2023 VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
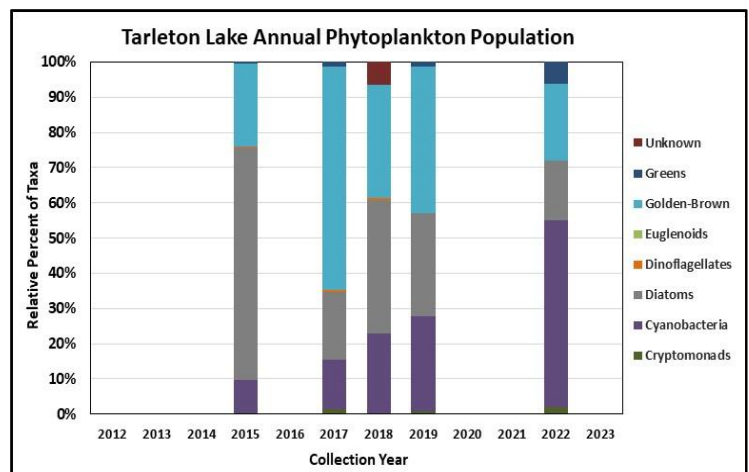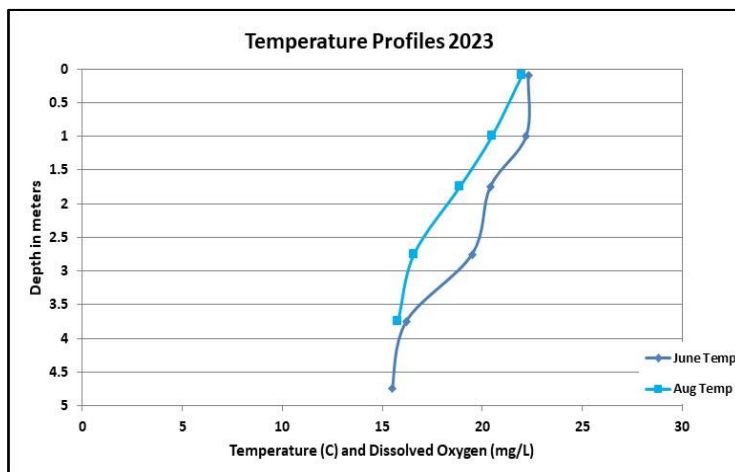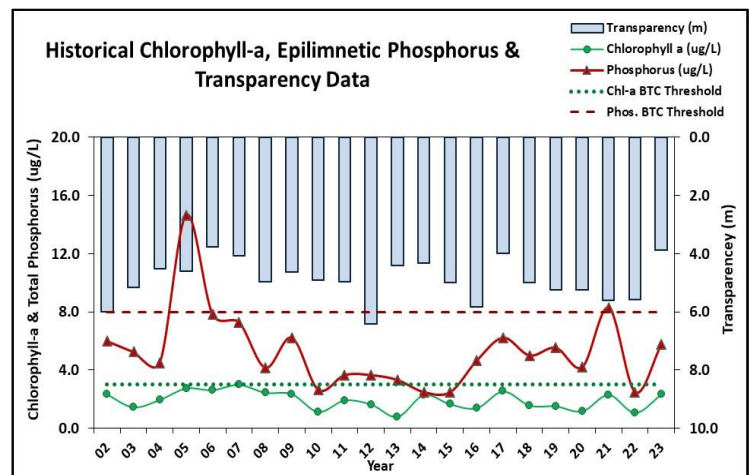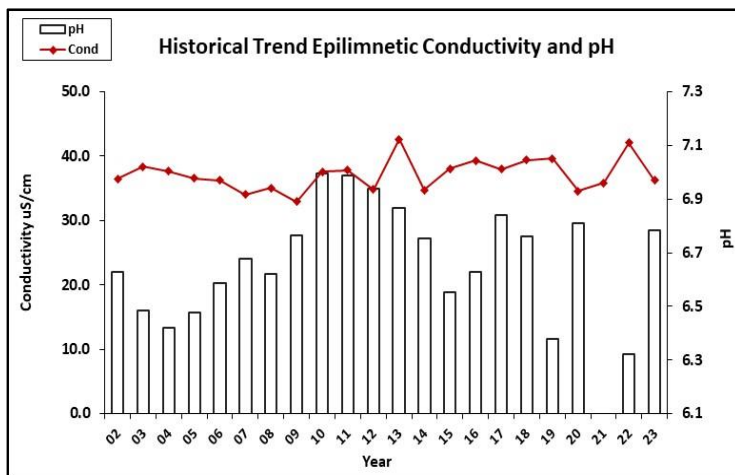## TARLETON LAKE, PIERMONT

