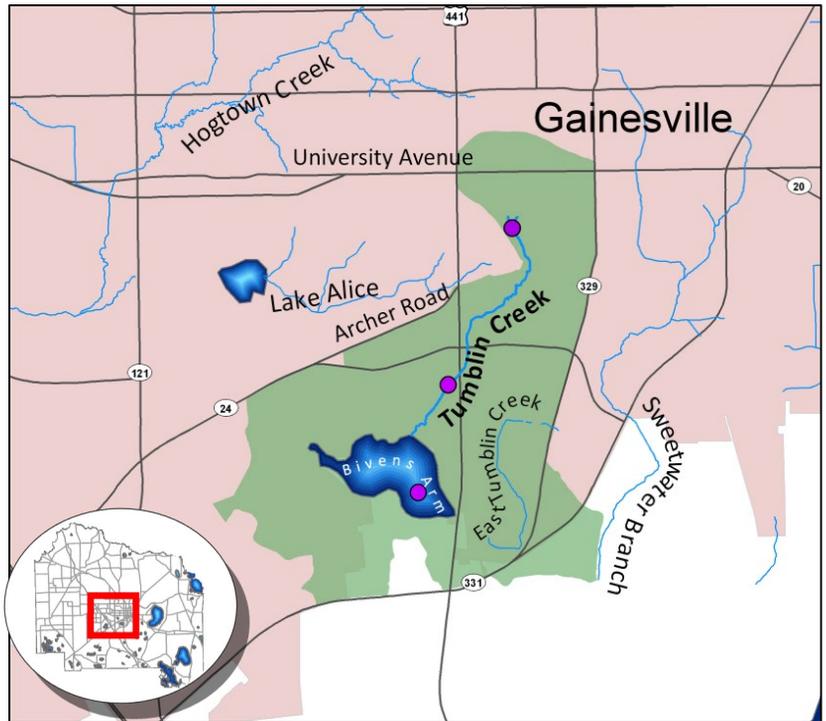




# Tumblin Creek Fact Sheet

## The Watershed

- The Tumblin Creek watershed is ~ 3.8 square miles.
- Tumblin Creek flows into Bivens Arm.
- The Tumblin Creek watershed is 41% residential, 53% commercial, 4% industrial, and 2% forest/natural.



Map of Tumblin Creek watershed (green) with sampling sites (purple circles).

## Potential Pollution

- Urban stormwater has high velocity flows which causes streambed and bank erosion. High flows also transport sediments, which degrades streamside vegetation and habitat for in-stream biota such as macroinvertebrates.
- Naturally occurring phosphorus from the Hawthorne Group formations may contribute to elevated phosphorus levels due to increased cutting and scour from stormwater flows.
- Failing septic systems, failing wastewater infrastructure, wildlife, and pets all introduce fecal material which is a source of nitrogen, phosphorus, and fecal coliform bacteria.



Tumblin Creek off Hwy 441.

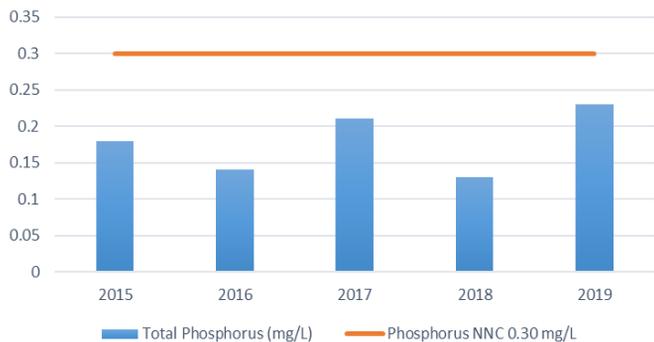
## In-Stream Biology

Biological surveys of Tumblin Creek were conducted at two locations on the creek and indicated that the stream had a healthy population of benthic macroinvertebrates with ample habitat at both locations. Tumblin Creek received a Healthy designation for the 2013 Stream Condition Index survey. This may indicate improved stream conditions from 2000 and 2009 Biorecon analyses, which scored Tumblin Creek as Impaired. However, different macroinvertebrate sampling methods were utilized in 2013.

# Water Quality

## Tumblin Creek Total Phosphorus

A



## Tumblin Creek Total Nitrogen

B

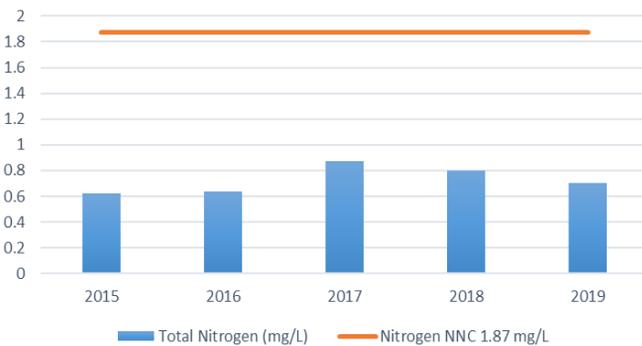


Figure 1. Annual geometric mean of A) total phosphorus (TP) and B) total nitrogen (TN).

**Nutrients:** The current FDEP water quality rule on nutrient standards went into effect February 2016. As a result, Tumblin Creek does not exceed the Numeric Nutrient Criteria (NNC) threshold for total phosphorus (TP) or for total nitrogen (TN). The stormwater pond constructed in the headwaters of the creek may have helped reduce the phosphorus loading to Tumblin Creek by reducing the peak velocity of stormwater flows.

## Tumblin Creek *E. coli* Concentration

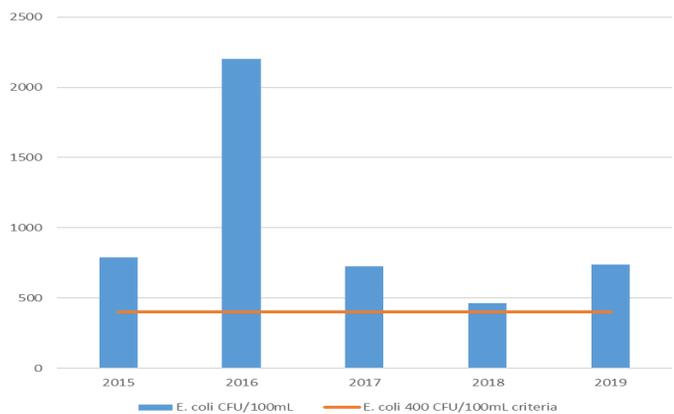


Figure 2. Annual geometric mean *E. coli* coliform colony forming units (CFU)/100 mL.

**Bacteria:** Measuring *Escherichia coli* is the more accurate method for determining fecal coliform contamination in streams. State standards for a single sample are 400 colony forming units (CFU)/100 mL. Tumblin Creek is listed as impaired for fecal coliform. Possible sources of this bacteria include urban campers, domestic and wild animal waste, leakage from sanitary sewer lines, faulty private sewer connections and overflows, persistence and regrowth of bacteria in creek sediments, and failing septic systems.

## Current Human Impacts

- Urban campers, failing septic systems, failing wastewater infrastructure, wildlife, and pets all introduce fecal material.
- Roadway runoff may contaminate the creek with traces of petroleum products, oil and grease from automobiles, and sediment.
- Most of the non-piped segments of Tumblin Creek have high velocities during storm flow events which transport sediments that smother habitat.



Tumblin Creek off Hwy 441.