White Lake Monitoring Report—July 2019

A Comparison of White Lake Water Quality Data for July, From 2013-2019

	7/15/2013	7/20/2017	7/12/2018	7/10/2019
Mean Temperature (C)	28.6	30.4	29.2	29.0
Water Clarity, Measured as Secchi Depth (m)	1.25	1.5	1.75	1.5
Turbidity (NTU)	4.3	3.0		1.9
Mean Algal Abundance, Measured as Chlorophyll a Concentration (µg/L)	27.7	9.6	6	8.5
pH Range (std. units)	8.0-8.3	6.6-6.8	6.5-6.9	6.5-6.6
Dissolved Oxygen, Mean % Saturation	103	92.5	94	93.5
Mean Total Nitrogen (mg/L)	0.41	0.61	0.70	0.62
Mean Total Phosphorus (mg/L)	0.02	0.02	0.08	<0.02
Number of Samples	3	3	7	6

2013 and 2017 data collected by NCDEQ; 2018 and 2019 data collected by LIMNOSCIENCES

Water clarity tends to diminish in the summer, due to an increase in algae as well as an increase in the amount of suspended sediments from the higher levels of boating activity (very high levels of rainfall may also cause a decline in clarity in this shallow lake). Results from this July's monitoring (both Secchi depth and Turbidity are measures of clarity) are in line with what has been seen in the past.

pH levels are holding steady and are also in line with what has been seen in the past, with the exception of July 2013, when an algal bloom caused a substantial pH increase.

Water column nutrient levels remain low—both near the bottom and near the surface—and soluble reactive phosphorus (SRP) levels (the form of phosphorus that algae use) are below detection limits. The high phosphorus levels in July 2018 were a result of the continued presence of the microfloc from the alum treatment (which bound up the phosphorus, making it unavailable to the algae but still measurable as total phosphorus).

Hydrilla Monitoring July 2019

While there is an abundance of a low-growing native plant (proliferating spikerush), no <u>Hydrilla</u> has been found.

Bacterial Monitoring by Bladen County Health Department

Results from May and June sampling indicated very low levels of <u>E. coli</u> bacteria at three sites around the lake.

July Rainfall and Lake Level Monitoring

Monthly Rainfall (inches) for White Lake, Compared With Elizabethtown Long-Term Averages

Month	2019 Monthly	2019 Total-Year to Date	2018 Monthly	2018 Total-Year to Date	E-town Monthly Average	E-town Total-Year to Date	E-town % of Total-Year to Date
January	2.75	2.75	4.20	4.20	3.81	3.81	7.7
February	2.25	5.00	2.00	6.20	3.44	7.25	14.7
March	3.25	8.25	3.95	10.15	3.91	11.16	22.6
April	7.25	15.50	6.75	16.90	3.12	14.28	29.0
May	1.20	16.70	7.70	24.60	3.67	17.95	36.4
June	5.25	21.95	10.00	34.60	4.70	22.65	45.9
July	6.00	27.95	4.75	39.35	5.75	28.40	57.6
August			6.25	45.60	5.95	34.35	69.6
September			29.45	75.05	5.29	39.64	80.4
October			2.25	77.30	3.38	43.02	87.2
November			4.25	81.55	3.16	46.18	93.6
December			7.5	89.05	3.14	49.32	100
Total			89.05		49.32		

July rainfall (as measured at the Town's WWTP) totaled 6", bringing the total for the year to date just under 28", which is average for the area.

Several of the July rainfall events were significant enough to be reflected in a slight, but temporary increase in lake level. By way of comparison: in June, with no

significant (over 1") rainfall events there was a 2.6 inch variation (from high to low), with a total loss for the month of 1.9 inches, while in July (with 3 rainfall events over 1") there was a 2.75 inch variation (from high to low), with a total loss for the month of 0.6 inches.