Volunteer Lake Assessment Program Individual Lake Reports

CONTOOCOOK LAKE, JAFFREY, NH

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

Watershed Area (Ac.):	5,888	**Max. Depth (m):**	6.4	**Flushing Rate (yr^{-1}):**	6.8	**Year**	**Trophic class**	Variable Milfoil
Surface Area (Ac.):	380	**Mean Depth (m):**	2.2	**P Retention Coef:**	0.5	1988	MESOTROPHIC	
Shore Length (m):	11,700	**Volume (m^3):**	1,944,000	**Elevation (ft):**	1009	2006	MESOTROPHIC	

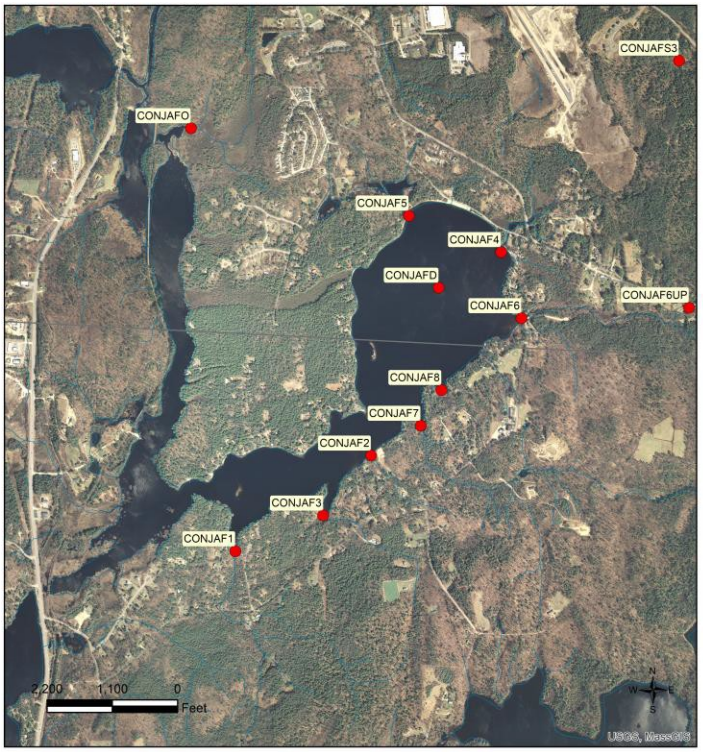
The Waterbody Report Card tables are generated from the DRAFT 2020 305(b) report on the status of N.H. waters, and are based on data collected from 2010-2019. Detailed waterbody assessment and report card information can be found at NHDES' Water Quality Assessment Website.

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 a given 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	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
Primary Contact Recreation	Escherichia coli	No Data	No data for this parameter.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

CONTOOCOOK LAKE - TOWN BEACH	Escherichia coli	Good	Sampling data commonly 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.



CONTOOCOOK LAKE
RINDGE
VOLUNTEER LAKE ASSESSMENT PROGRAM

STATIONID	STATION NAME
CONJAF4	SQUANTUM INLET
CONJAF5	TAFT INLET
CONJAF6	TOWNLINE INLET
CONJAFD	DEEP SPOT
CONJAFO	DAM OUTLET
CONJAF1	JOWDER COVE INLET
CONJAF2	COCHRANE INLET E
CONJAF3	COCHRANE INLET W
CONJAF7	WALSH INLET
CONJAF8	WOODBOUND INLET
CONJAFS3	SQUANTUM 3
CONJAF6UP	TOWNLINE INLET UPSTREAM

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
Contoocook Lake, Jaffrey
2020 Data Summary

Recommended Actions: Great job sampling in 2020! Lake quality is representative of mesotrophic, or average, conditions and the improving chlorophyll levels are encouraging. However, lake phosphorus levels tend to fluctuate above the threshold for mesotrophic lakes and conductivity levels have increased. Encourage local road agents and private winter maintenance companies to obtain Voluntary Salt Applicator License through the Green SnowPro Certification program. Jowder Cove Inlet experienced elevated phosphorus levels and volunteers noted a white scum on the water's surface in the lake. Investigate potential upstream sources of phosphorus to the Inlet and report any surface scums to the NHDES Harmful Algal Bloom Program HAB@des.nh.gov. Squantum Inlet phosphorus levels were extremely elevated in 2020 and this station has a history of elevated levels due to wetland impacts that were likely exacerbated by drought conditions. The lake association should work with the Town to determine who is responsible for maintaining the culvert located at Taft Inlet and establish a regular cleaning schedule to maintain flow. Efforts should be made to address stormwater runoff and erosion within the watershed and property owners should be encouraged to implement improvement projects as detailed in NHDES' "NH Homeowner's Guide to Stormwater Management". Keep up the great work!

