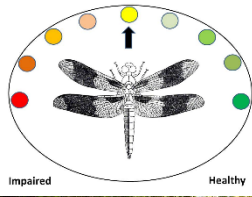


Lexington Creek EcoSummary



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.

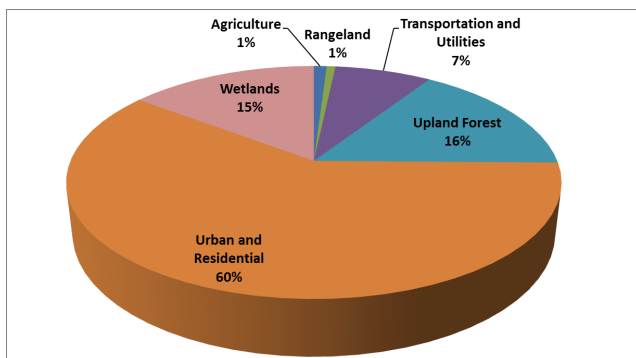


Figure 1. Lexington Creek watershed land use.

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). The latest biological survey was conducted in 2021 to evaluate the health of aquatic invertebrate communities in the Creek. 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	-	-

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 undertook the rehabilitation of the sewer lines in the immediate area of the creek. Levels are still elevated with exceedances still

occurring. Leon County staff continues to investigate the source(s) of the bacteria.

Turbidity

Turbidity levels have occasionally exceeded water quality standards (**Figure 5**). Sedimentation continues to be an ongoing problem in the stream.

Stream Condition Index (SCI) and Habitat Assessment

The results of the Habitat Assessment score for Lexington Creek characterize the stream habitat in the Suboptimal category (**Table 2**). Human induced channel impacts are most apparent in the first 40 meters of the 100-meter transect but some anthropogenic debris is located throughout the channel (and floodplain), along with sedimentation. The SCI score was in the low to mid Healthy category with a score of 36 (**Table 3**). Vial 1 and Vial 2 individually scored within one point of each other. The last time a SCI was performed on this stream was in November of 2018. At that time the SCI scored in the Healthy category with a numerical score of 42.

Further analysis of the macroinvertebrate community of the stream presents an inconsistent mixture of results. The Ephemeroptera/Plecoptera/Trichoptera (EPT) taxa are widely regarded as the groups of aquatic insects that contain large numbers of pollution sensitive taxa. However, the total for EPT taxa score is only two with one Ephemeroptera taxon and one Trichoptera taxon recovered. No Plecoptera taxa were present in the SCI. Although the stream is in a suburban landscape, FDEP sensitive taxa (seven) out-numbered very tolerant taxa (three) but no long-lived taxa were recovered. Sedimentation is a very real threat to this stream's biotic community. For example, in the 2018 sample event, a small section of cobble was noted and sampled as a minor habitat. During the 2021 sample event, that section of the stream had no

visible cobble present. However, field samplers did relocate the previously documented cobble habitat about two inches below the surface of the sand-covered streambed.

[Click here for more information about the Stream Condition Index and Habitat Assessments.](#)

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 SCI score for Lexington Creek was at the low to middle level of the Healthy range, while the Habitat Assessment Score was in the Suboptimal range. Sedimentation continues to be a threat to the stream biotic community and is contributing to the elevated phosphorus levels. 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.

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 Site 26.](#)

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Table 2. Lexington Creek Habitat Assessment Score.

Lexington Creek	Score	Category
Substrate Diversity	11	Suboptimal
Substrate Availability	6	Marginal
Water Velocity	20	Optimal
Habitat Smothering	9	Suboptimal
Artificial Channelization	20	Optimal
Bank Stability	6, 7	Suboptimal, Suboptimal
Riparian Zone Width	10, 8	Optimal, Suboptimal
Riparian Vegetation Quality	6, 6	Suboptimal, Suboptimal
Final Habitat Assessment Score	109	
Interpretation	Suboptimal	

Table 3. Lexington Creek Stream Condition Index Score.

