

Table 1.LC. Little Cobb River Monitoring Station Information



Station Address: Near County Road 16 Bridge, Beauford, MN
County: Blue Earth
Major Basin: Minnesota River Basin
Watershed: Le Sueur River
Drainage Area: 130.0 square miles

Station Operator: Metropolitan Council Environmental Services

Metropolitan Council Environmental Services Contact Information:

Contact Person: Heather Offerman
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Station Overview: MCES has conducted water quality monitoring of the Little Cobb River since 1999. The monitoring station is located near Beauford, Minnesota, 1.6 miles upstream from the river confluence with the Big Cobb River. The Little Cobb River outlets from Trenton Lake and flows northwesterly until passing through Severson Lake. From Severson Lake, the river flows northeasterly, where Bull Run Creek joins prior to the confluence with the Big Cobb River. The Little Cobb River flows through mainly agricultural land in Freeborn, Waseca, and Blue Earth Counties.

MCES is the sole operator of this monitoring station, but partners with the USGS, which maintains the rating curve at this location. USGS has been monitoring river flow at this location, station number 05320270, since 1995. This site is also being studied as a part of the USGS National Water Quality Assessment (NAWQA) Program, including intermittent collection of water quality samples from 1995 to present. A rain gauge at this monitoring station collects rainfall data during the April-December period.

2002 Monitoring Year: Snowmelt began during the third week of March 2002. Spring runoff was minimal, however, and the daily average flow in the Little Cobb River did not rise above 70 cfs.

With reduced spring rainfall and runoff, grab samples were obtained until June, when the first significant rainfall event occurred. Runoff event-based composite sampling began on June 5 and continued throughout the remainder of the month. The Little Cobb River returned to baseflow conditions by late July, and a sizable rainfall event in late August caused a small increase in the hydrograph. On October 4, a rainfall event of approximately 1.70 inches caused the river to peak at 360 cfs, with a stage of 8.70 feet, the highest flow peak of 2002. This was the last runoff event and composite sample for 2002. Grab samples were collected monthly from mid October through December.

Thirty samples were collected for water quality analysis during 2002, including 12 composite samples and 18 grab samples. The MCES annual water quality monitoring plan includes 12 monthly baseflow (“non-event”) grab samples and approximately 10 to 15 flow-weighted composite samples collected during all runoff events in the open-water season (March-November). The 2002 sampling scheme met the goals of the MCES monitoring work plan.

For additional stream monitoring information and monitoring methods regarding this site, see www.metrocouncil.org/environment/RiversLakes.

