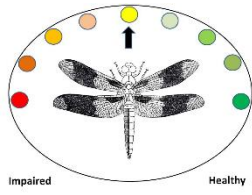


Lexington Creek EcoSummary



Lexington Creek is a moderately altered stream located in the northern part of Tallahassee and drains into the Fords Arm of Lake Jackson. The watershed extends to Thomasville Road at I-10 on the east and is bounded by Maclay Road and Live Oak Plantation Road on the north and south, respectively.

As shown in **Figure 1**, agriculture, rangeland, transportation, utilities, urban and residential uses make up approximately 69% of the 1,786-acre watershed. Increases in stormwater runoff and waterbody nutrient loads can often be attributed to these types of land uses.

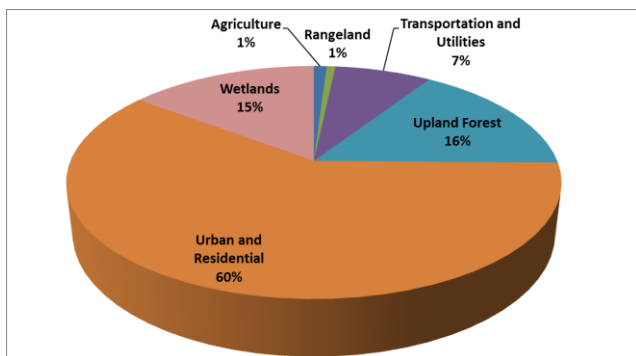


Figure 1. Lexington Creek watershed land use.

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.

To reduce flooding where Lexington Creek crosses under Meridian Road, Leon County improved drainage by installing large box culverts to move water beneath the roadway. Such improvements are also expected to better treat stormwater and reduce soil erosion, improving the health of adjacent wetlands and Lake Jackson.

Methods

Surface water samples are collected quarterly (as field conditions allow). This information is used to determine the health of Lexington 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 over the sampling period and to construction associated with the drainage improvements to Meridian Road (latter part of 2020), four temporally independent samples per year could not 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**. The Total Phosphorus criteria was exceeded in 2018, 2019 and 2021.

This is not completely unexpected. Individual values were sometimes elevated during the sampling period (**Figure 2**). For example, due to a rainfall event that flushed phosphorus-laden sediment into the creek, the August 2012 Total Phosphorus value (1.3 mg/L) was substantially higher than all other phosphorus values recorded at this site.

The Total Nitrogen results over the entire sampling period did not exceed FDEP’s 1.03 mg/L threshold value. But individual nitrogen levels have occasionally been exceeded since sampling began (**Figure 3**). One exceedance occurred during the same previously mentioned August 2012 sampling event (1.7 mg/L); others include the November 2008 sampling event (1.1 mg/L), and the January 2022 sampling event (3.40 mg/L).

The unusually high nitrogen and phosphorus levels during the August 2012 event can be attributed to stormwater runoff associated with the heavy rainfall in the area prior to the sampling event. The effects were probably more acute due to the previously dry streambed conditions and the associated floodplain being inundated within a short time from runoff.

Interestingly enough, with the exception of nitrogen, water quality parameter results during the January 2022 event appeared normal; the excessive nitrogen amount could be attributed to organic detritus (e.g., leaf particles) being inadvertently collected in the sampling bottle.

Table 1. NNC thresholds and sample results for Lexington Creek. Results in bold signify exceedances of the NNC.

Lexington Creek	TN Threshold 1.03 mg/L	TP Threshold 0.18 mg/L
2007	-	-
2008	0.43	0.15
2009	0.13	0.14
2010	0.42	0.15
2011-2013	-	-
2014	0.33	0.12
2015-2017	-	-
2018	0.33	0.21
2019	0.40	0.20
2020	-	-
2021	0.35	0.23
2022-2023	-	-

Escherichia coli (*E. coli*)

