



# Volunteer Lake Assessment Program Individual Lake Reports

## WAUKEWAN, LAKE, NEW HAMPTON, NH

### MORPHOMETRIC DATA

Watershed Area (Ac.):	7,551	Max. Depth (m):	21.4	Flushing Rate (yr <sup>-1</sup> )	0.6
Surface Area (Ac.):	913	Mean Depth (m):	6.7	P Retention Coef:	0.7
Shore Length (m):	13,000	Volume (m <sup>3</sup> ):	24,809,000	Elevation (ft):	539

### TROPHIC CLASSIFICATION

Year	Trophic class
1982	OLIGOTROPHIC
1994	OLIGOTROPHIC

### 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](http://www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm)

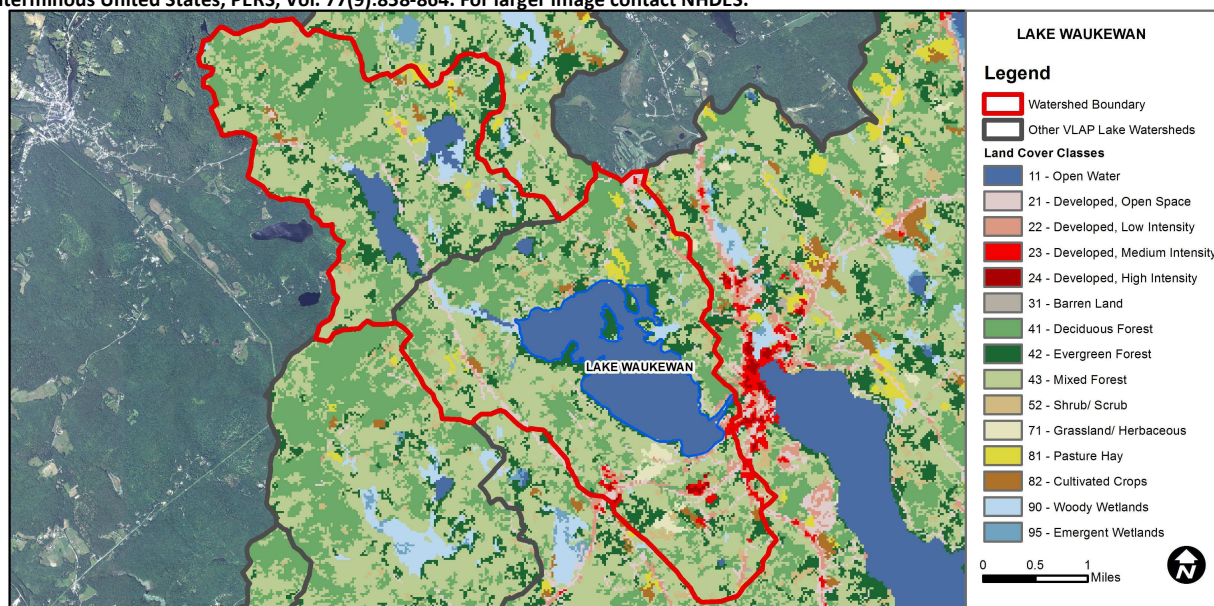
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
	Oxygen, Dissolved	Bad	Data periodically exceed water quality standards or thresholds for this parameter by a large margin.
	Dissolved oxygen saturation	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	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Cyanobacteria hepatotoxin	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

### BEACH PRIMARY CONTACT ASSESSMENT STATUS

LAKE WAUKEWAN - TOWN BEACH	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
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### 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	14.6	Barren Land	0.02	Grassland/Herbaceous	0.79
Developed-Open Space	3	Deciduous Forest	25.15	Pasture Hay	1.08
Developed-Low Intensity	1.29	Evergreen Forest	9.6	Cultivated Crops	0.74
Developed-Medium Intensity	0.56	Mixed Forest	39.35	Woody Wetlands	1.81
Developed-High Intensity	0.14	Shrub-Scrub	1.83	Emergent Wetlands	0.05



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

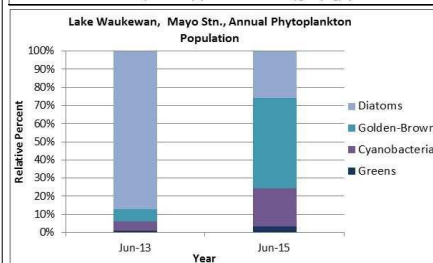
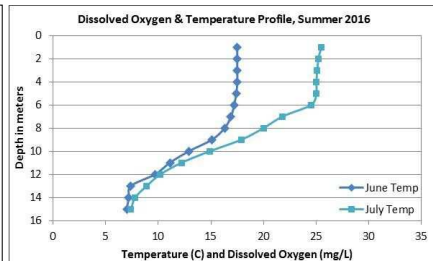
## WAUKEWAN LAKE, MAYO STN., MEREDITH

