

Talk to Me

Generating Interest in Water Quality Through Better Reporting

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Volunteer Lake Assessment Program
NH Dept. of Environmental Services

Talk to Me:

Can you swim and
recreate?

Can aquatic life survive?

Seen something fishy?

*Want answers about that lake's water
quality?*

*Join the New Hampshire Department of
Environmental Services (DES) Volunteer
Lake Assessment Program (VLAP) and
find out!*

Is NH lake water quality
getting better, worse or
staying the same?

*25 for 25: Tackling Phosphorus in our Lakes.
Great progress has been made in 25 years.*

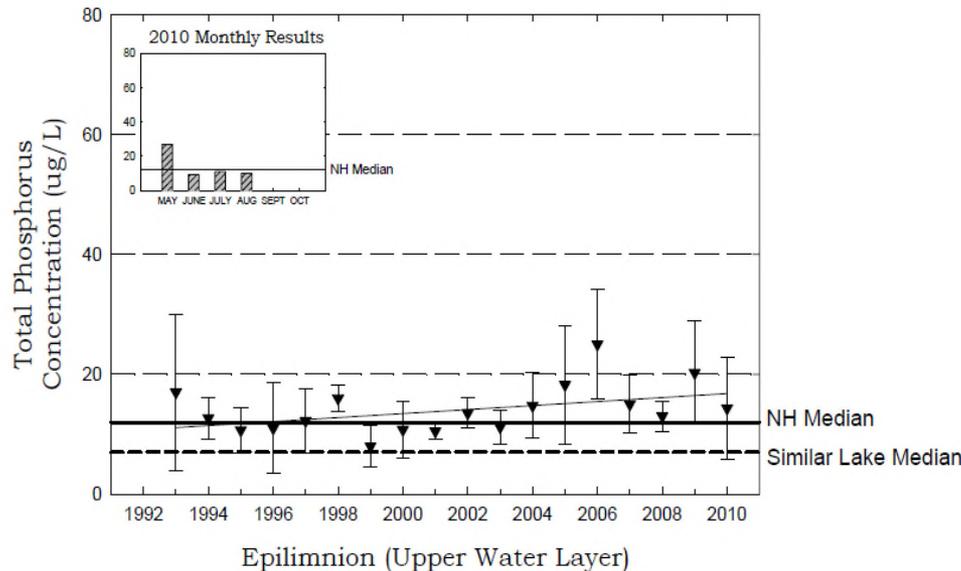


VLAP Reports

OBSERVATIONS & RECOMMENDATIONS

Beaver Lake, Derry

Figure 3. Monthly and Historical Total Phosphorus Data



After reviewing data collected from Angle Pond, Sandown, the program coordinators have made the following observations and recommendations.

Thank you for your continued hard work sampling the pond this year! Your monitoring group sampled the deep spot three times this year and has done so for many years! As you know, conducting multiple sampling events each year enables DES to more accurately detect water quality changes. Keep up the good work!

FIGURE INTERPRETATION

CHLOROPHYLL-A

➤ **Figure 1 and Table 1:** Figure 1 in Appendix A depicts the historical and current year chlorophyll-a concentration in the water column. Table 1 in Appendix B lists the minimum, maximum, and mean concentration for each year that the pond has been monitored through VLAP.

Chlorophyll-a, a pigment found in plants, is an indicator of the algal abundance. Algae (also known as phytoplankton) are typically microscopic, chlorophyll producing plants that naturally occur in lake ecosystems. The chlorophyll-a concentration measured in the water gives biologists an estimation of the algal concentration or lake productivity. The median summer chlorophyll-a concentration for New Hampshire's lakes and ponds is 4.58 mg/m³.

