LAKE MOREY AESTHETICS USE IMPAIRMENT BASED ON MONITORING DATA FROM 2013-2022 (VT DEC)

Following the 2021 VT Surface Water Assessment & Listing Methodology for Aesthetics Use, Lake Morey can be assessed and listed as impaired because "sampling data from within the last 10 years (with a minimum of at least five years of data over that period) show with 95% confidence based on a one tailed T-test that the mean of the total phosphorus annual means exceed the criteria contained in Table 3 of Section 29A-306 of the Vermont Water Quality Standards". Lake Morey has been sampled by volunteers during summer following VT Lay Monitoring Program (LMP) protocols, and the mean total phosphorus (TP) of 21 ug/l from 2013 through 2022 exceeds the Class B(2) criterion of 18 ug/l (see Lay Monitoring Reports and calculations below). Since 2018, LMP staff have collected water quality vertical profile data during summer lake sampling visits with volunteers that indicate internal phosphorus loading from the sediment is a significant source of the increasing total phosphorus concentrations (see Lay Monitoring Reports). It should also be noted that from late August to October of 2022 there was a lake-wide persistent cyanobacteria bloom with floating benthic mats identified as Lyngbya.

Year #	Year	Sample #	LMP TP Mean (ug/l)	TP Criterion (ug/l)	LMP Chlorophyll-a Mean (ug/l)	Chlorophyll-a Criterion (ug/l)	LMP Secchi Depth Mean (m)	Secchi Depth Criterion (m)
1	2022	9	22.3	18	7.9	7.0	5.1	2.6
2	2021	9	26.1	18	2.7	7.0	8.2	2.6
3	2020	7	24.1	18	7.4	7.0	6	2.6
4	2019	10	18.6	18	5.3	7.0	7.7	2.6
5	2018	9	19.6	18	6.1	7.0	6.7	2.6
6	2017	9	19.4	18	8.8	7.0	5.6	2.6
7	2016	9	20.7	18	2.8	7.0	6.9	2.6
8	2015	9	15.4	18	2.7	7.0	7.1	2.6
9	2014	9	21.5	18	3.3	7.0	6.9	2.6
10	2013	9	21.1	18	5.9	7.0	5.3	2.6
Mean			**20.9**	**18**	**5.3**	**7.0**	**6.6**	**2.6**
T-test P-value			**0.0067**		**0.0221**		**0.0000**	