

# 2005 Monitoring Summary

Basin Assessment Site

## Fayne Creek at Talladega County Road 047 (33.48549/-85.96301)

### BACKGROUND

The Alabama Department of Environmental Management (ADEM) selected the Fayne Creek watershed for biological and water quality monitoring as part of the 2005 Assessment of the Alabama, Coosa, and Tallapoosa (ACT) River Basins. The objectives of the ACT Basin Assessments were to assess the biological integrity of each monitoring site and to estimate overall water quality within the ACT basin group. Habitat and macroinvertebrate assessments could not be completed due to dry site conditions.

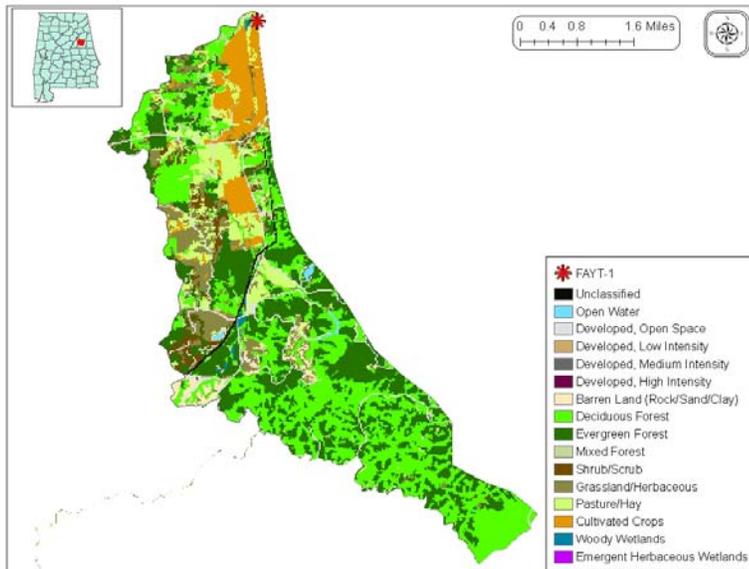


Figure 1. Sampling location and landuse within the Fayne Creek watershed at FAYT-1.

Table 1. Summary of watershed characteristics.

Watershed Characteristics		
Drainage Area (mi <sup>2</sup> )		15
Ecoregion <sup>a</sup>		67f
% Landuse		
Open water		<1
Wetland	Woody	<1
Forest	Deciduous	36
	Evergreen	29
	Mixed	2
Shrub/scrub		3
Grassland/herbaceous		9
Pasture/hay		8
Cultivated crops		7
Development	Open space	4
Low intensity		<1
Barren		2
Population/km <sup>2b</sup>		11

a. Southern Limestone/Dolomite Valleys and Low Rolling Hills  
b. 2000 US Census

### WATERSHED CHARACTERISTICS

Watershed characteristics are summarized in Table 1. Fayne Creek is a small *Fish & Wildlife (F&W)* stream located near the city of Talladega on the edge of the Talladega National Forest. Landuse within the watershed is primarily forest (67%), with some agricultural areas (15%) (Fig. 1). During the 2005 sampling period, flow in Fayne Creek appeared to be rain dependent. The sampling reach was dry in late June during the macroinvertebrate assessment and again in October. However, the stream was flowing during collection of the July and August samples, which occurred just after rain events. The bridge at Talladega County Road 047 forms a lowhead dam that prevents flow beyond this point during low flow periods. As of June 9, 2008, ADEM's NPDES Management System database did not show any permitted discharges located within the watershed.

### WATER CHEMISTRY

Results of water chemistry analyses are presented in Table 2. Samples were collected monthly, semi-monthly (metals), or quarterly (pesticides, herbicides, and semi-volatile organics) during March through August of 2005. Median values for all lab parameters were similar to the 90th percentile of all data collected at least impaired reference reached located within this ecoregion. The site was dry October and no samples were collected.

### CONCLUSIONS

During the 2005 sampling period, flow in Fayne Creek appeared to be rain dependent. Dry conditions prevented the completion of habitat and macroinvertebrate assessments in late June and collection of the last scheduled water quality sample in October. However, water quality results were similar to the 90th percentile of all data collected at least impaired reference reaches located within ecoregion 67f.

