



# Hollomans Branch Creek

STREAM HABITAT ASSESSMENT, STREAM CONDITIONS INDEX, LINEAR VEGETATION SURVEY, RAPID PERIPHYTON SURVEY AND WATER QUALITY

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# Methods

## STUDY AREA ANALYSIS

The watershed containing the stream being assessed was analyzed using ESRI ArcGIS 10.2. Using this software with 2016 Hillsborough County aerial, 2011 Land Use/ Land Cover (LULC) and Watershed boundary (WBID) layers courtesy of the Florida Department of Environmental Protection. The Landscape Development Intensity Index (LDI) was calculated for the WBID containing the stream. From FDEP “The Landscape Development Intensity index (LDI) is an estimate of how much humans have altered an area of interest around a waterbody. Various land use types (low density residential, row crops, industrial and natural) are assigned coefficients of land use intensity based on estimates of the amount of human energy that is put into those land use types.

The LDI is calculated by multiplying each land use coefficient by the percentage of the area of interest occupied by that land use, and then summing the results. The Florida Department of Environmental Protection (DEP) uses the LDI as a tool to estimate potential land use impacts on streams, lakes, and wetlands. LDI values less than two ( $\leq 2$ ) can be considered minimally disturbed.” In the Florida framework, the maximum LDI index score is approximately 42.

## HABITAT AND VEGETATION ASSESSMENT

For small streams that are not easily navigated by Jonboat for bathymetric mapping and vegetation analysis, Hillsborough County requested the implementation of the Florida Department of Environmental Protection methods for Stream and River Habitat Assessment (FT 3100) (<http://www.dep.state.fl.us/water/sas/sop/sops.htm>) using forms FD 9000-3, FD 9000-4 and FD 9000-5, Rapid Periphyton Survey (FS 7230) using form FD 9000-25 and Linear Stream Vegetation Survey (FS 7320) using form FD 9000-32. These methods were utilized on two sampling locations on each stream, typically near access points along roadways.

Stream and River Habitat Assessment per FT3100 receives a score calculated in Form FD 9000-5. This score results from the ranking of the primary habitat components (substrate diversity, substrate availability, water velocity and habitat smothering) and secondary habitat components (Artificial channelization, bank stability, riparian buffer zone width and riparian zone vegetation quality). The maximum score possible in this method is a 160.

Two metrics are utilized in the Linear Vegetation Survey. The Mean Coefficient of Conservatism (CoC) applies a score of 0-10 to each species based on its ecological tolerances and fidelity to pre-settlement conditions. Species with higher scores show a high fidelity to native, undisturbed habitats and are typically sensitive to alterations. Available CoC scores can be obtained from LT 7000 from the Florida Department of Environmental Protection at: <http://www.dep.state.fl.us/water/sas/sop/sops.htm>. The Percent Florida Exotic Pest Plant Council (% FLEPPC) metric calculates the percent invasive exotics as the number of occurrences of FLEPPC Category I or II in the 100 m reach divided by the total number of taxa occurrences in the 100 m reach. The FLEPPC list can be found at: <http://www.fleppc.org/list/ulist.html>

## STREAM CONDITION INDEX ASSESSMENT

The Stream Condition Index (SCI) was sampled per DEP SOP FS7420 and calculated per DEP SOP LT7200. The SCI consists of collecting macroinvertebrates via 20 D-frame dipnet sweeps (0.5 m in length) in the most productive habitats in a 100 m reach of stream. The organisms are sub-sampled, and identified to the lowest practical taxonomic level. The SCI is composed of ten metrics, eight of which decrease in response to human disturbance, with two metrics (% very tolerant and % dominant) increasing in response to human disturbance. According to DEP SOP LT 7000, the SCI score ranges and categories are: (68-100) Exceptional; (35-67) Healthy; and (0-34) Impaired. Proposed biological health assessment criteria state that a site is considered to meet designated uses if the average of the two most recent SCI scores is 40 or higher and neither of those scores is less than 35.

## WATER QUALITY ASSESSMENT

Physical water quality samples were taken using a Eureka Manta Sub-2 multiprobe pre and post calibrated daily. Measurements taken with this device include: depth, conductivity, pH, Dissolved Oxygen (mg/l and % Saturation) and salinity. Chemical water parameters were collected and preserved on ice by USF Water Institute staff and analyzed at the Environmental Protection Commission of Hillsborough County Laboratory. Analysis include; Chlorophyll (a, b, c, t and corrected), Alkalinity, Color, E. Coli, Enterococci, Ammonia, Nitrates/Nitrites, Total Phosphorous, Kjeldahl Nitrogen and Total Nitrogen.

