



## Volunteer Lake Assessment Program Individual Lake Reports

### RUST POND, WOLFEBORO, NH

#### MORPHOMETRIC DATA

#### TROPHIC CLASSIFICATION

#### KNOWN EXOTIC SPECIES

Watershed Area (Ac.):	1,651	Max. Depth (m):	12.2	Flushing Rate (yr <sup>-1</sup> ):	0.6	Year	Trophic class	
Surface Area (Ac.):	210	Mean Depth (m):	7.4	P Retention Coef:	0.68	1981	MESOTROPIC	
Shore Length (m):	4,800	Volume (m <sup>3</sup> ):	6,310,500	Elevation (ft):	579	2000	OLIGOTROPIC	

The Waterbody Report Card tables are generated from the DRAFT 2018 305(b) report on the status of N.H. waters, and are based on data collected from 2008-2017. Detailed waterbody assessment and report card information can be found at [www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm](http://www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm)

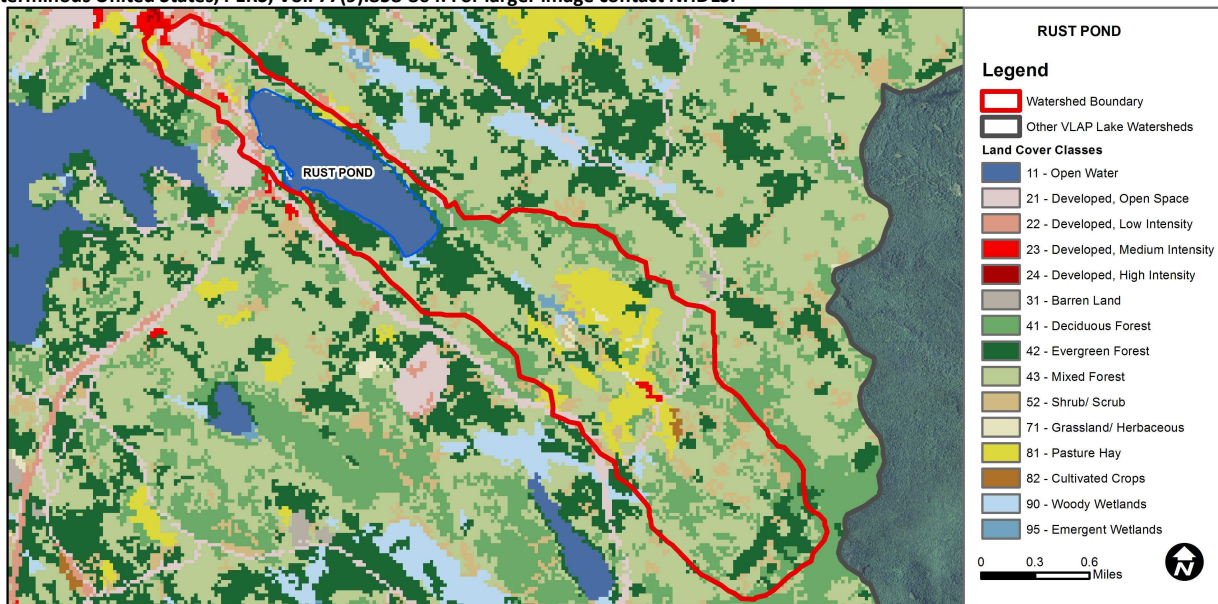
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
	pH	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.
	Oxygen, Dissolved	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Dissolved oxygen saturation	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.
Primary Contact Recreation	Chlorophyll-a	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
	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.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

#### BEACH PRIMARY CONTACT ASSESSMENT STATUS

RUST POND - WOLFEBORO CAMP SCHOOL 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	12.4	Barren Land	0	Grassland/Herbaceous	0.5
Developed-Open Space	3.73	Deciduous Forest	15.42	Pasture Hay	9.68
Developed-Low Intensity	1.45	Evergreen Forest	14.69	Cultivated Crops	0.24
Developed-Medium Intensity	0.48	Mixed Forest	34.07	Woody Wetlands	0.99
Developed-High Intensity	0	Shrub-Scrub	6.04	Emergent Wetlands	0.38



