D2

APPENDICES

TO AWRC PUBLICATON NO. 255

STORM AND BASE FLOW WATER QUALITY FOR BEAR, CALF, AND TOMAHAWK CREEKS

SUBMITTED TO THE BUFFALO NATIONAL RIVER

BY

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LIST OF APPENDICES

APPENDIX I

Table I1. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category for Upper Bear Creek.

Table I2. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category for Lower Bear Creek.

Table I3. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category for Calf Creek.

Table I4. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category for Tomahawk Creek.

Table I5. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category for Upper Buffalo Creek.

Table I6. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the lower third of Upper Bear Creek.

Table I7. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the middle third of Upper Bear Creek.

Table I8. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the upper third of Upper Bear Creek.

Table I9. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the lower third of Lower Bear Creek.

Table I10. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the middle third of Lower Bear Creek.

Table I11. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the upper third of Lower Bear Creek.

Table I23. Acres and percent of land use within various distances to the tributary and percent degree of the total land use within each percent slope category for Calf Creek.

Table I24. Acres and percent of land use within various distances to the tributary and percent degree of the total land use within each percent slope category for Tomahawk Creek.

Table I25. Acres and percent of land use within various distances to the tributary and percent degree of the total land use within each percent slope category for Upper Buffalo Creek.

Table I26. Acres and percent of land use within various distances to the tributary and percent degree of the total land use within each category in the lower third of Upper Bear Creek.

Table I27. Acres and percent of land use within various distances to the tributary and percent degree of the total land use within each category in the middle third of Upper Bear Creek.

Table I28. Acres and percent of land use within various distances to the tributary and percent degree of the total land use within each category for in the upper third of Upper Bear Creek.

Table I29. Acres and percent of land use within various distances to the tributary and percent degree of the total land use within each category in the lower third of Lower Bear Creek.

Table I30. Acres and percent of land use within various distances to the tributary and percent degree of the total land use within each category in the middle third of Lower Bear Creek.

Table I31. Acres and percent of land use within various distances to the tributary and percent degree of the total land use within each category in the upper third of Lower Bear Creek.

Table I32. Acres and percent of land use within various distances to the tributary and percent degree of the total land use within each category in the lower third of Calf Creek.

Table I33. Acres and percent of land use within various distances to the tributary and percent degree of the total land use within each category in the middle third of Calf Creek.

Table K3. Distribution of data by season and year for the trend analyses. Year 5=1985 and Year 10 =1990, etc. Season 1 = Winter, Season 2= Spring, Season 3 = Summer and Season 4 = Fall.

APPENDIX L

Table L1. Annual average parameter values based on seasonal averages for the tributaries and R1.

Table L2. Annual average loads based on seasonal means for each year and average of annual averages for loads for the three tributaries and R1.

Table L3. Annual seasonal means, seasonal average and annual average values (based on seasonal mean values) for the tributaries and R1.

Table L4. Annual seasonal means, seasonal average and annual average loads (based on seasonal mean loads) for the tributaries and R1.

Table L5. Average seasonal and annual means of parameter values for the tributaries and R1.

Table L6. Annual seasonal means, average of seasonal means, and annual average loads based on seasonal mean loads for the tributaries and R1.

APPENDIX M

Table M1. Slopes and p values for annual analysis of loads.

Table M2. Slopes and p values for seasonal analysis of loads.

Table M3. Distribution of load data by season. Also see Table K3 for distribution of parameter distribution by year.

APPENDIX N

Figure N1. Average winter base flow concentrations for the tributaries.

Figure N2. Average spring season base flow concentrations for the tributaries.

Figure N3. Average summer base flow concentrations for the tributaries.

Figure N4. Average fall base flow concentrations for the tributaries.

Figure N5. Average annual base flow concentrations for the tributaries.

APPENDIX O

Table O1. Raw data for the tributaries and R1 for base flow 1985 to mid-1997.

Table O2. Simple statistics and Pearson correlation coefficients and probability values for R1 for base flow 1985 to mid-1997.

Table O3. Simple statistics and Pearson correlation coefficients and probability values for Calf Creek for base flow 1985 to mid-1997.

Table O4. Simple statistics and Pearson correlation coefficients and probability values for Bear Creek for base flow 1985 to mid-1997.

Table O5. Simple statistics and Pearson correlation coefficients and probability values for Tomahawk Creek for base flow 1985 to mid-1997.

APPENDIX P

Table P1. Number of base flow samples out of total analyses exceeding standards and "average of base flow plus two standard deviations" for all Buffalo River tributaries for Bear Creek. Maximum concentration and date for maximum concentration are also provided.

Table P2. Number of base flow samples out of total analyses exceeding standards and "average of base flow plus two standard deviations" for all Buffalo River tributaries for Calf Creek. Maximum concentration and date for maximum concentration are also provided.

Table P3. Number of base flow samples out of total analyses exceeding standards and "average of base flow plus two standard deviations" for all Buffalo River tributaries for Tomahawk Creek. Maximum concentration and date for maximum concentration are also provided.

Table P4. Number of base flow samples out of total analyses exceeding standards and "average of base flow plus two standard deviations" for all Buffalo River tributaries for R1. Maximum concentration and date for maximum concentration are also provided.

APPENDIX A

Table A1. Ownership of tributary watersheds.

Table A2. Land use and land cover of the tributary, upper Buffalo River (R1) and entire Buffalo River watersheds by percent slope for 1965.

Table A3. Land use and land cover of the tributary, upper Buffalo River (R1) and entire Buffalo River watersheds for 1992.

Table A1. Ownership of the tributary watersheds.

	Private		Federal		Total
Tributary	Acres	%	Acres	%	Acres
Bear	58,700	99.66	200	0.34	58,900
Calf	30,500	96.52	1,100	3.48	31,600
Tomahawk	23,600	99.58	100	0.42	23,700

Table A2. Land use and land cover by acres and percentage of sub-basin for the tributaries, Upper Buffalo River and the entire Buffalo River watershed for 1992.

	Pasture		Forest		Other		Total
Tributary	Acres	%	Acres	%	Acres	%	Acres
Upper Bear Creek	17,121	33.33	33,049	64.34	1,194	2.33	51,364
Lower Bear Creek	2,300	31.88	4,699	65.13	216	3.00	7,215
Total of Bear Cree	19,421	33.15	37,748	64.44	1,411	2.41	58,579
Calf Creek	11,888	37.74	18,768	59.58	842	2.67	31,499
Tomahawk Creek	11,794	49.54	11,510	48.34	505	2.12	23,809
Upper Buffalo	4,885	14.18	29,336	85.14	234	0.68	34,455
Buffalo River	214,955	25.06	626,782	73.08	15,870	1.85	857,607

Table A3. Land use and land cover by acres and percentage of sub-basin for the tributaries, Upper Buffalo River and the entire Buffalo River watershed for 1965.

	Pasture		Forest		Other		Total
Tributary	Acres	%	Acres	%	Acres	%	Acres
Upper Bear Creek	12,715	24.76	38,214	74.40	435	0.85	51,364
Lower Bear Creek	1,303	18.06	5,849	81.07	62	0.86	7,215
Total of Bear Cree	14,019	23.93	44,063	75.22	497	0.85	58,579
Calf Creek	9,562	30.36	21,509	68.28	428	1.36	31,499
Tomahawk Creek	5,547	23.30	18,120	76.11	142	0.60	23,809
Upper Buffalo	1,641	4.76	32,708	94.91	113	0.33	34,461
Buffalo River	122,175	13.82	752,545	85.13	9,257	1.05	883,977

APPENDIX B

Table B1. Acres of inventoried problem areas compared to total drainage area.

Table B2. Problem areas acres and percent cover conditions.

Table B3. Soil texture of problem areas.

Table B4. Geology of problem areas in each watershed.

Table B5. Problem acres and proximity with respect to tributaries.

Table B6. Acres of problem area versus distance to nearest stream.

Table B7. Problem area acres by percent slope range.

Table B1. Acres of inventoried problem areas compared to total drainage area. After NCRS, 1995.

Tributary	Total Drainage Area (Acres)	Inventoried Problem Area (Acres)	%
Bear	23,613	9,191	39.00
Calf	58,933	17,409	30.00
Tomahawk	31,616	11,060	35.00

Table B2. Problem areas cover conditions by acres and percent of pasture area. After NCRS, 1995.

		Cover Conditions			
Tributary	Units	Good	Fair	Poor	Total
Bear	Acres	641	13,761	3,007	17,409
	%	3.68	79.05	17.27	100.00
Calf	Acres	91	8,819	2,150	11,060
	%	0.82	79.74	19.44	100.00
Tomahawk	Acres	1,089	2,947	5,155	9,191
	%	11.85	32.06	56.09	100.00

Table B3. Soil texture of problem areas. After NCRS, 1995.

		Soil Texture			
Tributary	Units	Sandy Loams	Silts	Clays	Total
Bear	Acres	0	17,409	0	17,409
	%	0	100.00	0	100.00
Calf	Acres	0	11,060	0	11,060
	%	0	100.00	0	100.00
Tomahawk	Acres	79	9,112	0	9,191
	%	0.86	99.14	0	100.00

Table B4. Geology of problem areas in each watershed.
After NCRS, 1995.

Tributary	Units	Shale	Sandstone	Limestone	Total
Bear	Acres	7,097	376	9,936	17,409
	%	40.77	2.16	57.07	100.00
Calf	Acres	2,633	0	8,427	11,060
	%	23.81	0.00	76.19	100.00
Tomahawk	Acres	0	2,946	6,245	9,191
	%	0.00	32.05	67.95	100.00

Table B5. Problem acres and proximity with respect to tributaries. After NCRS, 1995.

Tributary	Units	No Tributary	Tributary To Tributary	Tributary To River	Buffalo River	Total
Bear	Acres	9,254	5,932	2,223	0	17,409
	%	53.16	34.07	12.77	0.00	100.00
Calf	Acres	4,474	5,464	1,122	0	11,060
	%	40.45	49.40	10.14	0.00	100.00
Tomahawk	Acres	4,267	4,334	538	52	9,191
	%	46.43	47.15	5.85	0.57	100.00

Table B6. Acres of problem area versus distances to nearest stream. After NCRS, 1995.

Tributary		>1 mile	1/2 to 1 mile	< 1/2mile	Total
Bear	Acres	0	606	16,803	17,409
	%	0.00	3.48	96.52	100.00
Calf	Acres	0	0	11,060	11,060
	%	0.00	0.00	100.00	100.00
Tomahawk	Acres	235	2,102	6,854	9,191
	%	2.56	22.87	74.57	100.00

Table B7. Problem area by acres and percent slope range. After NCRS, 1995.

Tributary		Slope Range Percent 0-3%	4-8%	9-14%	>15%	Totals
Bear	Acres	2,380	8,303	5,937	789	17,409
	%	13.67	47.69	34.10	4.53	100.00
Calf	Acres	1,118	4,125	4,989	828	11,060
	%	10.11	37.30	45.11	7.49	100.00
Tomahawk	Acres	298	1,739	5,382	1,772	9,191
	%	3.24	18.92	58.56	19.28	100.00

APPENDIX C

Table C1. Land use and land cover by degrees of slope categories for the tributaries, upper Buffalo River and the entire Buffalo River watersheds for 1992.

Table C2. Land use and land cover by degrees of slope categories for the tributaries, upper Buffalo River and the entire Buffalo River watersheds for 1965.

Table C3. Land use and land cover by degrees of slope categories for the tributaries, upper Buffalo River and the entire Buffalo River watersheds for 1965.

Table C4. Land use and land cover by degrees of slope categories for the tributaries, upper Buffalo River and the entire Buffalo River watersheds for 1992.

Table C1. Land use and land cover by percent slope categories for tributaries, by acres and precentage of area sub-basin upper Buffalo River and the entire Buffalo River watershed for 1992.

Water Type	Land cover	Category 0-7%		Category 8-14%		Category >15%		All Categories
		acres	% of cover	acres	% of cover	acres	% of cover	Total Acres
Upper Bear Creek	Other	530	44.37	390	32.64	275	22.99	1,194
	Pasture	7,262	42.42	5,554	32.44	4,305	25.14	17,121
	Forest	3,708	11.22	6,711	20.30	22,630	68.47	33,049
	Total	11,501	22.39	12,654	24.64	27,209	52.97	51,364
Lower Bear Creek	Other	54	24.97	53	24.36	110	50.67	216
	Pasture	598	25.99	631	27.43	1,071	46.58	2,300
	Forest	487	10.37	939	19.99	3,272	69.64	4,699
	Total	1,139	15.78	1,623	22.49	4,453	61.72	7,215
Total of Bear Creek	Other	584	41.40	443	31.37	384	27.23	1,411
	Pasture	7,860	40.47	6,185	31.85	5,376	27.68	19,421
	Forest	4,195	11.11	7,650	20.27	25,902	68.62	37,747
	Total	12,639	21.58	14,277	24.37	31,662	54.05	58,579
Calf Creek	Other	384	45.62	242	28.71	216	25.67	842
	Pasture	5,981	50.31	3,532	29.71	2,376	19.99	11,888
	Forest	2,910	15.50	4,609	24.56	11,249	59.94	18,768
	Total	9,275	29.44	8,383	26.61	13,842	43.94	31,499
Tomahawk Creek	Other	150	29.82	186	36.92	168	33.26	505
	Pasture	3,297	27.95	4,491	38.08	4,006	33.97	11,794
	Forest	1,470	12.77	3,272	28.43	6,768	58.80	11,510
	Total	4,917	20.65	7,950	33.39	10,942	45.96	23,809
Upper Buffalo River	Other	51	21.65	73	31.05	111	47.29	234
	Pasture	800	16.38	1,241	25.41	2,844	58.21	4,885
	Forest	2,895	9.87	6,361	21.68	20,081	68.45	29,336
	Total	3,745	10.87	7,674	22.27	23,035	66.86	34,455
Buffalo River	Other	4,557	28.71	4,644	29.26	6,669	42.02	15,870
	Pasture	58,433	27.18	62,129	28.90	94,393	43.91	214,955
	Forest	57,896	9.24	128,178	20.45	440,708	70.31	626,782
	Total	120,886	14.10	194,950	22.73	541,771	63.17	857,607

Table C2. Land use and land cover by percent slope categories for tributaries, by acres and precentage of area sub-basin upper Buffalo River and the entire Buffalo River watershed for 1965.

Water Type	Land cover	Category 0-7%		Category 8-14%		Category >15%		All Categories
		acres	% of cover	acres	% of cover	acres	% of cover	Total Acres
Upper Bear Creek	Other	244	56.03	141	32.38	50	11.59	435
	Pasture	6,270	49.31	4,084	32.12	2,361	18.57	12,715
	Forest	4,987	13.05	8,429	22.06	24,797	64.89	38,214
	Total	11,501	22.39	12,654	24.64	27,209	52.97	51,364
Lower Bear Creek	Other	13	21.43	12	18.93	37	59.64	62
	Pasture	489	37.49	392	30.07	423	32.44	1,303
	Forest	637	10.89	1,219	20.84	3,993	68.27	5,849
	Total	1,139	15.78	1,623	22.49	4,453	61.72	7,215
Total of Bear Creek	Other	257	51.70	153	30.70	88	17.60	497
	Pasture	6,758	48.21	4,476	31.93	2,784	19.86	14,019
	Forest	5,624	12.76	9,648	21.90	28,791	65.34	44,063
	Total	12,639	21.58	14,277	24.37	31,662	54.05	58,579
Calf Creek	Other	168	39.30	158	37.02	101	23.68	428
	Pasture	5,702	59.63	2,700	28.24	1,161	12.14	9,562
	Forest	3,405	15.83	5,524	25.68	12,580	58.49	21,509
	Total	9,275	29.44	8,383	26.61	13,842	43.94	31,499
Tomahawk Creek	Other	39	27.43	54	38.40	48	34.17	142
	Pasture	2,035	36.69	2,241	40.40	1,270	22.90	5,547
	Forest	2,843	15.69	5,654	31.20	9,623	53.11	18,120
	Total	4,917	20.65	7,950	33.39	10,942	45.96	23,809
Upper Buffalo River	Other	19	17.19	38	33.60	55	49.21	113
	Pasture	478	29.21	600	36.69	558	34.10	1,635
	Forest	3,249	9.93	7,037	21.51	22,422	68.55	32,708
	Total	3,745	10.87	7,674	22.27	23,035	66.86	34,455
Buffalo River	Other	1,956	34.05	1,644	28.61	2,145	37.34	5,745
	Pasture	49,519	40.26	40,095	32.60	33,369	27.13	122,983
	Forest	69,411	9.52	153,211	21.02	506,256	69.46	728,879
	Total	120,886	14.10	194,950	22.73	541,771	63.17	857,607

Table C3. Land use and land cover by percent slope categories for the tributaries, upper Buffalo River and the entire Buffalo River watershed for 1965 by acres and percent of area sub-basin.

Watershed	Land cover	Category 0-7°		Category 7-14°		Category >15°		All Categories
		acres	%	arces	%	arces	%	Total Acres
Upper Bear Creek	Other	337	77.32	90	20.63	9	2.04	435
	Pasture	8,976	70.59	3,266	25.69	473	3.72	12,715
	Forest	9,441	24.71	18,294	47.87	10,480	27.42	38,214
	Total	18,753	36.51	21,650	42.15	10,961	21.34	51,365
Lower Bear Creek	Other	20	32.86	23	36.43	19	30.71	62
	Pasture	746	57.22	410	31.43	148	11.34	1,303
	Forest	1,309	22.38	2,658	45.43	1,883	81.07	5,850
	Total	2,075	28.76	3,090	42.83	2,050	28.41	7,215
Total of Bear Creek	Other	357	71.75	113	22.62	28	5.63	498
	Pasture	9,722	69.35	3,676	26.22	621	4.43	14,019
	Forest	10,750	24.40	20,951	47.55	12,363	28.06	44,064
	Total	20,828	35.56	24,740	42.23	13,012	22.21	58,580
Calf Creek	Other	278	64.95	125	29.28	25	5.73	428
	Pasture	7,592	79.40	1,785	18.67	185	1.93	9,562
	Forest	6,468	30.07	9,847	45.78	5,194	24.15	21,509
	Total	14,338	45.52	11,757	37.33	5,403	17.15	31,499
Tomahawk Creek	Other	70	49.69	63	44.51	8	5.80	142
	Pasture	3,457	62.33	1,979	35.68	111	23.30	5,548
	Forest	5,942	32.79	9,496	52.41	2,682	14.80	18,120
	Total	9,470	39.77	11,538	48.46	2,802	11.77	23,810
Upper Buffalo River	Other	37	32.50	68	35.22	10	7.84	115
	Pasture	854	52.27	669	27.70	111	6.38	1,635
	Forest	6,872	21.01	15,774	26.94	10,062	23.53	32,708
	Total	7,764	22.53	16,510	27.00	10,183	22.81	34,457
Buffalo River	Other	2,943	51.23	2,080	24.33	722	11.17	5,745
	Pasture	74,615	60.67	41,968	24.49	6,399	4.95	122,982
	Forest	147,510	20.24	349,328	26.66	232,041	24.15	728,879
	Total	225,068	26.24	393,376	26.40	239,162	21.81	857,606

Table C4. Land use and land cover by percent slope categories for the tributaries, upper Buffalo River and the entire Buffalo River watershed for 1992 by acres and percent of area sub-basin.

Watershed	Land cover	Category 0-7°		Category 7-14°		Category >15°		All Categories
		acres	%	arces	%	arces	%	Total Acres
Upper Bear Creek	Other	772	64.60	368	30.80	55	4.60	1,194
	Pasture	10,832	63.27	5,263	30.74	1,026	5.99	17,121
	Forest	7,150	21.63	16,020	48.47	9,880	29.89	33,049
	Total	18,754	36.51	21,650	25.78	10,961	17.59	51,364
Lower Bear Creek	Other	86	39.77	77	35.66	53	24.56	216
	Pasture	990	43.07	890	38.70	419	18.23	2,300
	Forest	999	21.25	2,122	45.17	1,578	4.13	4,699
	Total	2,075	28.76	3,090	25.01	2,050	22.13	7,215
Total of Bear Creek	Other	858	60.79	445	37.26	108	7.66	1,411
	Pasture	11,823	60.88	6,153	31.68	1,445	7.44	19,421
	Forest	8,148	21.59	18,142	48.06	11,458	30.35	37,748
	Total	20,829	35.56	24,739	42.23	13,011	22.21	58,579
Calf Creek	Other	549	65.22	221	26.20	72	8.58	842
	Pasture	8,365	70.36	2,919	25.55	605	5.09	11,888
	Forest	5,423	28.90	8,616	45.92	4,727	25.18	18,766
	Total	22,904	34.81	27,829	54.85	15,061	22.89	65,794
Tomahawk Creek	Other	264	52.25	203	40.13	38	7.62	505
	Pasture	6,013	50.98	4,996	42.36	786	6.66	11,794
	Forest	3,194	27.75	6,340	55.08	1,977	17.17	11,510
	Total	9,470	39.77	11,538	30.25	2,801	11.76	23,809
Upper Buffalo River	Other	89	37.99	124	32.65	21	9.12	234
	Pasture	1,514	30.99	2,047	24.79	1,324	27.11	4,885
	Forest	6,161	21.00	14,340	27.31	8,835	30.12	29,336
	Total	7,764	22.53	16,510	27.00	10,181	29.55	34,455
Buffalo River	Other	7,334	46.21	6,067	24.86	2,470	15.56	15,870
	Pasture	95,098	44.24	85,176	25.44	34,681	16.13	214,955
	Forest	122,637	19.57	302,133	26.72	202,012	32.23	626,782
	Total	225,069	26.24	393,376	26.40	239,162	27.89	857,607

APPENDIX D

Table D1. Tributary data for the April 29-30, 1994 storm.

Table D2. Tributary data for the November 3-5, 1994 storm.

Table D3. Tributary data for the January 13-14, 1995 storm.

Table D4. Tributary data for the December 17 and 18, 1995 storm.

Table D5. R1 data for 1989 storms.

Table D1. Tributary data for the April 29-30, 1994 storm.

RAIN EVENT DATA FROM APRIL 29 AND 30, 1994

Calf Creek (T10)
Rainfall data from Point Peter gauge

DATE AND TIME (mm/dd/yy) (2400)	Q cfs	TEMP Deg C	COND uS/cm	TURB FTU	pH	DO mg/L	FECAL COLIFORM col/100mL	TKN mg/L	NO3-N mg/L	NH3-N mg/L	OPO4-P mg/L	TP mg/L	TSS mg/L	CL mg/L	SO4 mg/L	TDS mg/L	CUMULATIVE RAINFALL Inches
4/29/94 10:00	75	14.0	193	30	7.9	8.8	3120	0.44	0.222	<0.050	<0.030	0.052	11	3.84	9.4	156	1.74
4/29/94 12:20	310	13.7	180	72	7.9	9.5	7200	1.05	0.333	<0.050	<0.030	0.167	84	3.38	8.4	155	1.82
4/29/94 13:50	660	13.5	142	170	7.8	10.3	34000	2.10	0.445	<0.050	0.052	0.511	234	3.53	10.4	146	1.82
4/29/94 15:15	580	13.8	126	90	7.8	10.4	16000	1.28	0.326	<0.050	0.055	0.324	118	2.93	8.4	135	1.82
4/29/94 17:02	440	13.9	122	55	8.0	10.2	11800	1.00	0.301	<0.050	0.036	0.198	65	2.77	7.4	132	1.82
4/29/94 20:00	280	13.8	142	38	8.0	10.2	5700	0.67	0.273	<0.050	<0.030	0.125	28	2.64	6.3	132	2.09
4/29/94 21:45	260	13.5	148	32	8.0	9.5	3200	0.67	0.272	<0.050	<0.030	0.094	16	2.63	5.2	136	2.09
4/30/94 5:00	680	13.2	142	90	7.9	10.4	17600	1.00	0.246	<0.050	0.044	0.219	117	2.92	6.3	133	2.80
4/30/94 7:00	2100	13.5	130	280	8.0	10.2	45200	2.40	0.260	<0.050	0.096	0.668	426	2.80	6.3	127	2.80
4/30/94 8:45	1450	13.9	132	110	8.0	10.2	12600	1.25	0.253	<0.050	0.069	0.355	144	2.83	5.2	114	2.80

Bear Creek (T12)
Rainfall data from Marshall gauge

4/29/94 10:15	62	15.0	168	5	7.7	8.8	290	0.47	0.315	<0.050	<0.030	0.052	2	4.00	8.4	126	1.18
4/29/94 12:43	170	15.1	168	15	7.6	8.7	1920	0.64	0.334	<0.050	<0.030	0.084	27	3.82	9.4	128	1.22
4/29/94 14:00	590	14.8	127	270	7.6	10.2	22300	2.25	0.635	0.269	0.160	0.710	419	4.39	12.3	138	1.22
4/29/94 16:00	550	14.8	127	85	7.8	9.1	15800	1.55	0.295	<0.050	0.053	0.334	116	3.32	9.4	121	1.22
4/29/94 17:35	450	14.3	112	45	7.9	9.4	9600	1.00	0.262	<0.050	0.050	0.188	49	3.16	7.4	116	1.30
4/29/94 20:30	350	14.1	109	12	7.9	9.4	5200	0.82	0.247	<0.050	<0.030	0.125	24	3.31	6.3	114	1.45
4/29/94 22:30	330	14.1	112	10	7.8	9.5	4600	0.73	0.256	<0.050	<0.030	0.105	18	3.01	6.3	112	1.45
4/30/94 5:30	740	.	.	120	7.9	.	15200	1.05	0.257	<0.050	0.032	0.271	164	3.22	7.4	129	2.12
4/30/94 7:45	2150	.	.	190	7.8	.	20800	1.65	0.249	<0.050	0.090	0.543	296	3.08	6.3	119	2.12
4/30/94 10:00	1600	14.0	123	75	7.8	10.2	7600	1.00	0.170	<0.050	0.056	0.271	93	2.62	5.2	99	2.12

RAIN EVENT DATA FROM APRIL 29 AND 30, 1994

Tomahawk Creek (T14)
Rainfall data from St.Joe gauge

DATE AND TIME (MM/DD/YY) (2400)	Q cfs	TEMP Deg C	COND uS/cm	TURB FTU	pH	DO mg/L	FECAL COLIFORM col/100mL	TKN mg/L	NO3-N mg/L	NH3-N mg/L	OPO4-P mg/L	TP mg/L	TSS mg/L	CL mg/L	SO4 mg/L	TDS mg/L	CUMULATIVE RAINFALL Inches
4/29/94 9:20	85	14.2	242	45	7.9	10.2	4400	0.90	0.402	<0.050	0.067	0.136	46	4.14	6.3	176	1.50
4/29/94 10:50	260	13.8	163	100	7.9	10.5	9750	1.55	0.355	0.182	0.105	0.344	171	4.79	8.4	148	1.54
4/29/94 11:45	328	13.4	145	130	7.8	10.0	7800	1.35	0.345	0.231	0.168	0.376	228	4.85	7.4	111	1.66
4/29/94 13:36	280	13.7	135	65	7.8	10.4	6450	0.90	0.314	0.108	0.093	0.219	87	3.69	6.3	136	1.66
4/29/94 14:45	280	13.8	145	42	7.8	10.2	5450	0.62	0.268	0.080	0.049	0.157	40	3.33	5.2	136	1.66
4/29/94 16:30	250	13.8	165	40	8.1	10.0	5000	0.58	0.260	0.077	<0.030	0.115	32	3.35	5.2	143	1.66
4/29/94 19:15	210	13.8	182	20	8.1	9.7	3000	0.45	0.281	<0.050	<0.030	0.084	22	2.97	5.2	150	1.90
4/29/94 23:00	190	13.3	193	17	8.1	10.0	3000	0.60	0.265	<0.050	0.066	0.198	18	2.97	5.2	151	1.90
4/30/94 6:15	535	13.3	158	90	8.1	10.5	8200	1.30	0.221	<0.050	0.043	0.209	128	2.94	5.2	101	2.33
4/30/94 8:00	440	13.6	178	60	8.1	10.5	5400	0.78	0.239	<0.050	<0.030	0.136	69	2.80	4.1	137	2.33

Table D2. Tributary data for the November 3-5, 1994 storm.

RAIN EVENT DATA FROM NOVEMBER 3-5, 19 94

Calf Creek (T10)

Rainfall data from Point Peter Gauge

	DATE AND TIME (mm/dd/yy) (2400)	Q cfs	TEMP Deg C	COND uS/cm	TURB FTU	pH	DO mg/L	FECAL COLIFORM col/100mL	TKN mg/L	NO3-N mg/L	NH3-N mg/L	OPO4-P mg/L	TP mg/L	TSS mg/L	CL mg/L	SO4 mg/L	TOC mg/L	TDS mg/L	CUMULATIVE RAINFALL inches
31	11/4/94 7:00	1100	.	.	300	.	.	7700	4.18	0.196	0.074	0.118	0.558	564	2.31	6.2	15.2	122	7.09
32	11/4/94 8:00	950	.	110	350	.	.	25000	3.83	0.366	0.074	0.127	0.659	447	2.48	6.2	9.2	128	7.09
33	11/4/94 9:45	300	.	128	192	.	.	11500	2.50	0.801	0.070	0.133	0.497	252	2.54	5.1	9.3	128	7.09
34	11/4/94 11:45	200	16.8	172	108	.	.	7800	1.25	0.923	0.066	0.102	0.578	84	2.69	5.1	7.3	132	7.09
35	11/4/94 13:50	92	17.0	199	56	.	.	7650	1.16	1.090	0.068	0.080	0.204	29	2.88	5.1	6.6	132	7.13
36	11/4/94 14:20	103	16.9	216	40	.	.	43000	0.85	1.220	0.057	0.080	0.164	15	2.95	4.0	5.4	142	7.72
37	11/4/94 18:45	280	16.3	182	74	.	.	24000	1.35	0.813	0.069	0.099	0.265	68	2.87	5.1	6.6	136	7.95
38	11/4/94 22:40	610	15.9	164	142	.	.	43000	1.57	0.761	0.070	0.145	0.457	162	2.85	6.2	8.0	136	8.58
39	11/5/94 2:30	3200	15.6	142	180	.	.	32000	1.93	0.602	0.070	0.168	0.598	216	2.46	6.2	10.2	128	9.13

RAIN EVENT DATA FROM NOVEMBER 3-5, 19 94

Bear Creek (T12)

Rainfall data from Marshall Gauge

	DATE AND TIME (mm/dd/yy) (2400)	Q cfs	TEMP Deg C	COND uS/cm	TURB FTU	pH	DO mg/L	FECAL COLIFORM col/100mL	TKN mg/L	NO3-N mg/L	NH3-N mg/L	OPO4-P mg/L	TP mg/L	TSS mg/L	CL mg/L	SO4 mg/L	TOC mg/L	TDS mg/L	CUMULATIVE RAINFALL inches
40	11/3/94 23:20	55	16.8	323	2	7.27	8.8	0	0.47	0.914	0.068	0.049	0.073	28	6.56	6.2	1.6	220	1.65
41	11/4/94 1:00	60	16.2	323	2	.	.	0	0.29	0.886	0.068	0.049	0.053	<0.5	6.51	7.3	1.1	220	1.69
42	11/4/94 7:25	60	.	339	2	.	.	0	0.24	0.902	0.065	0.052	0.063	1	6.46	7.3	1.2	214	2.20
43	11/4/94 22:10	500	16.3	164	310	.	.	43000	2.24	0.907	0.070	0.272	0.961	396	4.00	11.1	8.6	150	3.98
44	11/4/94 23:20	620	16.3	158	216	.	.	28000	1.69	0.648	0.074	0.211	0.648	247	3.74	11.1	8.1	142	4.25
45	11/5/94 3:00	1300	15.7	121	136	.	.	19000	1.30	0.532	0.057	0.167	0.497	168	3.09	9.3	9.6	114	4.88
46	11/5/94 5:45	2500	15.5	99	200	.	.	12750	1.88	0.528	0.072	0.172	0.689	355	2.80	7.3	10.0	106	6.34
47	11/5/94 8:50	6500	15.6	64	350	.	.	8100	2.60	0.323	0.073	0.165	1.030	662	2.09	7.3	9.4	84	6.50
48	11/5/94 11:10	5600	15.8	58	280	.	.	21000	1.95	0.328	0.071	0.091	0.759	445	2.07	6.2	9.1	72	6.57

RAIN EVENT DATA FROM NOVEMBER 3-5, 19 94

Tomahawk Creek (T14)

Rainfall data from St.Joe Gauge

	DATE AND TIME (MM/DD/YY) (2400)	Q cfs	TEMP Deg C	COND US/cm	TURB FTU	pH	DO mg/L	FECAL COLIFORM col/100mL	TKN mg/L	NO3-N mg/L	NH3-N mg/L	OPO4-P mg/L	TP mg/L	TSS mg/L	CL mg/L	SO4 mg/L	TOC mg/L	TDS mg/L	CUMULATIVE RAINFALL inches
49	11/3/94 22:45	20	18.2	240	19	.	9.6	15400	0.96	0.238	0.082	0.082	0.134	11	5.72	6.2	3.2	172	3.19
50	11/4/94 0:10	130	17.9	240	43	7.64	7.2	9250	1.25	0.270	0.071	0.053	0.174	112	4.80	6.2	3.4	172	3.66
51	11/4/94 1:43	980	17.5	110	800	8.02	.	41000	5.44	0.522	0.081	0.146	0.982	2010	3.50	9.3	13.1	128	3.82
52	11/4/94 3:15	1250	17.5	105	740	.	.	23000	7.38	0.348	0.083	0.110	0.992	1800	3.27	8.3	13.8	128	3.98
53	11/4/94 9:00	9000	.	79	480	.	.	20000	4.64	0.295	0.074	0.087	0.790	1190	2.12	7.3	12.3	136	5.43
54	11/4/94 11:00	3900	16.4	115	270	.	.	6000	2.25	0.510	0.071	0.060	0.436	417	2.37	6.2	9.9	124	5.43
55	11/4/94 13:20	1350	16.2	146	250	.	.	6000	1.16	0.757	0.072	0.052	0.245	127	2.79	5.1	6.7	122	5.43
56	11/4/94 15:25	930	16.1	169	90	.	.	12800	0.95	0.877	0.071	0.041	0.194	96	2.96	4.0	6.3	126	6.42
57	11/4/94 18:00	5100	16.1	127	260	.	.	6600	1.90	0.599	0.072	0.071	0.416	572	2.63	6.2	7.9	122	6.69
58	11/4/94 21:00	950	15.8	122	160	.	.	1800	1.17	0.523	0.052	0.071	0.255	203	2.22	5.1	8.3	116	6.93
59	11/5/94 3:50	3300	15.5	132	75	.	.	4000	0.76	0.654	0.075	0.062	0.174	146	2.76	4.0	6.2	106	7.52
60	11/5/94 6:30	8000	15.5	100	200	.	.	5000	1.51	0.433	0.071	0.078	0.376	434	2.23	5.1	7.7	98	8.03

Table D3. Tributary data for the January 13-14, 1995 storm.

RAIN EVENT DATA FROM JANUARY 13 AND 14, 1995

TOMAHAWK CREEK (T14)
Rainfall from St. Joe gauge

DATE AND TIME (mm/dd/yy) (2400)	Q cfs	TEMP Deg C	COND uS/cm	TURB FTU	pH	DO mg/L	FECAL COLIFORM col/100mL	TKN mg/L	NO3-N mg/L	NH3-N mg/L	OPO4-P mg/L	TSS mg/L	Cl mg/L	SO4 mg/L	TOC mg/L	TDS mg/L	CUMULATIVE RAINFALL Inches
1/13/95 0:05	15	13.2	336	1	8.05	12.2	650	0.81	0.356	<0.050	<0.020	1	4.53	11.97	3.0	181	0.79
1/13/95 0:55	24	12.7	325	13	8.20	11.7	2000	0.94	0.376	<0.050	<0.020	6	4.59	10.89	3.4	179	0.94
1/13/95 1:30	28	12.6	323	14	8.11	13.7	2300	0.68	0.356	<0.050	<0.020	7	4.01	10.89	3.7	177	0.98
1/13/95 2:00	68	12.8	328	9	8.13	12.8	1950	0.67	0.334	<0.050	<0.020	5	3.84	10.89	3.1	176	1.06
1/13/95 3:00	130	12.6	299	51	8.13	14.0	7600	1.08	0.310	<0.050	<0.020	49	4.18	15.93	8.4	174	1.14
1/13/95 4:00	175	14.8	242	82	8.05	9.8	16000	1.26	0.333	<0.050	<0.020	58	3.70	14.04	14	156	1.34
1/13/95 5:00	245	13.5	213	81	8.01	11.5	12050	1.48	0.317	<0.050	<0.020	59	3.21	13.05	16	147	1.42
1/13/95 6:00	350	13.1	185	68	7.92	10.3	9450	1.37	0.241	<0.050	<0.020	74	2.85	11.97	18	132	1.65
1/13/95 7:00	420	12.9	178	59	7.92	9.3	10400	1.50	0.249	<0.050	<0.020	58	2.76	9.63	17	122	1.69
1/13/95 8:00	750	12.9	156	120	7.95	9.2	8000	1.67	0.271	<0.050	<0.020	276	2.59	9.63	18	118	1.97
1/13/95 8:30	1350	12.2	150	130	7.88	9.1	17000	2.07	0.246	<0.050	<0.020	348	2.58	9.63	15	119	2.09
1/13/95 8:45	1900	11.0	133	180	7.87	10.0	12000	2.43	0.217	<0.050	<0.020	520	2.26	9.63	17	114	2.13
1/13/95 9:15	2900	11.1	123	430	7.95	9.7	9000	3.23	0.205	<0.050	<0.020	867	2.21	10.89	16	108	2.13
1/13/95 9:45	3400	12.0	120	400	7.90	9.1	14000	3.29	0.217	<0.050	<0.020	884	2.12	10.89	17	112	2.17
1/13/95 10:15	4600	12.2	119	410	7.92	9.5	18000	3.98	0.232	<0.050	<0.020	1044	2.12	10.89	19	121	2.17
1/13/95 10:45	4700	12.1	113	550	7.94	9.1	14000	3.40	0.242	<0.050	<0.020	1036	2.11	10.89	21	128	2.17
1/13/95 11:15	4100	11.9	113	380	7.82	9.6	5000	2.84	0.288	0.051	0.059	704	2.14	11.97	17	109	2.20
1/13/95 11:45	3500	11.9	118	250	7.89	9.9	6000	2.22	0.314	0.050	<0.020	533	2.12	10.89	14	108	2.20
1/13/95 12:15	2800	11.9	121	200	7.93	8.2	5200	1.79	0.347	<0.050	<0.020	389	2.05	10.89	16	110	2.20
1/13/95 12:45	2450	11.7	126	150	7.95	9.8	7850	1.42	0.392	<0.050	<0.020	316	2.15	9.63	16	110	2.24
1/13/95 13:15	2070	11.9	129	130	7.96	9.0	5600	1.54	0.401	<0.050	<0.020	262	1.97	9.63	13	110	2.28
1/13/95 13:50	1850	11.8	132	120	7.90	9.2	5300	1.34	0.427	<0.050	<0.020	230	2.02	9.63	12	106	2.28
1/13/95 14:15	1750	11.6	135	105	7.90	8.8	4500	1.30	0.444	<0.050	<0.020	176	2.47	8.37	11	107	2.28
1/13/95 14:45	.	11.6	138	95	7.86	9.0	5000	1.05	0.467	<0.050	<0.020	188	1.92	8.37	13	105	2.28
1/13/95 15:15	.	11.6	139	91	7.88	9.2	3500	0.97	0.494	<0.050	<0.020	165	2.17	8.37	11	105	2.28
1/13/95 16:15	.	11.5	139	83	7.99	8.9	3800	0.86	0.494	<0.050	<0.020	145	2.22	8.37	12	105	2.28
1/13/95 18:41	.	11.3	150	80	7.98	8.4	3000	0.74	0.524	<0.050	<0.020	111	2.11	6.84	11	103	2.28
1/14/95 9:30	.	.	.	.	.	.	.	.	.	.	.	20	.	.	.	.	.

Table D4. Tributary data for the December 17 and 18, 1995 storm.

RAIN EVEN DATA FROM DECEMBER 17 AND 18, 1995

Calf Creek (T10)

Rainfall data from Point Peter gauge

DATE AND TIME (mm/dd/yy) (2400)	Q cfs	TEMP Deg C	COND uS/cm	TURB FTU	pH	DO mg/L	FECAL COLIFORM col/100mL	TKN mg/L	NO3-N mg/L	NH3-N mg/L	OPO4-P mg/L	TP mg/L	TSS mg/L	CL mg/L	SO4 mg/L	TOC mg/L	TDS mg/L	CUMULATIVE RAINFALL inches
12/17/95 13:00	7	10.5	301	1	7.72	12.6	556	?0.20	0.671	<0.050	0.032	0.11	1	3.28	10.8	1.4	166	1.46
12/17/95 14:30	26	10.5	293	3	7.91	11.5	920	?0.34	0.344	<0.050	<0.030	0.12	2	5.40	9.7	1.8	163	1.61
12/17/95 16:00	40	8.8	244	220	7.90	11.8	22000	?0.84	0.564	<0.050	0.067	0.37	152	5.81	10.8	5.3	184	1.65
12/17/95 17:20	43	8.6	236	155	7.89	12.1	45000	?0.74	0.558	<0.050	0.083	0.34	56	5.90	11.8	7.0	184	1.69
12/17/95 19:00	25	8.9	253	77	7.83	12.3	24000	?0.62	0.546	<0.050	0.090	0.24	19	5.97	10.8	7.0	173	1.73
12/17/95 20:30	150	8.1	199	205	7.75	12.8	42400	?1.86	0.868	<0.050	0.269	0.72	219	4.46	14.8	10.2	176	1.73
12/17/95 22:15	130	8.5	195	105	8.40	12.7	22800	?1.11	0.673	<0.050	0.184	0.39	74	3.47	10.8	10.2	156	1.73
12/17/95 23:30	108	8.5	183	85	7.80	12.7	13800	?0.93	0.623	<0.050	0.166	0.28	45	3.40	10.8	12.6	146	1.73
12/18/95 0:45	100	8.7	182	70	7.90	13.1	13800	?0.84	0.625	<0.050	0.124	0.23	26	3.17	9.7	10.5	161	1.77
12/18/95 2:45	150	8.9	185	55	7.84	12.5	9200	?0.70	0.686	<0.050	0.110	0.18	14	3.61	9.7	9.0	139	1.77
12/18/95 5:35	58	9.3	195	43	7.89	12.6	6500	?0.59	0.717	<0.050	0.074	0.12	8	3.39	9.7	7.4	139	1.77
12/18/95 7:30	110	9.5	201	37	7.87	11.7	4600	?0.52	0.785	<0.050	0.058	0.11	3	3.88	9.7	6.8	137	1.77
12/18/95 10:00	43	9.8	209	32	7.84	10.5	2950	?0.41	0.757	<0.050	0.047	0.09	2	3.38	9.7	5.8	139	1.77
12/18/95 11:20	100	9.9	211	26	7.98	10.6	2620	?0.43	0.762	<0.050	0.059	0.08	1	3.40	10.8	5.8	139	1.81
12/18/95 13:30	40	10.2	213	26	7.92	10.5	2500	?0.37	0.773	<0.050	0.042	0.07	2	3.34	9.7	5.3	137	1.93

? = TKN analyses exceed EPA holding time by 3 days.

RAIN EVEN DATA FROM DECEMBER 17 AND 18, 1995

Bear Creek (T12)

Rainfall data from Marshall gauge

DATE AND TIME (mm/dd/yy) (2400)	Q cfs	TEMP Deg C	COND uS/cm	TURB FTU	pH	DO mg/L	FECAL COLIFORM col/100mL	TKN mg/L	NO3-N mg/L	NH3-N mg/L	OPO4-P mg/L	TP mg/L	TSS mg/L	CL mg/L	SO4 mg/L	TOC mg/L	TDS mg/L	CUMULATIVE RAINFALL inches
12/17/95 12:30	23	13.5	315	2	7.43	10.0	346	0.34	0.673	<0.050	<0.030	0.11	1	5.54	10.8	1.2	174	1.26
12/17/95 14:00	23	13.4	311	5	7.55	10.3	276	0.26	0.673	<0.050	<0.030	0.12	2	5.48	10.8	1.4	172	1.61
12/17/95 15:20	24	13.5	312	4	7.59	9.4	240	0.29	0.678	<0.050	0.034	0.15	1	5.63	10.8	7.9	172	1.85
12/17/95 18:00	620	8.5	220	210	7.71	12.3	40000	2.08	0.854	<0.050	0.177	0.87	325	5.92	15.8	9.5	164	2.01
12/17/95 18:30	820	8.3	178	185	7.90	12.5	33000	2.12	0.823	0.072	0.172	0.67	240	5.83	16.7	11.4	147	2.01
12/17/95 20:00	855	8.0	146	110	8.04	14.0	17200	0.77	0.704	<0.050	0.167	0.39	113	3.90	10.8	10.7	129	2.05
12/17/95 21:30	820	8.2	124	84	7.96	13.2	9000	1.01	0.618	<0.050	0.127	0.27	60	3.31	8.5	10.2	115	2.05
12/17/95 23:00	710	8.4	114	78	8.10	13.6	8200	0.88	0.590	<0.050	0.100	0.22	57	3.14	9.7	6.8	103	2.05
12/18/95 0:15	620	8.5	112	35	8.10	13.6	9000	0.51	0.648	<0.050	0.040	0.08	10	3.05	7.4	10.1	93	2.09
12/18/95 2:15	480	8.6	112	60	8.08	13.2	6000	0.71	0.591	<0.050	0.094	0.18	40	3.07	8.5	8.6	98	2.09
12/18/95 5:00	385	8.7	120	47	8.05	12.3	3700	0.79	0.616	<0.050	0.082	0.09	25	3.12	7.4	7.0	94	2.09
12/18/95 7:00	310	8.9	125	39	8.06	11.6	3400	0.59	0.638	<0.050	0.039	0.09	13	3.13	8.5	5.7	93	2.09
12/18/95 9:30	290	9.1	128	31	7.87	10.4	1900	0.48	0.663	<0.050	0.051	0.08	4	3.18	7.4	5.4	93	2.09
12/18/95 11:00	260	9.2	129	39	8.05	10.9	1820	0.43	0.723	<0.050	0.044	0.06	5	3.83	8.5	5.0	92	2.09
12/18/95 13:00	250	9.3	130	27	8.07	11.1	1180	0.38	0.334	<0.050	<0.030	0.06	3	4.42	8.5		91	2.17

Table D5. R1 data for 1989 storms.

SITE - Storm	DATE mm/dd/yy	TIME 24:00	Q cfs	TEMP Deg C	COND uS/cm	TURB FTU	pH	DO mg/L	F COLI col/100mL	TKN mg/L	NO3-N mg/L	NH3-N mg/L	TP mg/L	Cl mg/L
R1-1	1/25/89	19:35	90	8.4	75	14.0	8.11	9.8	90	0.74	<0.005	<0.01	0.018	2.0
R1-1	1/25/89	21:30	130	8.1	83	14.0	7.72	9.7	10	0.82	<0.005	<0.01	0.005	2.0
R1-1	1/25/89	23:20	165	7.9	86	14.0	7.68	9.9	20	1.23	<0.005	0.07	0.015	2.0
R1-1	1/26/89	1:00	1100	7.6	48	39.0	7.52	10.1	500	1.60	0.020	0.12	0.069	1.5
R1-1	1/26/89	3:00	1200	7.6	40	42.5	7.44	10.1	360	1.28	0.016	0.03	0.072	2.0
R1-1	1/26/89	5:30	1100	7.4	41	36.0	7.34	10.2	230	1.49	<0.005	0.03	0.046	1.5
R1-1	1/26/89	9:30	900	7.1	46	30.0	7.33	10.7	120	0.78	0.007	<0.01	0.024	2.0
R1-1	1/26/89	12:00	700	6.8	46	27.0	7.38	10.6	110	1.00	<0.005	<0.01	0.022	2.0
R1-1	1/26/89	15:30	600	6.7	51	23.5	7.32	10.6	70	0.54	0.020	<0.01	0.019	2.0
R1-1	1/26/89	18:00	550	6.6	49	22.0	7.42	10.6	30	1.00	<0.005	<0.01	0.032	1.5
R1-2	1/28/89	20:45	440	5.8	66	16.0	7.60	10.9	8	0.87	<0.005	0.02	<0.005	2.5
R1-2	1/29/89	3:00	700	5.9	47	16.0	7.53	10.9	184	0.87	0.011	0.05	<0.005	.
R1-2	1/29/89	8:00	500	6.2	50	16.0	7.42	10.4	72	0.82	<0.005	0.07	0.014	2.5
R1-2	1/29/89	11:00	450	6.3	56	14.5	7.61	10.5	8	0.95	0.014	0.02	0.014	2.0
R1-2	1/29/89	15:00	420	6.7	51	13.5	7.52	10.7	16	0.54	0.009	<0.01	<0.005	2.0
R1-3	5/8/89	16:15	40	14.6	106	3.3	7.88	9.1	114	<0.05	0.005	<0.01	0.011	.
R1-3	5/8/89	18:00	40	14.8	108	5.7	7.79	9.3	70	0.05	<0.005	<0.01	0.006	.
R1-3	5/8/89	20:30	40	14.7	.	8.9	7.76	9.3	12	<0.05	<0.005	0.05	0.019	.
R1-3	5/9/89	9:30	50	14.4	119	2.3	7.76	9.6	12	<0.05	<0.005	0.08	0.017	.
R1-4	5/22/89	10:20	380	15.1	52	1.6	7.70	9.2	320	0.44	<0.005	<0.01	0.045	.
R1-4	5/22/89	12:00	520	14.9	51	2.2	7.61	9.2	240	0.35	<0.005	<0.01	0.038	.
R1-4	5/22/89	13:45	640	15.2	47	2.7	7.57	9.7	270	0.38	<0.005	<0.01	0.045	.
R1-4	5/22/89	16:00	640	16.0	42	2.5	7.59	10.1	520	0.30	<0.005	<0.01	0.042	.
R1-4	5/22/89	18:00	560	16.0	39	2.4	7.67	10.0	250	0.22	<0.005	<0.01	0.055	.
R1-4	5/22/89	20:00	500	15.9	41	2.2	7.59	9.5	240	0.12	<0.005	<0.01	0.052	.
R1-4	5/23/89	4:00	440	14.6	44	1.8	7.58	8.8	40	0.07	<0.005	<0.01	0.048	.
R1-4	5/23/89	9:00	390	14.0	48	1.5	7.58	9.2	10	<0.05	<0.005	<0.01	0.019	.
R1-4	5/23/89	12:00	360	13.9	48	1.4	7.65	10.0	20	0.05	0.006	<0.01	0.048	.

APPENDIX E

Base flow data for R1 and the tributaries from 1985-mid 1997.

STREAM	DATE	TIME	Q	TEMP	COND	TURB	pH	DO	F COLI	TKN	NO3-N	NH3-N	OPO4-P	TP	CL	SO4
			cfs	Deg C	uS/cm	FTU		mg/L	col/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
R1	3/25/85	1415	.	13.0	40	.	.	11.0	0	.	.	.	.	.	.	.
R1	4/8/85	1204	.	13.0	43	5.0	.	.	2	<0.050	0.020	.	.	0.004	.	.
R1	4/23/85	1200	.	.	.	.	.	6.0	52	.	.	.	.	.	.	.
R1	5/15/85	1130	.	17.1	64	.	.	.	4	.	.	.	.	.	.	.
R1	6/14/85	1130	.	19.0	91	.	.	.	2	.	.	.	.	.	.	.
R1	7/1/85	1500	.	26.0	138	.	.	.	2	.	.	.	.	.	.	.
R1	7/9/85	1610	.	30.0	159	.	.	10.0	0	.	.	.	.	.	.	.
R1	7/20/85	1200	.	30.1	170	.	.	10.0	0	0.100	0.030	.	.	0.007	.	.
R1	8/24/85	1145	.	26.0	165	.	.	.	0	.	.	.	.	.	.	.
R1	9/21/85	1245	.	24.0	175	.	.	9.0	4	0.200	0.010	.	.	0.004	.	.
R1	12/21/85	850	.	4.0	30	.	.	12.0	6	<0.050	0.010	.	.	0.004	.	.
R1	5/7/86	950	.	17.5	68	.	.	.	8	.	.	.	.	.	.	.
R1	6/30/86	1010	.	23.5	105	.	.	9.0	14	.	0.030	.	0.003	0.009	.	.
R1	7/19/86	1445	.	25.5	143	.	.	.	6	.	.	.	.	.	.	.
R1	8/19/86	1820	.	25.5	130	.	.	9.0	2	.	0.035	.	0.009	0.018	.	.
R1	9/13/86	1300	.	23.0	150	.	.	.	0	.	0.040	.	<0.030	0.003	.	.
R1	12/23/86	948	.	6.0	53	.	7.35	.	0	.	.	.	.	.	.	.
R1	1/28/87	945	.	4.0	35	.	.	11.0	0	.	.	.	.	.	.	.
R1	5/27/87	930	.	20.0	67	.	.	8.5	0	<0.050	0.450	0.020	.	0.008	.	.
R1	6/11/87	1000	.	20.5	80	.	7.90	.	2	.	.	.	.	.	.	.
R1	7/21/87	1730	.	27.0	155	.	8.92	7.3	2	0.300	0.030	.	.	0.015	.	.
R1	8/3/87	940	.	26.0	175	.	7.80	.	10	.	.	.	.	.	.	.
R1	9/30/87	650	.	14.5	175	.	7.40	7.9	0	0.200	0.040	.	.	0.012	.	.
R1	11/15/87	757	.	12.5	90	.	.	.	2	.	.	.	.	.	.	.
R1	2/3/88	1700	.	5.9	29	.	7.88	.	2	0.080	0.030	.	.	0.004	.	.
R1	3/30/88	912	.	8.0	18	.	8.21	10.0	16	<0.050	0.010	.	.	0.006	.	.
R1	5/3/88	1620	.	18.0	51	.	8.60	.	2	<0.050	.	.	.	0.006	.	.
R1	11/18/88	1541	.	9.9	110	1.5	7.72	10.7	5	0.580	<0.005	<0.050	.	0.006	.	.

STREAM	DATE	TIME	Q	TEMP	COND	TURB	pH	DO	F COLI	TKN	NO3-N	NH3-N	OPO4-P	TP	CL	SO4
			cfs	Deg C	uS/cm	FTU		mg/L	col/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
R1	1/20/89	1000	.	4.8	46	1.5	7.50	15.1	0	.	.	.	.	.	.	.
R1	2/11/89	1920	.	5.3	48	4.0	7.74	10.7	0	.	.	.	.	.	.	.
R1	3/12/89	2010	.	8.6	47	6.4	7.81	9.0	6	1.390	0.040	0.220	.	0.027	6.00	.
R1	4/21/89	1645	.	17.5	87	2.5	7.88	8.9	5	.	.	.	.	.	.	.
R1	7/21/89	1130	.	18.8	135	1.1	8.09	9.6	8	0.050	0.015	<0.050	.	0.002	.	.
R1	8/24/89	920	.	20.0	138	1.4	7.92	8.5	20	.	.	.	.	.	.	.
R1	9/19/89	910	.	17.4	135	1.1	7.99	9.3	20	.	.	.	.	.	.	.
R1	10/17/89	1645	.	14.2	145	0.9	8.22	9.9	2	1.080	0.005	0.010	.	0.005	.	.
R1	11/14/89	1600	.	19.7	150	1.2	8.34	9.7	4	0.200	0.030	<0.050	.	0.010	.	.
R1	12/6/89	1130	.	7.0	120	0.8	8.10	11.1	0	.	.	.	.	.	.	.
R1	1/22/90	1220	.	6.8	17	0.1	6.81	8.7	4	0.340	0.120	<0.050	0.060	0.040	.	6.0
R1	2/22/90	1130	.	8.0	30	4.1	7.11	10.3	0	0.430	<0.005	<0.050	<0.030	0.080	2.00	3.0
R1	3/26/90	1010	.	8.0	32	3.5	7.69	10.5	0	0.210	<0.005	0.050	0.090	0.030	1.00	4.0
R1	4/23/90	1136	.	15.0	24	12.0	7.34	9.0	30	0.600	0.050	<0.050	<0.030	0.050	2.00	4.0
R1	5/7/90	1030	.	13.5	47	7.2	7.35	9.5	6	0.600	0.030	0.170	<0.030	0.060	16.00	7.0
R1	6/18/90	1005	.	23.5	76	1.5	7.62	7.4	10	0.310	0.050	0.050	<0.030	0.002	2.00	2.0
R1	7/30/90	1150	.	25.0	.	1.8	7.72	.	12	0.350	0.100	.	0.030	0.030	1.00	4.0
R1	8/27/90	930	.	24.1	145	1.6	7.69	7.1	2	0.500	0.040	<0.050	0.060	0.030	3.00	5.0
R1	9/24/90	1230	.	18.6	162	1.2	7.85	7.9	2	0.280	0.170	0.070	<0.030	0.040	3.00	3.0
R1	10/22/90	945	.	12.4	88	1.2	7.56	8.5	6	0.410	<0.005	0.090	<0.030	0.040	3.00	5.0
R1	11/18/90	1015	.	10.5	93	0.9	8.11	9.0	2	0.260	0.120	<0.050	0.030	0.040	5.00	8.0
R1	12/17/90	915	.	9.2	54	3.5	7.76	9.0	0	0.230	0.040	0.060	<0.030	0.080	2.00	6.0
R1	1/28/91	930	.	4.8	32	3.2	7.78	10.8	2	.	.	<0.050	<0.030	.	.	3.0
R1	2/25/91	944	.	7.9	43	1.5	7.90	10.8	6	.	<0.005	0.110	0.030	.	.	7.0
R1	4/22/91	1115	.	12.0	32	6.0	7.64	10.0	8	.	0.020	<0.050	<0.030	.	.	3.0
R1	6/24/91	920	.	22.0	112	8.2	7.63	5.8	272	.	0.030	<0.050	0.040	.	.	4.0
R1	7/22/91	1009	.	24.8	162	2.4	7.53	4.6	24	.	0.020	0.080	0.080	.	.	4.0
R1	9/23/91	940	.	16.4	157	1.3	7.65	8.5	14	.	0.190	0.120	<0.030	0.050	.	8.0

STREAM	DATE	TIME	Q	TEMP	COND	TURB	pH	DO	F COLI	TKN	NO3-N	NH3-N	OPO4-P	TP	CL	SO4
			cfs	Deg C	uS/cm	FTU		mg/L	col/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
R1	10/21/91	1020	.	12.0	150	0.8	7.76	9.0	0	.	<0.005	<0.050	<0.030	0.040	.	8.0
R1	12/16/91	930	.	6.5	32	0.5	8.60	12.2	4	.	<0.005	0.050	0.030	.	.	2.0
R1	2/3/92	934	33.9	7.0	56	2.3	.	11.8	2	.	<0.005	<0.050	<0.030	.	3.00	2.0
R1	6/23/92	955	45.9	19.0	45	3.8	7.49	8.9	8	.	0.020	0.050	0.050	0.052	2.00	3.0
R1	8/3/92	1015	5.0	22.5	119	1.3	7.48	7.8	.	.	0.030	.	0.093	0.002	2.00	5.0
R1	9/28/92	950	9.9	15.9	110	1.1	8.29	9.2	10	.	<0.005	<0.050	0.081	0.002	2.00	2.0
R1	11/30/92	930	66.2	7.5	38	5.8	7.14	13.0	12	.	<0.005	<0.050	<0.030	.	2.00	6.0
R1	2/1/93	810	85.0	4.8	34	4.5	8.08	11.1	11	.	<0.005	<0.050	<0.030	.	0.50	8.0
R1	3/22/93	1007	213.0	7.5	31	0.7	7.92	11.1	2	.	.	.	.	.	.	.
R1	6/21/93	930	9.0	21.3	101	1.8	7.51	6.9	9	.	0.040	0.078	0.044	.	.	3.0
R1	8/16/93	1050	10.0	26.3	178	0.9	7.65	5.6	12	.	<0.005	<0.050	<0.030	.	2.00	6.0
R1	9/27/93	1245	67.0	17.5	82	6.5	7.93	8.7	38	.	<0.005	<0.050	0.049	.	2.00	6.0
R1	12/6/93	920	165.7	7.2	32	7.6	7.48	8.7	9	.	<0.005	<0.050	<0.030	.	2.00	3.0
R1	2/7/94	940	56.8	4.5	32	3.5	7.25	11.8	3	.	.	.	0.033	.	.	7.0
R1	4/4/94	928	95.0	9.5	35	5.2	8.30	10.8	6	.	<0.005	0.137	0.055	.	2.00	1.0
R1	6/13/94	1020	2.4	22.0	105	1.4	7.71	7.8	8	.	0.080	<0.050	<0.030	.	2.00	10.0
R1	8/29/94	1050	4.0	22.4	123	2.1	7.47	6.8	12	.	<0.005	<0.050	0.045	.	2.00	5.0
R1	10/17/94	1000	0.5	16.8	183	0.9	8.30	7.6	9	.	0.060	<0.050	<0.030	.	3.00	8.0
R1	5/15/95	1610	118.0	18.9	53	7.0	8.29	9.3	6	.	<0.005	<0.050	0.033	.	1.27	6.9
R1	8/14/95	930	1.0	25.1	165	1.2	7.21	6.4	1	.	<0.005	0.057	0.034	.	1.63	1.4
R1	10/2/95	920	1.0	17.1	193	1.8	7.45	9.2	14	.	0.036	<0.050	<0.030	.	2.79	10.0
R1	11/27/95	940	2.4	10.9	134	1.5	7.09	12.4	2	.	<0.005	<0.050	<0.030	.	2.91	12.0
R1	1/8/96	1000	37.0	1.8	80	0.3	6.83	15.0	0	.	<0.005	0.084	<0.030	.	1.66	7.2
R1	7/22/96	910	1.6	23.7	123	1.2	7.41	6.0	8	.	0.227	<0.050	0.047	.	1.40	.
R1	1/27/97	930	114.0	5.9	48	8.0	7.25	14.1	2	.	.	.	.	.	.	.
R1	6/9/97	930	11.8	18.0	76	2.5	7.35	8.1	4	.	.	.	.	.	.	.

STREAM	DATE	TIME	Q	TEMP	COND	TURB	pH	DO	F COLI	TKN	NO3-N	NH3-N	OPO4-P	TP	CL	SO4
			cfs	Deg C	uS/cm	FTU		mg/L	col/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CALF	4/10/85	1431	.	16.0	218	.	.	.	12	.	.	.	.	.	.	.
CALF	5/13/85	1515	.	22.0	245	.	.	.	72	.	.	.	.	.	.	.
CALF	5/30/85	1100	.	19.8	248	.	.	.	0	.	.	.	.	.	.	.
CALF	6/12/85	1345	.	22.7	270	.	.	.	4	.	.	.	.	.	.	.
CALF	6/26/85	1056	.	23.0	290	.	.	.	6	.	.	.	.	.	.	.
CALF	7/19/85	1015	.	22.0	279	.	.	.	14	.	.	.	.	.	.	.
CALF	8/2/85	1245	.	24.0	302	.	.	.	18	.	.	.	.	.	.	.
CALF	8/21/85	1350	.	25.8	312	.	.	.	10	.	.	.	.	.	.	.
CALF	9/1/85	1500	.	28.0	330	.	.	.	0	.	.	.	.	.	.	.
CALF	9/22/85	1400	.	25.0	302	.	.	.	0	.	.	.	.	.	.	.
CALF	6/18/87	1510	.	23.0	275	.	7.91	.	28	.	.	.	.	.	.	.
CALF	7/14/87	1415	.	26.0	320	.	7.96	.	14	.	.	.	.	.	.	.
CALF	8/6/87	1347	.	27.0	320	.	7.95	.	84	.	.	.	.	.	.	.
CALF	9/20/87	1130	.	22.0	300	.	7.21	.	.	.	.	.	.	.	.	.
CALF	6/14/88	1030	.	21.0	.	1.0	7.79	.	12	.	.	.	.	.	.	.
CALF	6/29/88	1320	.	23.2	310	17.5	7.70	.	8	.	.	.	.	.	.	.
CALF	7/23/88	1300	.	24.5	290	2.4	7.69	.	8	.	.	.	.	.	.	.
CALF	8/18/88	1445	.	24.1	325	2.6	7.84	9.3	20	.	.	.	.	.	.	.
CALF	6/7/89	1400	.	18.5	228	1.4	.	9.3	10	0.100	0.130	0.020	.	0.024	.	.
CALF	6/21/89	1000	.	21.8	225	1.4	7.82	8.0	20	.	.	.	.	.	.	.
CALF	7/10/89	1340	.	26.0	275	1.5	7.75	9.2	12	0.400	0.300	0.100	.	0.029	.	.
CALF	7/25/89	1300	.	20.8	318	1.4	7.81	9.2	0	.	.	.	.	.	.	.
CALF	8/8/89	1400	.	22.6	282	2.1	7.78	8.4	0	0.200	0.130	0.050	.	0.034	.	.
CALF	8/23/89	1250	.	23.8	315	2.7	7.75	8.7	2	.	.	.	.	.	.	.
CALF	9/6/89	1340	.	25.2	290	2.5	7.77	8.6	46	0.100	0.180	0.030	.	0.030	.	.
CALF	9/25/89	1300	.	19.0	272	2.3	7.81	9.6	12	0.100	0.190	0.070	.	0.043	.	.
CALF	4/4/90	1058	.	11.1	.	1.7	8.29	11.3	0	.	.	.	.	.	.	.
CALF	5/14/90	1405	.	17.0	240	2.7	8.01	9.4	24	.	.	.	.	.	.	.

