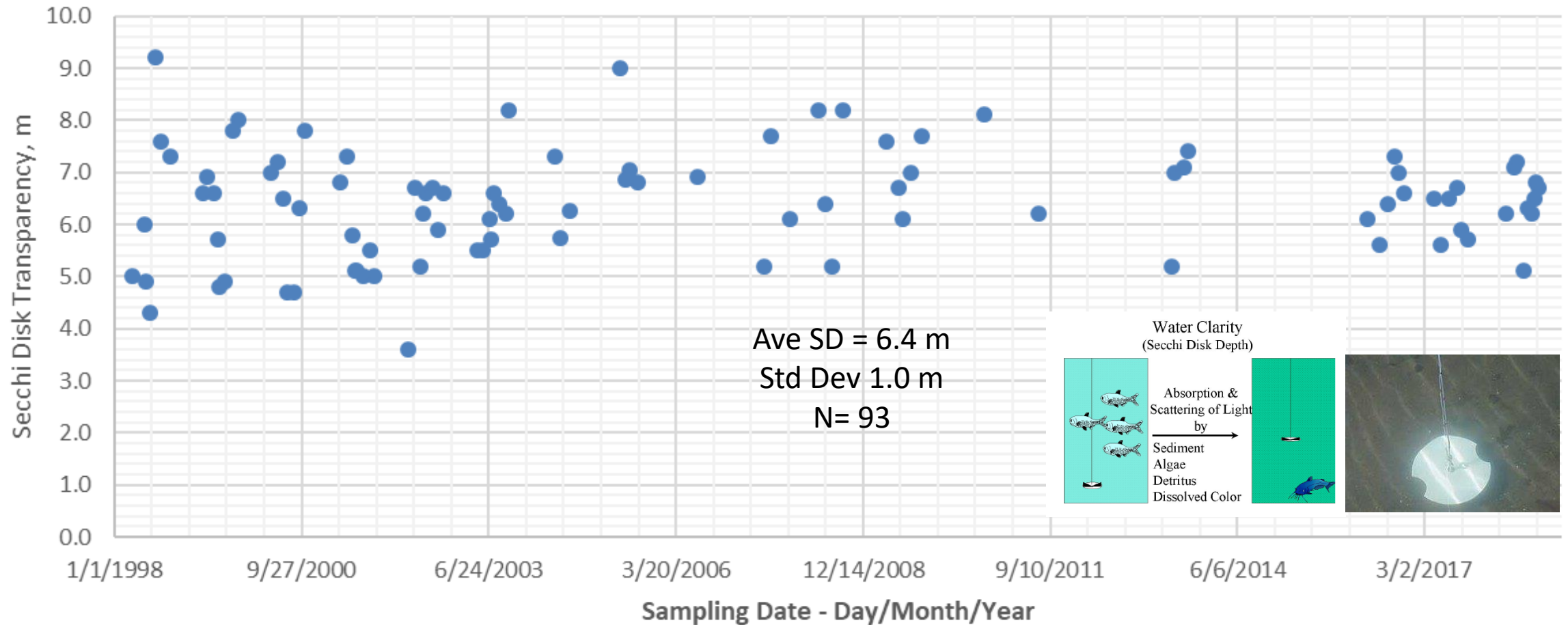
# Farm Pond - 2020 Dissolved Oxygen vs Depth Profiles



**Note: Starting on 8/4/20 changed to 0.5 m data collection intervals from original 1.0 m intervals.**

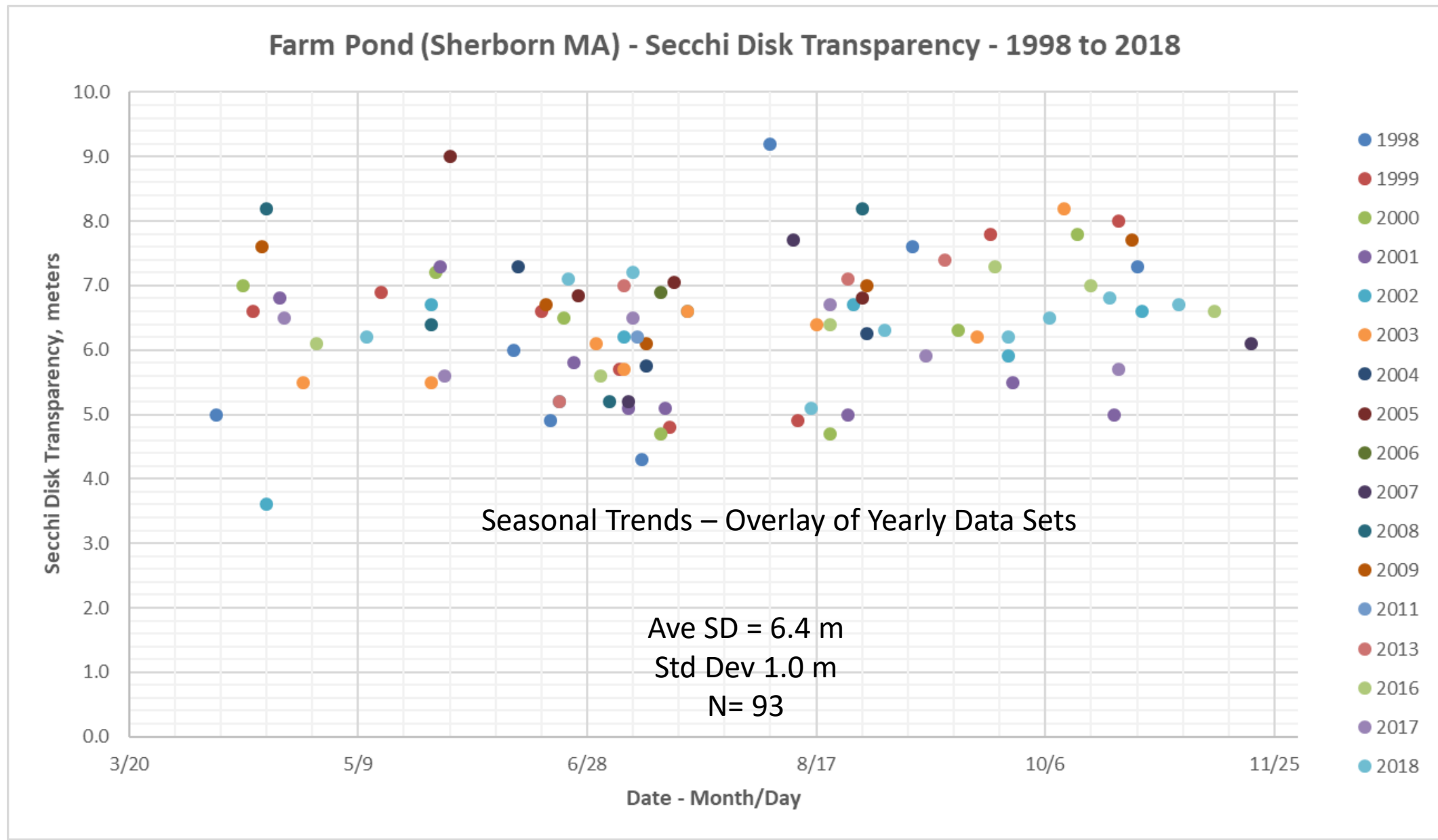
# Recent Past Years Results:

