



Volunteer Lake Assessment Program Individual Lake Reports

MARTIN MEADOW POND, LANCASTER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	960	Max. Depth (m):	9.1	Flushing Rate (yr ⁻¹):	0.9
Surface Area (Ac.):	118	Mean Depth (m):	4.1	P Retention Coef:	0.71
Shore Length (m):	3,200	Volume (m ³):	1,954,000	Elevation (ft):	1068

TROPIC CLASSIFICATION

Year	Trophic class
1994	MESOTROPHIC
2008	MESOTROPHIC

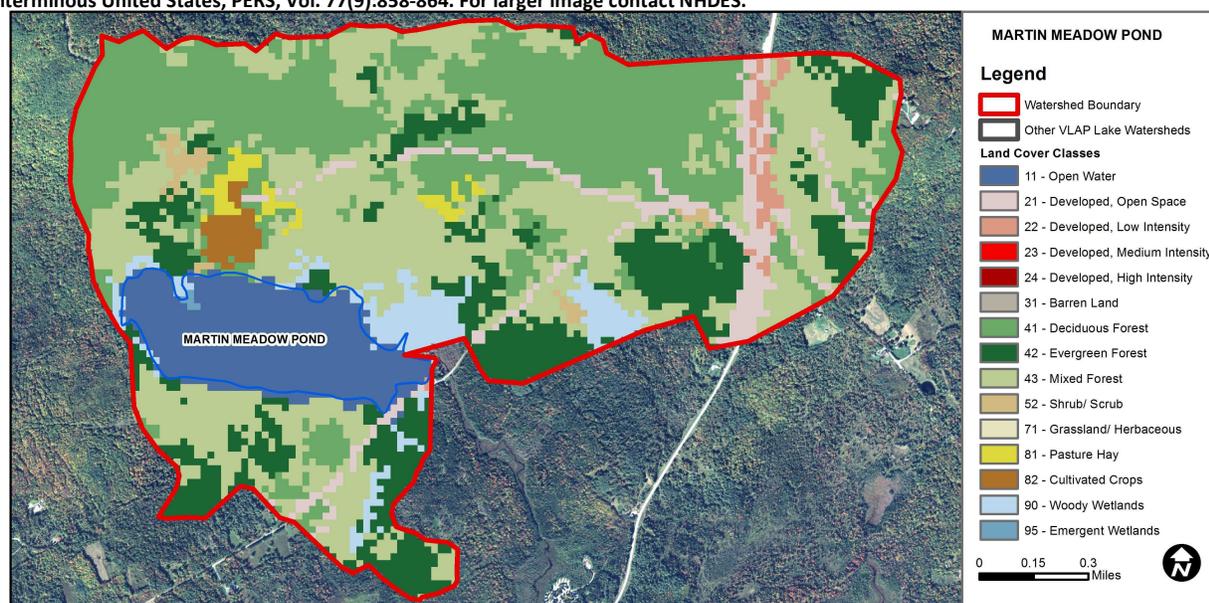
KNOWN EXOTIC SPECIES

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

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Cautionary	There are < 10 samples with 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Cyanobacteria hepatoto	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Good	There are at least 10 samples with one, but < 10% of samples, exceeding indicator.

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	9.7	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	4.96	Deciduous Forest	29.52	Pasture Hay	1.17
Developed-Low Intensity	1.06	Evergreen Forest	15.78	Cultivated Crops	1.04
Developed-Medium Intensity	0	Mixed Forest	31.87	Woody Wetlands	4.02
Developed-High Intensity	0	Shrub-Scrub	0.87	Emergent Wetlands	0.08



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

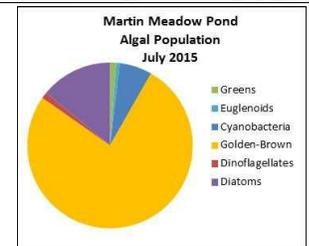
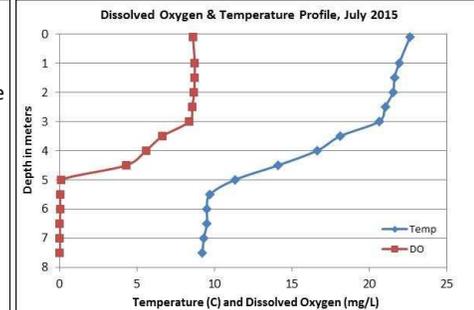
MARTIN MEADOW POND, LANCASTER

