

9/17/19

## Greenwood Lake Harmful Algal Bloom Sampling Results, Map and Flight Results

### Greenwood Lake Harmful Algal Bloom (HAB) Samples and Results as of 9/16/2019

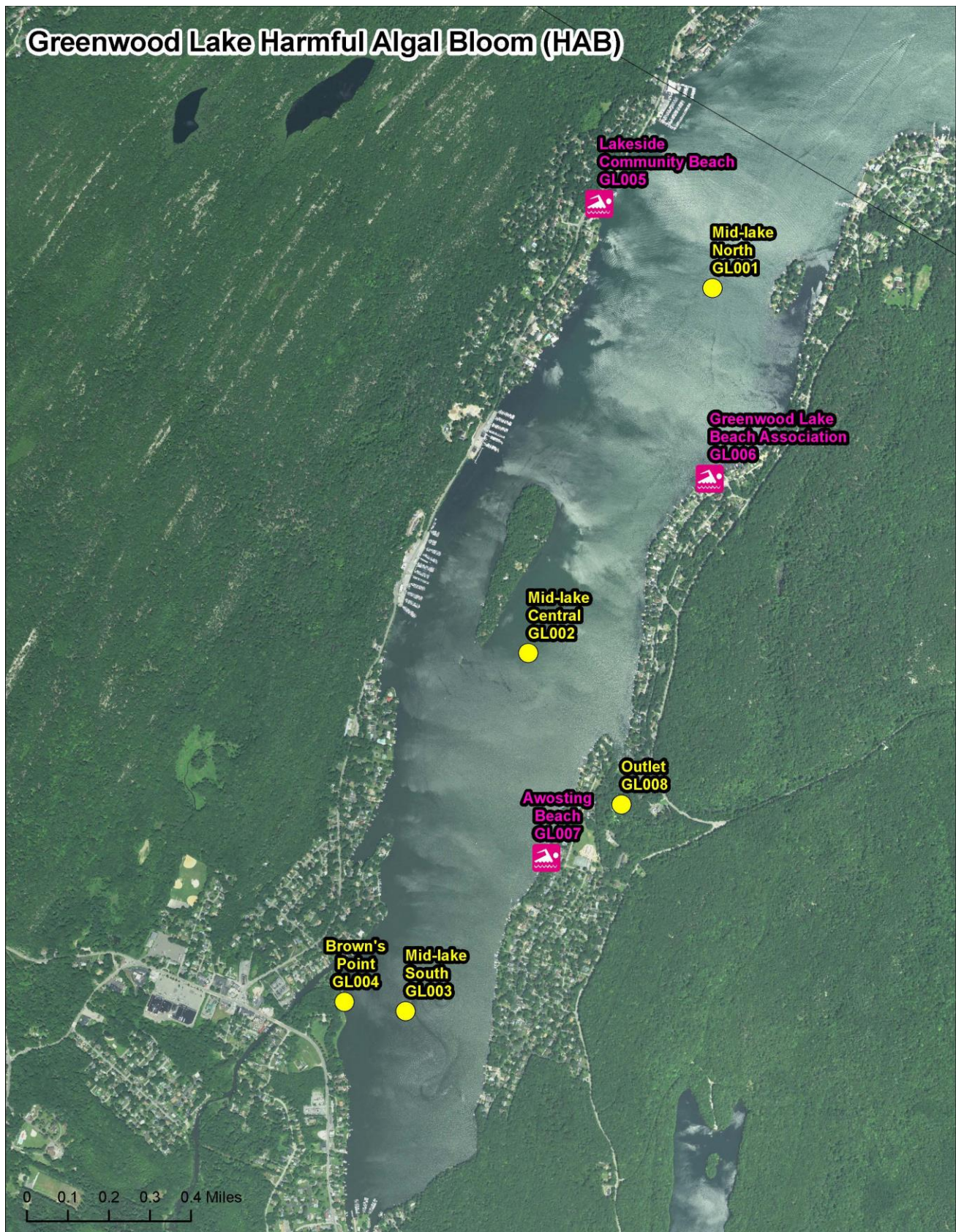
#### Cell Counts

Site ID	Site name (all within NJ boundary)	Cyanobacteria Counts cells/mL*																	
		Date Sampled																	
		7/10/2019	7/15/2019	7/22/2019	7/24/2019	7/29/2019	7/31/2019	8/5/2019	8/7/2019**	8/13/2019**	8/14/2019**	8/19/2019**	8/21/2019**	8/26/2019	8/28/2019	9/4/2019	9/9/2019	9/12/2019	9/16/2019
GL001	Mid-lake North	51000	61000	80160	100500	84700	134000	96500	> 57000	> 45000	> 55250	>69750	>115750	153000	108750	95875	76750	113500	50000
GL002	Mid-lake Center	---	90000	139250	111750	95500	58500	145000	> 34050	> 48250	> 48250	>45625	>65000	209750	135500	96000	73000	116500	22250
GL003	Mid-lake South	108000	212000	98560	133750	121250	472000	117500	> 101300	>91000	>84750	>54250	>93500	187250	127000	144000	106250	89500	36250
GL004	Browns Point	---	148000	232250	90625	152750	111250	90000	> 151750	>69500	> 58875	>76250	>73000	258250	202500	138500	146500	71500	24250
GL005	Lake side Community Beach	---	---	71000	89875	82000	104000	85000	> 55250	>97750	>65000	>24750	>89625	148500	70000	137250	76000	69000	72500
GL006	Greenwood Lake Beach Assoc	---	---	33375	86750	30250	63000	56750	> 88250	>103375	>38500	>85500	>46750	165500	123250	214250	83500	59750	66000
GL007	Awosting Beach	---	---	156750	87500	77250	87750	128000	> 107750	>119750	>83750	>56750	>95875	133500	278500	178250	111000	79750	44000
GL008	Outlet	---	---	85375	94625	50250	58000	71000	> 31800	>38750	>37750	>21000	>49750	196750	132250	77750	72000	82250	38500
		*NJ Health Advisory Guidance Levels Cell Count $\geq$ 20,000 cells/ml; Microcystins $\geq$ 3 $\mu$ g/L																	
		Indicates > than advisory levels																	
		**Cell counts greater than values shown due to the need for approximations for a newly observed cyanobacterial specie																	