## Farm Pond 1998-2018 Secchi Disk Transparency



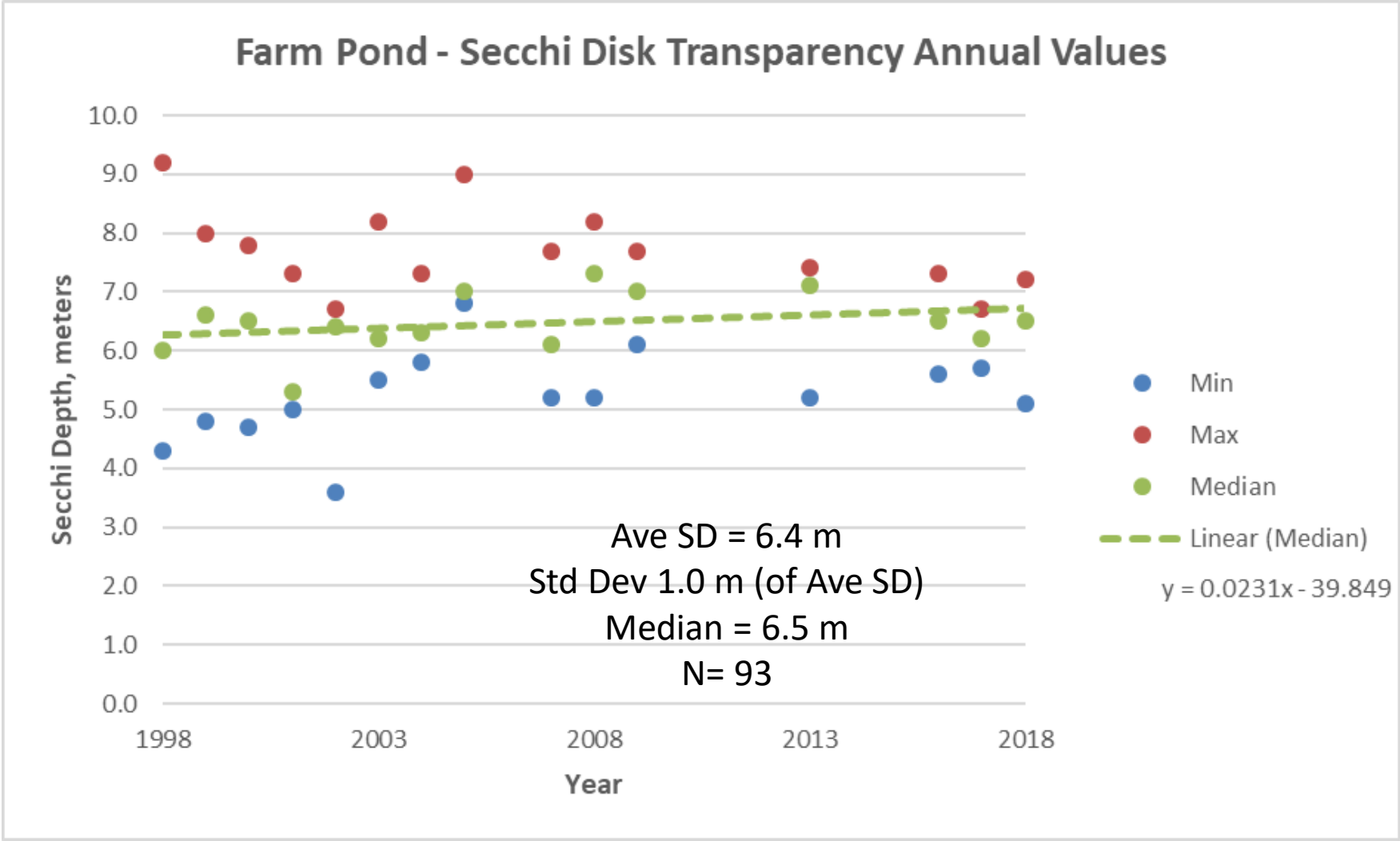
Note: Sampling 1998 to 2018 at mooring near center of Farm Pond, with no data from years 2012, 2014, and 2015





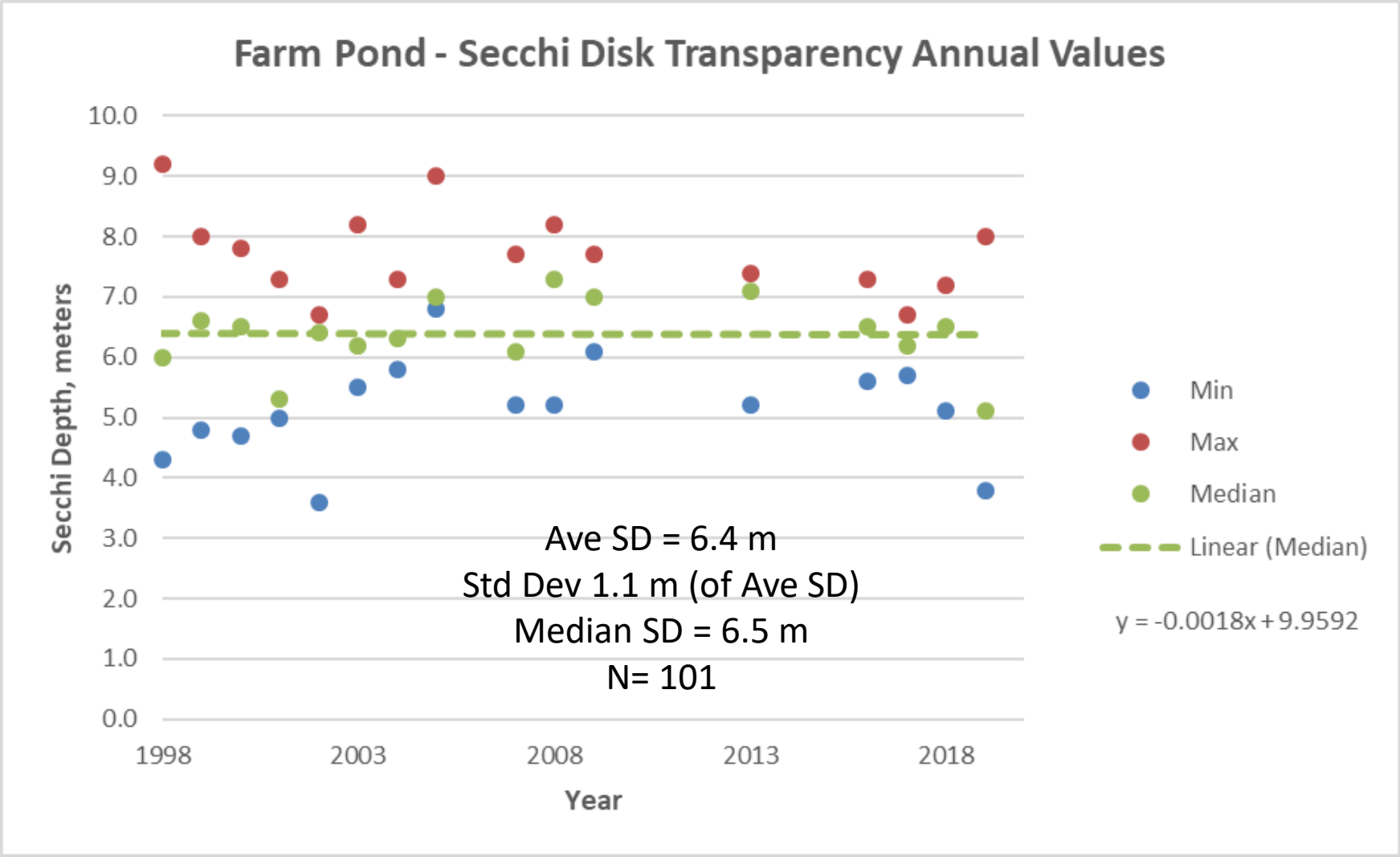
Note: Sampling 1998 to 2018 at mooring near center of Farm Pond, with no data from years 2012, 2014, and 2015

