



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

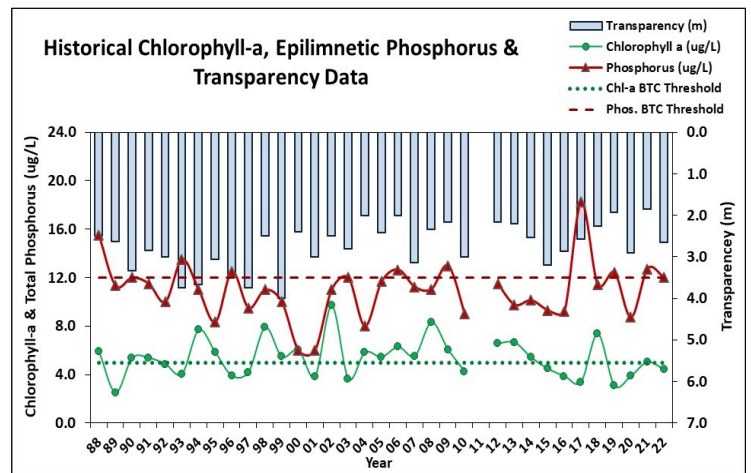
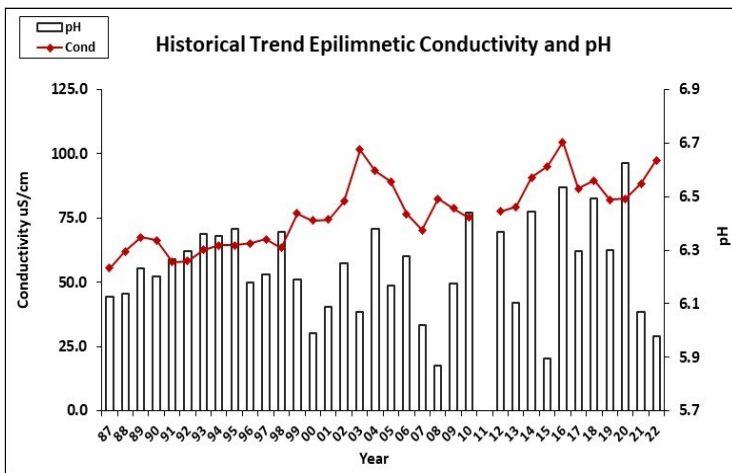
## MONOMONAC LAKE, RINDGE

### 2022 DATA SUMMARY

**RECOMMENDED ACTIONS:** Great job sampling in 2022! Lake quality is generally representative of mesotrophic, or average conditions, however algal growth tends to fluctuate above the threshold for mesotrophic lakes and cyanobacteria blooms are occurring more frequently which highlights the delicate balance of the system. Evaluate any relationship between exotic plant management activities, such as herbicide treatments, and the occurrence of **cyanobacteria** blooms. Conduct monthly dissolved oxygen/temperature profiles at the deep spot to determine periods of anoxia (lack of dissolved oxygen) in late summer as this could cause phosphorus to be released from bottom sediments which can fuel cyanobacteria blooms during fall turnover. Consider development of a **watershed management plan** to identify and quantify pollutant loads to the lake and make recommendations on management activities to reduce nutrient loading. Improved water quality during drought years highlights the importance of managing stormwater runoff and erosion to the lake. NHDES' [NH Homeowner's Guide to Stormwater Management](#) is a great resource. Encourage lake front property owners to be certified [LakeSmart](#) through NH LAKES' lake-friendly living program. Keep up the great work!

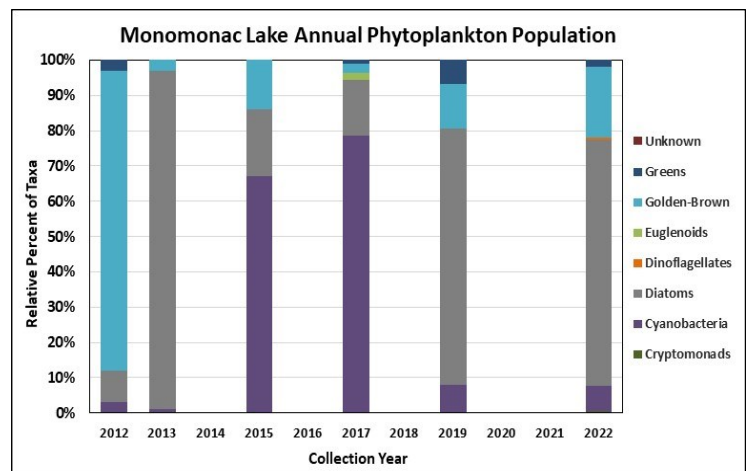
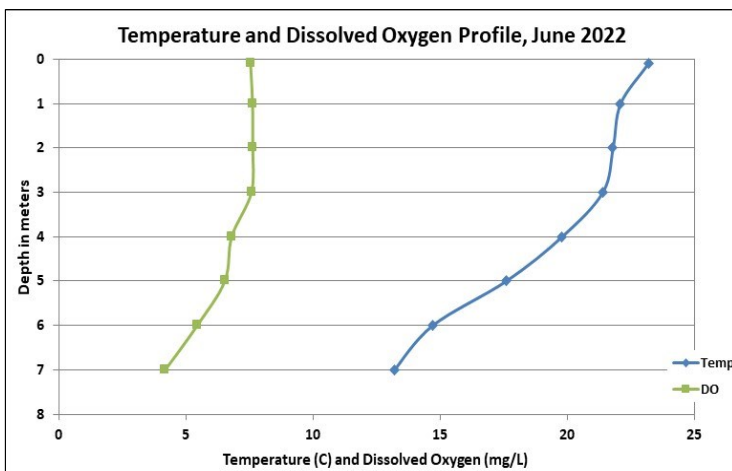
#### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Parameter	Trend
Conductivity	Worsening	Chlorophyll-a	Stable
pH (epilimnion)	Stable	Transparency	Stable
		Phosphorus (epilimnion)	Stable



