



Algal identification and cyanotoxin detection report



Prepared For:

Painted Hills Lakes

**4364 Rembrandt Dr.
Martinsville, IN 46151**

**Attn: Tina Thrasher
812-650-2979
tthrasher6264@gmail.com**

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Report #1487

Sample ID: Boat ramp (Lake Holiday)

Sample Depth (feet): < 1

Sample Type: Grab

Preservative: Chilled (< 10°C)

Date Collected: 04-19-2021

Date Received: 04-19-2021

Date Analyzed: 04-19-2021

Analyzed by: G. Gusler

Algae ID + Enumeration

Explanation of Analysis

Algae identification and enumeration involves microscopic analysis of the submitted water sample at 100-400x magnification using a compound light microscope to screen for potential toxin-producing cyanobacteria (blue-green algae). Each genus of algae detected will be reported in the table below. Cell densities of each genus identified were enumerated utilizing a Sedgewick-Rafter counting chamber and standard operating procedures.

Results of Analysis:

Harmful algae detected?



Yes



No

Total Cell Density: 0 cells/mL

Genus	Taxonomic Class	Cell Density (cells/mL)	Potential Toxin Producer
No algae detected	-	-	-

Note: The data presented here pertain to water samples collected at the specified site on the collection date stated in this report. These data are used to determine whether algal species at a specific site are present that are capable of producing toxins. Results from a sample taken at a single point in time are not conclusive for predicting presence or absence of toxin-producing cyanobacteria at any other point in time at this site.

Sample ID: Clubhouse (Lake Holiday)

Sample Depth (feet): < 1

Sample Type: Grab

Preservative: Chilled (< 10°C)

Date Collected: 04-19-2021

Date Received: 04-19-2021

Date Analyzed: 04-19-2021

Analyzed by: G. Gusler

Algae ID + Enumeration

Explanation of Analysis

Algae identification and enumeration involves microscopic analysis of the submitted water sample at 100-400x magnification using a compound light microscope to screen for potential toxin-producing cyanobacteria (blue-green algae). Each genus of algae detected will be reported in the table below. Cell densities of each genus identified were enumerated utilizing a Sedgewick-Rafter counting chamber and standard operating procedures.

Results of Analysis:

Harmful algae detected?



Yes



No

Total Cell Density: No planktonic algae detected

Genus	Taxonomic Class	Cell Density (cells/mL)	Potential Toxin Producer
<i>Spirogyra sp.</i>	Zygnematophyceae	n/a– mat forming genus	No
<i>Zygnema sp.</i>	Zygnematophyceae	n/a– mat forming genus	No
<i>Mougeotia sp.</i>	Zygnematophyceae	n/a– mat forming genus	No

Note: The data presented here pertain to water samples collected at the specified site on the collection date stated in this report. These data are used to determine whether algal species at a specific site are present that are capable of producing toxins. Results from a sample taken at a single point in time are not conclusive for predicting presence or absence of toxin-producing cyanobacteria at any other point in time at this site.

Sample ID: Nebo Ramp (Lake Nebo)

Sample Depth (feet): < 1

Sample Type: Grab

Preservative: Chilled (< 10°C)

Date Collected: 04-19-2021

Date Received: 04-19-2021

Date Analyzed: 04-19-2021

Analyzed by: G. Gusler

Algae ID + Enumeration

Explanation of Analysis

Algae identification and enumeration involves microscopic analysis of the submitted water sample at 100-400x magnification using a compound light microscope to screen for potential toxin-producing cyanobacteria (blue-green algae). Each genus of algae detected will be reported in the table below. Cell densities of each genus identified were enumerated utilizing a Sedgewick-Rafter counting chamber and standard operating procedures.

Results of Analysis:

Harmful algae detected?



Yes



No

Total Cell Density: 52,200 cells/mL

Genus	Taxonomic Class	Cell Density (cells/mL)	Potential Toxin Producer
<i>Aphanizomenon sp.</i>	Cyanophyceae	51,232	✓
<i>Microcystis sp.</i>	Cyanophyceae	968	✓

Note: The data presented here pertain to water samples collected at the specified site on the collection date stated in this report. These data are used to determine whether algal species at a specific site are present that are capable of producing toxins. Results from a sample taken at a single point in time are not conclusive for predicting presence or absence of toxin-producing cyanobacteria at any other point in time at this site.

Results: Toxin detection tests

Sample ID	Toxin Screened	Estimated Concentration (µg/L)
Lake Holiday Boat Ramp	Microcystins (Recreational)	Non-detect
Clubhouse	Microcystins (Recreational)	Non-detect
Nebo Boat Ramp	Microcystins (Recreational)	Non-detect

Summary of Results

Algae ID and Density

As part of the consultation service provided, algae are identified and enumerated in the collected samples to monitor for presence and densities of known toxin- or odor-producing algae. At the time of sampling, potential toxin-producing cyanobacteria (blue-green algae) were detected in only the water sample collected from Nebo Lake. In that sample, the total cell density of cyanobacteria was 52,200 cells/mL. The sample collected from Lake Holiday's boat ramp did not contain any detectable algae. The sample collected from the Clubhouse dock contained 3 genera of green filamentous algae (non-harmful).

Algal Toxin Analysis

At the time of testing, microcystins were non-detectable at all sampling locations. These results place the water in both lakes under IDEM recreational use risk category 1 (<4 ppb, low or no risk of exposure).

Recommendations

Precautions

At this time, the results of toxin monitoring indicate that no water use restrictions need to be observed. Since cyanobacteria may produce toxins intermittently, it is always best to avoid contact with the water when signs of growth are present. Please remain observant for any signs of excessive growth including surface films/scums.

Algae Management

At this time, cell densities are sufficiently high that an algaecide treatment would be recommended in Nebo Lake. It is recommended to proactively treat HAB species to minimize the risk of toxin production and exposure. In order to proactively manage HABs it is recommended to set an action threshold for algaecide treatments. For Holiday and Nebo Lakes, the recommended action threshold density is 20,000 cells/mL. If the total of all HABs equal or exceed this measurement, a treatment would be strongly recommended. If toxins were present, a treatment would be deemed necessary.