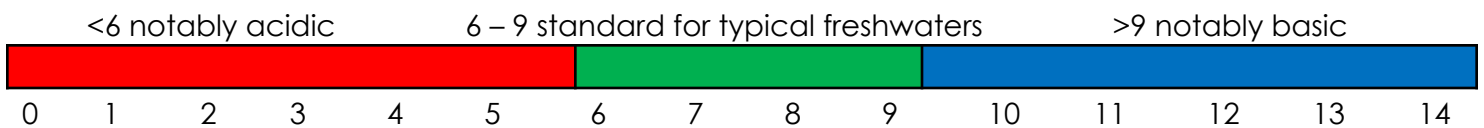


## WATER QUALITY RESULTS

PROPERTY NAME: Lake Monticello  
 SAMPLING DATE: April 19, 2022  
 REPORT DATE: April 25, 2022  
 SUBMITTED TO: Mark Lugar  
 SUBMITTED BY: Shannon Junior

At your request, we sampled the water quality in Lake Monticello in advance of the CAL-TRI Triathlon. Water samples were collected at three locations along the swim route and combined into a single sample for evaluation. The results are summarized in the table on Page 3 and the attached Algae Analysis Report. The table also indicates a reference water quality standard for each parameter, if applicable. Below are descriptions of each parameter and how they relate to the ecology of the waterbody and health and safety standards.

**pH** – The concentration of acids and bases in the water determines its pH. A low pH (less than 7) is considered acidic, while a high pH (greater than 7) is basic. A pH of 7 is considered neutral. Most aquatic organisms survive best in waters with a pH between 6.8 and 8.2.



**Total coliforms, E. Coli, and enterococci** – Total coliforms are a widespread group of gram-negative bacteria found in animal digestive systems and feces, though also present in external areas such as soil. These bacteria may or may not be directly related to fecal coliform, but act as a general indicator of water contamination. Since the total coliform analysis measures all coliform groups, both good and bad, no direct recreational standards are based on this analysis. However, the threshold level for total coliforms in drinking water is zero.

*Escherichia coli* (*E. coli*) are rod-shaped, gram negative bacteria commonly found in the gastrointestinal system of humans and animals. *E. coli* is a type of fecal coliform whose presence

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indicates fecal contamination of water from warm blooded animals. *E. coli* can be directly deposited into a water resource or contaminate through sewer discharges, faulty septic systems, storm water runoff, pets, wildlife (e.g., geese) and farm animals. Despite numerous strains of non-pathogenic *E. coli*, some are responsible for serious human illness.

Enterococci are a subgroup within the fecal streptococcus group. Enterococci are distinguished by their ability to survive in salt water, and in this respect they more closely mimic many pathogens than do the other indicators. Enterococci are typically more human-specific than the larger fecal streptococcus group. EPA recommends enterococci as the best indicator of health risk in salt water used for recreation and as a useful indicator in fresh water as well.

The U.S. Environmental Protection Agency (EPA) has determined human contact safety guidelines in recreational freshwater samples of 33 CFU (Colony Forming Units) of enterococci per 100 milliliters (mL). For *E. coli*, the standard is 126 CFU per 100 mL [average of samples over a 30-day period] or a single sample in excess of 235 CFU *E. coli* per 100 mL. Beach closures are often posted if samples exceed these designated threshold levels.

**Cyanobacteria** - Cyanobacteria, also known as blue-green algae, are readily present in freshwaters throughout the United States. Cyanobacteria blooms often appear as bluish-green surface scums or thick mats, although some infestations are dispersed through the water and provide slight discoloration. With rapid growth rates under certain conditions, these organisms have the ability to achieve levels of concern in short order. Some cyanobacteria have the ability to form surface scums through buoyancy regulation and become highly concentrated in static or windblown areas of water bodies. Caution should be taken around cyanobacteria infestations to avoid exposure and resultant potential health risks.

Cyanobacteria are capable of producing toxins that can pose significant risks to humans and wildlife. Common cyanobacteria associated toxins includes; hepatotoxins (impacts liver/kidney), neurotoxins (impacts brain), dermatitis toxins (impacts skin, digestive system) and gastrointestinal toxins (impacts digestive system). Animal mortalities from cyanobacteria toxin exposure have, in part, included cows, dogs, pigs, and ducks. Human exposure is commonly from inhalation of aerosolized toxins, ingestion/consumption of contaminated water/ algae cells, or recreational skin contact with cyanobacteria infestations. Correlations have been made between chronic cyanotoxin exposure and neurodegenerative diseases, such as ALS and Alzheimer's, and human mortalities have been observed in extreme exposure scenarios.

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**Table 1:** Surface Water Quality

Parameter	Surface	Optimal Range
pH	7.0	6.8-8.2
Total Coliforms (CFU/100 mL)	686.7	n/a
E. Coli (CFU/100 mL)	19.9	<126
Enterococci (CFU/100 mL)	0	<33

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## SeSCRIPT Analysis Report: *Lake Monticello*

**Company:** SOLitude Lake Management

**Address:** 1320 Brookwood Dr Ste H, Little Rock AR 72202

**Contact Person:** Shannon Junior; Tyler Meighan

**Phone:** (888) 480-5253

**Email:** sjunior; tmeighan@solitudelake.com

**Project Name:** Lake Monticello

**Surface Area:** 317 acres

**Average depth:** 25 feet

**Date Sample Received:** 04/20/2022

**SeSCRIPT Analysis Performed:** Algae ID

### *Algae ID Results* Lake Monticello

Identification	Classification	Description	Density/Biomass (cells/mL)
<i>Gonyostomum</i> sp.	Raphidophyceae	Single-celled, flagellated, planktonic	< 40
<i>Staurastrum</i> sp.	Streptophyta- Desmids	Single-celled, planktonic	< 40

Other algae observed at densities lower than 40 cells/mL include: *Dinobryon* (Chrysophyceae); *Gymnodinium* (Dinophyta); *Mallomonas* (Synurophyceae)

