



## Volunteer Lake Assessment Program Individual Lake Reports

### BAXTER LAKE, FARMINGTON, NH

#### MORPHOMETRIC DATA

Watershed Area (Ac.):	2,439	Max. Depth (m):	4.6	Flushing Rate (yr <sup>-1</sup> ):	1.9
Surface Area (Ac.):	295	Mean Depth (m):	2.1	P Retention Coef:	0.7
Shore Length (m):	7,200	Volume (m <sup>3</sup> ):	2,452,500	Elevation (ft):	405

#### TROPHIC CLASSIFICATION

Year	Trophic class
1979	MESOTROPHIC
1995	MESOTROPHIC

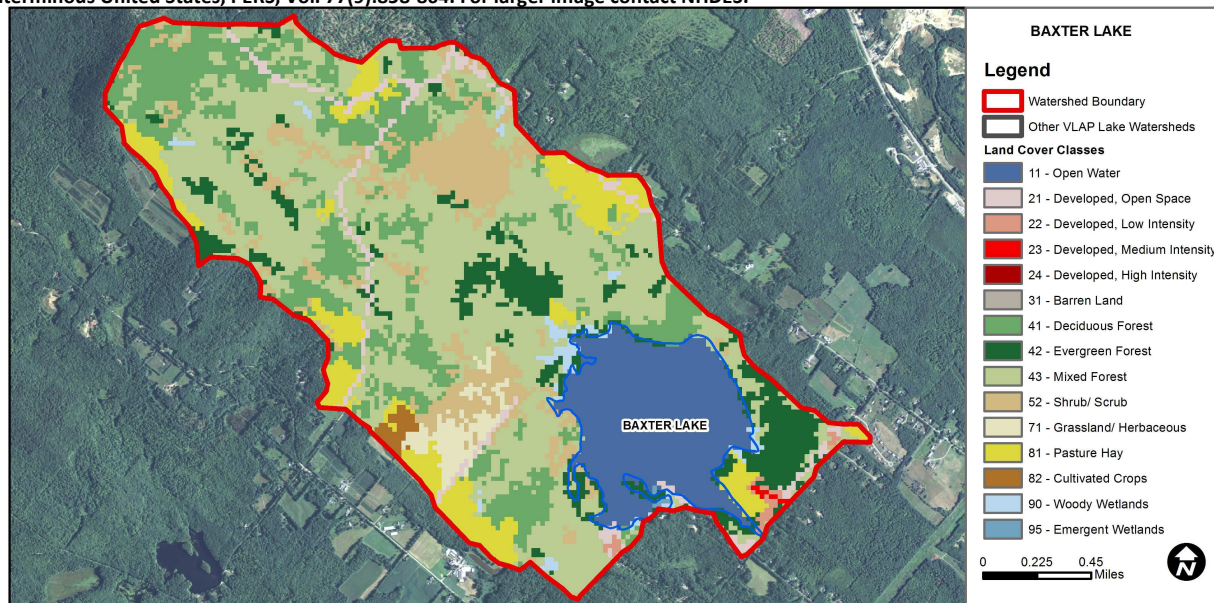
#### KNOWN EXOTIC SPECIES


The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at [www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm](http://www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm)

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; however more data are necessary to fully assess the parameter.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Oxygen, Dissolved	Slightly Bad	Data periodically exceed water quality standards or thresholds for this 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	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.

#### 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	12.1	Barren Land	0	Grassland/Herbaceous	1.76
Developed-Open Space	2.97	Deciduous Forest	16.84	Pasture Hay	8.1
Developed-Low Intensity	0.46	Evergreen Forest	8.75	Cultivated Crops	0.53
Developed-Medium Intensity	0.1	Mixed Forest	37.43	Woody Wetlands	1.17
Developed-High Intensity	0	Shrub-Scrub	9.71	Emergent Wetlands	0.07



