

**Table 1.UBE. Upper Bevens Creek Monitoring Station Information**



**Station Address:** 7312 Maplewood Road, Cologne, MN 55322  
**County:** Carver  
**Major Basin:** Minnesota River Basin  
**Watershed:** Bevens Creek  
**Drainage Area:** 90.2 square miles

**Station Operator:** Metropolitan Council Environmental Services

**Metropolitan Council Environmental Services Contact Information:**

**Contact Person:** Tim Pattock or Mike Ahlf  
**Address:** 2400 Childs Road  
St. Paul, MN 55106  
**Phone:** 651-602-8084 (Tim) or 651-602-8082 (Mike)  
**E-mail:** timothy.pattock@metc.state.mn.us  
mike.ahlf@metc.state.mn.us

**Watershed District or Watershed Management Organization:**

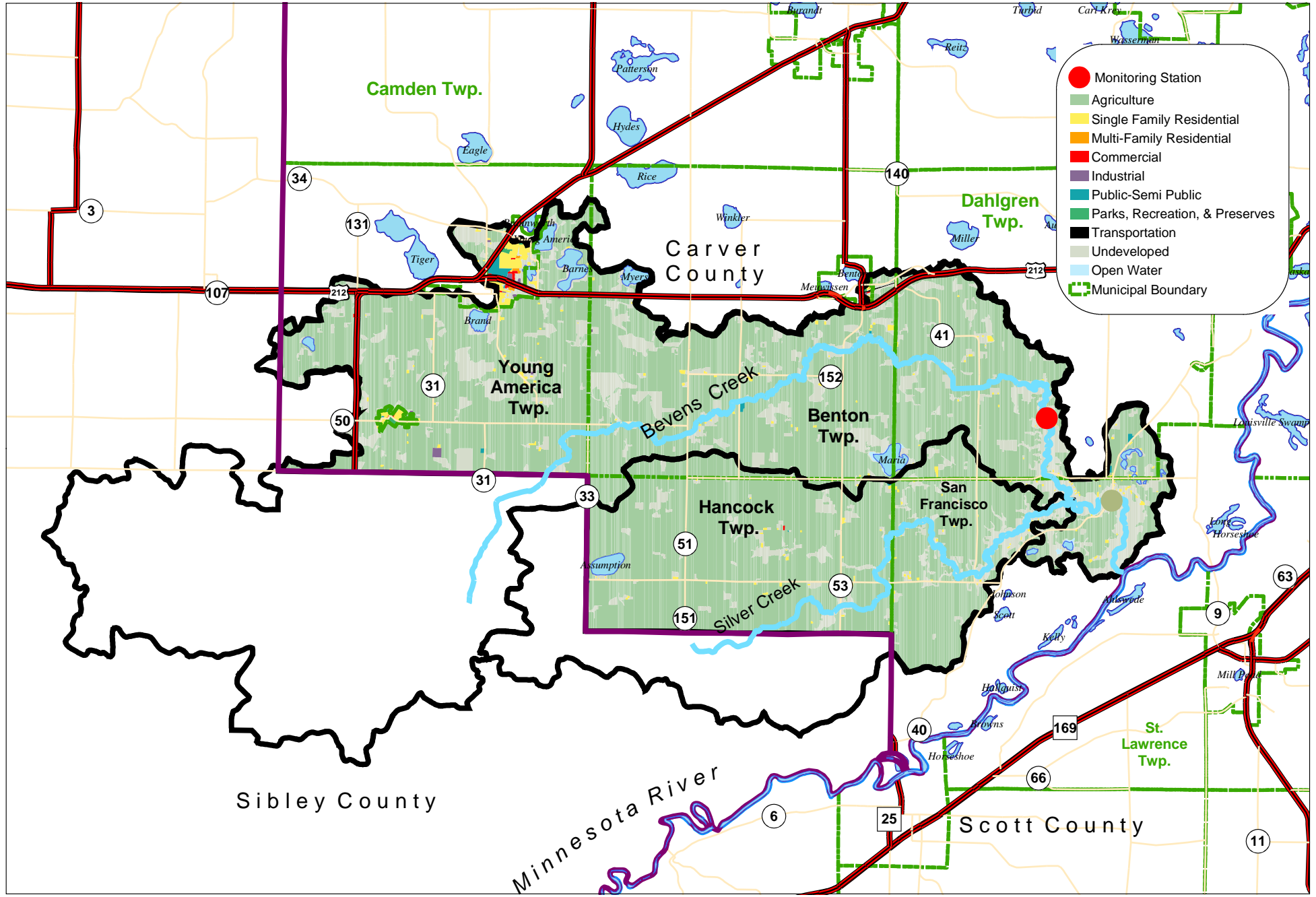
**Station Overview:** MCES has conducted water quality monitoring of Upper Bevens Creek since 1992. The monitoring station is located in Cologne, Minnesota, 5.0 miles upstream from the creek confluence with the Minnesota River. MCES staff maintain the rating curve at this station. There is no rain gauge at this station; however, precipitation data are obtained from the Minnesota Climatology Working Group, Jordan Station Number 214176.