STREAM	DATE	TIME	Q	TEMP	COND	TURB	pH	DO	F COLI	TKN	NO3-N	NH3-N	OPO4-P	TP	CL	SO4
			cfs	Deg C	uS/cm	FTU		mg/L	col/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CALF	6/25/90	1045	.	22.2	263	1.9	7.67	7.5	12	.	.	.	.	.	.	.
CALF	7/18/90	1405	.	25.4	305	1.8	7.80	9.4	12	.	.	.	.	.	.	.
CALF	8/24/90	1355	.	26.9	315	2.0	7.78	8.2	18	.	.	.	.	.	.	.
CALF	9/17/90	1500	.	22.0	285	4.2	7.69	6.3	29	.	.	.	.	.	.	.
CALF	10/12/90	1530	.	18.2	252	3.1	7.63	8.2	66	.	.	.	.	.	.	.
CALF	11/8/90	1500	.	14.3	232	0.5	8.07	9.4	2	.	.	.	.	.	.	.
CALF	12/5/90	1132	.	11.3	195	2.5	8.05	9.7	64	.	.	.	.	.	.	.
CALF	2/28/91	1135	.	10.0	186	1.2	8.29	12.5	0	.	.	.	.	.	.	.
CALF	3/8/91	1215	.	12.2	190	0.6	8.22	11.6	0	.	.	.	.	.	.	.
CALF	4/24/91	1450	.	18.9	223	2.5	8.04	9.7	20	.	.	.	.	.	.	.
CALF	5/22/91	1215	.	19.0	235	3.2	8.10	7.5	156	.	.	.	.	.	.	.
CALF	6/17/91	1220	.	23.2	282	0.6	7.82	8.3	16	.	.	.	.	.	.	.
CALF	7/25/91	1250	.	22.5	292	0.8	7.79	7.0	36	.	.	.	.	.	.	.
CALF	8/22/91	1200	.	24.0	292	1.4	7.96	9.2	32	.	.	.	.	.	.	.
CALF	9/19/91	1125	.	20.3	280	1.4	7.87	9.4	20	.	.	.	.	.	.	.
CALF	10/15/91	1330	.	19.0	274	1.3	7.82	9.6	8	.	.	.	.	.	.	.
CALF	11/25/91	1400	.	12.0	180	2.6	7.88	10.2	44	.	.	.	.	.	.	.
CALF	12/11/91	1140	.	12.8	181	2.2	8.19	11.4	90	.	.	.	.	.	.	.
CALF	1/6/92	1320	32.8	11.5	185	1.2	8.49	12.7	23	.	0.240	<0.050	<0.030	.	4.00	13.0
CALF	4/6/92	1245	22.4	13.0	200	1.4	8.13	11.1	14	.	0.090	0.090	<0.030	0.040	4.00	12.0
CALF	6/1/92	1500	29.7	18.7	215	2.4	7.98	9.6	132	.	0.080	0.060	<0.030	0.002	3.00	11.0
CALF	7/21/92	950	9.9	21.8	295	1.1	.	8.7	24	.	0.230	0.082	0.060	0.002	4.00	10.0
CALF	9/14/92	1300	5.1	24.0	310	2.2	7.94	11.2	38	.	0.440	<0.050	0.040	0.047	5.00	10.0
CALF	11/2/92	1315	9.1	18.3	273	1.2	7.80	9.9	20	.	0.080	<0.050	<0.030	0.002	5.00	11.0
CALF	2/2/93	1530	31.0	9.5	178	0.9	8.23	11.9	0	.	0.200	<0.050	<0.030	.	4.00	13.0
CALF	4/26/93	1015	56.3	13.4	208	1.6	8.21	10.2	28	.	.	<0.050	.	.	.	.
CALF	7/13/93	1100	6.9	23.8	302	4.2	7.42	8.3	2	.	0.280	<0.050	<0.030	.	5.00	10.0
CALF	10/18/93	1050	4.9	18.0	268	1.4	7.73	7.5	47	.	<0.005	<0.050	<0.030	.	0.50	0.5

STREAM	DATE	TIME	Q	TEMP	COND	TURB	pH	DO	F COLI	TKN	NO3-N	NH3-N	OPO4-P	TP	CL	SO4
			cfs	Deg C	uS/cm	FTU		mg/L	col/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CALF	1/10/94	1140	9.1	8.5	185	0.6	8.24	11.8	2	.	0.140	<0.050	<0.030	.	5.00	11.0
CALF	3/21/94	1305	66.9	15.1	201	2.5	8.40	11.5	11	.	0.330	0.118	0.090	.	4.00	10.0
CALF	5/16/94	1220	28.4	18.9	240	1.2	8.16	9.7	12	.	.	<0.050	.	.	.	.
CALF	7/11/94	1540	5.1	25.4	301	1.0	8.06	10.7	6	.	0.310	<0.050	<0.030	.	4.00	9.0
CALF	9/19/94	1030	1.3	21.0	281	4.3	7.67	13.8	15	.	0.190	0.102	0.060	.	6.00	11.0
CALF	1/9/95	1320	35.5	8.4	263	0.9	8.09	.	1	.	0.213	<0.050	<0.030	.	4.00	11.0
CALF	4/10/95	1020	16.5	16.3	287	0.6	7.45	8.5	10	.	0.179	<0.050	0.034	.	3.81	11.0
CALF	7/10/95	1145	14.3	23.1	314	1.3	7.56	9.8	65	.	0.284	0.112	<0.030	.	4.97	12.0
CALF	9/4/95	1105	2.5	21.9	320	2.5	7.28	5.3	159	.	0.196	<0.050	<0.030	.	4.72	12.0
CALF	10/30/95	1345	9.2	16.4	317	1.3	7.76	12.0	105	.	1.275	0.088	<0.030	.	5.17	10.0
CALF	2/5/96	1010	16.5	4.8	253	0.5	7.70	16.4	16	.	0.502	<0.050	0.033	.	4.08	.
CALF	8/12/96	1040	3.1	22.3	304	1.0	7.79	8.5	26	.	0.227	<0.050	0.048	.	5.64	.
CALF	10/21/96	1340	7.4	17.5	324	2.3	7.20	7.1	17	.	0.523	<0.050	0.068	.	5.02	.
CALF	1/6/97	1100	29.1	9.7	279	0.5	8.57	12.3	5	.	.	.	.	.	.	.

STREAM	DATE	TIME	Q	TEMP	COND	TURB	pH	DO	F COLI	TKN	NO3-N	NH3-N	OPO4-P	TP	CL	SO4
			cfs	Deg C	uS/cm	FTU		mg/L	col/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BEAR	4/10/85	1516	.	16.2	171	.	.	.	8	.	.	.	.	.	.	.
BEAR	5/13/85	1605	.	23.3	215	.	.	.	30	.	.	.	.	.	.	.
BEAR	5/27/85	1520	.	23.9	238	.	.	.	22	.	.	.	.	.	.	.
BEAR	6/12/85	1045	.	21.9	238	.	.	.	48	.	.	.	.	.	.	.
BEAR	6/26/85	1330	.	27.0	280	.	.	.	44	.	.	.	.	.	.	.
BEAR	7/19/85	1230	.	26.0	270	.	.	.	28	.	.	.	.	.	.	.
BEAR	8/4/85	1350	.	25.0	250	.	.	.	4	.	.	.	.	.	.	.
BEAR	8/22/85	1510	.	26.0	240	.	.	.	20	.	.	.	.	.	.	.
BEAR	9/2/85	1120	.	27.0	255	.	.	.	14	.	.	.	.	.	.	.
BEAR	6/17/87	1110	.	25.0	240	.	8.15	.	42	.	.	.	.	.	.	.
BEAR	7/15/87	1340	.	26.0	250	.	8.25	.	10	.	.	.	.	.	.	.
BEAR	8/12/87	1440	.	29.5	230	.	8.71	.	22	.	.	.	.	.	.	.
BEAR	9/20/87	1340	.	22.0	240	.	8.89	.	.	.	.	.	.	.	.	.
BEAR	6/14/88	1213	.	29.0	.	0.9	7.82	.	20	.	.	.	.	.	.	.
BEAR	7/5/88	1015	.	24.8	304	1.1	7.53	.	16	.	.	.	.	.	.	.
BEAR	7/29/88	1035	.	26.1	268	0.5	7.47	7.1	16	.	.	.	.	.	.	.
BEAR	8/8/88	1350	.	27.8	255	0.5	8.10	8.1	14	.	.	.	.	.	.	.
BEAR	9/4/88	1020	.	21.0	208	0.5	7.45	8.1	20	.	.	.	.	.	.	.
BEAR	6/7/89	1200	.	20.9	210	1.1	.	10.0	20	0.100	0.080	0.020	.	0.020	.	.
BEAR	6/21/89	1100	.	24.0	182	2.0	8.32	9.0	36	.	.	.	.	.	.	.
BEAR	7/11/89	1445	.	29.7	290	1.5	8.54	9.4	10	0.300	0.040	0.060	.	0.002	.	.
BEAR	7/26/89	1400	.	23.1	275	3.7	8.44	9.5	15	.	.	.	.	.	.	.
BEAR	8/9/89	1230	.	21.6	230	1.6	8.27	10.0	14	0.100	0.070	0.070	.	0.022	.	.
BEAR	8/22/89	1330	.	24.8	278	1.5	8.25	9.3	18	.	.	.	.	.	.	.
BEAR	9/11/89	1130	.	22.5	245	1.2	8.05	8.3	18	0.100	0.040	0.040	.	0.024	.	.
BEAR	9/26/89	1300	.	16.1	218	0.9	.	10.1	4	<0.050	0.030	0.010	.	0.014	.	.
BEAR	4/4/90	1258	.	12.5	.	2.5	8.45	11.5	6	.	.	.	.	.	.	.
BEAR	5/14/90	1220	.	15.0	178	2.8	8.27	9.9	26	.	.	.	.	.	.	.

STREAM	DATE	TIME	Q	TEMP	COND	TURB	pH	DO	F COLI	TKN	NO3-N	NH3-N	OPO4-P	TP	CL	SO4
			cfs	Deg C	uS/cm	FTU		mg/L	col/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BEAR	6/21/90	1000	.	24.3	251	1.3	7.50	7.3	16	.	.	.	.	.	.	.
BEAR	7/19/90	1155	.	26.8	270	0.7	8.19	9.2	28	.	.	.	.	.	.	.
BEAR	8/21/90	1210	.	28.3	265	1.1	8.18	10.5	14	.	.	.	.	.	.	.
BEAR	9/17/90	1250	.	22.8	240	1.4	8.17	8.2	405	.	.	.	.	.	.	.
BEAR	10/16/90	1030	.	17.2	238	1.5	8.11	9.2	16	.	.	.	.	.	.	.
BEAR	11/1/90	1130	49.7	14.1	225	0.6	8.33	11.5	36	.	.	.	.	.	.	.
BEAR	12/12/90	1440	21.3	12.5	185	1.0	8.71	12.3	0	.	.	.	.	.	.	.
BEAR	2/28/91	1310	.	11.5	150	.	8.93	13.6	.	.	.	.	.	.	.	.
BEAR	3/11/91	1315	.	14.4	162	1.3	8.99	12.8	2	.	.	.	.	.	.	.
BEAR	6/17/91	1336	.	26.5	255	0.8	8.34	10.3	6	.	.	.	.	.	.	.
BEAR	7/25/91	1440	.	2.4	240	1.0	8.10	7.7	24	.	.	.	.	.	.	.
BEAR	8/22/91	1400	.	25.3	250	0.7	8.48	9.4	0	.	.	.	.	.	.	.
BEAR	9/19/91	945	.	17.0	225	0.6	8.10	8.9	30	.	.	.	.	.	.	.
BEAR	10/8/91	1345	.	16.7	215	0.6	8.17	10.6	0	.	.	.	.	.	.	.
BEAR	11/25/91	1215	.	9.3	125	2.9	8.18	12.5	28	.	.	.	.	.	.	.
BEAR	12/11/91	1310	.	11.9	133	4.1	8.31	11.4	46	.	.	.	.	.	.	.
BEAR	1/6/92	1000	75.8	10.1	150	1.6	8.52	11.4	37	.	0.260	<0.050	<0.030	.	3.00	11.0
BEAR	4/6/92	1345	39.3	13.9	174	1.4	8.58	12.4	11	.	<0.005	<0.050	<0.030	0.030	4.00	11.0
BEAR	6/9/92	1010	100.0	20.5	187	2.6	8.01	8.7	53	.	0.030	<0.050	<0.030	0.030	3.00	10.0
BEAR	7/21/92	745	10.1	25.2	270	0.9	.	6.9	10	.	0.100	0.093	<0.030	0.002	4.00	10.0
BEAR	9/14/92	1050	9.4	22.0	258	1.3	8.18	9.1	44	.	0.070	<0.050	<0.030	0.002	5.00	9.0
BEAR	11/2/92	1420	16.8	15.7	243	0.6	8.22	10.6	18	.	0.220	<0.050	<0.030	0.002	5.00	11.0
BEAR	2/8/93	1330	45.0	10.5	160	1.0	8.80	13.2	0	.	0.050	<0.050	<0.030	.	4.00	11.0
BEAR	4/26/93	1140	122.5	16.4	168	2.8	8.55	11.0	24	.	.	.	.	.	.	.
BEAR	7/19/93	1040	9.9	27.5	290	1.5	8.14	8.8	1	.	0.050	0.072	<0.030	.	6.00	.
BEAR	10/19/93	1430	10.4	18.0	248	1.0	8.22	10.4	9	.	.	<0.050	.	.	5.54	11.2
BEAR	12/13/93	940	67.0	8.8	142	2.9	8.14	11.2	32	.	0.280	<0.050	<0.030	.	4.00	11.0
BEAR	1/10/94	938	15.3	4.8	150	0.8	8.35	14.8	11	.	0.040	<0.050	<0.030	.	5.00	11.0

STREAM	DATE	TIME	Q	TEMP	COND	TURB	pH	DO	F COLI	TKN	NO3-N	NH3-N	OPO4-P	TP	CL	SO4
			cfs	Deg C	uS/cm	FTU		mg/L	col/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BEAR	3/21/94	1340	128.8	15.8	165	3.3	8.74	11.8	1	.	0.330	0.055	0.040	.	4.00	9.0
BEAR	5/16/94	1100	54.8	18.8	181	1.5	8.39	11.0	31	.	0.120	<0.050	<0.030	.	5.00	7.0
BEAR	7/11/94	1230	9.5	25.6	254	0.6	8.38	8.4	20	.	0.080	<0.050	<0.030	.	4.15	8.4
BEAR	9/19/94	1320	7.2	22.2	249	0.7	8.45	9.6	12	.	0.070	0.124	0.040	.	10.00	10.0
BEAR	1/9/95	1110	78.7	5.3	207	3.2	8.13	.	11	.	0.180	<0.050	<0.030	.	3.75	10.0
BEAR	4/10/95	1400	34.8	20.1	233	1.3	8.22	10.3	24	.	0.032	<0.050	<0.030	.	3.97	11.0
BEAR	7/10/95	1525	25.0	29.1	265	1.4	8.17	10.8	20	.	0.102	0.069	<0.030	.	5.12	5.7
BEAR	9/4/95	1330	5.2	24.2	260	2.0	7.85	8.3	33	.	<0.005	<0.050	<0.030	.	5.97	8.6
BEAR	10/30/95	1140	18.8	13.2	253	5.8	7.92	11.9	168	.	0.669	<0.050	<0.030	.	4.52	8.8
BEAR	2/5/96	1330	37.2	2.6	216	1.5	8.55	17.8	1	.	0.402	<0.050	<0.030	.	4.98	.
BEAR	8/12/96	1330	6.5	26.2	255	1.3	8.33	10.2	4	.	0.077	<0.050	<0.030	.	6.39	.
BEAR	10/21/96	1200	19.3	16.3	291	0.9	7.65	9.3	48	.	0.354	<0.050	<0.030	.	5.58	.
BEAR	1/6/97	1400	60.5	8.6	218	0.9	.	15.3	1	.	.	.	.	.	.	.

STREAM	DATE	TIME	Q	TEMP	COND	TURB	pH	DO	F COLI	TKN	NO3-N	NH3-N	OPO4-P	TP	CL	SO4
			cfs	Deg C	uS/cm	FTU		mg/L	col/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
OMAHAWK	4/12/85	1053	.	15.9	255	.	.	.	32	.	.	.	.	.	.	.
OMAHAWK	4/24/85	1330	.	17.5	238	.	.	9.0	62	.	.	.	.	.	.	.
OMAHAWK	5/17/85	1130	.	23.0	285	.	.	.	114	.	.	.	.	.	.	.
OMAHAWK	5/30/85	1215	.	19.8	290	.	.	.	78	.	.	.	.	.	.	.
OMAHAWK	6/9/85	955	.	21.0	310	.	.	.	88	.	.	.	.	.	.	.
OMAHAWK	6/26/85	1520	.	26.1	320	.	.	.	12	.	.	.	.	.	.	.
OMAHAWK	7/16/85	1315	.	25.0	320	.	.	.	14	.	.	.	.	.	.	.
OMAHAWK	8/2/85	1205	.	25.0	320	.	.	.	12	.	.	.	.	.	.	.
OMAHAWK	8/21/85	1315	.	24.5	315	.	.	.	24	.	.	.	.	.	.	.
OMAHAWK	9/2/85	1000	.	24.0	315	.	.	.	24	.	.	.	.	.	.	.
OMAHAWK	9/22/85	1245	.	23.0	310	.	.	.	14	.	.	.	.	.	.	.
OMAHAWK	6/16/87	1430	.	24.0	298	.	8.31	.	6	.	.	.	.	.	.	.
OMAHAWK	7/14/87	1315	.	25.0	330	.	8.13	.	54	.	.	.	.	.	.	.
OMAHAWK	7/30/87	1110	.	26.5	340	.	8.35	.	0	.	.	.	.	.	.	.
OMAHAWK	8/6/87	1242	.	27.0	340	.	8.25	.	56	.	.	.	.	.	.	.
OMAHAWK	8/20/87	1310	.	27.0	335	.	8.21	.	0	.	.	.	.	.	.	.
OMAHAWK	9/20/87	1340	.	21.0	320	.	7.76	.	.	.	.	.	.	.	.	.
OMAHAWK	6/14/88	1700	.	27.0	.	0.6	8.12	.	34	.	.	.	.	.	.	.
OMAHAWK	7/5/88	1130	.	23.6	363	0.5	7.83	.	60	.	.	.	.	.	.	.
OMAHAWK	7/29/88	1130	.	23.9	325	0.5	7.92	8.4	64	.	.	.	.	.	.	.
OMAHAWK	8/8/88	1300	.	26.7	325	0.5	8.07	8.4	87	.	.	.	.	.	.	.
OMAHAWK	6/7/89	1100	.	18.6	292	0.6	.	9.6	38	0.100	0.130	0.020	.	0.003	.	.
OMAHAWK	6/21/89	1200	.	24.0	313	0.7	8.33	9.8	44	.	.	.	.	.	.	.
OMAHAWK	7/11/89	1340	.	27.0	365	1.3	8.39	9.1	54	0.200	0.110	0.070	.	0.002	.	.
OMAHAWK	7/26/89	1315	.	21.0	335	1.9	8.27	9.6	45	.	.	.	.	.	.	.
OMAHAWK	8/9/89	1515	.	23.0	302	0.9	8.36	9.4	22	<0.050	0.060	0.110	.	0.002	.	.
OMAHAWK	8/22/89	1230	.	23.3	338	1.2	8.23	9.2	26	.	.	.	.	.	.	.
OMAHAWK	9/11/89	1230	.	21.9	285	0.9	8.20	9.0	48	0.100	0.070	0.140	.	0.003	.	.

STREAM	DATE	TIME	Q	TEMP	COND	TURB	pH	DO	F COLI	TKN	NO3-N	NH3-N	OPO4-P	TP	CL	SO4
			cfs	Deg C	uS/cm	FTU		mg/L	col/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
OMAHAWK	9/26/89	1200	.	15.1	272	0.5	8.22	9.8	22	<0.050	0.070	0.010	.	0.003	.	.
OMAHAWK	4/4/90	1339	.	16.0	.	0.7	8.55	11.4	12	.	.	.	.	.	.	.
OMAHAWK	5/14/90	1125	.	15.0	255	1.8	8.22	9.6	84	.	.	.	.	.	.	.
OMAHAWK	6/21/90	1130	.	21.6	335	0.6	8.06	8.1	348	.	.	.	.	.	.	.
OMAHAWK	7/18/90	1225	.	24.6	322	0.6	8.02	8.8	60	.	.	.	.	.	.	.
OMAHAWK	8/24/90	1300	.	27.1	340	1.0	8.16	8.9	104	.	.	.	.	.	.	.
OMAHAWK	10/1/90	1200	.	19.8	312	1.7	8.24	9.8	94	.	.	.	.	.	.	.
OMAHAWK	10/16/90	1200	.	17.8	308	0.8	8.22	9.8	398	.	.	.	.	.	.	.
OMAHAWK	10/23/90	1200	.	13.7	270	0.4	8.39	10.3	51	<0.050	0.350	<0.050	<0.030	0.002	5.00	6.0
OMAHAWK	11/19/90	1115	.	14.0	288	1.2	8.24	11.9	127	0.280	0.220	0.070	<0.030	0.002	7.00	91.0
OMAHAWK	1/29/91	1130	.	9.5	252	0.5	8.41	11.4	64	.	.	0.090	<0.030	.	0.50	8.0
OMAHAWK	2/26/91	1100	.	10.0	239	0.4	8.27	12.8	8	.	0.390	<0.050	<0.030	.	.	9.0
OMAHAWK	3/19/91	1230	.	15.0	170	0.9	8.35	11.4	36	.	0.210	<0.050	<0.030	.	.	10.0
OMAHAWK	4/23/91	1145	.	15.5	268	1.5	8.20	9.3	4	.	0.330	<0.050	<0.030	.	.	6.0
OMAHAWK	5/14/91	1145	.	20.3	310	0.5	8.45	9.9	418	.	0.090	0.050	<0.030	.	.	5.0
OMAHAWK	6/25/91	1150	.	22.3	320	0.7	8.26	8.8	410	.	0.170	<0.050	<0.030	.	.	4.0
OMAHAWK	7/23/91	1143	.	26.0	338	0.7	8.17	10.1	296	.	0.090	<0.050	<0.030	.	.	4.0
OMAHAWK	8/27/91	1230	.	25.0	332	1.8	8.21	9.8	48	.	0.110	<0.050	0.070	0.002	.	3.0
OMAHAWK	9/24/91	1150	.	18.5	292	0.6	.	9.6	240	.	0.130	0.090	<0.030	0.050	.	6.0
OMAHAWK	10/22/91	1015	.	13.9	290	0.4	8.09	10.6	140	.	0.100	<0.050	<0.030	0.002	.	7.0
OMAHAWK	11/19/91	1240	.	14.7	240	2.6	.	9.8	260	.	0.680	<0.050	<0.030	.	.	4.0
OMAHAWK	12/17/91	1210	.	9.7	239	0.5	8.45	13.3	12	.	0.340	0.080	<0.030	.	.	8.0
OMAHAWK	1/7/92	920	27.6	9.9	248	0.6	8.34	11.9	11	.	0.460	<0.050	<0.030	.	3.00	8.0
OMAHAWK	3/3/92	1235	21.2	14.2	270	0.7	8.46	10.3	1	.	0.330	<0.050	<0.030	0.002	4.00	8.0
OMAHAWK	5/12/92	1333	13.8	23.0	311	1.5	8.37	10.5	110	.	0.100	0.070	<0.030	0.002	4.00	7.0
OMAHAWK	7/7/92	1255	9.6	26.5	344	0.4	8.20	9.5	203	.	0.090	<0.050	<0.030	0.002	3.00	6.0
OMAHAWK	9/1/92	1200	5.6	22.5	329	0.9	8.09	9.6	44	.	0.130	<0.050	<0.030	0.002	5.00	6.0
OMAHAWK	2/2/93	1345	29.0	9.7	237	0.4	8.52	11.6	3	.	0.390	<0.050	<0.030	.	4.00	12.0

STREAM	DATE	TIME	Q	TEMP	COND	TURB	pH	DO	F COLI	TKN	NO3-N	NH3-N	OPO4-P	TP	CL	SO4
			cfs	Deg C	uS/cm	FTU		mg/L	col/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
OMAHAWK	3/23/93	1015	25.8	10.7	249	0.5	.	12.2	41	.	.	.	.	.	.	.
OMAHAWK	6/22/93	1030	14.0	21.5	335	1.3	8.28	8.6	213	.	0.210	0.072	<0.030	.	.	4.0
OMAHAWK	7/13/93	1330	7.9	28.5	361	3.5	8.27	9.3	104	.	0.210	<0.050	<0.030	.	4.00	8.0
OMAHAWK	10/19/93	934	6.8	17.8	305	1.2	7.86	7.4	146	.	.	<0.050	.	.	5.06	6.5
OMAHAWK	11/23/93	1252	25.0	13.0	255	0.7	8.31	10.5	13	.	0.640	<0.050	<0.030	.	4.00	8.0
OMAHAWK	2/8/94	940	28.1	10.2	249	0.5	8.27	10.8	114	.	.	.	<0.030	.	.	8.0
OMAHAWK	3/21/94	1150	54.6	15.0	269	0.7	8.55	11.1	14	.	0.490	0.052	0.104	.	5.00	8.0
OMAHAWK	5/16/94	1425	23.7	23.0	330	1.1	8.49	10.3	26	.	0.290	<0.050	<0.030	.	4.00	6.0
OMAHAWK	7/11/94	1030	4.7	20.5	363	0.8	8.16	8.5	66	.	0.220	<0.050	<0.030	.	5.00	6.0
OMAHAWK	9/19/94	1520	3.0	23.2	320	1.0	8.34	10.0	3	.	0.142	0.095	<0.030	.	5.01	7.6
OMAHAWK	12/13/94	1010	87.0	8.5	343	1.2	8.19	11.4	.	.	0.672	<0.050	<0.030	.	3.44	5.3
OMAHAWK	1/9/95	1420	21.2	8.2	348	0.4	8.22	.	2	.	0.445	<0.050	<0.030	.	4.07	5.9
OMAHAWK	4/10/95	1515	17.2	19.2	338	0.7	8.14	9.2	41	.	0.203	<0.050	<0.030	.	3.82	6.4
OMAHAWK	8/14/95	1420	5.3	28.2	344	1.2	7.96	9.9	44	.	0.132	<0.050	0.057	.	5.01	5.3
OMAHAWK	10/2/95	1445	3.9	19.4	350	0.6	8.04	12.9	30	.	0.126	<0.050	<0.030	.	5.41	7.0
OMAHAWK	11/27/95	1620	4.4	12.0	355	0.8	8.13	11.7	63	.	0.113	<0.050	<0.030	.	5.55	12.0
OMAHAWK	1/22/96	900	23.5	5.2	353	1.0	7.07	21.5	31	.	0.690	<0.050	<0.030	.	4.23	.
OMAHAWK	12/10/96	1120	58.0	12.0	358	2.5	8.18	12.0	7	.	0.675	<0.050	<0.030	.	4.02	.
OMAHAWK	5/5/97	1110	18.5	16.3	356	0.6	8.43	10.5	159	.	.	.	.	.	.	.

APPENDIX F

Quality assurance data for analyses performed by the Arkansas Department of Pollution Control and Ecology

4/29/94															
FT10	Field Duplicates						Matrix Spike Duplicates								
	original	Duplicate	Difference	UCL	LCL		Spike 1	Spike 2	RPD	UCL	LCL	Spike added	% recovery	UCL	LCL
13-N	-0.03	-0.04	0.01	0.06	0.71		0.47	0.482	-1.26	19.9	-18.6	0.5	100	119	61
loride	3.84	3.14	0.7	1.29	-1.48		51.9	51.4	0.48	5.73	-5.98	50	96.12	118	83
03+NO2-N	0.222	0.215	0.007	0.071	-0.071		0.788	0.782	0.38	10.9	-10.9	0.5	113.2	118	71
hosphorus	0.002	-0.005	0.007	0.055	-0.065		0.54	0.554	-1.28	17.6	-14.7	0.6	89.7	118	66
hosphorus	0.0524	0.0629	-0.0105	0.035	-0.033		0.657	0.668	-0.83	12.5	-10.1	0.6	100.8	108	88
04	9.4	6.3	3.1	3.8	-3.9		58.2	59.9	-1.44	19.6	-14.1	50	97.6	112	77
N	0.44	0.38	0.06	0.55	-0.67		VOID	12		18.9	-19.9	8		148	56
S	11	12	-1	4.7	-4.9										
S	156	154	2	10.1	-9.6										
JFT12	Field Duplicates						Matrix Spike Duplicates								
	original	Duplicate	Difference	UCL	LCL		Spike 1	Spike 2	RPD	UCL	LCL	Spike added	% recovery	UCL	LCL
13-N	-0.033	-0.036	0.003	0.06	0.71		0.481	0.49	-0.93	19.9	-18.6	0.5	102.8	119	61
loride	4	3.39	0.61	1.29	-1.48		52.9	52.1	0.76	5.73	-5.98	50	97.8	118	83
03+NO2-N	0.315	0.321	-0.006	0.071	-0.071		0.913	0.917	-0.22	10.9	-10.9	0.5	**119.6**	118	71
phosphorus	0.001	-0.013	0.014	0.055	-0.065		0.539	0.55	-1.01	17.6	-14.7	0.6	89.7	118	66
phosphorus	0.0524	0.042	0.0104	0.035	-0.033		0.72	0.647	5.34	12.5	-10.1	0.6	**111.3**	108	88
04	8.4	6.3	2.1	3.8	-3.9		57.3	59.1	-1.55	19.6	-14.1	50	97.8	112	77
KN	0.47	0.42	0.05	0.55	-0.67		8	8.4	-2.44	18.9	-19.9	8	94.125	148	56
SS	2	1	1	4.7	-4.9										
DS	126	125	1	10.1	-9.6										

BUFT14	Field Duplicates						Matrix Spike Duplicates								
	original	Duplicate	Difference	UCL	LCL		Spike 1	Spike 2	RPD	UCL	LCL	Spike added	% recovery	UCL	LCL
NH3-N	0.037	0.022	0	0.06	0.71		0.539	0.535	0.37	19.9	-18.6	0.5	100.4	119	61
Chloride	4.14	4.11	0.03	1.29	-1.48		53.2	52.5	0.66	5.73	-5.98	50	98.12	118	83
NO3+NO2-N	0.402	0.413	-0.011	0.071	-0.071		0.971	0.964	0.36	10.9	-10.9	0.5	113.8	118	71
o-phosphorus	0.067	0.05	0	0.055	-0.065		0.577	0.604	-2.29	17.6	-14.7	0.6	85	118	66
T-phosphorus	0.136	0.105	0.031	0.035	-0.033		0.71	0.73	-1.39	12.5	-10.1	0.6	95.7	108	88
SO4	6.3	4.1	2.2	3.8	-3.9		54.8	55.6	-0.72	19.6	-14.1	50	97	112	77
TKN	0.9	0.82	0.08	0.55	-0.67		8.8	8.8	0.00	18.9	-19.9	8	98.8	148	56
TSS	46	44	2	4.7	-4.9										
TDS	176	175	1	10.1	-9.6										
BUFS41	Field Duplicates						Matrix Spike Duplicates								
	original	Duplicate	Difference	UCL	LCL		Spike 1	Spike 2	RPD	UCL	LCL	Spike added	% recovery	UCL	LCL
NH3-N	-0.038	-0.044	0.006	0.06	0.71		0.471	0.457	1.51	19.9	-18.6	0.5	101.8	119	61
Chloride	4.28	4.02	0.26	1.29	-1.48		54	52.6	1.31	5.73	-5.98	50	99.44	118	83
NO3+NO2-N	0.728	0.73	-0.002	0.071	-0.071		1.31	1.31	0.00	10.9	-10.9	0.5	116.4	118	71
o-phosphorus	0.009	-0.013	0.022	0.055	-0.065		0.517	0.554	-3.45	17.6	-14.7	0.6	84.7	118	66
T-phosphorus	0.042	0.03	0.012	0.035	-0.033		0.616	0.637	-1.68	12.5	-10.1	0.6	95.7	108	88
SO4	6.3	5.2	1.1	3.8	-3.9		56.5	57.3	-0.70	19.6	-14.1	50	100.4	112	77
TKN	0.38	0.38	0	0.55	-0.67		8.4	8.2	1.20	18.9	-19.9	8	100.3	148	56
TSS	2	2	0	4.7	-4.9										
TDS	223	223	0	10.1	-9.6										

5/11/94																
BUFT14	Field Duplicates						Matrix Spike Duplicates									
	original	Duplicate	Difference	UCL	LCL		Spike 1	Spike 2	RPD	UCL	LCL	Spike added	% recovery	UCL	LCL	
NH3-N	0.071	0.076	-0.005	0.081	0.71											
Chloride	2.23	2.2	0.03	1.2	-1.48											
NO3+NO2-N	0.433	0.436	-0.003	0.092	-0.071											
o-phosphorus	0.078	0.076	0.002	0.064	-0.065											
T-phosphorus	0.376	0.386	-0.01	0.049	-0.033											
SO4	5.1	5.1	0	4	-3.9											
TKN	1.51	1.65	-0.14	0.55	-0.67											
TOC	7.7	7.8	-0.1	1.44	-1.35											
Turbidity	200	192	**8**	2.08	-1.81											
TSS	434	447	**-13**	4.7	-4.9											
TDS	98	100	-2	10.1	-9.6											
WHI0049A	Field Duplicates						Matrix Spike Duplicates									
	original	Duplicate	Difference	UCL	LCL		Spike 1	Spike 2	RPD	UCL	LCL	Spike added	% recovery	UCL	LCL	
NH3-N	0.063	0.068	-0.005	0.06	0.71											
Chloride	1.82	1.9	-0.08	1.29	-1.48											
NO3+NO2-N	0.041	0.15	**-0.109**	0.071	-0.071											
o-phosphorus	0.053	0.049	0.004	0.055	-0.065											
T-phosphorus	0.659	0.618	**0.041**	0.035	-0.033											
SO4	5.1	6.2	-1.1	3.8	-3.9											
TKN	2.67	2.65	0.02	0.055	-0.67											
TOC	11.1	8.6	**2.5**	1.44	-1.35											
Turbidity	320	290	**30**	2.08	-1.81											
TSS	670	570	**100**	4.7	-4.9											
TDS	122	128	-6	10.1	-9.6											

1/13/95															
BUFT14	Field Duplicates						Matrix Spike Duplicates								
	original	Duplicate	Difference	UCL	LCL		Spike 1	Spike 2	RPD	UCL	LCL	Spike added	% recovery	UCL	LCL
NH3-N	0.063	0.152	-0.089	0.081	-0.089		0.537	0.546	-0.83	21.4	-19.5	0.5	94.8	120	60
Chloride	2.85	3.6	-0.75	1.2	-1.4		52.855	53.9	-0.98	6.3	-6.8	50	100.0	113	88
NO3+NO2-N	0.241	0.297	-0.056	0.092	-0.095		0.809	0.789	1.25	9.1	-8.9	0.5	113.6	124	68
o-phosphorus	0.053	0.049	0.004	0.064	-0.071		0.501	0.545	-4.21	10.2	-8.1	0.6	74.7	118	74
T-phosphorus	0.161	0.161	0	0.055	-0.06					6.7	-4.7	0.6		110	85
SO4	12	9.6	2.4	4.1	-4.4		59	51.5	6.79	8.9	-5.1	50	94.0	112	72
TKN	1.37	1.13	0.24	0.64	-0.86		9.01	9.31	-1.64	8.7	-8.8	8	95.5	138	59
TOC	7.7	8.7	-1	1.44	-1.47		10.6	10.6	0.00	10.5	-10.4	5	**58.0**	129	68
Turbidity	68	67	1	2.08	-1.81										
TSS	74	56	18	4.7	-4.9										
TDS	132	132	0	10.1	-9.6										

APPENDIX G

Table G1. Raw data, simple statistics and Pearson correlation coefficients and probability values for the tributaries during the April, 1994 storm.

Table G2. Raw data, simple statistics and Pearson correlation coefficients and probability values for tributaries during the November, 1994 storm.

Table G3. Raw data, simple statistics and Pearson correlation coefficients and probability values for tributaries during the January, 1995 storm.

Table G4. Raw data, simple statistics and Pearson correlation coefficients and probability values for tributaries during the December, 1995 storm.

Table G5. Raw data, simple statistics and Pearson correlation coefficients and probability values for January and May, 1989 storms at the R1 site (upper Buffalo River).

Figure G1. Discharge, TSS and fecal coliform versus time for Bear Creek during the November storm.

Figure G2. Discharge, TSS and fecal coliform versus time for Calf Creek during the November storm.

Figure G3. TSS versus fecal coliform for Calf Creek during the November storm.

Table G1. Raw data, simple statistics and Pearson correlation coefficients and probability values for the tributaries during the April, 1994 storm.

STREAM	Q	TEMP	COND	TURB	PH	DO	FCOLI	TKN
CALF	75	14.0	193	30	7.9	8.8	3120	0.44
CALF	310	13.7	180	72	7.9	9.5	7200	1.05
CALF	660	13.5	142	170	7.8	10.3	34000	2.10
CALF	580	13.8	126	90	7.8	10.4	16000	1.28
CALF	440	13.9	122	55	8.0	10.2	11800	1.00
CALF	280	13.8	142	38	8.0	10.2	5700	0.67
CALF	260	13.5	148	32	8.0	9.5	3200	0.67
CALF	680	13.2	142	90	7.9	10.4	17600	1.00
CALF	2100	13.5	130	280	8.0	10.2	45200	2.40
CALF	1450	13.9	132	110	8.0	10.2	12600	1.25
BEAR	62	15.0	168	5	7.7	8.8	290	0.47
BEAR	170	15.1	168	15	7.6	8.7	1920	0.64
BEAR	590	14.8	127	270	7.6	10.2	22300	2.25
BEAR	550	14.8	127	85	7.8	9.1	15800	1.55
BEAR	450	14.3	112	45	7.9	9.4	9600	1.00
BEAR	350	14.1	109	12	7.9	9.4	5200	0.82
BEAR	330	14.1	112	10	7.8	9.5	4600	0.73
BEAR	740	.	.	120	7.9	.	15200	1.05
BEAR	2150	.	.	190	7.8	.	20800	1.65
BEAR	1600	14.0	123	75	7.8	10.2	7600	1.00
TOMAHAWK	85	14.2	242	45	7.9	10.2	4400	0.90
TOMAHAWK	260	13.8	163	100	7.9	10.5	9750	1.55
TOMAHAWK	328	13.4	145	130	7.8	10.0	7800	1.35
TOMAHAWK	280	13.7	135	65	7.8	10.4	6450	0.90
TOMAHAWK	280	13.8	145	42	7.8	10.2	5450	0.62
TOMAHAWK	250	13.8	165	40	8.1	10.0	5000	0.58
TOMAHAWK	210	13.8	182	20	8.1	9.7	3000	0.45
TOMAHAWK	190	13.3	193	17	8.1	10.0	3000	0.60
TOMAHAWK	535	13.3	158	90	8.1	10.5	8200	1.30
TOMAHAWK	440	13.6	178	60	8.1	10.5	5400	0.78

NO3	NH3	OPO4	TP	TSS	CL	SO4	TDS	RAIN
0.222	0.025	0.015	0.052	11	3.84	9.4	156	1.74
0.333	0.025	0.015	0.167	84	3.38	8.4	155	1.82
0.445	0.025	0.052	0.511	234	3.53	10.4	146	1.82
0.326	0.025	0.055	0.324	118	2.93	8.4	135	1.82
0.301	0.025	0.036	0.198	65	2.77	7.4	132	1.82
0.273	0.025	0.015	0.125	28	2.64	6.3	132	2.09
0.272	0.025	0.015	0.094	16	2.63	5.2	136	2.09
0.246	0.025	0.044	0.219	117	2.92	6.3	133	2.80
0.260	0.025	0.096	0.668	426	2.80	6.3	127	2.80
0.253	0.025	0.069	0.355	144	2.83	5.2	114	2.80
0.315	0.025	0.015	0.052	2	4.00	8.4	126	1.18
0.334	0.025	0.015	0.084	27	3.82	9.4	128	1.22
0.635	0.269	0.160	0.710	419	4.39	12.3	138	1.22
0.295	0.025	0.053	0.334	116	3.32	9.4	121	1.22
0.262	0.025	0.050	0.188	49	3.16	7.4	116	1.30
0.247	0.025	0.015	0.125	24	3.31	6.3	114	1.45
0.256	0.025	0.015	0.105	18	3.01	6.3	112	1.45
0.257	0.025	0.032	0.271	164	3.22	7.4	129	2.12
0.249	0.025	0.090	0.543	296	3.08	6.3	119	2.12
0.170	0.025	0.056	0.271	93	2.62	5.2	99	2.12
0.402	0.025	0.067	0.136	46	4.14	6.3	176	1.50
0.355	0.182	0.105	0.344	171	4.79	8.4	148	1.54
0.345	0.231	0.168	0.376	228	4.85	7.4	111	1.66
0.314	0.108	0.093	0.219	87	3.69	6.3	136	1.66
0.268	0.080	0.049	0.157	40	3.33	5.2	136	1.66
0.260	0.077	0.015	0.115	32	3.35	5.2	143	1.66
0.281	0.025	0.015	0.084	22	2.97	5.2	150	1.90
0.265	0.025	0.066	0.198	18	2.97	5.2	151	1.90
0.221	0.025	0.043	0.209	128	2.94	5.2	101	2.33
0.239	0.025	0.015	0.136	69	2.80	4.1	137	2.33

Correlation Analysis

17 'VAR' Variables: Q TEMP COND TURB PH DO FCOLI TKN NO3 NH3 OPO4 TP TSS CL SO4 TDS RAIN

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Q	10	683.50000	625.07800	6835	75.00000	2100
TEMP	10	13.68000	0.24855	136.80000	13.20000	14.00000
COND	10	145.70000	23.19986	1457	122.00000	193.00000
TURB	10	96.70000	77.22125	967.00000	30.00000	280.00000
PH	10	7.93000	0.08233	79.30000	7.80000	8.00000
DO	10	9.97000	0.52715	99.70000	8.80000	10.40000
FCOLI	10	15642	13826	156420	3120	45200
TKN	10	1.18600	0.62351	11.86000	0.44000	2.40000
NO3	10	0.29310	0.06380	2.93100	0.22200	0.44500
NH3	10	0.02500	0	0.25000	0.02500	0.02500
OPO4	10	0.04120	0.02762	0.41200	0.01500	0.09600
TP	10	0.27130	0.19566	2.71300	0.05200	0.66800
TSS	10	124.30000	125.83857	1243	11.00000	426.00000
CL	10	3.02700	0.41139	30.27000	2.63000	3.84000
SO4	10	7.33000	1.77204	73.30000	5.20000	10.40000
TDS	10	136.60000	12.75583	1366	114.00000	156.00000
RAIN	10	2.16000	0.45673	21.60000	1.74000	2.80000

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 10

	Q	TEMP	COND	TURB	PH	DO
Q	1.00000 0.0	-0.22943 0.5237	-0.50496 0.1366	0.87446 0.0009	0.26762 0.4547	0.46738 0.1732
TEMP	-0.22943 0.5237	1.00000 0.0	0.18575 0.6074	-0.38937 0.2661	0.14118 0.6973	-0.36126 0.3051
COND	-0.50496 0.1366	0.18575 0.6074	1.00000 0.0	-0.37956 0.2793	-0.18092 0.6169	-0.88027 0.0008
TURB	0.87446 0.0009	-0.38937 0.2661	-0.37956 0.2793	1.00000 0.0	-0.06135 0.8663	0.43839 0.2050
PH	0.26762 0.4547	0.14118 0.6973	-0.18092 0.6169	-0.06135 0.8663	1.00000 0.0	-0.07937 0.8275
DO	0.46738 0.1732	-0.36126 0.3051	-0.88027 0.0008	0.43839 0.2050	-0.07937 0.8275	1.00000 0.0
FCOLI	0.77206 0.0089	-0.45802 0.1831	-0.44590 0.1965	0.96788 0.0001	-0.17987 0.6190	0.52517 0.1190
TKN	0.77399 0.0086	-0.37268 0.2889	-0.45551 0.1858	0.95894 0.0001	-0.20520 0.5695	0.53202 0.1134
NO3	-0.11408 0.7537	-0.15751 0.6639	-0.15934 0.6602	0.23908 0.5059	-0.61619 0.0578	0.32616 0.3577
NH3	. .	. .	. .	. .	. .	. .
OPO4	0.93915 0.0001	-0.22436 0.5332	-0.61418 0.0589	0.88261 0.0007	0.00195 0.9957	0.59350 0.0705
TP	0.85359 0.0017	-0.31699 0.3722	-0.51860 0.1246	0.96864 0.0001	-0.14410 0.6912	0.56901 0.0860
TSS	0.88104 0.0008	-0.38771 0.2683	-0.39924 0.2531	0.99913 0.0001	-0.04923 0.8926	0.45373 0.1878
CL	-0.30835 0.3860	0.19820 0.5831	0.74368 0.0137	-0.03434 0.9250	-0.61380 0.0591	-0.56250 0.0905
SO4	-0.36409 0.3010	0.18819 0.6026	0.40160 0.2500	0.03125 0.9317	-0.79133 0.0064	-0.21898 0.5433
TDS	-0.64675 0.0433	0.06028 0.8686	0.80491 0.0050	-0.29150 0.4138	-0.52691 0.1176	-0.65633 0.0393
RAIN	0.76333 0.0102	-0.46296 0.1778	-0.38379 0.2736	0.49814 0.1428	0.43734 0.2063	0.41580 0.2320

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 10

	FCOLI	TKN	NO3	NH3	OPO4	TP
Q	0.77206	0.77399	-0.11408	.	0.93915	0.85359
	0.0089	0.0086	0.7537	.	0.0001	0.0017
TEMP	-0.45802	-0.37268	-0.15751	.	-0.22436	-0.31699
	0.1831	0.2889	0.6639	.	0.5332	0.3722
COND	-0.44590	-0.45551	-0.15934	.	-0.61418	-0.51860
	0.1965	0.1858	0.6602	.	0.0589	0.1246
TURB	0.96788	0.95894	0.23908	.	0.88261	0.96864
	0.0001	0.0001	0.5059	.	0.0007	0.0001
PH	-0.17987	-0.20520	-0.61619	.	0.00195	-0.14410
	0.6190	0.5695	0.0578	.	0.9957	0.6912
DO	0.52517	0.53202	0.32616	.	0.59350	0.56901
	0.1190	0.1134	0.3577	.	0.0705	0.0860
FCOLI	1.00000	0.96529	0.35737	.	0.84382	0.95937
	0.0	0.0001	0.3107	.	0.0021	0.0001
TKN	0.96529	1.00000	0.48974	.	0.83933	0.98286
	0.0001	0.0	0.1508	.	0.0024	0.0001
NO3	0.35737	0.48974	1.00000	.	0.05611	0.37075
	0.3107	0.1508	0.0	.	0.8776	0.2916
NH3	.	.	.	.	.	.
	.	.	.	.	.	.
OPO4	0.84382	0.83933	0.05611	.	1.00000	0.91662
	0.0021	0.0024	0.8776	.	0.0	0.0002
TP	0.95937	0.98286	0.37075	.	0.91662	1.00000
	0.0001	0.0001	0.2916	.	0.0002	0.0
TSS	0.96732	0.95612	0.22452	.	0.89050	0.96740
	0.0001	0.0001	0.5329	.	0.0005	0.0001
CL	-0.00990	-0.00859	0.27123	.	-0.22293	-0.07558
	0.9784	0.9812	0.4484	.	0.5359	0.8356
SO4	0.14639	0.16485	0.62039	.	-0.15998	0.06951
	0.6865	0.6490	0.0557	.	0.6589	0.8487
TDS	-0.23780	-0.24345	0.29932	.	-0.60410	-0.37396
	0.5082	0.4979	0.4008	.	0.0644	0.2871
RAIN	0.40229	0.33212	-0.47025	.	0.63110	0.43483
	0.2491	0.3485	0.1702	.	0.0504	0.2092

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 10

	TSS	CL	SO4	TDS	RAIN
Q	0.88104	-0.30835	-0.36409	-0.64675	0.76333
	0.0008	0.3860	0.3010	0.0433	0.0102
TEMP	-0.38771	0.19820	0.18819	0.06028	-0.46296
	0.2683	0.5831	0.6026	0.8686	0.1778
COND	-0.39924	0.74368	0.40160	0.80491	-0.38379
	0.2531	0.0137	0.2500	0.0050	0.2736
TURB	0.99913	-0.03434	0.03125	-0.29150	0.49814
	0.0001	0.9250	0.9317	0.4138	0.1428
PH	-0.04923	-0.61380	-0.79133	-0.52691	0.43734
	0.8926	0.0591	0.0064	0.1176	0.2063
DO	0.45373	-0.56250	-0.21898	-0.65633	0.41580
	0.1878	0.0905	0.5433	0.0393	0.2320
FCOLI	0.96732	-0.00990	0.14639	-0.23780	0.40229
	0.0001	0.9784	0.6865	0.5082	0.2491
TKN	0.95612	-0.00859	0.16485	-0.24345	0.33212
	0.0001	0.9812	0.6490	0.4979	0.3485
NO3	0.22452	0.27123	0.62039	0.29932	-0.47025
	0.5329	0.4484	0.0557	0.4008	0.1702
NH3	.	.	.	.	.
	.	.	.	.	.
OPO4	0.89050	-0.22293	-0.15998	-0.60410	0.63110
	0.0005	0.5359	0.6589	0.0644	0.0504
TP	0.96740	-0.07558	0.06951	-0.37396	0.43483
	0.0001	0.8356	0.8487	0.2871	0.2092
TSS	1.00000	-0.05716	0.01640	-0.30684	0.50581
	0.0	0.8754	0.9641	0.3885	0.1358
CL	-0.05716	1.00000	0.83689	0.79121	-0.47136
	0.8754	0.0	0.0025	0.0064	0.1691
SO4	0.01640	0.83689	1.00000	0.75907	-0.70359
	0.9641	0.0025	0.0	0.0109	0.0232
TDS	-0.30684	0.79121	0.75907	1.00000	-0.72549
	0.3885	0.0064	0.0109	0.0	0.0176
RAIN	0.50581	-0.47136	-0.70359	-0.72549	1.00000
	0.1358	0.1691	0.0232	0.0176	0.0

Correlation Analysis

17 'VAR' Variables: Q TEMP COND TURB PH DO
FCOLI TKN NO3 NH3 OPO4 TP
TSS CL SO4 TDS RAIN

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Q	10	699.20000	663.20247	6992	62.00000	2150
TEMP	8	14.52500	0.44641	116.20000	14.00000	15.10000
COND	8	130.75000	24.02231	1046	109.00000	168.00000
TURB	10	82.70000	88.42831	827.00000	5.00000	270.00000
PH	10	7.78000	0.11353	77.80000	7.60000	7.90000
DO	8	9.41250	0.56426	75.30000	8.70000	10.20000
FCOLI	10	10331	7783	103310	290.00000	22300
TKN	10	1.11600	0.54480	11.16000	0.47000	2.25000
NO3	10	0.30200	0.12522	3.02000	0.17000	0.63500
NH3	10	0.04940	0.07716	0.49400	0.02500	0.26900
OPO4	10	0.05010	0.04591	0.50100	0.01500	0.16000
TP	10	0.26830	0.21325	2.68300	0.05200	0.71000
TSS	10	120.80000	137.55225	1208	2.00000	419.00000
CL	10	3.39300	0.52529	33.93000	2.62000	4.39000
SO4	10	7.84000	2.09613	78.40000	5.20000	12.30000
TDS	10	120.20000	10.87096	1202	99.00000	138.00000
RAIN	10	1.54000	0.41093	15.40000	1.18000	2.12000

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	Q	TEMP	COND	TURB	PH	DO
Q	1.00000 0.0 10	-0.53284 0.1739 8	-0.37963 0.3536 8	0.52239 0.1214 10	0.20017 0.5793 10	0.75417 0.0306 8
TEMP	-0.53284 0.1739 8	1.00000 0.0 8	0.83325 0.0102 8	0.17993 0.6698 8	-0.76114 0.0283 8	-0.57422 0.1366 8
COND	-0.37963 0.3536 8	0.83325 0.0102 8	1.00000 0.0 8	-0.16524 0.6958 8	-0.72475 0.0420 8	-0.61522 0.1045 8
TURB	0.52239 0.1214 10	0.17993 0.6698 8	-0.16524 0.6958 8	1.00000 0.0 10	-0.25744 0.4727 10	0.66217 0.0736 8
PH	0.20017 0.5793 10	-0.76114 0.0283 8	-0.72475 0.0420 8	-0.25744 0.4727 10	1.00000 0.0 10	0.09326 0.8262 8
DO	0.75417 0.0306 8	-0.57422 0.1366 8	-0.61522 0.1045 8	0.66217 0.0736 8	0.09326 0.8262 8	1.00000 0.0 8
FCOLI	0.55413 0.0965 10	0.06079 0.8863 8	-0.40129 0.3245 8	0.92616 0.0001 10	0.02429 0.9469 10	0.59186 0.1222 8
TKN	0.43584 0.2080 10	0.12553 0.7671 8	-0.31711 0.4441 8	0.93387 0.0001 10	-0.20623 0.5676 10	0.59906 0.1166 8
NO3	-0.28365 0.4271 10	0.54236 0.1649 8	0.18345 0.6637 8	0.61780 0.0570 10	-0.69012 0.0272 10	0.23122 0.5817 8
NH3	-0.05785 0.8739 10	0.24891 0.5522 8	-0.06308 0.8820 8	0.74422 0.0136 10	-0.55709 0.0943 10	0.56392 0.1454 8
OPO4	0.42409 0.2219 10	0.13592 0.7483 8	-0.20041 0.6342 8	0.93856 0.0001 10	-0.35772 0.3102 10	0.68945 0.0585 8
TP	0.55680 0.0946 10	0.11565 0.7851 8	-0.25317 0.5452 8	0.98251 0.0001 10	-0.23837 0.5072 10	0.68436 0.0612 8
TSS	0.50430 0.1372 10	0.20036 0.6343 8	-0.14846 0.7257 8	0.99634 0.0001 10	-0.29556 0.4070 10	0.64061 0.0870 8
CL	-0.52298 0.1209 10	0.80177 0.0167 8	0.56119 0.1478 8	0.28443 0.4257 10	-0.73482 0.0155 10	-0.22240 0.5965 8
SO4	-0.42493 0.2209 10	0.78666 0.0206 8	0.38413 0.3475 8	0.45912 0.1819 10	-0.70129 0.0238 10	-0.06861 0.8718 8
TDS	-0.37182 0.2901 10	0.82731 0.0113 8	0.48739 0.2206 8	0.45223 0.1894 10	-0.52757 0.1171 10	-0.27048 0.5170 8
RAIN	0.81274 0.0043	-0.72449 0.0421	-0.36819 0.3695	0.27617 0.4399	0.45013 0.1918	0.60935 0.1088

10	8	8	10	10	8

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	FCOLI	TKN	NO3	NH3	OPO4	TP
Q	0.55413	0.43584	-0.28365	-0.05785	0.42409	0.55680
	0.0965	0.2080	0.4271	0.8739	0.2219	0.0946
	10	10	10	10	10	10
TEMP	0.06079	0.12553	0.54236	0.24891	0.13592	0.11565
	0.8863	0.7671	0.1649	0.5522	0.7483	0.7851
	8	8	8	8	8	8
COND	-0.40129	-0.31711	0.18345	-0.06308	-0.20041	-0.25317
	0.3245	0.4441	0.6637	0.8820	0.6342	0.5452
	8	8	8	8	8	8
TURB	0.92616	0.93387	0.61780	0.74422	0.93856	0.98251
	0.0001	0.0001	0.0570	0.0136	0.0001	0.0001
	10	10	10	10	10	10
PH	0.02429	-0.20623	-0.69012	-0.55709	-0.35772	-0.23837
	0.9469	0.5676	0.0272	0.0943	0.3102	0.5072
	10	10	10	10	10	10
DO	0.59186	0.59906	0.23122	0.56392	0.68945	0.68436
	0.1222	0.1166	0.5817	0.1454	0.0585	0.0612
	8	8	8	8	8	8
FCOLI	1.00000	0.93909	0.42287	0.54033	0.83141	0.93583
	0.0	0.0001	0.2234	0.1069	0.0029	0.0001
	10	10	10	10	10	10
TKN	0.93909	1.00000	0.61826	0.73137	0.93751	0.97342
	0.0001	0.0	0.0567	0.0162	0.0001	0.0001
	10	10	10	10	10	10
NO3	0.42287	0.61826	1.00000	0.93436	0.70481	0.58869
	0.2234	0.0567	0.0	0.0001	0.0228	0.0734
	10	10	10	10	10	10
NH3	0.54033	0.73137	0.93436	1.00000	0.84111	0.72776
	0.1069	0.0162	0.0001	0.0	0.0023	0.0170
	10	10	10	10	10	10
OPO4	0.83141	0.93751	0.70481	0.84111	1.00000	0.95891
	0.0029	0.0001	0.0228	0.0023	0.0	0.0001
	10	10	10	10	10	10
TP	0.93583	0.97342	0.58869	0.72776	0.95891	1.00000
	0.0001	0.0001	0.0734	0.0170	0.0001	0.0
	10	10	10	10	10	10
TSS	0.91159	0.93123	0.64605	0.76172	0.93743	0.98097
	0.0002	0.0001	0.0436	0.0105	0.0001	0.0001
	10	10	10	10	10	10
CL	0.07149	0.24729	0.86481	0.66688	0.34798	0.22833
	0.8444	0.4909	0.0012	0.0352	0.3245	0.5258
	10	10	10	10	10	10
SO4	0.33483	0.51029	0.91200	0.74761	0.53039	0.43250
	0.3443	0.1318	0.0002	0.0129	0.1148	0.2119
	10	10	10	10	10	10
TDS	0.34621	0.37143	0.78348	0.57532	0.36841	0.35584
	0.3271	0.2906	0.0073	0.0818	0.2949	0.3129
	10	10	10	10	10	10
RAIN	0.31930	0.08760	-0.50515	-0.27361	0.05996	0.23304
	0.3685	0.8098	0.1364	0.4443	0.8693	0.5170

10	10	10	10	10	10

APRIL RAIN CORRELATION DATA
BEAR STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	TSS	CL	SO4	TDS	RAIN
Q	0.50430	-0.52298	-0.42493	-0.37182	0.81274
	0.1372	0.1209	0.2209	0.2901	0.0043
	10	10	10	10	10
TEMP	0.20036	0.80177	0.78666	0.82731	-0.72449
	0.6343	0.0167	0.0206	0.0113	0.0421
	8	8	8	8	8
COND	-0.14846	0.56119	0.38413	0.48739	-0.36819
	0.7257	0.1478	0.3475	0.2206	0.3695
	8	8	8	8	8
TURB	0.99634	0.28443	0.45912	0.45223	0.27617
	0.0001	0.4257	0.1819	0.1894	0.4399
	10	10	10	10	10
PH	-0.29556	-0.73482	-0.70129	-0.52757	0.45013
	0.4070	0.0155	0.0238	0.1171	0.1918
	10	10	10	10	10
DO	0.64061	-0.22240	-0.06861	-0.27048	0.60935
	0.0870	0.5965	0.8718	0.5170	0.1088
	8	8	8	8	8
FCOLI	0.91159	0.07149	0.33483	0.34621	0.31930
	0.0002	0.8444	0.3443	0.3271	0.3685
	10	10	10	10	10
TKN	0.93123	0.24729	0.51029	0.37143	0.08760
	0.0001	0.4909	0.1318	0.2906	0.8098
	10	10	10	10	10
NO3	0.64605	0.86481	0.91200	0.78348	-0.50515
	0.0436	0.0012	0.0002	0.0073	0.1364
	10	10	10	10	10
NH3	0.76172	0.66688	0.74761	0.57532	-0.27361
	0.0105	0.0352	0.0129	0.0818	0.4443
	10	10	10	10	10
OPO4	0.93743	0.34798	0.53039	0.36841	0.05996
	0.0001	0.3245	0.1148	0.2949	0.8693
	10	10	10	10	10
TP	0.98097	0.22833	0.43250	0.35584	0.23304
	0.0001	0.5258	0.2119	0.3129	0.5170
	10	10	10	10	10
TSS	1.00000	0.32109	0.47522	0.47462	0.24501
	0.0	0.3657	0.1651	0.1657	0.4951
	10	10	10	10	10
CL	0.32109	1.00000	0.88375	0.86418	-0.66051
	0.3657	0.0	0.0007	0.0013	0.0376
	10	10	10	10	10
SO4	0.47522	0.88375	1.00000	0.84853	-0.63516
	0.1651	0.0007	0.0	0.0019	0.0485
	10	10	10	10	10
TDS	0.47462	0.86418	0.84853	1.00000	-0.40094
	0.1657	0.0013	0.0019	0.0	0.2509
	10	10	10	10	10
RAIN	0.24501	-0.66051	-0.63516	-0.40094	1.00000
	0.4951	0.0376	0.0485	0.2509	0.0

10	10	10	10	10

Correlation Analysis

17 'VAR' Variables: Q TEMP COND TURB PH DO
FCOLI TKN NO3 NH3 OPO4 TP
TSS CL SO4 TDS RAIN

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Q	10	285.80000	126.89348	2858	85.00000	535.00000
TEMP	10	13.67000	0.27909	136.70000	13.30000	14.20000
COND	10	170.60000	30.93075	1706	135.00000	242.00000
TURB	10	60.90000	36.23212	609.00000	17.00000	130.00000
PH	10	7.97000	0.14181	79.70000	7.80000	8.10000
DO	10	10.20000	0.27487	102.00000	9.70000	10.50000
FCOLI	10	5845	2219	58450	3000	9750
TKN	10	0.90300	0.37603	9.03000	0.45000	1.55000
NO3	10	0.29500	0.05732	2.95000	0.22100	0.40200
NH3	10	0.08030	0.07388	0.80300	0.02500	0.23100
OPO4	10	0.06360	0.04856	0.63600	0.01500	0.16800
TP	10	0.19740	0.09592	1.97400	0.08400	0.37600
TSS	10	84.10000	70.52100	841.00000	18.00000	228.00000
CL	10	3.58300	0.76596	35.83000	2.80000	4.85000
SO4	10	5.85000	1.26864	58.50000	4.10000	8.40000
TDS	10	138.90000	21.03146	1389	101.00000	176.00000
RAIN	10	1.81400	0.30108	18.14000	1.50000	2.33000

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 10

	Q	TEMP	COND	TURB	PH	DO
Q	1.00000 0.0	-0.64055 0.0460	-0.55698 0.0944	0.49187 0.1487	0.22315 0.5355	0.53485 0.1112
TEMP	-0.64055 0.0460	1.00000 0.0	0.46312 0.1777	-0.29481 0.4083	-0.27793 0.4369	-0.07242 0.8424
COND	-0.55698 0.0944	0.46312 0.1777	1.00000 0.0	-0.45304 0.1886	0.33639 0.3419	-0.19472 0.5898
TURB	0.49187 0.1487	-0.29481 0.4083	-0.45304 0.1886	1.00000 0.0	-0.45260 0.1890	0.45296 0.1886
PH	0.22315 0.5355	-0.27793 0.4369	0.33639 0.3419	-0.45260 0.1890	1.00000 0.0	-0.17102 0.6366
DO	0.53485 0.1112	-0.07242 0.8424	-0.19472 0.5898	0.45296 0.1886	-0.17102 0.6366	1.00000 0.0
FCOLI	0.51583 0.1270	-0.19491 0.5895	-0.51590 0.1269	0.89617 0.0004	-0.40300 0.2482	0.66209 0.0370
TKN	0.37100 0.2912	-0.21397 0.5528	-0.24148 0.5015	0.91186 0.0002	-0.36900 0.2940	0.57834 0.0799
NO3	-0.65326 0.0405	0.58411 0.0762	0.36354 0.3018	0.27852 0.4358	-0.62875 0.0515	-0.05077 0.8892
NH3	0.02347 0.9487	-0.10137 0.7805	-0.54074 0.1065	0.77155 0.0090	-0.66506 0.0359	0.06621 0.8558
OPO4	-0.08773 0.8096	-0.20105 0.5776	-0.27711 0.4383	0.72743 0.0171	-0.72162 0.0185	0.08492 0.8156
TP	0.19264 0.5939	-0.38176 0.2763	-0.42031 0.2265	0.85130 0.0018	-0.53075 0.1145	0.29793 0.4031
TSS	0.41268 0.2359	-0.33291 0.3472	-0.43810 0.2054	0.98339 0.0001	-0.45074 0.1911	0.35080 0.3203
CL	-0.29278 0.4117	0.25464 0.4777	-0.07634 0.8340	0.68044 0.0304	-0.70488 0.0228	0.09394 0.7963
SO4	-0.26683 0.4561	0.16162 0.6556	-0.13988 0.6999	0.64094 0.0458	-0.62068 0.0555	0.13064 0.7191
TDS	-0.86237 0.0013	0.74906 0.0127	0.73610 0.0152	-0.62570 0.0530	0.03241 0.9292	-0.24986 0.4863
RAIN	0.76871 0.0094	-0.59875 0.0674	-0.07020 0.8472	-0.03673 0.9198	0.66671 0.0352	0.26583 0.4579

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 10

	FCOLI	TKN	NO3	NH3	OPO4	TP
Q	0.51583 0.1270	0.37100 0.2912	-0.65326 0.0405	0.02347 0.9487	-0.08773 0.8096	0.19264 0.5939
TEMP	-0.19491 0.5895	-0.21397 0.5528	0.58411 0.0762	-0.10137 0.7805	-0.20105 0.5776	-0.38176 0.2763
COND	-0.51590 0.1269	-0.24148 0.5015	0.36354 0.3018	-0.54074 0.1065	-0.27711 0.4383	-0.42031 0.2265
TURB	0.89617 0.0004	0.91186 0.0002	0.27852 0.4358	0.77155 0.0090	0.72743 0.0171	0.85130 0.0018
PH	-0.40300 0.2482	-0.36900 0.2940	-0.62875 0.0515	-0.66506 0.0359	-0.72162 0.0185	-0.53075 0.1145
DO	0.66209 0.0370	0.57834 0.0799	-0.05077 0.8892	0.06621 0.8558	0.08492 0.8156	0.29793 0.4031
FCOLI	1.00000 0.0	0.92243 0.0001	0.17905 0.6206	0.67793 0.0312	0.54652 0.1021	0.77485 0.0085
TKN	0.92243 0.0001	1.00000 0.0	0.37465 0.2861	0.64414 0.0444	0.68323 0.0294	0.85080 0.0018
NO3	0.17905 0.6206	0.37465 0.2861	1.00000 0.0	0.47206 0.1683	0.62181 0.0549	0.39791 0.2548
NH3	0.67793 0.0312	0.64414 0.0444	0.47206 0.1683	1.00000 0.0	0.83991 0.0024	0.86381 0.0013
OPO4	0.54652 0.1021	0.68323 0.0294	0.62181 0.0549	0.83991 0.0024	1.00000 0.0	0.90637 0.0003
TP	0.77485 0.0085	0.85080 0.0018	0.39791 0.2548	0.86381 0.0013	0.90637 0.0003	1.00000 0.0
TSS	0.86170 0.0013	0.91093 0.0002	0.32574 0.3584	0.81879 0.0038	0.79310 0.0062	0.90923 0.0003
CL	0.59280 0.0709	0.69308 0.0263	0.83712 0.0025	0.85089 0.0018	0.84226 0.0022	0.77205 0.0089
SO4	0.64574 0.0437	0.74124 0.0142	0.76732 0.0096	0.81497 0.0041	0.81477 0.0041	0.80878 0.0046
TDS	-0.55015 0.0994	-0.43128 0.2133	0.49705 0.1439	-0.32221 0.3639	-0.24910 0.4877	-0.42874 0.2163
RAIN	-0.05376 0.8827	-0.07363 0.8398	-0.78532 0.0071	-0.51952 0.1238	-0.47856 0.1618	-0.26241 0.4639

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 10

	TSS	CL	SO4	TDS	RAIN
Q	0.41268 0.2359	-0.29278 0.4117	-0.26683 0.4561	-0.86237 0.0013	0.76871 0.0094
TEMP	-0.33291 0.3472	0.25464 0.4777	0.16162 0.6556	0.74906 0.0127	-0.59875 0.0674
COND	-0.43810 0.2054	-0.07634 0.8340	-0.13988 0.6999	0.73610 0.0152	-0.07020 0.8472
TURB	0.98339 0.0001	0.68044 0.0304	0.64094 0.0458	-0.62570 0.0530	-0.03673 0.9198
PH	-0.45074 0.1911	-0.70488 0.0228	-0.62068 0.0555	0.03241 0.9292	0.66671 0.0352
DO	0.35080 0.3203	0.09394 0.7963	0.13064 0.7191	-0.24986 0.4863	0.26583 0.4579
FCOLI	0.86170 0.0013	0.59280 0.0709	0.64574 0.0437	-0.55015 0.0994	-0.05376 0.8827
TKN	0.91093 0.0002	0.69308 0.0263	0.74124 0.0142	-0.43128 0.2133	-0.07363 0.8398
NO3	0.32574 0.3584	0.83712 0.0025	0.76732 0.0096	0.49705 0.1439	-0.78532 0.0071
NH3	0.81879 0.0038	0.85089 0.0018	0.81497 0.0041	-0.32221 0.3639	-0.51952 0.1238
OPO4	0.79310 0.0062	0.84226 0.0022	0.81477 0.0041	-0.24910 0.4877	-0.47856 0.1618
TP	0.90923 0.0003	0.77205 0.0089	0.80878 0.0046	-0.42874 0.2163	-0.26241 0.4639
TSS	1.00000 0.0	0.72361 0.0180	0.71107 0.0211	-0.58853 0.0735	-0.08270 0.8203
CL	0.72361 0.0180	1.00000 0.0	0.94237 0.0001	0.05106 0.8886	-0.71482 0.0202
SO4	0.71107 0.0211	0.94237 0.0001	1.00000 0.0	0.03102 0.9322	-0.66848 0.0346
TDS	-0.58853 0.0735	0.05106 0.8886	0.03102 0.9322	1.00000 0.0	-0.49353 0.1472
RAIN	-0.08270 0.8203	-0.71482 0.0202	-0.66848 0.0346	-0.49353 0.1472	1.00000 0.0

Table G2. Raw data, simple statistics and Pearson correlation coefficients and probability values for tributaries during the November, 1994 storm.

