

BABOOSIC LAKE

2023 SAMPLING HIGHLIGHTS

Station 3 Sharks Tooth

Amherst & Merrimack, NH



Blue = Oligotrophic

Yellow = Mesotrophic

Red = Eutrophic

Gray = No Data

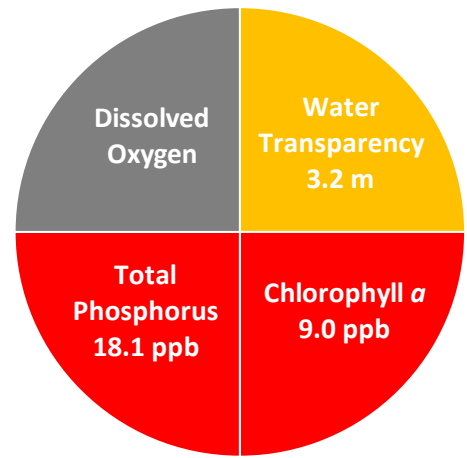


Figure 1. Baboosic Lake Water Quality (2023)

Water quality data displayed in Tables 1, 2 and 3 are surface water measurements with the exception of the dissolved oxygen data that are collected near the lake bottom. Summary statistics are provided for weekly samples collected between May 17 and October 4, 2023.

Table 1. 2023 Baboosic Lake Seasonal Averages and NH DES Aquatic Life Nutrient Criteria¹

Parameter	Oligotrophic "Excellent"	Mesotrophic "Fair"	Eutrophic "Poor"	Baboosic Lake Average (range)	Baboosic Lake Classification
Water Clarity (meters)	> 4.0 – 7.0	2.5 - 4.0	< 2.5	3.2 meters (2.0 – 4.1)	Mesotrophic
Chlorophyll <i>a</i> ¹ (ppb)	< 3.3	> 3.3 – 5.0	> 5.0 – 11.0	9.0 ppb (2.9 – 18.7)	Eutrophic
Total Phosphorus ¹ (ppb)	< 8.0	> 8.0 – 12.0	> 12.0 – 28.0	18.1 ppb (14.7 – 25.5)	Eutrophic
Dissolved Oxygen (ppm)	> 5.0 – 7.0	2.0 – 5.0	<2.0	Not Assessed *	Not Assessed

* Baboosic Lake did not develop a mid or bottom layer that is the basis for dissolved oxygen assessment.

Table 2. 2023 Baboosic Lake Seasonal Average Accessory Water Quality Measurements

Parameter	Assessment Criteria					Baboosic Lake Average (range)	Baboosic Lake Classification
	< 10 uncolored	10 – 20 slightly colored	20 – 40 lightly tea colored	40 – 80 tea colored	> 80 highly colored		
Color (color units)	< 10 uncolored	10 – 20 slightly colored	20 – 40 lightly tea colored	40 – 80 tea colored	> 80 highly colored	44.0 color units (range: 27.3 – 58.3)	Tea colored
Alkalinity (ppm)	< 0.0 acidified	0.1 – 2.0 extremely vulnerable	2.1 – 10 moderately vulnerable	10.1 – 25.0 low vulnerability	> 25.0 not vulnerable	11.0 ppm (single value)	Low vulnerability
pH (std units)	< 5.5 suboptimal for successful growth and reproduction		6.5 – 9.0 optimal range for fish growth and reproduction			7.0 standard units (single value)	Optimal range for fish growth and reproduction
Specific Conductivity (μ S/cm)	< 50 μ S/cm Characteristic of minimally impacted NH lakes		50-100 μ S/cm Lakes with some human influence	> 100 μ S/cm Characteristic of lakes experiencing human disturbances		108.8 μ S/cm (range: 105.8 – 115.4)	Characteristic of lakes experiencing human disturbances

Strategies to stabilize and improve water quality

Implement Best Management Practices (BMPs) within the Baboosic Lake watershed to minimize the adverse impacts of polluted runoff and erosion into Baboosic Lake. Refer to [Landscaping at the Water's Edge: An Ecological Approach](#), [New Hampshire Homeowner's Guide to Stormwater Management: Do-it-Yourself Stormwater Solutions for Your Home](#), and the [Baboosic Lake Watershed Management Plan](#) for information on how to reduce nutrient loading caused by overland runoff. NH Lakes also provides a series of resources aimed at educating residents and protecting our lakes and ponds through the [LakeSmart](#) program.

