Hurrah Creek

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

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Methods

STUDY AREA ANALYISIS

The watershed containing the stream being assessed was analyzed using ESRI ArcGIS 10.2. Using this software with 2020 Hillsborough County aerial, 2014 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 (≤ 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/11list.html

STREAM CONDITION INDEX ASSESSMENT

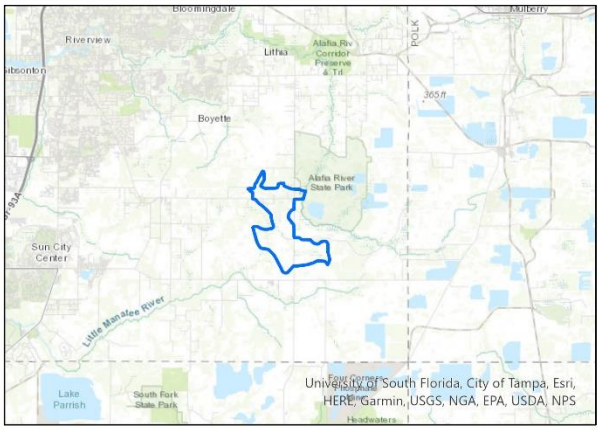
The Stream Condition Index (SCI) was sampled per DEP SOP FS7420 and calculated per DEP SOP LT7200. The SCI consists of collecting macroinvertebrates via 20 D-frame dipnet sweeps (0.5 m in length) in the most productive habitats in a 100 m reach of stream. The organisms are sub-sampled, and identified 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

Hurrah Creek is located in south-eastern Hillsborough County. Its headwaters are located southeast of Hwy 39 S and Ft Lonesome Plant Rd and the outfall of Hurrah Creek is in South Prong Alafia River. The assessment of Hurrah Creek was conducted on February 19, 2020 northwest of the intersection of S County Road 39 and Thatcher Road. At the time of the assessment, the water levels were normal for the dry season. The Hurrah Creek WBID covers 6.23 square miles and is dominated by extractive (39.3%), natural (20.0%) and pasture (14.4%) land uses. The resulting calculated landscape development intensity index score was 6.63.



Hurrah Creek
WBID 1711

Mouth - South prong Alafia River
Area - 5,152 Acres (6.22 Sq Miles)
Landscape Development Intensity - 5.41
Stream Habitat Assessment - 115
Rapid Peiphyton Survey -
% ranked 4-6 - 0%
Linear Vegetation Survey - < 2m^2
% FLPPC - 29.41%
Average CoC - 2.50
Stream Condition Index - 72

Figure 1 2020 Hurrah Creek Study Area Map

Figure 2 Overview photograph of the Hurrah Creek Sample Site

Habitat and Vegetation Assessment

The region of Hurrah Creek where the assessment was conducted is in a natural cooridor with extractive activities nearby. The region was moderately shaded with a mean canopy cover measurement of 72.5%. Hurrah Creek averaged 0.5 meters in depth, approximately 4.35 meters wide with a flow of 0.25 m/s.

The primary habitat components of the FDEP Habitat Assessment focus on in-water habitat. The primary habitat components score in the suboptimal category for Habitat Smothering (adequate number of stable pools with some habitats being affected by sand and silt) and Water Velocity. Substrate Availability (5.7% of stream are productive habitats) and Substrate Diversity (Presence of two major productive habitats (snags, roots)) were scored as marginal. Minor habitats included leaf packs/mats, aquatic macrophytes, sand and silt deposits. The total score for the primary habitat components was a 44 out of 80.

The secondary habitat components of the FDEP Habitat Assessment focus on the surrounding features of the stream. The secondary habitat components scored in the optimal category for Artificial Channelization, Bank Stability and Riparian Buffer Zone Width having well developed sinuosity with few raw eroded areas of bank and a vegetative buffer greater than 18 meters on both banks. Riparian Zone Vegetation Quality scored in the suboptimal category due to several non-native invasive species and native species indicative of disturbance in the surrounding buffer zone. The vegetation in the stream itself was sparse with less than 2 square meters of surface area in the study area of predominantly native species with 3 non-native invasive species out of 15 total species. The secondary habitat components received a score of 71 out of 80. The resulting FDEP Habitat Assessment score was a 115.