# Plot of Farm Pond annual min, max, and median SD values, 98' to 2018



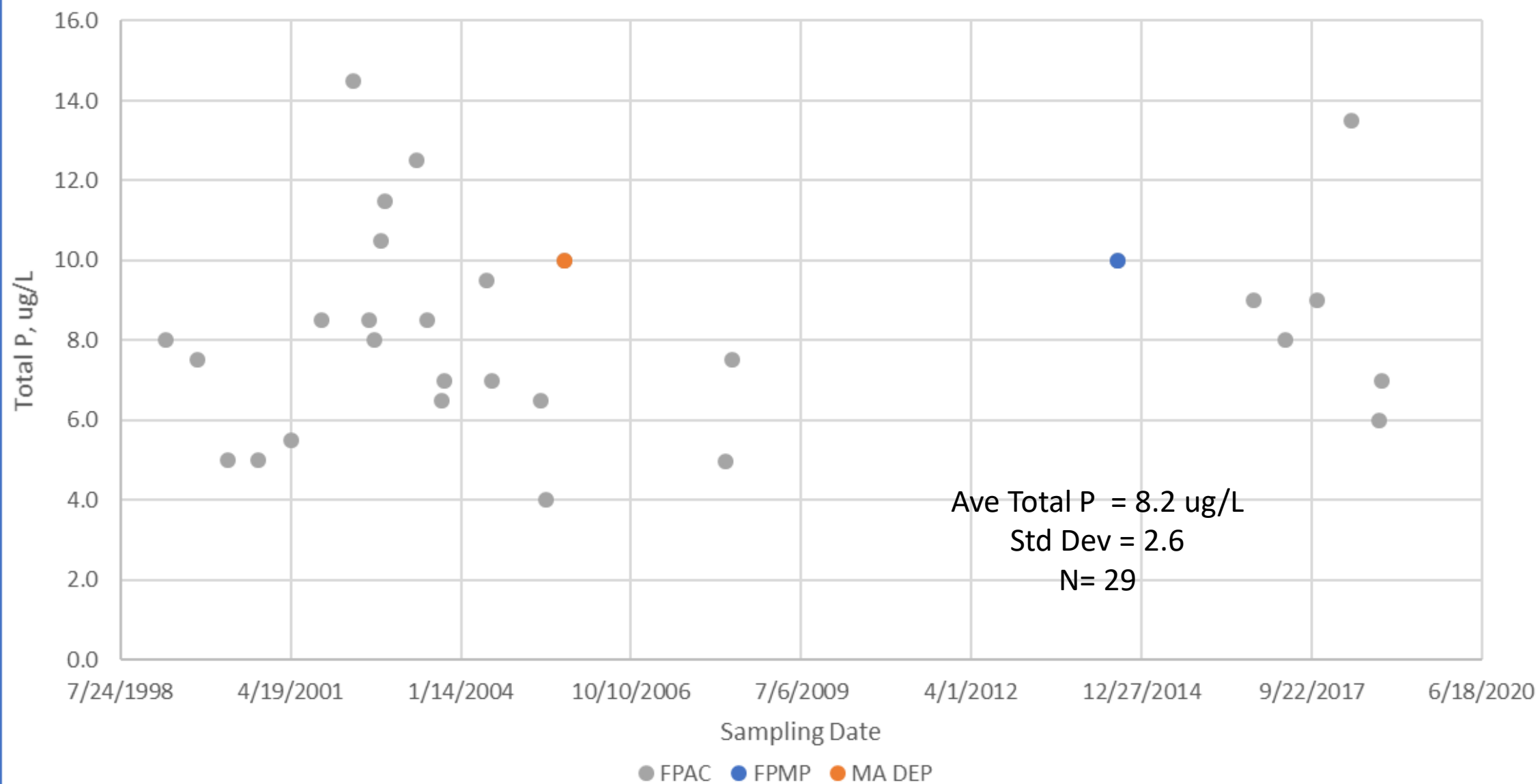
Note: Very encouraging that trend line of SD median values is slightly positive (water clarity improving over last 20 years).

