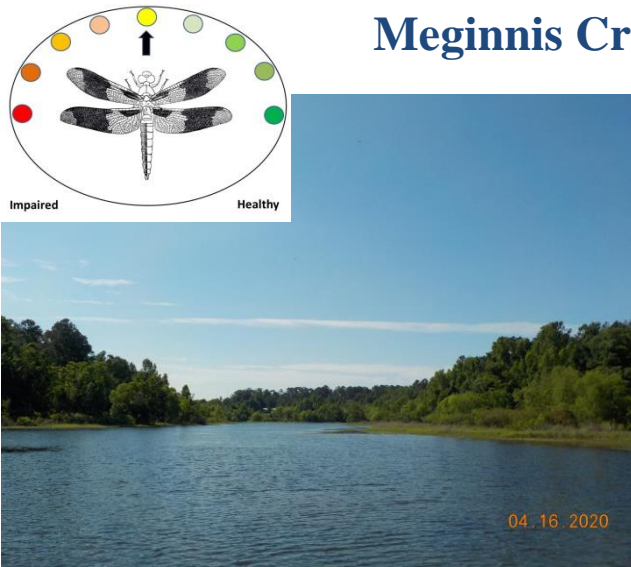


Meginnis Creek EcoSummary



Meginnis Creek is a substantially altered, nitrogen-limited stream located in the northern part of Tallahassee and drains into Lake Jackson.

As shown in **Figure 1**, residential, commercial and transportation uses make up approximately 85% of the 2,416-acre watershed. These types of land uses are often attributed to increases in stormwater runoff and higher nutrient loads.

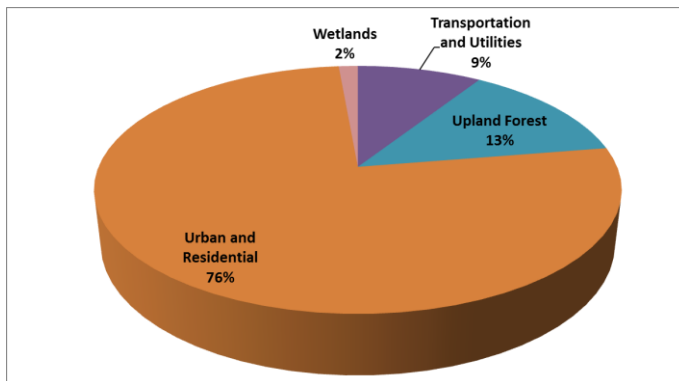


Figure 1. Meginnis Arm watershed land use.

Background

Healthy, well-balanced lake communities may stay that way 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 Leon County waterbodies 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. The most recent Lake Jackson dry down event has contributed to low water conditions in Meginnis Creek that prevented sample collection since April 2020. When viewing tables and figures, the absence of data means there was not enough data collected to fulfill data requirements.

Staff established the new Meginnis Arm station in April 2010, so the 1st quarter sample was not collected for that year.

Nutrients

The nutrient thresholds and results are found in **Table 1**. When sampling requirements were met, the NNC were never exceeded during the period of record.

For illustrative purposes, individual data points were plotted to determine any possible trends (**Figures 2 and 3**). With few exceptions, individual values did not exceed the instream criteria for Total Phosphorus and never exceeded the criteria for Total Nitrogen.

Table 1. NNC thresholds and sample results for Meginnis Creek.

| Meginnis Creek | TN Threshold 1.03 mg/L | TP Threshold 0.18 mg/L |
|----------------|---------------------------|---------------------------|
| 2010- 2014* | - | - |
| 2015 | 0.38 | 0.05 |
| 2016 | 0.26 | 0.05 |
| 2017 | 0.35 | 0.05 |
| 2018 | - | - |
| 2019 | 0.30 | 0.04 |
| 2020-2023* | - | - |

* Due to a station relocation (2010) and low water conditions, staff could not determine the NNC.

Other Parameters

Dissolved oxygen often did not meet Class III water quality standards (**Figure 4**). This is not surprising since this system is a low velocity system. Lower velocity systems generally have lower levels of dissolved oxygen than high velocity systems because they are less aerated.