#### DISSOLVED OXYGEN AND PHYTOPLANKTON

(Note: Information may not be collected annually)





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### OBSERVATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- ◆ **CHLOROPHYLL-A:** Chlorophyll level was within a low range in June, increased to a moderate level in July, and decreased to a low level in August. Average chlorophyll level decreased from 2021, was approximately equal to the state median, and was slightly less than the threshold for mesotrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride levels remained slightly greater than the state medians, yet less than a level of concern. Dapkas 2 conductivity and chloride levels were very low and less than the state medians. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic (upper water layer) conductivity levels since monitoring began.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was moderately tea colored, or brown, in June and decreased to a light tea color by August.
- ◆ **E. COLI:** Marina Inlet E. coli levels were very low on each sampling event. Dolly Lane E. coli level was slightly elevated in June but less than the state standard for surface waters.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was slightly elevated in June and decreased to a low level in July and August. Average epilimnetic phosphorus level decreased from 2021, was slightly greater than the state median, and was approximately equal to the threshold for mesotrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus levels increased to an elevated level as the summer progressed and the turbidity of the samples also was elevated suggesting potential release of phosphorus from bottom sediments under anoxic (no dissolved oxygen) conditions. Dapkas 2 phosphorus levels were greatly elevated in June and the turbidity of the sample was also elevated likely due to low flow conditions. Marina Inlet phosphorus level was elevated in August and the turbidity of the sample was also elevated. All other tributary phosphorus levels fluctuated within low to average ranges for those stations.
- ◆ **TRANSPARENCY:** Transparency measured without the viewscope (NVS) was average in June and increased (improved) steadily as the summer progressed. Average NVS transparency was higher than 2021 but remained lower (worse) than the state median. Historical trend analysis indicates relatively stable NVS transparency since monitoring began. Viewscope (VS) transparency was higher (better) than NVS transparency and a better measure of actual conditions.
- ◆ **TURBIDITY:** Epilimnetic, Begun, Colburn, Converse, Dapkas, Goddard, Loon Bay, Sandbeck, State Line, State Line Int., and Swan Point Inlet turbidity levels fluctuated within a low to moderate range and were higher in June due to pine pollen. Hypolimnetic turbidity levels were elevated in July and August potentially due to formation and accumulation of organic compounds under anoxic conditions and/or bottom sediment contamination due to low water levels. Dapkas 2 turbidity level was elevated due to low flows and organic matter. Findley Point and Marina Inlet turbidity levels were slightly elevated in July.
- ◆ **pH:** Deep spot, Converse, Dapkas 2, Dapkas, Findley Point, and Marina Inlet pH levels were slightly acidic and less than the desirable range 6.5-8.0 units. Historical trend analysis indicates stable, yet variable, epilimnetic pH levels since monitoring began. Begun, Colburn, Goddard, Loon Bay, Sandbeck, State Line, and State Line Int. Inlet pH levels were approximately equal to the low end of the desirable range.

Station Name	Table 1. 2022 Average Water Quality Data for LAKE MONOMONAC - RINDGE										
	Alk. (mg/L)	Chlor-a (ug/L)	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	E. coli (mpn/100mL)	Total P (ug/L)	Trans. (m)		Turb. (ntu)	pH
								NVS	VS		
Epilimnion	2.9	4.40	23	57	97.5		12	2.66	3.45	0.82	5.98
Hypolimnion					95.7		19			3.78	6.13
Begun Inlet			23		100.8		12			0.70	6.51
Colburn Inlet			23		96.0		12			1.20	6.52
Converse Inlet			22		88.1		13			1.20	6.41
Dapkas 2			3		20.9		415			5.92	5.29
Dapkas Inlet			18		76.2		18			0.58	5.90
Findley Point			16		78.0		14			1.63	5.96
Goddard Inlet			23		93.8		15			1.08	6.47
Loon Bay			22		96.0		11			0.67	6.52
Marina Inlet			28		119.5	11	28			3.52	6.32
48 Dolly Lane						175					
Sandbeck Inlet			23		92.8		11			0.90	6.50
State Line Inlet			23		93.2		15			0.84	6.46
State Line Int. St.			23		98.4		13			0.98	6.50
Swan Point Inlet			22		92.4		14			0.97	6.43

#### NH Water Quality Standards

Numeric criteria for specific parameters. Water quality violation if thresholds exceeded.

**Chloride:** > 230 mg/L (chronic)  
**Turbidity:** > 10 NTU above natural  
**E. coli:** > 88 cts/100 mL (beach)  
**E. coli:** > 406 cts/100 mL (surface waters)  
**pH:** between 6.5-8.0 (unless naturally occurring)

#### NH Median Values

Median values generated from historic lake monitoring data.

**Alkalinity:** 4.5 mg/L  
**Chlorophyll-a:** 4.39 ug/L  
**Conductivity:** 42.3 uS/cm  
**Chloride:** 5 mg/L  
**Total Phosphorus:** 11 ug/L  
**Transparency:** 3.3 m  
**pH:** 6.6