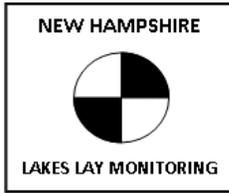


MENDUMS POND

2013 SAMPLING HIGHLIGHTS

BARRINGTON, NH



Mendums Pond volunteers collected water quality data between April 27 and October 29, 2013.

Light Blue = Outstanding = Ultraoligotrophic

Blue = Excellent = Oligotrophic

Yellow = Fair = Mesotrophic

Red = Poor = Eutrophic

Light Gray = No Data

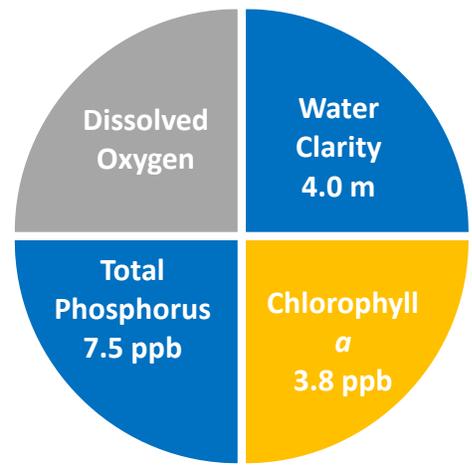


Figure 1. Average Water Quality Conditions

2013 RESULT HIGHLIGHTS

WATER CLARITY: Water clarity, measured as Secchi disk depth, averaged 4.0 meters in Mendums Pond. The 2013 measurements indicated a decrease in the water clarity values relative to 2012.

CHLOROPHYLL: Chlorophyll *a*, a measure of microscopic plant life within the lake, averaged 3.8 parts per billion (ppb) in Mendums Ponds, and indicated an increase in microscopic plant life relative to 2012.

TOTAL PHOSPHORUS: Phosphorus is the nutrient most responsible for microscopic plant growth. Total phosphorus concentrations collected in Mendums Pond averaged 7.5 ppb and remained below 10 ppb, which is considered sufficient to support green water events that are referred to as algal blooms.

DISSOLVED OXYGEN: Dissolved oxygen concentrations were not monitored in Mendums Pond in 2013.

COLOR: Color is a result of naturally occurring “tea” color substances from the breakdown of soils and plant materials. The Mendums Pond color averaged 46.2 color units (CPU). Wet years tend to increase wetland drainage and the associated dissolved colored substances that enter the lake. This increase in the “tea” color reduces light penetration, and is oftentimes associated with reduced water clarity.

ALKALINITY: Alkalinity measures the lake’s resistance against acid rain. The average Mendums Pond alkalinity measured 1.5 milligrams per liter (mg/L). The 2013 alkalinity indicates Mendums Pond is extremely vulnerability to acid rain.

SPECIFIC CONDUCTIVITY: Specific Conductivity was not monitored in Mendums Pond in 2013.

CYANOBACTERIA: Mendum’s Pond did not participate in the 2013 cyanobacteria-monitoring. Please see recommendations on how to become involved.

Note: Site 1 South Dam (see map) was used to as the reference point to give an overall representation of the Mendums Pond water quality discussed in this summary. For a more detailed discussion of water quality measurements, please refer to the executive summary within the annual Mendums Pond water quality report.

Table 1. 2013 Mendums Pond Seasonal Average Water Quality Readings and Trophic Level Classification Criteria used by the New Hampshire Lakes Lay Monitoring Program

Parameter	Ultraoligotrophic “Outstanding”	Oligo “Excellent”	Meso “Fair”	Eutrophic “Poor”	Mendums Pond Average (range)	Mendums Pond Classification
Water Clarity (meters)	> 7.0	4.0 – 7.0	2.5 - 4.0	< 2.5	4.0 meters (range: 3.2 – 4.8)	Oligotrophic
Chlorophyll <i>a</i> (ppb)	< 2.0	2.0 - 3.0	3.0 - 7.0	> 7.0	3.8 ppb (range: 2.1 – 5.5)	Mesotrophic
Total Phosphorus (ppb)	< 7.0	15.0 – 7.0	15.0 - 25.0	> 25.0	7.5 ppb (range: 6.0 – 9.1)	Oligotrophic
Dissolved Oxygen (mg/L)	> 7.0	5.0 – 7.0	2.0 – 5.0	<2.0	N/A	N/A
Cyanobacteria (cell counts or toxin concentration)	The Massachusetts Department of Public Health recommends a maximum level of <14,000 nanograms microcystins per Liter or 70,000 cyanobacteria cells per milliliter.			The New Hampshire Department of Environmental services encourages that an official be alerted and warnings be posted if concentrations of cyanobacteria exceed more than 70,000 cells per milliliter.		