Specific conductivity and dissolved solids in Meginnis Creek (averaged 116 µmhos/cm and 71.5 mg/L respectively for the first two quarters of 2020) were elevated when compared to Lake Jackson (averaged 46 µmhos/cm and 31.5 mg/L during the same time period).

The combination of relatively high levels of conductivity and dissolved solids with relatively low nutrients suggest that the dissolved solids may be the result of impervious surfaces in the watershed. Water is more efficiently transported over impervious surfaces where it can pick up weathered calcium carbonate and other calcium salts (found in concrete) due to efflorescence in the increased expanses of impervious surfaces and drainage systems.

Other water quality parameters were typical of the stream, and no exceedances were noted.

Vegetation

Several species of exotic plants are associated with the Meginnis Creek stream corridor including Taro (*Colocasia* sp.), alligator weed (*Alternanthera philoxeroides*), Chinese tallow (*Sapium sebiferum*), rattlebox (*Sesbania punicea*) and hydrilla (*Hydrilla verticillata*). In many cases exotic plants will crowd out native plants which in turn stress native wildlife which has evolved to depend on native plants for food and shelter. The native wildlife may move away or perish if the native vegetation is replaced by exotic plants. The Florida Fish and Wildlife Conservation Commission have an aquatic plant management program that manages the creek and the greater Lake Jackson area. The program is effective to the degree that the exotic vegetation does not overwhelm the native vegetation, but staff recommends that the problem of exotic plants be more aggressively pursued in this area of the watershed.

Conclusions

Based on ongoing sampling, Meginnis Creek met the NNC for the East Panhandle Region. Specific conductivity and dissolved solids were elevated when compared to Lake Jackson. The combination of relatively high levels of conductivity and dissolved solids with relatively low nutrients suggest that the dissolved solids may be the result of impervious surfaces in the watershed. Dissolved oxygen rarely meets Class III water quality standards. Several species of exotic plants are associated with the Meginnis Creek stream corridor. The Florida Fish and Wildlife Conservation Commission have an aquatic plant management program and continues to manage the creek and the greater Lake Jackson area.

Thank you for your interest in maintaining the water quality of Leon County's aquatic 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 2020.](#)

[Click here for a map of the watershed – Sample Site JL01.](#)

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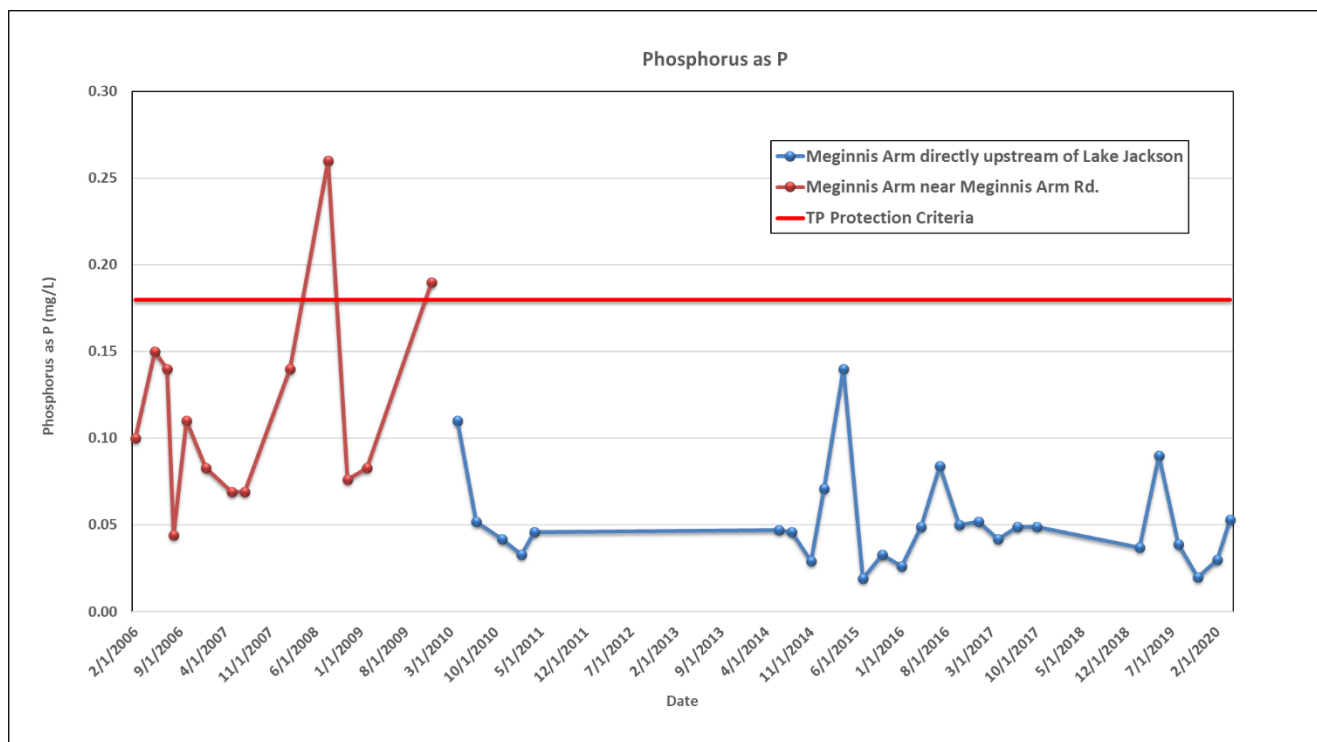


