



Volunteer Lake Assessment Program Individual Lake Reports

MONOMONAC, LAKE, RINDGE, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	12,448	Max. Depth (m):	7.8	Flushing Rate (yr ¹)	3.6	Year	Trophic class	Variable Milfoil
Surface Area (Ac.):	711	Mean Depth (m):	2.8	P Retention Coef:	0.55	2008	MESOTROPHIC	
Shore Length (m):	17,200	Volume (m ³):	8,093,500	Elevation (ft):	1044	1976	MESOTROPHIC	

TROPHIC CLASSIFICATION

KNOWN EXOTIC SPECIES

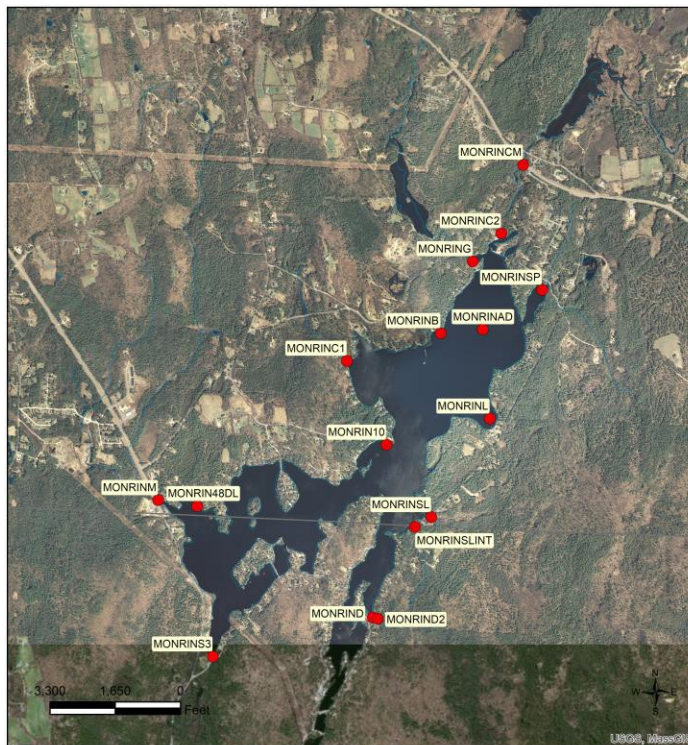
The Waterbody Report Card tables are generated from the DRAFT 2020 305(b) report on the status of N.H. waters, and are based on data collected from 2010-2019. Detailed waterbody assessment and report card information can be found at [NHDES' Water Quality Assessment Website](#).

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
	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	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
Primary Contact Recreation	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Cyanobacteria hepatoto	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

MONOMONAC LAKE - CAMP MONOMONAC BEACH	Escherichia coli	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.
MONOMONAC LAKE - CAMP MONOMONAC BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).

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



LAKE MONOMONAC RINDGE VOLUNTEER LAKE ASSESSMENT PROGRAM

STATIONID	STATION NAME
MONRIN48DL	48 DOLLY LANE
MONRINAD	STATION A DEEP SPOT
MONRINB	BEGUN INLET
MONRINC1	COLBURN INLET
MONRINC2	CONVERSE INLET
MONRING	GODDARD INLET
MONRINM	MARINA INLET
MONRINS3	SPILLWAY OUTLET
MONRINSL	STATE LINE INLET
MONRINSP	SWAN POINT INLET
MONRIN10	10
MONRINL	LOON BAY
MONRIND	DAPKAS INLET
MONRINSLINT	STATE LINE INTERMITTENT STREA
MONRINCM	CONVERSE MEADOW
MONRIND2	DAPKAS 2

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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Monomonac Lake, Rindge

2020 Data Summary

Recommended Actions: Great job sampling in 2020! Lake quality is generally representative of mesotrophic, or average conditions, however algal growth tends to fluctuate above the threshold for mesotrophic lakes. A storm event in July during drought conditions resulted in higher phosphorus and turbidity levels at several tributary stations indicating potential impacts from stormwater runoff. This highlights the importance of implementing stormwater management best practices within the watershed to reduce runoff to tributaries and the lake. Consider development of a watershed management plan to identify and quantify pollutant loads to the lake and make recommendations on management activities to reduce loading. For more information contact the NHDES Watershed Assistance Section at katherine.zink@des.nh.gov. Continue to investigate the source of elevated phosphorus and turbidity levels measured in Dapkas Inlet. Water clarity (transparency) improved in 2020 potentially due to drought conditions and the lack of stormwater runoff and flushing of wetland systems rich in dissolved organic matter which imparts a tea, or brown, color to the water. Continue to evaluate the relationship between water clarity, color and turbidity. Keep up the great work!

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

- ◆ **Chlorophyll-a:** Chlorophyll level was moderate in July and decreased to a low range in September. Average chlorophyll level increased slightly from 2019 and was less than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels since monitoring began.
- ◆ **Conductivity/Chloride:** Epilimnetic (upper water layer), Hypolimnetic (lower water layer), Begun Inlet, Colburn Inlet, Converse Inlet, Goddard Inlet, Loon Bay, Marina Inlet, State Line Inlet, State Line Int. Stream, and Swan Point conductivity and chloride levels were slightly greater than the state medians, yet less than a level of concern. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began. Dapkas Inlet and Dapkas 2 conductivity and chloride levels were within a low to average range for NH lakes.
- ◆ **Color:** Apparent color measured in the epilimnion indicates the water was moderately tea colored, or brown, in July and then became lightly tea colored in September.
- ◆ **Total Phosphorus:** Epilimnetic and Hypolimnetic phosphorus levels were low in July and then decreased in September. Average epilimnetic phosphorus level decreased from 2019 and was less than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates stable epilimnetic phosphorus levels since monitoring began. Begun Inlet, Colburn Inlet, Converse Inlet, and Goddard Inlet phosphorus levels fluctuated within a low range. Loon Bay, State Line Inlet and Swan Point phosphorus levels were slightly elevated in July following a storm event prior to sampling. State Line Int. Stream phosphorus levels were slightly elevated in July due to stagnant conditions. Marina Inlet phosphorus levels were slightly elevated in July and September. Dapkas Inlet phosphorus levels were greatly elevated in July and lab data noted colored water with sediment. Upstream Dapkas 2 phosphorus level was also elevated and lab data noted a high amount of sediment and organic matter in the sample.
- ◆ **Transparency:** Transparency measured without the viewscope (NVS) was below average (worse) in July and then increased (improved) to a high (good) range in September when water color was lighter. Average NVS transparency increased (improved) from 2019 and was slightly less than the state median. Historical trend analysis indicates significantly decreasing (worsening) NVS transparency since monitoring began. Viewscope (VS) transparency was slightly higher (better) than NVS transparency and likely a better measure of actual conditions.
- ◆ **Turbidity:** Epilimnetic, Begun Inlet, Colburn Inlet, Converse Inlet, Goddard Inlet, State Line Int. Stream, and Swan Point turbidity levels fluctuated within a low range. Hypolimnetic turbidity level was slightly elevated in September likely due to the formation and accumulation of organic compounds under anoxic (low dissolved oxygen) conditions. Loon Bay, Marina Inlet and State Line Inlet turbidity levels were slightly elevated in July following a storm event and sediment was noted in the Loon Bay sample. Dapkas Inlet and Dapkas 2 turbidity levels were elevated in July and lab data noted sediment and/or organic matter in the samples.
- ◆ **pH:** Epilimnetic pH level was within the desirable range 6.5-8.0 units and historical trend analysis indicates relatively stable epilimnetic pH levels since monitoring began. Begun Inlet, Colburn Inlet, Goddard Inlet, State Line Inlet, State Line Int. Stream, and Swan Point pH levels were slightly less than desirable. Hypolimnetic, Converse Inlet, Dapkas Inlet, Dapkas 2, Loon Bay, and Marina Inlet pH levels were slightly acidic and potentially critical to aquatic life.

Station Name	Table 1. 2020 Average Water Quality Data for LAKE MONOMONAC - RINDGE									
	Alk. (mg/L)	Chlor-a (ug/L)	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Trans. (m)		Turb. (ntu)	pH
							NVS	VS		
Epilimnion	3.4	3.88	24	55	82.6	9	2.91	3.00	0.49	6.62
Hypolimnion					82.0	11			1.58	6.02
Begun Inlet			24		82.0	7			0.50	6.34
Colburn Inlet			23		83.0	8			0.49	6.36
Converse Inlet			22		81.0	10			0.51	6.03
Dapkas 2			3		24.2	204			4.96	5.20
Dapkas Inlet			14		51.3	71			6.60	5.56
Goddard Inlet			25		83.8	10			0.84	6.30
Loon Bay			20		76.7	31			3.34	5.91
Marina Inlet			27		92.7	25			1.22	6.15
State Line Inlet			23		82.8	15			1.02	6.36
State Line Int. Stream			18		79.7	26			0.71	6.33
Swan Point Inlet			25		84.4	13			0.62	6.30

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	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Worsening	Data significantly decreasing.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.

