



Volunteer Lake Assessment Program Individual Lake Reports

NORTHWOOD LAKE, NORTHWOOD, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	15,384	Max. Depth (m):	6.3	Flushing Rate (yr ⁻¹)	3.9
Surface Area (Ac.):	687	Mean Depth (m):	3.1	P Retention Coef:	0.53
Shore Length (m):	13,000	Volume (m ³):	8,488,000	Elevation (ft):	514

TROPHIC CLASSIFICATION

Year	Trophic class
2000	MESOTROPIC
2000	MESOTROPIC

KNOWN EXOTIC SPECIES

Variable Milfoil

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

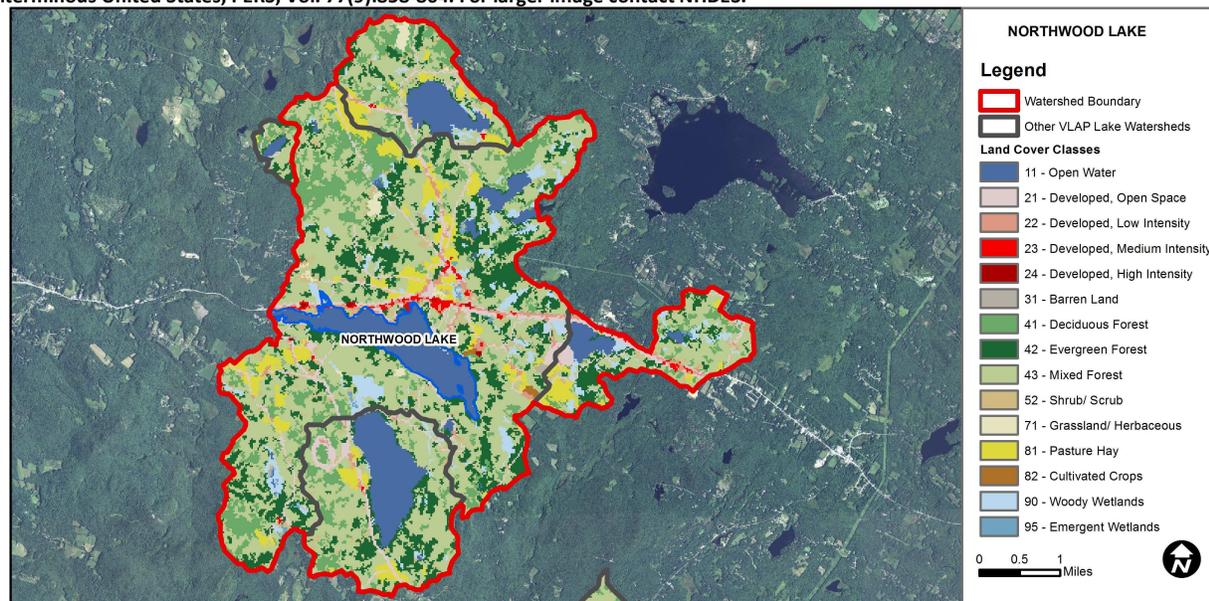
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	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	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. One or more exceedance is >2X criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

Beach Name	Parameter	Category	Comments
NORTHWOOD LAKE - LYNN GROVE ASSOCIATION BEACH	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.
NORTHWOOD LAKE - CAMP WAH-TUT-CA BEACH	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.
NORTHWOOD LAKE - TOWN BEACH	Escherichia coli	Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. One or more exceedance is >2X 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	11.4	Barren Land	0.13	Grassland/Herbaceous	0.57
Developed-Open Space	5.57	Deciduous Forest	11.28	Pasture Hay	5.87
Developed-Low Intensity	1.69	Evergreen Forest	15.9	Cultivated Crops	0.13
Developed-Medium Intensity	0.71	Mixed Forest	39.73	Woody Wetlands	4.04
Developed-High Intensity	0.09	Shrub-Scrub	2.48	Emergent Wetlands	0.29



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

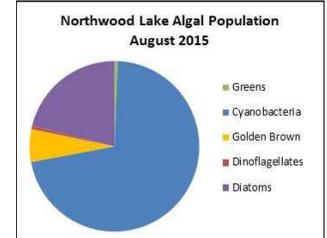
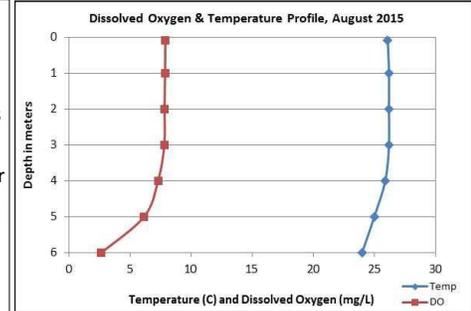
NORTHWOOD LAKE, NORTHWOOD

