

2022 Canandaigua Lake Sampling and Monitoring Program

Report to the Canandaigua Lake Watershed Council
February 8, 2023

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Program Background

- Program in it's 28th year (1996 – 2023)
- FLCC's role
- Lake attributes that are monitored each year since 1996:
 - Water clarity (secchi disk)
 - Lake algal productivity (chlorophyll-a)
 - Lake nutrients (Phosphorus)
 - Water quality profiles: temperature, dissolved oxygen, pH, conductivity

Program Notes

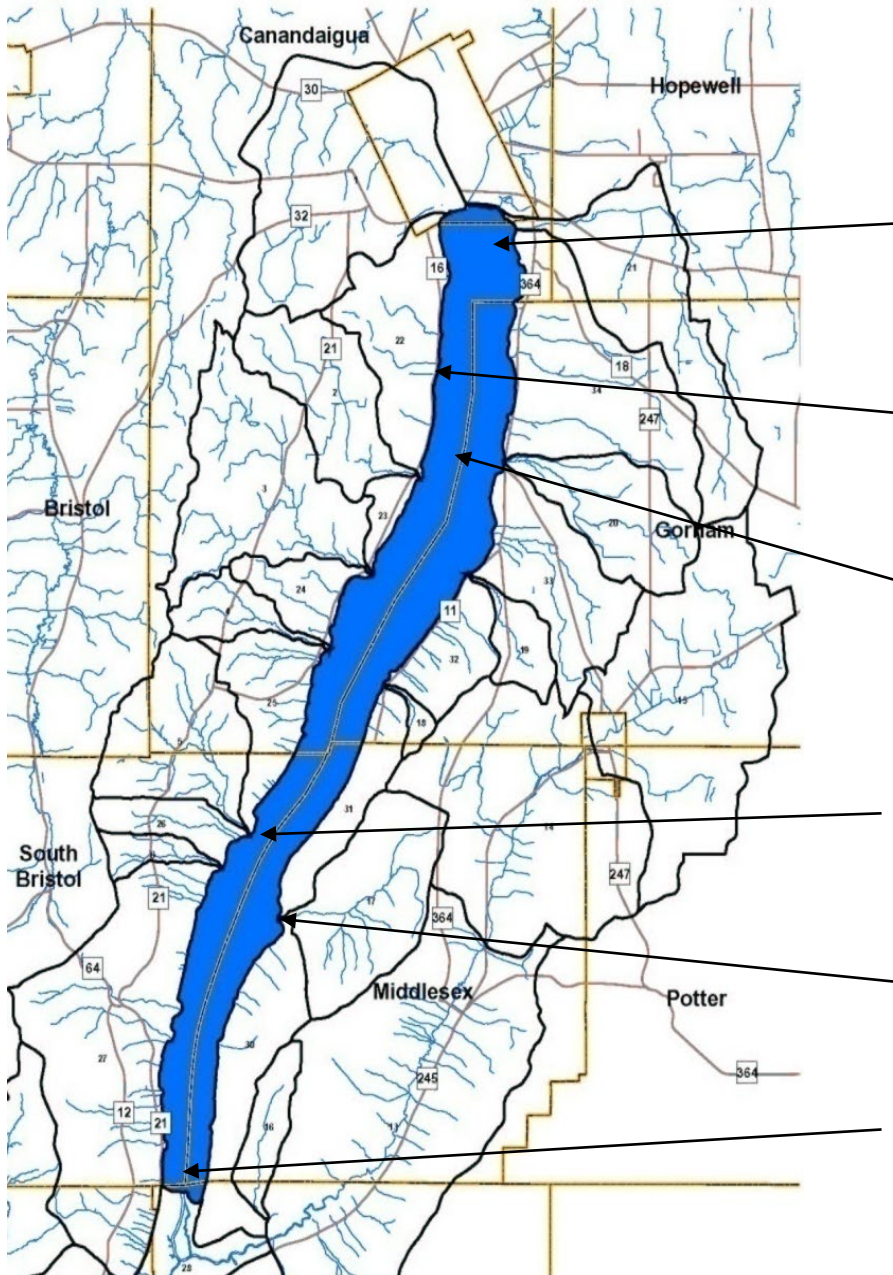
- 2017: Patty joins project
- 2018: Reduced sampling period:
 - From April to November
 - To May to October
- 2019:
 - Increased FLCC student participation
 - QAAP updates
 - Increased profile resolution sampling (2019)
- 2020:
 - April – factory maintained YSI sonde (removed one probe)
 - May – returned sonde after housing leaked and retested in field
 - June – began sampling for this year's grant
- 2021:
 - ~~Put into college budget 30K for a boat and 20K for a new sonde~~
- 2022:
 - Ordered new sonde (added algal sensor), ~~will use it mid-season~~
- 2023:
 - Plan to use new sonde

YSI EXO 3S sonde

- 66 m cable
- 5 sensor ports
 - pH
 - Dissolved oxygen
 - Temperature / Conductivity
 - Turbidity (new!)
 - Total algae – (new!)
- Sonde weight



Study Sites



Fallbrook (FB)

Hope Point (HP)

Deep Run (DR)

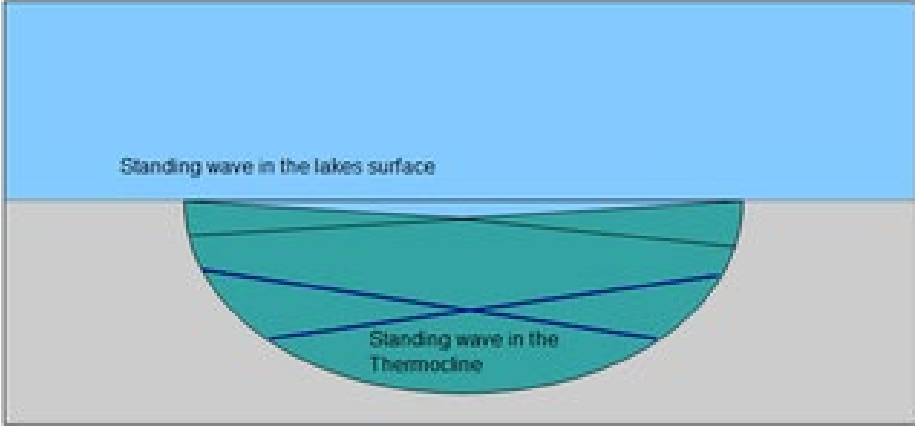
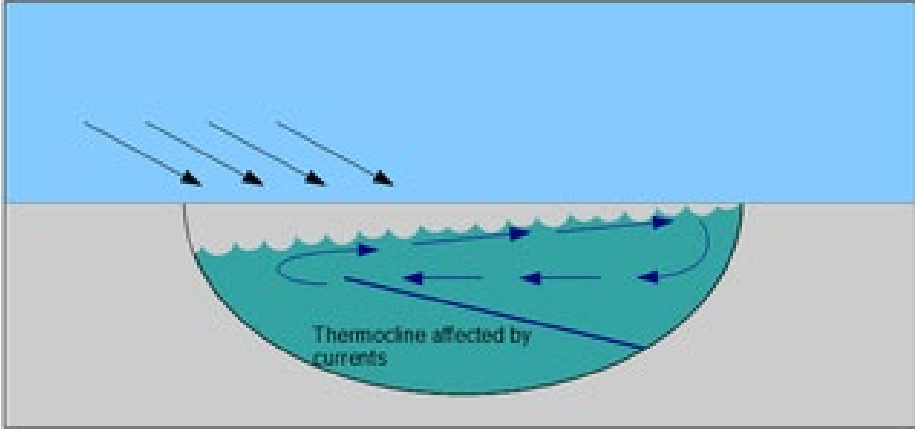
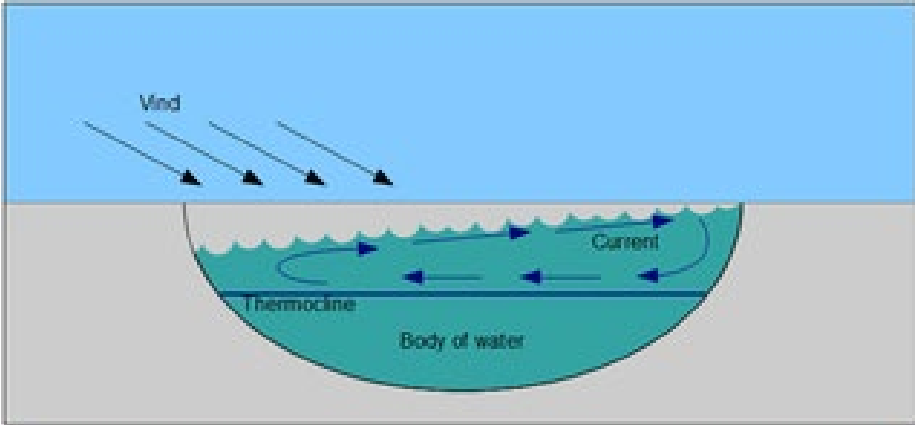
mid-lake locations

Seneca Point (SP)

Vine Valley (VV)