**Table 2.** Summary of water quality data collected March-October, 2005. 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. Metals results were compared to ADEM's chronic aquatic life use criteria adjusted for hardness.

Parameter	N	Min	Max	Median	Avg	SD
<b>Physical</b>						
Temperature (°C)	6	11.0	28.0	21.0	20.0	6.4
Turbidity (NTU)	6	4.6	14.5	7.8	8.5	3.8
Total Dissolved Solids (mg/L)	6	15.0	57.0	35.5	34.8	14.1
Total Suspended Solids (mg/L)	6	4.0	33.0	8.5	12.7	10.6
Specific Conductance (µmhos)	6	29.1	38.6	31.5	32.2	3.4
Hardness (mg/L)	4	7.2	9.5	8.1	8.2	1.2
Alkalinity (mg/L)	6	7.5	12.3	9.1	9.4	1.9
Stream Flow (cfs)	6	1.7	45.5	7.7	12.7	---
<b>Chemical</b>						
Dissolved Oxygen (mg/L)	6	7.7	10.5	8.6	8.8	1.2
pH (su)	6	6.5	7.37	6.9	6.8	0.3
Ammonia Nitrogen (mg/L)	6	< 0.015	0.093	0.008	0.029	0.037
Nitrate+Nitrite Nitrogen (mg/L)	6	< 0.003	0.048	0.027	0.023	0.018
Total Kjeldahl Nitrogen (mg/L)	6	< 0.150	0.205	0.075	0.108	0.057
Total Nitrogen (mg/L)	6	0.076	0.220	0.113	0.132	0.050
Dissolved Reactive Phosphorus (mg/L)	6	< 0.004	0.121	0.008	0.026	0.047
Total Phosphorus (mg/L)	6	0.041	0.119	0.068	0.072	0.029
CBOD-5 (mg/L)	6	1.0	2.8	1.7	1.8	0.7
<sup>J</sup> Chlorides (mg/L)	6	3.7	4.5	3.8	3.9	0.3
Atrazine (µg/L)	2	< 0.05	< 0.05	0.03	0.03	---
<b>Total Metals</b>						
Aluminum (mg/L)	3	0.022	0.137	0.070	0.076	0.058
Iron (mg/L)	3	0.467	0.669	0.573	0.570	0.101
Manganese (mg/L)	3	0.016	0.072	0.039	0.042	0.028
<b>Dissolved Metals</b>						
Aluminum (mg/L)	3	< 0.015	< 0.015	0.008	0.008	0.000
Antimony (µg/L)	3	< 2	< 2	1	1	0
Arsenic (µg/L)	3	< 10	< 10	5	5	0
Cadmium (mg/L)	3	< 0.005	< 0.005	0.003	0.003	0.000
Chromium (mg/L)	3	< 0.004	< 0.004	0.002	0.002	0.000
Copper (mg/L)	3	< 0.005	< 0.005	0.003	0.003	0.000
Iron (mg/L)	3	0.142	0.413	0.189	0.248	0.145
Lead (µg/L)	3	< 2	< 2	1	1	0
Manganese (mg/L)	3	< 0.005	0.037	0.003	0.014	0.020
<sup>J</sup> Mercury (µg/L)	3	< 0.3	< 0.3	0.15	0.2	0.087
Nickel (mg/L)	3	< 0.006	< 0.006	0.003	0.003	0.000
Selenium (µg/L)	3	< 10	< 10	5	5	0
Silver (mg/L)	3	< 0.003	< 0.003	0.002	0.002	0.000
Thallium (µg/L)	3	< 1	< 1	0.5	0.5	0.0
Zinc (mg/L)	3	< 0.006	< 0.006	0.003	0.003	0.000
<b>Biological</b>						
<sup>J</sup> Chlorophyll a (µg/L)	6	0.53	2.40	1.21	1.25	0.65
<sup>J</sup> Fecal Coliform (col/100 mL)	6	33	530	155	239	226

<sup>J</sup>=Reported value is an estimate; N=# samples

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