NOVEMBER RAIN CORRELATION DATA

STREAM	Q	TEMP	COND	TURB	PH	DO	FCOLI	TKN	NO3
CALF	1100	.	.	300	.	.	7700	4.18	0.196
CALF	950	.	110	350	.	.	25000	3.83	0.366
CALF	300	.	128	192	.	.	11500	2.50	0.801
CALF	200	16.8	172	108	.	.	7800	1.25	0.923
CALF	92	17.0	199	56	.	.	7650	1.16	1.090
CALF	103	16.9	216	40	.	.	43000	0.85	1.220
CALF	280	16.3	182	74	.	.	24000	1.35	0.813
CALF	610	15.9	164	142	.	.	43000	1.57	0.761
CALF	3200	15.6	142	180	.	.	32000	1.93	0.602
BEAR	55	16.8	323	2	7.27	8.8	0	0.47	0.914
BEAR	60	16.2	323	2	.	.	0	0.29	0.886
BEAR	60	.	339	2	.	.	0	0.24	0.902
BEAR	500	16.3	164	310	.	.	43000	2.24	0.907
BEAR	620	16.3	158	216	.	.	28000	1.69	0.648
BEAR	1300	15.7	121	136	.	.	19000	1.30	0.532
BEAR	2500	15.5	99	200	.	.	12750	1.88	0.528
BEAR	6500	15.6	64	350	.	.	8100	2.60	0.323
BEAR	5600	15.8	58	280	.	.	21000	1.95	0.328
TOMAHAWK	20	18.2	240	19	.	9.6	15400	0.96	0.238
TOMAHAWK	130	17.9	240	43	7.64	7.2	9250	1.25	0.270
TOMAHAWK	980	17.5	110	800	8.02	.	41000	5.44	0.522
TOMAHAWK	1250	17.5	105	740	.	.	23000	7.38	0.348
TOMAHAWK	9000	.	79	480	.	.	20000	4.64	0.295
TOMAHAWK	3900	16.4	115	270	.	.	6000	2.25	0.510
TOMAHAWK	1350	16.2	146	250	.	.	6000	1.16	0.757
TOMAHAWK	930	16.1	169	90	.	.	12800	0.95	0.877
TOMAHAWK	5100	16.1	127	260	.	.	6600	1.90	0.599
TOMAHAWK	950	15.8	122	160	.	.	1800	1.17	0.523
TOMAHAWK	3300	15.5	132	75	.	.	4000	0.76	0.654
TOMAHAWK	8000	15.5	100	200	.	.	5000	1.51	0.433

NH3	OPO4	TP	TSS	CL	SO4	TOC	TDS	RAIN
0.074	0.118	0.558	564	2.31	6.2	15.2	122	7.09
0.074	0.127	0.659	447	2.48	6.2	9.2	128	7.09
0.070	0.133	0.497	252	2.54	5.1	9.3	128	7.09
0.066	0.102	0.578	84	2.69	5.1	7.3	132	7.09
0.068	0.080	0.204	29	2.88	5.1	6.6	132	7.13
0.057	0.080	0.164	15	2.95	4.0	5.4	142	7.72
0.069	0.099	0.265	68	2.87	5.1	6.6	136	7.95
0.070	0.145	0.457	162	2.85	6.2	8.0	136	8.58
0.070	0.168	0.598	216	2.46	6.2	10.2	128	9.13
0.068	0.049	0.073	28	6.56	6.2	1.6	220	1.65
0.068	0.049	0.053	0	6.51	7.3	1.1	220	1.69
0.065	0.052	0.063	1	6.46	7.3	1.2	214	2.20
0.070	0.272	0.961	396	4.00	11.1	8.6	150	3.98
0.074	0.211	0.648	247	3.74	11.1	8.1	142	4.25
0.057	0.167	0.497	168	3.09	9.3	9.6	114	4.88
0.072	0.172	0.689	355	2.80	7.3	10.0	106	6.34
0.073	0.165	1.030	662	2.09	7.3	9.4	84	6.50
0.071	0.091	0.759	445	2.07	6.2	9.1	72	6.57
0.082	0.082	0.134	11	5.72	6.2	3.2	172	3.19
0.071	0.053	0.174	112	4.80	6.2	3.4	172	3.66
0.081	0.146	0.982	2010	3.50	9.3	13.1	128	3.82
0.083	0.110	0.992	1800	3.27	8.3	13.8	128	3.98
0.074	0.087	0.790	1190	2.12	7.3	12.3	136	5.43
0.071	0.060	0.436	417	2.37	6.2	9.9	124	5.43
0.072	0.052	0.245	127	2.79	5.1	6.7	122	5.43
0.071	0.041	0.194	96	2.96	4.0	6.3	126	6.42
0.072	0.071	0.416	572	2.63	6.2	7.9	122	6.69
0.052	0.071	0.255	203	2.22	5.1	8.3	116	6.93
0.075	0.062	0.174	146	2.76	4.0	6.2	106	7.52
0.071	0.078	0.376	434	2.23	5.1	7.7	98	8.03

Correlation Analysis

18 'VAR' Variables: Q TEMP COND TURB PH DO
FCOLI TKN NO3 NH3 OPO4 TP
TSS CL SO4 TOC TDS RAIN

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Q	9	759.44444	984.96638	6835	92.00000	3200
TEMP	6	16.41667	0.57764	98.50000	15.60000	17.00000
COND	8	164.12500	35.88250	1313	110.00000	216.00000
TURB	9	160.22222	107.68215	1442	40.00000	350.00000
PH	0	.	.	.	.	.
DO	0	.	.	.	.	.
FCOLI	9	22406	14645	201650	7650	43000
TKN	9	2.06889	1.19956	18.62000	0.85000	4.18000
NO3	9	0.75244	0.32583	6.77200	0.19600	1.22000
NH3	9	0.06867	0.00507	0.61800	0.05700	0.07400
OPO4	9	0.11689	0.02964	1.05200	0.08000	0.16800
TP	9	0.44222	0.18435	3.98000	0.16400	0.65900
TSS	9	204.11111	191.08339	1837	15.00000	564.00000
CL	9	2.67000	0.22967	24.03000	2.31000	2.95000
SO4	9	5.46667	0.77782	49.20000	4.00000	6.20000
TOC	9	8.64444	2.89919	77.80000	5.40000	15.20000
TDS	9	131.55556	5.89727	1184	122.00000	142.00000
RAIN	9	7.65222	0.76444	68.87000	7.09000	9.13000

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	Q	TEMP	COND	TURB	PH	DO
Q	1.00000	-0.79166	-0.44995	0.39975	.	.
	0.0	0.0606	0.2633	0.2864	.	.
	9	6	8	9	0	0
TEMP	-0.79166	1.00000	0.85357	-0.87364	.	.
	0.0606	0.0	0.0306	0.0229	.	.
	6	6	6	6	0	0
COND	-0.44995	0.85357	1.00000	-0.93748	.	.
	0.2633	0.0306	0.0	0.0006	.	.
	8	6	8	8	0	0
TURB	0.39975	-0.87364	-0.93748	1.00000	.	.
	0.2864	0.0229	0.0006	0.0	.	.
	9	6	8	9	0	0
PH	.	.	.	.	.	.
	.	.	.	.	.	.
	0	0	0	0	0	0
DO	.	.	.	.	.	.
	.	.	.	.	.	.
	0	0	0	0	0	0
FCOLI	0.21292	-0.49477	0.13887	-0.19087	.	.
	0.5823	0.3184	0.7429	0.6228	.	.
	9	6	8	9	0	0
TKN	0.29640	-0.91777	-0.91731	0.96322	.	.
	0.4387	0.0099	0.0013	0.0001	.	.
	9	6	8	9	0	0
NO3	-0.51045	0.91989	0.90691	-0.91996	.	.
	0.1603	0.0094	0.0019	0.0004	.	.
	9	6	8	9	0	0
NH3	0.36789	-0.61813	-0.80652	0.77427	.	.
	0.3300	0.1909	0.0156	0.0143	.	.
	9	6	8	9	0	0
OPO4	0.77573	-0.94991	-0.74144	0.53591	.	.
	0.0140	0.0037	0.0353	0.1370	.	.
	9	6	8	9	0	0
TP	0.53984	-0.60651	-0.87300	0.80814	.	.
	0.1336	0.2018	0.0046	0.0084	.	.
	9	6	8	9	0	0
TSS	0.36902	-0.93477	-0.94787	0.95934	.	.
	0.3284	0.0062	0.0003	0.0001	.	.
	9	6	8	9	0	0
CL	-0.59098	0.61618	0.90563	-0.86822	.	.
	0.0938	0.1927	0.0020	0.0024	.	.
	9	6	8	9	0	0
SO4	0.62433	-0.83557	-0.72209	0.74093	.	.
	0.0723	0.0383	0.0431	0.0224	.	.
	9	6	8	9	0	0
TOC	0.48837	-0.83836	-0.90829	0.77465	.	.
	0.1822	0.0371	0.0018	0.0142	.	.
	9	6	8	9	0	0
TDS	-0.45562	0.40131	0.82632	-0.78404	.	.
	0.2178	0.4304	0.0115	0.0124	.	.

	9	6	8	9	0	0
RAIN	0.64803	-0.94801	0.02092	-0.21391	.	.
	0.0591	0.0040	0.9608	0.5805	.	.
	9	6	8	9	0	0

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	FCOLI	TKN	NO3	NH3	OPO4	TP
Q	0.21292 0.5823 9	0.29640 0.4387 9	-0.51045 0.1603 9	0.36789 0.3300 9	0.77573 0.0140 9	0.53984 0.1336 9
TEMP	-0.49477 0.3184 6	-0.91777 0.0099 6	0.91989 0.0094 6	-0.61813 0.1909 6	-0.94991 0.0037 6	-0.60651 0.2018 6
COND	0.13887 0.7429 8	-0.91731 0.0013 8	0.90691 0.0019 8	-0.80652 0.0156 8	-0.74144 0.0353 8	-0.87300 0.0046 8
TURB	-0.19087 0.6228 9	0.96322 0.0001 9	-0.91996 0.0004 9	0.77427 0.0143 9	0.53591 0.1370 9	0.80814 0.0084 9
PH	. . 0	. . 0	. . 0	. . 0	. . 0	. . 0
DO	. . 0	. . 0	. . 0	. . 0	. . 0	. . 0
FCOLI	1.00000 0.0 9	-0.31067 0.4158 9	0.20006 0.6058 9	-0.38658 0.3041 9	0.25255 0.5121 9	-0.20460 0.5975 9
TKN	-0.31067 0.4158 9	1.00000 0.0 9	-0.92030 0.0004 9	0.76282 0.0168 9	0.38502 0.3062 9	0.67415 0.0464 9
NO3	0.20006 0.6058 9	-0.92030 0.0004 9	1.00000 0.0 9	-0.85184 0.0036 9	-0.57613 0.1045 9	-0.76355 0.0166 9
NH3	-0.38658 0.3041 9	0.76282 0.0168 9	-0.85184 0.0036 9	1.00000 0.0 9	0.56151 0.1157 9	0.67581 0.0457 9
OPO4	0.25255 0.5121 9	0.38502 0.3062 9	-0.57613 0.1045 9	0.56151 0.1157 9	1.00000 0.0 9	0.72698 0.0265 9
TP	-0.20460 0.5975 9	0.67415 0.0464 9	-0.76355 0.0166 9	0.67581 0.0457 9	0.72698 0.0265 9	1.00000 0.0 9
TSS	-0.25511 0.5077 9	0.98891 0.0001 9	-0.94401 0.0001 9	0.75238 0.0193 9	0.45706 0.2161 9	0.71082 0.0318 9
CL	0.39413 0.2939 9	-0.86368 0.0027 9	0.86505 0.0026 9	-0.70144 0.0352 9	-0.58829 0.0957 9	-0.82869 0.0058 9
SO4	-0.03038 0.9382 9	0.65628 0.0549 9	-0.84220 0.0044 9	0.87092 0.0022 9	0.75940 0.0176 9	0.74923 0.0201 9
TOC	-0.35544 0.3479 9	0.84787 0.0039 9	-0.87736 0.0019 9	0.69785 0.0366 9	0.48953 0.1810 9	0.63559 0.0658 9
TDS	0.63194 0.0679	-0.81962 0.0068	0.81119 0.0080	-0.81592 0.0073	-0.46370 0.2087	-0.72426 0.0273

	9	9	9	9	9	9
RAIN	0.71474	-0.33386	0.03311	-0.07680	0.58504	0.00229
	0.0305	0.3799	0.9326	0.8443	0.0980	0.9953
	9	9	9	9	9	9

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	TSS	CL	SO4	TOC	TDS	RAIN
Q	0.36902 0.3284 9	-0.59098 0.0938 9	0.62433 0.0723 9	0.48837 0.1822 9	-0.45562 0.2178 9	0.64803 0.0591 9
TEMP	-0.93477 0.0062 6	0.61618 0.1927 6	-0.83557 0.0383 6	-0.83836 0.0371 6	0.40131 0.4304 6	-0.94801 0.0040 6
COND	-0.94787 0.0003 8	0.90563 0.0020 8	-0.72209 0.0431 8	-0.90829 0.0018 8	0.82632 0.0115 8	0.02092 0.9608 8
TURB	0.95934 0.0001 9	-0.86822 0.0024 9	0.74093 0.0224 9	0.77465 0.0142 9	-0.78404 0.0124 9	-0.21391 0.5805 9
PH	. . 0	. . 0	. . 0	. . 0	. . 0	. . 0
DO	. . 0	. . 0	. . 0	. . 0	. . 0	. . 0
FCOLI	-0.25511 0.5077 9	0.39413 0.2939 9	-0.03038 0.9382 9	-0.35544 0.3479 9	0.63194 0.0679 9	0.71474 0.0305 9
TKN	0.98891 0.0001 9	-0.86368 0.0027 9	0.65628 0.0549 9	0.84787 0.0039 9	-0.81962 0.0068 9	-0.33386 0.3799 9
NO3	-0.94401 0.0001 9	0.86505 0.0026 9	-0.84220 0.0044 9	-0.87736 0.0019 9	0.81119 0.0080 9	0.03311 0.9326 9
NH3	0.75238 0.0193 9	-0.70144 0.0352 9	0.87092 0.0022 9	0.69785 0.0366 9	-0.81592 0.0073 9	-0.07680 0.8443 9
OPO4	0.45706 0.2161 9	-0.58829 0.0957 9	0.75940 0.0176 9	0.48953 0.1810 9	-0.46370 0.2087 9	0.58504 0.0980 9
TP	0.71082 0.0318 9	-0.82869 0.0058 9	0.74923 0.0201 9	0.63559 0.0658 9	-0.72426 0.0273 9	0.00229 0.9953 9
TSS	1.00000 0.0 9	-0.88683 0.0014 9	0.70464 0.0340 9	0.89861 0.0010 9	-0.82236 0.0065 9	-0.24106 0.5321 9
CL	-0.88683 0.0014 9	1.00000 0.0 9	-0.66193 0.0521 9	-0.89489 0.0011 9	0.92658 0.0003 9	0.13997 0.7195 9
SO4	0.70464 0.0340 9	-0.66193 0.0521 9	1.00000 0.0 9	0.68698 0.0409 9	-0.67946 0.0441 9	0.28058 0.4646 9
TOC	0.89861 0.0010 9	-0.89489 0.0011 9	0.68698 0.0409 9	1.00000 0.0 9	-0.87603 0.0020 9	-0.09424 0.8094 9
TDS	-0.82236 0.0065	0.92658 0.0003	-0.67946 0.0441	-0.87603 0.0020	1.00000 0.0	0.27142 0.4799

	9	9	9	9	9	9
RAIN	-0.24106	0.13997	0.28058	-0.09424	0.27142	1.00000
	0.5321	0.7195	0.4646	0.8094	0.4799	0.0
	9	9	9	9	9	9

Correlation Analysis

18 'VAR' Variables:	Q	TEMP	COND	TURB	PH	DO
	FCOLI	TKN	NO3	NH3	OPO4	TP
	TSS	CL	SO4	TOC	TDS	RAIN

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Q	9	1911	2484	17195	55.00000	6500
TEMP	8	16.02500	0.44641	128.20000	15.50000	16.80000
COND	9	183.22222	114.67757	1649	58.00000	339.00000
TURB	9	166.44444	138.21642	1498	2.00000	350.00000
PH	1	7.27000	.	7.27000	7.27000	7.27000
DO	1	8.80000	.	8.80000	8.80000	8.80000
FCOLI	9	14650	14712	131850	0	43000
TKN	9	1.40667	0.88139	12.66000	0.24000	2.60000
NO3	9	0.66311	0.24820	5.96800	0.32300	0.91400
NH3	9	0.06867	0.00520	0.61800	0.05700	0.07400
OPO4	9	0.13644	0.08018	1.22800	0.04900	0.27200
TP	9	0.53033	0.38454	4.77300	0.05300	1.03000
TSS	9	255.77778	229.21812	2302	0	662.00000
CL	9	4.14667	1.88482	37.32000	2.07000	6.56000
SO4	9	8.12222	1.91101	73.10000	6.20000	11.10000
TOC	9	6.52222	3.95689	58.70000	1.10000	10.00000
TDS	9	146.88889	58.67803	1322	72.00000	220.00000
RAIN	9	4.22889	2.02469	38.06000	1.65000	6.57000

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	Q	TEMP	COND	TURB	PH	DO
Q	1.00000	-0.67742	-0.77574	0.70903	.	.
	0.0	0.0649	0.0140	0.0325	.	.
	9	8	9	9	1	1
TEMP	-0.67742	1.00000	0.80035	-0.51884	.	.
	0.0649	0.0	0.0170	0.1877	.	.
	8	8	8	8	1	1
COND	-0.77574	0.80035	1.00000	-0.88825	.	.
	0.0140	0.0170	0.0	0.0014	.	.
	9	8	9	9	1	1
TURB	0.70903	-0.51884	-0.88825	1.00000	.	.
	0.0325	0.1877	0.0014	0.0	.	.
	9	8	9	9	1	1
PH	.	.	.	.	.	.
	.	.	.	.	.	.
	1	1	1	1	1	1
DO	.	.	.	.	.	.
	.	.	.	.	.	.
	1	1	1	1	1	1
FCOLI	0.04714	-0.03315	-0.54709	0.69348	.	.
	0.9042	0.9379	0.1274	0.0383	.	.
	9	8	9	9	1	1
TKN	0.69941	-0.57021	-0.90953	0.98817	.	.
	0.0360	0.1400	0.0007	0.0001	.	.
	9	8	9	9	1	1
NO3	-0.90068	0.81454	0.88352	-0.67029	.	.
	0.0009	0.0138	0.0016	0.0482	.	.
	9	8	9	9	1	1
NH3	0.36883	0.05227	-0.26879	0.48826	.	.
	0.3287	0.9022	0.4843	0.1823	.	.
	9	8	9	9	1	1
OPO4	0.09956	-0.22674	-0.60759	0.74602	.	.
	0.7988	0.5892	0.0826	0.0210	.	.
	9	8	9	9	1	1
TP	0.66598	-0.54524	-0.89059	0.99302	.	.
	0.0502	0.1622	0.0013	0.0001	.	.
	9	8	9	9	1	1
TSS	0.84660	-0.60904	-0.87866	0.95940	.	.
	0.0040	0.1090	0.0018	0.0001	.	.
	9	8	9	9	1	1
CL	-0.79177	0.80922	0.99789	-0.87974	.	.
	0.0110	0.0150	0.0001	0.0018	.	.
	9	8	9	9	1	1
SO4	-0.35563	0.13253	-0.17645	0.34496	.	.
	0.3476	0.7544	0.6497	0.3633	.	.
	9	8	9	9	1	1
TOC	0.59706	-0.73485	-0.96554	0.86777	.	.
	0.0896	0.0378	0.0001	0.0024	.	.
	9	8	9	9	1	1
TDS	-0.82532	0.81715	0.99052	-0.85225	.	.
	0.0062	0.0133	0.0001	0.0035	.	.

	9	8	9	9	1	1
PAIN	0.83202	-0.84835	-0.97411	0.83720	.	.
	0.0054	0.0078	0.0001	0.0049	.	.
	9	8	9	9	1	1

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	FCOLI	TKN	NO3	NH3	OPO4	TP
Q	0.04714 0.9042 9	0.69941 0.0360 9	-0.90068 0.0009 9	0.36883 0.3287 9	0.09956 0.7988 9	0.66598 0.0502 9
TEMP	-0.03315 0.9379 8	-0.57021 0.1400 8	0.81454 0.0138 8	0.05227 0.9022 8	-0.22674 0.5892 8	-0.54524 0.1622 8
COND	-0.54709 0.1274 9	-0.90953 0.0007 9	0.88352 0.0016 9	-0.26879 0.4843 9	-0.60759 0.0826 9	-0.89059 0.0013 9
TURB	0.69348 0.0383 9	0.98817 0.0001 9	-0.67029 0.0482 9	0.48826 0.1823 9	0.74602 0.0210 9	0.99302 0.0001 9
PH	. . 1	. . 1	. . 1	. . 1	. . 1	. . 1
DO	. . 1	. . 1	. . 1	. . 1	. . 1	. . 1
FCOLI	1.00000 0.0 9	0.66371 0.0513 9	-0.13494 0.7292 9	0.18248 0.6384 9	0.87177 0.0022 9	0.70820 0.0328 9
TKN	0.66371 0.0513 9	1.00000 0.0 9	-0.68656 0.0411 9	0.47846 0.1926 9	0.76958 0.0153 9	0.99505 0.0001 9
NO3	-0.13494 0.7292 9	-0.68656 0.0411 9	1.00000 0.0 9	-0.20583 0.5952 9	-0.20703 0.5930 9	-0.64588 0.0602 9
NH3	0.18248 0.6384 9	0.47846 0.1926 9	-0.20583 0.5952 9	1.00000 0.0 9	0.23531 0.5422 9	0.44761 0.2270 9
OPO4	0.87177 0.0022 9	0.76958 0.0153 9	-0.20703 0.5930 9	0.23531 0.5422 9	1.00000 0.0 9	0.79801 0.0099 9
TP	0.70820 0.0328 9	0.99505 0.0001 9	-0.64588 0.0602 9	0.44761 0.2270 9	0.79801 0.0099 9	1.00000 0.0 9
TSS	0.46872 0.2031 9	0.96178 0.0001 9	-0.75617 0.0184 9	0.51985 0.1514 9	0.58488 0.0981 9	0.94959 0.0001 9
CL	-0.51934 0.1519 9	-0.89865 0.0010 9	0.90078 0.0009 9	-0.25462 0.5085 9	-0.58538 0.0977 9	-0.88041 0.0017 9
SO4	0.78379 0.0124 9	0.33119 0.3840 9	0.18442 0.6348 9	0.00210 0.9957 9	0.82041 0.0067 9	0.38588 0.3050 9
TOC	0.67377 0.0466 9	0.90341 0.0008 9	-0.75706 0.0182 9	0.19313 0.6186 9	0.76274 0.0168 9	0.89411 0.0011 9
TDS	-0.46790 0.2040	-0.86718 0.0025	0.92545 0.0003	-0.23177 0.5485	-0.51135 0.1594	-0.84688 0.0040

	9	9	9	9	9	9
RAIN	0.40594	0.86355	-0.91691	0.30151	0.49285	0.83778
	0.2783	0.0027	0.0005	0.4304	0.1777	0.0048
	9	9	9	9	9	9

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	TSS	CL	SO4	TOC	TDS	RAIN
Q	0.84660 0.0040 9	-0.79177 0.0110 9	-0.35563 0.3476 9	0.59706 0.0896 9	-0.82532 0.0062 9	0.83202 0.0054 9
TEMP	-0.60904 0.1090 8	0.80922 0.0150 8	0.13253 0.7544 8	-0.73485 0.0378 8	0.81715 0.0133 8	-0.84835 0.0078 8
COND	-0.87866 0.0018 9	0.99789 0.0001 9	-0.17645 0.6497 9	-0.96554 0.0001 9	0.99052 0.0001 9	-0.97411 0.0001 9
TURB	0.95940 0.0001 9	-0.87974 0.0018 9	0.34496 0.3633 9	0.86777 0.0024 9	-0.85225 0.0035 9	0.83720 0.0049 9
PH	. . 1	. . 1	. . 1	. . 1	. . 1	. . 1
DO	. . 1	. . 1	. . 1	. . 1	. . 1	. . 1
FCOLI	0.46872 0.2031 9	-0.51934 0.1519 9	0.78379 0.0124 9	0.67377 0.0466 9	-0.46790 0.2040 9	0.40594 0.2783 9
TKN	0.96178 0.0001 9	-0.89865 0.0010 9	0.33119 0.3840 9	0.90341 0.0008 9	-0.86718 0.0025 9	0.86355 0.0027 9
NO3	-0.75617 0.0184 9	0.90078 0.0009 9	0.18442 0.6348 9	-0.75706 0.0182 9	0.92545 0.0003 9	-0.91691 0.0005 9
NH3	0.51985 0.1514 9	-0.25462 0.5085 9	0.00210 0.9957 9	0.19313 0.6186 9	-0.23177 0.5485 9	0.30151 0.4304 9
OPO4	0.58488 0.0981 9	-0.58538 0.0977 9	0.82041 0.0067 9	0.76274 0.0168 9	-0.51135 0.1594 9	0.49285 0.1777 9
TP	0.94959 0.0001 9	-0.88041 0.0017 9	0.38588 0.3050 9	0.89411 0.0011 9	-0.84688 0.0040 9	0.83778 0.0048 9
TSS	1.00000 0.0 9	-0.87662 0.0019 9	0.10454 0.7890 9	0.80944 0.0082 9	-0.86301 0.0027 9	0.87173 0.0022 9
CL	-0.87662 0.0019 9	1.00000 0.0 9	-0.15916 0.6825 9	-0.95802 0.0001 9	0.99537 0.0001 9	-0.98112 0.0001 9
SO4	0.10454 0.7890 9	-0.15916 0.6825 9	1.00000 0.0 9	0.37402 0.3214 9	-0.07868 0.8405 9	0.02256 0.9541 9
TOC	0.80944 0.0082 9	-0.95802 0.0001 9	0.37402 0.3214 9	1.00000 0.0 9	-0.93255 0.0002 9	0.91574 0.0005 9
TDS	-0.86301 0.0027	0.99537 0.0001	-0.07868 0.8405	-0.93255 0.0002	1.00000 0.0	-0.98596 0.0001

	9	9	9	9	9	9
RAIN	0.87173	-0.98112	0.02256	0.91574	-0.98596	1.00000
	0.0022	0.0001	0.9541	0.0005	0.0001	0.0
	9	9	9	9	9	9

Correlation Analysis

18 'VAR' Variables: Q TEMP COND TURB PH DO
FCOLI TKN NO3 NH3 OPO4 TP
TSS CL SO4 TOC TDS RAIN

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Q	12	2909	3040	34910	20.00000	9000
TEMP	11	16.60909	0.98128	182.70000	15.50000	18.20000
COND	12	140.41667	51.78883	1685	79.00000	240.00000
TURB	12	282.25000	260.51597	3387	19.00000	800.00000
PH	2	7.83000	0.26870	15.66000	7.64000	8.02000
DO	2	8.40000	1.69706	16.80000	7.20000	9.60000
FCOLI	12	12571	11119	150850	1800	41000
TKN	12	2.44750	2.16030	29.37000	0.76000	7.38000
NO3	12	0.50217	0.19861	6.02600	0.23800	0.87700
NH3	12	0.07292	0.00803	0.87500	0.05200	0.08300
OPO4	12	0.07608	0.02868	0.91300	0.04100	0.14600
TP	12	0.43067	0.31515	5.16800	0.13400	0.99200
TSS	12	593.16667	691.77004	7118	11.00000	2010
CL	12	3.11417	1.10444	37.37000	2.12000	5.72000
SO4	12	6.08333	1.60614	73.00000	4.00000	9.30000
TOC	12	8.23333	3.48120	98.80000	3.20000	13.80000
TDS	12	129.16667	22.44117	1550	98.00000	172.00000
RAIN	12	5.54417	1.61342	66.53000	3.19000	8.03000

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	Q	TEMP	COND	TURB	PH	DO
Q	1.00000 0.0 12	-0.64061 0.0337 11	-0.64314 0.0241 12	0.11263 0.7275 12	1.00000 . 2	-1.00000 . 2
TEMP	-0.64061 0.0337 11	1.00000 0.0 11	0.59199 0.0550 11	0.26364 0.4334 11	-1.00000 . 2	1.00000 . 2
COND	-0.64314 0.0241 12	0.59199 0.0550 11	1.00000 0.0 12	-0.61917 0.0318 12	-1.00000 . 2	. . 2
TURB	0.11263 0.7275 12	0.26364 0.4334 11	-0.61917 0.0318 12	1.00000 0.0 12	1.00000 . 2	-1.00000 . 2
PH	1.00000 . 2	-1.00000 . 2	-1.00000 . 2	1.00000 . 2	1.00000 . 2	. . 1
DO	-1.00000 . 2	1.00000 . 2	. . 2	-1.00000 . 2	. . 1	1.00000 . 2
FCOLI	-0.15175 0.6378 12	0.61171 0.0455 11	-0.14932 0.6432 12	0.78799 0.0023 12	1.00000 . 2	1.00000 . 2
TKN	0.10616 0.7426 12	0.41307 0.2067 11	-0.51172 0.0890 12	0.94430 0.0001 12	1.00000 . 2	-1.00000 . 2
NO3	-0.13379 0.6785 12	-0.67035 0.0240 11	-0.17742 0.5812 12	-0.15292 0.6352 12	1.00000 . 2	-1.00000 . 2
NH3	-0.04950 0.8786 12	0.57081 0.0667 11	0.10723 0.7401 12	0.42630 0.1670 12	1.00000 . 2	1.00000 . 2
OPO4	0.01722 0.9576 12	0.42105 0.1972 11	-0.38150 0.2211 12	0.84026 0.0006 12	1.00000 . 2	1.00000 . 2
TP	0.23347 0.4652 12	0.29011 0.3868 11	-0.63474 0.0266 12	0.97869 0.0001 12	1.00000 . 2	-1.00000 . 2
TSS	0.13780 0.6693 12	0.33126 0.3197 11	-0.56600 0.0551 12	0.97816 0.0001 12	1.00000 . 2	-1.00000 . 2
CL	-0.62668 0.0292 12	0.87287 0.0005 11	0.86710 0.0003 12	-0.22098 0.4901 12	-1.00000 . 2	1.00000 . 2
SO4	-0.01862 0.9542 12	0.66984 0.0241 11	-0.24265 0.4473 12	0.85236 0.0004 12	1.00000 . 2	. . 2
TOC	0.32310 0.3056 12	-0.02180 0.9493 11	-0.82785 0.0009 12	0.92409 0.0001 12	1.00000 . 2	-1.00000 . 2
TDS	-0.45607 0.1362	0.87669 0.0004	0.78082 0.0027	-0.17530 0.5858	-1.00000 .	. .

	12	11	12	12	2	2
RAIN	0.53407	-0.97197	-0.47644	-0.33154	1.00000	-1.00000
	0.0737	0.0001	0.1174	0.2925	.	.
	12	11	12	12	2	2

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	FCOLI	TKN	NO3	NH3	OPO4	TP
Q	-0.15175	0.10616	-0.13379	-0.04950	0.01722	0.23347
	0.6378	0.7426	0.6785	0.8786	0.9576	0.4652
	12	12	12	12	12	12
TEMP	0.61171	0.41307	-0.67035	0.57081	0.42105	0.29011
	0.0455	0.2067	0.0240	0.0667	0.1972	0.3868
	11	11	11	11	11	11
COND	-0.14932	-0.51172	-0.17742	0.10723	-0.38150	-0.63474
	0.6432	0.0890	0.5812	0.7401	0.2211	0.0266
	12	12	12	12	12	12
TURB	0.78799	0.94430	-0.15292	0.42630	0.84026	0.97869
	0.0023	0.0001	0.6352	0.1670	0.0006	0.0001
	12	12	12	12	12	12
PH	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
	.	.	.	.	.	.
	2	2	2	2	2	2
DO	1.00000	-1.00000	-1.00000	1.00000	1.00000	-1.00000
	.	.	.	.	.	.
	2	2	2	2	2	2
FCOLI	1.00000	0.75909	-0.23792	0.63210	0.84463	0.77658
	0.0	0.0042	0.4565	0.0274	0.0005	0.0030
	12	12	12	12	12	12
TKN	0.75909	1.00000	-0.34881	0.49808	0.78828	0.97000
	0.0042	0.0	0.2665	0.0994	0.0023	0.0001
	12	12	12	12	12	12
NO3	-0.23792	-0.34881	1.00000	-0.26318	-0.39243	-0.27354
	0.4565	0.2665	0.0	0.4085	0.2070	0.3896
	12	12	12	12	12	12
NH3	0.63210	0.49808	-0.26318	1.00000	0.47974	0.43747
	0.0274	0.0994	0.4085	0.0	0.1145	0.1550
	12	12	12	12	12	12
OPO4	0.84463	0.78828	-0.39243	0.47974	1.00000	0.83320
	0.0005	0.0023	0.2070	0.1145	0.0	0.0008
	12	12	12	12	12	12
TP	0.77658	0.97000	-0.27354	0.43747	0.83320	1.00000
	0.0030	0.0001	0.3896	0.1550	0.0008	0.0
	12	12	12	12	12	12
TSS	0.83585	0.95729	-0.25785	0.47758	0.88777	0.98612
	0.0007	0.0001	0.4184	0.1164	0.0001	0.0001
	12	12	12	12	12	12
CL	0.26811	-0.09610	-0.45362	0.47344	0.09584	-0.22636
	0.3995	0.7664	0.1386	0.1200	0.7670	0.4793
	12	12	12	12	12	12
SO4	0.83460	0.86217	-0.53462	0.51598	0.86459	0.86677
	0.0007	0.0003	0.0733	0.0859	0.0003	0.0003
	12	12	12	12	12	12
TOC	0.58678	0.87980	-0.07330	0.19854	0.69395	0.93621
	0.0449	0.0002	0.8209	0.5362	0.0123	0.0001
	12	12	12	12	12	12
TDS	0.24912	-0.00980	-0.56911	0.30739	-0.00638	-0.13398
	0.4349	0.9759	0.0535	0.3311	0.9843	0.6780

	12	12	12	12	12	12
RAIN	-0.62025	-0.43222	0.52657	-0.55901	-0.40735	-0.31781
	0.0314	0.1605	0.0786	0.0588	0.1887	0.3141
	12	12	12	12	12	12

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	TSS	CL	SO4	TOC	TDS	RAIN
Q	0.13780	-0.62668	-0.01862	0.32310	-0.45607	0.53407
	0.6693	0.0292	0.9542	0.3056	0.1362	0.0737
	12	12	12	12	12	12
TEMP	0.33126	0.87287	0.66984	-0.02180	0.87669	-0.97197
	0.3197	0.0005	0.0241	0.9493	0.0004	0.0001
	11	11	11	11	11	11
COND	-0.56600	0.86710	-0.24265	-0.82785	0.78082	-0.47644
	0.0551	0.0003	0.4473	0.0009	0.0027	0.1174
	12	12	12	12	12	12
TURB	0.97816	-0.22098	0.85236	0.92409	-0.17530	-0.33154
	0.0001	0.4901	0.0004	0.0001	0.5858	0.2925
	12	12	12	12	12	12
PH	1.00000	-1.00000	1.00000	1.00000	-1.00000	1.00000
	.	.	.	.	.	.
	2	2	2	2	2	2
DO	-1.00000	1.00000	.	-1.00000	.	-1.00000
	.	.	.	.	.	.
	2	2	2	2	2	2
FCOLI	0.83585	0.26811	0.83460	0.58678	0.24912	-0.62025
	0.0007	0.3995	0.0007	0.0449	0.4349	0.0314
	12	12	12	12	12	12
TKN	0.95729	-0.09610	0.86217	0.87980	-0.00980	-0.43222
	0.0001	0.7664	0.0003	0.0002	0.9759	0.1605
	12	12	12	12	12	12
NO3	-0.25785	-0.45362	-0.53462	-0.07330	-0.56911	0.52657
	0.4184	0.1386	0.0733	0.8209	0.0535	0.0786
	12	12	12	12	12	12
NH3	0.47758	0.47344	0.51598	0.19854	0.30739	-0.55901
	0.1164	0.1200	0.0859	0.5362	0.3311	0.0588
	12	12	12	12	12	12
OPO4	0.88777	0.09584	0.86459	0.69395	-0.00638	-0.40735
	0.0001	0.7670	0.0003	0.0123	0.9843	0.1887
	12	12	12	12	12	12
TP	0.98612	-0.22636	0.86677	0.93621	-0.13398	-0.31781
	0.0001	0.4793	0.0003	0.0001	0.6780	0.3141
	12	12	12	12	12	12
TSS	1.00000	-0.13918	0.88183	0.89293	-0.10596	-0.35251
	0.0	0.6662	0.0001	0.0001	0.7431	0.2611
	12	12	12	12	12	12
CL	-0.13918	1.00000	0.19786	-0.51341	0.85852	-0.75562
	0.6662	0.0	0.5376	0.0878	0.0004	0.0045
	12	12	12	12	12	12
SO4	0.88183	0.19786	1.00000	0.68575	0.29266	-0.67223
	0.0001	0.5376	0.0	0.0138	0.3559	0.0166
	12	12	12	12	12	12
TOC	0.89293	-0.51341	0.68575	1.00000	-0.38781	-0.06390
	0.0001	0.0878	0.0138	0.0	0.2129	0.8436
	12	12	12	12	12	12
TDS	-0.10596	0.85852	0.29266	-0.38781	1.00000	-0.82746
	0.7431	0.0004	0.3559	0.2129	0.0	0.0009

	12	12	12	12	12	12
RAIN	-0.35251	-0.75562	-0.67223	-0.06390	-0.82746	1.00000
	0.2611	0.0045	0.0166	0.8436	0.0009	0.0
	12	12	12	12	12	12

Table G3. Raw data, simple statistics and Pearson correlation coefficients and probability values for tributaries during the January, 1995 storm.

CREEK	Q	TEMP	COND	TURB	PH	DO	FCOLI	TKN
TOMAHAWK	15	13.2	336	1	8.05	12.2	650	0.81
TOMAHAWK	24	12.7	325	13	8.20	11.7	2000	0.94
TOMAHAWK	28	12.6	323	14	8.11	13.7	2300	0.68
TOMAHAWK	68	12.8	328	9	8.13	12.8	1950	0.67
TOMAHAWK	130	12.6	299	51	8.13	14.0	7600	1.08
TOMAHAWK	175	14.8	242	82	8.05	9.8	16000	1.26
TOMAHAWK	245	13.5	213	81	8.01	11.5	12050	1.48
TOMAHAWK	350	13.1	185	68	7.92	10.3	9450	1.37
TOMAHAWK	420	12.9	178	59	7.92	9.3	10400	1.50
TOMAHAWK	750	12.9	156	120	7.95	9.2	8000	1.67
TOMAHAWK	1350	12.2	150	130	7.88	9.1	17000	2.07
TOMAHAWK	1900	11.0	133	180	7.87	10.0	12000	2.43
TOMAHAWK	2900	11.1	123	430	7.95	9.7	9000	3.23
TOMAHAWK	3400	12.0	120	400	7.90	9.1	14000	3.29
TOMAHAWK	4600	12.2	119	410	7.92	9.5	18000	3.98
TOMAHAWK	4700	12.1	113	550	7.94	9.1	14000	3.40
TOMAHAWK	4100	11.9	113	380	7.82	9.6	5000	2.84
TOMAHAWK	3500	11.9	118	250	7.89	9.9	6000	2.22
TOMAHAWK	2800	11.9	121	200	7.93	8.2	5200	1.79
TOMAHAWK	2450	11.7	126	150	7.95	9.8	7850	1.42
TOMAHAWK	2070	11.9	129	130	7.96	9.0	5600	1.54
TOMAHAWK	1850	11.8	132	120	7.90	9.2	5300	1.34
TOMAHAWK	1750	11.6	135	105	7.90	8.8	4500	1.30
TOMAHAWK	.	11.6	138	95	7.86	9.0	5000	1.05
TOMAHAWK	.	11.6	139	91	7.88	9.2	3500	0.97
TOMAHAWK	.	11.5	139	83	7.99	8.9	3800	0.86
TOMAHAWK	.	11.3	150	80	7.98	8.4	3000	0.74
TOMAHAWK	.	.	.	.	.	.	.	.

NO3	NH3	OPO4	TSS	CL	SO4	TOC	TDS	RAIN
0.356	0.025	0.010	1	4.53	11.97	3.0	181	0.79
0.376	0.025	0.010	6	4.59	10.89	3.4	179	0.94
0.356	0.025	0.010	7	4.01	10.89	3.7	177	0.98
0.334	0.025	0.010	5	3.84	10.89	3.1	176	1.06
0.310	0.025	0.010	49	4.18	15.93	8.4	174	1.14
0.333	0.025	0.010	58	3.70	14.04	13.5	156	1.34
0.317	0.025	0.010	59	3.21	13.05	15.8	147	1.42
0.241	0.025	0.010	74	2.85	11.97	18.4	132	1.65
0.249	0.025	0.010	58	2.76	9.63	16.7	122	1.69
0.271	0.025	0.010	276	2.59	9.63	18.3	118	1.97
0.246	0.025	0.010	348	2.58	9.63	15.0	119	2.09
0.217	0.025	0.010	520	2.26	9.63	17.0	114	2.13
0.205	0.025	0.010	867	2.21	10.89	16.3	108	2.13
0.217	0.025	0.010	884	2.12	10.89	17.3	112	2.17
0.232	0.025	0.010	1044	2.12	10.89	18.7	121	2.17
0.242	0.025	0.010	1036	2.11	10.89	20.9	128	2.17
0.288	0.051	0.059	704	2.14	11.97	16.9	109	2.20
0.314	0.050	0.010	533	2.12	10.89	14.2	108	2.20
0.347	0.025	0.010	389	2.05	10.89	15.8	110	2.20
0.392	0.025	0.010	316	2.15	9.63	15.9	110	2.24
0.401	0.025	0.010	262	1.97	9.63	12.8	110	2.28
0.427	0.025	0.010	230	2.02	9.63	12.0	106	2.28
0.444	0.025	0.010	176	2.47	8.37	10.6	107	2.28
0.467	0.025	0.010	188	1.92	8.37	13.2	105	2.28
0.494	0.025	0.010	165	2.17	8.37	11.4	105	2.28
0.494	0.025	0.010	145	2.22	8.37	12.2	105	2.28
0.524	0.025	0.010	111	2.11	6.84	10.7	103	2.28
.	.	.	20	.	.	.	.	.

Correlation Analysis

17 'VAR' Variables: Q TEMP COND TURB PH DO
FCOLI TKN NO3 NH3 OPO4 TSS
CL SO4 TOC TDS RAIN

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Q	23	1721	1584	39575	15.00000	4700
TEMP	27	12.23704	0.83166	330.40000	11.00000	14.80000
COND	27	177.14815	76.72313	4783	113.00000	336.00000
TURB	27	158.59259	147.65663	4282	1.00000	550.00000
PH	27	7.96259	0.09412	214.99000	7.82000	8.20000
DO	27	10.03704	1.56209	271.00000	8.20000	14.00000
FCOLI	27	7746	4938	209150	650.00000	18000
TKN	27	1.70111	0.92878	45.93000	0.67000	3.98000
NO3	27	0.33681	0.09408	9.09400	0.20500	0.52400
NH3	27	0.02689	0.00681	0.72600	0.02500	0.05100
OPO4	27	0.01181	0.00943	0.31900	0.01000	0.05900
TSS	28	304.67857	325.61953	8531	1.00000	1044
CL	27	2.70370	0.85000	73.00000	1.92000	4.59000
SO4	27	10.54333	1.89292	284.67000	6.84000	15.93000
TOC	27	13.15556	5.07144	355.20000	3.00000	20.90000
TDS	27	127.48148	27.29662	3442	103.00000	181.00000
RAIN	27	1.87556	0.50686	50.64000	0.79000	2.28000

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	Q	TEMP	COND	TURB	PH	DO
Q	1.00000 0.0 23	-0.61364 0.0018 23	-0.79065 0.0001 23	0.92147 0.0001 23	-0.65709 0.0007 23	-0.60523 0.0022 23
TEMP	-0.61364 0.0018 23	1.00000 0.0 27	0.60492 0.0008 27	-0.36156 0.0639 27	0.49353 0.0089 27	0.42760 0.0261 27
COND	-0.79065 0.0001 23	0.60492 0.0008 27	1.00000 0.0 27	-0.62970 0.0004 27	0.87920 0.0001 27	0.87337 0.0001 27
TURB	0.92147 0.0001 23	-0.36156 0.0639 27	-0.62970 0.0004 27	1.00000 0.0 27	-0.49022 0.0094 27	-0.41307 0.0322 27
PH	-0.65709 0.0007 23	0.49353 0.0089 27	0.87920 0.0001 27	-0.49022 0.0094 27	1.00000 0.0 27	0.75876 0.0001 27
DO	-0.60523 0.0022 23	0.42760 0.0261 27	0.87337 0.0001 27	-0.41307 0.0322 27	0.75876 0.0001 27	1.00000 0.0 27
FCOLI	0.33990 0.1125 23	0.21954 0.2712 27	-0.35623 0.0682 27	0.50231 0.0076 27	-0.31328 0.1116 27	-0.26064 0.1892 27
TKN	0.87040 0.0001 23	-0.25659 0.1964 27	-0.57860 0.0016 27	0.93650 0.0001 27	-0.49616 0.0085 27	-0.35659 0.0679 27
NO3	-0.29716 0.1685 23	-0.22264 0.2643 27	0.04639 0.8183 27	-0.50953 0.0066 27	0.11677 0.5619 27	-0.13423 0.5044 27
NH3	0.41528 0.0488 23	-0.11678 0.5618 27	-0.23173 0.2448 27	0.30774 0.1184 27	-0.33152 0.0912 27	-0.05349 0.7910 27
OPO4	0.32743 0.1272 23	-0.08099 0.6880 27	-0.16710 0.4048 27	0.29967 0.1289 27	-0.30278 0.1247 27	-0.05591 0.7818 27
TSS	0.92856 0.0001 23	-0.41749 0.0303 27	-0.63619 0.0004 27	0.97768 0.0001 27	-0.51187 0.0063 27	-0.41161 0.0329 27
CL	-0.78520 0.0001 23	0.66760 0.0001 27	0.97290 0.0001 27	-0.56437 0.0022 27	0.85808 0.0001 27	0.84689 0.0001 27
SO4	-0.26456 0.2225 23	0.64240 0.0003 27	0.47964 0.0114 27	0.03757 0.8524 27	0.42938 0.0254 27	0.62098 0.0005 27
TOC	0.61841 0.0017 23	-0.17222 0.3904 27	-0.80760 0.0001 27	0.66963 0.0001 27	-0.72560 0.0001 27	-0.65307 0.0002 27
TDS	-0.68821 0.0003 23	0.67230 0.0001 27	0.96170 0.0001 27	-0.44372 0.0204 27	0.86465 0.0001 27	0.88841 0.0001 27
RAIN	0.77984 0.0001	-0.70735 0.0001	-0.97124 0.0001	0.52717 0.0047	-0.83549 0.0001	-0.86985 0.0001

23	27	27	27	27	27

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	FCOLI	TKN	NO3	NH3	OPO4	TSS
Q	0.33990	0.87040	-0.29716	0.41528	0.32743	0.92856
	0.1125	0.0001	0.1685	0.0488	0.1272	0.0001
	23	23	23	23	23	23
TEMP	0.21954	-0.25659	-0.22264	-0.11678	-0.08099	-0.41749
	0.2712	0.1964	0.2643	0.5618	0.6880	0.0303
	27	27	27	27	27	27
COND	-0.35623	-0.57860	0.04639	-0.23173	-0.16710	-0.63619
	0.0682	0.0016	0.8183	0.2448	0.4048	0.0004
	27	27	27	27	27	27
TURB	0.50231	0.93650	-0.50953	0.30774	0.29967	0.97768
	0.0076	0.0001	0.0066	0.1184	0.1289	0.0001
	27	27	27	27	27	27
PH	-0.31328	-0.49616	0.11677	-0.33152	-0.30278	-0.51187
	0.1116	0.0085	0.5619	0.0912	0.1247	0.0063
	27	27	27	27	27	27
DO	-0.26064	-0.35659	-0.13423	-0.05349	-0.05591	-0.41161
	0.1892	0.0679	0.5044	0.7910	0.7818	0.0329
	27	27	27	27	27	27
FCOLI	1.00000	0.67097	-0.66187	-0.13167	-0.11116	0.53288
	0.0	0.0001	0.0002	0.5127	0.5810	0.0042
	27	27	27	27	27	27
TKN	0.67097	1.00000	-0.69627	0.25906	0.24506	0.96291
	0.0001	0.0	0.0001	0.1919	0.2179	0.0001
	27	27	27	27	27	27
NO3	-0.66187	-0.69627	1.00000	-0.11048	-0.10369	-0.53667
	0.0002	0.0001	0.0	0.5833	0.6068	0.0039
	27	27	27	27	27	27
NH3	-0.13167	0.25906	-0.11048	1.00000	0.70791	0.26881
	0.5127	0.1919	0.5833	0.0	0.0001	0.1752
	27	27	27	27	27	27
OPO4	-0.11116	0.24506	-0.10369	0.70791	1.00000	0.23767
	0.5810	0.2179	0.6068	0.0001	0.0	0.2326
	27	27	27	27	27	27
TSS	0.53288	0.96291	-0.53667	0.26881	0.23767	1.00000
	0.0042	0.0001	0.0039	0.1752	0.2326	0.0
	27	27	27	27	27	28
CL	-0.24393	-0.48689	-0.05794	-0.19443	-0.13254	-0.57730
	0.2201	0.0100	0.7741	0.3311	0.5099	0.0016
	27	27	27	27	27	27
SO4	0.27041	0.11683	-0.49219	0.13659	0.15063	-0.02062
	0.1725	0.5617	0.0091	0.4969	0.4533	0.9187
	27	27	27	27	27	27
TOC	0.70214	0.71008	-0.48145	0.13756	0.14756	0.65423
	0.0001	0.0001	0.0110	0.4938	0.4626	0.0002
	27	27	27	27	27	27
TDS	-0.17052	-0.37942	-0.14079	-0.20028	-0.13531	-0.45725
	0.3951	0.0509	0.4836	0.3165	0.5010	0.0165
	27	27	27	27	27	27
RAIN	0.21340	0.44389	0.14035	0.18446	0.12793	0.54478
	0.2852	0.0204	0.4850	0.3570	0.5248	0.0033

27	27	27	27	27	27

JANUARY RAIN CORRELATION DATA
TOMAHAWK STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	CL	SO4	TOC	TDS	RAIN
Q	-0.78520	-0.26456	0.61841	-0.68821	0.77984
	0.0001	0.2225	0.0017	0.0003	0.0001
	23	23	23	23	23
TEMP	0.66760	0.64240	-0.17222	0.67230	-0.70735
	0.0001	0.0003	0.3904	0.0001	0.0001
	27	27	27	27	27
COND	0.97290	0.47964	-0.80760	0.96170	-0.97124
	0.0001	0.0114	0.0001	0.0001	0.0001
	27	27	27	27	27
TURB	-0.56437	0.03757	0.66963	-0.44372	0.52717
	0.0022	0.8524	0.0001	0.0204	0.0047
	27	27	27	27	27
PH	0.85808	0.42938	-0.72560	0.86465	-0.83549
	0.0001	0.0254	0.0001	0.0001	0.0001
	27	27	27	27	27
DO	0.84689	0.62098	-0.65307	0.88841	-0.86985
	0.0001	0.0005	0.0002	0.0001	0.0001
	27	27	27	27	27
FCOLI	-0.24393	0.27041	0.70214	-0.17052	0.21340
	0.2201	0.1725	0.0001	0.3951	0.2852
	27	27	27	27	27
TKN	-0.48689	0.11683	0.71008	-0.37942	0.44389
	0.0100	0.5617	0.0001	0.0509	0.0204
	27	27	27	27	27
NO3	-0.05794	-0.49219	-0.48145	-0.14079	0.14035
	0.7741	0.0091	0.0110	0.4836	0.4850
	27	27	27	27	27
NH3	-0.19443	0.13659	0.13756	-0.20028	0.18446
	0.3311	0.4969	0.4938	0.3165	0.3570
	27	27	27	27	27
OPO4	-0.13254	0.15063	0.14756	-0.13531	0.12793
	0.5099	0.4533	0.4626	0.5010	0.5248
	27	27	27	27	27
TSS	-0.57730	-0.02062	0.65423	-0.45725	0.54478
	0.0016	0.9187	0.0002	0.0165	0.0033
	27	27	27	27	27
CL	1.00000	0.57364	-0.72201	0.96563	-0.97791
	0.0	0.0018	0.0001	0.0001	0.0001
	27	27	27	27	27
SO4	0.57364	1.00000	-0.06008	0.63088	-0.60584
	0.0018	0.0	0.7659	0.0004	0.0008
	27	27	27	27	27
TOC	-0.72201	-0.06008	1.00000	-0.67003	0.66698
	0.0001	0.7659	0.0	0.0001	0.0001
	27	27	27	27	27
TDS	0.96563	0.63088	-0.67003	1.00000	-0.97739
	0.0001	0.0004	0.0001	0.0	0.0001
	27	27	27	27	27
RAIN	-0.97791	-0.60584	0.66698	-0.97739	1.00000
	0.0001	0.0008	0.0001	0.0001	0.0

27	27	27	27	27

Table G4. Raw data, simple statistics and Pearson correlation coefficients and probability values for tributaries during the December, 1995 storm.