Lexington Creek	Vial 1	Vial 2
Stream Condition Index Metrics Scores		
Total Taxa	0.71	1.43
Ephemeroptera Taxa	1.25	0
Trichoptera Taxa	0	0
% Filter Feeder	10	10
Long-lived Score	0	0
Clinger Taxa	3	3
% Dominance	2.43	2.45
% Tanytarsini Taxa	8.71	7.60
Sensitive Taxa	2.67	3.33
% Tolerant Taxa	3.85	4.47
SCI Vial Score	36.24	35.88
Stream Condition Index Score	36	
Score Interpretation	Healthy	

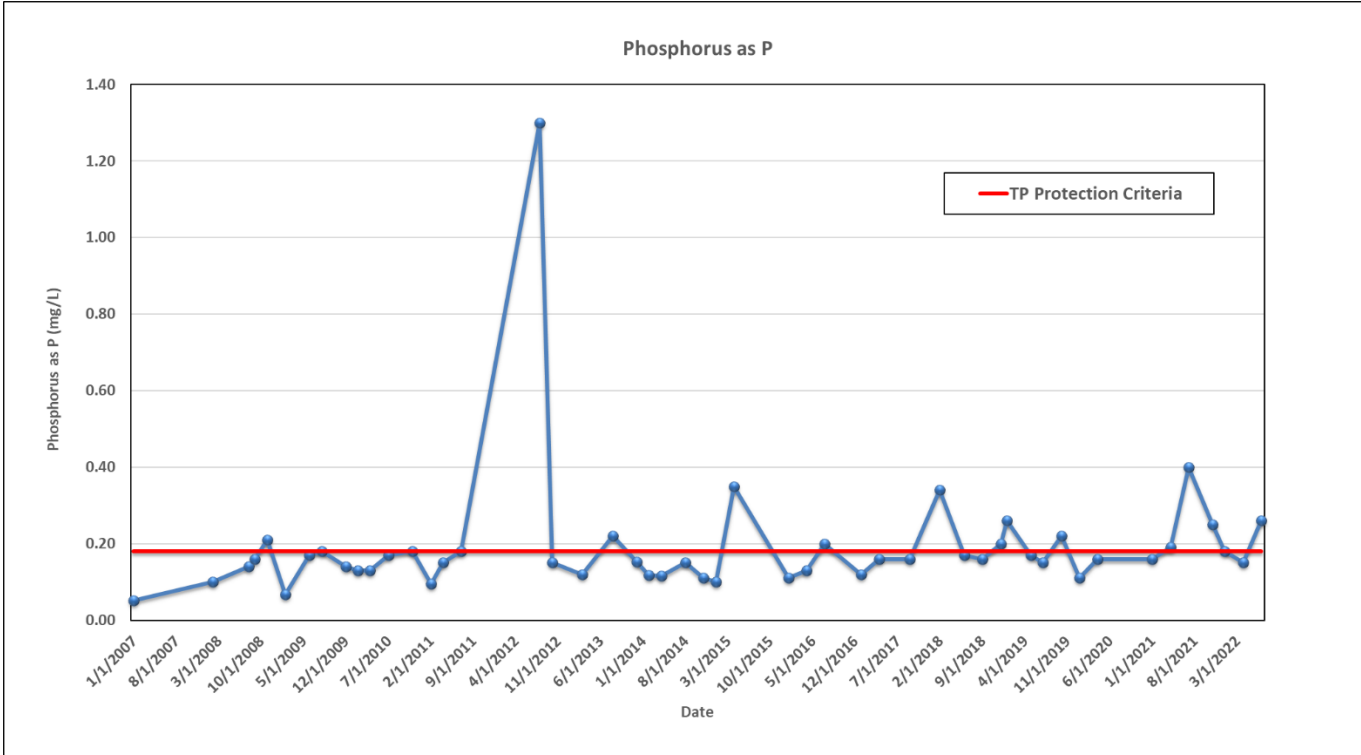


Figure 2. Total Phosphorus values in Lexington Creek.

