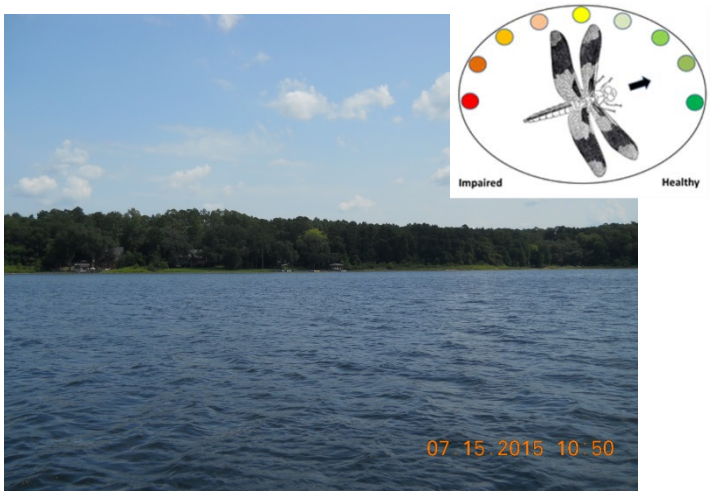
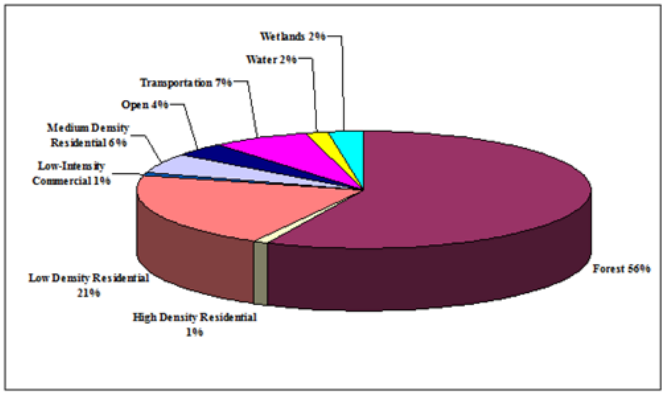
Waterbody: Lake Hall



Basin: Lake Jackson

Lake Hall is an approximately 182 acre lake located in northern Leon County, just north of Interstate 10 and slightly west of U.S. Highway 319. Lake Hall is part of the Alfred B. Maclay State Gardens State Park, a state recreation area and botanical garden, and is considered to be an "Outstanding Florida Waters" by the Florida Department of Environmental Protection (FDEP).

As shown in the figure below, approximately 36% of land uses in the 464 acre Lake Hall watershed are residential, commercial, or transportation. Increases in stormwater runoff and waterbody nutrient loads can often be attributed to these types of land uses.



Background

Healthy, well-balanced lake communities may be maintained with some level of human activity, but excessive human disturbance may result in waterbody degradation. Human stressors may include increased inputs of nutrients, sediments, and/or other contaminants from watershed runoff, adverse hydrologic alterations, undesirable removal of habitat or riparian buffer vegetation, and introduction of exotic plants and animals. State water quality standards are designed to protect designated uses of the waters of the state (e.g., recreation, aquatic life, fish consumption), and exceedances of these standards are associated with interference of the designated use.

Methods

Surface water, sediment samples and a Lake Vegetation Index (LVI) survey was conducted to determine the health of Lake Hall and met the collection and analysis requirements of the FDEP.

Results

The nutrient thresholds and results are found in Table 1. According to FDEP requirements, Numeric Nutrient Thresholds (expressed as an annual geometric mean) cannot be exceeded more than once in a three year period.

Table1. FDEP's chlorophyll-*a*, total nitrogen and phosphorus criteria for lakes applied to Lake Hall.

Clear Lake, Low Alkalinity	Chlorophyll-*a* 6.0 µg/L	Total Nitrogen Threshold 0.51-0.93 mg/L	Total Phosphorus Threshold 0.01-0.03 mg/L
2004	2.1	0.13	0.01
2005	1.4	0.22	0.01
2006	1.3	0.22	0.01

Clear Lake, Low Alkalinity	Chlorophyll-*a* 6.0 µg/L	Total Nitrogen Threshold 0.51-0.93 mg/L	Total Phosphorus Threshold 0.01-0.03 mg/L
2007	1.5	0.42	0.01
2008	2.2	0.33	0.00
2009	1.8	0.43	0.00
2010	2.2	0.33	0.01
2011	1.3	0.41	0.01
2012	1.4	0.34	0.01
2013	3.0	0.15	0.01
2014	1.6	0.26	0.01
2015	3.3	0.26	0.02

While the State criteria were not exceeded during the period of record, there was an elevated total phosphorus reading (0.20) during the 2015 2nd quarter sampling event. The average total phosphorus value in Lake Hall over the sampling period is 0.02 mg/L, so this is by far the largest value ever recorded in the lake. Lake Carr was sampled on the same day and had an extremely high (for Lake Carr) total phosphorus value as well, that appeared to be erroneous. Because other parameters appeared normal and orthophosphate values were in the undetectable range (<0.0034 mg/L), and since Lake Carr (sampled on the same day) had a similar aberrant total phosphorus result, staff suggests that the total phosphorus value is erroneous and may have been caused by a laboratory error. *Other Parameters*

Other water quality parameters appeared to be normal for the area and no impairments were noted.

Floral Assessment

The Lake Vegetation Index score for Lake Hall was 67, placing the lake's vegetative community in the healthy category.

Sixty-five species were found during the survey. The native species fanwort (*Cabomba caroliniana*), coontail (*Ceratophyllum demersum*) and fragrant waterlily (*Nymphaea odorata*) were the most dominant species in the lake. Other native shoreline vegetation included: red maple (*Acer rubrum*), buttonbush (*Cephalanthus occidentalis*) and swamp tupelo (*Nyssa sylvatica var. biflora*).

Unfortunately, Chinese tallow tree (*Sapium sebiferum*), hydrilla (*Hydrilla verticillata*), torpedo grass (*Panicum repens*) and camphor tree (*Cinnamomum camphora*) are Category I Invasive Exotics and were found in Lake Hall. Alligator weed (*Alternanthera philoxeroides*) is a Category II Invasive Exotic found in the lake. Additionally, the exotic single grass (*Urochloa* sp.) and Mexican fan palm (*Washingtonia robusta*) were also found in and near the lake.
Click here for more information on the Lake Hall LVI.

Click here for more information on common exotic and invasive plants in Leon County wetlands and waterbodies.

Conclusions

Based on ongoing sampling, Lake Hall met the nutrient thresholds for the Eastern Panhandle Region and the floral community is considered "healthy" by the LVI.

Thank you for your interest in maintaining the quality of Leon County's water resources. Please feel free to contact us if you have any questions.

Contact and resources for more information
www.LeonCountyFL.gov/WaterResources

Click here to access the results for all water quality stations sampled in 2015.

Click here for map of watershed – Sample site H07.

Johnny Richardson, Water Resource Scientist
(850) 606-1500
Richardsonjo@leoncountyfl.gov