# Plot of Farm Pond annual min, max, and median SD values, 98' to 2019

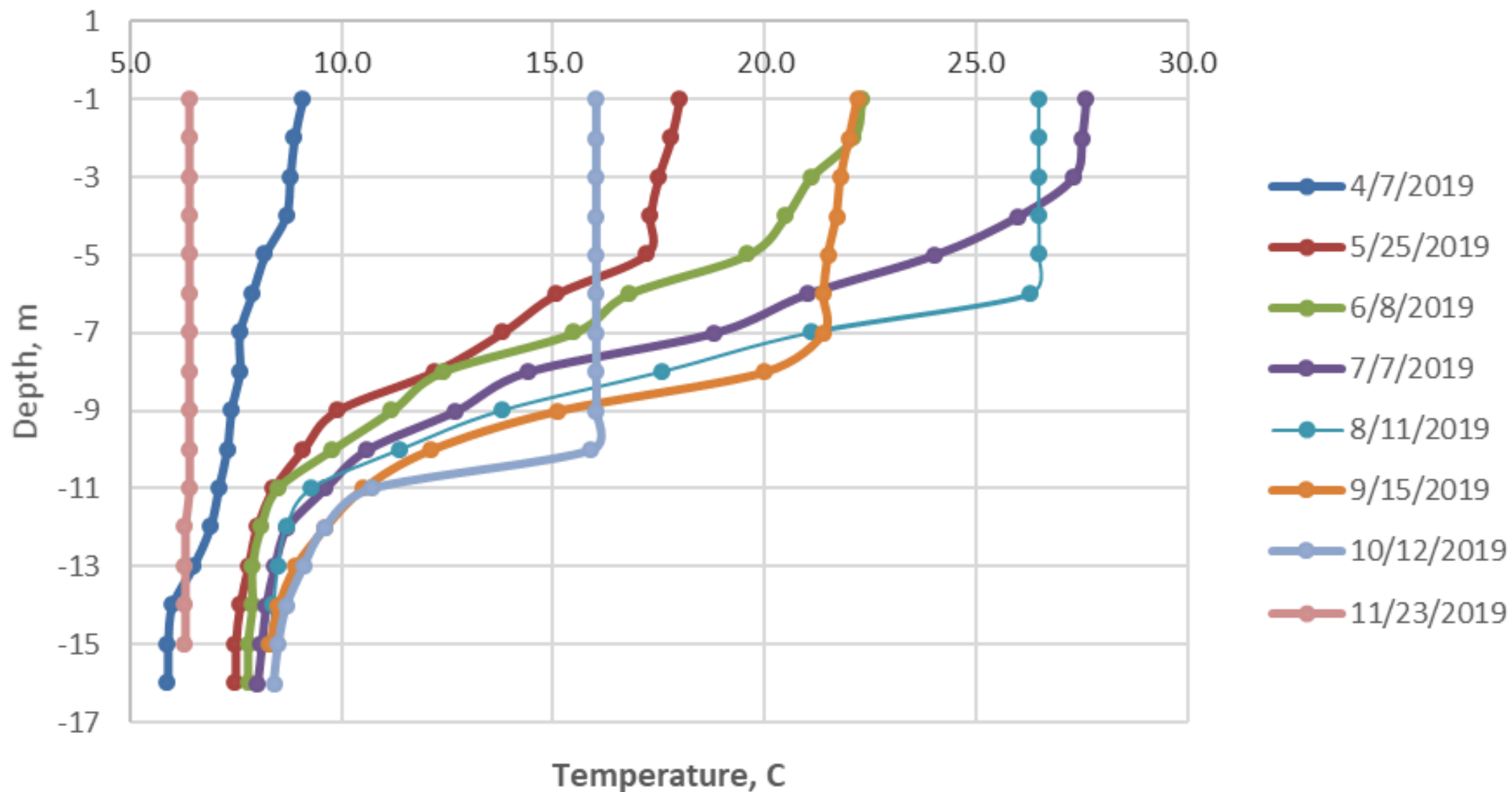


Note: Trend line of SD median values is now almost flat, slight negative trend (water clarity near constant over last 21 years).

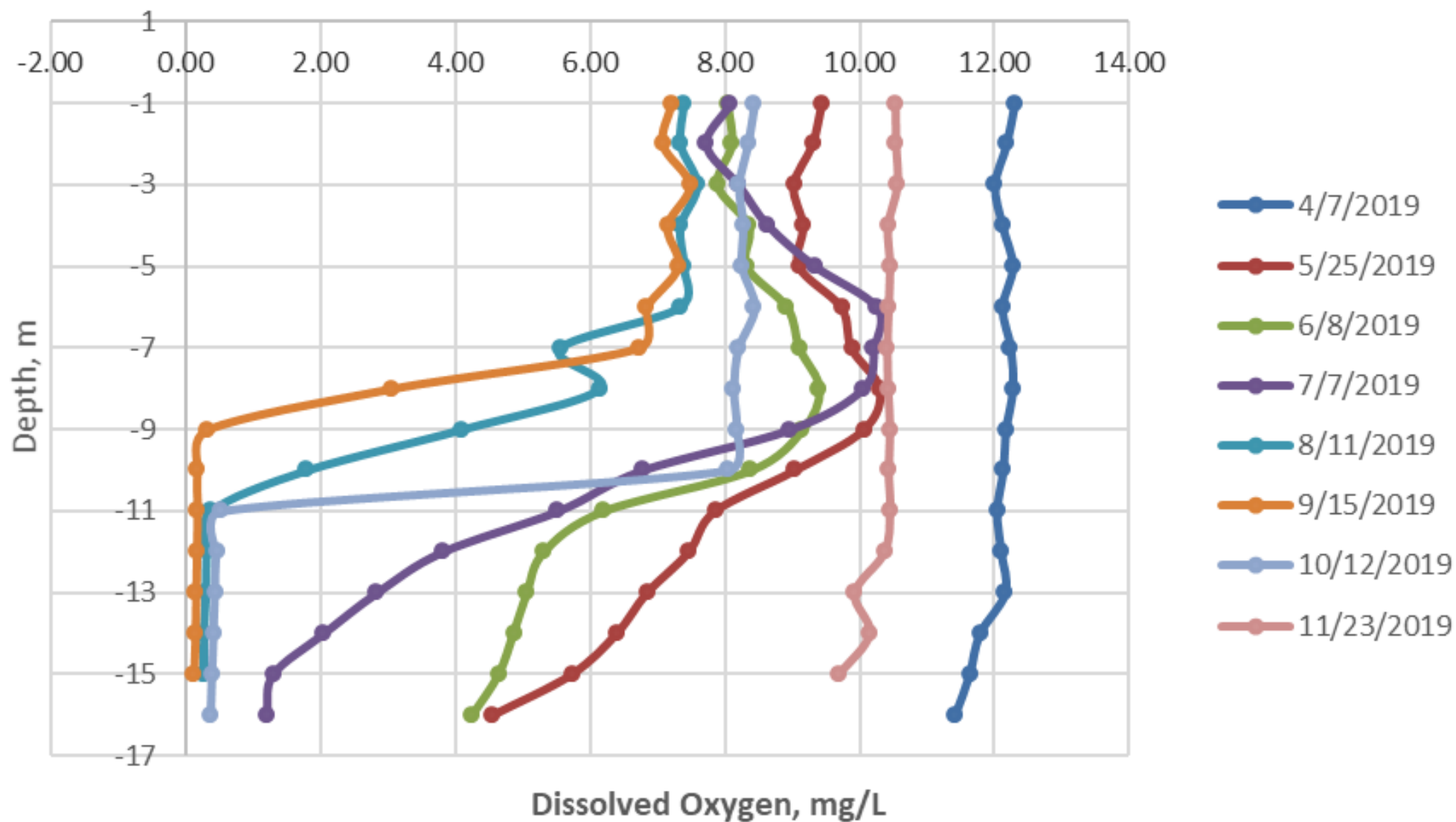
## Farm Pond - Total Phosphorus, ug/L - 1999 to 2018