Recommended Actions: Great job sampling in 2023! Lake quality remains representative of oligotrophic, or high quality, conditions. However, Cyanobacteria abundance has gradually increased in the pond based upon annual phytoplankton sample analysis. Keep an eye out for any signs of Cyanobacteria surface scums or blooms and notify NHDES' Harmful Algal Bloom Program if observed. In contrast to drought conditions in 2022, excessive summer rainfall in 2023 resulted in overall higher lake nutrient (phosphorus) levels, algal growth (chlorophyll), turbidity, darker water color, and poor water clarity (transparency). This highlights the importance of managing stormwater runoff within the watershed. Evaluate any management activities within the watershed that may be affecting nutrient and turbidity levels in the lake, such as any changes to water level management and timber harvesting. Consult with NHDES' Watershed Assistance Section to develop a watershed management plan for Lakes Tarleton and Armington to identify and quantify pollutant loads and make recommendations on ways to prevent and control pollutant loading to the lakes. For more information contact the VLAP Coordinator. Consider increased monitoring frequency to evaluate potential impacts of planned forest management activities within the watershed. Keep up the great work!

HISTORICAL WATER QUALITY TREND ANALYSIS

PARAMETER	TREND	PARAMETER	TREND
Conductivity	Stable	Chlorophyll-a	Stable
pH (epilimnion)	Stable	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 within a low range in July and increased slightly in August but remained within a low range. Average chlorophyll level increased from 2022 and was less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates stable chlorophyll levels since monitoring began.

- **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Metalimnetic (middle water layer) and Hypolimnetic (lower water layer) conductivity levels were within a low range and less than the state median. Epilimnetic chloride levels were also low and approximately equal to the state median. Historical trend analysis indicates stable epilimnetic conductivity levels since monitoring began.

- **COLOR:** Apparent color measured in the epilimnion indicates the water was lightly tea colored, or light brown, and was twice as dark as that measured in 2022.

- **E. COLI:** Public Beach and West Shore E. coli levels were very low and much less than the state standard for public beaches and surface waters.

- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was within a low range in July and increased slightly in August. Average epilimnetic phosphorus level increased from 2022 but was less than the state median and the threshold for oligotrophic lakes. Metalimnetic and Hypolimnetic phosphorus levels were stable and low. Historical trend analysis indicates relatively stable epilimnetic and hypolimnetic phosphorus levels since monitoring began.

- **TRANSPARENCY:** Transparency measured without the viewscope (NVS) was below average (worse) in July and increased (improved) in August. Average NVS transparency decreased by two meters from 2022 but remained slightly higher (better) than the state median. Historical trend analysis indicates relatively stable NVS transparency since monitoring began. Viewscope (VS) transparency was higher (better) than NVS transparency but also below average and two meters lower (worse) than levels measured in 2022.

- **TURBIDITY:** Epilimnetic turbidity level fluctuated within a low range but was higher than average for the lake. Metalimnetic and Hypolimnetic turbidity levels also fluctuated within a low range.

- **PH:** Epilimnetic pH level was within the desirable range of 6.5-8.0 units. Historical trend analysis indicates stable, yet variable, epilimnetic pH levels since monitoring began. Metalimnetic and Hypolimnetic pH levels were slightly acidic and potentially critical to aquatic life.

Table 1. 2023 Average Water Quality Data for LAKE TARLETON - 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) NVS	Trans. (m) VS	Turb. (ntu)	pH
Epilimnion	4.0	2.34	6	44	36.2	-	6	3.88	5.12	0.59	6.78
Metalimnion	-	-	-	-	40.8	-	6	-	-	0.54	6.16
Hypolimnion	-	-	-	-	40.6	-	6	-	-	0.38	5.94
Public Launch	-	-	-	-	-	3	-	-	-	-	-
West Shore	-	-	-	-	-	3	-	-	-	-	-

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)