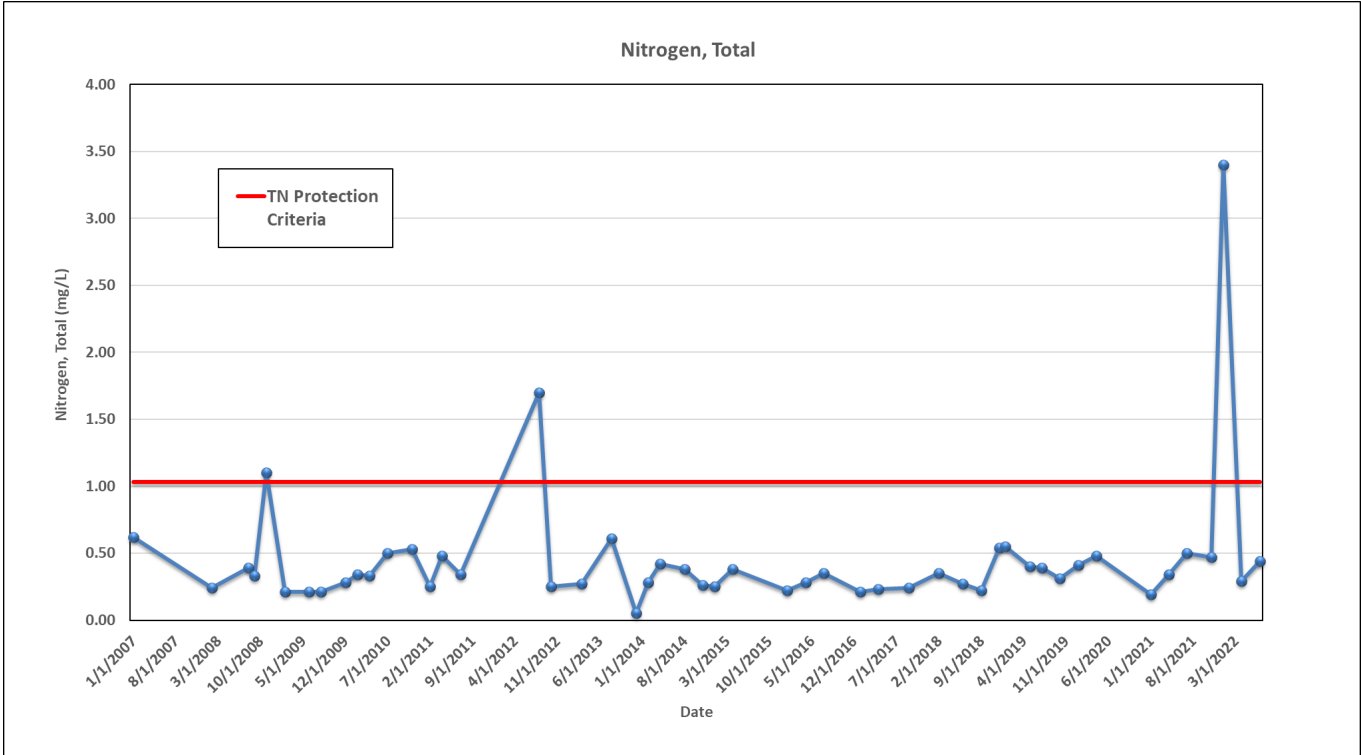


Figure 3. Total Nitrogen values in Lexington Creek.

