Appendix A: Basic Statistics of Trended Water Quality Parameter

Table A1: Battle River Statistics

Parameter	n	Mean	SD	Max	90th %ile	Median	10th %ile	Min
Nutrients (mg/L)								
Ammonia Dissolved	378	0.133	0.217	1.470	0.429	0.027	0.015	0.003
Nitrogen Dissolved NO^3 & NO^2	625	0.126	0.228	2.600	0.440	0.010	0.005	0.003
Nitrogen Total	294	1.299	0.789	6.380	1.998	1.132	0.663	0.453
Phosphorous Total	540	0.115	0.136	0.973	0.266	0.066	0.028	0.010
Phosphorous Total Dissolved	513	0.030	0.027	0.245	0.057	0.022	0.011	0.003
Major Ions (mg/L)								
Chloride Dissolved	627	24.680	14.275	175.000	39.780	22.800	9.500	0.400
Fluoride Dissolved	573	0.232	0.068	0.790	0.300	0.230	0.160	0.003
Sodium Dissolved/Filtered	627	125.536	47.287	338.000	181.000	129.000	65.180	4.500
Total Dissolved Solids	448	637.996	222.500	1728.714	883.400	629.000	367.939	218.366
Sulphate Dissolved	626	144.211	50.317	389.000	202.000	145.500	80.900	14.000
Physicals (Units)								
Oxygen Dissolved	531	7.866	3.905	18.700	12.500	8.700	1.200	0.010
PH units	533	8.168	0.468	9.230	8.700	8.300	7.500	6.950
Residue Non-filterable	556	69.323	160.554	1146.000	171.900	13.000	3.000	0.500
Sodium Adsorption Ratio	223	3.610	1.022	7.500	5.014	3.580	2.398	0.640
Metals (µg/L)								
Aluminum Dissolved	188	9.059	28.699	323.000	13.150	3.300	0.800	0.250
Aluminum Total	188	658.526	1923.577	19300.000	1615.000	86.700	35.500	0.600
Arsenic Dissolved	188	1.855	1.129	8.000	3.480	1.545	0.793	0.490
Arsenic Total	188	2.913	1.770	10.100	4.928	2.380	1.129	0.640
Barium Dissolved	188	98.179	34.972	272.000	144.700	93.050	61.530	33.200
Barium Total	188	132.400	66.317	720.000	182.100	120.000	84.960	35.600
Beryllium Dissolved	188	0.005	0.008	0.059	0.013	0.003	0.001	0.001
Beryllium Total	188	0.070	0.184	1.460	0.169	0.013	0.005	0.001
Boron Dissolved	188	199.152	75.734	467.000	276.700	203.000	96.170	15.000
Boron Total	188	211.806	76.629	476.000	301.100	215.000	104.300	23.700
Cadmium Dissolved	188	0.035	0.051	0.372	0.066	0.019	0.007	0.001
Cadmium Total	188	0.050	0.093	0.952	0.123	0.021	0.010	0.004
Chromium Dissolved	188	0.071	0.082	0.640	0.126	0.050	0.028	0.005
Chromium Total	188	0.997	2.744	29.200	2.228	0.210	0.099	0.003
Cobalt Dissolved	188	0.418	0.576	5.490	0.624	0.267	0.196	0.150
Cobalt Total	188	1.310	2.277	20.300	3.238	0.452	0.286	0.196
Copper Dissolved	188	1.524	0.738	4.140	2.571	1.390	0.707	0.130
Copper Total	188	3.425	5.296	49.300	6.945	1.860	0.933	0.270
Iron Dissolved	188	147.581	504.708	4770.000	151.900	35.300	19.360	8.700
Iron Total	188	1883.185	4240.275	41700.000	4590.000	557.500	258.300	27.700
Lead Dissolved	188	0.046	0.068	0.660	0.087	0.027	0.010	0.003
Lead Total	188	1.210	3.093	27.300	3.069	0.230	0.106	0.010
Lithium Dissolved	188	72.497	24.798	162.000	101.700	73.000	40.290	4.970
Lithium Total	188	78.013	24.593	169.000	106.700	77.450	46.340	22.600
Manganese Dissolved	188	126.194	389.211	3870.000	280.200	16.150	3.046	1.180
Manganese Total	188	236.766	421.299	3860.000	516.300	106.000	37.860	6.560
Molybdenum Dissolved	188	1.603	0.349	3.020	2.050	1.550	1.223	0.637
Molybdenum Total	188	1.602	0.413	3.000	2.144	1.590	1.113	0.417
Nickel Dissolved	188	3.908	1.065	7.810	5.184	3.715	2.809	0.870
Nickel Total	188	6.257	6.246	61.000	11.110	4.390	3.163	1.770
Selenium Dissolved	188	0.165	0.096	0.780	0.220	0.150	0.093	0.025
Selenium Total	188	0.206	0.146	1.240	0.300	0.180	0.100	0.025
Silver Dissolved	188	0.002	0.002	0.014	0.005	0.002	0.001	0.001

Silver Total	188	0.013	0.032	0.319	0.028	0.004	0.002	0.001
Thallium Dissolved	188	0.009	0.006	0.040	0.015	0.008	0.004	0.001
Thallium Total	188	0.025	0.040	0.349	0.048	0.012	0.006	0.001
Uranium Dissolved	188	1.312	0.373	2.680	1.730	1.290	0.861	0.508
Uranium Total	188	1.493	0.451	3.040	2.210	1.420	0.995	0.527
Vanadium Dissolved	188	0.810	0.510	2.460	1.604	0.672	0.274	0.107
Vanadium Total	188	2.903	5.113	45.000	6.054	1.320	0.451	0.200
Zinc Dissolved	188	1.049	0.843	5.700	1.954	0.840	0.300	0.025
Zinc Total	188	6.873	16.938	162.000	16.570	1.600	0.903	0.025

Table A2: Beaver River Statistics

Parameter	n	Mean	SD	Max	90th %ile	Median	10th %ile	Min
Nutrients (mg/L)								
Ammonia Dissolved	338	0.184	0.317	2.780	0.556	0.027	0.012	0.003
Nitrogen Dissolved NO^3 & NO^2	534	0.116	0.136	0.972	0.287	0.058	0.005	0.001
Nitrogen Total	271	0.993	0.426	3.480	1.412	0.925	0.579	0.270
Phosphorous Total	504	0.095	0.081	0.720	0.158	0.070	0.042	0.024
Phosphorous Total Dissolved	476	0.037	0.038	0.540	0.058	0.028	0.016	0.009
Major Ions (mg/L)								
Chloride Dissolved	506	4.361	3.046	34.900	7.628	3.760	1.600	0.050
Fluoride Dissolved	492	0.132	0.046	0.550	0.183	0.125	0.080	0.005
Sodium Dissolved/Filtered	507	18.856	11.227	95.300	32.560	17.000	7.900	1.600
Total Dissolved Solids	372	233.709	91.497	687.884	359.365	220.591	133.999	83.000
Sulphate Dissolved	506	14.233	9.019	82.100	24.090	12.950	5.600	1.650
Physicals (Units)								
Oxygen Dissolved	487	7.413	4.029	14.600	12.000	8.420	0.812	0.010
PH units	487	7.842	0.452	8.900	8.394	7.900	7.200	5.900
Residue Non-filterable	507	17.124	27.289	273.000	39.840	6.800	2.600	0.500
Sodium Adsorption Ratio (units)	507	0.598	0.280	2.583	0.909	0.563	0.319	0.097
Metals (µg/L)								
Aluminum Dissolved	180	4.986	4.665	34.600	9.600	3.600	1.750	0.900
Aluminum Total	180	146.412	222.214	1880.000	294.500	64.600	20.100	1.400
Arsenic Dissolved	180	0.809	0.271	2.580	1.050	0.740	0.585	0.370
Arsenic Total	180	1.148	0.388	2.930	1.615	1.040	0.815	0.530
Barium Dissolved	180	50.691	18.627	151.000	71.400	44.700	35.100	26.200
Barium Total	180	59.170	19.726	163.000	80.500	53.150	42.000	34.800
Beryllium Dissolved	180	0.004	0.002	0.018	0.006	0.004	0.002	0.001
Beryllium Total	180	0.014	0.015	0.139	0.026	0.009	0.005	0.001
Boron Dissolved	180	40.299	15.262	113.000	58.250	36.350	23.800	13.800
Boron Total	180	42.565	16.130	126.000	61.500	38.550	25.400	14.000
Cadmium Dissolved	180	0.046	0.121	1.400	0.084	0.018	0.005	0.001
Cadmium Total	180	0.031	0.059	0.534	0.067	0.0125	0.006	0.001
Chromium Dissolved	180	0.062	0.042	0.510	0.080	0.054	0.040	0.020
Chromium Total	179	0.359	0.441	3.800	0.634	0.210	0.110	0.054
Cobalt Dissolved	179	0.148	0.211	1.510	0.267	0.082	0.058	0.043
Cobalt Total	179	0.304	0.307	2.280	0.538	0.200	0.117	0.050
Copper Dissolved	179	0.442	0.181	1.760	0.640	0.410	0.284	0.074
Copper Total	179	0.762	0.525	4.340	1.208	0.600	0.378	0.250
Iron Dissolved	179	237.615	345.631	3610.000	413.000	181.000	55.380	19.200
Iron Total	179	930.748	808.245	6940.000	1382.000	750.000	386.000	56.900
Lead Dissolved	179	0.033	0.026	0.164	0.067	0.026	0.011	0.003
Lead Total	179	0.224	0.280	2.470	0.429	0.138	0.053	0.015
Lithium Dissolved	179	11.685	4.725	31.800	17.620	10.500	6.632	4.500
Lithium Total	179	12.506	4.877	34.400	18.560	11.100	7.282	5.500
Manganese Dissolved	179	171.183	464.857	3300.000	394.800	20.200	4.584	1.370
Manganese Total	179	221.811	493.013	3580.000	463.800	87.800	28.780	13.300
Molybdenum Dissolved	178	0.584	0.347	3.440	0.896	0.506	0.325	0.209
Molybdenum Total	179	0.609	0.373	3.680	0.938	0.529	0.327	0.202
Nickel Dissolved	179	0.686	0.174	1.430	0.906	0.650	0.490	0.330
Nickel Total	179	0.998	0.629	5.970	1.422	0.800	0.610	0.350
Selenium Dissolved	179	0.059	0.029	0.220	0.080	0.050	0.025	0.025
Selenium Total	179	0.072	0.039	0.300	0.100	0.070	0.044	0.020

Silver Total	179	0.005	0.006	0.036	0.012	0.003	0.001	0.001
Thallium Dissolved	179	0.002	0.002	0.017	0.005	0.002	0.001	0.001
Thallium Total	179	0.005	0.005	0.038	0.010	0.004	0.002	0.001
Uranium Dissolved	179	0.224	0.082	0.568	0.330	0.216	0.132	0.043
Uranium Total	179	0.247	0.091	0.656	0.354	0.235	0.148	0.063
Vanadium Dissolved	179	0.276	0.120	0.578	0.441	0.266	0.127	0.079
Vanadium Total	179	0.756	0.740	6.460	1.326	0.520	0.241	0.123
Zinc Dissolved	179	1.087	0.863	7.500	1.980	0.840	0.400	0.025
Zinc Total	179	2.097	2.259	18.400	3.900	1.500	0.650	0.025

Table A3: Cold River Statistics

Parameter	n	Mean	SD	Max	90th %ile	Median	10th %ile	Min
Nutrients (mg/L)								
Ammonia Dissolved	147	0.010	0.008	0.078	0.014	0.009	0.005	0.003
Nitrogen Dissolved NO^3 & NO^2	147	0.032	0.032	0.145	0.080	0.013	0.005	0.005
Nitrogen Total	144	0.415	0.076	0.956	0.480	0.407	0.338	0.262
Phosphorous Total	147	0.018	0.011	0.134	0.022	0.017	0.011	0.006
Phosphorous Total Dissolved	147	0.009	0.005	0.038	0.015	0.009	0.004	0.001
Major Ions (mg/L)								
Chloride Dissolved	170	0.694	0.255	2.700	0.925	0.610	0.520	0.230
Fluoride Dissolved	171	0.096	0.021	0.180	0.120	0.090	0.080	0.005
Sodium Dissolved/Filtered	171	8.988	0.714	13.000	9.610	8.980	8.376	4.700
Total Dissolved Solids	162	148.606	10.973	240.814	159.022	147.304	140.700	85.844
Sulphate Dissolved	170	3.094	0.724	5.100	4.200	2.865	2.400	1.350
Physicals (Units)								
Oxygen Dissolved	168	11.551	1.502	14.960	13.278	11.735	9.530	7.000
PH units	166	8.294	0.318	9.160	8.698	8.300	7.871	7.400
Residue Non-filterable	147	1.271	1.197	7.800	2.380	1.000	0.500	0.500
Sodium Adsorption Ratio (units)	171	0.348	0.018	0.436	0.364	0.348	0.330	0.268
Metals (µg/L)								
Aluminum Dissolved	117	0.924	0.805	5.200	1.700	0.800	0.250	0.100
Aluminum Total	117	2.115	4.307	44.700	3.840	1.200	0.250	0.100
Arsenic Dissolved	117	0.836	0.095	1.160	0.938	0.840	0.692	0.540
Arsenic Total	117	0.920	0.190	2.740	0.990	0.900	0.820	0.710
Barium Dissolved	117	35.189	1.911	41.400	37.600	35.100	33.020	29.900
Barium Total	116	37.189	2.319	41.900	39.600	37.350	35.010	20.700
Boron Dissolved	117	25.563	1.987	31.300	28.200	25.200	23.320	20.700
Boron Total	116	26.841	1.696	32.400	29.000	26.800	25.010	20.200
Cadmium Dissolved	117	0.034	0.104	1.020	0.065	0.011	0.003	0.001
Cadmium Total	117	0.015	0.059	0.621	0.027	0.004	0.001	0.001
Chromium Dissolved	117	0.019	0.020	0.150	0.033	0.010	0.008	0.003
Chromium Total	117	0.035	0.107	1.140	0.062	0.020	0.008	0.003
Cobalt Dissolved	117	0.011	0.004	0.043	0.015	0.011	0.008	0.001
Cobalt Total	117	0.012	0.002	0.022	0.015	0.012	0.010	0.005
Copper Dissolved	117	0.166	0.228	2.440	0.220	0.120	0.080	0.010
Copper Total	117	0.149	0.108	0.910	0.230	0.130	0.080	0.010
Iron Dissolved	117	1.700	1.447	10.400	2.580	1.300	0.600	0.250
Iron Total	117	6.128	4.204	24.900	11.820	5.100	2.360	0.250
Lithium Dissolved	117	7.905	0.657	10.300	8.808	7.810	7.182	6.320
Lithium Total	117	8.254	0.635	10.700	9.032	8.180	7.584	6.100
Manganese Dissolved	117	0.717	1.003	8.490	1.126	0.520	0.220	0.050
Manganese Total	117	1.262	0.576	3.160	2.066	1.160	0.704	0.130
Molybdenum Dissolved	117	0.444	0.036	0.620	0.475	0.439	0.408	0.359
Molybdenum Total	117	0.463	0.035	0.662	0.499	0.458	0.432	0.337
Nickel Dissolved	117	0.150	0.051	0.440	0.198	0.150	0.110	0.010
Nickel Total	117	0.128	0.051	0.550	0.160	0.130	0.100	0.010
Selenium Dissolved	117	0.034	0.018	0.130	0.040	0.030	0.020	0.005
Selenium Total	117	0.037	0.017	0.130	0.040	0.030	0.025	0.005
Uranium Dissolved	117	0.082	0.006	0.101	0.088	0.083	0.077	0.039
Uranium Total	117	0.084	0.008	0.104	0.091	0.085	0.080	0.004
Vanadium Dissolved	117	0.111	0.016	0.192	0.124	0.110	0.094	0.070
Vanadium Total	117	0.121	0.018	0.200	0.140	0.119	0.106	0.080

Zinc Dissolved	117	0.438	0.301	1.620	0.800	0.400	0.100	0.025

Table A4: North Saskatchewan River Statistics

Parameter	n	Mean	SD	Max	90th %ile	Median	10th %ile	Min
Nutrients (mg/L)								
Ammonia Dissolved	368	0.103	0.149	0.825	0.333	0.023	0.007	0.003
Nitrogen Dissolved NO^3 & NO^2	368	0.309	0.213	0.945	0.594	0.300	0.005	0.005
Nitrogen Total	294	0.740	0.561	4.602	1.176	0.637	0.256	0.161
Phosphorous Total	367	0.093	0.182	1.720	0.204	0.044	0.014	0.006
Phosphorous Total Dissolved	367	0.025	0.030	0.215	0.064	0.013	0.003	0.001
Major Ions (mg/L)								
Chloride Dissolved	311	4.586	3.036	32.400	7.020	3.980	2.200	1.130
Fluoride Dissolved	310	0.139	0.029	0.240	0.180	0.140	0.100	0.005
Sodium Dissolved/Filtered	311	9.613	9.379	151.000	12.340	8.380	6.096	1.350
Total Dissolved Solids	307	206.593	29.850	399.906	237.805	206.884	176.179	68.197
Sulphate Dissolved	311	47.554	9.777	75.000	57.580	48.600	35.220	2.400
Physicals (Units)								
Oxygen Dissolved	362	10.348	1.865	14.970	12.900	10.285	8.097	5.550
PH units	352	8.208	0.400	9.140	8.710	8.185	7.700	6.570
Residue Non-filterable	368	75.266	262.154	2500.000	154.800	8.400	2.400	0.500
Sodium Adsorption Ratio (units)	183	0.296	0.099	0.820	0.392	0.270	0.220	0.120
Metals (µg/L)								
Aluminum Dissolved	188	32.565	53.465	639.000	50.650	27.000	5.600	3.100
Aluminum Total	188	655.557	1867.881	18100.000	1294.000	115.000	44.710	13.400
Arsenic Dissolved	188	0.378	0.155	0.900	0.614	0.320	0.220	0.130
Arsenic Total	188	0.815	1.155	8.790	1.547	0.410	0.280	0.180
Barium Dissolved	188	64.541	7.471	83.100	73.890	64.700	55.750	33.200
Barium Total	188	88.402	63.382	791.000	114.200	73.050	63.450	47.700
Beryllium Dissolved	188	0.002	0.004	0.047	0.005	0.001	0.001	0.001
Beryllium Total	188	0.045	0.132	1.430	0.095	0.007	0.003	0.001
Boron Dissolved	188	16.366	3.538	32.900	19.670	16.150	12.900	5.900
Boron Total	188	18.858	11.617	140.000	21.670	17.100	14.330	12.000
Cadmium Dissolved	188	0.041	0.061	0.515	0.107	0.020	0.011	0.004
Cadmium Total	188	0.063	0.116	0.918	0.164	0.022	0.012	0.003
Chromium Dissolved	188	0.079	0.086	0.950	0.100	0.061	0.047	0.020
Chromium Total	188	1.042	2.870	29.300	1.975	0.225	0.110	0.042
Cobalt Dissolved	188	0.083	0.059	0.669	0.121	0.072	0.041	0.019
Cobalt Total	188	0.674	1.897	21.500	1.435	0.154	0.082	0.051
Copper Dissolved	188	0.753	0.379	2.400	1.131	0.640	0.443	0.310
Copper Total	188	2.223	4.230	44.200	4.662	0.905	0.620	0.380
Iron Dissolved	186	23.871	37.617	235.000	55.000	11.050	5.710	0.250
Iron Total	188	1219.126	3650.972	39600.000	2567.000	157.000	74.190	4.000
Lead Dissolved	188	0.050	0.085	0.911	0.088	0.030	0.016	0.005
Lead Total	188	0.891	2.520	28.100	1.957	0.158	0.088	0.011
Lithium Dissolved	188	4.975	1.217	10.800	6.397	4.800	3.781	2.230
Lithium Total	188	6.619	5.643	56.900	8.491	5.300	4.300	3.070
Manganese Dissolved	188	3.957	4.686	40.800	7.141	2.675	1.272	0.180
Manganese Total	188	44.083	111.505	1220.000	90.240	10.345	4.410	1.140
Molybdenum Dissolved	188	1.151	0.821	11.900	1.367	1.070	0.844	0.482
Molybdenum Total	188	1.183	0.800	11.500	1.437	1.125	0.828	0.456
Nickel Dissolved	188	0.900	0.445	2.920	1.391	0.770	0.570	0.400
Nickel Total	188	2.588	5.560	61.400	5.271	0.965	0.703	0.460
Selenium Dissolved	188	0.257	0.095	0.630	0.387	0.230	0.170	0.025
Selenium Total	188	0.287	0.123	0.920	0.450	0.250	0.180	0.025

Silver Total	188	0.014	0.039	0.362	0.029	0.003	0.001	0.001
Thallium Dissolved	188	0.006	0.004	0.040	0.010	0.005	0.003	0.001
Thallium Total	188	0.019	0.037	0.387	0.035	0.008	0.004	0.001
Uranium Dissolved	188	0.535	0.080	0.820	0.631	0.529	0.444	0.293
Uranium Total	188	0.635	0.224	2.280	0.769	0.581	0.500	0.361
Vanadium Dissolved	188	0.293	0.202	2.040	0.483	0.242	0.137	0.083
Vanadium Total	188	1.818	4.492	42.100	3.662	0.430	0.249	0.119
Zinc Dissolved	188	1.359	1.040	11.700	2.210	1.200	0.566	0.300
Zinc Total	188	6.201	14.784	160.000	12.580	1.920	1.000	0.220

Table A5: Red Deer River near Bindloss Statistics

Parameter	n	Mean	SD	Max	90th %ile	Median	10th %ile	Min
Nutrients (mg/L)								
Ammonia Dissolved	376	0.037	0.070	0.625	0.094	0.015	0.007	0.003
Nitrogen Dissolved NO^3 & NO^2	625	0.222	0.323	3.840	0.536	0.080	0.005	0.001
Nitrogen Total	290	1.047	1.398	16.490	2.170	0.653	0.360	0.182
Phosphorous Total	553	0.165	0.523	11.000	0.384	0.061	0.010	0.002
Phosphorous Total Dissolved	522	0.015	0.019	0.180	0.033	0.008	0.003	0.001
Major Ions (mg/L)								
Chloride Dissolved	576	6.119	3.666	45.000	10.490	5.520	2.410	0.050
Fluoride Dissolved	518	0.155	0.041	0.600	0.190	0.150	0.120	0.005
Sodium Dissolved/Filtered	577	28.408	11.597	108.000	42.680	26.600	16.120	9.700
Total Dissolved Solids	383	301.476	73.964	602.864	403.472	291.000	217.107	147.584
Sulphate Dissolved	576	69.209	23.575	236.000	99.960	65.500	44.030	24.000
Physicals (Units)								
Oxygen Dissolved	530	9.363	2.710	18.300	12.725	9.265	6.390	0.380
PH units	543	8.186	0.332	9.150	8.580	8.200	7.742	7.010
Residue Non-filterable	571	259.356	648.929	6600.000	585.600	53.600	4.000	0.500
Sodium Adsorption Ratio (units)	576	0.903	0.368	3.430	1.314	0.846	0.521	0.358
Metals (µg/L)								
Aluminum Dissolved	188	42.941	205.949	1800.000	16.210	3.400	1.100	0.100
Aluminum Total	188	2481.811	6290.628	58500.000	6257.000	541.500	56.780	2.100
Arsenic Dissolved	188	0.614	0.244	1.780	0.904	0.550	0.350	0.250
Arsenic Total	188	1.880	2.592	21.800	3.903	1.010	0.400	0.310
Barium Dissolved	188	92.966	20.224	153.000	123.700	88.600	70.290	46.300
Barium Total	188	179.711	157.639	1110.000	334.500	126.000	98.030	68.900
Beryllium Dissolved	188	0.006	0.026	0.301	0.007	0.001	0.001	0.001
Beryllium Total	188	0.250	0.601	4.770	0.673	0.049	0.006	0.001
Boron Dissolved	188	24.590	5.850	44.100	33.400	23.350	17.530	13.400
Boron Total	188	27.682	6.968	52.100	36.840	26.050	20.500	4.800
Cadmium Dissolved	188	0.040	0.051	0.525	0.064	0.026	0.014	0.003
Cadmium Total	188	0.128	0.216	1.590	0.354	0.049	0.021	0.009
Chromium Dissolved	188	0.135	0.316	2.490	0.201	0.060	0.030	0.020
Chromium Total	188	2.992	7.308	70.400	7.737	0.720	0.137	0.057
Cobalt Dissolved	188	0.142	0.233	2.490	0.184	0.101	0.053	0.036
Cobalt Total	188	2.552	5.529	39.400	6.592	0.611	0.108	0.049
Copper Dissolved	188	1.659	0.995	8.310	2.695	1.380	0.833	0.220
Copper Total	188	7.731	14.425	110.000	19.670	2.855	1.070	0.730
Iron Dissolved	188	60.441	281.687	2620.000	75.250	6.350	2.730	0.700
Iron Total	188	3762.917	8481.881	67100.000	10200.000	809.500	100.320	5.200
Lead Dissolved	188	0.096	0.360	4.130	0.110	0.034	0.016	0.003
Lead Total	188	3.700	8.382	60.100	10.950	0.655	0.127	0.007
Lithium Dissolved	188	13.051	4.394	34.800	18.900	11.850	8.390	6.200
Lithium Total	188	16.734	8.546	65.800	24.810	14.400	10.030	4.490
Manganese Dissolved	188	5.923	23.022	296.000	6.591	2.740	1.350	0.380
Manganese Total	188	131.788	235.256	1710.000	416.600	47.100	7.295	0.120
Molybdenum Dissolved	188	1.409	0.279	2.250	1.787	1.370	1.080	0.749
Molybdenum Total	188	1.229	0.381	3.070	1.677	1.245	0.744	0.055
Nickel Dissolved	188	1.769	0.965	8.350	2.706	1.520	0.903	0.750
Nickel Total	188	7.945	14.695	109.000	19.920	2.895	1.059	0.880
Selenium Dissolved	188	0.339	0.122	1.000	0.467	0.320	0.220	0.090

Selenium Total	188	0.394	0.236	2.020	0.567	0.340	0.230	0.025
Silver Total	188	0.038	0.086	0.674	0.095	0.010	0.002	0.001
Thallium Dissolved	188	0.012	0.010	0.099	0.018	0.010	0.005	0.001
Thallium Total	188	0.068	0.125	0.838	0.176	0.024	0.008	0.001
Uranium Dissolved	188	1.354	0.401	3.620	1.930	1.250	0.956	0.785
Uranium Total	188	1.869	1.148	9.400	2.918	1.530	1.060	0.589
Vanadium Dissolved	188	0.567	0.545	4.970	0.858	0.496	0.199	0.141
Vanadium Total	188	6.097	12.917	116.000	15.520	1.820	0.370	0.194
Zinc Dissolved	188	1.378	1.913	18.100	2.370	0.960	0.363	0.025
Zinc Total	188	18.693	40.174	274.000	51.620	4.620	1.206	0.025

Table A6: South Saskatchewan Statistics

Parameter	n	Mean	SD	Max	90th %ile	Median	10th %ile	Min
Nutrients (mg/L)								
Ammonia Dissolved	372	0.052	0.077	0.470	0.159	0.016	0.007	0.003
Nitrogen Dissolved NO^3 & NO^2	649	0.444	0.448	1.900	1.100	0.286	0.005	0.001
Nitrogen Total	321	0.915	0.616	5.270	1.584	0.821	0.310	0.175
Phosphorous Total	627	0.088	0.154	1.670	0.210	0.038	0.013	0.002
Phosphorous Total Dissolved	586	0.015	0.030	0.483	0.029	0.007	0.003	0.001
Major Ions (mg/L)								
Chloride Dissolved	521	7.698	5.338	63.500	13.640	6.630	2.600	0.050
Fluoride Dissolved	510	0.146	0.036	0.360	0.190	0.148	0.110	0.005
Sodium Dissolved/Filtered	525	18.158	6.956	52.000	26.300	17.600	10.000	4.100
Total Dissolved Solids	380	241.351	47.145	399.544	304.760	235.418	182.932	98.000
Sulphate Dissolved	521	61.544	17.378	151.000	83.380	61.900	37.780	20.800
Physicals (Units)								
Oxygen Dissolved	531	10.724	2.222	16.500	13.620	10.650	7.976	5.500
PH units	537	8.301	0.368	9.320	8.720	8.350	7.800	7.050
Residue Non-filterable	620	93.626	218.988	2150.000	249.000	18.300	4.000	0.500
Sodium Adsorption Ratio (units)	521	0.610	0.238	2.307	0.886	0.577	0.357	0.195
Metals (µg/L)								
Aluminum Dissolved	189	14.038	38.772	506.000	16.300	9.800	5.240	1.500
Aluminum Total	189	896.520	3011.570	28200.000	1704.000	191.000	65.400	9.400
Arsenic Dissolved	189	0.494	0.160	1.240	0.682	0.490	0.300	0.210
Arsenic Total	189	1.008	1.368	12.500	1.666	0.680	0.400	0.310
Barium Dissolved	189	77.763	11.807	122.000	93.180	77.300	64.200	47.600
Barium Total	189	107.443	75.050	748.000	127.000	90.300	76.700	41.900
Beryllium Dissolved	189	0.002	0.004	0.039	0.003	0.001	0.001	0.001
Beryllium Total	189	0.063	0.174	1.510	0.124	0.014	0.005	0.001
Boron Dissolved	189	20.516	4.358	33.000	26.260	20.300	14.540	10.700
Boron Total	189	22.151	4.430	39.800	27.620	21.800	17.000	12.400
Cadmium Dissolved	189	0.036	0.075	0.935	0.068	0.021	0.010	0.001
Cadmium Total	189	0.068	0.156	1.240	0.119	0.024	0.014	0.007
Chromium Dissolved	189	0.110	0.228	2.820	0.154	0.070	0.040	0.019
Chromium Total	189	1.202	3.609	32.800	2.326	0.300	0.140	0.060
Cobalt Dissolved	189	0.103	0.048	0.472	0.152	0.099	0.056	0.035
Cobalt Total	189	0.822	2.114	19.500	1.472	0.260	0.132	0.058
Copper Dissolved	189	0.974	0.485	6.110	1.396	0.900	0.614	0.440
Copper Total	189	2.681	5.129	46.500	4.846	1.360	0.868	0.650
Iron Dissolved	189	16.719	62.525	794.000	21.860	7.600	4.500	1.800
Iron Total	189	1412.989	4430.203	41300.000	2786.000	286.000	105.400	11.200
Lead Dissolved	189	0.043	0.054	0.618	0.073	0.034	0.014	0.003
Lead Total	189	1.151	3.103	28.600	2.332	0.282	0.133	0.043
Lithium Dissolved	189	7.990	2.288	20.700	10.800	7.550	5.496	4.560
Lithium Total	189	9.567	4.038	41.800	12.360	8.470	6.778	5.490
Manganese Dissolved	189	1.900	2.683	26.500	2.842	1.330	0.710	0.220
Manganese Total	189	49.500	123.030	1060.000	92.060	14.600	4.852	2.230
Molybdenum Dissolved	189	1.323	0.303	2.810	1.642	1.270	0.990	0.750
Molybdenum Total	189	1.294	0.369	2.960	1.670	1.290	0.807	0.430
Nickel Dissolved	189	0.989	0.309	2.430	1.286	0.930	0.690	0.220
Nickel Total	189	2.830	5.756	51.200	4.936	1.300	0.900	0.660
Selenium Dissolved	189	0.555	0.139	1.050	0.740	0.550	0.390	0.210
Selenium Total	189	0.592	0.181	1.340	0.796	0.570	0.400	0.025

Silver Dissolved	189	0.001	0.001	0.009	0.002	0.001	0.001	0.001
Silver Total	189	0.016	0.051	0.419	0.028	0.003	0.001	0.001
Thallium Dissolved	189	0.007	0.004	0.043	0.010	0.006	0.003	0.001
Thallium Total	189	0.025	0.050	0.454	0.047	0.011	0.006	0.003
Uranium Dissolved	189	1.022	0.234	2.360	1.290	1.000	0.771	0.246
Uranium Total	189	1.193	0.466	5.200	1.456	1.110	0.882	0.700
Vanadium Dissolved	189	0.292	0.156	1.410	0.468	0.252	0.145	0.109
Vanadium Total	189	2.331	6.454	57.000	4.238	0.708	0.331	0.147
Zinc Dissolved	189	1.389	0.933	4.980	2.596	1.200	0.458	0.190
Zinc Total	189	7.037	16.962	147.000	13.240	2.500	1.128	0.060

Table A7: Assiniboine River Statistics

Parameter	n	Mean	SD	Max	90th %ile	Median	10th %ile	Min
Nutrients (mg/L)								
Ammonia Dissolved	393	0.217	0.465	7.230	0.576	0.067	0.025	0.003
Nitrate as N	584	0.241	0.443	4.750	0.759	0.050	0.005	0.001
Nitrogen Total	289	1.689	0.784	7.330	2.517	1.552	1.050	0.596
Phosphorous Total	571	0.153	0.123	1.176	0.270	0.121	0.058	0.013
Phosphorous Total Dissolved	533	0.087	0.101	1.067	0.160	0.057	0.027	0.007
Major Ions (mg/L)								
Chloride Dissolved	565	23.947	18.611	155.000	42.200	19.500	8.800	1.600
Fluoride Dissolved	553	0.194	0.066	0.690	0.250	0.190	0.130	0.040
Sodium Dissolved/Filtered	567	46.353	23.214	203.000	70.160	44.000	21.640	3.700
Total Dissolved Solids	436	671.896	183.605	1440.000	891.276	675.355	445.100	198.000
Sulphate Dissolved	567	219.373	83.894	609.000	338.200	211.000	118.200	38.000
Physicals (Units)								
Oxygen Dissolved	528	8.156	2.693	17.890	11.757	8.000	4.824	0.100
PH units	551	7.893	0.387	10.940	8.314	7.920	7.400	6.500
Residue Non-filterable	548	26.301	34.814	357.000	68.840	13.200	4.000	0.500
Sodium Adsorption Ratio (units)	211	0.956	0.419	5.260	1.224	0.920	0.600	0.310
Metals (µg/L)								
Aluminum Dissolved	188	11.701	56.471	595.000	6.870	2.500	1.200	0.100
Aluminum Total	189	264.638	287.950	2360.000	596.600	147.000	61.600	3.500
Arsenic Dissolved	188	2.838	1.578	12.700	4.767	2.290	1.466	1.040
Arsenic Total	189	3.557	1.839	16.000	5.658	2.960	1.990	1.320
Barium Dissolved	188	56.794	11.256	88.900	70.270	57.100	41.330	29.500
Barium Total	189	65.956	11.373	97.000	80.100	66.200	50.720	34.100
Beryllium Dissolved	188	0.003	0.005	0.046	0.007	0.002	0.001	0.001
Beryllium Total	189	0.021	0.020	0.164	0.045	0.013	0.005	0.001
Boron Dissolved	188	77.461	19.230	147.000	99.010	78.200	53.180	29.800
Boron Total	189	80.559	23.956	273.000	102.200	80.100	55.240	34.700
Cadmium Dissolved	188	0.045	0.106	1.180	0.072	0.022	0.012	0.003
Cadmium Total	189	0.039	0.026	0.263	0.063	0.033	0.019	0.012
Chromium Dissolved	188	0.102	0.159	1.250	0.136	0.060	0.037	0.028
Chromium Total	189	0.554	0.521	4.530	1.134	0.346	0.180	0.082
Cobalt Dissolved	188	0.378	0.120	1.060	0.526	0.357	0.257	0.170
Cobalt Total	189	0.689	0.389	3.230	1.146	0.584	0.351	0.234
Copper Dissolved	188	1.359	0.612	6.030	1.921	1.190	0.933	0.690
Copper Total	189	2.127	1.140	9.440	3.380	1.720	1.194	0.740
Iron Dissolved	188	73.246	159.199	1720.000	128.700	34.550	9.430	2.800
Iron Total	189	874.197	716.432	6410.000	1594.000	624.000	339.400	4.200
Lead Dissolved	188	0.058	0.105	1.030	0.101	0.034	0.014	0.003
Lead Total	189	0.523	0.466	3.750	1.034	0.328	0.167	0.043
Lithium Dissolved	188	58.844	17.707	123.000	77.910	58.650	37.290	15.900
Lithium Total	189	60.801	17.707	130.000	78.820	60.100	38.600	19.300
Manganese Dissolved	188	147.302	160.005	1130.000	336.400	93.000	16.650	2.120
Manganese Total	189	238.055	145.061	1160.000	388.400	218.000	98.920	45.800
Molybdenum Dissolved	188	2.409	0.701	5.080	3.304	2.295	1.636	1.200
Molybdenum Total	189	2.433	0.700	5.030	3.418	2.310	1.714	1.210
Nickel Dissolved	188	2.831	0.573	4.780	3.647	2.765	2.163	1.710
Nickel Total	189	3.675	1.283	10.800	4.960	3.320	2.488	1.990
Selenium Dissolved	188	0.396	0.160	1.230	0.584	0.370	0.230	0.100
Selenium Total	189	0.422	0.194	1.480	0.620	0.380	0.250	0.025

Silver Total	189	0.006	0.006	0.036	0.013	0.004	0.001	0.001
Thallium Dissolved	188	0.013	0.019	0.232	0.019	0.010	0.005	0.001
Thallium Total	189	0.021	0.021	0.240	0.036	0.016	0.008	0.003
Uranium Dissolved	188	4.894	1.708	11.200	7.267	4.510	2.962	2.350
Uranium Total	189	4.993	1.675	11.200	7.276	4.600	3.178	2.380
Vanadium Dissolved	188	1.252	0.752	3.880	2.345	1.090	0.449	0.337
Vanadium Total	189	2.304	1.523	10.600	4.178	1.840	0.825	0.412
Zinc Dissolved	188	1.459	1.292	7.600	3.000	1.200	0.300	0.100
Zinc Total	189	4.088	3.324	29.200	7.560	3.030	1.570	0.760

Table A8: Carrot River Statistics

Parameter	n	Mean	SD	Max	90th %ile	Median	10th %ile	Min
Nutrients (mg/L)								
Ammonia Dissolved	349	0.192	0.254	1.540	0.547	0.063	0.023	0.008
Nitrogen Dissolved NO^3 & NO^2	504	0.104	0.227	2.160	0.223	0.030	0.005	0.004
Nitrogen Total	280	1.209	0.495	4.309	1.817	1.098	0.667	0.385
Phosphorous Total	497	0.099	0.088	0.532	0.219	0.069	0.029	0.003
Phosphorous Total Dissolved	479	0.030	0.032	0.280	0.070	0.018	0.006	0.002
Major Ions (mg/L)								
Chloride Dissolved	449	207.361	203.173	1030.000	498.000	133.000	31.320	2.200
Fluoride Dissolved	451	0.172	0.053	0.370	0.240	0.160	0.110	0.005
Sodium Dissolved/Filtered	451	134.840	125.288	664.000	326.800	90.000	26.720	8.400
Total Dissolved Solids	360	673.502	416.734	2286.000	1295.382	512.200	293.196	167.300
Sulphate Dissolved	453	71.880	39.202	297.000	121.200	63.000	32.760	6.000
Physicals (Units)								
Oxygen Dissolved	480	6.573	3.929	17.740	11.500	7.050	0.596	0.000
PH units	499	7.612	0.382	9.670	8.065	7.615	7.185	5.460
Residue Non-filterable	500	44.662	85.120	1083.000	100.800	16.000	6.000	0.500
Sodium Adsorption Ratio (units)	450	3.102	2.451	13.177	6.878	2.340	0.796	0.299
Metals (µg/L)								
Aluminum Dissolved	164	7.746	16.905	176.000	12.810	4.450	1.090	0.100
Aluminum Total	165	320.288	471.823	2950.000	750.000	165.000	32.400	3.100
Arsenic Dissolved	164	1.536	0.691	3.370	2.651	1.245	0.850	0.110
Arsenic Total	165	2.283	0.867	5.200	3.560	2.080	1.380	1.090
Barium Dissolved	164	71.654	33.018	186.000	124.800	60.300	43.990	12.600
Barium Total	165	85.663	35.196	198.000	146.000	73.800	53.200	32.900
Beryllium Dissolved	164	0.005	0.003	0.016	0.008	0.004	0.002	0.001
Beryllium Total	165	0.028	0.037	0.248	0.055	0.016	0.006	0.002
Boron Dissolved	164	72.056	40.251	269.000	129.200	61.350	35.100	15.800
Boron Total	165	74.452	40.080	244.000	129.000	62.300	37.100	29.400
Cadmium Dissolved	164	0.030	0.028	0.191	0.054	0.021	0.011	0.003
Cadmium Total	165	0.041	0.040	0.263	0.079	0.027	0.016	0.008
Chromium Dissolved	164	0.093	0.126	1.380	0.122	0.070	0.040	0.011
Chromium Total	165	0.754	1.049	6.600	1.610	0.410	0.169	0.067
Cobalt Dissolved	164	0.412	0.286	1.470	0.860	0.296	0.171	0.099
Cobalt Total	165	0.760	0.559	3.860	1.280	0.586	0.342	0.203
Copper Dissolved	164	1.040	0.473	2.860	1.601	1.035	0.359	0.040
Copper Total	165	1.936	1.565	10.600	3.150	1.510	0.780	0.390
Iron Dissolved	164	250.563	385.748	2540.000	557.500	115.000	55.290	21.700
Iron Total	165	1561.873	1314.215	7220.000	3480.000	1080.000	482.000	105.000
Lead Dissolved	164	0.057	0.068	0.624	0.107	0.043	0.015	0.003
Lead Total	165	0.495	0.654	4.370	1.200	0.280	0.099	0.016
Lithium Dissolved	164	33.054	15.660	89.600	51.390	29.700	17.410	5.700
Lithium Total	165	34.669	15.392	87.200	54.700	31.300	18.600	9.900
Manganese Dissolved	164	484.147	650.960	2810.000	1643.000	128.500	36.410	2.710
Manganese Total	165	561.982	656.661	2910.000	1700.000	229.000	88.800	49.900
Molybdenum Dissolved	164	1.798	0.525	3.580	2.462	1.780	1.169	0.219
Molybdenum Total	165	1.818	0.495	3.500	2.480	1.790	1.230	0.918
Nickel Dissolved	164	2.711	0.514	4.000	3.328	2.710	2.159	0.250
Nickel Total	165	3.723	1.715	14.000	5.340	3.220	2.650	1.470
Selenium Dissolved	164	0.256	0.117	0.900	0.341	0.240	0.169	0.025

Selenium Total	165	0.292	0.138	0.970	0.440	0.260	0.190	0.140
Silver Total	165	0.007	0.009	0.050	0.016	0.004	0.001	0.001
Thallium Dissolved	164	0.012	0.017	0.193	0.019	0.009	0.004	0.001
Thallium Total	165	0.024	0.028	0.192	0.042	0.016	0.008	0.001
Uranium Dissolved	164	1.664	0.834	4.660	2.634	1.545	0.760	0.097
Uranium Total	165	1.770	0.819	4.730	2.790	1.630	0.878	0.445
Vanadium Dissolved	164	0.531	0.321	1.800	0.948	0.467	0.149	0.003
Vanadium Total	165	1.783	1.800	10.800	3.380	1.240	0.462	0.158
Zinc Dissolved	164	1.170	0.997	8.880	2.028	0.905	0.400	0.230
Zinc Total	165	3.662	4.558	27.700	7.300	1.920	1.100	0.360

Table A9: Churchill River Statistics

Parameter	n	Mean	SD	Max	90th %ile	Median	10th %ile	Min
Nutrients (mg/L)								
Ammonia Dissolved	142	0.013	0.008	0.042	0.024	0.011	0.005	0.003
Nitrogen Dissolved NO^3 & NO^2	258	0.023	0.035	0.380	0.058	0.005	0.005	0.003
Nitrogen Total	97	0.390	0.137	1.539	0.485	0.370	0.290	0.258
Phosphorous Total	257	0.018	0.014	0.144	0.025	0.016	0.009	0.004
Phosphorous Total Dissolved	239	0.007	0.004	0.030	0.010	0.006	0.003	0.002
Major Ions (mg/L)								
Chloride Dissolved	259	1.306	0.514	4.900	1.900	1.200	0.870	0.005
Fluoride Dissolved	259	0.095	0.021	0.170	0.120	0.090	0.080	0.025
Sodium Dissolved/Filtered	259	3.176	0.772	6.590	4.230	3.100	2.300	1.720
Total Dissolved Solids	190	45.927	11.640	187.000	62.050	43.700	32.900	25.000
Sulphate Dissolved	259	2.880	0.911	7.100	4.000	2.700	2.000	0.600
Physicals (Units)								
Oxygen Dissolved	246	11.165	2.343	18.000	14.200	10.945	8.302	6.160
PH units	251	7.486	0.469	9.810	8.100	7.500	6.900	6.200
Residue Non-filterable	253	3.496	3.480	46.000	6.000	3.200	0.740	0.500
Sodium Adsorption Ratio (units)	63	0.238	0.032	0.440	0.270	0.230	0.212	0.190
Metals (µg/L)								
Aluminum Dissolved	55	23.913	13.733	84.600	36.600	22.800	9.400	3.800
Aluminum Total	56	120.636	72.208	399.000	204.300	117.500	42.860	26.300
Arsenic Dissolved	55	0.287	0.077	0.710	0.360	0.270	0.220	0.180
Arsenic Total	56	0.315	0.117	1.090	0.379	0.300	0.240	0.210
Barium Dissolved	55	14.757	7.039	63.300	17.800	13.700	10.700	9.100
Barium Total	56	16.543	8.121	73.500	19.460	15.450	12.010	10.300
Beryllium Dissolved	55	0.003	0.001	0.006	0.005	0.003	0.001	0.001
Beryllium Total	56	0.007	0.004	0.028	0.011	0.007	0.003	0.001
Boron Dissolved	55	11.755	2.497	18.800	15.100	11.600	8.800	6.100
Boron Total	56	11.921	2.482	18.900	15.240	11.700	8.900	6.300
Cadmium Dissolved	55	0.012	0.011	0.048	0.026	0.008	0.002	0.001
Cadmium Total	56	0.007	0.009	0.062	0.012	0.005	0.002	0.001
Chromium Dissolved	55	0.090	0.029	0.183	0.127	0.080	0.060	0.042
Chromium Total	56	0.310	0.141	0.850	0.474	0.294	0.141	0.100
Cobalt Dissolved	55	0.017	0.008	0.066	0.020	0.016	0.012	0.001
Cobalt Total	56	0.072	0.060	0.450	0.107	0.067	0.028	0.016
Copper Dissolved	55	0.504	0.163	1.110	0.680	0.460	0.340	0.260
Copper Total	56	0.589	0.244	1.880	0.808	0.555	0.410	0.280
Iron Dissolved	55	26.140	15.160	88.200	43.700	21.800	11.800	8.000
Iron Total	56	157.329	122.915	910.000	237.800	142.500	59.340	34.500
Lead Dissolved	55	0.022	0.025	0.157	0.034	0.016	0.007	0.003
Lead Total	56	0.088	0.092	0.697	0.106	0.077	0.031	0.022
Lithium Dissolved	55	3.847	0.827	8.000	4.810	3.770	3.000	2.600
Lithium Total	56	4.016	0.856	8.800	4.781	3.945	3.200	2.900
Manganese Dissolved	55	1.071	0.606	3.030	1.620	0.920	0.520	0.430
Manganese Total	56	16.138	8.351	37.700	28.440	13.550	7.628	3.640
Molybdenum Dissolved	55	0.167	0.110	0.933	0.199	0.147	0.119	0.079
Molybdenum Total	56	0.168	0.104	0.908	0.195	0.154	0.121	0.088
Nickel Dissolved	55	0.326	0.138	1.010	0.390	0.300	0.230	0.190
Nickel Total	56	0.431	0.235	1.980	0.566	0.415	0.261	0.190
Thallium Dissolved	55	0.003	0.007	0.056	0.003	0.002	0.001	0.001
Thallium Total	56	0.005	0.006	0.043	0.006	0.004	0.002	0.001

Uranium Dissolved	55	0.077	0.077	0.617	0.104	0.064	0.043	0.030
Uranium Total	56	0.086	0.081	0.664	0.105	0.074	0.052	0.035
Vanadium Dissolved	55	0.164	0.061	0.378	0.244	0.167	0.087	0.071
Vanadium Total	56	0.372	0.214	1.530	0.539	0.346	0.143	0.115
Zinc Dissolved	55	0.657	0.669	5.000	1.130	0.500	0.240	0.100
Zinc Total	56	0.796	0.584	3.650	1.183	0.660	0.400	0.200

Table A10: Qu'Appelle River Statistics

Parameter	n	Mean	SD	Max	90th %ile	Median	10th %ile	Min
Nutrients (mg/L)								
Ammonia Dissolved	354	0.068	0.090	1.070	0.137	0.041	0.022	0.007
Nitrogen Dissolved NO^3 & NO^2	488	0.144	0.205	1.920	0.360	0.059	0.005	0.005
Nitrogen Total	267	1.369	0.520	4.375	1.879	1.252	0.945	0.346
Phosphorous Total	487	0.211	0.095	0.983	0.319	0.196	0.118	0.029
Phosphorous Total Dissolved	487	0.131	0.067	0.436	0.230	0.123	0.055	0.010
Major Ions (mg/L)								
Chloride Dissolved	448	69.770	19.415	124.000	92.970	70.250	44.460	10.000
Fluoride Dissolved	451	0.198	0.046	0.570	0.250	0.200	0.150	0.020
Sodium Dissolved/Filtered	448	154.282	38.136	244.000	201.400	157.000	109.000	23.600
Total Dissolved Solids	382	959.763	168.825	1380.370	1145.800	979.500	777.400	226.666
Sulphate Dissolved	450	402.838	84.855	633.000	492.000	414.000	302.500	16.700
Physicals (Units)								
Oxygen Dissolved	478	9.653	2.224	15.700	12.447	9.800	6.715	0.700
PH units	482	8.175	0.307	9.290	8.543	8.200	7.800	6.480
Residue Non-filterable	490	63.096	78.910	917.000	136.500	38.700	9.000	0.500
Sodium Adsorption Ratio (units)	451	3.054	1.032	5.668	4.176	3.228	1.922	0.000
Metals (µg/L)								
Aluminum Dissolved	164	5.704	16.507	184.000	6.960	2.350	1.090	0.100
Aluminum Total	165	517.310	747.067	5970.000	1060.000	277.000	80.500	33.100
Arsenic Dissolved	164	5.962	2.006	12.400	8.801	5.560	3.520	1.730
Arsenic Total	165	6.875	2.056	12.700	9.880	6.490	4.410	2.940
Barium Dissolved	164	54.001	8.201	78.300	62.160	54.200	46.510	24.000
Barium Total	165	73.881	25.098	247.000	95.200	67.200	55.600	27.100
Beryllium Dissolved	164	0.004	0.006	0.033	0.012	0.002	0.001	0.001
Beryllium Total	165	0.040	0.053	0.456	0.080	0.024	0.007	0.003
Boron Dissolved	164	199.050	47.957	308.000	252.100	204.500	127.800	54.400
Boron Total	165	203.013	48.090	313.000	257.000	212.000	140.000	68.200
Cadmium Dissolved	164	0.035	0.063	0.674	0.058	0.019	0.008	0.002
Cadmium Total	165	0.038	0.033	0.265	0.067	0.027	0.016	0.008
Chromium Dissolved	164	0.096	0.227	2.820	0.148	0.050	0.030	0.003
Chromium Total	165	0.933	1.260	10.500	1.890	0.510	0.204	0.080
Cobalt Dissolved	164	0.317	0.116	0.720	0.447	0.310	0.174	0.118
Cobalt Total	165	0.976	1.001	8.550	1.720	0.640	0.337	0.197
Copper Dissolved	164	1.360	0.637	5.700	2.031	1.205	0.839	0.610
Copper Total	165	2.746	2.344	20.800	4.490	1.990	1.200	0.710
Iron Dissolved	164	17.129	40.580	459.000	30.070	7.300	3.300	1.100
Iron Total	165	1144.285	1578.357	13000.000	2380.000	609.000	235.000	122.000
Lead Dissolved	164	0.042	0.092	1.090	0.073	0.021	0.009	0.003
Lead Total	165	0.888	1.214	10.200	1.900	0.459	0.154	0.091
Lithium Dissolved	164	95.172	19.185	150.000	116.100	96.850	71.020	34.000
Lithium Total	165	98.001	18.770	148.000	119.000	101.000	73.100	39.500
Manganese Dissolved	164	93.488	164.858	1620.000	179.900	54.750	7.118	1.070
Manganese Total	165	267.272	279.470	2370.000	411.000	201.000	93.300	49.800
Molybdenum Dissolved	164	4.058	0.634	5.370	4.843	4.015	3.278	2.050
Molybdenum Total	165	4.009	0.727	5.340	4.880	4.010	3.140	1.510
Nickel Dissolved	164	3.567	0.656	6.390	4.422	3.410	2.808	2.120
Nickel Total	165	5.345	2.864	26.900	7.700	4.570	3.140	2.080
Selenium Dissolved	164	0.563	0.234	2.040	0.741	0.530	0.369	0.170

Selenium Total	165	0.595	0.243	2.100	0.780	0.550	0.400	0.100
Silver Total	165	0.007	0.009	0.062	0.016	0.004	0.001	0.001
Thallium Dissolved	164	0.012	0.021	0.199	0.015	0.008	0.004	0.001
Thallium Total	165	0.023	0.026	0.194	0.041	0.017	0.006	0.002
Uranium Dissolved	164	3.121	0.837	5.710	4.153	3.075	2.208	1.030
Uranium Total	165	3.269	0.843	5.680	4.270	3.240	2.320	1.100
Vanadium Dissolved	164	2.341	0.973	5.330	3.793	2.200	1.148	0.663
Vanadium Total	165	4.251	2.887	22.000	7.360	3.390	1.820	1.060
Zinc Dissolved	164	1.004	1.293	13.900	2.165	0.625	0.200	0.070
Zinc Total	165	6.015	8.356	72.600	12.100	3.400	1.340	0.730

Table A11: Red Deer River at Erwood Statistics

Parameter	n	Mean	SD	Max	90th %ile	Median	10th %ile	Min
Nutrients (mg/L)								
Ammonia Dissolved	255	0.064	0.083	0.168	0.016	0.009	0.027	0.501
Nitrogen Dissolved NO^3 & NO^2	190	0.220	0.358	2.590	0.679	0.034	0.005	0.003
Nitrogen Total	186	1.229	0.578	5.377	1.869	1.132	0.672	0.443
Phosphorous Total	412	0.057	0.090	1.000	0.110	0.029	0.014	0.008
Phosphorous Total Dissolved	383	0.024	0.032	0.297	0.045	0.016	0.008	0.002
Major Ions (mg/L)								
Chloride Dissolved	459	5.268	2.683	25.000	8.142	4.700	2.700	0.500
Fluoride Dissolved	431	0.134	0.039	0.350	0.180	0.130	0.090	0.050
Sodium Dissolved/Filtered	459	15.556	7.404	76.300	24.000	14.500	7.900	1.800
Total Dissolved Solids	320	344.002	131.878	824.498	531.762	306.607	192.817	46.024
Sulphate Dissolved	459	73.928	39.462	314.000	128.000	70.000	28.940	2.260
Physicals (Units)								
Oxygen Dissolved	399	10.180	2.470	16.610	13.200	10.300	7.108	1.000
PH units	410	7.999	0.444	10.900	8.510	8.000	7.400	6.560
Residue Non-filterable	412	16.946	41.729	404.000	39.300	3.800	1.000	0.500
Sodium Adsorption Ratio (units)	452	0.408	0.120	1.232	0.540	0.404	0.275	0.042
Metals (µg/L)								
Aluminum Dissolved	127	8.470	10.918	83.000	16.420	5.400	2.400	0.100
Aluminum Total	128	177.496	321.536	2410.000	424.300	55.500	20.600	9.100
Arsenic Dissolved	127	1.218	0.442	2.860	1.896	1.060	0.822	0.250
Arsenic Total	128	1.521	0.593	3.530	2.358	1.380	0.933	0.280
Barium Dissolved	127	38.990	11.220	71.200	53.580	37.000	26.860	12.000
Barium Total	128	44.843	11.581	76.800	58.280	44.550	31.530	14.300
Beryllium Dissolved	127	0.004	0.003	0.019	0.007	0.003	0.002	0.001
Beryllium Total	128	0.018	0.026	0.182	0.039	0.009	0.003	0.001
Boron Dissolved	127	47.665	14.463	84.300	66.540	44.800	29.060	9.300
Boron Total	128	48.670	13.676	80.100	66.800	48.550	31.280	9.800
Cadmium Dissolved	127	0.027	0.034	0.290	0.052	0.019	0.010	0.002
Cadmium Total	129	0.040	0.051	0.332	0.086	0.022	0.010	0.005
Chromium Dissolved	127	0.091	0.086	0.920	0.134	0.070	0.050	0.030
Chromium Total	128	0.502	0.770	5.560	1.334	0.220	0.100	0.060
Cobalt Dissolved	127	0.164	0.073	0.439	0.249	0.162	0.081	0.015
Cobalt Total	128	0.378	0.435	3.110	0.751	0.257	0.101	0.066
Copper Dissolved	128	1.022	0.382	2.760	1.480	0.950	0.670	0.450
Copper Total	128	1.503	1.268	9.580	2.844	1.090	0.746	0.550
Iron Dissolved	127	88.430	58.883	311.000	158.200	73.800	32.760	11.700
Iron Total	128	640.234	878.057	5770.000	1671.000	304.000	140.500	48.300
Lead Dissolved	127	0.039	0.036	0.211	0.074	0.028	0.013	0.003
Lead Total	128	0.311	0.505	3.480	0.738	0.129	0.048	0.024
Lithium Dissolved	127	27.279	8.902	47.300	40.320	26.900	17.100	3.000
Lithium Total	128	28.106	8.652	48.500	40.120	27.900	17.430	3.400
Manganese Dissolved	127	24.028	28.175	217.000	55.980	14.300	6.350	0.810
Manganese Total	128	79.394	84.913	510.000	178.500	53.500	13.960	7.450
Molybdenum Dissolved	127	1.703	0.559	3.500	2.376	1.590	1.162	0.128
Molybdenum Total	128	1.736	0.549	3.530	2.361	1.610	1.196	0.136
Nickel Dissolved	127	1.868	0.428	3.150	2.388	1.820	1.374	0.330
Nickel Total	128	2.425	1.291	10.800	3.612	2.130	1.540	0.450
Selenium Dissolved	127	0.242	0.096	0.820	0.358	0.220	0.150	0.025
Selenium Total	128	0.261	0.108	0.730	0.404	0.235	0.143	0.050

Silver Total	128	0.005	0.007	0.046	0.011	0.002	0.001	0.001
Thallium Dissolved	127	0.011	0.009	0.099	0.014	0.010	0.003	0.001
Thallium Total	128	0.019	0.020	0.154	0.034	0.013	0.008	0.003
Uranium Dissolved	127	1.981	0.896	5.130	3.116	1.840	1.060	0.049
Uranium Total	128	2.062	0.895	5.070	3.185	1.895	1.136	0.060
Vanadium Dissolved	127	0.685	0.337	1.530	1.174	0.630	0.350	0.139
Vanadium Total	128	1.448	1.511	11.600	2.719	1.015	0.480	0.349
Zinc Dissolved	127	1.186	1.051	7.160	2.200	0.900	0.300	0.200
Zinc Total	128	2.955	4.060	26.900	6.117	1.540	0.612	0.300

Table A12: Saskatchewan River Statistics

Parameter	n	Mean	SD	Max	90th %ile	Median	10th %ile	Min
Nutrients (mg/L)								
Ammonia Dissolved	329	0.036	0.036	0.410	0.072	0.024	0.012	0.003
Nitrogen Dissolved NO^3 & NO^2	472	0.114	0.129	0.697	0.320	0.050	0.005	0.002
Nitrogen Total	258	0.608	0.170	1.378	0.788	0.585	0.410	0.284
Phosphorous Total	472	0.053	0.039	0.336	0.105	0.042	0.018	0.009
Phosphorous Total Dissolved	453	0.010	0.008	0.080	0.016	0.008	0.005	0.001
Major Ions (mg/L)								
Chloride Dissolved	472	8.969	15.531	300.000	10.200	7.650	5.480	3.600
Fluoride Dissolved	472	0.138	0.032	0.240	0.180	0.140	0.100	0.018
Sodium Dissolved/Filtered	472	17.396	5.714	106.000	21.730	17.000	12.900	2.440
Total Dissolved Solids	381	231.264	48.133	624.547	277.496	223.617	184.880	146.000
Sulphate Dissolved	472	51.465	11.976	101.000	66.980	51.150	37.000	25.000
Physicals (Units)								
Oxygen Dissolved	457	10.229	2.217	15.900	12.935	10.400	7.238	3.500
PH units	462	7.992	0.377	10.880	8.383	8.000	7.597	5.350
Residue Non-filterable	471	45.981	43.636	280.000	102.800	34.400	7.000	0.500
Sodium Adsorption Ratio (units)	471	0.579	0.147	2.818	0.693	0.573	0.459	0.152
Metals (µg/L)								
Aluminum Dissolved	166	7.979	12.430	147.000	12.040	6.000	2.300	0.100
Aluminum Total	169	458.451	455.866	2640.000	1066.000	296.000	83.840	1.700
Arsenic Dissolved	167	0.799	0.205	1.380	1.108	0.760	0.570	0.480
Arsenic Total	169	1.166	0.404	2.500	1.730	1.100	0.720	0.420
Barium Dissolved	167	73.317	10.713	107.000	87.460	73.100	61.280	42.800
Barium Total	169	84.103	11.689	123.000	98.800	83.700	72.720	16.700
Beryllium Dissolved	166	0.002	0.002	0.008	0.004	0.002	0.001	0.001
Beryllium Total	169	0.031	0.029	0.147	0.071	0.023	0.006	0.001
Boron Dissolved	167	25.857	4.325	40.900	31.180	25.900	19.760	15.100
Boron Total	169	26.376	4.442	39.600	31.980	26.300	20.640	7.000
Cadmium Dissolved	167	0.019	0.017	0.134	0.034	0.013	0.007	0.004
Cadmium Total	169	0.027	0.015	0.087	0.047	0.022	0.012	0.007
Chromium Dissolved	167	0.054	0.039	0.370	0.087	0.043	0.030	0.010
Chromium Total	169	0.887	0.770	4.240	1.886	0.620	0.220	0.027
Cobalt Dissolved	167	0.070	0.022	0.205	0.085	0.068	0.052	0.035
Cobalt Total	169	0.469	0.390	2.050	0.961	0.330	0.134	0.055
Copper Dissolved	167	1.221	0.265	2.320	1.540	1.180	0.920	0.600
Copper Total	169	2.063	0.872	5.800	3.112	1.850	1.194	0.890
Iron Dissolved	166	27.967	25.341	176.000	58.950	20.050	7.200	2.200
Iron Total	169	897.236	817.174	4420.000	1992.000	586.000	234.400	3.800
Lead Dissolved	166	0.028	0.024	0.191	0.049	0.022	0.011	0.003
Lead Total	169	0.535	0.457	2.250	1.090	0.385	0.126	0.010
Lithium Dissolved	167	11.078	2.249	19.200	13.800	10.900	8.168	6.200
Lithium Total	169	11.801	2.270	18.800	14.460	11.800	9.270	1.880
Manganese Dissolved	166	7.811	9.845	46.200	22.200	2.820	0.760	0.440
Manganese Total	169	41.532	27.052	180.000	75.400	33.600	14.900	2.590
Molybdenum Dissolved	167	1.132	0.199	1.610	1.416	1.120	0.863	0.661
Molybdenum Total	169	1.103	0.223	1.650	1.366	1.110	0.849	0.179
Nickel Dissolved	167	1.272	0.213	2.150	1.532	1.230	1.050	0.900
NickelTotal	169	2.332	1.048	6.980	3.596	2.040	1.440	1.070
Selenium Dissolved	166	0.252	0.078	0.550	0.348	0.240	0.172	0.025
Selenium Total	169	0.267	0.076	0.560	0.370	0.260	0.180	0.110