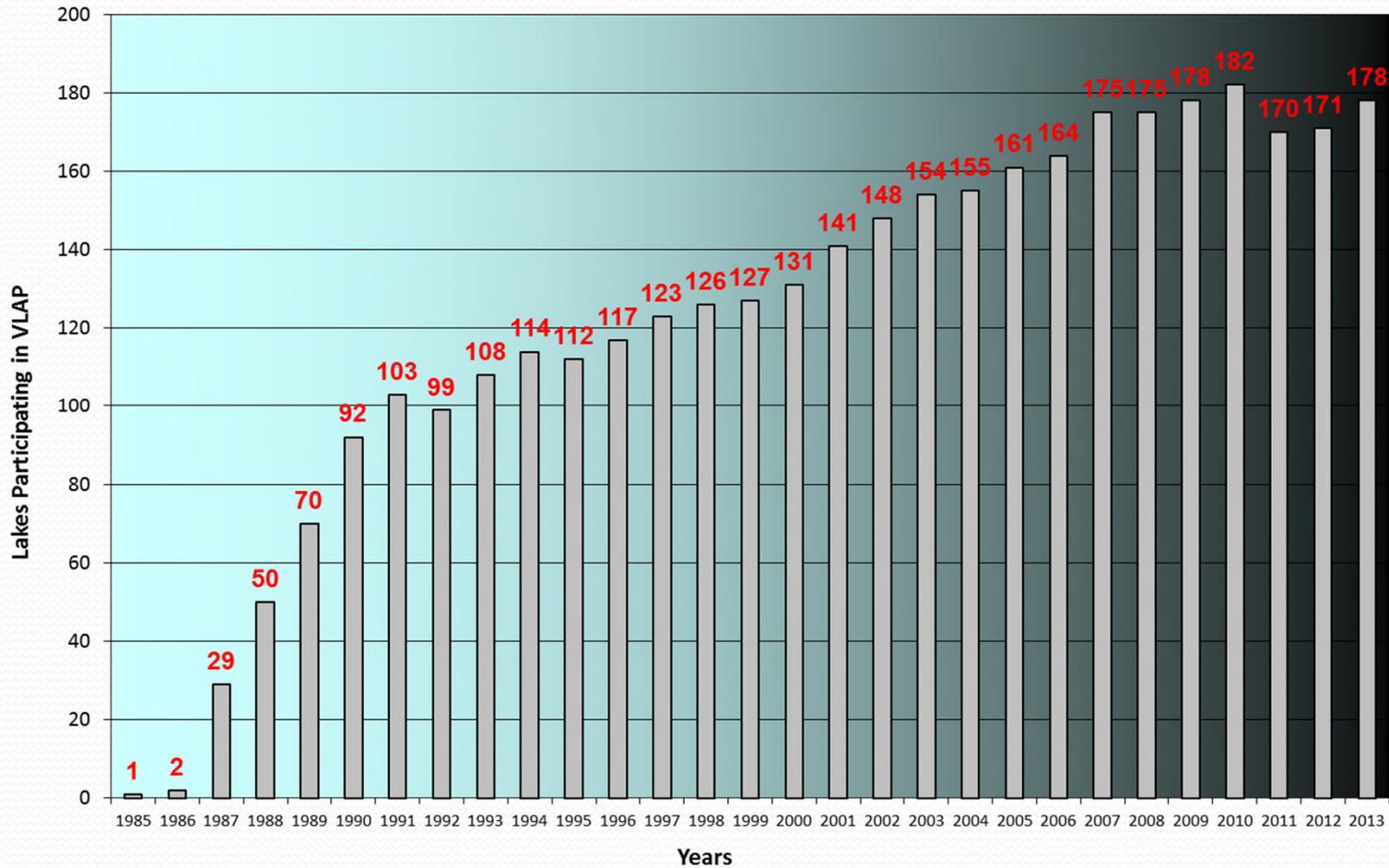
The current year data (the top graph) show that the chlorophyll-a concentration *increased slightly* from June to July, and then *decreased* from July to August.

The historical data (the bottom graph) show that the 2010 chlorophyll-a mean is *less than* the state and similar lake medians, and was the lowest mean chlorophyll-a concentration measured since monitoring began. For more information on the similar lake median, refer to Appendix F.

VLAP Reports



Number of VLAP Lakes Monitored 1985-2013



New VLAP Reports

- Review of New England state program reports.
- Meet audience needs?
- One report for all lakes.
 - Regional Reports (2012)
- Individual reports for all lakes.
 - Individual lake reports (2013)
- Staff requirements.