### 2016 DATA SUMMARY

**RECOMMENDED ACTIONS:** Lake water quality is representative of Oligotrophic, or high quality water, conditions. The drought conditions in 2016 and lack of stormwater runoff and wetland influence likely helped to improve water clarity as it was the best measured since monitoring began. This highlights the importance of managing stormwater runoff from areas vulnerable to erosion, steep slopes, shoreline, dirt/gravel roads, and impervious surfaces. Conductivity has increased in the lake likely due to winter road, parking lot, driveway, and walkway maintenance. Encourage local road agents and winter maintenance companies to obtain a NH Voluntary Salt Applicators License through UNH Technology Transfer Center's Green SnowPro Certification program. Encourage road agents and homeowner's to clean up roadside ditches and culverts of any leftover sand/salt mixtures applied during winter months. Keep up the great work!

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

- **CHLOROPHYLL-A:** Chlorophyll levels were stable and low from June to September. The 2016 average chlorophyll level increased slightly from 2015 and was less than the state median. Historical trend analysis indicates relatively stable chlorophyll levels since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Deep spot, Inlet, Outlet, and Perkins Cove conductivity and chloride levels were slightly elevated and greater than the state medians, however chloride levels did not exceed the state chronic chloride standard. Historical trend analysis indicates significantly increasing (worsening) epilimnetic (upper water layer) conductivity levels since monitoring began. Camp Rd. Trib., EE Brook and Mayo Farm Bk. conductivity and chloride levels were low and less than the state medians. Sayward Bk. and Sayward Bk. at Rock Ridge conductivity and chloride were slightly greater than the state medians however not above a level of concern.
- **TOTAL PHOSPHORUS:** Epilimnetic and Metalimnetic (middle water layer) phosphorus levels were stable and low from June to September. Average epilimnetic phosphorus level increased from 2015 but remained much less than the state median. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus levels since monitoring began. Hypolimnetic (lower water layer) phosphorus levels were low in June and September and slightly elevated in July. Camp Rd. Trib., EE Brook, Inlet, Mayo Farm Bk., Outlet, and Perkins Cove phosphorus levels were low. Sayward Bk. and Sayward Bk. at Rock Ridge phosphorus levels were slightly higher during spring runoff sampling, however were within an average range for those stations.
- **TRANSPARENCY:** Transparency measured with the viewscope (VS) was below average in June due to wind and wave conditions, then increased (improved) in July and again in September. Transparency was measured without the viewscope (NVS) in July and was high (good). Average transparency improved from 2015 and was much higher (better) than the state median. Historical trend analysis indicates significantly increasing (improving) transparency since monitoring began.
- **TURBIDITY:** Deep spot and tributary turbidity levels were within low to average ranges and not above a level of concern.
- **pH:** Epilimnetic, Metalimnetic, Inlet, Mayo Farm Bk., Outlet, Perkins Cove, Sayward Bk., and Sayward Bk. at Rock Ridge pH levels were within the desirable range 6.5-8.0 units. Hypolimnetic, Camp Rd. Trib. And EE Brook pH levels were slightly less than desirable. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began.



Station Name	Table 1. 2016 Average Water Quality Data for WAUKEWAN LAKE, MAYO STN.								
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	9.0	2.44	23	122.5	6	8.50	8.28	0.35	7.03
Metalimnion				119.0	6			0.57	7.07
Hypolimnion				119.6	13			1.00	6.39
Camp Rd. Trib.			3	27.4	7			0.88	6.44
EE Brook			3	34.2	11			0.36	6.48
Inlet			16	96.2	7			0.67	6.87
Mayo Farm Bk.			3	35.1	7			0.84	6.79
Outlet			25	120.5	6			0.49	6.98
Perkins Cove			24	121.7	7			0.51	7.07
Sayward Bk.			14	89.5	14			1.41	6.84
Sayward Bk. Rock Ridge			14	84.6	19			1.44	6.84

**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/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

#### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data show low variability.	Transparency	Improving	Data significantly increasing.
			Phosphorus (epilimnion)	Improving	Data significantly decreasing.