STREAM	Q	TEMP	COND	TURB	PH	DO	FCOLI	TKN	NO3
CALF	7	10.5	301	1	7.72	12.6	556	0.20	0.671
CALF	26	10.5	293	3	7.91	11.5	920	0.34	0.344
CALF	40	8.8	244	220	7.90	11.8	22000	0.84	0.564
CALF	43	8.6	236	155	7.89	12.1	45000	0.74	0.558
CALF	25	8.9	253	77	7.83	12.3	24000	0.62	0.546
CALF	150	8.1	199	205	7.75	12.8	42400	1.86	0.868
CALF	130	8.5	195	105	8.40	12.7	22800	1.11	0.673
CALF	108	8.5	183	85	7.80	12.7	13800	0.93	0.623
CALF	100	8.7	182	70	7.90	13.1	13800	0.84	0.625
CALF	150	8.9	185	55	7.84	12.5	9200	0.70	0.686
CALF	58	9.3	195	43	7.89	12.6	6500	0.59	0.717
CALF	110	9.5	201	37	7.87	11.7	4600	0.52	0.785
CALF	43	9.8	209	32	7.84	10.5	2950	0.41	0.757
CALF	100	9.9	211	26	7.98	10.6	2620	0.43	0.762
CALF	40	10.2	213	26	7.92	10.5	2500	0.37	0.773
BEAR	23	13.5	315	2	7.43	10.0	346	0.34	0.673
BEAR	23	13.4	311	5	7.55	10.3	276	0.26	0.673
BEAR	24	13.5	312	4	7.59	9.4	240	0.29	0.678
BEAR	620	8.5	220	210	7.71	12.3	40000	2.08	0.854
BEAR	820	8.3	178	185	7.90	12.5	33000	2.12	0.823
BEAR	855	8.0	146	110	8.04	14.0	17200	0.77	0.704
BEAR	820	8.2	124	84	7.96	13.2	9000	1.01	0.618
BEAR	710	8.4	114	78	8.10	13.6	8200	0.88	0.590
BEAR	620	8.5	112	35	8.10	13.6	9000	0.51	0.648
BEAR	480	8.6	112	60	8.08	13.2	6000	0.71	0.591
BEAR	385	8.7	120	47	8.05	12.3	3700	0.79	0.616
BEAR	310	8.9	125	39	8.06	11.6	3400	0.59	0.638
BEAR	290	9.1	128	31	7.87	10.4	1900	0.48	0.663
BEAR	260	9.2	129	39	8.05	10.9	1820	0.43	0.723
BEAR	250	9.3	130	27	8.07	11.1	1180	0.38	0.334

NH3	OPO4	TP	TSS	CL	SO4	TOC	TDS	RAIN
0.025	0.032	0.11	1	3.28	10.8	1.4	166	1.46
0.025	0.015	0.12	2	5.40	9.7	1.8	163	1.61
0.025	0.067	0.37	152	5.81	10.8	5.3	184	1.65
0.025	0.083	0.34	56	5.90	11.8	7.0	184	1.69
0.025	0.090	0.24	19	5.97	10.8	7.0	173	1.73
0.025	0.269	0.72	219	4.46	14.8	10.2	176	1.73
0.025	0.184	0.39	74	3.47	10.8	10.2	156	1.73
0.025	0.166	0.28	45	3.40	10.8	12.6	146	1.73
0.025	0.124	0.23	26	3.17	9.7	10.5	161	1.77
0.025	0.110	0.18	14	3.61	9.7	9.0	139	1.77
0.025	0.074	0.12	8	3.39	9.7	7.4	139	1.77
0.025	0.058	0.11	3	3.88	9.7	6.8	137	1.77
0.025	0.047	0.09	2	3.38	9.7	5.8	139	1.77
0.025	0.059	0.08	1	3.40	10.8	5.8	139	1.81
0.025	0.042	0.07	2	3.34	9.7	5.3	137	1.93
0.025	0.015	0.11	1	5.54	10.8	1.2	174	1.26
0.025	0.015	0.12	2	5.48	10.8	1.4	172	1.61
0.025	0.034	0.15	1	5.63	10.8	7.9	172	1.85
0.025	0.177	0.87	325	5.92	15.8	9.5	164	2.01
0.072	0.172	0.67	240	5.83	16.7	11.4	147	2.01
0.025	0.167	0.39	113	3.90	10.8	10.7	129	2.05
0.025	0.127	0.27	60	3.31	8.5	10.2	115	2.05
0.025	0.100	0.22	57	3.14	9.7	6.8	103	2.05
0.025	0.040	0.08	10	3.05	7.4	10.1	93	2.09
0.025	0.094	0.18	40	3.07	8.5	8.6	98	2.09
0.025	0.082	0.09	25	3.12	7.4	7.0	94	2.09
0.025	0.039	0.09	13	3.13	8.5	5.7	93	2.09
0.025	0.051	0.08	4	3.18	7.4	5.4	93	2.09
0.025	0.044	0.06	5	3.83	8.5	5.0	92	2.09
0.025	0.015	0.06	3	4.42	8.5	.	91	2.17

Correlation Analysis

18 'VAR' Variables:	Q	TEMP	COND	TURB	PH	DO
	FCOLI	TKN	NO3	NH3	OPO4	TP
	TSS	CL	SO4	TOC	TDS	RAIN

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Q	15	75.33333	47.92057	1130	7.00000	150.00000
TEMP	15	9.24667	0.77632	138.70000	8.10000	10.50000
COND	15	220.00000	37.93980	3300	182.00000	301.00000
TURB	15	76.00000	68.40948	1140	1.00000	220.00000
PH	15	7.89600	0.15463	118.44000	7.72000	8.40000
DO	15	12.00000	0.87587	180.00000	10.50000	13.10000
FCOLI	15	14243	14421	213646	556.00000	45000
TKN	15	0.70000	0.40566	10.50000	0.20000	1.86000
NO3	15	0.66347	0.12833	9.95200	0.34400	0.86800
NH3	15	0.02500	0	0.37500	0.02500	0.02500
OPO4	15	0.09467	0.06753	1.42000	0.01500	0.26900
TP	15	0.23000	0.17386	3.45000	0.07000	0.72000
TSS	15	41.60000	63.84334	624.00000	1.00000	219.00000
CL	15	4.12400	1.07818	61.86000	3.17000	5.97000
SO4	15	10.62000	1.33588	159.30000	9.70000	14.80000
TOC	15	7.07333	3.10839	106.10000	1.40000	12.60000
TDS	15	155.93333	17.74609	2339	137.00000	184.00000
RAIN	15	1.72800	0.10339	25.92000	1.46000	1.93000

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 15

	Q	TEMP	COND	TURB	PH	DO
Q	1.00000 0.0	-0.59739 0.0187	-0.77400 0.0007	0.26157 0.3463	0.25429 0.3604	0.34700 0.2051
TEMP	-0.59739 0.0187	1.00000 0.0	0.57961 0.0235	-0.78453 0.0005	-0.15363 0.5846	-0.62084 0.0135
COND	-0.77400 0.0007	0.57961 0.0235	1.00000 0.0	-0.18177 0.5167	-0.23437 0.4005	-0.15133 0.5903
TURB	0.26157 0.3463	-0.78453 0.0005	-0.18177 0.5167	1.00000 0.0	0.04430 0.8754	0.34154 0.2128
PH	0.25429 0.3604	-0.15363 0.5846	-0.23437 0.4005	0.04430 0.8754	1.00000 0.0	-0.02848 0.9197
DO	0.34700 0.2051	-0.62084 0.0135	-0.15133 0.5903	0.34154 0.2128	-0.02848 0.9197	1.00000 0.0
FCOLI	0.23715 0.3948	-0.79649 0.0004	-0.12907 0.6466	0.85707 0.0001	0.05193 0.8542	0.43640 0.1039
TKN	0.66048 0.0074	-0.84512 0.0001	-0.46299 0.0822	0.78039 0.0006	0.10852 0.7003	0.53436 0.0402
NO3	0.48908 0.0643	-0.13022 0.6437	-0.57735 0.0242	0.04079 0.8852	-0.06555 0.8165	-0.12557 0.6557
NH3	. .	. .	. .	. .	. .	. .
OPO4	0.73967 0.0016	-0.82891 0.0001	-0.54794 0.0345	0.61005 0.0157	0.14809 0.5984	0.59911 0.0183
TP	0.44649 0.0952	-0.78905 0.0005	-0.19112 0.4950	0.87205 0.0001	0.05606 0.8427	0.52206 0.0459
TSS	0.35264 0.1973	-0.66456 0.0069	-0.13258 0.6376	0.91329 0.0001	-0.00661 0.9813	0.34630 0.2061
CL	-0.37776 0.1651	-0.20394 0.4660	0.50303 0.0560	0.51456 0.0497	-0.11600 0.6806	0.01407 0.9603
SO4	0.29758 0.2814	-0.52511 0.0444	0.00028 0.9992	0.69375 0.0041	-0.16521 0.5562	0.30890 0.2626
TOC	0.76108 0.0010	-0.85016 0.0001	-0.84898 0.0001	0.41659 0.1224	0.19978 0.4753	0.51108 0.0515
TDS	-0.27892 0.3141	-0.37254 0.1715	0.48971 0.0639	0.68646 0.0047	-0.10839 0.7006	0.38648 0.1547
RAIN	0.38596 0.1553	-0.16518 0.5563	-0.73624 0.0017	-0.05444 0.8472	0.23090 0.4077	-0.38336 0.1584

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 15

	FCOLI	TKN	NO3	NH3	OPO4	TP
Q	0.23715 0.3948	0.66048 0.0074	0.48908 0.0643	. .	0.73967 0.0016	0.44649 0.0952
TEMP	-0.79649 0.0004	-0.84512 0.0001	-0.13022 0.6437	. .	-0.82891 0.0001	-0.78905 0.0005
COND	-0.12907 0.6466	-0.46299 0.0822	-0.57735 0.0242	. .	-0.54794 0.0345	-0.19112 0.4950
TURB	0.85707 0.0001	0.78039 0.0006	0.04079 0.8852	. .	0.61005 0.0157	0.87205 0.0001
PH	0.05193 0.8542	0.10852 0.7003	-0.06555 0.8165	. .	0.14809 0.5984	0.05606 0.8427
DO	0.43640 0.1039	0.53436 0.0402	-0.12557 0.6557	. .	0.59911 0.0183	0.52206 0.0459
FCOLI	1.00000 0.0	0.75773 0.0011	-0.01238 0.9651	. .	0.65545 0.0080	0.86271 0.0001
TKN	0.75773 0.0011	1.00000 0.0	0.28996 0.2945	. .	0.95204 0.0001	0.94784 0.0001
NO3	-0.01238 0.9651	0.28996 0.2945	1.00000 0.0	. .	0.35478 0.1944	0.12888 0.6471
NH3	. .	. .	. .	. .	. .	. .
OPO4	0.65545 0.0080	0.95204 0.0001	0.35478 0.1944	. .	1.00000 0.0	0.85610 0.0001
TP	0.86271 0.0001	0.94784 0.0001	0.12888 0.6471	. .	0.85610 0.0001	1.00000 0.0
TSS	0.74443 0.0015	0.87214 0.0001	0.17786 0.5260	. .	0.71732 0.0026	0.93951 0.0001
CL	0.55828 0.0305	0.12056 0.6687	-0.60125 0.0177	. .	-0.08379 0.7666	0.34617 0.2063
SO4	0.77321 0.0007	0.78071 0.0006	0.27734 0.3169	. .	0.71071 0.0030	0.87002 0.0001
TOC	0.44999 0.0924	0.70588 0.0033	0.31110 0.2591	. .	0.80898 0.0003	0.51096 0.0516
TDS	0.72366 0.0023	0.38538 0.1560	-0.45608 0.0875	. .	0.22409 0.4220	0.63594 0.0108
RAIN	-0.05757 0.8385	0.10253 0.7162	0.47577 0.0730	. .	0.13669 0.6271	-0.12239 0.6639

DECEMBER RAIN CORRELATION DATA
CALF STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 15

	TSS	CL	SO4	TOC	TDS	RAIN
Q	0.35264 0.1973	-0.37776 0.1651	0.29758 0.2814	0.76108 0.0010	-0.27892 0.3141	0.38596 0.1553
TEMP	-0.66456 0.0069	-0.20394 0.4660	-0.52511 0.0444	-0.85016 0.0001	-0.37254 0.1715	-0.16518 0.5563
COND	-0.13258 0.6376	0.50303 0.0560	0.00028 0.9992	-0.84898 0.0001	0.48971 0.0639	-0.73624 0.0017
TURB	0.91329 0.0001	0.51456 0.0497	0.69375 0.0041	0.41659 0.1224	0.68646 0.0047	-0.05444 0.8472
PH	-0.00661 0.9813	-0.11600 0.6806	-0.16521 0.5562	0.19978 0.4753	-0.10839 0.7006	0.23090 0.4077
DO	0.34630 0.2061	0.01407 0.9603	0.30890 0.2626	0.51108 0.0515	0.38648 0.1547	-0.38336 0.1584
FCOLI	0.74443 0.0015	0.55828 0.0305	0.77321 0.0007	0.44999 0.0924	0.72366 0.0023	-0.05757 0.8385
TKN	0.87214 0.0001	0.12056 0.6687	0.78071 0.0006	0.70588 0.0033	0.38538 0.1560	0.10253 0.7162
NO3	0.17786 0.5260	-0.60125 0.0177	0.27734 0.3169	0.31110 0.2591	-0.45608 0.0875	0.47577 0.0730
NH3	. .	. .	. .	. .	. .	. .
OPO4	0.71732 0.0026	-0.08379 0.7666	0.71071 0.0030	0.80898 0.0003	0.22409 0.4220	0.13669 0.6271
TP	0.93951 0.0001	0.34617 0.2063	0.87002 0.0001	0.51096 0.0516	0.63594 0.0108	-0.12239 0.6639
TSS	1.00000 0.0	0.35565 0.1933	0.82212 0.0002	0.35419 0.1952	0.61486 0.0147	-0.11971 0.6709
CL	0.35565 0.1933	1.00000 0.0	0.30191 0.2741	-0.24221 0.3844	0.76046 0.0010	-0.30340 0.2716
SO4	0.82212 0.0002	0.30191 0.2741	1.00000 0.0	0.26900 0.3323	0.58007 0.0234	-0.18277 0.5144
TOC	0.35419 0.1952	-0.24221 0.3844	0.26900 0.3323	1.00000 0.0	-0.10142 0.7191	0.44858 0.0935
TDS	0.61486 0.0147	0.76046 0.0010	0.58007 0.0234	-0.10142 0.7191	1.00000 0.0	-0.57082 0.0263
RAIN	-0.11971 0.6709	-0.30340 0.2716	-0.18277 0.5144	0.44858 0.0935	-0.57082 0.0263	1.00000 0.0

Correlation Analysis

17 'VAR' Variables: Q TEMP COND TURB PH DO
FCOLI TKN NO3 NH3 OPO4 TP
TSS CL SO4 TDS RAIN

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Q	15	432.66667	296.56092	6490	23.00000	855.00000
TEMP	15	9.60667	2.03065	144.10000	8.00000	13.50000
COND	15	171.73333	78.24638	2576	112.00000	315.00000
TURB	15	63.73333	62.36238	956.00000	2.00000	210.00000
PH	15	7.90400	0.22541	118.56000	7.43000	8.10000
DO	15	11.89333	1.47961	178.40000	9.40000	14.00000
FCOLI	15	9017	12143	135262	240.00000	40000
TKN	15	0.77600	0.58181	11.64000	0.26000	2.12000
NO3	15	0.65507	0.11671	9.82600	0.33400	0.85400
NH3	15	0.02813	0.01214	0.42200	0.02500	0.07200
OPO4	15	0.07813	0.05880	1.17200	0.01500	0.17700
TP	15	0.22933	0.24022	3.44000	0.06000	0.87000
TSS	15	59.93333	96.92152	899.00000	1.00000	325.00000
CL	15	4.17000	1.17178	62.55000	3.05000	5.92000
SO4	15	10.00667	2.83737	150.10000	7.40000	16.70000
TDS	15	122.00000	34.11744	1830	91.00000	174.00000
RAIN	15	1.97333	0.23856	29.60000	1.26000	2.17000

DECEMBER RAIN CORRELATION DATA
BEAR STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 15

	Q	TEMP	COND	TURB	PH	DO
Q	1.00000 0.0	-0.82293 0.0002	-0.58960 0.0207	0.74696 0.0014	0.56779 0.0272	0.90431 0.0001
TEMP	-0.82293 0.0002	1.00000 0.0	0.90234 0.0001	-0.58095 0.0231	-0.85115 0.0001	-0.79901 0.0004
COND	-0.58960 0.0207	0.90234 0.0001	1.00000 0.0	-0.18418 0.5111	-0.95928 0.0001	-0.66696 0.0066
TURB	0.74696 0.0014	-0.58095 0.0231	-0.18418 0.5111	1.00000 0.0	0.14728 0.6004	0.53404 0.0403
PH	0.56779 0.0272	-0.85115 0.0001	-0.95928 0.0001	0.14728 0.6004	1.00000 0.0	0.68734 0.0046
DO	0.90431 0.0001	-0.79901 0.0004	-0.66696 0.0066	0.53404 0.0403	0.68734 0.0046	1.00000 0.0
FCOLI	0.66494 0.0068	-0.45791 0.0861	-0.04082 0.8852	0.97329 0.0001	0.01328 0.9625	0.45605 0.0875
TKN	0.66813 0.0065	-0.50178 0.0567	-0.11940 0.6717	0.96654 0.0001	0.06500 0.8180	0.43940 0.1013
NO3	0.23093 0.4076	0.00789 0.9777	0.31618 0.2509	0.56813 0.0271	-0.36428 0.1819	0.03119 0.9121
NH3	0.36132 0.1858	-0.17801 0.5256	0.02216 0.9375	0.53794 0.0386	-0.00491 0.9861	0.11343 0.6873
OPO4	0.84659 0.0001	-0.61597 0.0145	-0.25321 0.3625	0.92505 0.0001	0.22052 0.4297	0.66410 0.0069
TP	0.57423 0.0252	-0.31349 0.2552	0.11825 0.6747	0.95049 0.0001	-0.14690 0.6014	0.34001 0.2150
TSS	0.59139 0.0202	-0.39225 0.1482	0.03098 0.9127	0.97043 0.0001	-0.06485 0.8184	0.37172 0.1725
CL	-0.28500 0.3032	0.58131 0.0230	0.83261 0.0001	0.26894 0.3324	-0.78629 0.0005	-0.49051 0.0634
SO4	0.25693 0.3553	0.06780 0.8103	0.45635 0.0873	0.74972 0.0013	-0.43180 0.1080	0.00682 0.9808
TDS	-0.25689 0.3553	0.68840 0.0045	0.92779 0.0001	0.16420 0.5587	-0.89646 0.0001	-0.40100 0.1385
RAIN	0.53579 0.0395	-0.83300 0.0001	-0.84904 0.0001	0.31781 0.2484	0.86646 0.0001	0.52318 0.0454

DECEMBER RAIN CORRELATION DATA
BEAR STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 15

	FCOLI	TKN	NO3	NH3	OPO4	TP
Q	0.66494 0.0068	0.66813 0.0065	0.23093 0.4076	0.36132 0.1858	0.84659 0.0001	0.57423 0.0252
TEMP	-0.45791 0.0861	-0.50178 0.0567	0.00789 0.9777	-0.17801 0.5256	-0.61597 0.0145	-0.31349 0.2552
COND	-0.04082 0.8852	-0.11940 0.6717	0.31618 0.2509	0.02216 0.9375	-0.25321 0.3625	0.11825 0.6747
TURB	0.97329 0.0001	0.96654 0.0001	0.56813 0.0271	0.53794 0.0386	0.92505 0.0001	0.95049 0.0001
PH	0.01328 0.9625	0.06500 0.8180	-0.36428 0.1819	-0.00491 0.9861	0.22052 0.4297	-0.14690 0.6014
DO	0.45605 0.0875	0.43940 0.1013	0.03119 0.9121	0.11343 0.6873	0.66410 0.0069	0.34001 0.2150
FCOLI	1.00000 0.0	0.94968 0.0001	0.63508 0.0110	0.54639 0.0351	0.85984 0.0001	0.97241 0.0001
TKN	0.94968 0.0001	1.00000 0.0	0.57983 0.0235	0.63906 0.0103	0.85827 0.0001	0.92967 0.0001
NO3	0.63508 0.0110	0.57983 0.0235	1.00000 0.0	0.39807 0.1417	0.52849 0.0428	0.65278 0.0083
NH3	0.54639 0.0351	0.63906 0.0103	0.39807 0.1417	1.00000 0.0	0.44161 0.0994	0.50748 0.0535
OPO4	0.85984 0.0001	0.85827 0.0001	0.52849 0.0428	0.44161 0.0994	1.00000 0.0	0.85484 0.0001
TP	0.97241 0.0001	0.92967 0.0001	0.65278 0.0083	0.50748 0.0535	0.85484 0.0001	1.00000 0.0
TSS	0.98641 0.0001	0.95285 0.0001	0.63279 0.0113	0.51396 0.0500	0.85249 0.0001	0.99065 0.0001
CL	0.39574 0.1443	0.32316 0.2400	0.42834 0.1112	0.39191 0.1485	0.09458 0.7374	0.51695 0.0485
SO4	0.81712 0.0002	0.77653 0.0007	0.65597 0.0079	0.65260 0.0084	0.59837 0.0184	0.88260 0.0001
TDS	0.29258 0.2899	0.20684 0.4595	0.50919 0.0525	0.20271 0.4687	0.11525 0.6825	0.44814 0.0939
RAIN	0.20175 0.4709	0.24157 0.3857	-0.21013 0.4522	0.04252 0.8804	0.33833 0.2174	0.07832 0.7814

DECEMBER RAIN CORRELATION DATA
BEAR STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 15

	TSS	CL	SO4	TDS	RAIN
Q	0.59139 0.0202	-0.28500 0.3032	0.25693 0.3553	-0.25689 0.3553	0.53579 0.0395
TEMP	-0.39225 0.1482	0.58131 0.0230	0.06780 0.8103	0.68840 0.0045	-0.83300 0.0001
COND	0.03098 0.9127	0.83261 0.0001	0.45635 0.0873	0.92779 0.0001	-0.84904 0.0001
TURB	0.97043 0.0001	0.26894 0.3324	0.74972 0.0013	0.16420 0.5587	0.31781 0.2484
PH	-0.06485 0.8184	-0.78629 0.0005	-0.43180 0.1080	-0.89646 0.0001	0.86646 0.0001
DO	0.37172 0.1725	-0.49051 0.0634	0.00682 0.9808	-0.40100 0.1385	0.52318 0.0454
FCOLI	0.98641 0.0001	0.39574 0.1443	0.81712 0.0002	0.29258 0.2899	0.20175 0.4709
TKN	0.95285 0.0001	0.32316 0.2400	0.77653 0.0007	0.20684 0.4595	0.24157 0.3857
NO3	0.63279 0.0113	0.42834 0.1112	0.65597 0.0079	0.50919 0.0525	-0.21013 0.4522
NH3	0.51396 0.0500	0.39191 0.1485	0.65260 0.0084	0.20271 0.4687	0.04252 0.8804
OPO4	0.85249 0.0001	0.09458 0.7374	0.59837 0.0184	0.11525 0.6825	0.33833 0.2174
TP	0.99065 0.0001	0.51695 0.0485	0.88260 0.0001	0.44814 0.0939	0.07832 0.7814
TSS	1.00000 0.0	0.46032 0.0842	0.85210 0.0001	0.35542 0.1936	0.15043 0.5926
CL	0.46032 0.0842	1.00000 0.0	0.80625 0.0003	0.88985 0.0001	-0.58329 0.0225
SO4	0.85210 0.0001	0.80625 0.0003	1.00000 0.0	0.70031 0.0036	-0.24359 0.3816
TDS	0.35542 0.1936	0.88985 0.0001	0.70031 0.0036	1.00000 0.0	-0.75685 0.0011
RAIN	0.15043 0.5926	-0.58329 0.0225	-0.24359 0.3816	-0.75685 0.0011	1.00000 0.0

Table G5. Raw data, simple statistics and Pearson correlation coefficients and probability values for January and May, 1989 storms at the R1 site (upper Buffalo River).

STM	Q	TEMP	COND	TURB	PH	DO	FCOLI	TKN	NO3	NH3	TP	CL
1	90	8.4	75	14.0	8.11	9.8	90	0.74	0.003	0.005	0.018	2.0
1	130	8.1	83	14.0	7.72	9.7	10	0.82	0.003	0.005	0.005	2.0
1	165	7.9	86	14.0	7.68	9.9	20	1.23	0.003	0.070	0.015	2.0
1	1100	7.6	48	39.0	7.52	10.1	500	1.60	0.020	0.120	0.069	1.5
1	1200	7.6	40	42.5	7.44	10.1	360	1.28	0.016	0.030	0.072	2.0
1	1100	7.4	41	36.0	7.34	10.2	230	1.49	0.003	0.030	0.046	1.5
1	900	7.1	46	30.0	7.33	10.7	120	0.78	0.007	0.005	0.024	2.0
1	700	6.8	46	27.0	7.38	10.6	110	1.00	0.003	0.005	0.022	2.0
1	600	6.7	51	23.5	7.32	10.6	70	0.54	0.020	0.005	0.019	2.0
1	550	6.6	49	22.0	7.42	10.6	30	1.00	0.003	0.005	0.032	1.5
2	440	5.8	66	16.0	7.60	10.9	8	0.87	0.003	0.020	0.003	2.5
2	700	5.9	47	16.0	7.53	10.9	184	0.87	0.011	0.050	0.003	.
2	500	6.2	50	16.0	7.42	10.4	72	0.82	0.003	0.070	0.014	2.5
2	450	6.3	56	14.5	7.61	10.5	8	0.95	0.014	0.020	0.014	2.0
2	420	6.7	51	13.5	7.52	10.7	16	0.54	0.009	0.005	0.003	2.0
3	40	14.6	106	3.3	7.88	9.1	114	0.03	0.005	0.005	0.011	.
3	40	14.8	108	5.7	7.79	9.3	70	0.05	0.003	0.005	0.006	.
3	40	14.7	.	8.9	7.76	9.3	12	0.03	0.003	0.050	0.019	.
3	50	14.4	119	2.3	7.76	9.6	12	0.03	0.003	0.080	0.017	.
4	380	15.1	52	1.6	7.70	9.2	320	0.44	0.003	0.005	0.045	.
4	520	14.9	51	2.2	7.61	9.2	240	0.35	0.003	0.005	0.038	.
4	640	15.2	47	2.7	7.57	9.7	270	0.38	0.003	0.005	0.045	.
4	640	16.0	42	2.5	7.59	10.1	520	0.30	0.003	0.005	0.042	.
4	560	16.0	39	2.4	7.67	10.0	250	0.22	0.003	0.005	0.055	.
4	500	15.9	41	2.2	7.59	9.5	240	0.12	0.003	0.005	0.052	.
4	440	14.6	44	1.8	7.58	8.8	40	0.07	0.003	0.005	0.048	.
4	390	14.0	48	1.5	7.58	9.2	10	0.03	0.003	0.005	0.019	.
4	360	13.9	48	1.4	7.65	10.0	20	0.05	0.006	0.005	0.048	.

Correlation Analysis

12 'VAR' Variables: Q TEMP COND TURB PH DO
FCOLI TKN NO3 NH3 TP CL

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Q	10	653.50000	422.17723	6535	90.00000	1200
TEMP	10	7.42000	0.61427	74.20000	6.60000	8.40000
COND	10	56.50000	17.65880	565.00000	40.00000	86.00000
TURB	10	26.20000	10.60451	262.00000	14.00000	42.50000
PH	10	7.52600	0.24896	75.26000	7.32000	8.11000
DO	10	10.23000	0.37133	102.30000	9.70000	10.70000
FCOLI	10	154.00000	162.01509	1540	10.00000	500.00000
TKN	10	1.04800	0.34454	10.48000	0.54000	1.60000
NO3	10	0.00810	0.00748	0.08100	0.00300	0.02000
NH3	10	0.02800	0.03860	0.28000	0.00500	0.12000
TP	10	0.03220	0.02288	0.32200	0.00500	0.07200
CL	10	1.85000	0.24152	18.50000	1.50000	2.00000

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 10

	Q	TEMP	COND	TURB	PH	DO
Q	1.00000 0.0	-0.41011 0.2392	-0.90091 0.0004	0.98710 0.0001	-0.71009 0.0214	0.43479 0.2092
TEMP	-0.41011 0.2392	1.00000 0.0	0.67707 0.0315	-0.29662 0.4053	0.83829 0.0024	-0.94305 0.0001
COND	-0.90091 0.0004	0.67707 0.0315	1.00000 0.0	-0.85471 0.0016	0.76730 0.0096	-0.70574 0.0226
TURB	0.98710 0.0001	-0.29662 0.4053	-0.85471 0.0016	1.00000 0.0	-0.61159 0.0603	0.31574 0.3741
PH	-0.71009 0.0214	0.83829 0.0024	0.76730 0.0096	-0.61159 0.0603	1.00000 0.0	-0.77978 0.0078
DO	0.43479 0.2092	-0.94305 0.0001	-0.70574 0.0226	0.31574 0.3741	-0.77978 0.0078	1.00000 0.0
FCOLI	0.78755 0.0068	0.08172 0.8224	-0.55381 0.0967	0.85929 0.0014	-0.21029 0.5598	-0.06501 0.8584
TKN	0.56410 0.0894	0.14878 0.6816	-0.27887 0.4352	0.60864 0.0619	-0.17135 0.6360	-0.23570 0.5121
NO3	0.52008 0.1233	-0.19649 0.5864	-0.41624 0.2315	0.55899 0.0930	-0.32873 0.3537	0.17092 0.6368
NH3	0.30286 0.3950	0.26195 0.4647	0.02282 0.9501	0.36142 0.3048	0.02914 0.9363	-0.31317 0.3783
TP	0.84220 0.0022	-0.06751 0.8530	-0.66193 0.0371	0.90080 0.0004	-0.32364 0.3617	0.04237 0.9075
CL	-0.43016 0.2147	0.24714 0.4912	0.41032 0.2389	-0.39911 0.2532	0.27533 0.4413	-0.13008 0.7202

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 10

	FCOLI	TKN	NO3	NH3	TP	CL
Q	0.78755 0.0068	0.56410 0.0894	0.52008 0.1233	0.30286 0.3950	0.84220 0.0022	-0.43016 0.2147
TEMP	0.08172 0.8224	0.14878 0.6816	-0.19649 0.5864	0.26195 0.4647	-0.06751 0.8530	0.24714 0.4912
COND	-0.55381 0.0967	-0.27887 0.4352	-0.41624 0.2315	0.02282 0.9501	-0.66193 0.0371	0.41032 0.2389
TURB	0.85929 0.0014	0.60864 0.0619	0.55899 0.0930	0.36142 0.3048	0.90080 0.0004	-0.39911 0.2532
PH	-0.21029 0.5598	-0.17135 0.6360	-0.32873 0.3537	0.02914 0.9363	-0.32364 0.3617	0.27533 0.4413
DO	-0.06501 0.8584	-0.23570 0.5121	0.17092 0.6368	-0.31317 0.3783	0.04237 0.9075	-0.13008 0.7202
FCOLI	1.00000 0.0	0.71734 0.0195	0.64185 0.0454	0.67745 0.0314	0.92834 0.0001	-0.42309 0.2231
TKN	0.71734 0.0195	1.00000 0.0	0.11614 0.7493	0.76996 0.0092	0.73989 0.0144	-0.63157 0.0502
NO3	0.64185 0.0454	0.11614 0.7493	1.00000 0.0	0.42628 0.2193	0.57545 0.0818	-0.05231 0.8859
NH3	0.67745 0.0314	0.76996 0.0092	0.42628 0.2193	1.00000 0.0	0.56034 0.0920	-0.42309 0.2231
TP	0.92834 0.0001	0.73989 0.0144	0.57545 0.0818	0.56034 0.0920	1.00000 0.0	-0.50668 0.1350
CL	-0.42309 0.2231	-0.63157 0.0502	-0.05231 0.8859	-0.42309 0.2231	-0.50668 0.1350	1.00000 0.0

Correlation Analysis

12 'VAR' Variables: Q TEMP COND TURB PH DO
FCOLI TKN NO3 NH3 TP CL

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Q	5	502.00000	114.54257	2510	420.00000	700.00000
TEMP	5	6.18000	0.35637	30.90000	5.80000	6.70000
COND	5	54.00000	7.44983	270.00000	47.00000	66.00000
TURB	5	15.20000	1.15109	76.00000	13.50000	16.00000
PH	5	7.53600	0.07635	37.68000	7.42000	7.61000
DO	5	10.68000	0.22804	53.40000	10.40000	10.90000
FCOLI	5	57.60000	75.55660	288.00000	8.00000	184.00000
TKN	5	0.81000	0.15796	4.05000	0.54000	0.95000
NO3	5	0.00800	0.00490	0.04000	0.00300	0.01400
NH3	5	0.03300	0.02636	0.16500	0.00500	0.07000
TP	5	0.00740	0.00602	0.03700	0.00300	0.01400
CL	4	2.25000	0.28868	9.00000	2.00000	2.50000

CORRELATIONS FOR STORM
STORM 2/JANUARY 28-29,1989

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	Q	TEMP	COND	TURB	PH	DO
Q	1.00000 0.0 5	-0.49486 0.3967 5	-0.58009 0.3052 5	0.53660 0.3512 5	-0.21324 0.7306 5	0.36562 0.5451 5
TEMP	-0.49486 0.3967 5	1.00000 0.0 5	-0.37666 0.5320 5	-0.90197 0.0363 5	-0.22418 0.7170 5	-0.49837 0.3928 5
COND	-0.58009 0.3052 5	-0.37666 0.5320 5	1.00000 0.0 5	0.13119 0.8334 5	0.64607 0.2389 5	0.26489 0.6667 5
TURB	0.53660 0.3512 5	-0.90197 0.0363 5	0.13119 0.8334 5	1.00000 0.0 5	-0.20196 0.7446 5	0.20953 0.7352 5
PH	-0.21324 0.7306 5	-0.22418 0.7170 5	0.64607 0.2389 5	-0.20196 0.7446 5	1.00000 0.0 5	0.45372 0.4428 5
DO	0.36562 0.5451 5	-0.49837 0.3928 5	0.26489 0.6667 5	0.20953 0.7352 5	0.45372 0.4428 5	1.00000 0.0 5
FCOLI	0.98400 0.0024 5	-0.40704 0.4964 5	-0.67154 0.2145 5	0.51281 0.3769 5	-0.37302 0.5363 5	0.30413 0.6188 5
TKN	0.31781 0.6023 5	-0.72392 0.1667 5	0.28681 0.6399 5	0.63937 0.2454 5	0.35239 0.5608 5	-0.04858 0.9382 5
NO3	0.23167 0.7077 5	0.31503 0.6056 5	-0.35620 0.5563 5	-0.50983 0.3802 5	0.44779 0.4495 5	-0.02238 0.9715 5
NH3	0.58533 0.2998 5	-0.40447 0.4994 5	-0.46462 0.4305 5	0.73733 0.1551 5	-0.71289 0.1765 5	-0.32021 0.5994 5
TP	-0.21518 0.7282 5	0.17931 0.7729 5	-0.12254 0.8444 5	0.03965 0.9495 5	-0.25107 0.6837 5	-0.92074 0.0265 5
CL	0.59373 0.4063 4	-0.78087 0.2191 4	0.35493 0.6451 4	0.94281 0.0572 4	-0.36051 0.6395 4	0.13019 0.8698 4

CORRELATIONS FOR STORM
STORM 2/JANUARY 28-29,1989

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	FCOLI	TKN	NO3	NH3	TP	CL
Q	0.98400 0.0024 5	0.31781 0.6023 5	0.23167 0.7077 5	0.58533 0.2998 5	-0.21518 0.7282 5	0.59373 0.4063 4
TEMP	-0.40704 0.4964 5	-0.72392 0.1667 5	0.31503 0.6056 5	-0.40447 0.4994 5	0.17931 0.7729 5	-0.78087 0.2191 4
COND	-0.67154 0.2145 5	0.28681 0.6399 5	-0.35620 0.5563 5	-0.46462 0.4305 5	-0.12254 0.8444 5	0.35493 0.6451 4
TURB	0.51281 0.3769 5	0.63937 0.2454 5	-0.50983 0.3802 5	0.73733 0.1551 5	0.03965 0.9495 5	0.94281 0.0572 4
PH	-0.37302 0.5363 5	0.35239 0.5608 5	0.44779 0.4495 5	-0.71289 0.1765 5	-0.25107 0.6837 5	-0.36051 0.6395 4
DO	0.30413 0.6188 5	-0.04858 0.9382 5	-0.02238 0.9715 5	-0.32021 0.5994 5	-0.92074 0.0265 5	0.13019 0.8698 4
FCOLI	1.00000 0.0 5	0.18937 0.7603 5	0.14589 0.8149 5	0.64461 0.2403 5	-0.21264 0.7313 5	0.52320 0.4768 4
TKN	0.18937 0.7603 5	1.00000 0.0 5	0.12923 0.8359 5	0.38123 0.5266 5	0.43345 0.4659 5	0.32393 0.6761 4
NO3	0.14589 0.8149 5	0.12923 0.8359 5	1.00000 0.0 5	-0.33875 0.5771 5	0.09317 0.8815 5	-0.92331 0.0767 4
NH3	0.64461 0.2403 5	0.38123 0.5266 5	-0.33875 0.5771 5	1.00000 0.0 5	0.41553 0.4866 5	0.66083 0.3392 4
TP	-0.21264 0.7313 5	0.43345 0.4659 5	0.09317 0.8815 5	0.41553 0.4866 5	1.00000 0.0 5	0.00000 1.0000 4
CL	0.52320 0.4768 4	0.32393 0.6761 4	-0.92331 0.0767 4	0.66083 0.3392 4	0.00000 1.0000 4	1.00000 0.0 4

Correlation Analysis

12 'VAR' Variables: Q TEMP COND TURB PH DO
FCOLI TKN NO3 NH3 TP CL

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Q	4	42.50000	5.00000	170.00000	40.00000	50.00000
TEMP	4	14.62500	0.17078	58.50000	14.40000	14.80000
COND	3	111.00000	7.00000	333.00000	106.00000	119.00000
TURB	4	5.05000	2.93655	20.20000	2.30000	8.90000
PH	4	7.79750	0.05679	31.19000	7.76000	7.88000
DO	4	9.32500	0.20616	37.30000	9.10000	9.60000
FCOLI	4	52.00000	49.55805	208.00000	12.00000	114.00000
TKN	4	0.03500	0.01000	0.14000	0.03000	0.05000
NO3	4	0.00350	0.00100	0.01400	0.00300	0.00500
NH3	4	0.03500	0.03674	0.14000	0.00500	0.08000
TP	4	0.01325	0.00591	0.05300	0.00600	0.01900
CL	0	.	.	.	.	.

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	Q	TEMP	COND	TURB	PH	DO
Q	1.00000 0.0 4	-0.87831 0.1217 4	0.98974 0.0913 3	-0.62432 0.3757 4	-0.44023 0.5598 4	0.88930 0.1107 4
TEMP	-0.87831 0.1217 4	1.00000 0.0 4	-0.78571 0.4246 3	0.70786 0.2921 4	0.07733 0.9227 4	-0.59173 0.4083 4
COND	0.98974 0.0913 3	-0.78571 0.4246 3	1.00000 0.0 3	-0.62134 0.5732 3	-0.78920 0.4210 3	0.96502 0.1689 3
TURB	-0.62432 0.3757 4	0.70786 0.2921 4	-0.62134 0.5732 3	1.00000 0.0 4	-0.38078 0.6192 4	-0.26154 0.7385 4
PH	-0.44023 0.5598 4	0.07733 0.9227 4	-0.78920 0.4210 3	-0.38078 0.6192 4	1.00000 0.0 4	-0.79010 0.2099 4
DO	0.88930 0.1107 4	-0.59173 0.4083 4	0.96502 0.1689 3	-0.26154 0.7385 4	-0.79010 0.2099 4	1.00000 0.0 4
FCOLI	-0.53809 0.4619 4	0.29932 0.7007 4	-0.95499 0.1917 3	-0.32250 0.6775 4	0.94515 0.0548 4	-0.79609 0.2039 4
TKN	-0.33333 0.6667 4	0.68313 0.3169 4	-0.37115 0.7579 3	0.14757 0.8524 4	-0.08805 0.9120 4	-0.08085 0.9192 4
NO3	-0.33333 0.6667 4	-0.09759 0.9024 4	-0.61859 0.5754 3	-0.39729 0.6027 4	0.96850 0.0315 4	-0.72761 0.2724 4
NH3	0.81650 0.1835 4	-0.71714 0.2829 4	0.98974 0.0913 3	-0.10195 0.8980 4	-0.71889 0.2811 4	0.85813 0.1419 4
TP	0.42308 0.5769 4	-0.53675 0.4632 4	0.81706 0.3912 3	0.21227 0.7877 4	-0.48425 0.5157 4	0.43097 0.5690 4
CL	. . 0	. . 0	. . 0	. . 0	. . 0	. . 0

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	FCOLI	TKN	NO3	NH3	TP	CL
Q	-0.53809	-0.33333	-0.33333	0.81650	0.42308	.
	0.4619	0.6667	0.6667	0.1835	0.5769	.
	4	4	4	4	4	0
TEMP	0.29932	0.68313	-0.09759	-0.71714	-0.53675	.
	0.7007	0.3169	0.9024	0.2829	0.4632	.
	4	4	4	4	4	0
COND	-0.95499	-0.37115	-0.61859	0.98974	0.81706	.
	0.1917	0.7579	0.5754	0.0913	0.3912	.
	3	3	3	3	3	0
TURB	-0.32250	0.14757	-0.39729	-0.10195	0.21227	.
	0.6775	0.8524	0.6027	0.8980	0.7877	.
	4	4	4	4	4	0
PH	0.94515	-0.08805	0.96850	-0.71889	-0.48425	.
	0.0548	0.9120	0.0315	0.2811	0.5157	.
	4	4	4	4	4	0
DO	-0.79609	-0.08085	-0.72761	0.85813	0.43097	.
	0.2039	0.9192	0.2724	0.1419	0.5690	.
	4	4	4	4	4	0
FCOLI	1.00000	0.24214	0.83404	-0.87870	-0.73988	.
	0.0	0.7579	0.1660	0.1213	0.2601	.
	4	4	4	4	4	0
TKN	0.24214	1.00000	-0.33333	-0.54433	-0.81796	.
	0.7579	0.0	0.6667	0.4557	0.1820	.
	4	4	4	4	4	0
NO3	0.83404	-0.33333	1.00000	-0.54433	-0.25385	.
	0.1660	0.6667	0.0	0.4557	0.7462	.
	4	4	4	4	4	0
NH3	-0.87870	-0.54433	-0.54433	1.00000	0.82907	.
	0.1213	0.4557	0.4557	0.0	0.1709	.
	4	4	4	4	4	0
TP	-0.73988	-0.81796	-0.25385	0.82907	1.00000	.
	0.2601	0.1820	0.7462	0.1709	0.0	.
	4	4	4	4	4	0
CL	.	.	.	.	.	.
	.	.	.	.	.	.
	0	0	0	0	0	0

Correlation Analysis

12 'VAR' Variables: Q TEMP COND TURB PH DO
FCOLI TKN NO3 NH3 TP CL

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Q	9	492.22222	107.44508	4430	360.00000	640.00000
TEMP	9	15.06667	0.80623	135.60000	13.90000	16.00000
COND	9	45.77778	4.52155	412.00000	39.00000	52.00000
TURB	9	2.03333	0.47170	18.30000	1.40000	2.70000
PH	9	7.61556	0.04640	68.54000	7.57000	7.70000
DO	9	9.52222	0.45491	85.70000	8.80000	10.10000
FCOLI	9	212.22222	165.88986	1910	10.00000	520.00000
TKN	9	0.21778	0.15603	1.96000	0.03000	0.44000
NO3	9	0.00333	0.00100	0.03000	0.00300	0.00600
NH3	9	0.00500	0	0.04500	0.00500	0.00500
TP	9	0.04356	0.01050	0.39200	0.01900	0.05500
CL	0	.	.	.	.	.

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	Q	TEMP	COND	TURB	PH	DO
Q	1.00000 0.0 9	0.73112 0.0252 9	-0.47743 0.1937 9	0.97997 0.0001 9	-0.39394 0.2941 9	0.45664 0.2166 9
TEMP	0.73112 0.0252 9	1.00000 0.0 9	-0.63322 0.0672 9	0.78229 0.0127 9	0.05903 0.8801 9	0.39422 0.2938 9
COND	-0.47743 0.1937 9	-0.63322 0.0672 9	1.00000 0.0 9	-0.48254 0.1883 9	0.20920 0.5891 9	-0.43485 0.2421 9
TURB	0.97997 0.0001 9	0.78229 0.0127 9	-0.48254 0.1883 9	1.00000 0.0 9	-0.33507 0.3781 9	0.39806 0.2887 9
PH	-0.39394 0.2941 9	0.05903 0.8801 9	0.20920 0.5891 9	-0.33507 0.3781 9	1.00000 0.0 9	0.18885 0.6265 9
DO	0.45664 0.2166 9	0.39422 0.2938 9	-0.43485 0.2421 9	0.39806 0.2887 9	0.18885 0.6265 9	1.00000 0.0 9
FCOLI	0.70520 0.0338 9	0.81561 0.0074 9	-0.20590 0.5951 9	0.68424 0.0421 9	0.10538 0.7873 9	0.42993 0.2481 9
TKN	0.47232 0.1992 9	0.46637 0.2057 9	0.33409 0.3796 9	0.50556 0.1650 9	0.29891 0.4346 9	0.09236 0.8132 9
NO3	-0.46148 0.2112 9	-0.54265 0.1311 9	0.18430 0.6350 9	-0.50350 0.1670 9	0.27839 0.4682 9	0.39385 0.2943 9
NH3	. . 9	. . 9	. . 9	. . 9	. . 9	. . 9
TP	0.24360 0.5276 9	0.53692 0.1361 9	-0.48147 0.1894 9	0.34151 0.3684 9	0.35974 0.3417 9	0.33464 0.3787 9
CL	. . 0	. . 0	. . 0	. . 0	. . 0	. . 0

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	FCOLI	TKN	NO3	NH3	TP	CL
Q	0.70520	0.47232	-0.46148	.	0.24360	.
	0.0338	0.1992	0.2112	.	0.5276	.
	9	9	9	9	9	0
TEMP	0.81561	0.46637	-0.54265	.	0.53692	.
	0.0074	0.2057	0.1311	.	0.1361	.
	9	9	9	9	9	0
COND	-0.20590	0.33409	0.18430	.	-0.48147	.
	0.5951	0.3796	0.6350	.	0.1894	.
	9	9	9	9	9	0
TURB	0.68424	0.50556	-0.50350	.	0.34151	.
	0.0421	0.1650	0.1670	.	0.3684	.
	9	9	9	9	9	0
PH	0.10538	0.29891	0.27839	.	0.35974	.
	0.7873	0.4346	0.4682	.	0.3417	.
	9	9	9	9	9	0
DO	0.42993	0.09236	0.39385	.	0.33464	.
	0.2481	0.8132	0.2943	.	0.3787	.
	9	9	9	9	9	0
FCOLI	1.00000	0.75022	-0.43453	.	0.25967	.
	0.0	0.0199	0.2425	.	0.4998	.
	9	9	9	9	9	0
TKN	0.75022	1.00000	-0.40324	.	0.16029	.
	0.0199	0.0	0.2819	.	0.6804	.
	9	9	9	9	9	0
NO3	-0.43453	-0.40324	1.00000	.	0.15871	.
	0.2425	0.2819	0.0	.	0.6834	.
	9	9	9	9	9	0
NH3	.	.	.	.	.	.
	.	.	.	.	.	.
	9	9	9	9	9	0
TP	0.25967	0.16029	0.15871	.	1.00000	.
	0.4998	0.6804	0.6834	.	0.0	.
	9	9	9	9	9	0
CL	.	.	.	.	.	.
	.	.	.	.	.	.
	0	0	0	0	0	0

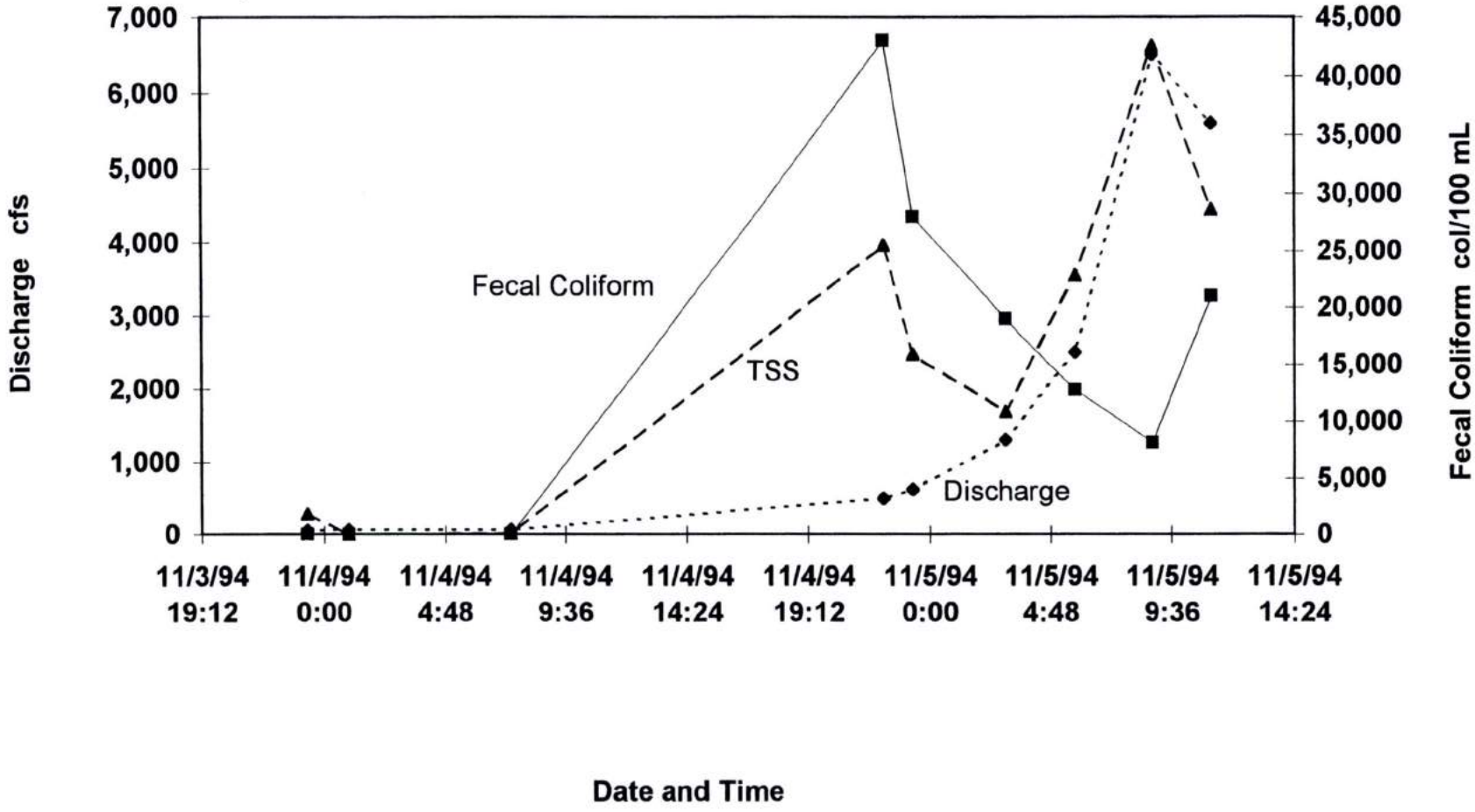

Figure G1. Discharge, TSS and fecal coliform versus time for Bear Creek during the November storm.

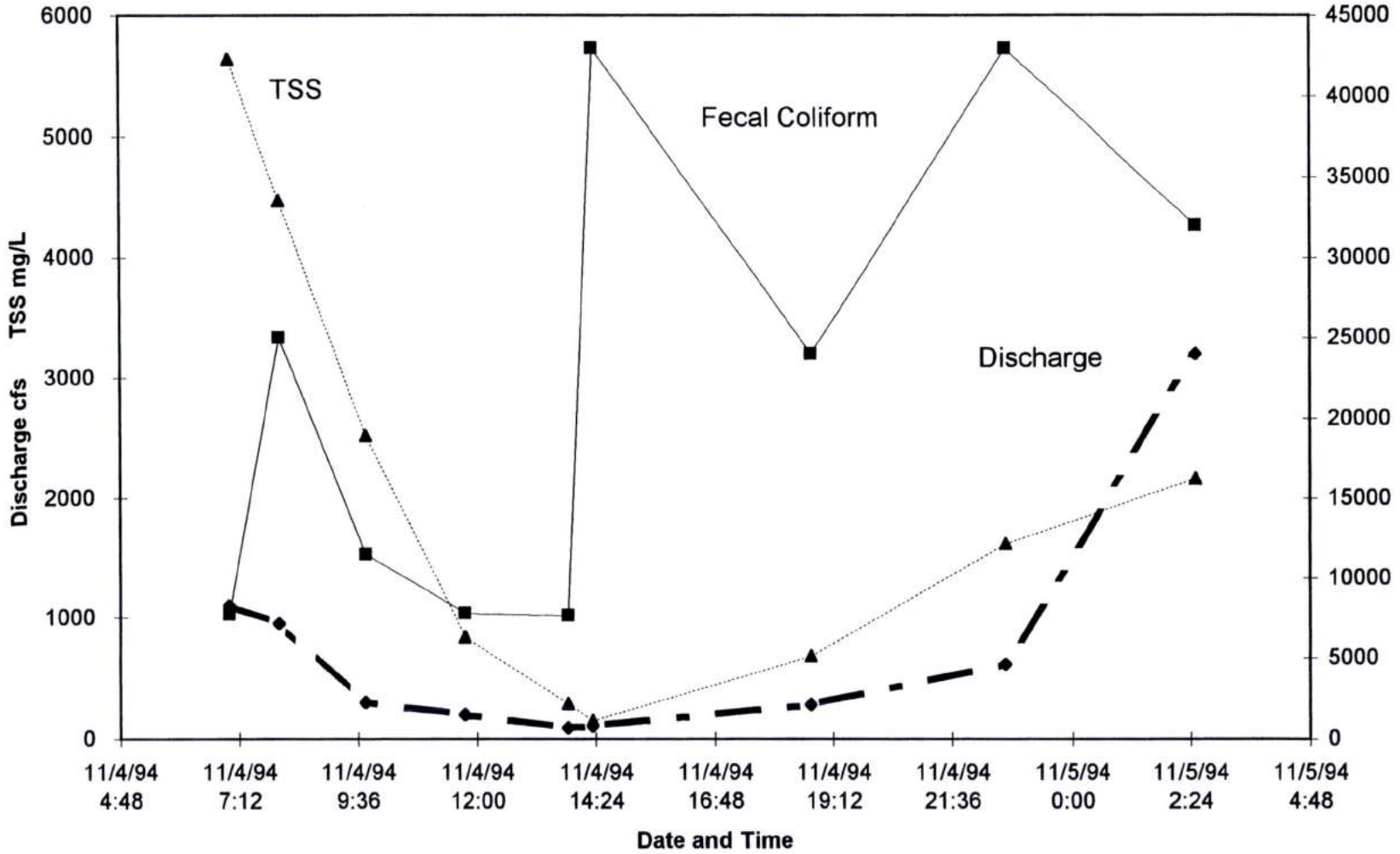

Figure G2. Discharge, TSS and fecal coliform versus time for Calf Creek during the November storm.

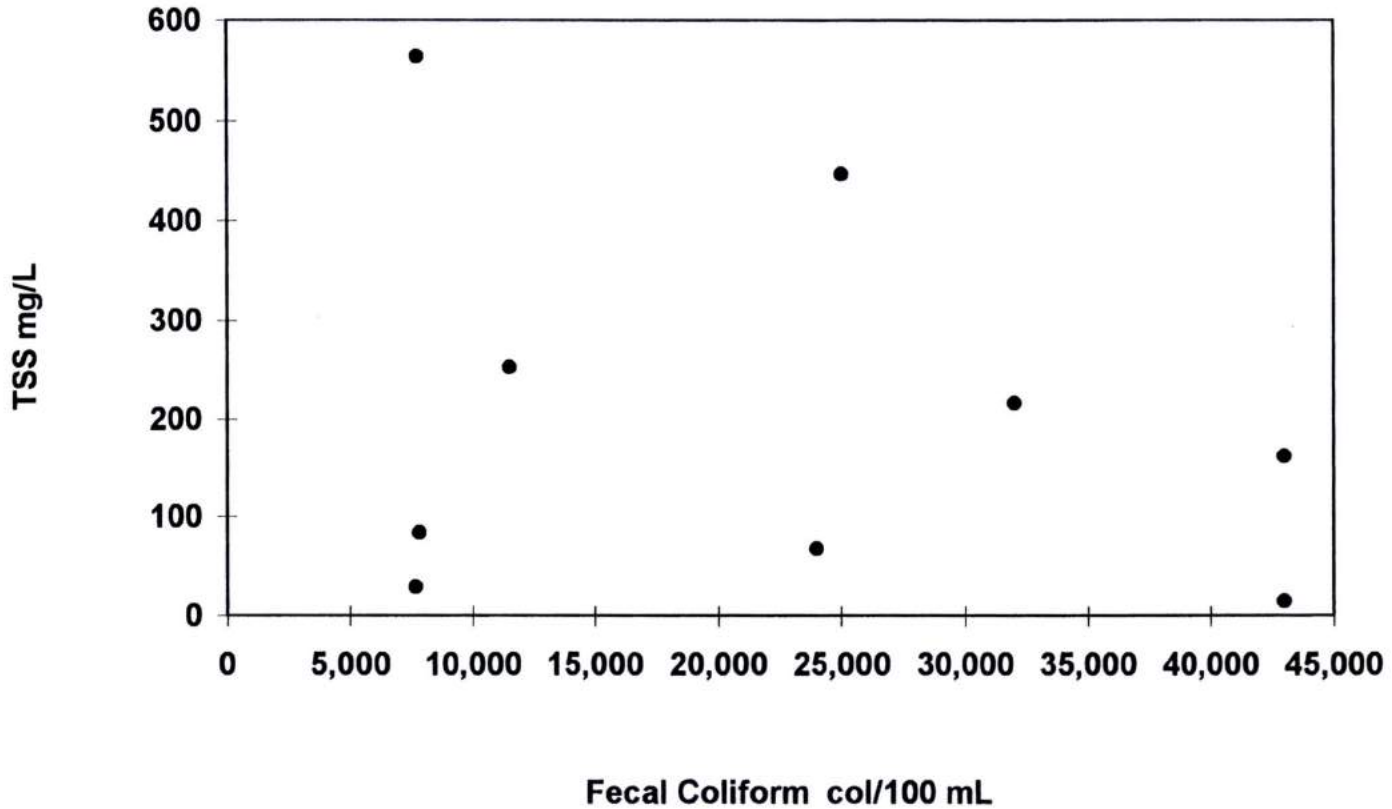

Figure G3. TSS versus fecal coliform for Calf Creek during the November storm.

APPENDIX H

Animal Waste Calculations

Table H1. Annual number of animals, pounds of waste, and pounds of N and P in the animals waste.

Figure H1. Pounds of animal waste, of nitrogen in animal waste and of phosphorus in animal waste per pasture acre for the three tributary watersheds.

APPENDIX H

The annual amount of animal of animal waste produced by animals in each tributary sub-basin was based on the number of animals in each sub-basin provided in NRCS (1995) and other published and personal communication information.. Sid Lowrance (personal communication, 1998) supplemented the swine numbers (Table H1) by providing an estimate of the number of sows and boars. The number of beef cattle in Bear Creek were proportioned to Upper Bear and Lower Bear Creek sub-basins based on the ratio of pasture land. The number of dairy cows in these two portions of the Bear Creek watershed was obtained by taking the mid point of the mapping unit for dairy cows in the NRCS (1995) map of dairy cow distribution.

The factor for the amount of waste generated by a beef cow was 59.1 lb/d/1000#. The average annual weight of the animal was estimated to be 900 lbs for the study area(Casey Dunnigan, personal communication, 1998). The factors used for nitrogen and phosphorus were 0.31 and 0.11 respectively (Barth et al., 1994).

Dairy cow waste production in terms of gross amount, the amount of nitrogen and phosphorus present was based on the following factors 81.00, 0.405 and 0.06 lb/d/1000#, respectively (Barth et al., 1994) for 365 days. These factors are the averages for lactating and dry cows. The weight of the animal was estimated to be 1200 lbs (Casey Dunnigan, personal communication, 1998).

The factors for waste production, amount of nitrogen and amount of phosphorus for gestating sow waste were 27.2, 0.19 and 0.06 lb/d/1000#, respectively. The weight of the sow was estimated to be 425 lb and the sow was considered to be in the gestating stage for 300 days. The weight of a lactating sow was estimated to be 375 lb for 65 days. The sow weights are from Charles Maxwell (personal communication , 1998). The factors for waste production, amount of nitrogen and amount of phosphorus for lactating sow waste were 60.00, 0.47 and 0.0.15 lb/d/1000#, respectively (Barth et al., 1998). Boar annual waste production, amount of nitrogen and amount of phosphorus were based on the following factors 20.50, 0.15, 0.05 lb/d/1000#, respectively (Barth et al., 1994) for an animal weighing 450 lb (Charles Maxwell, personal communication, 1998). The waste and the amount of nitrogen and phosphorus generated by pigs was based on the following factors 106.0, 0.60, 0.25 lb/d/1000#, respectively (Barth et al., 1994) and an average animal weight of 20 lb for 22 days (Charles Maxwell, personal communication, 1998).

lb = pounds
d = day
1000# = thousand pounds of animal

Table H1. Number of animals, pounds of waste produced, pounds of nitrogen and phosphorus in the waste by watershed.

	Number of Animals			Cattle			Dairy Cow			Swine*			TOTAL		
Tributary	Cattle	Cows	Swine	Waste lbs	lbs N	lbs P	Waste lbs	lbs N	lbs P	Waste lbs	lbs N	lbs P	Waste lbs	lbs N	lbs P
Bear															
Upper	2882	822	0	3.34E+07	1.75E+05	6.22E+04	2.92E+07	1.46E+05	2.16E+04				6.26E+07	3.21E+05	8.38E+04
Lower	387	110	0	4.49E+06	2.35E+04	8.35E+03	3.90E+06	1.95E+04	2.89E+03						
Total	3269	932	0	3.79E+07	1.99E+05	7.06E+04	3.31E+07	1.65E+05	2.45E+04						
Calf	2382	244	0	2.76E+07	1.45E+05	5.14E+04	8.66E+06	4.33E+04	6.41E+03				3.63E+07	1.88E+05	5.78E+04
Tomahawk	1724	313	454*	2.00E+07	1.05E+05	3.72E+04	1.11E+07	5.55E+04	8.23E+03	283,051	2,198	642	3.14E+07	1.63E+05	4.61E+04

* Break down on swine calculations are given below. Gest = gestation and Lac = lactation

	Sows Gest	Sows Lac	Boars	Pigs	Total
Number	50	50	4	400	454
Lbs Wast	1.73E+05	7.31E+04	1.79E+04	1.87E+04	2.83E+05
Lbs N	1.21E+03	5.73E+02	3.09E+02	1.06E+02	2.20E+03
Lbs P	3.83E+02	1.83E+02	3.29E+01	4.40E+01	6.42E+02

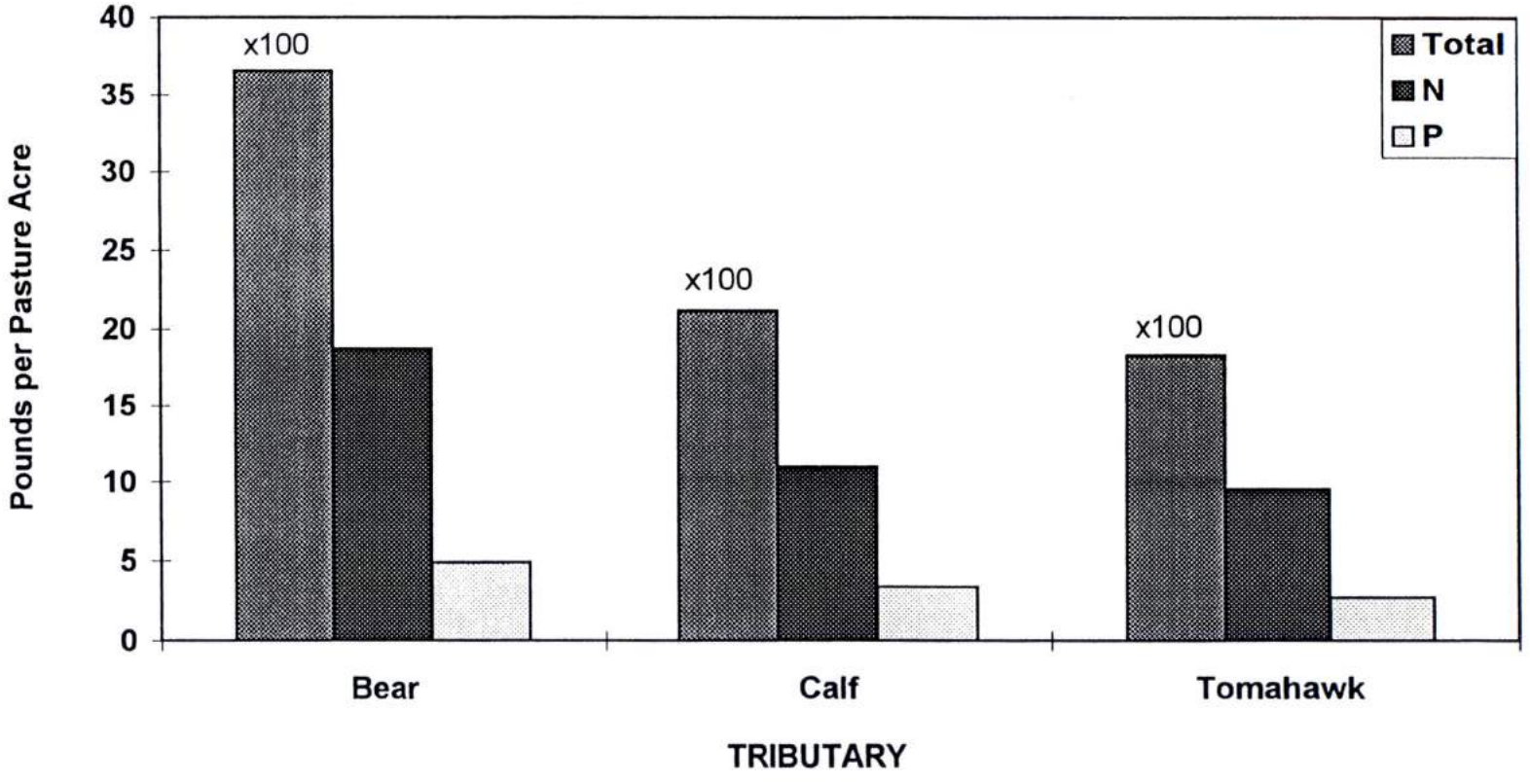

Figure H1. Pounds of animal waste, of nitrogen in animal waste and of phosphorus in animal waste per pasture acre for the three tributary watersheds.

APPENDIX I

Table I1. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category for Upper Bear Creek.

Table I2. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category for Lower Bear Creek.

Table I3. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category for Calf Creek.

Table I4. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category for Tomahawk Creek.

Table I5. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category for Upper Buffalo Creek.

Table I6. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the lower third of Upper Bear Creek.

Table I7. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the middle third of Upper Bear Creek.

Table I8. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category for in the upper third of Upper Bear Creek.

APPENDIX I continued

Table I9. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the lower third of Lower Bear Creek.

Table I10. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the middle third of Lower Bear Creek.

Table I11. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the upper third of Lower Bear Creek.

Table I12. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the lower third of Calf Creek.

Table I13. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the middle third of Calf Creek.

Table I14. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the upper third of Calf Creek.

Table I15. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the lower third of Tomahawk Creek.

Table I16. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the middle third of Tomahawk Creek.

APPENDIX I continued

Table I17. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the upper third of Tomahawk Creek.

Table I18. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the lower third of Upper Buffalo River.

Table I19. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the middle third of Upper Buffalo River.

Table I20. Acres and percent of land use within various distances to the tributary and percent slope of the total land use within each percent slope category in the upper third of Upper Buffalo River.

Table I21. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each percent slope category for Upper Bear Creek.

Table I22. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each percent slope category for Lower Bear Creek.

Table I23. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each percent slope category for Calf Creek.

Table I24. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each percent slope category for Tomahawk Creek.

APPENDIX I continued

Table I25. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each percent slope category for Upper Buffalo Creek.

Table I26. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category in the lower third of Upper Bear Creek.

Table I27. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category in the middle third of Upper Bear Creek.

Table I28. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category for in the upper third of Upper Bear Creek.

Table I29. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category in the lower third of Lower Bear Creek.

Table I30. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category in the middle third of Lower Bear Creek.

Table I31. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category in the upper third of Lower Bear Creek.

Table I32. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category in the lower third of Calf Creek.

APPENDIX I continued

Table I33. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category in the middle third of Calf Creek.

Table I34. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category in the upper third of Calf Creek.

Table I35. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category in the lower third of Tomahawk Creek.

Table I36. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category in the middle third of Tomahawk Creek.

Table I37. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category in the upper third of Tomahawk Creek.

Table I38. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category in the lower third of Upper Buffalo River.

Table I39. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category in the middle third of Upper Buffalo River.

Table I40. Acres and percent of land use within various distances to the tributary and degree slope of the total land use within each category in the upper third of Upper Buffalo River.

