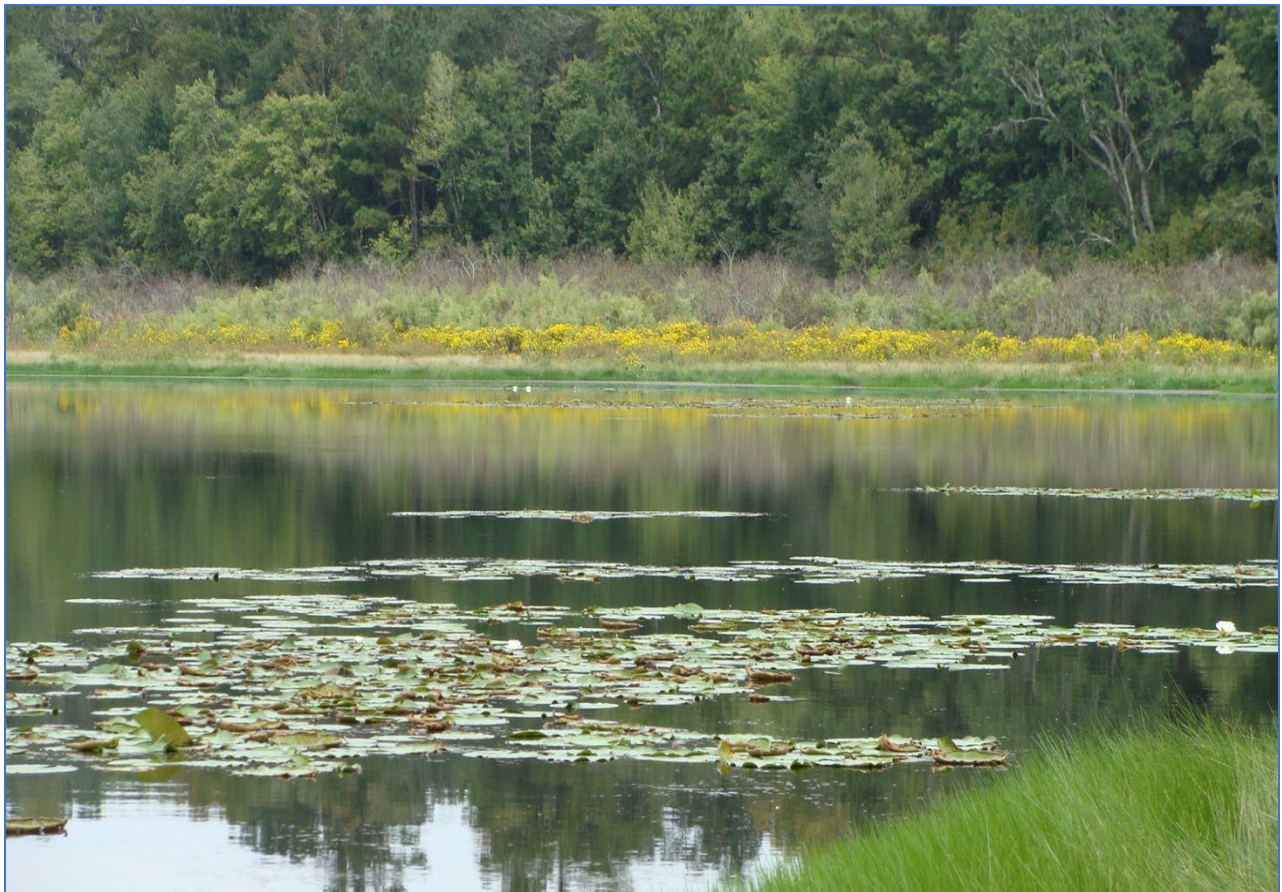


# Lakes Monitoring Annual Report

## Lake Overstreet

*Lake Overstreet is within the Alfred B. Maclay Gardens state park located just north of Interstate-10 near Thomasville Road within the City of Tallahassee corporate limits.*

- Lake Overstreet Physiographic Province: Red Hills
- Lake Overstreet is an [Outstanding Florida Waterbody](#)
- Publicly Accessible: Yes
- Surface Area: 128 acres
- Drainage Basin: 1,378 acres
- Maximum Depth: 26 feet
- Average Depth: > 17 feet
- [Trophic Classification](#): Oligotrophic
- [Fish Consumption Advisories](#): None
- Lake Type: Clear-Acidic
- Water Quality Conditions: Exceptional
- Water Quality Impairments: None
- Biological Health: Healthy



