

LAKE KANASATKA

2024 SAMPLING HIGHLIGHTS

Station 1 Deep

Moultonborough, NH



Extension

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 bi-weekly samples collected between April 25 and October 18, 2024.

Blue = Oligotrophic

Light Green = Mesotrophic

Dark Green = Eutrophic

Gray = No Data

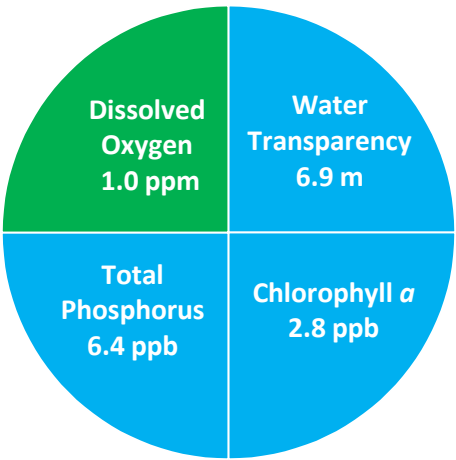


Figure 1. Lake Kanasatka Water Quality (2024)

Table 1. 2024 Lake Kanasatka Seasonal Averages and NH DES Aquatic Life Nutrient Criteria¹

Parameter	Oligotrophic "Excellent"	Mesotrophic "Fair"	Eutrophic "Poor"	Lake Kanasatka Average (range)	Lake Kanasatka Classification
Water Clarity (meters)	> 4.0 – 7.0	2.5 - 4.0	< 2.5	6.9 meters (5.0– 9.4)	Oligotrophic
Chlorophyll <i>a</i> ¹ (ppb)	< 3.3	3.3 – 5.0	> 5.0 – 11.0	2.8 ppb (1.6 – 4.4)	Oligotrophic
Total Phosphorus ¹ (ppb)	< 8.0	8.0 – 12.0	> 12.0 – 28.0	6.4 ppb (4.7 – 9.4)	Oligotrophic
Dissolved Oxygen (ppm)	> 5.0 – 7.0	2.0 – 5.0	< 2.0	1.0 ppm (0.0 – 4.6) *	Eutrophic

* Dissolved oxygen concentrations were measured between 8.0 and 13.0 meters, in the middle and bottom water layers, on September 20, 2024.

Table 2. 2024 Lake Kanasatka Seasonal Average Accessory Water Quality Measurements

Parameter	Assessment Criteria					Lake Kanasatka Average (range)	Lake Kanasatka Classification
Color (color units)	< 10 uncolored	10 – 20 slightly colored	20 – 40 lightly tea colored	40 – 80 tea colored	> 80 highly colored	10.9 color units (range: 5.8 – 23.1)	Slightly 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	12.7 ppm (range: 12.3 – 13.1)	Low vulnerability
pH (std units)	< 5.5 suboptimal for successful growth and reproduction		6.5 – 9.0 optimal range for fish growth and reproduction			7.3 standard units (range: 7.2 – 7.5)	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		108.3 μ S/cm (range: 96.3 – 115.8)	Characteristic of lakes experiencing human disturbances

Strategies to stabilize and improve water quality

Implement Best Management Practices (BMPs) within the Lake Kanasatka watershed to minimize the adverse impacts of polluted runoff and erosion into Lake Kanasatka. 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 [Lake Kanasatka Watershed-Based 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. Lake Kanasatka (2024 Seasonal Data)
Secchi Disk Transparency and Chlorophyll *a* Data

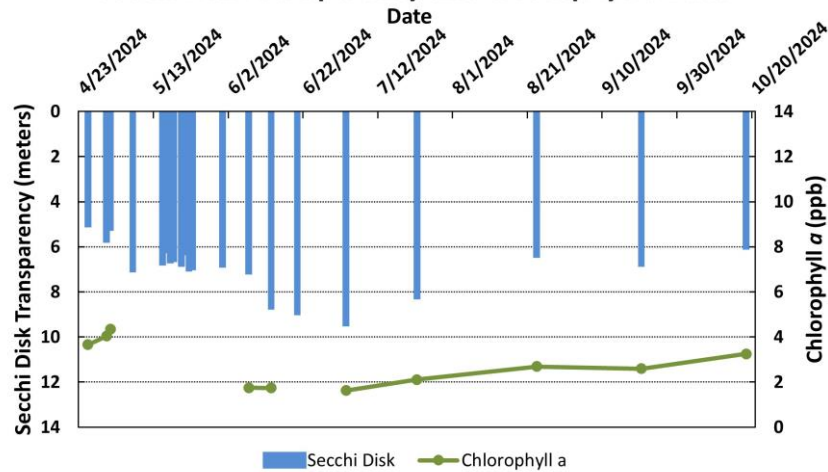


Figure 3. Lake Kanasatka (2024 Seasonal Data)
Secchi Disk Transparency and Dissolved Color Data

