

# Soapstone Creek EcoSummary



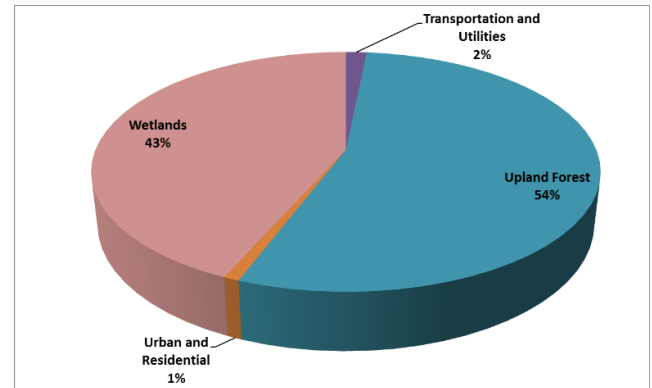
Soapstone Creek is a minimally disturbed, phosphorus-limited stream located in southwestern Leon County. The stream flows west, eventually reaching the Ochlockonee River downstream of Lake Talquin.

Soapstone Creek is aptly named due to its tendency to have foam form on the water's surface giving it a "soap sudsy" appearance. While foam is sometimes associated with pollution, it naturally forms under certain conditions. In this case, foam is naturally formed when water surface tension is reduced as natural oils and organic compounds (i.e., tannins) are released into the water from the surrounding wooded and boggy areas and float to the surface. Turbulence introduces air into the water forming foam.

The culvert associated with the bridge spanning the creek at County Road 375 frequently prevents the creek from flowing during low water conditions, preventing staff from sampling. Due to low water conditions, staff was only able to collect water quality samples intermittently throughout the sampling period.

While the majority of the 4,025-acre watershed is relatively undeveloped, urban and residential, utilities and transportation land uses make up

approximately 3% of the watershed (as shown in **Figure 1**). These types of land uses are often attributed to increases in stormwater runoff and higher nutrient loads.



**Figure 1.** Soapstone Creek watershed land use.

## Background

Healthy, well-balanced stream 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). This information is used to determine the health of Soapstone Creek and meets the requirements of the Florida

Department of Environmental Protection (FDEP).

## Results

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.

Due to low water conditions, four temporally independent samples per year could not always be collected. When viewing tables and figures, the absence of data means there was not enough data collected to fulfill data requirements.

### Nutrients

The nutrient thresholds and results are found in **Table 1**. When the sampling criteria were met, the NNC was met. For illustrative purposes, individual data points were plotted to determine any possible trends (**Figures 2 and 3**). During the May 2023 sampling event, the total nitrogen value was extremely high (3.4 mg/L). Further examination showed an elevated nitrite (NO<sub>2</sub>) + nitrate (NO<sub>3</sub>) value (2.7 mg/L), while ammonia (0.035 mg/L) and organic nitrogen (0.63 mg/L) values resembled more typical values for this system. Other water chemistry parameters were also typical of this system, so it is not known why nitrite (NO<sub>2</sub>) + nitrate (NO<sub>3</sub>) was so elevated. It is possible that the result could have been caused by laboratory error. Individual values rarely exceed the instream criteria for Total Nitrogen and never exceeded the criteria for Total Phosphorus.

### Dissolved Oxygen

As **Figure 4** shows, Soapstone Creek occasionally did not meet the Class III criteria for dissolved oxygen (DO). Staff believes that this is a natural condition for this location, since the creek is a low gradient blackwater stream that drains wetlands.

### Escherichia coli (*E. coli*)

The *E. coli* water quality limit of > 10% threshold value of 410 in 10% or more of samples in a 30-day period was exceeded during the March 2018 and March 2022 sampling event (630/100 mL and 680/100 mL, respectively). Since the watershed is relatively undeveloped, elevated bacteria levels are probably the result of wildlife in the area. There were no exceedances in 2023.

**Table 1.** Total Nitrogen and Phosphorus results and thresholds for Soapstone Creek.

Soapstone Creek	TN Threshold 1.03 mg/L	TP Threshold 0.18 mg/L
2008	0.64	0.01
2009	0.50	0.00
2010	0.51	0.01
2011- 2014	-	-
2015	0.60	0.01
2016-2023	-	-

### Other Parameters

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

## Conclusions

Based on ongoing sampling, Soapstone Creek met the NNC for the East Panhandle Region.

The reason for the abnormally high nitrite (NO<sub>2</sub>) + nitrate (NO<sub>3</sub>) is unknown but could possibly be a laboratory error. As a result of low flow, the Class III criterion for dissolved oxygen was not always met during the sampling period.

