



2023 VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

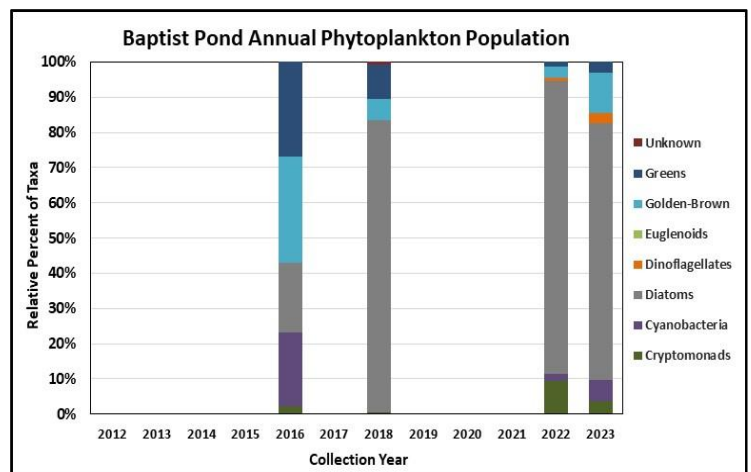
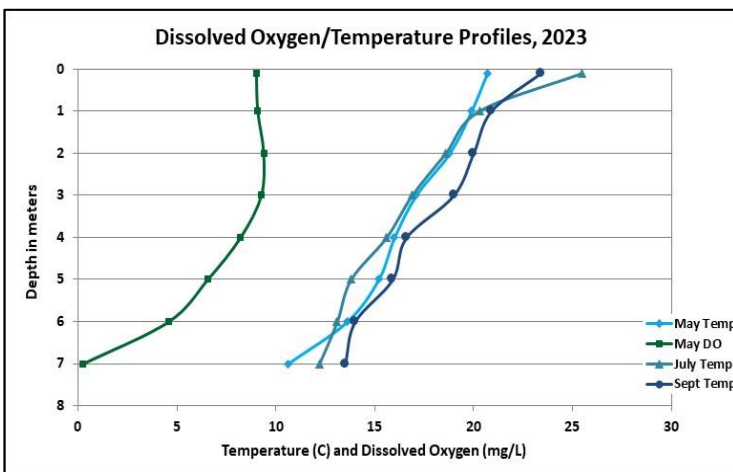
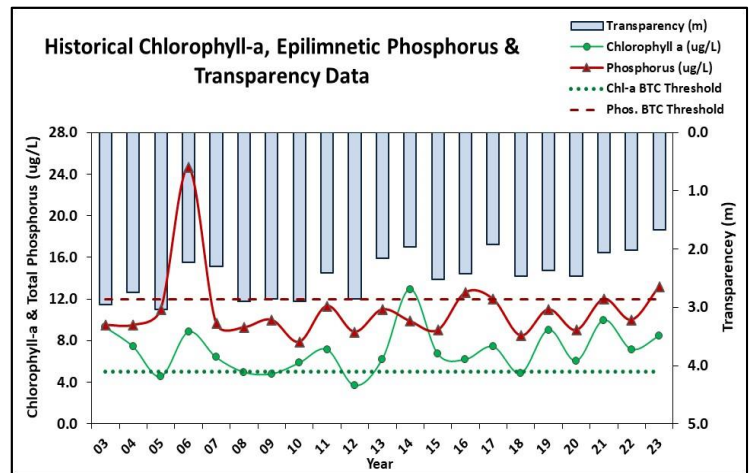
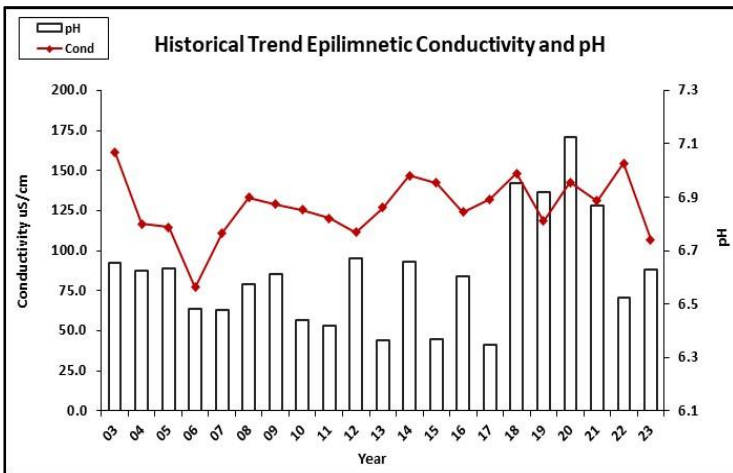
BAPTIST POND, SPRINGFIELD