Periphyton was not encountered during the 99 samples taken during the Rapid Periphyton Survey. The tree canopy in the assessment area averaged 72.5% limiting available sunlight for macrophytes and algae.

The FDEP Linear Vegetation Survey encountered less than 2 square meters of herbaceous aquatic vegetation among 15 species in Hurrah Creek. *Hygrophila polysperma*, *Alternanthera philoxeroides* and *Urochloa mutica* are non-native invasive species. Only *Hygrophila was* abundant in small sections of the assessment region. Although the coverage was less than 2 square meters (the threshold for incorporating LVS results) the resulting metrics would have been a Percent FLEPPC of 29.41% and an Average Coefficient of Conservatism of 2.50. The Percent FLEPPC metric is above the threshold and indicates disturbance to the vegetative community.

Table 1 Linear Vegetation Survey Results – Hurrah Creek

Taxa Name	C of C Score	Sample Site										Total Occurrences
		0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	
Commelina virginica	4.67		1				1	1	1	1	1	6
Ludwigia repens	3.2	1	1				1	1	1			5
Urochloa mutica	0						1		1	1	1	4
Alternanthera philoxeroides	0	1				1	1					3
Hygrophila polysperma	0					1	1				1	3
Rumex verticillatus	3.17	1						1			1	3
Eclipta prostrata	2					1		1				2
Hydrocotyle ranunculoides	2			1		1						2
Mikania scandens	1.95			1						1		2
Cicuta maculata	4.54								1			1
Micranthemum umbrosum	5.66										1	1
Pontederia cordata	5.38							1				1
Symphyotrichum carolinianum	3.93		1									1

Figure 3 The 80-100 meter section of the study area in Hurrah Creek.

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 Hurrah Creek was 72 out of a possible 100 points, corresponding with a "Healthy" designation, with the expected community of a healthy stream.

High scores were achieved for the Total Taxa, Total Clingers, % Dominance and % Tanytarsini in both subsamples. Sample B also scored high for the % Filter Feeders metric. Both subsamples contained sensitive taxa and Long Lived Taxa. The full results of the SCI sampling are shown in Table 3 (Sample A) and Table 4 (Sample B) for Hurrah Creek.

Table 2 SCI metric summaries for Hurrah Creek

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	35.00	8.33	8.33
Total Ephemeroptera	2.00	4.00	4.00
Total Trichoptera	4.00	5.71	5.71
% Filter Feeders	25.83	5.84	5.84
Total Clingers	5.00	7.14	7.14
Total Long-lived Taxa	2.00	6.67	6.67
% Dominance	17.88	9.22	9.22
% Tanytarsini	14.57	8.07	8.07
Total Sensitive Taxa	2.00	2.86	2.86
% Very Tolerant Individuals	7.95	6.27	6.27

SCI Sum	64.13
Final SCI score	71.25

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	33.00	7.50	7.50
Total Ephemeroptera	1.00	2.00	2.00
Total Trichoptera	4.00	5.71	5.71
% Filter Feeders	30.86	7.01	7.01
Total Clingers	6.00	8.57	8.57
Total Long-lived Taxa	2.00	6.67	6.67
% Dominance	16.67	9.47	9.47
% Tanytarsini	15.43	8.23	8.23
Total Sensitive Taxa	3.00	4.29	4.29
% Very Tolerant Individuals	8.64	6.08	6.08