Figure 1.1.C. Little Cobb River Monitoring Station Location and Watershed

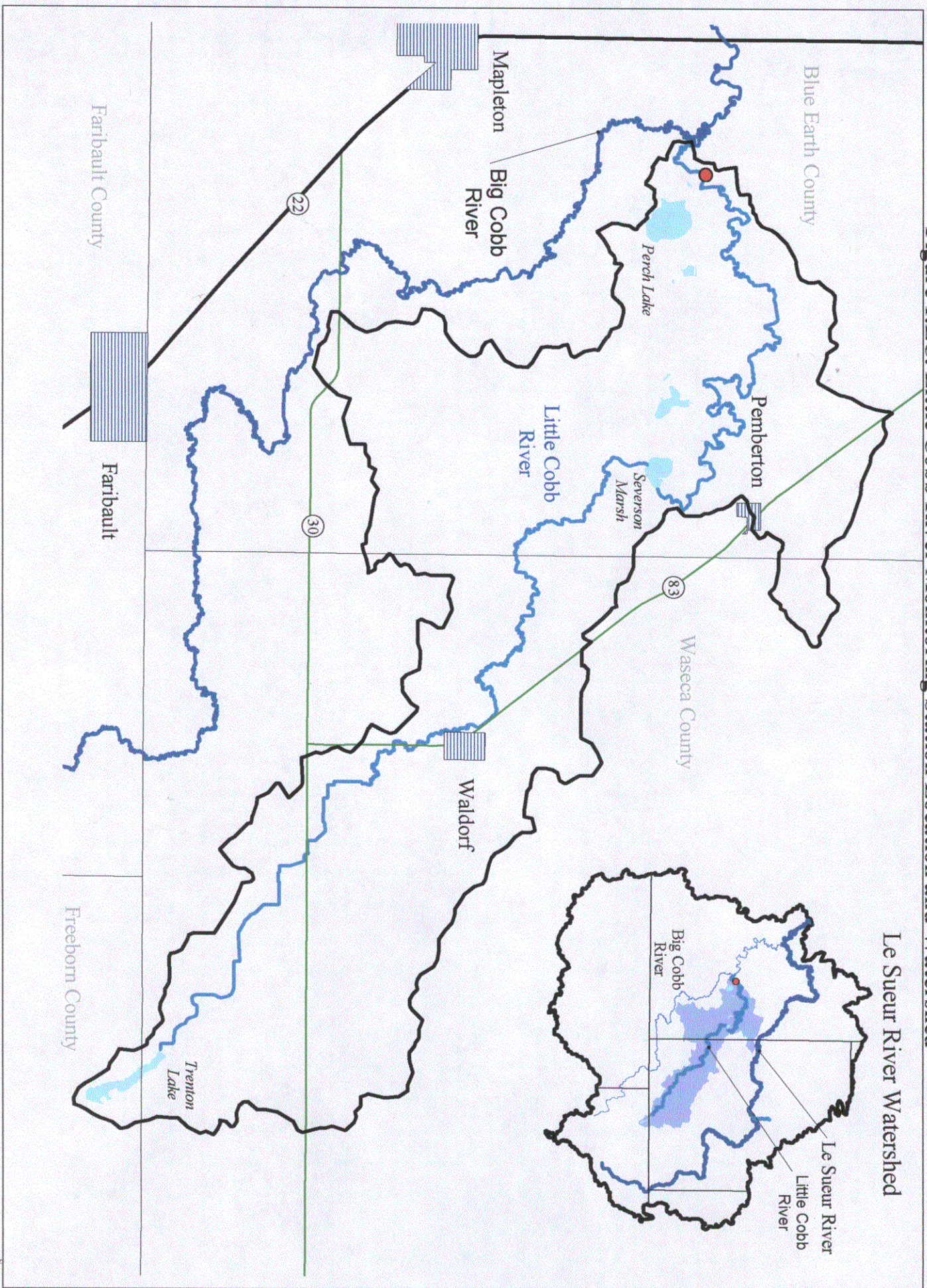


Figure 2. LC. Little Cobb River 2002 Hydrograph with Rainfall and Sampling Information