## Evaluation of Lake Health

Healthy lake systems often exhibit well-balanced populations of flora and fauna. While some level of disturbance can be tolerated, excessive human activities may result in lake degradation. Human stressors such as increased inputs of nutrients, sediments and pesticides from watershed runoff, undesirable removal of native shoreline and upland buffer vegetation, and introduction of nuisance (generally exotic) plants and animals all contribute to degradation of our water resources. The Florida Department of Environmental Protection (FLDEP) has developed methods to evaluate if these anthropogenic activities have resulted in conditions where a particular waterbody has exceeded water quality criteria, (Chapter 62-302, Florida Administrative Code), including whether adverse impacts to biological communities have occurred. The most common criteria used by FLDEP to determine lake health is called "Numeric Nutrient Criteria". FLDEP water quality standards are designed to protect the designated uses of waters of the state (*e.g.*, recreation, aquatic life support). This criterion will show exceedances of these standards that may impede the designated use of a particular waterbody. The Numeric Nutrient Criterion evaluates Chlorophyll-*a*, Total Nitrogen and Total Phosphorus. Chlorophyll-*a* is a measure of algal biomass in a water column and is generally found in higher concentrations as a response to increased levels of nitrogen and/or phosphorus. In clear, low alkalinity lakes (a lake where color is  $\leq 40$  PCU and the alkalinity is  $\leq 20$  mg/L  $\text{CaCO}_3$ ), a healthy system is expected to have  $< 6$   $\mu\text{g/L}$  of chlorophyll-*a*. In colored ( $> 40$  PCU) lakes or clear, high alkalinity ( $> 20$  mg/L  $\text{CaCO}_3$ ) lakes,

healthy systems are expected to have  $< 20$   $\mu\text{g/L}$  of chlorophyll-*a*. Chlorophyll-*a* values greater than those referenced may result in unwanted shading of aquatic plants and/or greater potential for harmful algal blooms. **Table 1** below represents the FLDEP Numeric Nutrient Criteria for Florida lakes.

**Table 1. Florida Numeric Nutrient Criteria**

Long Term Geometric Mean Lake Color and Alkalinity	Annual Geometric Mean Chlorophyll <i>a</i>	Minimum calculated numeric interpretation		Maximum calculated numeric interpretation	
		Annual Geometric Mean Total Phosphorus	Annual Geometric Mean Total Nitrogen	Annual Geometric Mean Total Phosphorus	Annual Geometric Mean Total Nitrogen
$> 40$ Platinum Cobalt Units	20 $\mu\text{g/L}$	0.05 mg/L	1.27 mg/L	0.16 mg/L <sup>1</sup>	2.23 mg/L
$\leq 40$ Platinum Cobalt Units and $> 20$ mg/L $\text{CaCO}_3$	20 $\mu\text{g/L}$	0.03 mg/L	1.05 mg/L	0.09 mg/L	1.91 mg/L
$\leq 40$ Platinum Cobalt Units and $\leq 20$ mg/L $\text{CaCO}_3$	6 $\mu\text{g/L}$	0.01 mg/L	0.51 mg/L	0.03 mg/L	0.93 mg/L

From a biological perspective on lake health, the Lake Vegetation Index (LVI) is utilized as the primary bioassessment tool. This rapid field method was developed by FLDEP to assess the lake's plant community.

For the LVI, the lake is divided into twelve sections. **(Figure 2)** Four of the sections are randomly selected for evaluation. During the monitoring event, the percent native species, the percent invasive exotic species, the percent sensitive species, and the coefficient of conservatism (C of C; a measure of how tolerant a species is to disturbance) of the dominant species are assessed, resulting in a score. According to DEP SOP LT 7000, the LVI score ranges and categories are: (78-100) Exceptional; (43-77) Healthy; and (0-42) Impaired. DEP's revised impairment threshold score of 43 and higher fully meet the expectation of a healthy, well-balanced community, and scores below 42 are considered impaired. The LVI

was sampled per DEP SOP FS7310 and calculated per DEP SOP LT7000.

Lake Overstreet maintains a consistent permanent pool of water, which is conducive to water quality and biological monitoring activities. As such, annual water quality data is available for Lake Overstreet dating back to 1991 and biological monitoring has occurred since 2001. The following tables and charts provide water quality (annual geometric means) and biological results covering the time-period of 2011-2024. **Figures 1 & 2** display the water quality and biological monitoring locations within Lake Overstreet.

