



2023 VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

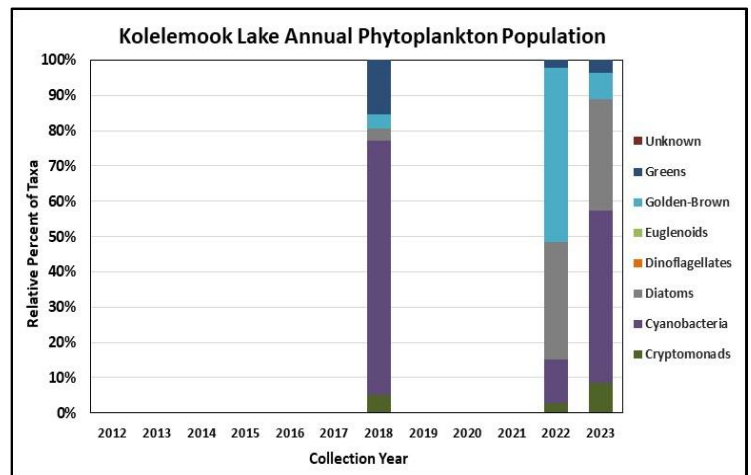
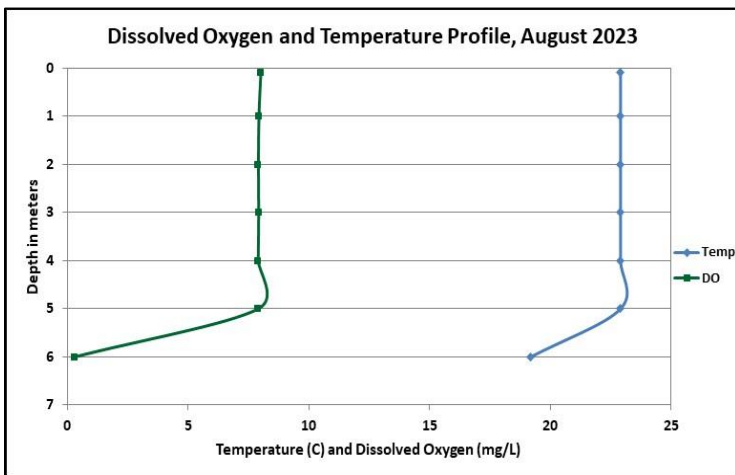
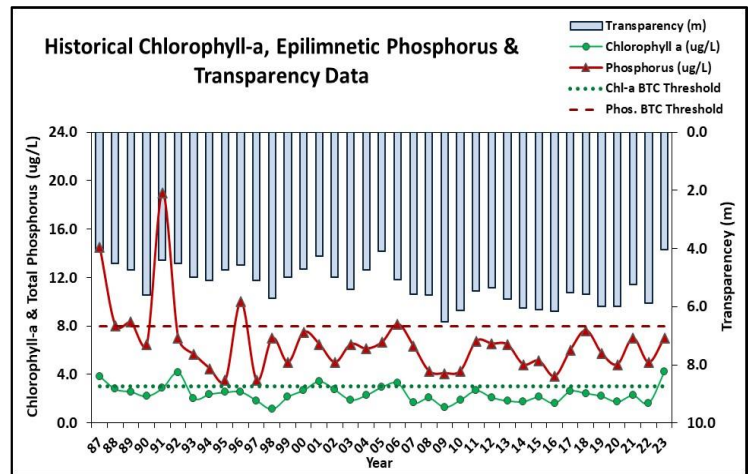
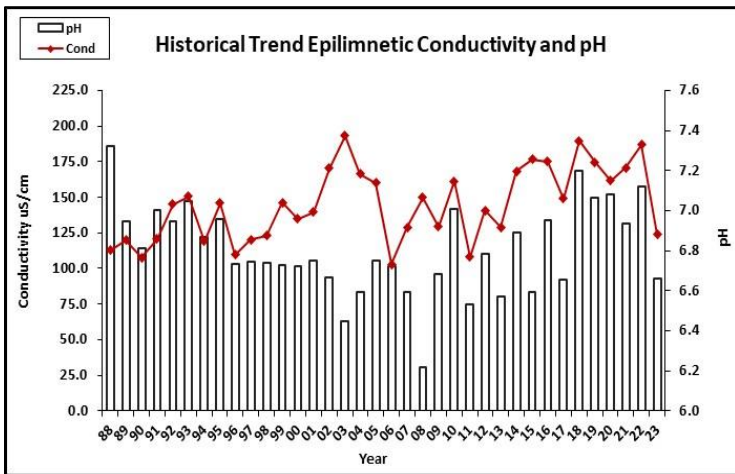
KOLELEMOOK LAKE, SPRINGFIELD

