

Summary of Information Provided on Inquiries About Algae Blooms in Little Lake St. Catherine

- Vermont DEC Fact Sheet [“What Are Algae?”](#)

Quotes:

Peter Isles, Aquatic Biologist, VT DEC:

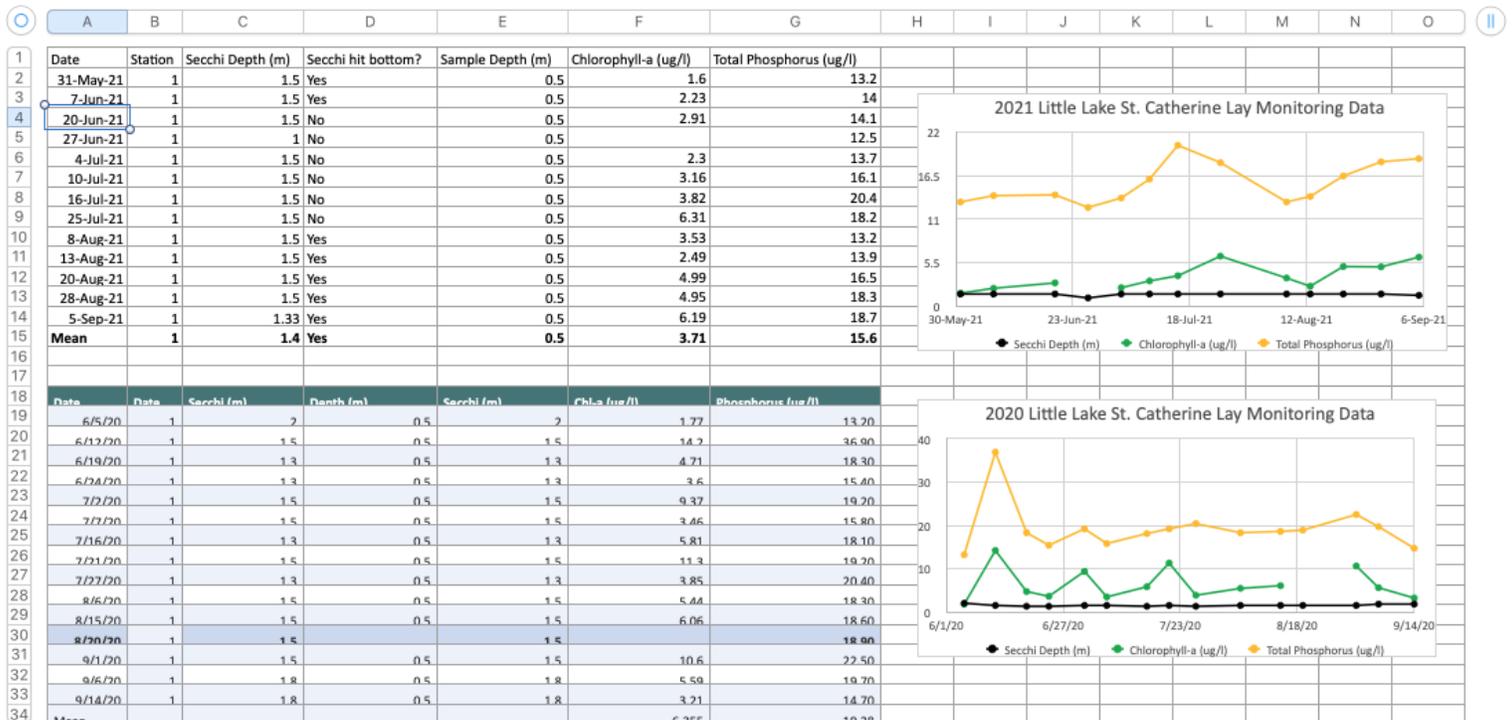
"The photos [Jeremy's] look to me like filamentous green algae, as Mark suggested, which are generally harmless and very common. It is hard to be more specific than that from the pictures that I have seen. If any microscopic images are available, that would make ID's possible. The amount of filamentous algae can vary from year to year depending on things like temperature, amount of precipitation and flushing, and wind conditions. There have been a number of complaints about filamentous algae growth this year, so it could be that the weather conditions this year have favored filamentous algae growth.", and

"Looking at your pictures [LSCCF], it looks as if you have filamentous green algae growing in that area. This type of algae is very common throughout the region, and is generally nothing to worry about from a health perspective. This year seems to have been particularly bad for filamentous green algae throughout the state, likely in part due to the weather conditions during the year (dry conditions, especially early on, and some warm autumn weather), which tend to favor these species as well as submerged aquatic plants. I wouldn't necessarily think that there is any connection to this algae growth and the herbicide treatment, given that similar growth was reported in areas without any herbicide use. I can't really say anything more specific without microscope images, but I am pretty confident that those would just confirm that these are common green algae."

