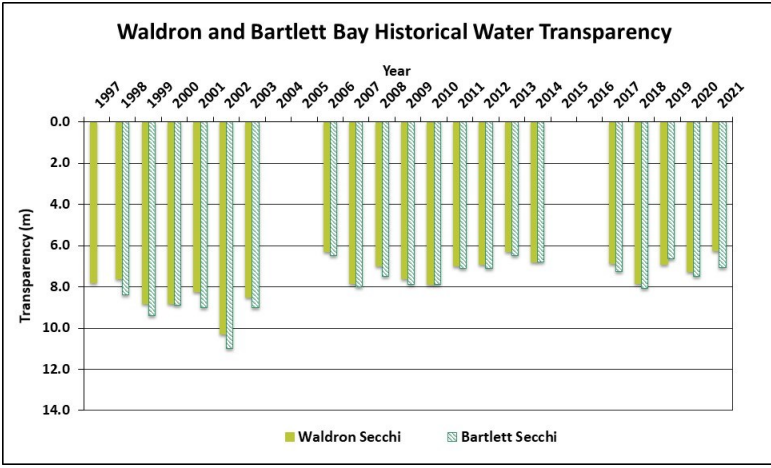
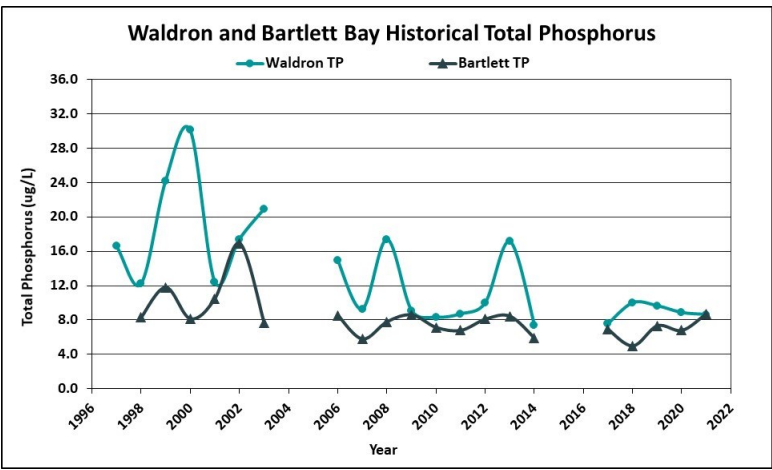
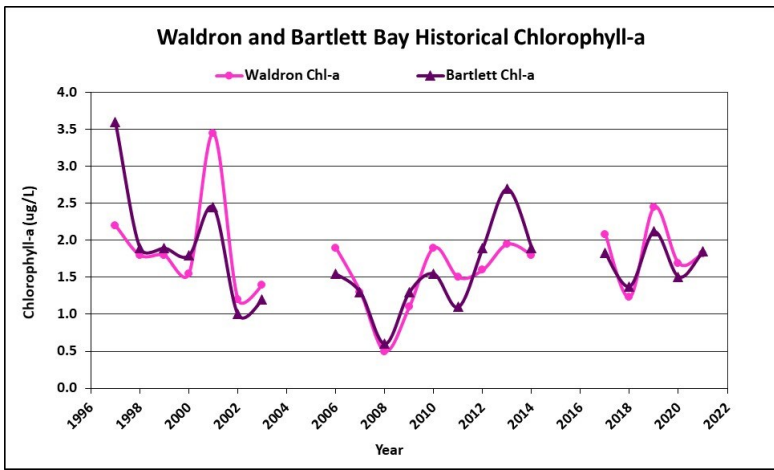




VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS LAKE WINNISQUAM, BARTLETT AND WALDRON BAYS 2021 DATA SUMMARY

RECOMMENDED ACTIONS: Phosphorus levels at both Bays have improved since monitoring began, which is encouraging. However, water clarity (transparency) has declined (worsened) since monitoring began, and algal growth (chlorophyll) appears to be increasing since 2006. The declining clarity is likely a result of a combination of increased algal growth and the increased frequency and intensity of storm events resulting in stormwater runoff and flushing of waters rich in dissolved organic matter that impart a brown or tea color to the water. Volunteers noted much reduced clarity in July following record rainfall amounts indicating impacts of stormwater runoff to these nearshore areas. This highlights the importance of managing and reducing stormwater runoff to the lake. Consider partnering with **Soak Up the Rain NH** to identify areas prone to stormwater runoff and implement projects designed to capture and infiltrate stormwater prior to reaching the lake. Keep an eye on chloride levels which indicate road salt is likely impacting the lake. Encourage road agents and winter maintenance companies that apply de-icing materials to roads, parking lots, walkways, and driveways to obtain **Green SnowPro Certification**. Evaluate culverts and roadside ditches close to the lake in the spring and identify areas in need of cleanup from application of winter salt/sand mixtures. Encourage clean up of these areas to prevent runoff into the lake. Keep up the great work!

HISTORICAL WATER QUALITY GRAPHICS





VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS LAKE WINNISQUAM, BARTLETT AND WALDRON BAYS 2021 DATA SUMMARY

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll level at Bartlett Bay was within a low range in June and decreased gradually through August. Waldron Bay chlorophyll level was very low in June and increased gradually through August but remained within a low range. Average chlorophyll levels at both stations increased from 2020 and were less than the state median and the threshold for oligotrophic lakes. Visual inspection of historical data indicates stable, yet variable, chlorophyll levels since 1997, however levels appear to be increasing since 2006.
- ◆ **CONDUCTIVITY/CHLORIDE:** Bartlett and Waldron Bay conductivity levels were slightly elevated and greater than the state median. Average conductivity levels increased at both stations from 2020. Chloride levels were greater than the state median and higher than expected for undisturbed surface waters, but levels did not exceed the state chronic chloride standard.
- ◆ **COLOR:** Apparent color levels at Bartlett Bay indicated the water was clear with little to no tea coloring. Waldron Bay apparent color levels were borderline clear to lightly tea colored, or light brown, particularly in July and August following record summer rainfall amounts.
- ◆ **TOTAL PHOSPHORUS:** Bartlett Bay phosphorus level was elevated in June, decreased to a low level in July, and increased slightly in August. Average Bartlett Bay phosphorus level increased from 2020, was less than the state median, and was slightly greater than the threshold for oligotrophic lakes. Waldron Bay phosphorus level was slightly elevated in June, decreased to a low level in July, and then increased to a slightly elevated level in August. Average Waldron Bay phosphorus level remained stable with 2020, was slightly less than the state median, and was slightly greater than the threshold for oligotrophic lakes. Visual inspection of historical data indicates decreasing phosphorus levels at both stations.
- ◆ **TRANSPARENCY:** Transparency measured at both stations was within an average range in June, decreased (worsened) significantly in July following record rainfall amounts and field data noted cloudy water with visible algal growth, and then increased (improved) to an average range in August. Average transparency at Bartlett and Waldron Bays decreased (worsened) from 2020 but remained much higher (better) than the state median. However, visual inspection of historical data indicates decreasing (worsening) transparency at both stations since monitoring began.
- ◆ **TURBIDITY:** Bartlett and Waldron Bay turbidity levels fluctuated within a low to average range for those stations and increased slightly from 2020.
- ◆ **pH:** Bartlett and Waldron Bays pH levels were slightly acidic and less than desirable range 6.5-8.0 units in June and July.

Station Name	Table 1. 2020 Average Water Quality Data for LAKE WINNISQUAM, BARTLETT & WALDRON BAYS								
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color pcu	Cond. us/cm	Total P ug/l	Trans. m	Turb. ntu	pH
Bartlett-Epilimnion	9.0	1.85	29	20	99.9	9	7.08	0.44	6.34
Waldron-Epilimnion	9.0	1.82	29	23	101.9	9	6.25	0.46	6.26

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)