R-WD-12-3A

New Hampshire Volunteer Lake Assessment Program

2011
Dartmouth Lake Sunapee
Regional Report



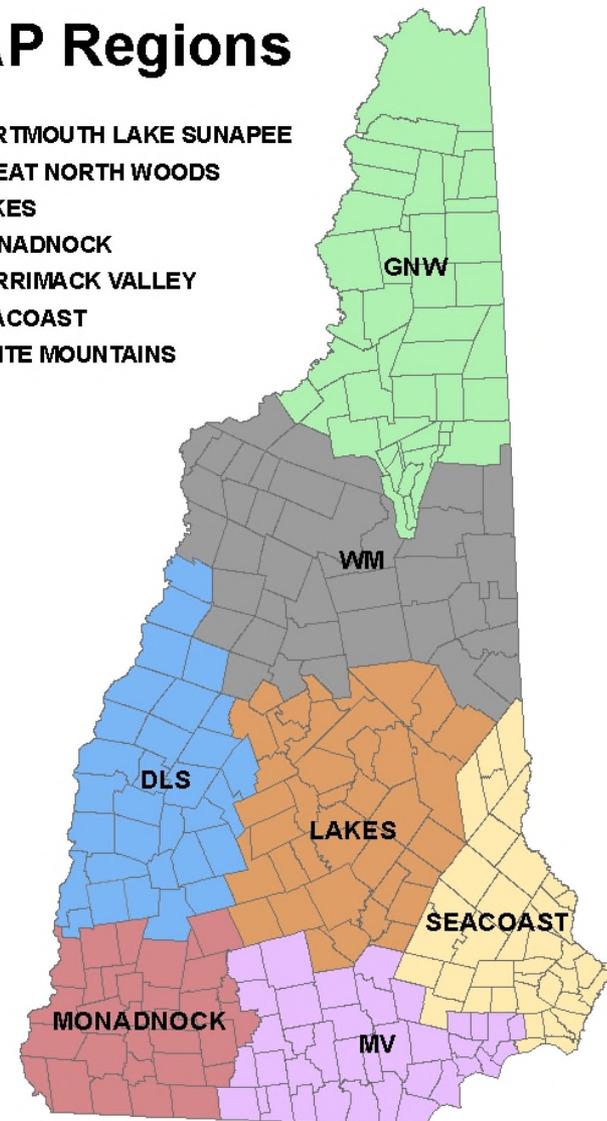
Waukeena Lake, Danbury, NH



Regional Reports

- 7 Geographical Regions
 - HUC 8 Watersheds (18)
- Looking at regional water quality.
 - Trends specific to regions.
 - Regional influences.

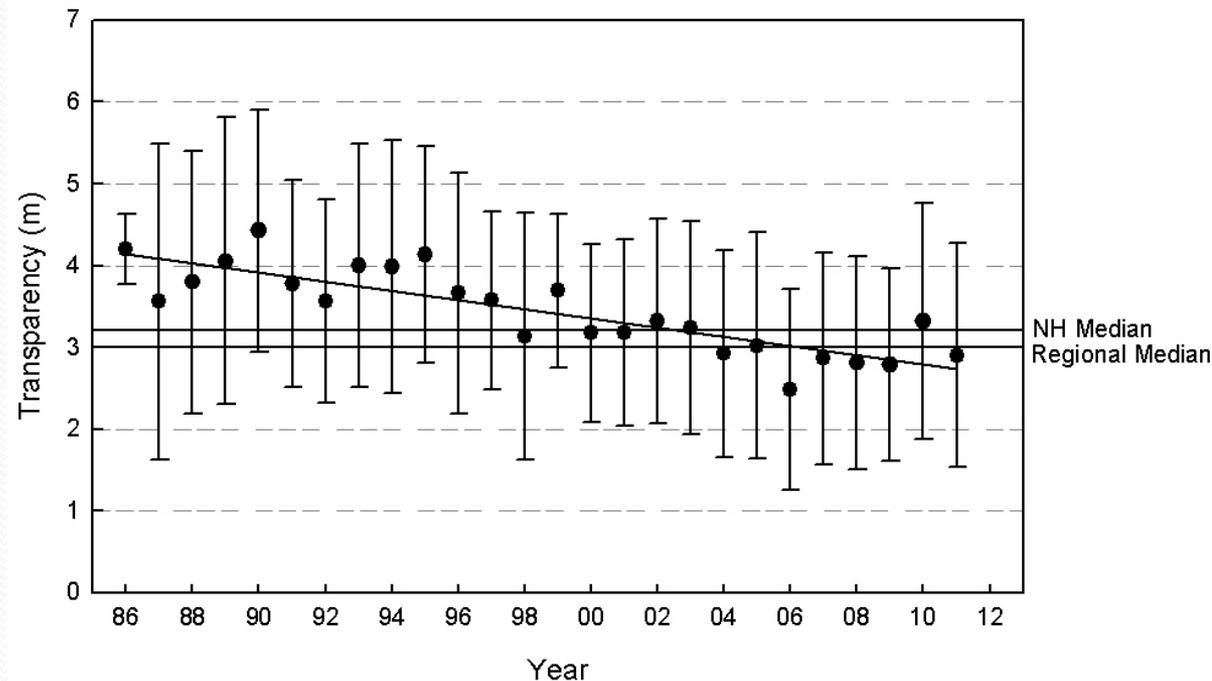
VLAP Regions



Regional Reports

- Land Use
- Exotic Species
- Geology
- Climate
- Water Quality Trends

Figure 8. MV Region Average Annual Transparency



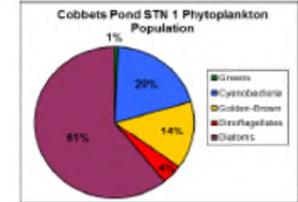
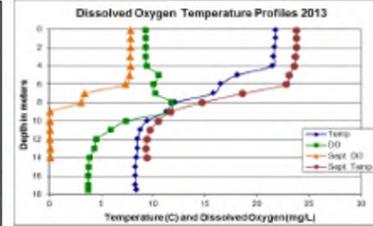
Individual Lake Reports