**2003 Monitoring Year:** Spring snowmelt and ice-free stream conditions occurred in mid-March 2003. Runoff event-based sampling began in mid-March and continued into July. From mid-August until the end of the year, no flow existed in the stream at this monitoring station. The remaining water pooled and eventually dried up completely. The peak daily average flow of 249 cfs occurred on May 20, 2003. This runoff event also produced the highest total suspended solids (TSS) concentration (720 mg/l) measured at this station in 2003.

Twenty samples were collected for water quality analysis during 2003, including 13 composite samples and 7 grab samples. Until mid-August, when stream flow ceased, samples were obtained during varying flow conditions, to most accurately characterize Upper Bevens Creek water quality. 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). During the portion of year when stream flow existed, the 2003 sampling scheme met the goals of the MCES monitoring work plan. Baseflow grab samples could not be obtained from September through December, due to the lack of flow at the Upper Bevens Creek monitoring station.

**For additional stream monitoring information and monitoring methods regarding this site, see [www.metrocouncil.org/environment/RiversLake](http://www.metrocouncil.org/environment/RiversLake)**

**Figure 1. UBE. Upper Bevens Creek Monitoring Station Location and Watershed Characteristics**

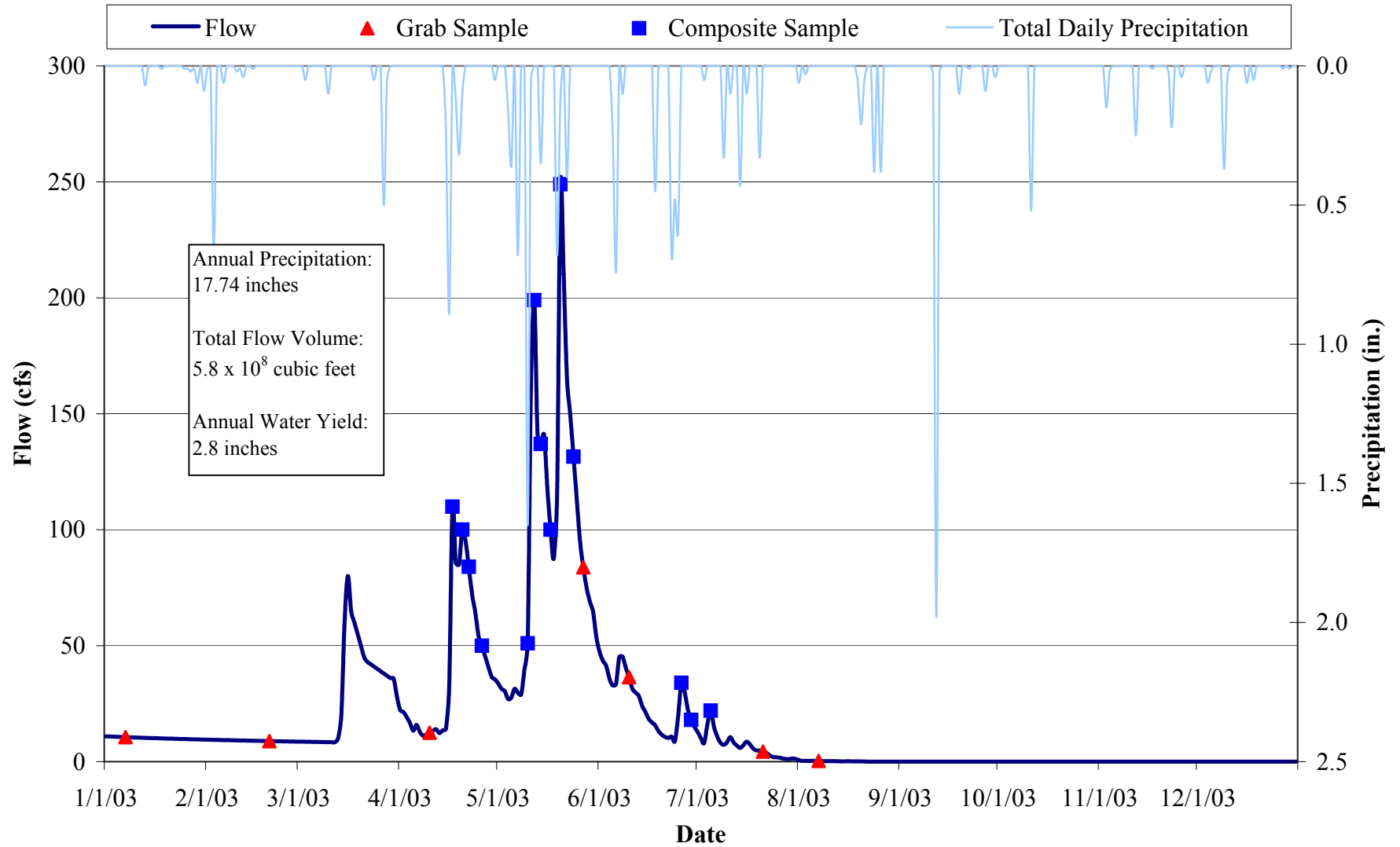