## Toxins

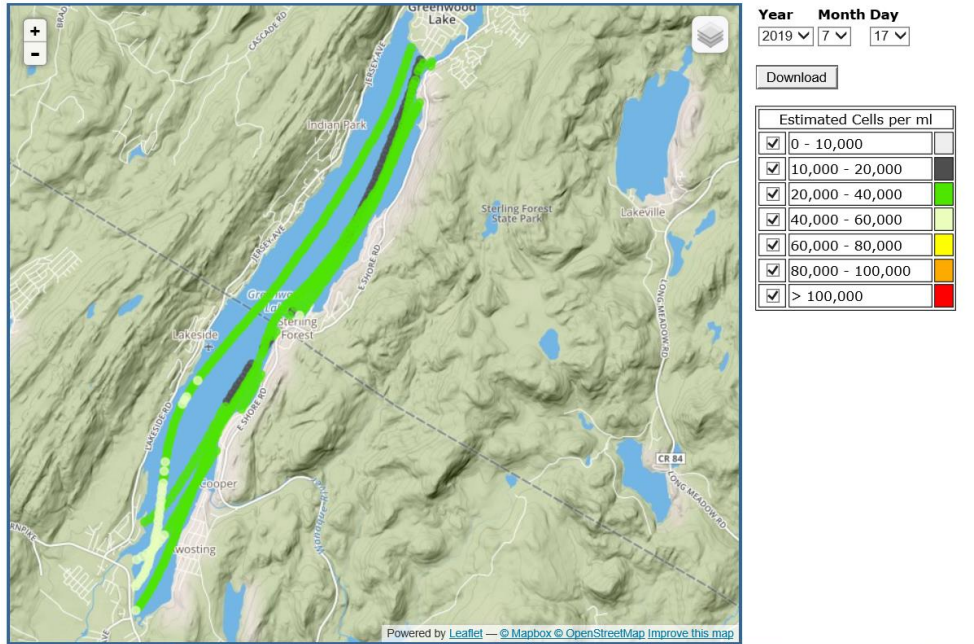
Site ID	Site name (all within NJ boundary)	Microcystins µg/l (lowest Reporting Level 0.15µg/l)*																	
		Date Sampled																	
		7/10/19	7/15/19	7/22/19	7/24/19	7/29/19	7/31/19	8/5/19	8/7/19	8/13/19	8/14/19	8/19/19	8/21/19	8/26/19	8/28/19	9/4/19	9/9/19	9/12/19	9/16/19
GL001	Mid-lake North	1.66	2.56	3.79	2.12	4.63	2.64	4.03	4.67	1.38	1.32	1.75	1.70	1.95	1.66	1.89	2.01	2.10	1.86
GL002	Mid-lake Center	3.01	3.27	4.77	1.43	5.64	2.44	3.37	5.71	1.04	1.02	2.05	1.86	2.71	2.54	3.42	2.21	2.11	2.50
GL003	Mid-lake South	4.45	3.02	4.54	1.65	6.21	2.91	3.67	6.11	0.98	1.19	2.43	2.66	2.27	2.65	3.50	2.37	3.29	1.90
GL004	Browns Point	---	4.50	3.40	2.13	5.66	2.76	3.50	6.18	0.98	0.80	2.38	1.60	2.25	3.12	2.29	2.41	1.97	1.28
GL005	Lakeside Community Beach	---	---	3.56	2.38	5.60	2.66	2.61	3.69	1.49	0.85	1.65	1.60	1.37	1.54	1.70	2.23	1.98	2.32
GL006	Greenwood Lake Beach Assoc	---	---	4.70	3.29	4.09	2.60	2.41	3.15	0.72	0.75	1.86	1.60	1.59	1.93	1.57	2.14	1.29	1.32
GL007	Awosting Beach	---	---	3.28	2.10	4.56	2.46	4.00	3.35	1.15	0.98	2.04	2.06	2.26	3.26	4.08	2.26	2.00	1.49
GL008	Outlet	---	---	3.74	2.51	4.84	1.53	2.88	3.35	1.79	0.94	1.76	1.81	2.84	2.70	3.06	2.23	2.79	1.73
		<p>*NJ Health Advisory Guidance Levels            Cell Count ≥ 20,000 cells/ml;            Microcystins ≥ 3µg/L</p>																	
		Indicates > than advisory levels																	