Figure 2. Baboosic Lake - 3 Sharks Tooth (2023 Seasonal Data)
 Secchi Disk Transparency and Chlorophyll *a* Data

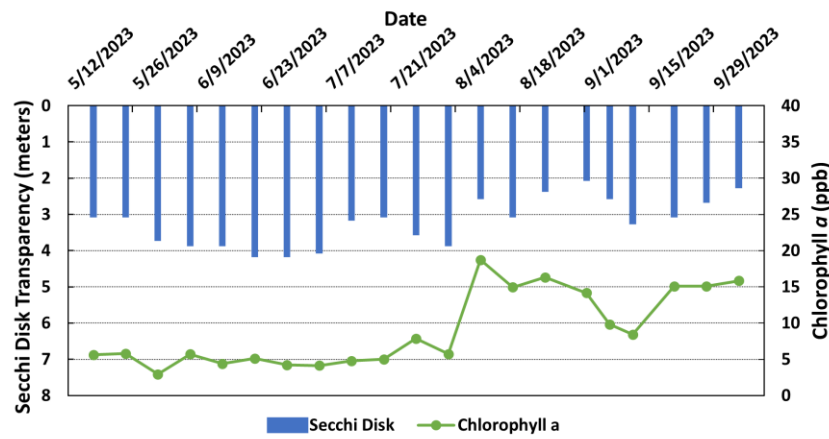


Figure 3. Baboosic Lake - 3 Sharks Tooth (2023 Seasonal Data)
 Secchi Disk Transparency and Dissolved Color Data

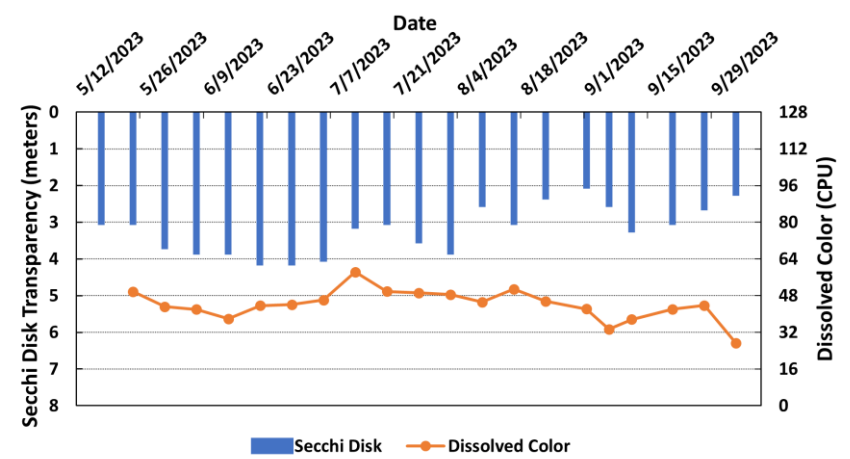


Figure 4. Baboosic Lake - Site 3 Sharks Tooth (1983-2023)
 Long-term Secchi Disk Transparency and Chlorophyll *a* Data