The *E. coli* water quality limit of > 410 in 10% of samples during a 30-day period have been exceeded several times during the sampling period (**Figure 4**). Leon County and FDEP have been in cooperation in the investigation of the source(s) of the bacteria. The results of the Microbial Source Tracking (MST) analyses and other analyses that track probable wastewater indicators (e.g., sucralose, acetaminophen) suggest that the sources of *E. coli* are human in origin. As part of their normal inspection, the City of Tallahassee (COT) undertook the rehabilitation of the sewer lines in the immediate area of the creek. Unfortunately, at least one leak has

occurred since the rehabilitation. A sewer line leak, located within ten meters of the creek, was discovered by Leon County staff on October 23, 2023. The leak was addressed later that same day by COT staff. But *E. coli* levels are still elevated with exceedances still occurring. To better track potential sources of *E. coli*, Leon County added additional water quality stations to the watershed in 2023 (**Figure 5**). Few conclusions can be made so far, but *E. coli* levels exceeded water quality standards at three of the four stations during the November 2023 sampling event. The high levels were probably associated with the approximately 2.8 inches of rain that fell two days prior to the sampling event. Whether this was related to a malfunctioning septic tank, sewer line leakage, or some other source is currently unknown. Leon County staff continues to investigate the source(s) of the bacteria.

Turbidity

Turbidity levels have occasionally exceeded water quality standards (**Figure 6**). Sedimentation continues to be an ongoing problem in the stream.

Conclusions

When the appropriate number of samples were collected, the NNC was being met, until 2018 when the Total Phosphorus criteria was exceeded in 2018, 2019 and 2021. The *E. coli* water quality limit has been exceeded several times during the sampling period. It is probable that the ongoing issue of *E. coli* exceedances are the result of malfunctioning septic tanks or leaking sewer lines. Sedimentation continues to be an ongoing problem in the stream.

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 2023.](#)

[Click here for a map of the watershed – Sample Site 26.](#)