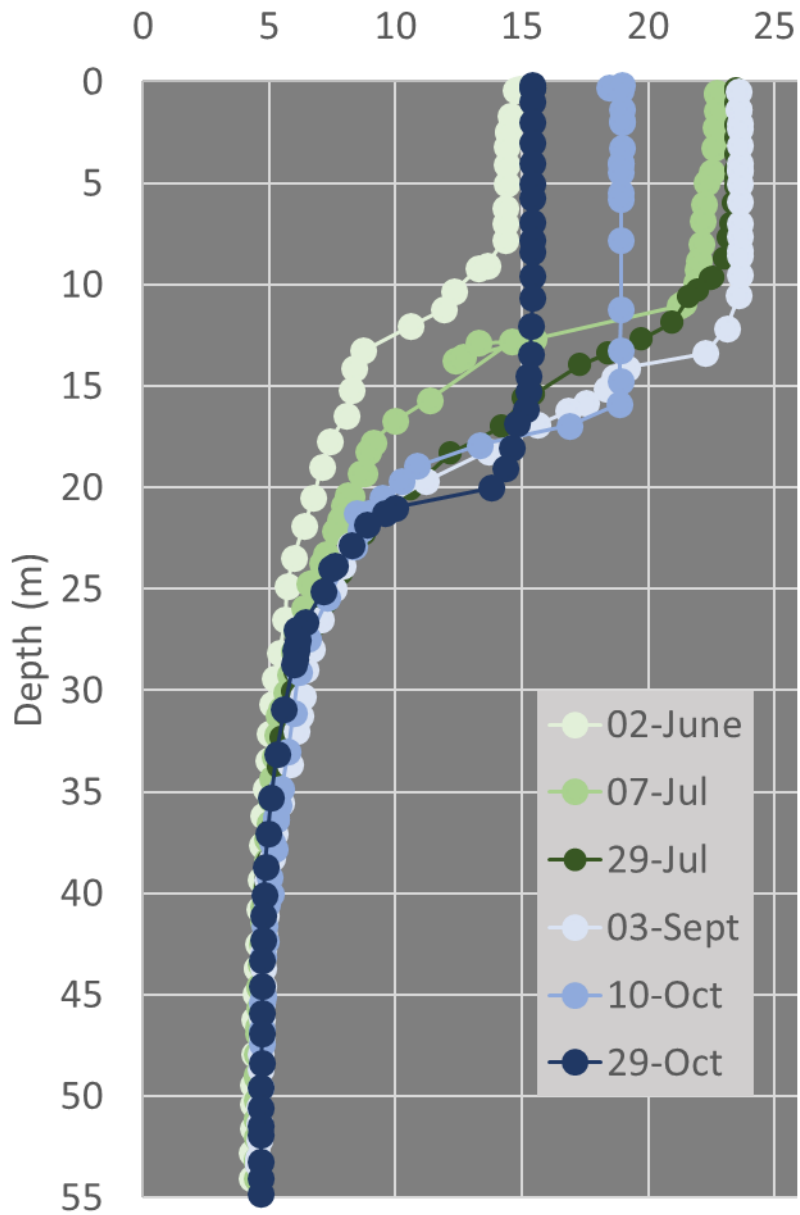
West River (WR)

Seiche



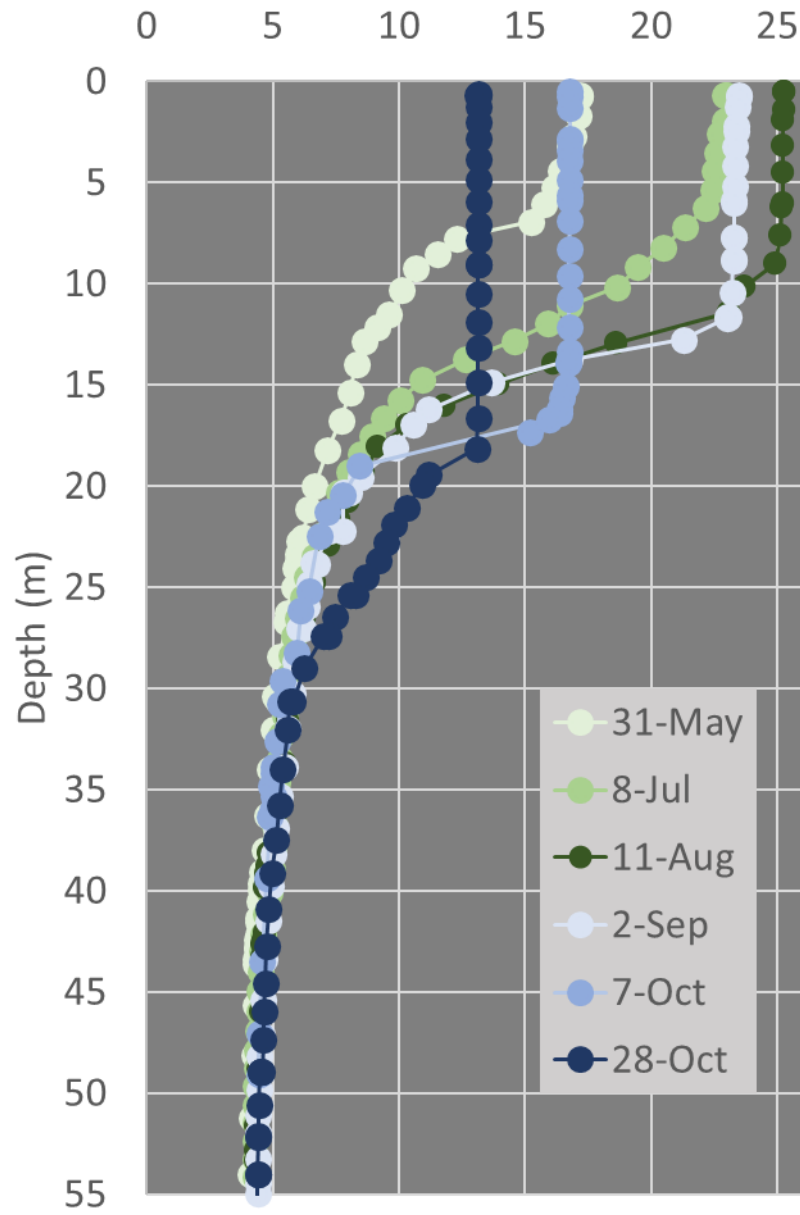
2021

Deep Run Temp. (°C)



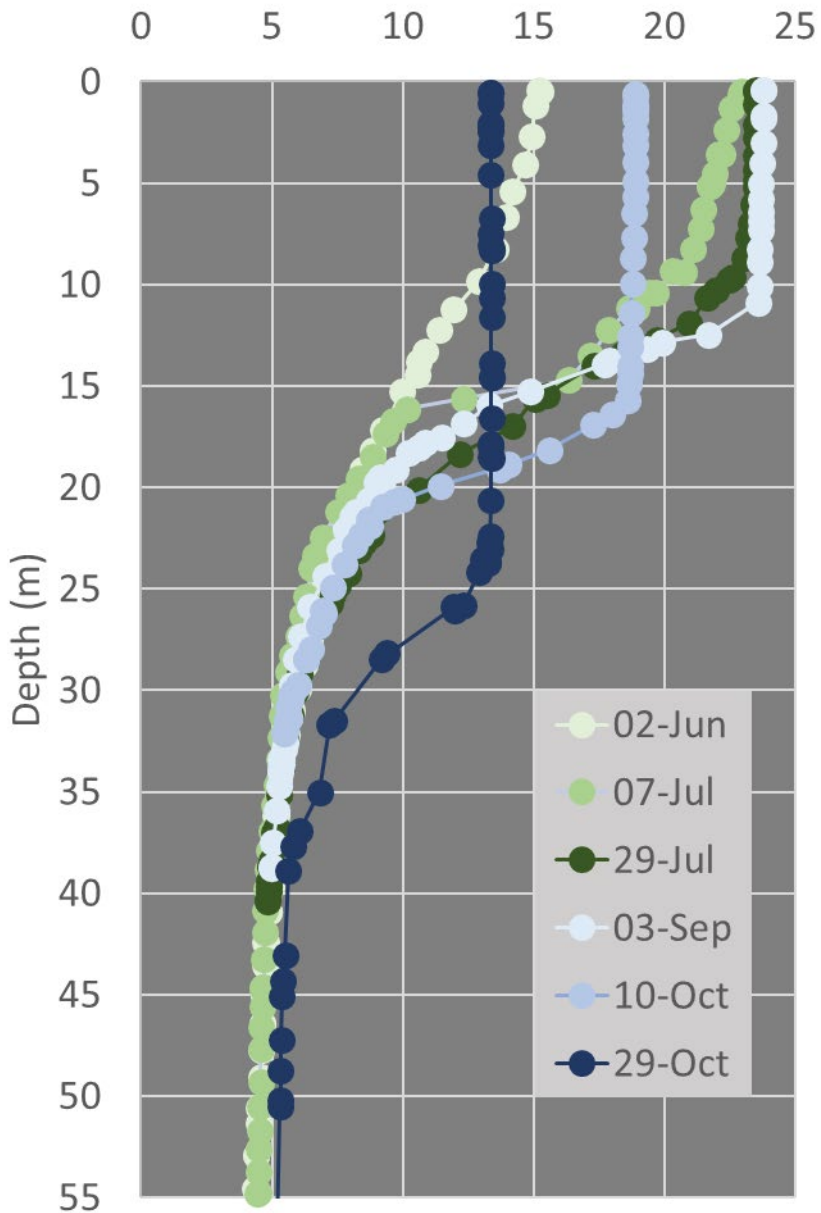
2022

Deep Run Temp. (°C)