- Two Page
- User-Friendly
- Distribute widely
- Curb Appeal



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

- **CHLOROPHYLL-A:** Chlorophyll levels were relatively low in June and September and less than the state median. However, historical trend analysis indicates significantly increasing (worsening) chlorophyll since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride levels were elevated and much greater than the state medians. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity since monitoring began.
- **E. COLI:** Town Beach E. coli levels were slightly greater than the state standard for public beaches.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were slightly elevated in June but decreased to lower levels in September. Historical trend analysis indicates significantly increasing (worsening) epilimnetic phosphorus since monitoring began. Hypolimnetic phosphorus was slightly elevated in September likely due to the release of phosphorus from bottom sediments under anoxic conditions. Monson Inlet and Mueller Stream phosphorus levels were elevated in June following significant storm event.
- **TRANSPARENCY:** Transparency was better than the state median and improved slightly in September. Although transparency has improved slightly in recent years, historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began.
- **TURBIDITY:** Epilimnetic turbidity was low in June and September. Monson Inlet and Mueller Stream turbidity was elevated after significant storm event.
- **PH:** pH levels were sufficient to support aquatic life. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.
- **DISSOLVED OXYGEN:** Dissolved oxygen levels were slightly lower in the hypolimnion in June but were above 1.0 mg/L. By September, hypolimnetic dissolved oxygen levels had decreased to below 1.0 mg/L. When phosphorus levels are below 1.0 mg/L, phosphorus and other organic compounds are released from bottom sediments resulting in elevated phosphorus and turbidity.
- **RECOMMENDED ACTIONS:** Increase monitoring frequency to three times per summer to better assess seasonal and historical trends. Continue implementing stormwater management projects in the watershed. Continue working with local and state officials to address chloride and conductivity either through implementing low salt zones, educating residents on proper use of de-icing materials, or local road agents and maintenance companies obtaining a NH Voluntary Salt Applicator License through the UNH Technology Transfer Center's Green SnowPro Certification. Keep up the great work!



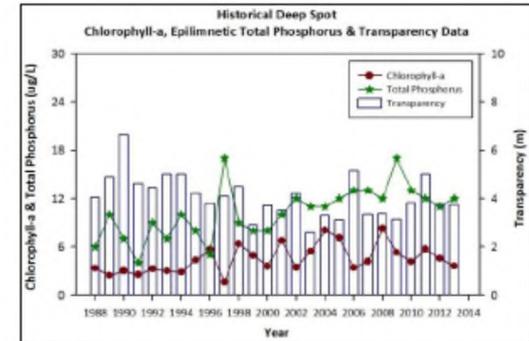
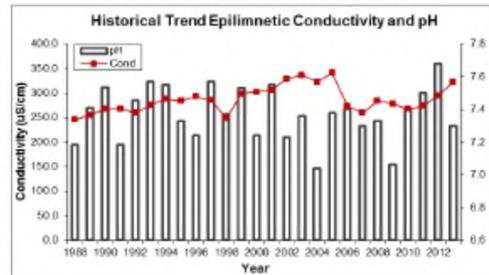
NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

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	2013 Average Water Quality Data for COBBETTS POND, STN 1										
	Alk. (mg/l)	Chloride (ug/l)	Chloride (mg/l)	Cond. (uS/cm)	E. Coli (#/100ml)	Total P (ug/l)	Trans. (m)		Turb. (ntu)	pH	
Fossa Rd Inlet			76	414.0		13		NVS	VS	0.21	6.52
Monson Inlet			87	336.0		37				3.61	6.98
Mueller Stream			100	416.0		30				2.43	7.37
Outlet			54	322.0		14				0.49	6.88
Epilimnion	23.0	3.76	57	323.0		12	3.73	4.05	0.84	7.30	
Metolimnion				319.0		17				1.03	7.02
Hypolimnion				319.3		73				1.32	6.74
Town Beach				261.0		110				0.46	6.61

HISTORICAL WATER QUALITY TREND ANALYSIS

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



Individual Lake Reports

Land Use

Lake Trophic Surveys

**Waterbody
Assessment**

Exotic Species

Beaches

Individual Lake Reports – Page 1



Volunteer Lake Assessment Program Individual Lake Reports ROCKYBOUND POND, CROYDON, NH

MORPHOMETRIC DATA

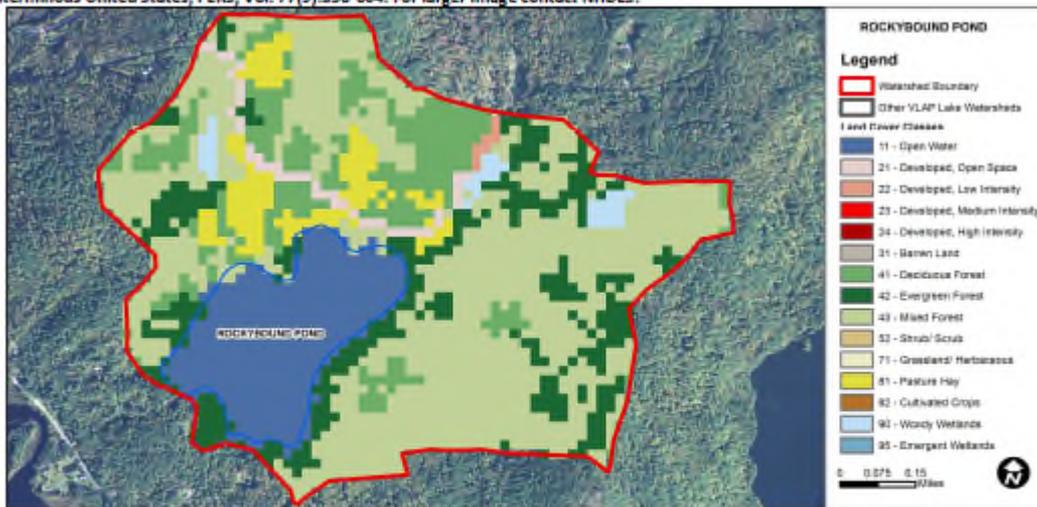
Watershed Area (Ac.):	529	Max. Depth (m):	9.3	Flushing Rate (yr ⁻¹):	0.7	Year	Trophic class	KNOWN EXOTIC SPECIES
Surface Area (Ac.):	65	Mean Depth (m):	4.5	P Retention Coef:	0.73	1989	OLIGOTROPHIC	Curly Leaf Pondweed
Shore Length (m):		Volume (m ³):	1,166,500	Elevation (ft):	1055	2006	MESOTROPHIC	