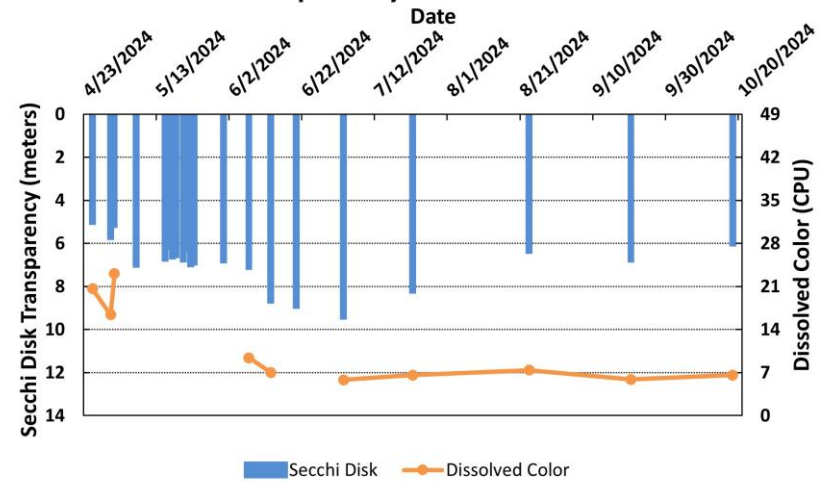


Figure 4. Lake Kanasatka - Site 1 Deep (1983-2024)
Long-term Secchi Disk and Chlorophyll *a* Data

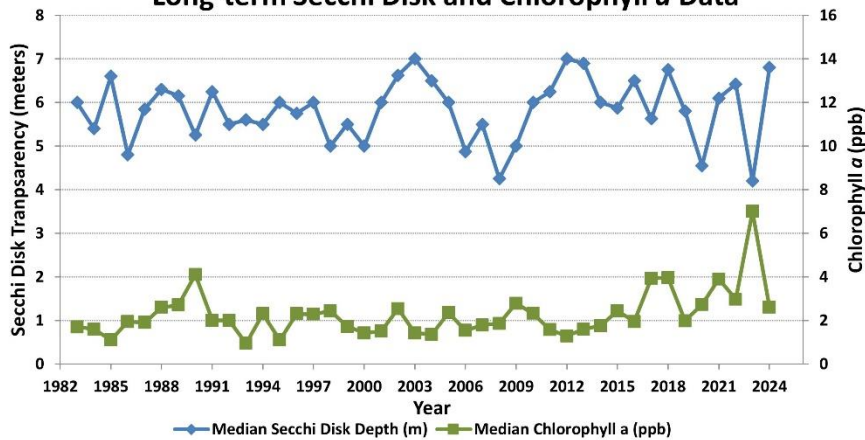
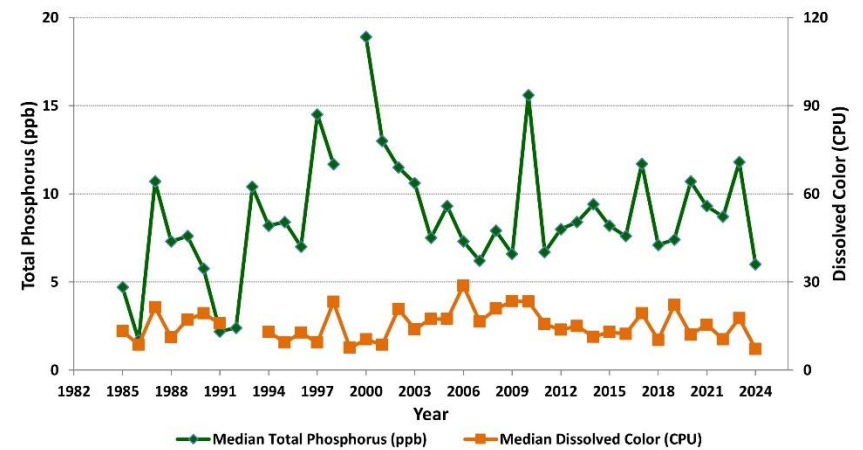


Figure 5. Lake Kanasatka - Site 1 Deep (1983-2024)
Long-term Total Phosphorus and Dissolved Color Data



Figures 2 and 3. Seasonal comparison of Lake Kanasatka, Site 1 Deep, water transparency (Secchi Disk depth), chlorophyll *a*, and dissolved color for 2024. Shallower water transparency measurements oftentimes correspond to increases in chlorophyll *a* and/or color concentrations.

