Volunteer Lake Assessment Program Individual Lake Reports

MESSER POND, NEW LONDON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,408	**Max. Depth (m):**	7.6	**Flushing Rate (yr^{-1}):**	4.7
Surface Area (Ac.):	67	**Mean Depth (m):**	2.6	**P Retention Coef:**	0.53
Shore Length (m):	3,200	**Volume (m^3):**	704,000	**Elevation (ft):**	1105

TROPHIC CLASSIFICATION

Year	Trophic class
1981	MESOTROPHIC
1996	MESOTROPHIC

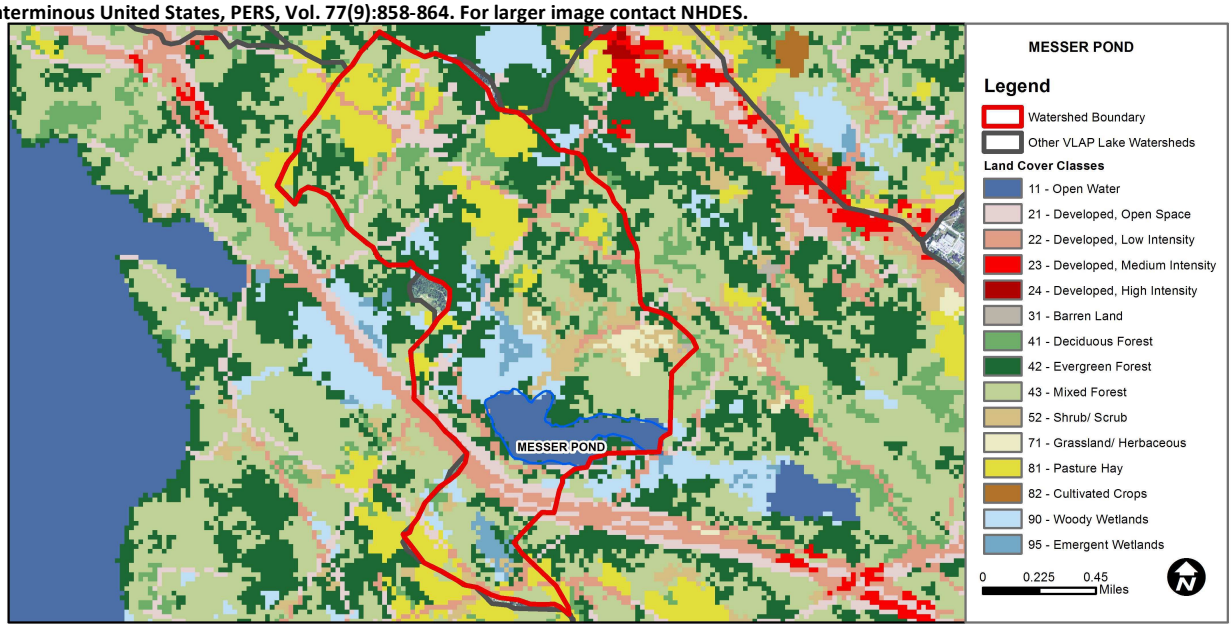
KNOWN EXOTIC SPECIES

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)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of 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.



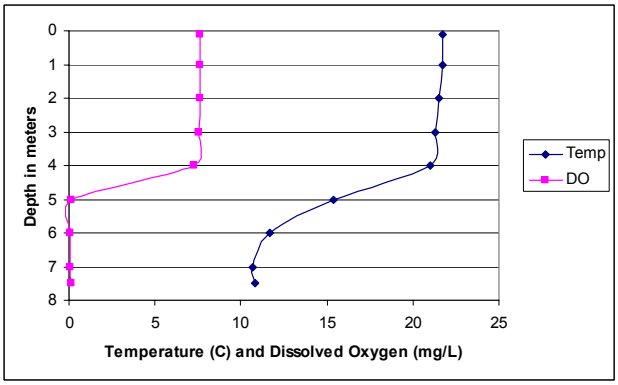
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	6.45	Barren Land	0.1	Grassland/Herbaceous	1.45
Developed-Open Space	6.29	Deciduous Forest	5.19	Pasture Hay	13.19
Developed-Low Intensity	5.96	Evergreen Forest	23.27	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	23.73	Woody Wetlands	6.57
Developed-High Intensity	0	Shrub-Scrub	5.23	Emergent Wetlands	2.16