Silver Total	169	0.007	0.006	0.031	0.017	0.005	0.001	0.001
Thallium Dissolved	166	0.007	0.007	0.073	0.010	0.005	0.003	0.001
Thallium Total	169	0.016	0.011	0.058	0.030	0.014	0.005	0.003
Uranium Dissolved	167	0.863	0.180	1.340	1.090	0.852	0.623	0.418
Uranium Total	169	0.908	0.171	1.390	1.112	0.904	0.696	0.205
Vanadium Dissolved	167	0.414	0.174	0.881	0.679	0.370	0.232	0.185
Vanadium Total	169	1.632	1.237	6.740	3.370	1.320	0.500	0.220
Zinc Dissolved	167	0.735	0.568	3.900	1.458	0.600	0.242	0.100
Zinc Total	169	3.717	2.915	15.400	7.662	2.800	1.088	0.500

Appendix B: Nutrients Trending Graphs

Time Series

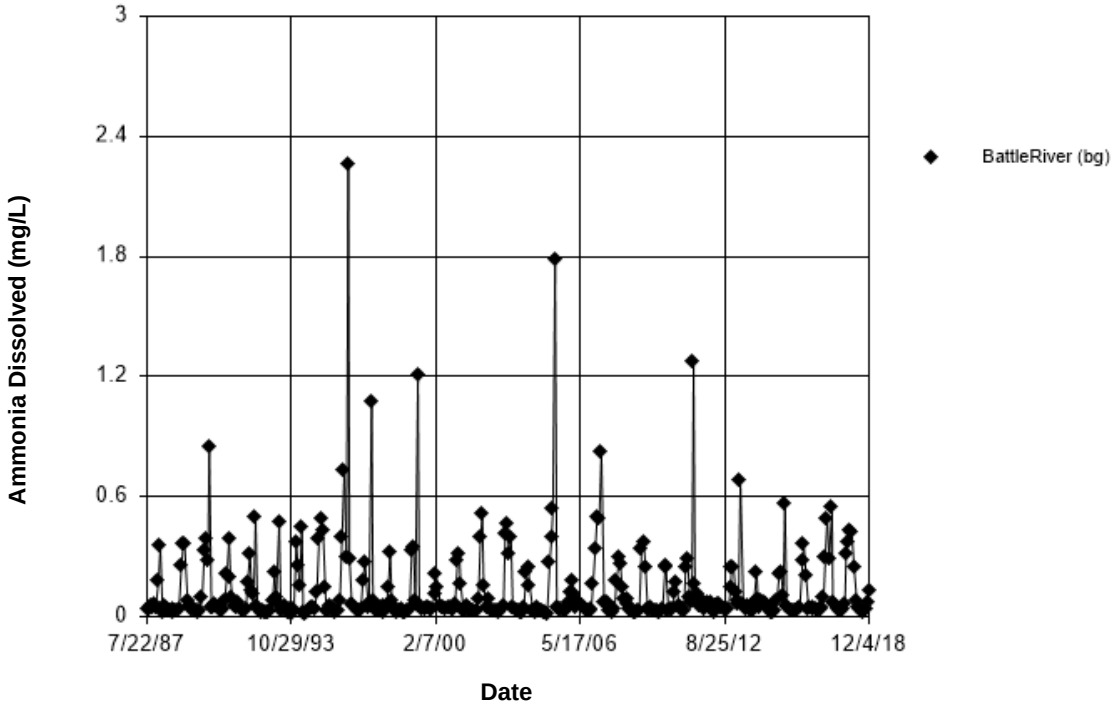

Figure B1 Battle River: Ammonia Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 63.33
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

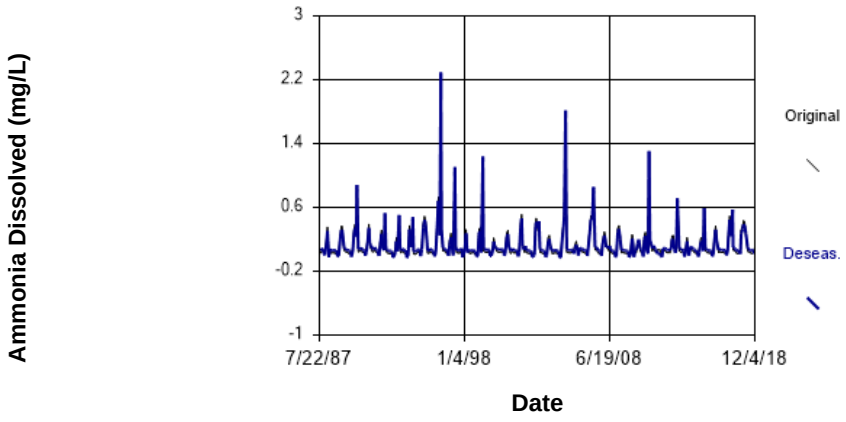

Figure B2 Battle River: Ammonia Dissolved

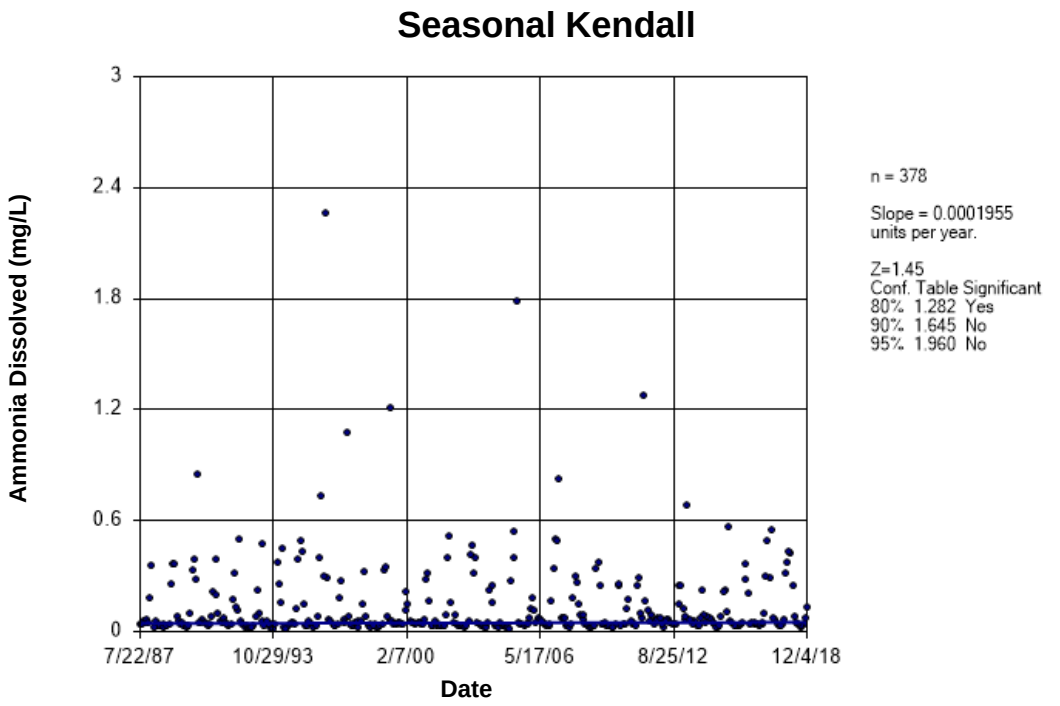

Figure B3 Battle River: Ammonia Dissolved

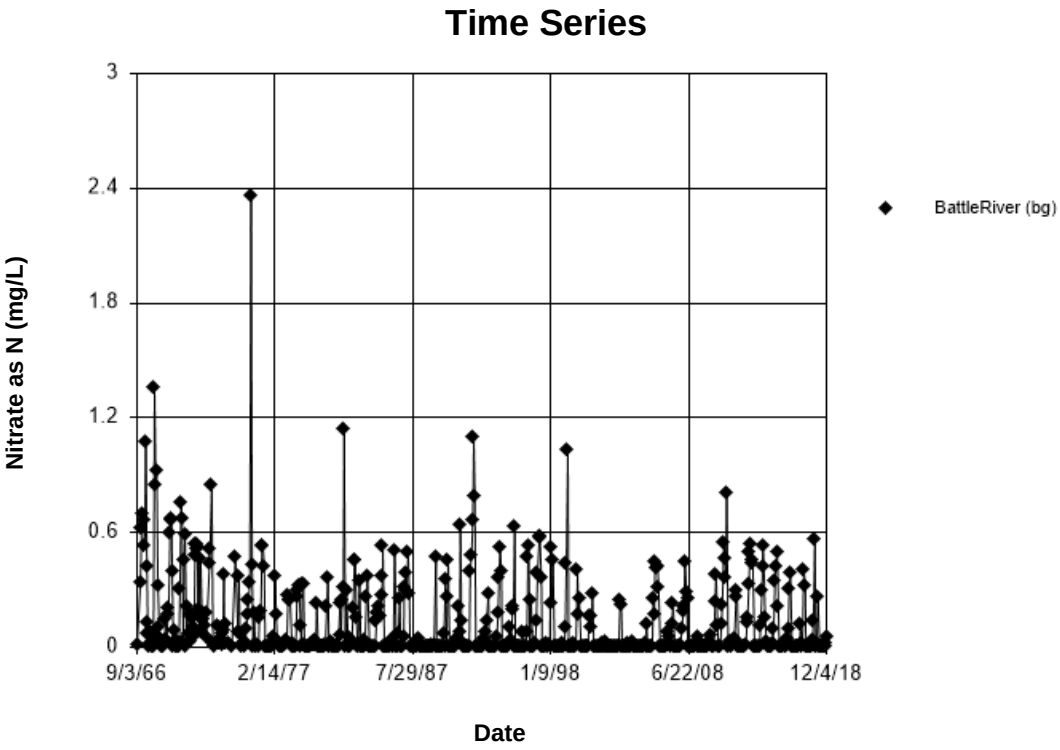

Figure B4 Battle River: Nitrate as N

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 134.1
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 44 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 134.1
Adjusted Kruskal-Wallis statistic (H') = 134.1

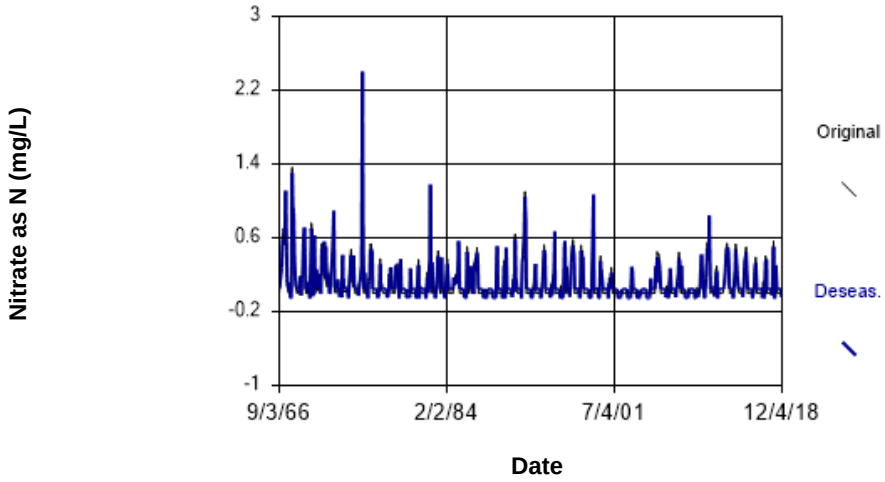

Figure B5 Battle River: Nitrate as N

Seasonal Kendall

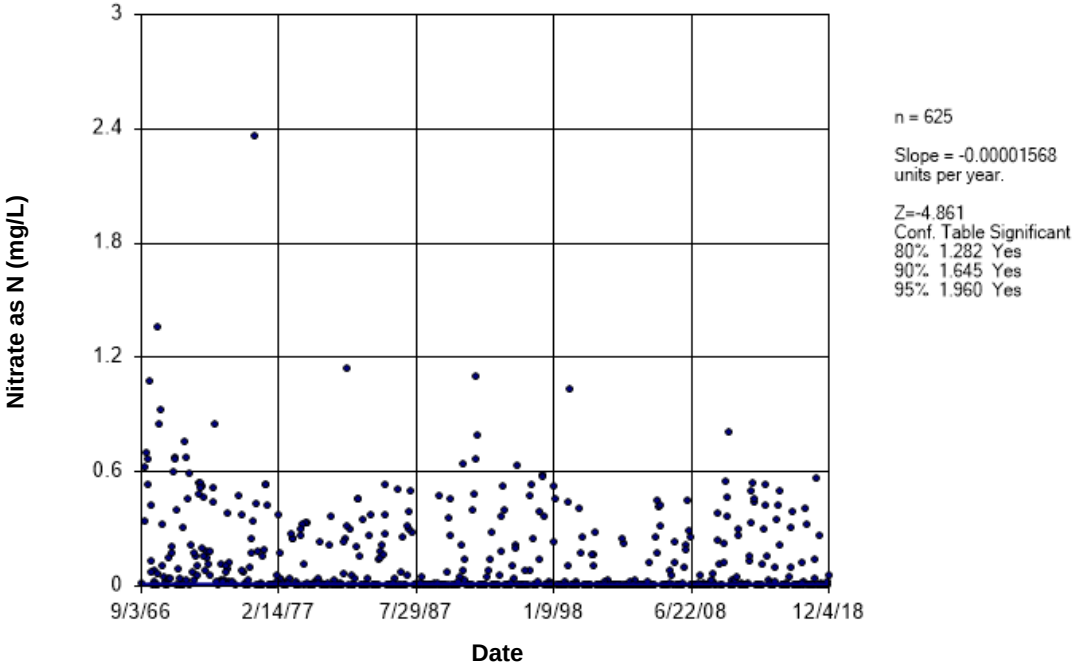

Figure B6 Battle River: Nitrate as N

Time Series

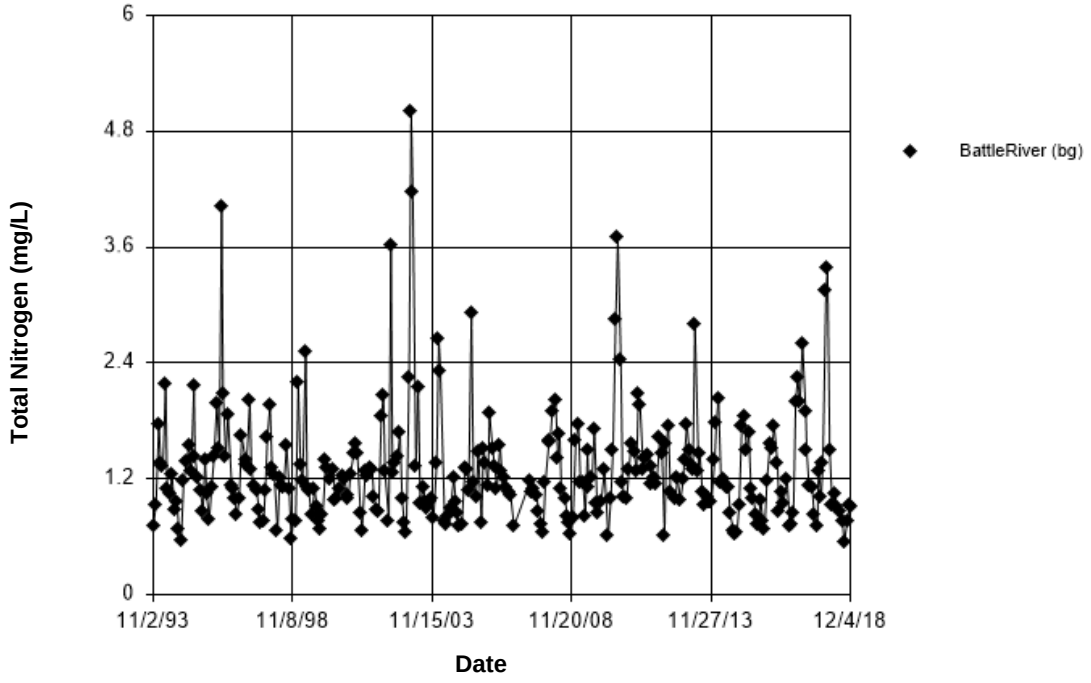

Figure B7 Battle River: Total Nitrogen

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 9.965
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

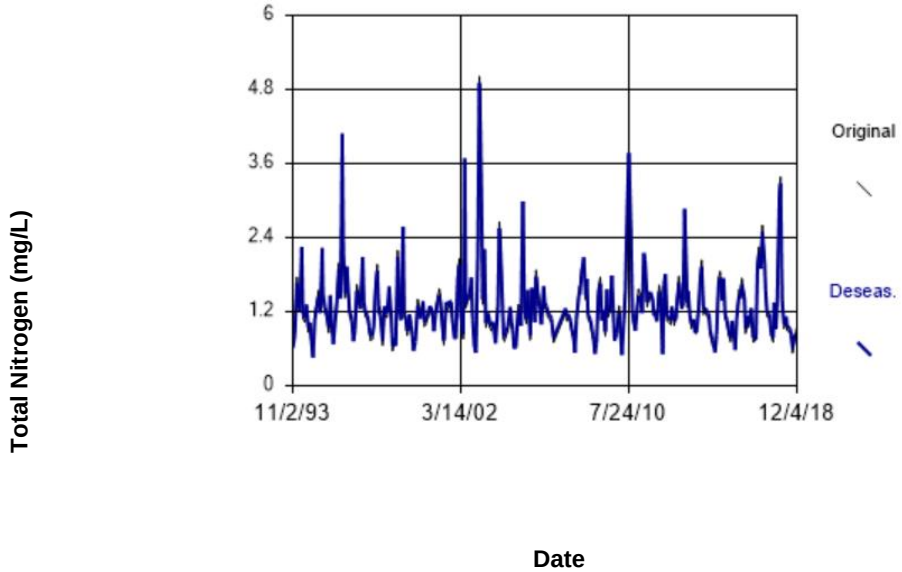

Figure B8 Battle River: Total Nitrogen

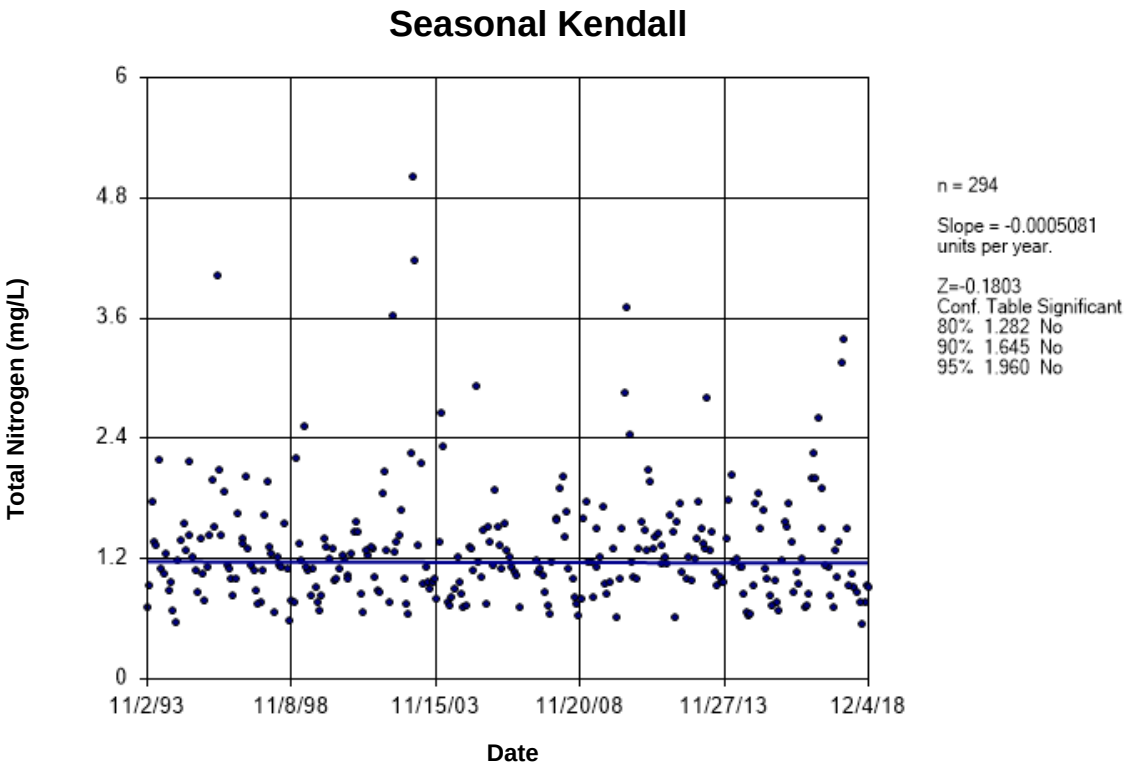

Figure B9 Battle River: Total Nitrogen

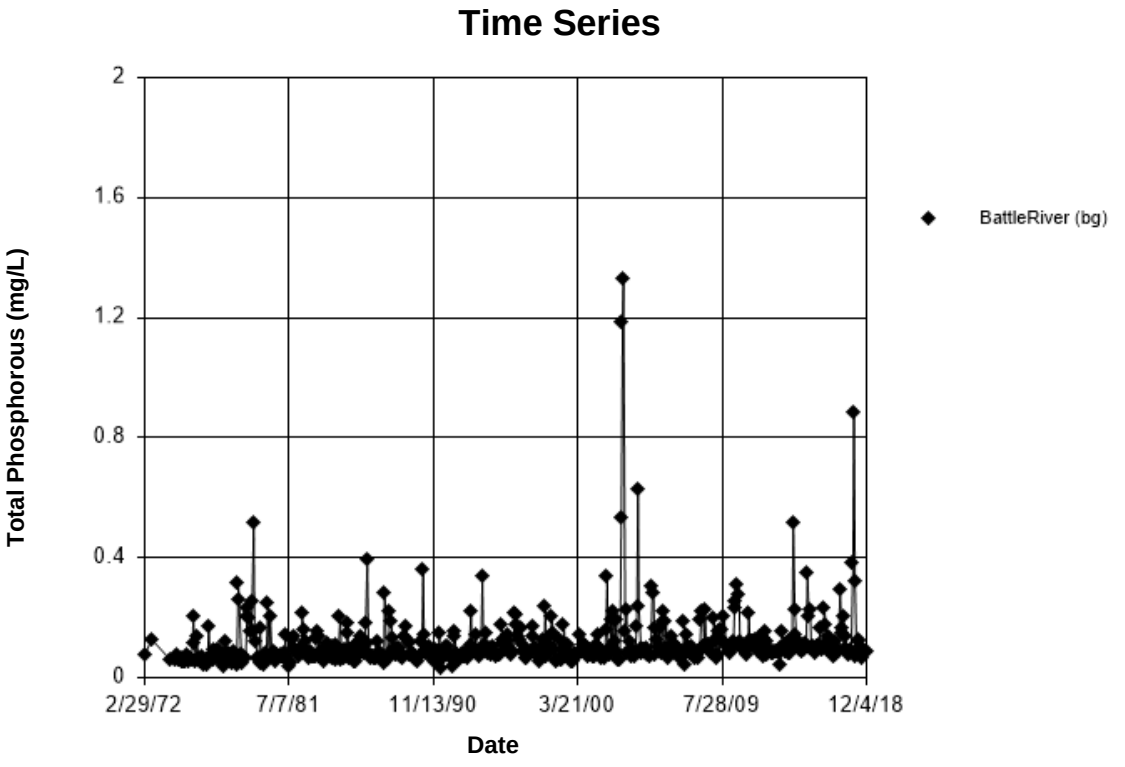

Figure B10 Battle River: Total Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 10.42
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

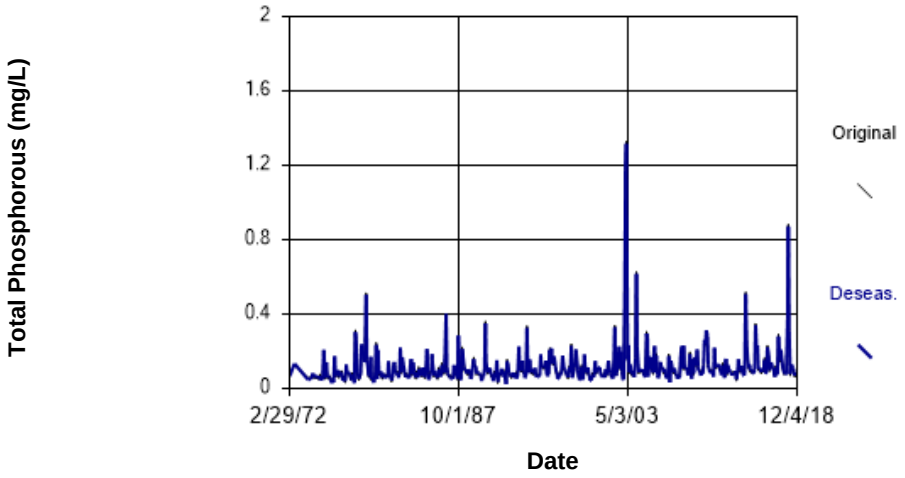

Figure B11 Battle River: Total Phosphorous

Seasonal Kendall

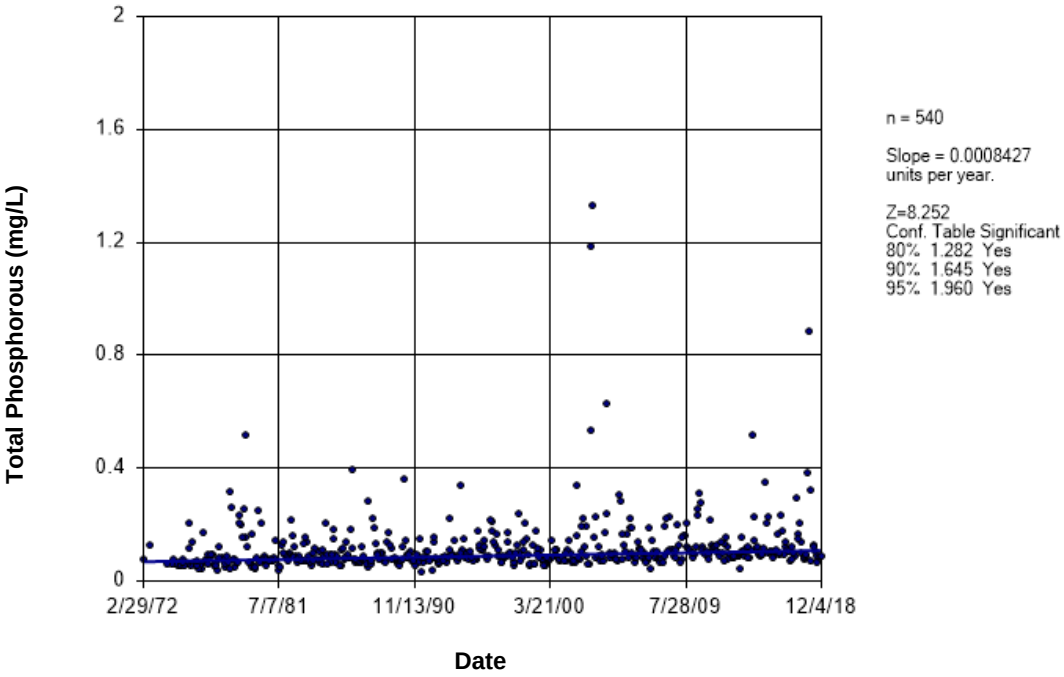

Figure B12 Battle River: Total Phosphorous

Time Series

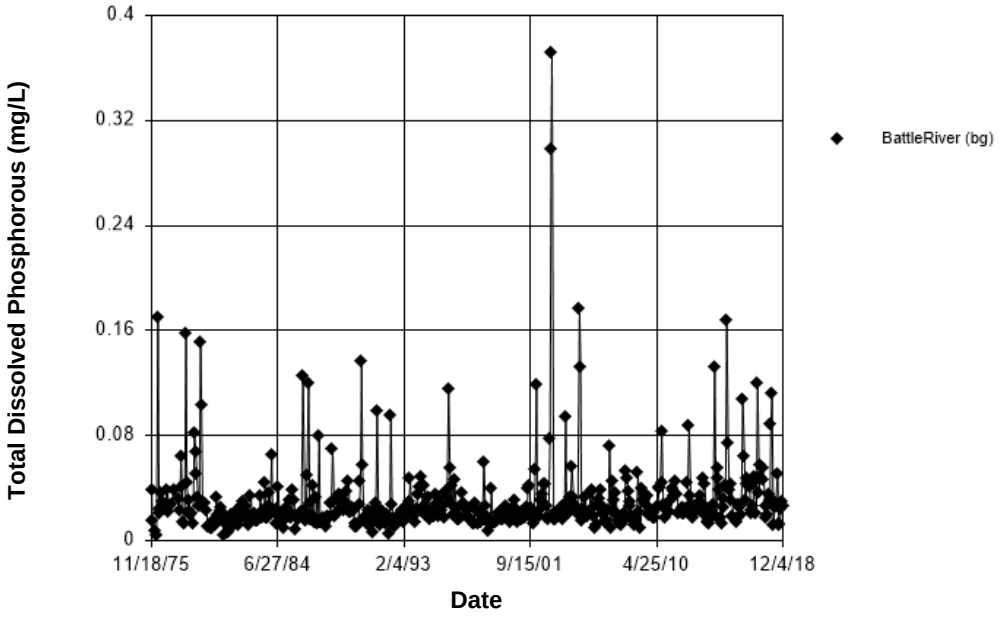

Figure B13 Battle River: Total Dissolved Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 1.923
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 1.923
Adjusted Kruskal-Wallis statistic (H') = 1.923

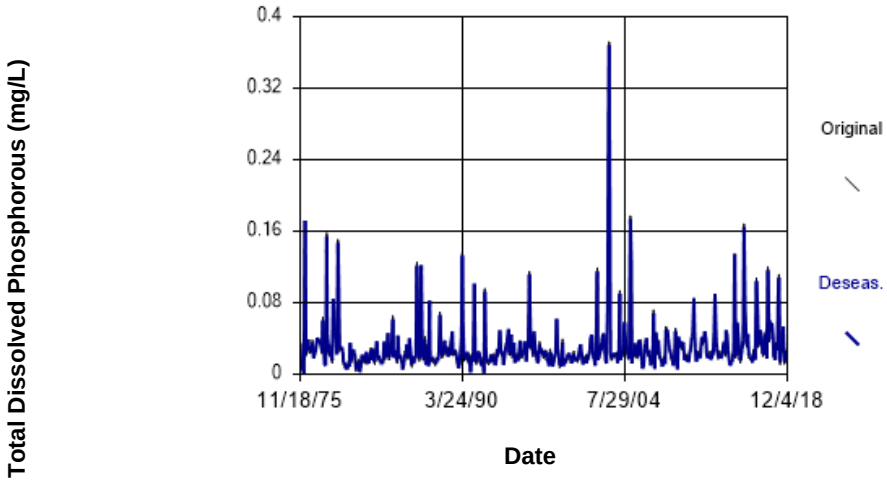

Figure B14 Battle River: Total Dissolved Phosphorous

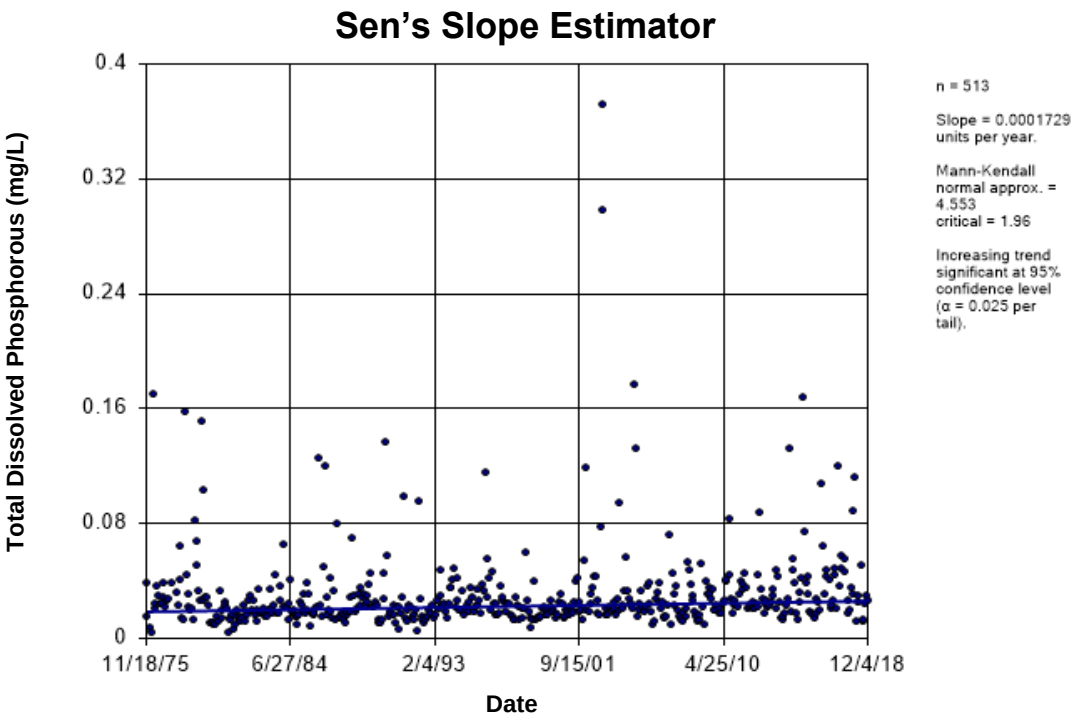

Figure B15 Battle River: Total Dissolved Phosphorous

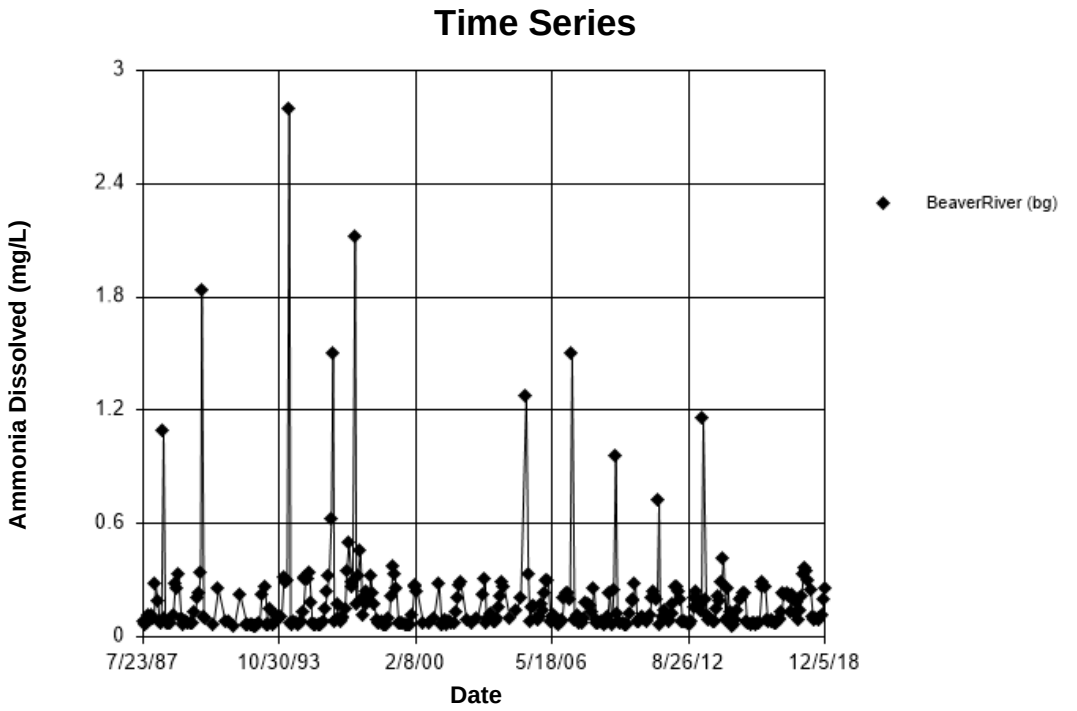

Figure B16 Beaver River: Ammonia Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 147.4
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 147.4
Adjusted Kruskal-Wallis statistic (H') = 147.4

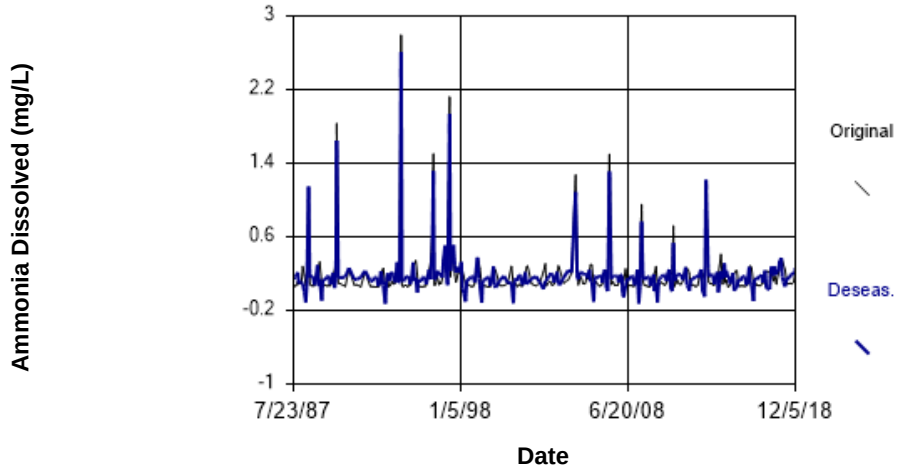

Figure B17 Beaver River: Ammonia Dissolved

Seasonal Kendall

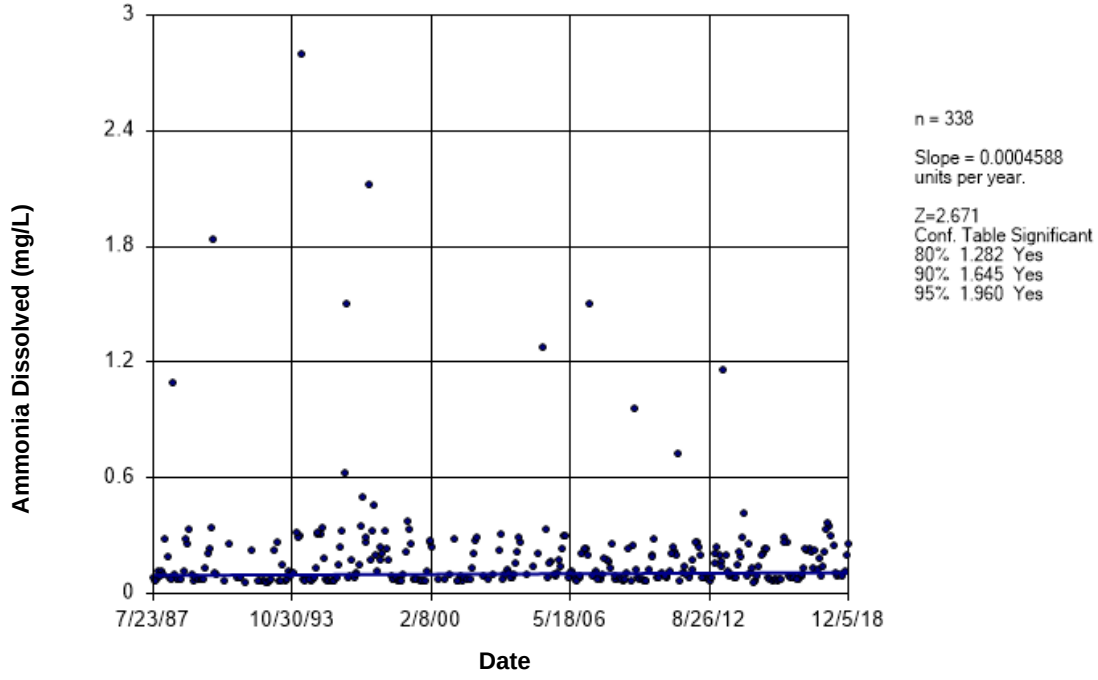

Figure B18 Beaver River: Ammonia Dissolved

Time Series

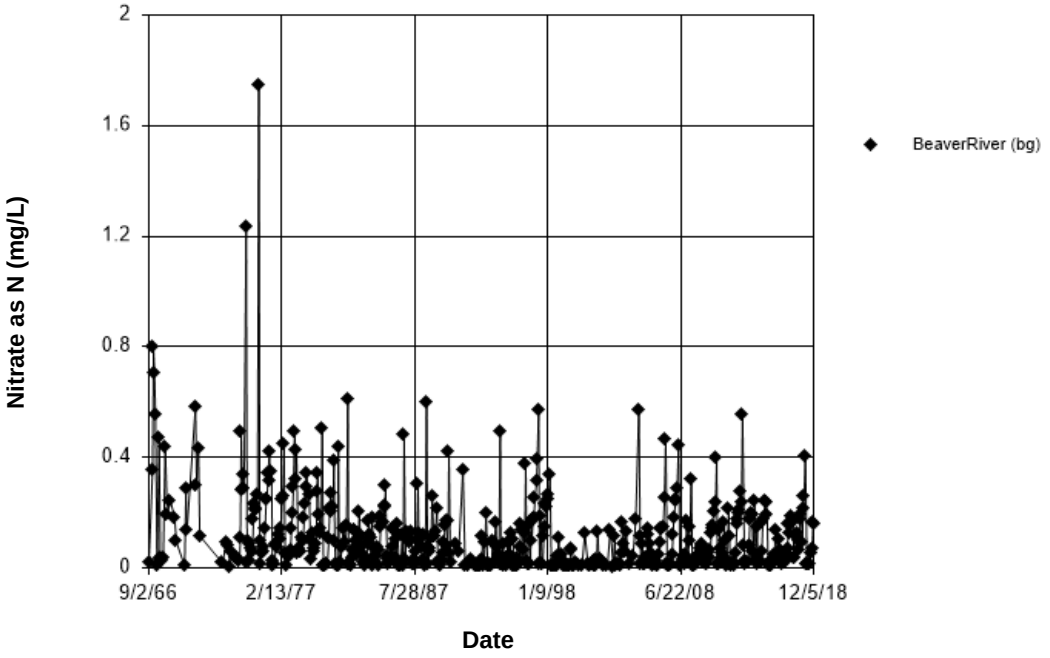

Figure B19 Beaver River: Nitrate as N

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 135.1
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 135.1
Adjusted Kruskal-Wallis statistic (H') = 135.1

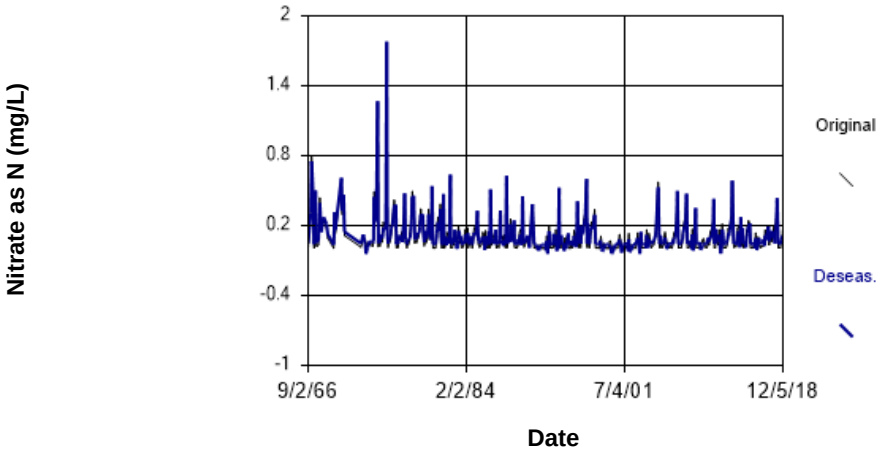

Figure B20 Beaver River: Nitrate as N

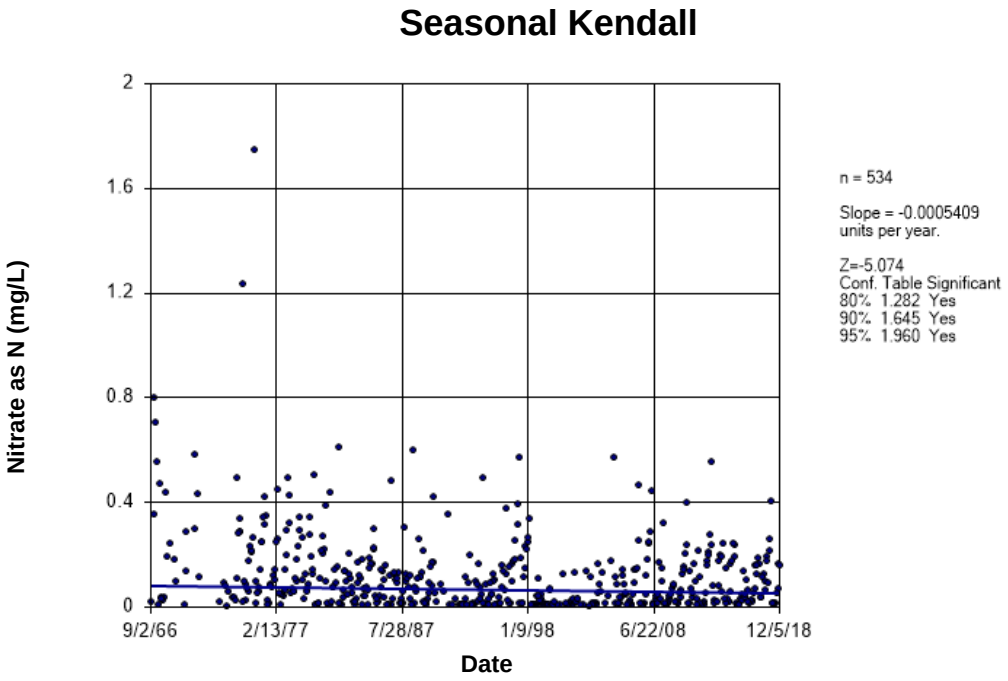

Figure B21 Beaver River: Nitrate as N

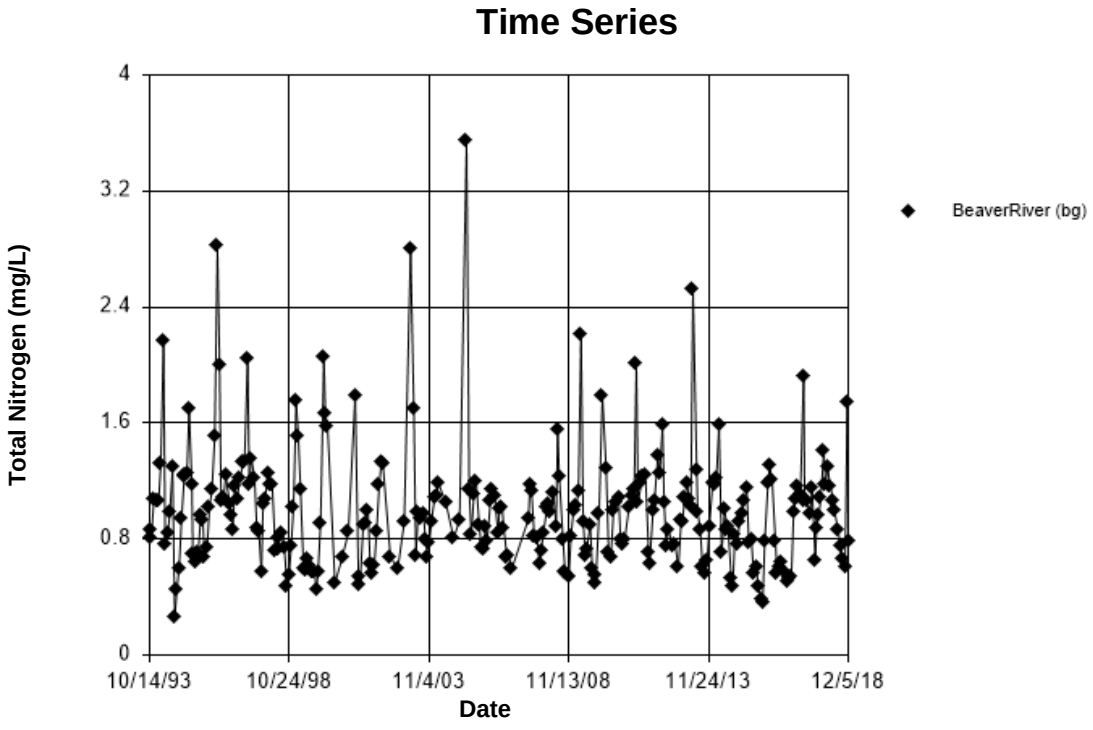

Figure B22 Beaver River: Total Nitrogen

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 40.84
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

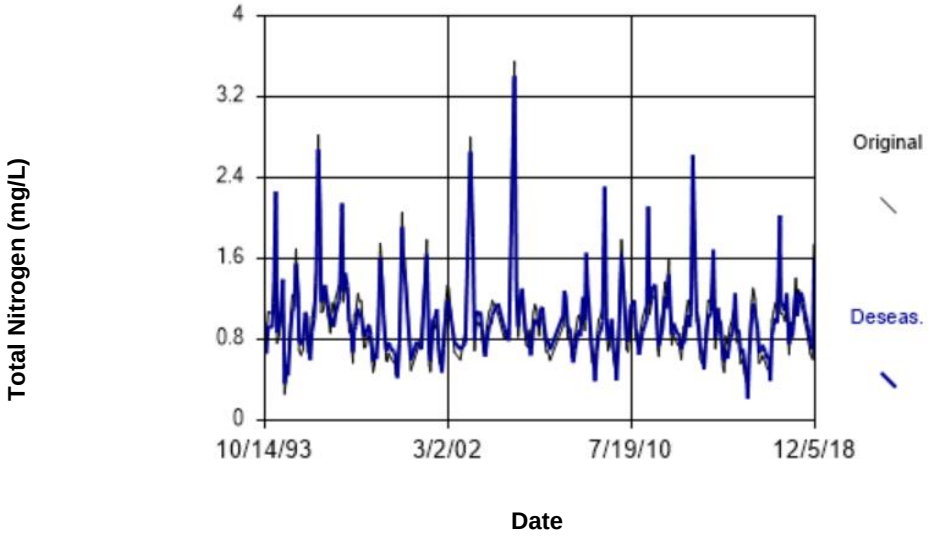

Figure B23 Beaver River: Total Nitrogen

Seasonal Kendall

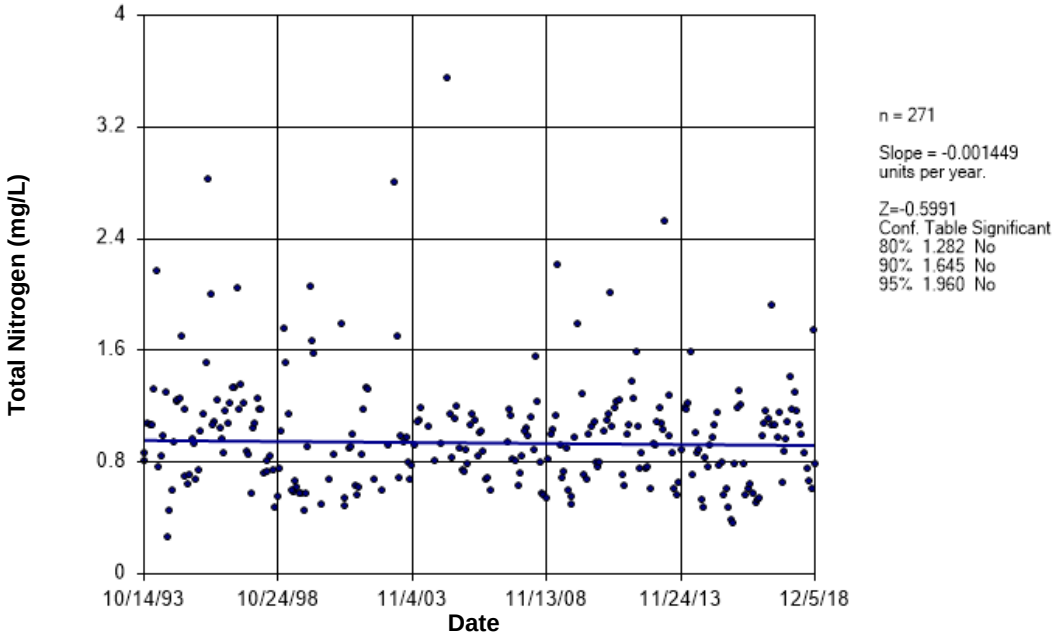

Figure B24 Beaver River: Total Nitrogen

Time Series

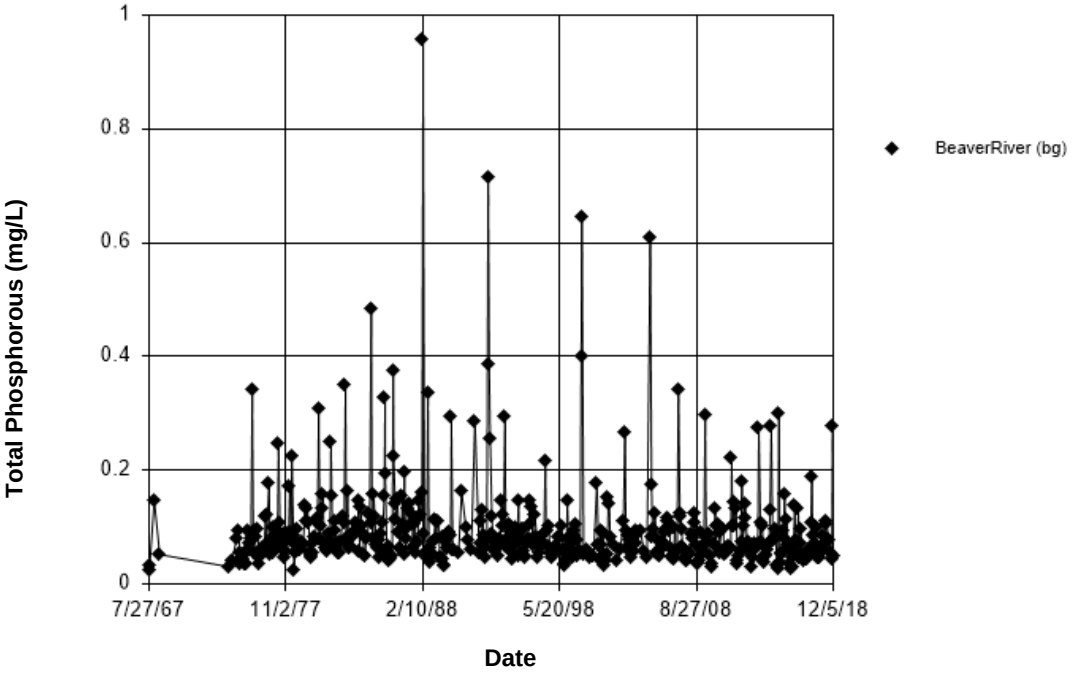

Figure B25 Beaver River: Total Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.489
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

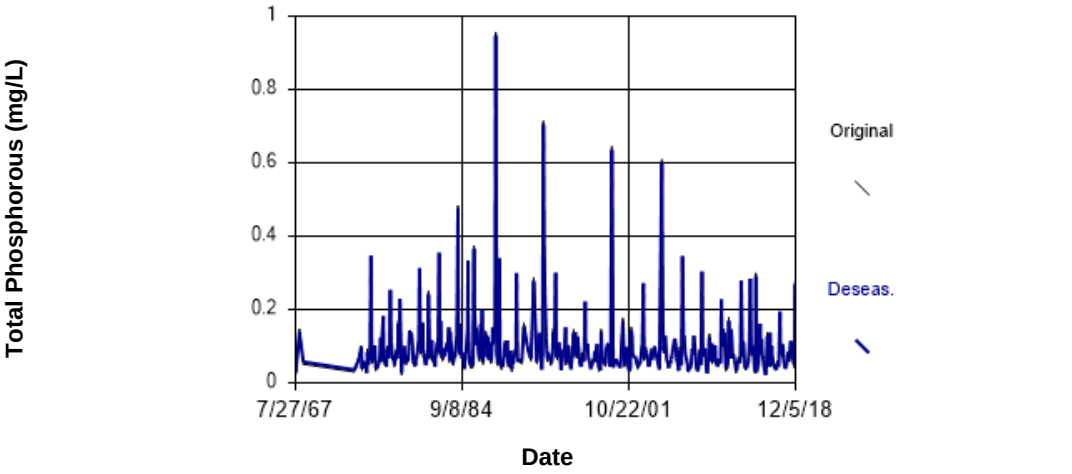

Figure B26 Beaver River: Total Phosphorous

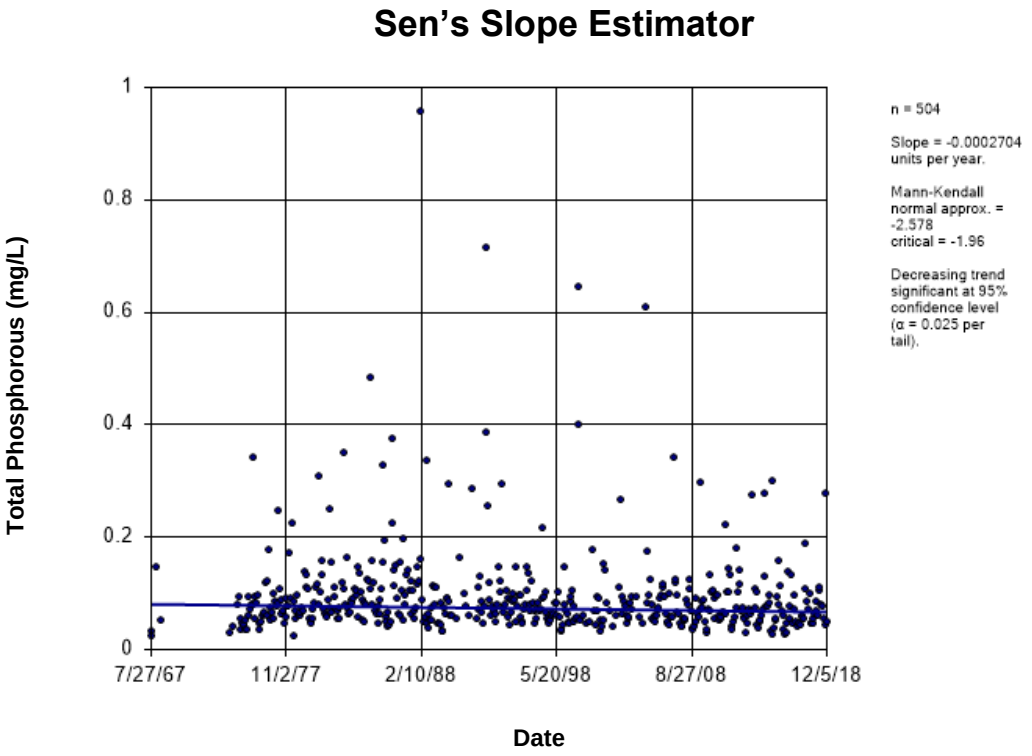

Figure B27 Beaver River: Total Phosphorous

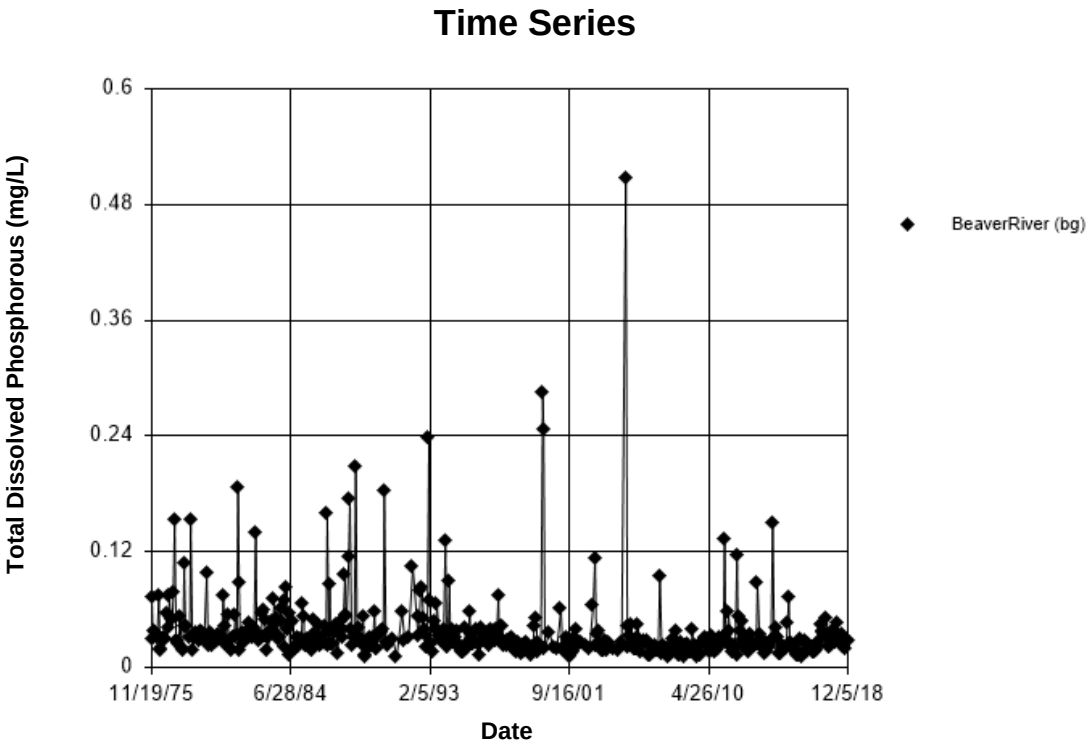

Figure B28 Beaver River: Total Dissolved Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.3294
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.3294
Adjusted Kruskal-Wallis statistic (H') = 0.3294

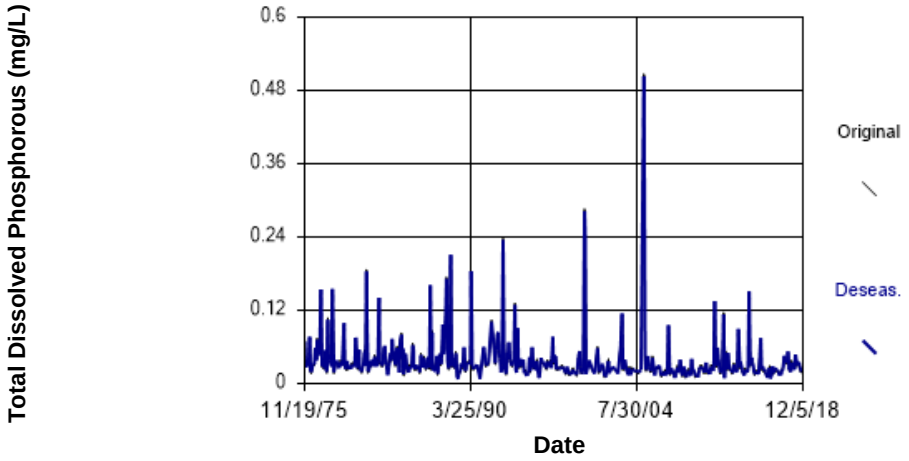

Figure B29 Beaver River: Total Dissolved Phosphorous

Sen's Slope Estimator

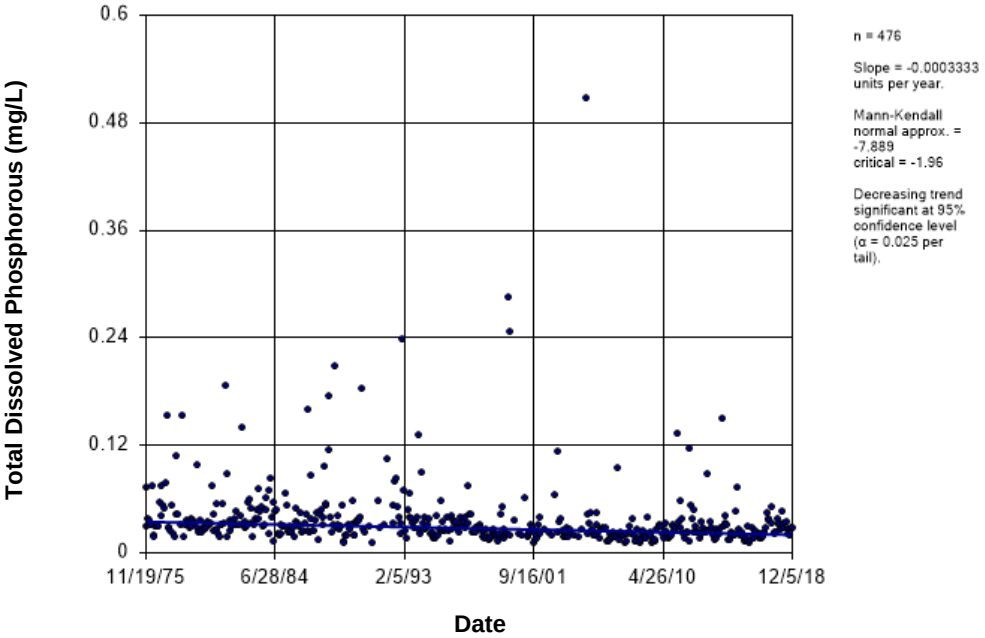

Figure B30 Beaver River: Total Dissolved Phosphorous

Time Series

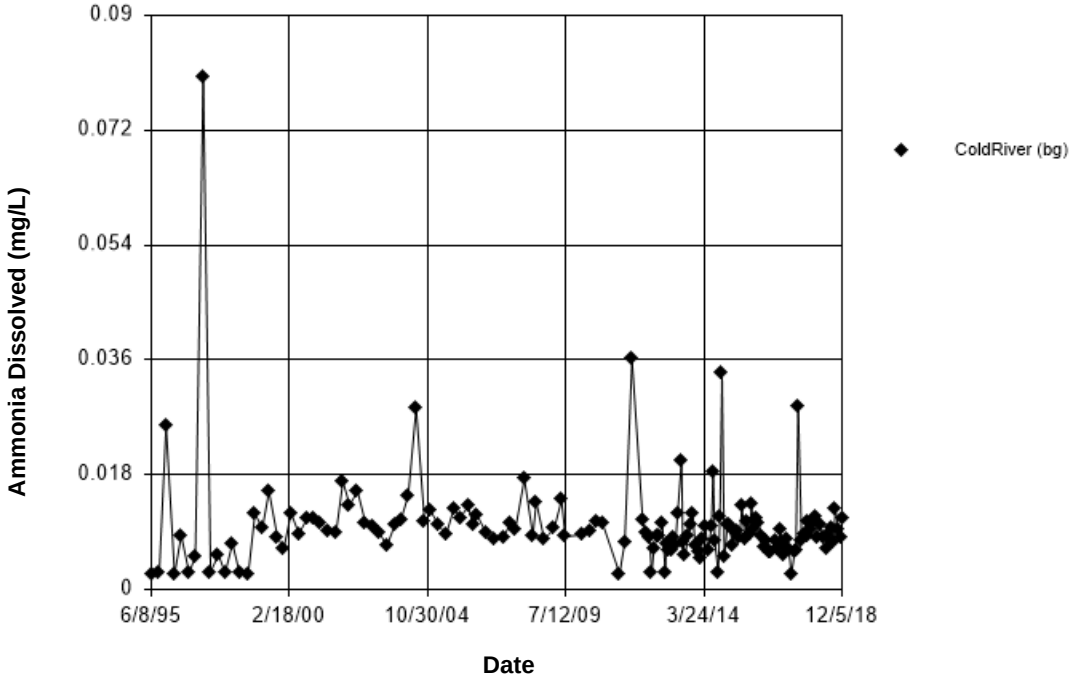

Figure B31 Cold River: Ammonia Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 1.091
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 1.091
Adjusted Kruskal-Wallis statistic (H') = 1.091