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.

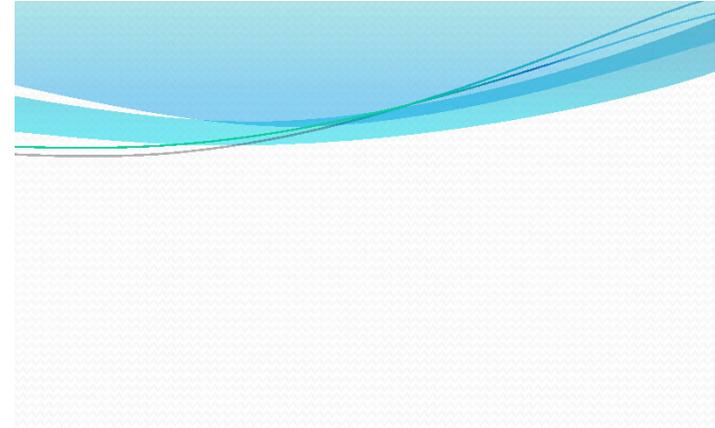
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria.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

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	14.8	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	1.97	Deciduous Forest	13.46	Pasture Hay	5.88
Developed-Low Intensity	0.36	Evergreen Forest	15.12	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	46.84	Woody Wetlands	1.71
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0



**Volunteer Lake Assessment Program Individual Lake Reports
ROCKYBOUND POND, CROYDON, NH**



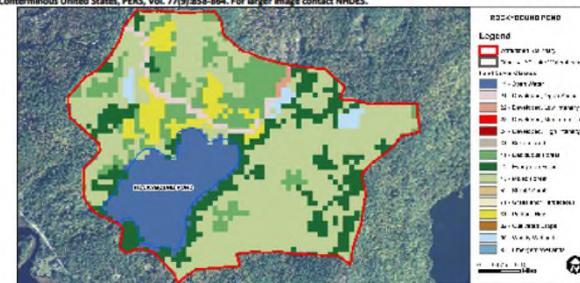
MORPHOMETRIC DATA				TROPHIC CLASSIFICATION		KNOWN EXOTIC SPECIES		
Watershed Area (Ac.):	329	Max. Depth (m):	3.3	Flushing Rate (yr ⁻¹):	0.7	Year	Trophic class	Known Exotic Species
Surface Area (Ac.):	65	Mean Depth (m):	4.3	P Retention Coef.:	0.73	1989	OLIGOTROPHIC	Curly Leaf Pondweed
Shore Length (m):		Volume (m ³):	1,166,500	Elevation (ft):	1025	2006	MESOTROPHIC	

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 (Totals)	Good	1/15 samples and median is < threshold but > 1/2 threshold value.
	pH	Slightly Bad	75% of samples exceed criteria by a small margin (median of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Slightly Bad	75% of samples exceed criteria by a small margin (median of 2 exceedances).
Primary Contact Recreation	Chlorophyll-a	Good	1/15 samples and median is < threshold but > 1/2 threshold value.
	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 mean is less than geometric mean criteria.
	Chlorophyll-a	Very Good	All best 10 samples with 0 exceedance of 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	14.8	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	1.97	Deciduous Forest	13.46	Pasture Hay	5.88
Developed-Low Intensity	0.36	Evergreen Forest	15.12	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	46.84	Woody Wetlands	1.71
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0

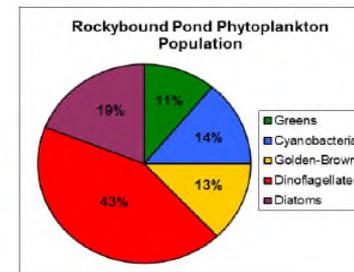
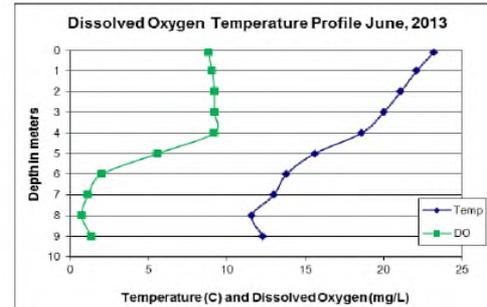
Individual Lake Reports – Page 2