**Figure 1. Water Quality Monitoring Locations**

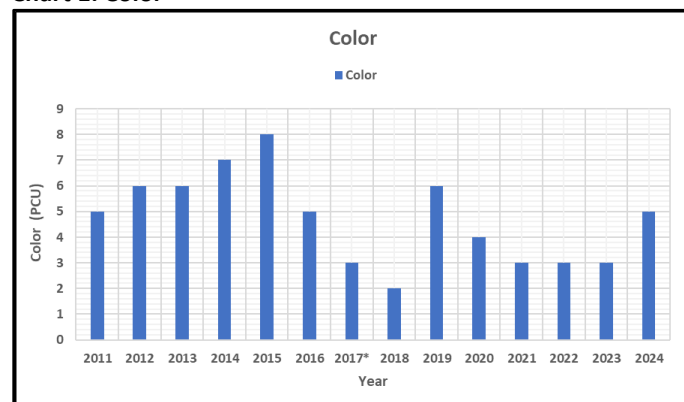


**Table 2. Water Quality Annual Geomeans**

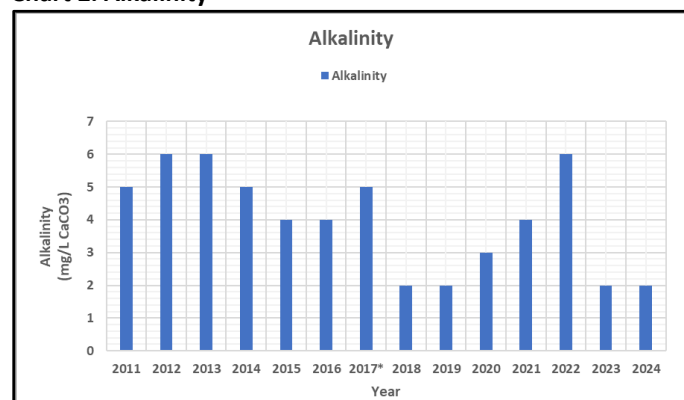
Yearly Geomean FLDEP Nutrient Criterion Parameters & Biological Health Lake Overstreet						
Year	Chlorophyll *	Color	Alkalinity	TN *	TP*	LVI
2011	3	5	5	0.25	0.008	76
2012	4	6	6	0.23	0.009	80
2013	2	6	6	0.31	0.011	70
2014	2	7	5	0.26	0.008	
2015	2	8	4	0.21	0.009	
2016	2	5	4	0.21	0.011	
2017*	2	3	5	0.32	0.011	
2018	3	2	2	0.14	0.008	
2019	1	6	2	0.31	0.010	75
2020	6	4	3	0.40	0.011	76
2021	4	3	4	0.37	0.017	72
2022	4	3	6	0.34	0.013	
2023	4	3	2	0.35	0.012	
2024	3	5	2	0.39	0.012	65

Years 2014 - 2018 Lake Overstreet innundated with Cuban Bulrush (*Oxycarum cubensis*) that prevented LVI survey's to be performed. Fall 2018 the C. Bulrush was treated with herbicide. Fall 2018. Years 2022 and 2023 the LVI scores absent due to low water levels.