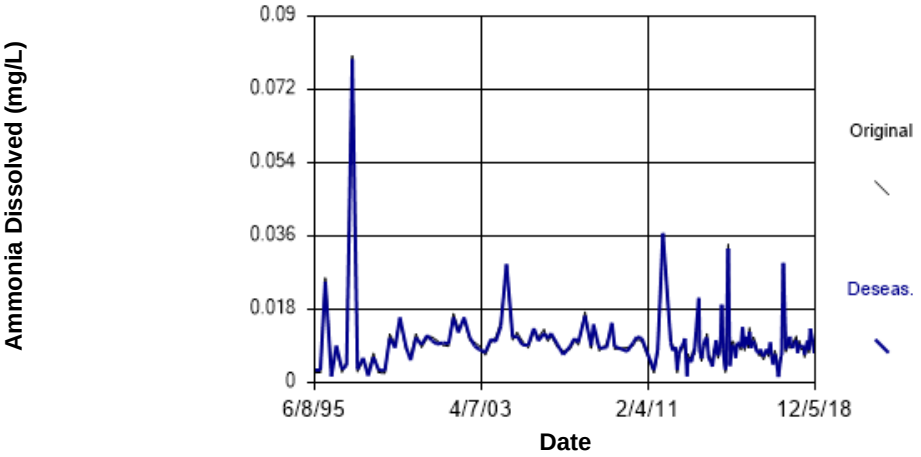

Figure B32 Cold River: Ammonia Dissolved

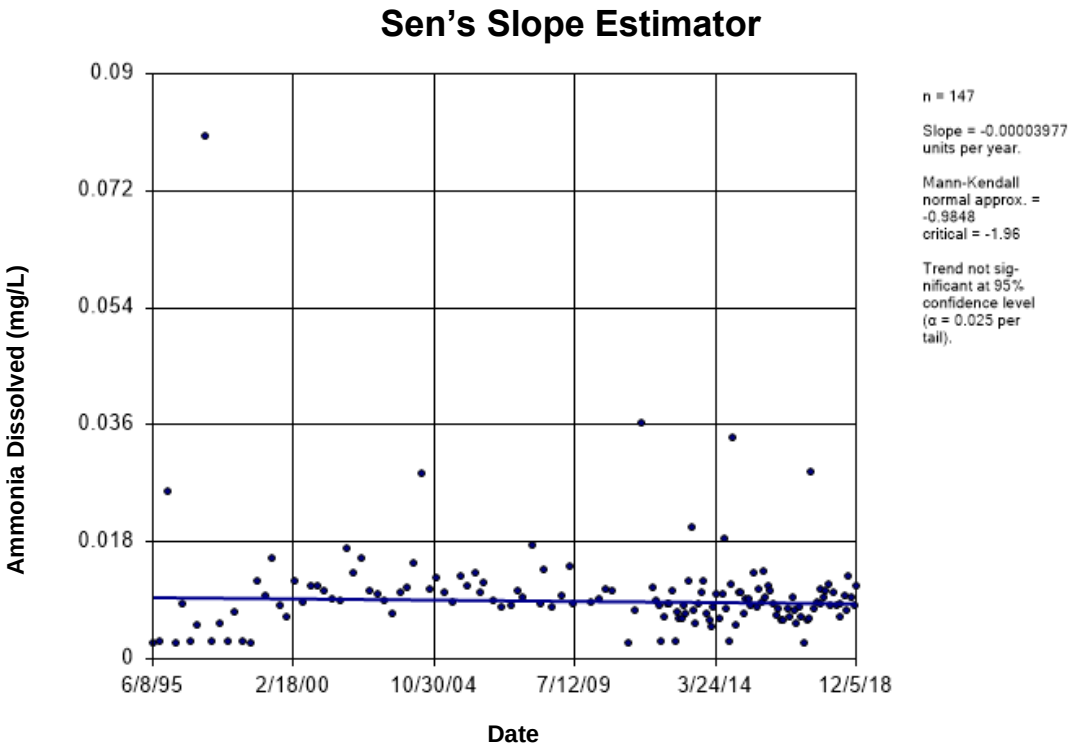

Figure B33 Cold River: Ammonia Dissolved

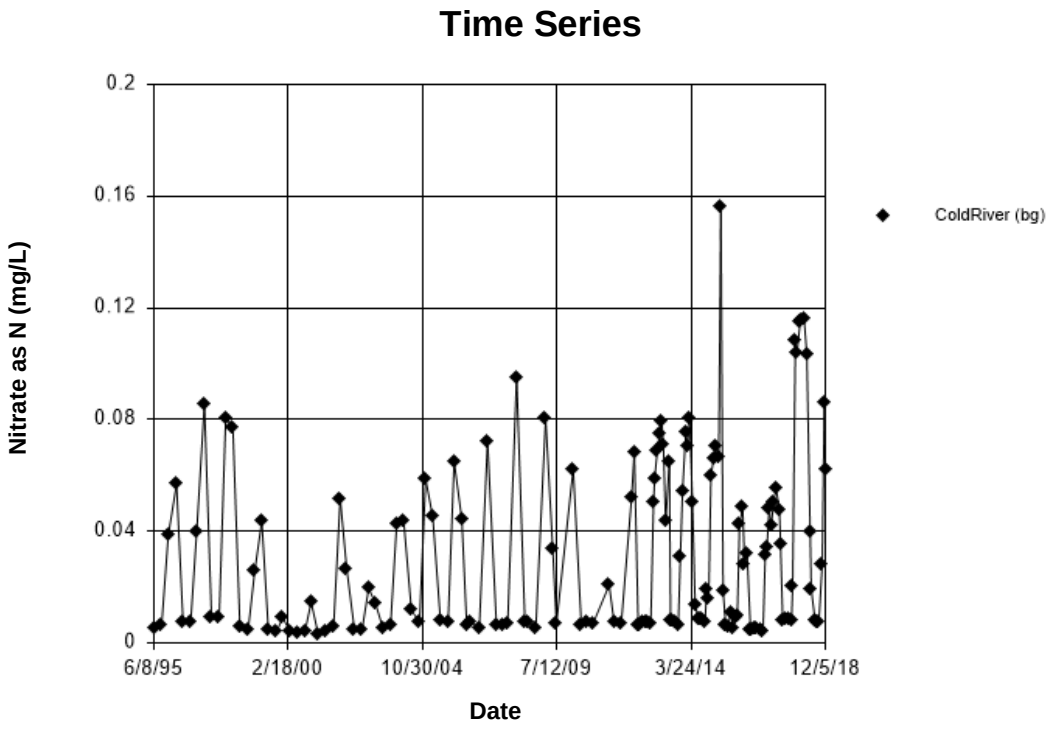

Figure B34 Cold River: Nitrate as N

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 68.63
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 68.63
Adjusted Kruskal-Wallis statistic (H') = 68.63

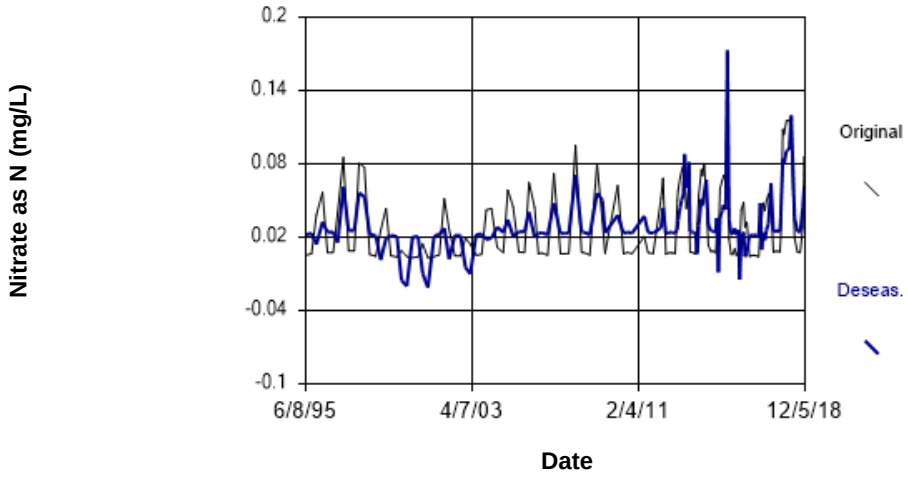

Figure B35 Cold River: Nitrate as N

Seasonal Kendall

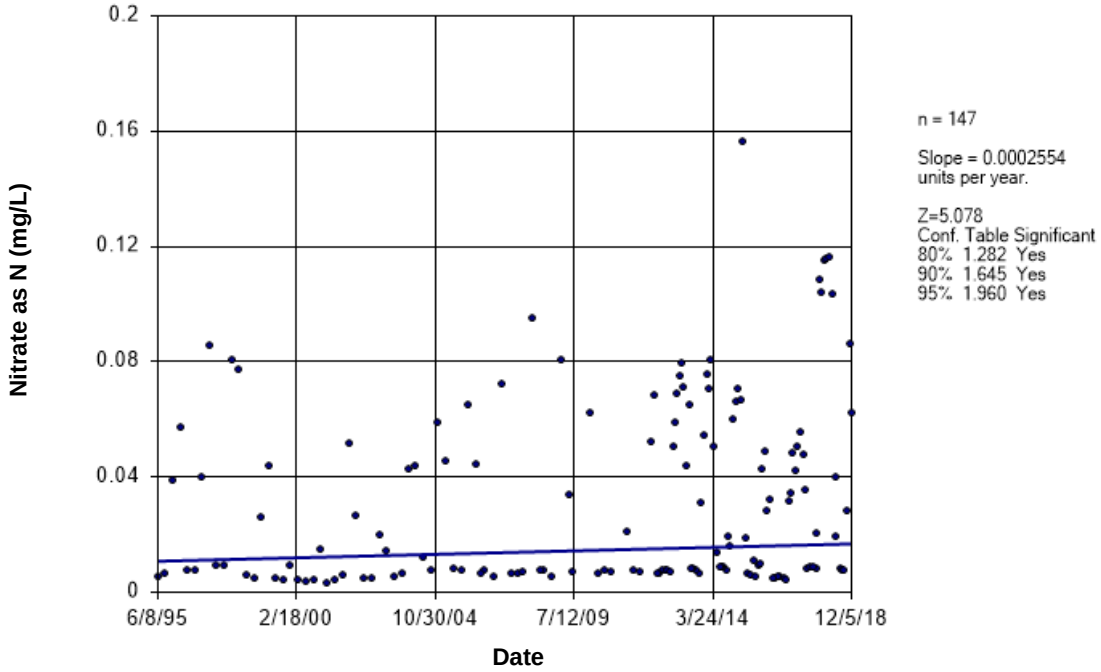

Figure B36 Cold River: Nitrate as N

Time Series

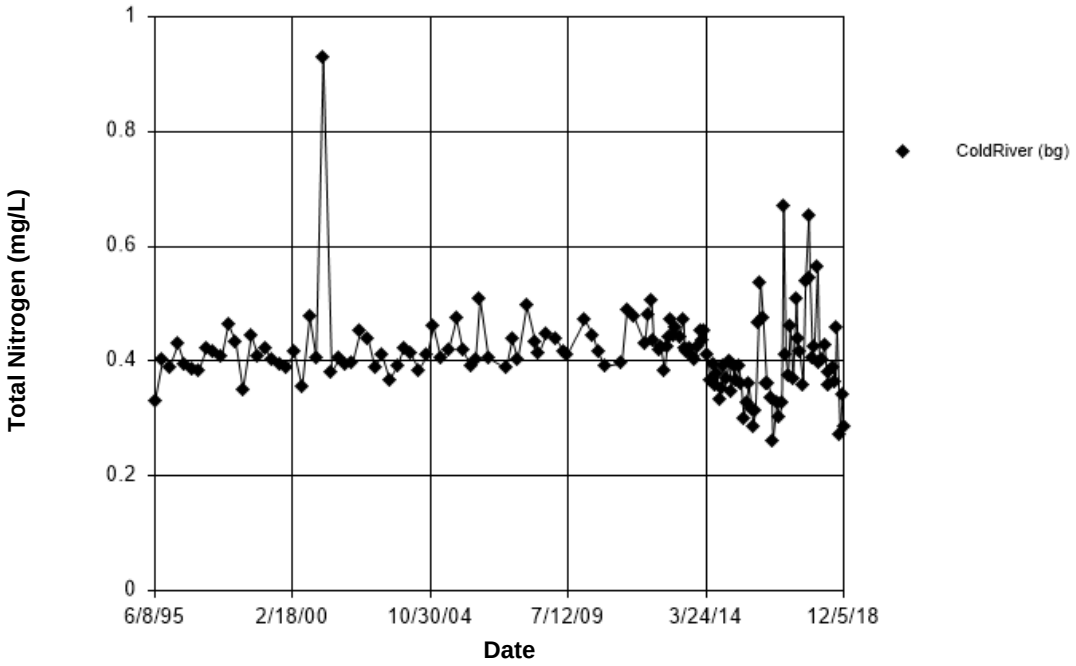

Figure B37 Cold River: Total Nitrogen

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 5.315
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

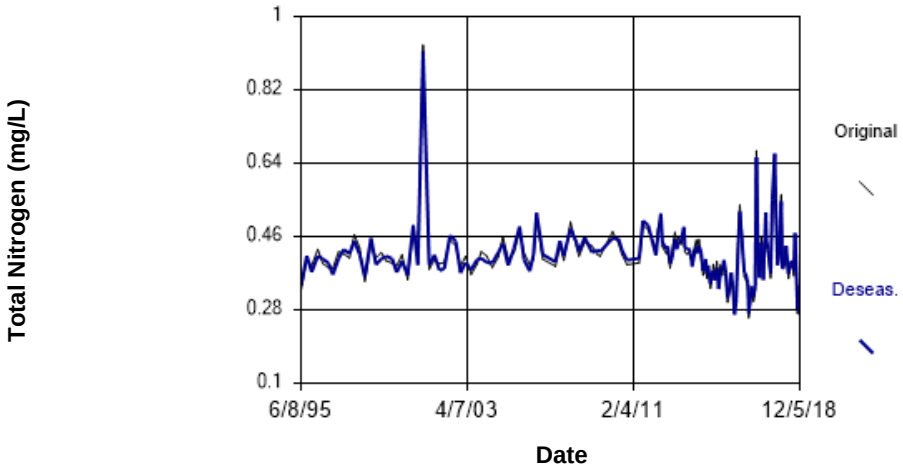

Figure B38 Cold River: Total Nitrogen

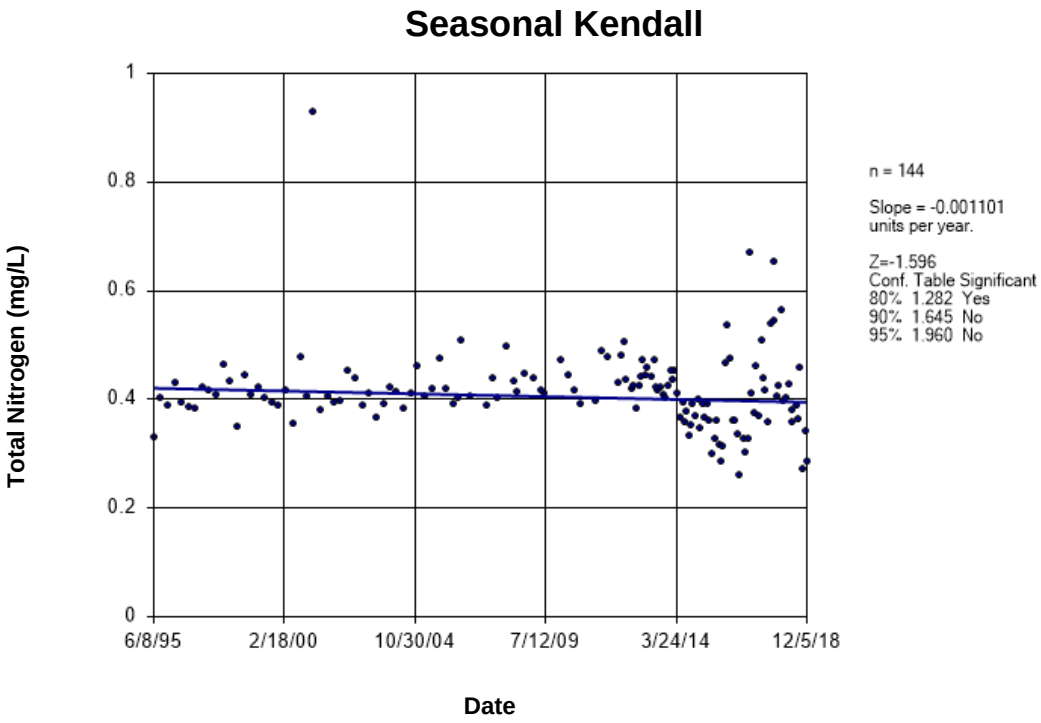

Figure B39 Cold River: Total Nitrogen

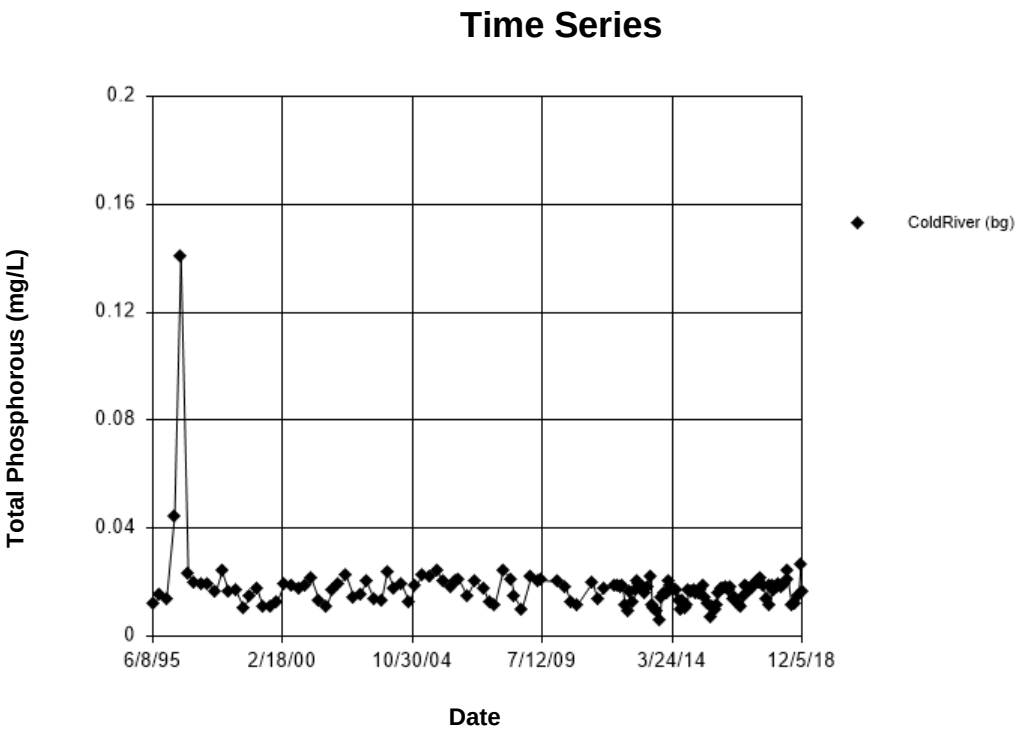

Figure B40 Cold River: Total Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 17.67
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 17.67
Adjusted Kruskal-Wallis statistic (H') = 17.67

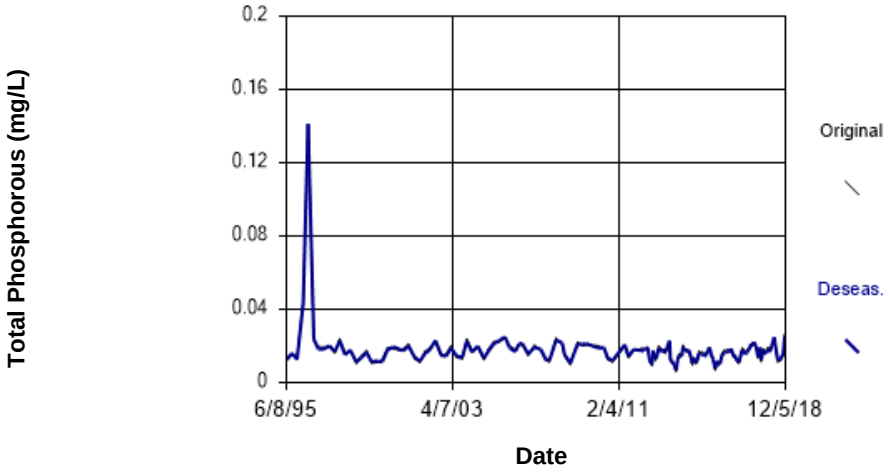

Figure B41 Cold River: Total Phosphorous

Seasonal Kendall

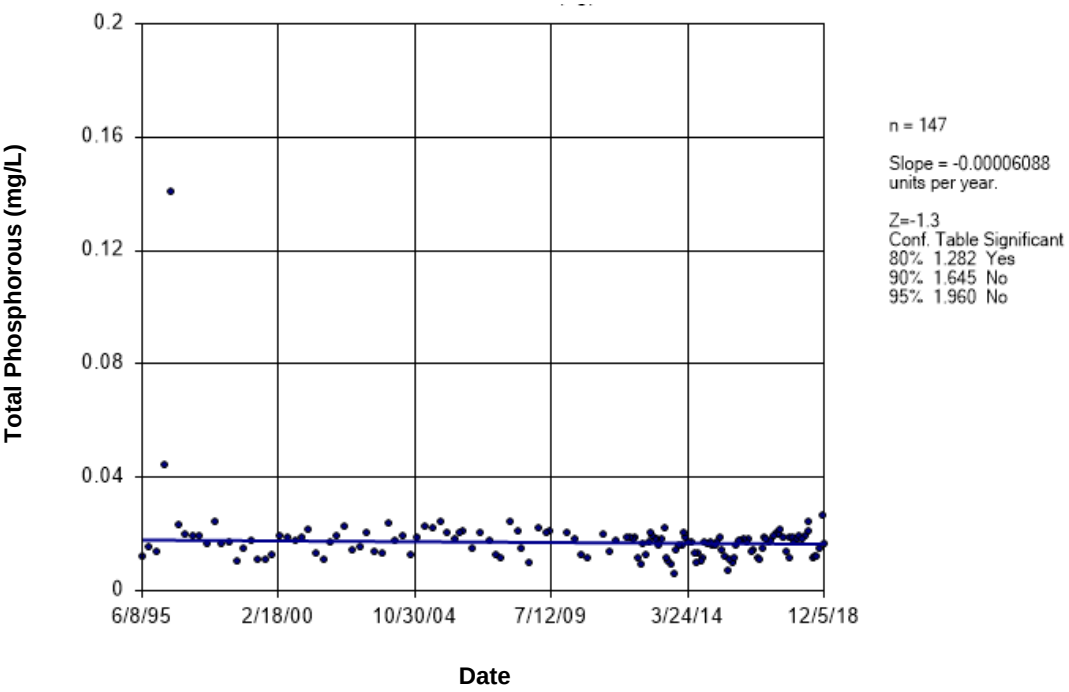

Figure B42 Cold River: Total Phosphorous

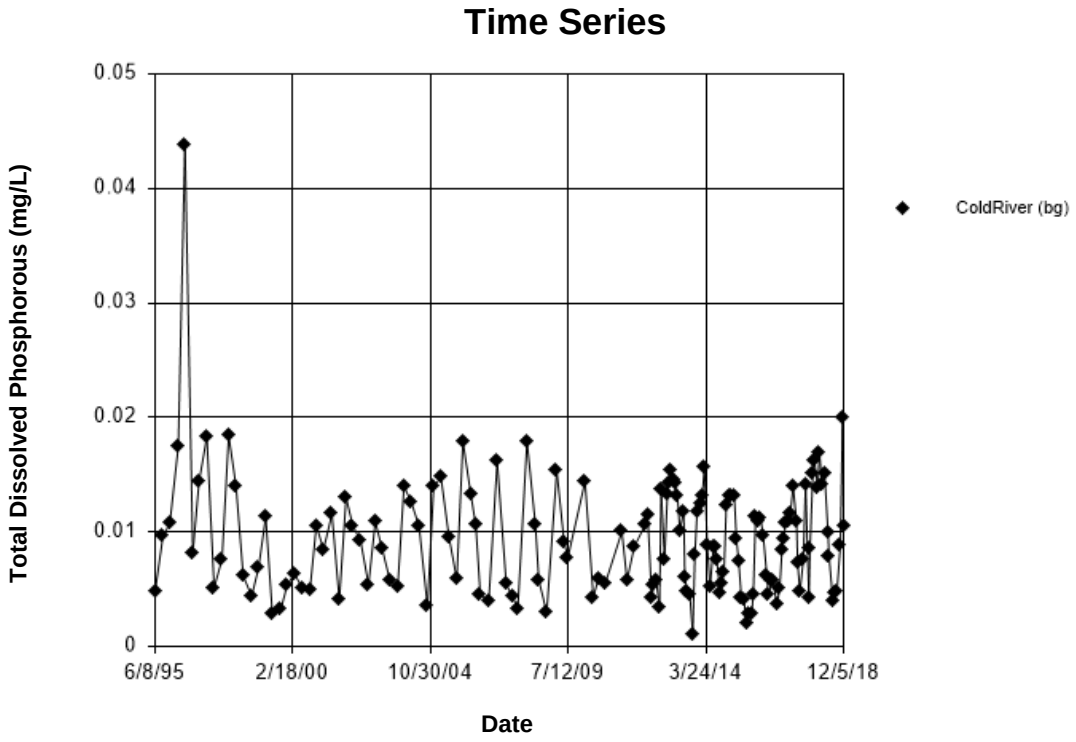

Figure B43 Cold River: Total Dissolved Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 67.1
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 67.1
Adjusted Kruskal-Wallis statistic (H') = 67.1

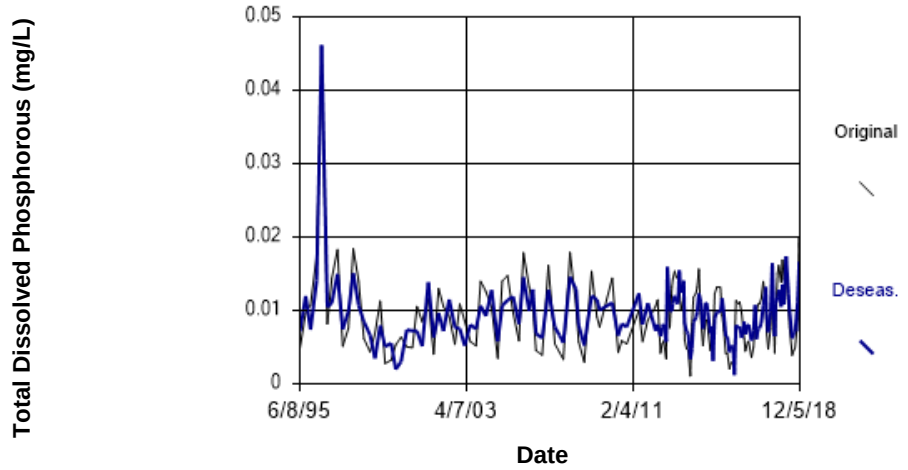

Figure B44 Cold River: Total Dissolved Phosphorous

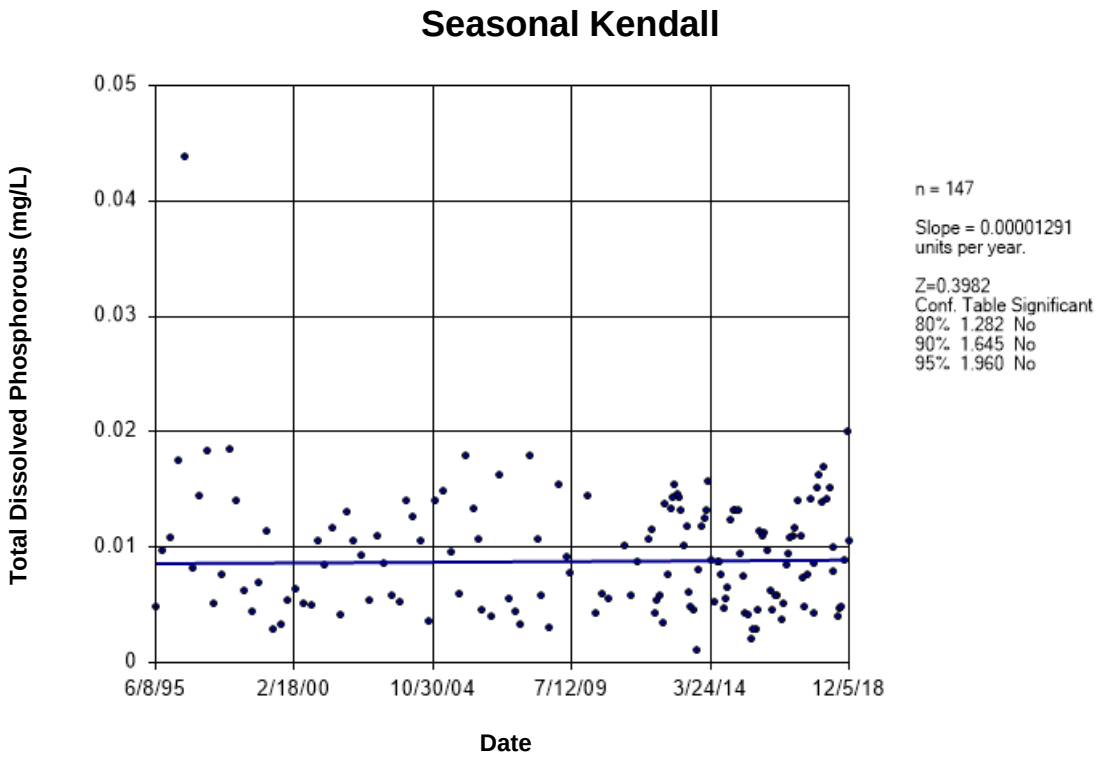

Figure B45 Cold River: Total Dissolved Phosphorous

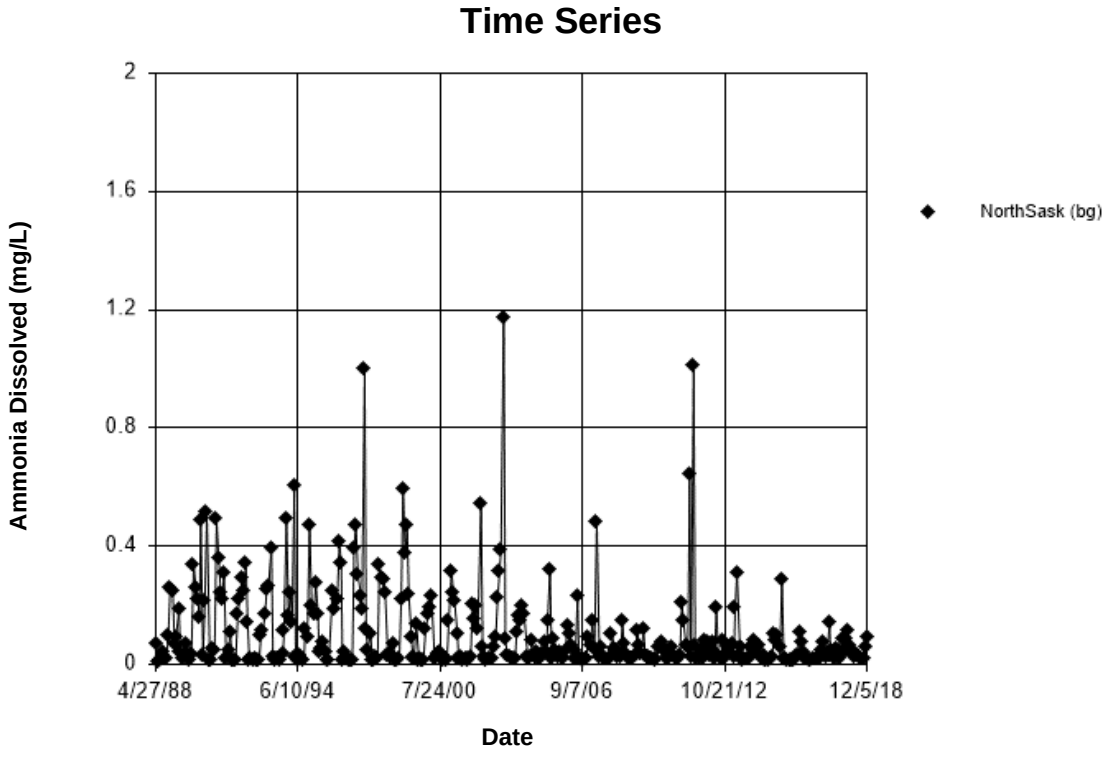

Figure B46 North Saskatchewan River: Ammonia Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 177.3
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 11 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 177.3
Adjusted Kruskal-Wallis statistic (H') = 177.3

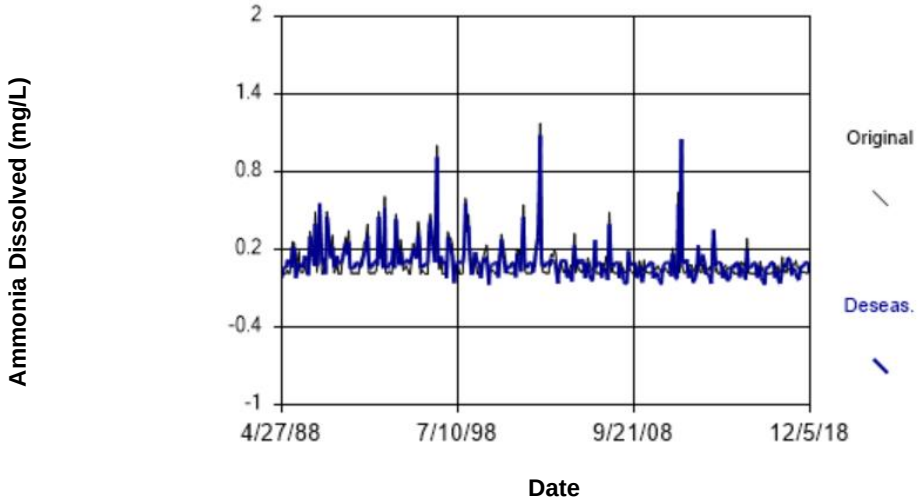

Figure B47 North Saskatchewan River: Ammonia Dissolved

Seasonal Kendall

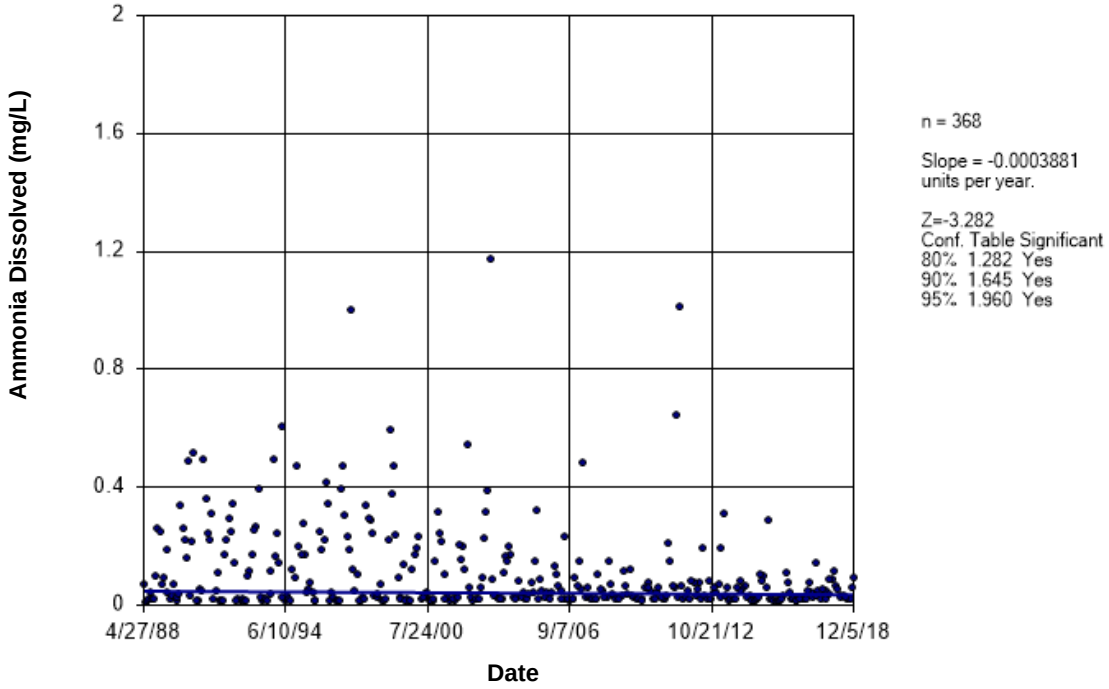

Figure B48 North Saskatchewan River: Ammonia Dissolved

Time Series

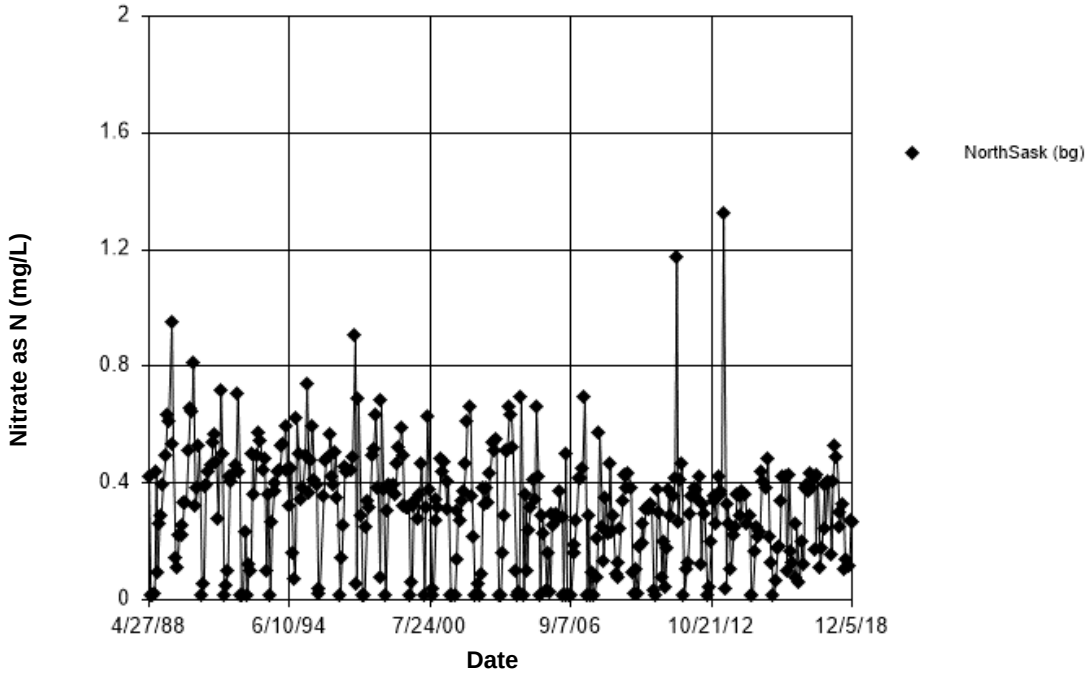

Figure B49 North Saskatchewan River: Nitrate as N

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 139.7
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 9 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 139.7
Adjusted Kruskal-Wallis statistic (H') = 139.7

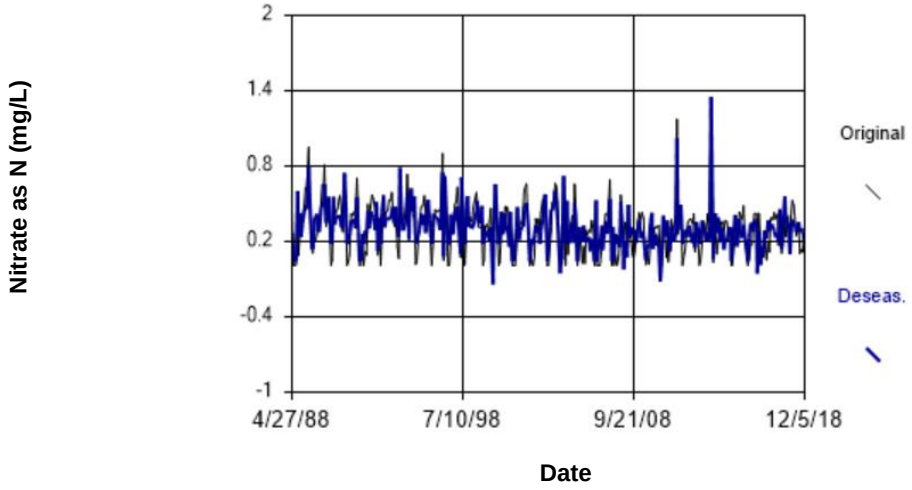

Figure B50 North Saskatchewan River: Nitrate as N

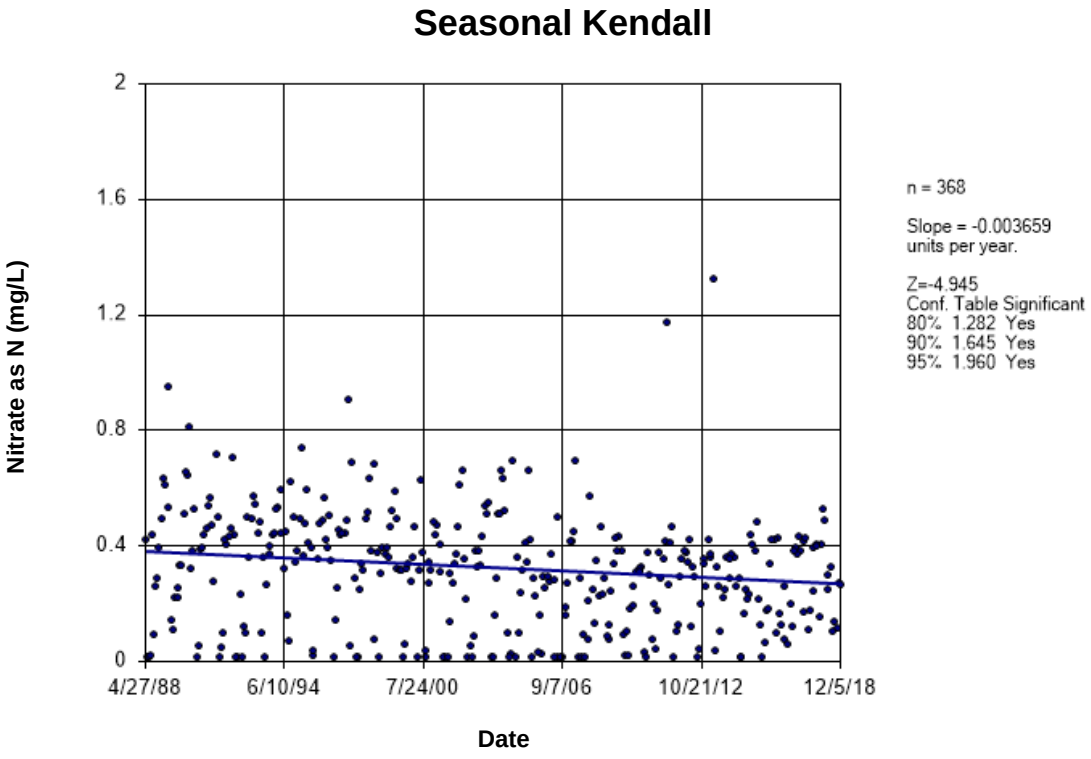

Figure B51 North Saskatchewan River: Nitrate as N

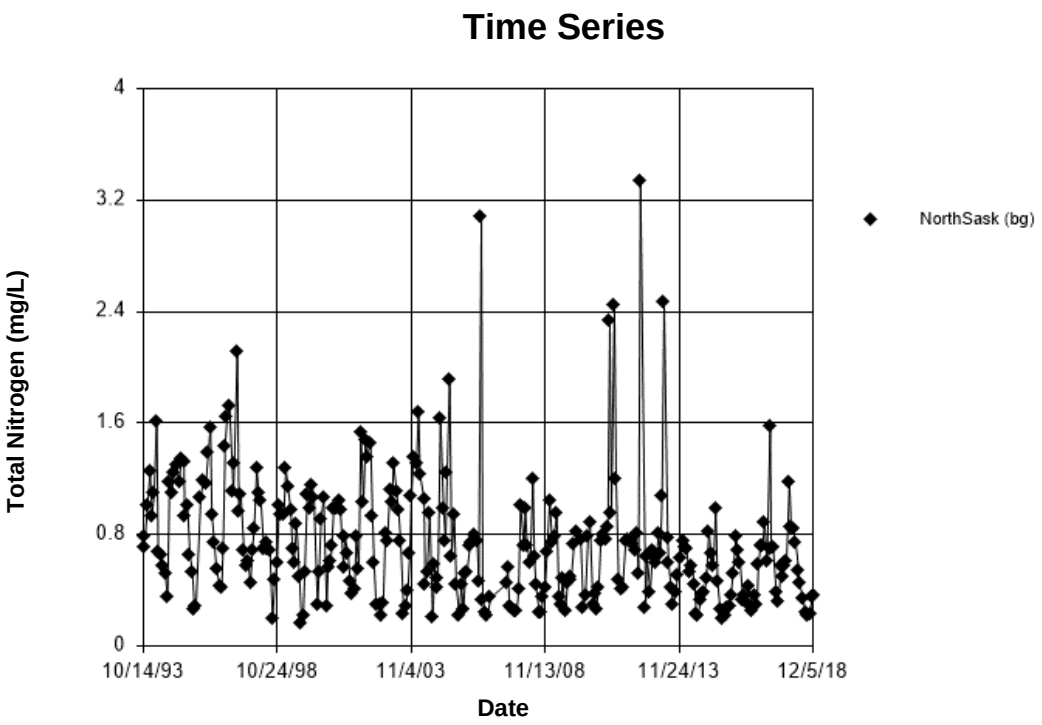

Figure B52 North Saskatchewan River: Total Nitrogen

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 125.8
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 125.8
Adjusted Kruskal-Wallis statistic (H') = 125.8

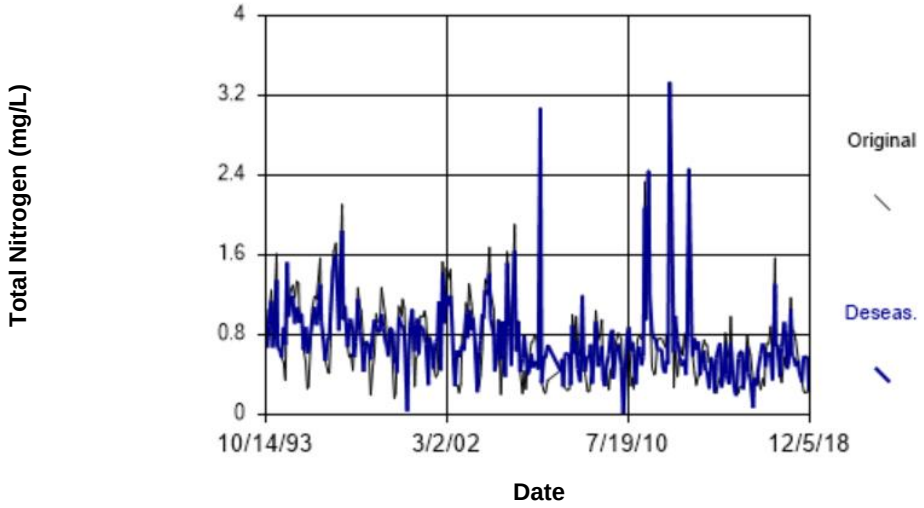

Figure B53 North Saskatchewan River: Total Nitrogen

Seasonal Kendall

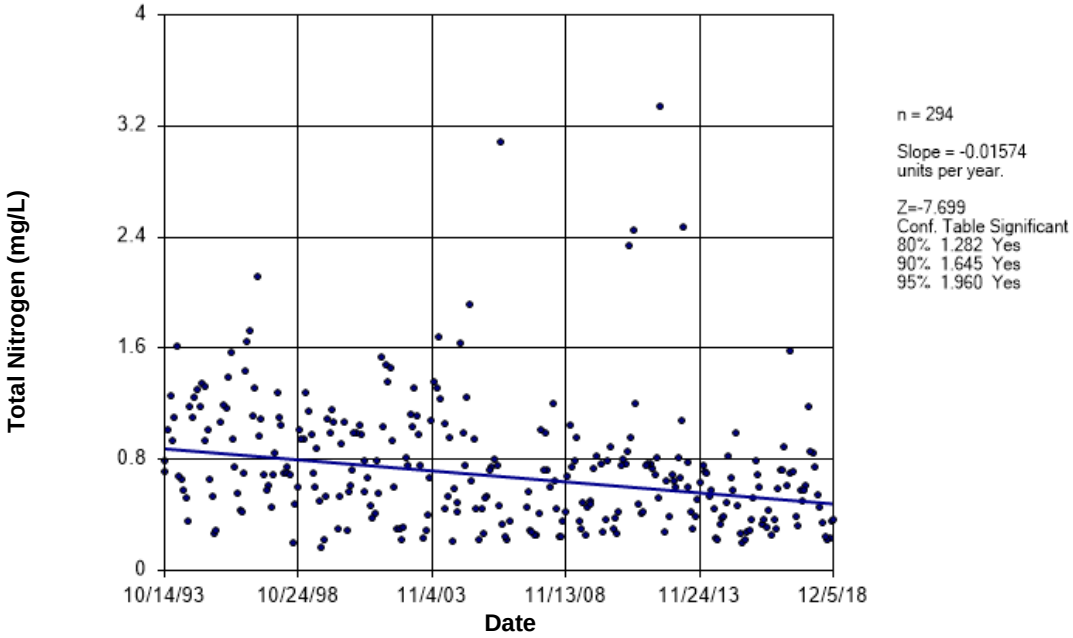

Figure B54 North Saskatchewan River: Total Nitrogen

Time Series

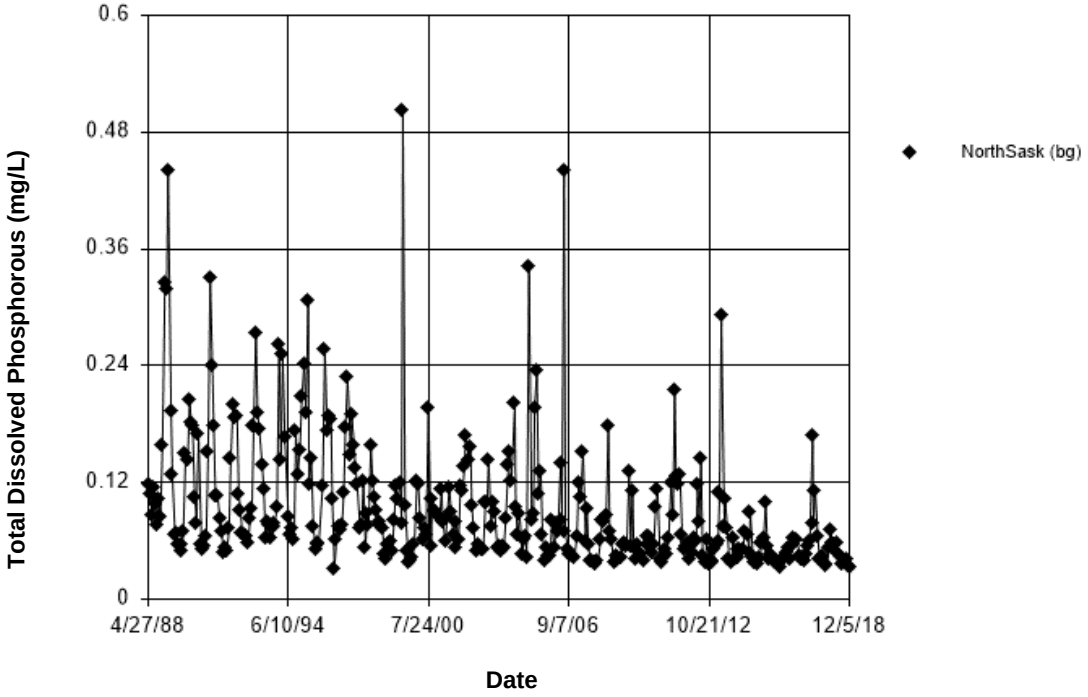

Figure B55 North Saskatchewan River: Total Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 94.65
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

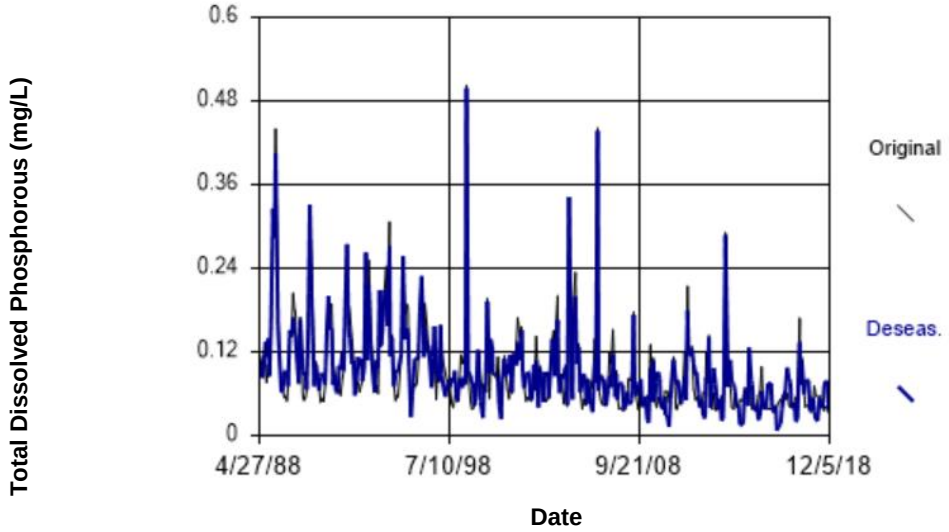

Figure B56 North Saskatchewan River: Total Phosphorous

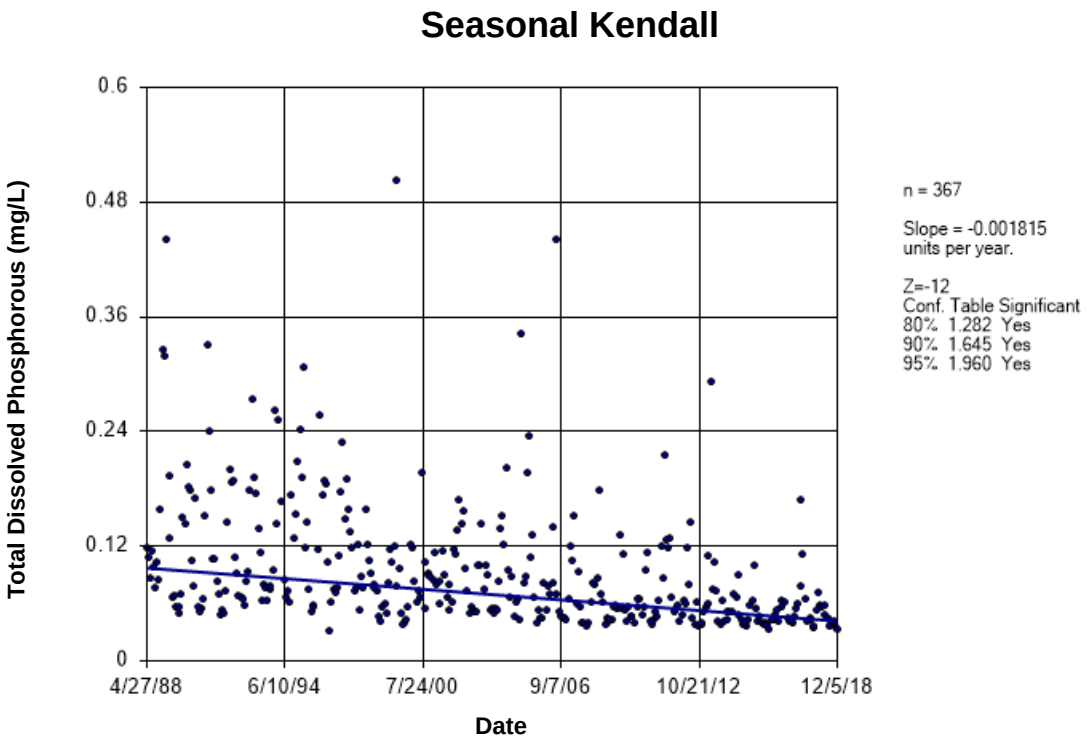

Figure B57 North Saskatchewan River: Total Phosphorous

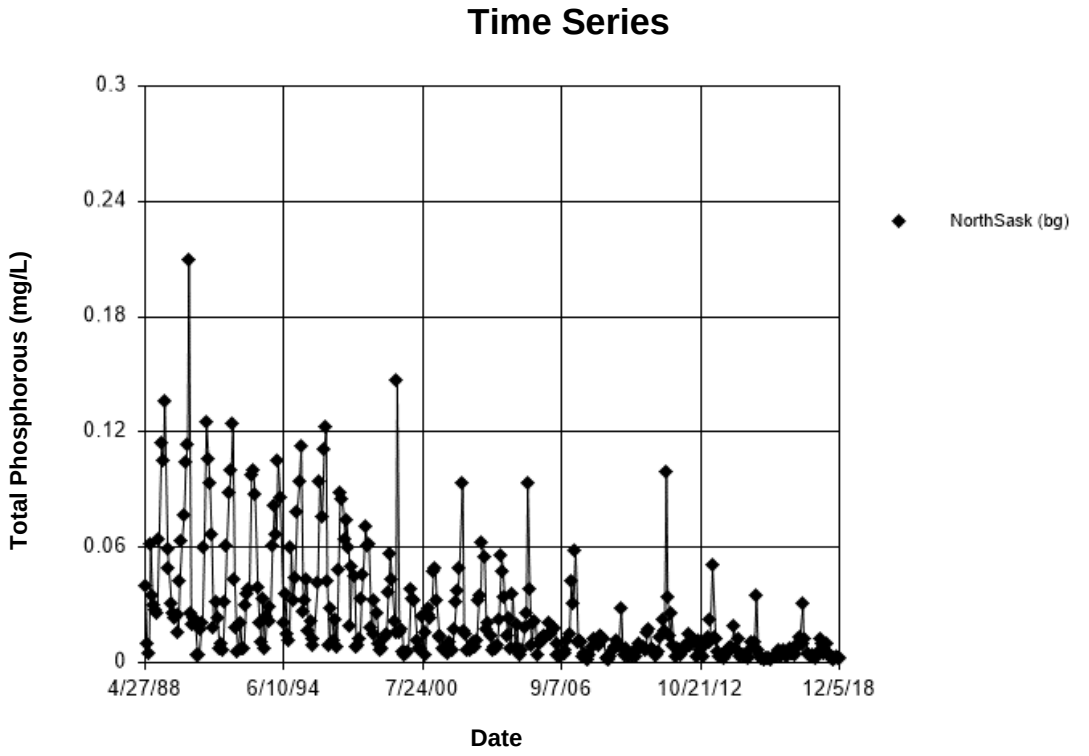

Figure B58 North Saskatchewan River: Total Dissolved Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 85.64
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 85.64
Adjusted Kruskal-Wallis statistic (H') = 85.64