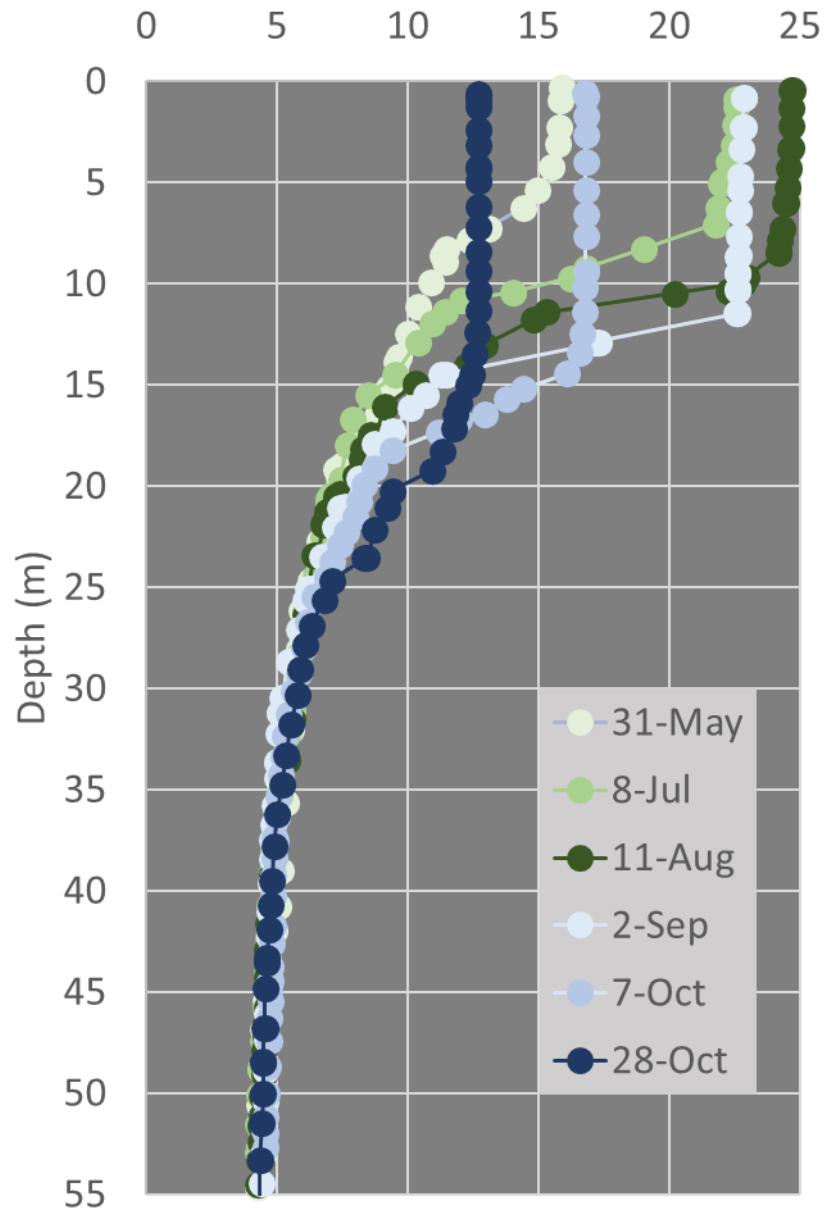
2021

Seneca Point Temp. (°C)



2022

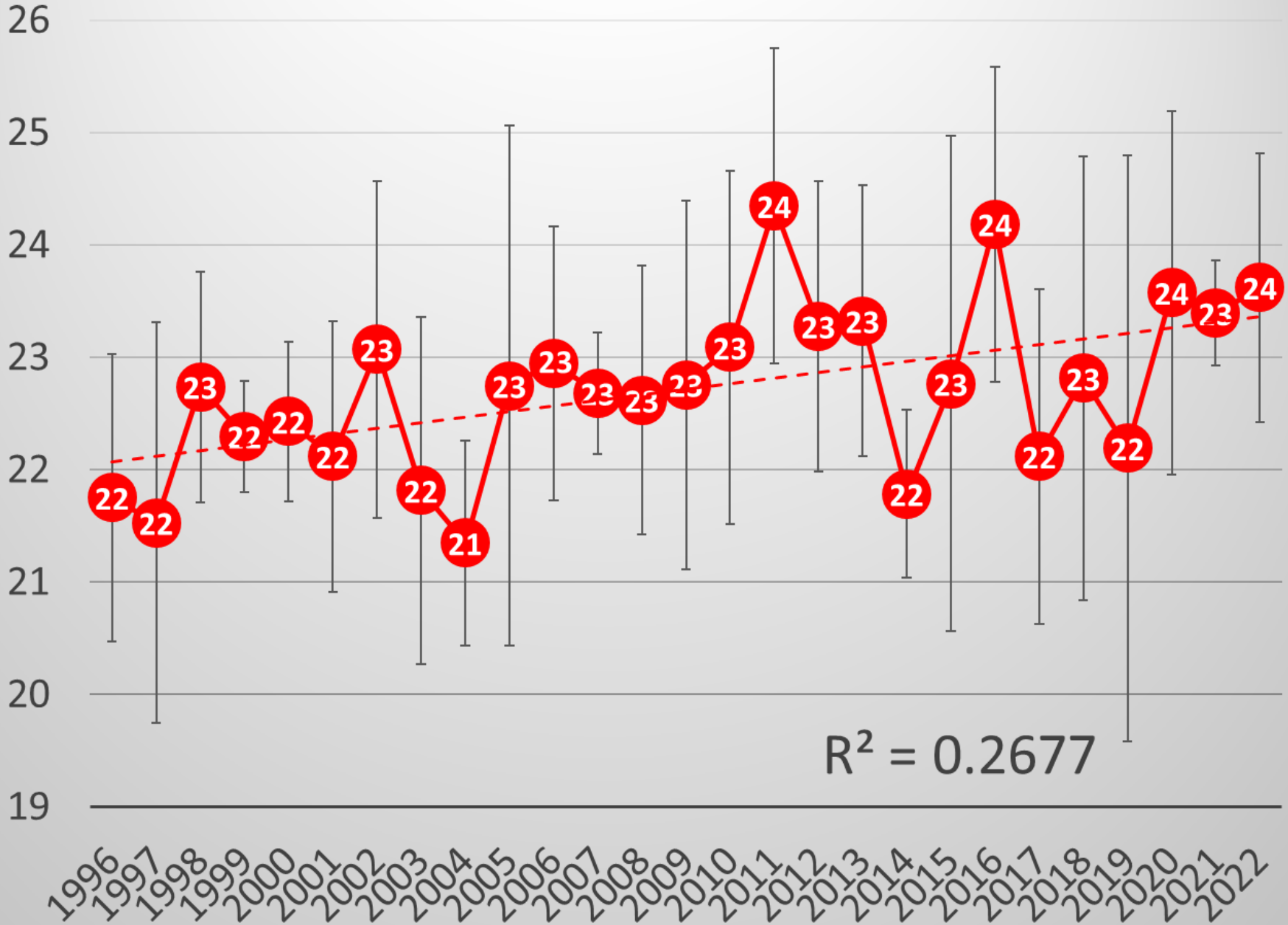
Seneca Point Temp. (°C)



