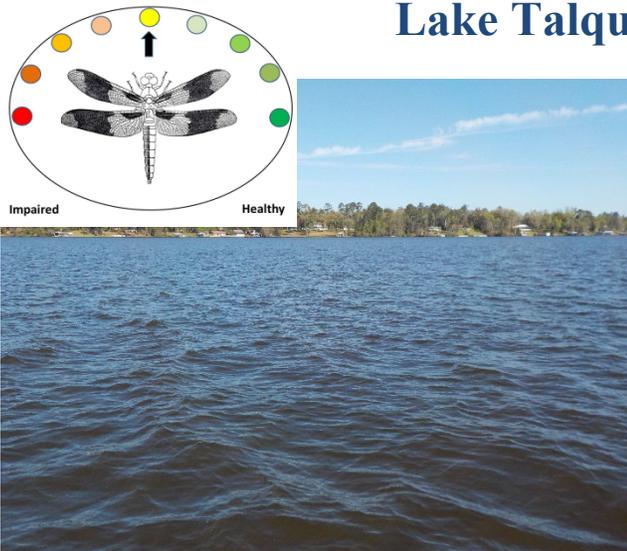


Lake Talquin EcoSummary



The 7,782-acre Lake Talquin is considered an Outstanding Florida Water by the Florida Department of Environmental Protection (FDEP) and is located in western Leon County. Its basin extends into surrounding Florida counties as well as southern Georgia. In 1970, Florida Power Corporation donated the land that is now Lake Talquin State Park along the southern shoreline of the lake.

The lake was formed in 1929 when the Jackson Bluff Dam was constructed on the Ochlockonee River to produce hydroelectric power. The dam, built and managed by the West Florida Power Company (later to become Florida Power Corporation) who operated the facility until 1970, was abandoned as a power plant and turned over to the Florida Department of Natural Resources (later to become FDEP). FDNR/FDEP managed the dam without producing power until 1981. The City of Tallahassee then took over the dam, and in August 1985, the plant became operational as the C. H. Corn Hydroelectric Power Generating Plant. In 2017, the City did not renew its lease to operate the power plant and turned the dam back over to the State.

Approximately 35% of land use in the 1,019,525-acre Ochlockonee Basin is agriculture, rangeland, urban, transportation or utilities (as

shown in **Figure 1**). These types of land uses are often attributed to increases in stormwater runoff and higher nutrient loads.

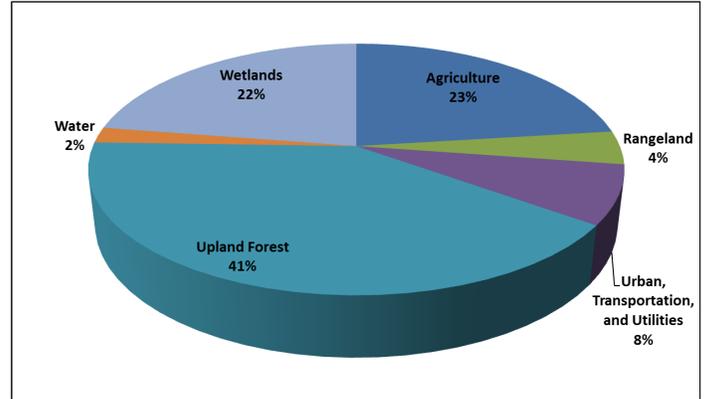


Figure 1. Lake Talquin watershed land use.

Because of nitrogen and phosphorus issues in Lake Talquin, the lake received a Total Maximum Daily Load (TMDL) by the Florida Department of Environmental Protection (FDEP) in 2022. The TMDL requires the lake to meet the nutrient TMDL concentrations, which, based on mean concentrations from the 2008-2014 period, will require a 19 percent reduction for Total Nitrogen (TN), and a 21 percent reduction for Total Phosphorus (TP).

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. Stressors can also include 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 samples are collected quarterly (as field conditions allow) and sediment samples are collected annually. This information is used to determine the health of Leon County waterbodies and meets the requirements of the Florida Department of Environmental Protection (FDEP).

Results

Nutrients

The State of Florida uses Numeric Nutrient Criteria (NNC) to evaluate nutrients in waterbodies. NNC thresholds are set based on waterbody-specific characteristics and are used to determine if a waterbody meets water quality standards. The results of the four quarterly samples from a single year are used to calculate the annual geometric mean. According to FDEP requirements, the NNC threshold cannot be exceeded more than once in a three-year period.

Water quality results and thresholds are found in **Table 1**. While Lake Talquin’s chlorophyll-a and Total Phosphorus standards were exceeded over the period of record, there have been no exceedances since 2016.

Chlorophyll-a

Water quality samples collected by Leon County are analyzed by Pace Analytical Services – Ormond Beach (Pace), with the analysis results provided back to the County for submission to FDEP. In June 2022, FDEP conducted a routine audit of the chlorophyll-a data. This audit revealed that from October 2014 through December 2020, the chlorophyll-a data was reported as “uncorrected chlorophyll-a” and not “corrected chlorophyll-a”, as it should have

been. Pace has since rectified this error and beginning in January 2021, the chlorophyll-a data were properly reported as “corrected chlorophyll-a”. The laboratory also provided Leon County with the “correct chlorophyll-a” data from the affected dates and the information in **Table 1** of this year’s Report has been changed to reflect this. This has resulted in chlorophyll-a numbers that are lower than past Reports, which in turn has led to changes to the current Report’s narrative.

Table 1. NNC thresholds and sample results for Lake Talquin. Results in bold signify exceedances of the State criteria.