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

Richardsonjo@leoncountyfl.gov

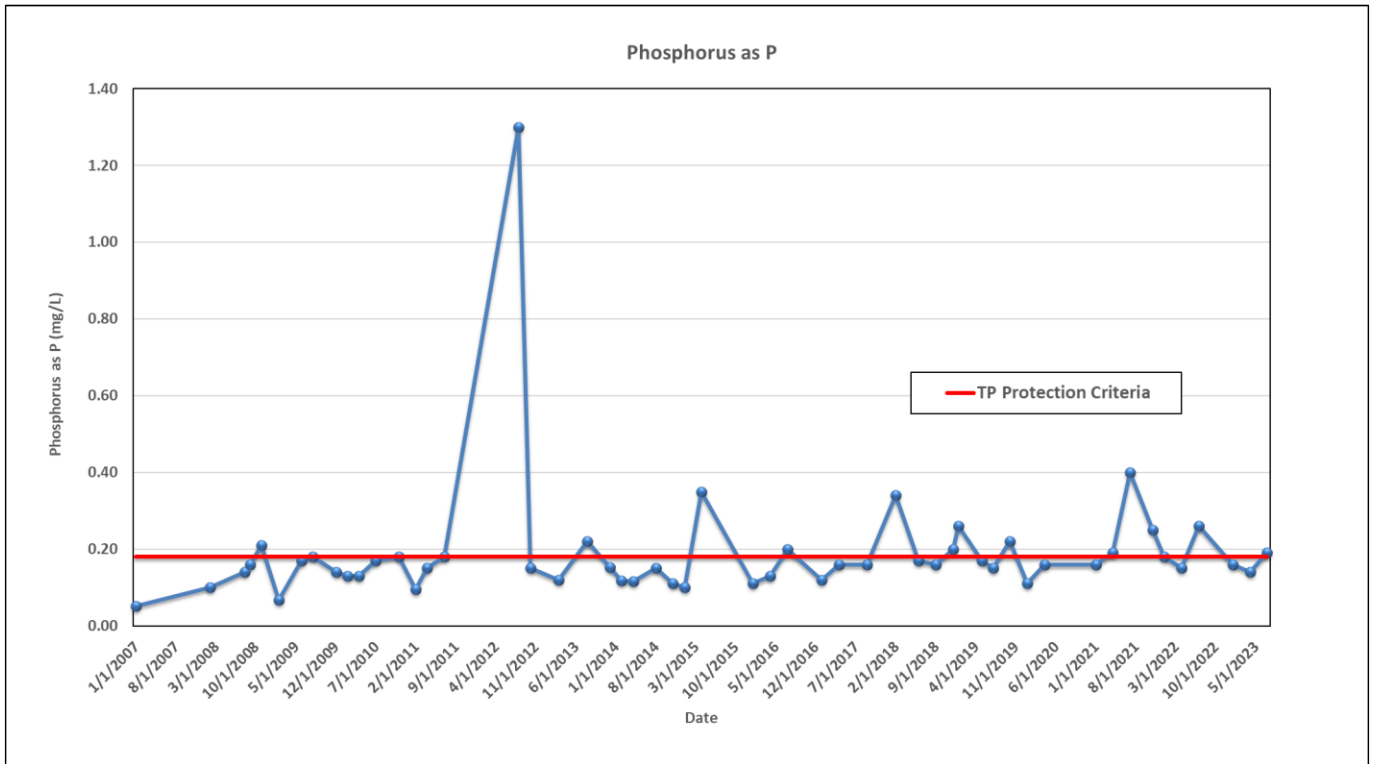


Figure 2. Total Phosphorus values in Lexington Creek.