Probe failure on 5/28/2020

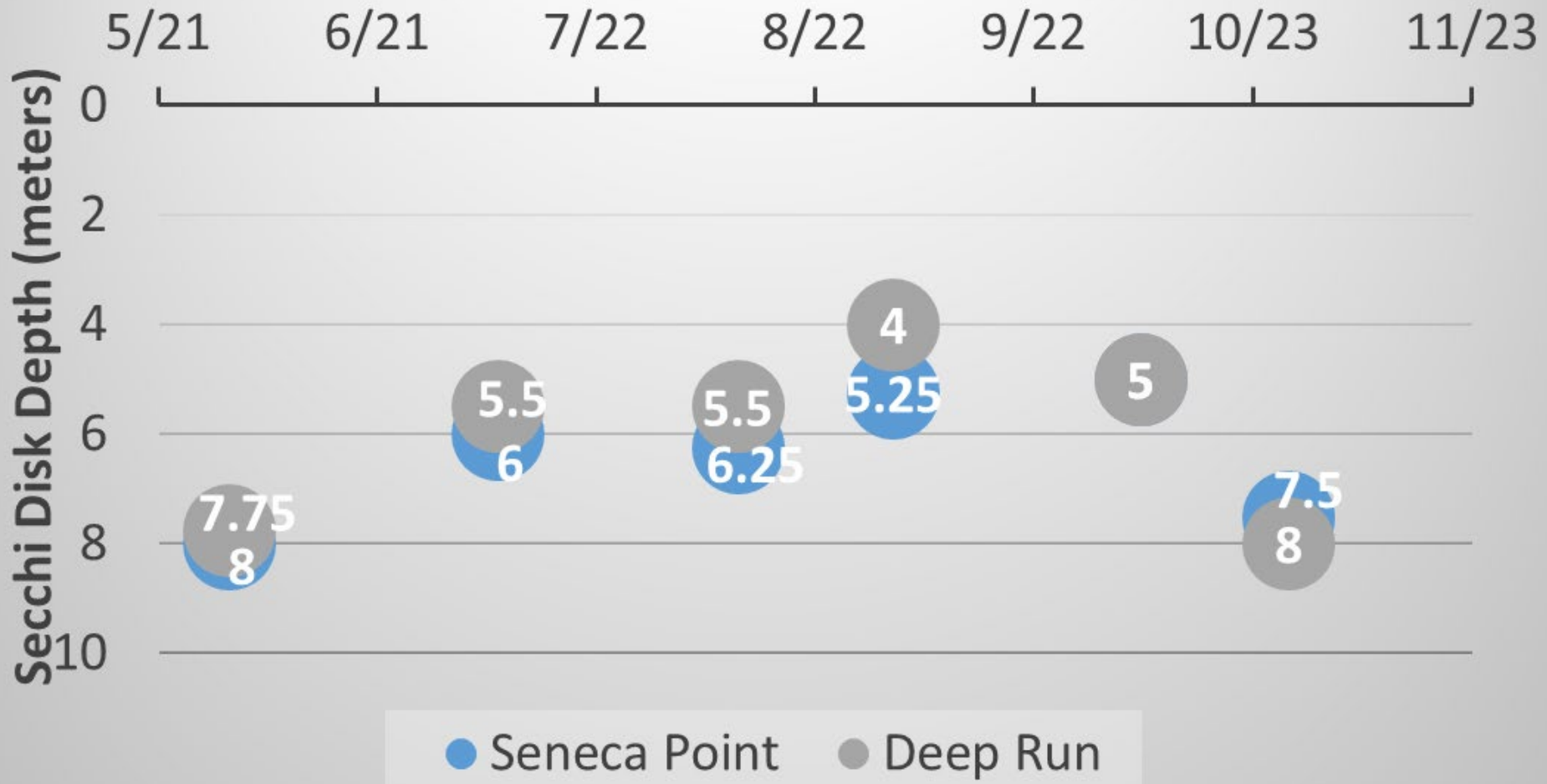
Summer Surface Temperatures (1996 - 2022)

June, July, August Temperature (C°)



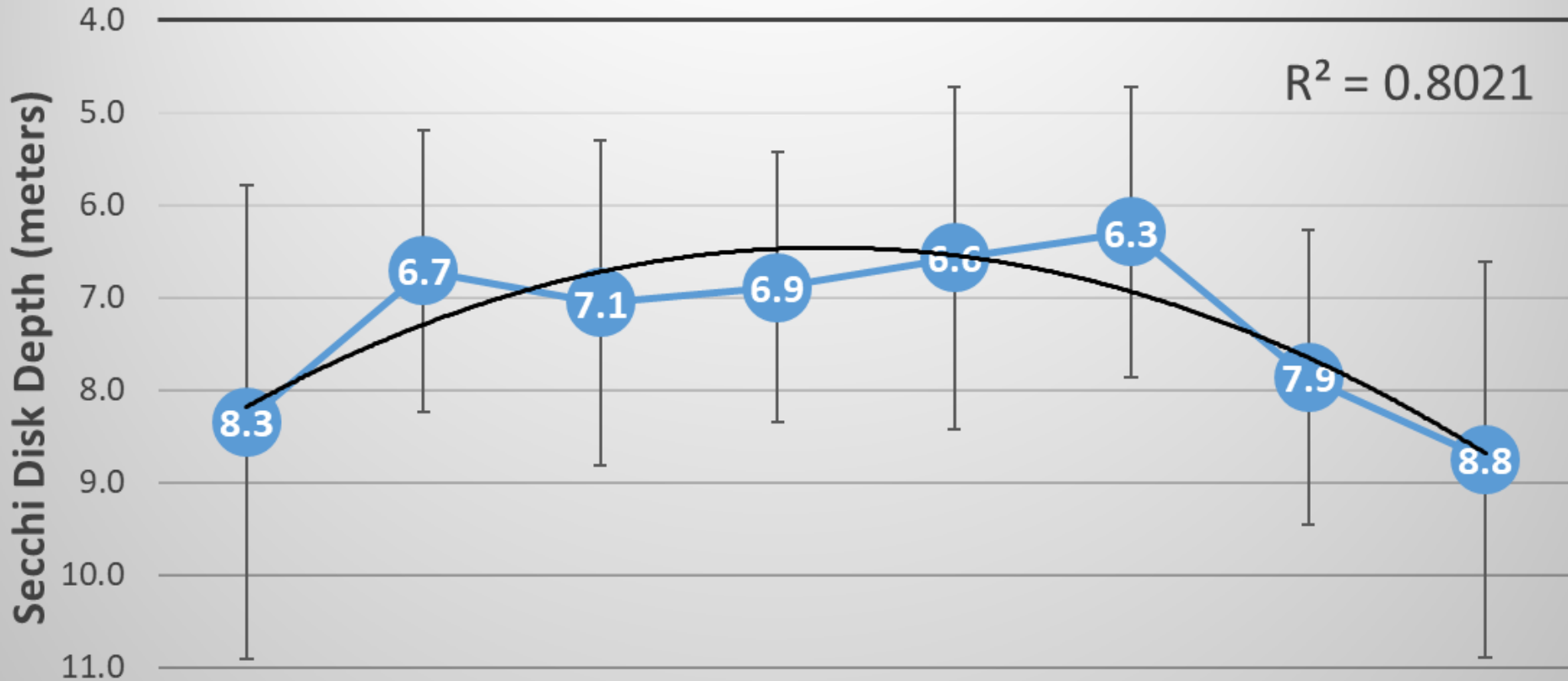
Lake Clarity

2022 Secchi Disk Measurements (meters)

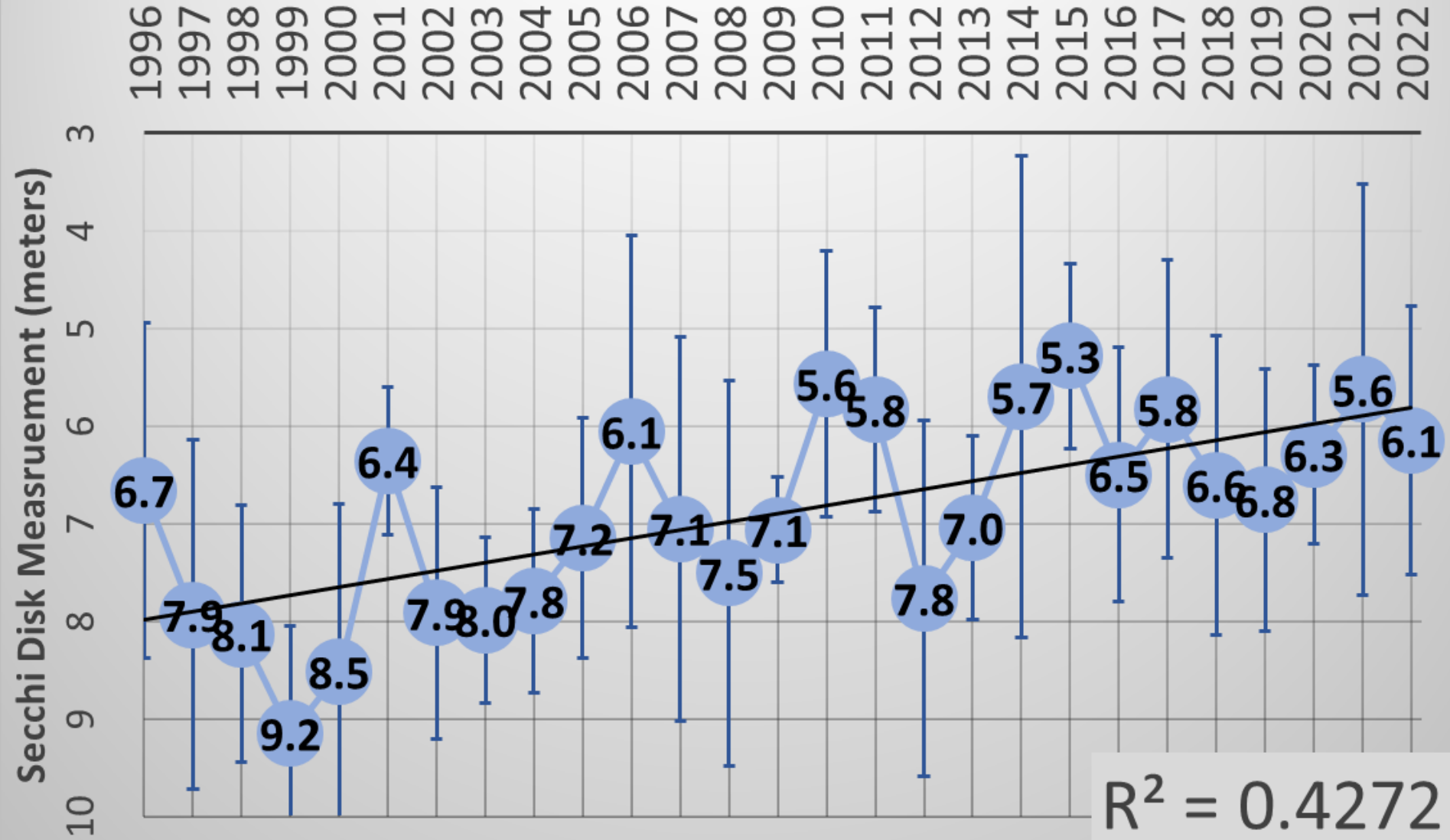


Seasonal Mean Lake Clarity (1996-2022)