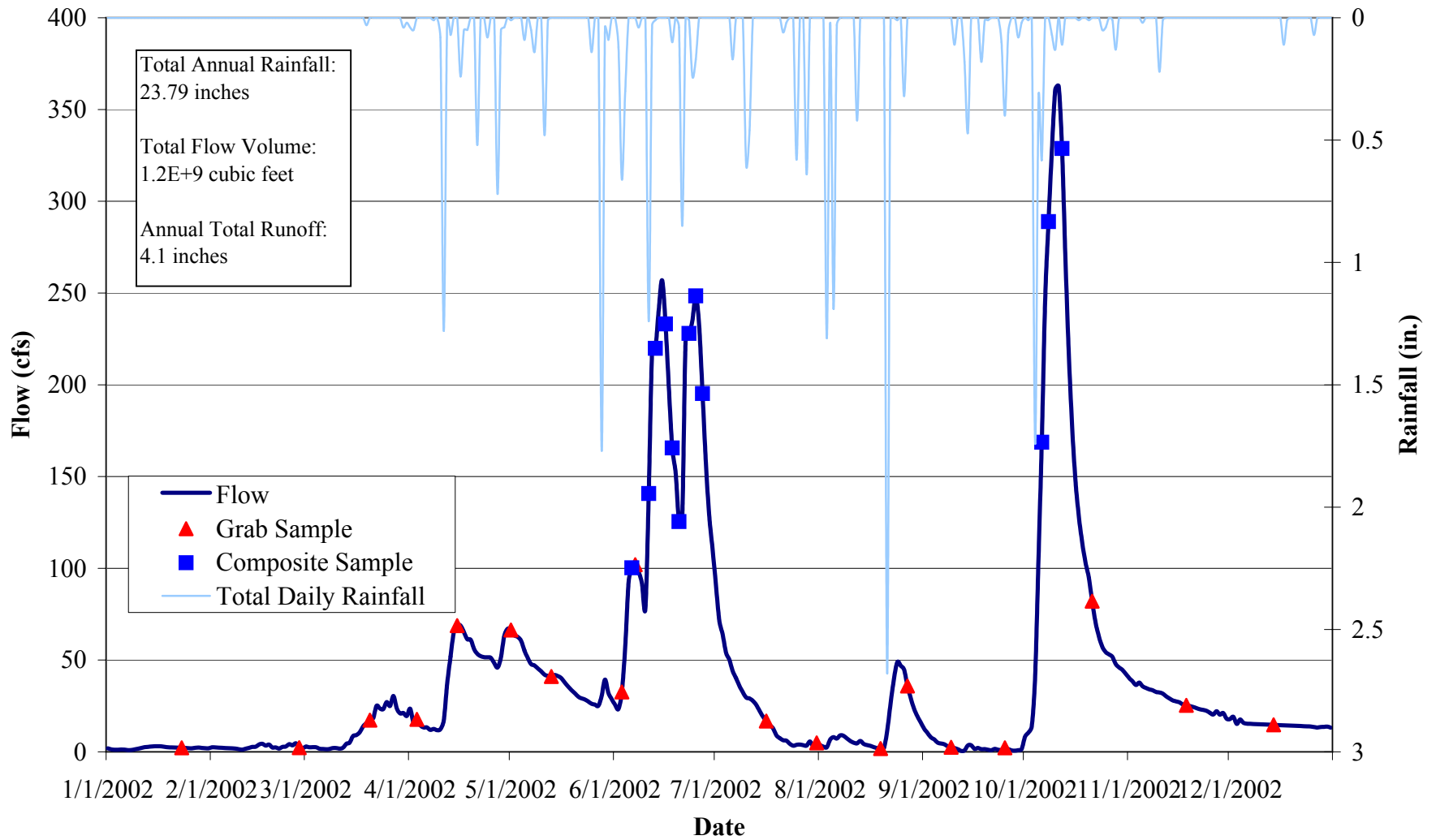


Table 2.LC. Little Cobb River 2002 Water Chemistry Information

Variable	N	Mean	Median	Minimum	Maximum	25%	75%	STD
Chloride, mg/L	28	18	17	11	44	14	21	7
Hardness, mg/L	15	291	296	176	450	244	360	73
Cadmium, ug/L	10	0.1	0.1	<0.1	0.3	0.1	0.1	0.1
Chromium, ug/L	10	1.7	1.1	0.2	5.3	0.4	2.6	1.9
Copper, ug/L	10	4.1	3.4	2.2	7.2	2.6	6.0	1.9
Lead, ug/L	10	1.2	0.6	0.1	4.5	0.2	1.9	1.5
Nickel, ug/L	10	5.4	4.7	3.4	9.9	3.7	6.5	2.3
Zinc, ug/L	10	7.5	4.6	1.2	23.0	1.4	11.8	8.5
Nitrogen, Total Kjeldahl, mg/L	30	1.93	1.75	0.70	5.20	0.99	2.60	1.05
Nitrogen, Total Nitrate, mg/L	30	9.45	9.40	0.11	17.70	5.51	13.98	5.27
Phosphorus, Total, mg/L	30	0.32	0.31	0.03	1.07	0.13	0.48	0.23
Phosphorus, Total Dissolved, mg/L	29	0.12	0.13	0.01	0.43	0.03	0.16	0.09
Solids, Total Suspended, mg/L	30	179	87	2	736	30	332	199
Solids, Volatile Suspended, mg/L	30	25	14	2	92	5	44	24
Turbidity, NTU	30	48	26	1	270	14	73	55
Transparency Tube, cm	28	20	12	2	60	6	22	20

