



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

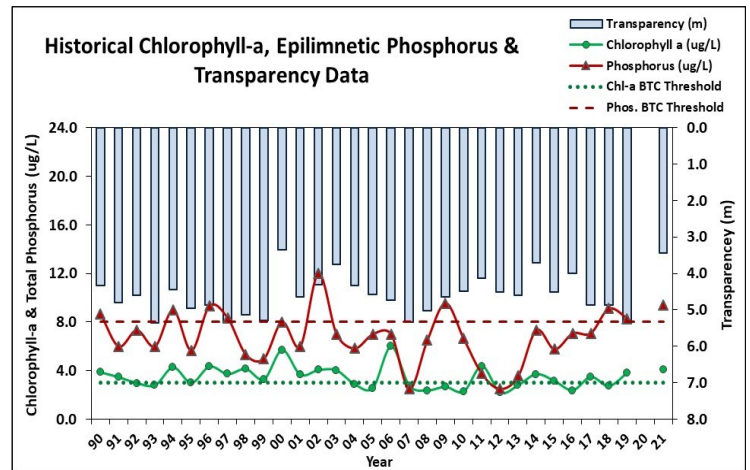
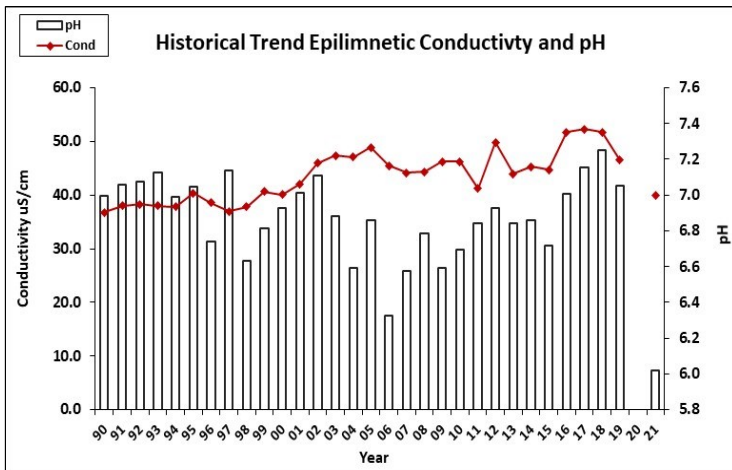
SWANZEY LAKE, SWANZEY

2021 DATA SUMMARY

RECOMMENDED ACTIONS: Lake quality is generally representative of borderline oligotrophic/mesotrophic conditions with phosphorus and chlorophyll levels that occasionally spike above the thresholds for oligotrophic lakes. Record rainfall amounts and a beaver dam blowout resulted in poor lake clarity and acidity, as well as slightly elevated nutrients. These nutrients fueled a cyanobacteria surface bloom in mid-August. Keep an eye out for any cyanobacteria surface bloom/scums in 2022 and notify NHDES' Harmful Algal Bloom Program if observed. This highlights the delicate balance of the lake ecosystem. Epilimnetic phosphorus levels have increased steadily since 2013. The increased frequency and intensity of storm events and resulting storm-water runoff likely contributes to excess nutrients. Efforts should be made to manage stormwater runoff from shoreline and watershed properties, beaches and dirt/gravel roads. NHDES' NH Homeowner's Guide to Stormwater Management, Maine DEP's Camp Road website, and DES fact sheet WB-18 Permitting Non-Tidal Beaches are great resources. Keep up the great work!