SCI Sum	65.54
Final SCI score	72.82

Table 3 SCI full results for Sample A

Stream Condition Index Results for Hurrah Creek SCIA

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Abundance	Collapsed Abundanc	Taxa Presence	Ephemeroptera	Trichoptera Taxa	50% Filterer	100% Filterer	Clinger Taxa	Long-lived Taxa	Dominant Taxa	Tanytarsini	Sensitive Taxa	Very Tolerant Individuals	Specimen Notes
Annelida		Polychaeta	Sedentaria	Spionida	Spionidae	*Boccardiella ligerica*	2	2	1	0	0	2	0	0	0		0	0	0	
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Slavina appendiculata*	1	1	1	0	0	0	0	0	0		0	0	0	
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Ancylidae	Ancylidae spp.	4	4	1	0	0	0	0	0	0		0	0	0	Damaged, no shells
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Planorbidae	Planorbidae spp.	1	1	1	0	0	0	0	0	0		0	0	1	Damaged
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Hydrobiidae	*Pyrgophorus platyrachis*	5	5	1	0	0	0	0	0	0		0	0	5	
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Hydrobiidae	*Amnicola dalli*	5	5	1	0	0	0	0	0	0		0	0	0	
Mollusca		Gastropoda	Caenogastropoda		Thiaridae	*Melanoides tuberculata*	1	1	1	0	0	0	0	0	0		0	0	1	
Mollusca		Bivalvia	Heterodonta	Veneroida	Corbiculidae	*Corbicula* spp.	12	12	1	0	0	0	12	0	1		0	0	0	
Mollusca		Bivalvia	Heterodonta	Veneroida	Sphaeriidae	Sphaeriidae spp.	1	1	1	0	0	0	1	0	0		0	0	0	Damaged
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda	Dogielinotidae	*Hyalella azteca* sp. complex	1	1	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Decapoda	Palaemonidae	*Palaemon* spp.	1		0	0	0	0	0	0	0		0	0	0	Damaged
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Decapoda	Palaemonidae	*Palaemon pugio*	1	2	1	0	0	0	0	0	1		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	*Labiobaetis propinquus*	1	1	1	1	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	*Acerpenna pygmaea*	1	1	1	1	0	0	0	0	0		0	1	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Argia* spp.	1		0	0	0	0	0	0	0		0	0	0	Damaged
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Argia sedula*	1	2	1	0	0	0	0	0	0		0	0	2	
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Polycentropodidae	*Cernotina* spp.	1	1	1	0	1	0	0	1	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Oecetis persimilis*	2	2	1	0	1	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	Hydropsychidae spp.	1	1	1	0	1	0	1	1	0		0	0	0	Immature
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydroptilidae	*Neotrichia* spp.	2	2	1	0	1	0	0	1	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Dubiraphia* spp.	6	6	1	0	0	0	0	0	0		0	0	0	4 larvae, 2 adults
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	10	10	1	0	0	0	0	1	0		0	0	0	5 larvae, 5 adults
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Microcylloepus* spp.	25	25	1	0	0	0	0	0	0		0	0	0	14 larvae, 11 adults
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera		Diptera spp.	1		0	0	0	0	0	0	0		0	0	0	Pupa, no posterior end
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	8		0	0	0	0	0	0	0		0	0	0	8 larvae
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* spp.	3	4	1	0	0	4	0	0	0		4	0	0	not buckleyi
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus buckleyi*	5	6	1	0	0	6	0	0	0		6	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cryptochironomus* spp.	2	2	1	0	0	0	0	0	0		0	0	2	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum scalaenum* group	4	5	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	23	27	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum illinoense* group	1	1	1	0	0	0	0	0	0		0	0	1	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus exiguus* group	10	12	1	0	0	0	12	1	0		12	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Ablabesmyia mallochi*	1	1	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tribelos* spp.	1	1	1	0	0	0	0	0	0		0	0	0	Damaged, missing antennae
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Dicrotendipes* spp.	1	1	1	0	0	1	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Stenochironomus* spp.	1	1	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* or *Orthocladius*	2	2	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Ceratopogonidae	*Atrichopogon* spp.	1	1	1	0	0	0	0	0	0		0	0	0	1 larva
Arthropoda	Chelicerata	Arachnida	Acari	Trombidiformes	Lebertiidae	*Lebertia* spp.	1	1	1	0	0	0	0	0	0		0	1	0	