Table I1. Acres and percent of land use within various distances to the tributary and percent slope of the total the land within each category for Upper Bear Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	129	35.77	155	42.78	78	21.45	362
Pasture	2,647	35.13	3,146	41.76	1,740	23.10	7,533
Forest	944	7.10	3,318	24.97	9,026	67.92	13,288
Total	3,720	17.56	6,619	31.25	10,844	51.19	21,182

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	124	32.27	176	45.92	84	21.81	384
Pasture	1,665	32.01	2,319	44.58	1,218	23.41	5,203
Forest	830	7.91	2,798	26.67	6,864	65.42	10,492
Total	2,619	16.29	5,294	32.92	8,166	50.79	16,079

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	115	43.80	117	44.39	31	11.81	263
Pasture	1,063	37.04	1,245	43.39	562	19.57	2,870
Forest	606	10.32	1,620	27.58	3,646	62.09	5,872
Total	1,785	19.82	2,982	33.11	4,239	47.07	9,005

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	23	30.30	27	35.59	26	34.12	76
Pasture	214	36.13	244	41.20	134	22.67	591
Forest	133	7.23	496	27.01	1,207	65.75	1,835
Total	369	14.76	766	30.63	1,366	54.62	2,502

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	4	23.81	6	34.52	8	41.67	19
Pasture	17	35.05	21	43.92	10	21.03	48
Forest	15	3.39	133	29.37	304	67.24	452
Total	36	7.04	160	30.89	322	62.08	518

Table I2. Acres and percent of land use within various distances to the tributary and percent slope of the total the land within each category for Lower Bear Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	11	15.21	19	26.11	42	58.68	72
Pasture	137	22.30	209	34.04	269	43.66	615
Forest	75	6.08	240	19.35	925	74.57	1,240
Total	223	11.59	468	24.29	1,235	64.11	1,927

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	4	10.71	10	25.59	24	63.70	37
Pasture	111	19.02	210	35.88	264	45.10	585
Forest	112	7.95	387	27.49	908	64.56	1,407
Total	227	11.19	606	29.88	1,196	58.93	2,030

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	6	17.85	13	42.14	12	40.00	31
Pasture	55	14.79	147	39.37	172	45.84	374
Forest	47	8.43	183	32.57	331	59.00	562
Total	108	11.19	343	35.51	515	53.30	967

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	9.37	2	25.00	5	65.64	7
Pasture	6	6.84	36	42.11	43	51.05	84
Forest	10	4.74	52	24.84	149	70.42	211
Total	16	5.43	90	29.66	196	64.91	303

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	10.00	1	60.02	1	29.99	2
Pasture	5	23.07	6	31.87	9	45.06	20
Forest	0	2.08	5	23.96	16	73.96	21
Total	5	12.18	13	29.44	26	58.38	44

Table I3. Acres and percent of land use within various distances to the tributary and percent slope of the total the land within each category for Calf Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	130	35.58	150	41.04	86	23.38	366
Pasture	2,370	40.23	2,379	40.39	1,141	19.38	5,890
Forest	801	10.27	2,449	31.39	4,550	58.34	7,800
Total	3,301	23.48	4,978	35.41	5,777	41.10	14,056

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	95	35.35	103	38.42	70	26.22	268
Pasture	1,667	45.37	1,520	41.37	487	13.26	3,674
Forest	672	12.39	1,860	34.29	2,892	53.32	5,425
Total	2,434	25.98	3,483	37.19	3,450	36.83	9,367

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	44	47.48	36	38.61	13	13.91	93
Pasture	614	42.01	569	38.94	279	19.05	1,462
Forest	324	10.80	908	30.27	1,767	58.93	2,998
Total	982	21.57	1,513	33.23	2,058	45.20	4,553

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	4	25.38	7	47.77	4	26.85	15
Pasture	67	30.54	87	39.43	66	30.03	220
Forest	77	7.13	275	25.32	732	67.55	1,084
Total	148	11.24	368	27.92	802	60.84	1,319

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	83.35	0	16.65	0	0.00	1
Pasture	0	0.00	1	28.57	2	71.43	3
Forest	79	16.98	179	38.44	208	44.59	466
Total	80	17.05	180	38.31	210	44.64	471

Table I4. Acres and percent of land use within various distances to the tributary and percent slope of the total the land within each category for Tomahawk Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	37	20.05	90	48.21	59	31.74	186
Pasture	903	17.79	2,414	47.56	1,758	34.65	5,075
Forest	403	7.41	1,750	32.13	3,294	60.47	5,447
Total	1,343	12.55	4,253	39.72	5,111	47.73	10,708

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	42	25.28	76	46.40	47	28.32	165
Pasture	892	22.40	1,972	49.55	1,117	28.05	3,981
Forest	353	10.06	1,401	39.96	1,752	49.98	3,506
Total	1,286	16.80	3,450	45.09	2,916	38.11	7,651

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	20	31.49	27	41.52	17	26.99	64
Pasture	338	23.35	730	50.47	379	26.18	1,446
Forest	147	9.74	581	38.38	785	51.88	1,513
Total	505	16.71	1,337	44.23	1,181	39.06	3,023

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	3	17.15	11	68.57	2	14.29	16
Pasture	68	20.98	199	61.63	56	17.39	322
Forest	45	10.72	174	41.27	203	48.01	422
Total	115	15.20	383	50.46	261	34.33	759

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	2	26.93	3	57.69	1	15.38	6
Pasture	37	24.13	86	56.07	30	19.80	154
Forest	20	18.72	63	58.23	25	23.04	108
Total	59	22.01	152	56.98	56	21.01	268

Table I5. Acres and percent of land use within various distances to the tributary and percent slope of the total the land within each category for Upper Buffalo River.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	6	8.81	23	35.59	36	55.59	66
Pasture	192	9.07	559	26.44	1,364	64.49	2,115
Forest	527	4.66	2,326	20.58	8,451	74.76	11,304
Total	725	5.37	2,909	21.57	9,851	73.06	13,485

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	12	20.38	22	37.69	24	41.92	58
Pasture	156	12.07	421	32.60	714	55.34	1,290
Forest	808	8.58	2,912	30.92	5,697	60.49	9,417
Total	976	9.06	3,354	31.16	6,435	59.78	10,765

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	4	10.52	22	52.63	16	36.84	42
Pasture	124	19.74	244	38.98	259	41.29	627
Forest	495	9.09	1,866	34.26	3,085	56.65	5,446
Total	623	10.19	2,132	34.87	3,359	54.94	6,115

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	3	16.48	9	45.06	8	38.46	20
Pasture	47	19.98	103	43.54	86	36.47	236
Forest	185	9.30	663	33.30	1,142	57.40	1,990
Total	236	10.49	774	34.48	1,236	55.03	2,246

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	30.01	2	50.00	1	19.99	4
Pasture	21	14.71	77	53.25	46	32.04	144
Forest	35	10.71	136	42.07	153	47.22	324
Total	57	12.11	215	45.55	200	42.35	472

Table I6. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the lower third of Upper Bear Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cove	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	82	34.72	106	45.19	47	20.09	236
Pasture	1,243	28.84	2,052	47.59	1,016	23.57	4,312
Forest	384	9.73	1,167	29.59	2,394	60.68	3,945
Total	1,709	20.13	3,326	39.17	3,457	40.71	8,492

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cove	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	102	34.04	131	43.58	67	22.38	301
Pasture	914	30.04	1,420	46.68	708	23.28	3,041
Forest	327	10.31	944	29.81	1,897	59.88	3,168
Total	1,343	20.63	2,495	38.33	2,673	41.05	6,510

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cove	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	90	41.76	94	43.94	31	14.30	215
Pasture	537	33.28	752	46.59	325	20.13	1,614
Forest	171	9.16	563	30.13	1,135	60.70	1,870
Total	798	21.58	1,409	38.11	1,491	40.31	3,698

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cove	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	18	27.62	24	37.41	22	34.97	64
Pasture	79	27.61	110	38.28	98	34.11	287
Forest	22	3.83	142	24.49	416	71.68	581
Total	119	12.79	276	29.63	537	57.59	932

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cove	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	4.76	1	23.81	3	71.44	5
Pasture	2	17.64	6	56.86	3	25.49	11
Forest	2	3.27	11	18.18	48	78.55	61
Total	4	5.48	19	24.21	54	70.32	77

Table I7. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the middle third of Upper Bear Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	34	39.23	34	39.23	19	21.54	87
Pasture	871	46.55	660	35.26	340	18.19	1,871
Forest	190	5.94	820	25.59	2,194	68.48	3,204
Total	1,095	21.22	1,513	29.32	2,553	49.46	5,161

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	9	21.05	25	58.42	9	20.53	42
Pasture	237	25.44	410	43.99	285	30.57	932
Forest	95	3.31	649	22.49	2,140	74.20	2,884
Total	341	8.85	1,083	28.08	2,433	63.07	3,858

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	16	50.34	14	41.50	3	8.16	33
Pasture	103	27.64	143	38.42	126	33.94	373
Forest	72	3.98	421	23.26	1,317	72.76	1,811
Total	191	8.64	578	26.08	1,447	65.28	2,216

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	75.11	0	24.89	0	0.00	2
Pasture	28	41.75	30	45.79	8	12.46	66
Forest	24	2.99	211	25.80	582	71.21	817
Total	53	6.03	241	27.29	590	66.68	885

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	0	0.00	0	0.00	0
Pasture	5	35.00	4	30.00	5	35.00	13
Forest	11	3.38	111	33.16	213	63.46	335
Total	16	4.59	115	33.04	217	62.37	349

Table I8. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the upper third of Upper Bear Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	14	34.46	14	36.16	12	29.38	39
Pasture	532	39.41	434	32.15	384	28.44	1,351
Forest	370	6.03	1,331	21.68	4,438	72.29	6,139
Total	916	12.16	1,780	23.64	4,834	64.20	7,529

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	13	30.81	21	50.27	8	18.92	41
Pasture	515	41.86	489	39.82	225	18.32	1,229
Forest	408	9.19	1,205	27.14	2,827	63.67	4,440
Total	935	16.38	1,715	30.04	3,060	53.59	5,710

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	9	37.84	9	36.94	6	25.22	25
Pasture	423	47.85	351	39.65	110	12.50	884
Forest	363	16.56	635	28.97	1,193	54.47	2,191
Total	795	25.65	994	32.08	1,310	42.27	3,100

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	4	39.13	3	26.09	4	34.78	10
Pasture	107	44.86	103	43.46	28	11.68	238
Forest	86	19.67	143	32.64	209	47.69	437
Total	197	28.71	249	36.30	240	35.00	685

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	4	30.16	5	38.10	4	31.75	14
Pasture	10	43.69	10	45.63	2	10.68	23
Forest	2	3.60	10	18.80	43	77.60	56
Total	16	17.55	26	28.36	50	54.09	92

Table I9. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the lower third of Lower Bear Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	acres	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	3	14.01	8	33.70	12	52.30	24
Pasture	65	20.24	107	33.45	148	46.31	320
Forest	26	4.83	81	14.93	436	80.25	543
Total	94	10.63	196	22.11	597	67.27	887

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	1	13.79	6	86.21	6
Pasture	4	3.72	23	21.28	81	75.00	108
Forest	12	3.24	58	15.79	300	80.97	370
Total	16	3.30	82	16.98	386	79.72	484

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	0	22.21	2	77.79	2
Pasture	3	4.93	14	20.39	50	74.67	68
Forest	4	5.00	15	16.75	70	78.25	89
Total	8	4.91	29	18.37	122	76.72	158

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0.22	25.00	0.22	25.00	0.44	50.00	1
Pasture	1	4.95	6	27.72	15	67.33	22
Forest	4	5.00	15	16.75	70	78.25	89
Total	6	5.15	21	19.01	85	75.84	112

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	0	0.00	0	0.00	0
Pasture	2	36.84	1	31.58	1	31.58	4
Forest	0	9.99	1	40.01	1	50.00	2
Total	2	27.58	2	34.49	2	37.93	6

Table I10. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the middle third of Lower Bear Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	8	16.50	10	22.81	28	60.68	46
Pasture	72	25.12	96	33.36	120	41.53	289
Forest	49	7.10	151	21.97	489	70.93	689
Total	129	12.60	258	25.22	636	62.18	1,023

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	2.20	5	25.27	15	72.53	20
Pasture	20	14.52	42	30.86	74	54.62	135
Forest	39	7.03	136	24.69	376	68.28	550
Total	59	8.32	182	25.88	464	65.79	705

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	6.45	4	30.64	9	62.91	14
Pasture	8	7.83	38	35.05	62	57.11	108
Forest	18	6.41	76	26.92	187	66.67	281
Total	27	6.79	118	29.23	257	63.98	402

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	10.52	1	31.58	2	57.90	4
Pasture	5	8.47	23	41.94	27	49.60	55
Forest	5	4.67	30	26.26	79	69.07	114
Total	10	6.02	54	31.37	109	62.61	174

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0.22	10.00	1.33	60.02	0.67	29.99	2
Pasture	3	19.44	5	31.95	8	48.61	16
Forest	0.22	1.16	4	22.09	15	76.75	19
Total	4	9.52	11	28.57	23	61.91	37

Table I11. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the upper third of Lower Bear Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	4	25.00	4	29.40	7	45.60	15
Pasture	112	25.57	149	34.08	176	40.35	436
Forest	71	9.45	195	26.04	484	64.50	750
Total	186	15.50	349	29.00	667	55.49	1,202

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	4	33.33	4	33.33	4	33.33	11
Pasture	88	25.58	146	42.42	110	31.99	343
Forest	61	12.57	192	39.58	233	47.85	486
Total	152	18.15	342	40.66	346	41.19	840

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	5	30.43	8	55.08	2	14.49	15
Pasture	44	21.90	96	48.16	60	29.94	199
Forest	25	12.96	92	48.15	75	38.89	192
Total	73	18.00	197	48.41	136	33.59	406

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	0.22	11.10	2	88.90	2
Pasture	0	0.00	6	90.33	1	9.67	7
Forest	0.22	2.77	8	94.45	0.22	2.77	8
Total	0.22	1.31	14	82.90	3	15.78	17

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	0	0.00	0	0.00	0
Pasture	0	0.00	0	0.00	0	0.00	0
Forest	0	0.00	0	0.00	0	0.00	0
Total	0	0.00	0	0.00	0	0.00	0

Table I12. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the lower third of Calf Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	71	32.55	90	41.66	56	25.79	217
Pasture	945	35.66	1,077	40.61	629	23.73	2,651
Forest	287	12.23	754	32.15	1,304	55.62	2,345
Total	1,303	24.99	1,921	36.85	1,989	38.16	5,213

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	39	33.15	61	51.69	18	15.17	119
Pasture	701	39.11	816	45.53	275	15.36	1,791
Forest	249	16.46	620	41.04	642	42.50	1,512
Total	989	28.90	1,497	43.76	936	27.34	3,422

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	18	42.06	18	42.57	7	15.38	43
Pasture	242	35.28	300	43.82	143	20.90	685
Forest	160	16.75	372	38.98	422	44.27	954
Total	420	24.95	690	41.04	572	34.01	1,682

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	1	42.91	2	57.09	3
Pasture	21	20.00	51	49.03	32	30.97	103
Forest	28	9.07	94	30.10	191	60.84	314
Total	49	11.69	146	34.85	225	53.46	420

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	0	0.00	0	0.00	0
Pasture	0	0.00	0	0.00	1	100.00	1
Forest	19	9.74	77	39.63	98	50.63	194
Total	19	9.69	77	39.45	99	50.86	195

Table I13. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the middle third of Calf Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	32	33.49	42	45.05	20	21.46	94
Pasture	924	42.18	953	43.48	314	14.33	2,191
Forest	342	16.18	768	36.38	1,001	47.44	2,111
Total	1,297	29.51	1,763	40.11	1,336	30.38	4,396

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	23	30.88	23	30.29	29	38.82	76
Pasture	704	57.17	462	37.54	65	5.29	1,231
Forest	241	20.29	507	42.65	441	37.06	1,190
Total	968	38.79	992	39.76	535	21.45	2,496

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	4	35.41	3	31.25	4	33.33	11
Pasture	157	43.00	131	35.89	77	21.11	365
Forest	74	14.19	216	41.37	232	44.44	522
Total	235	26.17	350	39.02	313	34.81	898

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	25.00	0	0.00	2	75.00	3
Pasture	8	24.48	11	33.57	13	41.96	32
Forest	24	9.35	65	25.70	165	64.95	254
Total	32	11.16	76	26.33	180	62.51	289

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	0	0.00	0	0.00	0
Pasture	0	0.00	1	66.64	0	33.36	1
Forest	42	30.44	55	39.77	41	29.79	138
Total	42	30.14	56	40.03	42	29.82	139

Table I14. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the upper third of Calf Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	28	51.22	17	31.71	9	17.07	55
Pasture	500	47.74	349	33.35	198	18.91	1,047
Forest	172	5.16	927	27.71	2,245	67.13	3,344
Total	700	15.75	1,293	29.09	2,452	55.16	4,446

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	32	43.50	19	25.38	23	31.12	74
Pasture	263	40.27	243	37.20	147	22.54	652
Forest	182	6.68	732	26.90	1,809	66.43	2,723
Total	476	13.81	994	28.81	1,979	57.38	3,449

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	22	56.90	14	36.21	3	6.90	39
Pasture	216	52.32	138	33.55	58	14.13	412
Forest	90	5.90	320	21.01	1,113	73.09	1,522
Total	327	16.60	472	23.93	1,173	59.47	1,973

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	3	34.15	6	63.42	0	2.44	9
Pasture	39	45.67	25	29.92	21	24.41	85
Forest	25	4.87	115	22.22	376	72.91	516
Total	67	10.97	146	23.91	397	65.12	610

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	83.35	0	16.65	0	0.00	1
Pasture	0	0.00	0	0.00	1	100.00	1
Forest	18	13.60	47	35.32	68	51.08	134
Total	19	14.19	48	34.91	69	50.90	136

Table I15. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the lower third of Tomahawk Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	20	23.33	37	42.82	29	33.85	87
Pasture	354	18.53	792	41.41	766	40.06	1,911
Forest	154	7.56	577	28.34	1,305	64.09	2,037
Total	528	13.09	1,406	34.84	2,101	52.06	4,035

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	12	19.56	31	52.03	17	28.41	60
Pasture	288	19.90	674	46.57	485	33.53	1,448
Forest	129	10.12	487	38.28	657	51.61	1,272
Total	429	15.41	1,193	42.89	1,159	41.69	2,780

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	8	25.55	14	46.72	8	27.74	30
Pasture	130	26.06	243	48.69	126	25.26	500
Forest	58	9.47	230	37.65	323	52.88	610
Total	196	17.17	487	42.73	457	40.10	1,141

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	23.08	2	61.52	0	15.40	3
Pasture	19	25.53	36	48.35	19	26.13	74
Forest	29	10.62	114	41.76	130	47.62	273
Total	49	13.87	152	43.32	150	42.81	350

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	40.02	1	59.98	0	0.00	1
Pasture	6	20.14	16	53.24	8	26.62	31
Forest	10	16.93	34	60.63	13	22.44	56
Total	16	18.34	51	58.04	21	23.62	88

Table I16. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the middle third of Tomahawk Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	13	17.65	36	48.23	26	34.12	76
Pasture	281	16.71	765	45.55	634	37.74	1,679
Forest	149	7.74	609	31.66	1,165	60.60	1,923
Total	443	12.04	1,410	38.34	1,825	49.62	3,677

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	22	27.03	32	39.68	27	33.30	80
Pasture	263	20.60	612	48.04	400	31.36	1,274
Forest	105	8.57	500	40.82	620	50.61	1,224
Total	389	15.09	1,144	44.35	1,046	40.56	2,579

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	7	27.93	9	37.84	8	34.23	25
Pasture	108	18.57	275	47.34	198	34.08	582
Forest	39	6.75	215	37.25	323	56.00	576
Total	154	13.01	499	42.23	529	44.77	1,183

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	23.08	4	65.38	1	11.54	6
Pasture	14	17.86	44	54.95	22	27.20	81
Forest	4	4.18	34	33.26	63	62.55	101
Total	20	10.66	82	43.60	86	45.73	188

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	50.00	1	50.00	0	0.00	1
Pasture	6	31.04	9	48.28	4	20.69	19
Forest	0	0.00	0	4.77	9	95.23	9
Total	7	22.22	10	34.82	13	42.96	30

Table I17. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the upper third of Tomahawk Creek.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	4	15.74	16	67.59	4	16.67	24
Pasture	268	18.06	857	57.76	359	24.18	1,484
Forest	100	6.76	564	37.92	823	55.33	1,487
Total	372	12.43	1,438	47.99	1,186	39.59	2,996

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	8	33.63	13	54.55	3	11.82	24
Pasture	341	27.09	686	54.50	232	18.40	1,259
Forest	119	11.78	414	41.05	476	47.17	1,009
Total	468	20.42	1,114	48.58	711	31.00	2,292

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	6	60.97	3	34.15	0	4.88	9
Pasture	99	27.27	211	57.90	54	14.83	364
Forest	51	15.54	136	41.72	139	42.74	326
Total	156	22.24	350	50.05	194	27.71	700

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	9.68	5	74.20	1	16.12	7
Pasture	34	20.48	118	70.74	15	8.78	167
Forest	12	25.12	26	55.35	9	19.54	48
Total	47	21.14	150	67.54	25	11.32	222

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	13.34	2	60.00	1	26.66	3
Pasture	25	24.03	60	58.37	18	17.60	104
Forest	11	25.26	28	66.84	3	7.89	42
Total	36	24.14	91	60.80	22	15.05	149

Table I18. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the lower third of Upper Buffalo River.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	3.33	8	38.89	12	57.78	20
Pasture	55	7.54	220	30.20	453	62.26	728
Forest	165	4.19	804	20.40	2,971	75.41	3,940
Total	221	4.71	1,032	22.00	3,436	73.29	4,688

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	4	22.22	8	40.00	8	37.78	20
Pasture	64	13.81	164	35.59	233	50.60	461
Forest	333	9.66	1,154	33.46	1,962	56.88	3,449
Total	401	10.21	1,326	33.74	2,202	56.05	3,930

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	2	11.90	11	60.72	5	27.38	19
Pasture	46	22.40	94	45.78	65	31.82	206
Forest	206	11.30	758	41.64	856	47.07	1,819
Total	254	12.42	863	42.23	927	45.35	2,043

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	3	28.90	5	51.11	2	19.99	10
Pasture	18	30.26	31	52.03	11	17.71	60
Forest	94	15.42	270	44.15	247	40.44	612
Total	115	16.93	306	44.94	260	38.13	682

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0.45	18.19	1	45.46	0.89	36.35	2
Pasture	8	11.77	39	56.86	21	31.37	68
Forest	13	19.09	37	54.05	18	26.86	69
Total	22	15.50	77	55.27	41	29.23	139

Table I19. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the middle third of Upper Buffalo River.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	5	16.30	12	40.00	13	43.71	30
Pasture	68	9.71	176	24.98	459	65.32	703
Forest	177	6.00	689	23.30	2,091	70.70	2,958
Total	251	6.79	877	23.76	2,564	69.45	3,691

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	6	34.18	7	41.77	4	24.05	18
Pasture	53	12.91	139	33.99	217	53.10	408
Forest	220	9.11	805	33.36	1,388	57.53	2,412
Total	278	9.81	951	33.51	1,609	56.68	2,838

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	2	12.85	9	55.72	5	31.43	16
Pasture	68	24.15	115	41.06	97	34.79	280
Forest	199	12.10	644	39.08	804	48.82	1,647
Total	269	13.84	767	39.50	906	46.66	1,942

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0.44	5.55	4	50.01	4	44.45	8
Pasture	27	20.10	61	45.35	46	34.55	134
Forest	64	9.86	271	41.72	315	48.43	650
Total	91	11.54	336	42.42	365	46.04	792

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0.89	44.46	1	55.54	0	0.00	2
Pasture	13	18.21	37	51.54	22	30.25	72
Forest	19	11.76	78	47.74	66	40.49	163
Total	33	14.00	116	48.97	88	37.03	237

Table I20. Acres and percent of land use within various distance to the tributary and percent slope of the land within each category in the upper third of Upper Buffalo River.

0-250 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	1.43	4	22.86	12	75.72	16
Pasture	69	10.03	163	23.94	451	66.03	683
Forest	185	4.19	833	18.91	3,388	76.90	4,406
Total	253	4.96	1,000	19.60	3,851	75.44	5,105

250-500 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	6.59	6	31.87	12	61.54	20
Pasture	39	9.35	118	27.98	264	62.67	421
Forest	255	7.18	953	26.80	2,347	66.01	3,555
Total	296	7.41	1,077	26.95	2,623	65.64	3,997

500-750 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0.22	2.77	2	27.78	6	69.45	8
Pasture	10	7.10	35	24.92	96	67.98	141
Forest	90	4.56	465	23.48	1,425	71.96	1,980
Total	101	4.72	502	23.59	1,526	71.69	2,129

750-1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	0	0.00	2	100.00	2
Pasture	2	4.79	11	25.53	29	69.68	42
Forest	27	3.67	121	16.68	580	79.66	728
Total	29	3.72	132	17.11	611	79.18	772

>1000 meters

	Category <7%		Category 8-14%		Category >15%		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	0	0.00	0	0.00	0
Pasture	0	0.00	1	18.75	3	81.25	4
Forest	2	2.64	22	23.26	69	74.10	93
Total	2	2.54	22	23.09	72	74.37	96

Table I21. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category for Upper Bear Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	226	62.38	120	33.13	16	4.49	362
Pasture	4,684	62.18	2,364	31.39	485	6.43	7,533
Forest	2,550	19.19	6,329	47.63	4,409	33.18	13,288
Total	7,460	35.22	8,813	41.60	4,910	23.18	21,182

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	235	61.02	131	34.18	18	4.80	384
Urban	195	64.49	96	31.69	12	3.82	303
Utilities	29	42.44	33	47.59	7	9.97	69
Water	10	80.00	2	20.00	0	0.00	12
Pasture	3,159	60.72	1,731	33.27	312	6.00	5,203
Forest	2,193	20.90	5,168	49.25	3,132	29.85	10,492
Total	5,586	34.74	7,030	43.72	3,463	21.54	16,079

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	194	71.22	73	26.98	5	1.80	272
Pasture	1,900	66.18	824	28.71	147	5.11	2,871
Forest	1,413	24.06	2,849	48.53	1,609	27.41	5,872
Total	3,506	38.90	3,747	41.57	1,761	19.53	9,014

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	40	53.53	25	33.24	10	13.24	76
Pasture	377	63.83	161	27.29	52	8.87	591
Forest	362	19.71	1,008	54.94	465	25.35	1,835
Total	780	31.16	1,195	47.75	528	21.09	2,502

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	9	46.43	6	32.14	4	21.43	19
Pasture	32	68.22	13	27.57	2	4.21	48
Forest	69	15.30	255	56.52	127	28.18	452
Total	110	21.28	275	52.98	133	25.74	518

Table I22. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category for Lower Bear Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	31	36.22	25	29.66	29	34.12	85
Urban	17	43.10	14	37.36	8	19.54	39
Utilities	11	29.17	10	26.79	16	44.05	37
Water	3	35.89	1	7.69	5	56.43	9
Pasture	473	45.33	345	33.03	226	21.64	1,045
Forest	375	18.91	802	40.46	805	40.62	1,983
Total	879	28.25	1,172	37.67	1,060	34.07	3,112

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	9	24.40	18	47.03	11	28.57	37
Pasture	233	39.79	254	43.39	98	16.82	585
Forest	309	21.93	701	49.80	398	28.27	1,407
Total	551	27.13	972	47.90	507	24.97	2,030

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	14	44.29	13	41.43	4	14.28	31
Pasture	144	38.60	177	47.39	52	14.01	374
Forest	159	22.71	353	50.33	189	26.96	701
Total	317	28.69	543	49.08	246	22.22	1,106

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	2	31.24	4	53.14	1	15.61	7
Pasture	22	26.58	51	60.00	11	13.42	84
Forest	36	16.84	117	55.26	59	27.89	211
Total	60	19.90	171	56.54	71	23.57	303

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	-	-	-	-	-	-	-
Pasture	-	-	-	-	-	-	-
Forest	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-

Table I23. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category for Calf Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	235	64.18	99	27.14	32	8.68	366
Pasture	3,916	67.06	1,577	27.00	347	5.94	5,840
Forest	2,076	26.61	3,676	47.13	2,048	26.26	7,800
Total	6,227	44.46	5,352	38.21	2,427	17.33	14,006

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	168	62.57	73	27.39	27	10.04	268
Pasture	2,789	75.90	784	21.34	101	2.76	3,674
Forest	1,657	30.55	2,558	47.15	1,210	22.30	5,425
Total	4,614	49.26	3,415	36.46	1,338	14.28	9,367

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	70	76.02	20	21.10	3	2.88	93
Pasture	996	68.11	377	25.81	89	6.08	1,462
Forest	780	26.50	1,227	41.68	937	31.83	2,944
Total	1,847	41.04	1,624	36.10	1,029	22.86	4,499

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	9	62.68	6	37.32	0	0.00	15
Pasture	126	57.53	60	27.50	33	14.96	220
Forest	216	19.95	505	46.56	363	33.50	1,084
Total	352	26.69	571	43.28	396	30.03	1,319

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	100.00	0	0.00	0	0.00	1
Pasture	0	0.00	2	57.15	1	42.85	3
Forest	177	37.91	243	52.12	46	9.97	466
Total	178	37.84	245	52.01	48	10.16	471

Table I24. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category for Tomahawk Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	93	49.76	70	37.83	23	12.41	186
Pasture	2,360	46.51	2,241	44.16	473	9.33	5,075
Forest	1,248	22.91	2,933	53.85	1,266	23.25	5,447
Total	3,701	34.56	5,245	48.98	1,763	16.46	10,708

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	70	51.71	60	44.21	6	4.08	136
Pasture	2,065	51.88	1,708	42.91	207	5.20	3,981
Forest	1,065	30.39	2,006	57.22	434	12.39	3,506
Total	3,201	41.99	3,775	49.52	647	8.49	7,623

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	38	58.82	26	40.14	1	1.04	64
Pasture	786	54.34	612	42.31	48	3.35	1,446
Forest	429	28.33	911	60.20	174	11.48	1,513
Total	1,252	41.42	1,548	51.21	223	7.37	3,023

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	14	80.00	4	20.00	0	0.00	18
Pasture	313	60.23	197	37.93	10	1.84	519
Forest	231	32.93	390	55.73	79	11.34	700
Total	557	45.07	591	47.74	89	7.19	1,237

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	3	53.86	3	46.14	0	0.00	6
Pasture	87	56.79	66	42.63	1	0.58	154
Forest	54	50.41	48	44.44	6	5.14	108
Total	145	54.15	116	43.44	6	2.41	268

Table I25. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category for Upper Buffalo River.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	28	37.05	37	49.42	10	13.53	76
Pasture	488	23.05	864	40.88	763	36.06	2,115
Forest	1,537	13.59	5,056	44.72	4,712	41.68	11,304
Total	2,052	15.21	5,958	44.15	5,485	40.64	13,495

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	22	37.69	33	56.92	3	5.38	58
Pasture	390	30.25	569	44.10	331	25.65	1,290
Forest	2,265	24.05	4,735	50.28	2,417	25.67	9,417
Total	2,677	24.87	5,337	49.57	2,751	25.56	10,765

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	16	37.90	22	52.10	4	10.00	42
Pasture	266	42.49	258	41.14	103	16.36	627
Forest	1,405	25.79	2,953	54.22	1,089	19.99	5,446
Total	1,687	27.59	3,232	52.86	1,195	19.55	6,115

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	8	41.76	10	51.66	1	6.58	20
Pasture	111	47.03	92	39.11	33	13.86	236
Forest	530	26.64	1,071	53.85	388	19.52	1,990
Total	649	28.92	1,174	52.28	422	18.81	2,246

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	3	60.00	2	40.00	0	0.00	4
Pasture	69	47.99	66	46.29	8	5.73	144
Forest	113	34.99	155	47.93	55	17.08	324
Total	185	39.18	224	47.36	64	13.46	472

Table I26. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the lower third of Upper Bear Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	149	63.11	73	31.13	14	5.75	236
Pasture	2,558	59.32	1,521	35.28	233	5.40	4,312
Forest	1,011	25.63	1,845	46.78	1,088	27.59	3,945
Total	3,717	43.78	3,440	40.51	1,335	15.72	8,492

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	185	61.37	102	33.97	14	4.65	301
Pasture	1,822	59.90	1,073	35.28	146	4.82	3,041
Forest	833	26.29	1,498	47.27	838	26.43	3,168
Total	2,839	43.61	2,673	41.06	998	15.33	6,510

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	151	70.36	61	28.50	2	1.14	215
Pasture	1,039	64.40	507	31.45	67	4.15	1,614
Forest	442	23.62	984	52.61	445	23.77	1,870
Total	1,632	44.12	1,552	41.98	514	13.90	3,698

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	33	52.45	22	34.97	8	12.59	64
Pasture	150	52.05	92	32.17	45	15.78	287
Forest	81	13.93	339	58.32	161	27.75	581
Total	264	28.32	453	48.66	215	23.02	932

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	23.80	1	19.04	3	57.16	5
Pasture	5	47.06	5	45.10	1	7.84	11
Forest	6	10.55	26	43.27	28	46.18	61
Total	13	16.71	32	42.08	32	41.21	77

Table I27. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the middle third of Upper Bear Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	56	64.10	29	33.59	2	2.31	87
Pasture	1,313	70.17	480	25.68	78	4.15	1,871
Forest	533	16.62	1,768	55.17	904	28.21	3,204
Total	1,901	36.83	2,277	44.12	983	19.05	5,161

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	23	54.74	17	40.00	2	5.26	42
Pasture	481	51.65	371	39.84	79	8.51	932
Forest	336	11.65	1,674	58.05	874	30.29	2,884
Total	841	21.79	2,062	53.45	955	24.76	3,858

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	28	84.36	4	12.92	1	2.72	33
Pasture	184	49.28	143	38.26	46	12.46	373
Forest	239	13.21	1,013	55.93	559	30.86	1,811
Total	451	20.33	1,160	52.32	606	27.35	2,216

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	2	100.00	0	0.00	0	0.00	2
Pasture	50	75.76	12	17.85	4	6.40	66
Forest	109	13.39	498	60.95	210	25.66	817
Total	161	18.22	510	57.61	214	24.17	885

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	0	0.00	0	0.00	0
Pasture	8	58.33	5	38.33	0	3.34	13
Forest	54	16.11	213	63.66	68	20.23	335
Total	62	17.73	219	62.69	68	19.58	349

Table I28. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the upper third of Upper Bear Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	21	54.24	17	44.07	1	1.70	39
Pasture	814	60.24	363	26.87	174	12.88	1,351
Forest	1,006	16.39	2,716	44.24	2,417	39.37	6,139
Total	1,841	24.46	3,096	41.12	2,592	34.42	7,529

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	27	64.87	12	29.73	2	5.41	41
Pasture	856	69.64	287	23.33	86	7.03	1,229
Forest	1,023	23.05	1,996	44.95	1,421	32.00	4,440
Total	1,906	33.38	2,295	40.19	1,510	26.43	5,710

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	15	61.26	8	32.43	2	6.31	25
Pasture	677	76.54	174	19.69	33	3.77	884
Forest	732	33.42	853	38.93	606	27.66	2,191
Total	1,424	45.94	1,035	33.39	641	20.67	3,100

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	5	52.17	3	28.26	2	19.57	10
Pasture	178	74.77	57	24.02	3	1.22	238
Forest	171	39.20	171	39.20	94	21.61	437
Total	355	51.74	231	33.77	99	14.50	685

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	8	53.97	5	36.51	1	9.53	14
Pasture	19	84.46	3	12.62	1	2.91	23
Forest	9	15.60	16	28.00	31	56.40	56
Total	36	38.46	24	25.48	33	36.06	92

Table I29. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the lower third of Lower Bear Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	9	39.25	7	28.97	8	31.78	24
Pasture	134	41.79	106	33.24	80	24.97	320
Forest	69	12.68	174	31.98	301	55.34	543
Total	212	23.88	287	32.36	388	43.76	887

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	3.44	4	55.17	3	41.38	6
Pasture	16	14.46	42	39.46	50	46.07	108
Forest	41	11.04	155	41.96	174	47.00	370
Total	57	11.70	201	41.58	226	46.72	484

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	11.11	1	55.58	1	33.32	2
Pasture	9	12.83	33	48.68	26	38.49	68
Forest	30	13.35	98	43.18	99	43.47	228
Total	39	13.22	132	44.51	126	42.27	298

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	25.00	0	25.00	0	50.00	1
Pasture	5	20.79	12	52.48	6	26.73	22
Forest	11	12.00	45	50.25	34	37.75	89
Total	16	13.86	57	50.50	40	35.64	112

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	0	0.00	0	0.00	0
Pasture	2	57.90	2	42.10	0	0.00	4
Forest	1	30.01	1	60.07	0	9.91	2
Total	3	48.29	3	48.29	0	3.42	6

Table I30. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the middle third of Lower Bear Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	15	33.49	12	26.70	18	39.81	46
Pasture	133	46.23	92	31.74	64	22.03	289
Forest	129	309.20	309	44.89	251	36.43	689
Total	277	27.11	413	40.37	333	32.52	1,023

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	3	14.28	10	51.65	7	34.07	20
Pasture	45	33.50	64	47.52	26	18.98	135
Forest	109	19.80	281	51.03	160	29.17	550
Total	157	22.26	355	50.38	193	27.36	705

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	3	22.58	7	50.00	4	27.42	14
Pasture	30	28.04	61	56.50	17	15.46	108
Forest	54	19.16	151	53.92	76	26.92	281
Total	87	21.66	219	54.48	96	23.87	402

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	21.04	3	63.18	1	15.78	4
Pasture	15	26.61	35	63.71	5	9.68	55
Forest	20	17.70	69	60.12	25	22.18	114
Total	36	20.61	106	61.33	31	18.05	174

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	40.01	1	59.99	0	0.00	2
Pasture	6	40.28	7	45.84	2	13.88	16
Forest	2	12.79	9	48.84	7	38.37	19
Total	10	26.19	18	48.21	10	25.59	37

Table I31. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the upper third of Lower Bear Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	6	39.70	6	39.71	3	20.59	15
Pasture	207	47.33	147	33.72	83	18.95	436
Forest	177	23.64	319	42.55	254	33.81	750
Total	390	32.45	472	39.31	339	28.25	1,202

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	6	56.25	4	33.34	1	10.42	11
Pasture	172	50.19	148	43.01	23	6.80	343
Forest	159	32.63	265	54.39	63	12.98	486
Total	337	40.11	416	49.47	88	10.42	840

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	10	68.12	5	31.88	0	0.00	15
Pasture	106	53.07	84	42.01	10	4.92	199
Forest	75	39.00	103	53.58	14	7.43	192
Total	191	46.99	191	47.10	24	5.92	406

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	55.52	1	44.48	0	0.00	2
Pasture	3	45.16	4	54.84	0	0.00	7
Forest	5	58.33	3	41.67	0	0.00	8
Total	9	52.63	8	47.37	0	0.00	17

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	-	0.00	-	0.00	-	0.00	-
Pasture	-	0.00	-	0.00	-	0.00	-
Forest	-	0.00	-	0.00	-	0.00	-
Total	-	0.00	-	0.00	-	0.00	-

Table I32. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the lower third of Calf Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	134	61.82	59	27.02	24	11.16	217
Pasture	1,659	62.58	795	30.00	197	7.43	2,651
Forest	698	29.78	1,027	43.79	620	26.44	2,345
Total	2,492	47.79	1,881	36.07	841	16.13	5,213

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	79	66.85	38	32.21	1	0.94	119
Pasture	1,284	71.67	463	25.87	44	2.46	1,791
Forest	600	39.72	672	44.46	239	15.82	1,512
Total	1,964	57.39	1,174	34.30	284	8.31	3,422

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	29	67.69	13	29.74	1	2.56	43
Pasture	426	62.22	221	32.29	38	5.49	685
Forest	338	37.56	389	43.17	173	19.26	900
Total	794	48.74	623	38.24	212	13.02	1,628

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	7.13	3	92.87	0	0.00	3
Pasture	52	50.11	40	38.92	11	10.97	103
Forest	75	23.87	166	53.05	72	23.09	314
Total	127	30.20	210	49.87	84	19.94	420

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	0	0.00	0	0.00	0
Pasture	0	0.00	0	50.00	0	50.00	1
Forest	48	24.97	126	65.06	19	9.97	194
Total	48	24.86	127	64.99	20	10.15	195

Table I33. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the middle third of Calf Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	60	63.68	29	31.13	5	5.19	94
Pasture	1,559	71.14	571	26.06	61	2.80	2,191
Forest	789	37.36	910	43.09	413	19.55	2,111
Total	2,407	54.76	1,510	34.35	479	10.90	4,396

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	40	53.24	24	31.18	12	15.59	76
Pasture	1,071	86.98	156	12.69	4	0.33	1,231
Forest	549	46.18	503	42.24	138	11.58	1,190
Total	1,660	66.51	682	27.34	154	6.15	2,496

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	7	62.50	2	22.92	2	14.58	11
Pasture	247	67.52	92	25.24	26	7.24	365
Forest	200	38.35	212	40.56	110	21.09	522
Total	453	50.51	306	34.12	138	15.38	898

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	25.00	2	75.00	0	0.00	3
Pasture	14	44.06	10	31.47	8	24.48	32
Forest	64	25.26	86	33.83	104	40.91	254
Total	79	27.33	98	33.95	112	38.72	289

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	0	0.00	0	0.00	0
Pasture	0	0.00	1	100.00	0	0.00	1
Forest	82	59.58	46	33.66	9	6.76	138
Total	82	59.01	48	34.29	9	6.70	139

Table I34. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the upper third of Calf Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	41	74.39	11	20.73	3	4.88	55
Pasture	698	70.04	210	21.09	88	8.87	997
Forest	589	17.61	1,740	52.02	1,016	30.37	3,344
Total	1,328	30.21	1,961	44.61	1,107	25.18	4,396

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	48	65.26	12	15.71	14	19.03	74
Pasture	434	66.59	164	25.23	53	8.18	652
Forest	507	18.64	1,383	50.79	833	30.58	2,723
Total	990	28.69	1,559	45.21	900	26.10	3,449

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	34	89.08	4	10.92	0	0.00	39
Pasture	323	78.42	64	15.53	25	6.04	412
Forest	242	15.89	627	41.18	654	42.93	1,522
Total	599	30.39	695	35.23	678	34.38	1,973

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	8	92.68	1	7.32	0	0.00	9
Pasture	61	71.65	10	12.07	14	16.27	85
Forest	77	14.94	252	48.88	187	36.18	516
Total	146	23.98	263	43.15	201	32.87	610

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	100.00	0	0.00	0	0.00	1
Pasture	0	0.00	0	0.00	1	100.00	1
Forest	46	34.33	70	52.40	18	13.27	134
Total	47	34.75	70	51.55	19	13.70	136

Table I35. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the lower third of Tomahawk Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	45	51.79	30	35.13	11	13.08	87
Pasture	815	42.62	870	45.52	227	11.86	1,911
Forest	435	21.38	1,036	50.88	565	27.74	2,037
Total	1,295	32.10	1,937	48.00	803	19.90	4,035

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	17	53.15	15	46.85	0	0.00	32
Pasture	683	47.20	652	45.02	113	7.78	1,448
Forest	379	29.82	723	56.80	170	13.38	1,272
Total	1,080	39.23	1,389	50.48	283	10.28	2,752

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	17	56.20	13	41.61	1	2.19	30
Pasture	277	55.45	207	41.31	16	3.25	500
Forest	172	28.26	360	58.92	78	12.82	610
Total	467	40.92	579	50.74	95	8.34	1,141

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	2	76.92	1	23.08	0	0.00	3
Pasture	39	52.55	33	44.44	2	3.00	74
Forest	89	32.57	159	58.14	25	9.28	273
Total	130	37.17	192	54.96	28	7.88	350

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	40.02	1	59.98	0	0.00	1
Pasture	16	53.24	14	44.60	1	2.16	31
Forest	28	50.00	27	48.43	1	1.57	56
Total	45	51.00	42	47.24	2	1.76	88

Table I36. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the middle third of Tomahawk Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	35	46.18	29	38.24	12	15.59	76
Pasture	735	43.79	754	44.92	190	11.30	1,679
Forest	449	23.37	1,054	54.82	419	21.81	1,923
Total	1,219	33.16	1,837	49.96	621	16.88	3,677

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	36	45.28	39	48.61	5	6.11	80
Pasture	620	48.65	584	45.84	70	5.51	1,274
Forest	353	28.80	739	60.34	133	10.86	1,224
Total	1,009	39.12	1,362	52.81	208	8.07	2,578

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	12	49.55	12	50.45	0	0.00	25
Pasture	273	46.85	283	48.61	26	4.55	582
Forest	131	22.79	387	67.18	58	10.03	576
Total	416	35.18	682	57.70	84	7.12	1,183

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	4	61.54	2	38.46	0	0.00	6
Pasture	38	46.70	42	51.37	2	1.92	81
Forest	17	16.74	68	66.96	16	16.30	101
Total	58	31.04	111	59.36	18	9.60	188

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	100.00	0	0.00	0	0.00	1
Pasture	12	63.22	7	35.63	0	1.15	19
Forest	0	0.00	5	50.00	5	50.00	9
Total	14	45.19	12	38.52	5	16.30	30

Table I37. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the upper third of Tomahawk Creek.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	13	53.70	11	46.30	0	0.00	24
Pasture	810	54.60	617	41.57	57	3.83	1,484
Forest	363	24.40	842	56.65	282	18.95	1,487
Total	1,186	39.60	1,471	49.09	339	11.31	2,996

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	17	70.91	6	26.36	1	2.73	24
Pasture	762	60.54	472	37.53	24	1.93	1,259
Forest	333	33.03	545	53.97	131	12.99	1,009
Total	1,113	48.54	1,024	44.65	156	6.81	2,292

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	8	92.68	1	7.32	0	0.00	9
Pasture	236	64.80	122	33.62	6	1.59	364
Forest	125	38.24	164	50.24	38	11.52	326
Total	369	52.78	287	41.02	43	6.20	700

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	4	58.07	3	38.71	0	3.22	7
Pasture	107	63.96	60	35.77	0	0.27	167
Forest	28	59.07	18	38.61	1	2.32	48
Total	139	62.73	81	36.47	2	0.80	222

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	40.01	2	59.99	0	0.00	3
Pasture	59	56.65	45	43.35	0	0.00	104
Forest	26	62.11	16	37.89	0	0.00	42
Total	86	57.82	63	42.18	0	0.00	149

Table I38. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the lower third of Upper Buffalo River.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	14	46.65	13	44.46	3	8.89	30
Pasture	166	22.78	318	43.66	244	33.56	728
Forest	482	12.23	1,755	44.53	1,704	43.24	3,940
Total	662	14.08	2,086	44.40	1,951	41.52	4,698

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	8	42.22	12	57.78	0	0.00	20
Pasture	159	34.62	173	37.66	128	27.72	461
Forest	941	27.28	1,619	46.94	889	25.79	3,449
Total	1,109	28.21	1,804	45.91	1,017	25.88	3,930

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	8	41.67	11	58.33	0	0.00	19
Pasture	108	52.71	64	31.17	33	16.13	206
Forest	555	30.52	1,032	56.75	232	12.74	1,819
Total	671	32.85	1,107	54.19	265	12.96	2,044

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	6	57.77	4	42.23	0	0.00	10
Pasture	39	64.21	18	30.63	3	5.17	60
Forest	243	39.71	330	53.96	39	6.33	612
Total	287	42.14	353	51.73	42	6.13	682

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	45.46	1	54.54	0	0.00	2
Pasture	30	44.77	37	54.90	0.22	0.33	68
Forest	36	52.62	32	46.42	1	0.97	69
Total	68	48.66	71	50.70	1	0.64	139

Table I39. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the middle third of Upper Buffalo River.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	12	41.48	15	48.89	3	9.63	30
Pasture	162	23.08	262	37.31	279	39.61	703
Forest	507	17.15	1,278	43.20	1,173	39.65	2,958
Total	682	18.48	1,555	42.12	1,455	39.40	3,691

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	9	49.36	9	49.37	0	1.26	18
Pasture	125	30.56	208	50.87	76	18.57	408
Forest	607	25.18	1,301	53.93	504	20.89	2,412
Total	741	26.10	1,517	53.46	580	20.44	2,838

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	7	45.72	6	38.56	2	15.72	16
Pasture	131	46.94	126	45.12	22	7.94	280
Forest	552	33.53	853	51.79	242	14.68	1,647
Total	691	35.56	985	50.72	266	13.72	1,942

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	3	33.33	5	61.12	0	5.56	8
Pasture	65	48.67	57	42.36	12	8.97	134
Forest	206	31.66	366	56.33	78	12.01	650
Total	274	34.55	428	54.02	91	11.43	792

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	2	77.77	0	22.23	0	0.00	2
Pasture	38	53.09	27	37.04	7	9.88	72
Forest	65	40.22	81	49.52	17	10.26	163
Total	105	44.46	108	45.49	24	10.06	237

Table l40. Acres and percent of land use within various distances to the tributary and degree slope of the total the land within each category in the upper third of Upper Buffalo River.

0-250 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	acres	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	2	9.99	9	60.00	5	30.00	16
Pasture	159	23.32	284	41.60	240	35.08	683
Forest	548	12.43	2,023	45.92	1,835	41.65	4,406
Total	709	13.88	2,317	45.39	2,079	40.73	5,105

250-500 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	5	23.08	13	62.64	3	14.28	20
Pasture	106	25.18	188	44.56	127	30.25	421
Forest	717	20.16	1,815	51.04	1,024	28.79	3,555
Total	828	20.71	2,015	50.42	1,154	28.87	3,997

500-750 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	1	13.89	5	63.89	2	22.22	8
Pasture	26	18.77	67	47.79	47	33.44	141
Forest	297	15.02	1,067	53.91	615	31.07	1,980
Total	325	15.26	1,140	53.54	664	31.20	2,129

750-1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	1	60.06	1	39.94	2
Pasture	7	17.02	17	40.96	18	42.02	42
Forest	81	11.18	375	51.53	272	37.29	728
Total	89	11.46	394	50.98	290	37.56	772

>1000 meters

	Category <7°		Category 8-14°		Category >15°		All Categories
Land cover	arces	% of cover	arces	% of cover	arces	% of cover	Total Acres
Other	0	0.00	0	0.00	0	0.00	0
Pasture	0.22	6.19	2	68.79	1	25.03	4
Forest	12	12.71	43	46.28	38	41.01	93
Total	12	12.47	45	47.11	39	40.42	96

APPENDIX J

Table J1. Ratios of tributaries to R1 for maximum storm flow concentrations and for average annual base flow concentrations.

Table J2. Concentrations at maximum storm flow and average annual base flow conditions for the tributaries. Ratios are maximum storm values/annual average base flow values.

Table J3. Loads at maximum storm flow and average annual base flow conditions for the tributaries. Ratios are maximum storm load/average annual base flow load.

Table J4. Ratios of tributaries to R1 for maximum storm loads and for average annual base flow loads.

Table J1. Ratios of tributaries to R1 for maximum storm flow concentrations and for average annual base flow concentrations.

November 3-5, 1994

Tributary		Q	F Coli	TKN	NO3-N	TP	TSS	OPO4-P	NH4-N
Calf Creek	Max	2.67	88.89	1.51	37.63	8.31	---	---	2.33
	Base	0.38	1.22	0.45	7.33	0.85	---	0.97	0.76
Bear Creek	Max	5.42	22.50	2.03	20.19	14.31	---	---	2.43
	Base	0.85	1.22	0.35	4.53	0.55	---	0.55	0.67
Tomahawk Creek	Max	7.50	55.56	3.63	18.44	10.97	---	---	2.47
	Base	0.48	3.13	0.34	7.73	0.15	---	0.66	0.76

April 29-30, 1994 Peak 1

Tributary		Q	F Coli	TKN	NO3-N	TP	TSS	OPO4-P	NH4-N
Calf Creek	Max	0.55	94.44	1.64	27.81	7.10	---	---	---
	Base	0.38	1.22	0.45	7.33	0.85	---	0.97	0.76
Bear Creek	Max	0.49	61.94	1.76	39.69	9.86	---	---	8.97
	Base	0.85	1.22	0.35	4.53	0.55	---	0.55	0.67
Tomahawk Creek	Max	0.27	21.67	1.05	21.56	5.22	---	---	7.70
	Base	0.48	3.13	0.34	7.73	0.15	---	0.66	0.76

Table J1. Ratios of tributaries to R1 for maximum storm flow concentrations and for average annual base flow concentrations.

April 29-30, 1994 Peak 2

Tributary		Q	F Coli	TKN	NO3-N	TP	TSS	OPO4-P	NH4-N
Calf Creek	Max	1.75	125.56	1.88	16.25	9.28	---	---	---
	Base	0.38	1.22	0.45	7.33	0.85	---	0.97	0.76
Bear Creek	Max	1.79	57.78	1.29	15.56	7.54	---	---	---
	Base	0.85	1.22	0.35	4.53	0.55	---	0.55	0.67
Tomahawk Creek	Max	0.45	22.78	1.02	13.81	2.90	---	---	---
	Base	0.48	3.13	0.34	7.73	0.15	---	0.66	0.76

January 13-14, 1995

Tributary		Q	F Coli	TKN	NO3-N	TP	TSS	OPO4-P	NH4-N
Tomahawk Creek	Max	3.92	3.89	2.66	15.13	---	---	---	---
	Base	0.48	3.13	0.34	7.73	0.15	---	0.66	0.76

December 17-18, 1995

Tributary		Q	F Coli	TKN	NO3-N	TP	TSS	OPO4-P	NH4-N
Calf Creek	Max	0.13	117.78	1.45	54.25	10.00	---	---	---
	Base	0.38	1.22	0.45	7.33	0.85	---	0.97	0.76
Bear Creek	Max	0.71	47.78	0.60	44.00	5.42	---	---	---
	Base	0.85	1.22	0.35	4.53	0.55	---	0.55	0.67

Table J2. Concentrations at maximum storm flow and average annual base flow conditions for the tributaries. Ratios are maximum storm values/annual average base flow values.

November 3-5, 1994									
Tributary		Q cfs	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	TP mg/L	TSS mg/L	OPO4-P mg/L	NH4-N mg/L
Calf Creek	Max	3,200	32,000	1.930	6.020E-01	5.980E-01	2.160E+02	1.680E-01	7.000E-02
	Base	18	28	0.150	2.930E-01	1.700E-02	---	2.800E-02	3.700E-02
	Ratio	175.8	1,142.9	12.867	2.055	35.176	---	6.000	1.892
Bear Creek	Max	6,500	8,100	2.600	3.230E-01	1.030E+00	6.620E+02	1.650E-01	7.300E-02
	Base	41	28	0.116	1.810E-01	1.100E-02	---	1.600E-02	3.300E-02
	Ratio	157.4	289	22.414	1.785	93.636	---	1.031E+01	2.212E+00
Tomahawk Creek	Max	9,000	20,000	4.640	2.950E-01	7.900E-01	1.190E+03	8.700E-02	7.400E-02
	Base	23	72	0.113	3.090E-01	3.000E-03	---	1.900E-02	3.700E-02
	Ratio	389.6	277.8	41.062	0.955	263.333	---	4.579	2.000

April 29-30, 1994 Peak 1									
Tributary		Q cfs	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	TP mg/L	TSS mg/L	OPO4-P mg/L	NH4-N mg/L
Calf Creek	Max	660	34,000	2.100	4.450E-01	5.110E-01	2.340E+02	5.200E-02	<0.05
	Base	18	28	0.150	2.930E-01	1.700E-02	---	2.800E-02	3.700E-02
	Ratio	36.3	1,214.3	14.000	1.519	30.059	---	1.857	<1.35
Bear Creek	Max	590	22,300	2.250	6.350E-01	7.100E-01	4.190E+02	1.600E-01	2.690E-01
	Base	41	28	0.116	1.810E-01	1.100E-02	---	1.600E-02	3.300E-02
	Ratio	14.3	796.4	19.397	3.508	64.545	---	10.000	8.152
Tomahawk Creek	Max	328	7,800	1.350	3.450E-01	3.760E-01	2.280E+02	1.680E-01	2.310E-01
	Base	23	72	0.113	3.090E-01	3.000E-03	---	1.900E-02	3.700E-02
	Ratio	14.2	108.3	11.947	1.117	125.333	---	8.842	6.243

Table J2. Concentrations at maximum storm flow and average annual base flow conditions for the tributaries. Ratios are maximum storm values/annual average base flow values.

April 29-30, 1994 Peak 2									
Tributary		Q cfs	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	TP mg/L	TSS mg/L	OPO4-P mg/L	NH4-N mg/L
Calf Creek	Max	2,100	45,200	2.400	2.600E-01	6.680E-01	4.260E+02	9.600E-02	<0.05
	Base	18	28	0.150	2.930E-01	1.700E-02	---	2.800E-02	3.700E-02
	Ratio	115.4	1,614.3	16.000	0.887	39.294	---	3.429	<1.35
Bear Creek	Max	2,150	20,800	1.650	2.490E-01	5.430E-01	2.960E+02	9.000E-02	<0.05
	Base	41	28	0.116	1.810E-01	1.100E-02	---	1.600E-02	3.300E-02
	Ratio	52.1	742.9	14.224	1.376	49.364	---	5.625	<1.50
Tomahawk Creek	Max	535	8,200	1.300	2.210E-01	2.090E-01	1.280E+02	4.300E-02	<0.05
	Base	23	72	0.113	3.090E-01	3.000E-03	---	1.900E-02	3.700E-02
	Ratio	23.2	113.9	11.504	0.715	69.667	---	2.263	<1.35

January 13-14, 1995									
Tributary		Q cfs	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	TP mg/L	TSS mg/L	OPO4-P mg/L	NH4-N mg/L
Tomahawk Creek	Max	4,700	1,400	3.400	2.420E-01	---	1.036E+03	<0.02	<0.05
	Base	23	72	0.113	3.090E-01	3.000E-03	---	1.900E-02	3.700E-02
	Ratio	203.5	19.4	30.088	0.783	---	---	<1.00	<1.35

December 17-18, 1995									
Tributary		Q cfs	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	TP mg/L	TSS mg/L	OPO4-P mg/L	NH4-N mg/L
Calf Creek	Max	150	42,400	1.860	8.680E-01	7.200E-01	2.190E+02	2.690E-01	<0.05
	Base	18	28	0.150	2.930E-01	1.700E-02	---	2.800E-02	3.700E-02
	Ratio	8.2	1,514.3	12.400	2.962	42.353	---	9.607	<1.35
Bear Creek	Max	855	17,200	0.770	7.040E-01	3.900E-01	1.130E+02	1.670E-01	<0.05
	Base	41	28	0.116	1.810E-01	1.100E-02	---	1.600E-02	3.300E-02
	Ratio	20.7	614.3	6.638	3.890	35.455	---	10.438	<1.50

Table J2. Concentrations at maximum storm flow and average annual base flow conditions for the tributaries. Ratios are maximum storm values/annual average base flow values.

January 25-26, 1989									
Tributary		Q cfs	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	TP mg/L	TSS mg/L	OPO4-P mg/L	NH4-N mg/L
R1	Max	1,200	360	1.280	1.600E-02	7.200E-02	---	---	3.000E-02
	Base	49	23	0.330	4.000E-02	2.000E-02	---	2.900E-02	4.900E-02
	Ratio	24.7	15.7	3.879	0.400	3.600	---	---	0.612

January 28-29, 1989									
Tributary		Q cfs	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	TP mg/L	TSS mg/L	OPO4-P mg/L	NH4-N mg/L
R1	Max	1,150	184	0.870	<0.005	<0.005	---	---	2.000E-02
	Base	49	23	0.330	4.000E-02	2.000E-02	---	2.900E-02	4.900E-02
	Ratio	23.7	8.0	2.636	<0.13	<0.25	---	---	0.408

May 8-9, 1989									
Tributary		Q cfs	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	TP mg/L	TSS mg/L	OPO4-P mg/L	NH4-N mg/L
R1	Max	150	12	<0.050	<0.005	1.700E-02	---	---	8.000E-02
	Base	49	23	0.330	4.000E-02	2.000E-02	---	2.900E-02	4.900E-02
	Ratio	3.1	0.5	<0.15	<0.13	0.850	---	---	1.633E+00

May 22, 1989									
Tributary		Q cfs	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	TP mg/L	TSS mg/L	OPO4-P mg/L	NH4-N mg/L
R1	Max	640	520	0.380	<0.005	4.500E-02	---	---	<0.01
	Base	49	23	0.330	4.000E-02	2.000E-02	3.400E+01	2.900E-02	4.900E-02
	Ratio	13.2	23	1.152	<0.13	2.250	---	---	<0.20

Table J3. Loads at maximum storm flow and at annual average base flow conditions for the tributaries. Ratios are maximum storm load/annual average base flow load.

November 3-5, 1994									
Tributary		Q L/sec	F Coli colonies/sec	TKN mg/sec	NO3-N mg/sec	TP mg/sec	TSS mg/sec	OPO4-P mg/sec	NH4-N mg/sec
Calf Creek	Max	90,624	2.900E+10	1.749E+05	5.456E+04	5.419E+04	1.957E+07	1.522E+04	6.344E+03
	Base	515	1.337E+04	7.731E+01	1.175E+02	5.600E+00	---	1.330E+01	2.240E+01
	Ratio	176	2,169,011	2,262	464	9,677	---	1,145	283
Bear Creek	Max	184,080	1.491E+10	4.786E+05	5.946E+04	1.896E+05	1.219E+08	3.037E+04	1.344E+04
	Base	1,170	2.650E+04	1.357E+02	2.005E+02	2.000E+01	---	2.030E+01	3.500E+01
	Ratio	157	562,766	3,528	297	9,480	---	1,496	384
Tomahawk Creek	Max	254,880	5.098E+10	1.183E+06	7.519E+04	2.014E+05	3.033E+08	2.217E+04	1.886E+04
	Base	654	2.442E+04	7.392E+01	3.481E+02	3.000E-01	---	1.540E+01	1.800E+01
	Ratio	390	2,087,127	15,998	216	671,184	---	1,440	1,048

April 29-30, 1994 Peak 1									
Tributary		Q L/sec	F Coli colonies/sec	TKN mg/sec	NO3-N mg/sec	TP mg/sec	TSS mg/sec	OPO4-P mg/sec	NH4-N mg/sec
Calf Creek	Max	18,691	6.355E+09	3.925E+04	8.318E+03	9.551E+03	4.374E+06	9.719E+02	<935
	Base	515	1.337E+04	7.731E+01	1.175E+02	5.600E+00	---	1.330E+01	2.240E+01
	Ratio	36	475,318	508	71	1,706	---	73	<42
Bear Creek	Max	16,709	3.726E+09	3.759E+04	1.061E+04	1.186E+04	7.001E+06	2.673E+03	4.495E+03
	Base	1,170	2.650E+04	1.357E+02	2.005E+02	2.000E+01	---	2.030E+01	3.500E+01
	Ratio	14.3	140,633	277	53	593	---	132	128
Tomahawk Creek	Max	9,289	7.245E+08	1.254E+04	3.205E+03	3.493E+03	2.118E+06	1.561E+03	2.146E+03
	Base	654	2.442E+04	7.392E+01	3.481E+02	3.000E-01	---	1.540E+01	1.800E+01
	Ratio	14	29,665	170	9.2	11,642	---	101	119

Table J3. Loads at maximum storm flow and at annual average base flow conditions for the tributaries. Ratios are maximum storm load/annual average base flow load.

April 29-30, 1994 Peak 2

Tributary		Q L/sec	F Coli colonies/sec	TKN mg/sec	NO3-N mg/sec	TP mg/sec	TSS mg/sec	OPO4-P mg/sec	NH4-N mg/sec
Calf Creek	Max	59,472	2.688E+10	1.427E+05	1.546E+04	3.973E+04	2.534E+07	5.709E+03	<2973
	Base	515	1.337E+04	7.731E+01	1.175E+02	5.600E+00	---	1.330E+01	2.240E+01
	Ratio	115	2,010,572	1,846	132	7,094	---	>15	<133
Bear Creek	Max	60,888	1.266E+10	1.005E+05	1.516E+04	3.306E+04	1.802E+07	5.480E+03	<3044
	Base	1,170	2.650E+04	1.357E+02	2.005E+02	2.000E+01	---	2.030E+01	3.500E+01
	Ratio	52	478,004	740	76	1,653	---	>20	<87
Tomahawk Creek	Max	15,151	1.242E+09	1.970E+04	3.348E+03	3.167E+03	1.939E+06	6.515E+02	<7576
	Base	654	2.442E+04	7.392E+01	3.481E+02	3.000E-01	---	1.540E+01	1.800E+01
	Ratio	23	50,868	266	10	10,555	---	4.231E+01	<421

January 13-14, 1995

Tributary		Q L/sec	F Coli colonies/sec	TKN mg/sec	NO3-N mg/sec	TP mg/sec	TSS mg/sec	OPO4-P mg/sec	NH4-N mg/sec
Tomahawk Creek	Max	133,104	1.863E+09	4.526E+05	3.221E+04	---	1.379E+08	<2662	<6655
	Base	654	2.442E+04	7.392E+01	3.481E+02	3.000E-01	---	1.540E+01	1.800E+01
	Ratio	203	76,296	6,122	93	---	---		<369

December 17-18, 1995

Tributary		Q L/sec	F Coli colonies/sec	TKN mg/sec	NO3-N mg/sec	TP mg/sec	TSS mg/sec	OPO4-P mg/sec	NH4-N mg/sec
Calf Creek	Max	4,248	1.801E+09	7.901E+03	3.687E+03	3.059E+03	9.303E+05	1.143E+03	<212
	Base	515	1.337E+04	7.731E+01	1.175E+02	5.600E+00	---	1.330E+01	2.240E+01
	Ratio	8	134,716	102	31	546	---	86	<9.5
Bear Creek	Max	24,214	4.165E+09	1.864E+04	1.705E+04	9.443E+03	2.736E+06	4.044E+03	<1210
	Base	1,170	2.650E+04	1.357E+02	2.005E+02	2.000E+01	---	2.030E+01	3.500E+01
	Ratio	21	157,190	137	85	472	---	199	<67

← 8.64E7 (using 1000)

Bear load/day 2.24E9 1.17E7 1.73E7 1.73E6 3.02 E6

Table J3. Loads at maximum storm flow and at annual average base flow conditions for the tributaries. Ratios are maximum storm load/annual average base flow load.

January 25-26, 1989									
Tributary		Q L/sec	F Coli colonies/sec	TKN mg/sec	NO3-N mg/sec	TP mg/sec	TSS mg/sec	OPO4-P mg/sec	NH4-N mg/sec
R1	Max	33,984	1.223E+08	4.350E+04	5.437E+02	2.447E+03	---	---	<1020
	Base	1,374	9,851	4.533E+02	1.020E+01	3.390E+01	---	3.310E+01	4.790E+01
	Ratio	25	12,419	96	<16.7	72	---	---	<21.3

January 28-29, 1989									
Tributary		Q L/sec	F Coli colonies/sec	TKN mg/sec	NO3-N mg/sec	TP mg/sec	TSS mg/sec	OPO4-P mg/sec	NH4-N mg/sec
R1	Max	32,568	5.993E+07	2.464E+01	<163	<163	---	---	6.514E+02
	Base	1,374	9,851	4.533E+02	1.020E+01	3.390E+01	---	3.310E+01	4.790E+01
	Ratio	24	6,083	0.1	<16	<4.8	---	---	14

May 8-9, 1989									
Tributary		Q L/sec	F Coli colonies/sec	TKN mg/sec	NO3-N mg/sec	TP mg/sec	TSS mg/sec	OPO4-P mg/sec	NH4-N mg/sec
R1	Max	4,248	5.098E+05	<212	<21	7.222E+01	---	---	<42
	Base	1,374	9,851	4.533E+02	1.020E+01	3.390E+01	---	3.310E+01	4.790E+01
	Ratio	3	52	<0.46	<2.1	2.1	---	---	<0.88

May 22, 1989									
Tributary		Q L/sec	F Coli colonies/sec	TKN mg/sec	NO3-N mg/sec	TP mg/sec	TSS mg/sec	OPO4-P mg/sec	NH4-N mg/sec
R1	Max	18,125	1.473E+04	6.887E+03	<90	8.156E+02	---	---	<181
	Base	1,374	9,851	4.533E+02	1.020E+01	3.390E+01	---	3.310E+01	4.790E+01
	Ratio	13	1.5	15	<8.8	24	---	---	<3.8

Table J4. Ratios of tributaries to R1 for maximum storm flow loads and for average annual base flow loads.

