



2023 VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

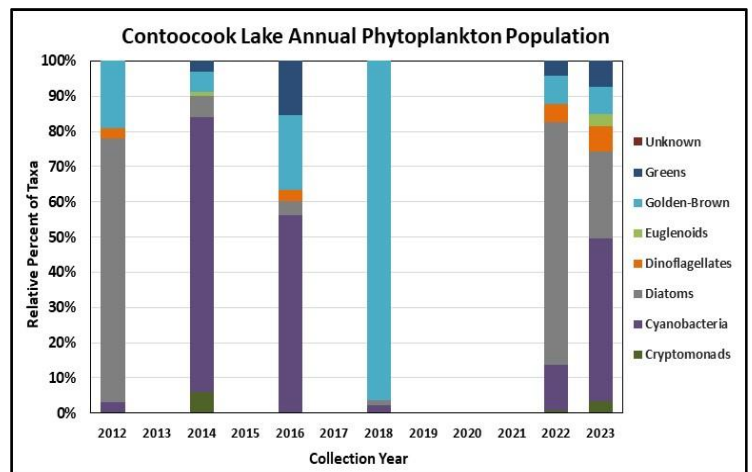
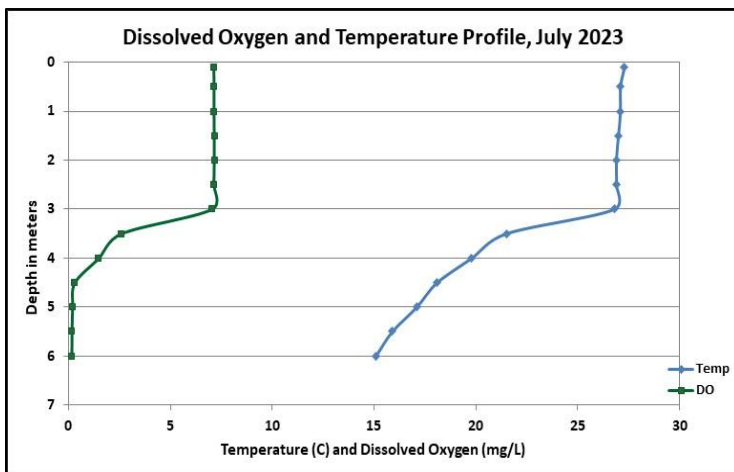
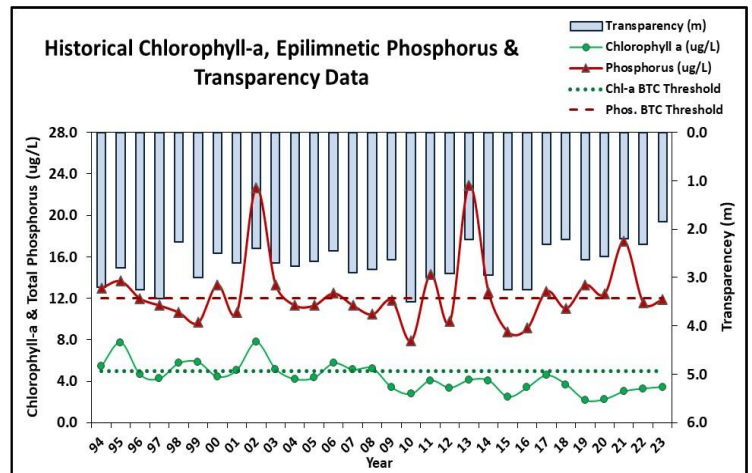
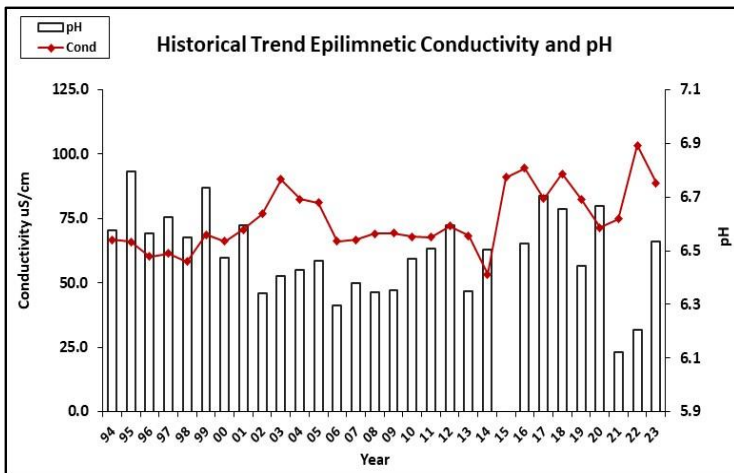
CONTOOCOOK LAKE, JAFFREY

Recommended Actions: Great job sampling in 2023! Lake quality is representative of mesotrophic, or average, conditions and the improving chlorophyll levels are encouraging. However, lake phosphorus levels tend to fluctuate above the threshold for mesotrophic lakes and transparency has remained below average since 2017. Record summer rainfall resulted in several tributaries with short-term elevated phosphorus and turbidity levels. This highlights the importance of managing stormwater runoff and erosion within the watershed. Consider development of a [watershed management plan](#) to help identify and quantify nutrient (phosphorus) loads and make recommendations on ways to reduce loading to the lake. Encourage property owners to be certified [LakeSmart](#) through NH LAKES lake-friendly living program and to utilize the [NH Homeowner's Guide to Stormwater Management](#) to reduce stormwater runoff from shorefront properties. Woodbound Inlet phosphorus and turbidity levels were elevated, and bracket sampling is encouraged to identify potential nutrient and sediment sources. Keep up the great work!