Mark Mitchell, Lay Monitoring Program Coordinator, VT DEC:

"I also concur with Peter's assessment of filamentous algae growth this year and its variability with weather conditions from year to year."

Mark also provided the Lay Monitoring Data for 2021 (attached), and I charted out 2020 data to show that both Phos and Chlor are lower this year (attached).



	Avg Chlor	Avg Phos
2020	6.36	19.28
2021	3.71	15.60

Marc Bellaud, SOLitude Lake Management:

"While I can't say definitively that the decomposing milfoil didn't contribute to the algae growth, I do think it's unlikely that it was the primary cause. If the treatment was going to stimulate an algae bloom, it would have happened much closer to the treatment date, not 4-5 months later. There is also a dense cover of native plants throughout Little Lake that would help absorb and use any nutrients that would have been released from decomposing milfoil. I just spoke with Amanda who performed the post-treatment survey and she did not notice anything out of the ordinary in Little Lake in September. She feels like there is always some algae in Little Lake, even in years when no treatment was performed. I think that it is probably more likely natural cycling and natural causes; all plants are dying back now and releasing nutrients, nutrient levels in the tributary were elevated as you indicated, and it's been relatively warm allowing algae growth to continue."

Hilary Solomon, PMNRCD:

"We just looked at our water quality data and the results from 2019 and this year (the two years sampled) show higher than average TP results draining from a tributary into this wetland. About 40 ug/l was normal for the summer, but we also had multiple moderate flow samples, which tend to lead to higher phos concentrations than low-flow data. Some of the data is around 20 ug/l, which I assume will be the low flow samples. These results are high compared to other tributaries that we monitored on the same dates and under the same flow conditions. Right now, we just have the raw data. As we organize it into a report, we'll keep an eye on this site."

Sadie, who sampled this tributary in both 2019 and 2021 reported that the landowners in the area channelized road runoff from Route 30 that had previously been sheetflow into a meadow and directed it more efficiently into the tributary. This work was just downstream from our monitoring site."

Misha Cetner, VT DEC:

"At this point, the various responses on this cover it quite well. In summary, filamentous algae naturally occurs in lakes and ponds and those populations should be expected to be seen to some degree. The localized nature of the reported population next to a wetland is not surprising nor is it alarming. If a significant portion of Little Lake was a mat of green filamentous algae, then that may be an issue, but that wasn't the case. The water chemistry reports from Lay Monitoring also appeared to be quite flat/stable. That's great in that it's largely showing plant control activities in the water aren't changing that chemistry and the system has remained stable. I look forward to reviewing the plant survey when that's available!"

Lakes are dynamic systems and it should be expected that things may change to some degree from year to year. I feel like we've probably discussed this before and I know you get it, but the causation/correlation argument also applies here. Just because an herbicide treatment occurred in Little Lake this year, you cannot say it caused all the changes you see in the lake that year. Can it be linked to the reduced population of EWM? Yes, it's a fairly direct pathway to get to that conclusion. The pathways linking an herbicide treatment to algae growth involve complex interactions between biological, chemical, and physical components of the environment (this complicated network is considered the ecological integrity of the waterbody – the 40% littoral zone treatment standard was created as a means to keep the ecological integrity of the waterbody balanced, which at this point, it appears that threshold is achieving its goal). This is where the principles of the scientific method really shine!"

Notes:

- Filamentous algae is not new in LSC or LL, blooms have been seen in years past (postings on the LSCCF website from 2013 / 2014 and social media posts from 2020 included in a previous email, personal observations).
- Blooms are caused by excess nutrients being available in the water for the algae.

- Hilary identified a potential nutrient source (with data) in the area where the bloom occurred, needs to be investigated, and has been noted for the LWAP.
- Various VT DEC employees noted that an increase in filamentous algae blooms have been reported state wide, speculating that conditions were good for algae to bloom this season.
- Marc from SOLitude stated, "If the treatment was going to stimulate an algae bloom, it would have happened much closer to the treatment date, not 4-5 months later."
- The lay monitoring data shows that while there was a slight increase in Phos and Chlor around 4 weeks after the treatment (peaking 7/16 & 7/25), it dipped back down, and levels for both Phos and Chlor, on average, were lower than in 2020 - when no treatment occurred.
- Halls Bay was patrolled and observed, no algae bloom was present.