- Monitoring Station
- Agriculture
- Single Family Residential
- Multi-Family Residential
- Commercial
- Industrial
- Public-Semi Public
- Parks, Recreation, & Preserves
- Transportation
- Undeveloped
- Open Water
- - - Municipal Boundary

0 0.5 1 2 Miles



**Figure 2.UBE. Upper Bevens Creek 2003 Hydrograph, Precipitation and Sampling Information**



**Table 2.UBE. Upper Bevens Creek 2003 Water Chemistry Information**

Variable	N	Mean	Median	Minimum	Maximum	25%	75%	STD
Chloride, mg/L	19	51	43	32	146	38	53	26
Hardness, mg/L	2	355	na	346	364	na	na	na
Cadmium, ug/L	1	na	na	na	na	na	na	na
Chromium, ug/L	1	na	na	na	na	na	na	na
Copper, ug/L	1	na	na	na	na	na	na	na
Lead, ug/L	1	na	na	na	na	na	na	na
Nickel, ug/L	1	na	na	na	na	na	na	na
Zinc, ug/L	1	na	na	na	na	na	na	na
Total Kjeldahl Nitrogen, mg/L	20	1.98	1.90	1.10	3.40	1.58	2.30	0.58
Total Nitrate Nitrogen, mg/L	19	7.02	6.61	0.49	13.10	4.50	9.51	3.50
Total Phosphorus, mg/L	20	0.55	0.49	0.18	1.94	0.35	0.67	0.37
Total Dissolved Phosphorus, mg/L	20	0.41	0.26	0.12	1.87	0.18	0.51	0.39
Total Suspended Solids, mg/L	20	188	108	2	720	26	265	214
Volatile Suspended Solids, mg/L	20	18	12	1	58	6	25	16
Turbidity, NTU	20	25	22	2	70	10	34	21

na: Data are insufficient to calculate these statistics.

