Alabama Department of Environmental Management

303(d) TMDL Monitoring Site

Rivers and Streams Monitoring Program

2013 Monitoring Summary

Fair

Little Coon Creek at Jackson County Road 53 (34.87425/-85.91075)

BACKGROUND

Little Coon Creek, from its confluence with Coon Creek to the Alabama / Tennessee State Line was placed on Alabama's Clean Water Act (CWA) §303(d) list of impaired waters in 2012. It was listed for siltation (habitat alteration) from non-irrigated crop production and pasture grazing. The Environmental Protection Agency (EPA) requires states to develop Total Maximum Daily Loads (TMDL) for listed water bodies to reduce contaminant concentrations. A Draft TMDL for Little Coon Creek is scheduled for completion in 2015. This report summarizes the results of biological and water quality monitoring activities the Alabama Department of Environmental Management (ADEM) has conducted to support the TMDL process.

Figure 1. Little Coon Creek at COCJ-1, April 30, 2013.

WATERSHED CHARACTERISTICS

Watershed characteristics are summarized in Table 1. Little Coon Creek is a *Fish & Wildlife (F&W)* stream in north-central Jackson County. It runs roughly southeast through the Skyline Wildlife Management Area and then along Jackson County Road 54. It combines with Big Coon Creek to form Crow Creek. Based on the 2006 National Land Cover Dataset, land use within the watershed is primarily forest (86%) with some shrub/scrub. As of May 13, 2013, ADEM has issued one NPDES permits in the watershed.

REACH CHARACTERISTICS

General observations (Table 2) and a habitat assessment (Table 3) were completed during the macroinvertebrate assessment. In comparison with reference reaches in the same ecoregion, they give an indication of the physical condition of the site and the quality and availability of habitat. Little Coon Creek at COCJ-1 is a low-gradient, glide-pool stream. Predominant instream substrates were sand, silt and hard pan clay (Figure 1). The overall habitat assessment resulted in a *marginal* rating.

Table 1. Summary of watershed characteristics.

Watershed Characteristics		
Basin		Tennessee River
Drainage Area (mi^2)		29
Ecoregion[a]		68b
% Landuse		
Open Water		<1
Wetland	Woody	<1
Forest	Deciduous	81
	Evergreen	1
	Mixed	4
Shrub/scrub		4
Grassland/herbaceous		1
Pasture/hay		6
Cultivated crops		1
Development	Open space	1
	Low Intensity	<1
Population/km^2[b]		11
# NPDES Permits[c]	**TOTAL**	1
401 Water Quality Certification		1

a.Sequatchie Valley
b.2000 US Census
c.#NPDES permits downloaded from ADEM's NPDES Management System database, May 13, 2013.

Table 2. Physical characteristics of Little Coon Creek at COCJ-1, June 5, 2013.

Physical Characteristics		
Width (ft)		25
Canopy Cover		Mostly Shaded
Depth (ft)		
	Run	2.0
	Pool	3.0
% of Reach		
	Run	80
	Pool	20
% Substrate		
	Boulder	2
	Clay	10
	Cobble	1
	Gravel	5
	Hard Pan Clay	15
	Sand	45
	Silt	15
	Organic Matter	7

BIOASSESSMENT RESULTS

Benthic macroinvertebrate communities were sampled using ADEM's Intensive Multi-habitat Bioassessment methodology (WMB-I). Table 4 summarizes results of taxonomic richness, community composition, and community tolerance metrics. Each metric is scored on a 100 point scale. The final score is the average of all individual metric scores. Metric results indicated the macroinvertebrate community in Little Coon Creek at COCJ-1 to be in *fair* condition.

Table 3. Results of the habitat assessment conducted in Little Coon Creek at COCJ-1, June 5, 2013.

Habitat Assessment	%Maximum Score	Rating
Instream Habitat Quality	61	Sub-optimal (59-70)
Sediment Deposition	71	Optimal (>70)
Sinuosity	40	Poor (<45)
Bank and Vegetative Stability	36	Marginal (35-59)
Riparian Buffer	63	Marginal (50-69)
Habitat Assessment Score	**128**	
% Maximum Score	**58**	**Marginal (41-58)**

Table 4. Results of the macroinvertebrate bioassessment conducted in Little Coon Creek at COCJ-1, June 5, 2013.