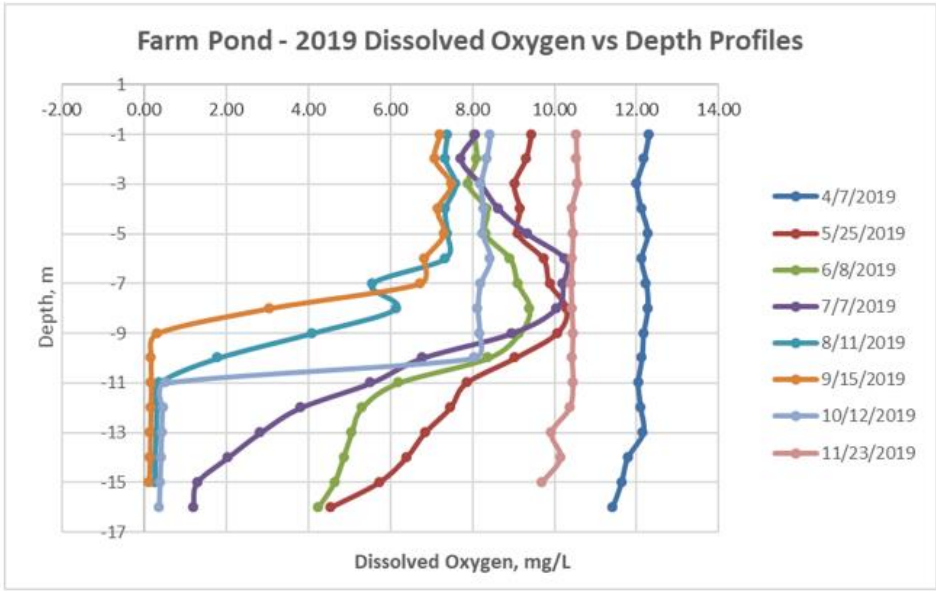
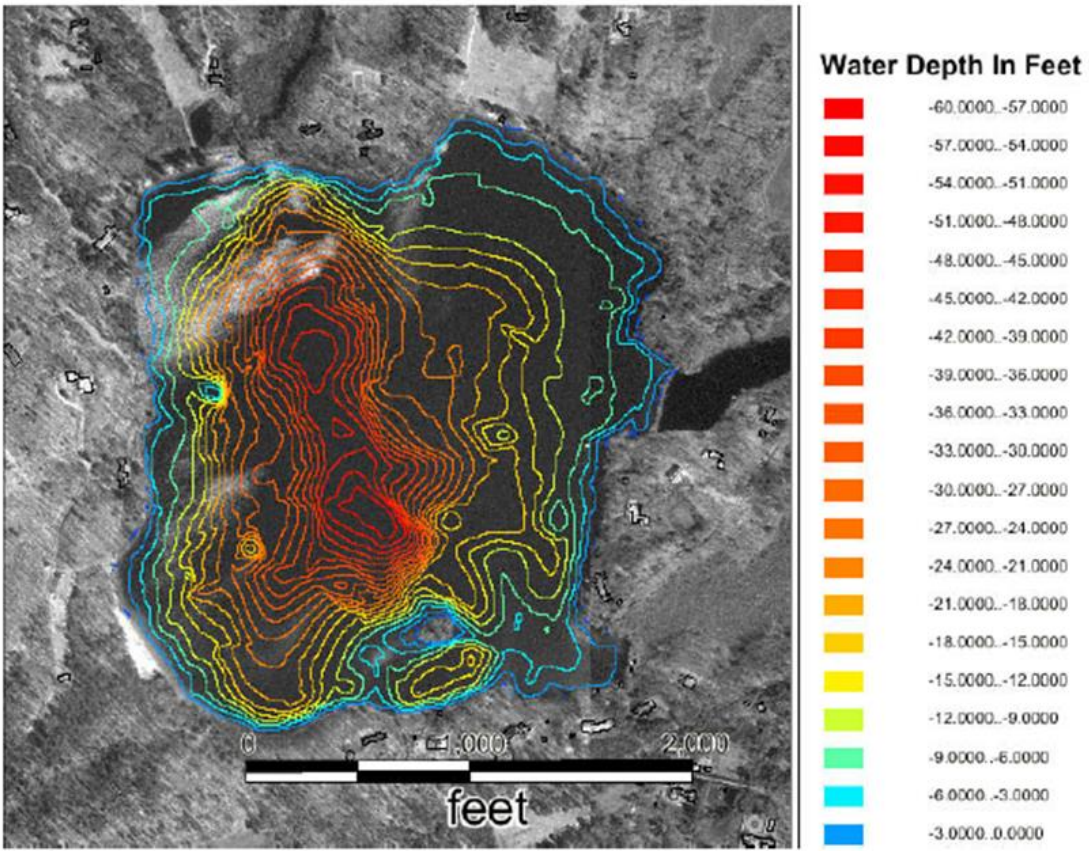
## Farm Pond - 2019 Temperature vs Depth Profiles



## Farm Pond - 2019 Dissolved Oxygen vs Depth Profiles



A need to calculate for Farm Pond: total water layer volumes by DO concentrations and time periods:



1/3/2020

T Trainor

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Bathymetry Range (Feet)	Area (Acres)
0-5	19.37
5-10	21.59
10-15	14.70
15-20	11.12
20-25	11.27
25-30	10.38
30-35	8.46
35-40	4.89
40-45	5.08
45-50	5.68
50-58	5.63

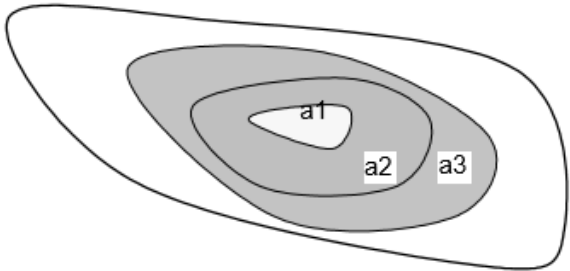
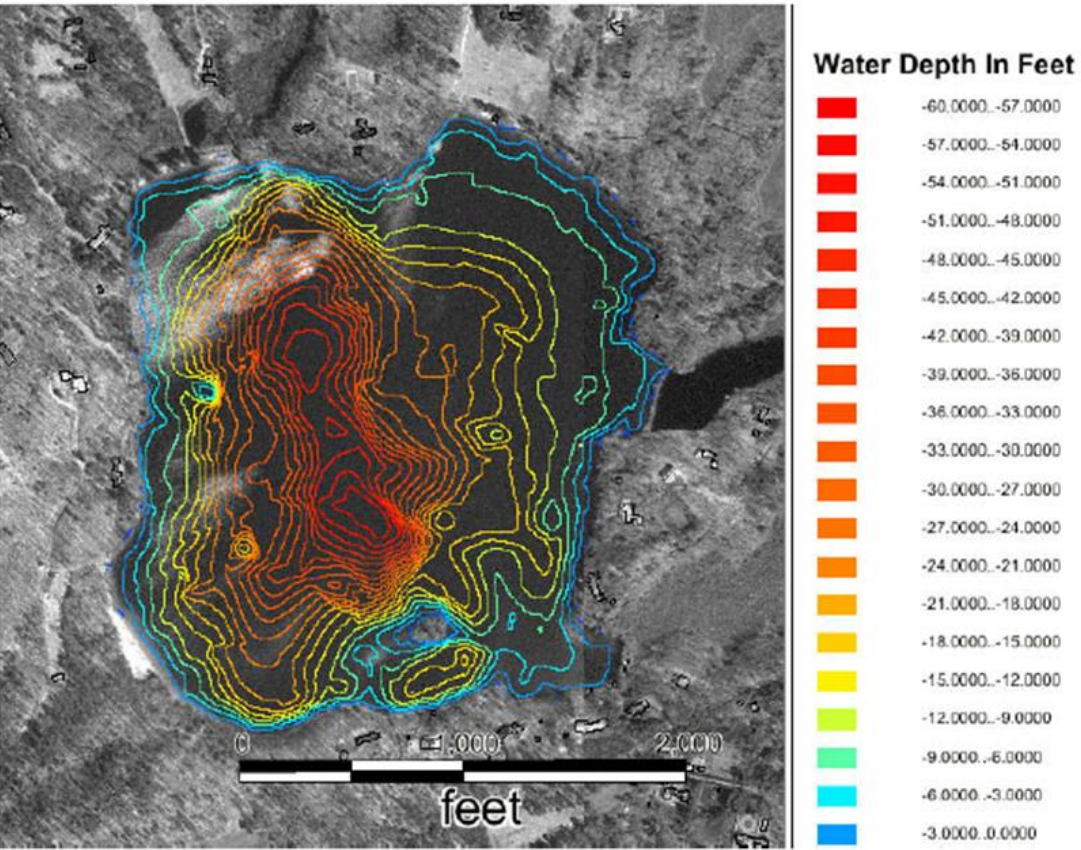


FIGURE 1. The sketch indicates different areas of a hypothetical lake that become anoxic sequentially with time, where a1 becomes anoxic first, then a2, etc.