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

## BAXTER LAKE, FARMINGTON

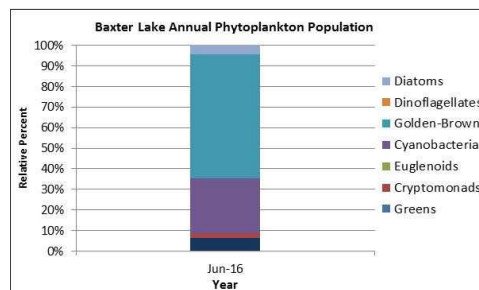
### 2016 DATA SUMMARY

**RECOMMENDED ACTIONS:** Deep spot conductivity levels have increased steadily since 2010 and conductivity levels have significant increased in Cruze Brook and Dinneen Brook since 2000. The application of winter de-icing materials to roads, parking lots, driveways, and walkways are likely impacting chloride and conductivity levels in the tributaries and lake. Educate local residents on best practices when applying de-icing materials to driveways and walkways. Encourage local road agents and winter maintenance companies to obtain a NH Voluntary Salt Applicator license through UNH Technology Transfer Center's Green SnowPro Certification program. More information can be found at [www.t2.unh.edu/road-salt-reduction](http://www.t2.unh.edu/road-salt-reduction). Lake chlorophyll and phosphorus levels have improved slightly since 2010 and we hope to see this trend continue. Education and outreach efforts aimed at reducing stormwater runoff from residential properties and maintaining vegetative buffers along the shoreline is encouraged. DES' "NH Homeowner's Guide to Stormwater Management" and UNH Cooperative Extension's "Landscaping at the Water's Edge" are great resources. Keep up the great work!

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

- ▲ **CHLOROPHYLL-A:** Chlorophyll levels were within a low to average range and increased slightly from June to August. The 2016 average chlorophyll level remained stable with 2014 and was less than the state median. Historical trend analysis indicates stable chlorophyll levels since monitoring began.
- ▲ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Hypolimnetic (lower water layer) and Outlet conductivity and chloride levels were within an average range for most NH lakes and slightly greater than the state medians. However, average epilimnetic conductivity levels were the highest measured since monitoring began. Historical trend analysis indicates stable epilimnetic conductivity with moderate variability between years. Cruze Brook and Dinneen Brook conductivity levels were elevated and approximately four times higher than the state median.
- ▲ **E. COLI:** Beach E. coli levels were very low throughout the summer and much less than the state standard of 88 cts/100mL for public beaches.
- ▲ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels increased slightly from June to August but remained within an average range for NH lakes. Average epilimnetic phosphorus decreased slightly from 2014, was slightly less than the state median, and was the lowest value measured since 2002. Historical trend analysis indicates stable epilimnetic phosphorus levels with moderate variability between years. Hypolimnetic phosphorus levels were within an average range in June and then increased to an elevated range in August. Dinneen Brook phosphorus levels were within an average range. Cruze Brook phosphorus levels were elevated in June and stagnant flow conditions were noted. Outlet phosphorus levels were average in June and elevated in August following a significant storm event that could have flushed nutrient rich waters through the Outlet.
- ▲ **TRANSPARENCY:** Transparency was average for the lake in June and decreased slightly in August following a significant storm event. Average transparency decreased slightly from 2014 and was slightly less than the state median. Historical trend analysis indicates stable transparency since monitoring began.
- ▲ **TURBIDITY:** Epilimnetic, Hypolimnetic, Cruze Brook, Dinneen Brook, and Outlet turbidity levels were within a low to average range on each sampling event, however epilimnetic turbidity was increased following the significant storm event in August.
- ▲ **pH:** Cruze Brook pH levels were slightly acidic and less than the desirable range of 6.5 - 8.0 units. Epilimnetic and Dinneen Brook pH levels were within the desirable range, however epilimnetic pH has historically fluctuated below the desirable range. Historical trend analysis indicates stable epilimnetic pH with moderate variability between years. Hypolimnetic and Outlet pH levels fluctuated below the desirable range on one sampling event.

Station Name	Table 1. 2016 Average Water Quality Data for BAXTER LAKE-FARMINGTON									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	5.3	3.80	13	68.3		11	2.59	3.13	1.05	6.80
Hypolimnion				68.8		20			1.15	6.58
Beach 1					10					
Beach 2					10					
Beach 3					10					
Cruze Brook				190.2		26			0.82	5.76
Dinneen Brook				160.7		9			1.11	6.77
Outlet				68.4		15			0.84	6.48



**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

- Alkalinity:** 4.9 mg/L
- Chlorophyll-a:** 4.58 mg/m<sup>3</sup>
- Conductivity:** 40.0 uS/cm
- Chloride:** 4 mg/L
- Total Phosphorus:** 12 ug/L
- Transparency:** 3.2 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 variable.	Chlorophyll-a	Stable	Trend not significant; data show low variability.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.

