Volunteer Lake Assessment Program Individual Lake Reports
CHALK POND, NEWBURY, NH

MORPHOMETRIC DATA   **TROPHIC CLASSIFICATION**   **KNOWN EXOTIC SPECIES**

Watershed Area (Ac.):	339	Max. Depth (m):	3.6	Flushing Rate (yr^1)	4.6	Year	Trophic class	
Surface Area (Ac.):	21	Mean Depth (m):	2	P Retention Coef:	0.56	1986	OLIGOTROPHIC	
Shore Length (m):	1,600	Volume (m³):	166,500	Elevation (ft):	1252	2006	MESOTROPHIC	

The Waterbody Report Card tables are generated from the DRAFT 2020 305(b) report on the status of N.H. waters, and are based on data collected from 2010-2019. Detailed waterbody assessment and report card information can be found at NHDES' Water Quality Assessment webpage.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
	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 satura	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	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
Primary Contact Recreation	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

VLAP SAMPLE STATION MAP: This map depicts the location of routine sampling stations discussed on page two of the report.

CHALK POND
NEWBURY
VOLUNTEER LAKE ASSESSMENT PROGRAM

STATIONID	STATION NAME
CHANBYNB	NORTH BEACH
CHANBYO	OUTLET
CHANBYSB	SOUTH BEACH
CHANBYD	DEEP SPOT
CHANBYI	INLET
CHANBYMB	MAIN BEACH

Source: The data layers are derived from NHDES data and are under constant revision. NHDES is not responsible for the use or interpretation of this information. Not intended for legal use. NHDES Watershed Management Bureau   Date: 2/17/2021

Volunteer Lake Assessment Program Individual Lake Reports Chalk Pond, Newbury 2020 Data Summary

Recommended Actions: Great job sampling in 2020! Pond nutrient levels are generally representative of oligotrophic conditions, however pond chlorophyll levels (algal growth) are generally greater than expected for oligotrophic lakes. This highlights the importance of minimizing watershed nutrient loads from stormwater runoff, erosion of steep slopes and dirt/gravel roads, and septic systems. Educate shorefront property owners on becoming certified LakeSmart through NHLAKES lake-friendly living program. Drought conditions in 2020 resulted in low water levels and organic matter contamination in many samples. Do not sample water that is not flowing or where there is not ample depth to obtain samples free of sediment and/or organic matter. The increasing conductivity levels suggest impacts from winter de-icing materials and/or the use of calcium chloride to control dust on dirt roads. Encourage local winter maintenance companies to obtain NH Voluntary Salt Applicator Licenses through the Green SnowPro Certification program. Continue to monitor chloride levels to build a baseline data set. Keep up the great work!

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

⬥ **Chlorophyll-a:** Chlorophyll level was low in June, increased to a slightly elevated level in July and remained stable in August. Average chlorophyll level decreased slightly from 2019, was slightly less than the state median, but was greater than the threshold for oligotrophic lakes. Historical trend analysis indicates stable, yet variable chlorophyll levels since monitoring began.

⬥ **Conductivity/Chloride:** Epilimnetic (deep spot), Main Beach and Outlet conductivity and chloride levels were slightly greater than the state medians yet much less than a level of concern. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began. Inlet conductivity and chloride levels remained low and less than the state medians.

⬥ **Color:** Apparent color measured in the epilimnion indicates the water was lightly tea colored, or light brown, in June and then decreased to clear conditions with little to no tea coloring by August. Inlet water color was clear in June. Outlet water was lightly tea colored in June.

⬥ **E. coli:** Main Beach E. coli level was very low and much less than the state standard for public beaches in July.

⬥ **Total Phosphorus:** Epilimnetic phosphorus level was low in June, increased to an elevated level in July and lab data note organic matter in the sample, and then decreased to a low level in August. Average epilimnetic phosphorus level increased from 2019, was less than the state median, and was slightly greater than the threshold for oligotrophic lakes. Historical trend analysis indicates stable epilimnetic phosphorus levels since monitoring began. Inlet phosphorus level was within a slightly elevated range for that station in June and July during low flow conditions and lab data noted moderate to high organic matter in the samples. Main Beach phosphorus levels were low. Outlet phosphorus level was slightly elevated in June and lab data noted organic matter in the sample.

⬥ **Transparency:** Transparency was good in June with the Secchi disk visible on the pond bottom, decreased (worsened) slightly in July when algal growth increased, and then increased (improved) in August and the Secchi disk was again visible on the pond bottom. Average transparency remained stable with 2019 and was approximately equal to the state median. Historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began, however this may be more representative of fluctuating water levels rather than a decline in water clarity.

⬥ **Turbidity:** Epilimnetic turbidity level was elevated in July. Inlet turbidity levels were slightly elevated in June and July. Outlet turbidity level was elevated in June. All instances of elevated turbidity levels were a result of organic matter in the samples due to drought conditions, low flows and low water levels.
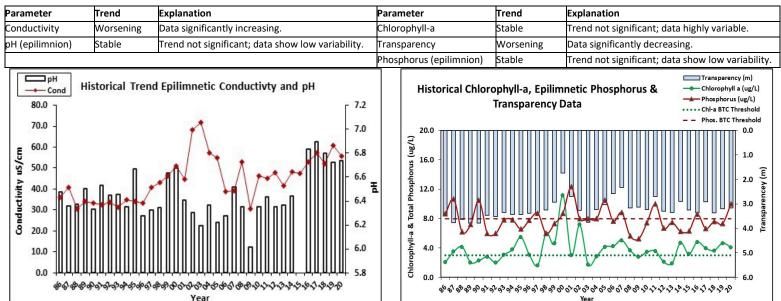
⬥ **pH:** Epilimnetic, Inlet, Main Beach, and Outlet pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began.

Station Name	Table 1. 2020 Average Water Quality Data for CHALK POND - NEWBURY									
	Alk. (mg/L)	Chlor-a (ug/L)	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	E. coli (cts/100 mL)	Total P (ug/L)	Trans. (m)	Turb. (ntu)	pH
								NVS		
Epilimnion	5.57	4.09	10	30	55.7		10	3.17	2.02	6.73
Inlet			3	20	24.0		15		2.23	6.56
Main Beach			10		53.7	2	8		0.98	6.80
Outlet			10	40	53.1		8		1.64	6.63

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.5 mg/L | **Chlorophyll-a:** 4.39 ug/L | **Conductivity:** 42.3 uS/cm | **Chloride:** 5 mg/L | **Total Phosphorus:** 11 ug/L | **Transparency:** 3.3 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: between 6.5-8.0 (unless naturally occurring)

Historical Water Quality Trend Analysis

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

Historical Trend Epilimnetic Conductivty and pH

Historical Chlorophyll-a, Epilimnetic Phosphorus & Transparency Data