## Study Area

Hollomans Branch Creek is located in north eastern Hillsborough County. Its headwaters are located south of Sam Allen Road and De Montmollin Road and the outfall of Hollomans Branch Creek is in Flint Creek. The assessment of Hollomans Branch Creek was conducted on December 14, 2017. At the time of the assessment, the water levels were below average but sufficient habitat for macroinvertebrates was still inundated.

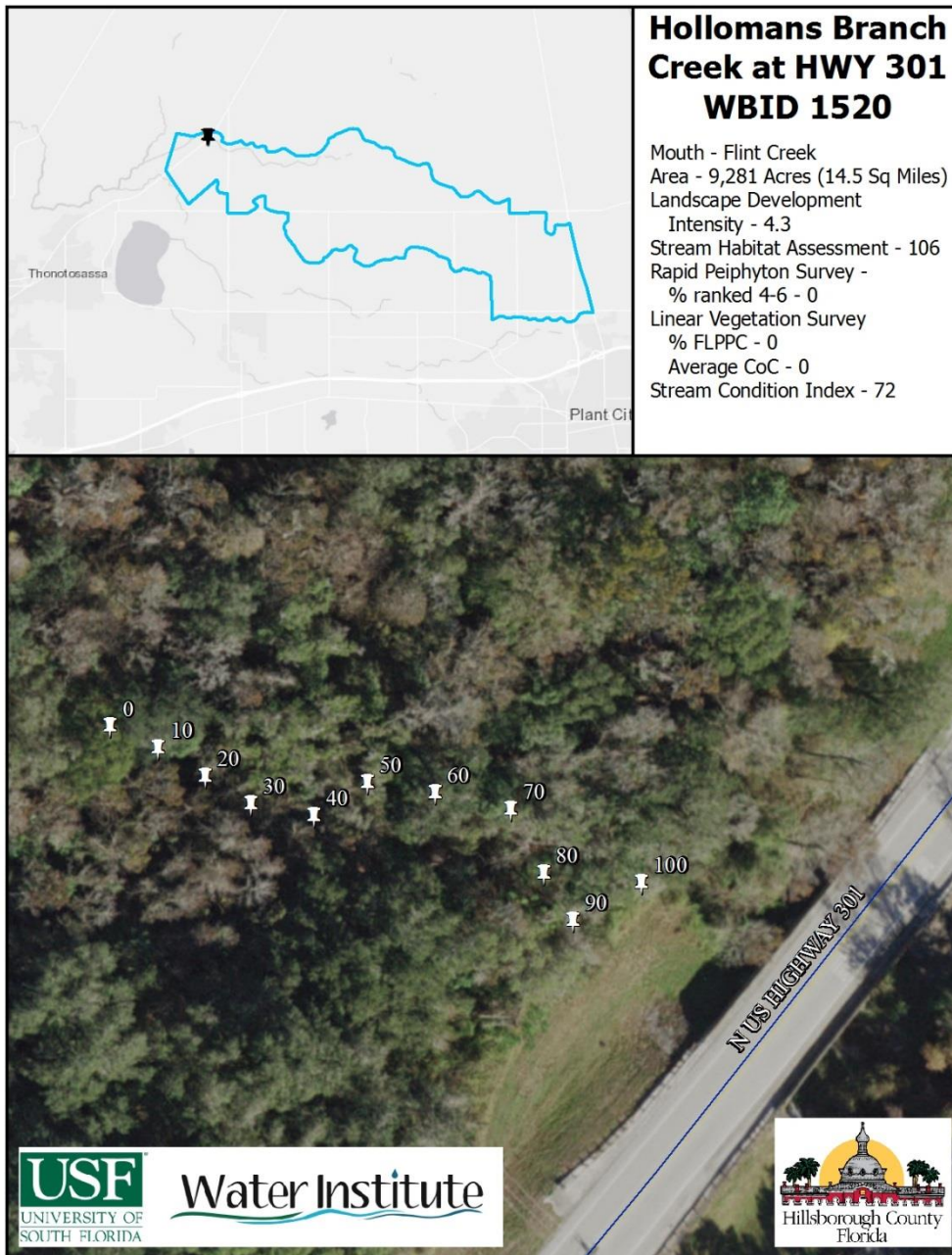


Figure 1 2018 Holloman's Branch Creek Study Area Map

The watershed surrounding Holloman's Branch Creek is dominated by Low Density Residential land use (39.5%), Agriculture (29.6%) and Natural lands (23.7%). The resulting Landscape Development Intensity Index for the watershed is 4.3.