N: Sample Count

25%, 75%: 25th and 75th Percentiles

STD: Standard Deviation

Table 3.LC. Little Cobb River 2002 Annual Loading Information* for Suspended Solids and Nutrients

Variable	Annual Load (tons)	Annual Yield (lbs/acre)	Annual Normalized Yield (lbs/acre/in of water)	Flow Weighted Mean Concentration (mg/L)
Solids, Total Suspended	6,730	161	40	176
Phosphorus, Total	11.8	0.28	0.07	0.31
Phosphorus, Total Dissolved	3.89	0.09	<0.01	0.10
Nitrogen, Total Nitrate+Total Nitrite	474	11.4	2.80	12.3

* 2002 Annual Loading Information is provisional and may be subject to minor revisions.

Figure 3.LC. Little Cobb River 2002 Hydrograph with Total Suspended Solids and Nitrate Nitrogen Concentrations

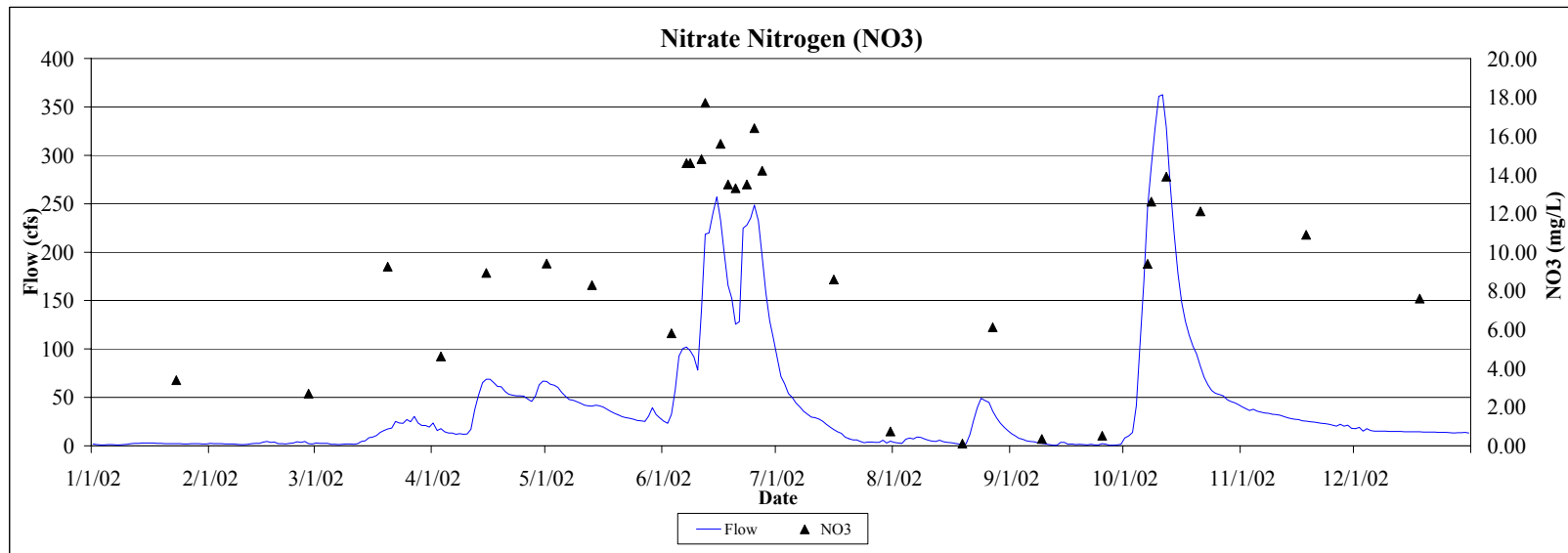
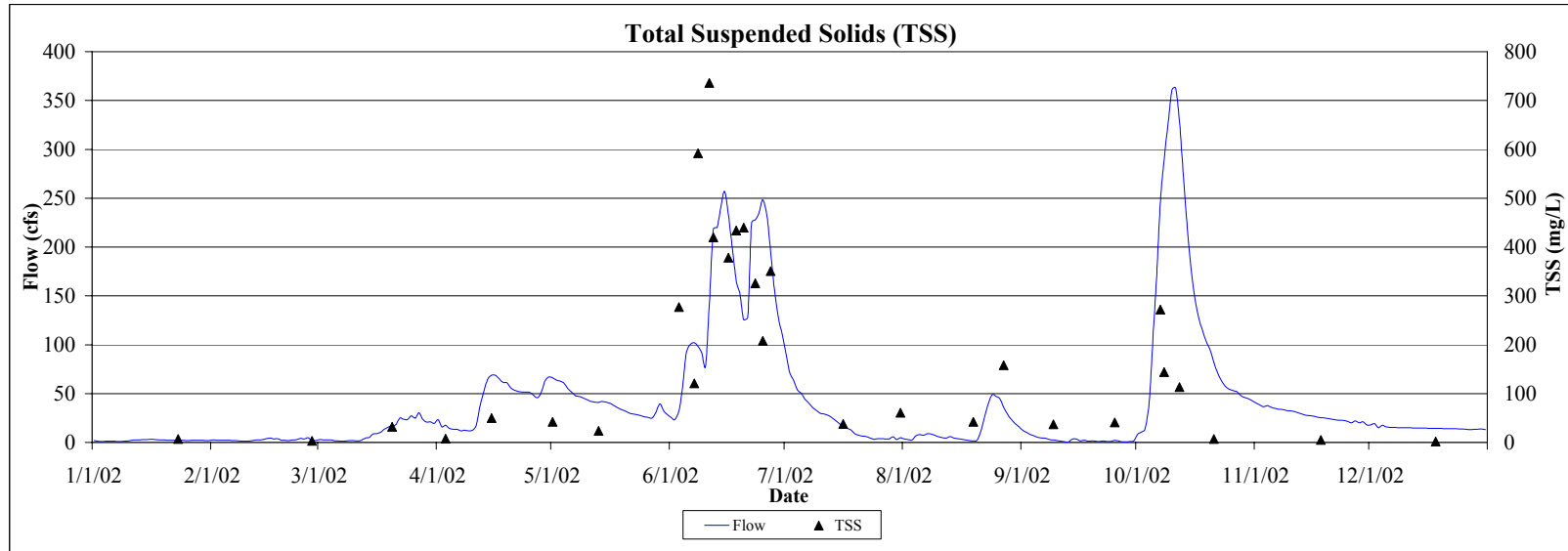


Figure 4.LC. Little Cobb River 2002 Hydrograph with Total and Dissolved Phosphorus Concentrations