Colored Lakes	Chlorophyll-a > 20.0 µg/L	TN Threshold 1.27-2.23 mg/L	TP Threshold 0.05-0.16 mg/L
2004	5	0.49	0.04
2005	6	0.52	0.04
2006	4	0.66	0.05
2007	8	0.83	0.06
2008	9	0.83	0.06
2009	3	0.65	0.07
2010	10	0.75	0.05
2011	31.3	0.78	0.06
2012	21.7	0.72	0.05
2013	26.8	0.81	0.08
2014	4.8	0.78	0.06
2015	22.9	0.78	0.06
2016	22.2	0.86	0.07
2017	7.9	0.83	0.08
2018	10.4	0.88	0.07
2019	14.1	0.70	0.07
2020	10.1	0.71	0.09
2021	2.7	0.68	0.06
2022	11.3	0.63	0.06

Dissolved Oxygen (DO)

Dissolved oxygen saturation values were below the Class III water quality limits during certain

events (**Figure 2**). In most cases, the low oxygen values are results from deep water (> 4 meter) readings. There does not appear to be any stratification in the water column, which could prevent oxygen transfer from the surface to lower levels. It is thought that microbial activity in the organic sediment demands more oxygen than can be readily replaced leading to the low DO levels. While the run of the river reservoir cannot be considered “natural”, it is normal for organic rich sediments to result in low DO levels immediately above the sediment surface. Anthropogenic activities upstream (e.g., agricultural) can make such conditions worse. However, when the lake was created, organic-rich bottomland forest was flooded. These pre-existing bottomland trees (still onsite and submersed) are continuing to release nutrients into the system, contributing to oxygen demand.

FDEP now requires oxygen level readings to be taken only in the top two meters of the water column for TMDL purposes, so Leon County no longer takes deep water readings, hence the “improved” DO readings.

Fish Consumption Advisory

The Florida Department of Health has issued consumption limits for certain fish in Lake Talquin due to elevated levels of mercury.

[Click here for more information about fish consumption advisories in Leon County.](#)

Other Parameters

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

Conclusions

Long term sampling demonstrates that Lake Talquin did not meet the chlorophyll-a and phosphorus thresholds for the Big Bend Bioregion, though the NNC has been met since 2017. Staff considers the low DO results taken in deeper water a normal condition for Lake Talquin.

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.LeonCountyWater.org

[Click here to access the results for all water quality stations sampled in 2022.](#)

[Click here for a map of the watershed – Sample Sites LT1, TOC2, T0D, T0E2, and T0LR.](#)

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

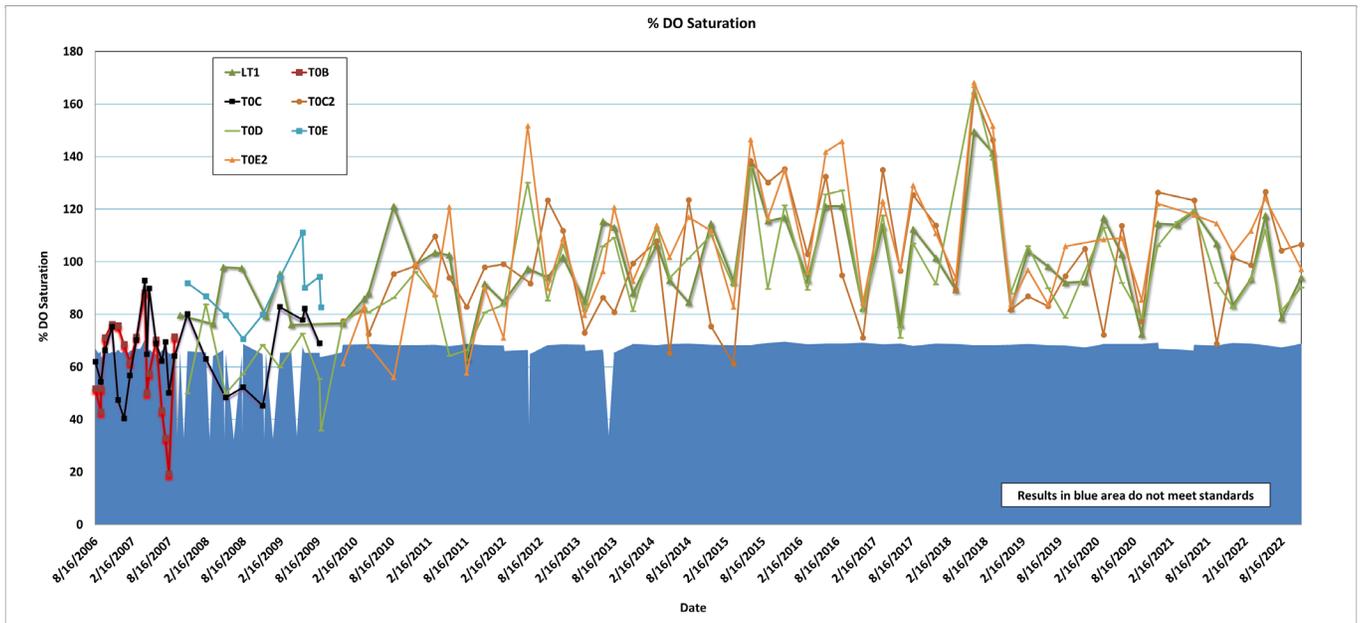


Figure 2. Dissolved Oxygen Percent Saturation results for Lake Talquin. Several sampling stations have been deactivated while others have been added over the sampling period.