Recommended Actions: Great job sampling in 2023! Lake phosphorus levels remained representative of oligotrophic, or high-quality conditions, however algal growth was the above the threshold for oligotrophic lakes and phytoplankton population data indicate [cyanobacteria](#) were dominant in the sample. Excessive summer rainfall and high water levels likely contributed nutrients necessary to fuel excess algal/cyanobacteria growth. This highlights the importance of managing [stormwater](#) runoff, maintaining [septic systems](#), establishing and maintaining [shoreline buffers](#), and minimizing [fertilizer](#) use within the watershed. While conductivity has significantly increased since monitoring began, it appears to have stabilized since 2010. Consider developing a watershed management plan to protect high quality waters. For more information, contact the NHDES [Watershed Assistance Section](#). Keep up the great work!

HISTORICAL WATER QUALITY TREND ANALYSIS

PARAMETER	TREND	PARAMETER	TREND
Conductivity	Worsening	Chlorophyll-a	Stable
pH (epilimnion)	Stable	Transparency	Improving
Phosphorus (hypolimnion)	Stable	Phosphorus (epilimnion)	Improving

HISTORICAL WATER QUALITY GRAPHICS





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OBSERVATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- CHLOROPHYLL-A:** Chlorophyll level was slightly elevated in July, decreased but remained within an elevated range in August, and decreased to a low level in September. Average chlorophyll level increased from 2022, was approximately equal to the state median, was slightly greater than the threshold for oligotrophic lakes, and was the highest measured since monitoring began. Historical trend analysis indicates stable chlorophyll levels since monitoring began.
- CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer) and Hypolimnetic (lower water layer) conductivity levels remained greater than the state median, yet less than a level of concern. Epilimnetic chloride levels were also slightly greater than the state median yet much less than the state chronic chloride standard. Average epilimnetic conductivity levels decreased greatly in 2023 due to dilution from excessive rainfall. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began.
- COLOR:** Apparent color measured in the epilimnion indicates the water fluctuated within a lightly tea colored, or light brown range, and was twice as dark as that measured in 2022.
- TOTAL PHOSPHORUS:** Epilimnetic phosphorus level within a low range in July, decreased slightly in August, and increased slightly in September but remained with a low range. Average epilimnetic phosphorus level increased from 2022 but remained less than the state median and the threshold for oligotrophic lakes and was within an average range for the lake. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus level was moderate in July, increased to an elevated level in August due to a deeper sampling depth capturing the effects of the sediment-water interface in lakes, and decreased to a low level in September. Average hypolimnetic phosphorus level increased from 2022 and historical trend analysis indicates relatively stable hypolimnetic phosphorus levels since monitoring began.
- TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was below average (worse) in July likely due to excessive summer rainfall, darker water color, and increased algal growth, and then decreased (worsened) in August likely due to wind and wave conditions, and increased (improved) to within a normal range for the lake in September. Average NVS transparency decreased from 2022 but remained higher (better) than the state median. Historical trend analysis indicates significantly increasing (improving) NVS transparency since monitoring began.
- TURBIDITY:** Epilimnetic and Hypolimnetic turbidity levels were slightly elevated in July and August likely due to excessive summer rainfall and elevated algal growth, and decreased to within a low range in September. Hypolimnetic turbidity levels in August reflect conditions at the sediment-water interface on the lake bottom.
- PH:** Epilimnetic and Hypolimnetic pH levels were within the desirable range 6.5-8.0 units and historical trend analysis indicates stable, yet variable, epilimnetic pH levels since monitoring began.

Table 1. 2023 Average Water Quality Data for KOLELEMOOK LAKE - 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	7.2	4.23	20	40	85.6	7	4.03	4.28	0.91	7.02
Hypolimnion	-	-	-	-	97.4	13	-	-	1.70	6.70

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)