2015 DATA SUMMARY

RECOMMENDED ACTIONS: Flat Meadows Bk. is an area of concern and field data note significant stormwater runoff to this tributary. Horse Farm phosphorus was greatly elevated in June following significant storm event and may be due to fertilizer use or storage on the property. Contact the N.H. Dept. of Agriculture to conduct site inspections of agricultural properties located along tributary systems with elevated E. coli and phosphorus levels to ensure best management practices for manure and fertilizer storage and disposal are being followed and to identify areas of stormwater runoff on these properties. Consider developing a watershed management plan to identify and quantify pollutant loads in the watershed and make recommendations on ways to reduce pollutant loading. Continue monitoring phosphorus and E. coli levels which are important components of management plans and watershed modeling. Keep up the great work!

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

- **CHLOROPHYLL-A:** Chlorophyll levels were moderate in June and decreased to lower levels in August. Average chlorophyll levels remained stable from 2014 and were slightly less than the state median. Historical trend analysis indicates stable chlorophyll levels since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride levels were generally slightly greater than the state medians but not above levels of concern. Rt. 4 E and W Inlets, Pleasant Pond Inlet and Rt. 107 Inlet conductivity levels were slightly higher due to the impacts of local roadways. Historical trend analysis indicates relatively stable epilimnetic (upper water layer) conductivity with moderate variability between years.
- **E. COLI:** Rt. 4 W Inlet, Town Beach and Old Dump Rd. E. coli levels were very low in June. Horse Farm, Rt. 4 E Inlet and Lower WTC Inlet E. coli levels were elevated in June but not above the state standard of 406 cts/100 mL for surface waters. Pleasant Pond Inlet E. coli levels were slightly elevated in August but not above the state standard. Flat Meadows Bk. E. coli levels were elevated and greater than the state standard in June and August potentially due to agricultural activities. Rt. 107 Inlet E. coli levels were also elevated and greater than the state standard in August.
- **TOTAL PHOSPHORUS:** Epilimnetic and Hypolimnetic (lower water layer) phosphorus levels were low in August and less than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Rt. 4 E and W Inlet and Town Beach phosphorus levels were within low to average ranges in June. Pleasant Pond Inlet and Rt. 107 Inlet phosphorus levels were within low to average ranges in August. Horse Farm Inlet phosphorus levels were extremely elevated in June during a significant storm event but were very low in August. Flat Meadows Bk. and Bridge Inlet phosphorus levels were slightly elevated but within average ranges for those stations. Lower WTC Inlet phosphorus was elevated in August.
- **TRANSPARENCY:** Transparency was low in July but increased (improved) in August, and average transparency improved from 2014 and was approximately equal to the state median. Transparency measured with the viewscope (VS) was much better than that measured without and likely a better representation of conditions. Historical trend analysis indicates relatively stable transparency with moderate variability since monitoring began.
- **TURBIDITY:** Epilimnetic and hypolimnetic turbidities were slightly elevated in June when algal growth was higher. Rt. 4 E and W Inlet, Horse Farm, Bridge Inlet, Town Beach, Outlet, and Old Dump Rd. turbidities were within average ranges for those stations. Flat Meadows Bk. turbidity was slightly elevated in June and August. Lower WTC Inlet and Rt. 107 Inlet turbidities were slightly elevated in June.
- **pH:** Epilimnetic pH was within the desirable range 6.5-8.0 units and historical trend analysis indicates relatively stable epilimnetic pH with moderate variability. Hypolimnetic and tributary pH levels were slightly acidic and generally less than desirable.



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

Station Name	Table 1. 2015 Average Water Quality Data for NORTHWOOD LAKE									
	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	6.0	4.25	19	85.7		8	3.35	4.83	1.17	6.78
Hypolimnion				84.3		9			1.28	6.45
Bridge Inlet			16	80.4	80	27			1.14	6.24
Flat Meadows Brook Inlet				58.0	505	25			2.23	5.85
Horse Farm			21	85.5	140	451			1.20	6.61
Lower WTC Inlet			4	36.1	120	44			1.74	5.42
Old Dump Rd			21	87.7	10	11			1.31	6.63
Outlet			18	88.6					1.97	6.51
Pleasant Pd Inlet			21	101.8	250	24			3.93	6.30
Rte. 107 Inlet			22	91.1	450	14			1.11	5.64
Rte. 4 E Inlet			27	119.5	390	27			2.00	6.13
Rte. 4 W Inlet				98.6	10	20			1.38	5.30
Town Beach				91.0	12	12			1.56	6.51

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 moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.