Recommended Actions: Great job sampling in 2023! Excessive summer rainfall resulted in elevated pond nutrient (phosphorus) levels, elevated turbidity levels, elevated algal growth, darker water color, and poor water clarity. This highlights the importance of managing stormwater runoff within the watershed. Educate lake and watershed residents on best practices to reduce stormwater runoff. NHDES' [NH Homeowner's Guide to Stormwater Management](#) and [Soak Up the Rain NH](#) are great resources. Epilimnetic phosphorus levels are generally representative of mesotrophic, or average, conditions however algal growth (chlorophyll) continues to be slightly elevated and both have gradually increased over time. Hypolimnetic phosphorus levels have significantly increased, and data suggest the potential for an internal load of phosphorus from bottom sediments under anoxic (low dissolved oxygen) conditions in late summer. This internal load of phosphorus is readily available for uptake by algae/cyanobacteria and could fuel late summer cyanobacteria blooms or surface scums. Be alert and notify NHDES' [Harmful Algal Bloom Program](#) if cyanobacteria blooms are observed. Consider conducting monthly dissolved oxygen profiles to better understand the extent of oxygen depletion in hypolimnetic waters in late summer. Continue to educate local winter maintenance companies and road agents on the negative impacts of road salt on water quality. Refer to Green Mountain Conservation Group's [Salt Responsibly](#) initiative for helpful information and materials. 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)	Worsening	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 elevated in May and increased through September potentially indicating an algal bloom was occurring. Average chlorophyll level increased slightly from 2022 and remained greater than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), and Outlet conductivity levels fluctuated within a slightly elevated range and decreased from 2022. Epilimnetic chloride levels were approximately five times greater than the state median, yet much less than the state chronic chloride standard. Historical trend analysis indicates relatively stable epilimnetic conductivity levels since monitoring began. McAlvin Brook and McAlvin Pond Brook conductivity and chloride levels were within a low to average range. Stoney Brook Inlet conductivity and chloride levels were elevated and greater than the state medians, however conductivity levels were much lower in July due to dilution from excessive rainfall.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was moderately tea colored in May and increased to highly tea colored conditions by September. Average water color was twice as dark as that measured in 2022.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level fluctuated within a slightly elevated range and was highest in July. Average epilimnetic phosphorus level increased from 2022 and was slightly greater than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Metalimnetic phosphorus level was elevated in July likely due to algal growth and/or fall out of suspended material washed in from excessive rainfall. Hypolimnetic phosphorus level was elevated in July and August potentially due to phosphorus release from bottom sediments under anoxic (low dissolved oxygen) conditions. Historical trend analysis indicates significantly increasing (worsening) hypolimnetic phosphorus levels since monitoring began. McCalvin Brook phosphorus levels were elevated. McCalvin Pond Brook phosphorus levels were within a moderate range. Outlet phosphorus level was slightly elevated in May and the turbidity of the sample was also slightly elevated. Stoney Brook phosphorus levels were slightly elevated in July and September.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was average in May, decreased (worsened) by roughly one meter in July and remained stable in September. Average NVS transparency decreased from 2022, was lower than the state median, and was the lowest (worst) measured since monitoring began. Historical trend analysis indicates relatively stable NVS transparency since monitoring began.
- ◆ **TURBIDITY:** Deep spot and tributary turbidity levels were fluctuated within a slightly elevated to elevated level in July and September following excessive rainfall.
- ◆ **PH:** Epilimnetic, Hypolimnetic, McCalvin Brook, McCalvin Pond Brook, and Outlet pH levels were within the desirable range of 6.5-8.0 units. Historical trend analysis indicates relatively stable epilimnetic pH levels since monitoring began. Metalimnetic and Stoney Brook pH levels were slightly less than desirable.

Table 1. 2023 Average Water Quality Data for BAPTIST POND - SPRINGFIELD

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	7.3	8.44	28	117	106.7	13	1.68	2.06	1.59	6.63
Metalimnion	-	-	-	-	102.6	18	-	-	1.96	6.31
Hypolimnion	-	-	-	-	159.0	17	-	-	3.24	6.52
McCalvin Brook	-	-	-	-	53.8	44	-	-	2.54	6.83
McCalvin Pond Brook	-	-	3	-	53.7	15	-	-	1.10	6.80
Outlet	-	-	-	-	118.4	15	-	-	1.50	6.94
Stoney Brook Inlet	-	-	62	-	166.1	18	-	-	2.43	6.27

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)