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

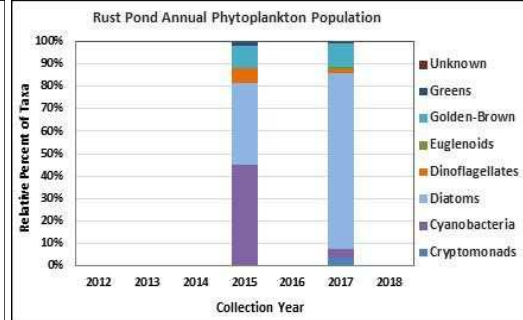
## RUST POND, WOLFEBORO

### 2018 DATA SUMMARY

**RECOMMENDED ACTIONS:** Pond quality remained representative of oligotrophic, or high quality conditions, and the improving water quality trends are encouraging and we hope to see this continue. Pond conductivity levels have remained within a higher range since 2015 and may be due warmer temperatures, an increase in winter precipitation falling as rain or sleet as well as groundwater influences. Continue education and outreach efforts aimed at reducing application of road salt through improvements in accuracy and precision of equipment. The Green SnowPro Certification program is recommended for any company responsible for the application of winter de-icing materials. North End Inlet water quality was worse in 2018. Keep an eye on this station's sub-watershed for any indications of potential new sources of pollution. Keep up the great work!

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels were low in June and decreased (improved) as the summer progressed. Average chlorophyll level remained stable with 2017 and was much less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicate significantly decreasing (improving) chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), Outlet, and Perry Brook conductivity levels were slightly greater than the state median, yet not above a level of concern. Epilimnetic chloride levels were slightly greater than the state median and much less than the state chronic chloride standard, however historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began. North End Inlet conductivity and chloride levels were elevated and much greater than the state medians.
- ◆ **COLOR:** Apparent color was measured in the epilimnion and indicates the water is clear with very little to no tea (brown) coloring.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic and Metalimnetic phosphorus levels were low in June and decreased as the summer progressed. Average epilimnetic phosphorus level remained stable with 2017, was much less than the state median, and slightly less than the threshold for oligotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus levels fluctuated within a low to moderate range for that station. Outlet phosphorus levels were low. North End Inlet phosphorus levels were elevated on each sampling event and the turbidity of the samples was also elevated suggesting low flows and wetland impacts. Perry Brook phosphorus levels fluctuated within a moderate range that is normal for that station.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was below average (low) in June and then increased (improved) as the summer progressed. Average NVS transparency increased (improved) slightly from 2017 and was much higher (better) than the state median. Historical trend analysis indicates stable transparency since monitoring began. VS transparency was much higher (better) than NVS transparency and likely a better measured of actual conditions.
- ◆ **TURBIDITY:** Epilimnetic, Metalimnetic, Hypolimnetic, and Outlet turbidity levels fluctuated within a low range for those stations. North End Inlet turbidity levels were elevated, and Perry Brook turbidity levels were also slightly elevated on each sampling event suggesting low flow conditions and wetland impacts.
- ◆ **pH:** Epilimnetic, Metalimnetic, Hypolimnetic, Outlet, and Perry Brook pH levels were within the desirable range 6.5-8.0 units. However, historical trend analysis indicates significantly decreasing (worsening) epilimnetic pH levels since monitoring began. North End Inlet pH levels were slightly 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:** 4.5 mg/L
- Chlorophyll-a:** 4.39 mg/m<sup>3</sup>
- Conductivity:** 42.3 uS/cm
- Chloride:** 5 mg/L
- Total Phosphorus:** 11 ug/L
- Transparency:** 3.3 m
- pH:** 6.6

Station Name	Table 1. 2018 Average Water Quality Data for RUST POND - WOLFEBORO									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color pcu	Cond. us/cm	Total P ug/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	13.3	1.76	16	27	84.3	6	5.60	6.21	0.54	7.26
Metalimnion					85.7	7			0.78	7.31
Hypolimnion					86.8	11			1.32	7.15
North End Inlet			96		362.3	45			9.58	6.34
Outlet					88.3	6			0.72	7.32
Perry Brook			3		66.2	20			2.97	6.92

### HISTORICAL WATER QUALITY TREND ANALYSIS

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

