



2023 VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

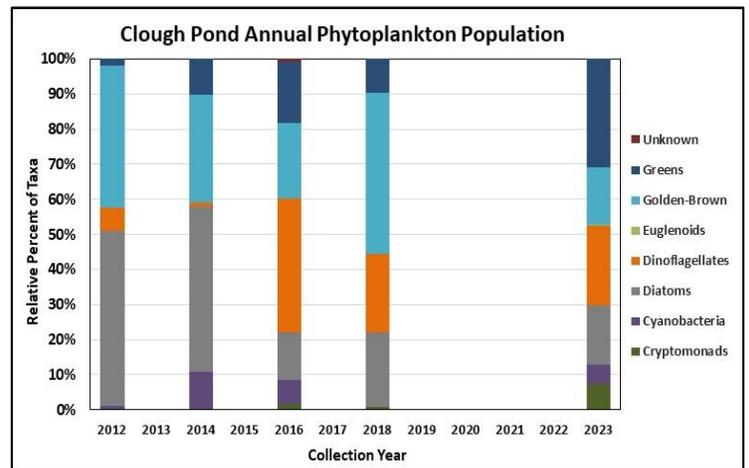
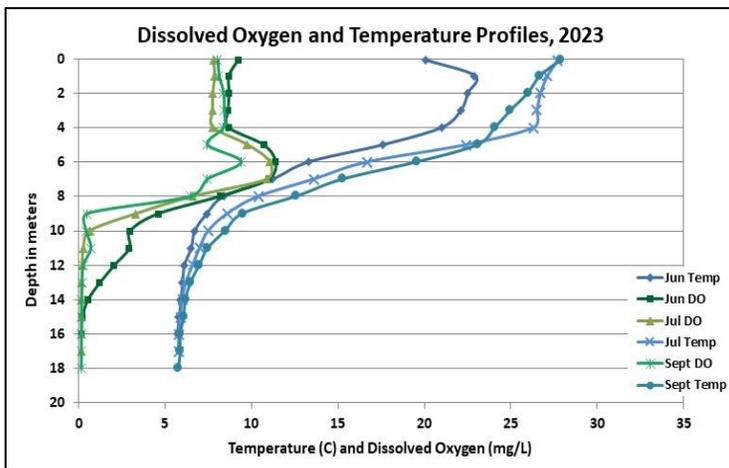
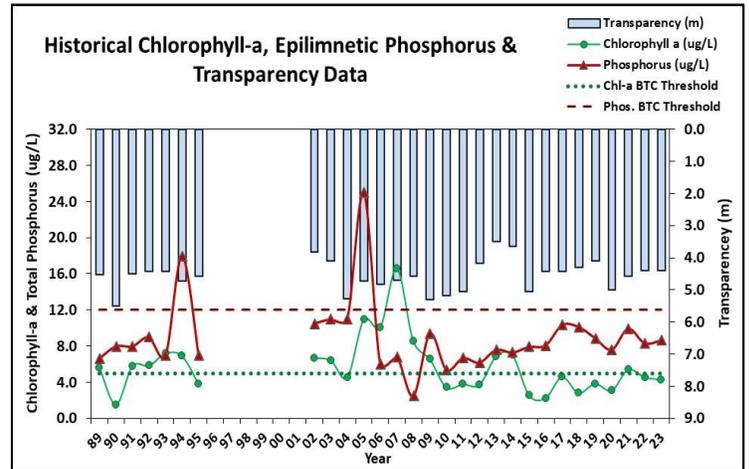
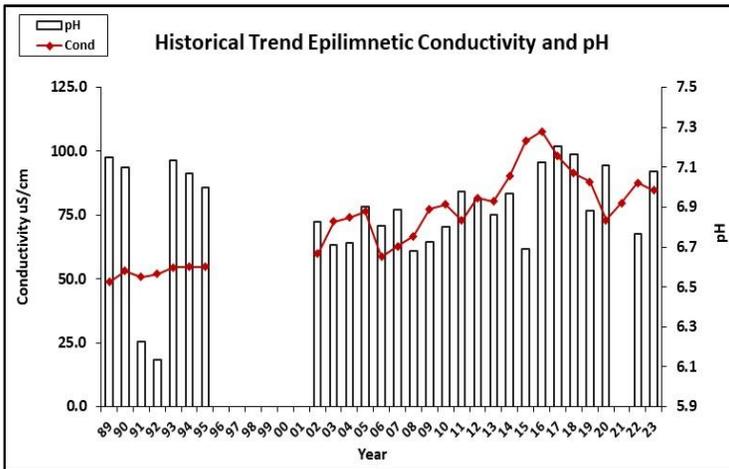
CLOUGH POND, LOUDON