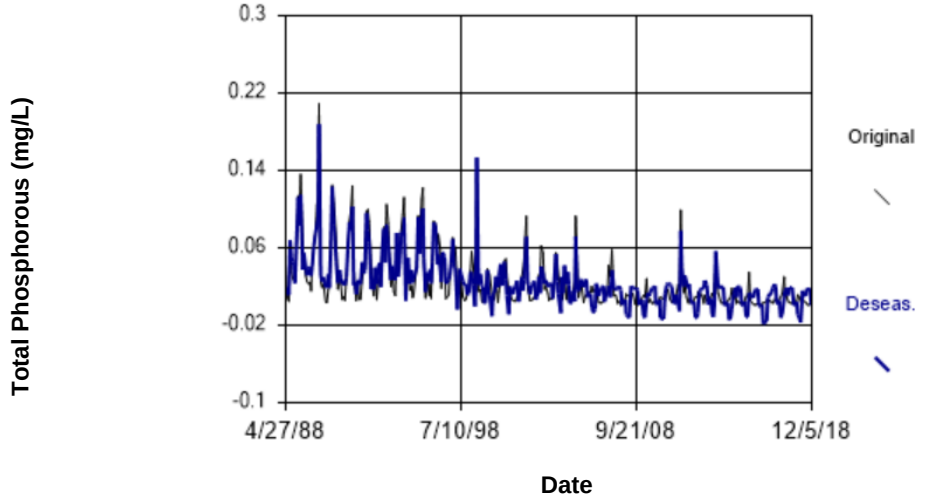

Figure B59 North Saskatchewan River: Total Dissolved Phosphorus

Seasonal Kendall

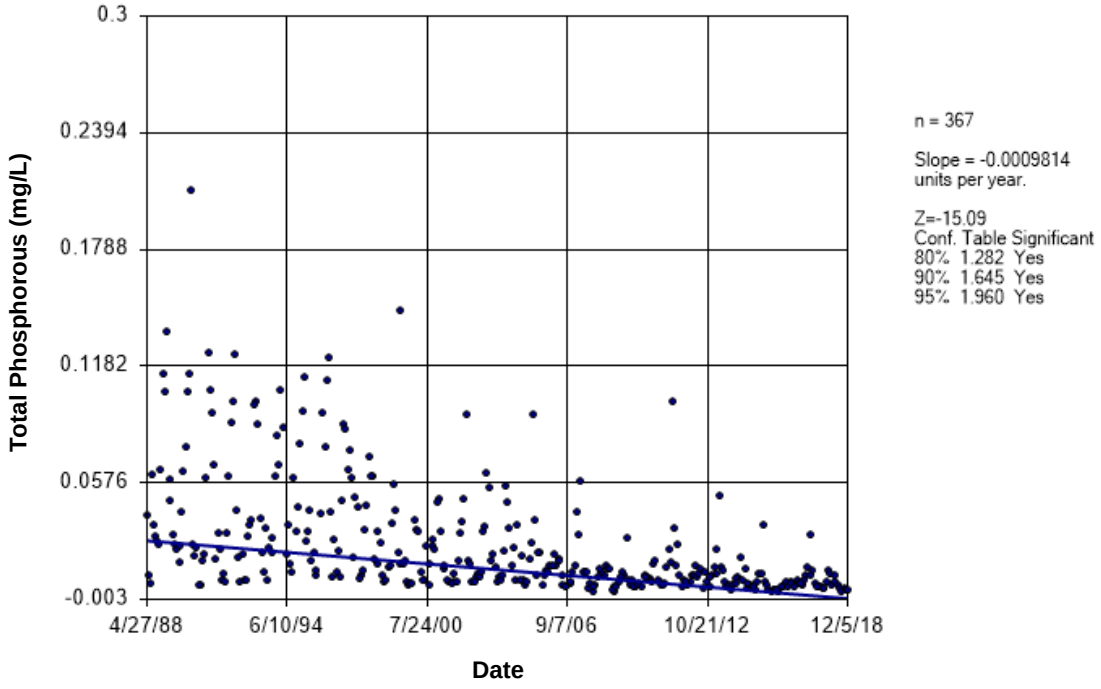

Figure B60 North Saskatchewan River: Total Dissolved Phosphorus

Time Series

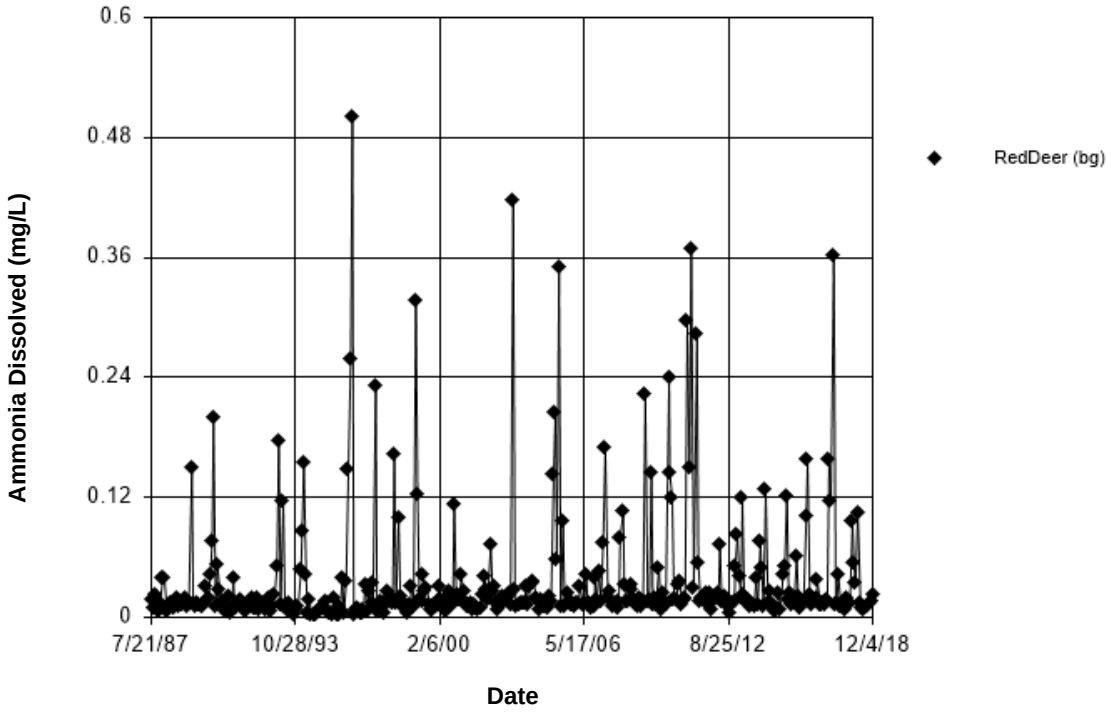

Figure B61 Red Deer River (AB-SK): Ammonia Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 85.62
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 85.62
Adjusted Kruskal-Wallis statistic (H') = 85.62

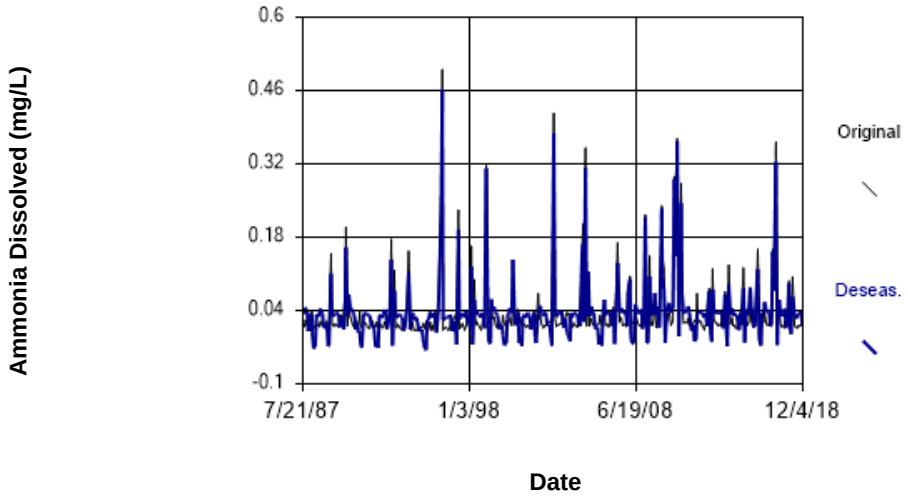

Figure B62 Red Deer River (AB-SK): Ammonia Dissolved

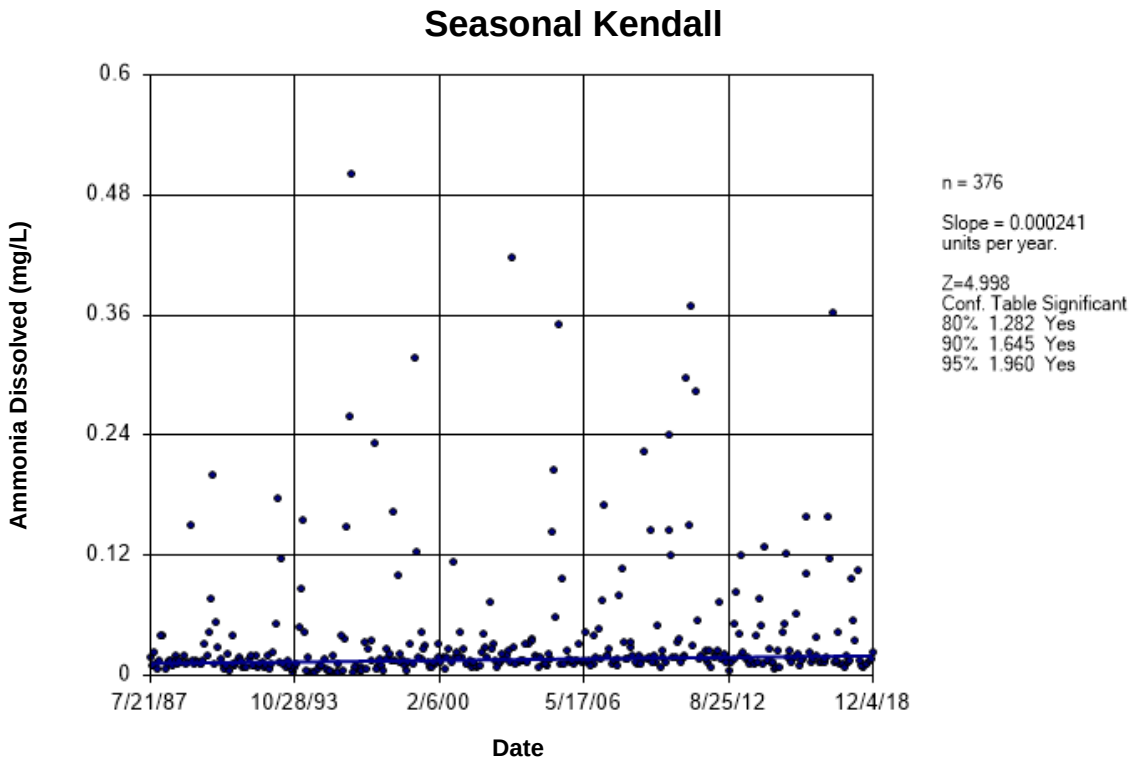

Figure B63 Red Deer River (AB-SK): Ammonia Dissolved

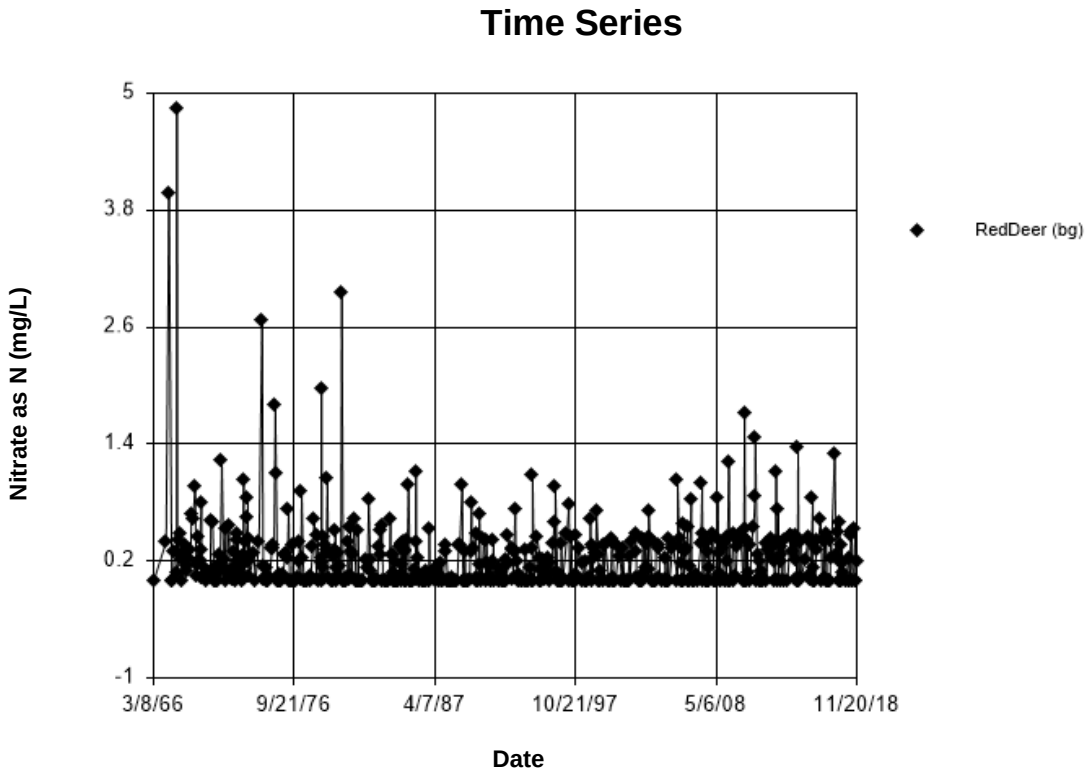

Figure B64 Red Deer River (AB-SK): Nitrate as N

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 70.29
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 30 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 70.29
Adjusted Kruskal-Wallis statistic (H') = 70.29

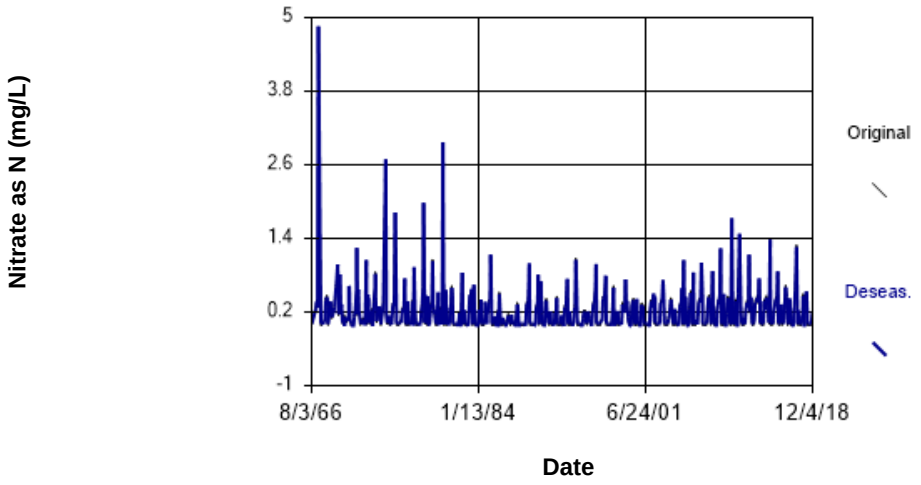

Figure B65 Red Deer River (AB-SK): Nitrate as N

Seasonal Kendall

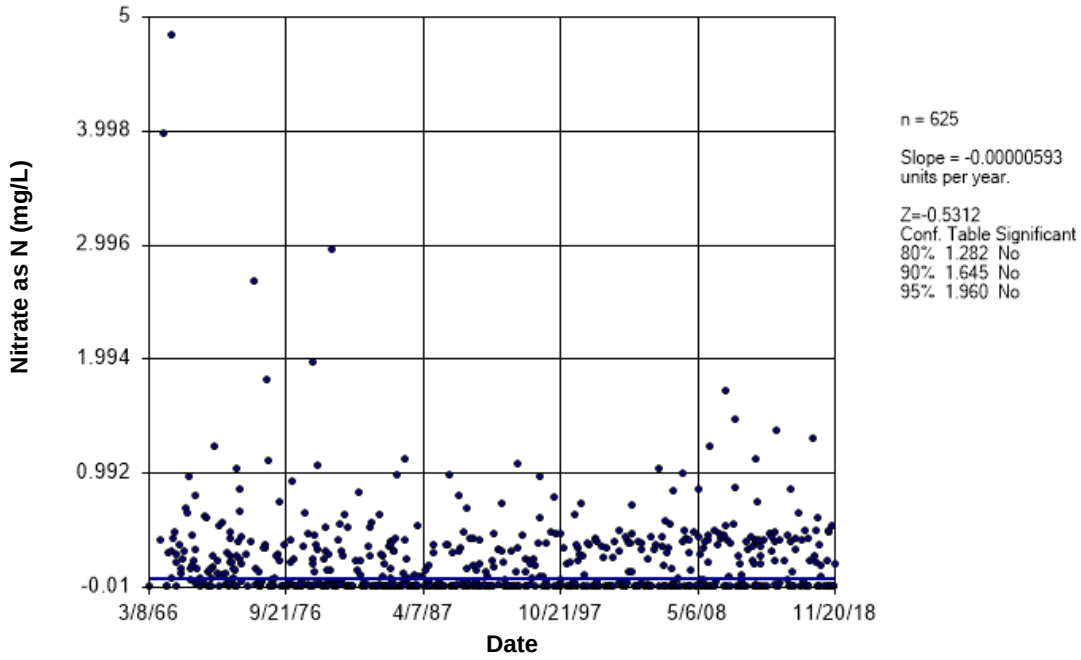

Figure B66 Red Deer River (AB-SK): Nitrate as N

Time Series

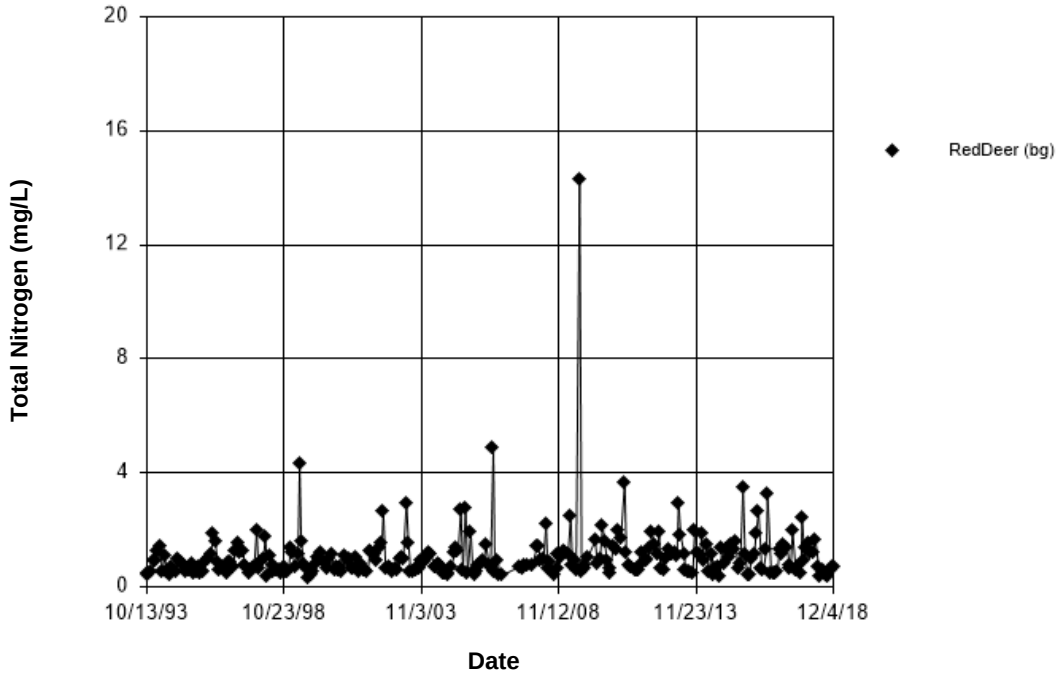

Figure B67 Red Deer River (AB-SK): Total Nitrogen

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 73.89
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 73.89
Adjusted Kruskal-Wallis statistic (H') = 73.89

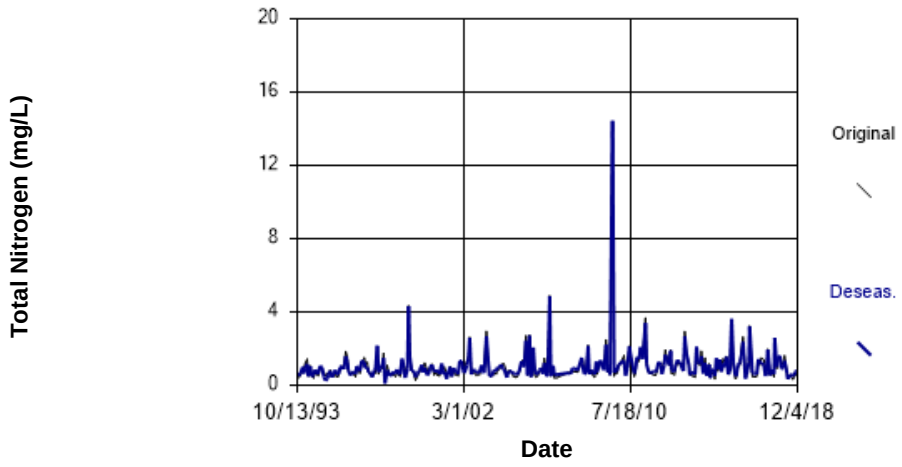

Figure B68 Red Deer River (AB-SK): Total Nitrogen

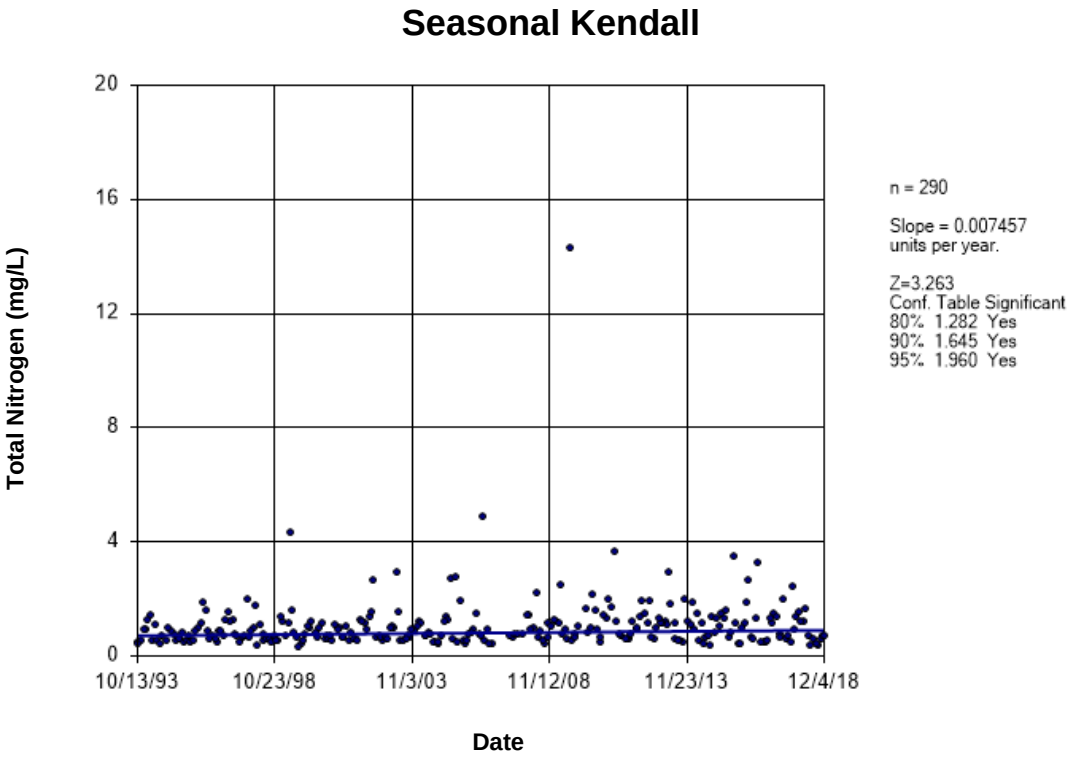

Figure B69 Red Deer River (AB-SK): Total Nitrogen

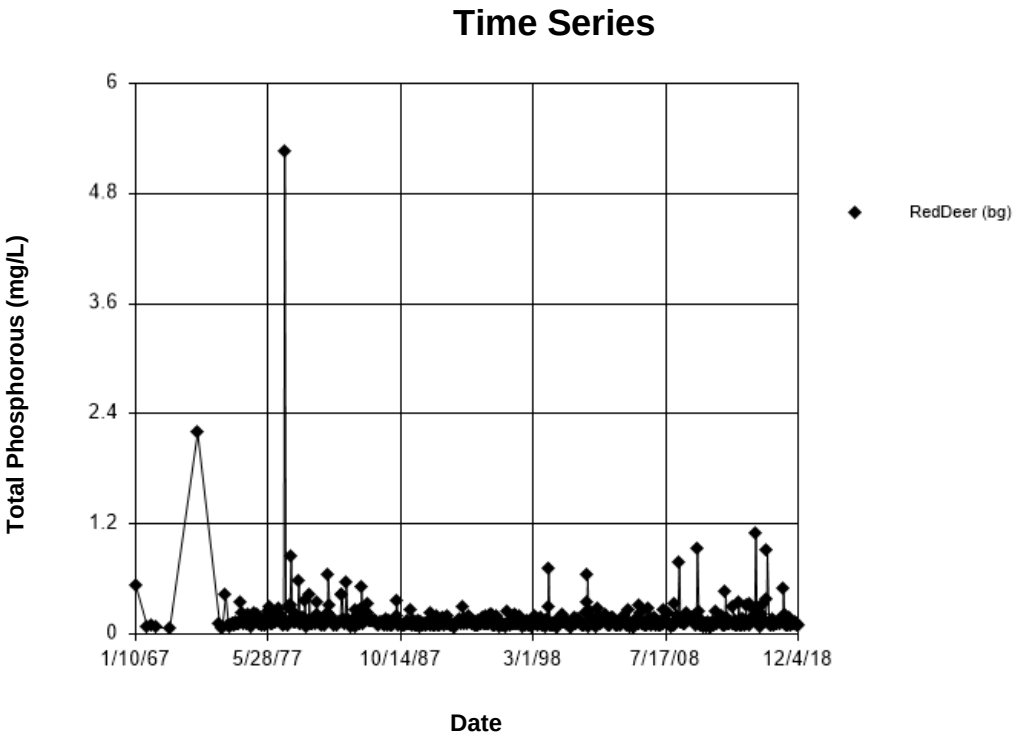

Figure B70 Red Deer River (AB-SK): Total Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 18.74
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 7 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 18.74
Adjusted Kruskal-Wallis statistic (H') = 18.74

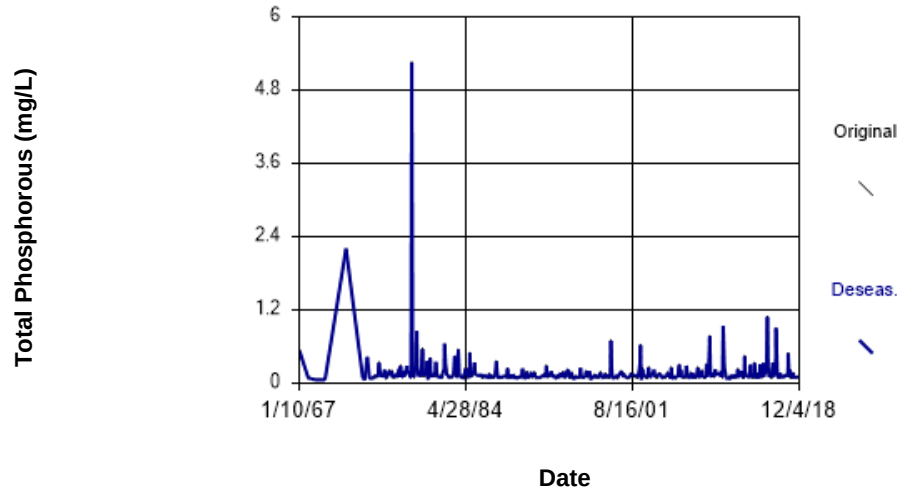

Figure B71 Red Deer River (AB-SK): Total Phosphorous

Seasonal Kendall

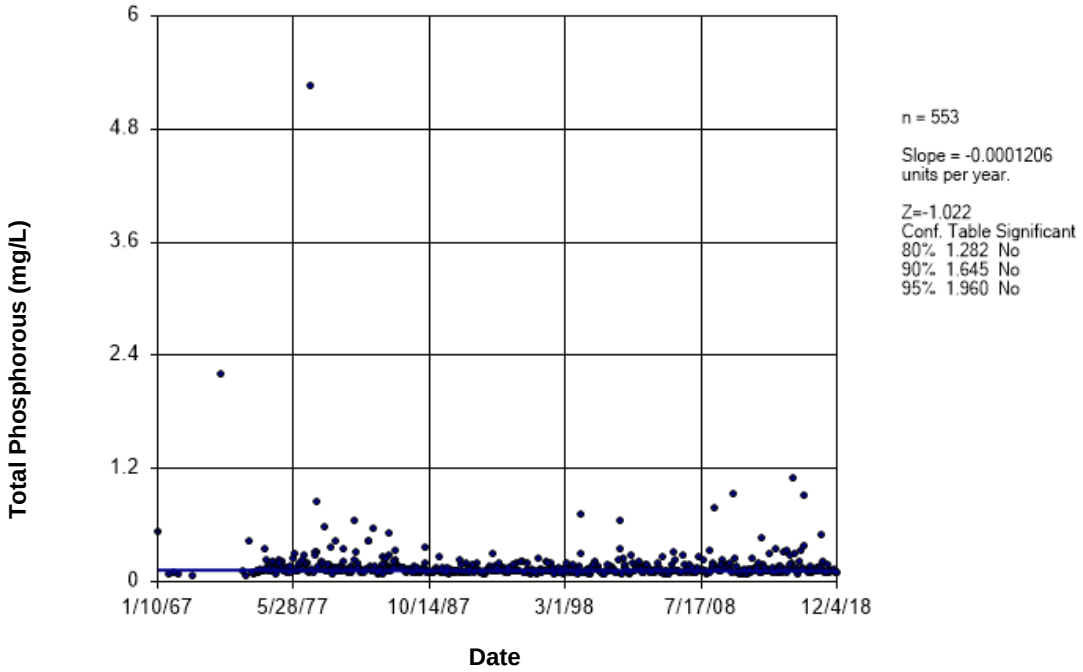

Figure B72 Red Deer River (AB-SK): Total Phosphorous

Time Series

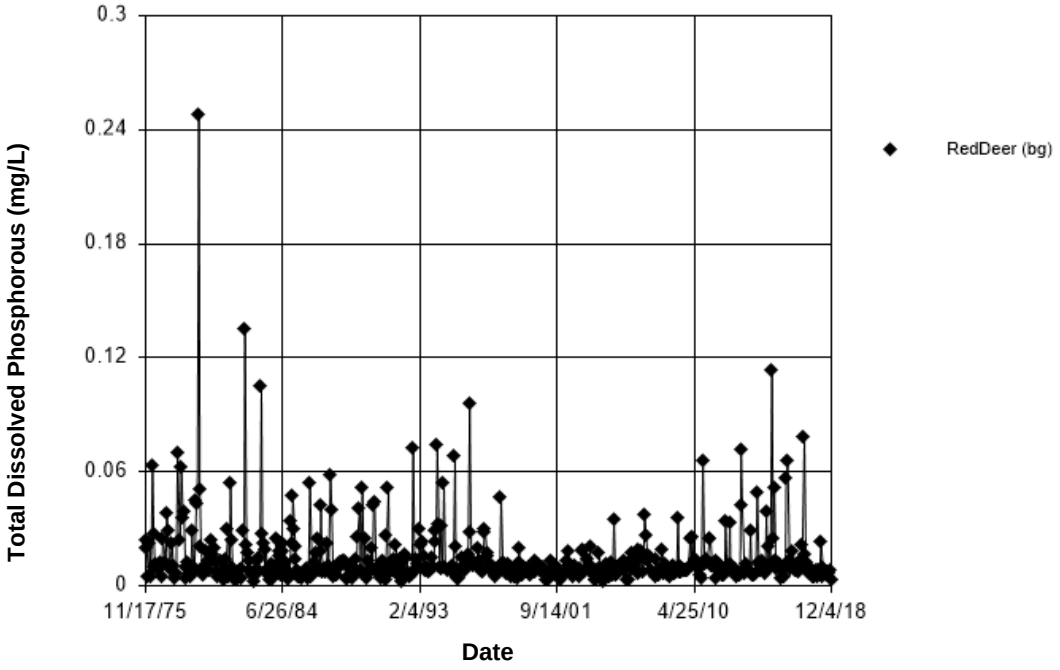

Figure B73 Red Deer River (AB-SK): Total Dissolved Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.3553
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 11 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.3553
Adjusted Kruskal-Wallis statistic (H') = 0.3553

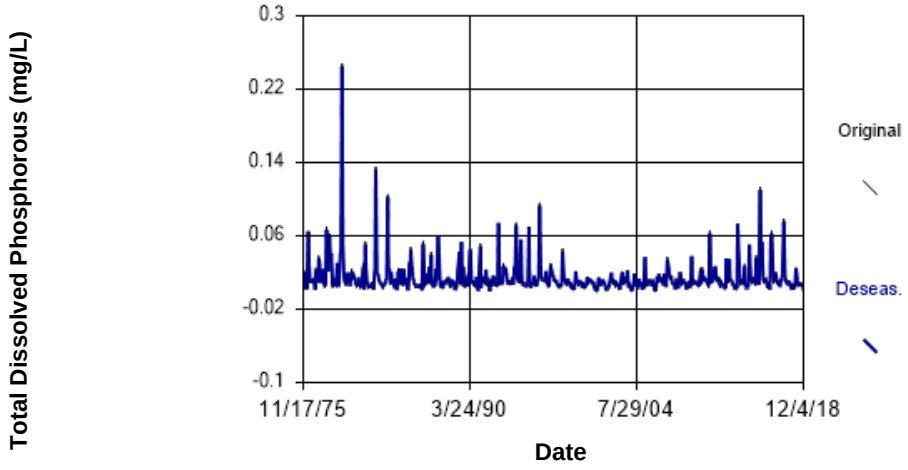

Figure B74 Red Deer River (AB-SK): Total Dissolved Phosphorous

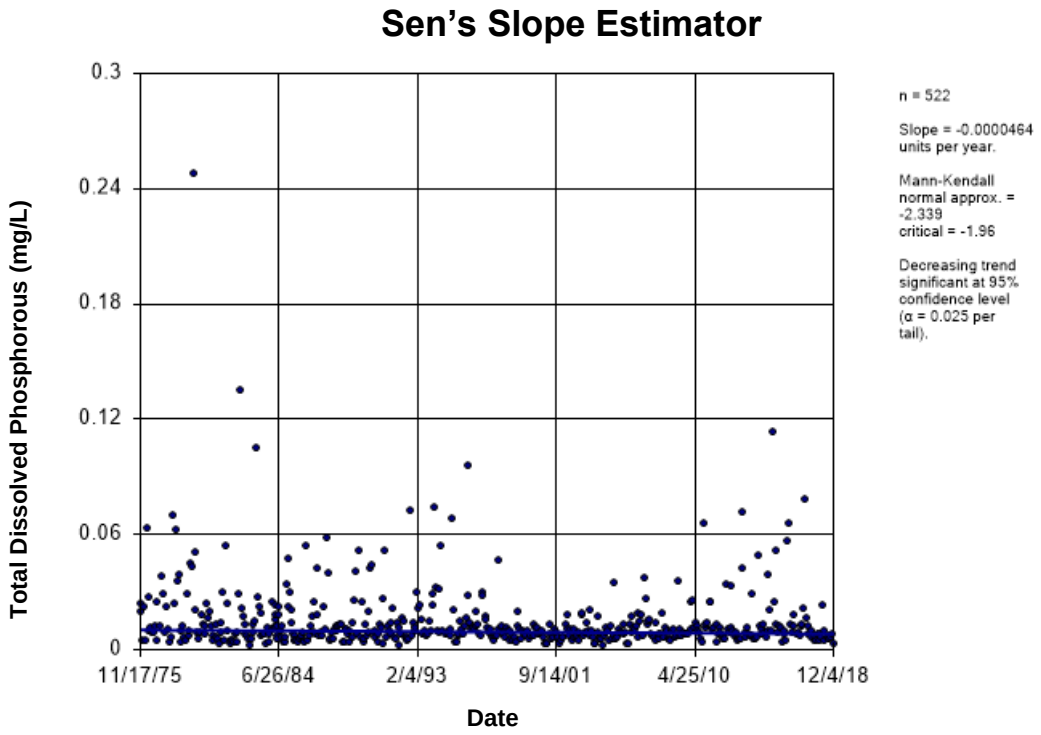

Figure B75 Red Deer River (AB-SK): Total Dissolved Phosphorous

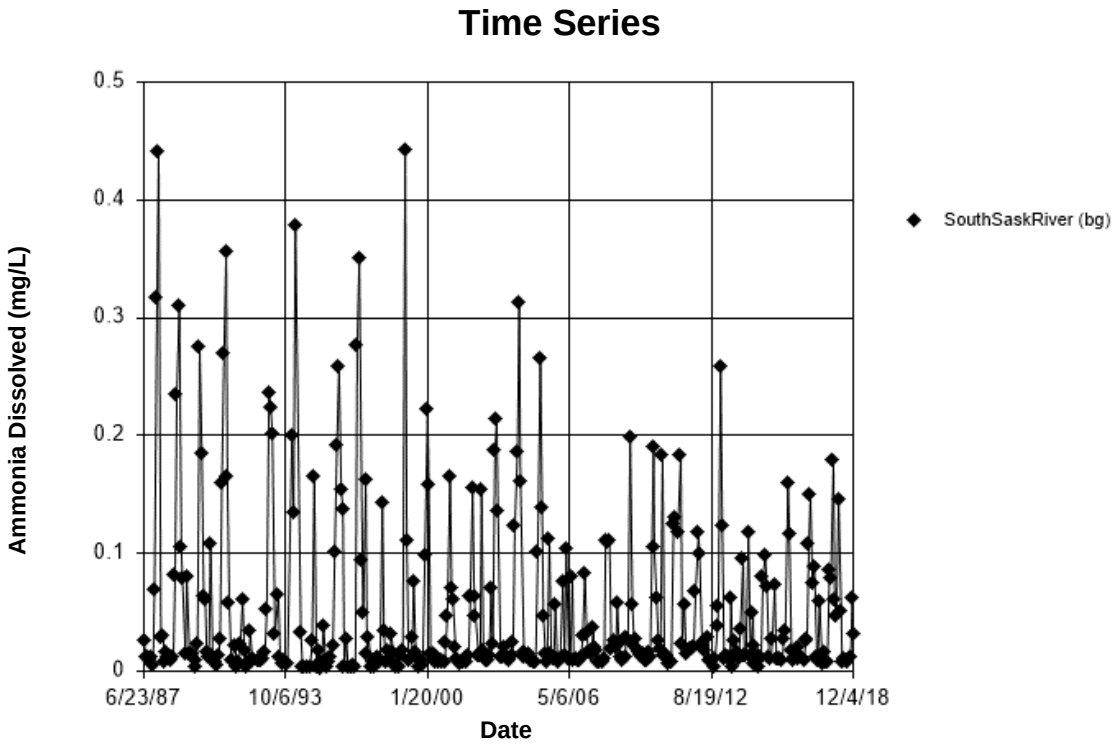

Figure B76 South Saskatchewan River: Ammonia Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 109.8
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 109.8
Adjusted Kruskal-Wallis statistic (H') = 109.8

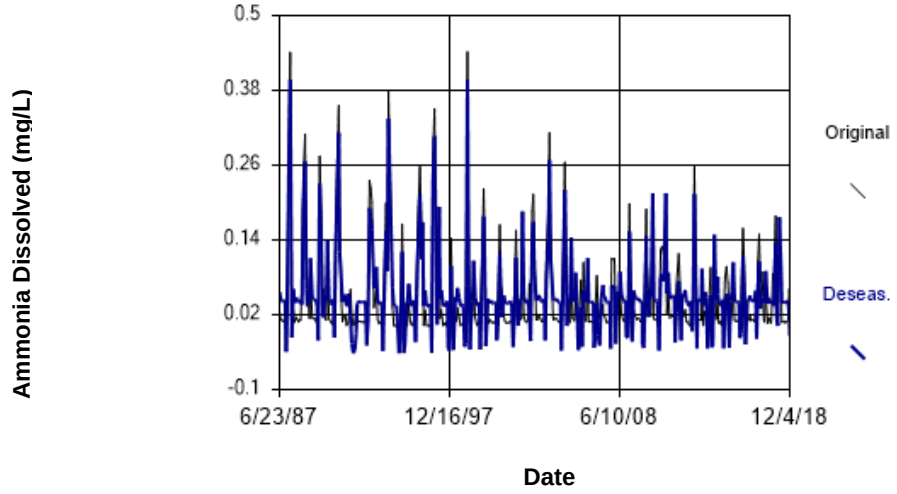

Figure B77 South Saskatchewan River: Ammonia Dissolved

Seasonal Kendall

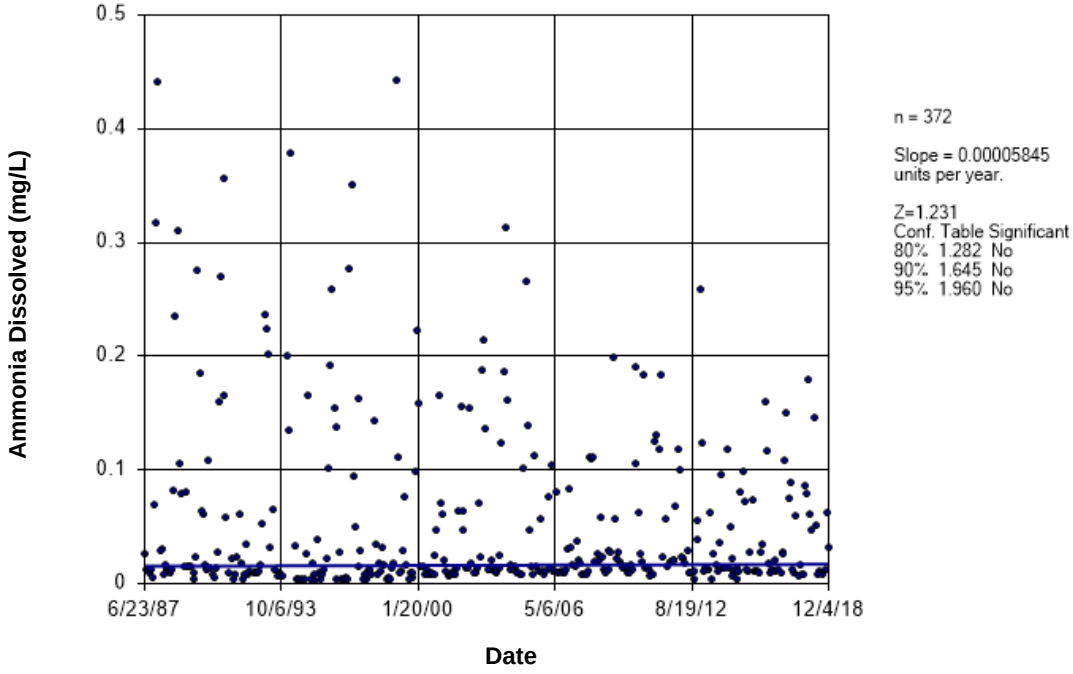

Figure B78 South Saskatchewan River: Ammonia Dissolved

Time Series

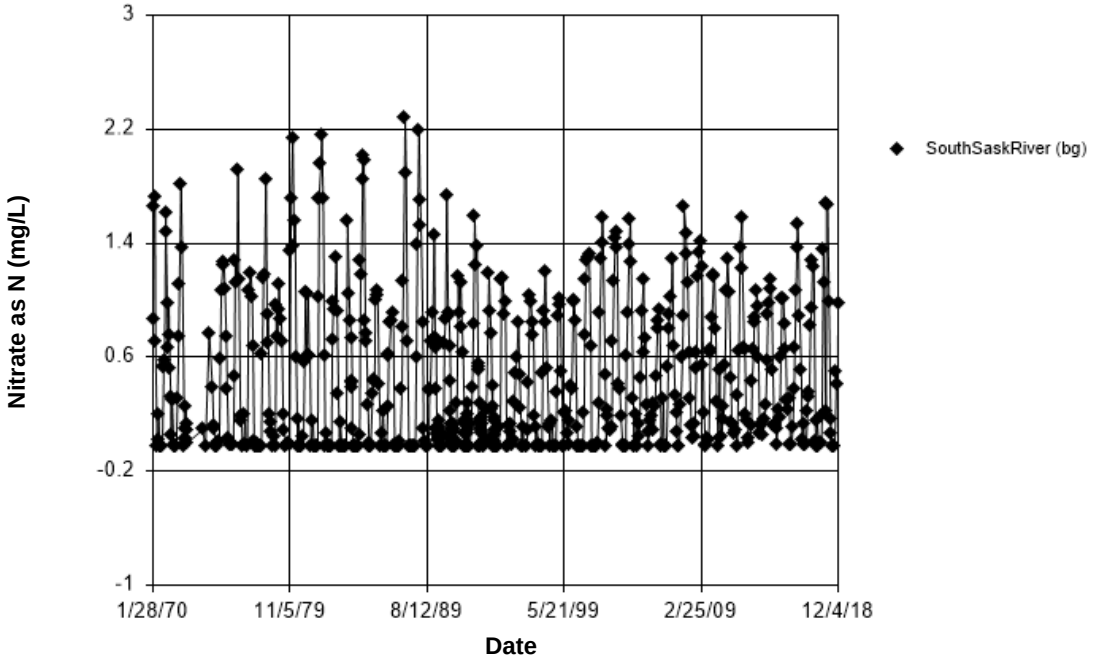

Figure B79 South Saskatchewan River: Nitrate as N

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 410.1
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 410.1
Adjusted Kruskal-Wallis statistic (H') = 410.1

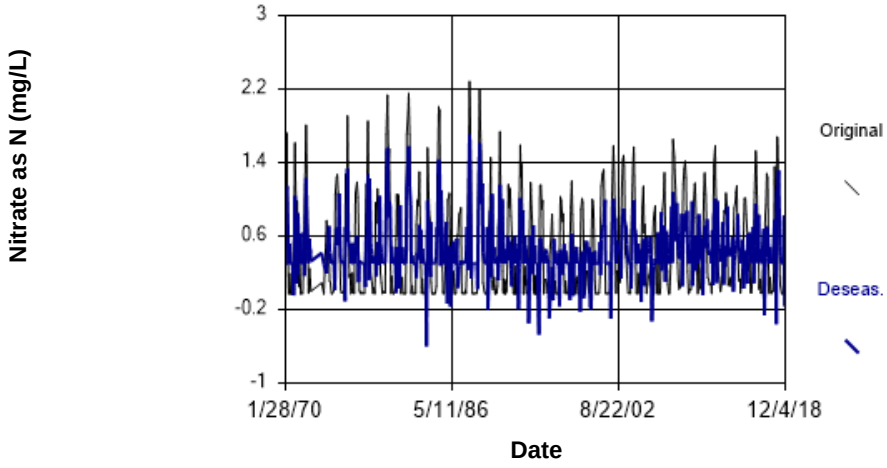

Figure B80 South Saskatchewan River: Nitrate as N

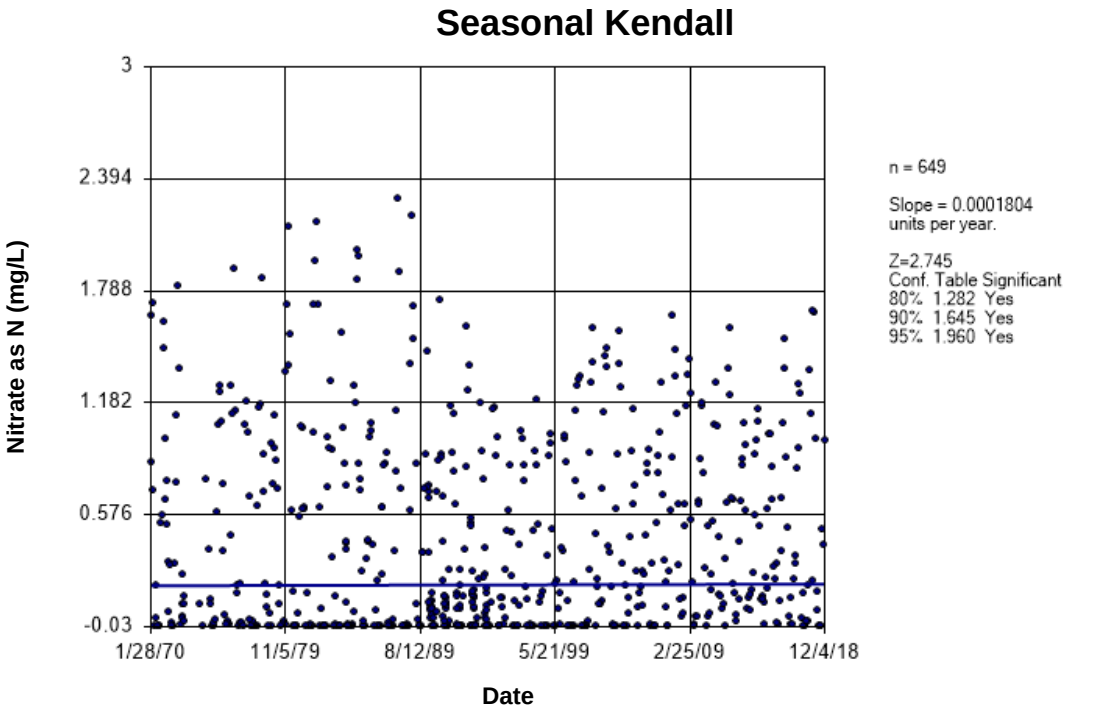

Figure B81 South Saskatchewan River: Nitrate as N

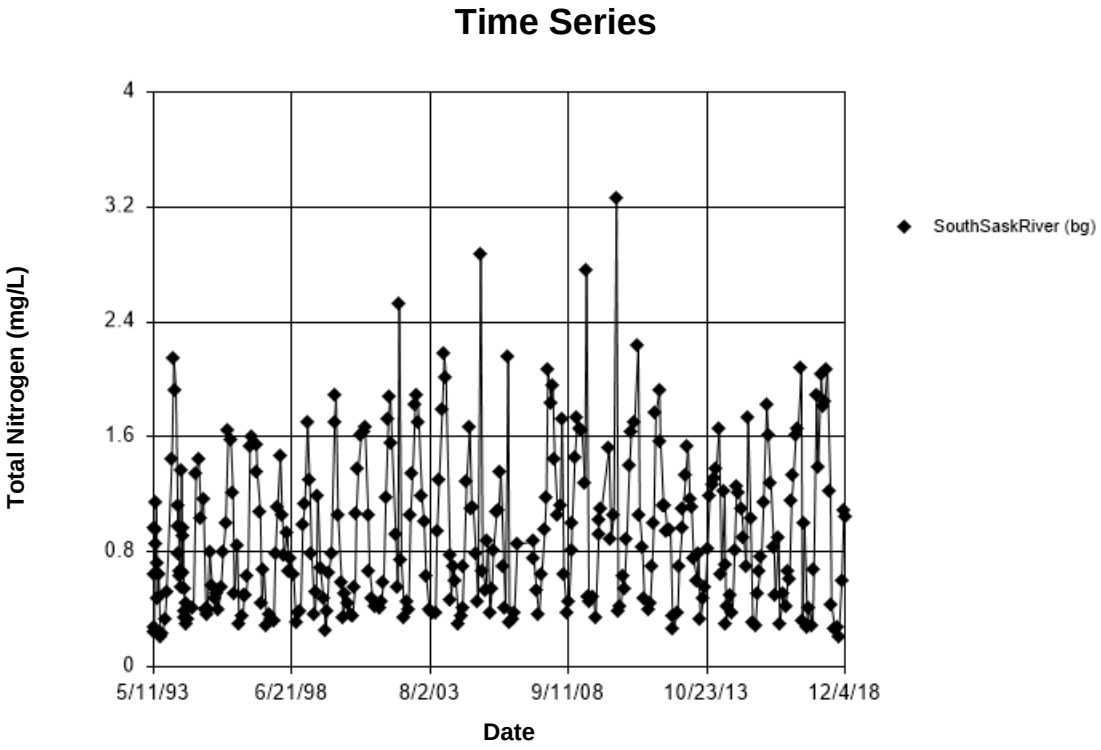

Figure B82 South Saskatchewan River: Total Nitrogen

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 127.1
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

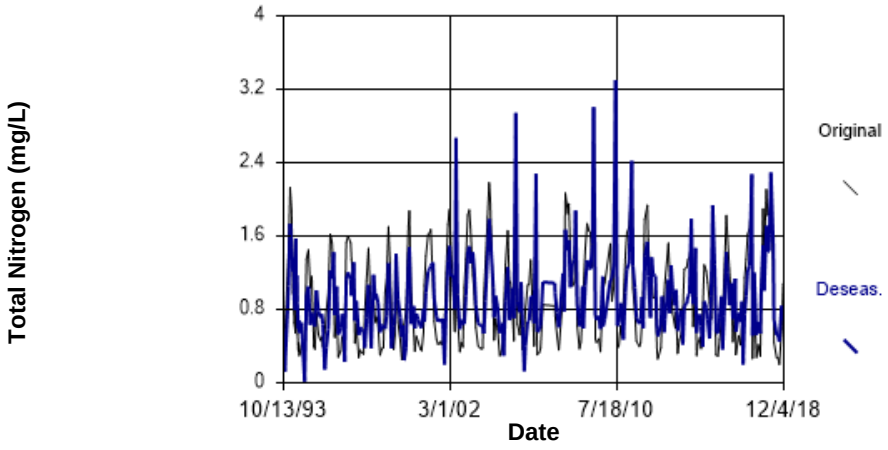

Figure B83 South Saskatchewan River: Total Nitrogen

Seasonal Kendall

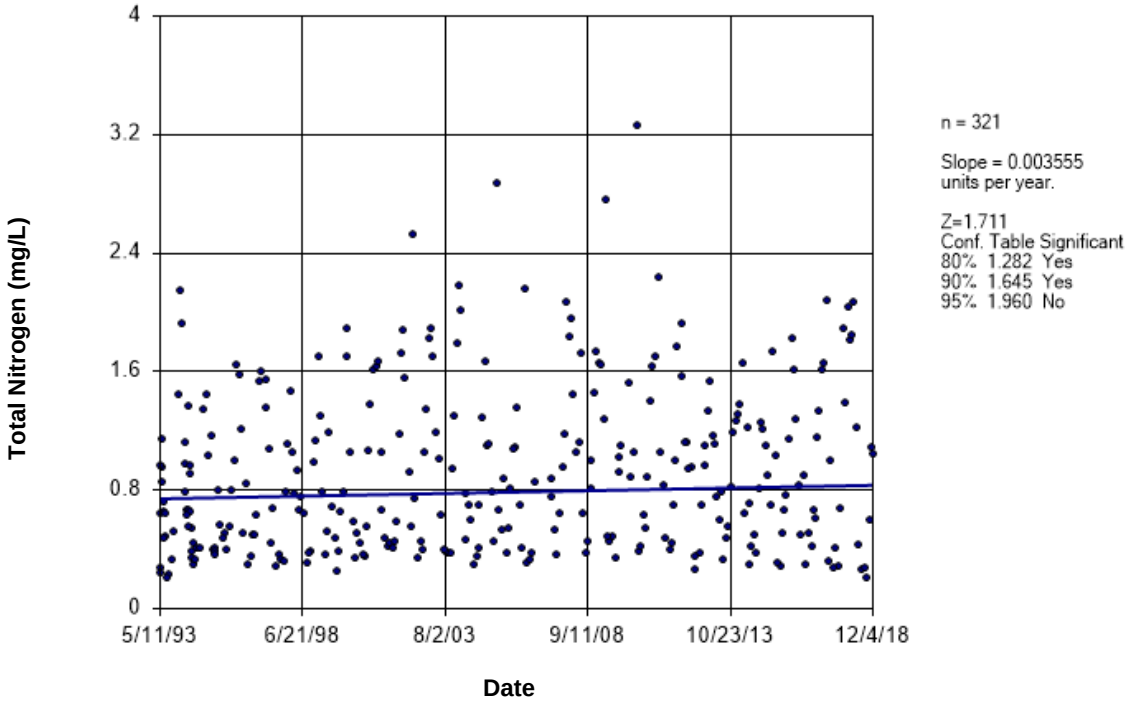

Figure B84 South Saskatchewan River: Total Nitrogen

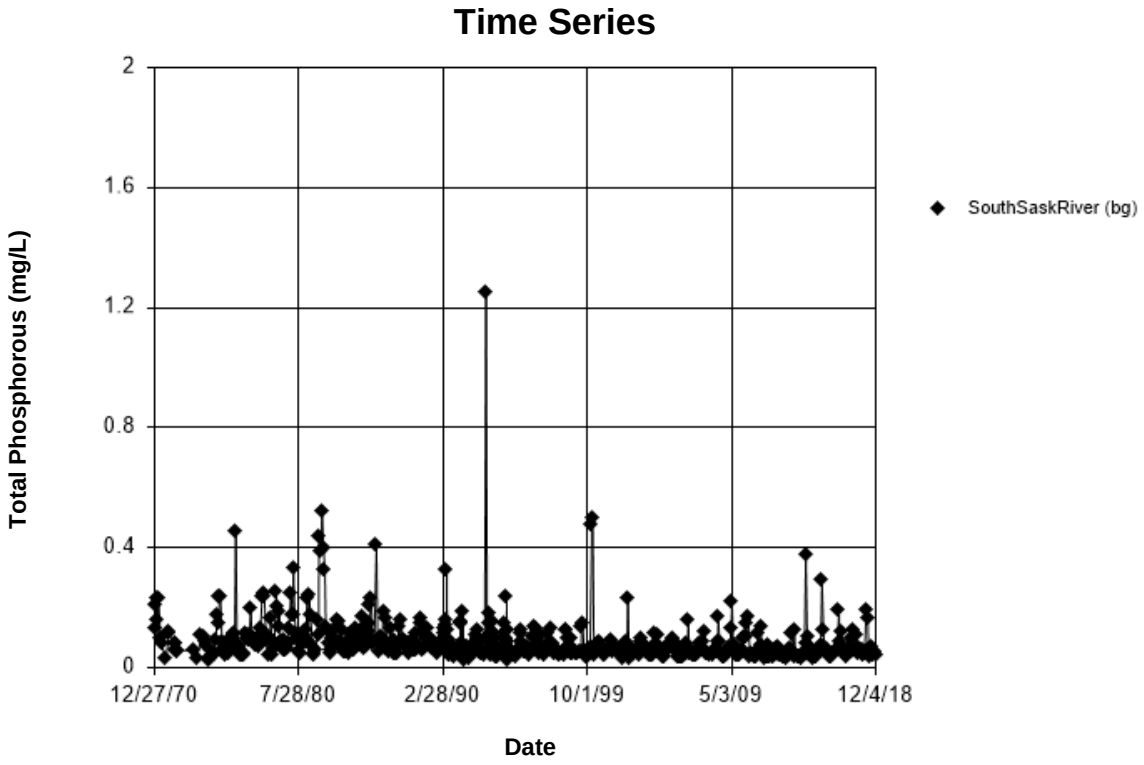

Figure B85 South Saskatchewan River: Total Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 12.91
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

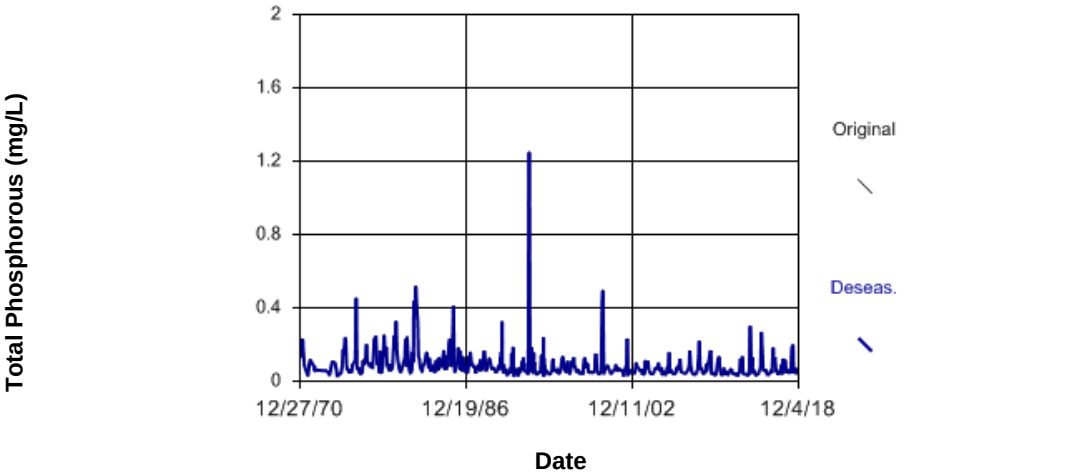

Figure B86 South Saskatchewan River: Total Phosphorous

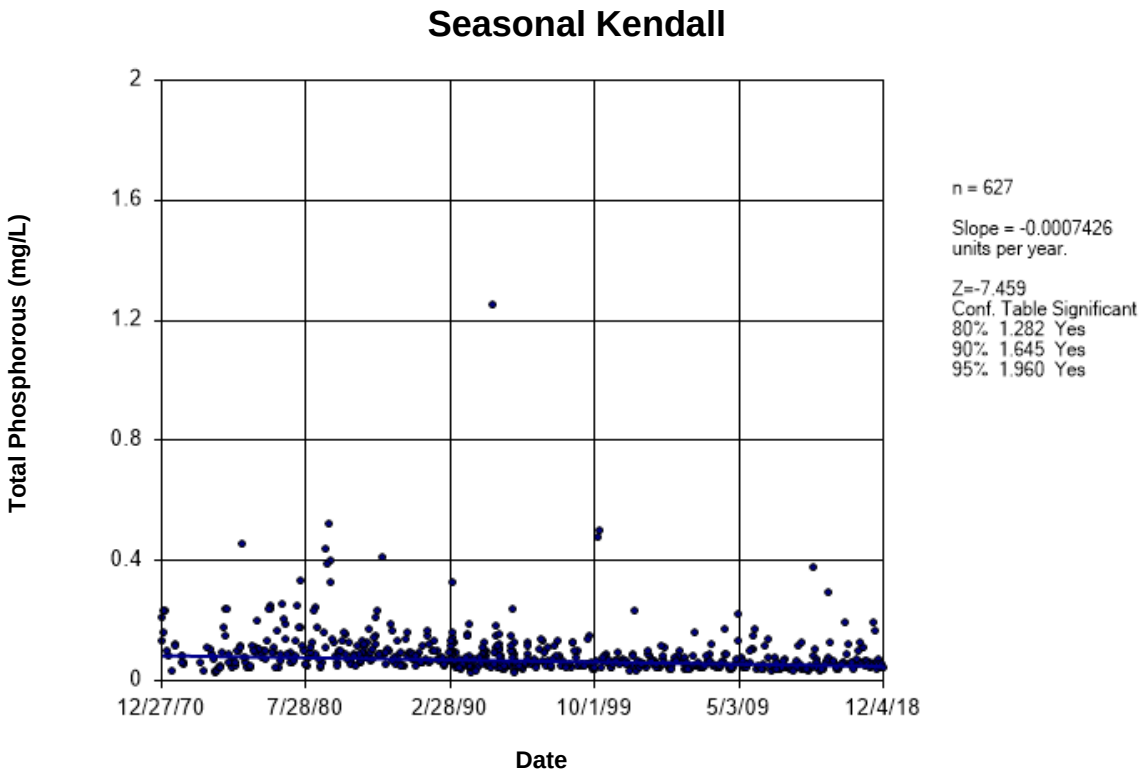

Figure B87 South Saskatchewan River: Total Phosphorous

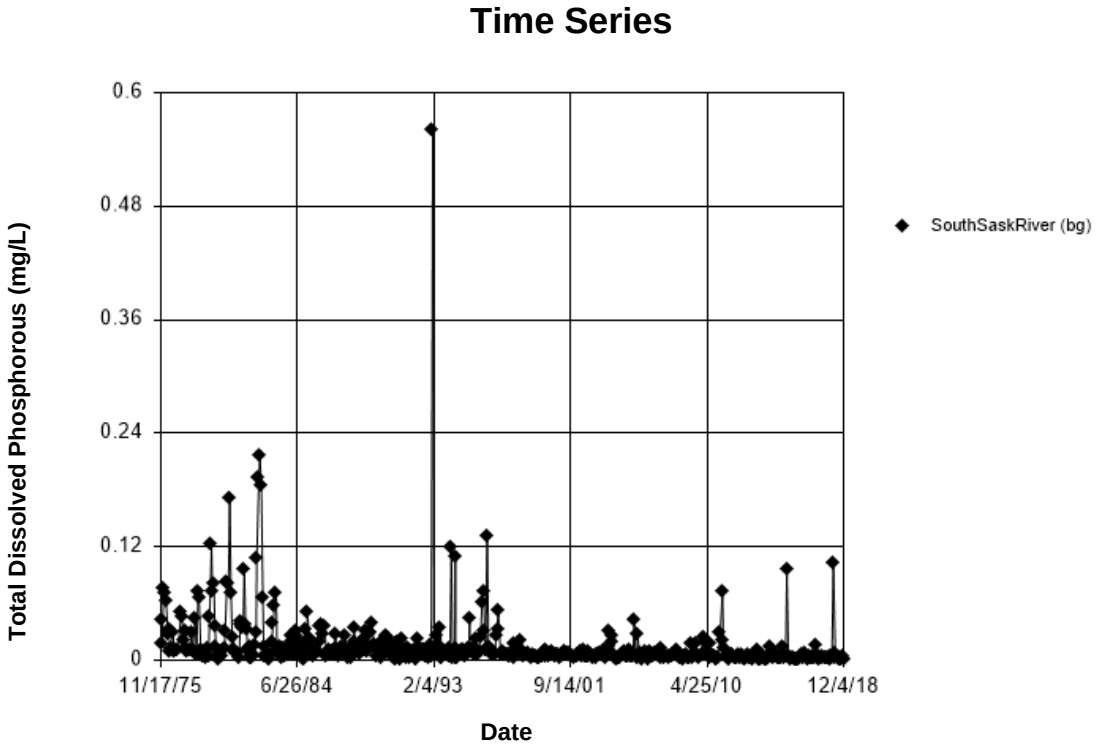

Figure B88 South Saskatchewan River: Total Dissolved Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 2.32
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 2.32
Adjusted Kruskal-Wallis statistic (H') = 2.32

