Volunteer Lake Assessment Program Individual Lake Reports

NUBANUSIT LAKE, NELSON, NH

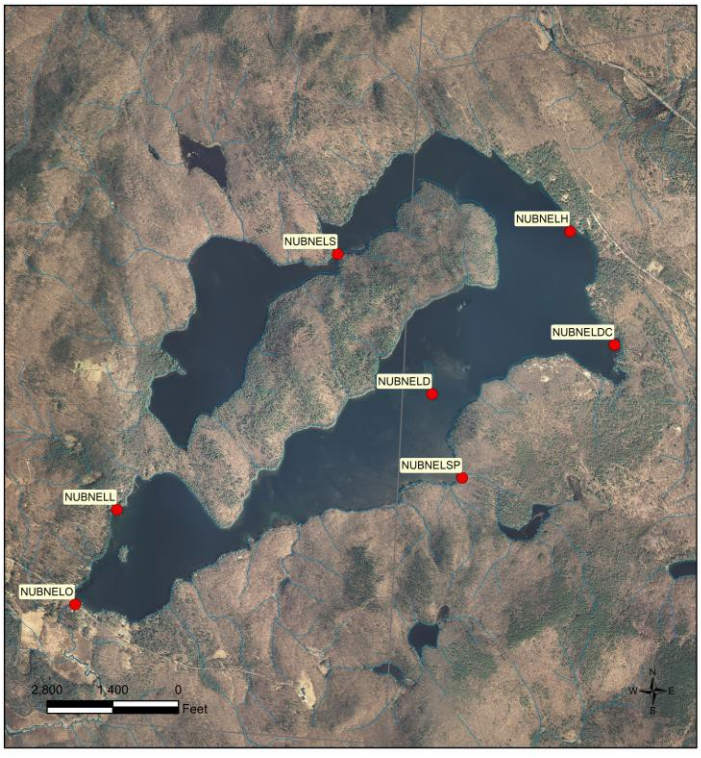
MORPHOMETRIC DATA | **TROPHIC CLASSIFICATION** | **KNOWN EXOTIC SPECIES**

Watershed Area (Ac.):	5,184	**Max. Depth (m):**	30.2	**Flushing Rate (yr^{1})**	0.4	**Year**	**Trophic class**	
Surface Area (Ac.):	715	**Mean Depth (m):**	11.5	**P Retention Coef:**		1988	OLIGOTROPHIC	
Shore Length (m):	13,700	**Volume (m^3):**	30,024,500	**Elevation (ft):**	1376	2003	OLIGOTROPHIC	

The Waterbody Report Card tables are generated from the DRAFT 2020 305(b) report on the status of N.H. waters, and are based on data collected from 2010-2019. Detailed waterbody assessment and report card information can be found at NHDES' Water Quality Assessment Website.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
	Oxygen, Dissolved	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Dissolved oxygen satura	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Chlorophyll-a	Very Good	Sampling data is 50 percent better than the water quality standards or thresholds for this parameter.
Primary Contact Recreation	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

VLAP SAMPLE STATION MAP: This map depicts the location of routine sampling stations discussed on page two of the report.



NUBANUSIT LAKE
NELSON
VOLUNTEER LAKE ASSESSMENT PROGRAM

STATIONID	STATION NAME
NUBNELDC	DALOZ COVE
NUBNELH	HANCOCK LANDING
NUBNELSP	SHADRACK PD BROOK
NUBNELD	DEEP SPOT
NUBNELL	LOT 10 INLET
NUBNELO	OUTLET IN STREAM
NUBNELS	SPOONWOOD DAM

Source: The data layers are derived from NHDES data and are under constant revision. NHDES is not responsible for the use or interpretation of this information. Not intended for legal use NHDES Watershed Management Bureau Date: 2/17/2021

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Nubanusit Lake, Nelson
2020 Data Summary

Recommended Actions: Great job sampling in 2020! Lake quality continues to be representative of oligotrophic, or high quality, conditions and the improving water quality trends are a positive sign. However, the lake experienced a late-season cyanobacteria bloom which highlights the delicate balance of the lake ecosystem. The worsening lake clarity may also be related to an increase in cyanobacteria growth in the metalimnion or thermocline of the lake and if cyanobacteria remain in the thermocline they pose no threat to public health, however certain conditions may result in cyanobacteria forming surface blooms or scums. Continue to be alert for the formation of surface blooms or scums and alert the NHDES Harmful Algal Bloom Program HAB@des.nh.gov. Consider conducting monthly dissolved oxygen/temperature profiles and collecting phytoplankton samples to better understand how thermal stratification and water temperature impact algal and cyanobacteria populations and growth. Keep up the great work!

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

- **Chlorophyll-a:** Chlorophyll level was very low in July and decreased slightly in September. Average chlorophyll level remained stable with 2019 and was much less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), Daloz Cove, Hancock Landing, Lot 10 Inlet, Outlet, Shadrack Pd. Brook, and Spoonwood Dam conductivity and/or chloride levels were within a very low range for NH lakes and less than the state medians. Historical trend analysis indicates significantly decreasing (improving) epilimnetic conductivity levels since monitoring began.
- **Color:** Apparent color measured in the epilimnion indicates the water is clear with no tea, or brown, coloring.
- **Total Phosphorus:** Epilimnetic, Metalimnetic, Hypolimnetic, and Hancock Landing phosphorus levels were within a low range for NH lakes. Average epilimnetic phosphorus level remained stable with 2019 and was much less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) epilimnetic and hypolimnetic phosphorus levels since monitoring began.
- **Transparency:** Transparency was within an average range for the lake in July and increased (improved) slightly in September. Small to moderate waves were noted on both sampling events which may have impacted these measurements. Average transparency increased (improved) from 2019 and was much higher (better) than the state median. However, historical trend analysis indicates significantly decreasing (worsening) transparency since 1997.
- **Turbidity:** Epilimnetic, Metalimnetic, Hypolimnetic, Hancock Landing, and Lot 10 Inlet turbidity levels fluctuated within a low range and were the lowest average turbidity levels measured since monitoring began. Daloz Cove, Outlet, Shadrack Pd. Brook, and Spoonwood Dam turbidity levels were also very low.
- **pH:** Epilimnetic, Metalimnetic, Daloz Cove, Hancock Landing, Lot 10 Inlet, Outlet, Shadrack Pd. Brook, and Spoonwood Dam pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable, yet variable, epilimnetic pH levels since monitoring began. Hypolimnetic pH level was slightly acidic and less than desirable.

Station Name	Table 1. 2020 Average Water Quality Data for NUBANUSIT LAKE - HANCOCK								
	Alk. (mg/L)	Chlor-a (ug/L)	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Trans. (m)	Turb. (ntu)	pH
							VS		
Epilimnion	2.2	0.88	3	5	12.0	3	10.6	0.16	6.62
Metalimnion					12.4	3		0.25	6.52
Hypolimnion					12.8	7		0.30	5.96
Daloz Cove					12.7			0.13	6.56
Hancock Landing			3		12.5	3		0.08	6.54
Lot 10 Inlet					12.5			0.18	6.55
Outlet In Stream			3		12.5			0.14	6.55
Shadrack Pd. Brook					12.5			0.08	6.58
Spoonwood Dam					12.5			0.16	6.52

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

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

NH Median Values: Median values for specific parameters 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

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Improving	Data significantly decreasing.	Chlorophyll-a	Improving	Data significantly decreasing.
pH (epilimnion)	Stable	Trend not significant; data highly variable.	Transparency	Worsening	Data significantly decreasing.
			Phosphorus (epilimnion)	Improving	Data significantly decreasing.