

2006 Monitoring Summary

Basin Assessment Site

Fowl River at US Hwy 90 in Mobile County(30.52817/-88.19708)

BACKGROUND

The Alabama Department Environmental Management (ADEM) selected the Fowl River watershed for biological and water quality monitoring as part of the 2006 Assessment of the Escatawpa, Mobile, Lower Tombigbee (EMT) River Basins. The objectives of the EMT Basin Assessments were to assess the biological integrity of each monitoring site and to estimate overall water quality within the EMT basin group. Habitat and macroinvertebrate assessments were not conducted in 2006 due to bridge construction at the site.

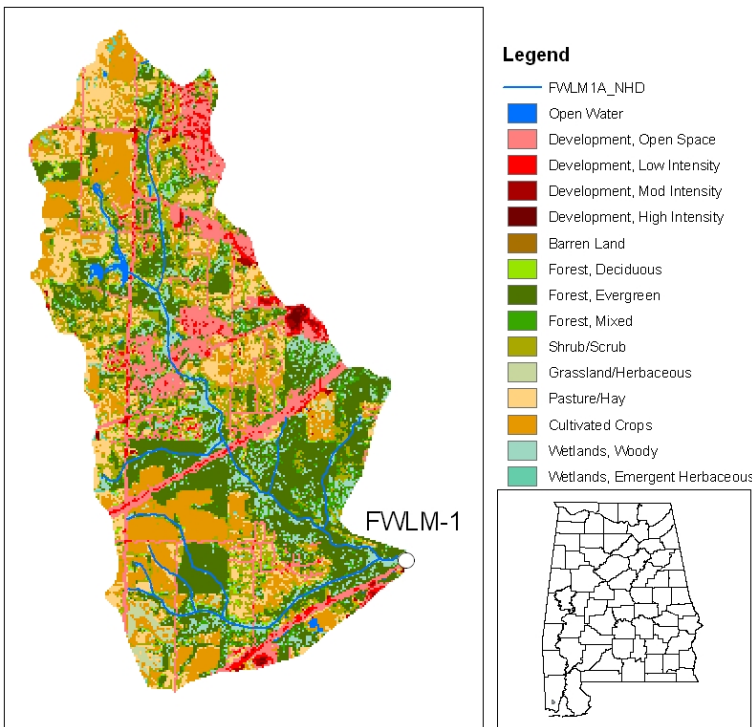


Figure 1. Sampling location and landuse within the Fowl River watershed at FWLM-1.

WATERSHED CHARACTERISTICS

Watershed characteristics are summarized in Table 1. Fowl River at FWLM-1 is a small *Fish & Wildlife (F&W)* stream located in the Southern Pine Plains and Hills ecoregion (65f) in Mobile County. (Griffith et al. 2001). Landuse within the watershed is mainly forest (39%), pasture, grassland and agriculture (30%) (Fig.1). Development accounted for 17% of land cover within the watershed. Twenty-two permitted discharges were located in the watershed.

WATER CHEMISTRY

Results of water chemistry are presented in Table 2. 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 of 2006 to help identify any stressors to the biological communities. A total of 3100 colonies were counted in the fecal coliform sample collected on 9th May 2006. However, this sample was collected after a heavy rain on 8th May 2006. The slightly acidic pH is normal for streams in ecoregion 65f. Median concentrations of nutrients (nitrate+nitrite nitrogen and total nitrogen) were higher than the 90th percentile of concentrations measured at ADEM's reference reaches in ecoregion 65f.

SUMMARY

As part of the assessment process, ADEM reviews all available data including the monitoring information presented in this report. Habitat and macroinvertebrate assessments could not be completed due to bridge construction at the site. Water quality data suggests that nutrient enrichment may be a concern within the reach. Macroinvertebrate and habitat assessments should be conducted during ADEM's 2011 basin assessment project to evaluate the impact of these conditions on the biological community.

Table 1. Summary of watershed characteristics.

Watershed Characteristics		
Basin		Mobile
Drainage Area (mi ²)		13
Ecoregion ^a		65f
% Landuse		
Open water		1
Wetland	Woody	8
	Emergent herbaceous	<1
Forest	Deciduous	2
	Evergreen	25
	Mixed	4
Shrub/scrub		13
Grassland/herbaceous		1
Pasture/hay		13
Cultivated crops		16
Development	Open space	13
	Low intensity	3
	Moderate intensity	1
	High intensity	<1
Population/km ² ^b		197
# NPDES Permits ^c	TOTAL	22
	Construction Stormwater	17
	Mining	1
	Industrial General	1
	Industrial Individual	1
	Underground Injection Control	2

a.Southern Pine Plains & Hills

b.2000 US Census

c.#NPDES permits downloaded from ADEM's NPDES Management System database, 18 Sep 2009.