# Greenwood Lake Harmful Algal Bloom (HAB)

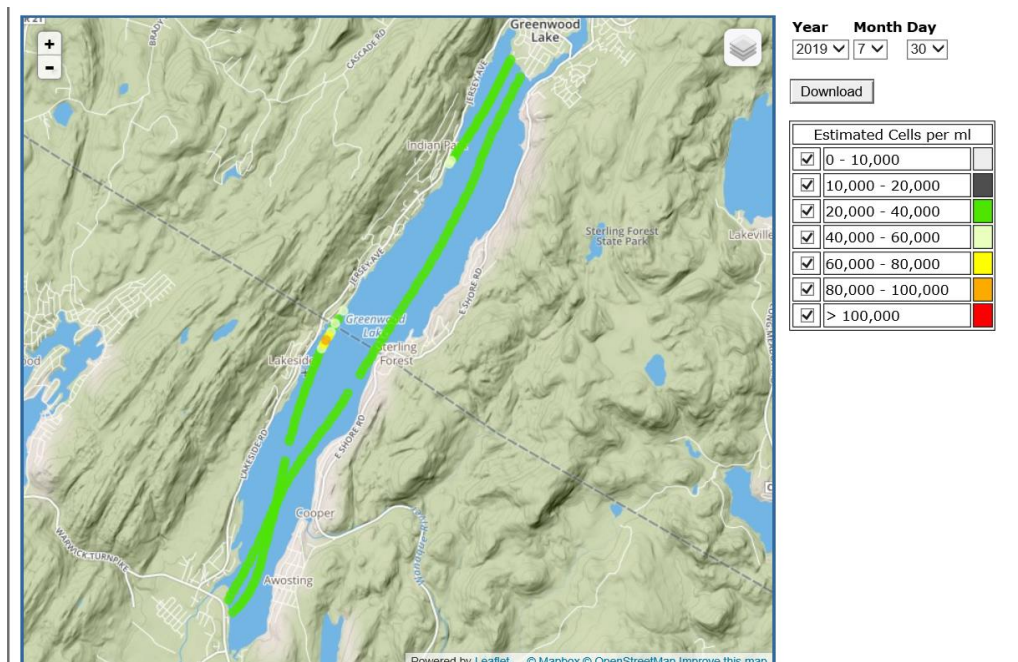


## Flight Results

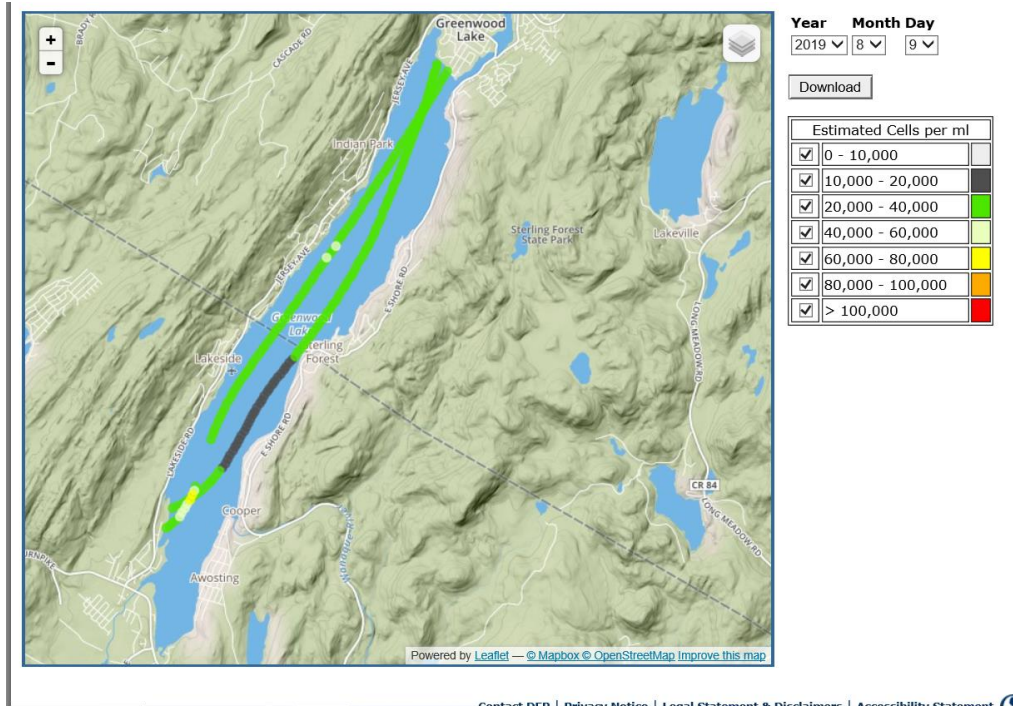
The 7/17/19 flight over Greenwood Lake detected lake wide cyanobacteria distribution, with the highest levels being detected in the New Jersey side of the lake.



The 7/30/19 flight over Greenwood Lake is detecting the presence of cyanobacteria in both NJ and NY waters and the pale-yellow color on the scale suggests cell counts greater than 20,000 cell/ml. This sensor is a general estimate and will be refined by comparison to lab analyzed cell counts.