## Habitat and Vegetation Assessment



*Figure 2 Overview photograph of Holloman's Branch Creek at the US Highway 301 Sample Site*

The FDEP Habitat Assessment splits the stream between Primary Habitat Components and Secondary Habitat Components. For the primary habitat components, Holloman's Branch Creek received suboptimal scores for Substrate Diversity (three major productive habitats) and Habitat Smothering (Adequate number of stable pools with > 25% of habitats affected by sand, silt or algae). The Water Velocity at the time of the assessment scored in the Marginal category at 0.07 meters/second. Substrate Availability scored in the Poor category with less than 5% of the

streams surface area being major productive habitat. The primary habitat component score was a 38 of a possible 80.

The major productive habitats found during the assessment and percentage of total surface area were Snags (2.4%), Roots/Undercut Banks (0.6%) and Leaf Packs/Mats (1.5%). In general the snags were of suboptimal quality with moderate sand smothering. The roots found were also of moderate quality with some siltation. The leaf packs/mats were of low quality with the majority of the leaf packs being fairly new fall and the leaf mats being silted and/or anoxic.

The secondary habitat components scored much better as the surrounding land is undeveloped preserve. Optimal scores were achieved for Artificial Channelization (expected sinuosity, no evidence of dredging or straightening) and Riparian Buffer Zone Width (> 18 meters). Suboptimal scores were recorded for Bank Stability (Meeting two of the three requirements) and Riparian Zone Vegetation Quality (50-80% of riparian zone undisturbed, some disruption in community observed). The secondary habitat component score was a 68 of a possible 80. The resulting FDEP Habitat Assessment score at the time of the assessment was a 106

During the Rapid Periphyton Survey, no species of periphyton was observed during sampling. The 100 meter region of Holloman's Branch Creek had a heavy canopy above it averaging 92% canopy coverage. The water itself was tannic in color with a secchi disc of greater than 0.75 meters visible on bottom in the deepest pool. The average depth at the time of the assessment was 0.3 meters deep.

The results of the Linear Vegetation Survey showed that no species of herbaceous vegetation was rooted in the wet portions of the stream at the time of the assessment. In part this is due to the streams hydrology. During the summer months the stream level rapidly rises to bankfull and often exceeds bankfull spilling over onto the surrounding flood plain. During the end of winter and in spring prior to the return of consistent rainfall, Holloman's Branch Creek often goes dry or has minimal flow. Because no species were found, the linear vegetation metrics of Mean Coefficient of Conservatism and the Percent FLEPPC type I plants were both 0.

*Table 1 Linear Vegetation Survey Results – Holloman's Branch Creek at US HWY 301*

Plant Species	Sample Site										Observations/ Species	CoC	
	0-10m	10-20m	20-30m	30-40m	40-50m	50-60m	60-70m	70-80m	80-90m	90-100m			
No Vegetation												0	0
Observations/station	0	0	0	0	0	0	0	0	0	0	0	0	
Total Observations	0												
Mean CoC	0												
% FLEPPC	0%												



*Figure 3 Holloman's Barnch Creek did not have rooted herbaceous vegetation or periphyton at the time of the assessment*



## Stream Condition Index

The analysis of the SCI sample involves splitting the sample into 2 aliquots for analysis. The SCI metrics are then calculated on each separately. The final SCI score is an average of the two scores. The SCI score for Holloman’s Branch Creek was 72 out of a possible 100 points, corresponding with an “Exceptional” designation, with the expected community of a healthy stream. The metrics calculated for each aliquot is shown below in Table 2. The full results of the SCI sampling are shown in Table 3 (Sample A) and Table 4 (Sample B) for Holloman’s Branch Creek.

Of note in the results is the lack of Long-Lived Taxa. This is likely due to the hydroperiod of the system where in the previous year the stream either goes dry completely or stops flowing leaving few areas of refuge.