Figures 4 and 5. Annual median Lake Kanasatka water transparency, chlorophyll *a*, dissolved color, and total phosphorus concentrations measured through the New Hampshire Lakes Lay Monitoring Program between 1983 and 2024. The long-term data provide insight into the water quality fluctuations, among years, that have been documented in Lake Kanasatka.

Figure 6. Lake Kanasatka - Site 1 Deep
Temperature Profiles (April 25 through October 18, 2024)

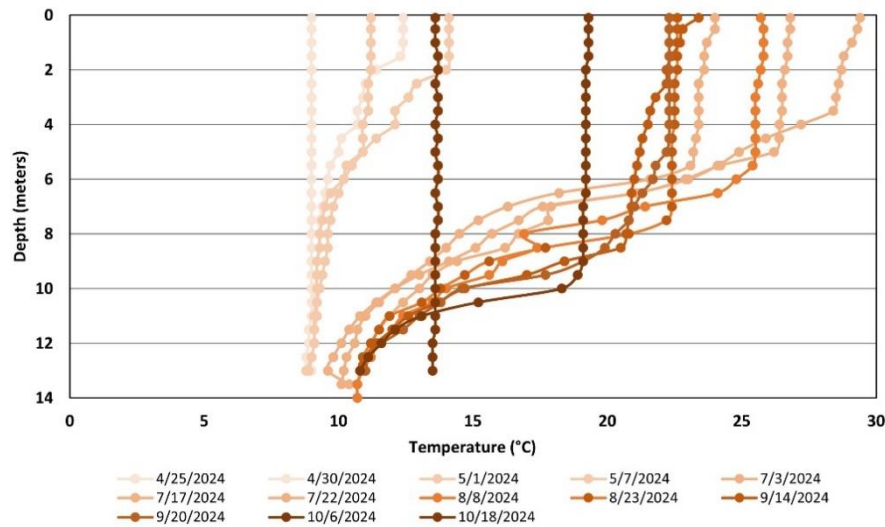


Figure 7. Lake Kanasatka - Site 1 Deep
Dissolved Oxygen Profiles (April 25 through October 18, 2024)

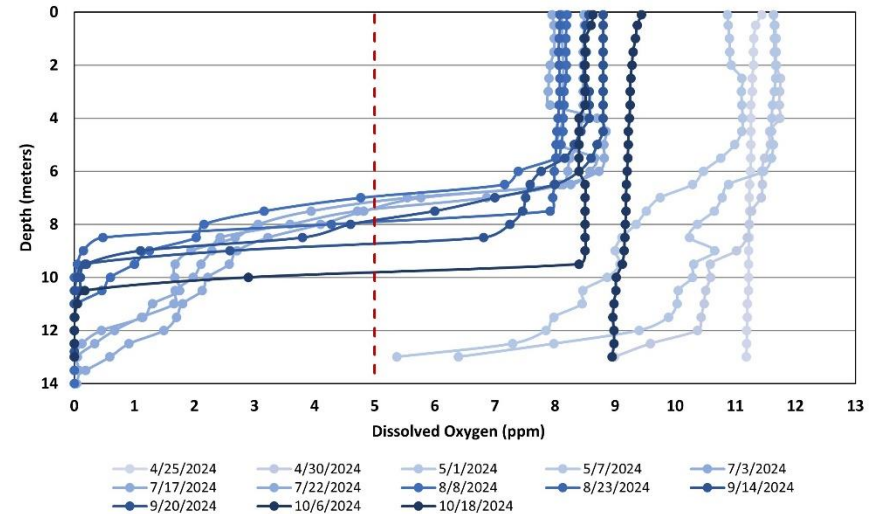


Figure 8. Lake Kanasatka - Site 1 Deep
Specific Conductivity (April 25 through October 18, 2024)