N: Sample Count

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

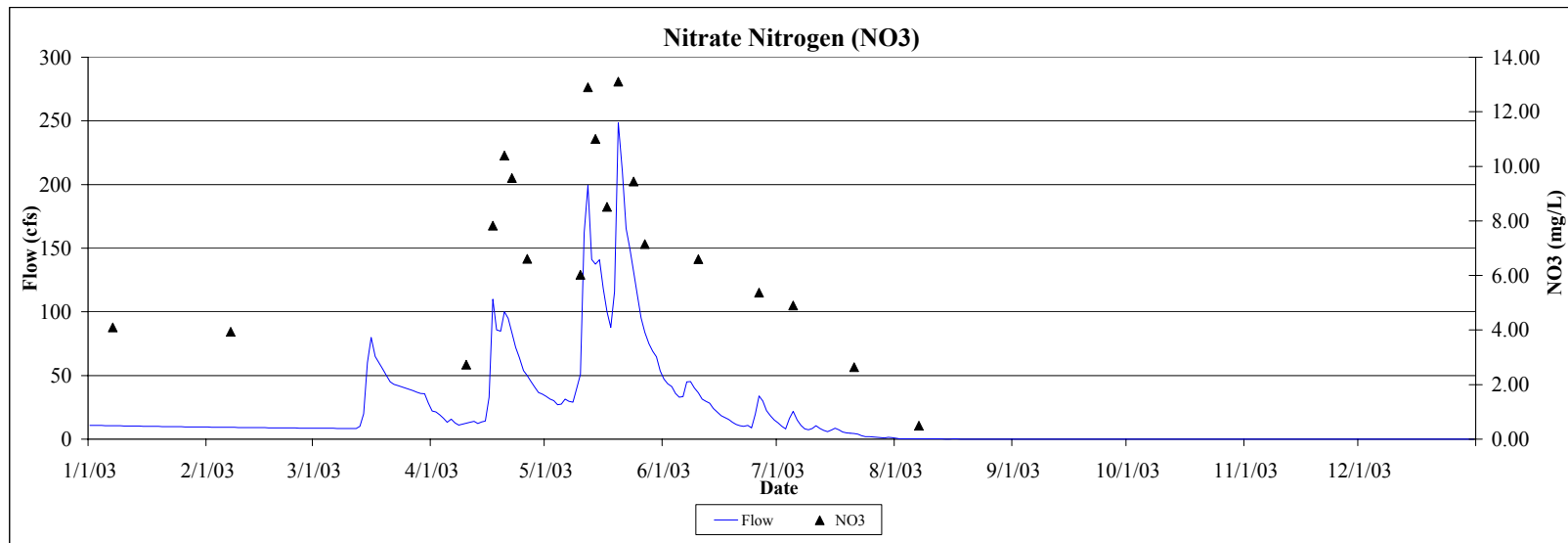
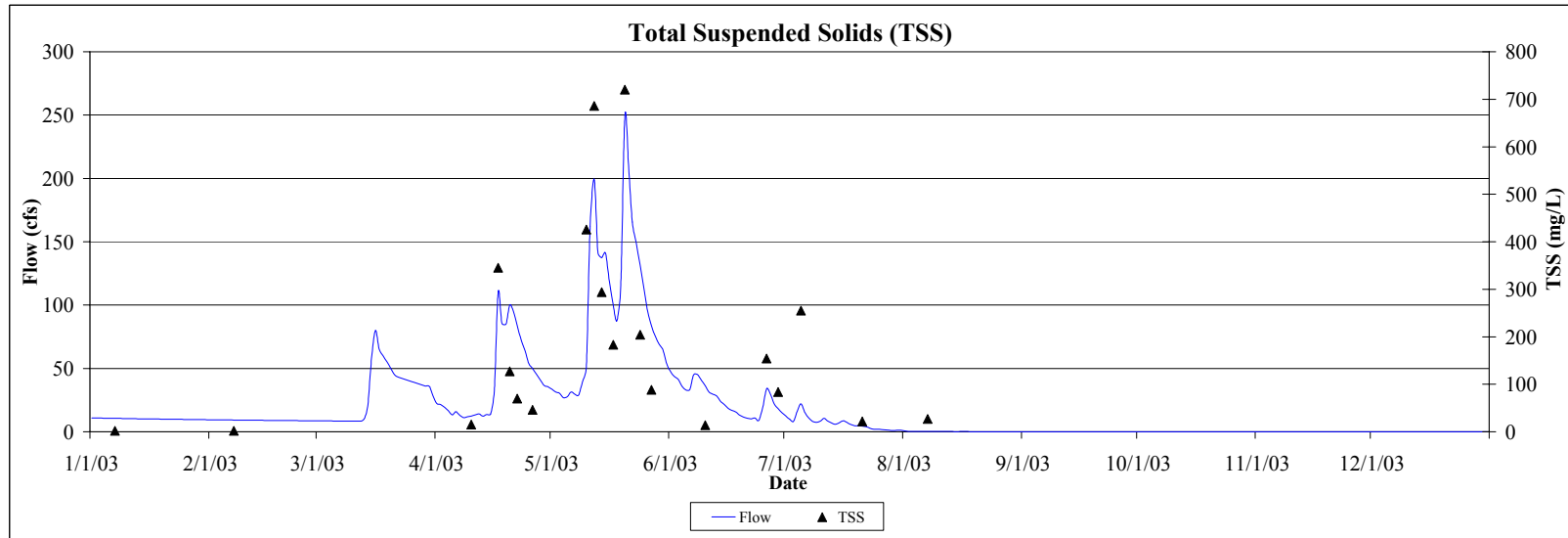
STD: Standard Deviation

