



# 2023 VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

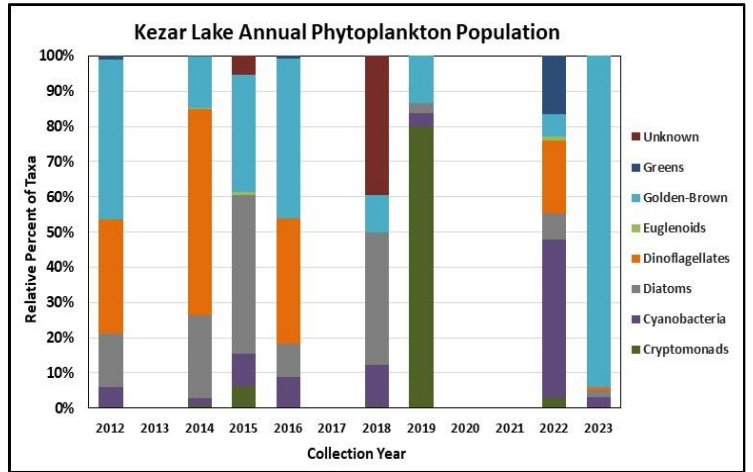
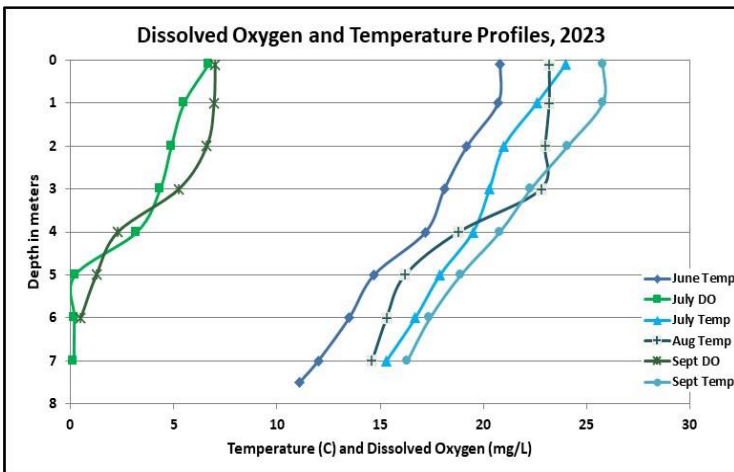
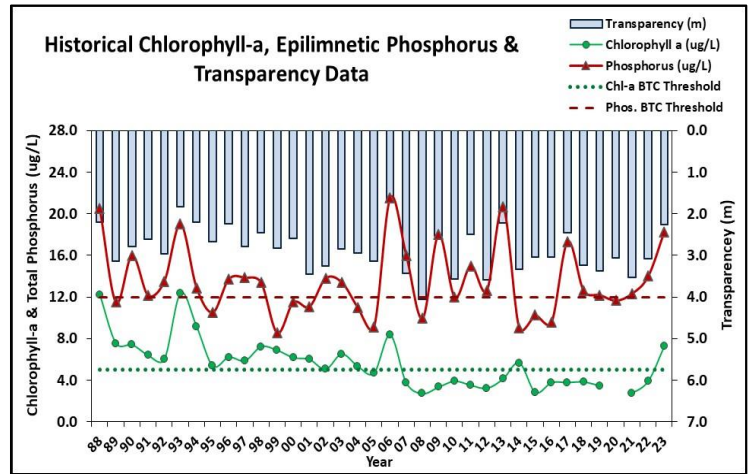
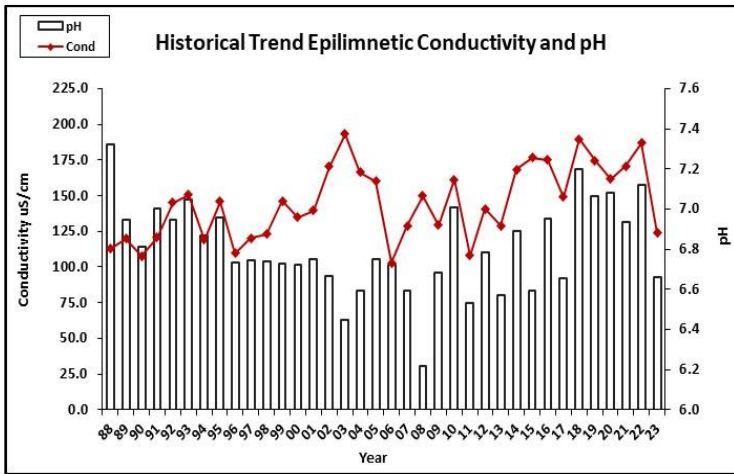
## KEZAR LAKE, NORTH SUTTON