November 3-5, 1994

Tributary		Q	F Coli	TKN	NO3-N	TP	TSS	OPO4-P	NH4-N
Calf Creek	Max	2.67	237.04	4.02	100.33	22.15	---	---	>6.5
	Base	0.38	1.36	0.17	11.52	0.17	---	0.40	0.47
Bear Creek	Max	5.42	121.88	11.00	109.35	77.49	---	---	>13
	Base	0.85	2.69	0.30	19.66	0.59	---	0.61	0.73
Tomahawk Creek	Max	7.50	416.67	27.19	138.28	82.29	---	---	>18
	Base	0.48	2.48	0.16	34.13	0.01	---	0.47	0.38

April 29-30, 1994 Peak 1

Tributary		Q	F Coli	TKN	NO3-N	TP	TSS	OPO4-P	NH4-N
Calf Creek	Max	0.55	51.94	0.90	15.30	3.90	---	---	---
	Base	0.38	1.36	0.17	11.52	0.17	---	0.40	0.47
Bear Creek	Max	0.49	30.46	0.86	19.51	4.85	---	---	>4.41
	Base	0.85	2.69	0.30	19.66	0.59	---	0.61	0.73
Tomahawk Creek	Max	0.27	5.92	0.29	5.89	1.43	---	---	>2.10
	Base	0.48	2.48	0.16	34.13	0.01	---	0.47	0.38

Table J4. Ratios of tributaries to R1 for maximum storm flow loads and for average annual base flow loads.

April 29-30, 1994 Peak 2

Tributary		Q	F Coli	TKN	NO3-N	TP	TSS	OPO4-P	NH4-N
Calf Creek	Max	1.75	219.72	3.28	28.44	16.24	---	---	---
	Base	0.38	1.36	0.17	11.52	0.17	---	0.40	0.47
Bear Creek	Max	1.79	103.52	2.31	27.88	13.51	---	---	---
	Base	0.85	2.69	0.30	19.66	0.59	---	0.61	0.73
Tomahawk Creek	Max	0.45	10.16	0.45	6.16	1.29	---	---	---
	Base	0.48	2.48	0.16	34.13	0.01	---	0.47	0.38

January 13-14, 1995

Tributary		Q	F Coli	TKN	NO3-N	TP	TSS	OPO4-P	NH4-N
Tomahawk Creek	Max	3.92	15.23	10.40	59.24	---	---	---	---
	Base	0.48	2.48	0.16	34.13	0.01	---	0.47	0.38

December 17-18, 1995

Tributary		Q	F Coli	TKN	NO3-N	TP	TSS	OPO4-P	NH4-N
Calf Creek	Max	0.13	14.72	0.18	6.78	1.25	---	---	---
	Base	0.38	1.36	0.17	11.52	0.17	---	0.40	0.47
Bear Creek	Max	0.71	34.04	0.43	31.35	3.86	---	---	---
	Base	0.85	2.69	0.30	19.66	0.59	---	0.61	0.73

APPENDIX K

Trend Analyses Data For Concentrations

Table K1. Slopes and p value for annual data (i.e., all data).

Table K2. Slope and "homogeneous" p value for seasonal data.

Table K3. Distribution of data by season and year for the trend analyses. Year 5=1985 and Year 10 =1990, etc. Season 1 = Winter, Season 2= Spring, Season 3 = Summer and Season 4 = Fall.

Table K1. Slopes and p values for annual analysis of concentration.

		trend	se	pvalue
VBL	CREEK			
AmmoniaN	BEAR	0.0006	0.0022	0.7958
	CALF	-0.0008	0.0032	0.8000
	R1	-0.0020	0.0031	0.5310
	TOMAHAWK	-0.0044	0.0023	0.0684
Chloride	BEAR	0.2929	0.1923	0.1452
	CALF	0.2049	0.1692	0.2435
	R1	-0.3893	0.2255	0.0962
	TOMAHAWK	0.1009	0.1541	0.5269
D.O.	BEAR	0.1544	0.0816	0.0696
	CALF	0.0759	0.1184	0.5289
	R1	-0.0177	0.0649	0.7863
	TOMAHAWK	0.2513	0.1326	0.0717
F.coli	BEAR	0.8428	2.3927	0.7274
	CALF	2.9754	1.3938	0.0366
	R1	0.8391	1.0441	0.4241
	TOMAHAWK	4.6149	4.4016	0.3050
NitrateN	BEAR	0.0128	0.0109	0.3332
	CALF	0.0406	0.0324	0.2331
	R1	-0.0019	0.0040	0.6420
	TOMAHAWK	0.0268	0.0134	0.0627
OPO4-P	BEAR	0.0001	0.0012	0.9520
	CALF	0.0031	0.0038	0.4319
	R1	0.0017	0.0015	0.2699
	TOMAHAWK	0.0011	0.0018	0.5589
Sulfate	BEAR	-0.5499	0.2484	0.0439
	CALF	-0.0056	0.6942	0.9937
	R1	0.4343	0.2090	0.0451
	TOMAHAWK	-2.0185	1.5585	0.2145
TKN	BEAR	0.0000	.	.
	CALF	0.0000	.	.
	R1	0.0668	0.0513	0.2264
	TOMAHAWK	0.0000	.	.
TotalP	BEAR	-0.0010	0.0040	0.8393
	CALF	-0.0026	0.0043	0.5624
	R1	0.0053	0.0019	0.0098
	TOMAHAWK	0.0010	0.0042	0.8192
Turb.	BEAR	0.0706	0.0687	0.3159
	CALF	-0.2197	0.1394	0.1212
	R1	0.0258	0.1251	0.8372
	TOMAHAWK	0.0509	0.0365	0.1692
pH	BEAR	-0.0111	0.0205	0.5927
	CALF	-0.0191	0.0133	0.1911
	R1	-0.0530	0.0210	0.0164
	TOMAHAWK	-0.0132	0.0166	0.4379

pvalues for sources of variation

		SEASON	YR
VBL	CREEK		
AmmoniaN	BEAR	0.064	0.796
	CALF	0.780	0.800
	R1	0.363	0.531
	TOMAHAWK	0.656	0.068
Chloride	BEAR	0.073	0.145
	CALF	0.310	0.243
	R1	0.546	0.096
	TOMAHAWK	0.270	0.527
D.O.	BEAR	0.000	0.070
	CALF	0.002	0.529
	R1	0.000	0.786
	TOMAHAWK	0.015	0.072
F.coli	BEAR	0.660	0.727
	CALF	0.034	0.037
	R1	0.181	0.424
	TOMAHAWK	0.117	0.305
NitrateN	BEAR	0.023	0.333
	CALF	0.629	0.233
	R1	0.433	0.642
	TOMAHAWK	0.004	0.063
OPO4-P	BEAR	0.786	0.952
	CALF	0.947	0.432
	R1	0.103	0.270
	TOMAHAWK	0.497	0.559
Sulfate	BEAR	0.136	0.044
	CALF	0.296	0.994
	R1	0.124	0.045
	TOMAHAWK	0.478	0.214
TKN	BEAR	0.828	.
	CALF	0.572	.
	R1	0.717	0.226
	TOMAHAWK	0.927	.
TotalP	BEAR	.	0.839
	CALF	0.548	0.562
	R1	0.818	0.010
	TOMAHAWK	0.887	0.819
Turb.	BEAR	0.267	0.316
	CALF	0.721	0.121
	R1	0.003	0.837
	TOMAHAWK	0.091	0.169
pH	BEAR	0.028	0.593
	CALF	0.010	0.191
	R1	0.618	0.016
	TOMAHAWK	0.466	0.438

Table K2. Slope and "homogeneous" p values for seasonal analysis of concentration.

Concentration data

		SEASON							
		1		2		3		4	
		trend	pvalue	trend	pvalue	trend	pvalue	trend	pvalue
VBL	CREEK								
AmmoniaN	BEAR	0.0000	1.0000	0.0008	0.8883	0.0007	0.8214	0.0000	1.0000
	CALF	0.0000	1.0000	-0.0015	0.8508	-0.0016	0.6988	0.0063	0.5942
	R1	-0.0081	0.3094	0.0026	0.6916	-0.0033	0.6192	-0.0014	0.8233
	TOMAHAWK	-0.0030	0.5963	0.0014	0.8066	-0.0079	0.0596	-0.0045	0.3058
Chloride	BEAR	0.3710	0.4012	0.2885	0.5890	0.3831	0.2937	0.0989	0.8141
	CALF	0.0160	0.9689	0.1033	0.8583	0.2048	0.6021	0.4710	0.2709
	R1	-0.3642	0.4336	-1.1119	0.0333	-0.1364	0.7451	-0.1007	0.8261
	TOMAHAWK	0.5688	0.0323	-0.0514	0.9149	0.4083	0.3351	-0.2464	0.2245
D.O.	BEAR	0.6368	0.0040	0.2489	0.2024	0.0960	0.3676	-0.1429	0.4537
	CALF	0.3238	0.2952	0.0926	0.7471	0.0534	0.7785	-0.1195	0.6813
	R1	0.2986	0.0149	0.0880	0.4561	-0.2804	0.0070	-0.1131	0.4367
	TOMAHAWK	1.6856	0.0002	0.0744	0.6305	0.1267	0.5749	0.2525	0.3667
F.coli	BEAR	-2.2857	0.8220	-0.7329	0.8618	0.1703	0.9604	13.5569	0.1172
	CALF	0.5699	0.9206	2.3353	0.3721	3.7839	0.0910	1.7384	0.7474
	R1	-0.0147	0.9952	0.9108	0.6359	1.2819	0.5026	0.7353	0.7832
	TOMAHAWK	0.8819	0.9605	8.9416	0.1578	8.7374	0.1913	-25.4376	0.0621
NitrateN	BEAR	0.0414	0.2014	-0.0005	0.9827	0.0032	0.7782	0.0657	0.0493
	CALF	0.0537	0.4996	0.0082	0.8892	0.0012	0.9783	0.2158	0.0183
	R1	-0.0044	0.7098	-0.0136	0.0875	0.0050	0.4386	0.0016	0.8532
	TOMAHAWK	0.0615	0.0823	0.0174	0.5784	0.0165	0.5359	0.0244	0.3528
OPO4-P	BEAR	0.0000	1.0000	0.0000	1.0000	0.0002	0.9274	0.0000	1.0000
	CALF	0.0036	0.6574	0.0063	0.5470	-0.0037	0.5760	0.0106	0.2044
	R1	-0.0056	0.1322	0.0044	0.1079	0.0033	0.1180	-0.0013	0.7180
	TOMAHAWK	0.0034	0.3556	0.0000	1.0000	0.0009	0.8377	0.0000	1.0000
Sulfate	BEAR	-0.4145	0.5482	-0.2161	0.7399	-0.6929	0.3205	-0.8109	0.2762
	CALF	-0.8521	0.6289	-0.1667	0.9274	0.5996	0.7303	0.3929	0.8280
	R1	0.5745	0.1685	0.3969	0.3583	-0.1836	0.6846	0.8184	0.0472
	TOMAHAWK	-0.4520	0.8987	0.2331	0.9508	0.4869	0.8910	-5.3134	0.0577
TKN	BEAR	.	.		.		.	.	.
	CALF	.	.		.		.	.	.
	R1	0.1287	0.6623		0.4265		0.8267	0.0785	0.5017
	TOMAHAWK	.	.		.		.		.
TotalP	BEAR	.	.	0.0033	0.3588	-0.0048	0.0974		.
	CALF	.	.	-0.0012	0.8903	-0.0033	0.5832		.
	R1	0.0225	0.0498	0.0073	0.0301	0.0021	0.4040	0.0084	0.0485
	TOMAHAWK		.	-0.0007	0.9556	0.0016	0.8843	0.0000	1.0000
Turb.	BEAR	0.0286	0.8866	0.0471	0.7580	0.0264	0.7963	0.2668	0.1362
	CALF	-0.0648	0.8604	-0.8190	0.0060	-0.0353	0.8578	-0.0479	0.8898
	R1	0.1158	0.6447	-0.2206	0.3181	0.0974	0.7282	0.2420	0.3892
	TOMAHAWK	0.0242	0.8310	0.0092	0.8890	0.0936	0.1813	0.0590	0.4737
pH	BEAR	-0.1065	0.1126	0.0462	0.2308	0.0022	0.9340	-0.1044	0.0478
	CALF	-0.0221	0.5563	0.0119	0.6565	-0.0130	0.4561	-0.0921	0.0114
	R1	-0.0759	0.0873	-0.0300	0.4817	-0.0778	0.0822	-0.0255	0.5853
	TOMAHAWK	-0.1757	0.0013	0.0128	0.5735	0.0063	0.7945	-0.0267	0.4710

		Homog. pvalue
VBL	CREEK	
AmmoniaN	BEAR	1.000
	CALF	0.934
	R1	0.762
	TOMAHAWK	0.615
Chloride	BEAR	0.955
	CALF	0.868
	R1	0.419
	TOMAHAWK	0.099
D.O.	BEAR	0.053
	CALF	0.765
	R1	0.004
	TOMAHAWK	0.008
F.coli	BEAR	0.479
	CALF	0.928
	R1	0.980
	TOMAHAWK	0.129
NitrateN	BEAR	0.224
	CALF	0.159
	R1	0.317
	TOMAHAWK	0.721
OPO4-P	BEAR	1.000
	CALF	0.569
	R1	0.124
	TOMAHAWK	0.895
Sulfate	BEAR	0.899
	CALF	0.923
	R1	0.410
	TOMAHAWK	0.458
TKN	BEAR	.
	CALF	.
	R1	0.958
	TOMAHAWK	.
TotalP	BEAR	.
	CALF	.
	R1	0.168
	TOMAHAWK	.
Turb.	BEAR	0.672
	CALF	0.140
	R1	0.563
	TOMAHAWK	0.821
pH	BEAR	0.063
	CALF	0.135
	R1	0.738
	TOMAHAWK	0.012

Table K3. Distribution of data by season and year for trend analyses. Year 5=1985 and Year 10 =1990, etc. Season 1 = Winter, Season 2= Spring, Season 3 = Summer and Season 4 = Fall.

Concentration data 09:19 Thursday, September 10, 1998 1

Number of observations on AmmoniaN

		YEAR													
		5	6	7	8	9	10	11	12	13	14	15	16	17	ALL
CREEK	SEASON														
BEAR	1	.	.	.	.	.	.	.	1	1	2	1	1	.	6
	2	.	.	.	.	1	.	.	2	.	1	1	.	.	5
	3	.	.	.	.	4	.	.	2	1	2	2	1	.	12
	4	.	.	.	.	.	.	.	1	2	.	1	1	.	5
	ALL	.	.	.	.	5	.	.	6	4	5	5	3	.	28
CALF	SEASON														
	1	.	.	.	.	.	.	.	1	1	2	1	1	.	6
	2	.	.	.	.	1	.	.	2	1	1	1	.	.	6
	3	.	.	.	.	4	.	.	2	1	2	2	1	.	12
	4	.	.	.	.	.	.	.	1	1	.	1	1	.	4
	ALL	.	.	.	.	5	.	.	6	4	5	5	3	.	28
R1	SEASON														
	1	.	.	.	.	1	3	2	1	1	.	.	1	.	9
	2	.	.	1	.	.	3	2	1	1	2	1	.	.	11
	3	.	.	.	.	1	2	2	1	2	1	1	1	.	11
	4	.	.	.	1	2	3	2	1	1	1	2	.	.	13
	ALL	.	.	1	1	4	11	8	4	5	4	4	2	.	44
TOMAHAWK	SEASON														
	1	.	.	.	.	.	.	3	2	1	1	1	1	.	9
	2	.	.	.	.	1	.	3	1	1	1	1	.	.	8
	3	.	.	.	.	4	.	3	2	1	2	1	.	.	13
	4	.	.	.	.	.	2	3	.	2	1	2	1	.	11
	ALL	.	.	.	.	5	2	12	5	5	5	5	2	.	41

Concentration data 09:19 Thursday, September 10, 1998 2

Number of observations on Chloride

		YEAR													
		5	6	7	8	9	10	11	12	13	14	15	16	17	ALL
CREEK	SEASON														
BEAR	1	.	.	.	.	.	.	.	1	1	2	1	1	.	6
	2	.	.	.	.	.	.	.	2	.	1	1	.	.	4
	3	.	.	.	.	.	.	.	2	1	2	2	1	.	8
	4	.	.	.	.	.	.	.	1	2	.	1	1	.	5
	ALL	.	.	.	.	.	.	.	6	4	5	5	3	.	23
CALF	SEASON														
	1	.	.	.	.	.	.	.	1	1	2	1	1	.	6
	2	.	.	.	.	.	.	.	2	.	.	1	.	.	3
	3	.	.	.	.	.	.	.	2	1	2	2	1	.	8
	4	.	.	.	.	.	.	.	1	1	.	1	1	.	4
	ALL	.	.	.	.	.	.	.	6	3	4	5	3	.	21
R1	SEASON														
	1	.	.	.	.	1	2	.	1	1	.	.	1	.	6
	2	.	.	.	.	.	3	.	1	.	2	1	.	.	7
	3	.	.	.	.	.	3	.	2	2	1	1	1	.	10
	4	.	.	.	.	.	3	.	1	1	1	2	.	.	8
	ALL	.	.	.	.	1	11	.	5	4	4	4	2	.	31
TOMAHAWK	SEASON														
	1	.	.	.	.	.	.	1	2	1	1	1	1	.	7
	2	.	.	.	.	.	.	.	1	.	1	1	.	.	3
	3	.	.	.	.	.	.	.	2	1	2	1	.	.	6
	4	.	.	.	.	.	2	.	.	2	1	2	1	.	8
	ALL	.	.	.	.	.	2	1	5	4	5	5	2	.	24

Concentration data 09:19 Thursday, September 10, 1998 3

Number of observations on D.O.

		YEAR													
		5	6	7	8	9	10	11	12	13	14	15	16	17	ALL
CREEK	SEASON														
BEAR	1	.	.	.	.	.	.	2	1	1	2	.	1	1	8
	2	.	.	.	.	2	3	1	2	1	1	1	.	.	11
	3	.	.	.	3	6	3	3	2	1	2	2	1	.	23
	4	.	.	.	.	.	3	3	1	2	.	1	1	.	11
	ALL	.	.	.	3	8	9	9	6	5	5	4	3	1	53
CALF	SEASON														
	1	.	.	.	.	.	.	2	1	1	2	.	1	1	8
	2	.	.	.	.	2	3	3	2	1	1	1	.	.	13
	3	.	.	.	1	6	3	3	2	1	2	2	1	.	21
	4	.	.	.	.	.	3	3	1	1	.	1	1	.	10
	ALL	.	.	.	1	8	9	11	6	4	5	4	3	1	52
R1	SEASON														
	1	1	.	1	1	3	3	2	1	2	1	.	1	1	17
	2	1	1	1	.	1	3	2	1	1	2	1	.	1	15
	3	3	1	2	.	3	2	2	2	2	1	1	1	.	20
	4	1	.	.	1	3	3	2	1	1	1	2	.	.	15
	ALL	6	2	4	2	10	11	8	5	6	5	4	2	2	67
TOMAHAWK	SEASON														
	1	.	.	.	.	.	.	3	2	2	2	.	1	.	10
	2	1	.	.	.	2	3	3	1	1	1	1	.	1	14
	3	.	.	.	2	6	2	3	2	1	2	1	.	.	19
	4	.	.	.	.	.	4	3	.	2	1	2	1	.	13
	ALL	1	.	.	2	8	9	12	5	6	6	4	2	1	56

Concentration data 09:19 Thursday, September 10, 1998 4

Number of observations on F.coli

		YEAR													
		5	6	7	8	9	10	11	12	13	14	15	16	17	ALL
CREEK	SEASON														
BEAR	1	.	.	.	.	.	.	1	1	1	2	1	1	1	8
	2	5	.	1	1	2	3	1	2	1	1	1	.	.	18
	3	4	.	2	4	6	3	3	2	1	2	2	1	.	30
	4	.	.	.	.	.	3	3	1	2	.	1	1	.	11
	ALL	9	.	3	5	8	9	8	6	5	5	5	3	1	67
CALF	SEASON														
	1	.	.	.	.	.	.	2	1	1	2	1	1	1	9
	2	5	.	1	2	2	3	3	2	1	1	1	.	.	21
	3	5	.	2	2	6	3	3	2	1	2	2	1	.	29
	4	.	.	.	.	.	3	3	1	1	.	1	1	.	10
	ALL	10	.	3	4	8	9	11	6	4	5	5	3	1	69
R1	SEASON														
	1	1	.	1	2	3	3	2	1	2	1	.	1	1	18
	2	4	2	2	1	1	3	2	1	1	2	1	.	1	21
	3	5	3	3	.	3	3	2	1	2	1	1	1	.	25
	4	1	1	1	1	3	3	2	1	1	1	2	.	.	17
	ALL	11	6	7	4	10	12	8	4	6	5	4	2	2	81
TOMAHAWK	SEASON														
	1	.	.	.	.	.	.	3	2	2	2	1	1	.	11
	2	6	.	1	1	2	3	3	1	1	1	1	.	1	21
	3	5	.	4	3	6	2	3	2	1	2	1	.	.	29
	4	.	.	.	.	.	4	3	.	2	.	2	1	.	12
	ALL	11	.	5	4	8	9	12	5	6	5	5	2	1	73

Concentration data 09:19 Thursday, September 10, 1998 5

Number of observations on NitrateN

		YEAR													
		5	6	7	8	9	10	11	12	13	14	15	16	17	ALL
CREEK	SEASON														
BEAR	1	.	.	.	.	.	.	.	1	1	2	1	1	.	6
	2	.	.	.	.	1	.	.	2	.	1	1	.	.	5
	3	.	.	.	.	4	.	.	2	1	2	2	1	.	12
	4	.	.	.	.	.	.	.	1	1	.	1	1	.	4
	ALL	.	.	.	.	5	.	.	6	3	5	5	3	.	27
CALF	SEASON														
	1	.	.	.	.	.	.	.	1	1	2	1	1	.	6
	2	.	.	.	.	1	.	.	2	.	.	1	.	.	4
	3	.	.	.	.	4	.	.	2	1	2	2	1	.	12
	4	.	.	.	.	.	.	.	1	1	.	1	1	.	4
	ALL	.	.	.	.	5	.	.	6	3	4	5	3	.	26
R1	SEASON														
	1	.	.	.	2	1	3	1	1	1	.	.	1	.	10
	2	1	1	1	.	.	3	2	1	1	2	1	.	.	13
	3	2	2	2	.	1	3	2	2	2	1	1	1	.	19
	4	1	.	.	1	2	3	2	1	1	1	2	.	.	14
	ALL	4	3	3	3	4	12	7	5	5	4	4	2	.	56
TOMAHAWK	SEASON														
	1	.	.	.	.	.	.	2	2	1	1	1	1	.	8
	2	.	.	.	.	1	.	3	1	1	1	1	.	.	8
	3	.	.	.	.	4	.	3	2	1	2	1	.	.	13
	4	.	.	.	.	.	2	3	.	1	1	2	1	.	10
	ALL	.	.	.	.	5	2	11	5	4	5	5	2	.	39

Concentration data 09:19 Thursday, September 10, 1998 6

Number of observations on OPO4-P

		YEAR													
		5	6	7	8	9	10	11	12	13	14	15	16	17	ALL
CREEK	SEASON														
BEAR	1	.	.	.	.	.	.	.	1	1	2	1	1	.	6
	2	.	.	.	.	.	.	.	2	.	1	1	.	.	4
	3	.	.	.	.	.	.	.	2	1	2	2	1	.	8
	4	.	.	.	.	.	.	.	1	1	.	1	1	.	4
	ALL	.	.	.	.	.	.	.	6	3	5	5	3	.	22
CALF	SEASON														
	1	.	.	.	.	.	.	.	1	1	2	1	1	.	6
	2	.	.	.	.	.	.	.	2	.	.	1	.	.	3
	3	.	.	.	.	.	.	.	2	1	2	2	1	.	8
	4	.	.	.	.	.	.	.	1	1	.	1	1	.	4
	ALL	.	.	.	.	.	.	.	6	3	4	5	3	.	21
R1	SEASON														
	1	.	.	.	.	.	3	2	1	1	1	.	1	.	9
	2	.	1	.	.	.	3	2	1	1	2	1	.	.	11
	3	.	2	.	.	.	3	2	2	2	1	1	1	.	14
	4	.	.	.	.	.	3	2	1	1	1	2	.	.	10
	ALL	.	3	.	.	.	12	8	5	5	5	4	2	.	44
TOMAHAWK	SEASON														
	1	.	.	.	.	.	.	3	2	1	2	1	1	.	10
	2	.	.	.	.	.	.	3	1	1	1	1	.	.	7
	3	.	.	.	.	.	.	3	2	1	2	1	.	.	9
	4	.	.	.	.	.	2	3	.	1	1	2	1	.	10
	ALL	.	.	.	.	.	2	12	5	4	6	5	2	.	36

Number of observations on Sulfate

		YEAR													
		5	6	7	8	9	10	11	12	13	14	15	16	17	ALL
CREEK	SEASON														
BEAR	1	.	.	.	.	.	.	.	1	1	2	1	.	.	5
	2	.	.	.	.	.	.	.	2	.	1	1	.	.	4
	3	.	.	.	.	.	.	.	2	.	2	2	.	.	6
	4	.	.	.	.	.	.	.	1	2	.	1	.	.	4
	ALL	.	.	.	.	.	.	.	6	3	5	5	.	.	19
CALF	SEASON														
	1	.	.	.	.	.	.	.	1	1	2	1	.	.	5
	2	.	.	.	.	.	.	.	2	.	.	1	.	.	3
	3	.	.	.	.	.	.	.	2	1	2	2	.	.	7
	4	.	.	.	.	.	.	.	1	1	.	1	.	.	3
	ALL	.	.	.	.	.	.	.	6	3	4	5	.	.	18
R1	SEASON														
	1	.	.	.	.	.	3	2	1	1	1	.	1	.	9
	2	.	.	.	.	.	3	2	1	1	2	1	.	.	10
	3	.	.	.	.	.	3	2	2	2	1	1	.	.	11
	4	.	.	.	.	.	3	2	1	1	1	2	.	.	10
	ALL	.	.	.	.	.	12	8	5	5	5	4	1	.	40
TOMAHAWK	SEASON														
	1	.	.	.	.	.	.	3	2	1	2	1	.	.	9
	2	.	.	.	.	.	.	3	1	1	1	1	.	.	7
	3	.	.	.	.	.	.	3	2	1	2	1	.	.	9
	4	.	.	.	.	.	2	3	.	2	1	2	.	.	10
	ALL	.	.	.	.	.	2	12	5	5	6	5	.	.	35

Number of observations on TKN

		YEAR													
		5	6	7	8	9	10	11	12	13	14	15	16	17	ALL
CREEK	SEASON														
BEAR	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2	.	.	.	.	1	.	.	.	.	.	.	.	.	1
	3	.	.	.	.	4	.	.	.	.	.	.	.	.	4
	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	ALL	.	.	.	.	5	.	.	.	.	.	.	.	.	5
CALF	SEASON														
	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2	.	.	.	.	1	.	.	.	.	.	.	.	.	1
	3	.	.	.	.	4	.	.	.	.	.	.	.	.	4
	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	ALL	.	.	.	.	5	.	.	.	.	.	.	.	.	5
R1	SEASON														
	1	.	.	.	2	1	3	.	.	.	.	.	.	.	6
	2	1	.	1	1	.	3	.	.	.	.	.	.	.	6
	3	2	.	2	.	1	3	.	.	.	.	.	.	.	8
	4	1	.	.	1	2	3	.	.	.	.	.	.	.	7
	ALL	4	.	3	4	4	12	.	.	.	.	.	.	.	27
TOMAHAWK	SEASON														
	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2	.	.	.	.	1	.	.	.	.	.	.	.	.	1
	3	.	.	.	.	4	.	.	.	.	.	.	.	.	4
	4	.	.	.	.	.	2	.	.	.	.	.	.	.	2
	ALL	.	.	.	.	5	2	.	.	.	.	.	.	.	7

Concentration data 09:19 Thursday, September 10, 1998 9

Number of observations on TotalP

		YEAR													
		5	6	7	8	9	10	11	12	13	14	15	16	17	ALL
CREEK	SEASON														
BEAR	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2	.	.	.	.	1	.	.	2	.	.	.	.	.	3
	3	.	.	.	.	4	.	.	2	.	.	.	.	.	6
	4	.	.	.	.	.	.	.	1	.	.	.	.	.	1
	ALL	.	.	.	.	5	.	.	5	.	.	.	.	.	10
CALF	SEASON														
	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2	.	.	.	.	1	.	.	2	.	.	.	.	.	3
	3	.	.	.	.	4	.	.	2	.	.	.	.	.	6
	4	.	.	.	.	.	.	.	1	.	.	.	.	.	1
	ALL	.	.	.	.	5	.	.	5	.	.	.	.	.	10
R1	SEASON														
	1	.	.	.	2	1	3	.	.	.	.	.	.	.	6
	2	1	1	1	1	.	3	.	1	.	.	.	.	.	8
	3	2	2	2	.	1	3	1	2	.	.	.	.	.	13
	4	1	.	.	1	2	3	1	.	.	.	.	.	.	8
	ALL	4	3	3	4	4	12	2	3	.	.	.	.	.	35
TOMAHAWK	SEASON														
	1	.	.	.	.	.	.	.	1	.	.	.	.	.	1
	2	.	.	.	.	1	.	.	1	.	.	.	.	.	2
	3	.	.	.	.	4	.	2	2	.	.	.	.	.	8
	4	.	.	.	.	.	2	1	.	.	.	.	.	.	3
	ALL	.	.	.	.	5	2	3	4	.	.	.	.	.	14

Concentration data 09:19 Thursday, September 10, 1998 10

Number of observations on Turb.

		YEAR													
		5	6	7	8	9	10	11	12	13	14	15	16	17	ALL
CREEK	SEASON														
BEAR	1	.	.	.	.	.	.	1	1	1	2	1	1	1	8
	2	.	.	.	1	2	3	1	2	1	1	1	.	.	12
	3	.	.	.	4	6	3	3	2	1	2	2	1	.	24
	4	.	.	.	.	.	3	3	1	2	.	1	1	.	11
	ALL	.	.	.	5	8	9	8	6	5	5	5	3	1	55
CALF	SEASON														
	1	.	.	.	.	.	.	2	1	1	2	1	1	1	9
	2	.	.	.	2	2	3	3	2	1	1	1	.	.	15
	3	.	.	.	2	6	3	3	2	1	2	2	1	.	22
	4	.	.	.	.	.	3	3	1	1	.	1	1	.	10
	ALL	.	.	.	4	8	9	11	6	4	5	5	3	1	56
R1	SEASON														
	1	.	.	.	.	3	3	2	1	2	1	.	1	1	14
	2	1	.	.	.	1	3	2	1	1	2	1	.	1	13
	3	.	.	.	.	3	3	2	2	2	1	1	1	.	15
	4	.	.	.	1	3	3	2	1	1	1	2	.	.	14
	ALL	1	.	.	1	10	12	8	5	6	5	4	2	2	56
TOMAHAWK	SEASON														
	1	.	.	.	.	.	.	3	2	2	2	1	1	.	11
	2	.	.	.	1	2	3	3	1	1	1	1	.	1	14
	3	.	.	.	3	6	2	3	2	1	2	1	.	.	20
	4	.	.	.	.	.	4	3	.	2	1	2	1	.	13
	ALL	.	.	.	4	8	9	12	5	6	6	5	2	1	58

Concentration data 09:19 Thursday, September 10, 1998 11

Number of observations on pH

		YEAR													
		5	6	7	8	9	10	11	12	13	14	15	16	17	ALL
CREEK	SEASON														
BEAR	1	.	.	.	.	.	.	2	1	1	2	1	1	.	8
	2	.	.	1	1	1	3	1	2	1	1	1	.	.	12
	3	.	.	3	4	5	3	3	1	1	2	2	1	.	25
	4	.	.	.	.	.	3	3	1	2	.	1	1	.	11
	ALL	.	.	4	5	6	9	9	5	5	5	5	3	.	56
CALF	SEASON														
	1	.	.	.	.	.	.	2	1	1	2	1	1	1	9
	2	.	.	1	2	1	3	3	2	1	1	1	.	.	15
	3	.	.	3	2	6	3	3	1	1	2	2	1	.	24
	4	.	.	.	.	.	3	3	1	1	.	1	1	.	10
	ALL	.	.	4	4	7	9	11	5	4	5	5	3	1	58
R1	SEASON														
	1	.	.	.	2	3	3	2	.	2	1	.	1	1	15
	2	.	.	1	1	1	3	2	1	1	2	1	.	1	14
	3	.	.	3	.	3	3	2	2	2	1	1	1	.	18
	4	.	1	.	1	3	3	2	1	1	1	2	.	.	15
	ALL	.	1	4	4	10	12	8	4	6	5	4	2	2	62
TOMAHAWK	SEASON														
	1	.	.	.	.	.	.	3	2	1	2	1	1	.	10
	2	.	.	1	1	1	3	3	1	1	1	1	.	1	14
	3	.	.	5	3	6	2	2	2	1	2	1	.	.	24
	4	.	.	.	.	.	4	2	.	2	1	2	1	.	12
	ALL	.	.	6	4	7	9	10	5	5	6	5	2	1	60

APPENDIX L

Table L1. Annual average parameter values based on seasonal averages for the tributaries and R1.

Table L2. Annual average loads based of seasonal means for each year and average of annual averages for loads for the three tributaries and R1.

Table L3. Annual seasonal means, seasonal average and annual average values (based on seasonal mean values) for the tributaries and R1.

Table L4. Annual seasonal means, seasonal average and annual average loads (based on seasonal mean loads) for the tributaries and R1.

Table L5. Average seasonal and annual means of parameter values for the tributaries and R1.

Table L6. Annual seasonal means, average of seasonal means, and annual average loads based on seasonal mean loads for the tributaries and R1.

Table L1. Annual average parameter values based on seasonal averages for the tributaries and R1.

Tributary Year	Q	TEMP	COND	pH	DO	TURBIDITY	F Coli	TKN	NO3-N	OPO4-P	TP	NH4-N
	cfs	Deg C	uS/cm		mg/L	FTU	col/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L
BEAR 1985	.	24.2	241.1	.	.	.	23	.	.	.	.	.
BEAR 1987	.	25.4	240.0	8.4	.	.	29	.	.	.	.	.
BEAR 1988	.	27.0	258.8	7.7	7.8	0.8	18	.	.	.	.	.
BEAR 1989	.	22.7	226.0	8.3	9.5	1.6	21	0.116	0.063	.	0.018	0.033
BEAR 1990	.	19.3	229.6	8.2	10.0	1.4	61	.	.	.	.	.
BEAR 1991	.	16.7	201.8	8.4	10.9	1.4	13	.	.	.	.	.
BEAR 1992	43.0	16.7	209.4	8.3	10.1	1.3	29	.	0.145	0.015	0.011	0.034
BEAR 1993	54.02	16.95	203.25	8.42	10.95	1.81	11	.	0.127	0.015	.	0.041
BEAR 1994	45.08	17.67	196.67	8.45	11.10	1.40	18	.	0.127	0.019	.	0.047
BEAR 1995	36.86	16.31	238.88	8.07	10.58	3.00	57	.	0.233	0.015	.	0.031
BEAR 1996	21.00	15.03	254.00	8.18	12.43	1.23	18	.	0.278	0.015	.	0.025
BEAR 1997	60.50	8.60	218.00	.	15.30	0.90	1	.	.	.	.	.
CALF 1985	.	22.8	279.6	.	.	.	14	.	.	.	.	.
CALF 1987	.	24.0	294.2	7.8	.	.	39	.	.	.	.	.
CALF 1988	.	23.2	308.8	7.8	9.3	5.9	12	.	.	.	.	.
CALF 1989	.	21.5	259.3	7.8	8.8	1.7	14	0.150	0.165	.	0.029	0.041
CALF 1990	.	18.7	259.8	7.9	8.8	2.3	25	.	.	.	.	.
CALF 1991	.	17.1	233.6	8.0	9.9	1.6	35	.	.	.	.	.
CALF 1992	18.9	17.1	242.0	8.1	10.7	1.5	37	.	0.185	0.024	0.015	0.045
CALF 1993	24.78	16.18	239.00	7.90	9.48	2.03	19	.	0.161	0.015	.	0.025
CALF 1994	23.21	17.97	241.33	8.12	11.20	1.80	10	.	0.243	0.045	.	0.053
CALF 1995	11.36	18.40	307.00	7.54	9.35	1.27	76	.	0.727	0.025	.	0.061
CALF 1996	9.01	14.87	293.67	7.56	10.67	1.27	20	.	0.417	0.050	.	0.025
CALF 1997	29.10	9.70	279.00	8.57	12.30	0.50	5	.	.	.	.	.

Table L1. Annual average parameter values based on seasonal averages for the tributaries and R1.

Tributary Year	Q	TEMP	COND	pH	DO	TURBIDITY	F Coli	TKN	NO3-N	OPO4-P	TP	NH4-N
	cfs	Deg C	uS/cm		mg/L	FTU	col/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L
TOMAHAWK 1985	.	22.4	299.5	.	9.0	.	41	.	.	.	.	.
TOMAHAWK 1987	.	24.7	315.5	8.2	.	.	17	.	.	.	.	.
TOMAHAWK 1988	.	25.9	337.7	8.0	8.4	0.6	52	.	.	.	.	.
TOMAHAWK 1989	.	21.6	309.3	8.3	9.5	0.9	39	0.094	0.104	.	0.003	0.051
TOMAHAWK 1990	.	19.9	306.8	8.2	9.7	1.0	133	0.153	0.285	0.015	0.001	0.048
TOMAHAWK 1991		16.7	274.2	8.3	10.6	0.9	161	.	0.245	0.015	0.013	0.037
TOMAHAWK 1992	15.27	19.85	302.17	8.31	10.38	0.93	80	.	0.202	0.015	0.001	0.040
TOMAHAWK 1993	16.30	18.90	304.75	8.29	9.69	1.55	105	.	0.363	0.015	.	0.037
TOMAHAWK 1994	38.98	16.49	318.38	8.34	10.48	0.95	42	.	0.408	0.026	.	0.041
TOMAHAWK 1995	11.94	17.83	345.63	8.10	10.47	0.75	33	.	0.225	0.026	.	0.025
TOMAHAWK 1996	40.75	8.60	355.50	7.63	16.75	1.75	19	.	0.683	0.015	.	0.025
TOMAHAWK 1997	18.52	16.30	356.00	8.43	10.50	0.60	159	.	.	.	.	.
R1 1985	15.1	74	.	9.7	5.0	6	0.067	0.017	0.017	.	0.005	.
R1 1986	17.1	94	7.35	9.0	.	5	.	0.034	0.034	0.004	0.010	.
R1 1987	14.8	92	7.97	9.0	.	2	0.138	0.243	0.243	.	0.011	0.020
R1 1988	11.6	62	8.12	10.4	1.5	5	0.219	0.012	0.012	.	0.006	0.025
R1 1989	14.0	102	7.95	10.0	2.2	6	0.693	0.024	0.024	.	0.012	0.088
R1 1990	14.6	77	7.55	8.7	3.2	6	0.377	0.061	0.061	0.031	0.043	0.055
R1 1991	13.6	92	7.83	9.1	3.0	190	.	0.026	0.026	0.034	0.033	0.051
R1 1992	13.2	63	7.51	10.6	3.3	8	.	0.011	0.011	0.042	0.027	0.031
R1 1993	14.1	74	7.70	8.5	3.9	12	.	0.012	0.012	0.027	.	0.038
R1 1994	14.9	102	7.76	8.9	2.5	8	.	0.035	0.035	0.032	.	0.044
R1 1995	19.3	127	7.59	8.8	3.3	5	.	0.009	0.009	0.027	.	0.036
R1 1996	12.8	102	7.12	10.5	0.8	4	.	0.115	0.115	0.031	.	0.055
R1 1997	12.0	62	7.30	11.1	5.3	3	.	.	.	.	.	.

Table L2. Annual average loads based of seasonal means for each year and average of annual averages for loads for the three tributaries and R1.

TRIBUTARY	YEAR	Fecal Coliform colonies/sec	TKN	NO3-N mg/sec	OPO4 mg/sec	TP mg/sec	NH4-N mg/sec
CALF	1992	23,145	.	92.4	10.0	5.6	24.2
CALF	1993	12,899	.	76.9	6.1	.	17.5
CALF	1994	7,013	.	178.3	44.7	.	46.3
CALF	1995	12,944	.	173.4	9.6	.	20.8
CALF	1996	4,450	.	121.5	11.3	.	6.4
CALF	1997	4,121	.	.	.	.	.
BEAR	1992	44,113	.	182.6	18.3	20.0	32.9
BEAR	1993	28,804	.	38.9	11.7	.	26.5
BEAR	1994	6,793	.	335.4	46.2	.	67.8
BEAR	1995	30,865	.	206.3	15.7	.	30.0
BEAR	1996	9,342	.	210.4	8.9	.	14.9
BEAR	1997	1,713	.	.	.	.	.
TOMAHAWK	1992	26,224	.	113.5	6.5	0.3	16.7
TOMAHAWK	1993	35,646	.	65.1	4.7	.	15.1
TOMAHAWK	1994	26,047	.	623.7	33.8	.	28.0
TOMAHAWK	1995	8,334	.	99.8	6.7	.	8.5
TOMAHAWK	1995	16,065	.	784.0	17.3	.	28.9
TOMAHAWK	1997	83,393	.	.	.	.	.
R1	1992	9,232	.	9.5	31.5	33.9	35.3
R1	1993	24,800	.	10.0	44.9	.	67.5
R1	1994	3,991	.	19.5	26.7	.	38.3
R1	1995	6,821	.	3.7	37.3	.	28.8
R1	1996	182	.	6.7	8.9	.	44.6
R1	1997	3,897	.	.	.	.	.

Table L3. Annual seasonal means, seasonal average and annual average values (based on seasonal mean values) for the tributaries and R1.

STREAM SEASON YEAR	Q cfs	TEMP Deg C	COND uS/cm	pH	DO mg/L	TURBIDITY FTU	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	OPO4-P mg/L	TP mg/L	NH4-N mg/L
BEAR CREEK WINTER 1991	.	13.0	156.0	8.96	13.2	1.3	2	.	.	.	.	.
BEAR CREEK WINTER 1992	75.8	10.1	150.0	8.52	11.4	1.6	37	.	0.260	0.015	.	0.025
BEAR CREEK WINTER 1993	45.0	10.5	160.0	8.80	13.2	1.0	0	.	0.050	0.015	.	0.025
BEAR CREEK WINTER 1994	72.1	10.3	157.5	8.55	13.3	2.1	6	.	0.185	0.015	.	0.040
BEAR CREEK WINTER 1995	78.7	5.3	207.0	8.13	.	3.2	11	.	0.180	0.015	.	0.025
BEAR CREEK WINTER 1996	37.2	2.6	216.0	8.55	17.8	1.5	1	.	0.402	0.015	.	0.025
BEAR CREEK WINTER 1997	60.5	8.6	218.0	.	15.3	0.9	1	.	.	.	.	.
BEAR CREEK WINTER AVG	**61.6**	**8.6**	**180.6**	**8.58**	**14.0**	**1.7**	**8**	.	**0.215**	**0.015**	.	**0.028**
BEAR CREEK SPRING 1985	.	22.5	228.4	.	.	.	30	.	.	.	.	.
BEAR CREEK SPRING 1987	.	25.0	240.0	8.15	.	.	42	.	.	.	.	.
BEAR CREEK SPRING 1988	.	29.0	.	7.82	.	0.9	20	.	.	.	.	.
BEAR CREEK SPRING 1989	.	22.5	196.0	8.32	9.5	1.6	28	0.100	0.080	.	0.020	0.020
BEAR CREEK SPRING 1990	.	17.3	214.4	8.07	9.6	2.2	16	.	.	.	.	.
BEAR CREEK SPRING 1991	.	26.5	255.0	8.34	10.3	0.8	6	.	.	.	.	.
BEAR CREEK SPRING 1992	69.7	17.2	180.5	8.30	10.6	2.0	32	.	0.017	0.015	0.030	0.025
BEAR CREEK SPRING 1993	122.5	16.4	168.0	8.55	11.0	2.8	24	.	.	.	.	.
BEAR CREEK SPRING 1994	54.8	18.8	181.0	8.39	11.0	1.5	31	.	0.120	0.015	.	0.025
BEAR CREEK SPRING 1995	34.8	20.1	233.0	8.22	10.3	1.3	24	.	0.032	0.015	.	0.025
BEAR CREEK SPRING AVG	**70.4**	**21.5**	**210.7**	**8.2**	**10.3**	**1.6**	**25**	**0.100**	**0.062**	**0.015**	**0.025**	**0.024**
BEAR CREEK SUMMER 1985	.	26.0	253.8	.	.	.	17	.	.	.	.	.
BEAR CREEK SUMMER 1987	.	25.8	240.0	8.62	.	.	16	.	.	.	.	.
BEAR CREEK SUMMER 1988	.	24.9	258.8	7.64	7.8	0.7	17	.	.	.	.	.
BEAR CREEK SUMMER 1989	.	23.0	256.0	8.31	9.4	1.7	13	0.131	0.045	.	0.015	0.045
BEAR CREEK SUMMER 1990	.	26.0	258.3	8.18	9.3	1.1	149	.	.	.	.	.
BEAR CREEK SUMMER 1991	.	14.9	238.3	8.23	8.7	0.8	18	.	.	.	.	.
BEAR CREEK SUMMER 1992	9.8	23.6	264.0	8.18	8.0	1.1	27	.	0.085	0.015	0.001	0.059
BEAR CREEK SUMMER 1993	9.9	27.5	290.0	8.14	8.8	1.5	1	.	0.050	0.015	.	0.072
BEAR CREEK SUMMER 1994	8.4	23.9	251.5	8.42	9.0	0.7	16	.	0.075	0.028	.	0.075
BEAR CREEK SUMMER 1995	15.1	26.7	262.5	8.01	9.6	1.7	27	.	0.053	0.015	.	0.047
BEAR CREEK SUMMER 1996	6.5	26.2	255.0	8.33	10.2	1.3	4	.	0.077	0.015	.	0.025
BEAR CREEK SUMMER AVG	**9.9**	**24.4**	**257.1**	**8.2**	**9.0**	**1.2**	**27.6**	**0.131**	**0.064**	**0.018**	**0.008**	**0.054**
BEAR CREEK FALL 1990	.	14.6	216.0	8.38	11.0	1.0	17	.	.	.	.	.
BEAR CREEK FALL 1991	.	12.6	157.7	8.22	11.5	2.5	25	.	.	.	.	.
BEAR CREEK FALL 1992	16.8	15.7	243.0	8.22	10.6	0.6	18	.	0.220	0.015	0.001	0.025
BEAR CREEK FALL 1993	38.7	13.4	195.0	8.18	10.8	2.0	21	.	0.280	0.015	.	0.025
BEAR CREEK FALL 1995	18.8	13.2	253.0	7.92	11.9	5.8	168	.	0.669	0.015	.	0.025
BEAR CREEK FALL 1996	19.3	16.3	291.0	7.65	9.3	0.9	48	.	0.354	0.015	.	0.025
BEAR CREEK FALLAVG	**23.4**	**14.3**	**225.9**	**8.1**	**10.9**	**2.1**	**49.4**	.	**0.381**	**0.015**	**0.001**	**0.025**
BEAR MEAN OF SEASON AVG	**41.3**	**17.2**	**218.6**	**8.3**	**11.0**	**1.6**	**27.7**	**0.116**	**0.181**	**0.016**	**0.011**	**0.033**

Table L3. Annual seasonal means, seasonal average and annual average values (based on seasonal mean values) for the tributaries and R1.

STREAM SEASON YEAR	Q cfs	TEMP Deg C	COND uS/cm	pH	DO mg/L	TURBIDITY FTU	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	OPO4-P mg/L	TP mg/L	NH4-N mg/L
CALF CREEK WINTER 1991	.	11.1	188.0	8.26	12.1	0.9	0	.	.	.	.	.
CALF CREEK WINTER 1992	32.8	11.5	185.0	8.49	12.7	1.2	23	.	0.240	0.015	.	0.025
CALF CREEK WINTER 1993	31.0	9.5	178.0	8.23	11.9	0.9	0	.	0.200	0.015	.	0.025
CALF CREEK WINTER 1996	16.5	4.8	253.0	7.70	16.4	0.5	16	.	0.502	0.033	.	0.025
CALF CREEK WINTER 1997	29.1	9.7	279.0	8.57	12.3	0.5	5	.	.	.	.	.
CALF CREEK WINTER AVG	**27.4**	**9.3**	**216.6**	**8.2**	**13.1**	**0.8**	**8.8**	**.**	**0.314**	**0.021**	**.**	**0.025**
CALF CREEK SPRING 1985	.	20.7	254.2	.	.	.	19	.	.	.	.	.
CALF CREEK SPRING 1987	.	23.0	275.0	7.91	.	.	28	.	.	.	.	.
CALF CREEK SPRING 1988	.	22.1	310.0	7.75	.	9.3	10	.	.	.	.	.
CALF CREEK SPRING 1989	.	20.2	226.5	7.82	8.7	1.4	15	0.100	0.130	.	0.024	0.020
CALF CREEK SPRING 1990	.	16.8	251.5	7.99	9.4	2.1	12	.	.	.	.	.
CALF CREEK SPRING 1991	.	20.4	246.7	7.99	8.5	2.1	64	.	.	.	.	.
CALF CREEK SPRING 1992	26.1	15.9	207.5	8.06	10.4	1.9	73	.	0.085	0.015	0.021	0.075
CALF CREEK SPRING 1993	56.3	13.4	208.0	8.21	10.2	1.6	28	.	.	.	.	0.025
CALF CREEK SPRING 1994	28.4	18.9	240.0	8.16	9.7	1.2	12	.	.	.	.	0.025
CALF CREEK SPRING 1995	16.5	16.3	287.0	7.45	8.5	0.6	10	.	0.179	0.034	.	0.025
CALF CREEK SPRING AVG	**31.8**	**18.8**	**250.6**	**7.93**	**9.33**	**2.5**	**27**	**0.100**	**0.131**	**0.025**	**0.022**	**0.034**
CALF CREEK SUMMER 1985	.	25.0	305.0	.	.	.	8	.	.	.	.	.
CALF CREEK SUMMER 1987	.	25.0	313.3	7.71	.	.	49	.	.	.	.	.
CALF CREEK SUMMER 1988	.	24.3	307.5	7.77	9.3	2.5	14	.	.	.	.	.
CALF CREEK SUMMER 1989	.	22.9	292.0	7.78	9.0	2.1	12	0.200	0.200	.	0.034	0.063
CALF CREEK SUMMER 1990	.	24.8	301.7	7.76	8.0	2.7	20	.	.	.	.	.
CALF CREEK SUMMER 1991	.	22.3	288.0	7.87	8.5	1.2	29	.	.	.	.	.
CALF CREEK SUMMER 1992	7.5	22.9	302.5	7.94	10.0	1.7	31	.	0.335	0.050	0.024	0.054
CALF CREEK SUMMER 1993	6.9	23.8	302.0	7.42	8.3	4.2	2	.	0.280	0.015	.	0.025
CALF CREEK SUMMER 1994	3.2	23.2	291.0	7.87	12.3	2.7	11	.	0.250	0.038	.	0.064
CALF CREEK SUMMER 1995	8.4	22.5	317.0	7.42	7.6	1.9	112	.	.	.	.	0.069
CALF CREEK SUMMER 1996	3.1	22.3	304.0	7.79	8.5	1.0	26	.	0.227	0.048	.	0.025
CALF CREEK SUMMER AVG	**5.8**	**23.5**	**302.2**	**7.73**	**9.03**	**2.2**	**29**	**0.200**	**0.258**	**0.038**	**0.029**	**0.050**
CALF CREEK FALL 1990	.	14.6	226.3	7.92	9.1	2.0	44	.	.	.	.	.
CALF CREEK FALL 1991	.	14.6	211.7	7.96	10.4	2.0	47	.	.	.	.	.
CALF CREEK FALL 1992	9.1	18.3	273.0	7.80	9.9	1.2	20	.	0.080	0.015	0.001	0.025
CALF CREEK FALL 1993	4.9	18.0	268.0	7.73	7.5	1.4	47	.	0.003	0.015	.	0.025
CALF CREEK FALL 1995	9.2	16.4	317.0	7.76	12.0	1.3	105	.	1.275	0.015	.	0.088
CALF CREEK FALL 1996	7.4	17.5	324.0	7.20	7.1	2.3	17	.	0.523	0.068	.	0.025
CALF CREEK FALL AVG	**7.7**	**16.6**	**270.0**	**7.73**	**9.33**	**1.7**	**47**	**.**	**0.470**	**0.028**	**0.001**	**0.041**
CALF MEAN OF SEASON AVG	**18.2**	**17.0**	**259.9**	**7.91**	**10.19**	**1.8**	**28**	**0.150**	**0.293**	**0.028**	**0.017**	**0.037**

Table L3. Annual seasonal means, seasonal average and annual average values (based on seasonal mean values) for the tributaries and R1.

STREAM SEASON YEAR	Q cfs	TEMP Deg C	COND uS/cm	pH	DO mg/L	TURBIDITY FTU	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	OPO4-P mg/L	TP mg/L	NH4-N mg/L
TOMAHAWK CREEK WINTER 1991	.	11.5	220.3	8.34	11.9	0.6	36	.	0.300	0.015	.	0.047
TOMAHAWK CREEK WINTER 1992	24.4	12.1	259.0	8.40	11.1	0.7	6	.	0.395	0.015	0.001	0.025
TOMAHAWK CREEK WINTER 1993	27.4	10.2	243.0	8.52	11.9	0.5	22	.	0.390	0.015	.	0.025
TOMAHAWK CREE WINTER 1994	41.3	12.6	259.0	8.41	11.0	0.6	64	.	0.490	0.060	.	0.052
TOMAHAWK CREEK WINTER 1995	21.2	8.2	348.0	8.22	.	0.4	2	.	0.445	0.015	.	0.025
TOMAHAWK CREEK WINTER 1996	23.5	5.2	353.0	7.07	21.5	1.0	31	.	0.690	0.015	.	0.025
TOMAHAWK WINTER AVG	**27.6**	**10.0**	**280.4**	**8.16**	**13.46**	**0.6**	**27**	**.**	**0.452**	**0.022**	**0.001**	**0.033**
TOMAHAWK CREEK SPRING 1985	.	20.6	283.0	.	9.0	.	64	.	.	.	.	.
TOMAHAWK CREE SPRING 1987	.	24.0	298.0	8.31	.	.	6	.	.	.	.	.
TOMAHAWK CREEK SPRING 1988	.	27.0	.	8.12	.	0.6	34	.	.	.	.	.
TOMAHAWK CREEK SPRING 1989	.	21.3	302.5	8.33	9.7	0.7	41	0.100	0.130	.	0.003	0.020
TOMAHAWK CREEK SPRING 1990	.	17.5	295.0	8.28	9.7	1.0	148	.	.	.	.	.
TOMAHAWK CREE SPRING 1991	.	19.4	299.3	8.30	9.3	0.9	277	.	0.197	0.015	.	0.033
TOMAHAWK CREEK SPRING 1992	13.8	23.0	311.0	8.37	10.5	1.5	110	.	0.100	0.015	0.001	0.070
TOMAHAWK CREEK SPRING 1993	14.0	21.5	335.0	8.28	8.6	1.3	213	.	0.210	0.015	.	0.072
TOMAHAWK CREEK SPRING 1994	23.7	23.0	330.0	8.49	10.3	1.1	26	.	0.290	0.015	.	0.025
TOMAHAWK CREEK SPRING 1995	17.2	19.2	338.0	8.14	9.2	0.7	41	.	0.203	0.015	.	0.025
TOMAHAWK CREEK SPRING 1997	18.5	16.3	356.0	8.43	10.5	0.6	159	.	.	.	.	.
TOMAHAWK SPRING AVG	**17.4**	**21.2**	**314.8**	**8.31**	**9.65**	**0.9**	**102**	**0.100**	**0.188**	**0.015**	**0.002**	**0.041**
TOMAHAWK CREE SUMMER 1985	.	24.3	316.0	.	.	.	18	.	.	.	.	.
TOMAHAWK CREEK SUMMER 1987	.	25.3	333.0	8.14	.	.	28	.	.	.	.	.
TOMAHAWK CREEK SUMMER 1988	.	24.7	337.7	7.94	8.4	0.5	70	.	.	.	.	.
TOMAHAWK CREEK SUMMER 1989	.	21.9	316.2	8.28	9.4	1.1	36	0.088	0.078	.	0.002	0.083
TOMAHAWK CREEK SUMMER 1990	.	25.9	331.0	8.09	8.9	0.8	82	.	.	.	.	.
TOMAHAWK CREE SUMMER 1991	.	23.2	320.7	8.19	9.8	1.0	195	.	0.110	0.015	0.026	0.025
TOMAHAWK CREEK SUMMER 1992	7.6	24.5	336.5	8.15	9.6	0.7	124	.	0.110	0.015	0.001	0.025
TOMAHAWK CREEK SUMMER 1993	7.9	28.5	361.0	8.27	9.3	3.5	104	.	0.210	0.015	.	0.025
TOMAHAWK CREEK SUMMER 1994	3.9	21.9	341.5	8.25	9.3	0.9	35	.	0.181	0.015	.	0.060
TOMAHAWK CREEK SUMMER 1995	5.3	28.2	344.0	7.96	9.9	1.2	44	.	0.132	0.057	.	0.025
TOMAHAWK SUMMER AVG	**6.2**	**24.8**	**333.8**	**8.14**	**9.30**	**1.2**	**73**	**0.088**	**0.137**	**0.023**	**0.010**	**0.040**
TOMAHAWK CREEK FALL 1990	.	16.3	294.5	8.27	10.5	1.0	168	0.153	0.285	0.015	0.001	0.048
TOMAHAWK CREEK FALL 1991	.	12.8	256.3	8.27	11.2	1.2	137	.	0.373	0.015	0.001	0.043
TOMAHAWK CREEK FALL 1993	15.9	15.4	280.0	8.09	9.0	1.0	80	.	0.640	0.015	.	0.025
TOMAHAWK CREEK FALL 1994	87.0	8.5	343.0	8.19	11.4	1.2	.	.	0.672	0.015	.	0.025
TOMAHAWK CREEK FALL 1995	4.2	15.7	352.5	8.09	12.3	0.7	47	.	0.120	0.015	.	0.025
TOMAHAWK CREEK FALL 1996	58.0	12.0	358.0	8.18	12.0	2.5	7	.	0.675	0.015	.	0.025
TOMAHAWK FALL AVG	**41.3**	**13.4**	**314.1**	**8.18**	**11.06**	**1.3**	**88**	**0.153**	**0.461**	**0.015**	**0.001**	**0.032**
TOMAHAWK MEAN OF SEASON AVG	**23.1**	**17.3**	**310.7**	**8.20**	**10.87**	**1.0**	**72**	**0.113**	**0.309**	**0.019**	**0.003**	**0.037**

Table L3. Annual seasonal means, seasonal average and annual average values (based on seasonal mean values) for the tributaries and R1.

STREAM SEASON YEAR	Q cfs	TEMP Deg C	COND uS/cm	pH	DO mg/L	TURBIDITY FTU	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	OPO4-P mg/L	TP mg/L	NH4-N mg/L
R1 WINTER 1985	.	13.0	40	.	11.0	.	0	.	.	.	.	.
R1 WINTER 1987	.	4.0	35	.	11.0	.	0	.	.	.	.	.
R1 WINTER 1988	.	7.0	24	8.05	10.0	.	9	0.05	0.020	.	0.005	.
R1 WINTER 1989	.	6.2	47	7.68	11.6	4.0	2	1.39	0.040	.	0.027	0.220
R1 WINTER 1990	.	7.6	26	7.20	9.8	2.6	1	0.33	0.042	0.055	0.050	0.033
R1 WINTER 1991	.	6.4	38	7.84	10.8	2.4	4	.	0.003	0.023	.	0.068
R1 WINTER 1992	33.9	7.0	56	.	11.8	2.3	2	.	0.003	0.015	.	0.025
R1 WINTER 1993	149.0	6.2	33	8.00	11.1	2.6	7	.	0.003	0.015	.	0.025
R1 WINTER 1994	56.8	4.5	32	7.25	11.8	3.5	3	.	.	0.033	.	.
R1 WINTER 1996	37.0	1.8	80	6.83	15.0	0.3	0	.	0.003	0.015	.	0.084
R1 WINTER 1997	114.0	5.9	48	7.25	14.1	8.0	2	.	.	.	.	.
R1 WINTER AVG	**78.1**	**6.3**	**42**	**7.51**	**11.6**	**3.2**	**3**	**0.59**	**0.016**	**0.026**	**0.027**	**0.076**
R1 SPRING 1985	.	16.4	66	.	6.0	5.0	15	0.03	0.020	.	0.004	.
R1 SPRING 1986	.	20.5	87	.	9.0	.	11	.	0.030	0.003	0.009	.
R1 SPRING 1987	.	20.3	74	7.90	8.5	.	1	0.03	0.450	.	0.008	0.020
R1 SPRING 1988	.	18.0	51	8.60	.	.	2	0.03	.	.	0.006	.
R1 SPRING 1989	.	17.5	87	7.88	8.9	2.5	5	.	.	.	.	.
R1 SPRING 1990	.	17.3	49	7.44	8.6	6.9	15	0.50	0.043	0.015	0.037	0.082
R1 SPRING 1991	.	17.0	72	7.64	7.9	7.1	140	.	0.025	0.028	.	0.025
R1 SPRING 1992	45.9	19.0	45	7.49	8.9	3.8	8	.	0.020	0.050	0.052	0.050
R1 SPRING 1993	9.0	21.3	101	7.51	6.9	1.8	9	.	0.040	0.044	.	0.078
R1 SPRING 1994	48.7	15.8	70	8.01	9.3	3.3	7	.	0.042	0.035	.	0.081
R1 SPRING 1995	118.0	18.9	53	8.29	9.3	7.0	6	.	0.003	0.033	.	0.025
R1 SPRING 1997	11.8	18.0	76	7.35	8.1	2.5	4	.	.	.	.	.
R1 SPRING AVG	**46.7**	**18.3**	**69**	**7.81**	**8.3**	**4.4**	**19**	**0.14**	**0.075**	**0.030**	**0.019**	**0.052**
R1 SUMMER 1985	.	27.2	161	.	9.7	.	1	0.15	0.020	.	0.006	.
R1 SUMMER 1986	.	24.7	141	.	9.0	.	3	.	0.038	0.005	0.011	.
R1 SUMMER 1987	.	22.5	168	8.04	7.6	.	4	0.25	0.035	.	0.014	.
R1 SUMMER 1989	.	18.7	136	8.00	9.1	1.2	16	0.05	0.015	.	0.001	0.025
R1SUMMER 1990	.	22.6	154	7.75	7.5	1.5	5	0.38	0.103	0.035	0.033	0.048
R1 SUMMER 1991	.	21.6	166	7.68	7.2	2.1	613	.	0.071	0.065	0.026	0.075
R1 SUMMER 1992	7.5	19.2	115	7.89	8.5	1.2	10	.	0.017	0.087	0.001	0.025
R1 SUMMER 1993	38.5	21.9	130	7.79	7.2	3.7	25	.	0.003	0.032	.	0.025
R1 SUMMER 1994	4.0	22.4	123	7.47	6.8	2.1	12	.	0.003	0.045	.	0.025
R1 SUMMER 1995	1.0	25.1	165	7.21	6.4	1.2	1	.	0.003	0.034	.	0.057
R1 SUMMER 1996	1.6	23.7	123	7.41	6.0	1.2	8	.	0.227	0.047	.	0.025
R1 SUMMER AVG	**10.5**	**22.7**	**144**	**7.69**	**7.7**	**1.8**	**63**	**0.21**	**0.049**	**0.044**	**0.013**	**0.038**
R1 FALL 1985	.	4.0	30	.	12.0	.	6	0.03	0.010	.	0.004	.
R1 FALL 1986	.	6.0	53	7.35	.	.	0	.	.	.	.	.
R1 FALL 1987	.	12.5	90	.	.	.	2	.	.	.	.	.
R1 FALL 1988	.	9.9	110	7.72	10.7	1.5	5	0.58	0.003	.	0.006	0.025
R1 FALL 1989	.	13.6	138	8.22	10.2	1.0	2	0.64	0.018	.	0.008	0.018

Table L3. Annual seasonal means, seasonal average and annual average values (based on seasonal mean values) for the tributaries and R1.

STREAM SEASON YEAR	Q cfs	TEMP Deg C	COND uS/cm	pH	DO mg/L	TURBIDITY FTU	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	OPO4-P mg/L	TP mg/L	NH4-N mg/L
R1 FALL 1990	.	10.7	78	7.81	8.8	1.9	3	0.30	0.054	0.020	0.053	0.058
R1 FALL 1991	.	9.3	91	8.18	10.6	0.7	2	.	0.003	0.023	0.040	0.038
R1 FALL 1992	66.2	7.5	38	7.14	13.0	5.8	12	.	0.003	0.015	.	0.025
R1 FALL 1993	165.7	7.2	32	7.48	8.7	7.6	9	.	0.003	0.015	.	0.025
R1 FALL 1994	0.5	16.8	183	8.30	7.6	0.9	9	.	0.060	0.015	.	0.025
R1 FALL 1995	1.7	14.0	164	7.27	10.8	1.7	8	.	0.020	0.015	.	0.025
R1 FALL AVG	**58.5**	**10.1**	**92**	**7.72**	**10.3**	**2.6**	**5**	**0.39**	**0.019**	**0.017**	**0.022**	**0.030**
R1 MEAN OF SEASON AVG	**48.5**	**14.4**	**87**	**7.68**	**9.5**	**3.0**	**23**	**0.33**	**0.040**	**0.029**	**0.020**	**0.049**

Table L4. Annual seasonal means, seasonal average and annual average loads (based on seasonal mean loads) for the tributaries and R1. Also total annual (365 days) base flow load for R1 is given.

TRIBUTARY SEASON AND YEAR	Fecal Coliform col/sec	TKN mg/sec	NO3-N mg/sec	OPO4 mg/sec	TP mg/sec	NH4-N mg/sec
BEAR CREEK WINTER 1992	79,426	.	558.1	32.2	.	53.7
BEAR CREEK WINTER 1993	0	.	63.7	19.1	.	31.9
BEAR CREEK WINTER 1994	4,213	.	610.5	76.2		105.7
BEAR CREEK WINTER 1995	24,526	.	401.3	33.4	.	55.7
BEAR CREEK WINTER 1996	1,054	.	423.5	15.8	.	26.3
BEAR CREEK WINTER 1997	1,713	.	.	.	.	.
BEAR WINTER AVG	**18,489**	**.**	**411.4**	**35.4**	**.**	**54.7**
BEAR CREEK SPRING 1992	81,174	.	44.2	29.6	59.2	49.3
BEAR CREEK SPRING 1993	83,261	.	.	.	.	.
BEAR CREEK SPRING 1994	12,246	.	377.6	56.1	.	81.6
BEAR CREEK SPRING 1995	24	.	31.5	14.8	.	24.6
BEAR SPRING AVG	**44,176**	**.**	**151.1**	**33.5**	**59.2**	**51.9**
BEAR CREEK SUMMER 1992	7,287	.	23.6	4.1	0.3	16.6
BEAR CREEK SUMMER 1993	280	.	14.0	4.2	.	20.2
BEAR CREEK SUMMER 1994	3,921	.	17.9	6.1	.	16.1
BEAR CREEK SUMMER 1995	9,511	.	36.4	6.4	.	26.3
BEAR CREEK SUMMER 1996	736	.	14.2	2.8	.	4.6
BEAR SUMMER AVG	**4,347**	**.**	**21.2**	**4.7**	**0.3**	**16.8**
BEAR CREEK FALL 1992	8,564	.	104.7	7.1	0.5	11.9
BEAR CREEK FALL 1993	31,675	.	.	.	.	27.4
BEAR CREEK FALL 1995	89,398	.	356.0	8.0	.	13.3
BEAR CREEK FALL 1996	26,236	.	193.5	8.2	.	13.7
BEAR FALL AVG	**38,968**	**.**	**218.1**	**7.8**	**0.5**	**16.6**
BEAR MEAN OF SEASON AVG	**26,495**	**.**	**200.5**	**20.3**	**20.0**	**35.0**
CALF CREEK WINTER 1992	21,365	.	222.9	13.9	.	23.2
CALF CREEK WINTER 1993	0	.	175.6	13.2	.	21.9
CALF CREEK WINTER 1994	10,679	.	330.7	87.2	.	115.0
CALF CREEK WINTER 1995	1,006	.	214.2	15.1	.	25.1
CALF CREEK WINTER 1996	7,476	.	234.6	15.4	.	11.7
CALF CREEK WINTER 1997	4,121	.	.	.	.	.
CALF WINTER AVG	**7,441**	**.**	**235.6**	**29.0**	**.**	**39.4**
CALF CREEK SPRING 1992	59,953	.	62.2	11.1	13.1	53.8
CALF CREEK SPRING 1993	44,644	.	.	.	.	39.9
CALF CREEK SPRING 1994	9,651	.	.	.	.	20.1
CALF CREEK SPRING 1995	4,673	.	83.6	15.9	.	11.7
CALF SPRING AVG	**29,730**	**.**	**72.9**	**13.5**	**13.1**	**31.4**
CALF CREEK SUMMER 1992	6,109	.	64.0	11.3	3.4	13.3
CALF CREEK SUMMER 1993	391	.	54.7	2.9	.	4.9
CALF CREEK SUMMER 1994	709	.	25.9	2.2	.	3.7
CALF CREEK SUMMER 1995	18,799	.	64.3	3.6	.	23.5
CALF CREEK SUMMER 1996	2,312	.	20.2	4.3	.	2.2
CALF SUMMER AVG	**5,664**	**.**	**45.8**	**4.9**	**3.4**	**9.5**
CALF CREEK FALL 1992	5,154	.	20.6	3.9	0.3	6.4
CALF CREEK FALL 1993	6,562	.	0.4	2.1	.	3.5
CALF CREEK FALL 1995	27,298	.	331.5	3.9	.	22.9
CALF CREEK FALL 1996	3,563	.	109.6	14.3	.	5.2
CALF FALL AVG	**10,644**	**.**	**115.5**	**6.0**	**0.3**	**9.5**
CALF MEAN OF SEASON AVG	**13,370**	**.**	**117.5**	**13.3**	**5.6**	**22.4**

Table L4. Annual seasonal means, seasonal average and annual average loads (based on seasonal mean loads) for the tributaries and R1. Also total annual (365 days) base flow load for R1 is given.

TRIBUTARY SEASON AND YEAR	Fecal Coliform col/sec	TKN mg/sec	NO3-N mg/sec	OPO4 mg/sec	TP mg/sec	NH4-N mg/sec
TOMAHAWK CREEK WINTER 1992	4,599	.	278.8	10.4	.	17.3
TOMAHAWK CREEK WINTER 1993	16,210	.	.	.	.	.
TOMAHAWK CREE WINTER 1994	56,168	.	.	86.4	.	.
TOMAHAWK CREEK WINTER 1995	1,198	.	266.5	9.0	.	15.0
TOMAHAWK CREEK WINTER 1996	20,631	.	459.2	10.0	.	16.6
TOMAHAWK WINTER AVG	**19,761**	**.**	**334.9**	**28.9**	**.**	**16.3**
TOMAHAWK CREEK SPRING 1992	42,990	.	39.1	5.9	0.4	27.4
TOMAHAWK CREEK SPRING 1993	84,450	.	83.3	5.9	.	28.5
TOMAHAWK CREEK SPRING 1994	17,451	.	194.6	10.1	.	16.8
TOMAHAWK CREEK SPRING 1995	19,913	.	98.6	7.3	.	12.1
TOMAHAWK CREEK SPRING 1997	83,393	.	.	.	.	.
TOMAHAWK SPRING AVG	**49,639**	**.**	**103.9**	**7.3**	**0.4**	**21.2**
TOMAHAWK CREEK SUMMER 1992	31,084	.	22.5	3.2	0.2	5.4
TOMAHAWK CREEK SUMMER 1993	23,268	.	47.0	3.4	.	5.6
TOMAHAWK CREEK SUMMER 1994	4,522	.	20.8	1.6	.	5.8
TOMAHAWK CREEK SUMMER 1995	6,617	.	19.9	8.6	.	3.8
TOMAHAWK SUMMER AVG	**16,373**	**.**	**27.5**	**4.2**	**0.2**	**5.1**
TOMAHAWK CREEK FALL 1993	18,656	.	.	.	.	11.3
TOMAHAWK CREEK FALL 1994	.	.	1,655.7	37.0	.	61.6
TOMAHAWK CREEK FALL 1995	5,609	.	14.0	1.8	.	2.9
TOMAHAWK CREEK FALL 1996	11,498	.	1,108.7	24.6	.	41.1
TOMAHAWK FALL AVG	**11,921**	**.**	**926.2**	**21.1**	**.**	**29.2**
TOMAHAWK MEAN OF SEASON AVG	**24,424**	**.**	**348.1**	**15.4**	**0.3**	**18.0**
R1 WINTER 1992	1920	.	2.9	14.4	.	24.0
R1 WINTER 1993	27428	.	12.7	63.3	.	105.5
R1 WINTER1994	4826	.	.	53.1	.	.
R1 WINTER1996	0	.	3.1	15.7	.	88.0
R1 WINTER 1997	6457	.	.	.	.	.
R1 MEAN WINTER AVG	**8126**	**.**	**6.2**	**36.6**	**.**	**72.5**
R1 SPRING 1992	10399	.	26.0	65.0	67.6	65.0
R1 SPRING 1993	2294	.	10.2	11.2	.	19.9
R1 SPRING 1994	9651	.	57.2	48.3	.	111.7
R1 SPRING 1995	20051	.	10.0	110.3	.	83.5
R1 SPRING 1997	1337	.	.	.	.	.
R1 MEAN SPRING AVG	**8746**	**.**	**25.9**	**58.7**	**67.6**	**70.0**
R1 SUMMER 1992	2110	.	3.5	18.4	0.2	5.3
R1 SUMMER 1993	27258	.	3.3	34.9	.	27.3
R1 SUMMER 1994	1366	.	0.3	5.1	.	2.8
R1 SUMMER 1995	28	.	0.1	1.0	.	1.6
R1 SUMMER 1996	365	.	10.4	2.1	.	1.1
R1 MEAN SUMMER AVG	**6225**	**.**	**3.5**	**12.3**	**0.2**	**7.6**
R1 FALL 1992	22497	.	5.6	28.1	.	46.9
R1 FALL 1993	42221	.	14.1	70.4	.	117.3
R1 FALL 1994	120	.	0.8	0.2	.	0.3
R1 FALL 1995	385	.	0.9	0.7	.	1.2
R1 MEAN FALL AVG	**16306**	**.**	**5.4**	**24.9**	**.**	**41.4**
R1 MEAN OF SEASON AVG	**9851**	**.**	**10.2**	**33.1**	**33.9**	**47.9**
R1 Annual (365 day) Avg Load	**3.107E+11**	**.**	**3.229E+08**	**1.044E+09**	**1.069E+09**	**1.510E+09**

Table L5. Average seasonal and annual means of parameter values for the tributaries and R1.

STREAM SEASON	Q cfs	TEMP Deg C	COND uS/cm	pH	DO mg/L	TURBIDITY FTU	F Coli col/100 mL	TKN mg/L	NO3-N mg/L	OPO4-P mg/L	TP mg/L	NH4-N mg/L
BEAR CREEK WINTER AVG	61.6	8.6	180.6	8.58	14.0	1.7	8	.	0.215	0.015	.	0.028
BEAR CREEK SPRING AVG	70.4	21.5	210.7	8.2	10.3	1.6	25	0.100	0.062	0.015	0.025	0.024
BEAR CREEK SUMMER AVG	9.9	24.4	257.1	8.2	9.0	1.2	27.6	0.131	0.064	0.018	0.008	0.054
BEAR CREEK FALLAVG	23.4	14.3	225.9	8.1	10.9	2.1	49.4	.	0.381	0.015	0.001	0.025
BEAR MEAN OF SEASON AVG	41.3	17.2	218.6	8.3	11.0	1.6	27.7	.	0.181	0.016	0.011	0.033
CALF CREEK WINTER AVG	27.4	9.3	216.6	8.2	13.1	0.8	8.8	.	0.314	0.021	.	0.025
CALF CREEK SPRING AVG	31.8	18.8	250.6	7.93	9.33	2.5	27	0.100	0.131	0.025	0.022	0.034
CALF CREEK SUMMER AVG	5.8	23.5	302.2	7.73	9.03	2.2	29	0.200	0.258	0.038	0.029	0.050
CALF CREEK FALL AVG	7.7	16.6	270.0	7.73	9.33	1.7	47	.	0.470	0.028	0.001	0.041
CALF MEAN OF SEASON AVG	18.2	17.0	259.9	7.91	10.19	1.8	28	.	0.293	0.028	0.017	0.037
TOMAHAWK WINTER AVG	27.6	10.0	280.4	8.16	13.46	0.6	27	.	0.452	0.022	0.001	0.033
TOMAHAWK SPRING AVG	17.4	21.2	314.8	8.31	9.65	0.9	102	0.100	0.188	0.015	0.002	0.041
TOMAHAWK SUMMER AVG	6.2	24.8	333.8	8.14	9.30	1.2	73	0.088	0.137	0.023	0.010	0.040
TOMAHAWK FALL AVG	41.3	13.4	314.1	8.18	11.06	1.3	88	0.153	0.461	0.015	0.001	0.032
TOMAHAWK MEAN OF SEASON AVG	23.1	17.3	310.7	8.20	10.87	1.0	72	0.113	0.309	0.019	0.003	0.037
R1 WINTER AVG	78.1	6.3	42	7.51	11.6	3.2	3	0.59	0.016	0.026	0.027	0.076
R1 SPRING AVG	46.7	18.3	69	7.81	8.3	4.4	19	0.14	0.075	0.030	0.019	0.052
R1 SUMMER AVG	10.5	22.7	144	7.69	7.7	1.8	63	0.21	0.049	0.044	0.013	0.038
R1 FALL AVG	58.5	10.1	92	7.72	10.3	2.6	5	0.39	0.019	0.017	0.022	0.030
R1 MEAN OF SEASON AVG	48.5	14.4	87	7.68	9.5	3.0	23	0.33	0.040	0.029	0.020	0.049

Table L6. Annual seasonal means, average of seasonal means, and annual average loads based on seasonal mean loads for the tributaries and R1.

TRIBUTARY SEASON AND YEAR	Fecal Coliform col/sec	TKN mg/sec	NO3-N mg/sec	OPO4-P mg/sec	TP mg/sec	NH4-N mg/sec
BEAR WINTER AVG	18,489	.	411.4	35.4	.	54.7
BEAR SPRING AVG	44,176	.	151.1	33.5	59.2	51.9
BEAR SUMMER AVG	4,347	.	21.2	4.7	0.3	16.8
BEAR FALL AVG	38,968	.	218.1	7.8	0.5	16.6
BEAR MEAN OF SEASON AVG	26,495	.	200.5	20.3	20.0	35.0
CALF WINTER AVG	7,441	.	235.6	29.0	.	39.4
CALF SPRING AVG	29,730	.	72.9	13.5	13.1	31.4
CALF SUMMER AVG	5,664	.	45.8	4.9	3.4	9.5
CALF FALL AVG	10,644	.	115.5	6.0	0.3	9.5
CALF MEAN OF SEASON AVG	13,370	.	117.5	13.3	5.6	22.4
TOMAHAWK WINTER AVG	19,761	.	334.9	28.9	.	16.3
TOMAHAWK SPRING AVG	49,639	.	103.9	7.3	0.4	21.2
TOMAHAWK SUMMER AVG	16,373	.	27.5	4.2	0.2	5.1
TOMAHAWK FALL AVG	11,921	.	926.2	21.1	.	29.2
TOMAHAWK MEAN OF SEASON AVG	24,424	.	348.1	15.4	0.3	18.0
R1 MEAN WINTER AVG	8126	.	6.2	36.6	.	72.5
R1 MEAN SPRING AVG	8746	.	25.9	58.7	67.6	70.0
R1 MEAN SUMMER AVG	6225	.	3.5	12.3	0.2	7.6
R1 MEAN FALL AVG	16306	.	5.4	24.9	.	41.4
R1 MEAN OF SEASON AVG	9851	.	10.2	33.1	33.9	47.9

APPENDIX M

Trend Analyses Data For Loads

For distribution of data see Table K3.

Table M1. Slopes and p values for annual analysis of loads.

Table M2. Slopes and p values for seasonal analysis of loads.

Table M3. Distribution of load data by season. Also see Table K3 for distribution of parameter distribution by year.

Table M1. Slopes and p values for annual analysis of loads.

		trend	se	pvalue
VBL	CREEK			
AmmoniaN	BEAR	-2.5495	6.0499	0.6784
	CALF	-2.3624	7.1905	0.7463
	R1	1.4513	15.3131	0.9258
	TOMAHAWK	-0.8552	4.3003	0.8457
Chloride	BEAR	-67.3205	418.7559	0.8741
	CALF	-105.5742	204.8645	0.6134
	R1	-483.8686	437.3021	0.2959
	TOMAHAWK	153.2544	480.0431	0.7555
F.coli	BEAR	-2054.1272	3939.8314	0.6073
	CALF	-2695.2035	3130.0568	0.3999
	R1	-3503.7898	2500.6076	0.1782
	TOMAHAWK	144.4437	4125.4252	0.9726
NitrateN	BEAR	4.1066	38.4665	0.9162
	CALF	12.7222	20.1514	0.5367
	R1	-1.0389	1.1082	0.3691
	TOMAHAWK	23.7898	76.1296	0.7600
OPO4-P	BEAR	-1.5578	4.4784	0.7322
	CALF	0.2399	5.6989	0.9669
	R1	-3.1536	6.9771	0.6573
	TOMAHAWK	1.5208	6.2035	0.8093
Q	BEAR	-2.9360	3.2401	0.3747
	CALF	-1.2918	1.7857	0.4782
	R1	-6.1378	7.4811	0.4249
	TOMAHAWK	0.6788	3.2675	0.8386
Sulfate	BEAR	-1082.1320	1523.7710	0.4893
	CALF	-271.1091	683.5835	0.6981
	R1	121.2341	1593.8768	0.9408
	TOMAHAWK	-256.5011	789.4626	0.7524
Turb.	BEAR	-95.1502	349.1885	0.7878
	CALF	-143.6728	139.4774	0.3159
	R1	271.1901	1540.6088	0.8629
	TOMAHAWK	96.7006	162.8545	0.5628

P VALUES

		SEASON	YR
VBL	CREEK		
AmmoniaN	BEAR	0.175	0.678
	CALF	0.362	0.746
	R1	0.335	0.926
	TOMAHAWK	0.357	0.846
Chloride	BEAR	0.009	0.874
	CALF	0.005	0.613
	R1	0.441	0.296
	TOMAHAWK	0.236	0.756
F.coli	BEAR	0.048	0.607
	CALF	0.202	0.400
	R1	0.975	0.178
	TOMAHAWK	0.170	0.973
NitrateN	BEAR	0.031	0.916
	CALF	0.065	0.537
	R1	0.152	0.369
	TOMAHAWK	0.077	0.760
OPO4-P	BEAR	0.151	0.732
	CALF	0.373	0.967
	R1	0.242	0.657
	TOMAHAWK	0.499	0.809
Q	BEAR	0.001	0.375
	CALF	0.001	0.478
	R1	0.152	0.425
	TOMAHAWK	0.145	0.839
Sulfate	BEAR	0.015	0.489
	CALF	0.002	0.698
	R1	0.563	0.941
	TOMAHAWK	0.110	0.752
Turb.	BEAR	0.057	0.788
	CALF	0.180	0.316
	R1	0.574	0.863
	TOMAHAWK	0.155	0.563

Table M2. Slopes and p values for seasonal analysis of loads.

Load data

		SEASON							
		1		2		3		4	
		trend	pvalue	trend	pvalue	trend	pvalue	trend	pvalue
VBL	CREEK								
AmmoniaN	BEAR	-3.0777	0.8239	-7.5690	0.6538	-0.4762	0.9665	-1.7789	0.8936
	CALF	-1.9888	0.9015	-14.6956	0.4552	0.2948	0.9822	1.6980	0.9159
	R1	14.4525	0.6519	28.6822	0.4908	-4.9341	0.8627	-25.7697	0.4793
	TOMAHAWK	-0.6316	0.9365	-5.7412	0.6125	-0.4663	0.9668	3.1009	0.7825
Chloride	BEAR	87.6490	0.9267	-521.831	0.6537	124.4415	0.8734	-190.859	0.8351
	CALF	-310.727	0.5033	-250.018	0.6749	-34.2309	0.9277	80.1218	0.8618
	R1	-178.155	0.8308	449.3043	0.6907	-255.193	0.7008	-2046.32	0.0478
	TOMAHAWK	3.6547	1.0000	163.5520	0.9997	-49.9154	0.9999	627.3572	0.9989
F.coli	BEAR	-9959.62	0.2047	-19177.5	0.1337	-243.788	0.9768	5249.735	0.3681
	CALF	-2151.92	0.6629	-20100.7	0.0205	1622.712	0.7629	1755.245	0.7889
	R1	-1679.85	0.6991	-505.038	0.9177	-6185.23	0.2886	-10824.9	0.1479
	TOMAHAWK	3376.548	0.6751	3380.000	0.6472	-9799.24	0.3943	-3546.66	0.7560
NitrateN	BEAR	6.8370	0.9381	12.5167	0.9070	1.0468	0.9884	0.2507	0.9977
	CALF	6.1897	0.8888	7.1508	0.9004	-6.3065	0.8621	50.9027	0.2620
	R1	-0.2630	0.8899	-5.1793	0.0644	1.1982	0.4960	-2.8436	0.2674
OPO4-P	BEAR	-1.8466	0.8566	-4.5414	0.7155	0.1763	0.9832	-1.8347	0.8575
	CALF	0.4889	0.9700	1.6072	0.9237	-1.8354	0.8633	2.2575	0.8622
	R1	-0.4168	0.9769	19.8579	0.2985	-7.5221	0.5170	-15.4618	0.3525
	TOMAHAWK	2.9332	0.7813	0.8390	0.9613	0.9205	0.9486	-0.6241	0.9706
Q	BEAR	-2.8863	0.6760	-12.5318	0.2677	0.3137	0.9667	-2.4259	0.6401
	CALF	-2.0028	0.5423	-3.1412	0.5536	-0.5252	0.8829	0.0850	0.9844
	R1	-1.4642	0.9122	0.3803	0.9795	-4.5116	0.7770	-36.3386	0.1343
	TOMAHAWK	-0.7125	0.9186	0.9241	0.8743	-1.1004	0.9111	4.4744	0.6514
Sulfate	BEAR	12.6133	0.9974	-3495.68	0.3069	-27.1144	0.9924	-923.822	0.8166
	CALF	-378.039	0.8278	-1097.40	0.5022	111.6974	0.9299	113.5531	0.9506
	R1	227.0455	0.9275	5727.618	0.1088	-732.033	0.8200	-4570.78	0.1823
	TOMAHAWK	-480.745	0.7886	355.9258	0.8479	-248.372	0.8896	-1156.36	0.6749
Turb.	BEAR	-279.101	0.7049	-1247.26	0.3005	33.1963	0.9670	197.0591	0.7217
	CALF	-225.148	0.3745	-400.228	0.3293	-58.7576	0.8298	48.8010	0.8836
	R1	2821.296	0.2836	556.4532	0.8418	-644.553	0.8423	-6889.47	0.1590

Table M3. Distribution of load data by season. Also see Table K3 for distribution of parameter distribution by year.

Load data

			nobs	n	mean	std	median	minimum	maximum
VBL	SEASON	CREEK							
AmmoniaN	1	BEAR	7	6	63.181	69.442	42.763	10.861	200.619
		CALF	7	6	52.004	84.363	22.585	6.464	223.564
		R1	6	3	57.400	32.099	60.180	24.001	88.019
		TOMAHAWK	8	6	27.850	25.850	18.089	14.974	80.406
	2	BEAR	5	4	40.521	21.077	33.322	24.638	70.800
		CALF	5	5	35.842	19.448	39.860	11.682	57.093
		R1	6	5	107.736	149.517	64.994	1.678	368.585
		TOMAHAWK	5	4	21.206	8.030	22.068	12.142	28.547
	3	BEAR	8	8	17.845	15.714	13.456	3.675	48.891
		CALF	8	8	11.011	15.476	3.683	1.784	45.230
		R1	7	6	11.188	17.947	4.928	1.140	47.436
		TOMAHAWK	6	6	5.270	1.932	4.779	3.328	8.179
	4	BEAR	7	5	18.729	16.235	13.303	7.363	47.422
		CALF	4	4	9.513	8.992	5.841	3.490	22.878
		R1	5	5	33.378	50.952	1.699	0.333	117.280
		TOMAHAWK	6	6	21.842	24.378	11.250	2.747	61.596
Chloride	1	BEAR	7	6	6984.625	4237.506	5843.209	2172.144	14590.464
		CALF	7	6	3671.263	2199.466	3613.632	1292.808	7578.432
		R1	6	3	1941.053	856.267	1739.414	1203.600	2880.144
		TOMAHAWK	8	6	3502.644	2101.843	2626.475	2344.896	7731.360
	2	BEAR	5	4	6155.890	2307.430	6107.491	3912.578	8496.000
		CALF	5	3	2280.374	433.102	2523.312	1780.337	2537.472
		R1	6	4	3089.712	2277.163	3421.906	134.237	5380.800
		TOMAHAWK	5	3	2034.443	581.796	1855.328	1563.264	2684.736
	3	BEAR	8	8	1625.733	888.981	1253.656	877.475	3627.860
		CALF	8	8	808.098	571.423	649.944	220.896	2007.101
		R1	7	7	791.843	1340.739	283.200	46.162	3794.880
		TOMAHAWK	6	6	725.622	162.657	773.180	431.325	894.912
	4	BEAR	7	5	3410.639	2388.320	2405.240	1631.685	7587.494
		CALF	4	4	938.621	592.890	1170.296	69.809	1344.084
		R1	5	5	2689.743	4060.861	197.787	39.931	9382.416
		TOMAHAWK	6	6	3362.532	3388.049	1902.084	594.459	8475.610
F.coli	1	BEAR	7	7	16449.348	29029.224	3647.616	0.000	79426.272
		CALF	7	7	7903.586	9377.896	4120.560	0.000	21364.608
		R1	6	6	8624.384	9685.893	5641.344	0.000	26479.200
		TOMAHAWK	8	8	21972.992	29845.535	14614.536	600.384	90688.003
	2	BEAR	5	5	63474.352	55543.560	48110.016	12252.082	150096.000
		CALF	5	5	35774.957	45039.956	9651.456	4672.800	111025.728
		R1	6	6	8459.939	8350.534	6346.512	536.947	20050.560
		TOMAHAWK	5	5	49639.466	32844.688	42989.760	17450.784	84450.240
	3	BEAR	8	8	5306.637	5072.001	3855.343	280.368	14171.328
		CALF	8	8	6742.001	8751.573	3900.230	390.816	26249.808
		R1	7	6	13344.006	28816.097	2084.918	28.320	72102.720
		TOMAHAWK	6	6	16849.267	20266.483	7881.456	258.278	55190.016
	4	BEAR	7	7	34031.254	33925.898	26235.648	0.000	89398.310
		CALF	4	4	10644.143	11169.742	5858.134	3562.656	27297.648
		R1	5	5	13074.098	18935.847	396.480	119.794	42220.872
		TOMAHAWK	6	5	12005.754	9489.783	9196.637	3296.448	28116.096
NitrateN	1	BEAR	7	6	444.631	428.730	412.421	17.377	1203.713
		CALF	7	6	251.452	197.119	218.569	36.199	625.221
		R1	6	3	4.415	2.434	3.144	2.880	7.222
		TOMAHAWK	8	6	393.567	198.867	339.925	198.127	757.673
	2	BEAR	5	4	76.518	80.595	58.249	3.341	186.232
		CALF	5	3	69.342	13.394	67.288	57.093	83.643
		R1	6	5	11.932	8.100	10.025	5.369	25.998
		TOMAHAWK	5	4	103.895	65.549	90.928	39.082	194.643
	3	BEAR	8	8	23.003	21.457	16.494	0.441	72.274
		CALF	8	8	47.923	35.109	49.744	6.995	114.691
		R1	7	7	3.201	3.817	0.850	0.085	10.350
		TOMAHAWK	6	6	25.571	11.907	22.543	12.225	46.983
	4	BEAR	7	4	296.320	187.970	274.742	104.671	531.125
		CALF	4	4	115.528	151.575	65.111	0.419	331.471
		R1	5	5	4.344	5.854	1.020	0.204	14.074
		TOMAHAWK	6	5	649.048	719.321	452.758	13.845	1655.700

Load data

			nobs	n	mean	std	median	minimum	maximum
VBL	SEASON	CREEK							
OPO4-P	1	BEAR	7	6	42.164	51.835	25.658	6.516	145.905
		CALF	7	6	38.667	64.734	14.509	3.878	170.515
		R1	6	4	29.827	18.415	25.913	14.401	53.083
		TOMAHAWK	8	7	32.109	56.770	11.724	8.985	160.812
	2	BEAR	5	4	24.312	12.646	19.993	14.783	42.480
		CALF	5	3	12.673	3.186	12.617	9.516	15.888
		R1	6	5	67.093	63.049	64.994	1.007	147.972
		TOMAHAWK	5	4	7.291	1.963	6.616	5.862	10.068
	3	BEAR	8	8	5.040	2.874	4.121	2.205	10.628
		CALF	8	8	5.163	5.033	3.600	1.070	16.822
		R1	7	7	20.190	32.989	5.123	0.963	92.975
		TOMAHAWK	6	6	3.612	2.623	2.867	1.291	8.572
	4	BEAR	7	4	12.943	10.350	8.090	7.137	28.453
		CALF	4	4	6.028	5.547	3.883	2.094	14.251
		R1	5	5	20.027	30.571	1.020	0.200	70.368
		TOMAHAWK	6	5	15.148	15.366	10.612	1.648	36.958
Sulfate	1	BEAR	7	5	19507.043	10596.603	22296.336	4778.717	32828.544
		CALF	7	5	11268.188	5714.661	11412.960	2844.178	18946.080
		R1	6	4	9995.544	7271.069	9402.240	1920.096	19257.600
		TOMAHAWK	8	6	7196.608	3303.409	6308.563	3533.911	12370.176
	2	BEAR	5	4	15569.132	8526.159	11557.817	10840.896	28320.000
		CALF	5	3	7334.880	2070.033	7612.416	5140.080	9252.144
		R1	6	5	6216.806	9512.037	2690.400	671.184	23058.144
		TOMAHAWK	5	4	2864.285	1010.361	2922.058	1585.920	4027.104
	3	BEAR	8	6	2478.227	926.632	2327.904	1264.035	4038.828
		CALF	8	7	1944.208	1493.178	1444.320	404.976	4846.118
		R1	7	6	2493.576	4389.329	638.616	39.648	11384.640
		TOMAHAWK	6	6	1103.758	481.932	875.088	654.305	1789.824
	4	BEAR	7	4	8520.157	8270.451	4958.152	3298.714	20865.610
		CALF	4	3	1834.806	1533.044	2599.776	69.809	2834.832
		R1	5	5	5305.525	6793.637	815.616	106.483	14073.624
		TOMAHAWK	6	5	4447.985	5197.195	1508.890	769.171	13058.352
TotalP	1	BEAR	7	0	.	.	.	.	.
		CALF	7	0	.	.	.	.	.
		R1	6	0	.	.	.	.	.
		TOMAHAWK	8	1	0.600	.	0.600	0.600	0.600
	2	BEAR	5	2	59.187	36.448	59.187	33.415	84.960
		CALF	5	2	13.108	17.348	13.108	0.841	25.375
		R1	6	1	67.594	.	67.594	67.594	67.594
		TOMAHAWK	5	1	0.391	.	0.391	0.391	0.391
	3	BEAR	8	2	0.276	0.014	0.276	0.266	0.286
		CALF	8	2	3.534	4.602	3.534	0.280	6.788
		R1	7	2	0.211	0.098	0.211	0.142	0.280
		TOMAHAWK	6	2	0.215	0.080	0.215	0.159	0.272
	4	BEAR	7	1	0.476	.	0.476	0.476	0.476
		CALF	4	1	0.258	.	0.258	0.258	0.258
		R1	5	0	.	.	.	.	.
		TOMAHAWK	6	0	.	.	.	.	.
Turb.	1	BEAR	7	7	3907.262	4229.819	1580.256	347.543	12037.133
		CALF	7	7	1192.462	1602.876	790.128	155.137	4736.520
		R1	6	6	8172.538	9361.380	4926.264	314.352	25827.840
		TOMAHAWK	8	8	496.043	267.150	409.012	239.587	1082.390
	2	BEAR	5	5	4449.083	3843.642	2327.904	1281.197	9713.760
		CALF	5	5	1340.669	921.246	965.146	280.368	2551.066
		R1	6	6	7285.027	9484.829	2887.507	93.966	23392.320
		TOMAHAWK	5	5	498.925	176.352	515.424	314.692	738.302
	3	BEAR	8	8	356.782	272.275	275.695	143.526	991.993
		CALF	8	8	317.743	245.894	243.410	88.925	820.714
		R1	7	7	1915.500	4594.980	239.077	33.984	12333.360
		TOMAHAWK	6	6	234.593	270.730	125.741	86.093	783.048
	4	BEAR	7	7	1586.705	1985.355	603.216	285.466	5500.933
		CALF	4	4	331.174	117.890	323.613	195.465	482.006
		R1	5	5	9338.367	15438.388	101.952	11.979	35653.181
		TOMAHAWK	6	6	1325.971	1753.166	363.147	65.929	4106.400

APPENDIX N

Figure N1. Average winter base flow concentrations for the tributaries.

Figure N2. Average spring season base flow concentrations for the tributaries.

Figure N3. Average summer base flow concentrations for the tributaries.

Figure N4. Average fall base flow concentrations for the tributaries.

Figure N5. Average annual base flow concentrations for the tributaries.

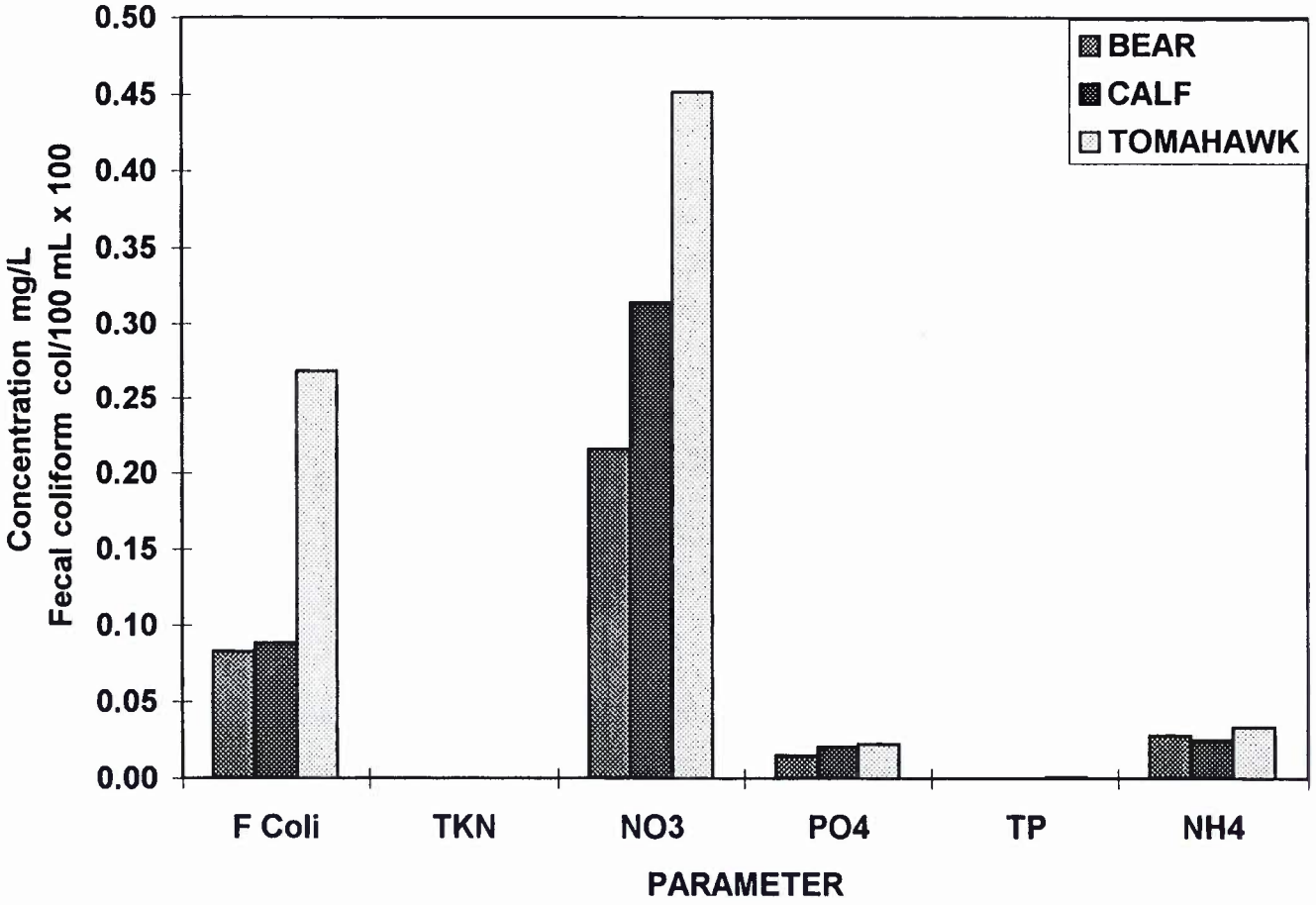

Figure N1. Average winter base flow concentrations for the tributaries.

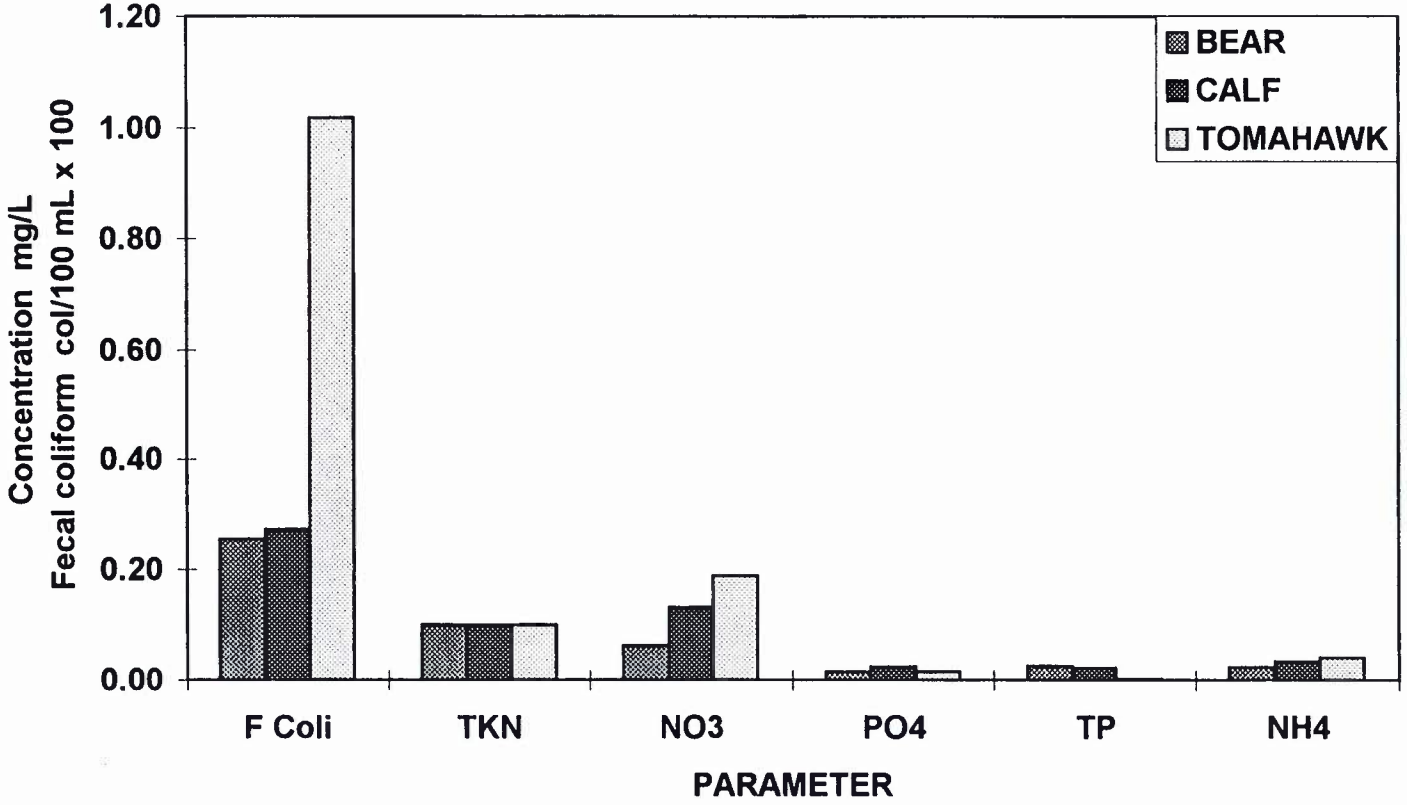

Figure N2. Average spring season base flow concentrations for the tributaries.

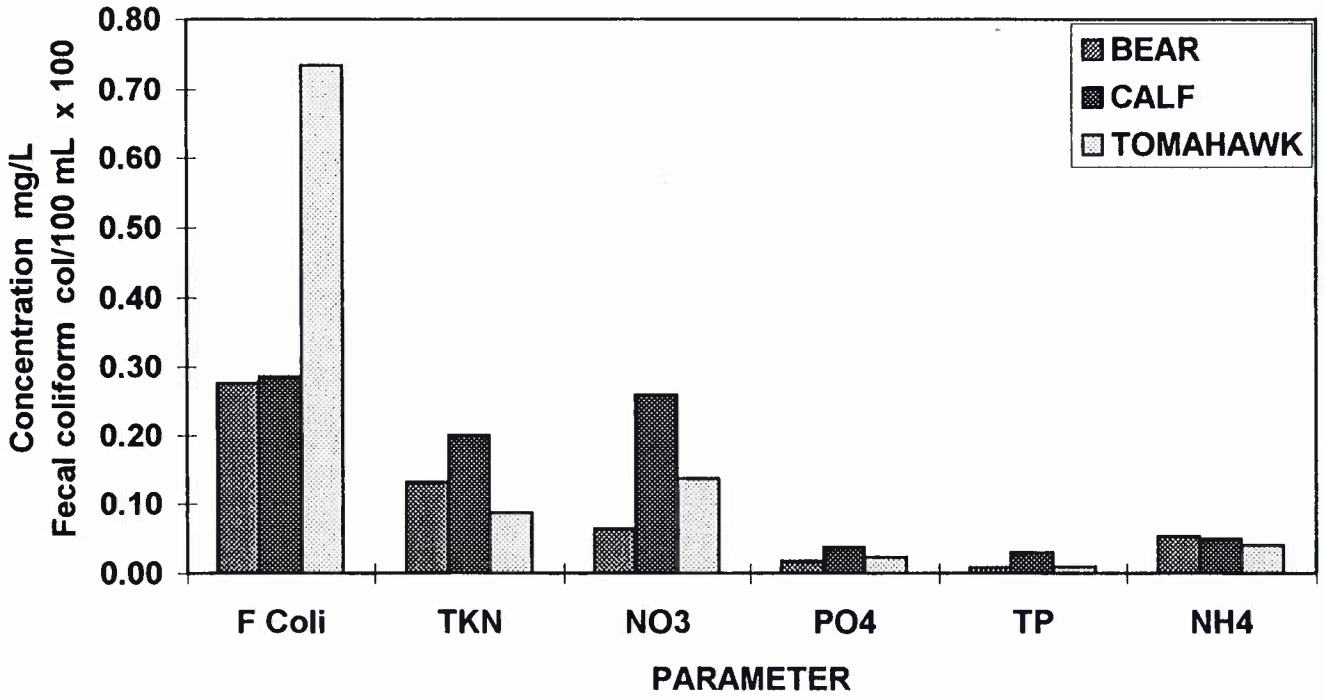

Figure N3. Average summer base flow concentrations for the tributaries.

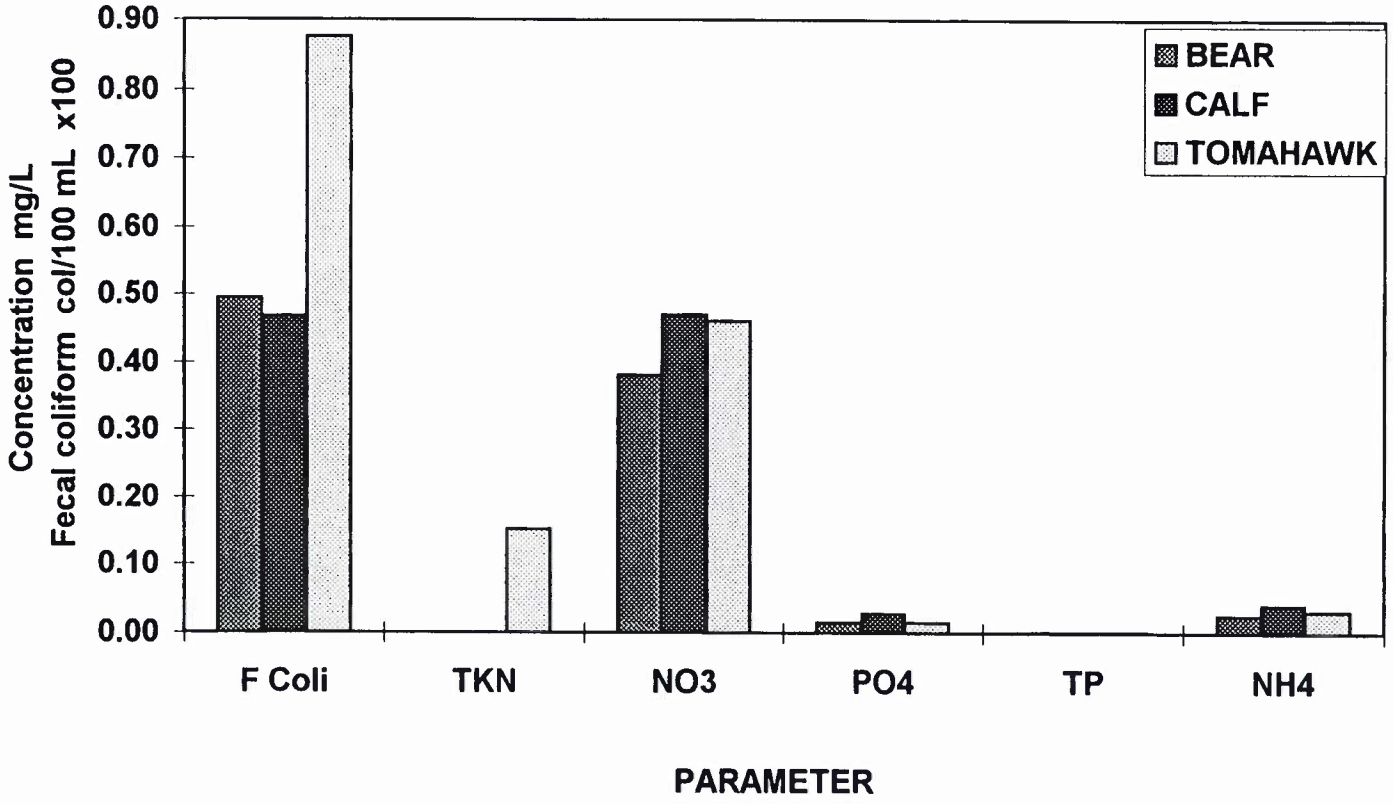

Figure N4. Average fall base flow concentrations for the tributaries.

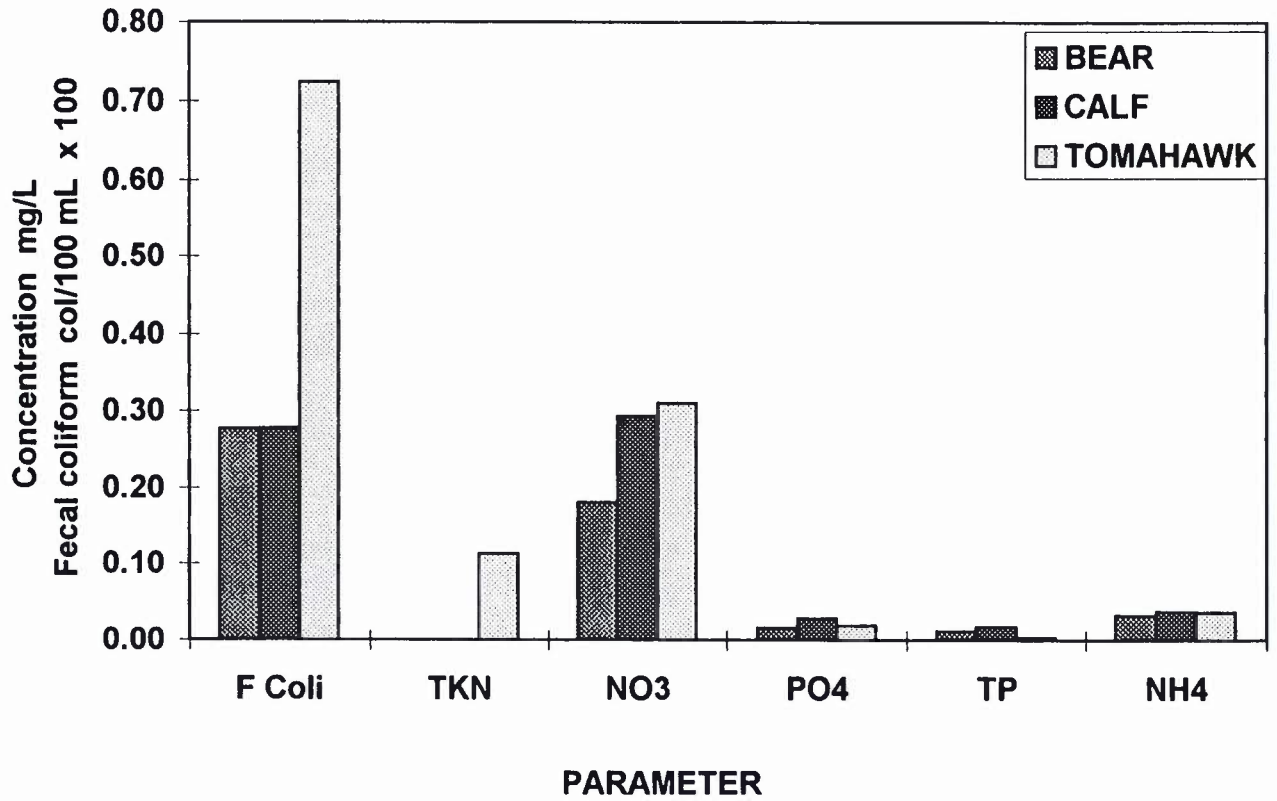

Figure N5. Average annual base flow concentrations for the tributaries.

APPENDIX O

Table O1. Raw data for the tributaries and R1 for base flow 1985 to mid-1997.

Table O2. Simple statistics and Pearson correlation coefficients and probability values for R1 for base flow 1985 to mid-1997.

Table O3. Simple statistics and Pearson correlation coefficients and probability values for Calf Creek for base flow 1985 to mid-1997.

Table O4. Simple statistics and Pearson correlation coefficients and probability values for Bear Creek for base flow 1985 to mid-1997.

Table O5. Simple statistics and Pearson correlation coefficients and probability values for Tomahawk Creek for base flow 1985 to mid-1997.

Table O1. Raw data for the tributaries and R1 for base flow 1985 to mid-1997.

BASEFLOW CORRELATION DATA

CREEK	DATE	TIME	Q	TEMP	COND	TURB	PH	DO
R1	3/25/85	1415	.	13.0	40	.	.	11.0
R1	4/8/85	1204	.	13.0	43	5.0	.	.
R1	4/23/85	1200	.	.	.	.	.	6.0
R1	5/15/85	1130	.	17.1	64	.	.	.
R1	6/14/85	1130	.	19.0	91	.	.	.
R1	7/1/85	1500	.	26.0	138	.	.	.
R1	7/9/85	1610	.	30.0	159	.	.	10.0
R1	7/20/85	1200	.	30.1	170	.	.	10.0
R1	8/24/85	1145	.	26.0	165	.	.	.
R1	9/21/85	1245	.	24.0	175	.	.	9.0
R1	12/21/85	850	.	4.0	30	.	.	12.0
R1	5/7/86	950	.	17.5	68	.	.	.
R1	6/30/86	1010	.	23.5	105	.	.	9.0
R1	7/19/86	1445	.	25.5	143	.	.	.
R1	8/19/86	1820	.	25.5	130	.	.	9.0
R1	9/13/86	1300	.	23.0	150	.	.	.
R1	12/23/86	948	.	6.0	53	.	7.35	.
R1	1/28/87	945	.	4.0	35	.	.	11.0
R1	5/27/87	930	.	20.0	67	.	.	8.5
R1	6/11/87	1000	.	20.5	80	.	7.90	.
R1	7/21/87	1730	.	27.0	155	.	8.92	7.3
R1	8/3/87	940	.	26.0	175	.	7.80	.
R1	9/30/87	650	.	14.5	175	.	7.40	7.9
R1	11/15/87	757	.	12.5	90	.	.	.
R1	2/3/88	1700	.	5.9	29	.	7.88	.
R1	3/30/88	912	.	8.0	18	.	8.21	10.0
R1	5/3/88	1620	.	18.0	51	.	8.60	.
R1	11/18/88	1541	.	9.9	110	1.5	7.72	10.7
R1	1/20/89	1000	.	4.8	46	1.5	7.50	15.1
R1	2/11/89	1920	.	5.3	48	4.0	7.74	10.7
R1	3/12/89	2010	.	8.6	47	6.4	7.81	9.0
R1	4/21/89	1645	.	17.5	87	2.5	7.88	8.9
R1	7/21/89	1130	.	18.8	135	1.1	8.09	9.6
R1	8/24/89	920	.	20.0	138	1.4	7.92	8.5
R1	9/19/89	910	.	17.4	135	1.1	7.99	9.3
R1	10/17/89	1645	.	14.2	145	0.9	8.22	9.9

FCOLI	TKN	NO3	NH3	OPO4	TP	CL	SO4
0	.	.	.	.	.	.	.
2	0.025	0.020	.	.	0.004	.	.
52	.	.	.	.	.	.	.
4	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.
0	.	.	.	.	.	.	.
0	0.100	0.030	.	.	0.007	.	.
0	.	.	.	.	.	.	.
4	0.200	0.010	.	.	0.004	.	.
6	0.025	0.010	.	.	0.004	.	.
8	.	.	.	.	.	.	.
14	.	0.030	.	0.003	0.009	.	.
6	.	.	.	.	.	.	.
2	.	0.035	.	0.009	0.018	.	.
0	.	0.040	.	0.015	0.003	.	.
0	.	.	.	.	.	.	.
0	.	.	.	.	.	.	.
0	0.025	0.450	0.020	.	0.008	.	.
2	.	.	.	.	.	.	.
2	0.300	0.030	.	.	0.015	.	.
10	.	.	.	.	.	.	.
0	0.200	0.040	.	.	0.012	.	.
2	.	.	.	.	.	.	.
2	0.080	0.030	.	.	0.004	.	.
16	0.025	0.010	.	.	0.006	.	.
2	0.025	.	.	.	0.006	.	.
5	0.580	0.003	0.025	.	0.006	.	.
0	.	.	.	.	.	.	.
0	.	.	.	.	.	.	.
6	1.390	0.040	0.220	.	0.027	6.00	.
5	.	.	.	.	.	.	.
8	0.050	0.015	0.025	.	0.001	.	.
20	.	.	.	.	.	.	.

20	.	.	.	:	.	:	:
2	1.080	0.005	0.010	:	0.005	:	:

BASEFLOW CORRELATION DATA

CREEK	DATE	TIME	Q	TEMP	COND	TURB	PH	DO
R1	11/14/89	1600	.	19.7	150	1.2	8.34	9.7
R1	12/6/89	1130	.	7.0	120	0.8	8.10	11.1
R1	1/22/90	1220	.	6.8	17	0.1	6.81	8.7
R1	2/22/90	1130	.	8.0	30	4.1	7.11	10.3
R1	3/26/90	1010	.	8.0	32	3.5	7.69	10.5
R1	4/23/90	1136	.	15.0	24	12.0	7.34	9.0
R1	5/7/90	1030	.	13.5	47	7.2	7.35	9.5
R1	6/18/90	1005	.	23.5	76	1.5	7.62	7.4
R1	7/30/90	1150	.	25.0	.	1.8	7.72	.
R1	8/27/90	930	.	24.1	145	1.6	7.69	7.1
R1	9/24/90	1230	.	18.6	162	1.2	7.85	7.9
R1	10/22/90	945	.	12.4	88	1.2	7.56	8.5
R1	11/18/90	1015	.	10.5	93	0.9	8.11	9.0
R1	12/17/90	915	.	9.2	54	3.5	7.76	9.0
R1	1/28/91	930	.	4.8	32	3.2	7.78	10.8
R1	2/25/91	944	.	7.9	43	1.5	7.90	10.8
R1	4/22/91	1115	.	12.0	32	6.0	7.64	10.0
R1	6/24/91	920	.	22.0	112	8.2	7.63	5.8
R1	7/22/91	1009	.	24.8	162	2.4	7.53	4.6
R1	9/23/91	940	.	16.4	157	1.3	7.65	8.5
R1	10/21/91	1020	.	12.0	150	0.8	7.76	9.0
R1	12/16/91	930	.	6.5	32	0.5	8.60	12.2
R1	2/3/92	934	33.9	7.0	56	2.3	.	11.8
R1	6/23/92	955	45.9	19.0	45	3.8	7.49	8.9
R1	8/3/92	1015	5.0	22.5	119	1.3	7.48	7.8
R1	9/28/92	950	9.9	15.9	110	1.1	8.29	9.2
R1	11/30/92	930	66.2	7.5	38	5.8	7.14	13.0
R1	2/1/93	810	85.0	4.8	34	4.5	8.08	11.1
R1	3/22/93	1007	213.0	7.5	31	0.7	7.92	11.1
R1	6/21/93	930	9.0	21.3	101	1.8	7.51	6.9
R1	8/16/93	1050	10.0	26.3	178	0.9	7.65	5.6
R1	9/27/93	1245	67.0	17.5	82	6.5	7.93	8.7
R1	12/6/93	920	165.7	7.2	32	7.6	7.48	8.7
R1	2/7/94	940	56.8	4.5	32	3.5	7.25	11.8
R1	4/4/94	928	95.0	9.5	35	5.2	8.30	10.8
R1	6/13/94	1020	2.4	22.0	105	1.4	7.71	7.8

FCOLI	TKN	NO3	NH3	OPO4	TP	CL	SO4
4	0.20	0.030	0.025	.	0.010	.	.
0	.	.	.	.	.	.	.
4	0.34	0.120	0.025	0.060	0.040	.	6.0
0	0.43	0.003	0.025	0.015	0.080	2.00	3.0
0	0.21	0.003	0.050	0.090	0.030	1.00	4.0
30	0.60	0.050	0.025	0.015	0.050	2.00	4.0
6	0.60	0.030	0.170	0.015	0.060	16.00	7.0
10	0.31	0.050	0.050	0.015	0.001	2.00	2.0
12	0.35	0.100	.	0.030	0.030	1.00	4.0
2	0.50	0.040	0.025	0.060	0.030	3.00	5.0
2	0.28	0.170	0.070	0.015	0.040	3.00	3.0
6	0.41	0.003	0.090	0.015	0.040	3.00	5.0
2	0.26	0.120	0.025	0.030	0.040	5.00	8.0
0	0.23	0.040	0.060	0.015	0.080	2.00	6.0
2	.	.	0.025	0.015	.	.	3.0
6	.	0.003	0.110	0.030	.	.	7.0
8	.	0.020	0.025	0.015	.	.	3.0
272	.	0.030	0.025	0.040	.	.	4.0
24	.	0.020	0.080	0.080	.	.	4.0
14	.	0.190	0.120	0.015	0.050	.	8.0
0	.	0.003	0.025	0.015	0.040	.	8.0
4	.	0.003	0.050	0.030	.	.	2.0
2	.	0.003	0.025	0.015	.	3.00	2.0
8	.	0.020	0.050	0.050	0.052	2.00	3.0
.	.	0.030	.	0.093	0.001	2.00	5.0
10	.	0.003	0.025	0.081	0.001	2.00	2.0
12	.	0.003	0.025	0.015	.	2.00	6.0
11	.	0.003	0.025	0.015	.	0.50	8.0
2	.	.	.	.	.	.	.
9	.	0.040	0.078	0.044	.	.	3.0
12	.	0.003	0.025	0.015	.	2.00	6.0
38	.	0.003	0.025	0.049	.	2.00	6.0
9	.	0.003	0.025	0.015	.	2.00	3.0
3	.	.	.	0.033	.	.	7.0

6	.	0.003	0.137	0.055	.	2.00	1.0
8	.	0.080	0.025	0.015	.	2.00	10.0

BASEFLOW CORRELATION DATA

CREEK	DATE	TIME	Q	TEMP	COND	TURB	PH	DO
R1	8/29/94	1050	4.0	22.4	123	2.1	7.47	6.8
R1	10/17/94	1000	0.5	16.8	183	0.9	8.30	7.6
R1	5/15/95	1610	118.0	18.9	53	7.0	8.29	9.3
R1	8/14/95	930	1.0	25.1	165	1.2	7.21	6.4
R1	10/2/95	920	1.0	17.1	193	1.8	7.45	9.2
R1	11/27/95	940	2.4	10.9	134	1.5	7.09	12.4
R1	1/8/96	1000	37.0	1.8	80	0.3	6.83	15.0
R1	7/22/96	910	1.6	23.7	123	1.2	7.41	6.0
R1	1/27/97	930	114.0	5.9	48	8.0	7.25	14.1
R1	6/9/97	930	11.8	18.0	76	2.5	7.35	8.1
CALF	4/10/85	1431	.	16.0	218	.	.	.
CALF	5/13/85	1515	.	22.0	245	.	.	.
CALF	5/30/85	1100	.	19.8	248	.	.	.
CALF	6/12/85	1345	.	22.7	270	.	.	.
CALF	6/26/85	1056	.	23.0	290	.	.	.
CALF	7/19/85	1015	.	22.0	279	.	.	.
CALF	8/2/85	1245	.	24.0	302	.	.	.
CALF	8/21/85	1350	.	25.8	312	.	.	.
CALF	9/1/85	1500	.	28.0	330	.	.	.
CALF	9/22/85	1400	.	25.0	302	.	.	.
CALF	6/18/87	1510	.	23.0	275	.	7.91	.
CALF	7/14/87	1415	.	26.0	320	.	7.96	.
CALF	8/6/87	1347	.	27.0	320	.	7.95	.
CALF	9/20/87	1130	.	22.0	300	.	7.21	.
CALF	6/14/88	1030	.	21.0	.	1.0	7.79	.
CALF	6/29/88	1320	.	23.2	310	17.5	7.70	.
CALF	7/23/88	1300	.	24.5	290	2.4	7.69	.
CALF	8/18/88	1445	.	24.1	325	2.6	7.84	9.3
CALF	6/7/89	1400	.	18.5	228	1.4	.	9.3
CALF	6/21/89	1000	.	21.8	225	1.4	7.82	8.0
CALF	7/10/89	1340	.	26.0	275	1.5	7.75	9.2
CALF	7/25/89	1300	.	20.8	318	1.4	7.81	9.2
CALF	8/8/89	1400	.	22.6	282	2.1	7.78	8.4
CALF	8/23/89	1250	.	23.8	315	2.7	7.75	8.7
CALF	9/6/89	1340	.	25.2	290	2.5	7.77	8.6
CALF	9/25/89	1300	.	19.0	272	2.3	7.81	9.6

FCOLI	TKN	NO3	NH3	OPO4	TP	CL	SO4
12	.	0.003	0.025	0.045	.	2.00	5.0
9	.	0.060	0.025	0.015	.	3.00	8.0
6	.	0.003	0.025	0.033	.	1.27	6.9
1	.	0.003	0.057	0.034	.	1.63	1.4
14	.	0.036	0.025	0.015	.	2.79	10.0
2	.	0.003	0.025	0.015	.	2.91	12.0
0	.	0.003	0.084	0.015	.	1.66	7.2
8	.	0.227	0.025	0.047	.	1.40	.
2	.	.	.	.	.	.	.
4	.	.	.	.	.	.	.
12	.	.	.	.	.	.	.
72	.	.	.	.	.	.	.
0	.	.	.	.	.	.	.
4	.	.	.	.	.	.	.
6	.	.	.	.	.	.	.
14	.	.	.	.	.	.	.
18	.	.	.	.	.	.	.
10	.	.	.	.	.	.	.
0	.	.	.	.	.	.	.
0	.	.	.	.	.	.	.
28	.	.	.	.	.	.	.
14	.	.	.	.	.	.	.
84	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
12	.	.	.	.	.	.	.
8	.	.	.	.	.	.	.
8	.	.	.	.	.	.	.
20	.	.	.	.	.	.	.
10	0.1	0.130	0.020	.	0.024	.	.
20	.	.	.	.	.	.	.
12	0.4	0.300	0.100	.	0.029	.	.
0	.	.	.	.	.	.	.
0	0.2	0.130	0.050	.	0.034	.	.
2	.	.	.	.	.	.	.

46	0.1	0.180	0.030	.	0.030	.	.
12	0.1	0.190	0.070	.	0.043	.	.