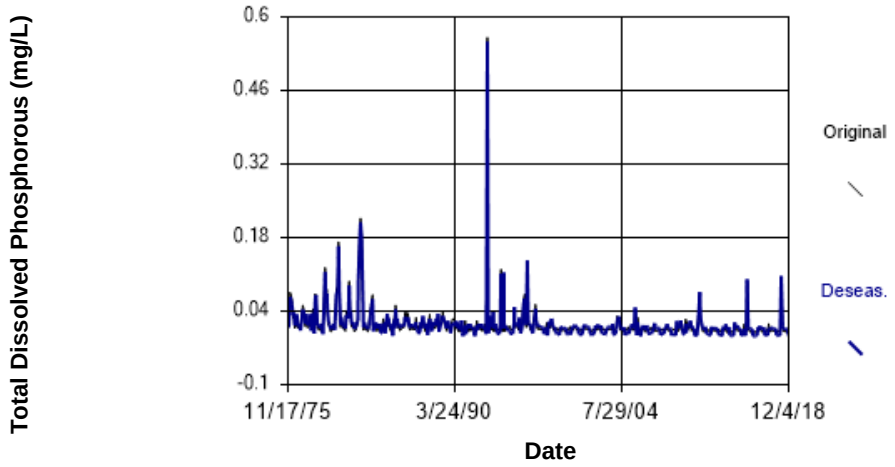

Figure B89 South Saskatchewan River: Total Dissolved Phosphorous

Sen's Slope Estimator

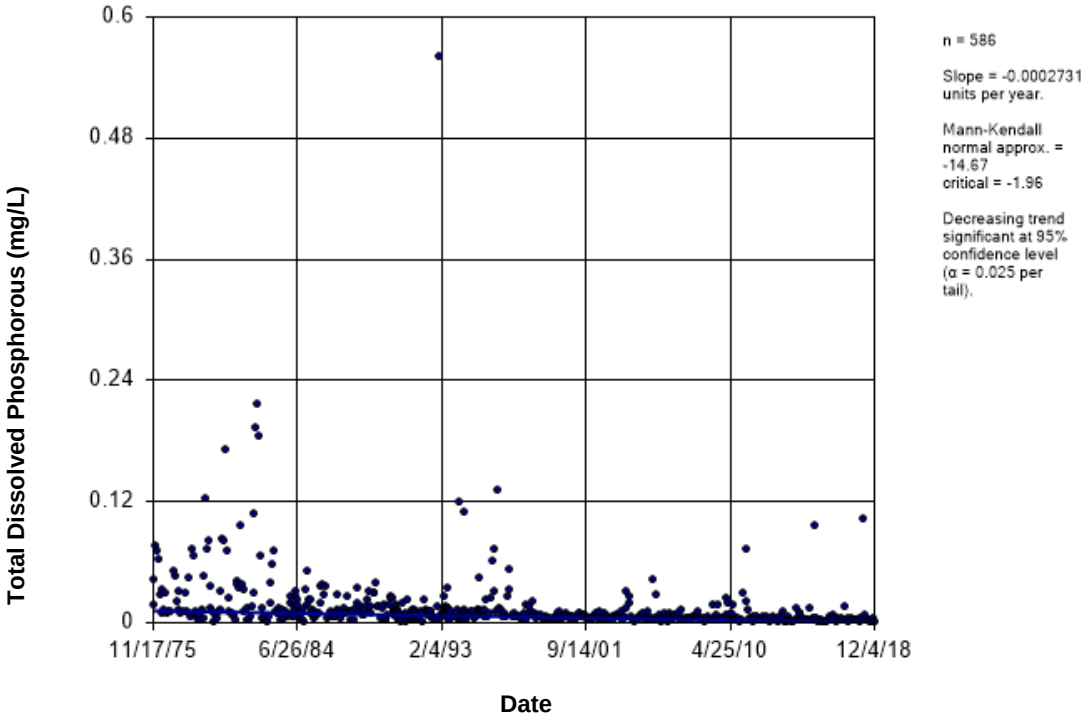

Figure B90 South Saskatchewan River: Total Dissolved Phosphorous

Time Series

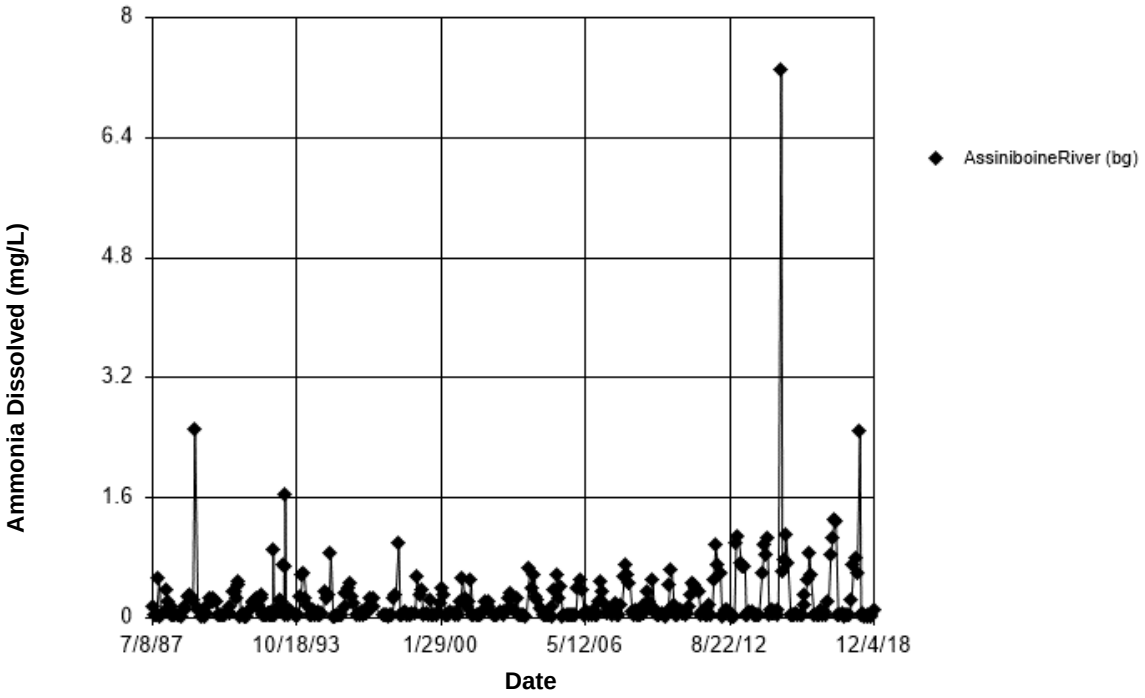

Figure B91 Assiniboine River: Ammonia Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 155
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

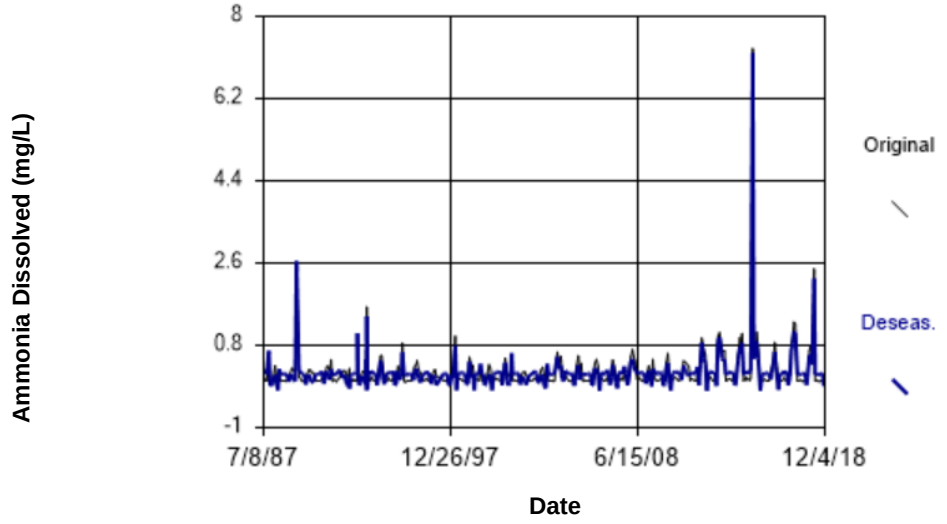

Figure B92 Assiniboine River: Ammonia Dissolved

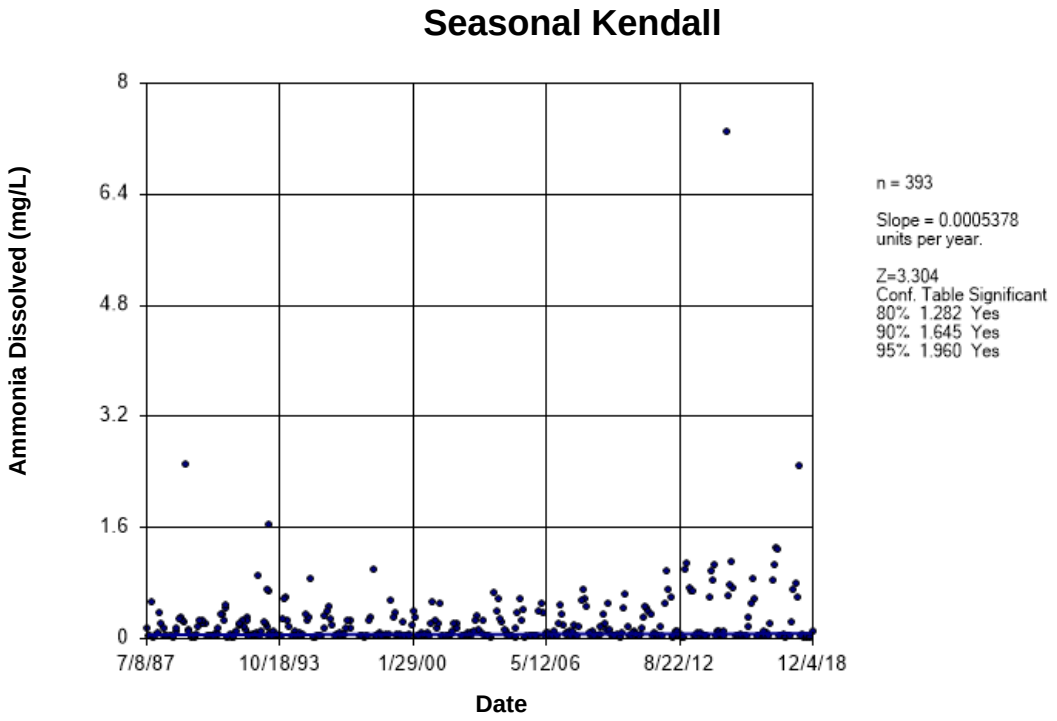

Figure B93 Assiniboine River: Ammonia Dissolved

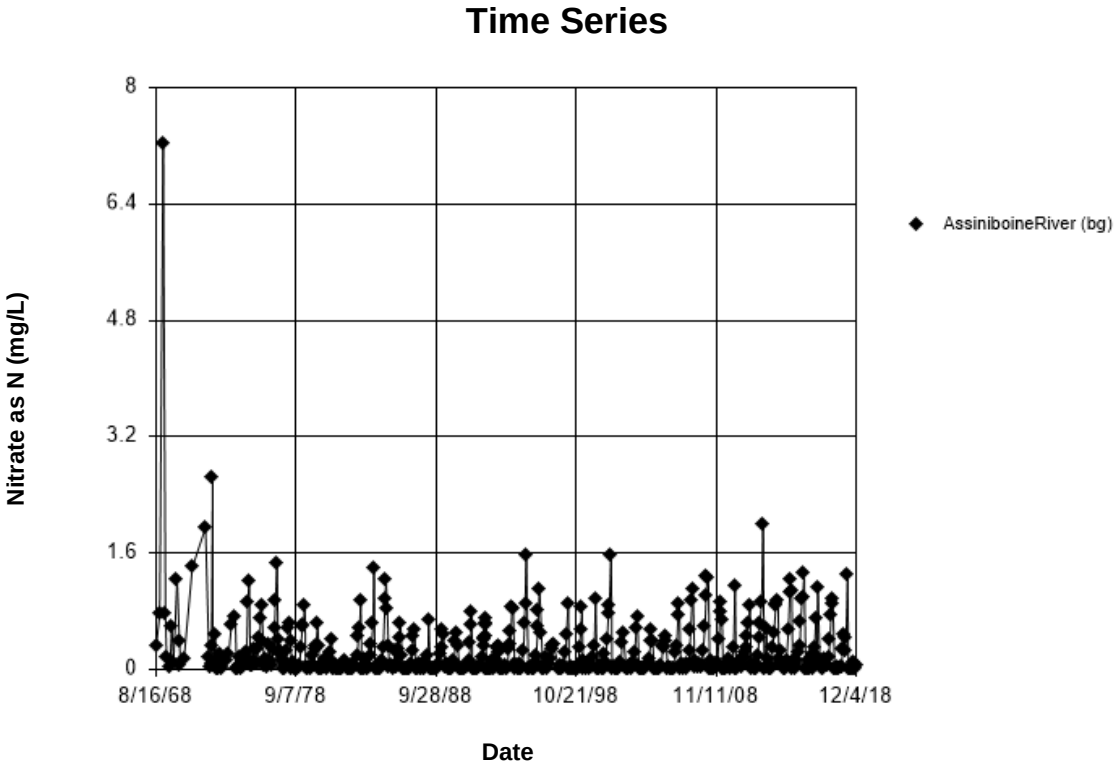

Figure B94 Assiniboine River: Nitrate as N

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 146.6
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 10 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 146.6
Adjusted Kruskal-Wallis statistic (H') = 146.6

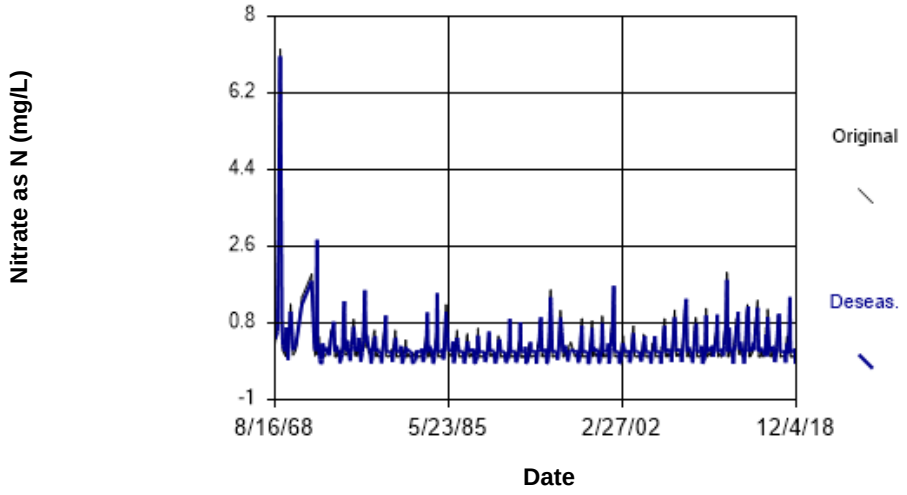

Figure B96 Assiniboine River: Nitrate as N

Seasonal Kendall

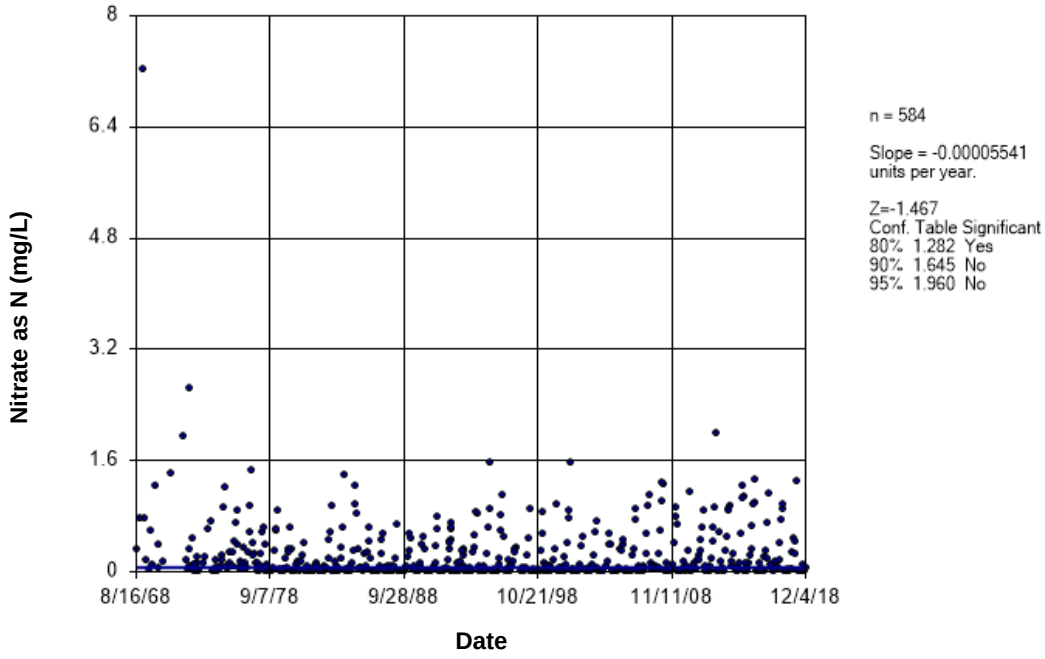

Figure B96 Assiniboine River: Nitrate as N

Time Series

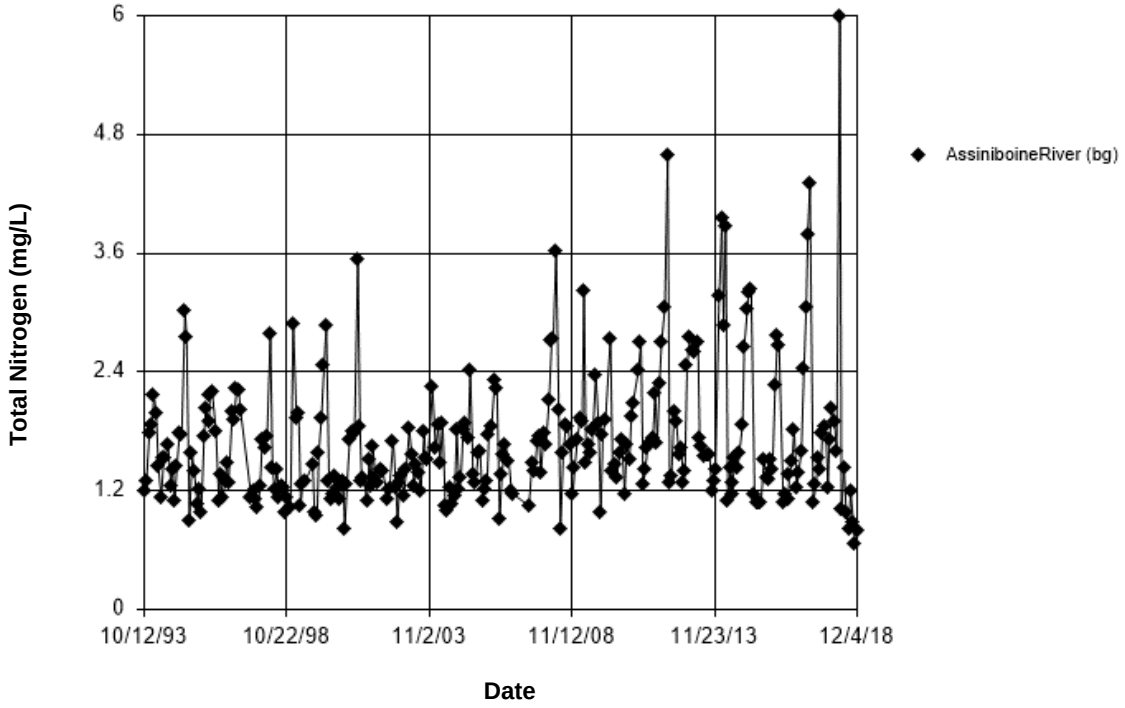

Figure B97 Assiniboine River: Total Nitrogen

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 53.87
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

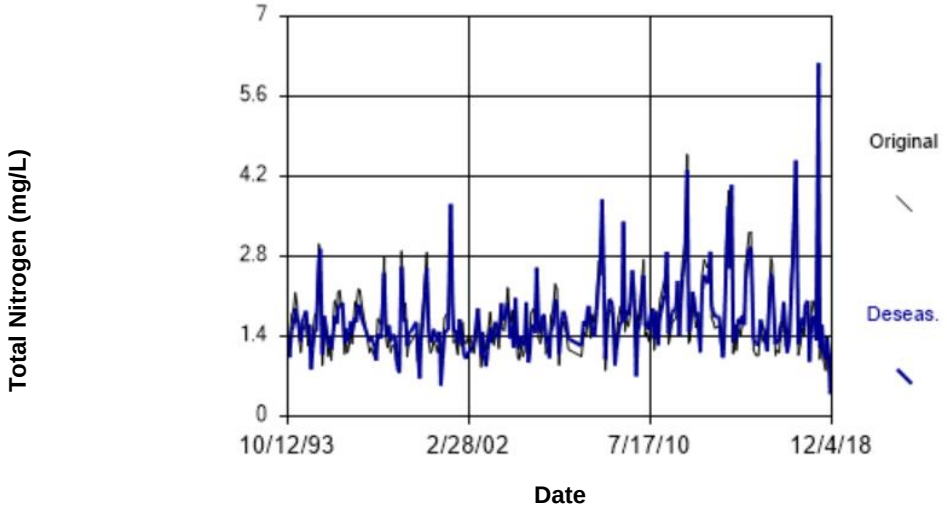

Figure B98 Assiniboine River: Total Nitrogen

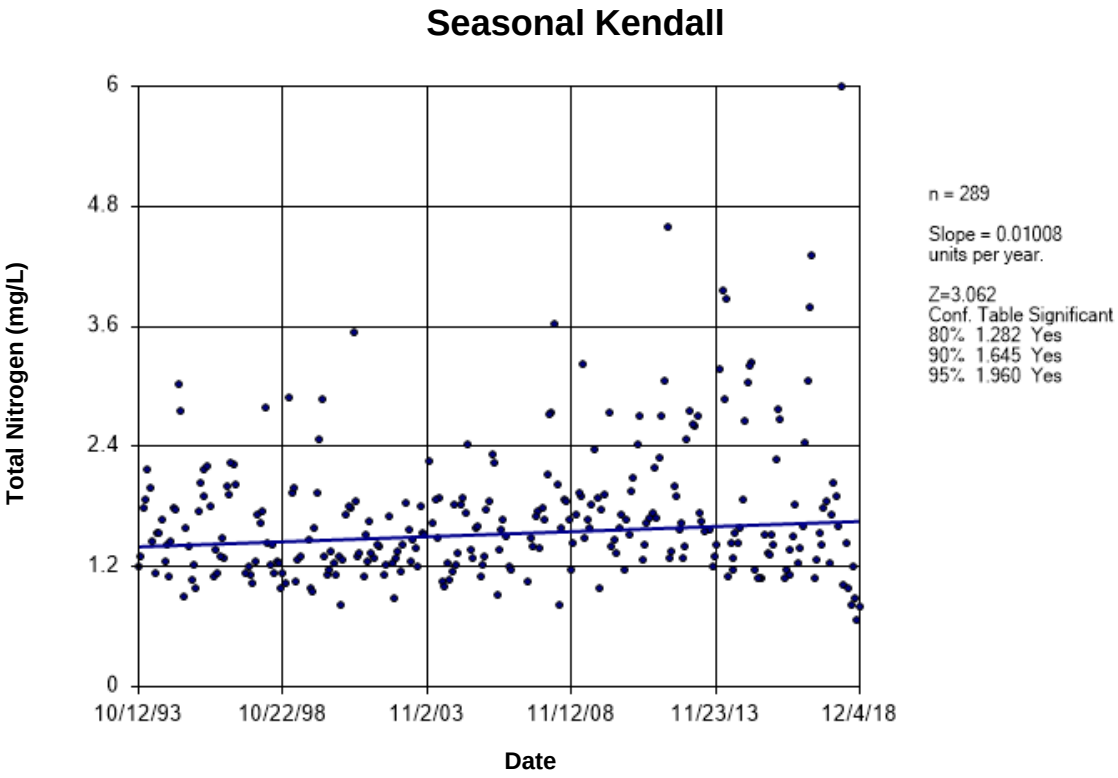

Figure B99 Assiniboine River: Total Nitrogen

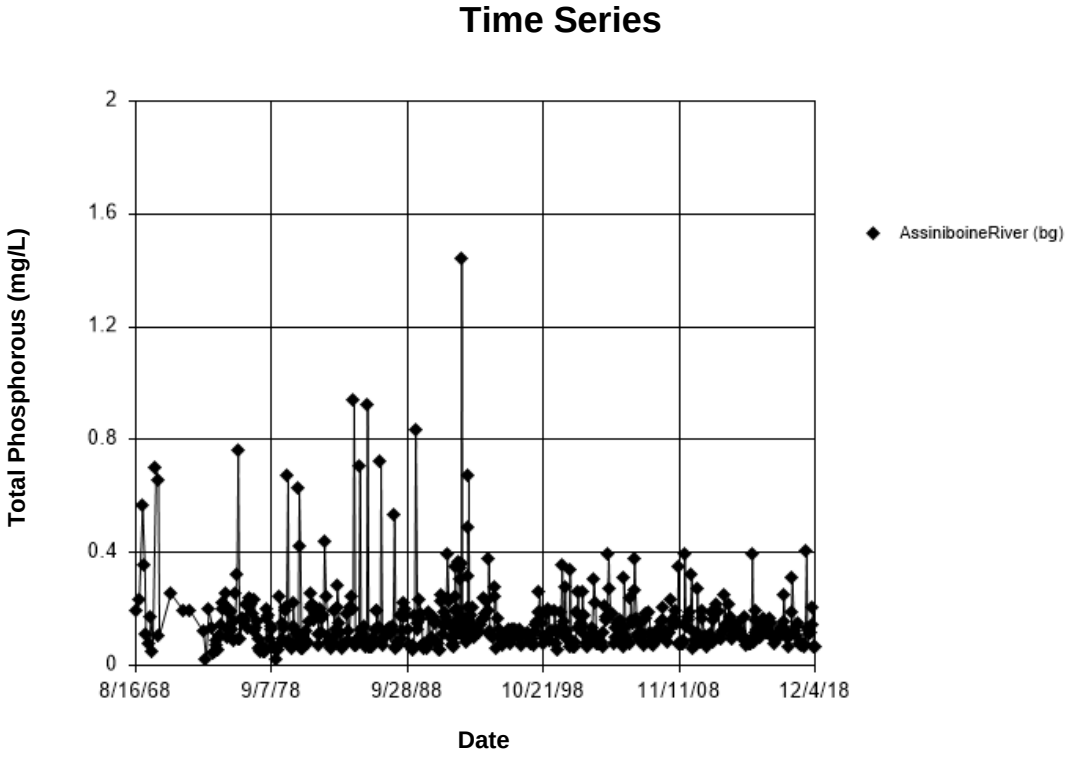

Figure B100 Assiniboine River: Total Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 118.5
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

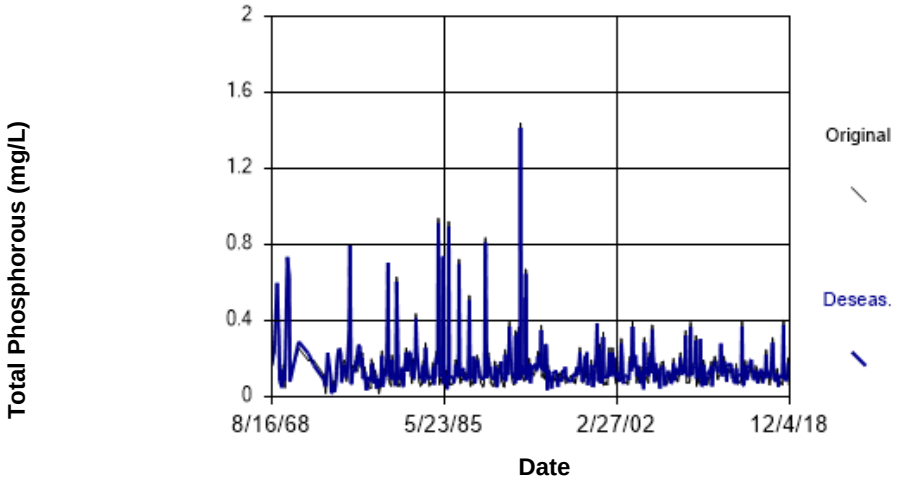

Figure B101 Assiniboine River: Total Phosphorous

Seasonal Kendall

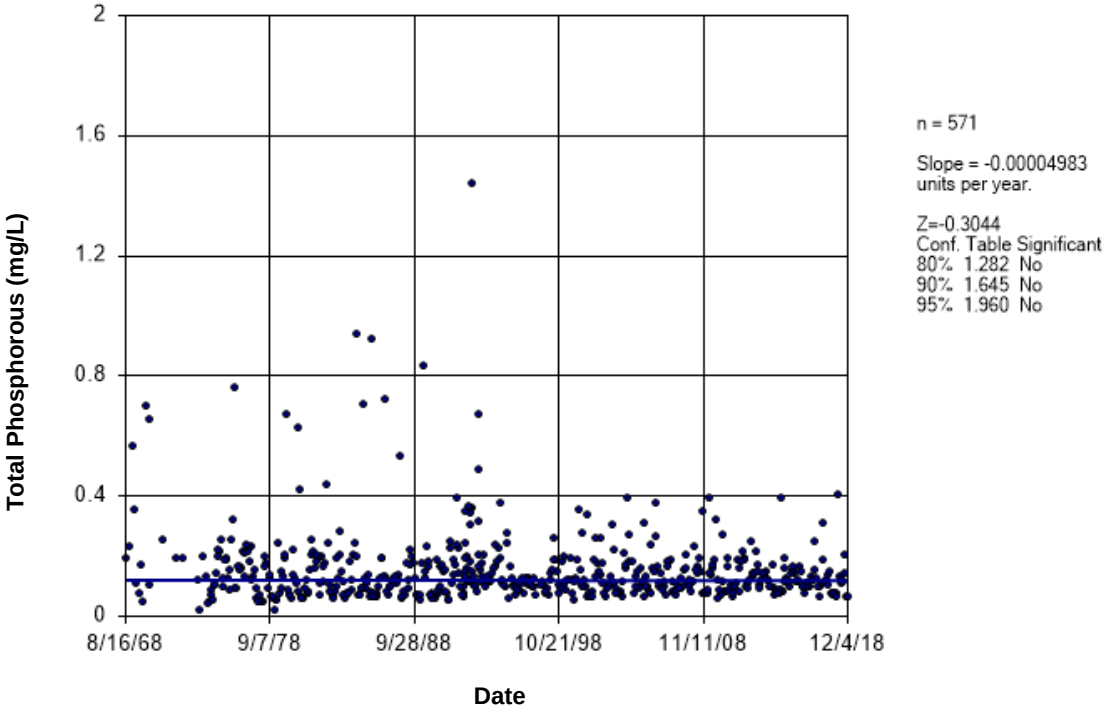

Figure B102 Assiniboine River: Total Phosphorous

Time Series

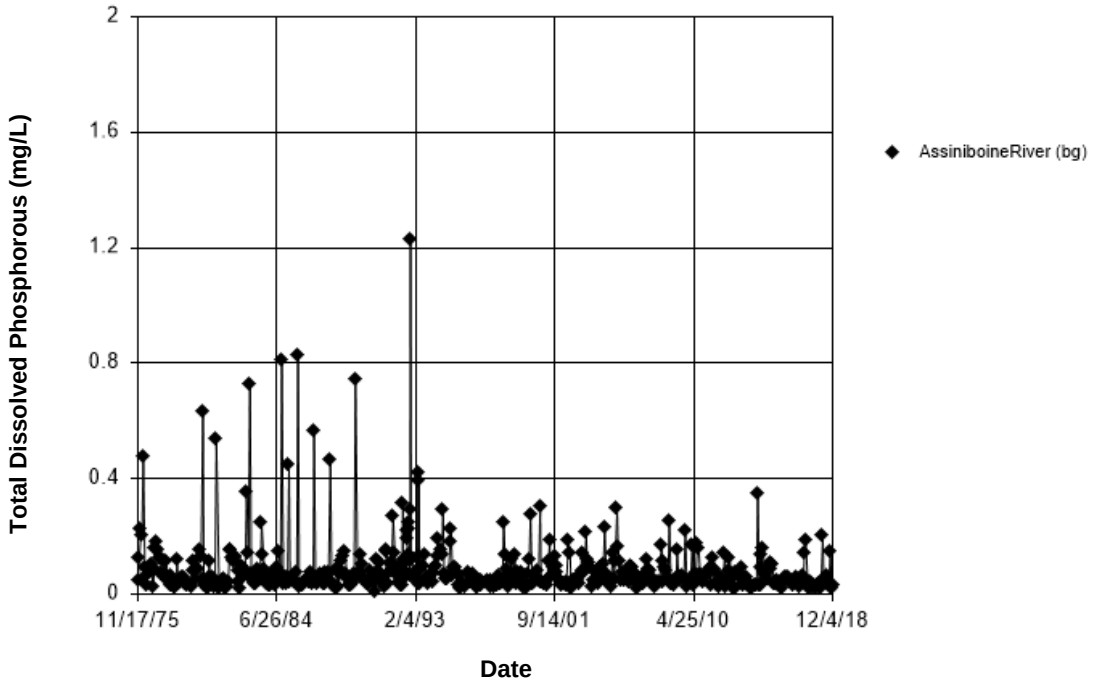

Figure B103 Assiniboine River: Total Dissolved Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 68.78
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

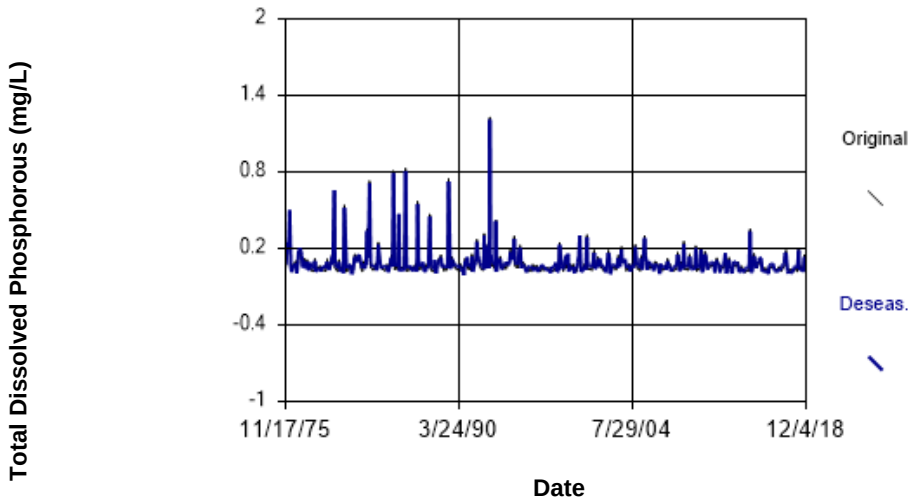

Figure B104 Assiniboine River: Total Dissolved Phosphorous

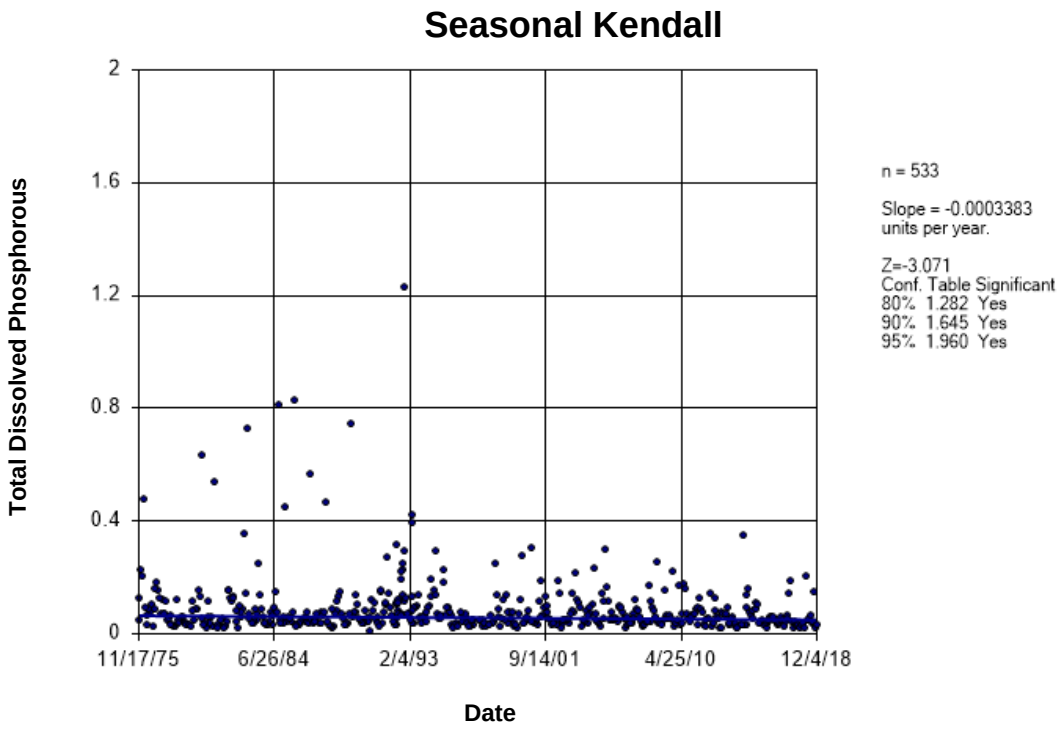

Figure B105 Assiniboine River: Total Dissolved Phosphorous

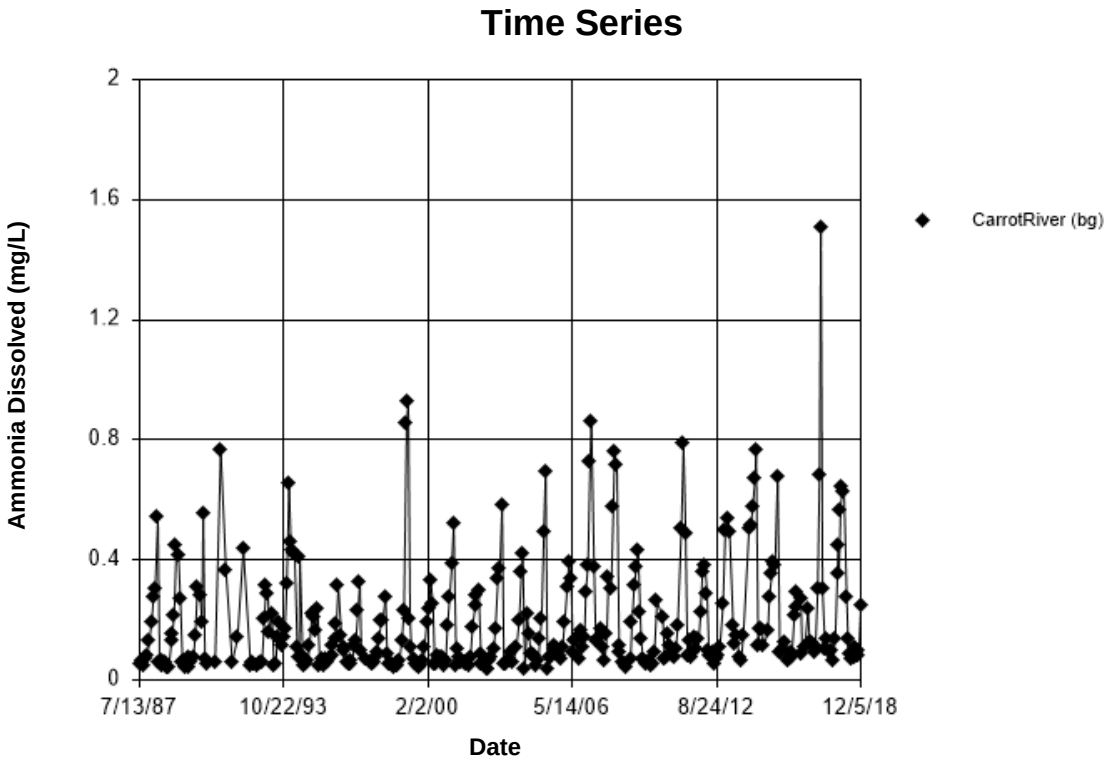

Figure B106 Carrot River: Ammonia Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 177.3
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

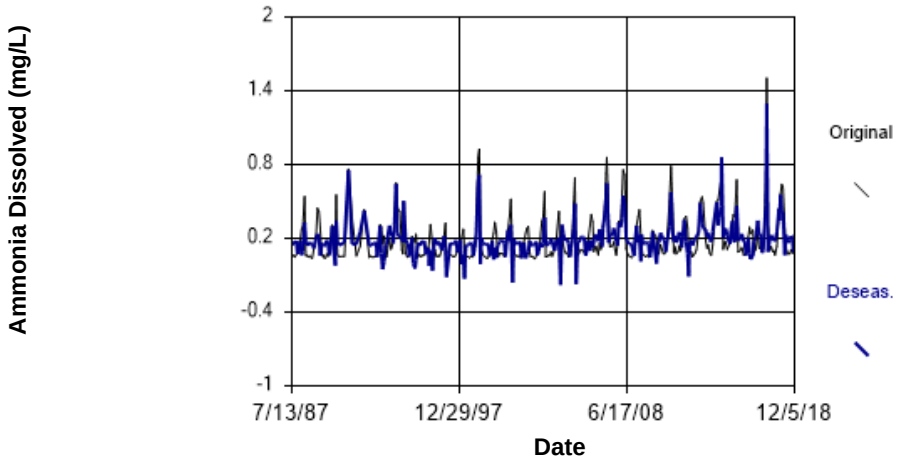

Figure B108 Carrot River: Ammonia Dissolved

Seasonal Kendall

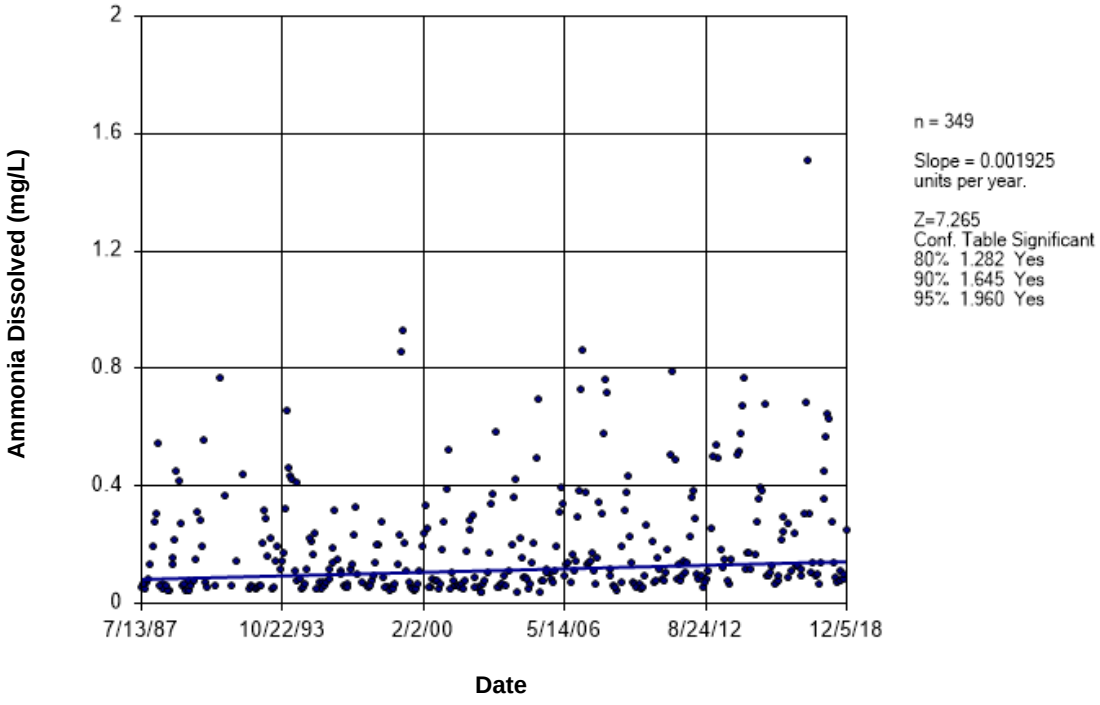

Figure B108 Carrot River: Ammonia Dissolved

Time Series

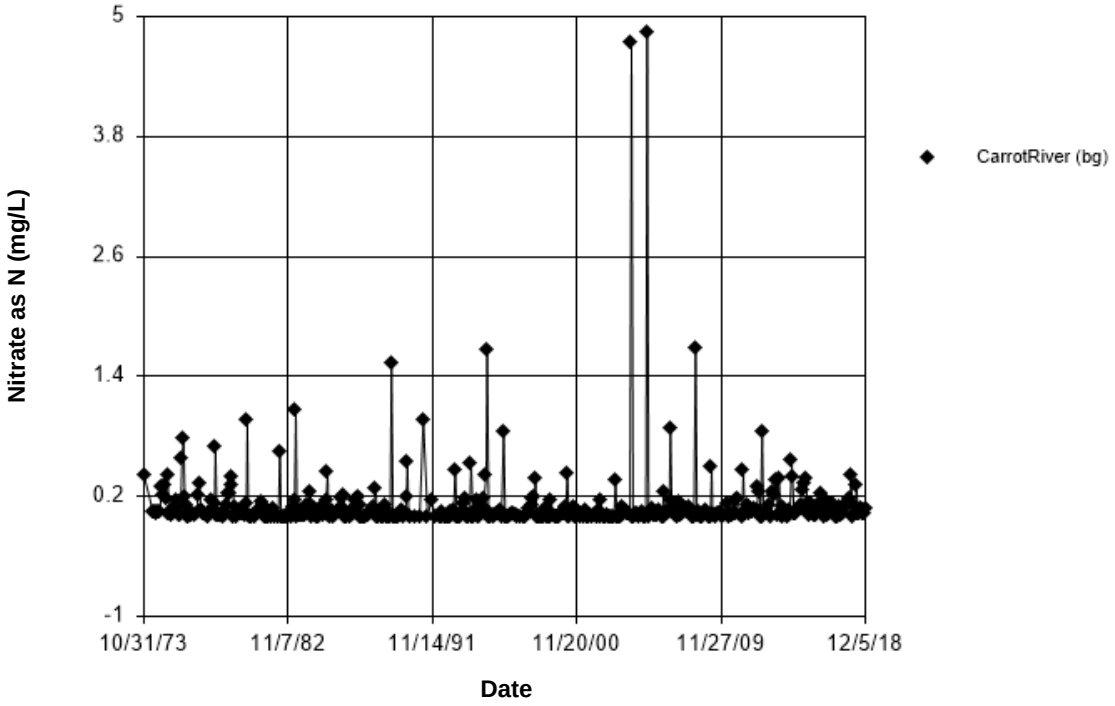

Figure B109 Carrot River: Nitrate as N

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 20.19
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 7 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 20.19
Adjusted Kruskal-Wallis statistic (H') = 20.19

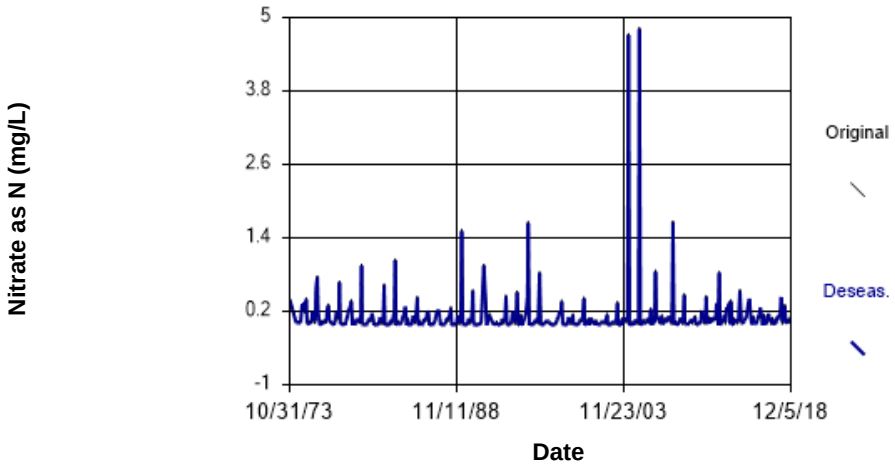

Figure B110 Carrot River: Nitrate as N

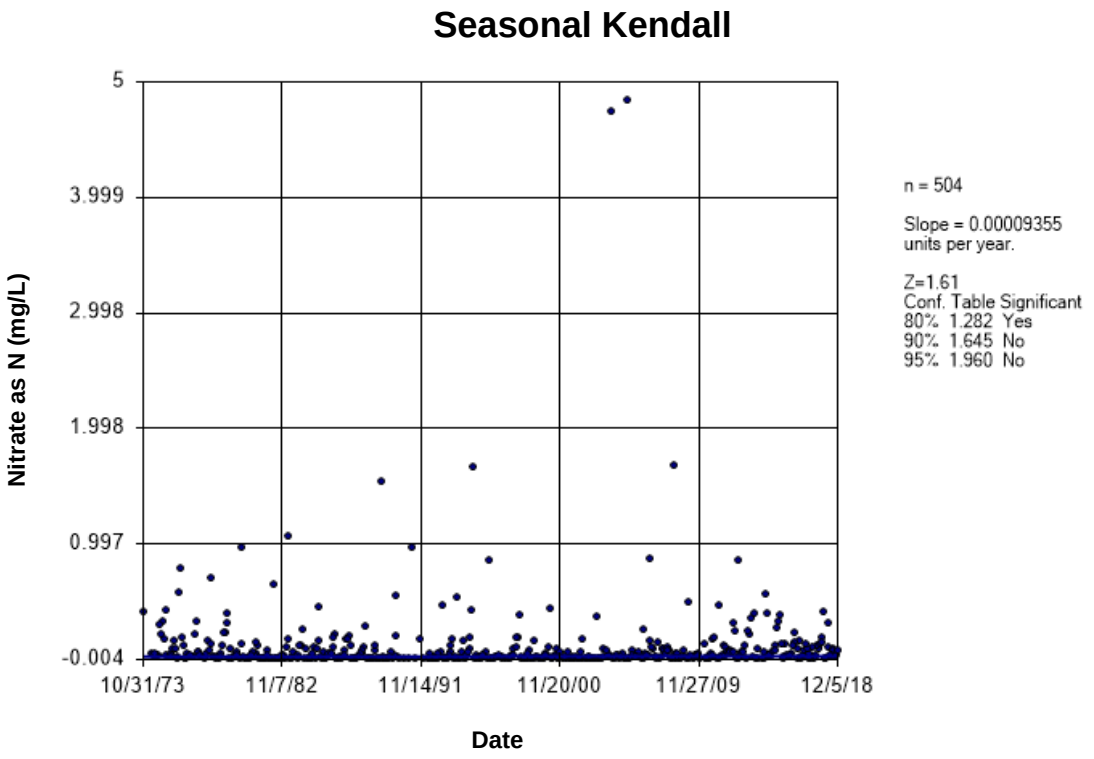

Figure B111 Carrot River: Nitrate as N

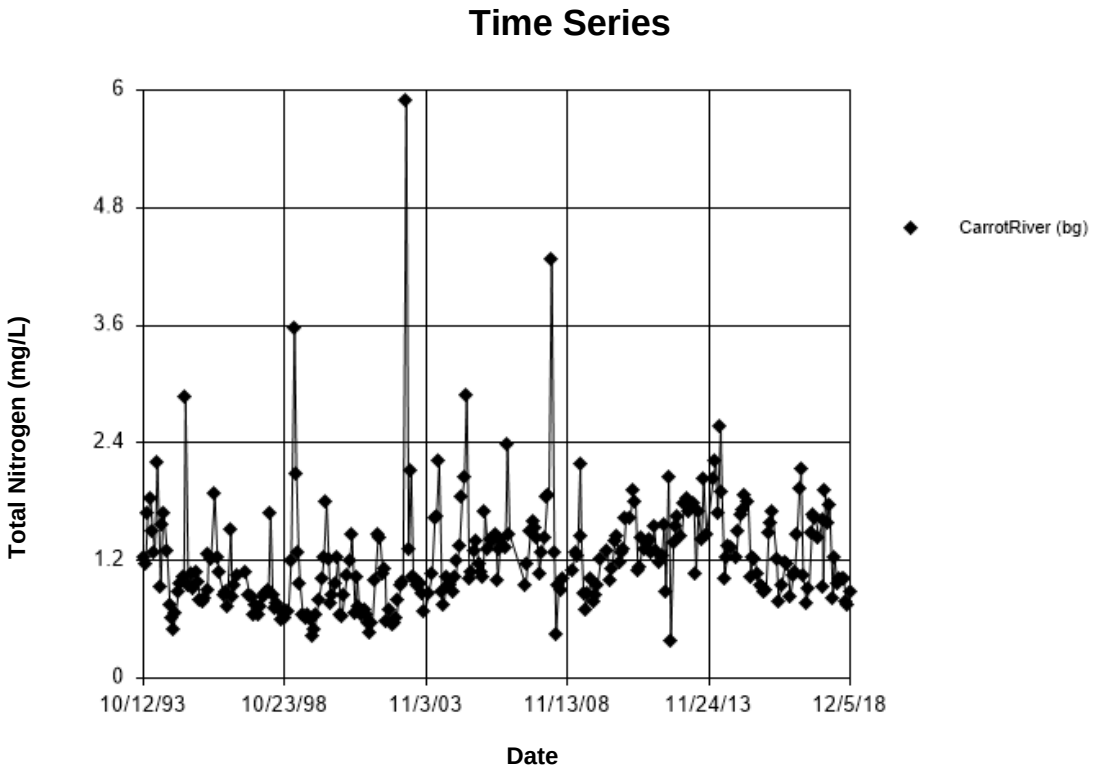

Figure B112 Carrot River: Total Nitrogen

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 63.82
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

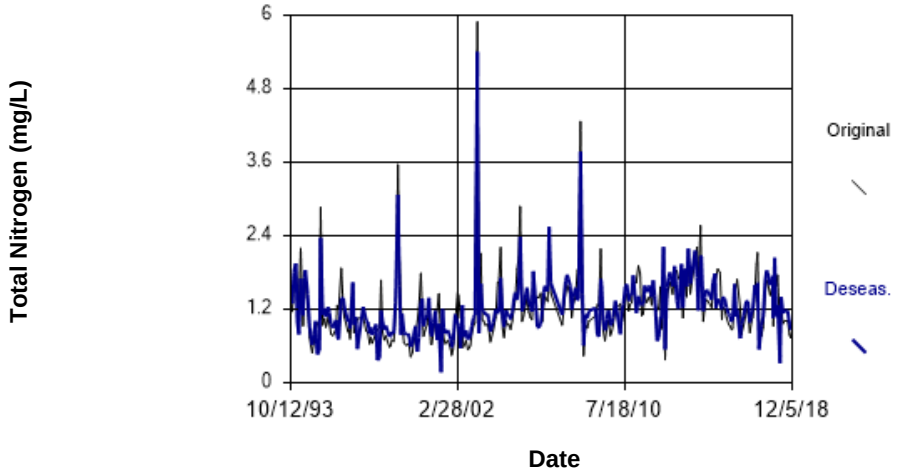

Figure B113 Carrot River: Total Nitrogen

Seasonal Kendall

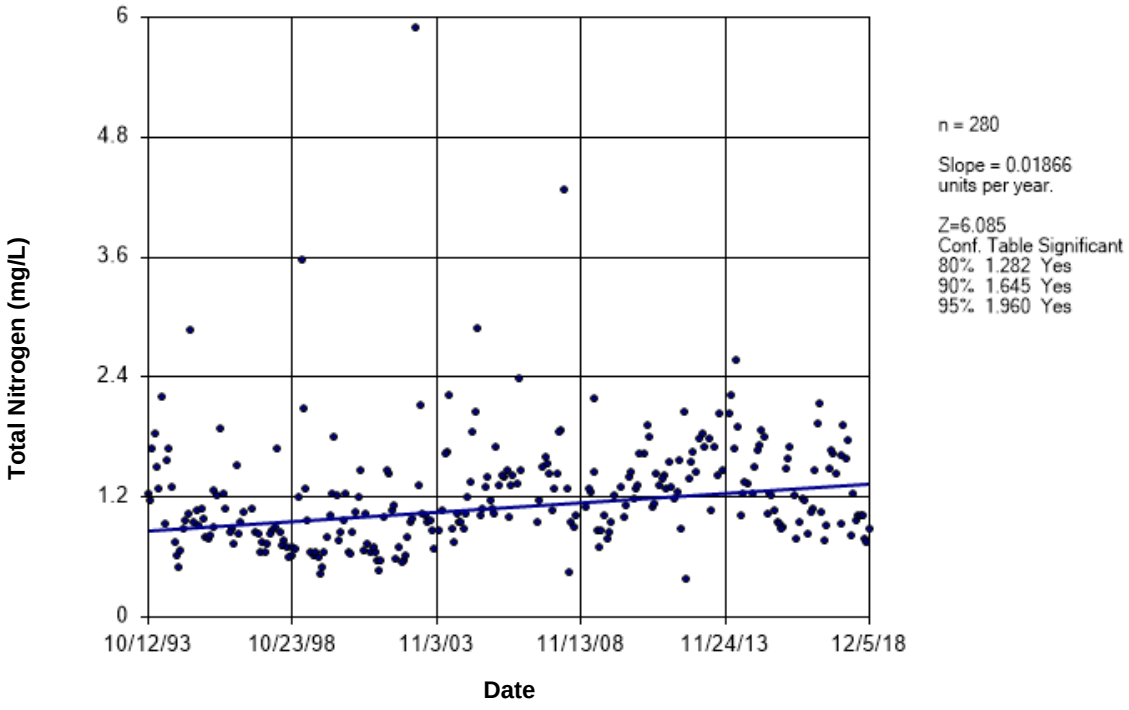

Figure B114 Carrot River: Total Nitrogen

Time Series

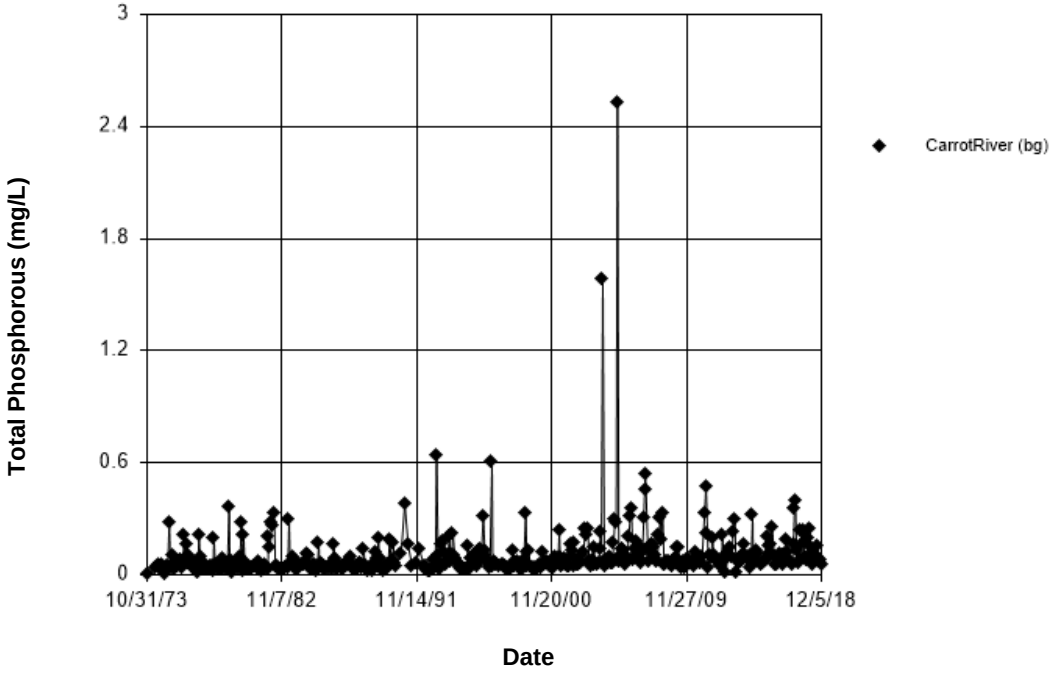

Figure B115 Carrot River: Total Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 8.736
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 8.736
Adjusted Kruskal-Wallis statistic (H') = 8.736