**Table 3.UBE. Upper Bevens Creek 2003 Annual Loading Information\* for Suspended Solids and Nutrients**

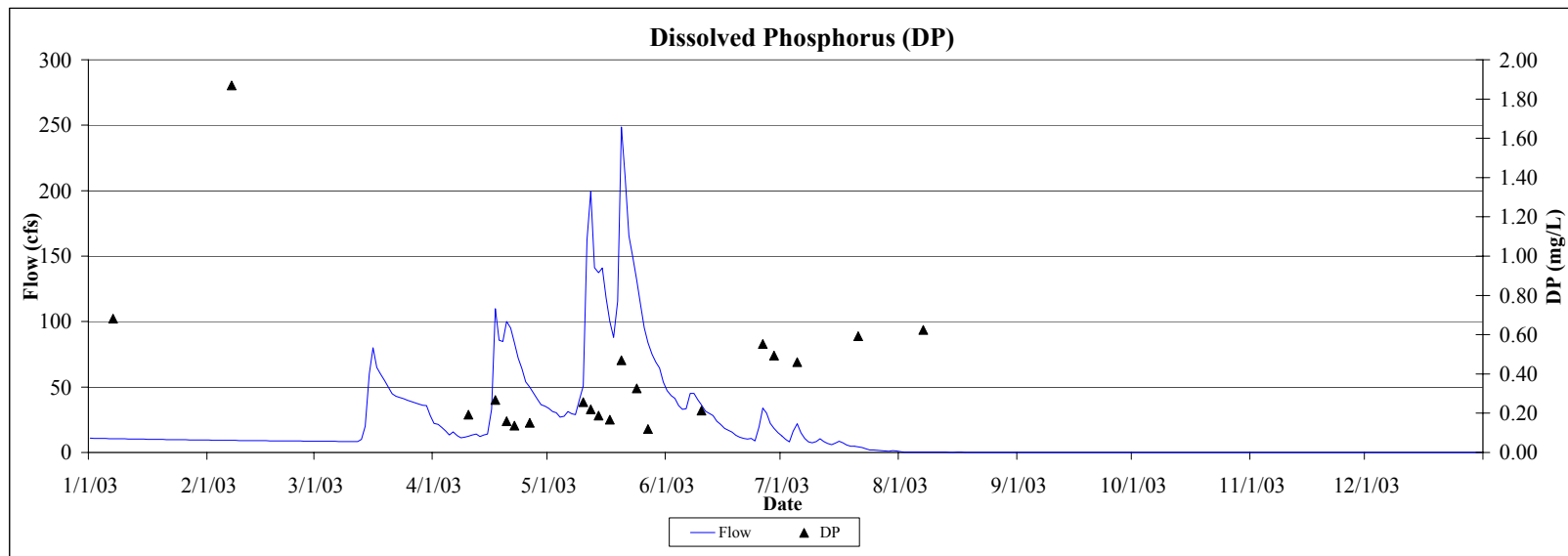
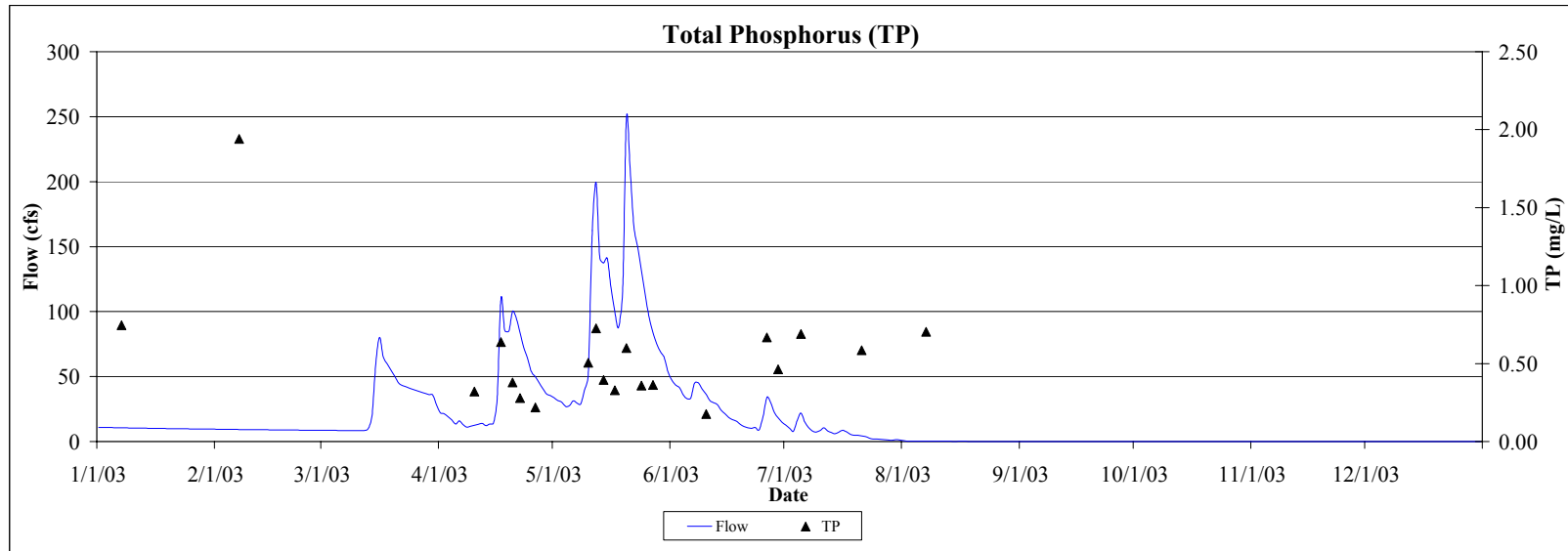
Variable	Annual Load (tons)	Annual Yield (lbs/acre)	Annual Normalized Yield (lbs/acre/in of water)	Flow Weighted Mean Concentration (mg/L)
Total Suspended Solids	3,840	133	47	212
Total Phosphorus	9.44	0.33	0.12	0.52
Total Dissolved Phosphorus	5.43	0.19	0.07	0.30
Total Nitrate Nitrogen	136	4.72	1.68	7.55