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
MESSER POND, NEW LONDON, NH
2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic)*

- **CHLOROPHYLL-A:** Chlorophyll levels were slightly above average and greater than the NH lake median however decreased from 2011 levels. Historical trend analysis indicates a relatively stable chlorophyll level since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Conductivity was elevated in Brown and Nutter Inlets which receive runoff from I-89, a salted highway. Chloride levels were slightly elevated at County Rd Inlet and the Epilimnion (upper water layer) indicating road salting practices negatively impact the pond.
- **E. COLI:** E. coli levels were well below state standards for public beaches and surface waters.
- **TOTAL PHOSPHORUS:** Phosphorus levels were elevated in Columbus Ave., County Rd 2, and Brown Inlets. Turbidity was also elevated and field data sheets indicate sediments in the samples which likely caused the elevated phosphorus. Tributaries were also at extremely low flows and dry by the end of the summer. Deep spot phosphorus levels were average and historical trend analysis indicates epilimnetic phosphorus levels fluctuate from year to year.
- **TRANSPARENCY:** Transparency improved as the summer progressed and was higher than 2011. Historical trend analysis indicates a significantly decreasing (worsening) transparency since monitoring began.
- **TURBIDITY:** Turbidities were elevated at numerous tributaries due to low flow conditions.
- **PH:** pH levels were lower than desirable and potentially critical to aquatic life.
- **RECOMMENDED ACTIONS:** The significantly decreasing transparency indicates a potential increase in suspended sediments in the lake. Stormwater runoff may impact the lake and it is recommended to educate homeowners on ways to reduce stormwater runoff from their properties. Brown and Nutter Inlets contribute to the elevated conductivity as well as sedimentation. Discuss the potential of treating stormwater runoff from the I-89 before it enters the lake. Consult the UNH Stormwater Center documents for recommendations on addressing stormwater runoff from roads.

Dissolved Oxygen & Temperature Profile



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)

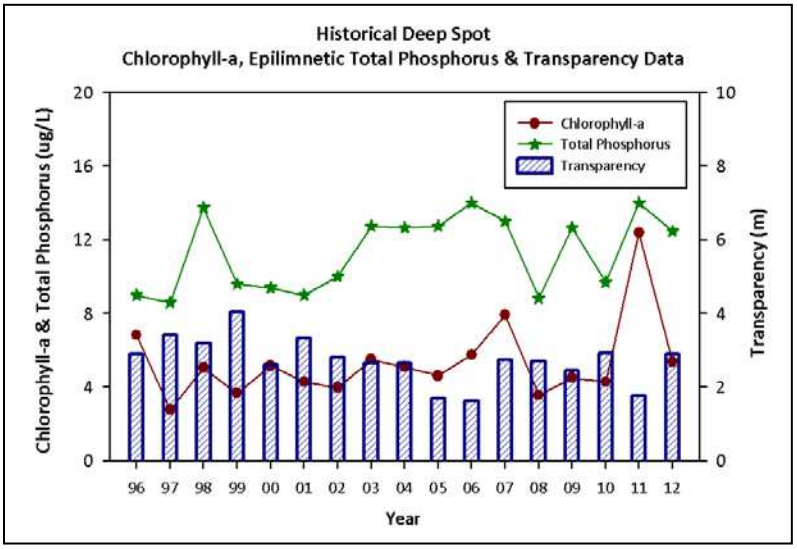
NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Table 1. 2012 Average Water Quality Data for MESSER POND

Station Name	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m NVS	Turb. ntu	pH
143 Forest Acres Rd					3				
253 Forest Acres Rd					2				
370 Fieldstone Ln					0				
Brown Inlet				294.1		113		16.2	6.12
Columbus Ave				50.3		43		4.69	6.22
County Rd 2			15	141.6		45		8.70	6.59
County Rd Inlet			17	110.6		21		2.45	6.16
Deep Epilimnion	10.5	5.38	21	121.4		12	2.89	1.21	6.49
Deep Hypolimnion				126.7		26		2.98	6.12
Fieldstone And County				124.2		29		4.35	6.52
Fieldstone Lane				53.2		19		1.34	5.50
Nutter Inlet				314.6		23		2.62	6.43
Outlet At Bog Rd				117.3		11		1.13	6.68

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Stable	Data not significantly increasing or decreasing.
Transparency	Degrading	Data significantly decreasing (worsening).
Phosphorus (epilimnion)	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.



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