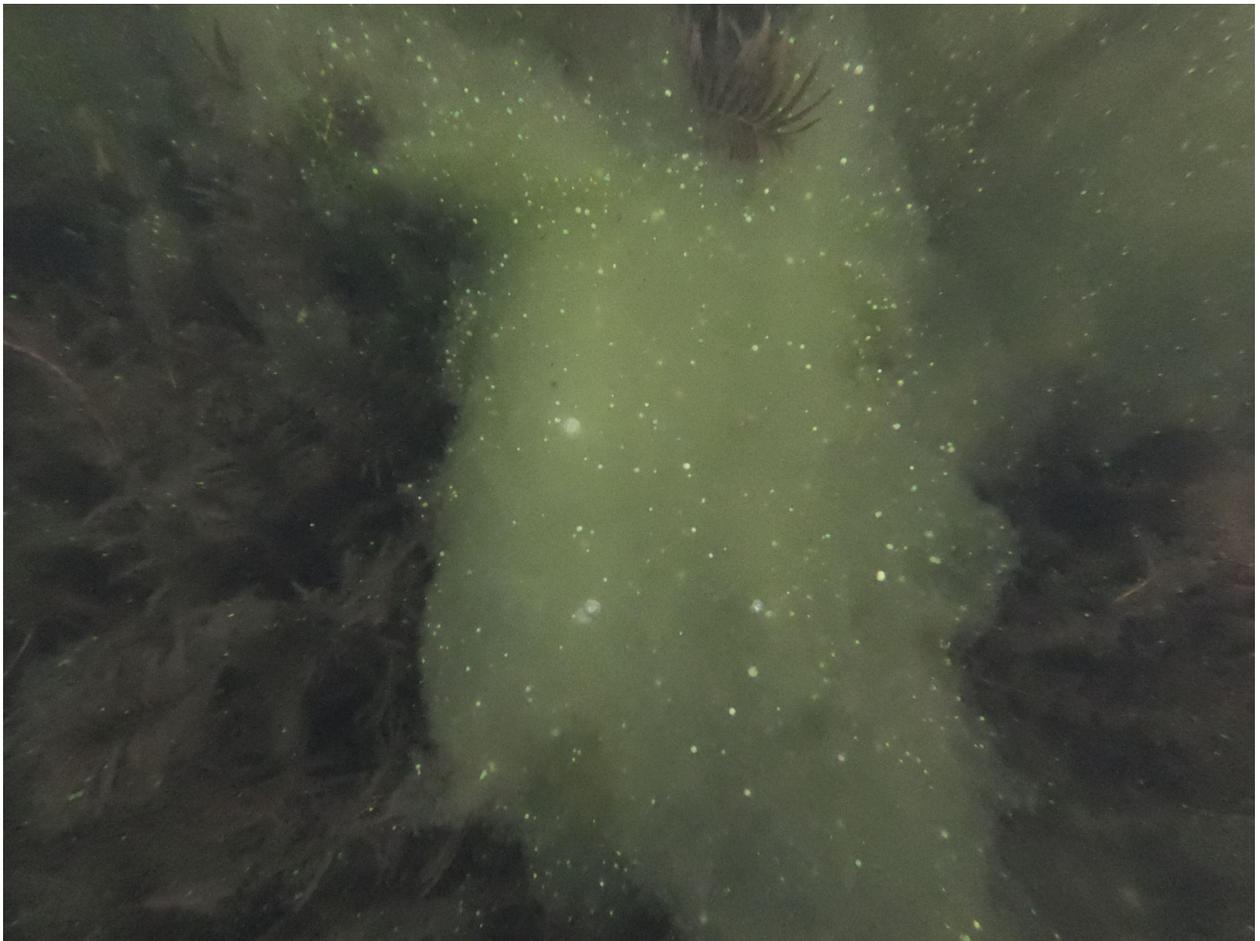
Considerations:

- Continue work on Lake Wise & LSC Stormwater Master Plan & continue to educate property owners about phosphorus, stormwater runoff - and their impacts on the lake.
- Work to increase testing beyond the Lay Monitoring window of Memorial Day - Labor Day (possibly year-round?) and by adding more testing sites (LSC Lake Watershed Action Plan, [VT DEC NextGen](#), [LaRosa Volunteer Monitoring](#), Castleton U, purchase testing equipment?).
- Look into other sources of Phos and work to mitigate them, ie. Adam mentioned leaves and street sweeping. The NE corner that is having the bloom was also covered in lily pads that have been dying there in the fall. I've read that they could be contributing a lot. Potential discussion: the lily pads take up Phos from the water and sediments as they grow during the season. Would it be good to harvest them at the end of the season so the Phos is not returned to the lake as they decay in the fall? When the substantial lily die-off happens, is there a significant nutrient spike (need an increase in testing).

Area Observed With Concentration of Algae, NE corner of Little Lake:



Underwater Photos of the Algae Observed [Jeremy]:



Photos of the Algae Observed on Eastern Shore [LSCCF]:

