



Volunteer Lake Assessment Program Individual Lake Reports

MASSASECUM, LAKE, BRADFORD, NH

MORPHOMETRIC DATA

TROPIC CLASSIFICATION

KNOWN EXOTIC SPECIES

Watershed Area (Ac.):	6,044	Max. Depth (m):	15.2	Flushing Rate (yr ⁻¹)	1.9	Year	Trophic class	Variable Milfoil
Surface Area (Ac.):	402	Mean Depth (m):	3.9	P Retention Coef:	0.59	1987	MESOTROPHIC	
Shore Length (m):	6,400	Volume (m ³):	6,420,000	Elevation (ft):	631	2005	MESOTROPHIC	

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)	Very Good	Sampling data is 50 percent better than the water quality standards or thresholds for this 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	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
Primary Contact Recreation	Escherichia coli	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	All sampling data meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

LAKE MASSASECUM - FRENCH'S PARK TOWN BEACH	Escherichia coli	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.
LAKE MASSASECUM - MASSASECUM CASINO BEACH	Escherichia coli	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.
LAKE MASSASECUM - CAMP PIESAULE BEACH	Escherichia coli	No Data	No data for this parameter.

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



MASSASECUM LAKE BRADFORD

VOLUNTEER LAKE ASSESSMENT PROGRAM

STATIONID	STATION NAME
MASBRAB	BABCOOK BROOK
MASBRAC1	CASINO BROOK
MASBRAC2	COLBY BROOK
MASBRAD	DEEP SPOT
MASBRADB	DAVIS BROOK
MASBRAB	FRENCHES PARK BROOK
MASBRAH	HOWLETT BROOK
MASBRAM1	MOUNTAIN INN BROOK
MASBRADB	MELVIN BROOK OUTLET
MASBRADB2	DAVIS BROOK 2
MASBRAC	KERR
MASBRAP	PIERCE RD BROOK
MASBRAP2	PIERCE BROOK 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: 1/28/2021





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Massasecum Lake, Bradford

2020 Data Summary

Recommended Actions: Great job sampling in 2020! Lake quality has remained stable since monitoring began and is representative of borderline oligotrophic/mesotrophic conditions. Lake and tributary turbidity and phosphorus levels generally remain low following significant storm events, which is a positive sign. Pierce Rd. Brook experienced elevated phosphorus and turbidity levels following storm events in 2019, however levels remained low following storm events in 2020. Continue to monitor this station to better understand water quality. Colby Brook phosphorus levels were slightly above average following storm events but may be a result of drought conditions. Conductivity levels in Frenches Park Bk. have significantly increased since monitoring began and chloride levels indicate winter de-icing materials impact conductivity levels. Consider implementing low salt zones along Rt. 114 to prevent further degradation to the stream. For more information on salt reduction consult the Green SnowPro Certification program. Encourage shoreline properties to become certified LakeSmart through NHLAKES lake-friendly living program www.nhlakes.org/lakesmart/. Keep up the great work!

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

- ◆ **Chlorophyll-a:** Chlorophyll level was low in June and decreased in August. Average chlorophyll level remained stable with 2019 and was less than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates stable chlorophyll levels since monitoring began.
- ◆ **Conductivity/Chloride:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), Babcock Brook, Colby Brook, Howlett Brook, Outlet, Pierce Rd. Brook, and Pierce Brook 2 conductivity and/or chloride levels were within a low range. Historical trend analysis indicates relatively stable epilimnetic conductivity levels since monitoring began. Davis Brook conductivity and chloride levels were slightly greater than the state medians. Frenches Park Brook conductivity and chloride levels were elevated in August during drought and low flow conditions.
- ◆ **Color:** Apparent color measured in the epilimnion indicates the water was clear with little to no tea, or brown, coloring.
- ◆ **Total Phosphorus:** Epilimnetic, Metalimnetic and Hypolimnetic phosphorus levels were within a low range for those stations. Average epilimnetic phosphorus level increased slightly from 2019 and was less than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates stable, yet variable, epilimnetic phosphorus levels since monitoring began. Babcock Brook, Frenches Park Brook, Howlett Brook, Outlet, Pierce Rd. Brook, and Pierce Brook 2 phosphorus levels fluctuated within a low to moderate range. Davis Brook phosphorus levels were slightly higher but within an average range for that station. Colby Brook phosphorus levels were slightly above average for that station.
- ◆ **Transparency:** Transparency measured with (VS) and without (NVS) the viewscope was within an average range for the lake in June and then decreased (worsened) in August due to wave conditions. Average NVS transparency decreased slightly from 2019 but was higher (better) than the state medians. Historical trend analysis indicates stable NVS transparency since monitoring began.
- ◆ **Turbidity:** Deep spot and tributary turbidity levels fluctuated within a low range for each station.
- ◆ **pH:** Epilimnetic, Colby Brook, Frenches Park Brook, Howlett Brook, Pierce Rd. Brook, and Pierce Brook 2 pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began. Babcock Brook and Outlet pH levels were approximately equal to the low end of the desirable range. Metalimnetic, Hypolimnetic and Davis Brook pH levels were slightly acidic and less than desirable.

Station Name	Table 1. 2020 Average Water Quality Data for MASSASECUM LAKE - BRADFORD									
	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	4	2.78	8	25	37.2	7	4.38	4.70	0.41	6.71
Metalimnion					37.0	12			0.55	6.00
Hypolimnion					39.9	12			1.43	6.07
Babcock Brook					45.4	12			0.50	6.44
Colby Brook					26.4	19			0.74	6.54
Davis Brook			20		74.8	21			0.52	6.00
Frenches Park Brook			51		174.9	10			0.22	6.64
Howlett Brook					39.7	10			0.29	6.58
Melvin Bk. Outlet					46.3	7			0.29	6.44
Pierce Brook 2					28.7	14			0.22	6.66
Pierce Rd. Brook					27.8	14			0.08	6.53

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	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data show low variability.
pH (epilimnion)	Stable	Trend not significant; data show low variability.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.