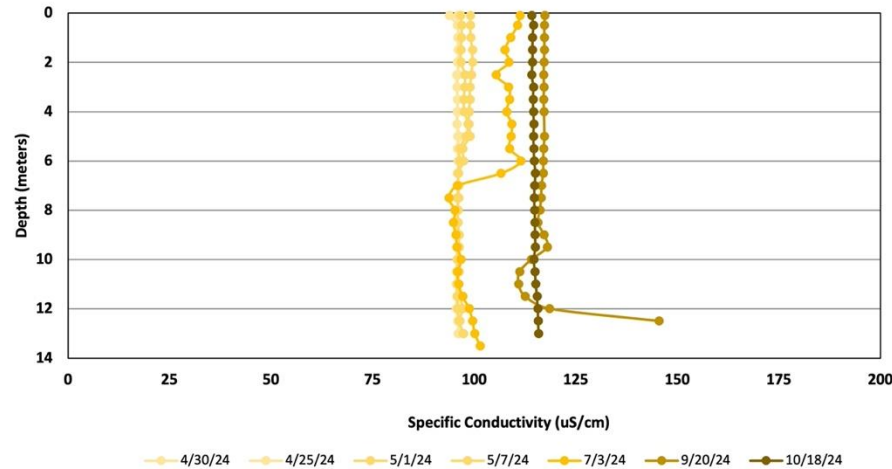
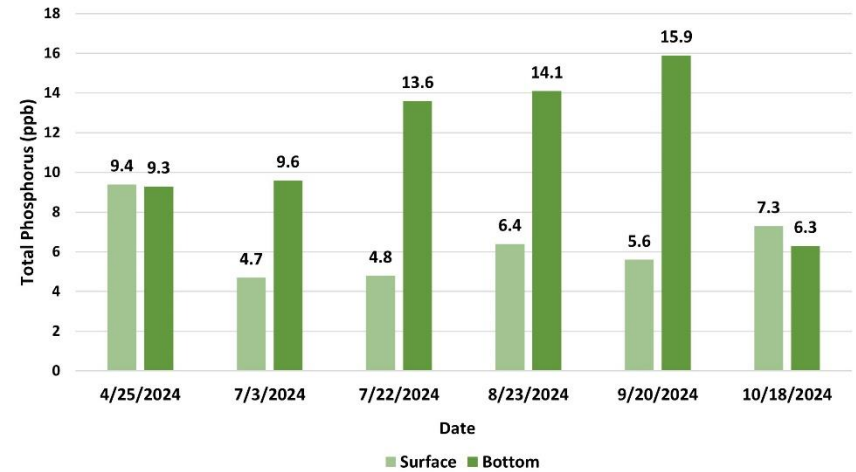


Figure 9. Lake Kanasatka- Site 1 Deep
Total Phosphorus inter-comparison (April 25 through October 18, 2024)



Figures 6, 7, and 8. Temperature, dissolved oxygen, and specific conductivity profiles display the water quality differences, through the water column, in 0.5-meter increments. Notice the decreasing dissolved oxygen concentrations and the increasing specific conductivity levels, near the lake bottom. The dashed vertical red line in Figure 7 displays the dissolved oxygen threshold for the successful growth and reproduction of cold-water fish such as trout and salmon.

Figure 9. Total phosphorus inter-comparison between the surface (epilimnion) and bottom (hypolimnion) water layers from April 25 to October 18, 2024.

Table 3. Lake Kanasatka Seasonal Average Water Quality Inter-Site Comparison (2024)

Sampling Station	Average (range) Secchi Disk Depth (meters)	Average (range) Total Phosphorus (ppb)	Average (range) Chlorophyll <i>a</i> (ppb)	Average (range) Dissolved Color (CPU)
1 Deep	6.9 m (5.0 – 9.4)	6.4 ppb (4.7 – 9.4)	2.8 ppb (1.6 – 4.4)	10.9 CPU (5.8 – 23.1)
2 Animal (Deep)	6.7 m (5.9 – 7.7)	7.0 ppb (5.2 – 8.8)	2.8 ppb (1.5– 3.6)	8.2 CPU (5.5 – 16.5)
3 West	6.2 m (5.0 – 7.3)	8.5 ppb (6.3 – 12.1)	3.1 ppb (1.4 – 5.1)	9.3 CPU (6.3 – 16.8)