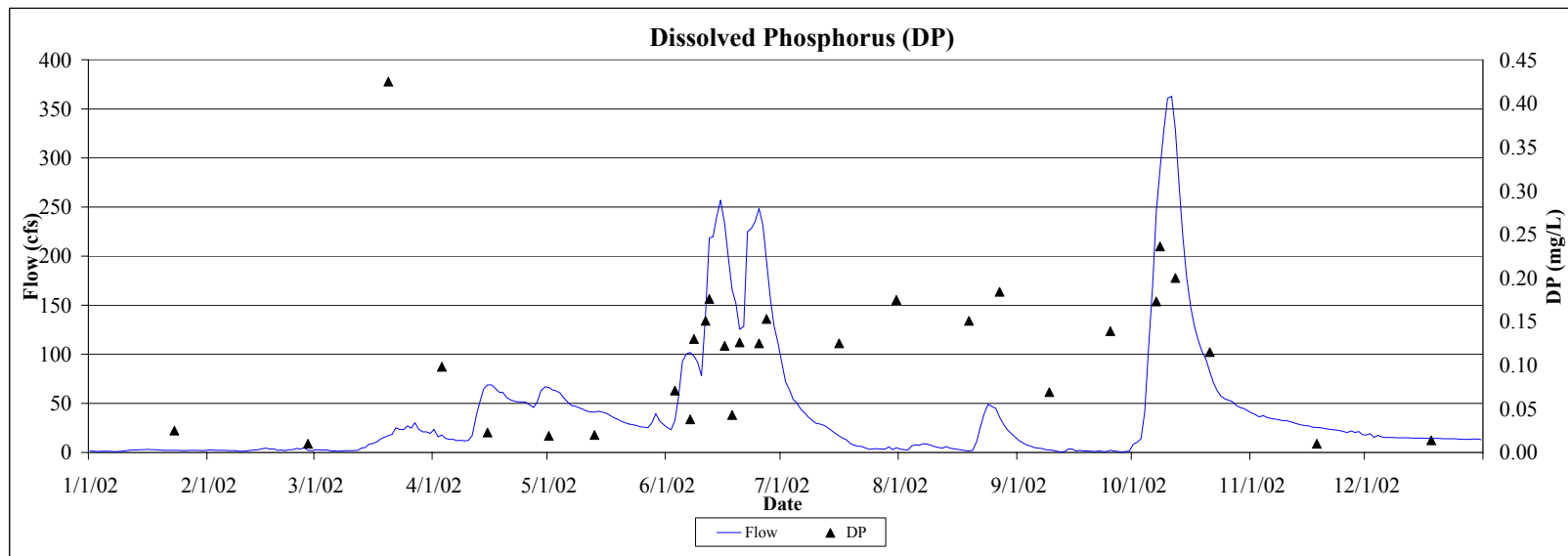
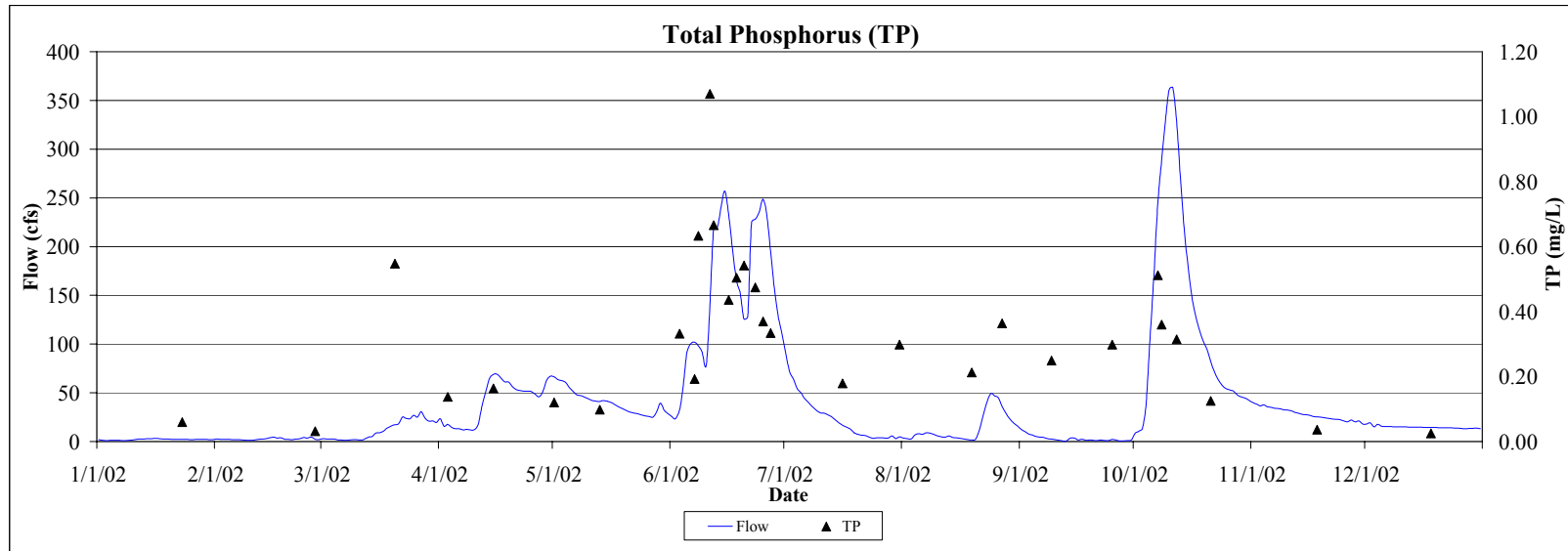