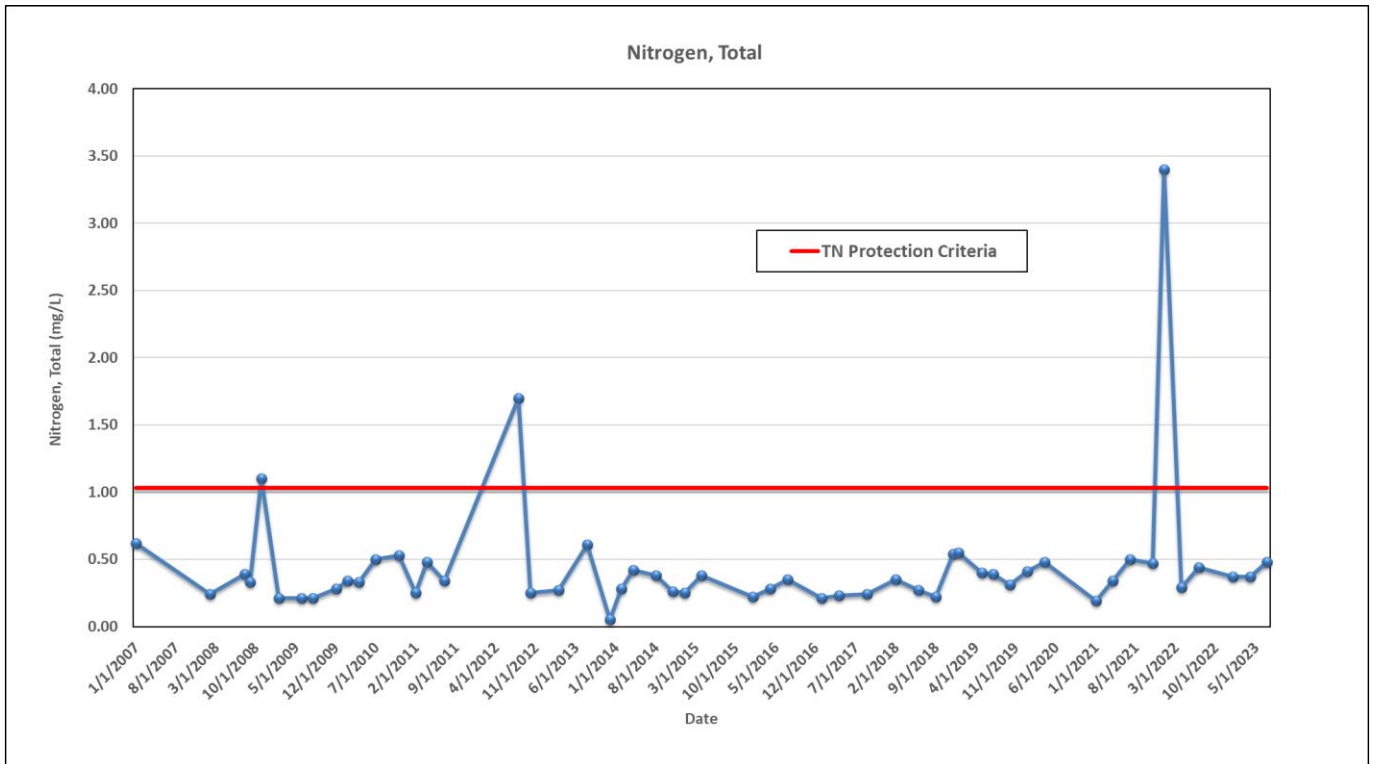


Figure 3. Total Nitrogen values in Lexington Creek.

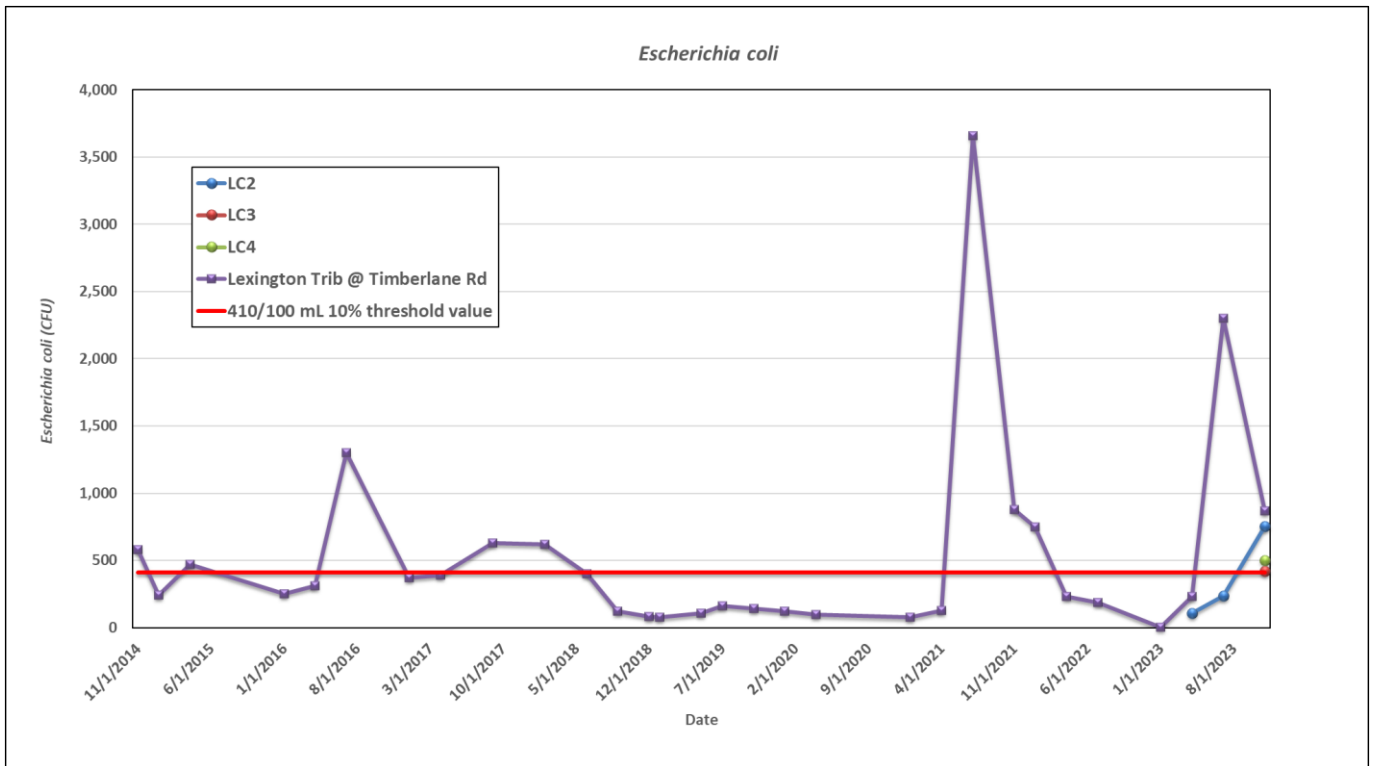


Figure 4. *Escherichia coli* values in Lexington Creek.