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS ROCKYBOUND POND, CROYDON, NH 2013 DATA SUMMARY

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

- ♣ **CHLOROPHYLL-A:** Chlorophyll levels were low in June and August and below the state median. Historical trend analysis indicates stable chlorophyll with low variability between years.
- ♣ **CONDUCTIVITY/CHLORIDE:** Conductivity levels were slightly greater than the state median and historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity since monitoring began.
- ♣ **E. COLI:** E. coli levels were well below state standards for surface waters.
- ♣ **TOTAL PHOSPHORUS:** Deep spot and tributary phosphorus levels were low and stable throughout the sampling season. Hypolimnetic phosphorus was slightly elevated in August and the turbidity was also slightly elevated. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years.
- ♣ **TRANSPARENCY:** Transparency improved slightly from 2012 and was greater than the state median. Historical trend analysis indicates stable transparency with low variability between years.
- ♣ **TURBIDITY:** Hypolimnetic turbidity was slightly elevated in August.
- ♣ **pH:** pH decreased to undesirable levels in the Hypolimnion.
- ♣ **DISSOLVED OXYGEN:** Dissolved oxygen levels were depleted in the hypolimnion in June. As the summer progresses, decomposition of organic matter on the lake bottom uses up available oxygen in the hypolimnion. This could lead to the release of phosphorus from lake sediments.
- ♣ **PHYTOPLANKTON:** There was a healthy and diverse mix of phytoplankton.
- ♣ **RECOMMENDED ACTIONS:** Conductivity has increased in the pond since monitoring began. Work with local road agents, lake and watershed residents to identify potential causes of the increased conductivity, including road, driveway and walkway salting, septic systems, and fertilizers. Keep up the great work!



Station	Table 1. 2013 Average Water Quality Data for ROCKYBOUND POND								
	Alk.	Chlor-a	Cond.	E. Coli	Total P	Trans.		Turb.	pH
	mg/l	ug/l	uS/cm	#/100ml	ug/l	m	VS	ntu	
Epilimnion	6.35	3.01	62.5		5	5.16	5.58	0.51	6.84
Metolimnion			62.5		8			0.76	6.61
Hypolimnion			69.1		15			1.55	5.91
W1 Public Beach/Inlet			64.0		7			0.68	6.60
W3 Homa			63.5	10	6			0.63	6.69
W5 Lewis			62.4		7			0.56	6.73
W6 Outlet			61.7		7			0.51	6.76
W8 Leslie Inlet			62.9		6			0.55	6.82

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

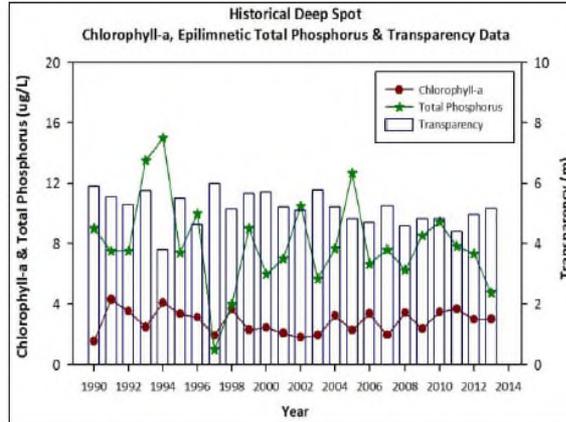
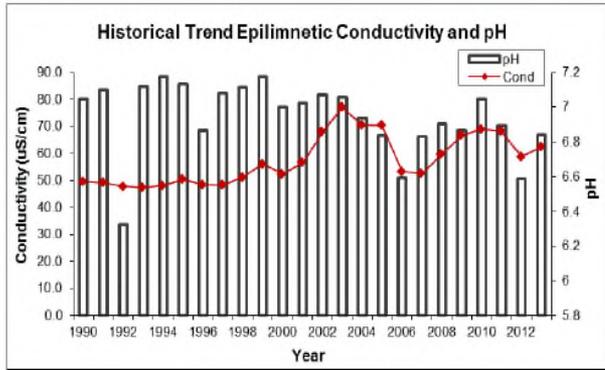
- Chloride:** < 230 mg/L (chronic)
- E. coli:** > 88 cts/100 mL – public beach
- E. coli:** > 406 cts/100 mL – surface waters
- Turbidity:** > 10 NTU above natural level
- pH:** 6.5-8.0 (unless naturally occurring)

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
pH	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data show low variability.
Conductivity	Degrading	Data have significantly increased.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.



