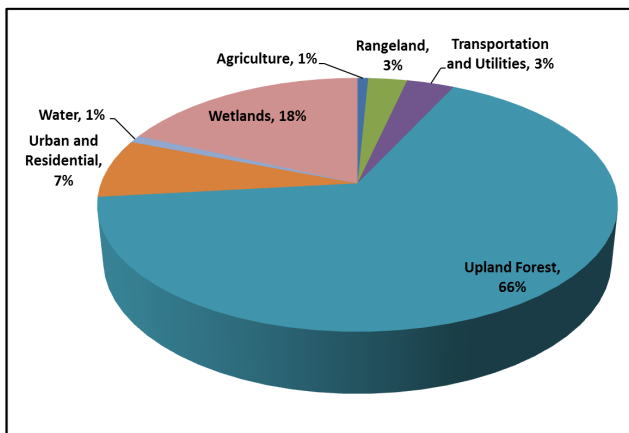


# Chicken Branch EcoSummary



Chicken Branch is located in southeastern Leon County. The stream is partially fed by Chicken Branch Spring and flows southeast, eventually draining into the St. Marks River.

As shown in **Figure 1**, the majority of the 6,572-acre watershed is relatively undeveloped. Agriculture, rangeland, transportation, utilities, urban and residential uses make up approximately 14% of the watershed. Increases in stormwater runoff and waterbody nutrient loads can often be attributed to these types of land uses. Watershed land use is changing; logging in the area adjacent to Chicken Branch and its spring impacted the system and may continue to do so.



**Figure 1.** Chicken Branch 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). The latest biological survey was conducted in 2020 to evaluate the health of aquatic invertebrate communities in the system. This information is used to determine the health of Chicken Branch 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.

The nutrient thresholds and results are found in **Table 1**. When data requirements were met, nutrient values were shown to not exceed the state criteria. While not exceeding the NNC threshold, the 2017 geometric mean nitrogen levels are the highest on record; the June 2017 result (0.81 mg/L) is the third highest individual result since sampling began in 2006. Substantial rainfall in the area immediately prior to the sampling could have affected nitrogen values via increased runoff into the system. The elevated color levels during the same event (150 PCU vs. a median of 40 PCU) suggest that runoff was a factor in the results. The following years' nitrogen results were considerably lower, so the elevated Total Nitrogen value in 2017 was probably an isolated event.

**Table 1.** Total Nitrogen and Phosphorus criteria and results for Chicken Branch.

<b>Chicken Branch</b>	<b>TN Threshold 1.03 mg/L</b>	<b>TP Threshold 0.18 mg/L</b>
2006- 2008	-	-
2009	0.15	0.04
2010	0.43	0.05
2011- 2012	-	-
2013	0.27	0.03
2014	0.41	0.05
2015	-	-
2016	0.38	0.05
2017	0.50	0.05
2018	0.40	0.04
2019	0.30	0.06
2020	-	-
2021	0.38	0.05
2022	0.35	0.05

### *Dissolved Oxygen*

As **Figure 2** shows, Chicken Branch did not always meet the Class III criteria for dissolved oxygen (DO). Low DO levels are typical of

Florida spring-run streams and are considered normal for Chicken Branch.

### *Stream Condition Index (SCI) and Habitat Assessment*

As reflected in Table 2, the 2020 SCI score matches the natural channel condition of the habitat. The presence of a varied and reasonably rich biological community with several sensitive taxa resulted in a SCI score (64) in the Healthy range. Interestingly, this score is seven points lower than the SCI score received in 2017, dropping the station from the lower end of the Exceptional range into the higher end of the Healthy range. This is likely due to drought conditions experienced in the system during the springtime. The two most abundant macroinvertebrate taxa collected in both vials were the Asellid isopod *Caecidotea* sp. and the mayfly *Caenis diminuta*. From the total taxa collected, six are listed as sensitive taxa by the FDEP and four as very tolerant. The Ephemeroptera, Plecoptera, Trichoptera (EPT) fauna are widely regarded as groups of aquatic insects that contains large numbers of pollution sensitive taxa. No Plecoptera (stoneflies) were noted in the SCI. Three Ephemeropteran (mayflies) species were collected, including the “sensitive” genus *Stenacron*. The Trichoptera (caddisflies) were also represented by two species: *Cheumatopsyche* and *Oxyethria*.

As reflected in Table 3, the results of the Habitat Assessment score (127) characterize the stream habitat as Suboptimal. Given the natural, non-dredged condition of the system, this score reflects a limitation on the availability of some of the major habitats within the channel. The system still displays impacts within the riparian zone as result of extensive timbering of the surrounding swamp forest. Numerous downed trees in the channel allow for increased light to reach the stream. This increased light combined

with the dry/non-flowing channel conditions in the spring supported the growth of wetland herbaceous plants within the channel to an extent not previously noted in this system.

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

#### *Other Parameters*

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

#### **Conclusions**

Based on ongoing sampling, Chicken Branch met the NNC for the Panhandle East Region. Staff considers the occasionally low DO values at Chicken Branch to be a natural condition for spring-fed systems. The 2020 SCI was in the Healthy range and showed the presence of a varied and reasonably rich biological community with several sensitive taxa.