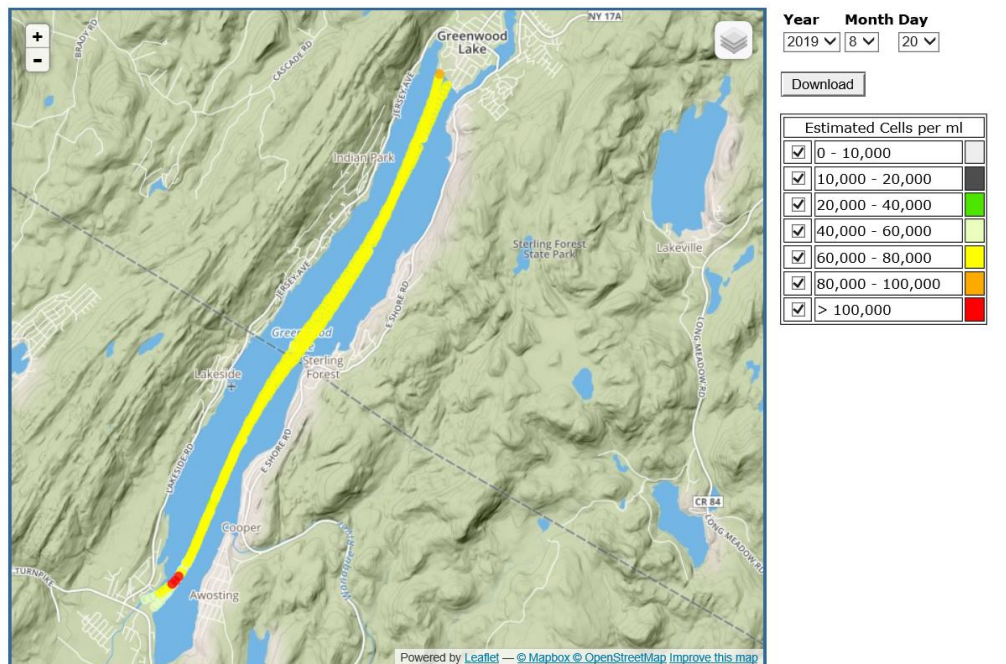


On 8/9, Greenwood Lake's spatial distribution changed slightly, but there are estimated cell counts greater than 60,000, in one area, and there is still the presence of the bloom lake wide.