Figure 5. Locations of Water Quality Station 26 and the newly established *E. coli* stations LC2, LC3, and LC4.

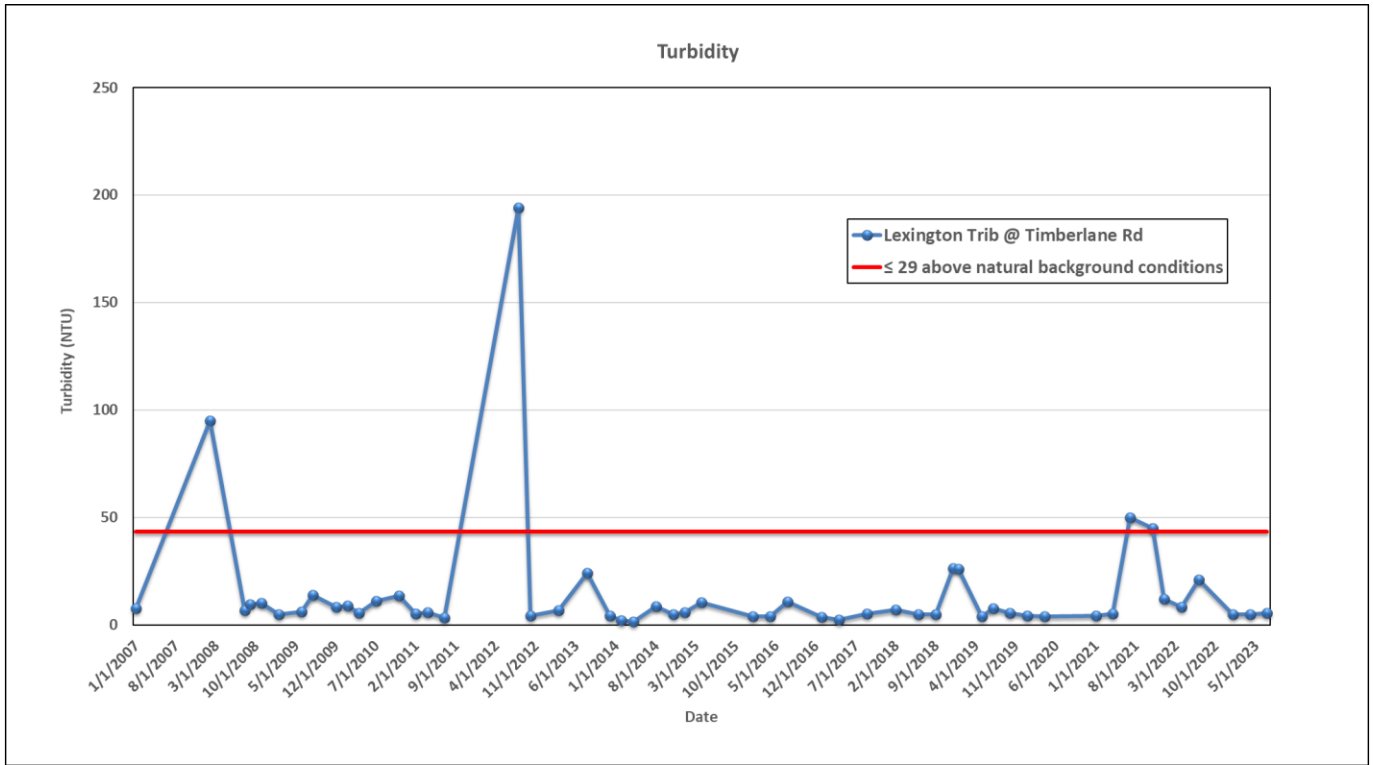


Figure 5. Turbidity values in Lexington Creek.