Table 2 SCI metric summaries for Holloman’s Branch Creek aliquot A (top) and aliquot B (bottom)

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	27.00	5.00	5.00
Total Ephemeroptera	4.00	8.00	8.00
Total Trichoptera	3.00	4.29	4.29
% Filter Feeders	39.46	9.01	9.01
Total Clingers	6.00	8.57	8.57
Total Long-lived Taxa	0.00	0.00	0.00
% Dominance	19.05	8.99	8.99
% Tanytarsini	21.09	9.10	9.10
Total Sensitive Taxa	3.00	4.29	4.29
% Very Tolerant Individuals	2.04	8.97	8.97

SCI Sum	66.22
Final SCI score	73.58

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	27.00	5.00	5.00
Total Ephemeroptera	4.00	8.00	8.00
Total Trichoptera	2.00	2.86	2.86
% Filter Feeders	43.40	9.93	9.93
Total Clingers	6.00	8.57	8.57
Total Long-lived Taxa	0.00	0.00	0.00
% Dominance	22.92	8.22	8.22
% Tanytarsini	22.92	9.34	9.34
Total Sensitive Taxa	2.00	2.86	2.86
% Very Tolerant Individuals	2.78	8.43	8.43

SCI Sum	63.20
Final SCI score	70.22

Hollmans Branch SCA  
 Stream Condition Index (SCI)  
 Samples Collected 12/14/2017  
 Project #: 6083170278

Stream Condition Index Results for Hollmans Branch SCA

Phylum	Class	Order	Family	Taxa	Abundance	Collapsed Abundance	Taxa Presence	ephemeroptera Taxa	Trichoptera Taxa	50% Filterer	100% Filterer	Clinger Taxa	Long-lived Taxa	Dominant Taxa	Tamytarsini	Sensitive Taxa	Very Tolerant Individuals
Arnelida	Ciliata	Encyrtacea	Encyrtidae	<i>Encyrtidae</i> spp.	1	1	1	0	0	0	0	0	0	0	0	0	0
Mollusca	Gastropoda	Hingophila	Ancylidae	Ancylidae spp.	6	6	1	0	0	0	0	0	0	0	0	0	0
Malacostraca	Branchiopoda	Veneroida	Sphaeriidae	<i>Eupera cubensis</i>	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Malacostraca	Amphipoda	Dogielinidae	<i>Hyalella azteca</i> sp. complex	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Ephemeroptera	Caenidae	<i>Caenis dinnica</i>	4	4	1	1	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Ephemeroptera	Caenidae	<i>Caenis</i> spp.	1	1	0	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Ephemeroptera	Baetidae	<i>Coloburiscus propinquus</i>	2	2	1	1	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Ephemeroptera	Baetidae	<i>Baetis intercalaris</i>	1	1	1	1	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Ephemeroptera	Baetidae	<i>Baetis</i> spp.	4	4	2	1	1	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Heptageniida	Heptageniidae	<i>Heptageniidae</i> spp.	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Odonata	Libellulidae	<i>Hebraura tibialis</i>	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Trichoptera	Leptoceridae	<i>Leptocera</i> spp.	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Trichoptera	Hydropsychidae	<i>Hydropsychidae</i> spp.	4	4	0	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Trichoptera	Hydropsychidae	<i>Chenutopsycha</i> spp.	24	28	1	0	1	0	28	1	0	0	0	0	0
Arthropoda	Insecta	Trichoptera	Hydropsychidae	<i>Neotrichia</i> spp.	3	3	1	0	0	0	0	1	0	0	0	0	0
Arthropoda	Insecta	Ephemeroptera	Heptageniidae	<i>Dolichoptera</i> spp.	2	2	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Ephemeroptera	Heptageniidae	<i>Stenelmis</i> spp.	3	3	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Ephemeroptera	Heptageniidae	<i>Microvelia</i> spp.	12	12	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Tanytarsus</i> spp.	5	5	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Tanytarsus buckleyi</i>	11	11	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Polyphemus scaberum</i> group	3	3	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Polyphemus flavum</i>	24	24	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Polyphemus filineae</i> group	3	3	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Polyphemus filix</i> group	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Rhyacotarsus exiguus</i> group	15	15	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Pentaneura incognita</i>	4	4	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Stenochironomus</i> spp.	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Corynoneura</i> spp.	2	2	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Simuliidae	<i>Simulium</i> spp.	6	6	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Empididae	<i>Hemiteles</i> spp.	1	1	1	0	0	0	0	0	0	0	0	0	0

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	27.00	5.00	5.00
Total Ephemeroptera	4.00	8.00	8.00
Total Trichoptera	3.00	4.29	4.29
% Filter Feeders	39.46	9.01	9.01
Total Clingers	6.00	8.57	8.57
Total Long-lived Taxa	0.00	0.00	0.00
% Dominance	19.05	8.99	8.99
% Tanytarsini	21.09	9.10	9.10
Total Sensitive Taxa	3.00	4.29	4.29
% Very Tolerant Individuals	2.04	8.97	8.97