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

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

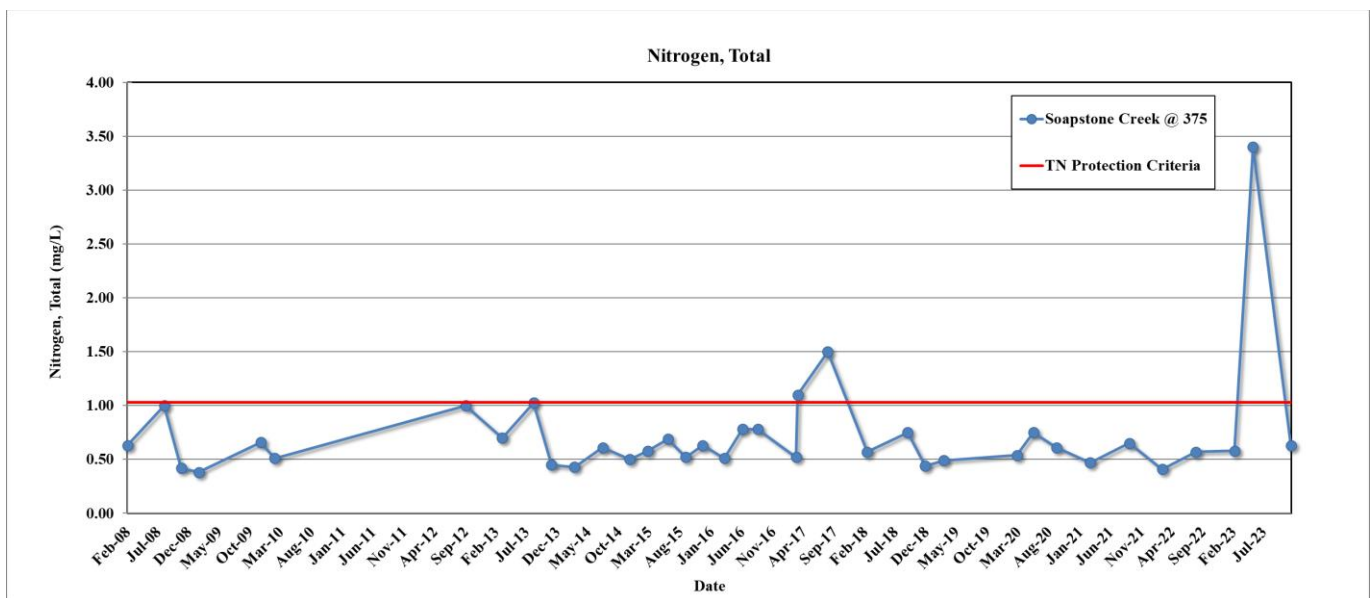
[www.LeonCountyWater.org](http://www.LeonCountyWater.org)

[Click here to access the results for all water quality stations sampled in 2023.](#)

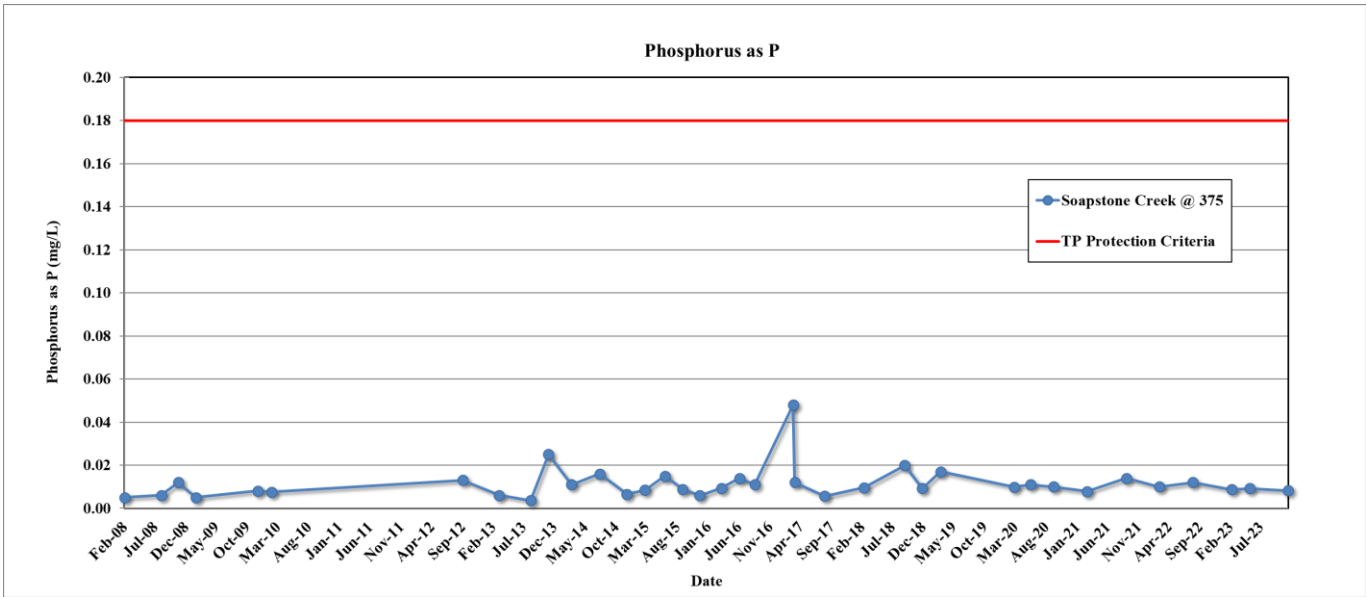
[Click here for a map of the watershed – Sample Site Soapstone.](#)

