

2013 Monitoring Summary



Ohatchee Creek-Three miles east of US Highway 431 and 1 mile west of Calhoun County Road 23 (33.89680/-85.87570)

BACKGROUND

The Alabama Department of Environmental Management (ADEM) monitored Ohatchee Creek at OHTC-6 as part of its 2005 and 2010 Basin Assessments of the Alabama, Coosa, and Tallapoosa Rivers Basins. Monitoring of Ohatchee Creek continued in 2013 to provide additional biological, chemical and physical data to fully assess the use support status of Ohatchee Creek for the 2016 Integrated Water Quality Report.



Figure 1. Ohatchee Creek at OHTC-6, May 14, 2013.

WATERSHED CHARACTERISTICS

Watershed characteristics are summarized in Table 1. Ohatchee Creek is a *Swimming/Fish & Wildlife (S/F&W)* stream in Calhoun County. Based on the 2006 National Land Cover Dataset, landuse within the watershed consists primarily of forest (69%) and pasture. Population density is relatively low and less than six percent of the area has been developed. As of September 1, 2012, there were two NPDES permitted outfalls active 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. Ohatchee Creek at OHTC-6 is a glide-pool stream located in the Southern Shale Valleys sub-ecoregion (Figure 1). Ohatchee Creek at OHTC-6 is characterized primarily by a gravel, sand, and bedrock substrate. Overall habitat quality was categorized as *marginal*.

Table 1. Summary of watershed characteristics.

Watershed Characteristics			Coosa River
Basin			
Drainage Area (mi²)			34
Ecoregion^a			67g
% Landuse			
Open water			<1
Wetland	Woody		<1
	Emergent herbaceous		<1
Forest	Deciduous		40
	Evergreen		17
	Mixed		12
Shrub/scrub			4
Grassland/herbaceous			3
Pasture/hay			17
Cultivated crops			2
Development	Open space		4
	Low intensity		<1
	Moderate intensity		<1
Barren			<1
Population/km^{2b}			12
# NPDES Permits^c	TOTAL		2
Construction Stormwater			2

a. Southern Shale Valleys

b. 2000 US Census

c. #NPDES permits downloaded from ADEM's NPDES Management System database, September 1, 2012.

Table 2. Physical characteristics of Ohatchee Creek at OHTC-6, May 14, 2013.

Physical Characteristics		
Width (ft)		25
Canopy Cover		Open
Depth (ft)		
	Riffle	0.7
	Run	2.0
	Pool	3.5
% of Reach		
	Riffle	10
	Run	80
	Pool	10
% Substrate		
	Bedrock	15
	Boulder	1
	Clay	1
	Cobble	2
	Gravel	58
	Sand	20
	Silt	1
	Organic Matter	2

Table 3. Results of the habitat assessment conducted on Ohatchee Creek at OHTC-6, May 14, 2013.

Habitat Assessment	% Maximum Score	Rating
Instream Habitat Quality	68	Sub-Optimal (55-79)
Sediment Deposition	59	Sub-Optimal (55-79)
Riffle frequency	50	Marginal (31-<55)
Bank Vegetative Stability	53	Marginal (31-<58)
Riparian Buffer	20	Poor (<31)
Habitat Assessment Score	104	
% Maximum Score	52	Marginal (31-<57)

BIOASSESSMENT RESULTS

Benthic macroinvertebrate communities were sampled using ADEM's Intensive Multi-habitat Bioassessment methodology (WMB-I). Measures of taxonomic richness, community composition, and community tolerance are used to assess the overall health of the macroinvertebrate community in comparison to conditions expected in north Alabama's streams and rivers. Each site is placed in one of six levels, ranging from 1, or *natural* to 6, or *highly altered*. The macroinvertebrate survey conducted in Ohatchee Creek at OHTC-6 rated the site as *fair* (Table 4).

Table 4. Results of the macroinvertebrate bioassessment conducted in Ohatchee Creek at OHTC-6, May 14, 2013.

Macroinvertebrate Assessment		Results
Taxa richness and diversity measures		
	Total # Taxa	58
	# EPT taxa	16
	Shannon Diversity	3.41
	# Highly-sensitive and Specialized Taxa	3
Taxonomic composition measures		
	% EPT minus Baetidae and Hydropsychidae	2
	% Non-insect taxa	25
Tolerance measures		
	# Sensitive EPT	7
	% Sensitive taxa	5
	% Tolerant taxa	32
	WMB-I Assessment Score	4
	WMB-I Assessment Rating	Fair

WATER CHEMISTRY

Results of water chemistry analyses are summarized in Table 5. In situ measurements and water samples were collected monthly during March through October 2013 to help identify any stressors to the biological communities. For Ohatchee Creek at OHTC-6 the median specific conductance value was higher than expected based on data collected at reference reaches within in the Ridge and Valley ecoregion (67). No E. coli, metals or organic samples were collected.

SUMMARY

Overall habitat quality for Ohatchee Creek at OHTC-6 was categorized as *marginal* for this stream type. Bioassessment results indicated the macroinvertebrate community to be in *fair* condition. Median specific conductance was higher than expected based on data collected at reference reaches within in the Ridge and Valley ecoregion (67). Monitoring should continue to ensure that conditions at the site remain stable.

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

Parameter	N	Min	Max	Median	Avg	SD
Physical						
Temperature (°C)	9	13.0	23.0	19.9	19.5	3.2
Turbidity (NTU)	9	6.3	28.5	11.9	14.9	8.8
Total Dissolved Solids (mg/L)	8	61.0	120.0	91.0	87.5	21.9
Total Suspended Solids (mg/L)	8	< 2.0	14.0	5.5	7.4	4.7
Specific Conductance (µmhos)	9	91.0	198.0	117.4 ^G	130.3	37.0
^J Alkalinity (mg/L)	8	38.2	92.2	53.6	58.0	20.1
Stream Flow (cfs)	8	6.0	47.6	27.1	24.9	15.8
Chemical						
Dissolved Oxygen (mg/L)	9	7.2	10.2	8.4	8.4	1.0
pH (su)	9	7.4	8.2	7.6	7.7	0.3
^J Ammonia Nitrogen (mg/L)	8	< 0.015	0.036	0.011	0.014	0.010
Nitrate+Nitrite Nitrogen (mg/L)	8	0.072	0.841	0.117	0.215	0.257
Total Kjeldahl Nitrogen (mg/L)	8	0.208	0.736	0.334	0.369	0.172
Total Nitrogen (mg/L)	8	0.316	1.049	0.503	0.584	0.241
^J Dissolved Reactive Phosphorus (mg/L)	8	< 0.006	0.014	0.008	0.008	0.003
^J Total Phosphorus (mg/L)	8	0.009	0.041	0.020	0.023	0.010
CBOD-5 (mg/L)	8	< 2.0	< 2.0	1.0	1.0	0.0
^J Chlorides (mg/L)	8	1.4	2.8	2.4	2.3	0.5
Biological						
^J Chlorophyll a (µg/L)	7	< 1.00	10.70	1.07	2.40	3.71

G=value higher than median concentration of all verified ecoregional reference reach data collected in ecoregion 67, J=estimate; N= # of samples;

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