SCI Sum	66.22
Final SCI score	73.58

Table 3 SCI full results for Sample A

Source: Anne Foster Wheeler, 2018  
 Prepared by: JSD  
 Checked by: SEM

Hollomans Branch SCB  
 Stream Condition Index (SCI)  
 Sample Collected 12/14/2017  
 Project #: 6063170278

Stream Condition Index Results for Hollomans Branch SCB

Phylum	Class	Order	Family	Taxa	Abundance	Collapsed Abundance	Taxa Presence	Ephemeroptera Taxa	Trichoptera Taxa	50% Filterer	100% Filterer	Clinger Taxa	Long-lived Taxa	Dominant Taxa	Tanytarsini	Sensitive Taxa	Very Tolerant Individuals
Arthropoda	Insecta	Lumbricidae	Lumbricidae	<i>Ecdyallus politus</i>	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Gastropoda	Ancylidae	<i>Ancylus</i> spp.	5	5	1	0	0	0	0	0	0	0	0	0	0
Mollusca	Bivalvia	Veneroida	Sphaeriidae	<i>Sphaeria</i> spp.	1	1	1	0	0	0	0	0	0	0	0	0	0
Mollusca	Bivalvia	Veneroida	Sphaeriidae	<i>Egira cubensis</i>	2	2	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Anisoptera	Dogielinotidae	<i>Hyalinotus arcticus</i> sp. complex	5	5	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Ephemeroptera	Caenidae	<i>Caenis fluminea</i>	3	3	1	1	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Ephemeroptera	Baetidae	<i>Baetis</i> spp.	2	2	1	1	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Ephemeroptera	Baetidae	<i>Labobacteris proquiquus</i>	4	4	1	1	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Ephemeroptera	Heptageniidae	<i>Heptagenia</i> spp.	1	1	1	0	0	0	0	1	0	0	0	0	0
Arthropoda	Insecta	Trichoptera	Hydropsychidae	<i>Hydropsyche</i> spp.	7	7	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Trichoptera	Hydropsychidae	<i>Crematoglyphe</i> spp.	26	33	1	0	1	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Trichoptera	Hydropsychidae	<i>Neotrichia</i> spp.	1	1	1	0	1	0	0	1	0	0	0	0	0
Arthropoda	Insecta	Coleoptera	Coleoptera	<i>Coleoptera</i> spp.	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Coleoptera	Elmidae	<i>Elmidae</i> spp.	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Coleoptera	Elmidae	<i>Dubiraphis</i> spp.	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Coleoptera	Elmidae	<i>Stenelmis</i> spp.	8	8	1	0	0	0	0	1	0	0	0	0	0
Arthropoda	Insecta	Coleoptera	Elmidae	<i>Microcyllepus</i> spp.	6	6	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Chironomus</i> spp.	2	2	0	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Tanytarsus</i> spp.	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Tanytarsus buckleyi</i>	14	14	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Tanytarsus</i> spp.	3	3	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Polyphemus scaberrimus</i> group	21	22	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Polyphemus flavum</i>	3	3	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Polyphemus lillicense</i> group	2	2	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Polyphemus foliis</i> group	17	18	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Rhectotanytarsus exiguus</i> group	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Pentaneuriscus incognita</i>	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Stenochironomus</i> spp.	3	3	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Chironomidae	<i>Polyphemus</i> baxteri	1	1	1	0	0	0	0	0	0	0	0	0	0
Arthropoda	Insecta	Diptera	Simuliidae	<i>Simulium</i> spp.	1	1	1	0	0	0	0	1	0	0	0	0	0

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	27.00	5.00	5.00
Total Ephemeroptera	4.00	8.00	8.00
Total Trichoptera	2.00	2.86	2.86
% Filter Feeders	43.40	9.93	9.93
Total Clingers	6.00	8.57	8.57
Total Long-lived Taxa	0.00	0.00	0.00
% Dominance	22.92	8.22	8.22
% Tanytarsini	22.92	9.34	9.34
Total Sensitive Taxa	2.00	2.86	2.86
% Very Tolerant Individuals	2.78	8.43	8.43

SCI Sum	63.20
Final SCI score	70.22

Table 4 SCI full results for Sample B

Source: Anee Foster Wheeler, 2018  
 Prepared by: JSO  
 Checked by: SEM

## Water Quality Assessment

Limited long-term water quality data is available for Holloman's Branch Creek. The data that is available was collected by the Hillsborough County Environmental Protection Commission and Florida Department of Environmental Protection, however the most recent data is from 2009. The water quality assessment in this report will be limited to a discussion of the results of the 2018 USF Water Institute data collection. Table 5 provides a summary of the Physical/Chemical conditions recorded at the site using a Manta sub-2 multiprobe.