APR MAY JUN JUL AUG SEP OCT NOV



Summer Mean Lake Clarity (1996 - 2022)

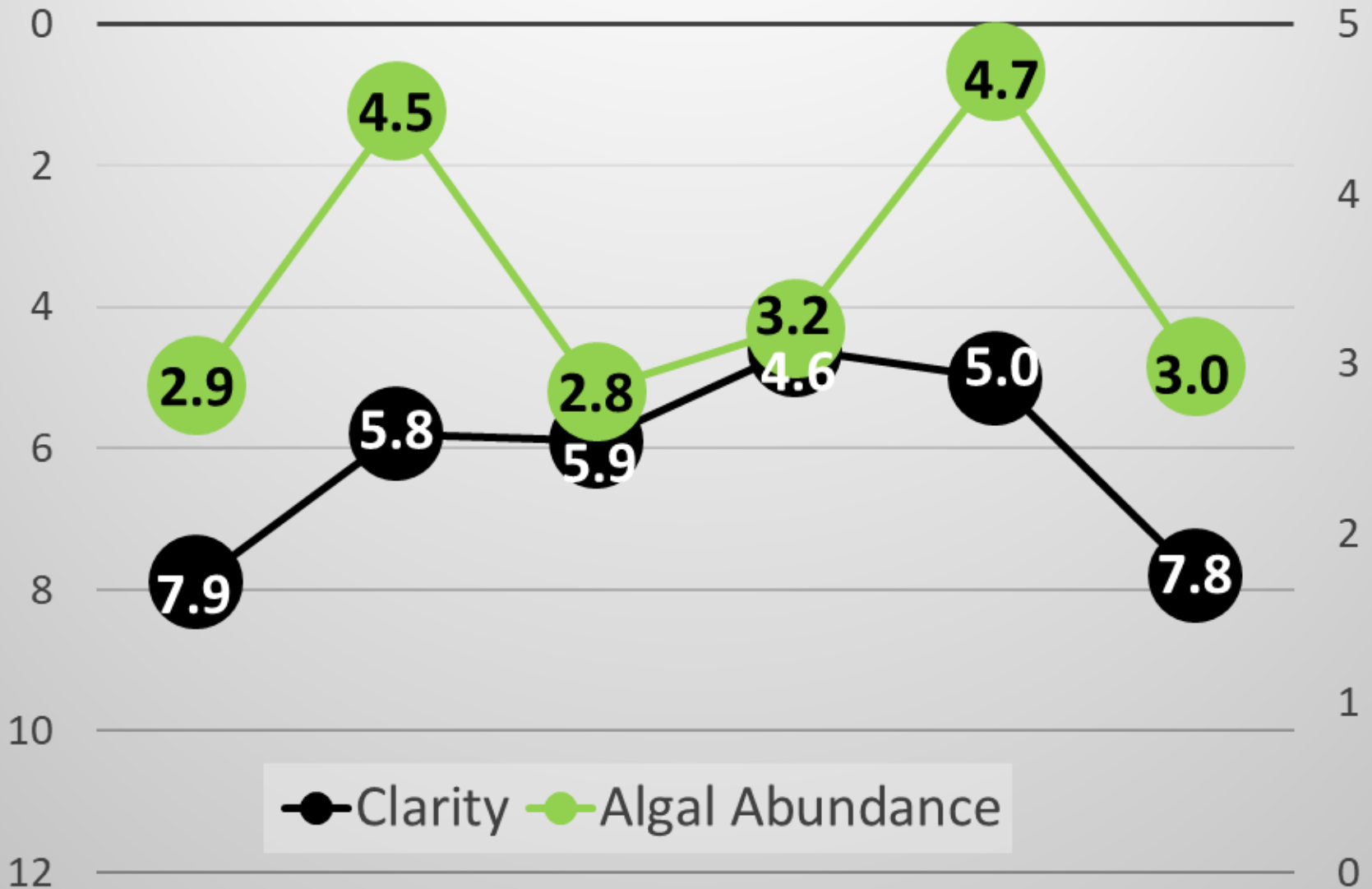


$R^2 = 0.4272$

Clarity versus Algal Abundance (2022)

MAY JUN JUL AUG SEP OCT

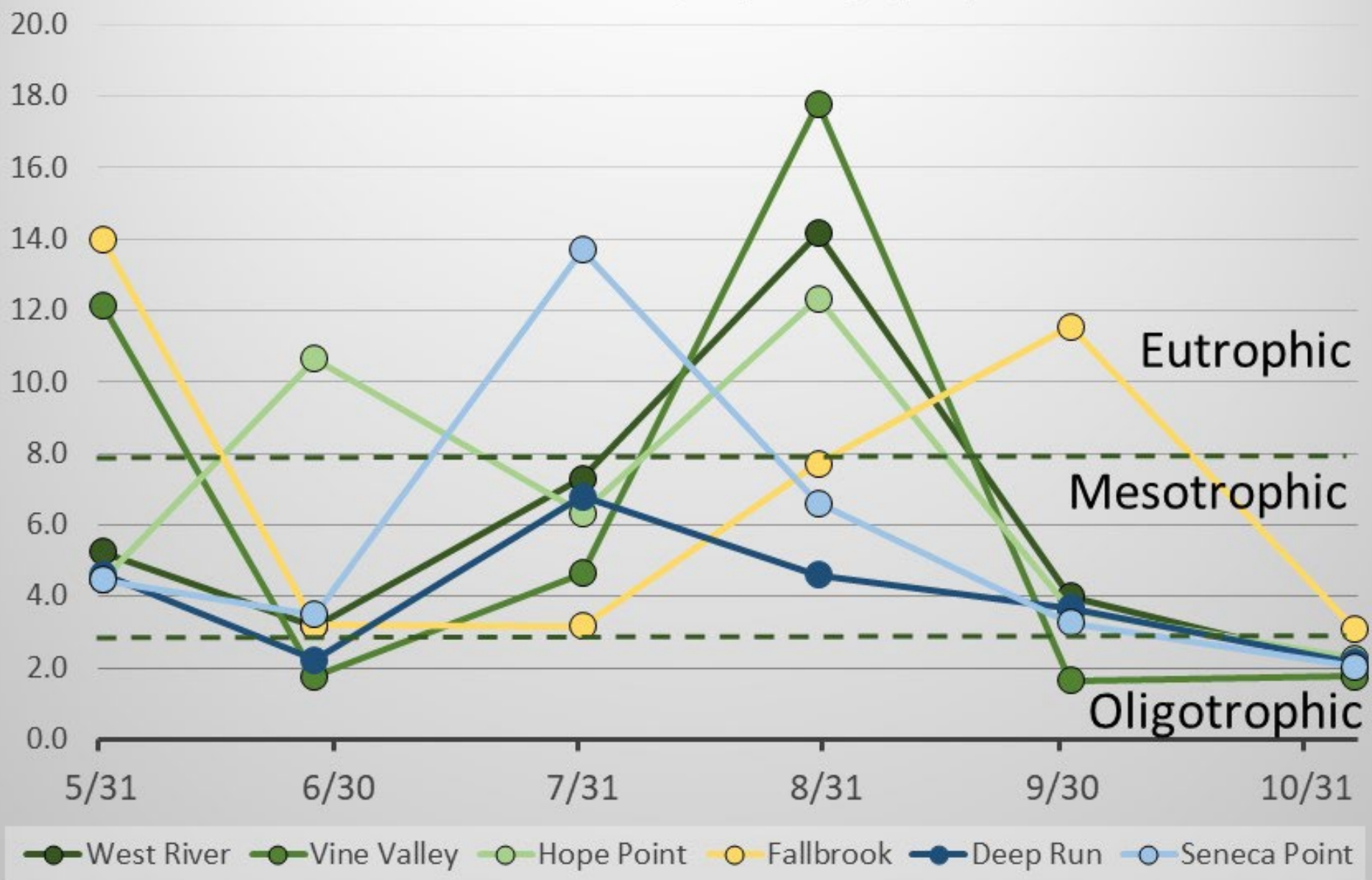
Secchi Disk Measurement (meters)