**Chart 1. Color**



**Chart 2. Alkalinity**



**Chart 3. Chlorophyll**

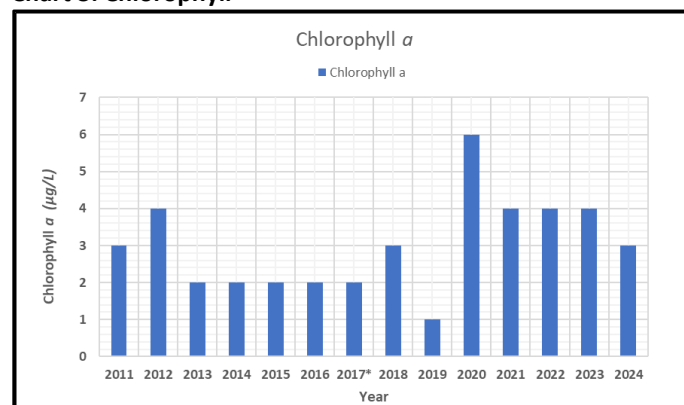




Chart 4. Total Nitrogen

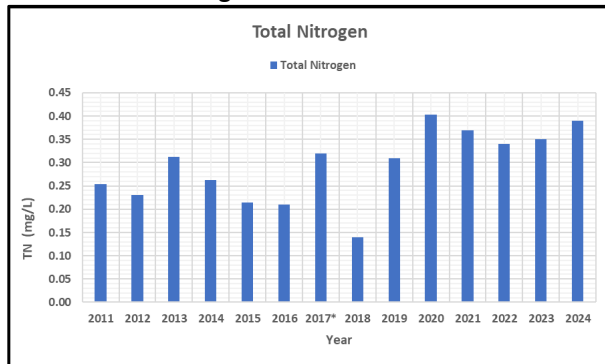


Chart 5. Total Phosphorus

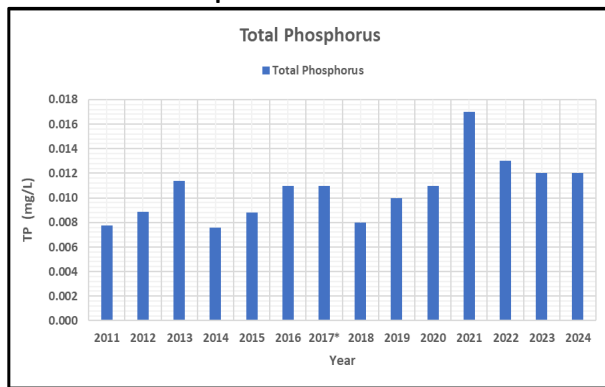


Figure 2. Biological Monitoring

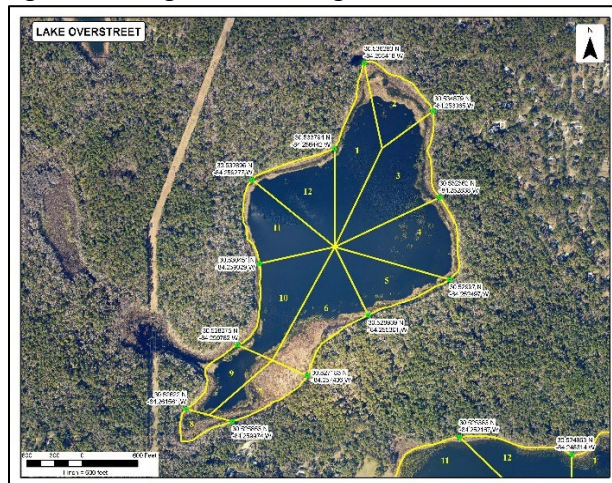


Photo 1. Lake Overstreet early morning sampling



Chart 6. Biological LVI Species List for Year 2024

Lake Overstreet Year 2024	LVI SCORE: 65	Sections			
Scientific Name	Common Name	1	4	7	10
<i>Acer Rubrum</i>	RED MAPLE	P	P	P	P
<i>Andropogon sp.</i>			P		P
<i>Brasenia schreberi</i>	WATERSHIELD		P	P	
<i>Cabomba caroliniana</i>	CAROLINA FANWORT	D	D	D	D
<i>Cephalanthus occidentalis</i>	COMMON BUTTONBUSH	P	P	P	P
<i>Decodon verticillatus</i>	WILLOW HERB; SWAMP LOOSESTRIFE		P		P
<i>Eupatorium capillifolium</i>	DOG FENNEL	P		P	
<i>Eupatorium leptophyllum</i>	FALSE FENNEL				P
<i>Juncus marginatus</i>	SHORE RUSH; GRASSLEAF RUSH		P		P
<i>Limnobium spongia</i>	AMERICAN SPONGEPLANT; FROG'S-BIT	P		P	
<i>Liquidambar styraciflua</i>	SWEETGUM	P	P	P	P
<i>Ludwigia leptocarpa</i>	ANGLESTEM PRIMROSEWILLOW	P	P		
<i>Ludwigia sphaerocarpa</i>	GLOBEFRUIT PRIMROSEWILLOW				P
<i>Myriophyllum heterophyllum</i>	TWO-LEAF WATERMILFOIL		P	P	
<i>Nelumbo lutea</i>	AMERICAN LOTUS	P			
<i>Nymphaea odorata</i>	AMERICAN WHITE WATERLILY	P	P	P	P
<i>Nyssa sylvatica biflora</i>	WATER TUPELO				P
<i>Oxycaryum cubense</i>	CUBAN BULRUSH	P	P	P	P
<i>Persicaria sp.</i>	SMARTWEED				P
<i>Pontederia cordata</i>	PICKERELWEED	P	P	P	P
<i>Sagittaria striata</i>	AMERICAN CUPSCALE	P	P	P	P
<i>Sagittaria latifolia</i>	COMMON ARROWHEAD; DUCK POTATO	P	P		
<i>Salix caroliniana</i>	CAROLINA WILLOW	P			
<i>Solidago sp.</i>	GOLDEN ROD		P		
<i>Triadenum virginicum</i>	VIRGINIA MARSH ST.JOHN'S-WORT	P			
<i>Xyris sp.</i>	YELLOW EYED GRASS	P	P		P