Table 4.LC. Little Cobb River: Comparison of 2001-2002 Hydrology and Water Chemistry

	2001	2002
Hydrology		
Total Precipitation (in)	26.91	23.79
Water Yield (in)	11.4	4.1
Total Volume (cf)	3.4E+09	1.2E+09
Annual Load (tons)		
Total Suspended Solids	9,120	6,730
Total Phosphorus	33.5	11.8
Total Dissolved Phosphorus	23.0	3.89
Total Nitrate + Total Nitrite Nitrogen	1,140	474
Annual Yield (lbs/acre)		
Total Suspended Solids	219	161
Total Phosphorus	0.81	0.28
Total Dissolved Phosphorus	0.55	0.09
Total Nitrate + Total Nitrite Nitrogen	27.3	11.4
Annual Normalized Yield (lbs/acre/in of water)		
Total Suspended Solids	19	40
Total Phosphorus	0.07	0.07
Total Dissolved Phosphorus	0.05	<0.01
Total Nitrate Nitrogen	2.40	2.80
Flow-Weighted Mean Concentration (mg/L)		
Total Suspended Solids	85	176
Total Phosphorus	0.31	0.31
Total Dissolved Phosphorus	0.21	0.10
Total Nitrate + Total Nitrite Nitrogen	10.6	12.3

Table 5.LC. Little Cobb River 2002 Macroinvertebrate Monitoring Results and Metrics

Monitoring Date 11/4/2002

Class	Order	Family	Common Name	Life Stage	Organism Count
Insecta	Coleoptera	Elmidae	Riffle Beetles	Adult	1
Insecta	Diptera	Chironomidae	Midges	Larvae	16
Insecta	Diptera	Simuliidae	Black Flies	Larvae	2
Insecta	Diptera	Tipulidae	Crane Flies	Larvae	3
Insecta	Ephemeroptera	Caenidae	Small Squaregills	Larvae	1
Insecta	Ephemeroptera	Heptageniidae	Flatheaded Mayflies	Larvae	1
Insecta	Ephemeroptera	Potamanthidae	Hackelgills	Larvae	1
Insecta	Plecoptera	Chloroperlidae	Green Stoneflies	Larvae	1
Insecta	Plecoptera	Nemouridae	Nemourid Broadbacks	Larvae	1
Insecta	Trichoptera	Hydropsychidae	Common Netspinners	Larvae	2

Macroinvertebrate Taxa Metrics

Total Taxa	10
EPT Taxa	6
% EPT Taxa	60
Diptera Taxa	3
% Diptera Taxa	30
Mean Tolerance Value	4.1

Macroinvertebrate Organism Metrics

Total Organisms	29
EPT Individuals	7
% EPT Individuals	24
Diptera Individuals	21
% Diptera Individuals	72
Chironomidae Individuals	16
% Chironomidae Individuals	55