*Table 5 Holloman's Branch Creek Physical Water Quality (Field)*

Rocky Creek								
Date	Depth (m)	Temp (°C)	pH	DO (mg/L)	DO (% Sat)	Cond (UMHO/cm)	Salinity (PPT)	Secchi Depth (m)
1/31/18	0.51	13.11	6.34	9.1	85.2	241.3	0.11	0.75

The chemical water quality analysis for Holloman's Branch Creek is shown in Table 6 for the sample for this assessment. Long term mean values and NNC calculations were not available. The sample for this assessment for Total Phosphorous value was below the nutrient region threshold developed by FDEP of 0.49 mg/L with a value of 0.292 mg/L. Total Nitrogen values were below the nutrient region threshold developed by FDEP of 1.65 mg/L with a value of 1.269 mg/L. Chlorophyll-a corrected values fall within the site specific evaluation range of 3.2 µg/l to 20 µg/l for the most recent sample with a value of 8.4 µg/l. For sites with Chlorophyll-a values in this range, the assessment is inconclusive of conditions reflecting an imbalance in flora. Elevated biomass of the bacterial parameters was observed with E Coli measuring 1,020 colonies/100 ml and Enterococci measuring 8,400 colonies/100 ml.

Table 6 Holloman's Branch Creek Water Quality (Laboratory)

Parameter	Holloman's Branch Creek	POR Mean	Units
Alkalinity	52.0	22	mg/LCaCO3
Nitrates/Nitrites	0.233	N/A	mg/L
E. Coli	1,020	N/A	#/100 ml
Enterococci	8,400	6,446	#/100 ml
Chlorophyll a	9.1	7.37	ug/L
Chlorophyll b	5.1	1.09	ug/L
Chlorophyll c	0.7	1.73	ug/L
Chlorophyll t	10.2	N/A	ug/L
Chlorophylla Corr	8.4	2.47	ug/L
Chlorophyll-pheo	3.2	N/A	ug/L
Ammonia	0.052	0.032	mg/L
Kjeldahl Nitrogen	1.036	0.775	mg/L
Total Nitrogen	1.269	1.855	mg/L
Total Phosphorus	0.292	0.318	mg/L
Color(345)F.45	44.2	89.1	Pt/Co

## Conclusion

Holloman's Branch Creek at US Highway 301 is located in an area of low density residential, agriculture and natural land uses. The stream at the assessment region is in the Hillsborough River Preserve. At the time of the habitat assessment, the water levels were low, corresponding to the dry season, however sufficient habitat for macroinvertebrates was observed. Due to these factors, the Habit Assessment resulted in a Suboptimal score of 106. The results of the Linear Vegetation Survey did not find any rooted herbaceous species in the wet portions of the stream. This is likely due to the large variances in water level and flow throughout the year where summer rains scour out existing vegetation. Similarly, the Rapid Periphyton Survey did not encounter any periphyton in the stream region. The tree canopy overhead was significant, blocking much of the direct sunlight. The historical water quality record for Holloman's Branch Creek was insufficient for the calculation of Numeric Nutrient Criteria. The data for the sample taken with this assessment showed acceptable concentrations of Total Phosphorous and Total Nitrogen but showed elevated biomass for Bacteria. The results of the SCI sampling indicate that the stream is exceptional based on the macroinvertebrate community. Table 7 summarizes the results of the nutrient sampling, floristic sampling, habitat assessment and SCI.

*Table 7 Summary of Water Quality, Floristic Surveys and Habitat Assessments*

Measure		US HWY 301	Mean POR	Threshold
Total Phosphorous (mg/l)		0.292	0.318	< 0.49
Total Nitrogen (mg/l)		1.269	1.855	< 1.65
RPS (% Rank 4-6)		0		< 25%
LVS	Avg C of C	0		≥ 2.5
	FLEPPC %	0.00%		< 25%
Chlorophyll (µg/l)		8.4	2.47	< 20 µg/l
Habitat Assessment		106		> 34
SCI		72		> 34