Farm Pond Management Plan, 2015 →



A need to calculate for Farm Pond: total water layer volumes by DO concentrations and time periods:



Note: most of the western half of Pond > 15 ft (4.6 m) depths, and eastern region much shallower.

Farm Pond Management Plan, 2015

Bathymetry Range (Feet)	Area (Acres)
0-5	19.37
5-10	21.59
10-15	14.70
15-20	11.12
20-25	11.27
25-30	10.38
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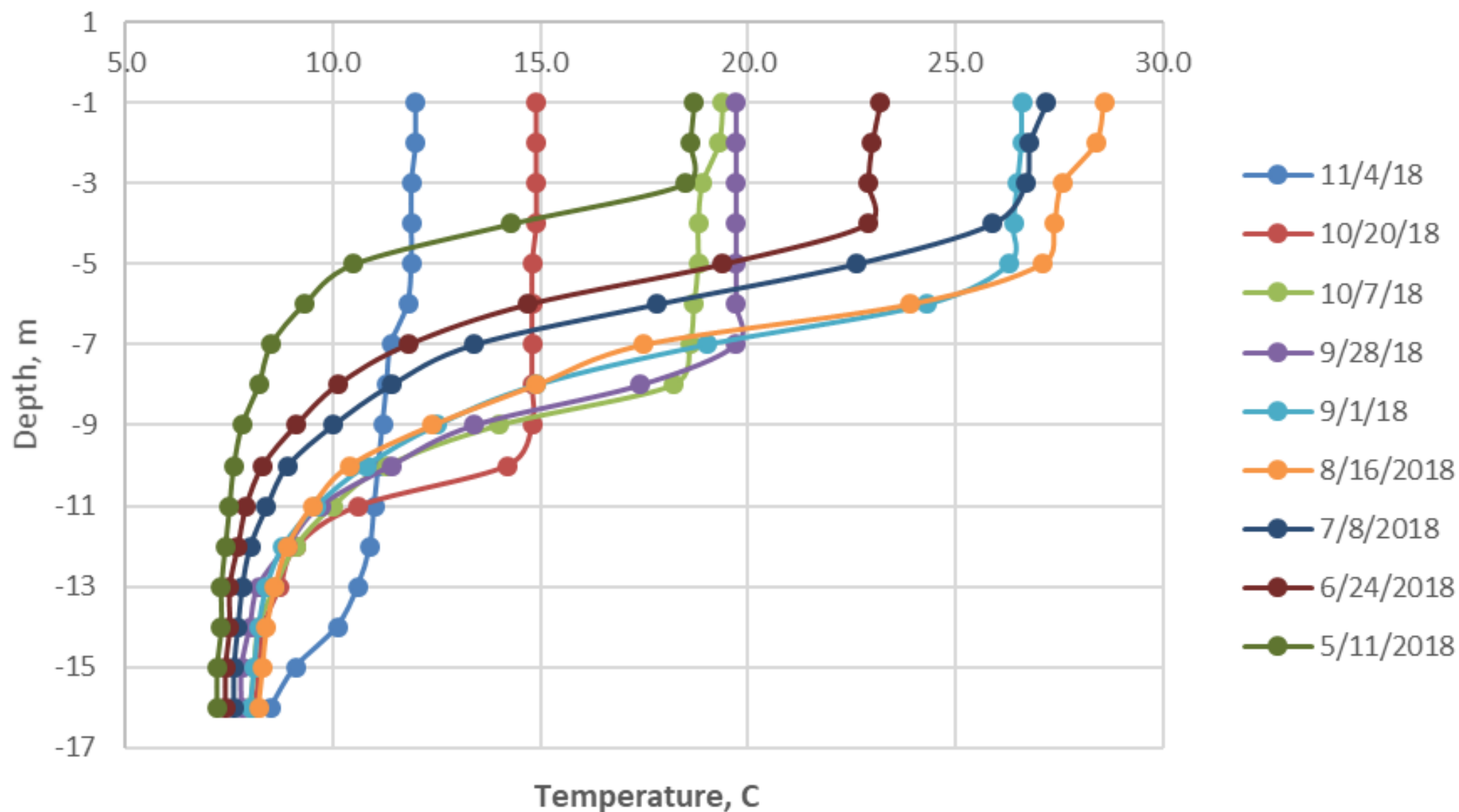
> 25 ft depths cover about 40 acres.