Table 4 SCI full results for Sample B

Stream Condition Index Results for Hurrah Creek SCIB

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Abundance	Collapsed Abundanc	Taxa Presence	Ephemeroptera	Trichoptera Taxa	50% Filterer	100% Filterer	Clinger Taxa	Long-lived Taxa	Dominant Taxa	Tanytarsini	Sensitive Taxa	Very Tolerant Individuals	Specimen Notes
Annelida		Polychaeta	Sedentaria	Spionida	Spionidae	*Boccardiella ligerica*	4	4	1	0	0	4	0	0	0		0	0	0	
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Ancylidae	Ancylidae spp.	2	2	1	0	0	0	0	0	0		0	0	0	Damaged, no shell
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Planorbidae	*Menetus dilatatus*	2	2	1	0	0	0	0	0	0		0	0	2	
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Hydrobiidae	*Pyrgophorus platyrachis*	8	8	1	0	0	0	0	0	0		0	0	8	
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Hydrobiidae	*Amnicola dalli*	1	1	1	0	0	0	0	0	0		0	0	0	
Mollusca		Gastropoda	Caenogastropoda		Thiaridae	*Melanoides tuberculata*	2	2	1	0	0	0	0	0	0		0	0	2	
Mollusca		Bivalvia	Heterodonta	Veneroida	Corbiculidae	*Corbicula* spp.	17	17	1	0	0	0	17	0	1		0	0	0	
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda	Dogielinotidae	*Hyalella azteca* sp. complex	2	2	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Decapoda	Palaemonidae	*Palaemon* spp.	4		0	0	0	0	0	0	0		0	0	0	Damaged
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Decapoda	Palaemonidae	*Palaemon pugio*	1	5	1	0	0	0	0	0	1		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Heptageniidae	Heptageniidae spp.	1	1	1	1	0	0	0	1	0		0	1	0	Damaged
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Argia* spp.	3	3	1	0	0	0	0	0	0		0	0	0	Damaged and/or immature
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Polycentropodidae	*Cernotina* spp.	1	1	1	0	1	0	0	1	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	Leptoceridae spp.	1	1	1	0	1	0	0	0	0		0	0	0	Damaged, probably Nectopsyche
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	Hydropsychidae spp.	1		0	0	0	0	0	0	0		0	0	0	Immature
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	3	4	1	0	1	0	4	1	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydroptilidae	*Neotrichia* spp.	3	3	1	0	1	0	0	1	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Dubiraphia* spp.	8	8	1	0	0	0	0	0	0		0	0	0	3 larvae, 5 adults
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	4	4	1	0	0	0	0	1	0		0	0	0	1larva, 3 adults
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Microcylloepus* spp.	24	24	1	0	0	0	0	0	0		0	0	0	13 larvae, 11 adults
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	2		0	0	0	0	0	0	0		0	0	0	2 pupae
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* spp.	6	6	1	0	0	6	0	0	0		6	0	0	not buckleyi
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus buckleyi*	4	4	1	0	0	4	0	0	0		4	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cryptochironomus* spp.	1	1	1	0	0	0	0	0	0		0	0	1	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum scalaenum* group	5	5	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	26	27	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus exiguus* group	13	14	1	0	0	0	14	1	0		14	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Ablabesmyia mallochi*	3	3	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Ablabesmyia rhamphe* group	1	1	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum beckae*	1	1	1	0	0	0	0	0	0		0	0	1	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheocricotopus robacki*	1	1	1	0	0	0	0	0	0		0	1	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Stempellinella fimbriata*	1	1	1	0	0	1	0	0	0		1	1	0	Slide 6, CS2, P3
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* or *Orthocladius*	2	2	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Ceratopogonidae	*Bezzia/Palpomyia* spp.	2	2	1	0	0	0	0	0	0		0	0	0	2 larvae
Arthropoda	Chelicerata	Arachnida	Acari	Trombidiformes	Sperchonidae	*Sperchon* spp.	1	1	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Chelicerata	Arachnida	Acari	Trombidiformes	Krendowskiidae	*Krendowskia* spp.	1	1	1	0	0	0	0	0	0		0	0	0	

Water Quality Assessment

Limited long-term water quality data is available for Hurrah Creek. The data that is available was collected by the Hillsborough County Environmental Protection Commission 2005-2020 and the Florida Department of Environmental Protection 2000-2019. Values for the water nutrient parameters have a gap from 2012 until 2019. The 2020 USF Water Institute Assessment fall within the range of the previous data collections. Table 5 provides a summary of the Physical/Chemical conditions recorded at the site.