Figure 2. Total Phosphorus results for Meginnis Creek.

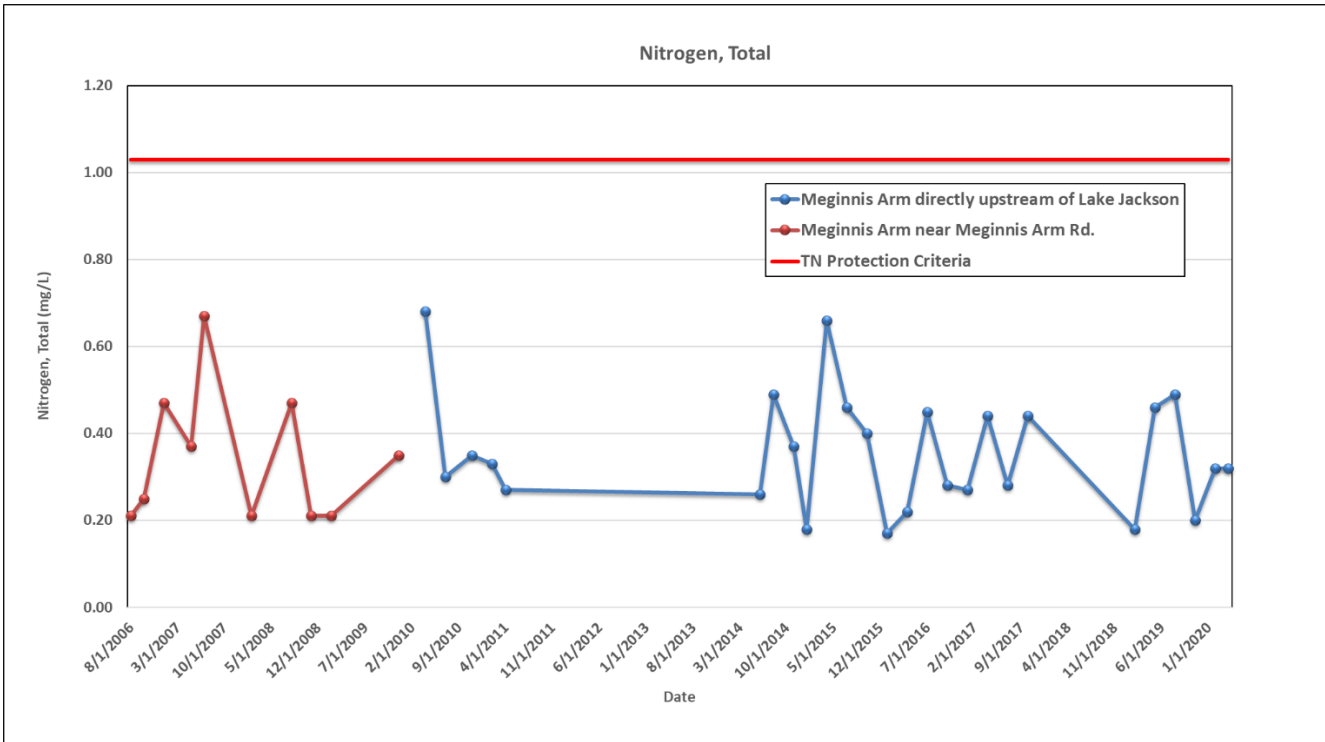


Figure 3. Total Nitrogen results for Meginnis Creek.