Table 2. Summary of water quality data collected March-October, 2006. 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	Median	Avg	SD
Physical						
Temperature (°C)	8	20.0	24.0	22.5	22.1	2.0
Turbidity (NTU)	8	2.2	32.8	2.7	8.6	11.5
Total Dissolved Solids (mg/L)	8	< 2.0	67.0	43.5	41.4	20.3
Total Suspended Solids (mg/L)	8	2.0	18.0	4.3	7.2	6.2
Specific Conductance (µmhos)	8	53.6	77.3	56.8	59.2	7.8
Hardness (mg/L)	3	23.0	36.0	26.0	28.3	6.8
Alkalinity (mg/L)	8	9.0	11.8	10.0	10.2	0.9
Stream Flow (cfs)	4	14.1	35.4	16.2	20.5	10.0
Chemical						
Dissolved Oxygen (mg/L)	8	5.7	8.7	7.0	7.2	1.0
pH (su)	8	5.9 ^c	8.6	6.3	6.3	0.3
Ammonia Nitrogen (mg/L)	8	< 0.010	0.051	0.028	0.026	0.019
Nitrate+Nitrite Nitrogen (mg/L)	8	0.105	0.612	0.466 ^M	0.408	0.173
Total Kjeldahl Nitrogen (mg/L)	8	< 0.140	0.602	0.251	0.295	0.187
Total Nitrogen (mg/L)	8	0.180	0.934	0.753 ^M	0.703	0.222
Dissolved Reactive Phosphorus (mg/L)	8	< 0.004	0.011	0.005	0.006	0.004
Total Phosphorus (mg/L)	8	< 0.004	0.051	0.012	0.018	0.016
CBOD-5 (mg/L)	8	< 1.0	2.6	1.1	1.3	0.9
Chlorides (mg/L)	8	1.6	10.8	8.0	7.2	3.5
Atrazine (µg/L)	2	< 0.05	< 0.05	0.03	0.03	0.00
Total Metals						
Aluminum (mg/L)	3	0.19	0.22	0.190	0.200	0.017
Iron (mg/L)	3	0.077	0.865	0.859	0.600	0.453
Manganese (mg/L)	3	0.048	0.077	0.072	0.066	0.016
Dissolved Metals						
Aluminum (mg/L)	3	< 0.1	< 0.1	0.050	0.067	0.029
Antimony (µg/L)	3	< 7.5	< 7.5	3.8	3.8	0.0
Arsenic (µg/L)	3	< 5	< 5	2.5	2.5	0.0
Cadmium (mg/L)	3	< 0.0003	< 0.0003	0.0001	0.0001	0.000
Chromium (mg/L)	3	< 0.005	< 0.005	0.003	0.003	0.000
Copper (mg/L)	3	< 0.005	< 0.005	0.003	0.003	0.000
Iron (mg/L)	3	0.331	0.741	0.361	0.478	0.229
Lead (µg/L)	3	< 5	< 5	2.5	2.5	0.0
Manganese (mg/L)	3	0.029	0.046	0.039	0.038	0.009
Mercury (µg/L)	3	< 0.5	< 0.5	0.3	0.3	0.0
Nickel (mg/L)	3	< 0.005	< 0.009	0.003	0.005	0.004
Selenium (µg/L)	3	< 7.5	< 7.5	3.8	3.8	0.0
Silver (mg/L)	3	< 0.001	< 0.001	0.0004	0.0004	0.000
Thallium (µg/L)	3	< 9	< 9	4.5	4.5	0.0
Zinc (mg/L)	3	< 0.005	< 0.005	0.003	0.003	0.000
Biological						
Chlorophyll a (µg/L)	8	0.36	45.92	0.52	6.53	15.94
^J Fecal Coliform (col/100 mL)	6	30	>3100 ^c	100	880	1312

J=estimate; N= # of samples; C=value exceeds established criteria for *Fish & Wildlife* water use classification, M=value>90% of all verified ecoregional reference reach data collected in the sub-region/eoregion 65f.

FOR MORE INFORMATION, CONTACT:
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