Table 5 Hurrah Creek Physical Water Quality (Field)

Hurrah Creek								
Date	**Depth (m)**	**Temp (°C)**	**pH**	**DO (mg/L)**	**DO (% Sat)**	**Cond (UMHO/cm**	**Salinity (PPT)**	**Secchi Depth (m)**
2/20/2020	0.15	22.68	7.24	7.65	87.7	189.6	0.09	1.6
Mean POR		21.28	6.65	6.62	67.3	199.9	0.12	0.49

The chemical water quality analysis for Hurrah Creek is shown in Table 6 along with mean values for the period of record for available parameters. Period of record and the most recent 2019-2020 geometric mean values for Total Phosphorous values were below the nutrient region threshold developed by FDEP of 0.49 mg/L with a mean value of 0.320 mg/L (2005-2020). The 2019-2020 geometric mean value for Total Phosphorous was 0.366 mg/L. Total Phosphorous values for the sample from this assessment were 0.340 mg/L. Total Nitrogen values were above the nutrient region threshold developed by FDEP of 1.65 mg/L with a mean value of 1.695 mg/L for the period of record (2005-2020). The 2019-2020 geometric mean value for Total Nitrogen was 1.340 mg/L. The Total Nitrogen value from the assessment was below the threshold with a concentration of 1.663 mg/L. Chlorophyll-a corrected values fall below the site specific evaluation range of 3.2 µg/l to 20 µg/l for the period of record (1.18 µg/l 2005-2020), and in the 2019-2020 samples (1.05 µg/l) . For sites with Chlorophyll-a values in this range, the assessment indicates a healthy community in flora.

Elevated biomass of the bacterial parameters was observed in the long term dataset with a geomean of 1,051/100 ml for Enterococci E. Coli was considerably lower having a geomean of 143.2 colonies/100 ml.

Table 6 Hurrah Creek Water Quality (Laboratory)

Parameter	Hurrah Creek	POR Mean	Units
Alkalinity	33.2	18.5	mg/LCaCO3
Nitrates/Nitrites	1.073	0.755	mg/L
E. Coli	125.9	143.2	#/100 ml
Enterococci	59.5	1051	#/100 ml
Chlorophyll a	1.5	1.1	ug/L
Chlorophyll b	< 1.0	0.4	ug/L
Chlorophyll c	< 1.0	0.3	ug/L
Chlorophyll t			ug/L
Chlorophylla Corr	1.0	1.18	ug/L
Chlorophyll-pheo			ug/L
Ammonia	0.027	0.041	mg/L
Kjeldahl Nitrogen	0.590	0.659	mg/L
Total Nitrogen	1.663	1.695	mg/L
Total Phosphorus	0.34	0.32	mg/L
Color(345)F.45	30	60.4	Pt/Co

Conclusion

Hurrah Creek at County Rd 39 and Thatcher Rd is located in a predominantly natural corridor in a larger extractive area. At the time of the habitat assessment, the water levels were low, corresponding to the middle of the dry season, however sufficient habitat for macroinvertebrates was observed. Due to these factors, the Habit Assessment resulted in a suboptimal score of 115. Less than 2 square meters of herbaceous aquatic vegetation was observed in the Linear Vegetation Survey. Hurrah Creek did meet standards for the rapid periphyton survey with 0% of samples being ranked between 4 and 6. The historical water quality record for Hurrah Creek showed elevated concentrations of Total Nitrogen in the long term dataset. The results of the SCI sampling indicate that the stream is "healthy" 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		Hurrah Creek	Mean POR	Threshold
Total Phosphorous (mg/l)		0.34	0.32	< 0.49
Total Nitrogen (mg/l)		1.663	1.695	< 1.65
RPS (% Rank 4-6)		0		< 25%
LVS	**Avg C of C**	<2m^2		≥ 2.5
	FLEPPC %	<2m^2		< 25%
Chlorophyll a (µg/l)		1.0	1.18	< 20 µg/l
Habitat Assessment		115		> 39
SCI		53		> 34