



March 12, 2021

SITUATION ANALYSIS

The Florida Department of Environmental Protection (FDEP) has reported an active algae bloom in Harbor Isle Lake. The bloom, comprised of blue green algae or cyanobacteria, produces a toxin that can be harmful to humans and pets. **Do not come in contact with or allow pets to come into contact with the lake water during the active algae bloom.** The Florida Fish and Wildlife Conservation Commission (FWCC) states that the best way to prevent exposure to blue-green algae toxins is to avoid water where scum, foam or algae mats are present or where water is a greenish color. The toxin can be an irritant when breathed, as well. Additional information on blue green algae can be found here:

- <https://myfwc.com/research/redtide/general/cyanobacteria/>
- <http://www.floridahealth.gov/environmental-health/aquatic-toxins/harmful-algae-blooms/index.html>

FDEP resampled the lake in March, 2021. Sampling results can be found on their dashboard using their mapping feature to locate the lake.

- <https://floridadep.gov/AlgalBloom>

NEXT STEPS

City Council has approved continued maintenance of the lake by SOLitude Lake Management. They are scheduled to be on the lake twice per month, typically on Wednesday, to inspect the lake and provide treatment to control blue green algae as well as maintain the aeration system in the lake.

In an effort to further characterize the nutrient inputs into the lake, the city has provided a notice to proceed to our consultants to conduct additional testing in the lake. The testing will consist of sediment sampling and analyses. Details of the testing program are attached. The program will take about six (6) months to complete.

HOW YOU CAN HELP

The algae bloom is caused by an imbalance of nutrient levels. Incorrectly used irrigation systems can carry fertilizers, grass clippings and leaves containing nutrients. To help protect the lake, follow these best practices:

- Limit reclaimed water use to twice per week. Sign up for the city's free sprinkler check program.
- Fertilize correctly. No fertilizer is needed if using reclaimed water since reclaimed water contains elevated nitrogen and phosphorous.
- Remove leaves and lawn debris from the streets.

Questions? Contact Carlos Frey in the Engineering & Capital Improvements Department at carlos.frey@stpete.org 727-892-5380.



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Evaluation of Sediment Characteristics and Impacts

The city has authorized our consultants to conduct sediment sampling and analyses. Evaluation the sediment characteristics and impacts to the Lake will include the following:

Bathymetric/Sediment Survey

Simultaneous measurements of water depth and organic sediment depth will be performed to hard bottom at a minimum of 75 locations in the Lake. The water depth will be determined by a lowering 10-cm diameter Secchi disk to the lake bottom, and the corresponding water depth will be recorded. A graduated aluminum pole will then be pushed into the sediments to the point of refusal by the sand lake bottom. The depth to the bottom of the organic sediments will also be recorded in the field. The difference between the water depth and depth to hard bottom at each site will be considered to be the depth of the organic sediments. The location of each probing site will be determined using a hand-held GPS device. The collected field data, including water measurements, depth to hard bottom, and GPS coordinates, will be entered into a spreadsheet upon return to the ERD Office. This information will be input into AutoCAD for developing water and sediment depth contour maps. Both the water and organic sediment maps will be developed with 1- foot contours. This information will be used to calculate the total water and organic sediment volumes within the Lake.

Sediment Collection/Characterization

Lake bottom sediment core samples will be collected at 10 sites using a 2-inch diameter stainless steel split-spoon core collector. Visual characteristics of each sediment core will be recorded, and the 0- 10 cm layer of the sediment core will be sectioned off and collected. This layer is collected since prior research has indicated that water quality impacts from lake sediments are limited primarily to the top 10 cm. Each core sample will be analyzed using the following parameters: Moisture Content, Total Phosphorus, Organic Content, Total Nitrogen, Sediment Density and pH. Additionally, the 10 core samples will be tested using the Chang and Jackson phosphorus speciation technique. This technique divides sediment phosphorus associations into: Saloid Phosphorus, Iron-Bound Phosphorus and Aluminum-Bound Phosphorus.

Internal Recycling Evaluation

Collection of Large Cores

Direct measurements of internal recycling of phosphorus under oxic and anoxic conditions will be performed in the lake by collection of large diameter (4-inch) sediment core samples from various locations within the lake. Three separate core samples will be collected from a variety of water depths and sediment characteristics. Locations of the large core collection sites will be determined after viewing the water and muck depth contour maps.

Routine Monitoring and Sample Collection

The core samples will be returned the laboratory and incubated under both oxic and anoxic conditions. Sediment release of nitrogen and phosphorus will be measured in each column over time. Filtered water samples will be collected from each core chamber every other day for a period of 30 days under both oxic and anoxic conditions. Periodic measurements of redox potential will be conducted in each core chamber to verify oxic and anoxic conditions. The release rate information will be combined with current and historical dissolved oxygen measurements to evaluate phosphorus recycling on a seasonal basis. A total of 90 samples will be collected (3 chambers x 15 samples/chamber x 2 conditions) and analyzed during the testing program for the following parameters: Ammonia, SRP, NOx, Total Phosphorus and Total Nitrogen.

A report with lab data will be provided to the city.