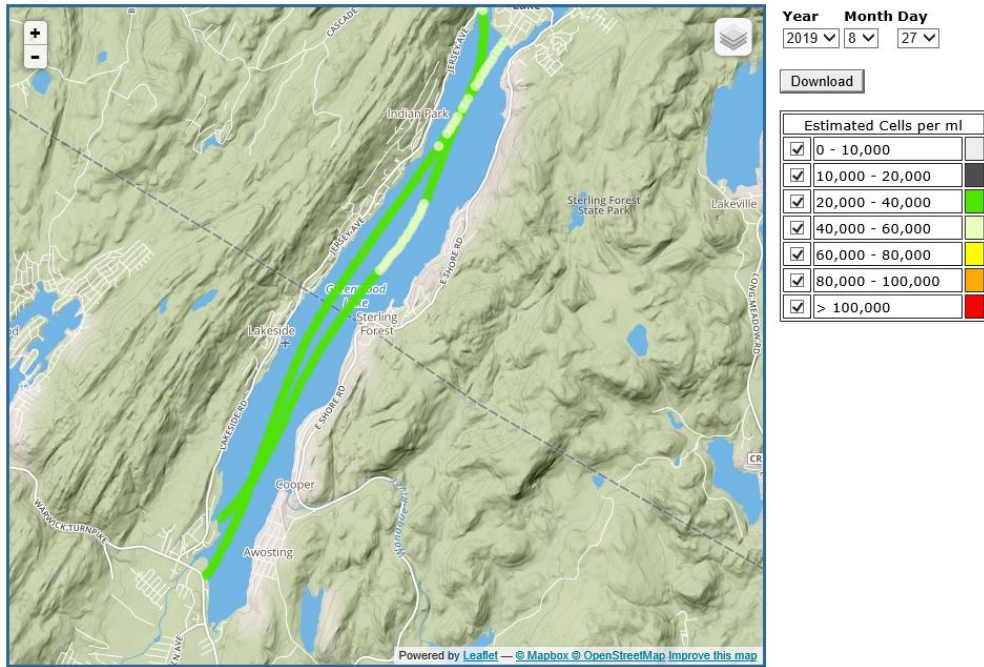


On 8/20, the spatial distribution of an intense bloom has increased lake wide; phycocyanin levels are high

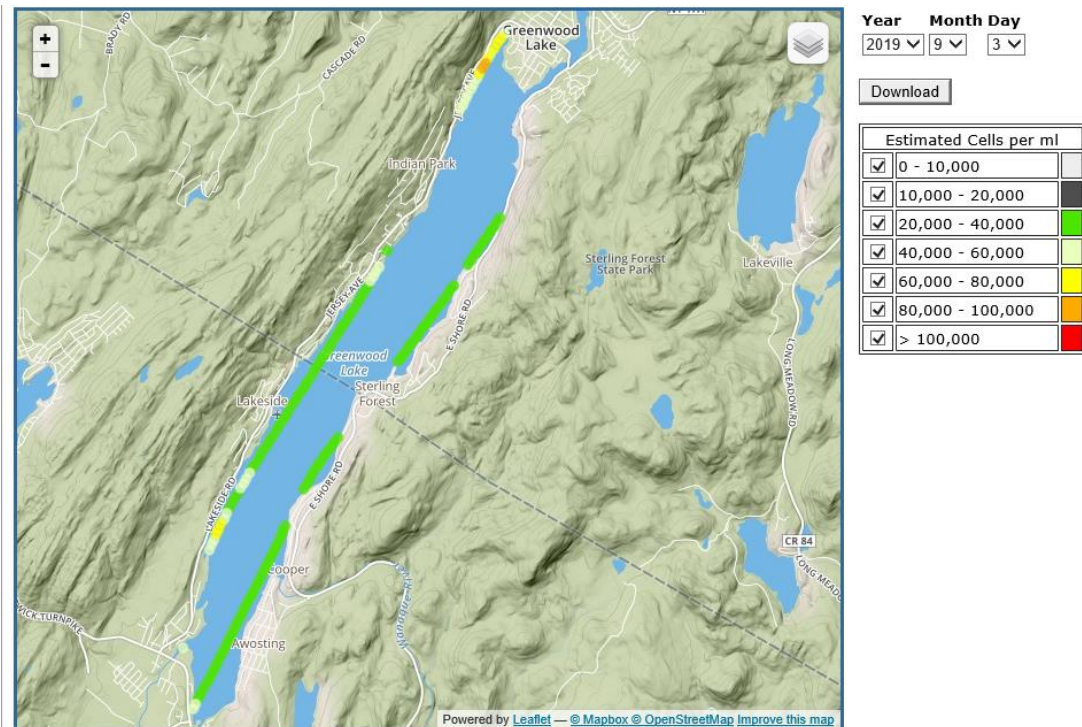
— during the summer months, in favorable weather conditions, over the coastal waters of New Jersey. These nights provide a valuable perspective on water conditions and trends that enable the Bureau to target boat sampling in locations where algal blooms may be occurring.



On 8/27, the spatial distribution of an intense bloom continues to be lake wide. The intensity appears to be lower or it may be due to the cloud cover which limits the amount of cyanobacteria present at the surface where the aircraft sensor detects the reflectance.



On 9/3, the spatial distribution of a bloom is lake wide. Some of the highest levels are on the New York side, but there are some high levels in New Jersey on the south west shoreline.



On 9/11, Greenwood Lake is showing much lower levels since last week, which may be showing the start of a declining trend.