BASEFLOW CORRELATION DATA

CREEK	DATE	TIME	Q	TEMP	COND	TURB	PH	DO
CALF	4/4/90	1058	.	11.1	.	1.7	8.29	11.3
CALF	5/14/90	1405	.	17.0	240	2.7	8.01	9.4
CALF	6/25/90	1045	.	22.2	263	1.9	7.67	7.5
CALF	7/18/90	1405	.	25.4	305	1.8	7.80	9.4
CALF	8/24/90	1355	.	26.9	315	2.0	7.78	8.2
CALF	9/17/90	1500	.	22.0	285	4.2	7.69	6.3
CALF	10/12/90	1530	.	18.2	252	3.1	7.63	8.2
CALF	11/8/90	1500	.	14.3	232	0.5	8.07	9.4
CALF	12/5/90	1132	.	11.3	195	2.5	8.05	9.7
CALF	2/28/91	1135	.	10.0	186	1.2	8.29	12.5
CALF	3/8/91	1215	.	12.2	190	0.6	8.22	11.6
CALF	4/24/91	1450	.	18.9	223	2.5	8.04	9.7
CALF	5/22/91	1215	.	19.0	235	3.2	8.10	7.5
CALF	6/17/91	1220	.	23.2	282	0.6	7.82	8.3
CALF	7/25/91	1250	.	22.5	292	0.8	7.79	7.0
CALF	8/22/91	1200	.	24.0	292	1.4	7.96	9.2
CALF	9/19/91	1125	.	20.3	280	1.4	7.87	9.4
CALF	10/15/91	1330	.	19.0	274	1.3	7.82	9.6
CALF	11/25/91	1400	.	12.0	180	2.6	7.88	10.2
CALF	12/11/91	1140	.	12.8	181	2.2	8.19	11.4
CALF	1/6/92	1320	32.8	11.5	185	1.2	8.49	12.7
CALF	4/6/92	1245	22.4	13.0	200	1.4	8.13	11.1
CALF	6/1/92	1500	29.7	18.7	215	2.4	7.98	9.6
CALF	7/21/92	950	9.9	21.8	295	1.1	.	8.7
CALF	9/14/92	1300	5.1	24.0	310	2.2	7.94	11.2
CALF	11/2/92	1315	9.1	18.3	273	1.2	7.80	9.9
CALF	2/2/93	1530	31.0	9.5	178	0.9	8.23	11.9
CALF	4/26/93	1015	56.3	13.4	208	1.6	8.21	10.2
CALF	7/13/93	1100	6.9	23.8	302	4.2	7.42	8.3
CALF	10/18/93	1050	4.9	18.0	268	1.4	7.73	7.5
CALF	1/10/94	1140	9.1	8.5	185	0.6	8.24	11.8
CALF	3/21/94	1305	66.9	15.1	201	2.5	8.40	11.5
CALF	5/16/94	1220	28.4	18.9	240	1.2	8.16	9.7
CALF	7/11/94	1540	5.1	25.4	301	1.0	8.06	10.7
CALF	9/19/94	1030	1.3	21.0	281	4.3	7.67	13.8
CALF	1/9/95	1320	35.5	8.4	263	0.9	8.09	.

FCOLI	TKN	NO3	NH3	OPO4	TP	CL	SO4
0	.	.	.	.	.	.	.
24	.	.	.	.	.	.	.
12	.	.	.	.	.	.	.
12	.	.	.	.	.	.	.
18	.	.	.	.	.	.	.
29	.	.	.	.	.	.	.
66	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.
64	.	.	.	.	.	.	.
0	.	.	.	.	.	.	.
0	.	.	.	.	.	.	.
20	.	.	.	.	.	.	.
156	.	.	.	.	.	.	.
16	.	.	.	.	.	.	.
36	.	.	.	.	.	.	.
32	.	.	.	.	.	.	.
20	.	.	.	.	.	.	.
8	.	.	.	.	.	.	.
44	.	.	.	.	.	.	.
90	.	.	.	.	.	.	.
23	.	0.240	0.025	0.015	.	4.00	13.0
14	.	0.090	0.090	0.015	0.040	4.00	12.0
132	.	0.080	0.060	0.015	0.001	3.00	11.0
24	.	0.230	0.082	0.060	0.001	4.00	10.0
38	.	0.440	0.025	0.040	0.047	5.00	10.0
20	.	0.080	0.025	0.015	0.001	5.00	11.0
0	.	0.200	0.025	0.015	.	4.00	13.0
28	.	.	0.025	.	.	.	.
2	.	0.280	0.025	0.015	.	5.00	10.0
47	.	0.003	0.025	0.015	.	0.50	0.5
2	.	0.140	0.025	0.015	.	5.00	11.0
11	.	0.330	0.118	0.090	.	4.00	10.0
12	.	.	0.025	.	.	.	.
6	.	0.310	0.025	0.015	.	4.00	9.0

15	.	0.190	0.102	0.060	.	6.00	11.0
1	.	0.213	0.025	0.015	.	4.00	11.0

BASEFLOW CORRELATION DATA

CREEK	DATE	TIME	Q	TEMP	COND	TURB	PH	DO	FCOLI	TKN	NO3	NH3	OPO4	TP	CL	SO4
CALF	4/10/95	1020	16.5	16.3	287	0.6	7.45	8.5	10	.	0.179	0.025	0.034	.	3.81	11.0
CALF	7/10/95	1145	14.3	23.1	314	1.3	7.56	9.8	65	.	0.284	0.112	0.015	.	4.97	12.0
CALF	9/4/95	1105	2.5	21.9	320	2.5	7.28	5.3	159	.	0.196	0.025	0.015	.	4.72	12.0
CALF	10/30/95	1345	9.2	16.4	317	1.3	7.76	12.0	105	.	1.275	0.088	0.015	.	5.17	10.0
CALF	2/5/96	1010	16.5	4.8	253	0.5	7.70	16.4	16	.	0.502	0.025	0.033	.	4.08	.
CALF	8/12/96	1040	3.1	22.3	304	1.0	7.79	8.5	26	.	0.227	0.025	0.048	.	5.64	.
CALF	10/21/96	1340	7.4	17.5	324	2.3	7.20	7.1	17	.	0.523	0.025	0.068	.	5.02	.
CALF	1/6/97	1100	29.1	9.7	279	0.5	8.57	12.3	5	.	.	.	.	.	.	.
BEAR	4/10/85	1516	.	16.2	171	.	.	.	8	.	.	.	.	.	.	.
BEAR	5/13/85	1605	.	23.3	215	.	.	.	30	.	.	.	.	.	.	.
BEAR	5/27/85	1520	.	23.9	238	.	.	.	22	.	.	.	.	.	.	.
BEAR	6/12/85	1045	.	21.9	238	.	.	.	48	.	.	.	.	.	.	.
BEAR	6/26/85	1330	.	27.0	280	.	.	.	44	.	.	.	.	.	.	.
BEAR	7/19/85	1230	.	26.0	270	.	.	.	28	.	.	.	.	.	.	.
BEAR	8/4/85	1350	.	25.0	250	.	.	.	4	.	.	.	.	.	.	.
BEAR	8/22/85	1510	.	26.0	240	.	.	.	20	.	.	.	.	.	.	.
BEAR	9/2/85	1120	.	27.0	255	.	.	.	14	.	.	.	.	.	.	.
BEAR	6/17/87	1110	.	25.0	240	.	8.15	.	42	.	.	.	.	.	.	.
BEAR	7/15/87	1340	.	26.0	250	.	8.25	.	10	.	.	.	.	.	.	.
BEAR	8/12/87	1440	.	29.5	230	.	8.71	.	22	.	.	.	.	.	.	.
BEAR	9/20/87	1340	.	22.0	240	.	8.89	.	.	.	.	.	.	.	.	.
BEAR	6/14/88	1213	.	29.0	.	0.9	7.82	.	20	.	.	.	.	.	.	.
BEAR	7/5/88	1015	.	24.8	304	1.1	7.53	.	16	.	.	.	.	.	.	.
BEAR	7/29/88	1035	.	26.1	268	0.5	7.47	7.1	16	.	.	.	.	.	.	.
BEAR	8/8/88	1350	.	27.8	255	0.5	8.10	8.1	14	.	.	.	.	.	.	.
BEAR	9/4/88	1020	.	21.0	208	0.5	7.45	8.1	42	.	.	.	.	.	.	.
BEAR	6/7/89	1200	.	20.9	210	1.1	.	10.0	10	.	.	.	.	.	.	.
BEAR	6/21/89	1100	.	24.0	182	2.0	8.32	9.0	22	.	.	.	.	.	.	.
BEAR	7/11/89	1445	.	29.7	290	1.5	8.54	9.4	.	.	.	.	.	.	.	.
BEAR	7/26/89	1400	.	23.1	275	3.7	8.44	9.5	20	.	.	.	.	.	.	.
BEAR	8/9/89	1230	.	21.6	230	1.6	8.27	10.0	16	.	.	.	.	.	.	.
BEAR	8/22/89	1330	.	24.8	278	1.5	8.25	9.3	16	.	.	.	.	.	.	.
BEAR	9/11/89	1130	.	22.5	245	1.2	8.05	8.3	14	.	.	.	.	.	.	.
BEAR	9/26/89	1300	.	16.1	218	0.9	.	10.1	20	.	.	.	.	.	.	.
BEAR	4/4/90	1258	.	12.5	.	2.5	8.45	11.5	20	0.100	0.080	0.020	.	0.020	.	.
BEAR	5/14/90	1220	.	15.0	178	2.8	8.27	9.9	36	.	.	.	.	.	.	.
									10	0.300	0.040	0.060	.	0.001	.	.
									15	.	.	.	.	.	.	.
									14	0.100	0.070	0.070	.	0.022	.	.
									18	.	.	.	.	.	.	.
									18	0.100	0.040	0.040	.	0.024	.	.
									4	0.025	0.030	0.010	.	0.014	.	.

6 : : : : : : :
26 : : : : : : :

BASEFLOW CORRELATION DATA

CREEK	DATE	TIME	Q	TEMP	COND	TURB	PH	DO
BEAR	6/21/90	1000	.	24.3	251	1.3	7.50	7.3
BEAR	7/19/90	1155	.	26.8	270	0.7	8.19	9.2
BEAR	8/21/90	1210	.	28.3	265	1.1	8.18	10.5
BEAR	9/17/90	1250	.	22.8	240	1.4	8.17	8.2
BEAR	10/16/90	1030	.	17.2	238	1.5	8.11	9.2
BEAR	11/1/90	1130	49.7	14.1	225	0.6	8.33	11.5
BEAR	12/12/90	1440	21.3	12.5	185	1.0	8.71	12.3
BEAR	2/28/91	1310	.	11.5	150	.	8.93	13.6
BEAR	3/11/91	1315	.	14.4	162	1.3	8.99	12.8
BEAR	6/17/91	1336	.	26.5	255	0.8	8.34	10.3
BEAR	7/25/91	1440	.	2.4	240	1.0	8.10	7.7
BEAR	8/22/91	1400	.	25.3	250	0.7	8.48	9.4
BEAR	9/19/91	945	.	17.0	225	0.6	8.10	8.9
BEAR	10/8/91	1345	.	16.7	215	0.6	8.17	10.6
BEAR	11/25/91	1215	.	9.3	125	2.9	8.18	12.5
BEAR	12/11/91	1310	.	11.9	133	4.1	8.31	11.4
BEAR	1/6/92	1000	75.8	10.1	150	1.6	8.52	11.4
BEAR	4/6/92	1345	39.3	13.9	174	1.4	8.58	12.4
BEAR	6/9/92	1010	100.0	20.5	187	2.6	8.01	8.7
BEAR	7/21/92	745	10.1	25.2	270	0.9	.	6.9
BEAR	9/14/92	1050	9.4	22.0	258	1.3	8.18	9.1
BEAR	11/2/92	1420	16.8	15.7	243	0.6	8.22	10.6
BEAR	2/8/93	1330	45.0	10.5	160	1.0	8.80	13.2
BEAR	4/26/93	1140	122.5	16.4	168	2.8	8.55	11.0
BEAR	7/19/93	1040	9.9	27.5	290	1.5	8.14	8.8
BEAR	10/19/93	1430	10.4	18.0	248	1.0	8.22	10.4
BEAR	12/13/93	940	67.0	8.8	142	2.9	8.14	11.2
BEAR	1/10/94	938	15.3	4.8	150	0.8	8.35	14.8
BEAR	3/21/94	1340	128.8	15.8	165	3.3	8.74	11.8
BEAR	5/16/94	1100	54.8	18.8	181	1.5	8.39	11.0
BEAR	7/11/94	1230	9.5	25.6	254	0.6	8.38	8.4
BEAR	9/19/94	1320	7.2	22.2	249	0.7	8.45	9.6
BEAR	1/9/95	1110	78.7	5.3	207	3.2	8.13	.
BEAR	4/10/95	1400	34.8	20.1	233	1.3	8.22	10.3
BEAR	7/10/95	1525	25.0	29.1	265	1.4	8.17	10.8
BEAR	9/4/95	1330	5.2	24.2	260	2.0	7.85	8.3

FCOLI	TKN	NO3	NH3	OPO4	TP	CL	SO4
16	.	.	.	.	.	.	.
28	.	.	.	.	.	.	.
14	.	.	.	.	.	.	.
405	.	.	.	.	.	.	.
16	.	.	.	.	.	.	.
36	.	.	.	.	.	.	.
0	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.
6	.	.	.	.	.	.	.
24	.	.	.	.	.	.	.
0	.	.	.	.	.	.	.
30	.	.	.	.	.	.	.
0	.	.	.	.	.	.	.
28	.	.	.	.	.	.	.
46	.	.	.	.	.	.	.
37	.	0.260	0.025	0.015	.	3.00	11.0
11	.	0.003	0.025	0.015	0.030	4.00	11.0
53	.	0.030	0.025	0.015	0.030	3.00	10.0
10	.	0.100	0.093	0.015	0.001	4.00	10.0
44	.	0.070	0.025	0.015	0.001	5.00	9.0
18	.	0.220	0.025	0.015	0.001	5.00	11.0
0	.	0.050	0.025	0.015	.	4.00	11.0
24	.	.	.	.	.	.	.
1	.	0.050	0.072	0.015	.	6.00	.
9	.	.	0.025	.	.	5.54	11.2
32	.	0.280	0.025	0.015	.	4.00	11.0
11	.	0.040	0.025	0.015	.	5.00	11.0
1	.	0.330	0.055	0.040	.	4.00	9.0
31	.	0.120	0.025	0.015	.	5.00	7.0
20	.	0.080	0.025	0.015	.	4.15	8.4
12	.	0.070	0.124	0.040	.	10.00	10.0
11	.	0.180	0.025	0.015	.	3.75	10.0
24	.	0.032	0.025	0.015	.	3.97	11.0

20	.	0.102	0.069	0.015	.	5.12	5.7
33	.	0.003	0.025	0.015	.	5.97	8.6

BASEFLOW CORRELATION DATA

CREEK	DATE	TIME	Q	TEMP	COND	TURB	PH	DO
BEAR	10/30/95	1140	18.8	13.2	253	5.8	7.92	11.9
BEAR	2/5/96	1330	37.2	2.6	216	1.5	8.55	17.8
BEAR	8/12/96	1330	6.5	26.2	255	1.3	8.33	10.2
BEAR	10/21/96	1200	19.3	16.3	291	0.9	7.65	9.3
BEAR	1/6/97	1400	60.5	8.6	218	0.9	.	15.3
TOMAHAWK	4/12/85	1053	.	15.9	255	.	.	.
TOMAHAWK	4/24/85	1330	.	17.5	238	.	.	9.0
TOMAHAWK	5/17/85	1130	.	23.0	285	.	.	.
TOMAHAWK	5/30/85	1215	.	19.8	290	.	.	.
TOMAHAWK	6/9/85	955	.	21.0	310	.	.	.
TOMAHAWK	6/26/85	1520	.	26.1	320	.	.	.
TOMAHAWK	7/16/85	1315	.	25.0	320	.	.	.
TOMAHAWK	8/2/85	1205	.	25.0	320	.	.	.
TOMAHAWK	8/21/85	1315	.	24.5	315	.	.	.
TOMAHAWK	9/2/85	1000	.	24.0	315	.	.	.
TOMAHAWK	9/22/85	1245	.	23.0	310	.	.	.
TOMAHAWK	6/16/87	1430	.	24.0	298	.	8.31	.
TOMAHAWK	7/14/87	1315	.	25.0	330	.	8.13	.
TOMAHAWK	7/30/87	1110	.	26.5	340	.	8.35	.
TOMAHAWK	8/6/87	1242	.	27.0	340	.	8.25	.
TOMAHAWK	8/20/87	1310	.	27.0	335	.	8.21	.
TOMAHAWK	9/20/87	1340	.	21.0	320	.	7.76	.
TOMAHAWK	6/14/88	1700	.	27.0	.	0.6	8.12	.
TOMAHAWK	7/5/88	1130	.	23.6	363	0.5	7.83	.
TOMAHAWK	7/29/88	1130	.	23.9	325	0.5	7.92	8.4
TOMAHAWK	8/8/88	1300	.	26.7	325	0.5	8.07	8.4
TOMAHAWK	6/7/89	1100	.	18.6	292	0.6	.	9.6
TOMAHAWK	6/21/89	1200	.	24.0	313	0.7	8.33	9.8
TOMAHAWK	7/11/89	1340	.	27.0	365	1.3	8.39	9.1
TOMAHAWK	7/26/89	1315	.	21.0	335	1.9	8.27	9.6
TOMAHAWK	8/9/89	1515	.	23.0	302	0.9	8.36	9.4
TOMAHAWK	8/22/89	1230	.	23.3	338	1.2	8.23	9.2
TOMAHAWK	9/11/89	1230	.	21.9	285	0.9	8.20	9.0
TOMAHAWK	9/26/89	1200	.	15.1	272	0.5	8.22	9.8
TOMAHAWK	4/4/90	1339	.	16.0	.	0.7	8.55	11.4
TOMAHAWK	5/14/90	1125	.	15.0	255	1.8	8.22	9.6

FCOLI	TKN	NO3	NH3	OPO4	TP	CL	SO4
168	.	0.669	0.025	0.015	.	4.52	8.8
1	.	0.402	0.025	0.015	.	4.98	.
4	.	0.077	0.025	0.015	.	6.39	.
48	.	0.354	0.025	0.015	.	5.58	.
1	.	.	.	.	.	.	.
32	.	.	.	.	.	.	.
62	.	.	.	.	.	.	.
114	.	.	.	.	.	.	.
78	.	.	.	.	.	.	.
88	.	.	.	.	.	.	.
12	.	.	.	.	.	.	.
14	.	.	.	.	.	.	.
12	.	.	.	.	.	.	.
24	.	.	.	.	.	.	.
24	.	.	.	.	.	.	.
14	.	.	.	.	.	.	.
6	.	.	.	.	.	.	.
54	.	.	.	.	.	.	.
0	.	.	.	.	.	.	.
56	.	.	.	.	.	.	.
0	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
34	.	.	.	.	.	.	.
60	.	.	.	.	.	.	.
64	.	.	.	.	.	.	.
87	.	.	.	.	.	.	.
38	0.100	0.130	0.020	.	0.003	.	.
44	.	.	.	.	.	.	.
54	0.200	0.110	0.070	.	0.001	.	.
45	.	.	.	.	.	.	.
22	0.025	0.060	0.110	.	0.001	.	.
26	.	.	.	.	.	.	.
48	0.100	0.070	0.140	.	0.003	.	.
22	0.025	0.070	0.010	.	0.003	.	.

12 . . . . . .
84 . . . . . .

BASEFLOW CORRELATION DATA

CREEK	DATE	TIME	Q	TEMP	COND	TURB	PH	DO
TOMAHAWK	6/21/90	1130	.	21.6	335	0.6	8.06	8.1
TOMAHAWK	7/18/90	1225	.	24.6	322	0.6	8.02	8.8
TOMAHAWK	8/24/90	1300	.	27.1	340	1.0	8.16	8.9
TOMAHAWK	10/1/90	1200	.	19.8	312	1.7	8.24	9.8
TOMAHAWK	10/16/90	1200	.	17.8	308	0.8	8.22	9.8
TOMAHAWK	10/23/90	1200	.	13.7	270	0.4	8.39	10.3
TOMAHAWK	11/19/90	1115	.	14.0	288	1.2	8.24	11.9
TOMAHAWK	1/29/91	1130	.	9.5	252	0.5	8.41	11.4
TOMAHAWK	2/26/91	1100	.	10.0	239	0.4	8.27	12.8
TOMAHAWK	3/19/91	1230	.	15.0	170	0.9	8.35	11.4
TOMAHAWK	4/23/91	1145	.	15.5	268	1.5	8.20	9.3
TOMAHAWK	5/14/91	1145	.	20.3	310	0.5	8.45	9.9
TOMAHAWK	6/25/91	1150	.	22.3	320	0.7	8.26	8.8
TOMAHAWK	7/23/91	1143	.	26.0	338	0.7	8.17	10.1
TOMAHAWK	8/27/91	1230	.	25.0	332	1.8	8.21	9.8
TOMAHAWK	9/24/91	1150	.	18.5	292	0.6	.	9.6
TOMAHAWK	10/22/91	1015	.	13.9	290	0.4	8.09	10.6
TOMAHAWK	11/19/91	1240	.	14.7	240	2.6	.	9.8
TOMAHAWK	12/17/91	1210	.	9.7	239	0.5	8.45	13.3
TOMAHAWK	1/7/92	920	27.6	9.9	248	0.6	8.34	11.9
TOMAHAWK	3/3/92	1235	21.2	14.2	270	0.7	8.46	10.3
TOMAHAWK	5/12/92	1333	13.8	23.0	311	1.5	8.37	10.5
TOMAHAWK	7/7/92	1255	9.6	26.5	344	0.4	8.20	9.5
TOMAHAWK	9/1/92	1200	5.6	22.5	329	0.9	8.09	9.6
TOMAHAWK	2/2/93	1345	29.0	9.7	237	0.4	8.52	11.6
TOMAHAWK	3/23/93	1015	25.8	10.7	249	0.5	.	12.2
TOMAHAWK	6/22/93	1030	14.0	21.5	335	1.3	8.28	8.6
TOMAHAWK	7/13/93	1330	7.9	28.5	361	3.5	8.27	9.3
TOMAHAWK	10/19/93	934	6.8	17.8	305	1.2	7.86	7.4
TOMAHAWK	11/23/93	1252	25.0	13.0	255	0.7	8.31	10.5
TOMAHAWK	2/8/94	940	28.1	10.2	249	0.5	8.27	10.8
TOMAHAWK	3/21/94	1150	54.6	15.0	269	0.7	8.55	11.1
TOMAHAWK	5/16/94	1425	23.7	23.0	330	1.1	8.49	10.3
TOMAHAWK	7/11/94	1030	4.7	20.5	363	0.8	8.16	8.5
TOMAHAWK	9/19/94	1520	0.3	23.2	320	1.0	8.34	10.0
TOMAHAWK	12/13/94	1010	87.0	8.5	343	1.2	8.19	11.4

FCOLI	TKN	NO3	NH3	OPO4	TP	CL	SO4
348	.	.	.	.	.	.	.
60	.	.	.	.	.	.	.
104	.	.	.	.	.	.	.
94	.	.	.	.	.	.	.
398	.	.	.	.	.	.	.
51	0.025	0.350	0.025	0.015	0.001	5.00	6.0
127	0.280	0.220	0.070	0.015	0.001	7.00	91.0
64	.	.	0.090	0.015	.	0.50	8.0
8	.	0.390	0.025	0.015	.	.	9.0
36	.	0.210	0.025	0.015	.	.	10.0
4	.	0.330	0.025	0.015	.	.	6.0
418	.	0.090	0.050	0.015	.	.	5.0
410	.	0.170	0.025	0.015	.	.	4.0
296	.	0.090	0.025	0.015	.	.	4.0
48	.	0.110	0.025	0.070	0.001	.	3.0
240	.	0.130	0.090	0.015	0.050	.	6.0
140	.	0.100	0.025	0.015	0.001	.	7.0
260	.	0.680	0.025	0.015	.	.	4.0
12	.	0.340	0.080	0.015	.	.	8.0
11	.	0.460	0.025	0.015	.	3.00	8.0
1	.	0.330	0.025	0.015	0.001	4.00	8.0
110	.	0.100	0.070	0.015	0.001	4.00	7.0
203	.	0.090	0.025	0.015	0.001	3.00	6.0
44	.	0.130	0.025	0.015	0.001	5.00	6.0
3	.	0.390	0.025	0.015	.	4.00	12.0
41	.	.	.	.	.	.	.
213	.	0.210	0.072	0.015	.	.	4.0
104	.	0.210	0.025	0.015	.	4.00	8.0
146	.	.	0.025	.	.	5.06	6.5
13	.	0.640	0.025	0.015	.	4.00	8.0
114	.	.	.	0.015	.	.	8.0
14	.	0.490	0.052	0.104	.	5.00	8.0
26	.	0.290	0.025	0.015	.	4.00	6.0
66	.	0.220	0.025	0.015	.	5.00	6.0

3	.	0.142	0.095	0.015	.	5.01	7.6
.	.	0.672	0.025	0.015	.	3.44	5.3

BASEFLOW CORRELATION DATA

CREEK	DATE	TIME	Q	TEMP	COND	TURB	PH	DO
TOMAHAWK	1/9/95	1420	21.2	8.2	348	0.4	8.22	.
TOMAHAWK	4/10/95	1515	17.2	19.2	338	0.7	8.14	9.2
TOMAHAWK	8/14/95	1420	5.3	28.2	344	1.2	7.96	9.9
TOMAHAWK	10/2/95	1445	3.9	19.4	350	0.6	8.04	12.9
TOMAHAWK	11/27/95	1620	4.4	12.0	355	0.8	8.13	11.7
TOMAHAWK	1/22/96	900	23.5	5.2	353	1.0	7.07	21.5
TOMAHAWK	12/10/96	1120	58.0	12.0	358	2.5	8.18	12.0
TOMAHAWK	5/5/97	1110	18.5	16.3	356	0.6	8.43	10.5

FCOLI	TKN	NO3	NH3	OPO4	TP	CL	SO4
2	.	0.445	0.025	0.015	.	4.07	5.9
41	.	0.203	0.025	0.015	.	3.82	6.4
44	.	0.132	0.025	0.057	.	5.01	5.3
30	.	0.126	0.025	0.015	.	5.41	7.0
63	.	0.113	0.025	0.015	.	5.55	12.0
31	.	0.690	0.025	0.015	.	4.23	.
7	.	0.675	0.025	0.015	.	4.02	.
159	.	.	.	.	.	.	.

Table O2. Simple statistics and Pearson correlation coefficients and probability values for R1 for base flow 1985 to mid-1997.

BASEFLOW CORRELATION DATA
CORRELATIONS FOR R1-1 STREAM

Correlation Analysis

15 'VAR' Variables: TIME Q TEMP COND TURB PH
DO FCOLI TKN NO3 NH3 OPO4
TP CL SO4

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
TIME	82	1123	283.96985	92115	650.00000	2010
Q	24	48.17083	58.04926	1156	0.50000	213.00000
TEMP	81	15.51728	7.53591	1257	1.80000	30.10000
COND	80	92.80000	52.25289	7424	17.00000	193.00000
TURB	56	2.90714	2.54028	162.80000	0.10000	12.00000
PH	62	7.73145	0.42014	479.35000	6.81000	8.92000
DO	67	9.40149	2.10097	629.90000	4.60000	15.10000
FCOLI	81	9.87654	30.71864	800.00000	0	272.00000
TKN	27	0.32685	0.32122	8.82500	0.02500	1.39000
NO3	56	0.04211	0.07326	2.35800	0.00300	0.45000
NH3	44	0.04900	0.04395	2.15600	0.01000	0.22000
OPO4	44	0.03082	0.02302	1.35600	0.00300	0.09300
TP	35	0.02326	0.02288	0.81400	0.00100	0.08000
CL	31	2.71484	2.68953	84.16000	0.50000	16.00000
SO4	40	5.21250	2.60967	208.50000	1.00000	12.00000

BASEFLOW CORRELATION DATA
CORRELATIONS FOR R1-1 STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	TIME	Q	TEMP	COND	TURB
TIME	1.00000 0.0 82	0.18963 0.3748 24	0.17913 0.1096 81	0.06160 0.5873 80	0.12128 0.3732 56
Q	0.18963 0.3748 24	1.00000 0.0 24	-0.56593 0.0039 24	-0.72718 0.0001 24	0.58558 0.0026 24
TEMP	0.17913 0.1096 81	-0.56593 0.0039 24	1.00000 0.0 81	0.71914 0.0001 80	-0.15326 0.2594 56
COND	0.06160 0.5873 80	-0.72718 0.0001 24	0.71914 0.0001 80	1.00000 0.0 80	-0.50972 0.0001 55
TURB	0.12128 0.3732 56	0.58558 0.0026 24	-0.15326 0.2594 56	-0.50972 0.0001 55	1.00000 0.0 56
PH	0.36278 0.0038 62	0.23708 0.2761 23	0.16667 0.1954 62	0.11461 0.3791 61	-0.14755 0.2870 54
DO	-0.02134 0.8639 67	0.41076 0.0462 24	-0.72967 0.0001 66	-0.50639 0.0001 66	0.06921 0.6190 54
FCOLI	-0.11020 0.3274 81	-0.06579 0.7655 23	0.13777 0.2230 80	0.05349 0.6396 79	0.34023 0.0110 55
TKN	0.45597 0.0168 27	. . 0	-0.12632 0.5301 27	0.01363 0.9473 26	0.29513 0.2345 18
NO3	-0.08499 0.5334 56	-0.34320 0.1385 20	0.20569 0.1283 56	0.07717 0.5755 55	-0.21599 0.1541 45
NH3	0.19639 0.2014 44	0.12717 0.6039 19	-0.15862 0.3038 44	-0.16562 0.2826 44	0.14191 0.3640 43
OPO4	-0.09603 0.5352 44	-0.15015 0.5159 21	0.16365 0.2885 44	-0.01242 0.9370 43	-0.11921 0.4579 41
TP	-0.23521 0.1738 35	0.99396 0.0700 3	-0.31088 0.0691 35	-0.28774 0.0989 34	0.35772 0.0938 23
CL	0.16316 0.3805 31	-0.36795 0.1212 19	-0.10303 0.5813 31	-0.07835 0.6807 30	0.21698 0.2410 31
SO4	0.02105 0.8974 40	-0.22241 0.3460 20	-0.10292 0.5274 40	0.29309 0.0702 39	-0.16160 0.3191 40

BASEFLOW CORRELATION DATA
CORRELATIONS FOR R1-1 STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	PH	DO	FCOLI	TKN	NO3
TIME	0.36278 0.0038 62	-0.02134 0.8639 67	-0.11020 0.3274 81	0.45597 0.0168 27	-0.08499 0.5334 56
Q	0.23708 0.2761 23	0.41076 0.0462 24	-0.06579 0.7655 23	. . 0	-0.34320 0.1385 20
TEMP	0.16667 0.1954 62	-0.72967 0.0001 66	0.13777 0.2230 80	-0.12632 0.5301 27	0.20569 0.1283 56
COND	0.11461 0.3791 61	-0.50639 0.0001 66	0.05349 0.6396 79	0.01363 0.9473 26	0.07717 0.5755 55
TURB	-0.14755 0.2870 54	0.06921 0.6190 54	0.34023 0.0110 55	0.29513 0.2345 18	-0.21599 0.1541 45
PH	1.00000 0.0 62	-0.09034 0.5079 56	-0.02590 0.8430 61	-0.17877 0.4260 22	-0.10327 0.4897 47
DO	-0.09034 0.5079 56	1.00000 0.0 67	-0.30825 0.0118 66	-0.06582 0.7654 23	-0.25579 0.0672 52
FCOLI	-0.02590 0.8430 61	-0.30825 0.0118 66	1.00000 0.0 81	0.15278 0.4468 27	-0.03964 0.7739 55
TKN	-0.17877 0.4260 22	-0.06582 0.7654 23	0.15278 0.4468 27	1.00000 0.0 27	-0.18469 0.3664 26
NO3	-0.10327 0.4897 47	-0.25579 0.0672 52	-0.03964 0.7739 55	-0.18469 0.3664 26	1.00000 0.0 56
NH3	-0.03183 0.8414 42	0.03957 0.7987 44	-0.08958 0.5631 44	0.54706 0.0230 17	-0.02998 0.8487 43
OPO4	0.08876 0.5860 40	-0.27764 0.0750 42	0.10181 0.5159 43	-0.28990 0.3607 12	-0.03863 0.8081 42
TP	-0.51924 0.0055 27	-0.04189 0.8260 30	0.05338 0.7643 34	0.26107 0.1884 27	0.06244 0.7257 34
CL	-0.08058 0.6721 30	0.00881 0.9631 30	-0.10680 0.5743 30	0.35592 0.2562 12	0.04241 0.8208 31
SO4	-0.15131 0.3578 39	0.16264 0.3226 39	-0.07073 0.6688 39	0.06534 0.8401 12	0.16529 0.3213 38

BASEFLOW CORRELATION DATA
CORRELATIONS FOR R1-1 STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	NH3	OPO4	TP	CL	SO4
TIME	0.19639 0.2014 44	-0.09603 0.5352 44	-0.23521 0.1738 35	0.16316 0.3805 31	0.02105 0.8974 40
Q	0.12717 0.6039 19	-0.15015 0.5159 21	0.99396 0.0700 3	-0.36795 0.1212 19	-0.22241 0.3460 20
TEMP	-0.15862 0.3038 44	0.16365 0.2885 44	-0.31088 0.0691 35	-0.10303 0.5813 31	-0.10292 0.5274 40
COND	-0.16562 0.2826 44	-0.01242 0.9370 43	-0.28774 0.0989 34	-0.07835 0.6807 30	0.29309 0.0702 39
TURB	0.14191 0.3640 43	-0.11921 0.4579 41	0.35772 0.0938 23	0.21698 0.2410 31	-0.16160 0.3191 40
PH	-0.03183 0.8414 42	0.08876 0.5860 40	-0.51924 0.0055 27	-0.08058 0.6721 30	-0.15131 0.3578 39
DO	0.03957 0.7987 44	-0.27764 0.0750 42	-0.04189 0.8260 30	0.00881 0.9631 30	0.16264 0.3226 39
FCOLI	-0.08958 0.5631 44	0.10181 0.5159 43	0.05338 0.7643 34	-0.10680 0.5743 30	-0.07073 0.6688 39
TKN	0.54706 0.0230 17	-0.28990 0.3607 12	0.26107 0.1884 27	0.35592 0.2562 12	0.06534 0.8401 12
NO3	-0.02998 0.8487 43	-0.03863 0.8081 42	0.06244 0.7257 34	0.04241 0.8208 31	0.16529 0.3213 38
NH3	1.00000 0.0 44	0.02107 0.9001 38	0.26217 0.2509 21	0.60347 0.0005 29	-0.08600 0.6128 37
OPO4	0.02107 0.9001 38	1.00000 0.0 44	-0.31722 0.1729 20	-0.18496 0.3278 30	-0.29668 0.0630 40
TP	0.26217 0.2509 21	-0.31722 0.1729 20	1.00000 0.0 35	0.22522 0.4196 15	0.32642 0.2010 17
CL	0.60347 0.0005 29	-0.18496 0.3278 30	0.22522 0.4196 15	1.00000 0.0 31	0.17425 0.3660 29
SO4	-0.08600 0.6128 37	-0.29668 0.0630 40	0.32642 0.2010 17	0.17425 0.3660 29	1.00000 0.0 40

Table O3. Simple statistics and Pearson correlation coefficients and probability values for Calf Creek for base flow 1985 to mid-1997.

Correlation Analysis

15 'VAR' Variables:	TIME	Q	TEMP	COND	TURB	PH
	DO	FCOLI	TKN	NO3	NH3	OPO4
	TP	CL	SO4			

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
TIME	70	1263	164.33799	88379	950.00000	1540
Q	24	18.87500	17.09620	453.00000	1.30000	66.90000
TEMP	70	19.43429	5.41067	1360	4.80000	28.00000
COND	68	266.85294	44.51103	18146	178.00000	330.00000
TURB	56	2.05536	2.29861	115.10000	0.50000	17.50000
PH	58	7.88569	0.28566	457.37000	7.20000	8.57000
DO	52	9.70385	1.97007	504.60000	5.30000	16.40000
FCOLI	69	26.65217	34.91032	1839	0	159.00000
TKN	5	0.18000	0.13038	0.90000	0.10000	0.40000
NO3	26	0.26700	0.24017	6.94200	0.00300	1.27500
NH3	28	0.04721	0.03295	1.32200	0.02000	0.11800
OPO4	21	0.02990	0.02260	0.62800	0.01500	0.09000
TP	10	0.02500	0.01790	0.25000	0.00100	0.04700
CL	21	4.32905	1.13086	90.91000	0.50000	6.00000
SO4	18	10.41667	2.70212	187.50000	0.50000	13.00000

BASEFLOW CORRELATION DATA
CORRELATIONS FOR CALF STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	TIME	Q	TEMP	COND	TURB
TIME	1.00000 0.0 70	0.18243 0.3936 24	0.19930 0.0981 70	0.02190 0.8593 68	0.13231 0.3310 56
Q	0.18243 0.3936 24	1.00000 0.0 24	-0.48363 0.0167 24	-0.65985 0.0005 24	-0.12686 0.5547 24
TEMP	0.19930 0.0981 70	-0.48363 0.0167 24	1.00000 0.0 70	0.74474 0.0001 68	0.24277 0.0714 56
COND	0.02190 0.8593 68	-0.65985 0.0005 24	0.74474 0.0001 68	1.00000 0.0 68	0.18514 0.1802 54
TURB	0.13231 0.3310 56	-0.12686 0.5547 24	0.24277 0.0714 56	0.18514 0.1802 54	1.00000 0.0 56
PH	0.09527 0.4768 58	0.64640 0.0009 23	-0.51642 0.0001 58	-0.64787 0.0001 56	-0.21830 0.1128 54
DO	-0.10607 0.4542 52	0.25168 0.2467 23	-0.63371 0.0001 52	-0.41783 0.0023 51	-0.27262 0.0505 52
FCOLI	0.02761 0.8218 69	-0.18173 0.3954 24	0.03223 0.7926 69	-0.02912 0.8151 67	0.05137 0.7069 56
TKN	-0.01769 0.9775 5	. . 0	0.64313 0.2417 5	0.23331 0.7057 5	-0.48736 0.4050 5
NO3	0.08288 0.6873 26	-0.07982 0.7309 21	-0.06113 0.7667 26	0.35632 0.0740 26	-0.05088 0.8050 26
NH3	-0.02490 0.8999 28	0.18803 0.3902 23	0.20455 0.2964 28	0.03526 0.8586 28	0.25685 0.1870 28
OPO4	-0.24568 0.2831 21	0.23830 0.2982 21	0.13546 0.5582 21	0.12488 0.5896 21	0.29423 0.1954 21
TP	0.15348 0.6721 10	-0.19296 0.7559 5	0.10780 0.7669 10	0.13252 0.7152 10	0.39196 0.2626 10
CL	-0.06424 0.7820 21	-0.24795 0.2785 21	0.19217 0.4040 21	0.30233 0.1828 21	0.27077 0.2352 21
SO4	0.25151 0.3140 18	0.24784 0.3214 18	-0.22551 0.3683 18	-0.22839 0.3620 18	-0.01022 0.9679 18

BASEFLOW CORRELATION DATA
CORRELATIONS FOR CALF STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	PH	DO	FCOLI	TKN	NO3
TIME	0.09527	-0.10607	0.02761	-0.01769	0.08288
	0.4768	0.4542	0.8218	0.9775	0.6873
	58	52	69	5	26
Q	0.64640	0.25168	-0.18173	.	-0.07982
	0.0009	0.2467	0.3954	.	0.7309
	23	23	24	0	21
TEMP	-0.51642	-0.63371	0.03223	0.64313	-0.06113
	0.0001	0.0001	0.7926	0.2417	0.7667
	58	52	69	5	26
COND	-0.64787	-0.41783	-0.02912	0.23331	0.35632
	0.0001	0.0023	0.8151	0.7057	0.0740
	56	51	67	5	26
TURB	-0.21830	-0.27262	0.05137	-0.48736	-0.05088
	0.1128	0.0505	0.7069	0.4050	0.8050
	54	52	56	5	26
PH	1.00000	0.54561	-0.16065	-0.75425	-0.14394
	0.0	0.0001	0.2326	0.2458	0.5022
	58	50	57	4	24
DO	0.54561	1.00000	-0.26366	-0.03056	0.28684
	0.0001	0.0	0.0589	0.9611	0.1645
	50	52	52	5	25
FCOLI	-0.16065	-0.26366	1.00000	-0.30691	0.23221
	0.2326	0.0589	0.0	0.6155	0.2537
	57	52	69	5	26
TKN	-0.75425	-0.03056	-0.30691	1.00000	0.78906
	0.2458	0.9611	0.6155	0.0	0.1125
	4	5	5	5	5
NO3	-0.14394	0.28684	0.23221	0.78906	1.00000
	0.5022	0.1645	0.2537	0.1125	0.0
	24	25	26	5	26
NH3	0.04074	0.19193	0.11384	0.80057	0.20106
	0.8434	0.3375	0.5641	0.1036	0.3247
	26	27	28	5	26
OPO4	-0.06776	0.03601	-0.25696	.	0.10678
	0.7765	0.8802	0.2608	.	0.6450
	20	20	21	0	21
TP	0.09623	0.35370	-0.43900	-0.18887	0.44717
	0.8207	0.3160	0.2043	0.7610	0.1951
	8	10	10	5	10
CL	-0.19365	0.17717	-0.08558	.	0.34841
	0.4133	0.4549	0.7122	.	0.1217
	20	20	21	0	21
SO4	0.16660	0.32998	-0.00381	.	0.08133
	0.5228	0.1958	0.9880	.	0.7483
	17	17	18	0	18

CORRELATIONS FOR CALF STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

	NH3	OPO4	TP	CL	SO4
TIME	-0.02490 0.8999 28	-0.24568 0.2831 21	0.15348 0.6721 10	-0.06424 0.7820 21	0.25151 0.3140 18
Q	0.18803 0.3902 23	0.23830 0.2982 21	-0.19296 0.7559 5	-0.24795 0.2785 21	0.24784 0.3214 18
TEMP	0.20455 0.2964 28	0.13546 0.5582 21	0.10780 0.7669 10	0.19217 0.4040 21	-0.22551 0.3683 18
COND	0.03526 0.8586 28	0.12488 0.5896 21	0.13252 0.7152 10	0.30233 0.1828 21	-0.22839 0.3620 18
TURB	0.25685 0.1870 28	0.29423 0.1954 21	0.39196 0.2626 10	0.27077 0.2352 21	-0.01022 0.9679 18
PH	0.04074 0.8434 26	-0.06776 0.7765 20	0.09623 0.8207 8	-0.19365 0.4133 20	0.16660 0.5228 17
DO	0.19193 0.3375 27	0.03601 0.8802 20	0.35370 0.3160 10	0.17717 0.4549 20	0.32998 0.1958 17
FCOLI	0.11384 0.5641 28	-0.25696 0.2608 21	-0.43900 0.2043 10	-0.08558 0.7122 21	-0.00381 0.9880 18
TKN	0.80057 0.1036 5	. . 0	-0.18887 0.7610 5	. . 0	. . 0
NO3	0.20106 0.3247 26	0.10678 0.6450 21	0.44717 0.1951 10	0.34841 0.1217 21	0.08133 0.7483 18
NH3	1.00000 0.0 28	0.37663 0.0924 21	0.02765 0.9396 10	0.15341 0.5067 21	0.13095 0.6045 18
OPO4	0.37663 0.0924 21	1.00000 0.0 21	-0.02091 0.9734 5	0.23086 0.3140 21	-0.02283 0.9283 18
TP	0.02765 0.9396 10	-0.02091 0.9734 5	1.00000 0.0 10	0.37017 0.5397 5	0.12764 0.8379 5
CL	0.15341 0.5067 21	0.23086 0.3140 21	0.37017 0.5397 5	1.00000 0.0 21	0.70337 0.0011 18
SO4	0.13095 0.6045 18	-0.02283 0.9283 18	0.12764 0.8379 5	0.70337 0.0011 18	1.00000 0.0 18

Table O4. Simple statistics and Pearson correlation coefficients and probability values for Bear Creek for base flow 1985 to mid-1997.

BASEFLOW CORRELATION DATA
CORRELATIONS FOR BEAR STREAM

Correlation Analysis

15 'VAR' Variables: TIME Q TEMP COND TURB PH
DO FCOLI TKN NO3 NH3 OPO4
TP CL SO4

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
TIME	69	1242	174.05962	85676	745.00000	1605
Q	27	39.95556	35.70530	1079	5.20000	128.80000
TEMP	69	19.71159	7.04240	1360	2.40000	29.70000
COND	67	226.47761	43.53103	15174	125.00000	304.00000
TURB	55	1.54000	1.05156	84.70000	0.50000	5.80000
PH	56	8.25429	0.34358	462.24000	7.45000	8.99000
DO	53	10.35660	2.11783	548.90000	6.90000	17.80000
FCOLI	67	27.16418	52.08140	1820	0	405.00000
TKN	5	0.12500	0.10308	0.62500	0.02500	0.30000
NO3	27	0.14007	0.15458	3.78200	0.00300	0.66900
NH3	28	0.03796	0.02617	1.06300	0.01000	0.12400
OPO4	22	0.01727	0.00736	0.38000	0.01500	0.04000
TP	10	0.01440	0.01241	0.14400	0.00100	0.03000
CL	23	4.86826	1.44116	111.97000	3.00000	10.00000
SO4	19	9.72105	1.53499	184.70000	5.70000	11.20000

BASEFLOW CORRELATION DATA
CORRELATIONS FOR BEAR STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	TIME	Q	TEMP	COND	TURB
TIME	1.00000 0.0 69	-0.13850 0.4909 27	0.07196 0.5568 69	0.05471 0.6602 67	-0.03491 0.8003 55
Q	-0.13850 0.4909 27	1.00000 0.0 27	-0.36210 0.0634 27	-0.66528 0.0002 27	0.43833 0.0222 27
TEMP	0.07196 0.5568 69	-0.36210 0.0634 27	1.00000 0.0 69	0.67262 0.0001 67	-0.28339 0.0360 55
COND	0.05471 0.6602 67	-0.66528 0.0002 27	0.67262 0.0001 67	1.00000 0.0 67	-0.31951 0.0197 53
TURB	-0.03491 0.8003 55	0.43833 0.0222 27	-0.28339 0.0360 55	-0.31951 0.0197 53	1.00000 0.0 55
PH	0.46988 0.0003 56	0.31596 0.1239 25	-0.24447 0.0694 56	-0.43664 0.0010 54	0.10393 0.4680 51
DO	0.26898 0.0515 53	0.21957 0.2811 26	-0.68199 0.0001 53	-0.54831 0.0001 52	0.18539 0.1882 52
FCOLI	-0.09611 0.4391 67	-0.03905 0.8467 27	0.02542 0.8382 67	0.04506 0.7215 65	0.22989 0.0913 55
TKN	0.68693 0.2001 5	. . 0	0.97365 0.0051 5	0.90703 0.0336 5	0.63139 0.2533 5
NO3	-0.07780 0.6997 27	0.19455 0.3856 22	-0.46243 0.0152 27	-0.04832 0.8109 27	0.65751 0.0002 27
NH3	-0.03579 0.8565 28	-0.17541 0.4234 23	0.45543 0.0149 28	0.35827 0.0612 28	-0.13376 0.4974 28
OPO4	0.23206 0.2987 22	0.29416 0.1839 22	0.07438 0.7422 22	-0.09021 0.6897 22	0.07176 0.7510 22
TP	0.02897 0.9367 10	0.82425 0.0861 5	-0.40600 0.2444 10	-0.83829 0.0024 10	0.56111 0.0915 10
CL	0.30278 0.1602 23	-0.56552 0.0049 23	0.33953 0.1130 23	0.47509 0.0220 23	-0.30266 0.1604 23
SO4	-0.17575 0.4717 19	0.06183 0.8015 19	-0.58854 0.0080 19	-0.39094 0.0979 19	-0.15595 0.5238 19

BASEFLOW CORRELATION DATA
CORRELATIONS FOR BEAR STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	PH	DO	FCOLI	TKN	NO3
TIME	0.46988 0.0003 56	0.26898 0.0515 53	-0.09611 0.4391 67	0.68693 0.2001 5	-0.07780 0.6997 27
Q	0.31596 0.1239 25	0.21957 0.2811 26	-0.03905 0.8467 27	. . 0	0.19455 0.3856 22
TEMP	-0.24447 0.0694 56	-0.68199 0.0001 53	0.02542 0.8382 67	0.97365 0.0051 5	-0.46243 0.0152 27
COND	-0.43664 0.0010 54	-0.54831 0.0001 52	0.04506 0.7215 65	0.90703 0.0336 5	-0.04832 0.8109 27
TURB	0.10393 0.4680 51	0.18539 0.1882 52	0.22989 0.0913 55	0.63139 0.2533 5	0.65751 0.0002 27
PH	1.00000 0.0 56	0.62883 0.0001 49	-0.14875 0.2830 54	0.89393 0.2959 3	-0.16442 0.4427 24
DO	0.62883 0.0001 49	1.00000 0.0 53	-0.15909 0.2600 52	-0.23229 0.7069 5	0.39041 0.0486 26
FCOLI	-0.14875 0.2830 54	-0.15909 0.2600 52	1.00000 0.0 67	0.01889 0.9759 5	0.63253 0.0004 27
TKN	0.89393 0.2959 3	-0.23229 0.7069 5	0.01889 0.9759 5	1.00000 0.0 5	-0.08391 0.8933 5
NO3	-0.16442 0.4427 24	0.39041 0.0486 26	0.63253 0.0004 27	-0.08391 0.8933 5	1.00000 0.0 27
NH3	0.16950 0.4179 25	-0.30335 0.1240 27	-0.20923 0.2853 28	0.59456 0.2903 5	-0.15073 0.4530 27
OPO4	0.37513 0.0938 21	-0.01168 0.9599 21	-0.18612 0.4069 22	. . 0	0.07828 0.7291 22
TP	-0.16314 0.7267 7	0.33115 0.3500 10	0.16390 0.6509 10	-0.75103 0.1434 5	-0.57622 0.0812 10
CL	-0.09530 0.6731 22	-0.12399 0.5825 22	-0.14311 0.5148 23	. . 0	-0.13748 0.5418 22
SO4	0.21873 0.3832 18	0.24985 0.3174 18	-0.20542 0.3989 19	. . 0	-0.06933 0.7846 18

BASEFLOW CORRELATION DATA
CORRELATIONS FOR BEAR STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	NH3	OPO4	TP	CL	SO4
TIME	-0.03579 0.8565 28	0.23206 0.2987 22	0.02897 0.9367 10	0.30278 0.1602 23	-0.17575 0.4717 19
Q	-0.17541 0.4234 23	0.29416 0.1839 22	0.82425 0.0861 5	-0.56552 0.0049 23	0.06183 0.8015 19
TEMP	0.45543 0.0149 28	0.07438 0.7422 22	-0.40600 0.2444 10	0.33953 0.1130 23	-0.58854 0.0080 19
COND	0.35827 0.0612 28	-0.09021 0.6897 22	-0.83829 0.0024 10	0.47509 0.0220 23	-0.39094 0.0979 19
TURB	-0.13376 0.4974 28	0.07176 0.7510 22	0.56111 0.0915 10	-0.30266 0.1604 23	-0.15595 0.5238 19
PH	0.16950 0.4179 25	0.37513 0.0938 21	-0.16314 0.7267 7	-0.09530 0.6731 22	0.21873 0.3832 18
DO	-0.30335 0.1240 27	-0.01168 0.9599 21	0.33115 0.3500 10	-0.12399 0.5825 22	0.24985 0.3174 18
FCOLI	-0.20923 0.2853 28	-0.18612 0.4069 22	0.16390 0.6509 10	-0.14311 0.5148 23	-0.20542 0.3989 19
TKN	0.59456 0.2903 5	. . 0	-0.75103 0.1434 5	. . 0	. . 0
NO3	-0.15073 0.4530 27	0.07828 0.7291 22	-0.57622 0.0812 10	-0.13748 0.5418 22	-0.06933 0.7846 18
NH3	1.00000 0.0 28	0.60856 0.0027 22	-0.30991 0.3835 10	0.57227 0.0043 23	-0.19580 0.4218 19
OPO4	0.60856 0.0027 22	1.00000 0.0 22	. . 5	0.47693 0.0248 22	-0.03290 0.8969 18
TP	-0.30991 0.3835 10	. . 5	1.00000 0.0 10	-0.76376 0.1328 5	0.32733 0.5908 5
CL	0.57227 0.0043 23	0.47693 0.0248 22	-0.76376 0.1328 5	1.00000 0.0 23	-0.14370 0.5573 19
SO4	-0.19580 0.4218 19	-0.03290 0.8969 18	0.32733 0.5908 5	-0.14370 0.5573 19	1.00000 0.0 19

Table O5. Simple statistics and Pearson correlation coefficients and probability values for Tomahawk Creek for base flow 1985 to mid-1997.

BASEFLOW CORRELATION DATA
CORRELATIONS FOR TOMAHAWK STREAM

Correlation Analysis

15 'VAR' Variables:	TIME	Q	TEMP	COND	TURB	PH
	DO	FCOLI	TKN	NO3	NH3	OPO4
	TP	CL	SO4			

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
TIME	72	1229	161.22358	88486	920.00000	1700
Q	22	19.85000	19.54791	436.70000	0.30000	87.00000
TEMP	72	19.79306	5.73082	1425	8.20000	28.50000
COND	70	304.70000	39.65991	21329	170.00000	365.00000
TURB	55	0.92182	0.58300	50.70000	0.40000	3.50000
PH	57	8.22982	0.17073	469.10000	7.76000	8.55000
DO	53	10.07358	1.28395	533.90000	7.40000	13.30000
FCOLI	70	80.57143	99.79538	5640	0	418.00000
TKN	7	0.10786	0.09903	0.75500	0.02500	0.28000
NO3	37	0.24441	0.17523	9.04300	0.06000	0.68000
NH3	39	0.04215	0.03045	1.64400	0.01000	0.14000
OPO4	34	0.02047	0.01882	0.69600	0.01500	0.10400
TP	14	0.00493	0.01300	0.06900	0.00100	0.05000
CL	22	4.31227	1.25376	94.87000	0.50000	7.00000
SO4	35	9.20000	14.37784	322.00000	3.00000	91.00000

BASEFLOW CORRELATION DATA
CORRELATIONS FOR TOMAHAWK STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	TIME	Q	TEMP	COND	TURB
TIME	1.00000 0.0 72	-0.38470 0.0771 22	0.31884 0.0063 72	0.28839 0.0155 70	0.09058 0.5107 55
Q	-0.38470 0.0771 22	1.00000 0.0 22	-0.57404 0.0052 22	-0.31911 0.1477 22	-0.12792 0.5705 22
TEMP	0.31884 0.0063 72	-0.57404 0.0052 22	1.00000 0.0 72	0.64430 0.0001 70	0.27544 0.0418 55
COND	0.28839 0.0155 70	-0.31911 0.1477 22	0.64430 0.0001 70	1.00000 0.0 70	0.16357 0.2419 53
TURB	0.09058 0.5107 55	-0.12792 0.5705 22	0.27544 0.0418 55	0.16357 0.2419 53	1.00000 0.0 55
PH	0.04420 0.7441 57	0.37879 0.0904 21	-0.30072 0.0230 57	-0.42701 0.0011 55	0.01368 0.9241 51
DO	0.02694 0.8481 53	0.36406 0.1047 21	-0.65905 0.0001 53	-0.44399 0.0010 52	-0.23803 0.0893 52
FCOLI	-0.26160 0.0287 70	-0.30038 0.1858 21	0.07372 0.5442 70	0.11638 0.3446 68	0.04650 0.7385 54
TKN	-0.31927 0.4852 7	. . 0	0.09468 0.8400 7	0.45599 0.3038 7	0.80691 0.0283 7
NO3	-0.24547 0.1431 37	0.81286 0.0001 19	-0.65059 0.0001 37	-0.38450 0.0188 37	0.10574 0.5334 37
NH3	0.12112 0.4626 39	-0.10549 0.6580 20	0.14007 0.3950 39	-0.05890 0.7217 39	-0.02346 0.8873 39
OPO4	0.01973 0.9118 34	0.29317 0.2097 20	0.18120 0.3051 34	0.03854 0.8287 34	0.09364 0.5984 34
TP	-0.18827 0.5192 14	. . 4	-0.08387 0.7756 14	-0.13282 0.6508 14	-0.18952 0.5164 14
CL	0.17293 0.4415 22	-0.41560 0.0768 19	0.20172 0.3680 22	0.27095 0.2226 22	0.11924 0.5971 22
SO4	-0.06460 0.7124 35	-0.03363 0.8849 21	-0.15982 0.3591 35	-0.09897 0.5716 35	0.03424 0.8452 35

BASEFLOW CORRELATION DATA
CORRELATIONS FOR TOMAHAWK STREAM

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	PH	DO	FCOLI	TKN	NO3
TIME	0.04420 0.7441 57	0.02694 0.8481 53	-0.26160 0.0287 70	-0.31927 0.4852 7	-0.24547 0.1431 37
Q	0.37879 0.0904 21	0.36406 0.1047 21	-0.30038 0.1858 21	. . 0	0.81286 0.0001 19
TEMP	-0.30072 0.0230 57	-0.65905 0.0001 53	0.07372 0.5442 70	0.09468 0.8400 7	-0.65059 0.0001 37
COND	-0.42701 0.0011 55	-0.44399 0.0010 52	0.11638 0.3446 68	0.45599 0.3038 7	-0.38450 0.0188 37
TURB	0.01368 0.9241 51	-0.23803 0.0893 52	0.04650 0.7385 54	0.80691 0.0283 7	0.10574 0.5334 37
PH	1.00000 0.0 57	0.45615 0.0011 48	-0.13621 0.3214 55	-0.14577 0.7829 6	0.32638 0.0596 34
DO	0.45615 0.0011 48	1.00000 0.0 53	-0.32320 0.0194 52	0.50103 0.2520 7	0.33659 0.0447 36
FCOLI	-0.13621 0.3214 55	-0.32320 0.0194 52	1.00000 0.0 70	0.86257 0.0125 7	-0.21669 0.2043 36
TKN	-0.14577 0.7829 6	0.50103 0.2520 7	0.86257 0.0125 7	1.00000 0.0 7	0.10569 0.8216 7
NO3	0.32638 0.0596 34	0.33659 0.0447 36	-0.21669 0.2043 36	0.10569 0.8216 7	1.00000 0.0 37
NH3	0.28930 0.0870 36	-0.04294 0.7980 38	0.00769 0.9634 38	0.18002 0.6993 7	-0.28635 0.0858 37
OPO4	0.08710 0.6355 32	-0.01448 0.9363 33	-0.17599 0.3272 33	. . 2	0.04920 0.7892 32
TP	-0.22277 0.4865 12	-0.14893 0.6114 14	0.61549 0.0191 14	-0.31036 0.4981 7	-0.06079 0.8364 14
CL	-0.32306 0.1425 22	-0.02564 0.9121 21	0.02918 0.9001 21	1.00000 . 2	-0.34728 0.1336 20
SO4	0.01389 0.9389 33	0.27351 0.1175 34	-0.03111 0.8613 34	1.00000 . 2	-0.03564 0.8465 32

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	NH3	OPO4	TP	CL	SO4
TIME	0.12112 0.4626 39	0.01973 0.9118 34	-0.18827 0.5192 14	0.17293 0.4415 22	-0.06460 0.7124 35
Q	-0.10549 0.6580 20	0.29317 0.2097 20	. . 4	-0.41560 0.0768 19	-0.03363 0.8849 21
TEMP	0.14007 0.3950 39	0.18120 0.3051 34	-0.08387 0.7756 14	0.20172 0.3680 22	-0.15982 0.3591 35
COND	-0.05890 0.7217 39	0.03854 0.8287 34	-0.13282 0.6508 14	0.27095 0.2226 22	-0.09897 0.5716 35
TURB	-0.02346 0.8873 39	0.09364 0.5984 34	-0.18952 0.5164 14	0.11924 0.5971 22	0.03424 0.8452 35
PH	0.28930 0.0870 36	0.08710 0.6355 32	-0.22277 0.4865 12	-0.32306 0.1425 22	0.01389 0.9389 33
DO	-0.04294 0.7980 38	-0.01448 0.9363 33	-0.14893 0.6114 14	-0.02564 0.9121 21	0.27351 0.1175 34
FCOLI	0.00769 0.9634 38	-0.17599 0.3272 33	0.61549 0.0191 14	0.02918 0.9001 21	-0.03111 0.8613 34
TKN	0.18002 0.6993 7	. . 2	-0.31036 0.4981 7	1.00000 . 2	1.00000 . 2
NO3	-0.28635 0.0858 37	0.04920 0.7892 32	-0.06079 0.8364 14	-0.34728 0.1336 20	-0.03564 0.8465 32
NH3	1.00000 0.0 39	-0.00687 0.9697 33	0.27920 0.3337 14	-0.12187 0.5890 22	0.24063 0.1704 34
OPO4	-0.00687 0.9697 33	1.00000 0.0 34	-0.12500 0.7486 9	0.17750 0.4415 21	-0.06913 0.6977 34
TP	0.27920 0.3337 14	-0.12500 0.7486 9	1.00000 0.0 14	. . 6	-0.12651 0.7457 9
CL	-0.12187 0.5890 22	0.17750 0.4415 21	. . 6	1.00000 0.0 22	0.47745 0.0246 22
SO4	0.24063 0.1704 34	-0.06913 0.6977 34	-0.12651 0.7457 9	0.47745 0.0246 22	1.00000 0.0 35

APPENDIX P

Table P1. Number of base flow samples out of total analyses exceeding standards and "average of base flow plus two standard deviations" for all Buffalo River tributaries for Bear Creek. Maximum concentration and date for maximum concentration are also provided.

Table P2. Number of base flow samples out of total analyses exceeding standards and "average of base flow plus two standard deviations" for all Buffalo River tributaries for Calf Creek. Maximum concentration and date for maximum concentration are also provided.

Table P3. Number of base flow samples out of total analyses exceeding standards and "average of base flow plus two standard deviations" for all Buffalo River tributaries for Tomahawk Creek. Maximum concentration and date for maximum concentration are also provided.

Table P4. Number of base flow samples out of total analyses exceeding standards and "average of base flow plus two standard deviations" for all Buffalo River tributaries for R1. Maximum concentration and date for maximum concentration are also provided.

Table P1. Number of base flow samples out of total analyses exceeding standards and "average of base flow plus two standard deviations" for all Buffalo River tributaries for Bear Creek . Maximum concentration and date for maximum concentration are also provided.

PARAMETER	Standard	umber of Samples Exceeding Standard	Average plus two std. dev	Number of Samples Exceeding Average two std.dev.	Highest Value	Date of Higest Value
Fecal Coliform col/100 mL	200-400	1/67	122	2/67	405	9/17/90
Turbidity NTU	10	0/55	7.1	0/55	5.8	10/30/95
NO3-N mg/L	None		0.492	1/27	0.669	10/30/95
TKN mg/L	None		0.545	0/14	0.300	7/11/89
Orthophosphate-P mg/L	None		0.059	0/22	0.040	3/21 & 9/19/94
Total Phosphorus mg/L	0.1	0/10	0.04	0/10	0.030	4/6 & 6/9/92
Ammonia-N mg/L	None		0.128	0/28	0.124	9/19/94
Chloride mg/L	10	0/23	5.858	4/23	10.0	9/19/94
Sulfate mg/L	10	8/19	17.284	0/19	11.2	10/19/93

Table P2. Number of base flow samples out of total analyses exceeding standards and "average of base flow plus two standard deviations" for all Buffalo River tributaries for Calf Creek . Maximum concentration and date for maximum concentration are also provided.

PARAMETER	Standard	Number of Samples Exceeding Standard	Average plus two std. dev	Number of Samples Exceeding Average two std.dev.	Highest Value	Date of Higest Value
Fecal Coliform col/100 mL	200-400	0/69	122	3/69	159	9/14/95
Turbidity NTU	10	1/56	7.1	1/56	17.5	6/29/88
NO3-N mg/L	None		0.49	3/26	1.275	10/30/95
TKN mg/L	None		0.55	0/5	0.400	7/10/89
Orthophosphate-P mg/L	None		0.06	4/21	0.090	3/21/94
Total Phosphorus mg/L	0.1	4/10	0.04	4/10	0.047	9/14/92
Ammonia-N mg/L	None		0.13	0/21	0.118	3/21/94
Chloride mg/L	10	0/21	5.86	1/22	6.00	9/19/94
Sulfate mg/L	10	11/18	17.3	0/18	13.0	1/6/92

Table P3. Number of base flow samples out of total analyses exceeding standards and "average of base flow plus two standard deviations" for all Buffalo River tributaries foTomahawk Creek . Maximum concentration and date for maximum concentration are also provided.

PARAMETER	Standard	Number of Samples Exceeding Standard	Average plus two std. dev	Number of Samples Exceeding Average two std.dev.	Highest Value	Date of Higest Value
Fecal Coliform col/100 mL	200-400	9/72 2/72	122	13/72	418	5/14/91
Turbidity NTU	10	0/58	7.1	0/58	3.5	7/13/93
NO3-N mg/L	None		0.492	5/39	0.690	1/22/94
TKN mg/L	None		0.545	0/7	0.028	11/19/90
Orthophosphate-P mg/L	None		0.059	1/36	0.104	3/21/94
Total Phosphorus mg/L	0.1	0/14	0.04	1/14	0.050	9/24/91
Ammonia-N mg/L	None		0.128	1/41	0.140	9/11/89
Chloride mg/L	10	0/24	5.858	1/24	7.00	11/19/90
Sulfate mg/L	10	3/35	17.284	1/35	91.0	11/19/90

Table P4. Number of base flow samples out of total analyses exceeding standards and "average of base flow plus two standard deviations" for all Buffalo River tributaries for R1. Maximum concentration and date for maximum concentration are also provided.

PARAMETER	Standard	Number of Samples Exceeding Standard	Average plus two std. dev	Exceeding Average plus two std.dev.	Highest Value	Higest Value
Fecal Coliform col/100 mL	200-400	1/81	122	1/81	272	6/24/91
Turbidity NTU	10	1/56	7.1	5/56	12.0	4/28/90
NO3-N mg/L	None		0.492	0/56	0.450	5/27/87
TKN mg/L	None		0.545	5/27	1.390	3/12/87
Orthophosphate-P mg/L	None		0.059	6/44	0.093	8/3/92
Total Phosphorus mg/L	0.1	0/35	0.04	6/35	0.080	2/22/90
Ammonia-N mg/L	None		0.128	3/44	0.220	3/12/89
Chloride mg/L	10	1/31	5.858	2/31	16.0	5/7/90
Sulfate mg/L	10	1/40	17.28	0/40	12.0	11/27/95