Volunteer Lake Assessment Program Individual Lake Reports

DEERING RESERVOIR, DEERING, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,816	**Max. Depth (m):**	11.3	**Flushing Rate (yr^{-1}):**	1.3
Surface Area (Ac.):	315	**Mean Depth (m):**	3.5	**P Retention Coef:**	0.67
Shore Length (m):	8,850	**Volume (m^3):**	4,442,500	**Elevation (ft):**	921

TROPHIC CLASSIFICATION

Year	Trophic class
1980	MESOTROPHIC
1997	OLIGOTROPHIC

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.

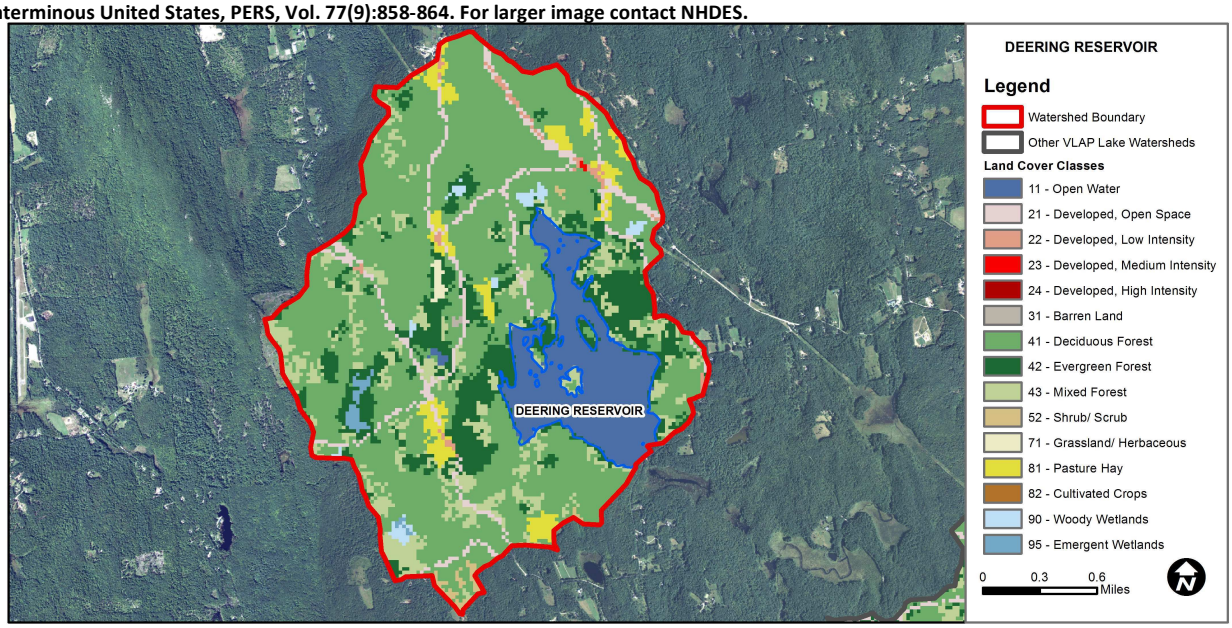
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
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.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

DEERING RESERVOIR - HOPKINTON INDEPENDENT SCHOOL BEACH	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.
DEERING RESERVOIR - DEERING LAKE BEACH	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >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	11.9	Barren Land	0.06	Grassland/Herbaceous	0.25
Developed-Open Space	4.22	Deciduous Forest	54.05	Pasture Hay	3.36
Developed-Low Intensity	0.71	Evergreen Forest	13.72	Cultivated Crops	0
Developed-Medium Intensity	0.03	Mixed Forest	9.69	Woody Wetlands	0.87
Developed-High Intensity	0	Shrub-Scrub	0.55	Emergent Wetlands	0.52