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

- **Chlorophyll-a:** Chlorophyll level was low in June and decreased slightly in August. Average chlorophyll level remained stable with 2019 and was less than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Epilimnetic (upper water layer), Hypolimnetic (lower water layer), Cochrane Inlet E, Cochrane Inlet W, Outlet, Jowder Cove Inlet, Townline Inlet, and Townline Upstream conductivity and chloride levels were greater than the state medians yet less than a level of concern. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began. Squantum Inlet and Taft Inlet conductivity and chloride levels were much greater than the state medians yet chloride levels did not exceed the state chronic chloride standard. Walsh Inlet conductivity and chloride levels were very low and less than the state medians.
- **Color:** Apparent color measured in the epilimnion indicates the water was moderately tea, or brown, colored in June and August.
- **Total Phosphorus:** Epilimnetic and Hypolimnetic phosphorus levels were elevated in June and decreased to a low to moderate range in August. Average epilimnetic phosphorus level decreased slightly from 2019, was slightly greater than the state median, and was approximately equal to the threshold for mesotrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Jowder Cove Inlet phosphorus levels were elevated in June and August. Cochrane Inlet E and Walsh Inlet phosphorus levels were elevated in August during low flow conditions. Cochrane Inlet W, Townline Inlet, Townline Inlet Upstream and Outlet phosphorus levels fluctuated within average ranges for those stations. Squantum Inlet phosphorus levels were extremely elevated in June and August. Taft Inlet phosphorus level was elevated in June and the turbidity of the sample was also elevated, and lab data noted moderate color, sediment and organic material in the sample.
- **Transparency:** Transparency measured with (VS) and without (NVS) the viewscope was within an average range for the lake in June and then increased (improved) in August. Average NVS transparency remained stable with 2019 and was slightly lower than the state median. Historical trend analysis indicates relatively stable NVS transparency since monitoring began.
- **Turbidity:** Epilimnetic, Hypolimnetic, Jowder Cove Inlet, Cochrane Inlet W, Townline Inlet, and Townline Inlet Upstream turbidity levels fluctuated within a low range for those stations. Cochrane Inlet E, Squantum Inlet, Taft Inlet, Walsh Inlet, and Outlet turbidity levels were slightly elevated to elevated in June following a significant storm during drought conditions and several samples were colored and contained sediment and/or organic material.
- **pH:** Epilimnetic and Townline Inlet Upstream pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began. Jowder Cove Inlet, Townline Inlet and Walsh Inlet pH levels were slightly less than desirable. Hypolimnetic, Cochrane Inlet E and W, Outlet, Squantum Inlet, and Taft Inlet pH levels were slightly acidic and potentially critical to aquatic life.

Station Name	Table 1. 2020 Average Water Quality Data for CONTOOCOOK LAKE - JAFFREY									
	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	6.7	2.24	21	55	71.4	12	2.56	2.94	0.59	6.66
Hypolimnion					76.2	17			1.08	6.09
Cochrane Inlet E			34		124.6	20			1.60	5.80
Cochrane Inlet W			28		93.6	23			1.32	5.02
Dam Outlet					87.2	16			0.84	5.72
Jowder Cove Inlet			28		92.5	26			0.76	6.32
Squantum Inlet			53		171.0	156			1.44	6.07
Taft Inlet			84		245.5	48			10.28	6.05
Townline Inlet			23		78.3	19			1.02	6.34
Townline Inlet Upstream			14		50.8	13			0.46	6.56
Walsh Inlet			2		25.4	27			2.06	6.32

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 ug/L
Conductivity: 42.3 uS/cm
Chloride: 5 mg/L
Total Phosphorus: 11 ug/L
Transparency: 3.3 m
pH: 6.6

Historical Water Quality Trend Analysis

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