



# 2023 VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

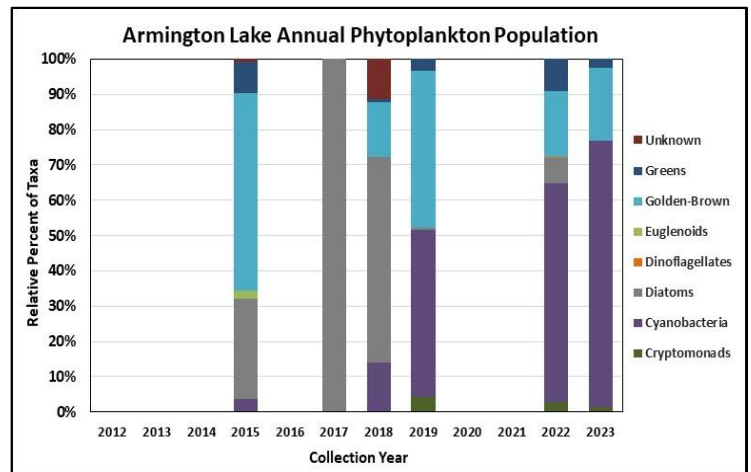
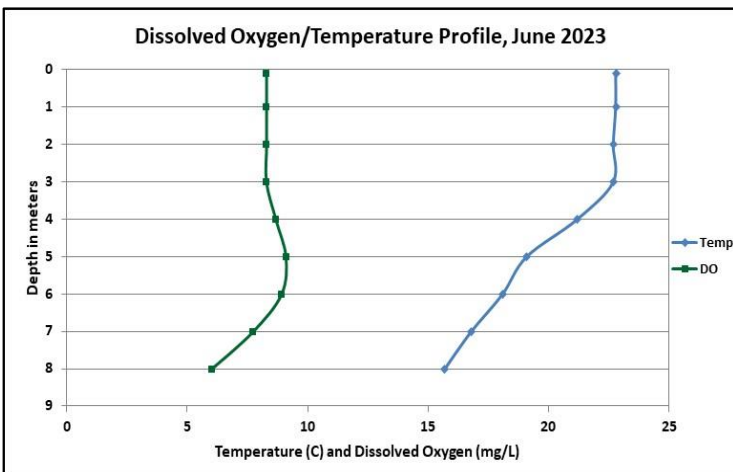
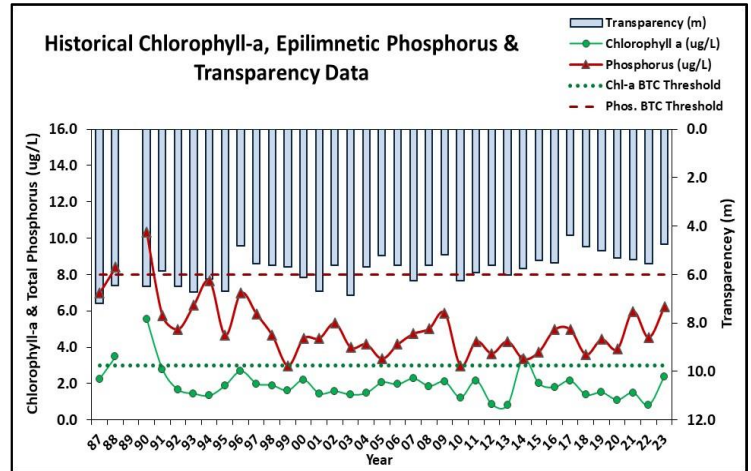
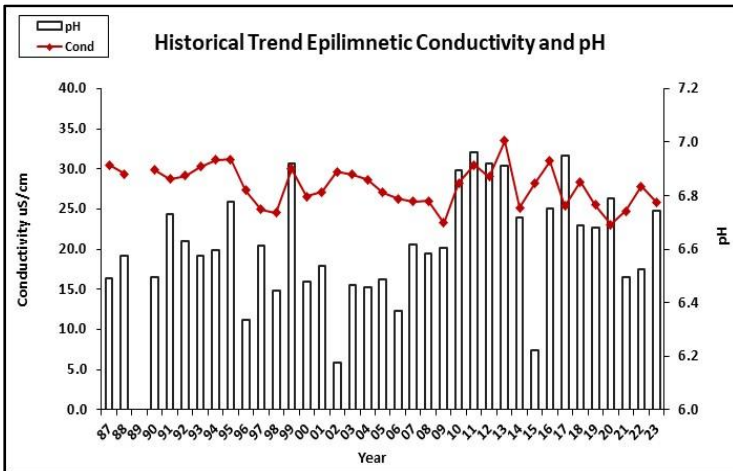
## ARMINGTON LAKE, PIERMONT