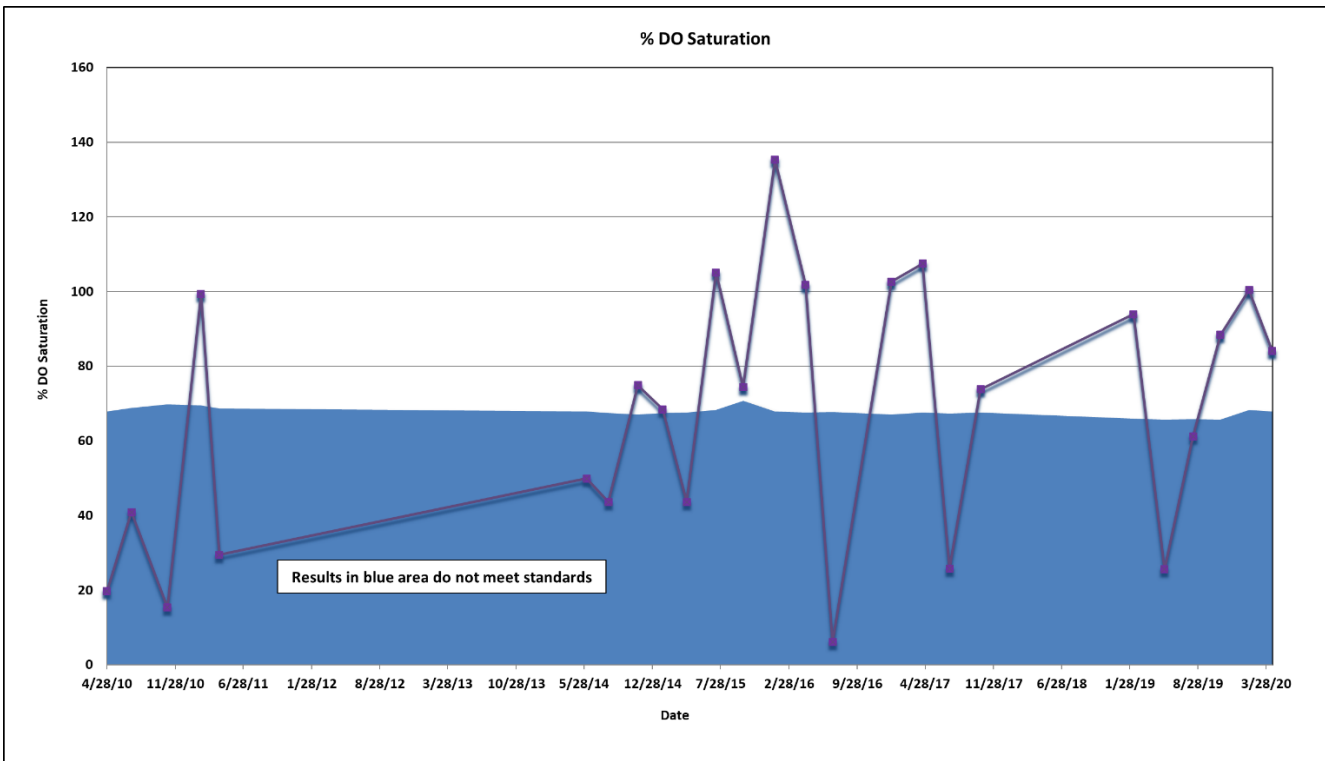


Figure 4. Dissolved Oxygen Percent Saturation results for Meginnis Creek.