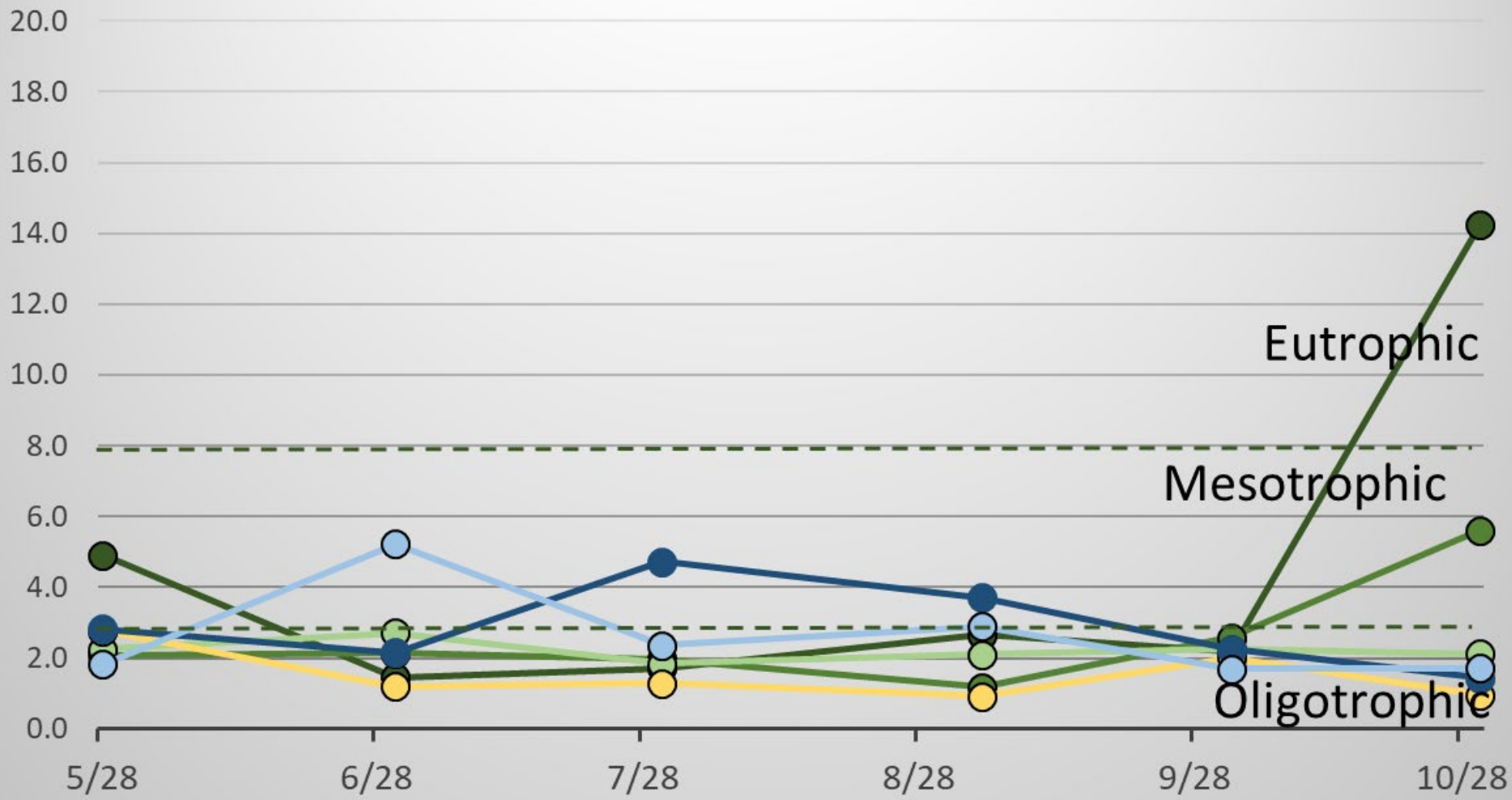
Chlorophyll-a Measurements (ug/L)

