



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

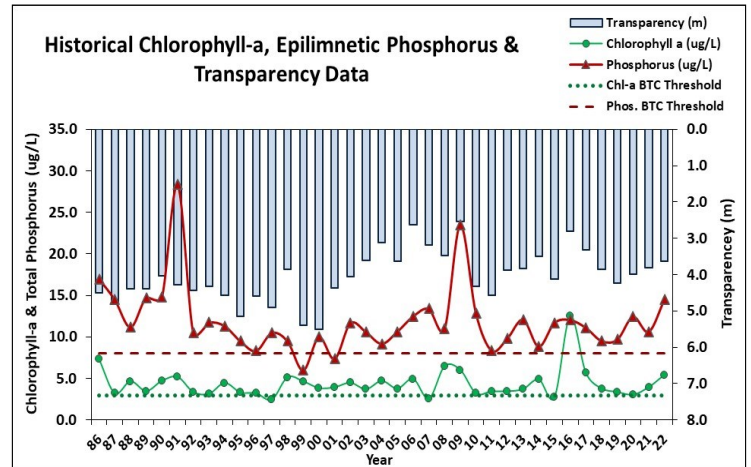
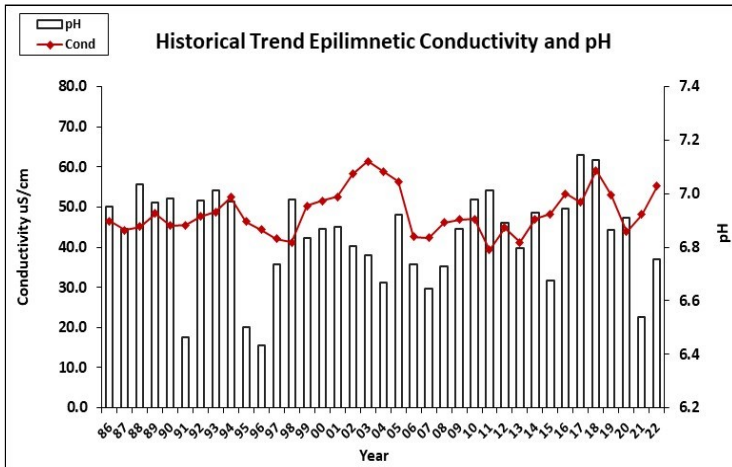
WEBSTER LAKE, FRANKLIN

2022 DATA SUMMARY

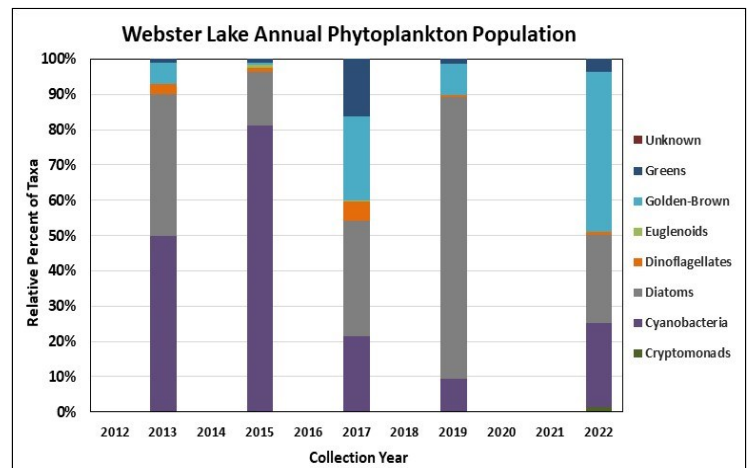
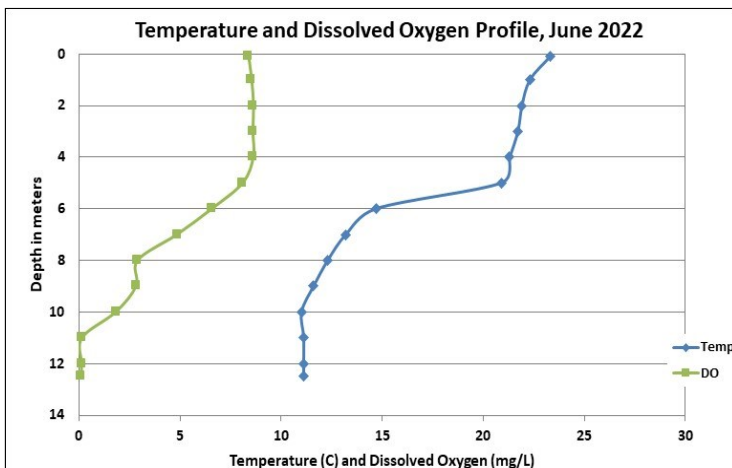
RECOMMENDED ACTIONS: Great job sampling in 2022! Lake nutrient (phosphorus) levels were elevated particularly in August and September due to an internal load of phosphorus from bottom sediments and lack of flushing of nutrients out of the lake due to drought conditions and low water levels. These conditions, as experienced in the past, typically result in elevated levels of [cyanobacteria](#) growth as occurred in August, however cyanobacteria levels did not exceed the advisory threshold. Great job sampling the lake in September! This sampling event provided a picture of how the internal phosphorus load mixes into the water column in the fall and the resulting nutrient load available to fuel cyanobacteria growth. Fluctuating climate conditions with extended periods of dry weather and droughts, high intensity rain events, shorter periods of ice cover, and changes in winter precipitation types and volume will result in more variable water quality and lake conditions in the future. This highlights the importance of watershed management activities aimed at reducing nutrient loading to the lake. Managing [stormwater runoff](#) and erosion, maintaining [septic systems](#), [planting vegetative buffers](#), as well as following [responsible boating practices](#) to reduce lake bottom and shoreline erosion can help buffer future climate impacts. Continue to maintain flow in the Outlet channel to help flush nutrients out of the pond. Encourage shoreline property owners to be certified [LakeSmart](#) through NH LAKES' lake-friendly. Keep up the great work!