HISTORICAL WATER QUALITY TREND ANALYSIS

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

HISTORICAL WATER QUALITY GRAPHICS





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CONTOOCCOOK LAKE, JAFFREY

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll level was low in June, decreased in July, and increased in August. Average chlorophyll level remained stable with 2022 and was less than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Hypolimnetic (lower water layer), Cochrane Inlet E and W, Outlet, Jowder Cove Inlet and Upstream, Squantum Inlet, and Townline Inlet conductivity and/or chloride levels remained slightly elevated for NH surface waters and greater than the state medians, yet chloride levels were less than the state chronic chloride standard. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began. Rue Deschenes Inlet and Woodbound Inlet conductivity and chloride levels were elevated but chloride levels remained less than the state standard. Walsh Inlet conductivity and chloride levels were low and less than the state medians.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was lightly tea colored in June and became highly tea colored by August.
- ◆ **E. COLI:** Jowder Cove Inlet and Upstream E. coli levels were low. Townline Inlet E. coli levels were slightly elevated in August however remained less than the state standard for surface waters.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was low in June, increased slightly in July and remained stable in August. Average epilimnetic phosphorus level remained stable with 2022, was slightly greater than the state median, and was approximately equal to the threshold for mesotrophic lakes. Hypolimnetic phosphorus level was elevated in July and August likely due to release of phosphorus from lake sediments under anoxic (no dissolved oxygen) conditions. Historical trend analysis indicates relatively stable epilimnetic and hypolimnetic phosphorus levels since monitoring began. Jowder Cove Inlet, Rue Deschenes Inlet, Walsh Inlet, Woodbound Inlet, and Outlet phosphorus levels increased and were slightly elevated in July following significant rainfall. Cochrane Inlet E and W, Townline Inlet, and Jowder Cove Upstream phosphorus levels fluctuated within a low to average range. Squantum Inlet phosphorus levels were elevated but within a low range for this station.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was average in June, decreased (worsened) greatly in July, and remained stable in August. Average NVS transparency decreased from 2022, was lower (worse) 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:** Epilimnetic turbidity level was elevated in August potentially due to cyanobacteria growth. Hypolimnetic turbidity level was elevated in July and August due to formation and accumulation of organic compounds under anoxic conditions. Jowder Cove Inlet and Upstream, Cochrane Inlet E and W, Squantum Inlet, Outlet, Townline Inlet, and Walsh Inlet turbidity levels fluctuated within a low to average range. Rue Deschenes Inlet and Woodbound Inlet turbidity levels were elevated in July.
- ◆ **PH:** Epilimnetic and Woodbound Inlet pH levels were within the desirable range of 6.5-8.0 units. Historical trend analysis indicates stable, yet variable, epilimnetic pH levels since monitoring began. All other stations exhibited pH levels that were slightly acidic to acidic and below the desirable range.

Table 1. 2023 Average Water Quality Data for CONTOOCCOOK LAKE - JAFFREY

| 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) | | Turb. (ntu) | pH |
|----------------------|----------------|-------------------|--------------------|----------------|------------------|------------------------|-------------------|------------|------|----------------|------|
| | | | | | | | | NVS | VS | | |
| Epilimnion | 4.1 | 3.45 | 19 | 73 | 88.9 | - | 12 | 1.84 | 2.83 | 1.10 | 6.53 |
| Hypolimnion | - | - | - | - | 100.3 | - | 21 | - | - | 5.26 | 6.18 |
| Cochrane Inlet E | - | - | 40 | - | 170.3 | - | 8 | - | - | 0.87 | 6.26 |
| Cochrane Inlet W | - | - | 28 | - | 116.7 | - | 15 | - | - | 0.49 | 5.30 |
| Dam Outlet | - | - | 25 | - | 116.7 | - | 13 | - | - | 0.55 | 5.76 |
| Jowder Cove Inlet | - | - | 29 | - | 122.5 | 64 | 17 | - | - | 0.81 | 6.41 |
| Jowder Cove Upstream | - | - | 28 | - | 119.0 | 49 | 15 | - | - | 0.64 | 6.45 |
| Rue Deschenes Inlet | - | - | 62 | - | 253.0 | - | 20 | - | - | 1.37 | 6.18 |
| Squantum Inlet | - | - | 20 | - | 107.5 | - | 59 | - | - | 0.97 | 6.20 |
| Townline Inlet | - | - | 16 | - | 79.4 | 169 | 18 | - | - | 1.20 | 6.28 |
| Walsh Inlet | - | - | 3 | - | 30.5 | - | 21 | - | - | 0.99 | 6.47 |
| Woodbound Inlet | - | - | 49 | - | 228.0 | - | 38 | - | - | 8.09 | 7.08 |

NH Median Values

Median values generated from historic lake monitoring data.

Alkalinity: 4.5 mg/L
Conductivity: 42.3 uS/cm
Total phosphorus: 11 ug/L
pH: 6.6
Chlorophyll-a: 4.39 ug/L
Chloride: 5 mg/L
Transparency: 3.3 m

NH Water Quality Standards

Numeric criteria for specific parameters. Water quality violation if exceeded.

Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL (beach)
E. coli: > 406 cts/100 mL (surface waters)
pH: between 6.5-8.0 (unless naturally occurring)
Turbidity: > 10 NTU above natural