**Table 2.** SCI results for Chicken Branch.

<b>Chicken Branch</b>	<b>Rep 1</b>	<b>Rep 2</b>
<b>Stream Condition Index Metrics Scores</b>		
Total Taxa	5.65	3.04
Ephemeroptera Taxa	6	6
Trichoptera Taxa	1.43	2.86
% Filter Feeder	3.21	2.25
Long-lived Taxa	6.67	3.33
Clinger Taxa	7.50	6.25
% Dominance	8.45	7.26
% Tanytarsini Taxa	9.56	8.58
Sensitive Taxa	6	5
% Tolerant Taxa	8.16	7.96
SCI Vial Score	69.59	58.38
<b>Stream Condition Index Score</b>	<b>64</b>	
<b>Score Interpretation</b>	<b>Healthy</b>	

**Table 3.** Habitat Assessment results for Chicken Branch.

<b>Chicken Branch</b>	<b>Score</b>	<b>Category</b>
Substrate Diversity	18	Optimal
Substrate Availability	10	Marginal
Water Velocity	13	Suboptimal
Habitat Smothering	10	Marginal
Artificial Channelization	18	Optimal
Bank Stability	10, 10	Optimal, Optimal
Riparian Zone Width	9, 9	Optimal, Optimal
Riparian Vegetation Quality	10, 10	Optimal, Optimal
<b>Final Habitat Assessment Score</b>	<b>127</b>	
<b>Interpretation</b>	<b>Suboptimal</b>	

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.

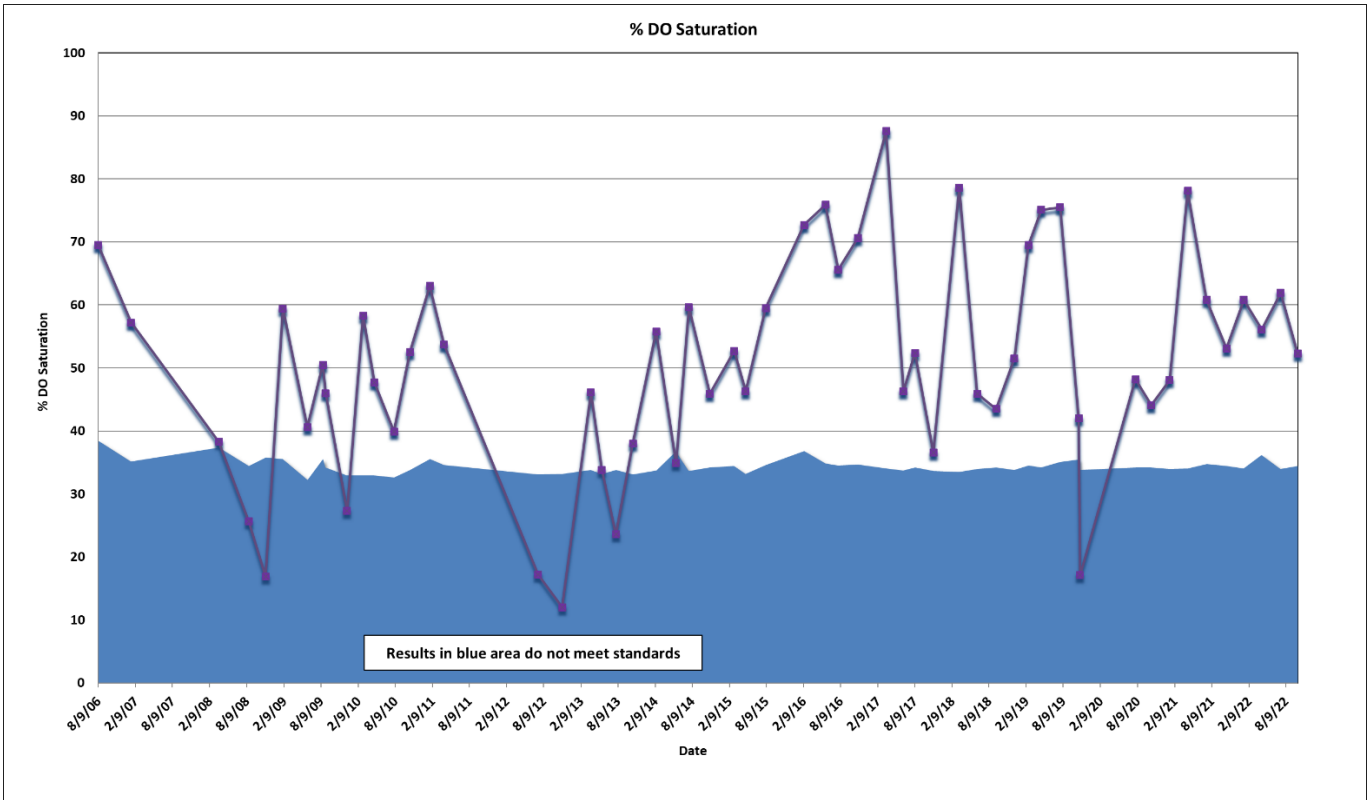
#### **Contact and Resources for More Information**

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

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

[Click here for a map of the watershed – Sample Site 53.](#)

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



**Figure 2.** Dissolved Oxygen Percent Saturation results for Chicken Branch.