**Recommended Actions:** Great job sampling in 2023! The record summer rainfall resulted in high water levels, increased phosphorus levels, higher levels of algal growth (chlorophyll), and poor water clarity. While overall historical trend analysis indicates improving phosphorus and chlorophyll levels, epilimnetic phosphorus levels have remained within a slightly higher range since 2021 and phytoplankton population dynamics indicate [Cyanobacteria](#) are becoming more dominant in the lake. This is a concern and residents should be alert for any suspicious looking surface scums or bloom and alert NHDES' [Harmful Algal Bloom Program](#) if observed. The worsening transparency trend has been documented in oligotrophic lakes around the state and is likely due to a combination of an increase in dissolved organic matter that imparts a "tea" or brown color to the water as well as the increased intensity of storm events. The [2020 New Hampshire Lake Trend Report](#) details the changing lake trends in the state. This 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 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	Improving	Chlorophyll-a	Improving
pH (epilimnion)	Stable	Transparency	Worsening
Phosphorus (epilimnion)	Improving	Phosphorus (hypolimnion)	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 within a low range in June, decreased slightly in July, and increased slightly in August. Average chlorophyll level increased from 2022 and was less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer) and Hypolimnetic (lower water layer) conductivity levels remained less than the state median. Historical trend analysis indicates significantly decreasing (improving) epilimnetic conductivity levels since monitoring began. Epilimnetic chloride levels were low and less than the state median.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was lightly tea colored, or light brown.
- ◆ **E. COLI:** Site 6, Site 2C, Inlet and Outlet E. coli levels were low and much less than the state standards for public beaches and surface waters.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was within a low range in June, increased slightly in July, and decreased in August. Average epilimnetic phosphorus level increased from 2022 and was less than the state median and threshold for oligotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus level fluctuated within a low range and was also highest in July. Historical trend analysis indicates relatively stable hypolimnetic phosphorus levels since monitoring began. Inlet phosphorus level was elevated in June following a significant storm event and decreased as the summer progressed. Outlet phosphorus level was within a low range in June and also decreased as the summer progressed.
- ◆ **TRANSPARENCY:** Transparency measured without the viewscope (NVS) was below average (worse) in June, remained stable in July, and increased (improved) in August. Average NVS transparency decreased from 2022 but remained higher (better) than the state median. Historical trend analysis indicates significantly decreasing (worsening) NVS transparency since monitoring began. Viewscope (VS) transparency was higher (better) than NVS transparency however was also below average and the lowest (worst) measured since 2017.
- ◆ **TURBIDITY:** Epilimnetic, Hypolimnetic, Inlet and Outlet turbidity levels fluctuated within a low and average range for those stations.
- ◆ **pH:** Epilimnetic pH level was within the desirable range of 6.5-8.0 units and historical trend analysis indicates stable, yet variable, epilimnetic pH levels since monitoring began. Hypolimnetic, Inlet and Outlet pH levels were slightly acidic and less than desirable.

Table 1. 2023 Average Water Quality Data for ARMINGTON LAKE - PIERMONT

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	4.2	2.39	2	27	25.9	-	6	4.73	6.00	0.45	6.74
Hypolimnion	-	-	-	-	27.9	-	5	-	-	0.66	6.30
Site 6	-	-	-	-	-	8	-	-	-	-	-
Inlet	-	-	-	-	16.2	20	11	-	-	0.60	6.25
Outlet	-	-	-	-	38.5	22	7	-	-	0.51	6.46
Site 2C	-	-	-	-	-	1	-	-	-	-	-

#### 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)