Volunteer Lake Assessment Program Individual Lake Reports

BRADLEY LAKE, ANDOVER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,624	**Max. Depth (m):**	20.1	**Flushing Rate (yr^{-1})**	1.4
Surface Area (Ac.):	169	**Mean Depth (m):**	6.1	**P Retention Coef:**	0.58
Shore Length (m):	4,500	**Volume (m^3):**	4,174,000	**Elevation (ft):**	828

TROPHIC CLASSIFICATION

Year	Trophic class
1993	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2018 305(b) report on the status of N.H. waters, and are based on data collected from 2008-2017. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm

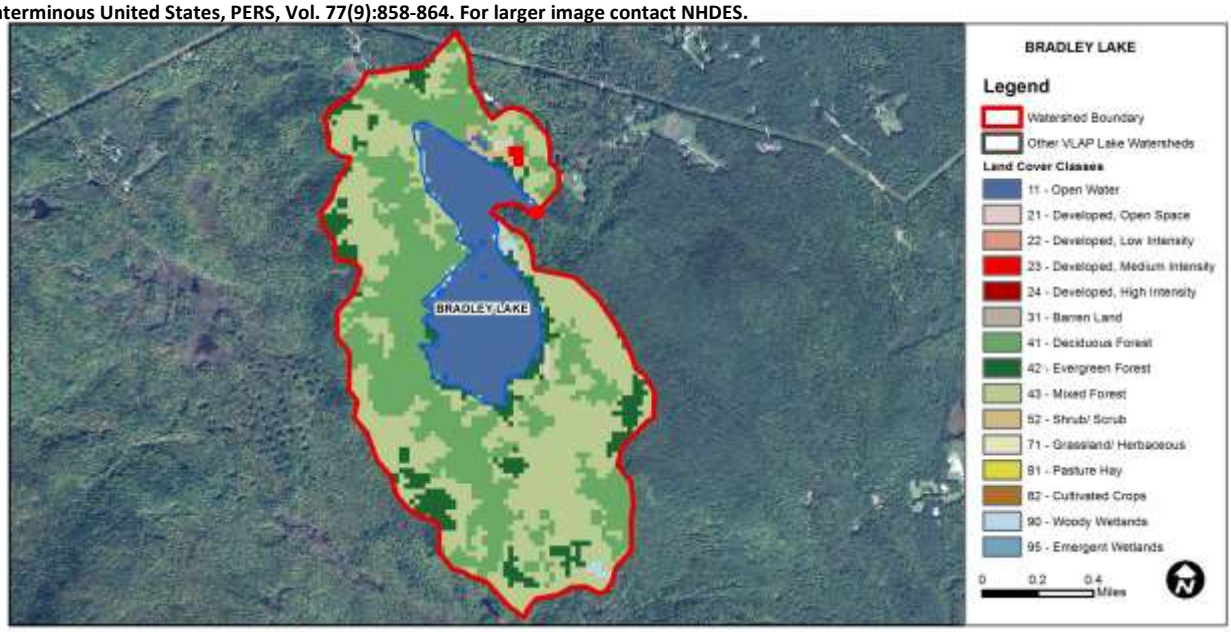
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
	pH	Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a large margin.
	Oxygen, Dissolved	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; however more data are necessary to fully assess the parameter.
	Dissolved oxygen satura	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Chlorophyll-a	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
Primary Contact Recreation	Escherichia coli	No Data	No data for this parameter.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

BRADLEY LAKE - CAMP MARLYN BEACH	Escherichia coli	No Data	No data for this parameter.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	17.1	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	0.51	Deciduous Forest	32.58	Pasture Hay	0
Developed-Low Intensity	0	Evergreen Forest	8.36	Cultivated Crops	0
Developed-Medium Intensity	0.23	Mixed Forest	40.26	Woody Wetlands	0.62
Developed-High Intensity	0	Shrub-Scrub	0.46	Emergent Wetlands	0

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Bradley Lake, Andover
2019 Data Summary

Recommended Actions: Lake water quality is indicative of oligotrophic, or high quality water, conditions. The lake serves as a public water supply and water quality data indicate the lake to be supportive of that use. The improving pH levels are a positive sign indicating the slow recovery of NH's surface waters from historical impacts of acid precipitation. For more information NHDES' "Acid Rain Status and Trends Report" can be found on the website. The increased frequency and intensity of storm events highlights the importance of minimizing impacts of stormwater runoff from the surrounding watershed. DES' "NH Homeowner's Guide to Stormwater Runoff" is a great resource for do-it-yourself stormwater projects around the lake. Keep up the great work!

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

- **Chlorophyll-a:** Chlorophyll level was low in July, decreased slightly from 2018 and was less than the state median and the threshold for oligotrophic 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), and Inlet conductivity levels were very low and much less than the state median. Historical trend analysis indicates relatively stable epilimnetic conductivity levels since monitoring began.
- **Color:** Apparent color measured in the epilimnion indicates the water was clear, with little to no tea (brown) coloring.
- **Total Phosphorus:** Epilimnetic, Metalimnetic and Hypolimnetic phosphorus levels were within a low range in July. Epilimnetic phosphorus level remained stable with 2018 and was much less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Inlet phosphorus levels were within a low range and slightly below average for that station which is good.
- **Transparency:** Transparency measured with (VS) and without (NVS) the viewscope was high (good) in July, remained stable with 2018 and was higher (better) than the state median. Historical trend analysis indicates relatively stable transparency since monitoring began.
- **Turbidity:** Epilimnetic and Hypolimnetic turbidity levels, while within a low range, were slightly above average for those stations and lab data noted light sediment in the epilimnion sample. Metalimnetic turbidity level was low and within a normal range for that station. Inlet turbidity level was within a low range for that station.
- **pH:** Epilimnetic, Metalimnetic and Inlet pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates significantly increasing (improving) epilimnetic pH levels since monitoring began. Hypolimnetic pH levels were slightly less than desirable.

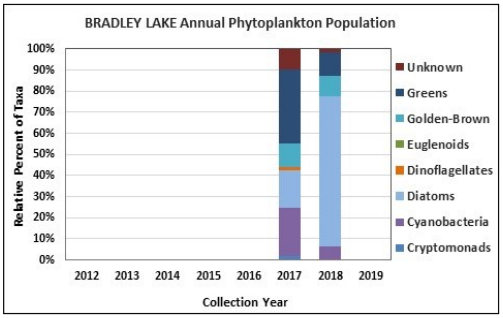

Table 1. 2019 Average Water Quality Data for BRADLEY LAKE - ANDOVER

Station Name	Alk. mg/l	Chlor-a ug/l	Color pcu	Cond. us/cm	Total P mg/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	2.8	1.41	20	17.4	5	5.65	6.40	0.74	6.63
Metalimnion				16.0	3			0.63	6.74
Hypolimnion				15.9	5			0.85	6.34
Inlet				23.1	7			0.55	6.64

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

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)

Historical Water Quality Trend Analysis

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