Macroinvertebrate Assessment		
	Results	**Scores**
Taxa richness and diversity measures		**(0-100)**
# EPT taxa	13	39
Taxonomic composition measures		
% Non-insect taxa	15	38
% Dominant Taxon	12	100
% EPC taxa	18	32
Functional feeding group measures		
% Predators	11	42
Tolerance measures		
% Taxa as Tolerant	39	27
WMB-I Assessment Score	**---**	**46**
WMB-I Assessment Rating		**Fair (39-58)**

WATER CHEMISTRY

Results of water chemistry analyses are presented in Table 5. In situ measurements and water samples were collected March through October 2013 to help identify any stressors to the biological communities. In situ parameters were also measured during the macroinvertebrate assessment on June 5. The *F&W* dissolved oxygen criterion was exceeded one time in October. Total dissolved solids, alkalinity and specific conductance values were greater than expected, as compared to all reference data collected in ecoregion 68. No metals, bacteriological or organics samples were collected.

SUMMARY

Little Coon Creek at COCJ-1 is a slow to medium velocity glide-pool stream. It is located downstream of LCNJ-36 and is located in the Sequatchie Valley sub-ecoregion. Overall habitat quality was rated *marginal*. Sediment loads are high during rain events and streambanks are being eroded, potentially impacting macroinvertebrate populations.

Bioassessment results indicated the macroinvertebrate communities to be in *fair* condition. Monitoring should continue to ensure that water quality and biological conditions meet current standards.

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Table 5. Summary of water quality data collected between March and October 2013. Minimum (Min) and maximum (Max) values calculated using minimum detection limits (MDL) when results were less than this value. Median, average (Avg), and standard deviations (SD) values were calculated by multiplying the MDL by 0.5 when results were less than this value.

Parameter	N	Min	Max	Med	Avg	SD	E
Physical							
Temperature (°C)	9	12.2	22.3	19.0	18.0	3.2	
Turbidity (NTU)	9	3.8	12.5	8.3	7.9	2.5	
J Total Dissolved Solids (mg/L)	8	80.0	192.0	148.5 M	145.6	34.1	
J Total Suspended Solids (mg/L)	8 <	1.0	13.0	3.0	4.4	4.2	
Specific Conductance (µmhos)	9	200.5	340.4	279.4 G	265.7	44.3	
Alkalinity (mg/L)	8	104.0	167.0	133.0 M	131.1	21.0	
Stream Flow (cfs)	6	3.4	55.6	11.7	19.0	19.5	
Chemical							
Dissolved Oxygen (mg/L)	9	4.6 C	10.3	7.4	7.4	2.2	1
pH (su)	9	7.4	7.9	7.6	7.6	0.1	
Ammonia Nitrogen (mg/L)	8 <	0.008	0.070	0.009	0.019	0.022	
Nitrate+Nitrite Nitrogen (mg/L)	8	0.083	0.313	0.140	0.158	0.080	
J Total Kjeldahl Nitrogen (mg/L)	8 <	0.041	0.383	0.159	0.173	0.142	
J Total Nitrogen (mg/L)	8 <	0.114	0.669	0.330	0.330	0.203	
J Dissolved Reactive Phosphorus (mg/L)	8 <	0.004	0.014	0.008	0.008	0.003	
J Total Phosphorus (mg/L)	8 <	0.009	0.029	0.018	0.018	0.007	
CBOD-5 (mg/L)	8 <	2.0 <	2.0	1.0	1.0	0.0	
Chlorides (mg/L)	8	1.0	1.7	1.3	1.3	0.3	

C= *F&W* criterion exceeded; E=#samples that exceeded criterion; G=value greater than median concentration of all verified reference data collected in ecoregion 68; ; J=estimate; M=value greater than the 90th percentile of all verified reference data collected in ecoregion 68; N=# of samples.