

# 2013 Monitoring Summary



## Kinterbish Creek at Sumter County Road 9 (32.34627/-88.26527)

### BACKGROUND

The Alabama Department of Environmental Management (ADEM) monitored Kinterbish Creek as part of its 2006 and 2011 Basin Assessments of the Escatawpa, Mobile, and Tombigbee (EMT) River Basins. Monitoring of Kinterbish Creek continued in 2013 to provide additional biological, chemical, and physical data to fully assess the use support status for the 2016 Integrated Water Quality Report.



Figure 1. Kinterbish Creek at KNBS-1, June 25, 2013.

Table 1. Summary of watershed characteristics.

Watershed Characteristics		
Basin	Tombigbee River	
Drainage Area (mi <sup>2</sup> )	28	
Ecoregion <sup>a</sup>	65D	
% Landuse <sup>b</sup>		
Open water		<1%
Wetland	Woody	9%
	Emergent herbaceous	<1%
Forest	Deciduous	22%
	Evergreen	29%
	Mixed	12%
Shrub/scrub	19%	
Grassland/herbaceous	3%	
Pasture/hay	3%	
Cultivated crops	<1%	
Development	Open space	3%
	Low intensity	<1%
Barren	<1%	
Population/km <sup>2c</sup>	2	

a.Southern Hilly Gulf Coastal Plain

b.2011 National Land Cover Dataset

c.2010 US Census

### WATERSHED CHARACTERISTICS

Watershed characteristics are summarized in Table 1. Kinterbish Creek is a *Swimming/Fish & Wildlife (S/F&W)* stream located in the Southern Hilly Gulf Coastal Plain (65d). Based on the 2011 National Land Cover Dataset, landuse within the watershed is predominantly forest (63%) with some wetland and shrub/scrub. As of April 1, 2016, no NPDES outfalls were active within 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. Kinterbish Creek at KNBS-1 is a low-gradient, glide-pool stream with substrate composed primarily of sand (Figure 1). The reach was characterized by limited root bank and instream habitat. Overall habitat quality and availability was rated as *sub-optimal* for supporting diverse aquatic macroinvertebrate communities.

Table 2. Physical characteristics of Kinterbish Creek at KNBS-1, June 25, 2013.

Physical Characteristics	
Width (ft)	20
Canopy Cover	Estimate 50/50
Depth (ft)	Run
	Pool
% of Reach	Run
	Pool
% Substrate	Cobble
	Mud/Muck
	Sand
	Silt
	Organic Matter

### BIOASSESSMENT RESULTS

Benthic macroinvertebrate communities were sampled using ADEM's Intensive Multi-habitat Bioassessment methodology (WMB-I). The WMB-I uses measures of taxonomic richness, community composition, and community tolerance to assess the overall health of the macroinvertebrate community. 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 to be in *fair* condition (Table 4).

**Table 3.** Results of the habitat assessment conducted on Kinterbish Creek at KNBS-1, June 25, 2013.

Habitat Assessment	% Maximum Score	Rating
Instream Habitat Quality	51	Marginal (31-<55)
Sediment Deposition	50	Marginal (31-<55)
Sinuosity	73	Sub-Optimal (55-79)
Bank Vegetative Stability	44	Marginal (31-<58)
Riparian Buffer	90	Optimal (>84)
<b>Habitat Assessment Score</b>	<b>109</b>	
<b>%f Maximum Score</b>	<b>60</b>	<b>Sub-Optimal (57-80)</b>

**Table 4.** Results of the macroinvertebrate bioassessment conducted in Kinterbish Creek at KNBS-1, June 25, 2013.

Macroinvertebrate Assessment		Results
Taxa richness and diversity measures		
	# EPT taxa	11
Taxonomic composition measures		
	% Non-insect taxa	13
	% Plecoptera	0
	% Dominant taxon	17
Functional feeding group		
	% Predators	29
Community tolerance		
	Becks community tolerance index	3
	% Nutrient tolerant individuals	26
	<b>WMB-I Assessment Score</b>	<b>53</b>
	<b>WMB-I Assessment Rating</b>	<b>Fair (37-55)</b>

## WATER CHEMISTRY

Results of water chemistry analyses are presented in Table 5. In situ measurements and water samples were collected March through October of 2013 to help identify any stressors to the biological communities. The low stream pH measured at the site was typical of streams in the region.

**Table 5.** Summary of water quality data collected March-October, 2013. Minimum (Min) and maximum (Max) values calculated using minimum detection limits (MDL). 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
<b>Physical</b>							
Temperature (°C)	9	11.0	23.9	22.3	20.1	4.4	
Turbidity (NTU)	9	8.8	177.0	14.9	42.7	60.1	
↓ Total Dissolved Solids (mg/L)	8	54.0	98.0	73.0	76.2	16.8	
↓ Total Suspended Solids (mg/L)	8	< 1.0	241.0	5.0	51.2	91.2	
Specific Conductance (µmhos)	9	23.2	69.0	59.7	50.7	18.2	
↓ Alkalinity (mg/L)	8	2.1	27.5	18.7	15.5	10.4	
Monthly Stream Flow (cfs)	6	2.6	8.5	6.0	5.9	2.0	
Stream Flow during Sample Collection (cfs)	6	2.6	8.5	6.0	5.9	2.0	
<b>Chemical</b>							
Dissolved Oxygen (mg/L)	9	6.6	9.9	7.4	7.6	1.0	
pH (su)	9	4.7	6.8	6.6	6.4	0.7	1
↓ Ammonia Nitrogen (mg/L)	8	< 0.011	0.070	0.009	0.017	0.021	
↓ Nitrate+Nitrite Nitrogen (mg/L)	8	0.015	0.052	0.040	0.038	0.011	
↓ Total Kjeldahl Nitrogen (mg/L)	8	< 0.085	1.630	0.272	0.476	0.514	
↓ Total Nitrogen (mg/L)	8	< 0.062	1.682	0.311	0.514	0.522	
↓ Dissolved Reactive Phosphorus (mg/L)	7	< 0.004	0.010	0.009	0.008	0.003	
Total Phosphorus (mg/L)	8	0.021	0.073	0.033	0.038	0.017	
↓ CBOD-5 (mg/L)	8	< 2.0	2.7	1.0	1.2	0.6	
Chlorides (mg/L)	8	1.3	3.0	2.8	2.5	0.6	
<b>Biological</b>							
Chlorophyll a (µg/L)	8	< 0.10	2.67	0.92	1.14	1.04	

C=S/F&W use class criterion exceeded; E=# samples that exceeded criteria; J=estimate; N=# samples.

## SUMMARY

Bioassessment results indicated the macroinvertebrate community to be in *fair* condition. Monitoring should continue to ensure that biological conditions remain stable. The results from this report will be used to develop ecoregional criteria for 65d, and to fully assess the use support status of Kinterbish Creek for the 2016 Integrated Water Quality Report.

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