LONG TERM TRENDS

WATER CLARITY: Over the past twenty-four years of sampling water clarity has increased approximately 30 centimeters (cm). However, the trend is not statistically significant.

CHLOROPHYLL: The chlorophyll *a* concentration has increased approximately 0.7 parts per billion (ppb) over the past twenty-four years of sampling. However, the trend is not statistically significant.

COLOR: Color has varied annually and has increased slightly over the years although there is not a statistically significant trend.

TOTAL PHOSPHORUS: Total phosphorus concentrations have increased significantly since 1987.

In summary, there are indications that the Mendums Pond water quality has declined, such as the long term-increases in chlorophyll *a* and total phosphorus. Next year's water quality report will take a closer look at the interrelationship between rainfall and water quality parameters that may help explain some of the water quality variability among years.

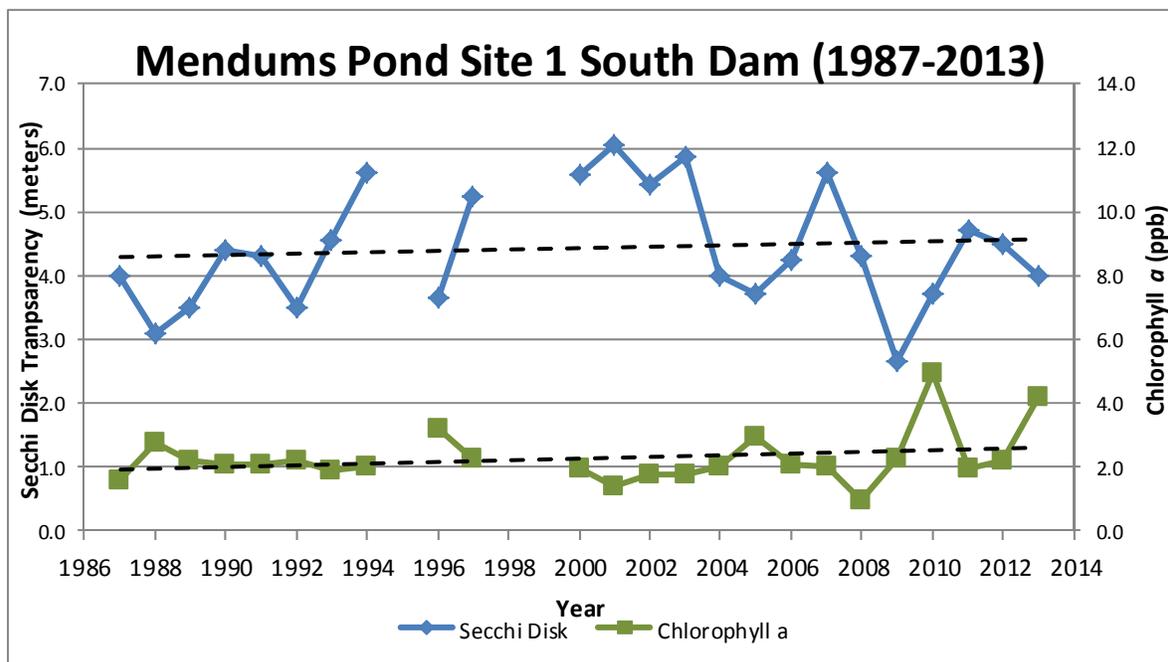


Figure 2. Changes in water clarity (Secchi disk depth) and chlorophyll *a* concentrations measured from 1987-2013 at Site 1 South Dam. There is a trend of increasing water transparency although it is not statistically significant (dashed line). Increasing water clarity is a positive trend for lakes if it is a response to reduced algae growth or polluted runoff. Algal growth (chlorophyll) has increased over the past twenty-four years of sampling. However, this trend is not statistically significant (dashed line).

Recommendations:

- Continue early season sampling (April/May) to document Mendums Pond's reaction to the period of spring thaw and periods of high streamflow.
- Schedule a **Center of Freshwater Biology** field team visit during which a more in depth water quality survey would be conducted.
- Consider adding a simple cyanobacteria monitoring program that uses existing water quality sample collection protocols. Cyanobacteria collections from the spring through fall months can give insight into how these populations are distributed throughout the seasons and when they are most likely to be at harmful levels. If you are interested in discussing additional water quality monitoring options that would meet your needs please contact [Bob Craycraft @ 862-3696](mailto:Bob.Craycraft@unh.edu) or bob.craycraft@unh.edu.

Mendum's Pond

Barrington, NH

2013 Deep water sampling sites with seasonal average water clarity