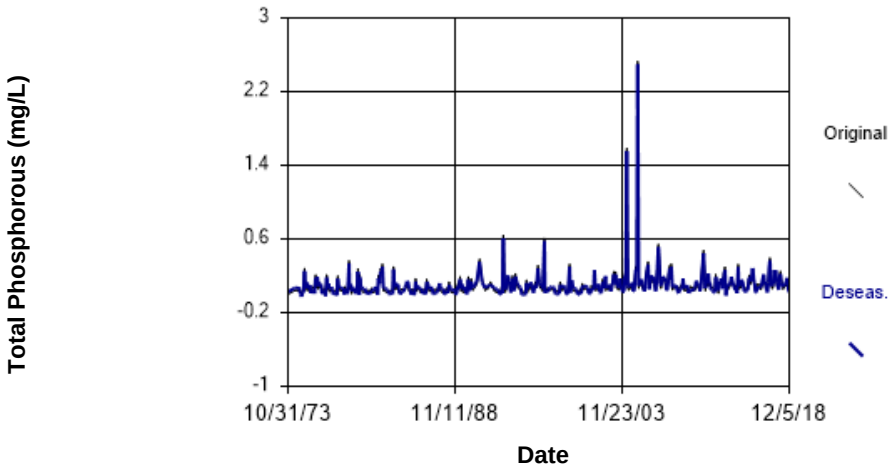

Figure B116 Carrot River: Total Phosphorous

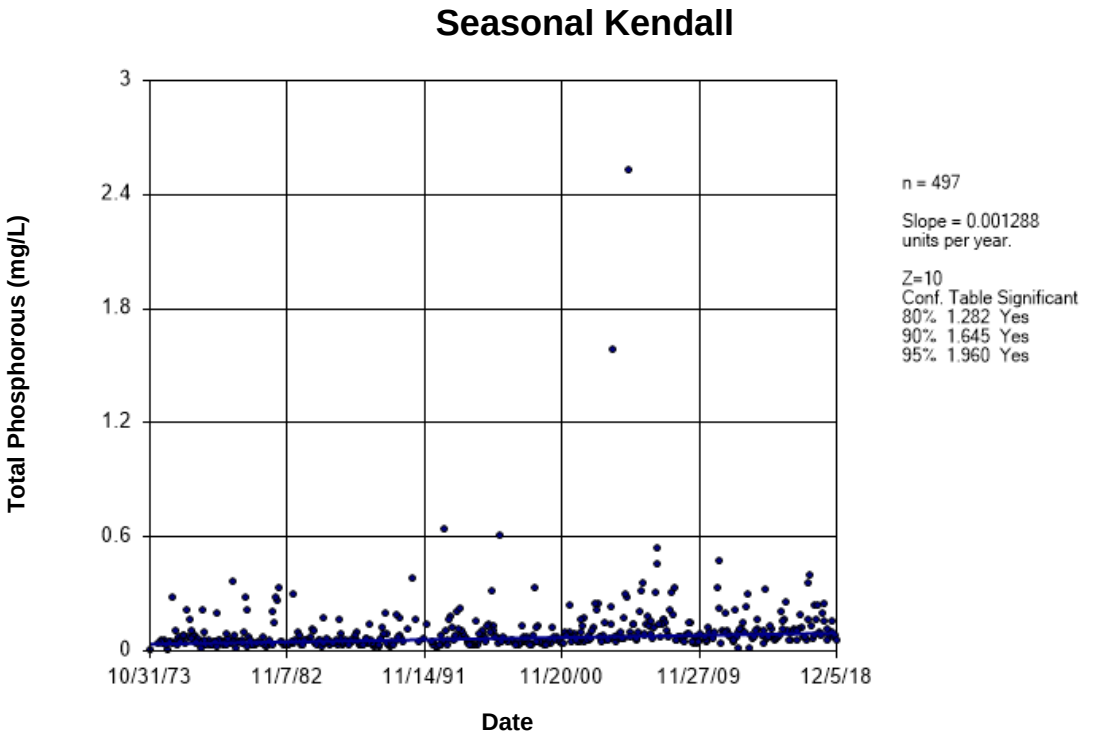

Figure B117 Carrot River: Total Phosphorous

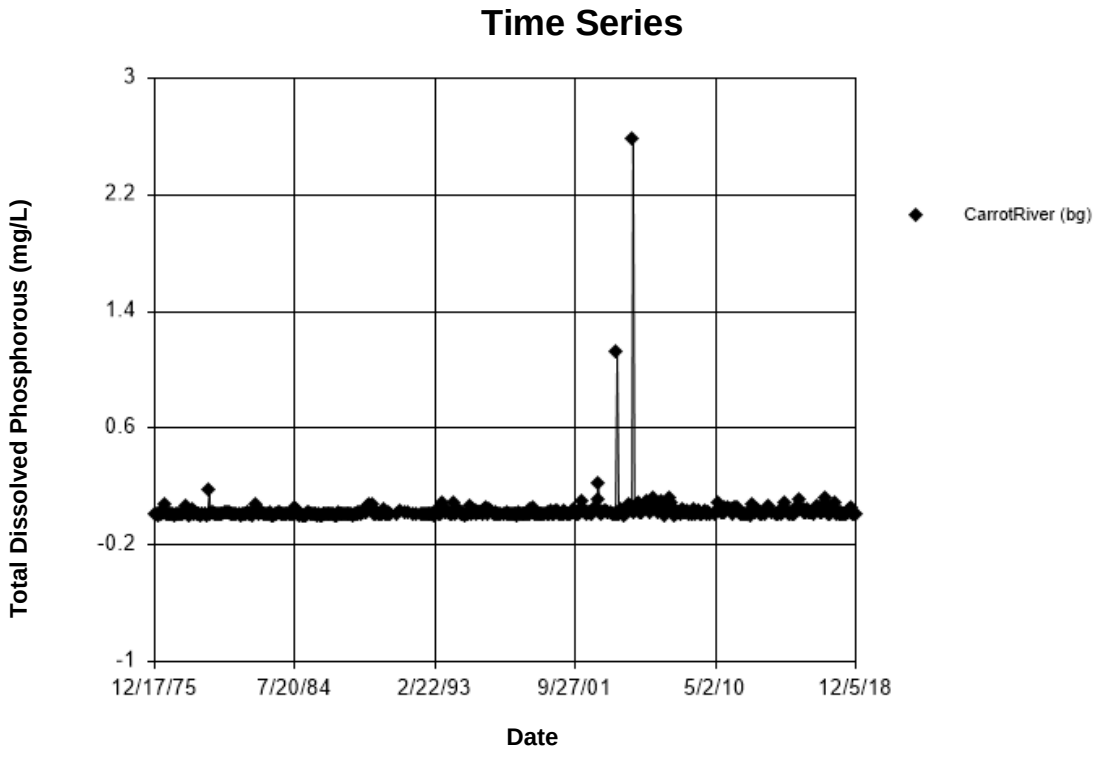

Figure B118 Carrot River: Total Dissolved Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 6.892
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 6.892
Adjusted Kruskal-Wallis statistic (H') = 6.892

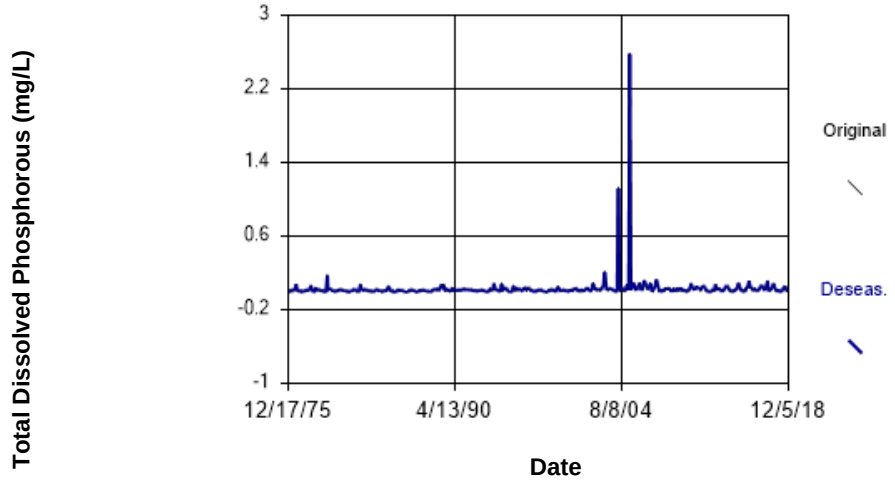

Figure B119 Carrot River: Total Dissolved Phosphorous

Seasonal Kendall

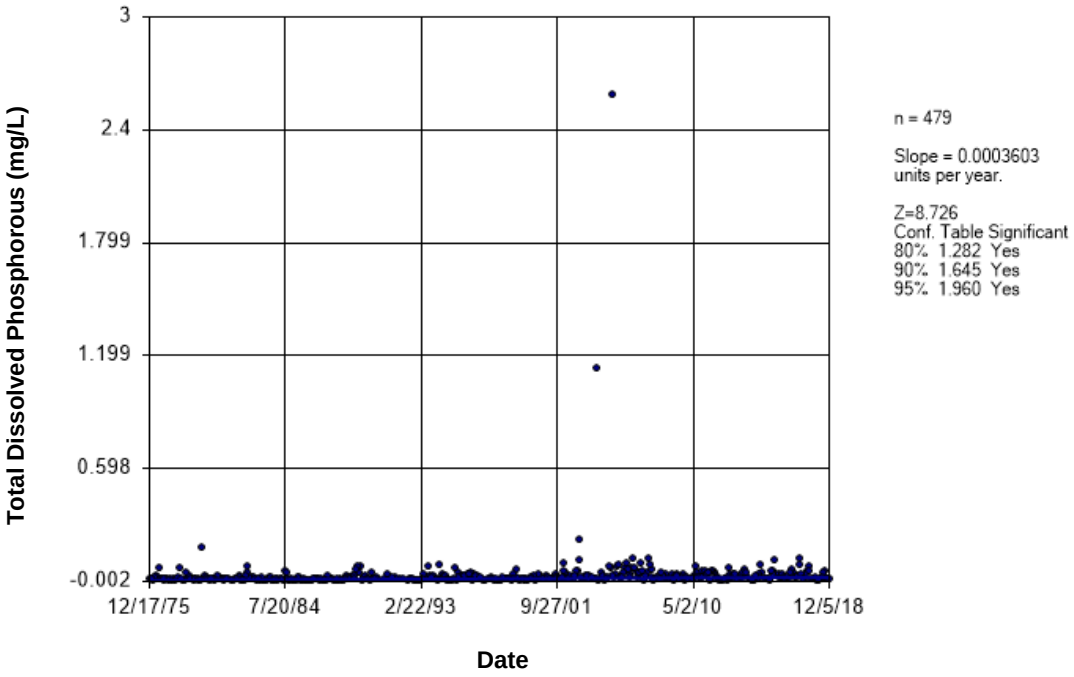

Figure B120 Carrot River: Total Dissolved Phosphorous

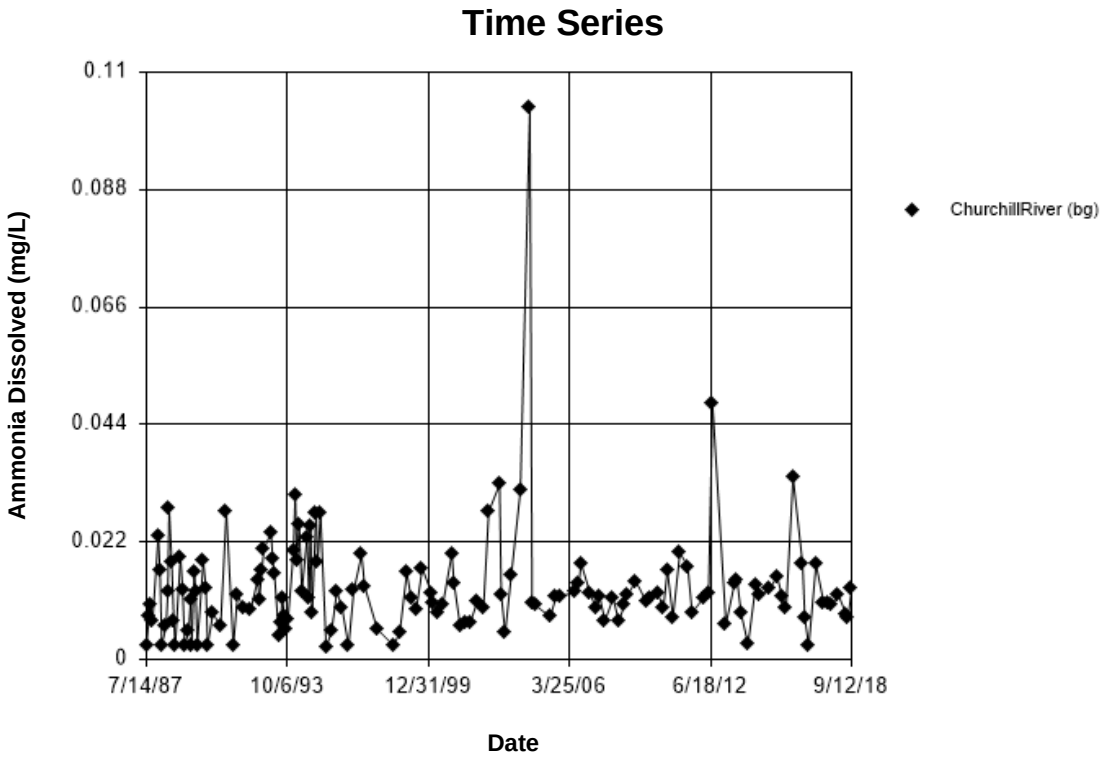

Figure B121 Churchill River: Ammonia Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 15.37
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

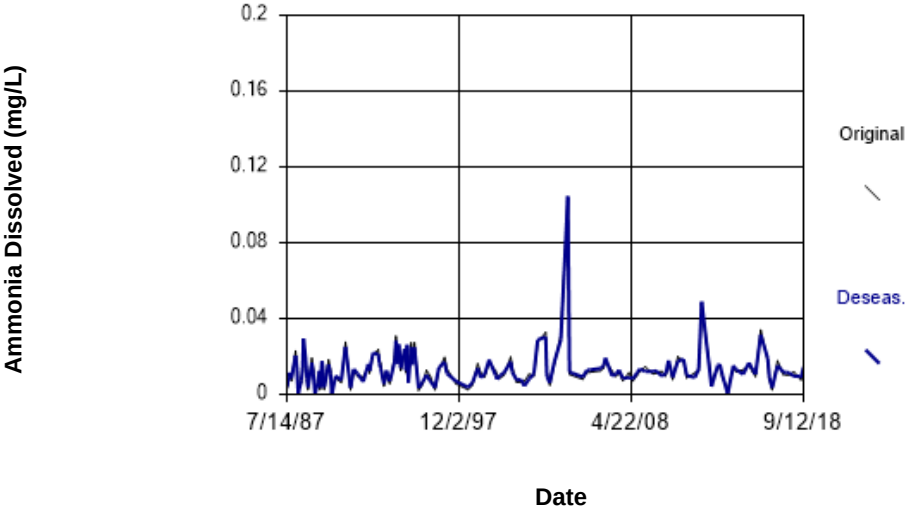

Figure B122 Churchill River: Ammonia Dissolved

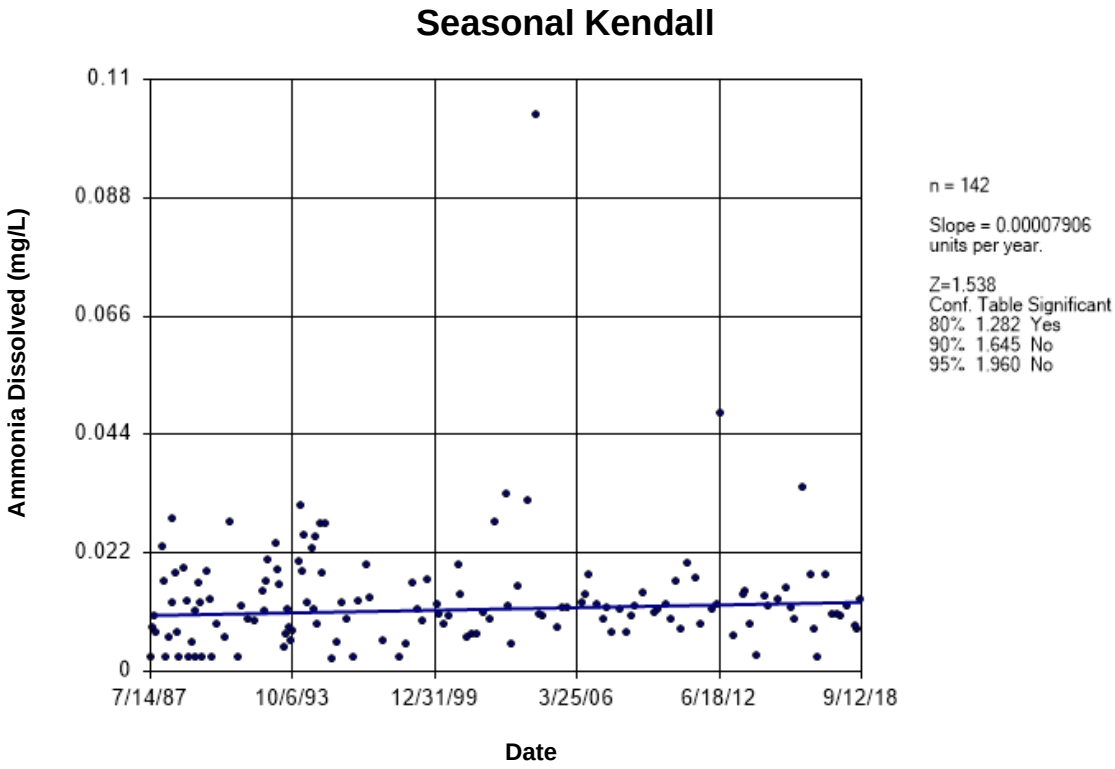

Figure B123 Churchill River: Ammonia Dissolved

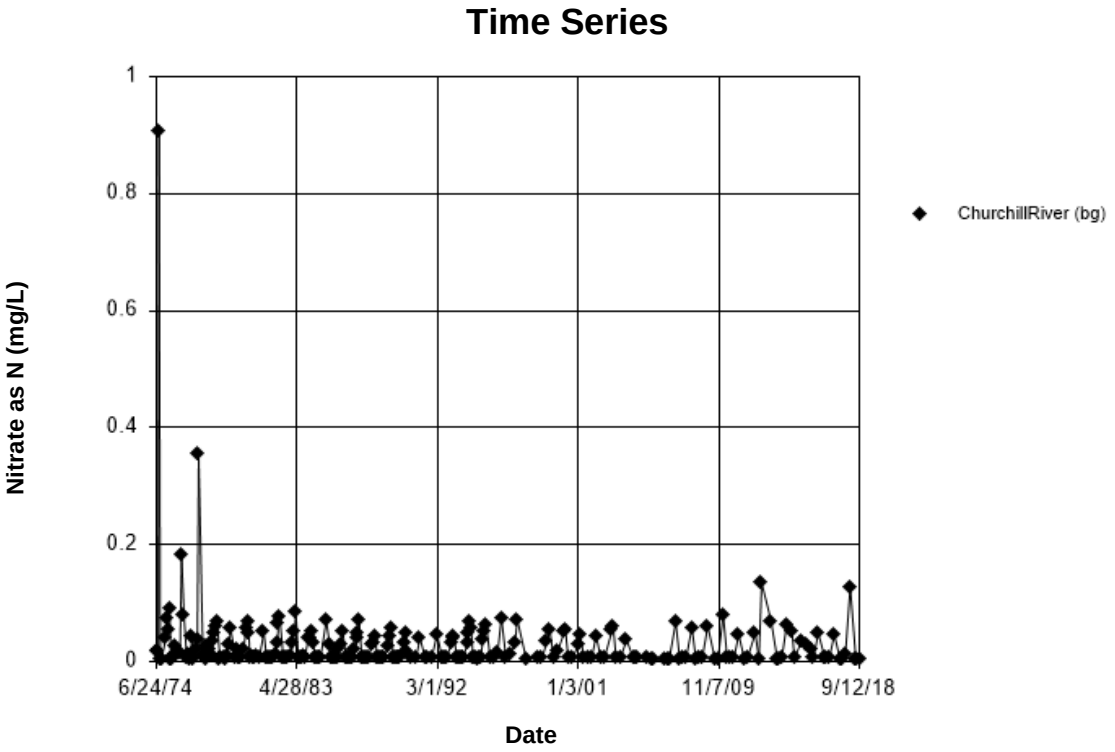

Figure B124 Churchill River: Nitrate as N

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 129.6
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 18 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 129.6
Adjusted Kruskal-Wallis statistic (H') = 129.6

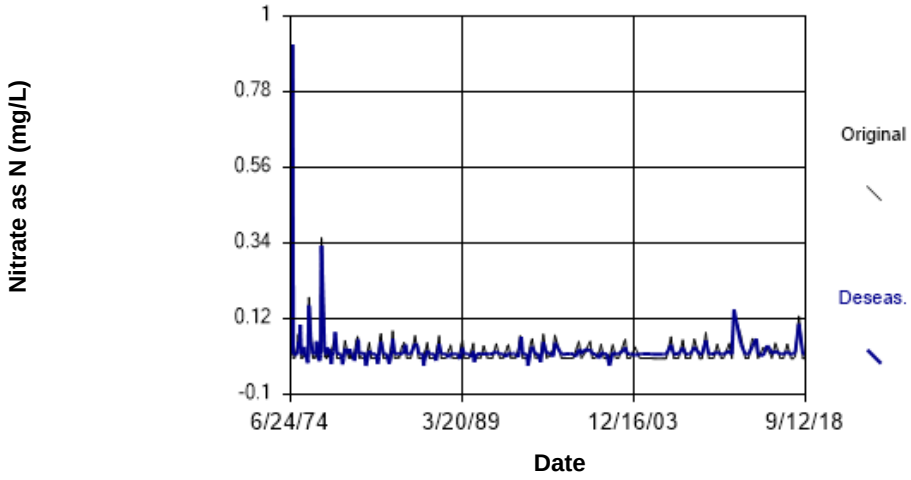

Figure B125 Churchill River: Nitrate as N

Seasonal Kendall

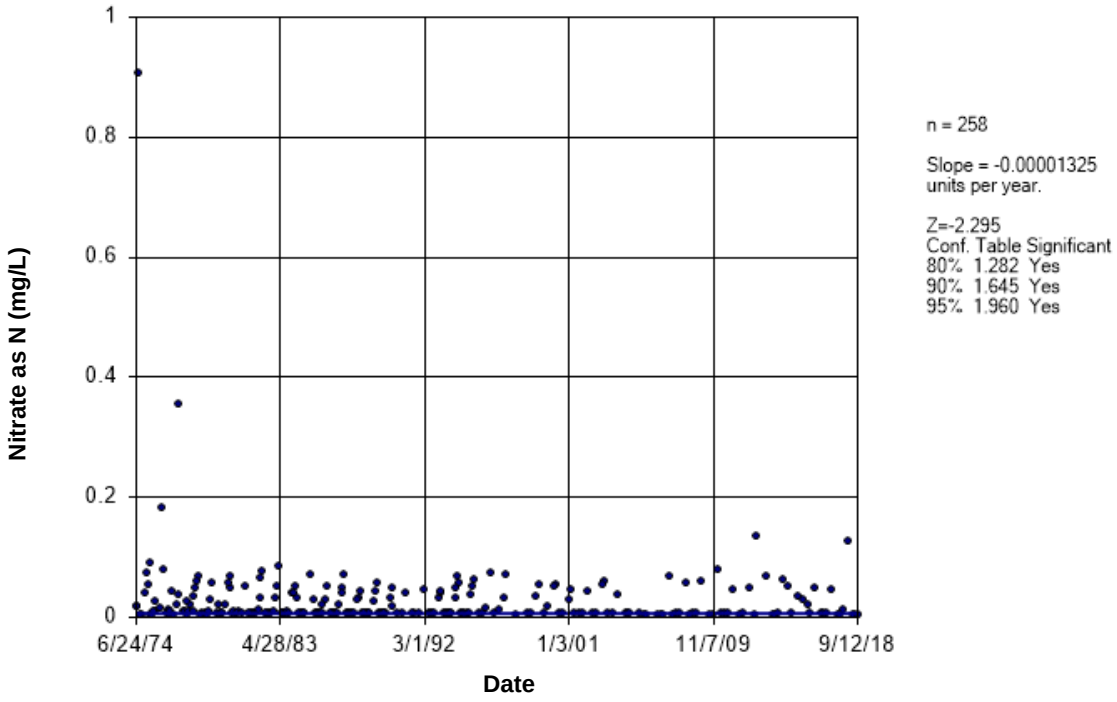

Figure B126 Churchill River: Nitrate as N

Time Series

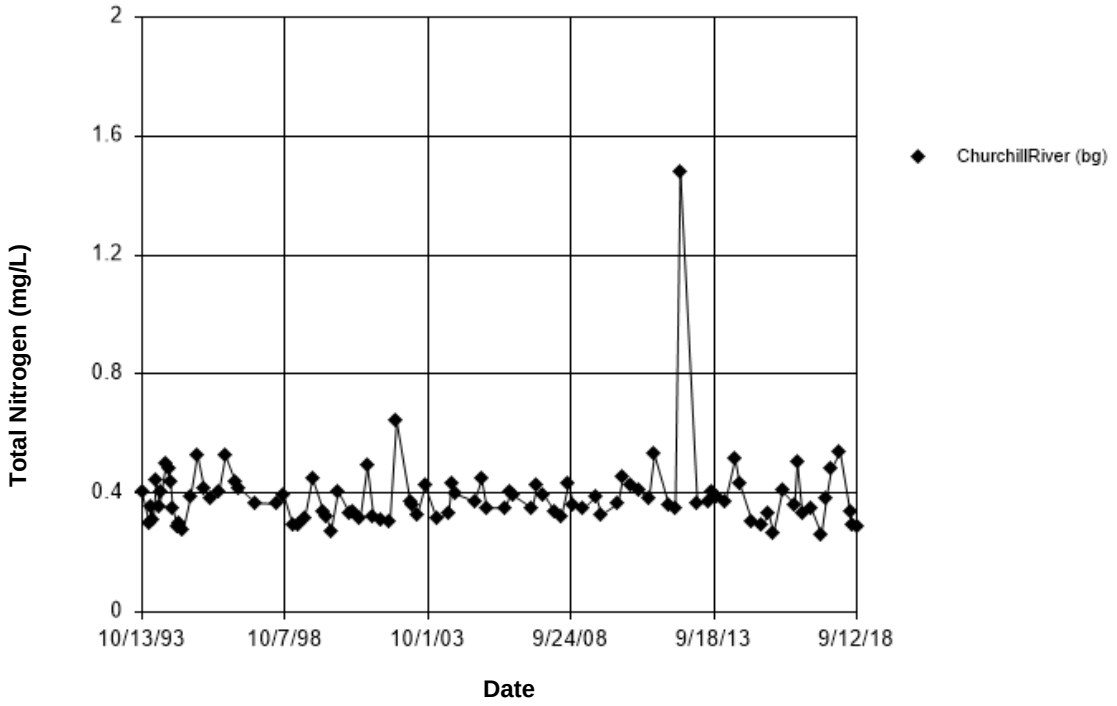

Figure B127 Churchill River: Total Nitrogen

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 7.894
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

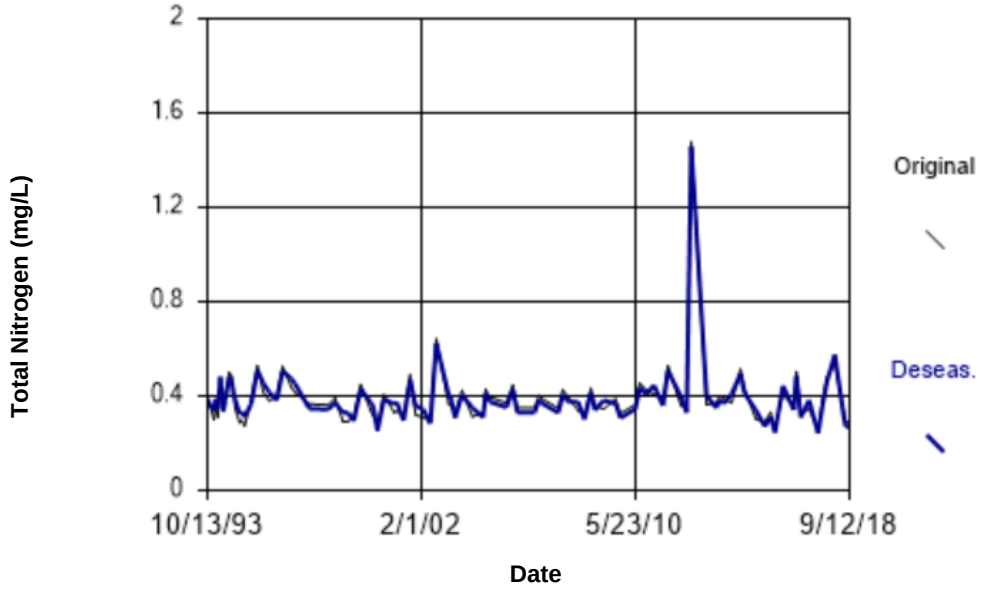

Figure B128 Churchill River: Total Nitrogen

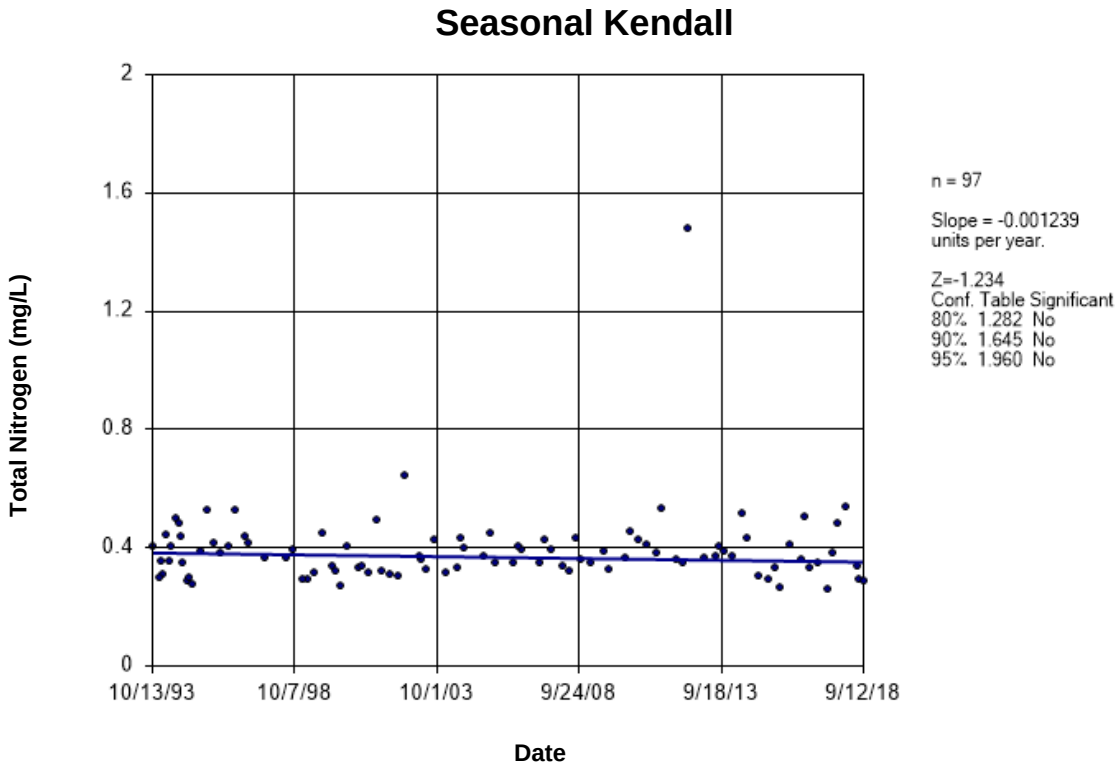

Figure B129 Churchill River: Total Nitrogen

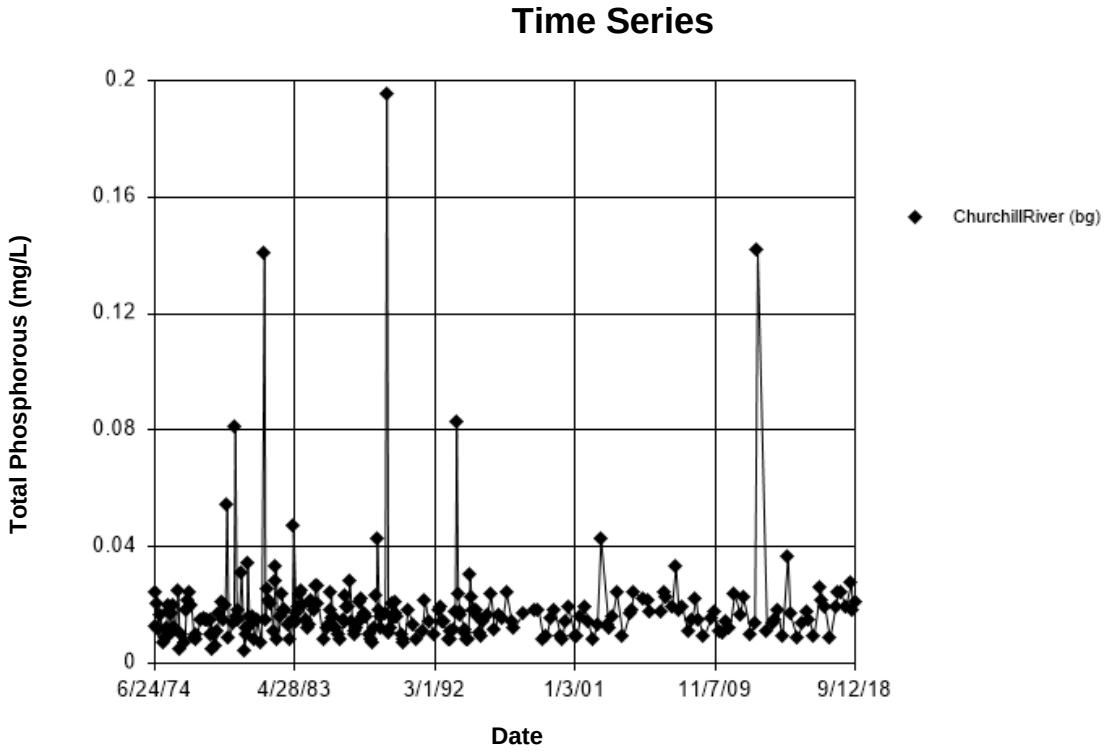

Figure B130 Churchill River: Total Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 78.14
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 78.14
Adjusted Kruskal-Wallis statistic (H') = 78.14

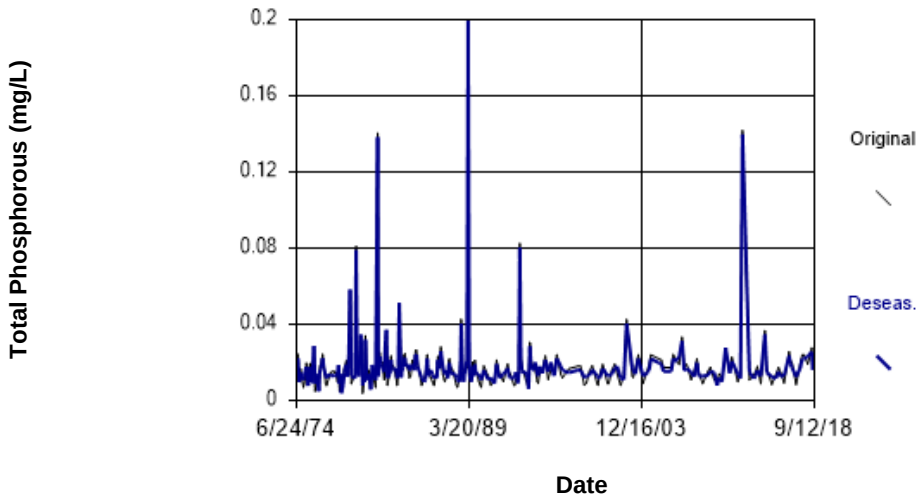

Figure B131 Churchill River: Total Phosphorous

Seasonal Kendall

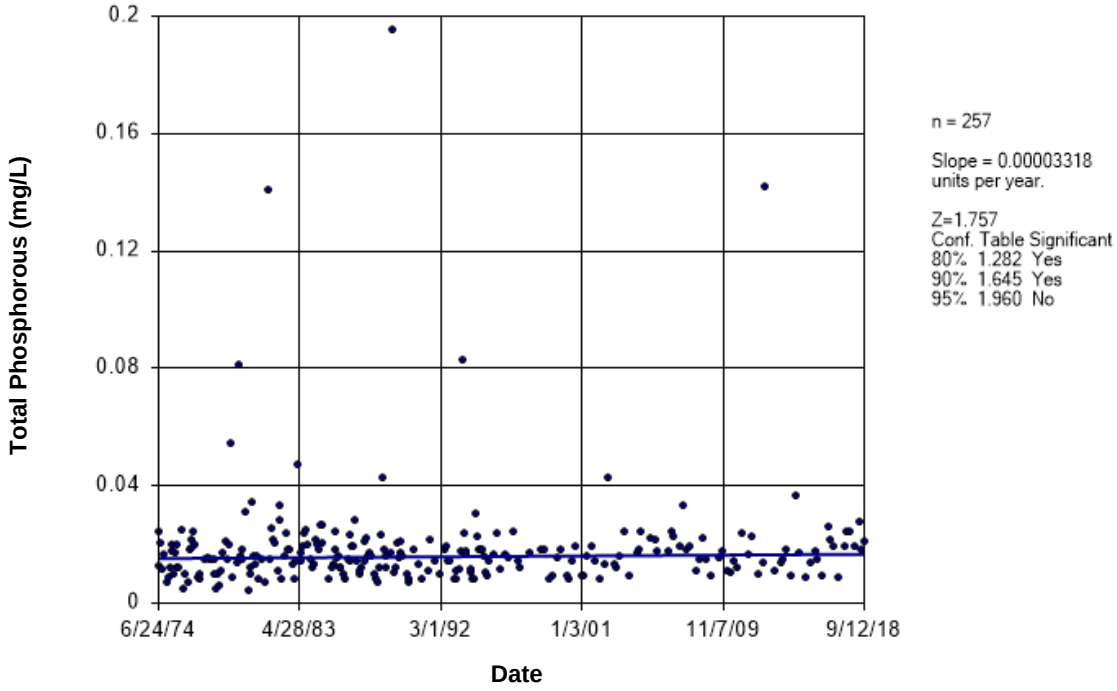

Figure B132 Churchill River: Total Phosphorous

Time Series

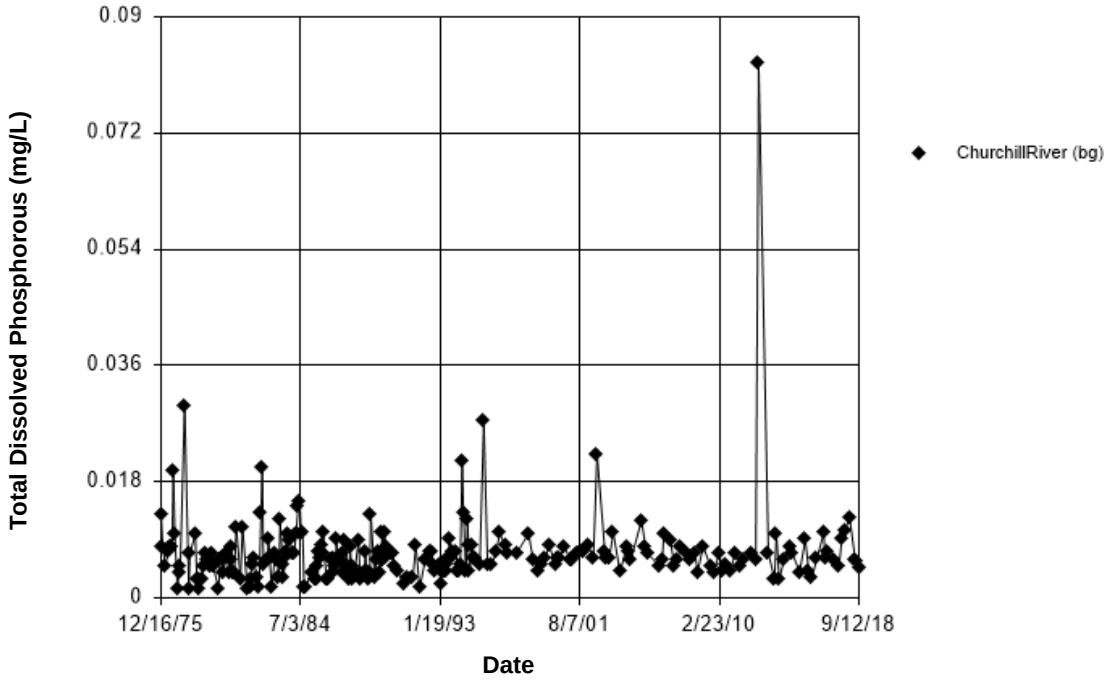

Figure B133 Churchill River: Total Dissolved Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.3985
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 9 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.3985
Adjusted Kruskal-Wallis statistic (H') = 0.3985

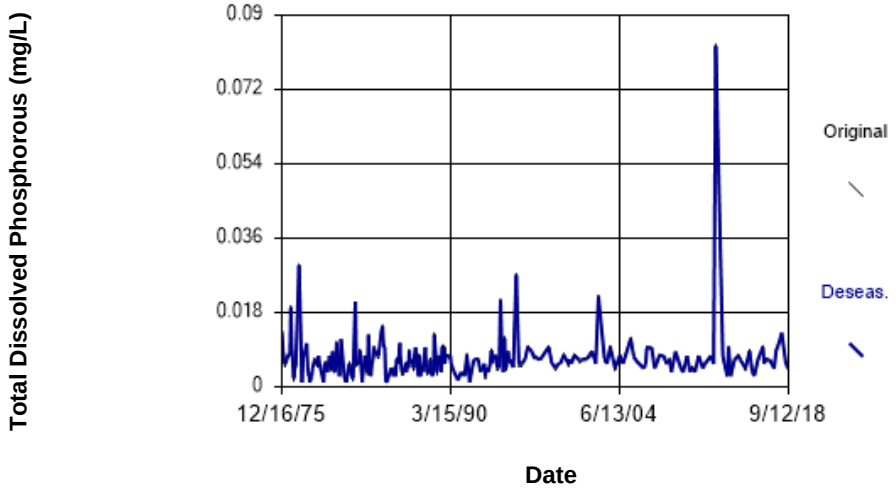

Figure B134 Churchill River: Total Dissolved Phosphorous

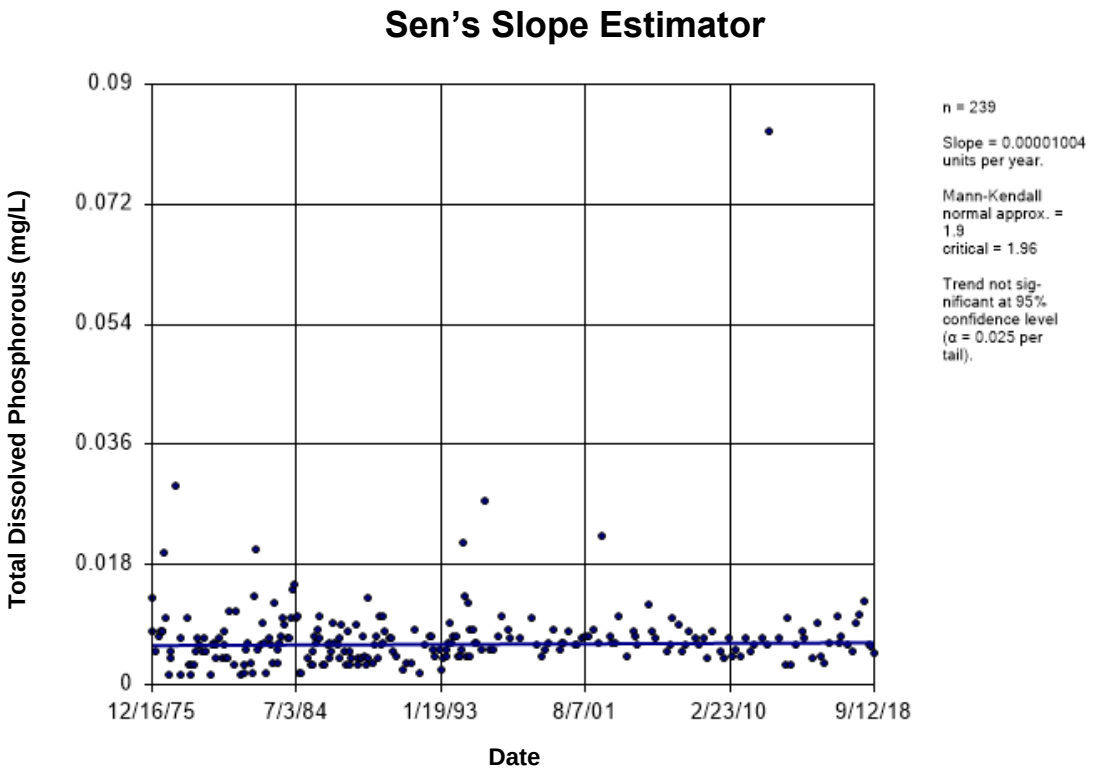

Figure B135 Churchill River: Total Dissolved Phosphorous

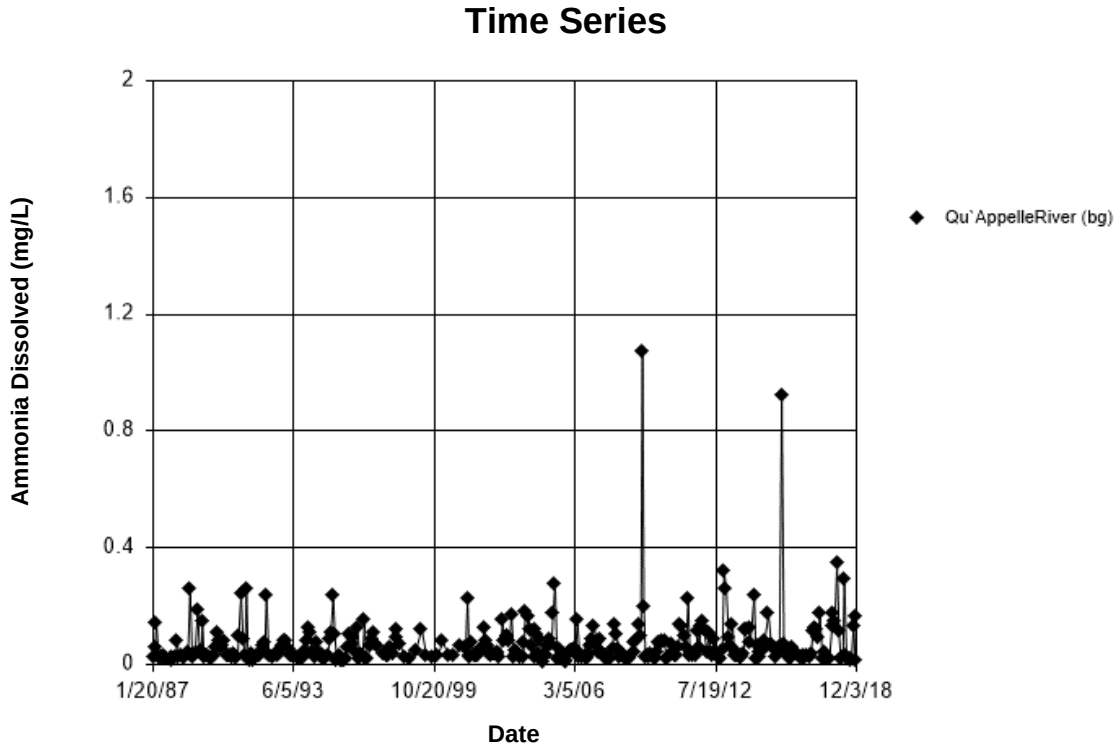

Figure B136 Qu'Appelle River: Ammonia Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 123.7
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 73 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 123.6
Adjusted Kruskal-Wallis statistic (H') = 123.7

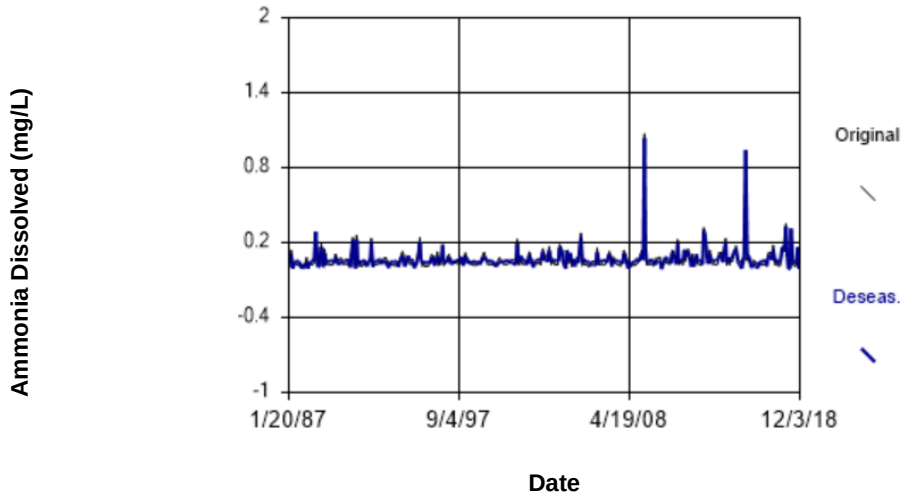

Figure B137 Qu'Appelle River: Ammonia Dissolved

Seasonal Kendall

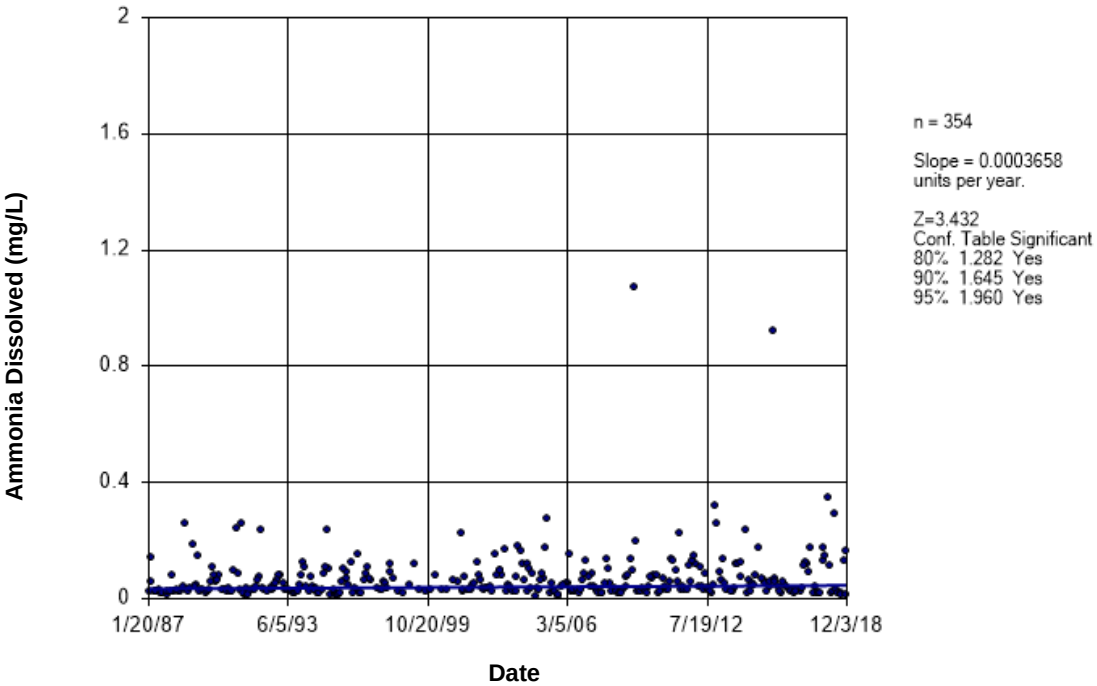

Figure B138 Qu'Appelle River: Ammonia Dissolved

Time Series

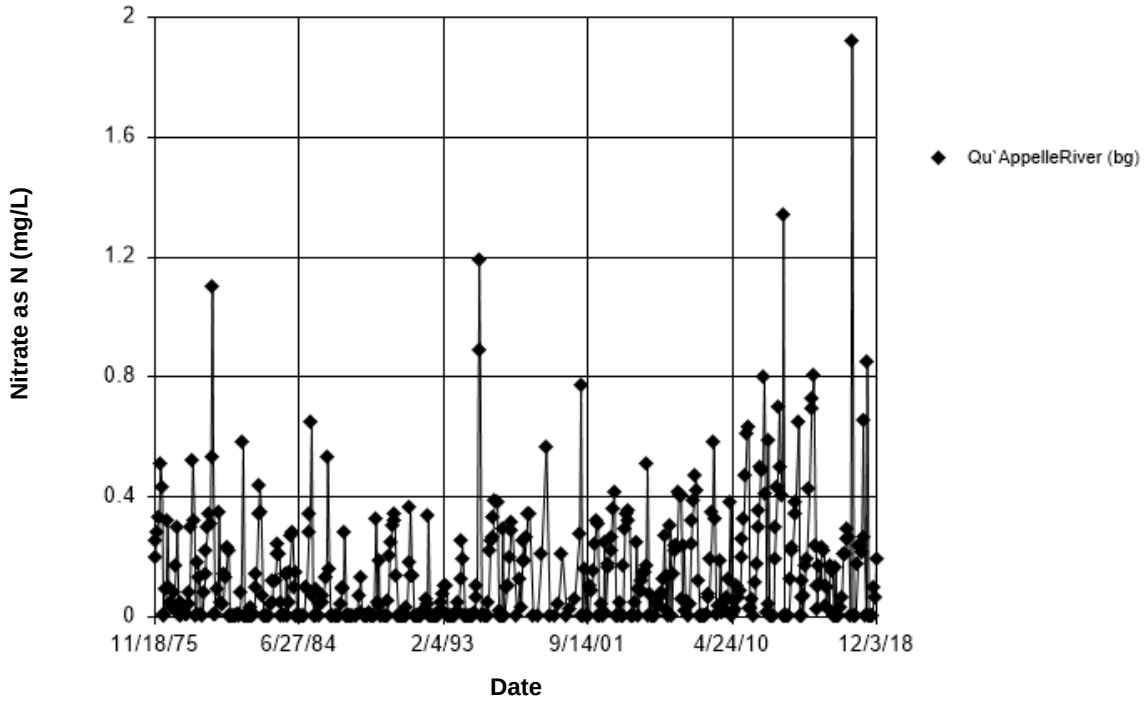

Figure B139 Qu'Appelle River: Nitrate as N

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 198.8
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 61 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 191.8
Adjusted Kruskal-Wallis statistic (H') = 198.8

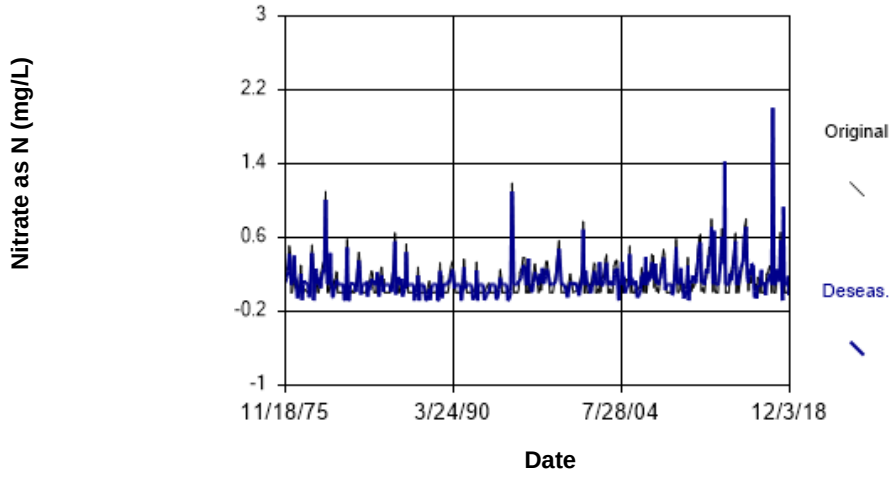

Figure B140 Qu'Appelle River: Nitrate as N

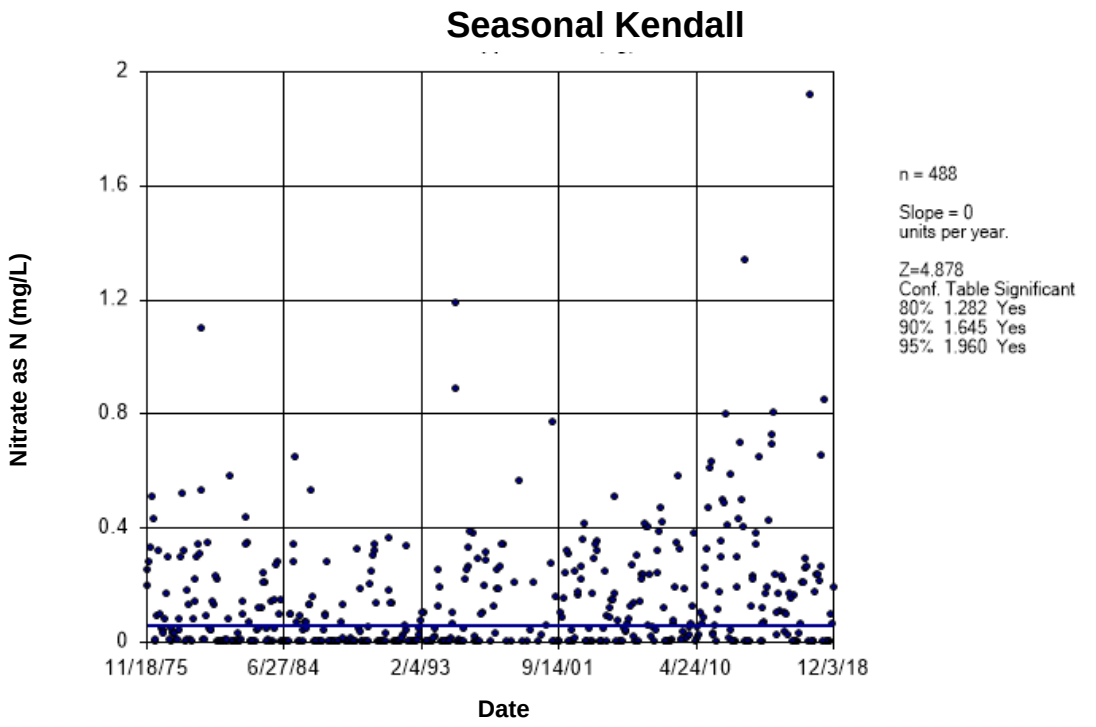

Figure B141 Qu'Appelle River: Nitrate as N

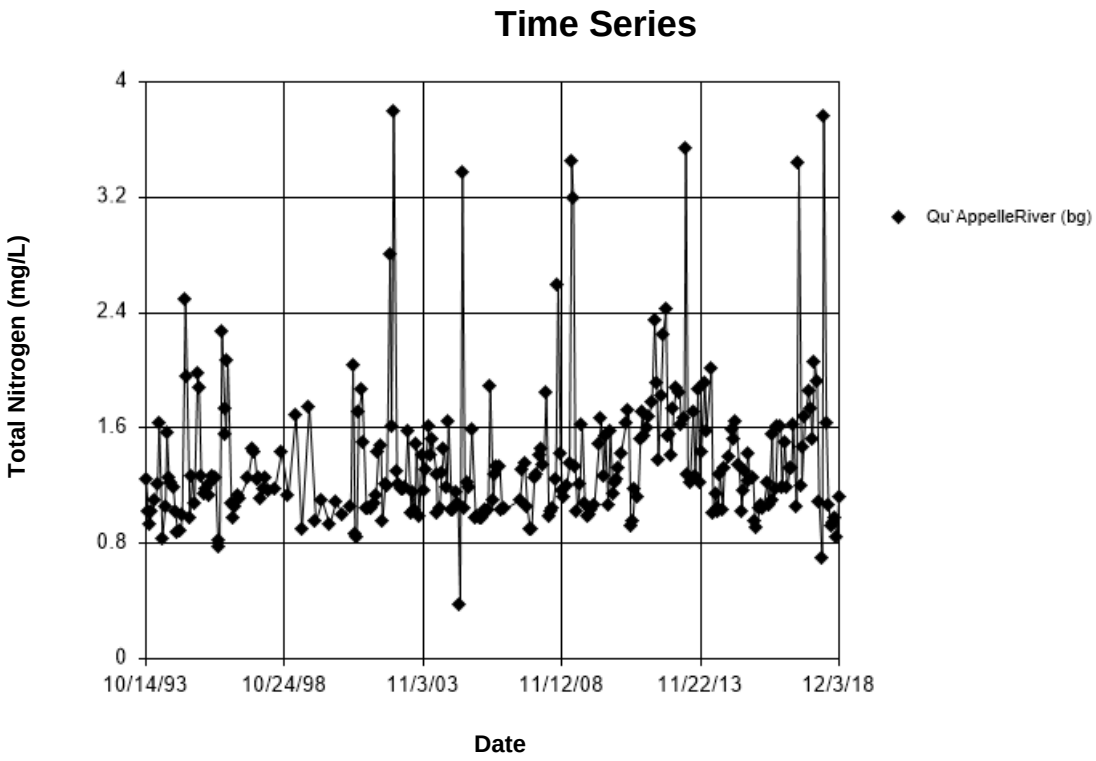

Figure B142 Qu'Appelle River: Total Nitrogen

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.3575
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

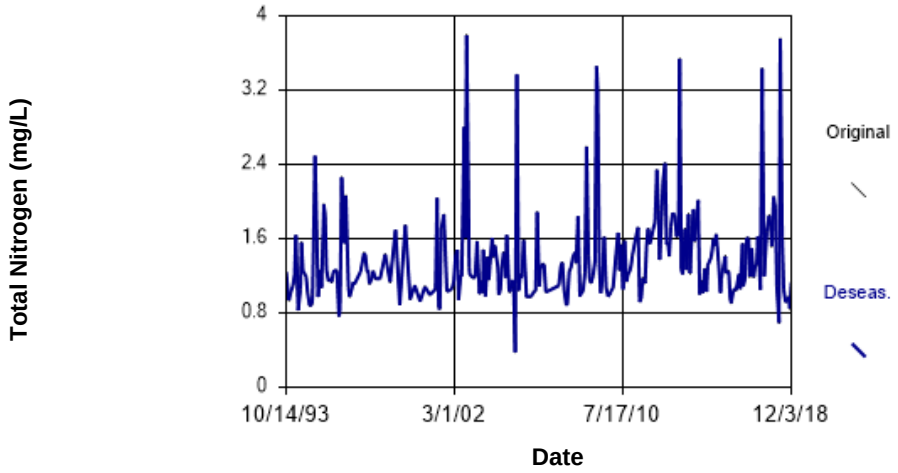

Figure B143 Qu'Appelle River: Total Nitrogen

Sen's Slope Estimator

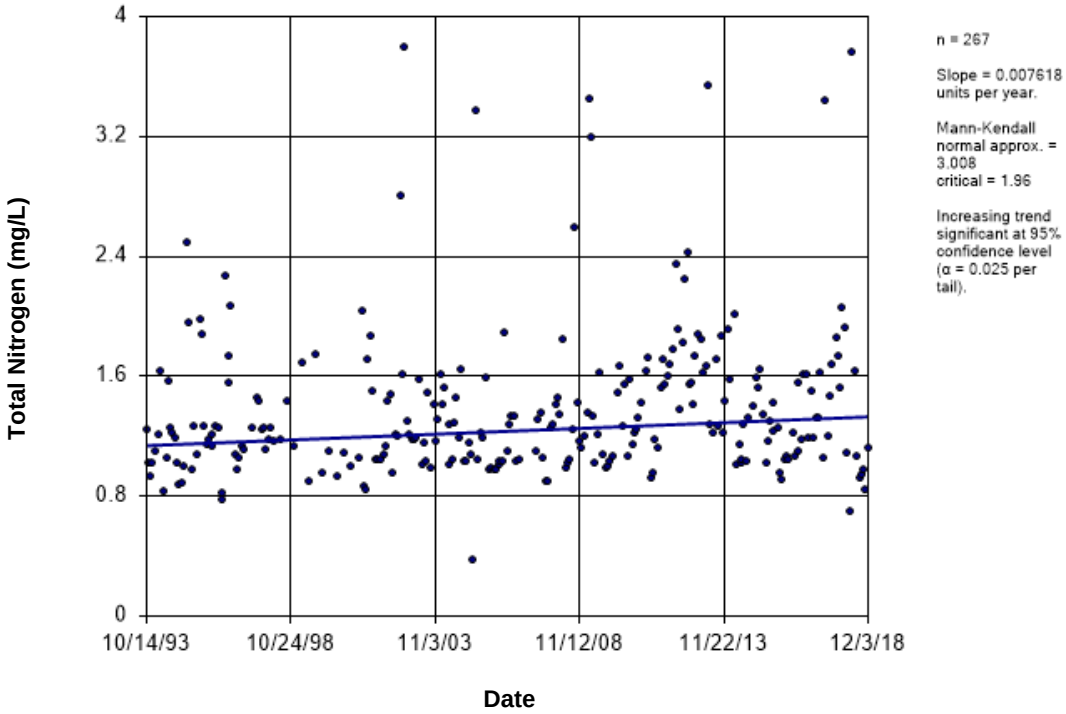

Figure B144 Qu'Appelle River: Total Nitrogen

Time Series

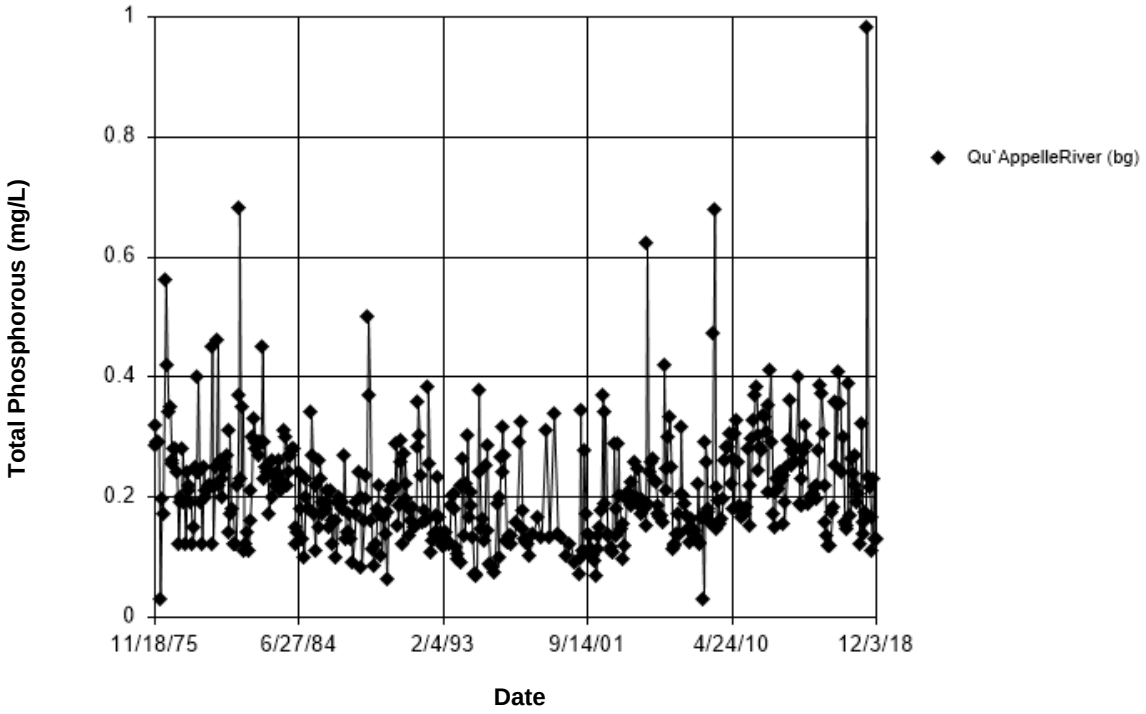

Figure B145 Qu'Appelle River: Total Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 6.113
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 95 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 6.112
Adjusted Kruskal-Wallis statistic (H') = 6.113