Recommended Actions: Great job sampling in 2023! Pond quality remained representative of mesotrophic, or average, conditions and the improving chlorophyll (algal growth) levels are encouraging. Excessive summer rainfall did not appear to negatively impact pond quality, rather it likely helped to flush nutrients out of the pond. However, the pond has experienced brief cyanobacteria blooms since 2020. The 2023 bloom occurred in June and the dissolved oxygen profile indicates a layer of cyanobacteria growth in Metalimnetic waters. Cyanobacteria are adapted to take advantage of warmer water temperatures and lower light conditions to take up nutrients from deeper in the water column. The internal load of nutrients from bottom sediments likely helps to fuel this growth. Continue to report any suspicious algal/cyanobacteria growth to NHDES' [Harmful Algal Bloom Program](#). Continue efforts to manage stormwater runoff in the watershed as past efforts likely helped to reduce stormwater impacts during wet years experienced in 2021 and 2023. Encourage shoreline property owners to be certified [LakeSmart](#) through NH LAKES' lake-friendly living program. Educate shoreline property owners on proper [septic system](#) maintenance to further help reduce nutrient loading to the pond. Keep up the great work!

HISTORICAL WATER QUALITY TREND ANALYSIS

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

HISTORICAL WATER QUALITY GRAPHICS





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

- ◆ **CHLOROPHYLL-A:** Chlorophyll level was low in June, increased slightly in July but remained within a low range, and increased to a slightly elevated range in September. Average chlorophyll level decreased slightly from 2022, was approximately equal to the state median, and was slightly less than the threshold for mesotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), Inlet, and Outlet conductivity and/or chloride levels remained slightly greater than the state medians, yet less than a level of concern. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was lightly tea colored, or light brown.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was within an average range in June, decreased to a low level in July, and increased slightly in August. Average epilimnetic phosphorus level increased slightly from 2022 and was less than the state median and the threshold for mesotrophic lakes. Metalimnetic phosphorus levels were slightly elevated in June and July and decreased to a low level in September. Hypolimnetic phosphorus level was elevated and increased gradually as the summer progressed. Historical trend analysis indicates relatively stable epilimnetic and hypolimnetic phosphorus levels since monitoring began. Inlet phosphorus level fluctuated within a low to moderate range. Outlet phosphorus level was greatly elevated in June due to an accumulation of cyanobacteria.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was high (good) in June, decreased (worsened) in July following excessive rainfall, and then increased (improved) in September. Average NVS transparency remained stable with 2022 and was higher (better) than the state median. Historical trend analysis indicates stable NVS transparency since monitoring began.
- ◆ **TURBIDITY:** Epilimnetic turbidity level increased in July following excessive rainfall but remained within a low range for NH lakes. Metalimnetic, Inlet and Outlet turbidity levels were slightly elevated in June and July. Hypolimnetic turbidity fluctuated within a slightly elevated range.
- ◆ **PH:** Epilimnetic, Metalimnetic, Inlet, and Outlet pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates significantly increasing (improving) epilimnetic pH levels since monitoring began. Hypolimnetic pH level was slightly acidic and less than desirable.

Table 1. 2023 Average Water Quality Data for CLOUGH POND - LOUDON

Station Name	Alk. (mg/L)	Chlor-a (ug/L)	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Trans. (m)		Turb. (ntu)	pH
							NVS	VS		
Epilimnion	8.6	4.30	16	22	84.6	9	4.40	4.84	0.70	7.08
Metalimnion	-	-	-	-	88.1	14	-	-	1.22	6.73
Hypolimnion	-	-	-	-	95.8	22	-	-	2.67	6.25
Inlet	-	-	13	-	79.4	10	-	-	1.35	6.79
Outlet	-	-	14	-	84.8	29	-	-	1.19	7.04

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 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)