● Clarity ● Algal Abundance

2019 Seasonal Algal Abundance Chlorophyll-a (ug/L)

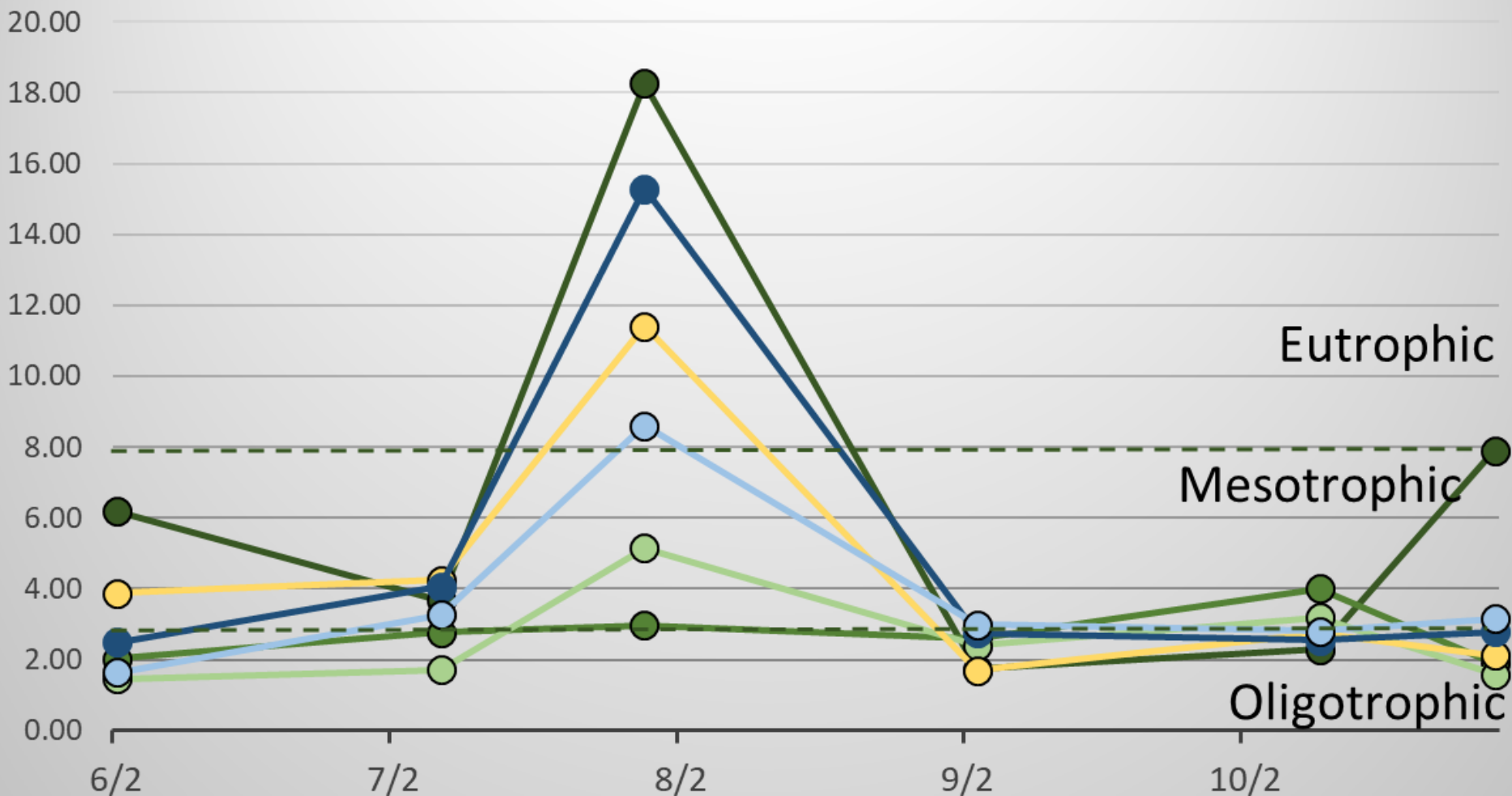


2020 Seasonal Algal Abundance Chlorophyll-a (ug/L)



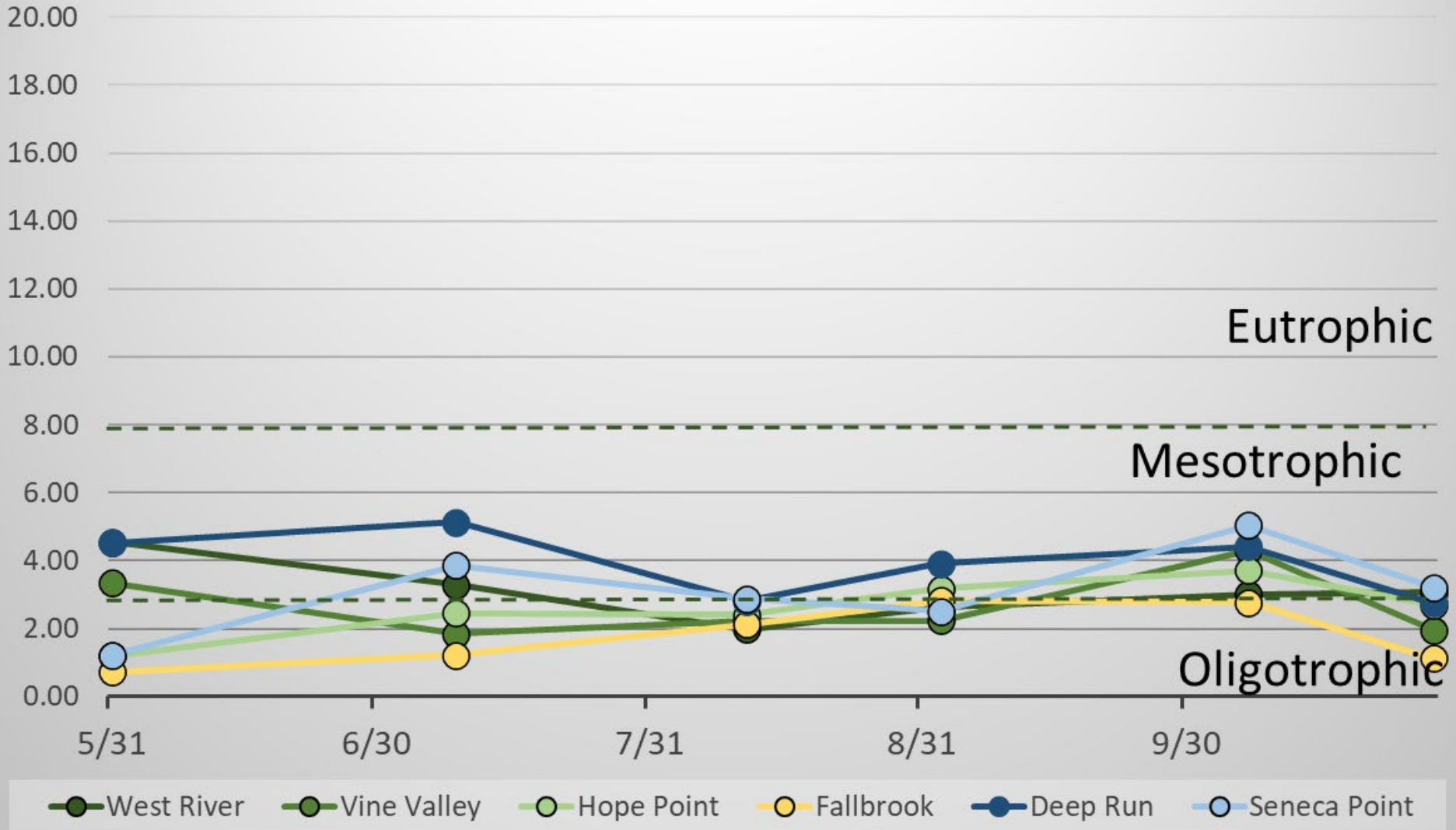
- West River
- Vine Valley
- Hope Point
- Fallbrook
- Deep Run
- Seneca Point

2021 Seasonal Algal Abundance Chlorophyll-a (ug/L)

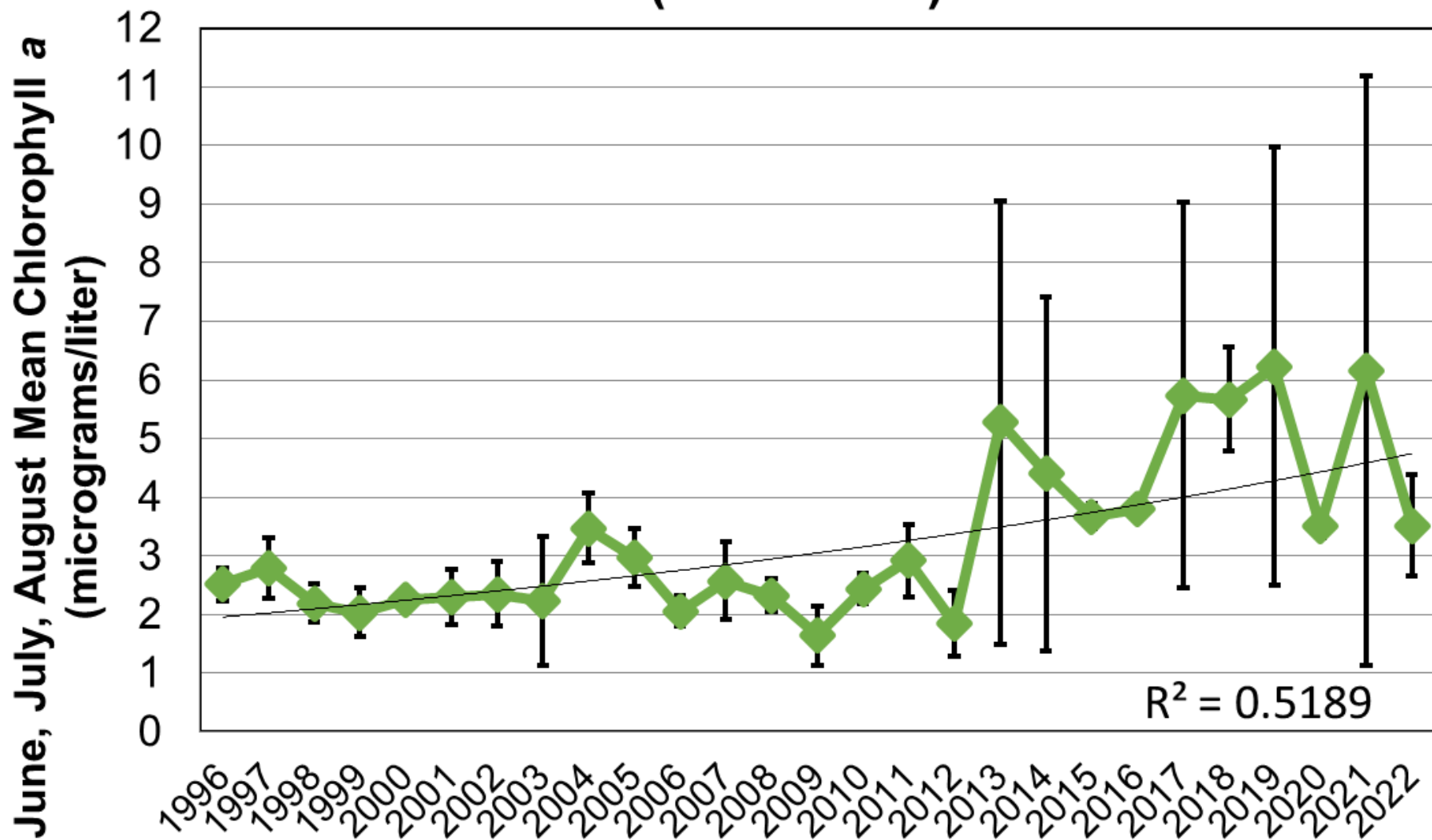


● West River ● Vine Valley ● Hope Point ● Fallbrook ● Deep Run ● Seneca Point

2022 Seasonal Algal Abundance Chlorophyll-a (ug/L)



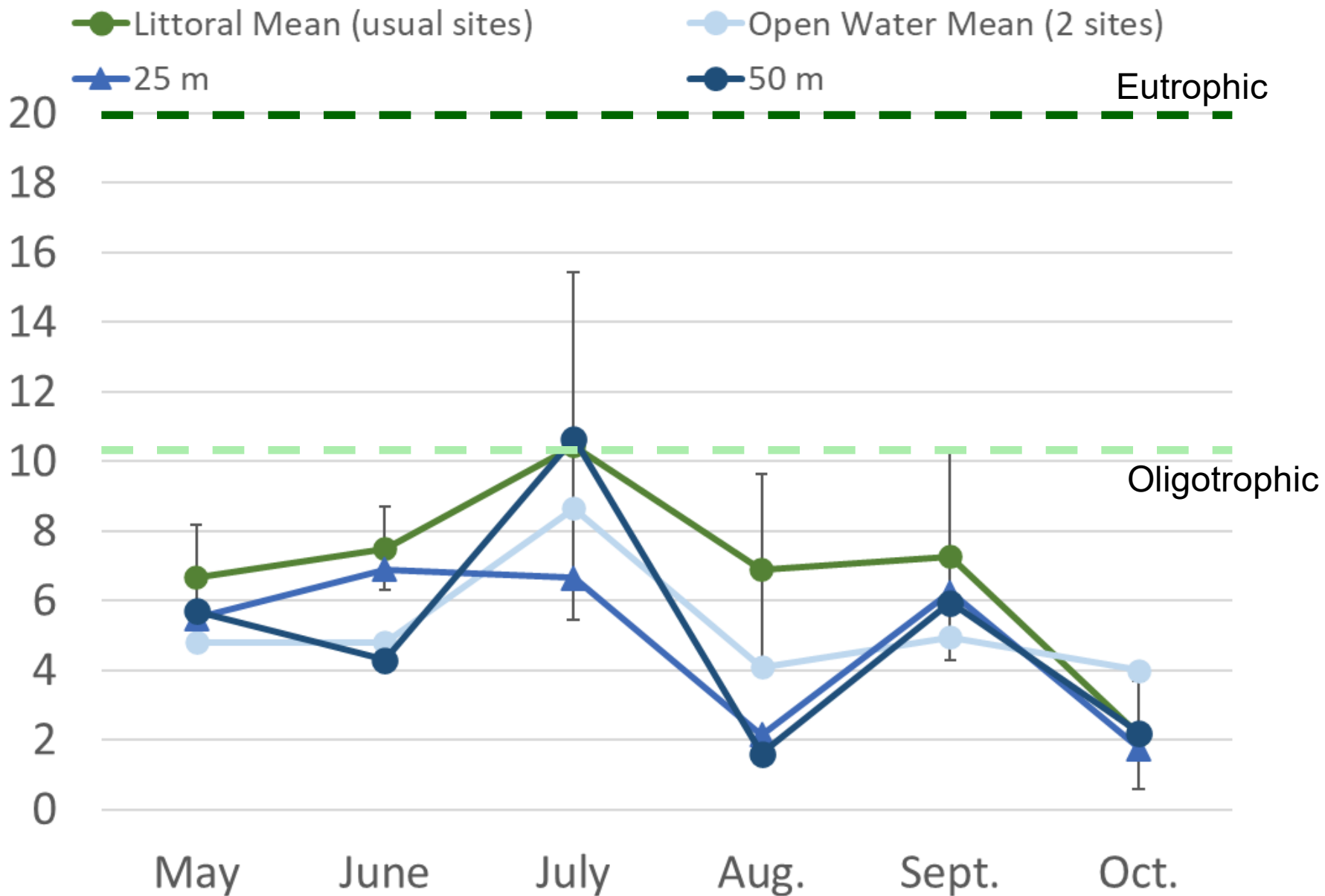
Long-term Summer Mean Algal Abundance (1996-2022)