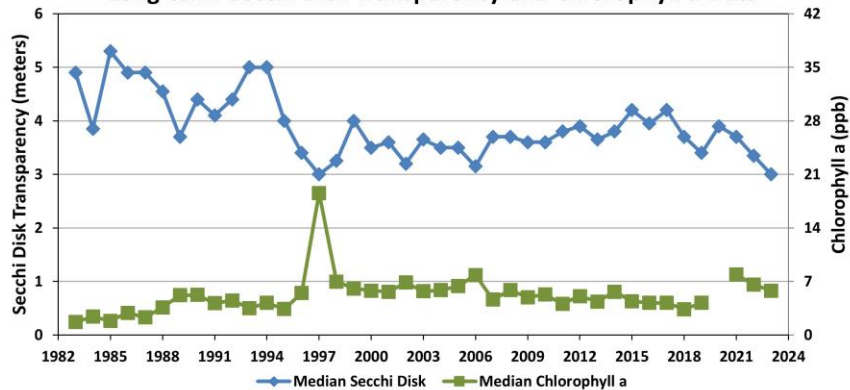
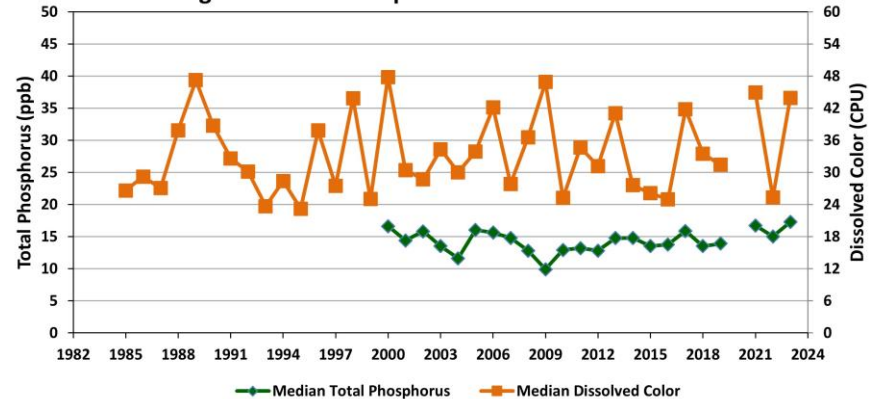


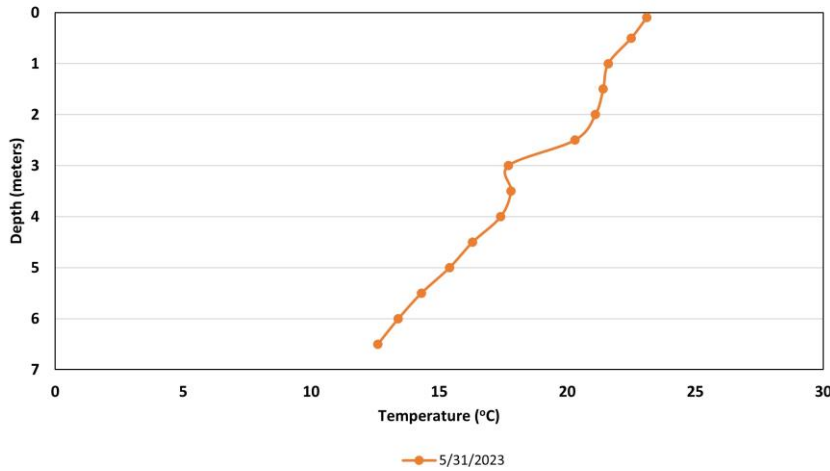
Figure 5. Baboosic Lake - Site 3 Sharks Tooth (1985-2023)
 Long-term Total Phosphorus and Dissolved Color Data



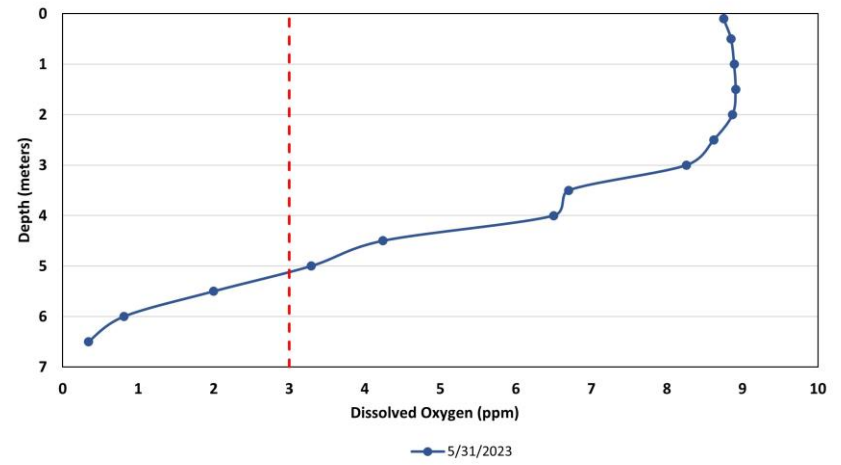
Figures 2 and 3. Seasonal comparison of Baboosic Lake water transparency (Secchi Disk depth), chlorophyll *a* and dissolved color for 2023. Shallower water transparency measurements oftentimes correspond to increases in chlorophyll *a* and/or color concentrations.