8.0 m = 26.25 ft

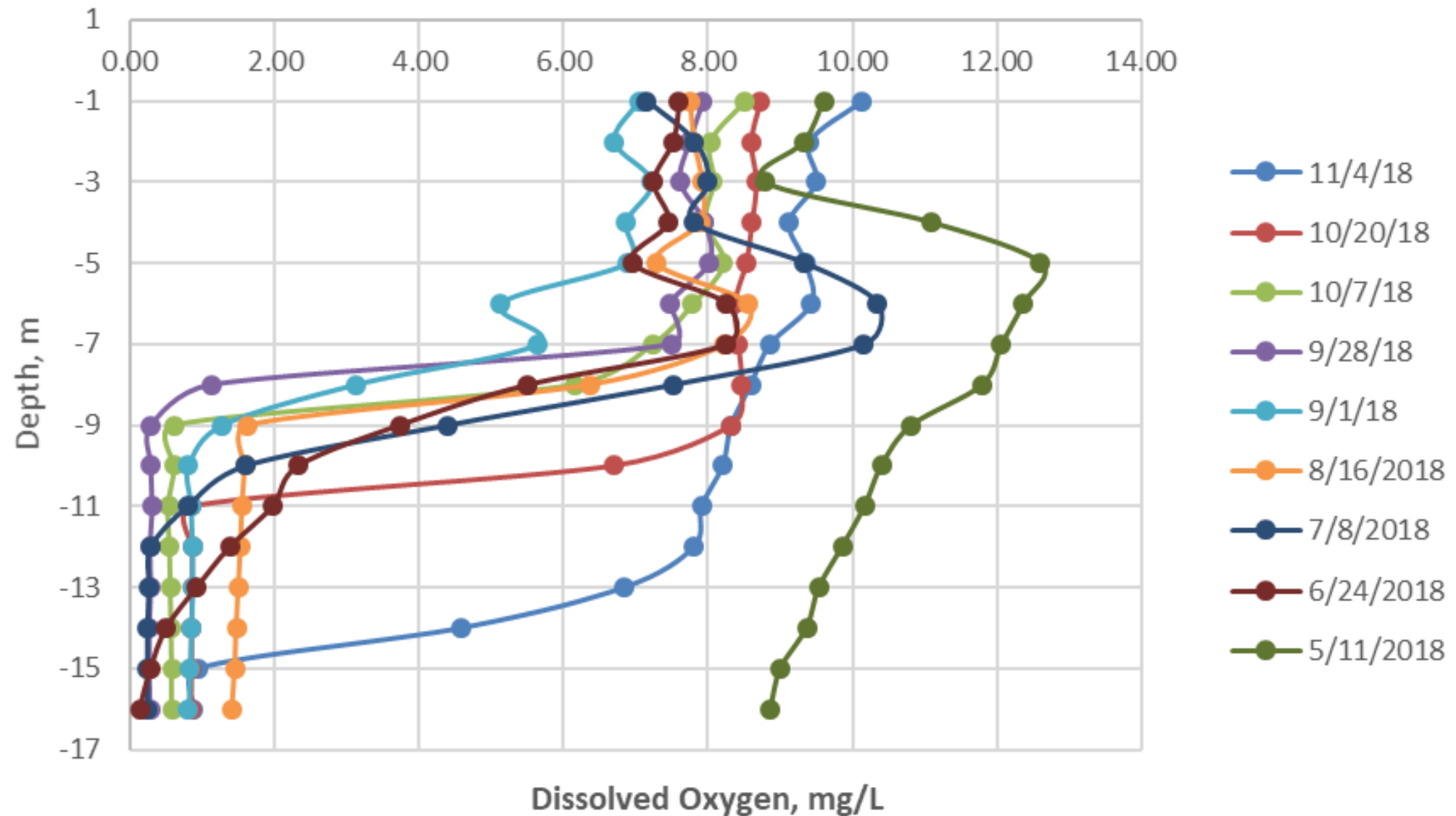
Volumes – depth estimates ?  
Bathymetric mapping was done in feet, while DO/T in meters ...



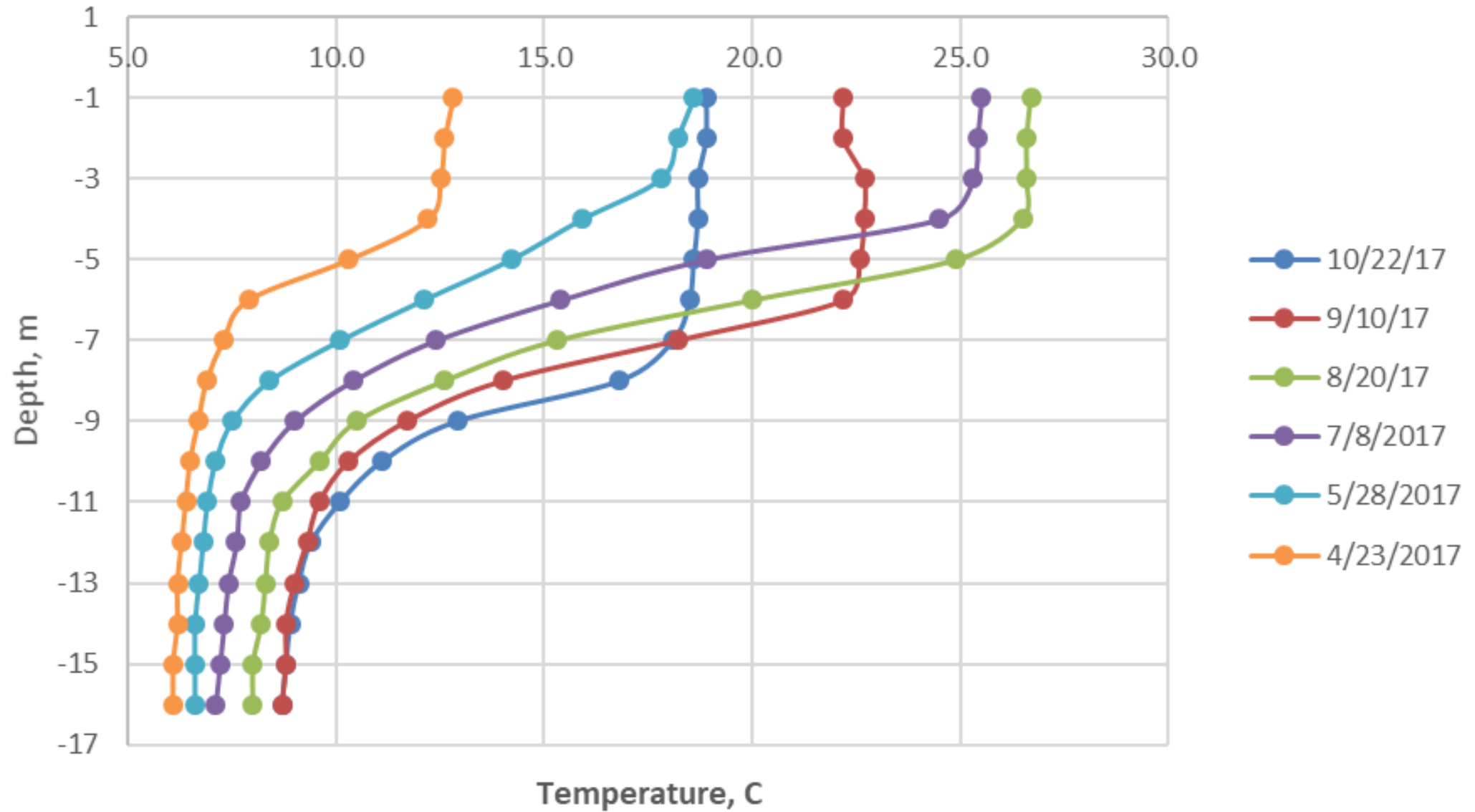
## Farm Pond - 2018 Temperature vs Depth Profiles