\* 2003 Annual Loading Information is provisional and may be subject to minor revisions.

**Figure 3.UBE. Upper Bevens Creek 2003 Hydrograph with Total Suspended Solids and Nitrate Nitrogen Concentrations**



**Figure 4.UBE. Upper Bevens Creek 2003 Hydrograph with Total and Dissolved Phosphorus Concentrations**



**Table 4.UBE. Upper Bevens Creek: Comparison of 2001-2003 Hydrology and Water Chemistry**

	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Hydrology</b>			
<b>Total Precipitation (inches)</b>	28.37	42.29	17.74
<b>Water Yield (inches)</b>	8.1	8.1	2.8
<b>Total Volume (cubic feet)</b>	$1.7 \times 10^9$	$1.7 \times 10^9$	$5.8 \times 10^8$
<b>Annual Load (tons)</b>			
<b>Total Suspended Solids</b>	8,520	6,960	3,840
<b>Total Phosphorus</b>	34.6	38.0	9.44
<b>Total Dissolved Phosphorus</b>	23.7	23.0	5.43
<b>Total Nitrate Nitrogen</b>	747	343	136
<b>Annual Yield (lbs/acre)</b>			
<b>Total Suspended Solids</b>	295	241	133
<b>Total Phosphorus</b>	1.20	1.32	0.33
<b>Total Dissolved Phosphorus</b>	0.82	0.80	0.19
<b>Total Nitrate Nitrogen</b>	25.9	11.9	4.72
<b>Annual Normalized Yield (lbs/acre/inch of water)</b>			
<b>Total Suspended Solids</b>	36	30	47
<b>Total Phosphorus</b>	0.15	0.16	0.12
<b>Total Dissolved Phosphorus</b>	0.10	0.10	0.07
<b>Total Nitrate Nitrogen</b>	3.20	1.47	1.68
<b>Flow-Weighted Mean Concentration (mg/L)</b>			
<b>Total Suspended Solids</b>	161	132	212
<b>Total Phosphorus</b>	0.65	0.72	0.52
<b>Total Dissolved Phosphorus</b>	0.45	0.44	0.30
<b>Total Nitrate Nitrogen</b>	14.20	6.51	7.55