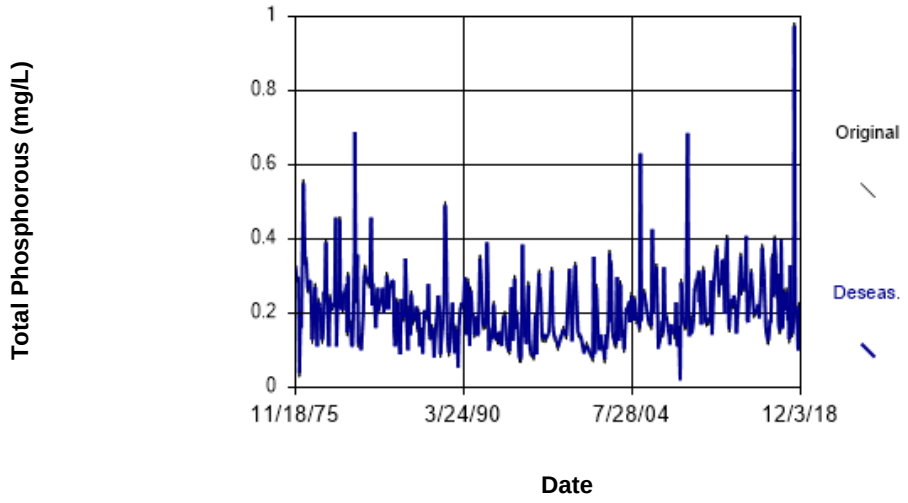

Figure B146 Qu'Appelle River: Total Phosphorous

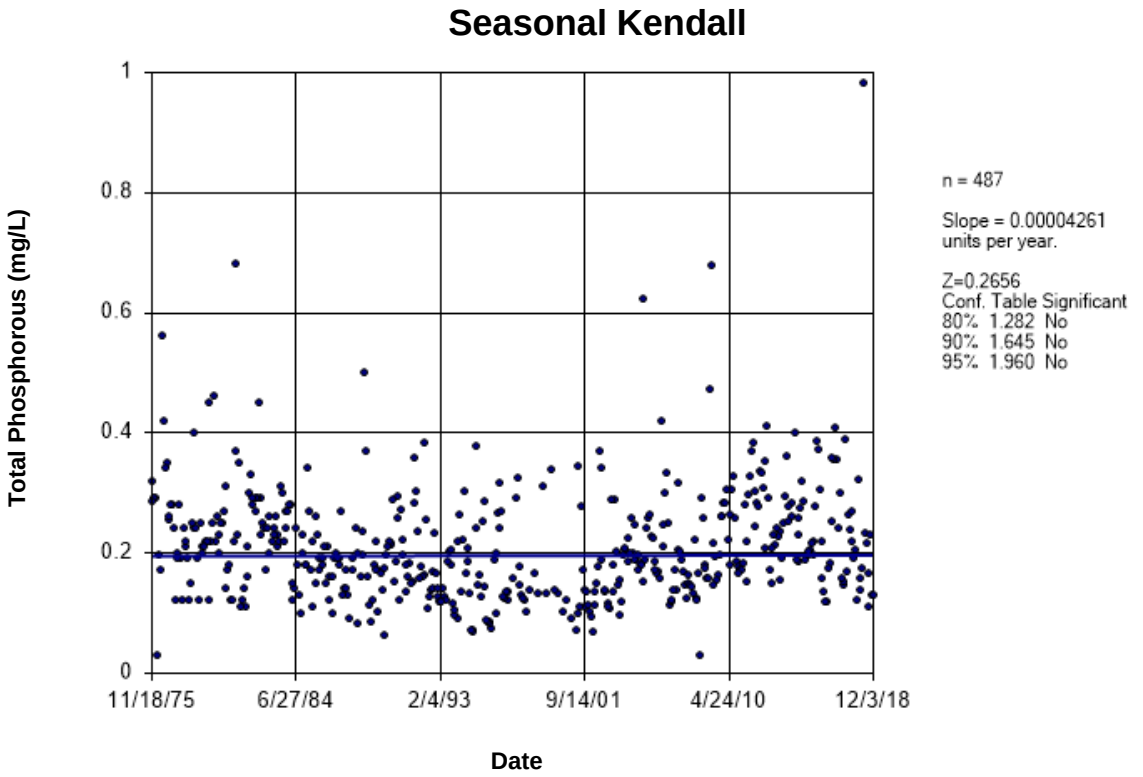

Figure B147 Qu'Appelle River: Total Phosphorous

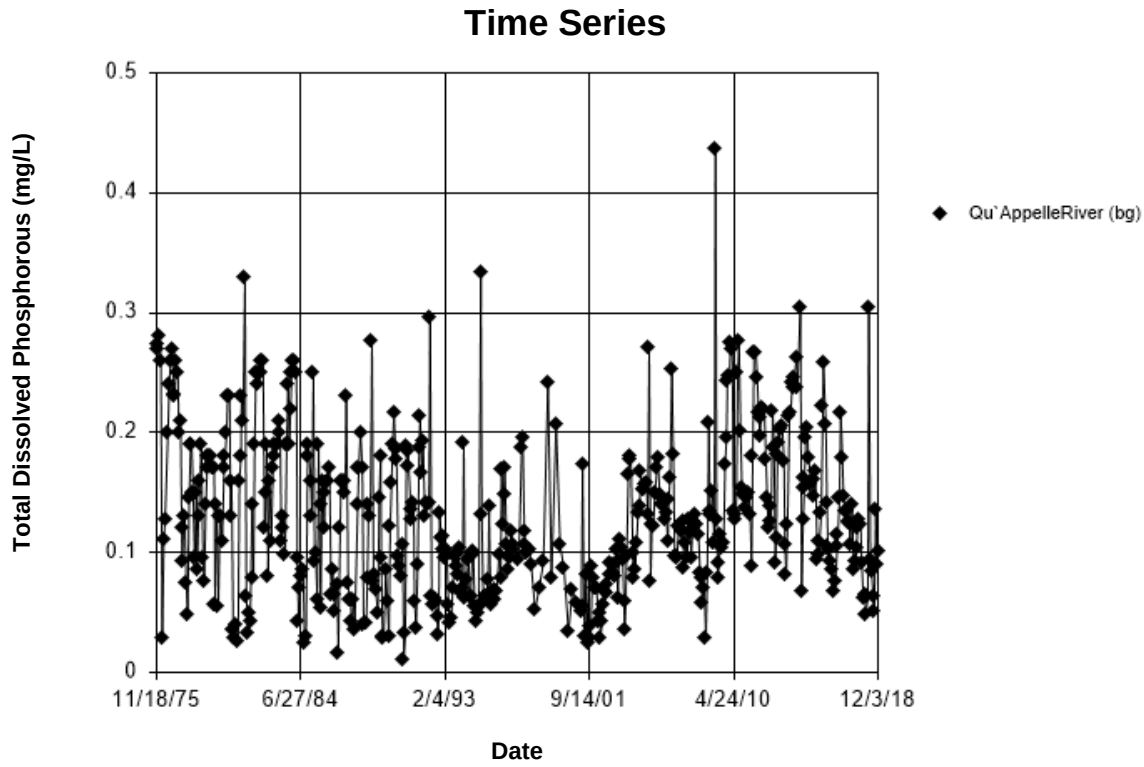

Figure B148 Qu'Appelle River: Total Dissolved Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 28.78
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 112 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 28.78
Adjusted Kruskal-Wallis statistic (H') = 28.78

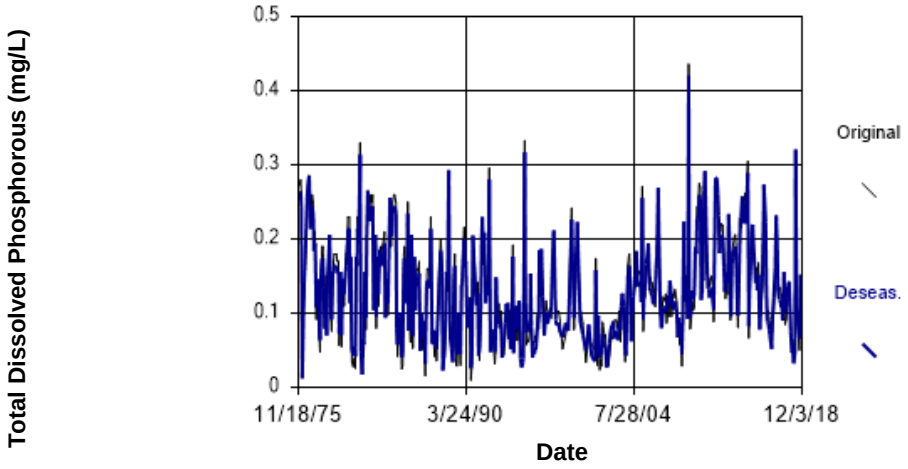

Figure B149 Qu'Appelle River: Total Dissolved Phosphorous

Seasonal Kendall

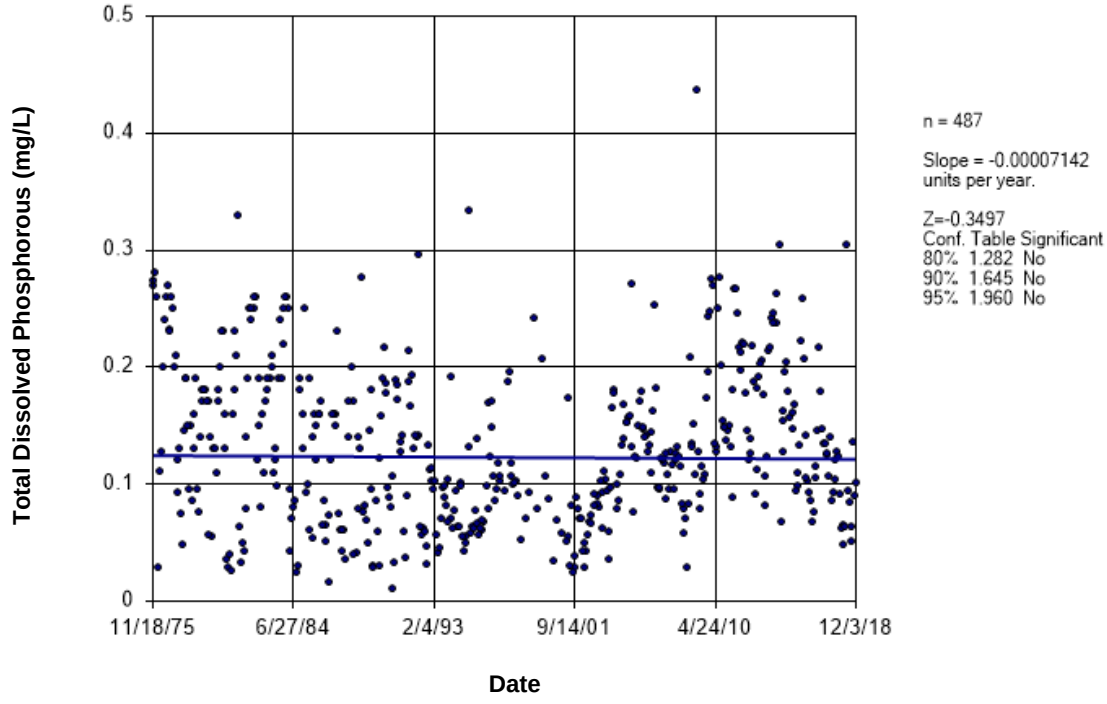

Figure B150 Qu'Appelle River: Total Dissolved Phosphorous

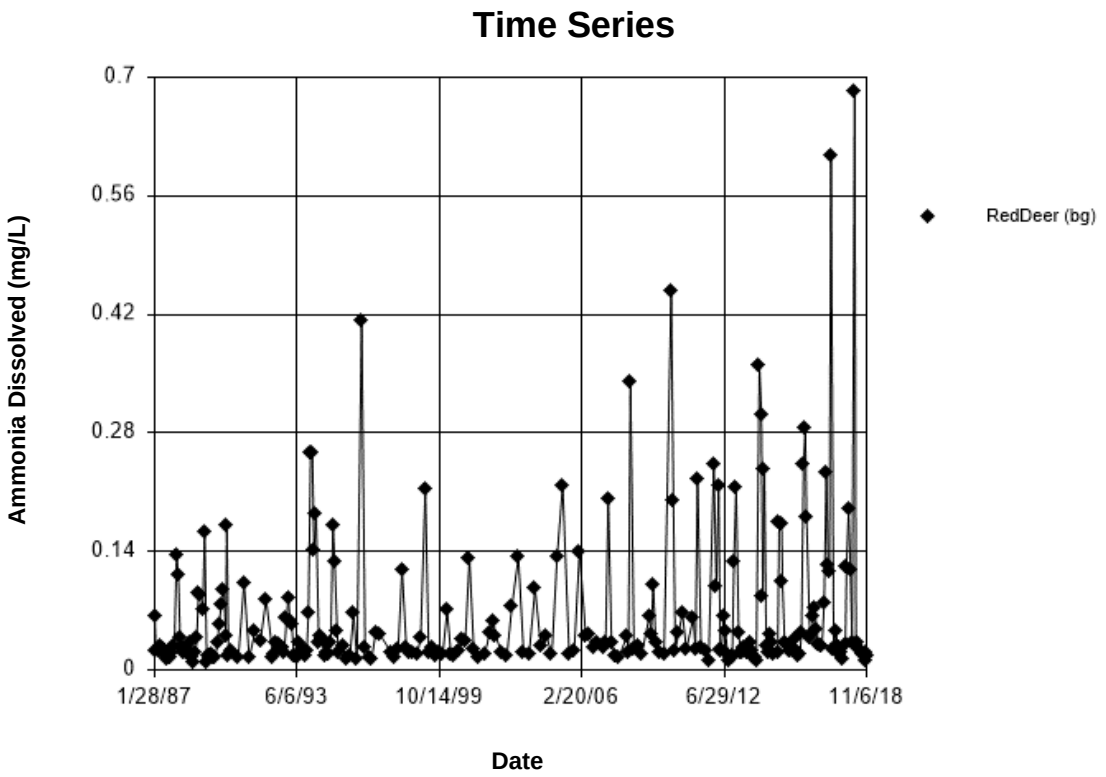

Figure B151 Red Deer River (SK-MB): Ammonia Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 87.81
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

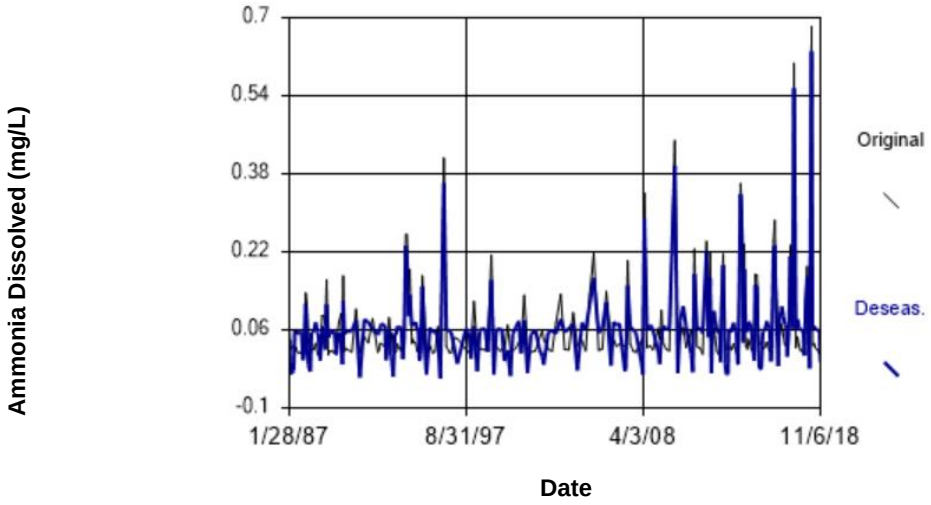

Figure B152 Red Deer River (SK-MB): Ammonia Dissolved

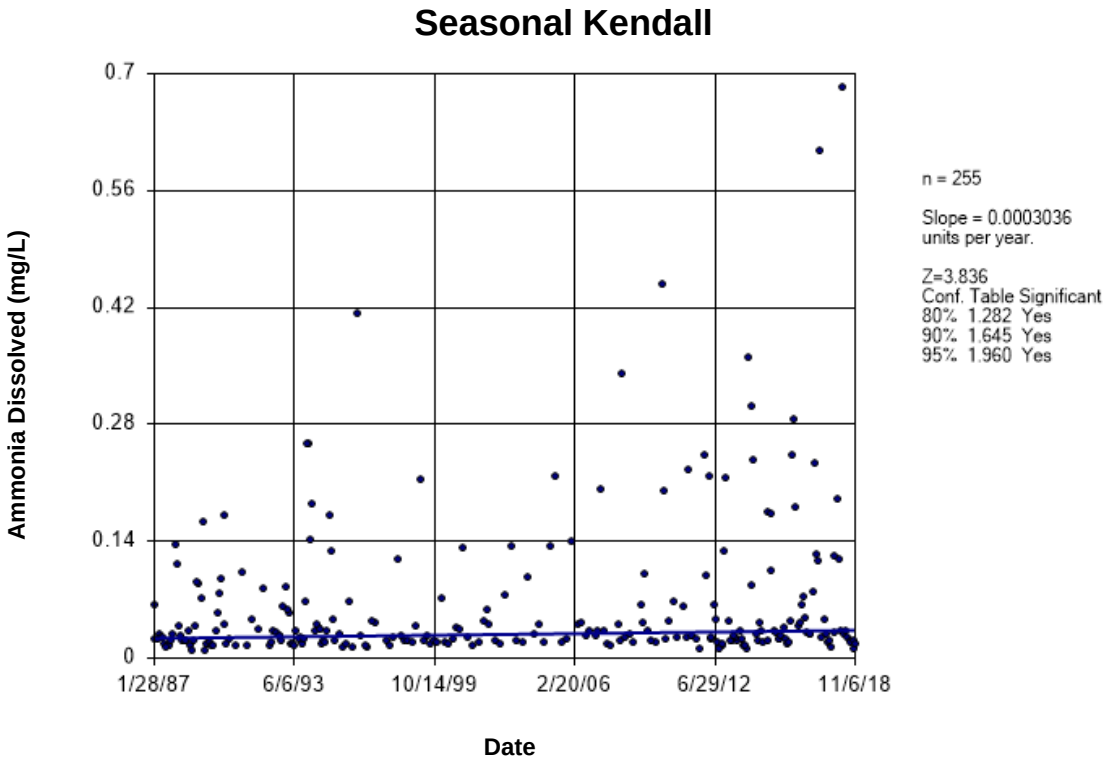

Figure B153 Red Deer River (SK-MB): Ammonia Dissolved

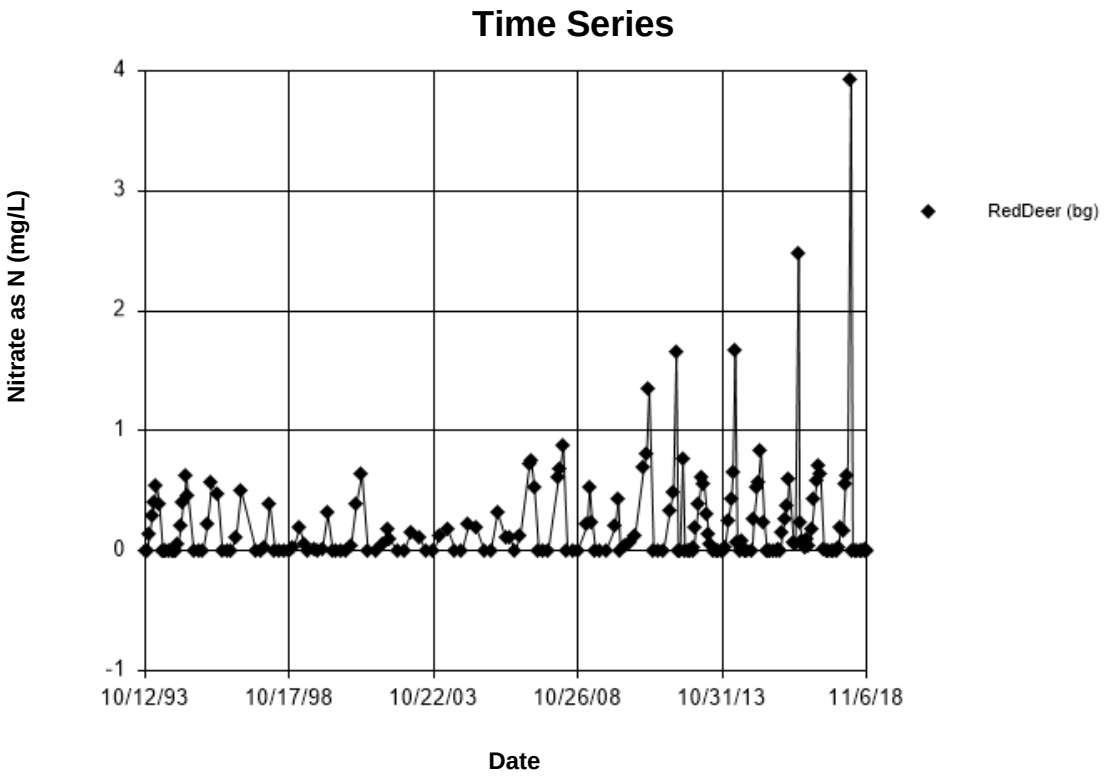

Figure B154 Red Deer River (SK-MB): Nitrate as N

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 88.29
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 88.29
Adjusted Kruskal-Wallis statistic (H') = 88.29

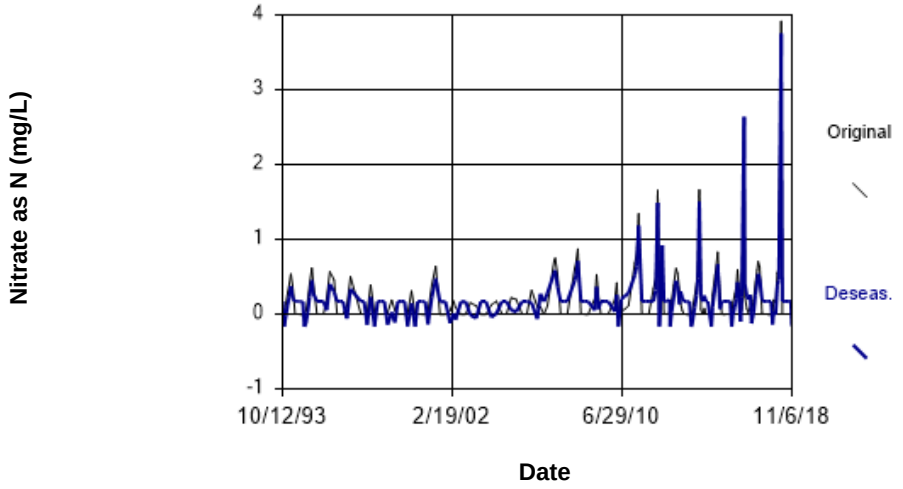

Figure B155 Red Deer River (SK-MB): Nitrate as N

Seasonal Kendall

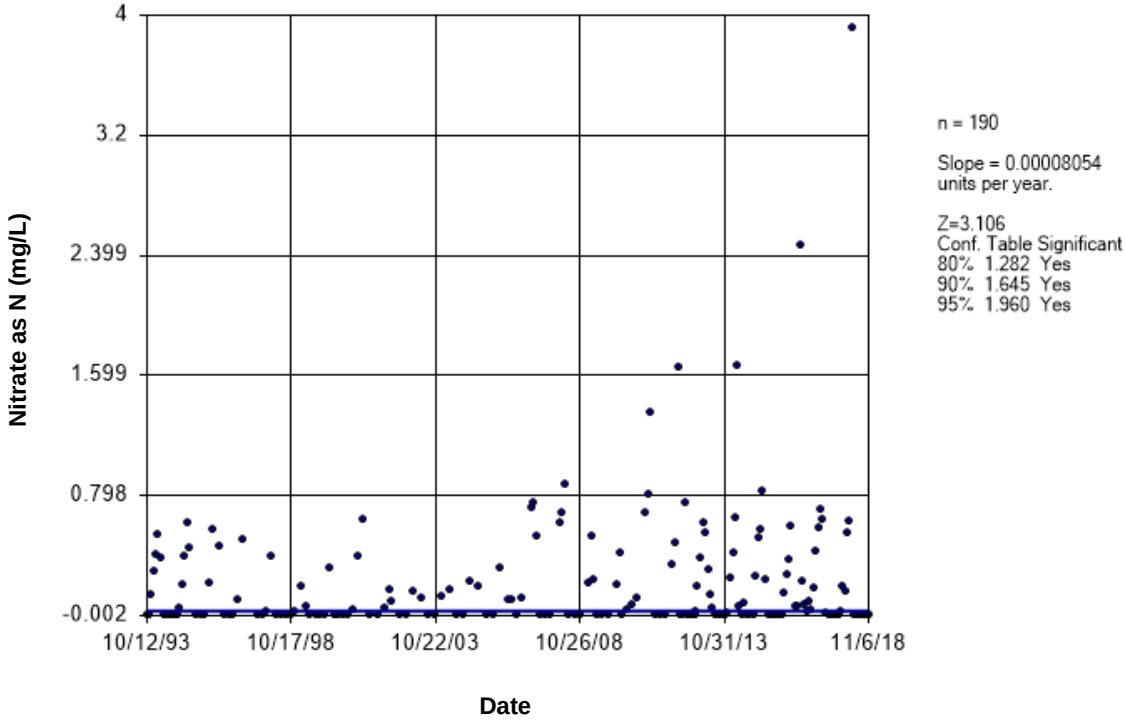

Figure B156 Red Deer River (SK-MB): Nitrate as N

Time Series

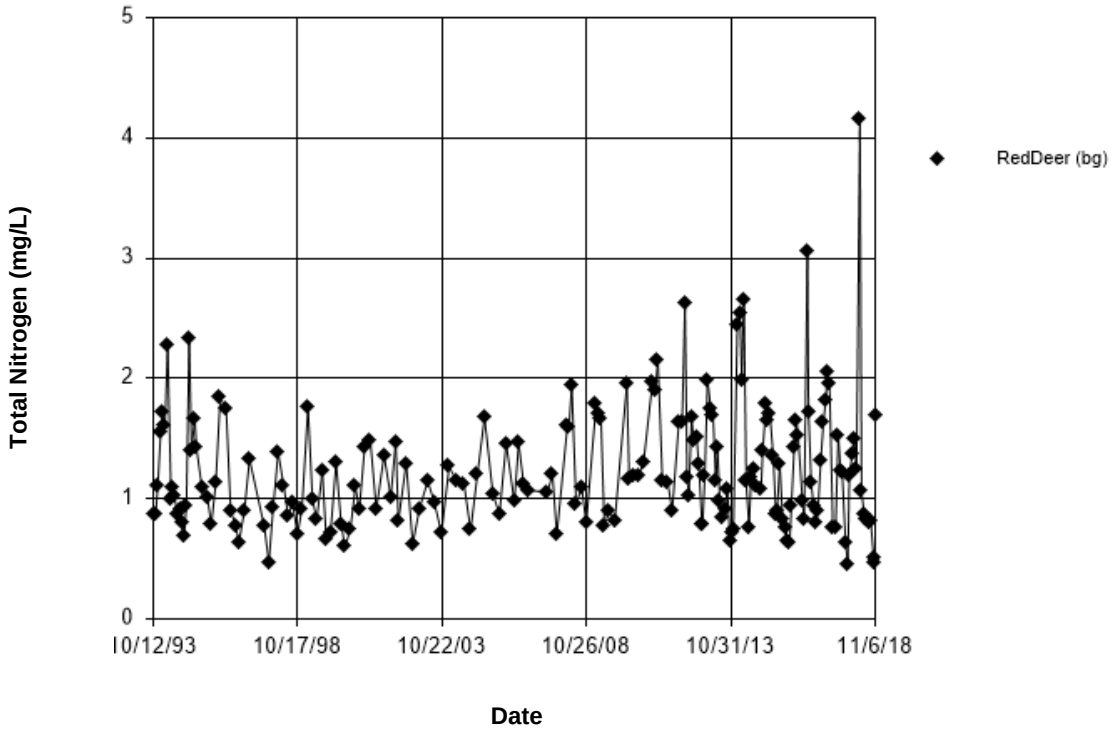

Figure B157 Red Deer River (SK-MB): Total Nitrogen

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 43.83
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

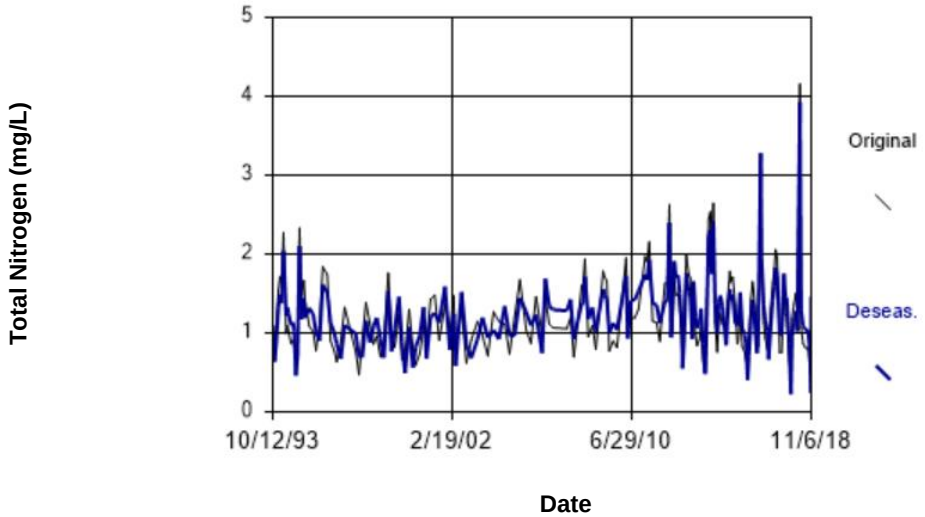

Figure B158 Red Deer River (SK-MB): Total Nitrogen

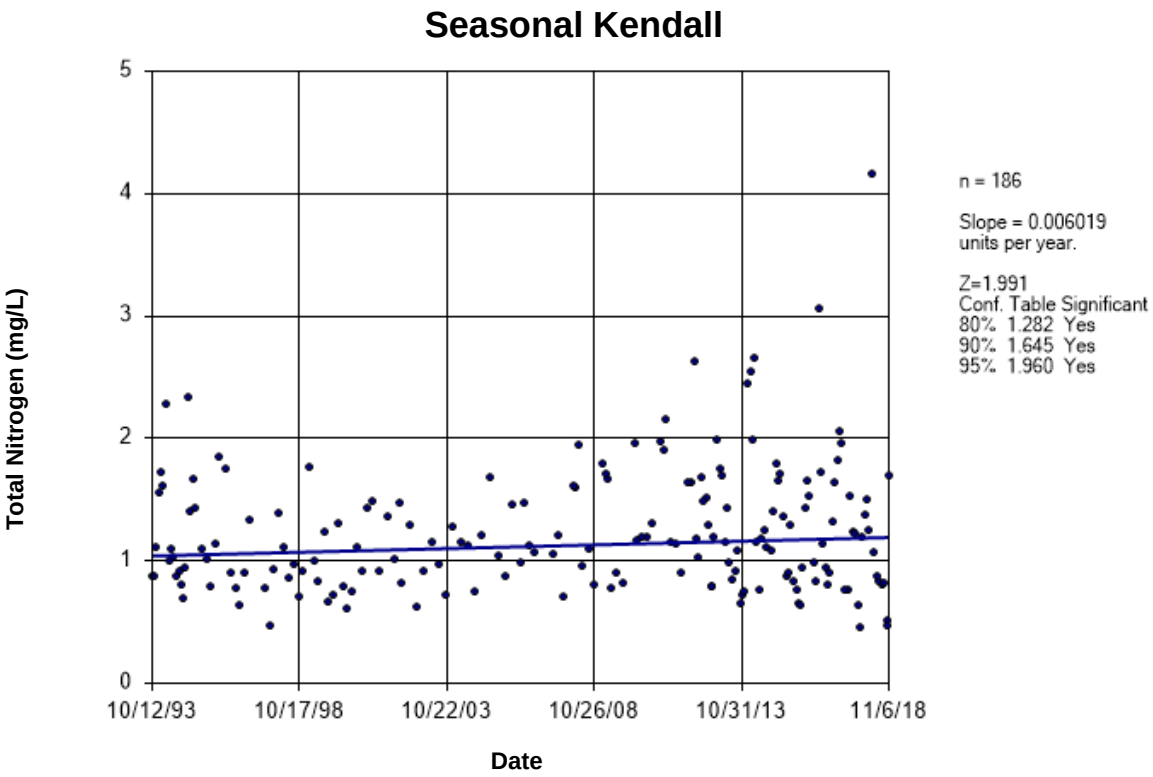

Figure B159 Red Deer River (SK-MB): Total Nitrogen

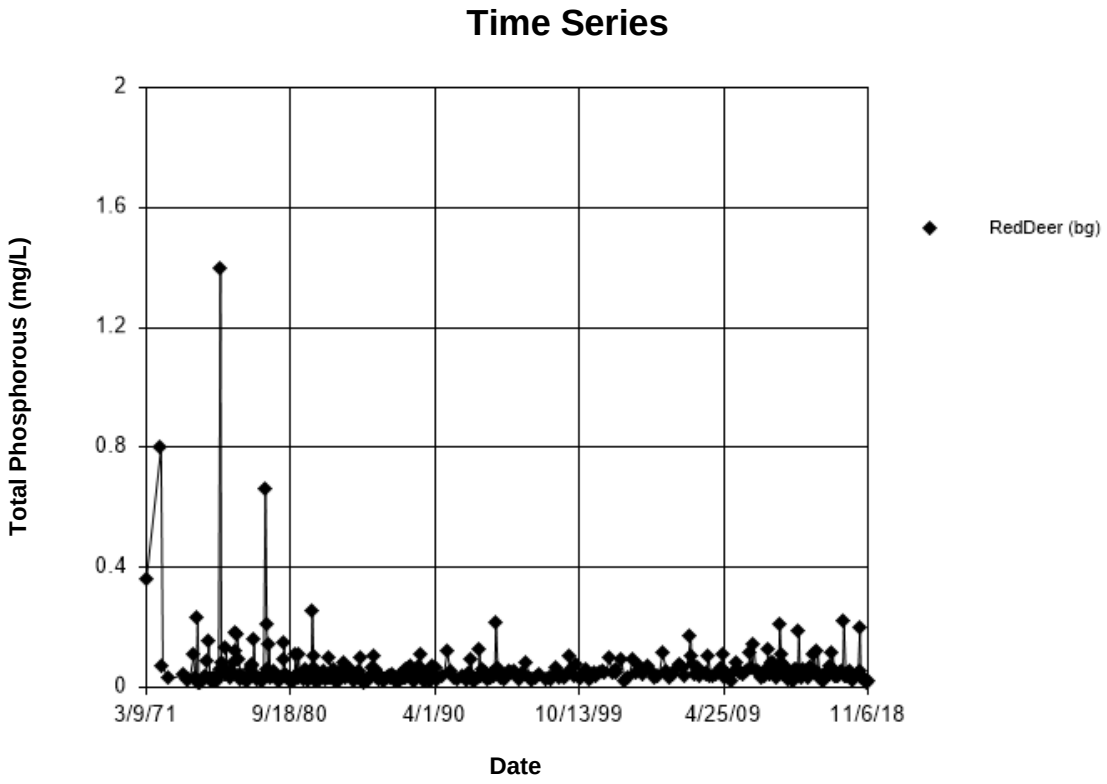

Figure B160 Red Deer River (SK-MB): Total Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 28.4
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 28.4
Adjusted Kruskal-Wallis statistic (H') = 28.4

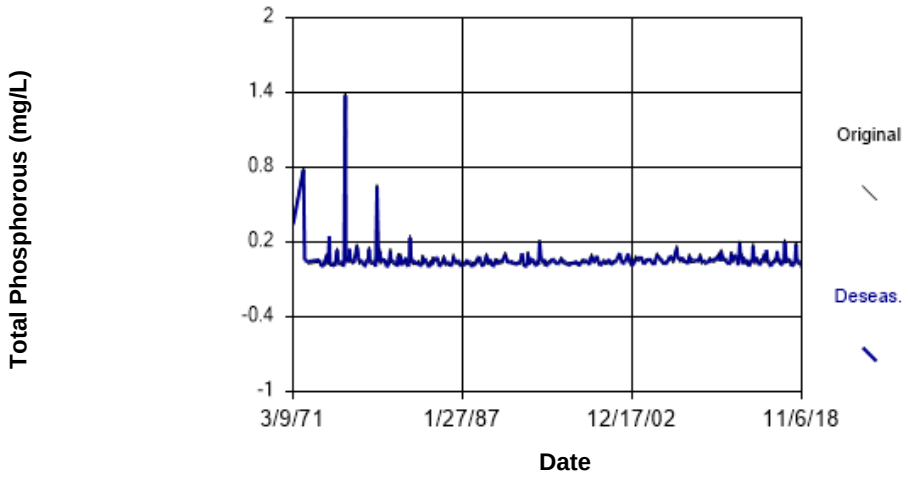

Figure B161 Red Deer River (SK-MB): Total Phosphorous

Seasonal Kendall

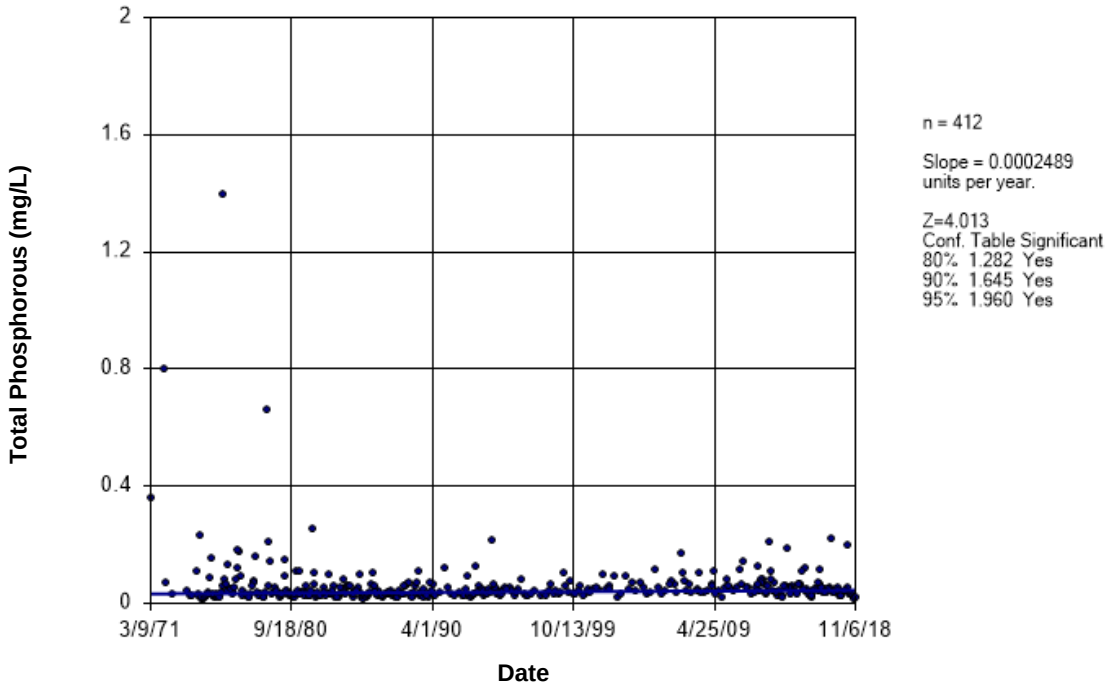

Figure B162 Red Deer River (SK-MB): Total Phosphorous

Time Series

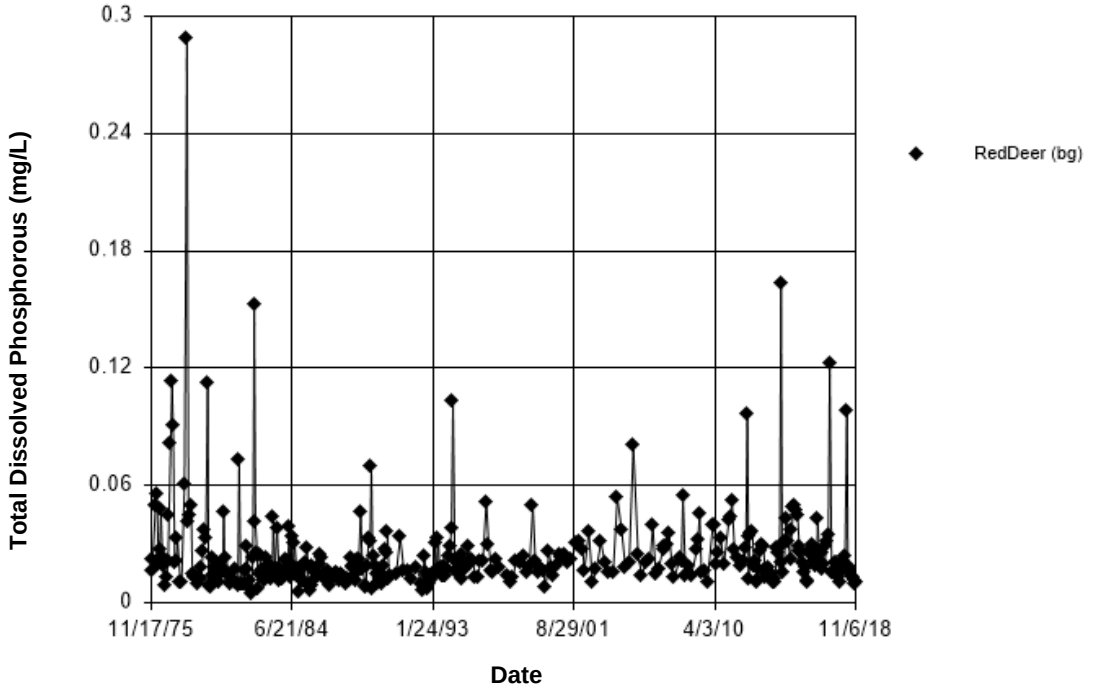

Figure B163 Red Deer River (SK-MB): Total Dissolved Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 29.99
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 29.99
Adjusted Kruskal-Wallis statistic (H') = 29.99

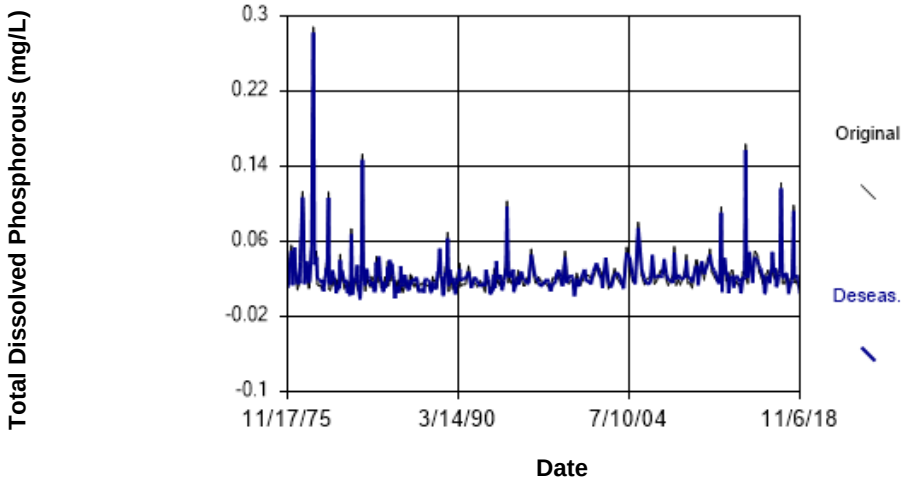

Figure B164 Red Deer River (SK-MB): Total Dissolved Phosphorous

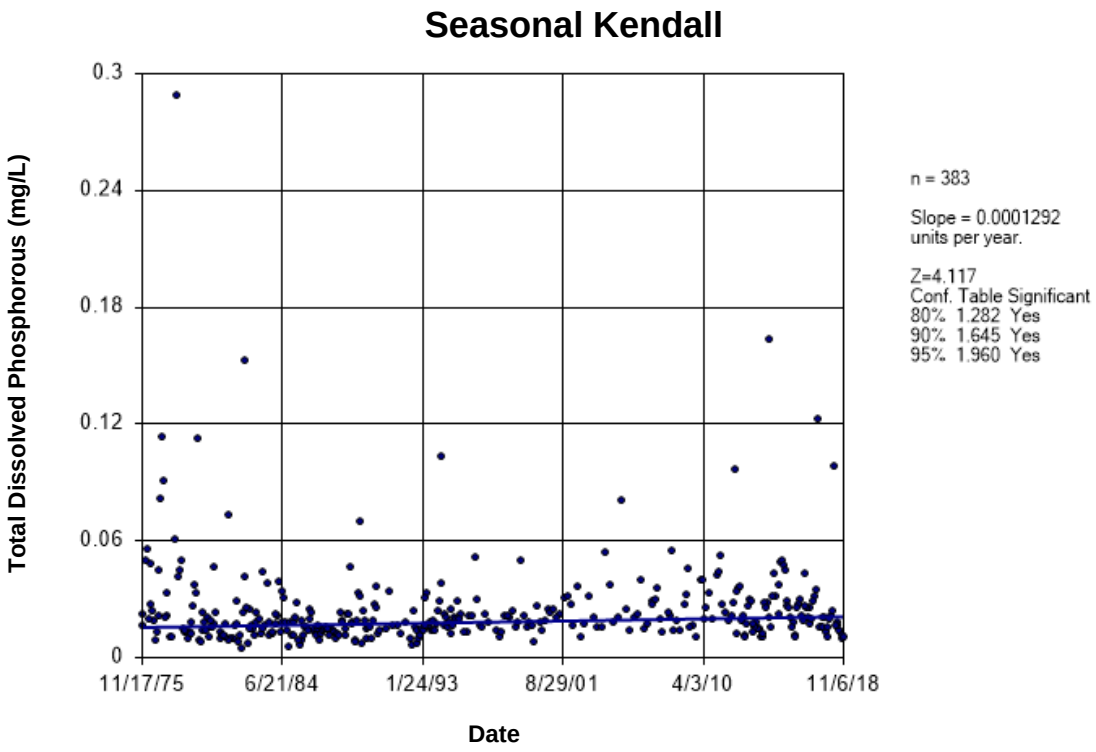

Figure B165 Red Deer River (SK-MB): Total Dissolved Phosphorous

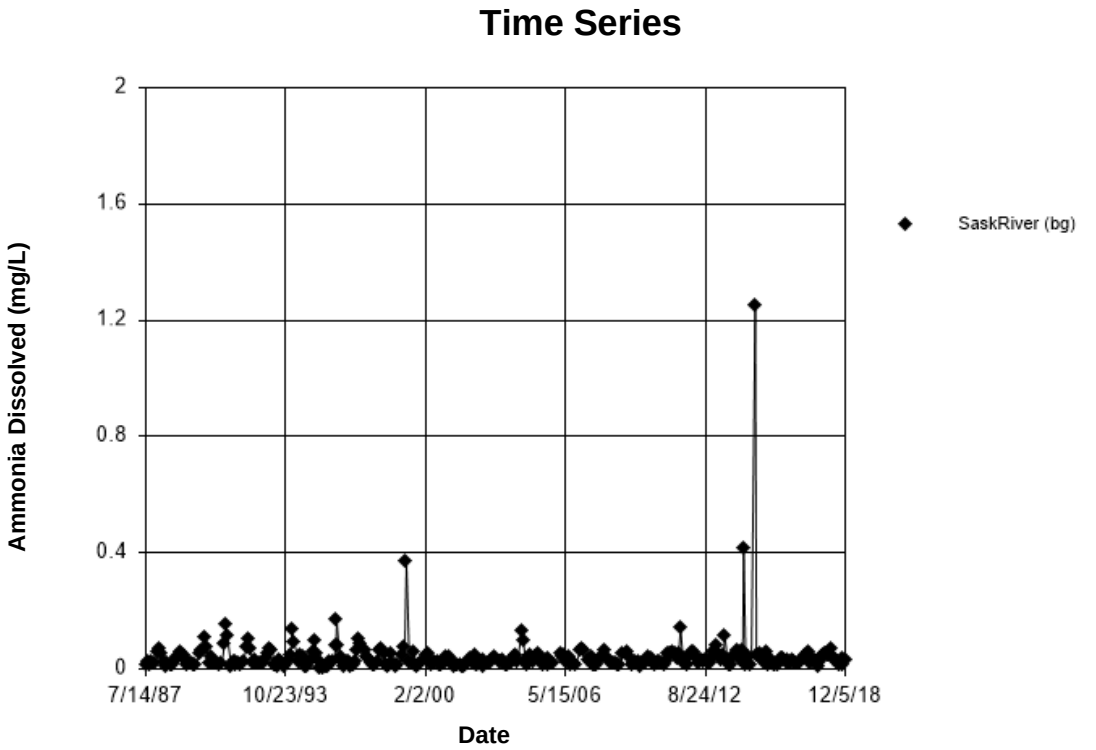

Figure B166 Saskatchewan River: Ammonia Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 137.3
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

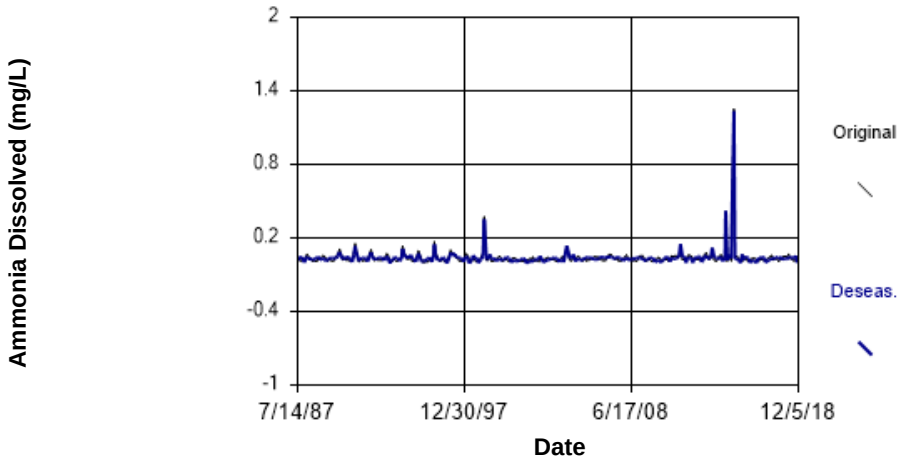

Figure B167 Saskatchewan River: Ammonia Dissolved

Seasonal Kendall

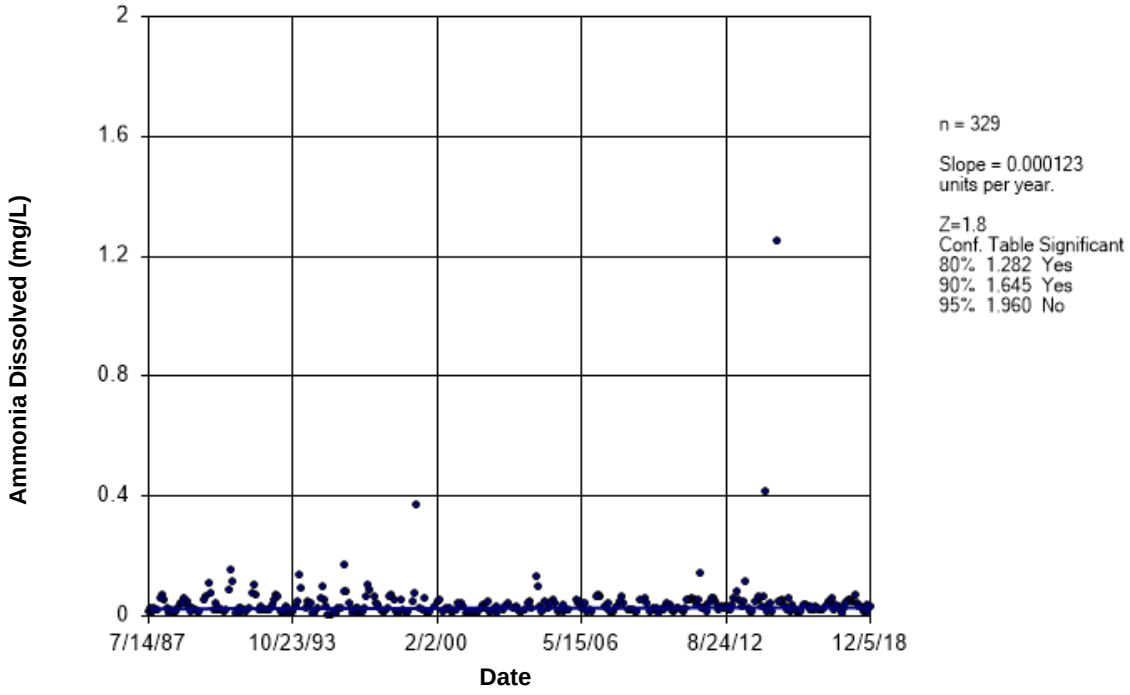

Figure B168 Saskatchewan River: Ammonia Dissolved

Time Series

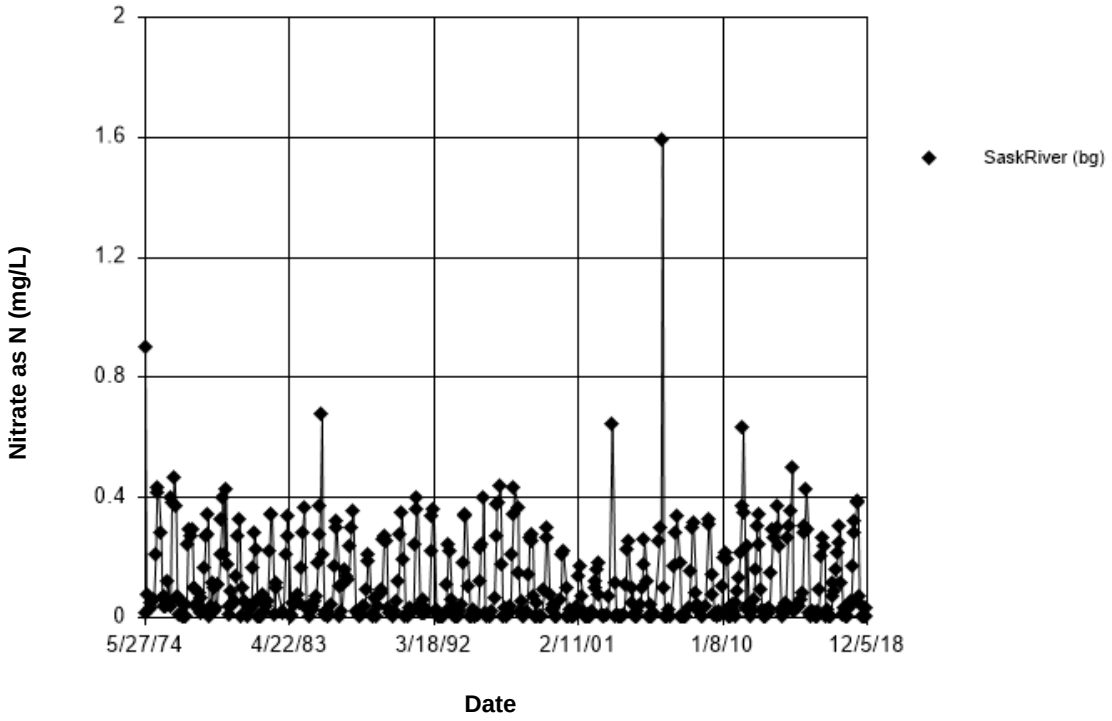

Figure B169 Saskatchewan River: Nitrate as N

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 121.9
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

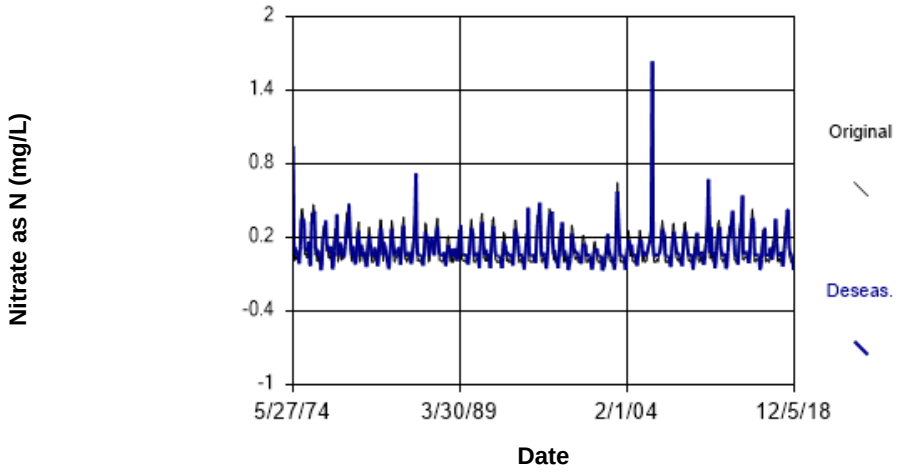

Figure B170 Saskatchewan River: Nitrate as N

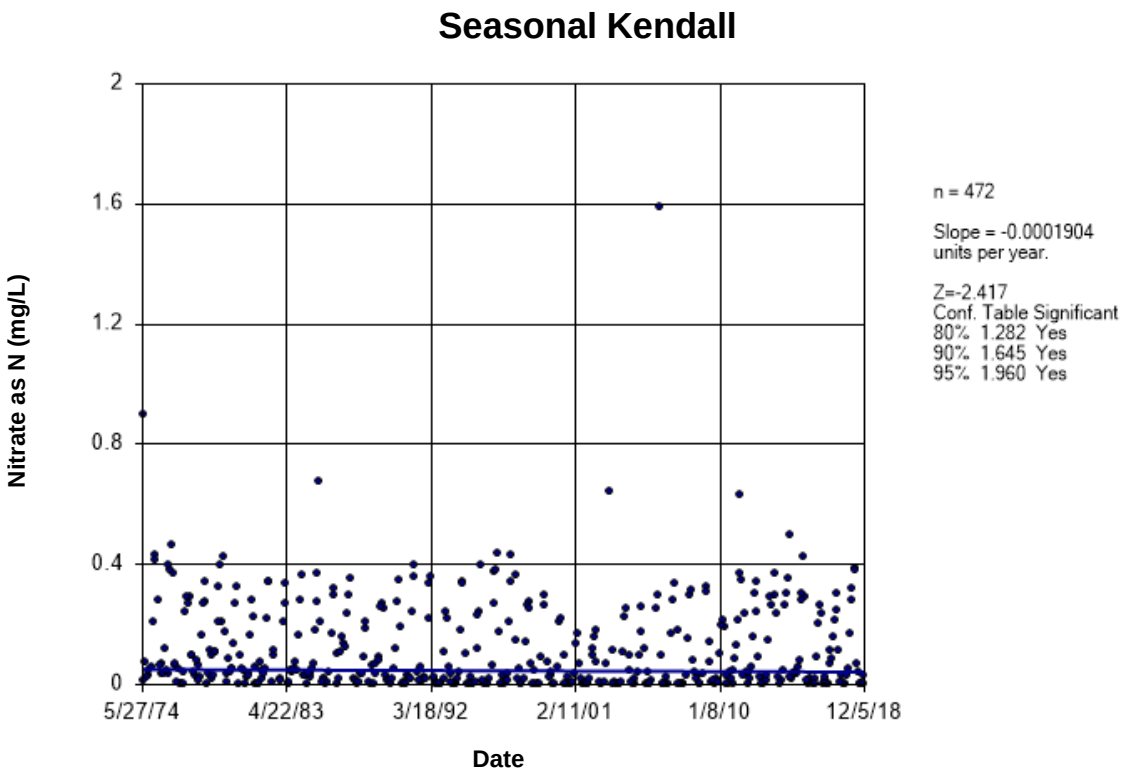

Figure B171 Saskatchewan River: Nitrate as N

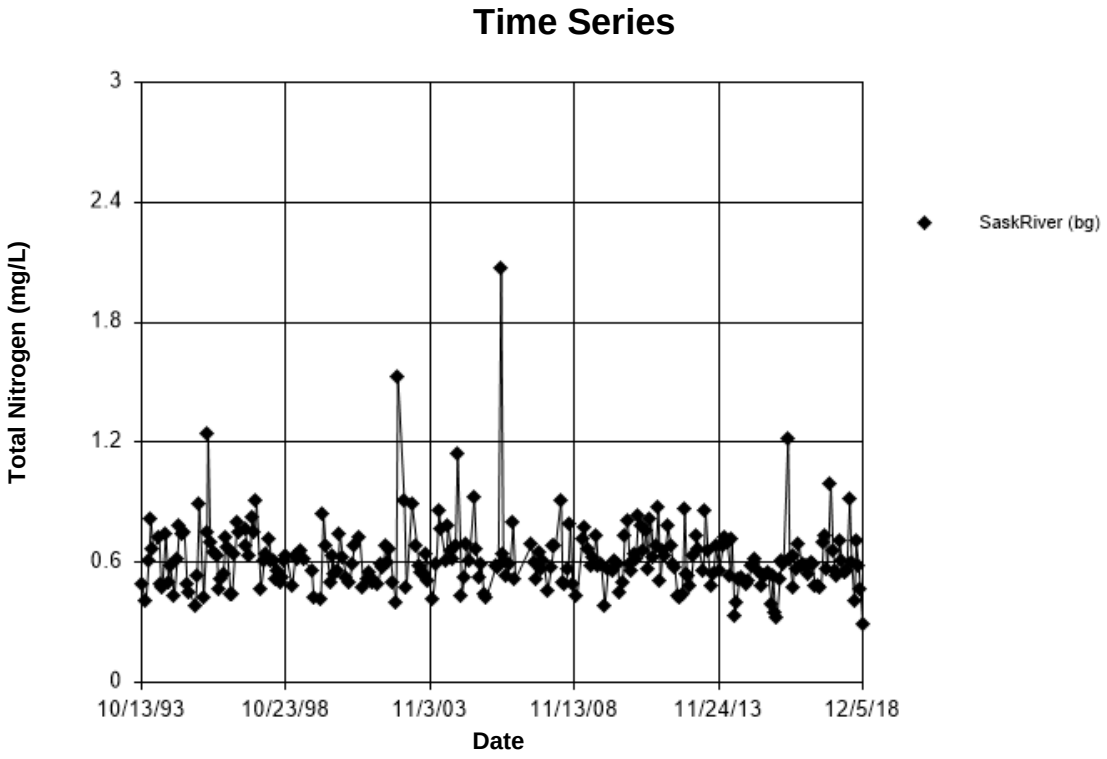

Figure B172 Saskatchewan River: Total Nitrogen

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 45.58
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 45.58
Adjusted Kruskal-Wallis statistic (H') = 45.58