Figures 4 and 5. Annual median Baboosic Lake water transparency, chlorophyll *a*, dissolved color and total phosphorus concentrations measured between 1983 and 2023, through the New Hampshire Lakes Lay Monitoring. The long-term data provide insight into the water quality fluctuations, among years, that have been documented in Baboosic Lake.

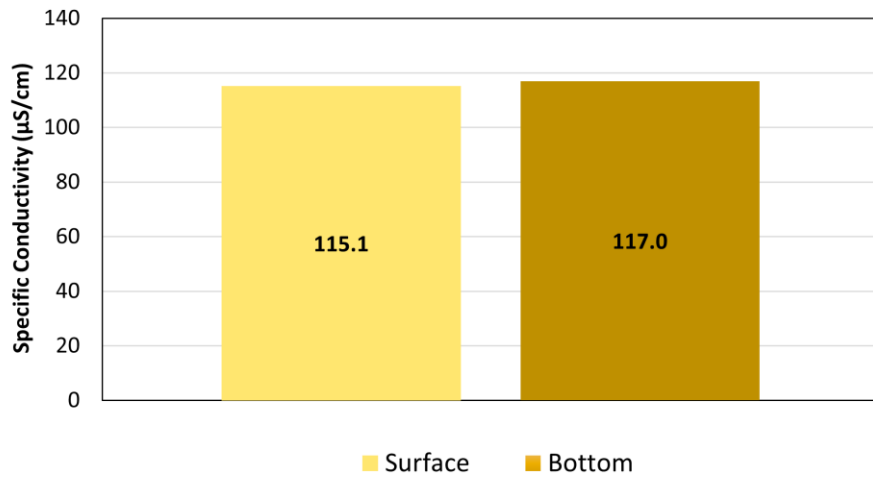
**Figure 6. Baboosic Lake - Site 3 Sharks Tooth
Temperature Profiles (May 31, 2023)**



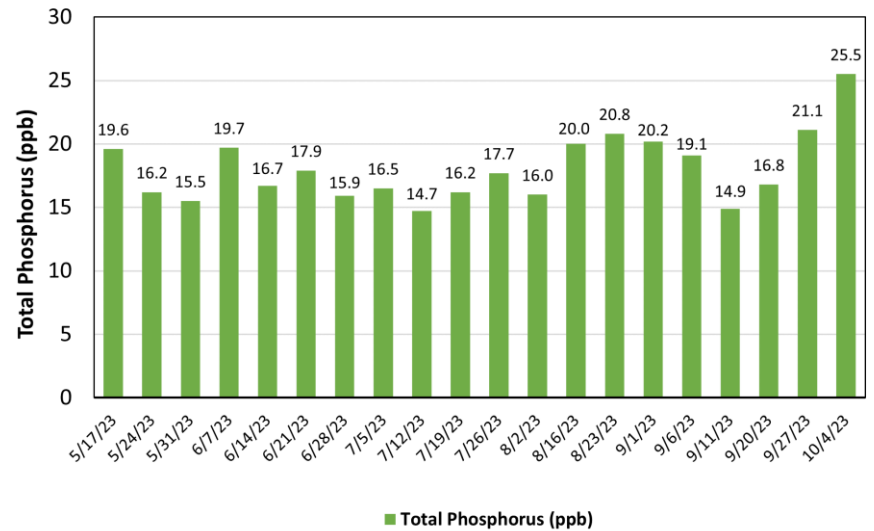
**Figure 7. Baboosic Lake - Site 3 Sharks Tooth
Dissolved Oxygen Profiles (May 31, 2023)**