## Data Discussion

The data within the above charts and tables is used to determine overall lake health and to assess whether any existing data trends are evident. The Lakes Monitoring Program utilizes the Mann-Kendall Statistical Trend Analysis to determine if there are trends in any of the nutrient parameters that could be statistically significant. Based on this analysis, the total nitrogen and total phosphorus data are showing

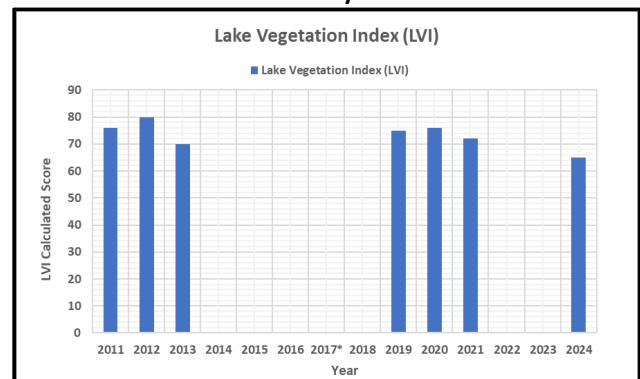
a slight increasing trend in concentrations within the lake, whereas the chlorophyll is showing neither an increasing nor a decreasing trend. This past year the nitrogen and phosphorus resulted in 0.39 mg/L and 0.012 mg/L respectively. Over the past fourteen years there are no exceedances of the numeric nutrient criteria.

The water quality and biological health within Lake Overstreet can respectfully be characterized as exceptional and healthy, evidenced by low levels of nutrients and chlorophyll-*a*. This characterization concurs with the FLDEP assessment of water quality, which notes no existing impairments within the lake.

Lake Overstreet's vegetation community is rich with native plant species. The LVI procedure requires adequate movement within the lake-body to document plant species. The abundant submerged vegetation hindered movement and accessibility to a much of the lake's littoral banks, but an LVI survey was completed in 2024. The score for this past year was a 65, down significantly from previous survey's but still equated to a "healthy" plant community. The overall long-term mean LVI calculates to a 73 for the seven LVI's performed on Overstreet since 2011. This indicates Lake Overstreet is a productive ecosystem with a very "Healthy" plant community. As shown in **Chart 6**, some of the lake's submerged aquatic plants include the following taxa: "Carolina Purple Fanwort" (*Cabomba caroliniana*) (the dominant taxa), "Watermilfoil" *Myriophyllum heterophyllum*, and "Bladderwort" (*Utricularia* sp.). The littoral shoreline is diverse, with tree species such as Swamp Tupelo (*Nyssa s. biflora*), and Red Maples (*Acer rubrum*). There is one plant that is becoming a nuisance taxon

and along the lake's shoreline edge, Cuban Bulrush (*Oxycarum cubense*). This plant is present in many of the City's lakes and starting to outcompete other native plants. Although non-native, this bulrush is not yet listed as an "invasive" according to Florida Natural Areas inventory (FNAI) and Exotic Pest Control Council (EPCC).

**Chart 7. Lake Overstreet Yearly LVI Score**



Thank you for your interest in maintaining the water quality within the City of Tallahassee area lakes. Visit the web-links below for more information on the City of Tallahassee, Leon County and Florida natural water resources.

City of Tallahassee Think About Personal Pollution (TAPP) Program  
<https://tappwater.org/>

City of Tallahassee Stormwater Management  
<https://www.talgov.com/you/stormwater>

Leon County Water Resources  
<https://cms.leoncountyfl.gov/waterresource>

Best Management Practices for Protection for Water Resources  
[https://ffl.ifas.ufl.edu/media/fflifasufledu/docs/GIB\\_MP\\_Manual\\_Web\\_English.pdf](https://ffl.ifas.ufl.edu/media/fflifasufledu/docs/GIB_MP_Manual_Web_English.pdf)

DEP biological assessment resources:

<https://floridadep.gov/dear/bioassessment/content/bioassessment-training-evaluation-and-quality-assurance#LVI>

FWCC Aquatic Plant Management:

<http://myfwc.com/wildlifehabitats/habitat/invasive-plants/aquatic-plant/>

Freshwater Algal Bloom information:

<https://floridadep.gov/AlgalBloom>

University of Florida / IFAS Lake Resources:

[Florida LAKEWATCH](#)

Florida Invasive Exotics, please click on the Florida  
Exotic Pest Control Council

<https://www.floridainvasives.org/>