



## Volunteer Lake Assessment Program Individual Lake Reports

### MOUNTAIN LAKE, UPPER, HAVERHILL, NH

#### MORPHOMETRIC DATA

#### TROPHIC CLASSIFICATION

#### KNOWN EXOTIC SPECIES

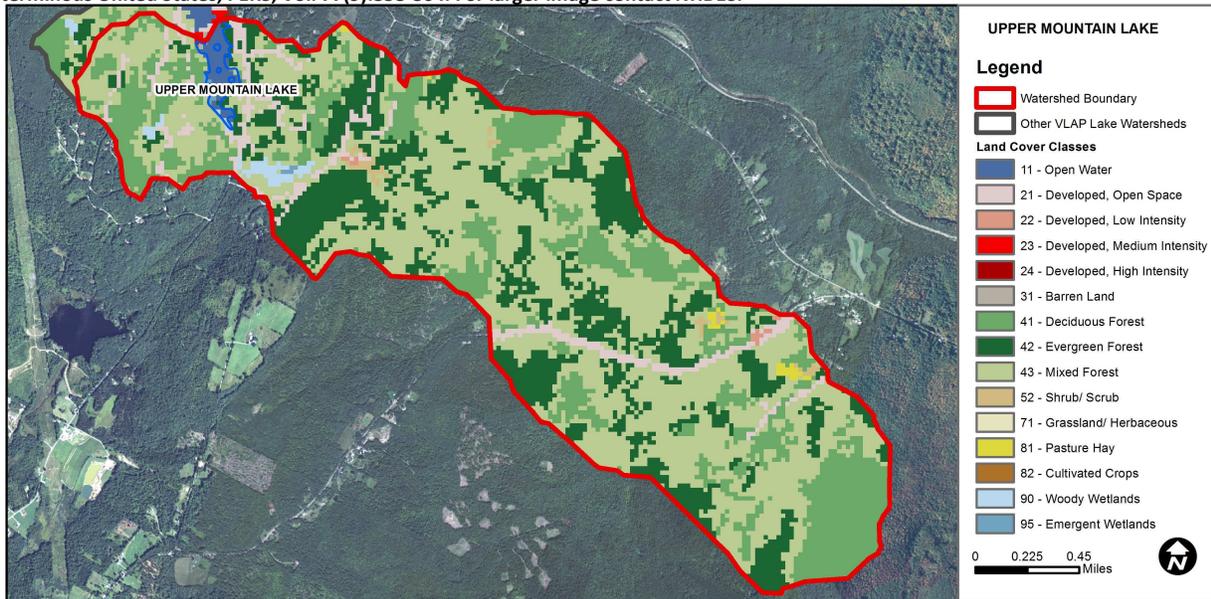
Watershed Area (Ac.):	2,155	Max. Depth (m):	5.5	Flushing Rate (yr <sup>-1</sup> )	17.1	Year	Trophic class	
Surface Area (Ac.):	30	Mean Depth (m):	2.5	P Retention Coef:		1984	MESOTROPHIC	
Shore Length (m):		Volume (m <sup>3</sup> ):	232,500	Elevation (ft):	776	2006	EUTROPHIC	

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Cautionary	<5 samples and median is > threshold. More data needed.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Good	>=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
	Chlorophyll-a	Good	At least 10 samples with 1 sample but < 10% of samples exceeding criteria.

#### 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	1	Barren Land	0.03	Grassland/Herbaceous	0
Developed-Open Space	4.72	Deciduous Forest	21.45	Pasture Hay	0.35
Developed-Low Intensity	0.17	Evergreen Forest	22.87	Cultivated Crops	0
Developed-Medium Intensity	0.02	Mixed Forest	46.8	Woody Wetlands	0.75
Developed-High Intensity	0	Shrub-Scrub	0.56	Emergent Wetlands	0.13



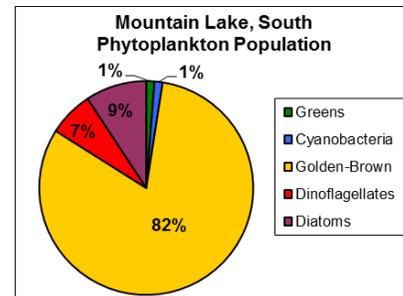
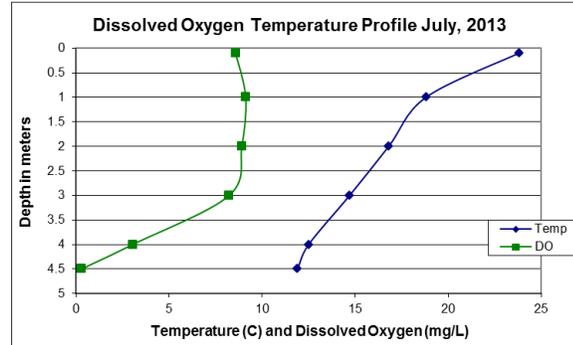
# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

## MOUNTAIN LAKE, SOUTH (UPPER), HAVERHILL, NH

### 2013 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- ♣ **CHLOROPHYLL-A:** Chlorophyll levels were elevated in July and much greater than the state median. Historical trend analysis indicates highly variable chlorophyll levels between years.
- ♣ **CONDUCTIVITY/CHLORIDE:** Deep spot and Monteau Inlet conductivity were slightly elevated above the state median. Historical trend analysis indicates highly variable epilimnetic conductivity between years.
- ♣ **E. COLI:** Beach E. coli levels were below the state standard for public beaches.
- ♣ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were relatively low, decreased greatly from 2012, and were less than the state median. Historical trend analysis indicates highly variable epilimnetic phosphorus between years. Hypolimnetic phosphorus was average for most lakes. Monteau Inlet phosphorus was low.
- ♣ **TRANSPARENCY:** Transparency improved from 2012 however remained lower than normal for the lake. Historical trend analysis indicates highly variable transparency between years.
- ♣ **TURBIDITY:** Epilimnetic turbidity was slightly elevated likely due to the increased algal growth or suspended sediments from a recent storm event. Monteau Inlet turbidity was slightly elevated potentially due to a recent storm event.
- ♣ **pH:** Hypolimnetic pH levels were less than desirable and epilimnetic pH levels were within a good range of 6.5-8.0 units.
- ♣ **DISSOLVED OXYGEN:** Dissolved oxygen levels were lower in the meter above the bottom and then recovered to healthy levels in the epilimnion.
- ♣ **RECOMMENDED ACTIONS:** Increase monitoring frequency to two or three times per summer to better assess seasonal and historical trends and decrease variability. Phosphorus and transparency trends have worsened particularly since 2007. Chlorophyll levels have also remained higher since 2007. The increased frequency and intensity of significant storm events has likely contributed excess nutrients and sediment to the lake. Efforts should be made to stabilize dirt roads and steep slopes prone to erosion during storm events. Lake residents should make efforts to reduce stormwater runoff from their properties. DES' "Homeowner's Guide to Stormwater Management" is a great resource.



**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:** 6.5-8.0 (unless naturally occurring)

**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

Station Name	Alk.	Chlor-a	Cond.	E. Coli	Total P	Trans.	Turb.	pH
	mg/l	ug/l	uS/cm	#/100ml	ug/l	m	ntu	
Beach				34		NVS		
Epilimnion	10.3	8.46	67.6		9	2.10	1.93	6.54
Hypolimnion			75.5		12		3.81	6.29
Monteau Inlet			76.1		8		1.73	6.86

#### HISTORICAL WATER QUALITY TREND ANALYSIS

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