Johnny Richardson, Water Resource Scientist  
(850) 606-1500

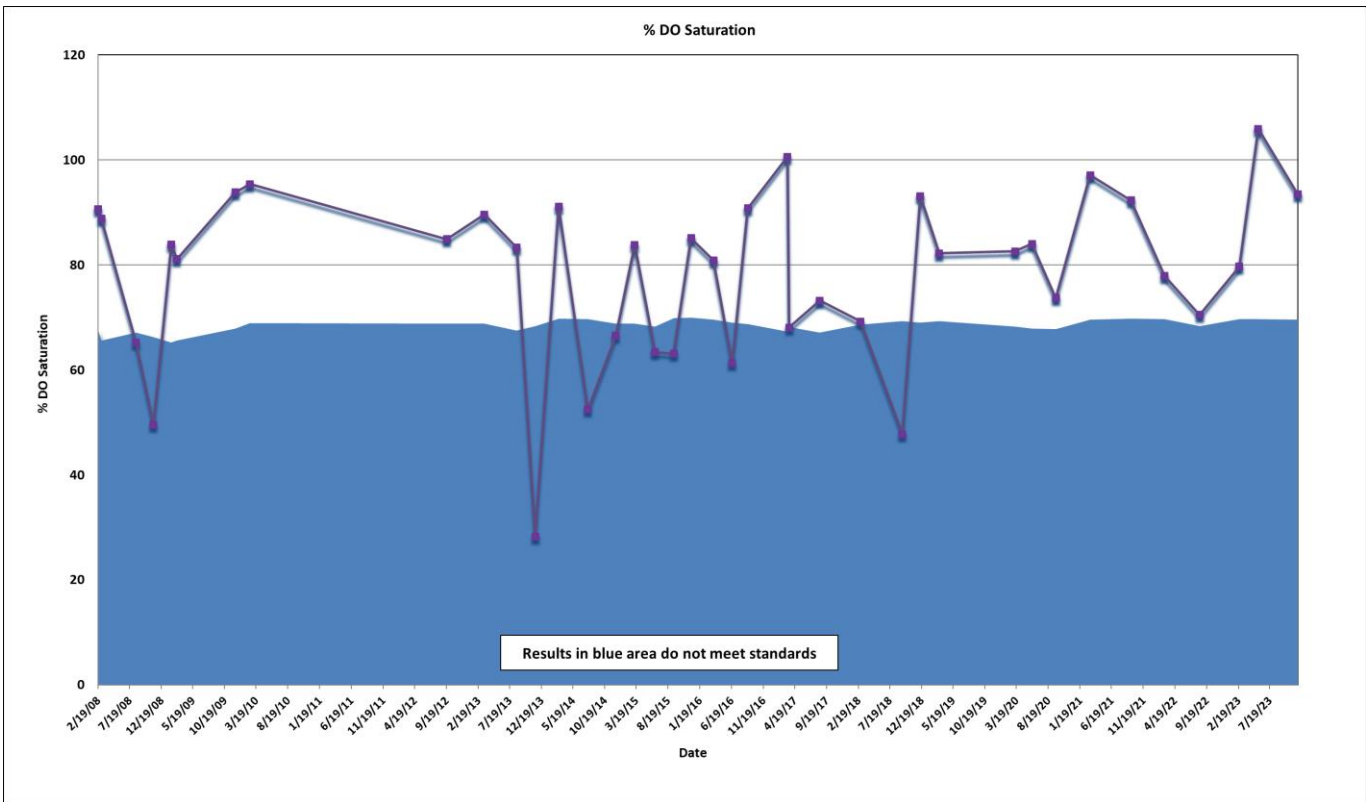
[Richardsonjo@leoncountyfl.gov](mailto:Richardsonjo@leoncountyfl.gov)



**Figure 2.** Total Nitrogen results for Soapstone Creek.



**Figure 3.** Total Phosphorus results for Soapstone Creek.



**Figure 4.** Dissolved Oxygen Percent Saturation results for Soapstone Creek.