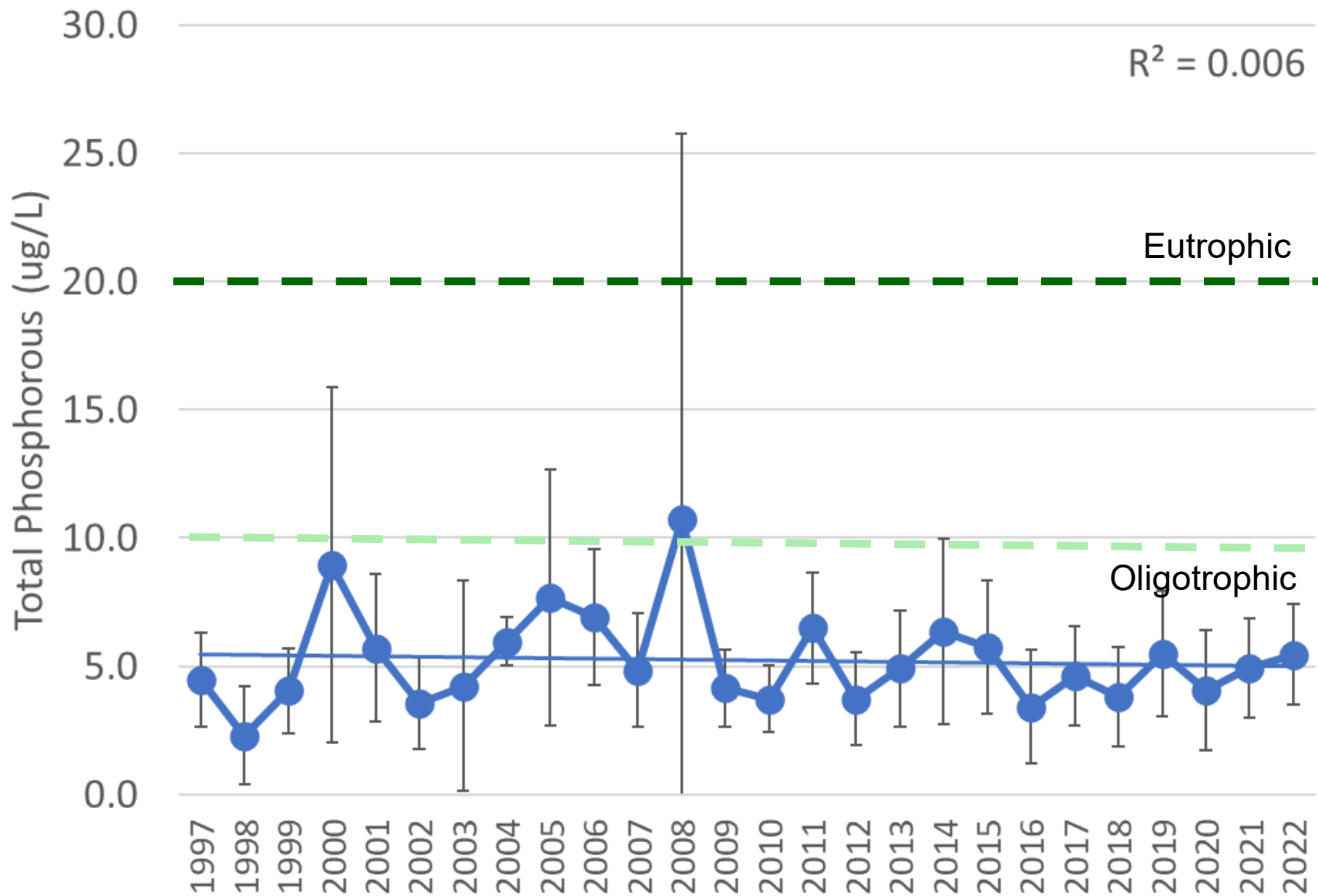
Total Phosphorous

- Includes ortho-phosphate and the phosphorus in suspended plant and animal fragments
- New York State's trophic assessments
 - Eutrophic: total phosphorus readings exceeded 20 ug/l
 - Mesotrophic: between the two categories
 - Oligotrophic: total phosphorus readings below 10 ug/l

2022 Total Phosphorus (ug/L)

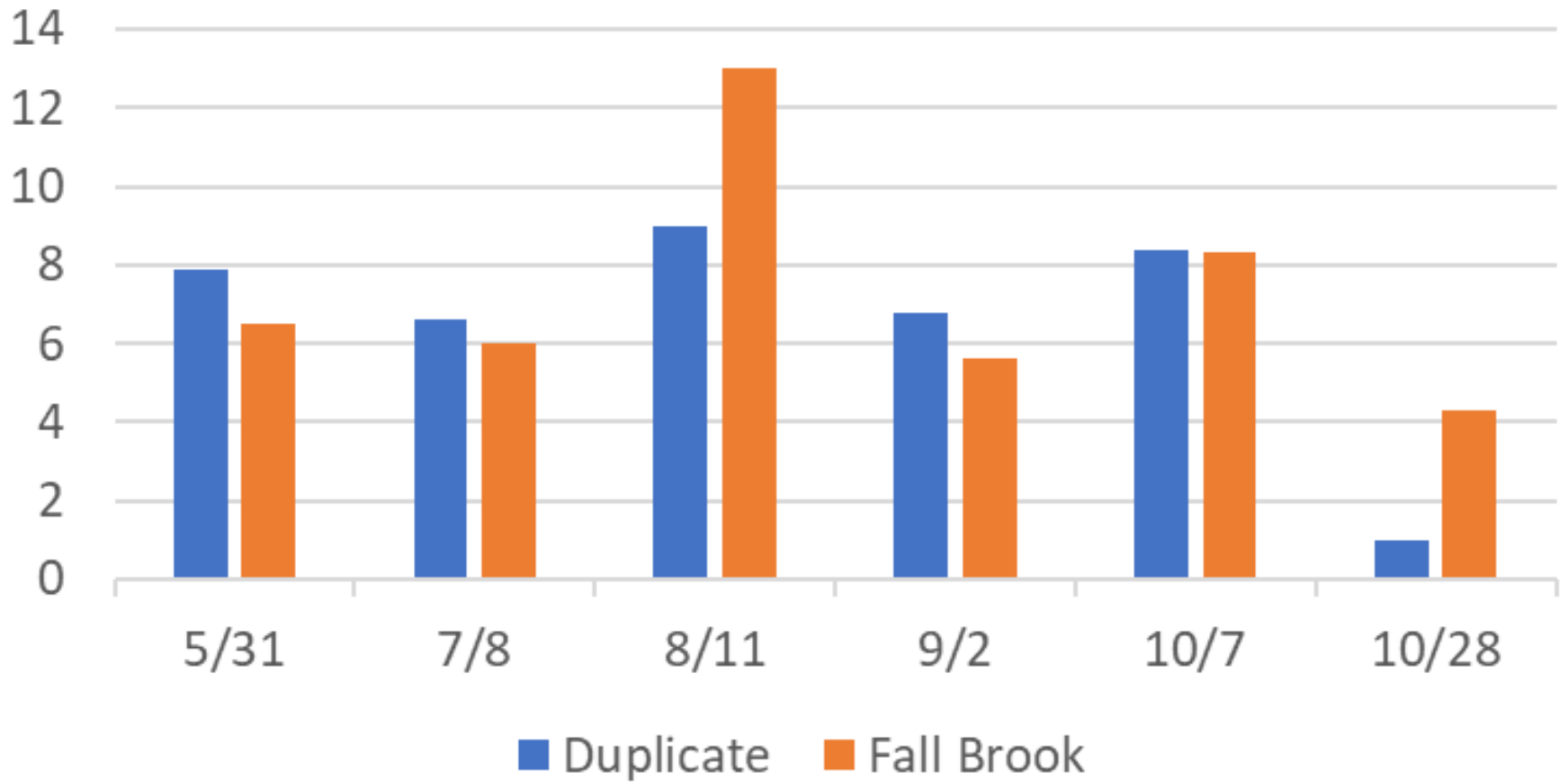


Mean TP (ug/L) May to October at Deep Run (2 m)



QAQC results

2022 Duplicates versus Site Samples



Special thanks to ... John Pfeffer Research Assistant



Thank you! Questions?

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