Alabama Department of Environmental Management

Basin Assessment Site

Rivers and Streams Monitoring Program

2007 Monitoring Summary

Sloan Creek at Walker County Road 5 (33.84451/-86.95998)

BACKGROUND

The Alabama Department of Environmental Management (ADEM) selected the Sloan Creek watershed for biological and water quality monitoring as part of the 2007 Assessment of the Black Warrior and Cahaba (BWC) River Basins.

Habitat and macroinvertebrate assessments were conducted to assess the biological integrity of each monitoring site and to estimate overall water quality within the BWC basin. Assessments of habitat quality and macroinvertebrate community were attempted for Sloan Creek at SLOW-11, but could not be completed due to no flow.

WATERSHED CHARACTERISTICS

Watershed characteristics are summarized in Table 1. Sloan Creek is a small *Fish & Wildlife (F&W)* stream located in the Dissected Plateau ecoregion (68e). Based on the 2000 National Land Cover Dataset, landuse within the watershed is primarily forest (50%) and pasture/hay (Figure 1). Population density is low within the watershed. As of February 23, 2011 ADEM's NPDES management database shows no permitted discharges located within the watershed.

WATER CHEMISTRY

Results of water chemistry analyses are presented in Table 2. When possible, in situ measurements and water samples were collected monthly, semi-monthly (metals), or quarterly (pesticides, herbicides (atrazine), and semi-volatile organics) during March through October at Basin Assessment stations to help identify any stressors to the biological communities. Due to no-flow conditions, water samples were only collected in March, April, May, and July. Metals were collected in March, May, and July. Median concentrations for chlorides, and dissolved aluminum were above the 90th percentile of all reference reach data collected in the Dissected Plateau ecoregion (68e). Additionally, specific conductance and hardness were above the median value of all reference reach data for this ecoregion.

SUMMARY

Sloan Creek at SLOW-11 was selected for biological and water quality monitoring as part of the 2007 assessment of the BWC River Basins. However, because the reach was dry during five of nine station visits, habitat and macroinvertebrate assessments could not be conducted and water samples could not be collected in those months. Additional monitoring will need to be conducted before biological conditions at this site can be assessed.

Figure 1. Reach characteristics of Sloan Creek at SLOW-11 on May 2, 2012.

Table 1. Summary of watershed characteristics.

Watershed Characteristics		
Basin		Black Warrior River
Drainage Area (mi^2)		3
Ecoregion[a]		68e
% Landuse		
Open water		<1
Wetland	Woody	1
Forest	Deciduous	36
	Evergreen	10
	Mixed	4
Shrub/scrub		5
Grassland/herbaceous		5
Pasture/hay		29
Cultivated crops		4
Development	Open space	6
	Low intensity	<1
Barren		<1
Population/km^2[b]		6
# NPDES Permits[c]	**TOTAL**	0

a.Dissected Plateau
b.2000 US Census

Table 2. Summary of water quality data collected March-October, 2007. Minimum (Min) and maximum (Max) values calculated using minimum detection limits (MDL) when results were less than this value for non-metals parameters. 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
Physical						
Temperature (°C)	4	15.6	22.2	16.5	17.7	3.0
Turbidity (NTU)	4	3.6	8.4	5.3	5.6	2.1
Total Dissolved Solids (mg/L)	4	26.0	49.0	36.0	36.8	11.5
Total Suspended Solids (mg/L)	4	1.0	7.0	3.5	3.8	2.8
Specific Conductance (µmhos)	4	36.7	48.3	42.2 G	42.4	4.8
Hardness (mg/L)	3	13.0	14.7	13 G	13.6	1.0
Alkalinity (mg/L)	4	4.7	9.9	8.8	8.1	2.4
Stream Flow (cfs)	2	1.2	2.5	1.8	1.8	0.9
Chemical						
Dissolved Oxygen (mg/L)	4	7.9	9.8	9.0	8.9	0.8
pH (su)	4	7.2	7.5	7.4	7.4	0.1
Ammonia Nitrogen (mg/L)	4	< 0.015	0.026	0.014	0.016	0.010
Nitrate+Nitrite Nitrogen (mg/L)	4	0.106	0.280	0.132	0.162	0.080
Total Kjeldahl Nitrogen (mg/L)	4	< 0.150	< 0.150	0.075	0.075	0.000
Total Nitrogen (mg/L)	4	< 0.181	< 0.355	0.206	0.237	0.080
Total Phosphorus (mg/L)	4	0.013	0.034	0.026	0.024	0.010
CBOD-5 (mg/L)	4	< 1.0	2.6	1.6	1.6	0.9
J Chlorides (mg/L)	4	2.9	3.6	3.2 M	3.1	0.5
Total Metals						
Aluminum (mg/L)	3	< 0.041	0.500	0.200	0.164	0.109
Iron (mg/L)	3	0.170	0.410	0.308	0.296	0.120
Manganese (mg/L)	3	0.035	0.049	0.049	0.044	0.008
Dissolved Metals						
Aluminum (mg/L)	3	< 0.015	< 0.500	0.140 M	0.132	0.121
Antimony (µg/L)	3	< 1.6	< 7.5	1.0	1.8	1.6
Arsenic (µg/L)	3	< 0.5	< 5.0	1.1	1.3	1.1
Cadmium (mg/L)	3	< 0.000	< 0.005	0.000	0.001	0.001
Chromium (mg/L)	3	< 0.002	< 0.005	0.002	0.002	0.001
Copper (mg/L)	3	< 0.002	< 0.005	0.002	0.002	0.001
Iron (mg/L)	3	0.070	0.140	0.119	0.110	0.036
Lead (µg/L)	3	< 1.1	5.0	0.7	1.3	1.1
Manganese (mg/L)	3	0.032	0.043	0.040	0.038	0.006
J Mercury (µg/L)	3	< 0.3	< 0.5	0.2	0.2	0.1
Nickel (mg/L)	3	< 0.004	0.006	0.002	0.002	0.000
Selenium (µg/L)	3	< 1.6	< 7.5	0.8	1.8	1.7
Silver (mg/L)	1	<			0.0	
Thallium (µg/L)	3	< 0.6	< 9.0	0.6	1.8	2.3
Zinc (mg/L)	2	< 0.002	< 0.006	0.002	0.002	0.001
Biological						
J Chlorophyll a (ug/L)	4	0.27	15.49	0.66	4.27	7.48
J Fecal Coliform (col/100 mL)	4	42	210	140	133	70

N= # samples; J= estimate; M= value > 90th percentile of all verified ecoregional reference reach data collected within ecoregion 68e; G= value > median of all reference reach data collected for ecoregion 68e.

FOR MORE INFORMATION, CONTACT:
Ruth Young, ADEM Aquatic Assessment Unit
1350 Coliseum Boulevard Montgomery, AL 36110
(334) 260-2762 ryoung@adem.state.al.us