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Parameter	Trend
Conductivity	Stable	Chlorophyll-a	Stable
pH (epilimnion)	Stable	Transparency	Worsening
		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, remained stable in July, increased to an elevated level in August, and increased again in September. Average chlorophyll level increased from 2021, was greater than the state median and the threshold for oligotrophic lakes.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), and Sucker Brook conductivity and chloride levels were slightly greater than the state median, yet less than a level of concern. Historical trend analysis indicates stable epilimnetic conductivity levels since monitoring began. Gagnes Brook, Lake Ave Trib. and Rte. 11 Inlet conductivity and chloride levels remained low and less than the state medians.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was borderline clear to lightly tea colored, or light brown.
- ◆ **E. COLI:** Gagnes Brook and Lake Ave Trib. E. coli levels were within a low range and less than the state standard for surface waters. Rte. 11 Inlet E. coli levels exceeded the state standard in June and remained above average in July potentially due to low water levels and wildlife activity upstream.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was slightly elevated in June, remained stable in July, decreased in August, and increased to an elevated level in September and was indicative of fall turnover conditions where nutrients from the Hypolimnion are mixed throughout the water column. Average epilimnetic phosphorus level increased from 2021 and was greater than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Metalimnetic phosphorus levels were slightly in June and July and greatly elevated in August when algae/cyanobacteria growth was elevated and again in September during fall turnover. Hypolimnetic phosphorus levels were elevated in June, increased to greatly elevated level in August due to internal loading from bottom sediments under anoxic conditions, and then decreased in September during fall turnover when phosphorus levels were uniformly mixed through the water column. Gagnes Brook phosphorus level was elevated in June and the turbidity of the sample was also elevated. Lake Ave Trib. phosphorus level was within an average range for that station. Rte. 11 Inlet phosphorus level was low. Sucker Brook phosphorus level fluctuated within an average range for that station.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was above average (good) in June, increased (improved) in July, decreased (worsened) by over three meters in August during elevated levels of algal/cyanobacteria growth, and increased slightly in September. Average NVS transparency decreased slightly from 2021 but remained higher (better) than the state median. Historical trend analysis indicates significantly decreasing (worsening) NVS transparency since monitoring began.
- ◆ **TURBIDITY:** Epilimnetic and Metalimnetic turbidity levels were greatly elevated in August when algal/cyanobacteria growth was elevated. Hypolimnetic turbidity level was elevated from July through September due to the formation and accumulation of organic compounds under anoxic conditions. Gagnes Brook turbidity level was elevated in June during moderate flows and following a storm event. Lake Ave Trib. Rte. 11 Inlet and Sucker Brook turbidity levels fluctuated within a low to moderate range.
- ◆ **pH:** Epilimnetic, Metalimnetic, Hypolimnetic, Rte. 11 Inlet, and Sucker Brook pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable, yet variable, epilimnetic pH levels since monitoring began. Gagnes Brook and Lake Ave Trib. pH levels were slightly acidic and less than desirable.

Station Name	Table 1. 2022 Average Water Quality Data for WEBSTER LAKE - FRANKLIN										
	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	7.6	5.43	9	25	55.2		15	3.62	4.36	1.30	6.75
Metalimnion					57.1		28			3.78	6.68
Hypolimnion					65.8		67			7.39	6.58
Gagnes Brook			3		31.1	42	81			8.72	6.24
Lake Ave Trib.			4		32.8	33	35			1.08	6.00
Rte. 11 Inlet			3		22.6	416	8			0.57	6.46
Sucker Brook			14		98.8	31	14			0.52	7.17

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)