**Figure 8. Baboosic Lake - Site 3 Sharks Tooth
Specific Conductivity inter-comparison (May 31, 2023)**



**Figure 9. Baboosic Lake - Site 3 Sharks Tooth
Total Phosphorus inter-comparison**



Figures 6 and 7. Temperature and dissolved oxygen profiles displaying the water quality differences, among depths, in 0.5-meter increments. Notice the decreasing dissolved oxygen concentrations, near the lake bottom, through the season. The dashed vertical red line in Figure 7 displays the dissolved oxygen threshold for the successful growth and reproduction of warm-water fish such as bass and perch.

Figure 8. Specific conductivity inter-comparison between the surface and bottom water on May 31, 2023.

Figure 9. Total phosphorus inter-comparison of the surface water from May 17 through October 4, 2023.

**Table 3. Baboosic Lake Inter-site Comparison
2023 water quality data collected between May 26 and October 1**

Lake	Average (range) Secchi Disk Transparency (meters)	Average (range) Chlorophyll-a (ppb)	Average (range) Total Phosphorus (ppb)
1 Clarks	3.1 meters (range: 2.2 – 4.0)	7.9 ppb (range: 4.0 – 16.4)	23.2 ppb (range: 16.3 – 38.3)
2 Center	3.3 meters (range: 2.2 – 4.2)	8.5 ppb (range: 3.6 – 17.3)	19.8 ppb (range: 14.2 – 26.9)
3 Sharks Tooth	3.2 meters (range: 2.0 – 4.1)	9.0 ppb (range: 2.9 – 18.7)	18.1 ppb (range: 14.7 – 25.5)
4 Washer Cove	3.1 meters (range: 2.2 – 3.8)	9.1 ppb (range: 3.7 – 14.9)	20.5 ppb (range: 15.8 – 27.0)

Data Interpretation: Overview of factors to consider when reviewing the Baboosic Lake data

