RESULTS

Water Quality

During September 2002, water quality at most of the river sites met water quality standards (Appendix A). Limit values were exceeded for only 10 out of 216 total water chemistry values. The exceedances are listed in Table 9.

Biological Communities

Raw data for the benthic macroinvertebrate analysis can be found in Appendix B. The results of the metrics for the IBI, reference site, and reference condition approaches are found in Appendix C. A high RBP score indicates a low degree of impairment and a comparatively healthy macroinvertebrate community. Results of the data are summarized below for each site and for each assessment method (Table 10). Table 10 shows the number of samplers within each station that received a nonimpaired, partially impaired, or severely impaired designation for the IBI-type analysis and the number of samplers within each station that received a nonimpaired, slightly impaired, moderately impaired, or severely impaired designation for the reference site and reference condition approaches.

Table 11 indicates an average for each metric for each sampler type. HD had the lowest and RS had the highest score for Taxa Richness, while HD had the lowest and RBP had the highest average score for Hilsenhoff Biotic Index and Shannon-Wiener Diversity Index. RBP had the lowest and HD had the highest average score for Percent Ephemeroptera, Percent Dominant Taxa, and Percent Chironomidae. RBP had the lowest and RS had the highest average score for EPT Index.

Physical Habitat

Physical habitat data are presented in Table 12. A high score indicates a high-quality physical habitat. SUSQ 1 was used as the reference site for habitat assessment, as it exhibited the best available habitat. All sites had either excellent (comparable to reference) or supporting habitat.

Table 9. Summary of Exceedances of Water Quality Standards

Station	Date	Parameter	Observed Concentration	Limit Concentration
SUSQ 1	9/23/02	Total Suspended Solids	18 mg/l	15 mg/l
SUSQ 4	9/24/02	Total Nitrate	1.45 mg/l	1.0 mg/l
SUSQ 5	9/25/02	Total Ammonia	0.23 mg/l	0.2 mg/l
SUSQ 5	9/25/02	Total Phosphorus	0.22 mg/l	0.1 mg/l
SUSQ 5	9/25/02	Total Orthophosphate	0.11 mg/l	0.05 mg/l
SUSQ 6	9/25/02	Total Ammonia	0.29 mg/l	0.2 mg/l
SUSQ 7	9/25/02	Total Nitrogen	1.01 mg/l	1.0 mg/l
SUSQ 7	9/25/02	Total Ammonia	0.28 mg/l	0.2 mg/l
SUSQ 10	9/26/02	Total Suspended Solids	20 mg/l	15 mg/l
SUSQ 10	9/26/02	Total Ammonia	0.26 mg/l	0.2 mg/l

Table 10. Summary of Impairment Designations for Each Site and Analysis Type

	IBI-type analysis			Reference site				Reference Condition			
Station	Non	Partial	Severe	Non	Slight	Moderate	Severe	Non	Slight	Moderate	Severe
SUSQ1	15	3	0	6	12	0	0	5	13	0	0
SUSQ2	1	4	7	0	4	8	0	0	2	10	0
SUSQ3	5	7	3	1	13	1	0	1	12	1	0
SUSQ4	4	6	1	3	7	1	0	0	8	3	0
SUSQ5	1	6	1	0	7	1	0	0	7	1	0
SUSQ6	1	7	2	1	6	1	2	0	6	2	2
SUSQ7	0	2	2	0	2	2	0	0	2	2	0
SUSQ10	0	4	2	0	5	1	0	0	4	2	0

Table 11. Summary of Averages for Each Sampler Type for Each Metric

Parameter	Sampler Type			
	HD	RBP	RS	VBS
Taxa Richness	14.9	18.8	20.4	18.6
Hilsenhoff Biotic Index	4.8	5.1	5.0	4.9
Percent Ephemeroptera	29.13	21.4	25.2	25.5
Percent Dominant Taxa	38.3	30.7	33.7	36.2
EPT Index	9.3	8.7	12.8	8.9
Percent Chironomidae	28.3	9.4	24.9	23.2
Shannon-Wiener Diversity Index	1.86	2.21	2.17	1.99

Table 12. Summary of Physical Habitat Data

Parameter	SUSQ1	SUSQ2	SUSQ3	SUSQ4	SUSQ5	SUSQ6	SUSQ7	SUSQ10
Epifaunal Substrate	14	11	13	10	13	12	14	13
Instream Cover	16	9	13	10	11	13	14	12
Embeddedness/Pool Substrate	15	14	13	11	14	14	15	15
Velocity/ Depth Regimes/ Pool Variability	18	13	12	14	13	16	16	14
Sediment Deposition	14	14	14	15	14	14	15	14
Channel Flow Status	14	14	15	17	17	17	18	18
Channel Alteration	15	15	16	10	14	13	15	12
Frequency of Riffles/ Channel Sinuosity	14	11	10	10	12	10	12	13
Condition of Banks	16	16	16	15	11	14	15	10
Left Bank	8	8	8	7	7	7	8	4
Right Bank	8	8	8	8	4	7	7	6
Vegetative Protective Cover	16	16	16	15	12	12	14	12
Left Bank	8	8	8	7	8	6	7	6
Right Bank	8	8	8	8	4	6	7	6
Riparian Vegetative Zone Width	10	10	7	6	9	7	12	6
Left Bank	5	6	2	2	7	4	6	2
Right Bank	5	4	5	4	2	2	6	4
Total Habitat Score								
Total Habitat Score	162	143	145	133	140	142	160	139
Habitat Percent of Reference	100	88	90	82	86	88	99	86