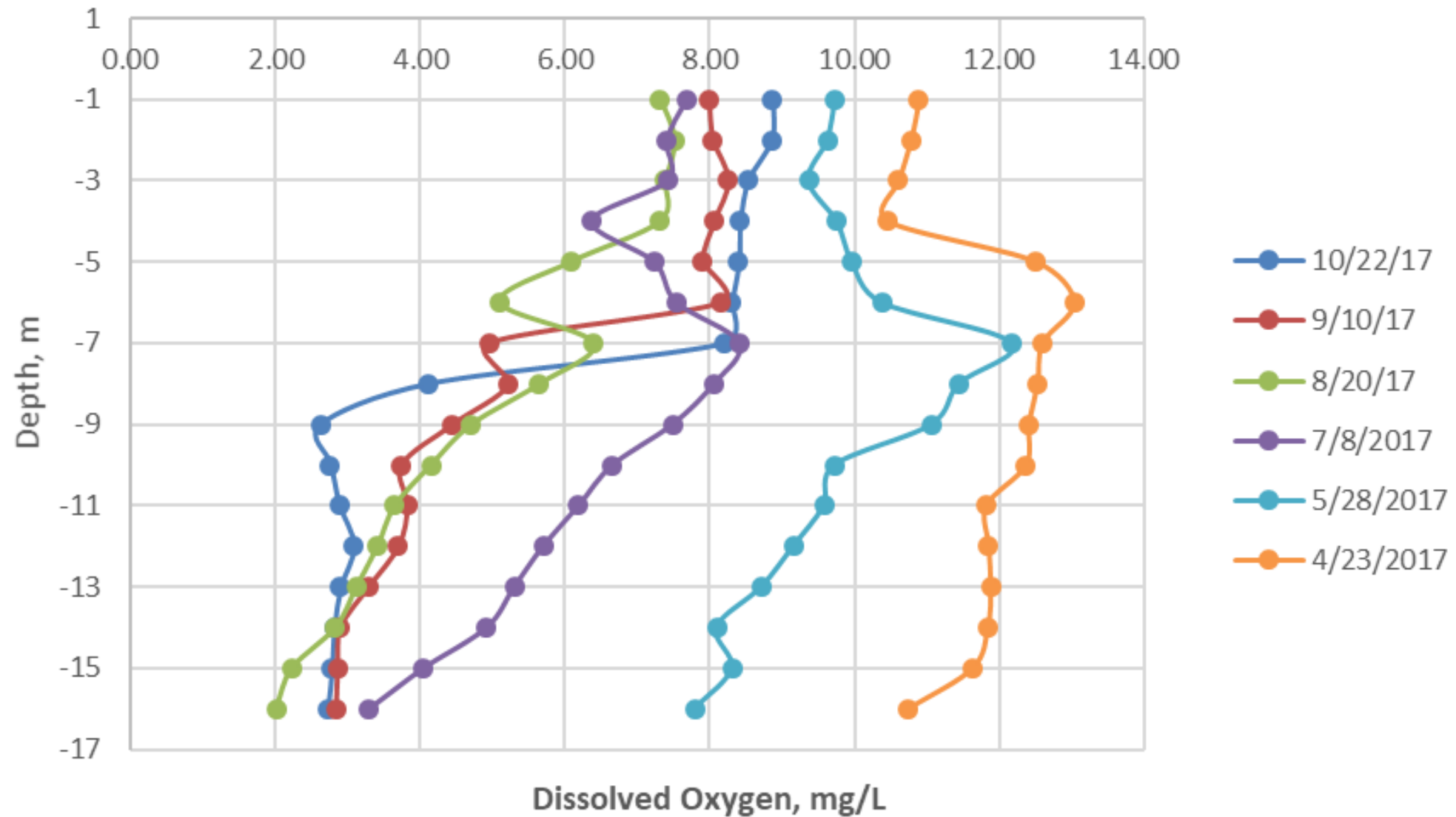
## Farm Pond - 2018 Dissolved Oxygen vs Depth Profiles



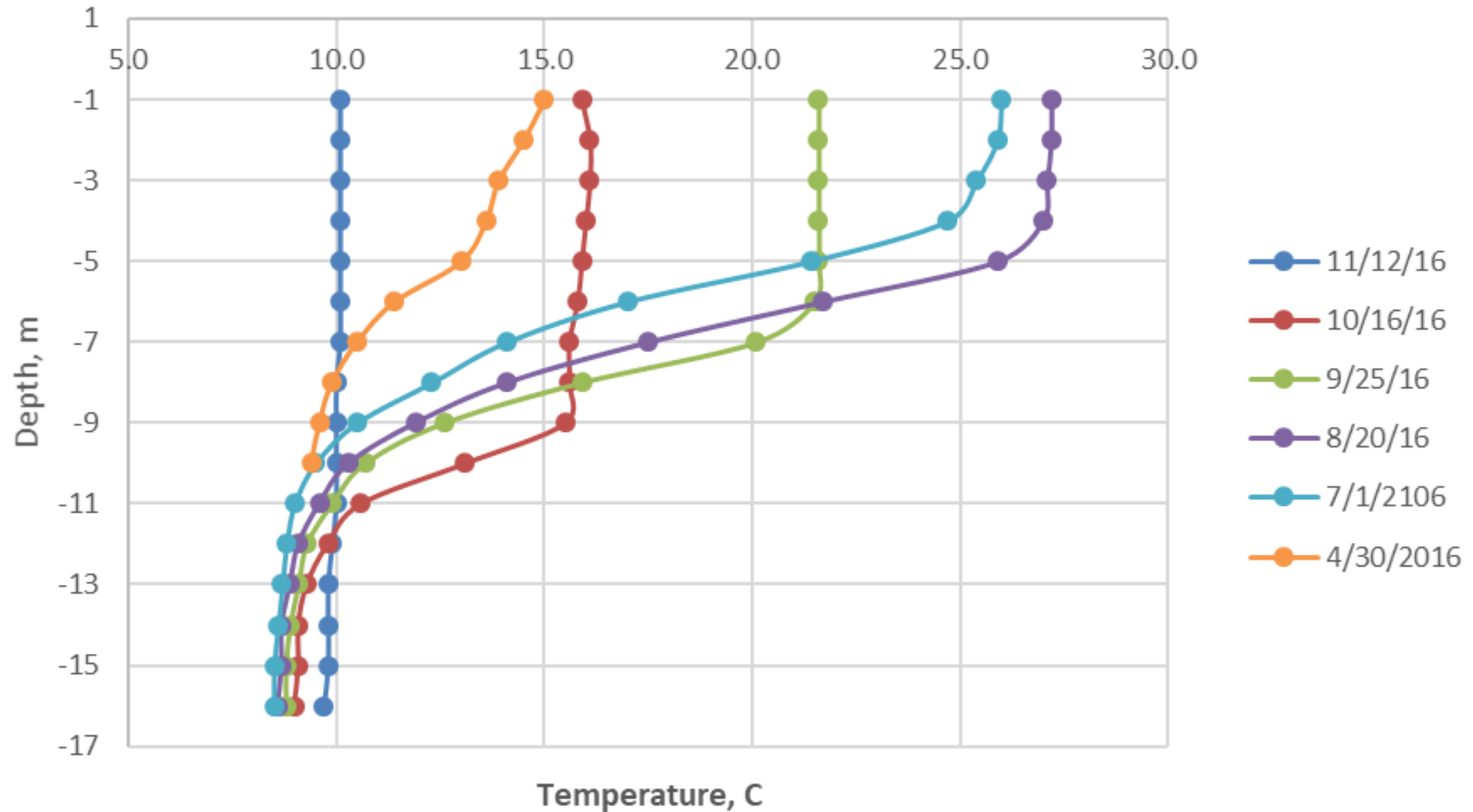
## Farm Pond - 2017 Temperature vs Depth Profiles



## Farm Pond - 2017 Dissolved Oxygen vs Depth Profiles



## Farm Pond - 2016 Temperature vs Depth Profiles



## Farm Pond - 2016 Dissolved Oxygen vs Depth Profiles