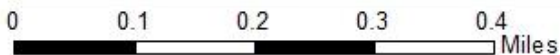
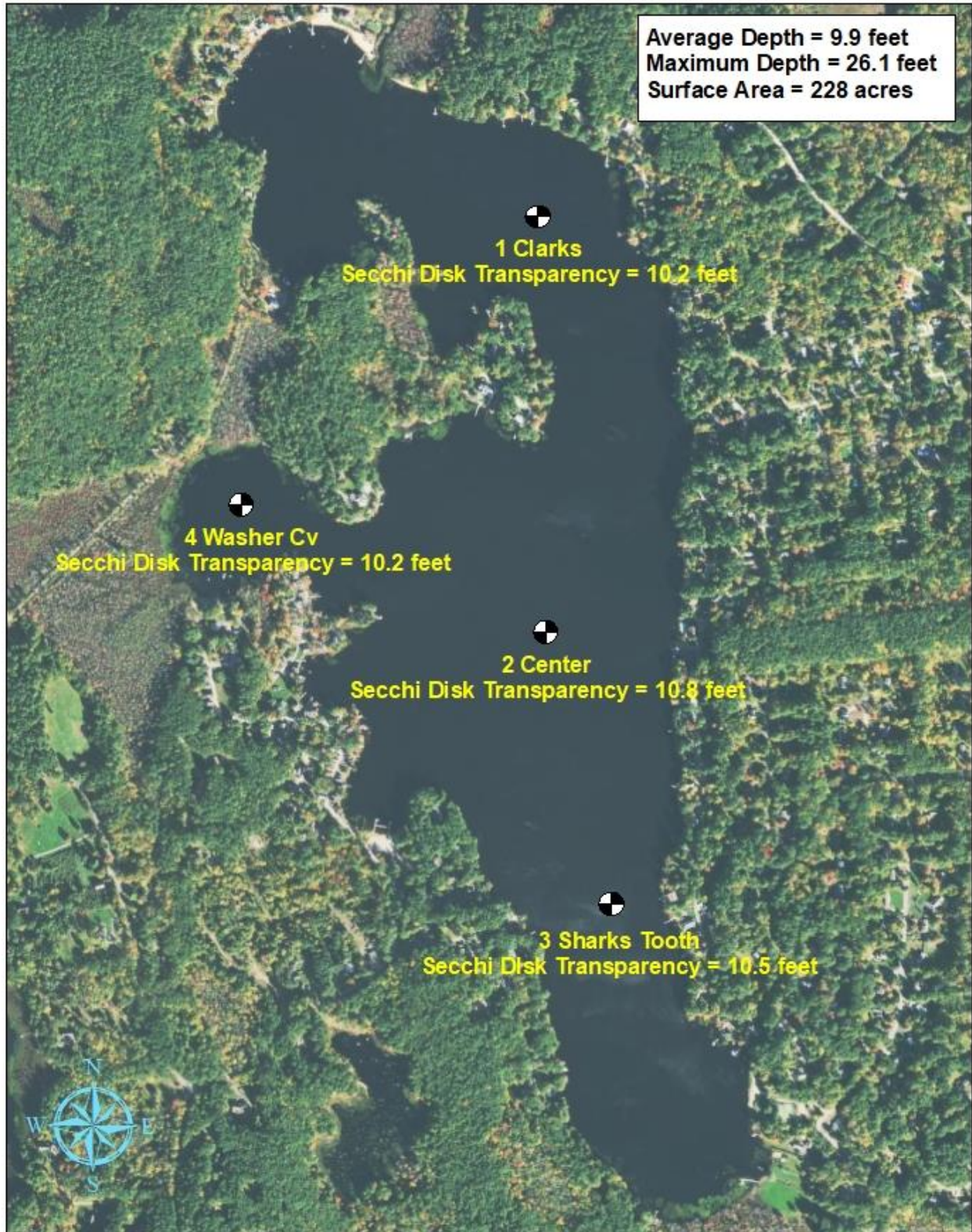
This highlight report provides a general overview of the current and historical conditions of Baboosic Lake. The report is intended to provide a simple assessment of the water quality trends. Should you have additional questions about interpreting your water quality results, we would be happy to discuss the data with you and/or any concerns you may have. In general, some factors that influence the current and long-term water quality results/trends for our New Hampshire lakes and ponds include:

- **Land-use Patterns** within the watershed (drainage basin) – Research indicates land use patterns have an impact on how much phosphorus (nutrient) is washing into our lakes. In general, more urbanized watersheds have a greater degree of phosphorus runoff than highly forested/vegetated drainage areas.
- **Weather Patterns** – Rainfall and temperature can influence water quality. Wet periods, and overland runoff, tend to be a time when elevated nutrients and other pollutants are transported into our lakes. Temperature can also influence water quality conditions since many aquatic plants and algae tend to respond to changing seasonal conditions. Unusually warm periods are sometimes tied to short-term algal and cyanobacteria blooms.
- **Best Management Practices (BMPs)** – The presence/absence of best management practices can have an interplay on water quality. BMPs are measures that are used to manage nutrients and other pollutants that could otherwise make their way into our lakes. Properties that employ BMPs, designed specifically to remove pollutants of concern (e.g. sediments and phosphorus), are less likely to contribute nutrients and other pollutants into our lakes.
- **Temperature (Thermal) Stratification** – Many lakes become thermally stratified during the summer months and may form three distinct thermal layers: upper water layer (epilimnion), middle lake layer (metalimnion) and bottom cold-water layer (hypolimnion). These thermal zones form a barrier to lake mixing, during the summer months, and can coincide with differences in dissolved oxygen and specific conductivity through the water column.
- **Internal Nutrient Loading** (nutrients that are introduced from the sediments along the lake bottom) – Some of our lakes experience significant internal nutrient loading. Such lakes generally tend to be well stratified and exhibit increasing deep water phosphorus concentrations, relative to surface levels).

Figure 10. Baboosic Lake

Amherst & Merrimack, NH

2023 Deep water sampling site locations and seasonal average water clarity



Aerial Orthophoto Source: NH GRANIT
Site location GPS coordinates collected by the UNH Center for Freshwater Biology