This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact VLAP at (603) 271-2658 or sara.steiner@des.nh.gov

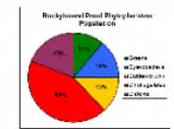
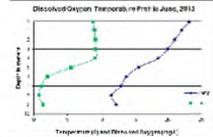


VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS ROCKYBOUNDED POND, CROYDON, NH 2013 DATA SUMMARY

- OBSERVATIONS AND RECOMMENDATIONS** (Refer to Table 2 and Historical Deep Spot Data Graphs)
 - CHLOROPHYLL-A:** Chlorophyll levels were low in June and August and below the state median. Historical trend analysis indicates stable chlorophyll with low variability between years.
 - CONDUCTIVITY/CHLORIDE:** Conductivity levels were slightly greater than the state median and historical trend analysis indicates significantly increasing (warming) epilimnetic conductivity since monitoring began.
 - E. COLI:** E. coli levels were well below state standards for surface waters.
 - TOTAL PHOSPHORUS:** Deep spot and tributary phosphorus levels were low and stable throughout the sampling season. Hypolimnetic phosphorus was slightly elevated in August and the turbidity was also slightly elevated. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years.
 - TRANSPARENCY:** Transparency improved slightly from 2002 and was greater than the state median. Historical trend analysis indicates stable transparency with low variability between years.
 - TURBIDITY:** Hypolimnetic turbidity was slightly elevated in August.
 - pH:** pH decreased to undesirable levels in the hypolimnion.
 - DISSOLVED OXYGEN:** Dissolved oxygen levels were depleted in the hypolimnion in June. As the summer progressed, decomposition of organic matter on the lake bottom used up available oxygen in the hypolimnion. This could lead to the release of phosphorus from lake sediments.
 - PERFORMANCE:** There was a healthy and diverse mix of phytoplankton.
 - RECOMMENDED ACTIONS:** Conductivity was increased in the pond since monitoring began. Work with local road agents, lake and watershed residents to identify potential causes of the increased conductivity, including road, driveway and walkway salting, septic systems, and fertilizers. Keep up the great work!

Table 1. 2013 Average Water Quality Data for ROCKYBOUNDED POND

Station	Chlor-a	Cond.	E. Coli	Total P	Trans.	Turb.	pH
mg/L	uS/cm	MPN/100ml	ug/L	m	NTU		
Epilimnion	0.18	64.0	0.0	0.1	5.30	1.39	6.74
Hypolimnion	0.15	60.0	0.0	0.1	4.70	1.70	6.52
Periphyton	0.17	61.0	0.0	0.1	5.10	1.51	6.71
Wet Public Beach/Inlet	0.40	70.0	0.0	0.1	3.90	4.00	6.70
Wet Home	0.15	60.0	0.0	0.1	5.00	1.60	6.70
Wet Camp	0.14	60.0	0.0	0.1	5.30	1.51	6.70
Wet Outlet	0.17	61.0	0.0	0.1	5.10	1.51	6.70
Wet Seep Inlet	0.15	60.0	0.0	0.1	5.50	1.40	6.70



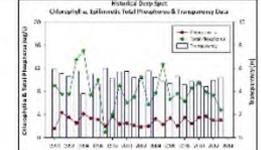
NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: < 230 mg/L (chronic)
 E. coli: > 300 cfu/100 mL - public beach
 E. coli: > 600 cfu/100 mL - surface waters
 Turbidity: > 10 NTU above natural level
 pH: 6-9.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Acidity: 4.9 mg/L
 Chlorophyll-a: 0.38 mg/L
 Conductivity: 40.40 uS/cm
 Chloride: 4 mg/L
 Total Phosphorus: 1.2 ug/L
 Transparency: 3.2 m
 pH: 6.6

HISTORICAL WATER QUALITY TREND ANALYSIS					
Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data show low variability.
Conductivity	Degrading	Data have significantly increased.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.



Individual Lake Reports

- “I want to tell you how impressed I am with the DLS Regional Report I received last week. The idea of a regional report makes all sorts of good sense, providing useful comparisons within the common area. The report was obviously well researched and clearly and thoughtfully presented. The descriptions and analysis of trends was complete yet concise; I felt the accompanying graphs were particularly useful. It is evident that a good deal of time, care, and thought and effort went into this production. It is appreciated, and I thank you, Sara.”

“I think the reports are excellent and the recent change to make comparisons by regions is great so that we have a baseline to compare.”

“This is great!

I’ll pass onto lake officers and fellow testers.

I’ll also pass on Guide to Storm water management to see what we can do to curb run offs as indicated. After reading the article, I’ll ask if you think we need more testing in those areas.”

“I LOVE the 2012 individual lake reports. Great format to share with the association members and residents. nice job!”

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Very Good	<5 samples and median is < 1/2 threshold.
	pH	Slightly Bad	<10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Bad	>47% with a minimum of 2 samples exceed criteria, with 2 or more by a large margin.
	D.O. (% sat)	Slightly Bad	<10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Very Good	<5 samples and median is < 1/2 threshold.
Primary Contact Recreation	E. coli	No Data	No Data for the parameter.
	Chlorophyll-a	Cautionary	< 10 samples and 3 exceedance of criteria. More data needed.