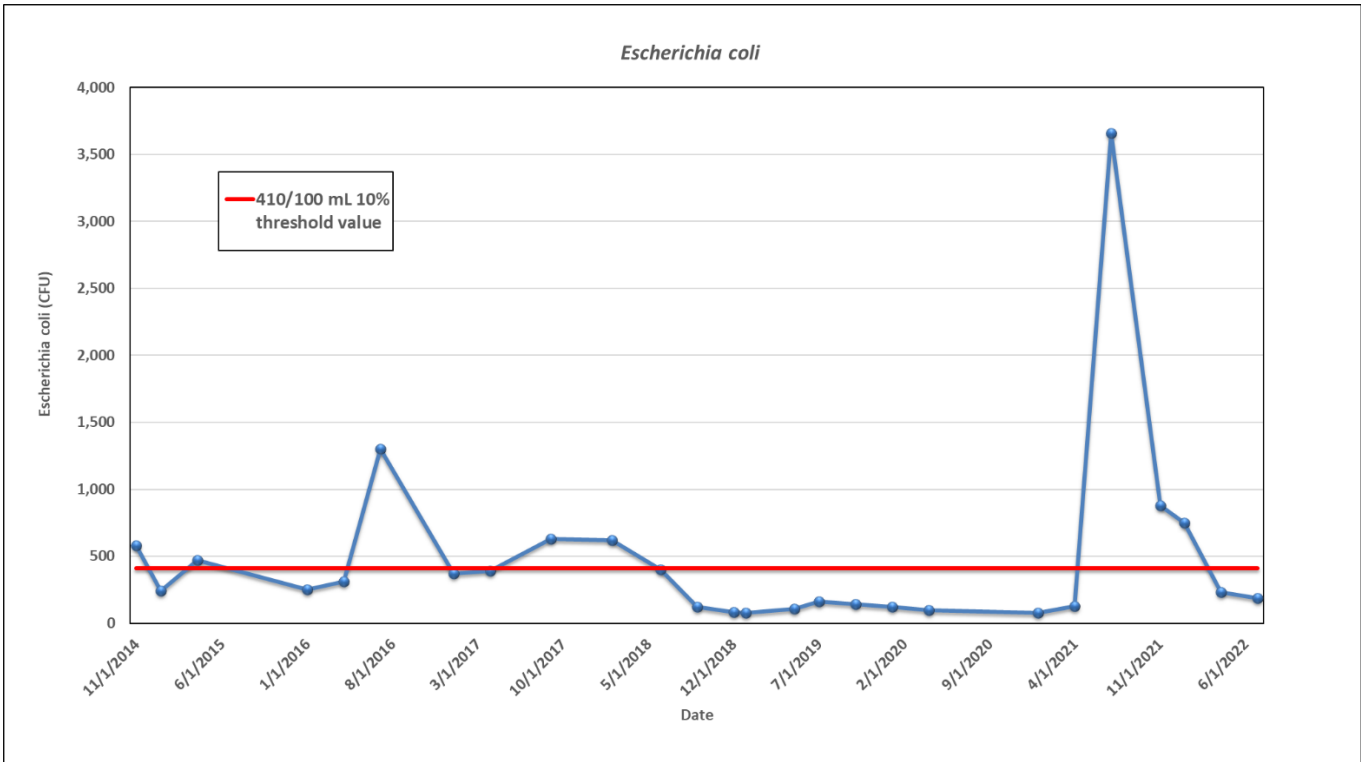


Figure 4. *Escherichia coli* values in Lexington Creek.

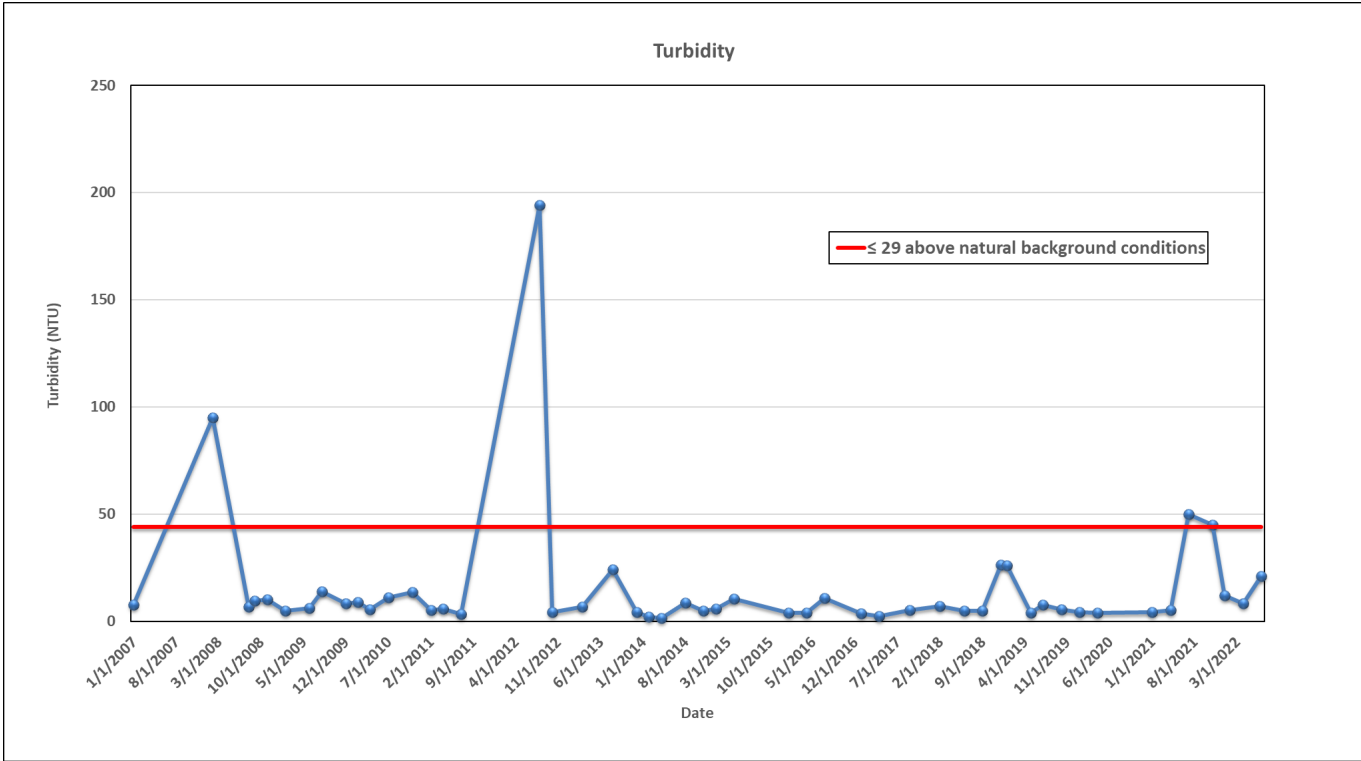


Figure 5. Turbidity values in Lexington Creek.