2015 DATA SUMMARY

RECOMMENDED ACTIONS: The July algal bloom highlights the delicate balance of a pond ecosystem. The pond has experienced elevated algal growth periodically since monitoring began and it appears that small increases in nutrient levels can lead to algal blooms. Historical agricultural operations within the watershed may cause short term pulses of nutrients either through groundwater or stormwater runoff that then promote algal growth. This highlights the importance of minimizing impacts from other nutrient sources such as septic systems, fertilizers and sediments through regular maintenance and stormwater management activities in the watershed. Consult DES' "N.H. Homeowner's Guide to Stormwater Management" and also UNH Cooperative Extension's "Landscaping at the Water's Edge" document to encourage vegetative buffers along the shoreline. These can help filter nutrients prior to them entering the lake. Keep up the great work and contact the VLAP Coordinator for a biologist visit in 2016.

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

- **CHLOROPHYLL-A:** Chlorophyll levels were greatly elevated and indicative of an algal bloom in July. The July phytoplankton sample indicated Golden-Brown algae were dominant and likely the cause of the algal bloom. Chlorophyll decreased to slightly above average levels in August. The 2015 average chlorophyll level much greater than the state median and the highest (worst) measured since monitoring began. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Deep spot, near shore, Inlet, and Outlet conductivity and chloride levels were slightly elevated and greater than the state medians. Historical trend analysis indicates stable epilimnetic (upper water layer) conductivity since monitoring began.
- **E. COLI:** Inlet, McCarten, Weeks, and Whithed E. coli levels were low on each sampling event and much less than the state standard for public beaches (88 cts/100 mL) and surface waters (406 cts/100 mL).
- **TOTAL PHOSPHORUS:** Epilimnetic and Hypolimnetic (lower water layer) phosphorus levels were slightly above average in July and likely contributed to the algal bloom. Phosphorus decreased to within a low to average range in August at both stations. Average epilimnetic phosphorus increased from 2014 and was approximately equal to the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus since monitoring began. Near shore stations, Inlet and Outlet phosphorus levels were remained low.
- **TRANSPARENCY:** Transparency was lower in July likely due to the algal bloom but improved (increased) in August. Average transparency remained stable with 2014 and was slightly less than the state median. Historical trend analysis indicates highly variable transparency since monitoring began and this tends to correlate with the variable chlorophyll levels.
- **TURBIDITY:** Epilimnetic turbidity was slightly elevated and above average in July and August. Hypolimnetic turbidity was within an average range for that station. Inlet, McCarten, Weeks, and Whithed turbidities were elevated in August potentially due to algal growth along the shoreline, low water levels, and/or a recent rain event. Outlet turbidity was low.
- **pH:** Deep spot, near shore, Inlet, and Outlet pH levels were within the desirable range 6.5-8.0 units, however historical hypolimnetic pH has fluctuated below the desirable range. Historical trend analysis indicates stable epilimnetic pH since monitoring began.



Station Name	Table 1. 2015 Average Water Quality Data for MARTIN MEADOW POND									
	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	17.0	19.74	18	100.0		12	2.66	3.49	1.40	7.01
Hypolimnion				103.4		13			1.31	6.83
Inlet			17	102.6	10	9			1.23	7.20
McCarten			17	104.3	10	9			1.36	7.23
Outlet			18	101.1		8			0.99	7.19
Weeks			17	104.9	10	8			1.25	7.23
Whithed			18	101.6	10	7			1.18	7.20

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:** 4.9 mg/L
- Chlorophyll-a:** 4.58 mg/m³
- Conductivity:** 40.0 uS/cm
- Chloride:** 4 mg/L
- Total Phosphorus:** 12 ug/L
- Transparency:** 3.2 m
- pH:** 6.6

HISTORICAL WATER QUALITY TREND ANALYSIS

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