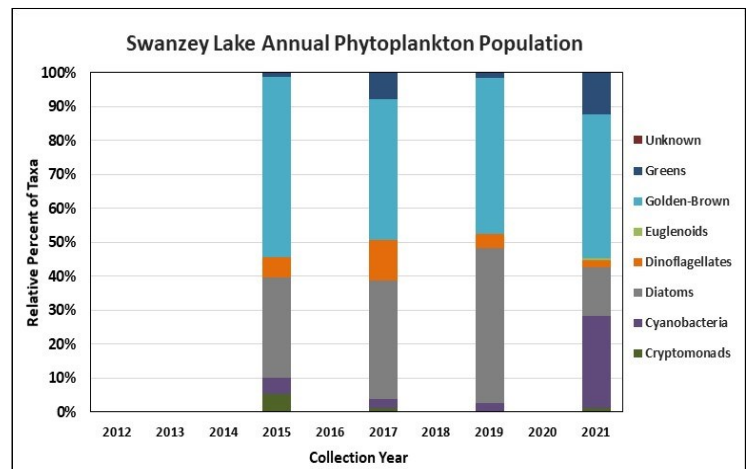
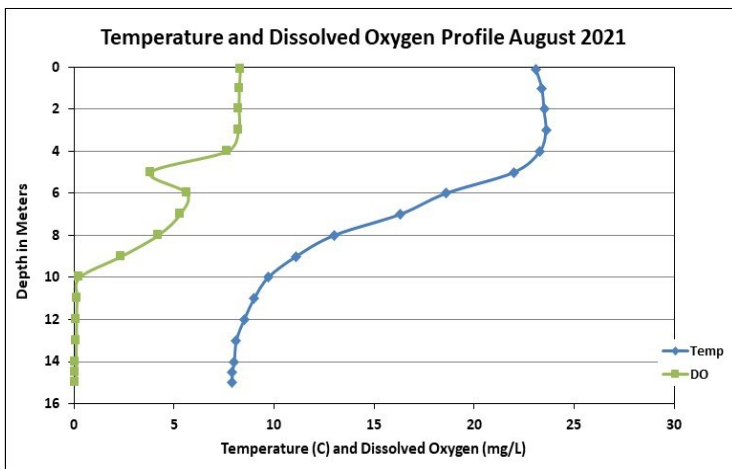
HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Parameter	Trend
Conductivity	Worsening	Chlorophyll-a	Stable
pH (epilimnion)	Stable	Transparency	Stable
		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 slightly elevated in August, was slightly less than the state median, and was slightly greater than 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), Hypolimnetic (lower water layer), and Outlet conductivity and/or chloride levels were approximately equal to the state medians and within a low range. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began. Pine Inlet A and B conductivity and chloride levels were low and less than the state medians.
- ◆ **COLOR:** Epilimnetic color indicates the water was moderately tea colored, or brown, following a beaver dam blowout a week earlier.
- ◆ **E. COLI:** Pine Inlet A and Outlet E. coli levels were within a low range and were much less than the state standard for surface waters. Pine Inlet B E. coli levels were slightly elevated but also less than the state standard for surface waters.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was slightly elevated, was less than the state median, and was greater than the threshold for oligotrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Metalimnetic, Pine Inlet B and Outlet phosphorus levels were within an average range for those stations. Hypolimnetic phosphorus level was slightly elevated. Pine Inlet A phosphorus level was low.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was below average (worse) in August likely due to the beaver dam blowout and noted murkier conditions. Historical trend analysis indicates stable NVS transparency since monitoring began.
- ◆ **TURBIDITY:** Epilimnetic and Metalimnetic turbidity levels were within a low range for those stations. Hypolimnetic turbidity level was slightly elevated. Pine Inlet A and B, and Outlet turbidity levels were within low to average ranges for those stations.
- ◆ **pH:** Epilimnetic, Metalimnetic, Hypolimnetic, Pine Inlet A and B pH levels were slightly acidic and less than desirable range 6.5-8.0 units and likely a result of record rainfall amounts in July. Historical trend analysis indicates relatively stable epilimnetic pH levels since monitoring began. Outlet pH level was within the desirable range.

Station Name	Table 1. 2021 Average Water Quality Data for SWANZEY LAKE - SWANZEY										
	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	4.10	6	50	40.0		9	3.45	3.55	0.62	6.02
Metalimnion					43.1		9			0.71	6.10
Hypolimnion					54.0		22			1.94	6.14
Outlet					42.7	33	11			0.85	6.63
Pine Inlet A			3		34.8	47	6			0.54	6.30
Pine Inlet B			3		32.3	185	21			1.04	6.11

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)