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

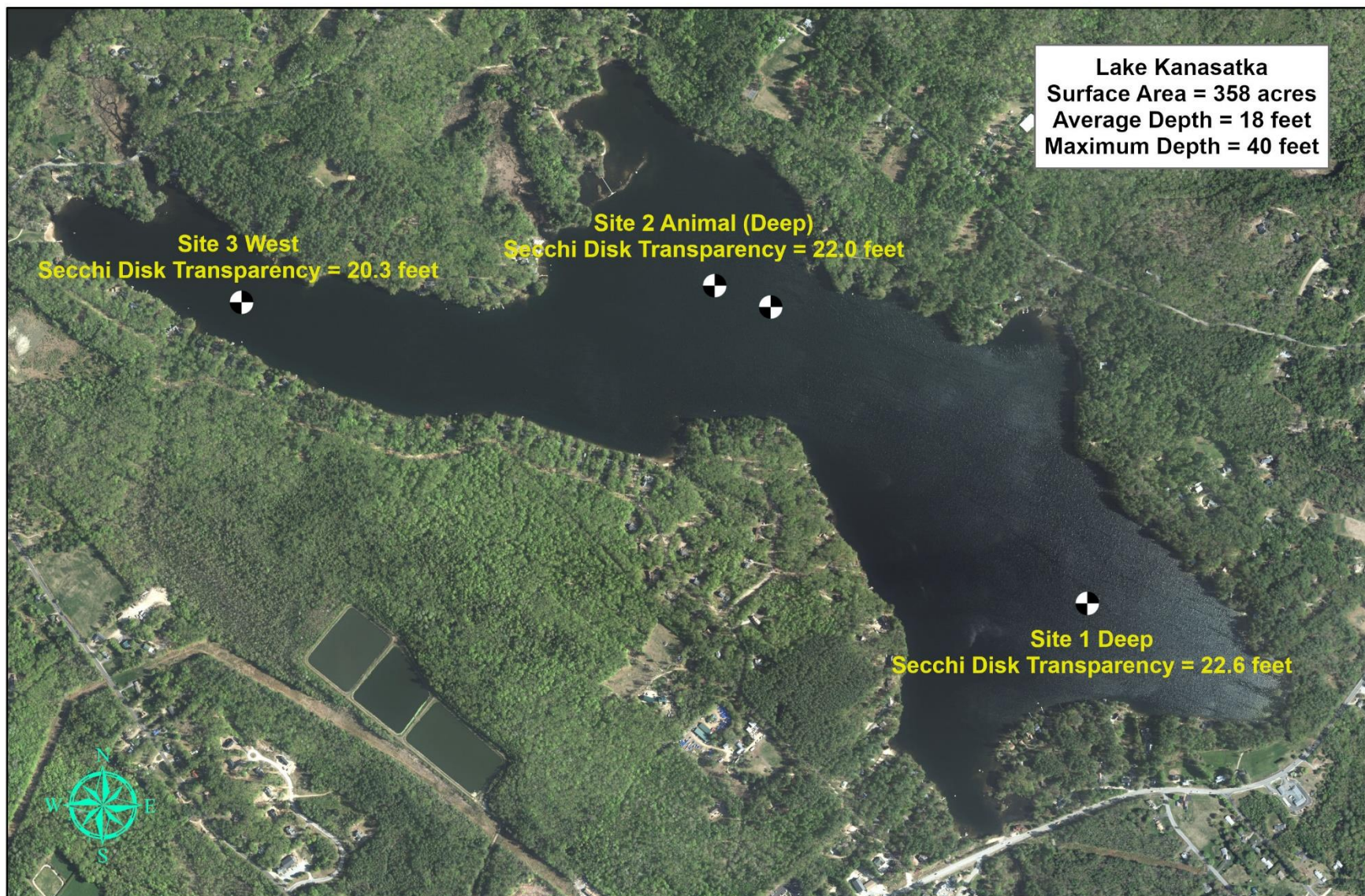
This highlight report provides a general overview of the current and historical conditions of Lake Kanasatka. The report is intended to provide a simple assessment of the water quality trends. Should you have additional questions about interpreting your water quality results, we would be happy to discuss 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. Lakes that exhibit internal nutrient loading may also exhibit increasing deep water specific conductivity concentrations (a measure of dissolved materials) through the summer months.

Figure 10. Lake Kanasatka

Moultonborough, NH

2024 Deep water sampling sites and seasonal average water transparency.



0 0.2 0.4 0.6 0.8 Miles

Aerial Orthophoto Source: NH GRANIT
GPS Coordinates collected by the UNH Center for Freshwater Biology



Extension