HOW TO READ YOUR VLAP REPORT

MORPHOMETRIC DATA ¹				TROPIC CLASSIFICATION ⁴			KNOWN EXOTIC SPECIES ⁵
Watershed Area (Ac.):	17,664	Max. Depth (m):	11.3	Flushing Rate (yr ⁻¹):	12.9	Year	Variable Milfoil
Surface Area (Ac.):	179	Mean Depth (m):	3.7	P Retention Coef.:	0.37	1992	MESOTROPHIC
Shore Length (m):	4,000	Volume (m ³):	2,675,000	Elevation(m):	508	2009	EUTROPHIC

1. LAKE MORPHOMETRY: refers to the size and shape of the lake basin and can affect the physical, chemical and biological processes of the lake. A lake's morphology can be best described by a bathymetric map.

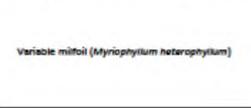


2. FLUSHING RATE: refers to the number of times a lake flushes (volume of water equal to the lake's volume passes through the lake) in one year, expressed to the nearest 0.1 times/year. Lakes have low flushing rates compared to rivers and streams, which are constantly replenishing their water volume, which leaves lakes more vulnerable to the accumulation of pollutants and nutrients.

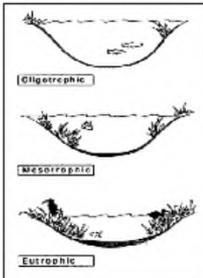
3. PHOSPHORUS RETENTION COEFFICIENT: The phosphorus retention coefficient can be defined as the fraction of inflowing phosphorus that is not lost through outflow and retained within the water body.

4. TROPIC CLASSIFICATION: of a lake generally refers to the biological production, or how aged a lake is. NH uses four indicators to determine a lake's trophic status. These are dissolved oxygen, chlorophyll-a, transparency, and vascular aquatic plant growth. Oligotrophic lakes tend to be deeper, larger lakes with clear water, rocky or sandy shorelines, low phosphorus enrichment, limited rooted plant growth, low algal growth and adequate dissolved oxygen throughout. Mesotrophic waters are an intermediate category with characteristics between oligotrophic and eutrophic water bodies. Eutrophic waters are smaller, shallower ponds with mucky bottoms, extensive rooted plant growth, and depleted dissolved oxygen in bottom waters; often tea-colored and sometimes murky from planktonic algal growth.

5. EXOTIC SPECIES: plants and/or animals that are not native to a specific region and once introduced, typically have no natural enemies to keep populations in check. In lakes, exotic aquatic plants, such as Variable milfoil, can quickly out-compete native plants for resources and have detrimental effects on the lake ecosystem. Currently, 72 lakes/ponds in NH are infested with an exotic species. For more information on Exotic Species in NH's lakes visit <http://des.nh.gov/organization/divisions/water/wmb/exoticspecies/index.htm>



Variable milfoil (*Myriophyllum heterophyllum*)



WATERBODY REPORT CARD TABLES

Water Quality Assessment Outcomes

Since the Clean Water Act took effect in 1987, it requires that every state submit two surface water quality assessment documents to the EPA every two years. Included in these reports is a list of waters (Section 303d list) that do not meet water quality standards thus, they are impaired or not supporting their designated uses.

Designated Use	Impaired	Parameter	Category
This represents the uses a waterbody (lake, river, estuary) should support. There are seven designated uses: aquatic life, fish consumption, Shellfish consumption, drinking water, primary contact recreation, secondary contact recreation, and wildlife.	If data collected for a specific parameter routinely do not meet accepted criteria, then a waterbody is considered to be impaired for that designated use. Alternately, if data meet accepted criteria, the waterbody fully supports the designated use. A specific quantity of data are necessary to make determinations.	The physical, chemical or biological parameter used to assess whether a waterbody supports a specific designated use.	Depicts how well the designated use is supported based on criteria assigned to the parameter. There are several categories from fully supported to severely impaired.

Parameter	Thresholds
pH	6.5 - 8.0
Phosphorus (total)	< 8 ug/L Oligotrophic ≤ 12 ug/L Mesotrophic ≤ 22 ug/L Eutrophic
Chlorophyll-a	< 3.3 ug/L Oligotrophic ≤ 3.0 ug/L Mesotrophic ≤ 11.0 ug/L Eutrophic
Dissolved Oxygen	> 6.0 mg/L Class A waters > 5.0 mg/L Class B waters > 2% Sat. Class A & B waters
E. coli	Single sample < 68 cts/100 ml. Public beaches Geometric mean < 47 cts/100 ml. Public beaches Single sample < 153 cts/100 ml. Class A waters Single sample < 406 cts/100 ml. Class B waters Geometric mean < 47 cts/100 ml. Class A waters Geometric mean < 126 cts/100 ml. Class B waters

- Continue to evolve and provide useful data to make informed decisions on local and state level.

Questions?

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