**Recommended Actions:** Great job sampling in 2023! Lake and tributary nutrient (phosphorus) levels and lake algal growth (chlorophyll) were elevated in 2023 due to excessive summer rainfall and associated stormwater runoff, erosion, and flooding. Storm events have historically resulted in poor water quality and highlights the importance of managing stormwater runoff in the watershed. NHDES' [NH Homeowner's Guide to Stormwater Management](#) is a great resource. Encourage shoreline property owners to obtain [LakeSmart](#) certification through NH LAKES' lake-friendly living program. Hypolimnetic nutrient levels and turbidity were elevated in late summer and suggest an internal load of nutrients may be released from bottom sediments under anoxic (no dissolved oxygen) conditions. This internal load is readily available for uptake by algae and [Cyanobacteria](#) and could fuel late season Cyanobacteria blooms. Report any potential Cyanobacteria blooms or scums to NHDES' [Harmful Algal Bloom Program](#). Continue efforts to develop [watershed management plans](#) to better identify and quantify sources of nutrient loads within the watershed and make recommendations on ways to reduce nutrient loading. Keep up the great work!

### HISTORICAL WATER QUALITY TREND ANALYSIS

PARAMETER	TREND	PARAMETER	TREND
Conductivity	Worsening	Chlorophyll-a	Improving
pH (epilimnion)	Stable	Transparency	Improving
Phosphorus (hypolimnion)	Stable	Phosphorus (epilimnion)	Stable

### HISTORICAL WATER QUALITY GRAPHICS





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## KEZAR LAKE, NORTH SUTTON

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll level was low in June, increased to an elevated level in July and remained elevated through September. Average chlorophyll level increased from 2022 and was greater than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Deep spot and Outlet conductivity and chloride levels were slightly elevated and greater than the state medians, however chloride levels did not exceed the state chronic chloride standard. Historical trend analysis indicates significantly increasing (worsening) epilimnetic (upper water layer) conductivity levels since monitoring began. Birch Brook, Clark Pond Outlet, Lyon Brook and Penacook Rd. Bridge conductivity and chloride levels were elevated. Rowe Creek and King Hill Brook conductivity and chloride levels were low and less than the state medians.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was moderately tea colored in June and increased to highly tea colored conditions in August and September following excessive rainfall in July.
- ◆ **E. COLI:** Boat Launch E. coli level was low and much less than the state standards for public beaches and surface waters.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was low in June, increased to an elevated level in July and remained elevated through September. Average epilimnetic phosphorus level increased from 2022 and was greater than the state median and the threshold for mesotrophic lakes. Hypolimnetic (lower water layer) phosphorus levels fluctuated within a slightly elevated range and were relatively stable from June through September. Historical trend analysis indicates stable, yet variable, epilimnetic and hypolimnetic phosphorus levels since monitoring began. King Hill Brook and Rowe Creek phosphorus levels were low. Birch Brook phosphorus levels were elevated from July through September. Clark Pond Outlet, Lyon Bk., Outlet, and Penacook Rd. Bridge phosphorus levels were generally elevated in July and remained elevated in August following excessive summer rainfall.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was average in June, decreased (worsened) by over a meter in July, and gradually increased (improved) to within an average range in September. Average NVS transparency decreased from 2022 and was lower (worse) than the state median. Historical trend analysis indicates significantly increasing (improving) NVS transparency since monitoring began.
- ◆ **TURBIDITY:** Epilimnetic turbidity levels fluctuated within an elevated range. Hypolimnetic turbidity levels increased from slightly elevated to elevated as the summer progressed indicating formation and accumulation of organic compounds under anoxic (no dissolved oxygen) conditions. King Hill Bk. and Lyon Bk. turbidity levels fluctuated within a low range. Clark Pond Outlet and Rowe Creek turbidity levels were elevated in June. Birch Brook, Outlet and Penacook Rd. Bridge turbidity levels were generally elevated throughout the summer.
- ◆ **pH:** Epilimnetic and tributary pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable, yet variable, epilimnetic pH levels. Hypolimnetic pH levels were slightly acidic and less than desirable.

Table 1. 2023 Average Water Quality Data for KEZAR LAKE – NORTH SUTTON

Station Name	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	7.3	7.26	25	90	123.6	-	18	2.26	2.92	1.68	6.66
Hypolimnion	-	-	27	-	152.9	-	24	-	-	9.58	6.31
Birch Brook	-	-	63	-	267.7	-	41	-	-	2.70	6.71
Boat Launch	-	-	-	-	-	17	-	-	-	-	-
Clark Pond Outlet	-	-	43	-	168.2	-	17	-	-	1.27	6.75
King Hill Brook	-	-	7	-	24.5	-	6	-	-	0.48	6.99
Lyon Brook Trussel Ridge	-	-	60	-	259.2	-	19	-	-	0.94	7.18
Outlet	-	-	26	-	121.9	-	15	-	-	1.28	6.77
Penacook Rd. Bridge	-	-	46	-	187.9	-	35	-	-	5.16	6.78
Rowe Creek	-	-	2	-	25.3	-	9	-	-	1.71	6.74

#### 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

#### NH Water Quality Standards

Numeric criteria for specific parameters. Water quality violation if 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)