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
DEERING RESERVOIR, DEERING, NH
2012 DATA SUMMARY

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

- **CHLOROPHYLL-A:** Chlorophyll levels were fairly low and below the NH lake median. Historical trend analysis indicates a stable chlorophyll level since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride were greatly elevated in Morotta and Main Inlets. Deep spot conductivity and chloride are slightly above median values for NH lakes.
- **TOTAL PHOSPHORUS:** Phosphorus levels were elevated in Morotta and Zowski Inlets in June. Turbidity was also elevated indicating that sediment or organic material may have contributed to the elevated phosphorus levels.
- **TRANSPARENCY:** Transparency improved in the lake as the summer progressed. Historical trend analysis indicates a relatively stable lake transparency since monitoring began.
- **TURBIDITY:** Turbidity in Zowski and Morotta Inlets was elevated in June. Approx. 0.5 inches of rainfall occurred prior to sampling indicating stormwater may have contributed to elevated turbidity.
- **pH:** Epilimnetic (upper water layer) pH levels were sufficient to support aquatic life, however levels decreased to critical range in the hypolimnion (lower water layer).
- **RECOMMENDED ACTIONS:** Approach Town/State road agents about elevated chloride and conductivity in Morotta and Main Inlets. Implement, if possible, low salt zones along sections of Rt. 149 and Old County Rd.

Dissolved Oxygen & Temperature Profile

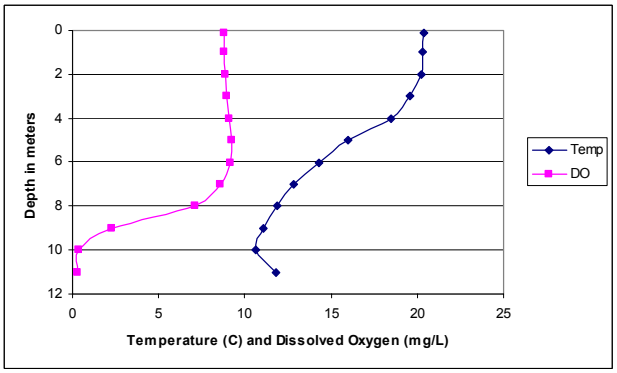


Table 1. 2012 Average Water Quality Data for DEERING RESERVOIR

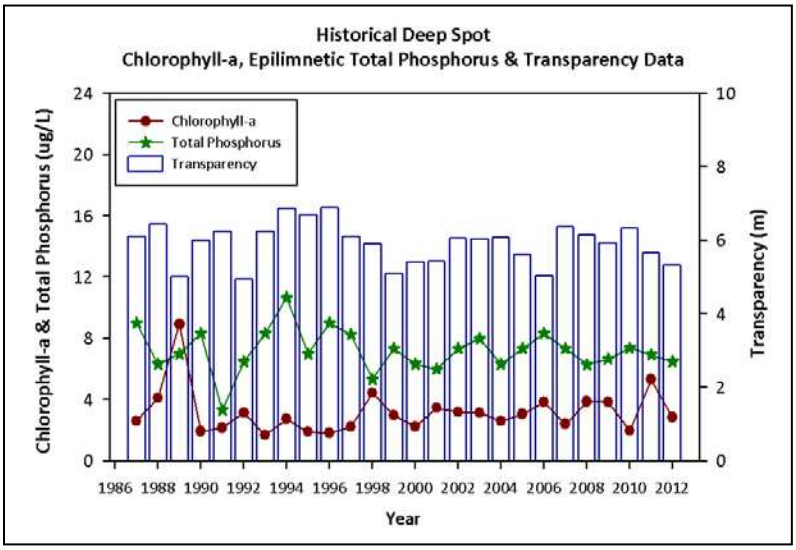
Station Name	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	ug/l	m		ntu	
						NVS	VS		
Deep Epilimnion	5.53	2.84	9	64.5	7	5.32	5.3	0.67	6.84
Deep Metalimnion				64.8	7			0.76	6.82
Deep Hypolimnion				66.3	12			1.51	6.23
Main Inlet			19	120.5	8			0.69	6.58
Morotta Inlet			47	240.5	35			3.81	6.91
Outlet			9	64.2	5			1.04	6.96
Zowski Inlet			10	85.6	28			4.53	7.03

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

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)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Stable	Data not significantly increasing or decreasing.
Transparency	Stable	Data not significantly increasing or decreasing.
Phosphorus (epilimnion)	Stable	Data not significantly increasing or decreasing.



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