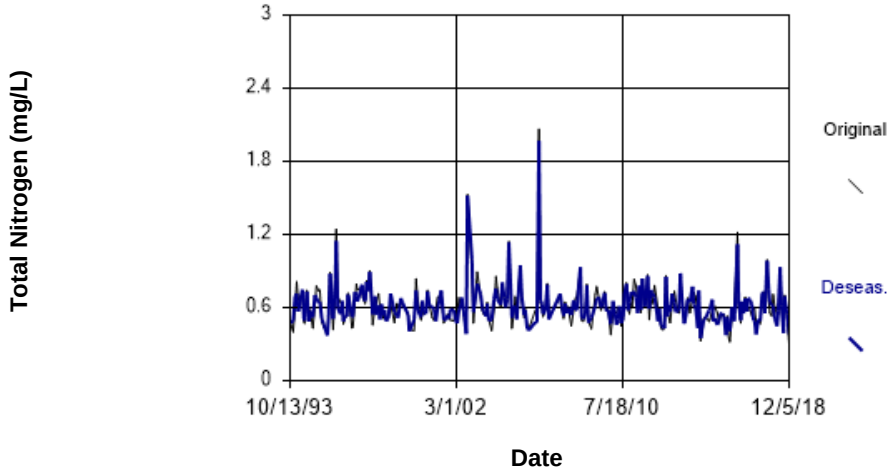

Figure B173 Saskatchewan River: Total Nitrogen

Seasonal Kendall

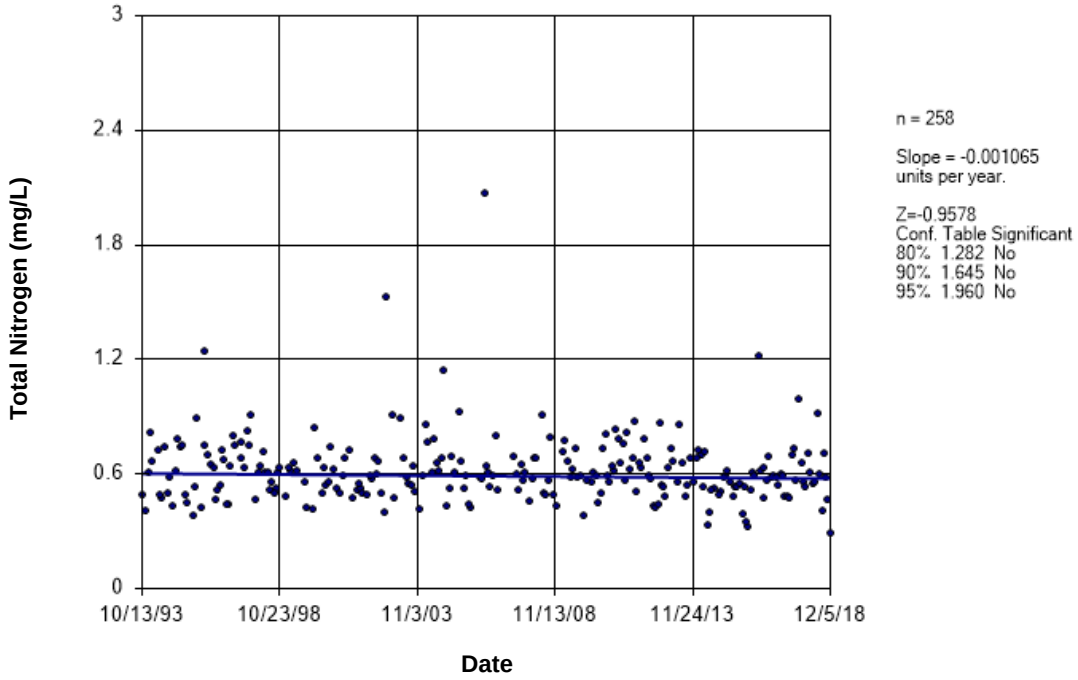

Figure B174 Saskatchewan River: Total Nitrogen

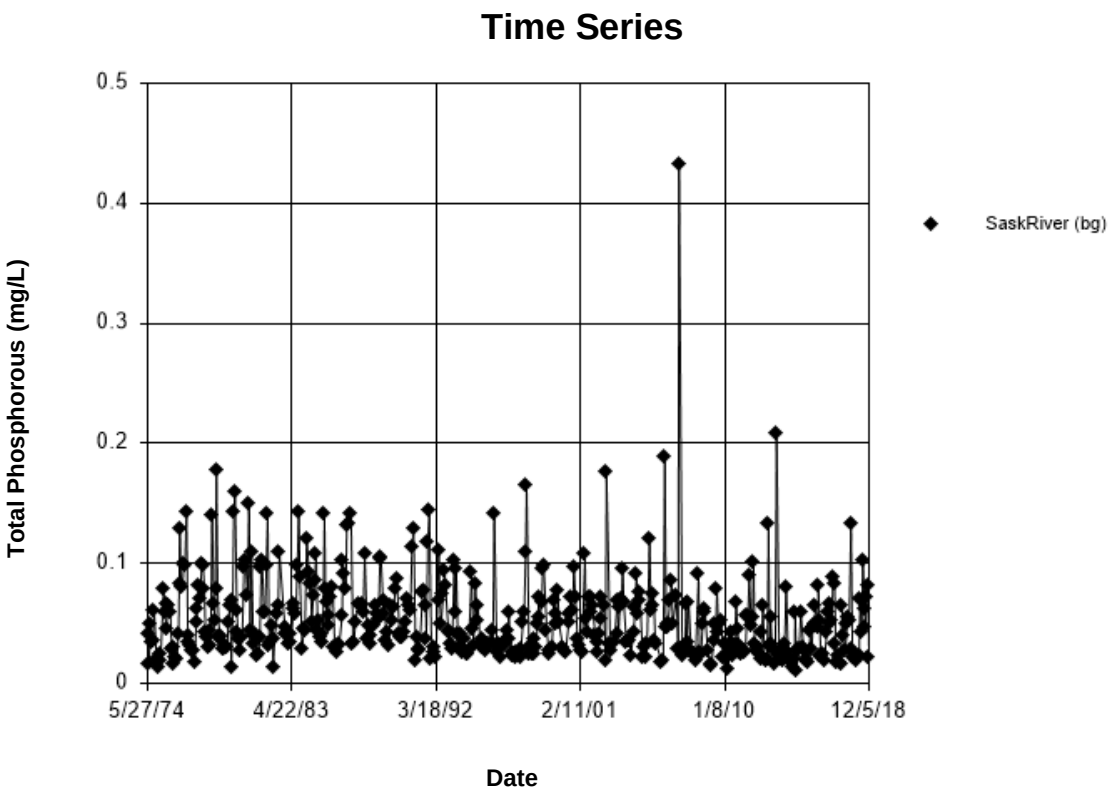

Figure B175 Saskatchewan River: Total Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 159
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

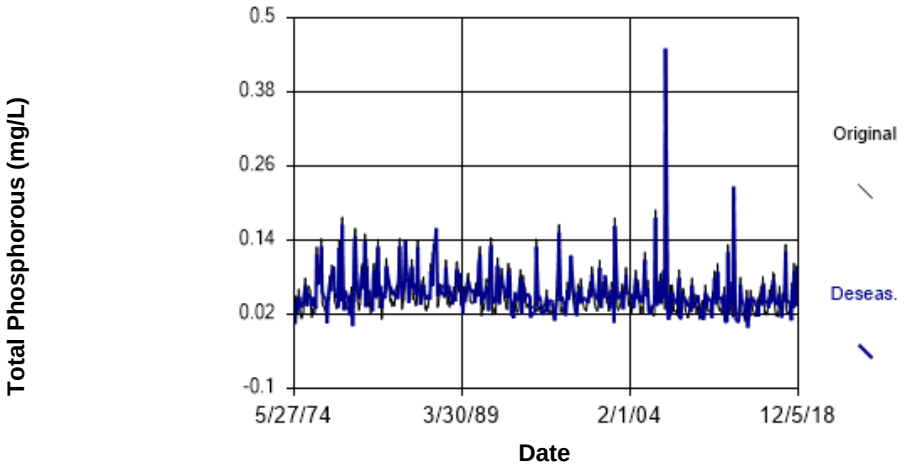

Figure B176 Saskatchewan River: Total Phosphorous

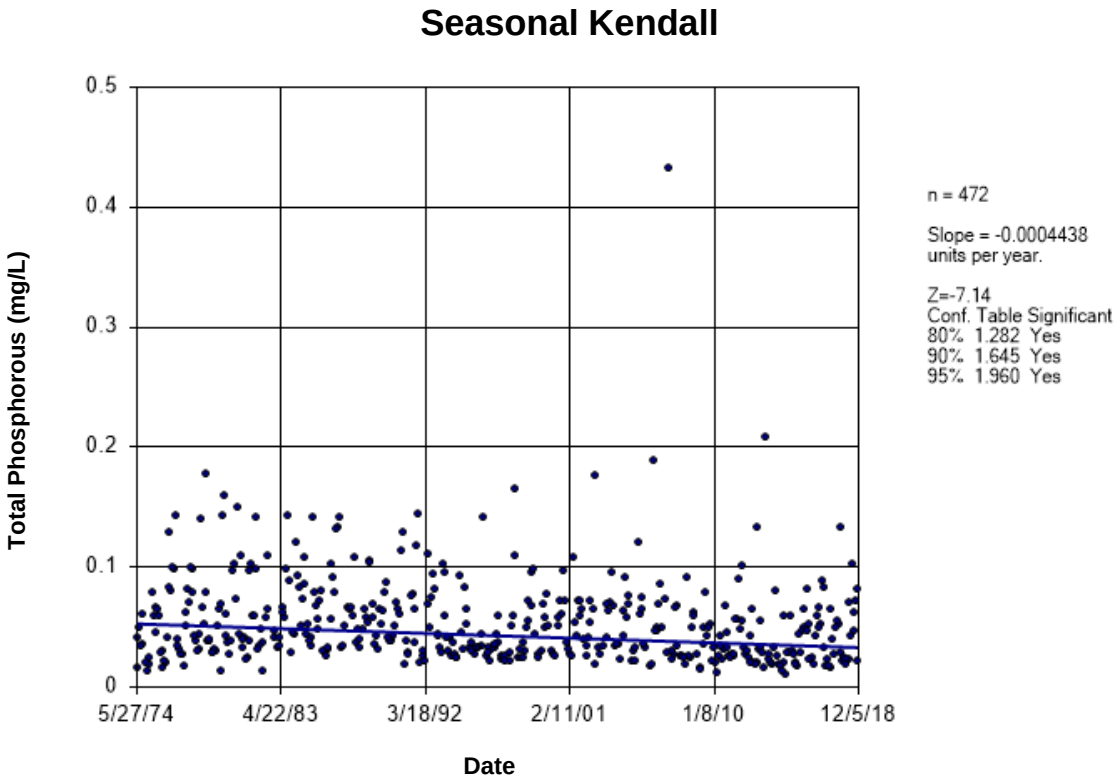

Figure B177 Saskatchewan River: Total Phosphorous

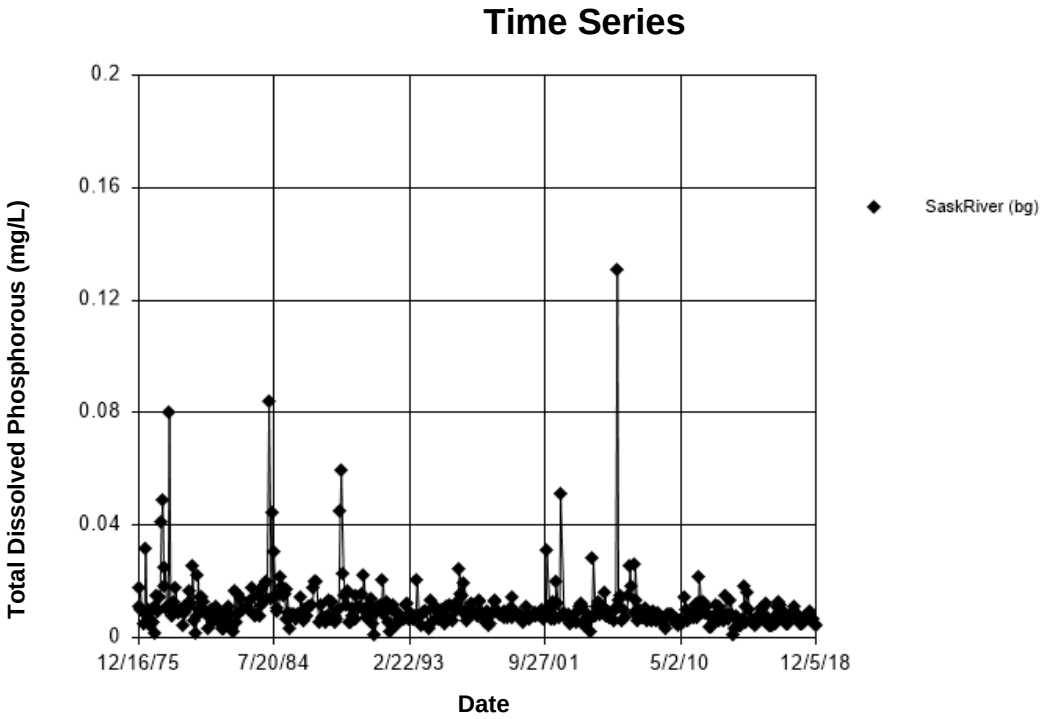

Figure B178 Saskatchewan River: Total Dissolved Phosphorous

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.3161
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

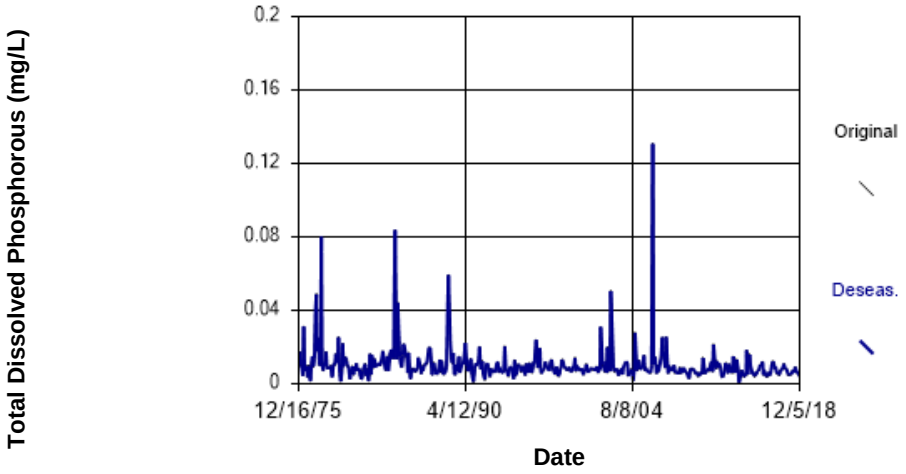

Figure B179 Saskatchewan River: Total Dissolved Phosphorous

Sen's Slope Estimator

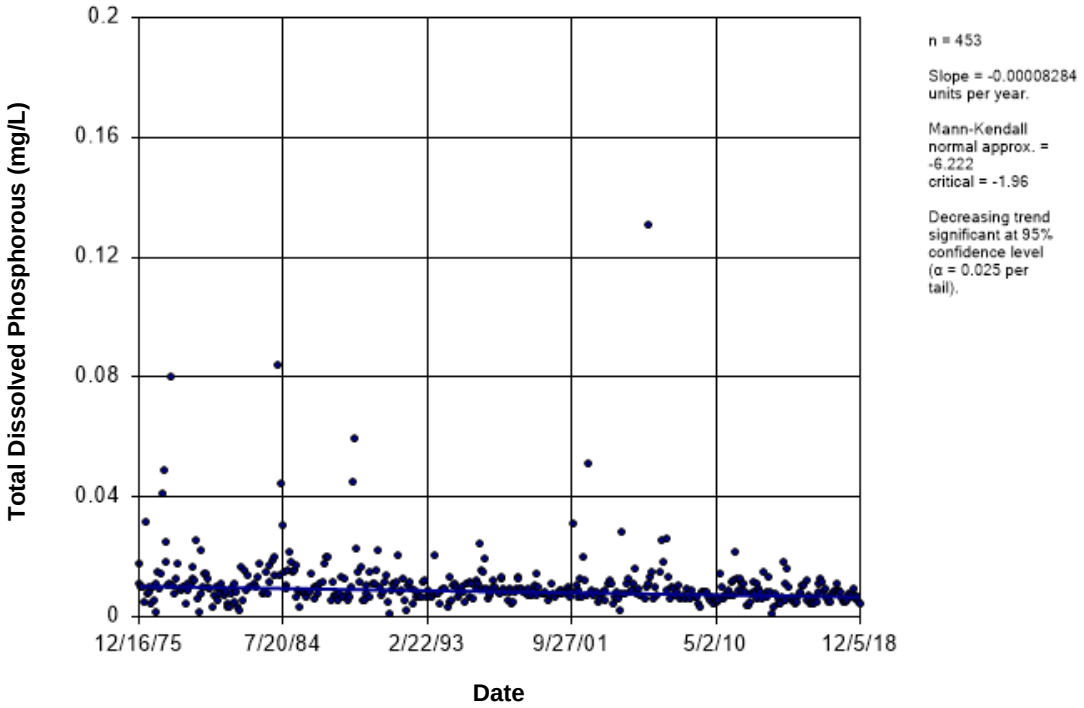

Figure B180 Saskatchewan River: Total Dissolved Phosphorous

Appendix C: Major Ions Trending Graphs

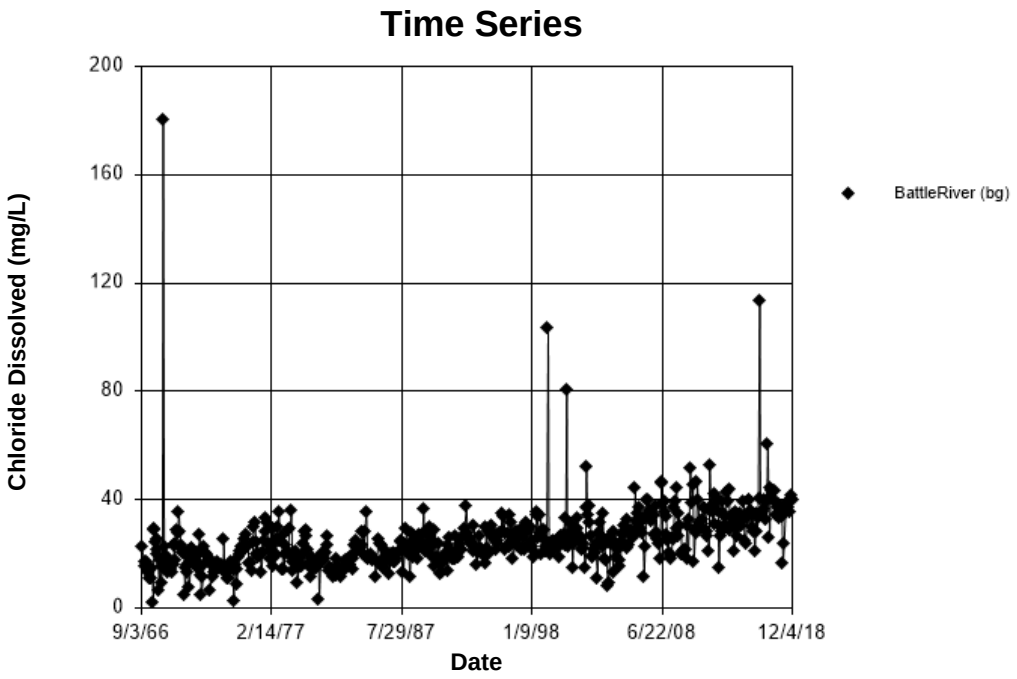

Figure C1 Battle River: Chloride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 16.33
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 16.33
Adjusted Kruskal-Wallis statistic (H') = 16.33

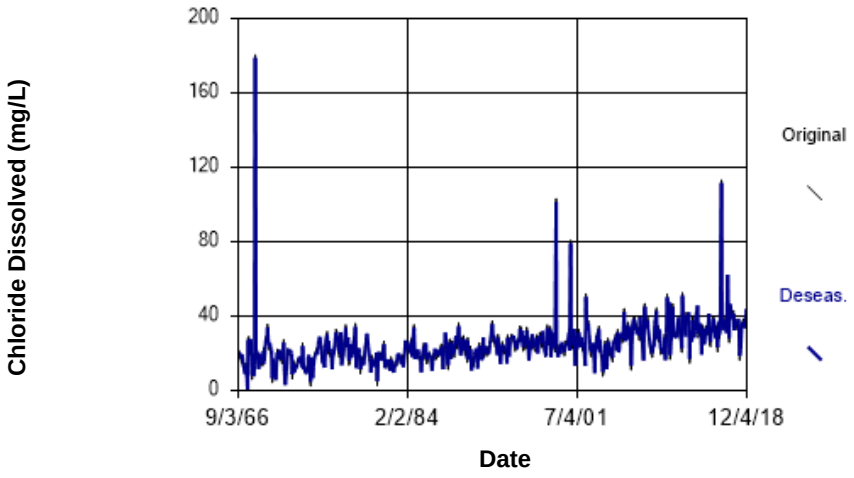

Figure C2 Battle River: Chloride Dissolved

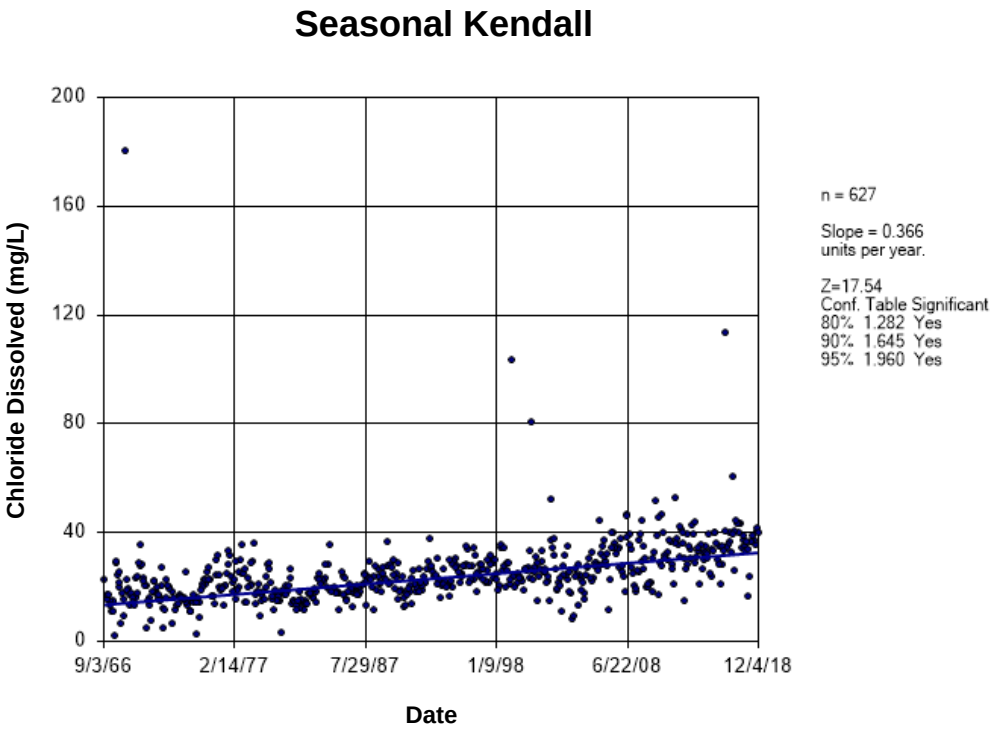

Figure C3 Battle River: Chloride Dissolved

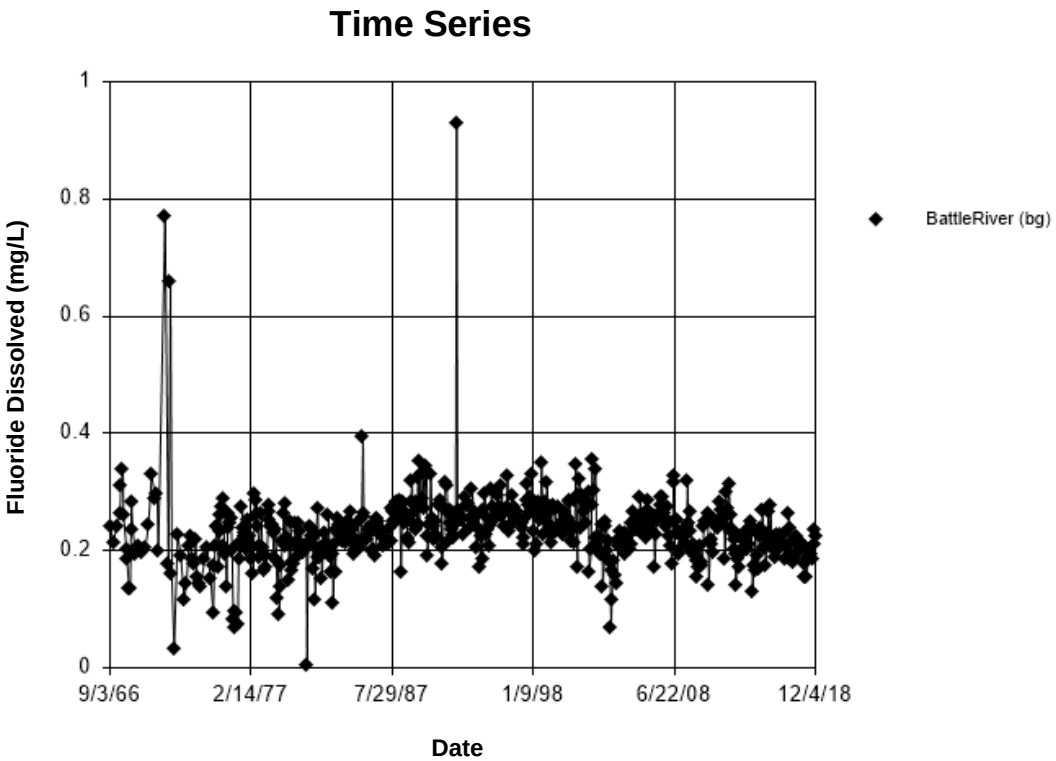

Figure C4 Battle River: Fluoride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 9.714
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 10 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 9.714
Adjusted Kruskal-Wallis statistic (H') = 9.714

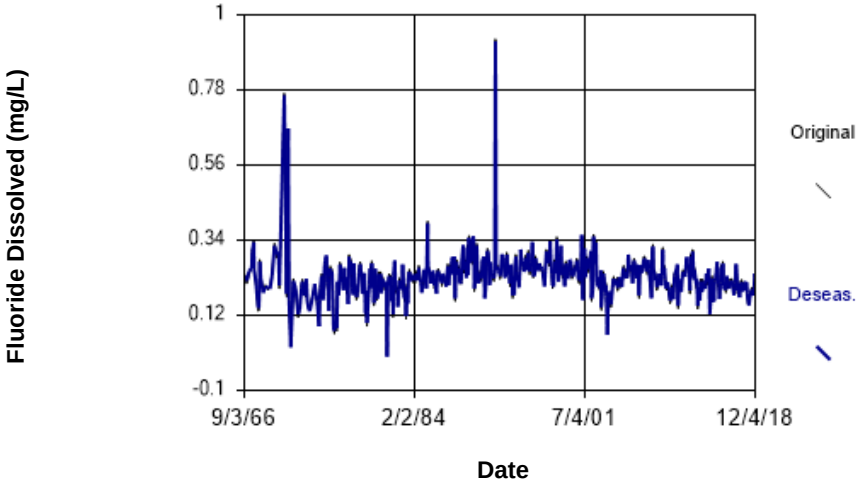

Figure C5 Battle River: Fluoride Dissolved

Seasonal Kendall

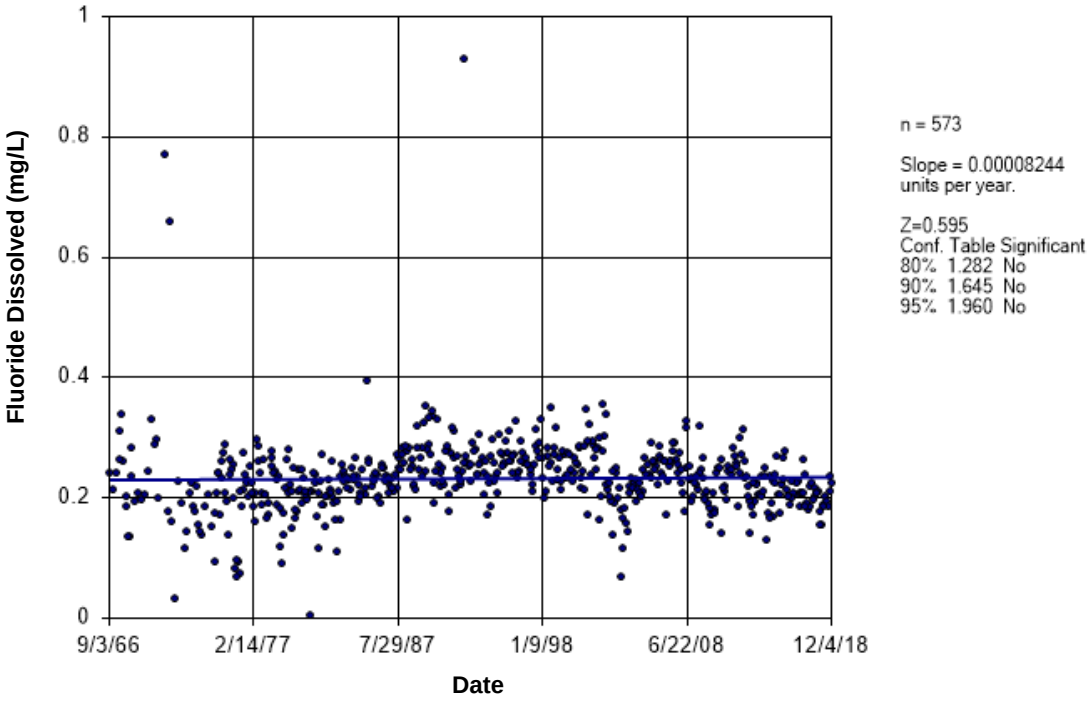

Figure C6 Battle River: Fluoride Dissolved

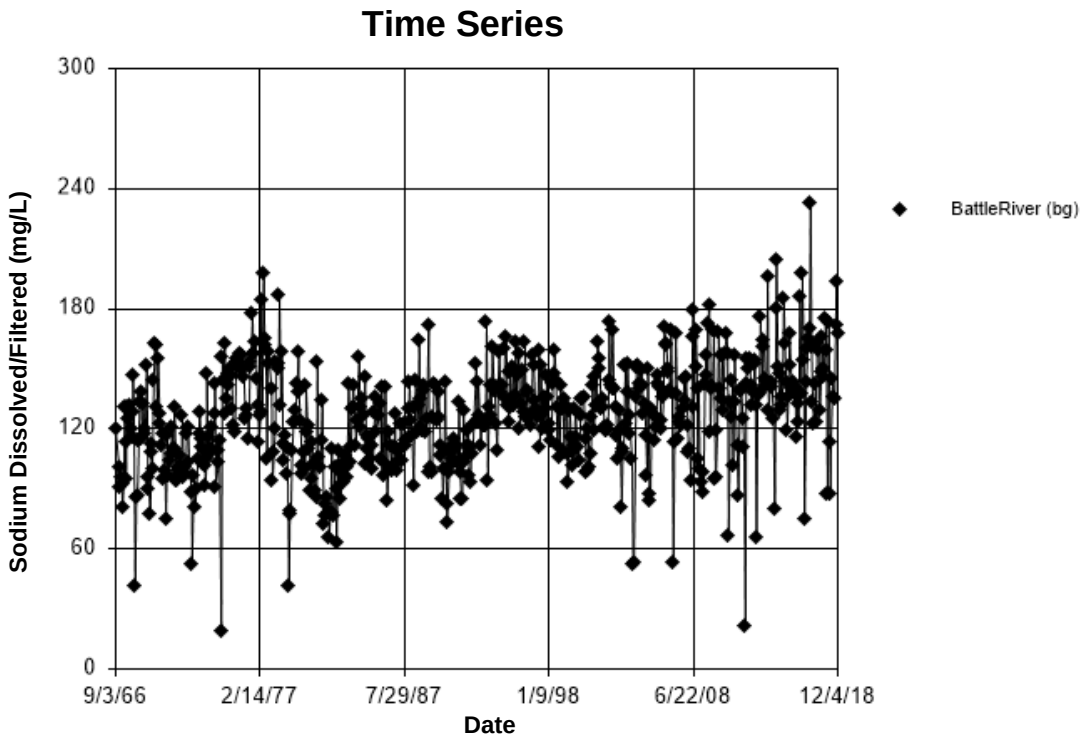

Figure C7 Battle River: Sodium Dissolved/Filtered

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 12.94
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 12.94
Adjusted Kruskal-Wallis statistic (H') = 12.94

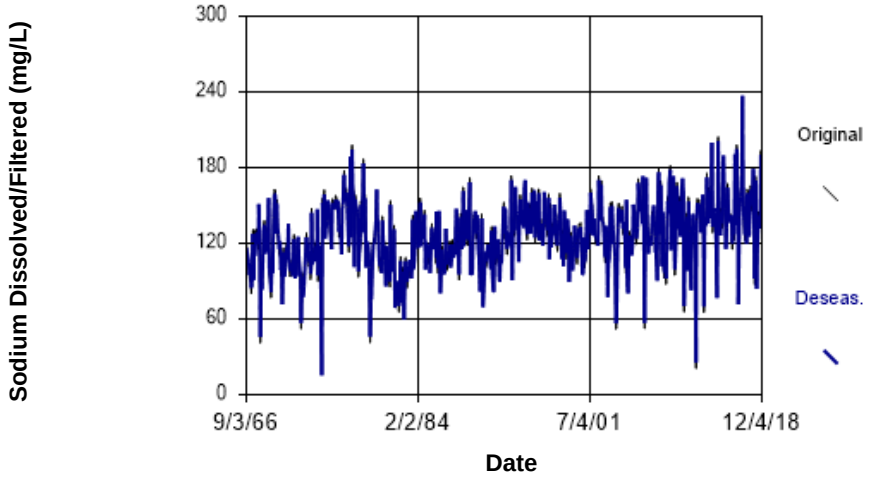

Figure C8 Battle River: Sodium Dissolved/Filtered

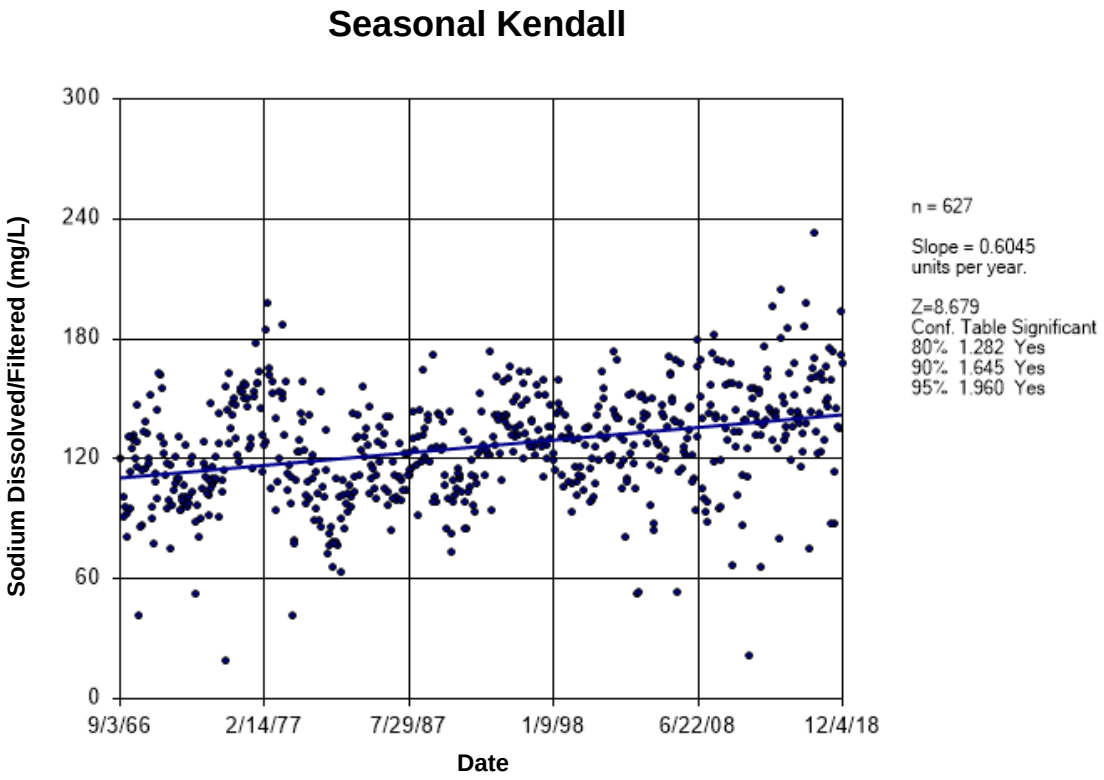

Figure C9 Battle River: Sodium Dissolved/Filtered

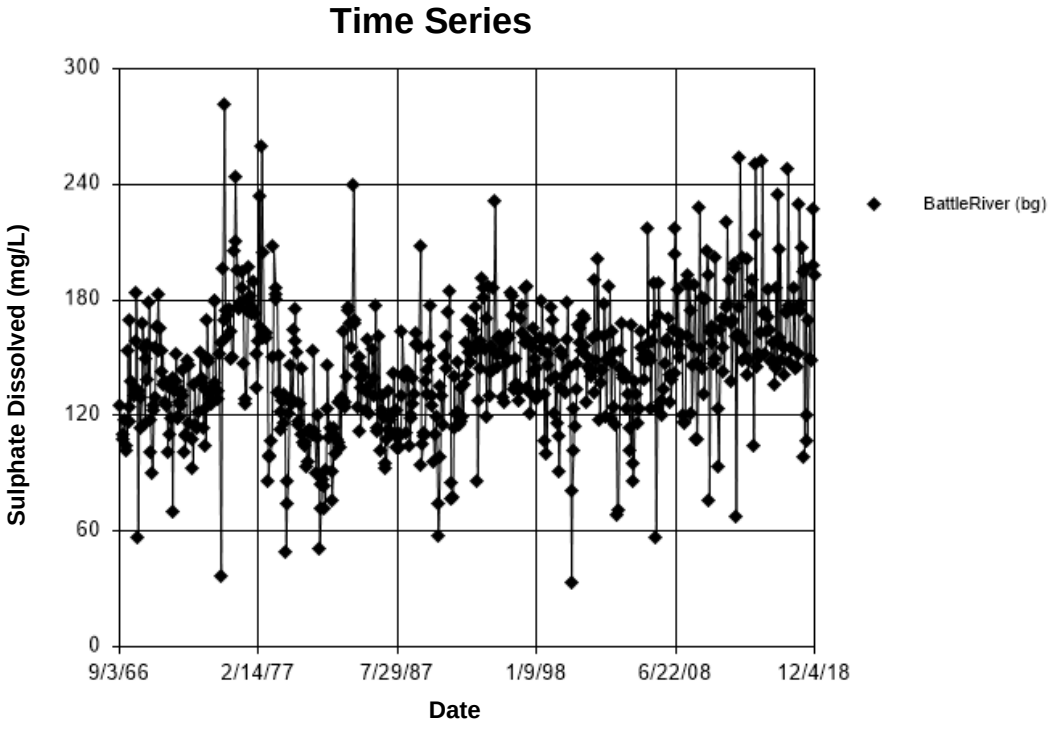

Figure C10 Battle River: Sulphate Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.016
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.016
Adjusted Kruskal-Wallis statistic (H') = 0.016

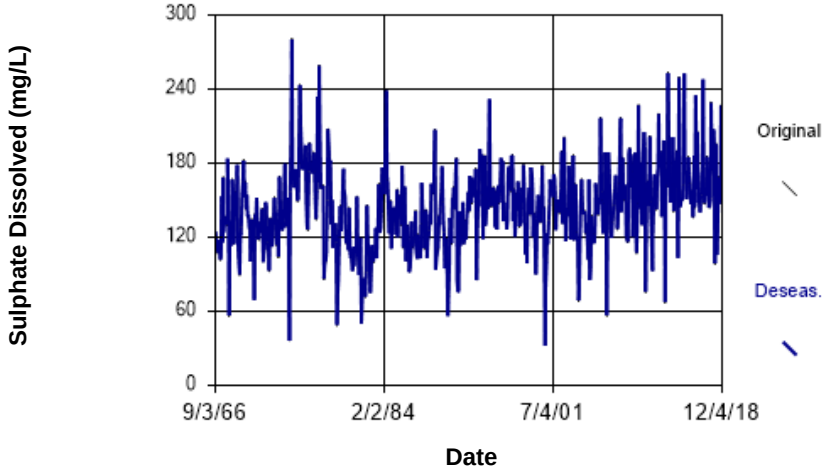

Figure C11 Battle River: Sulphate Dissolved

Sen's Slope Estimator

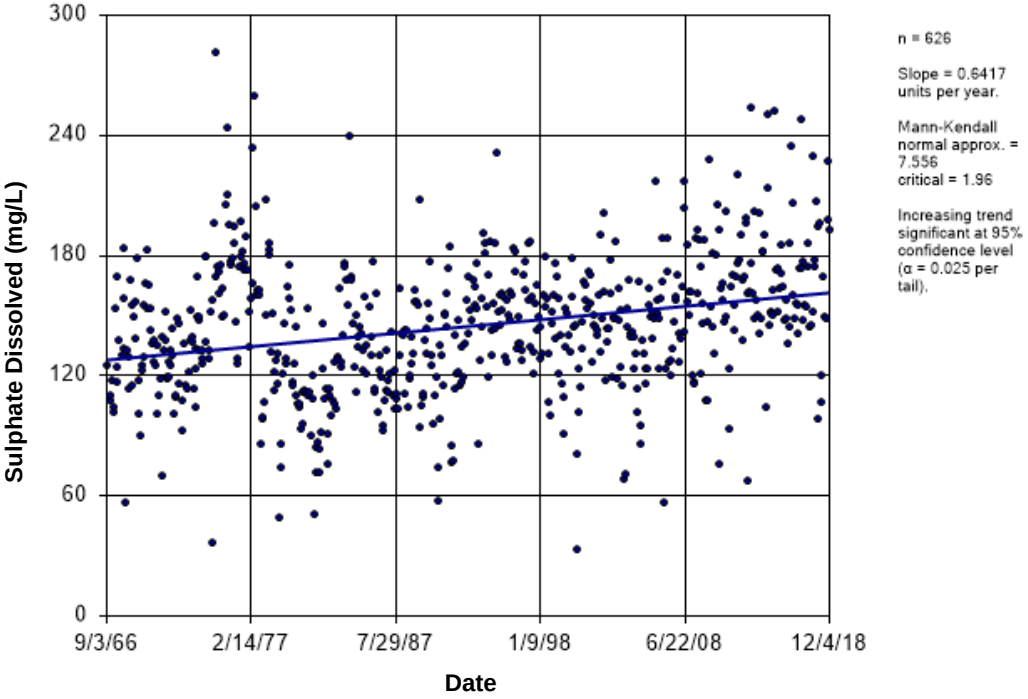

Figure C12 Battle River: Sulphate Dissolved

Time Series

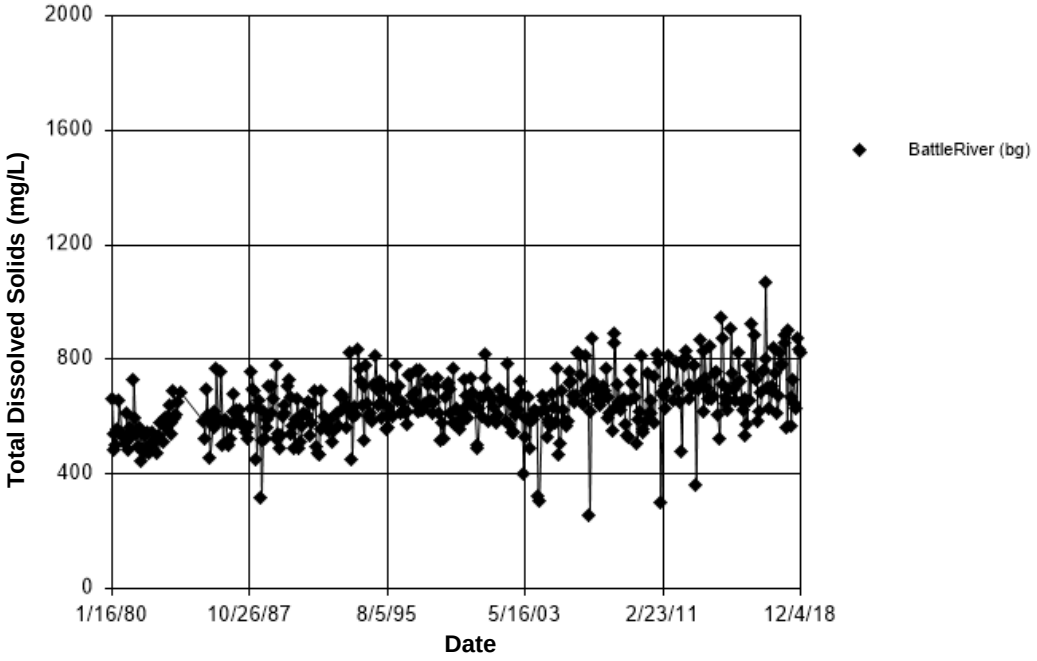

Figure C13 Battle River: Total Dissolved Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 13.99
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

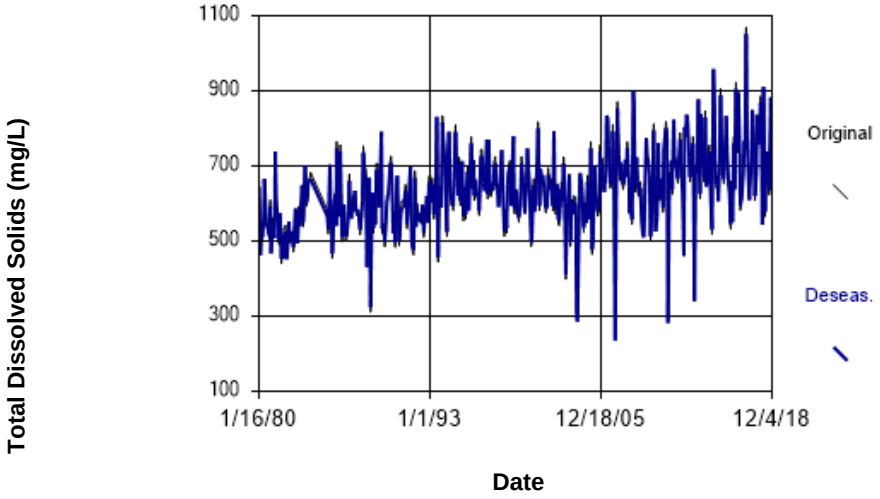

Figure C14 Battle River: Total Dissolved Solids

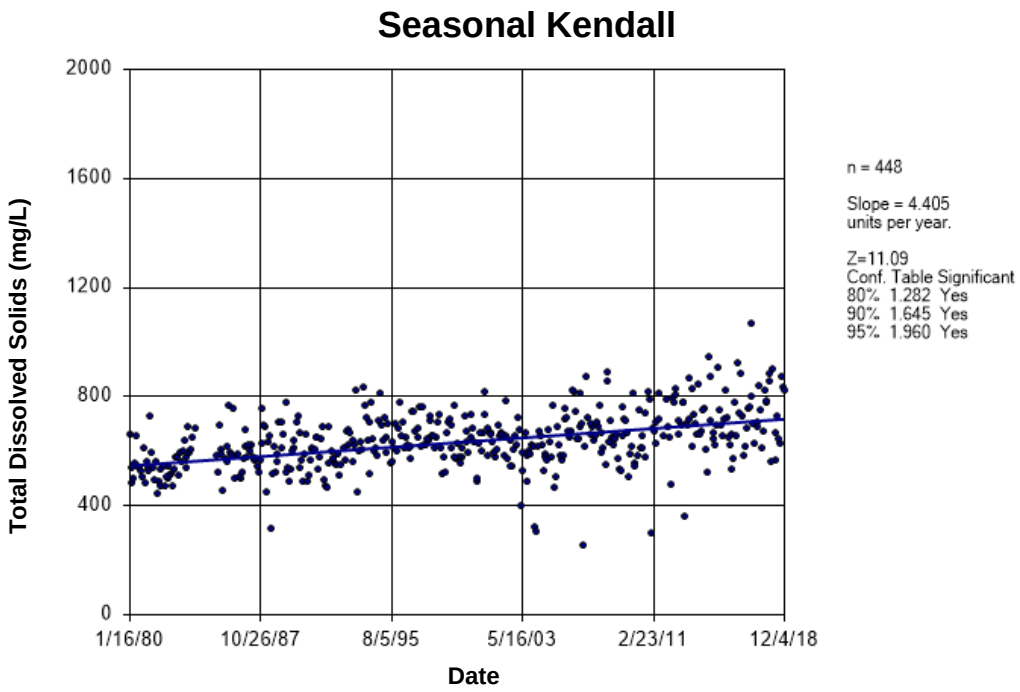

Figure C15 Battle River: Total Dissolved Solids

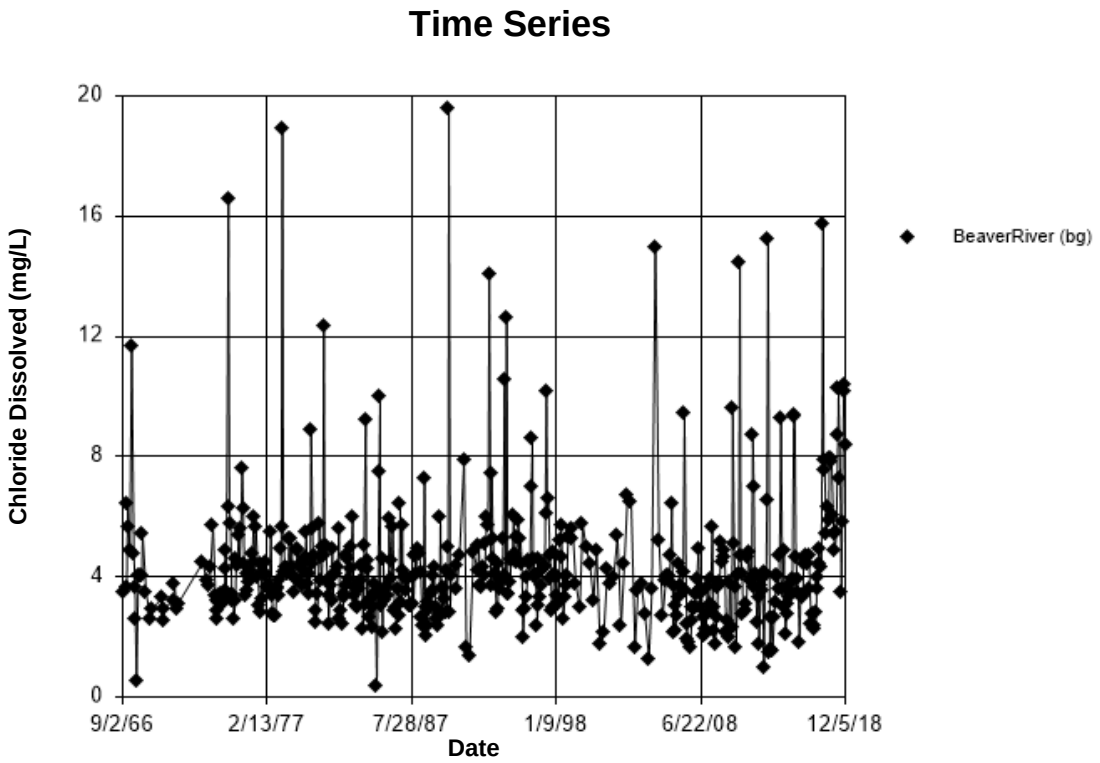

Figure C16 Beaver River: Chloride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 33.57
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 33.57
Adjusted Kruskal-Wallis statistic (H') = 33.57

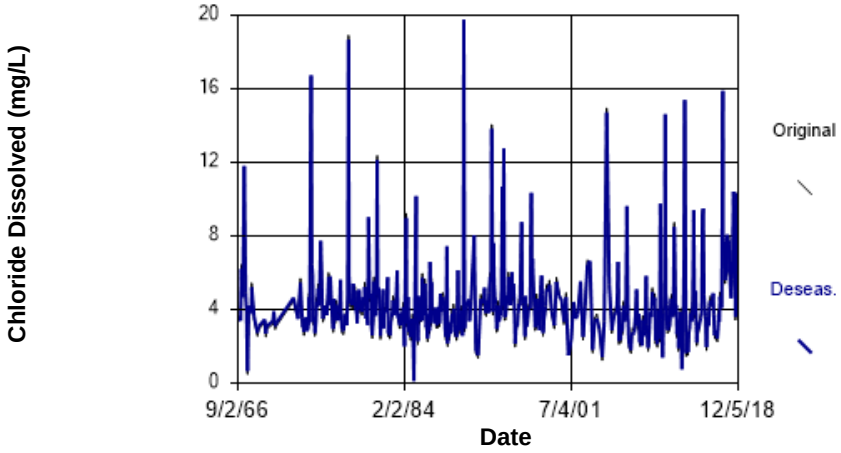

Figure C17 Beaver River: Chloride Dissolved

Seasonal Kendall

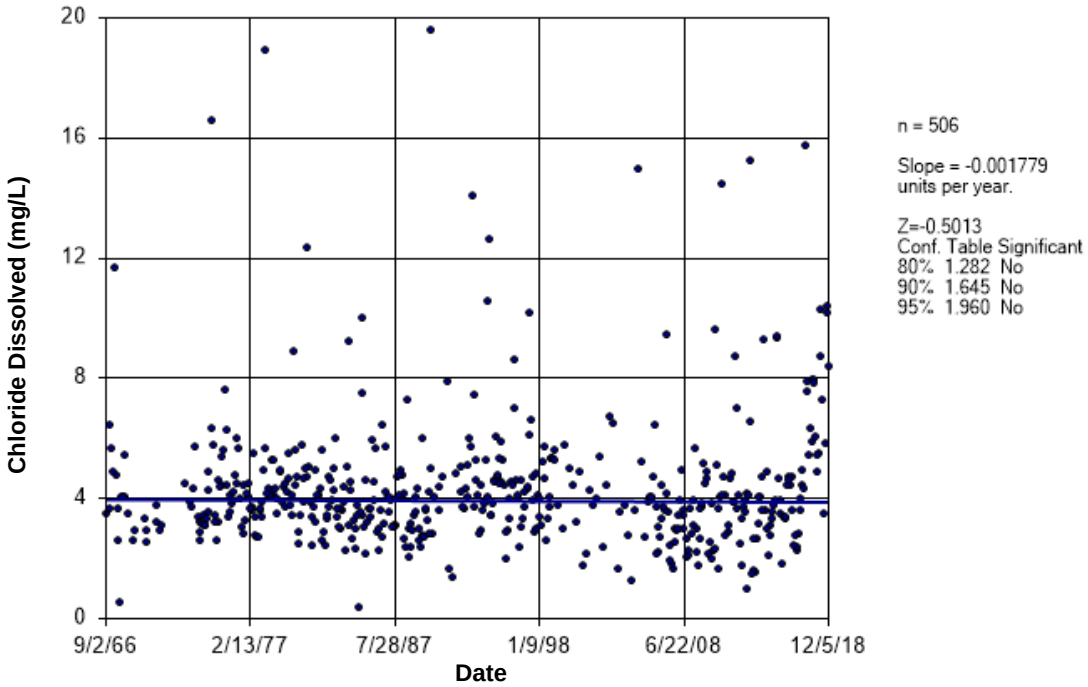

Figure C18 Beaver River: Chloride Dissolved

Time Series

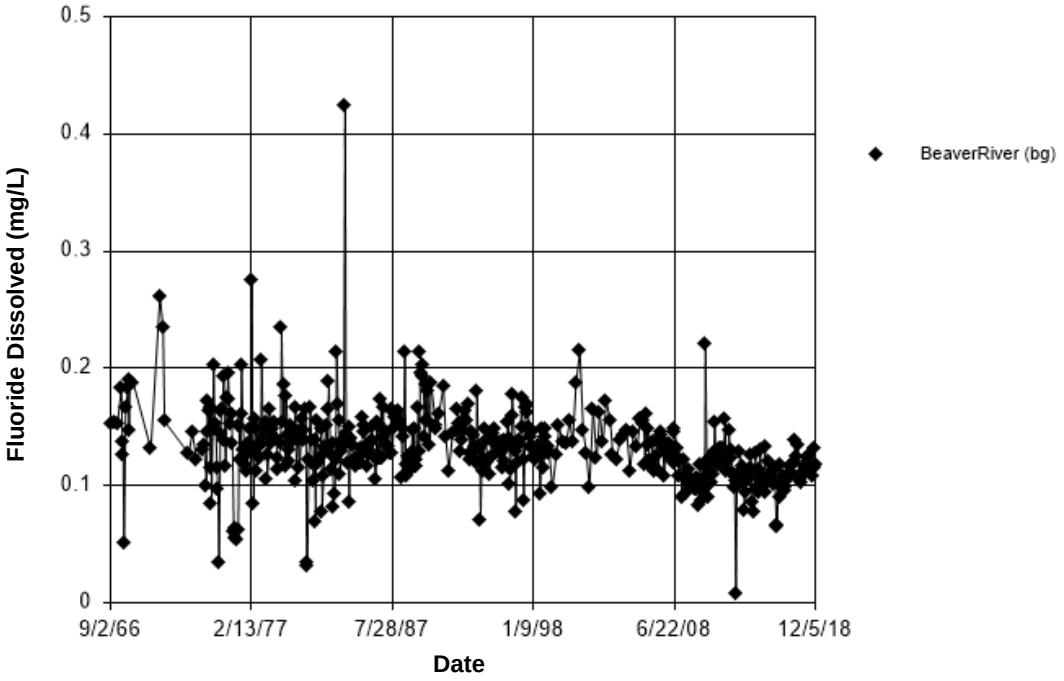

Figure C19 Beaver River: Fluoride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 1.417
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 14 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 1.417
Adjusted Kruskal-Wallis statistic (H') = 1.417

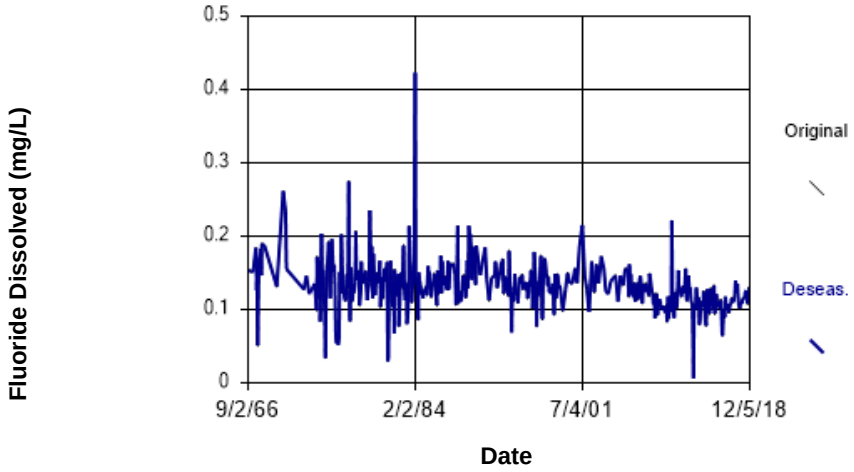

Figure C20 Beaver River: Fluoride Dissolved

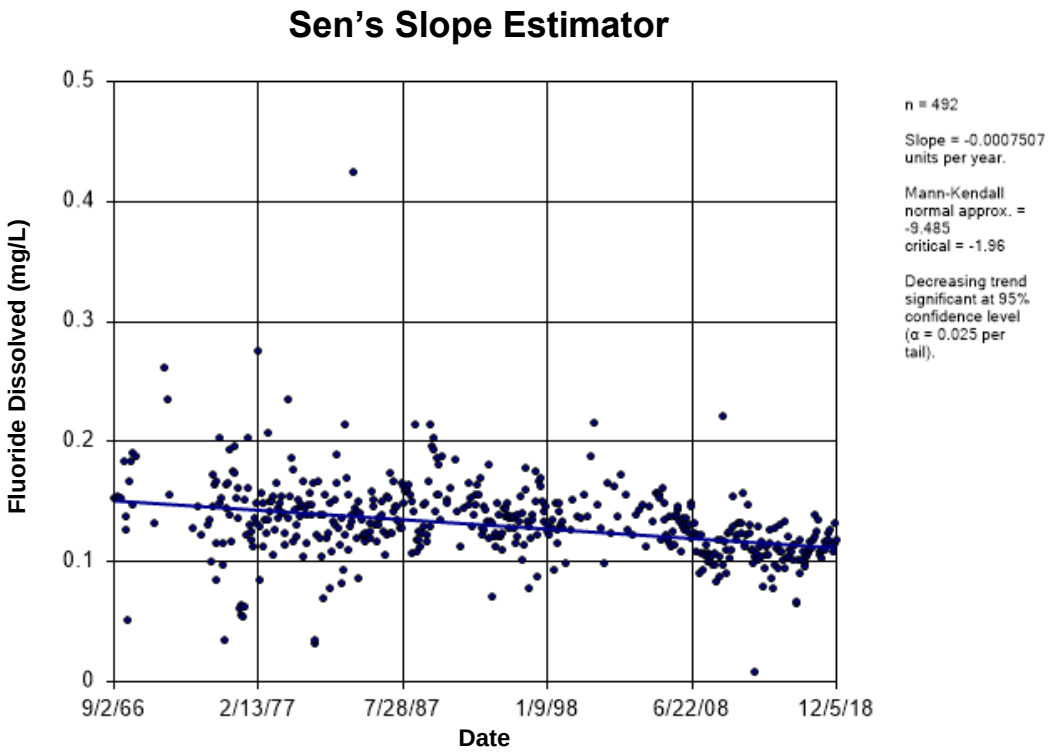

Figure C21 Beaver River: Fluoride Dissolved

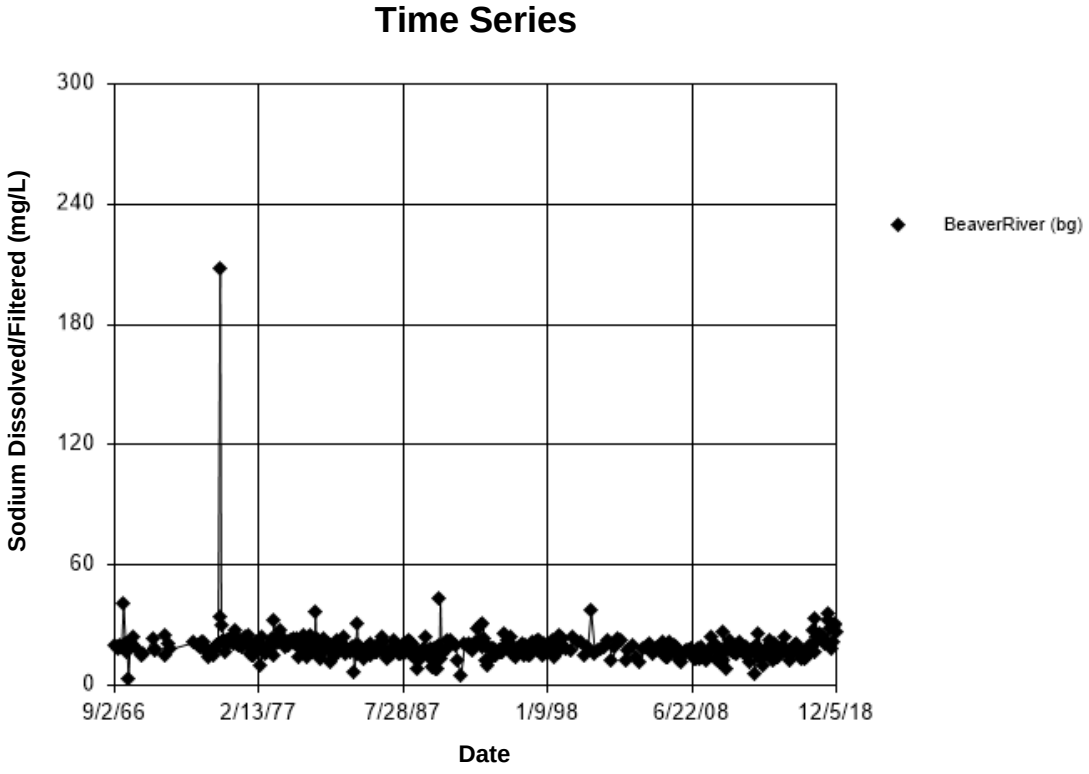

Figure C22 Beaver River: Sodium Dissolved/Filtered

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 47.38
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 47.38
Adjusted Kruskal-Wallis statistic (H') = 47.38

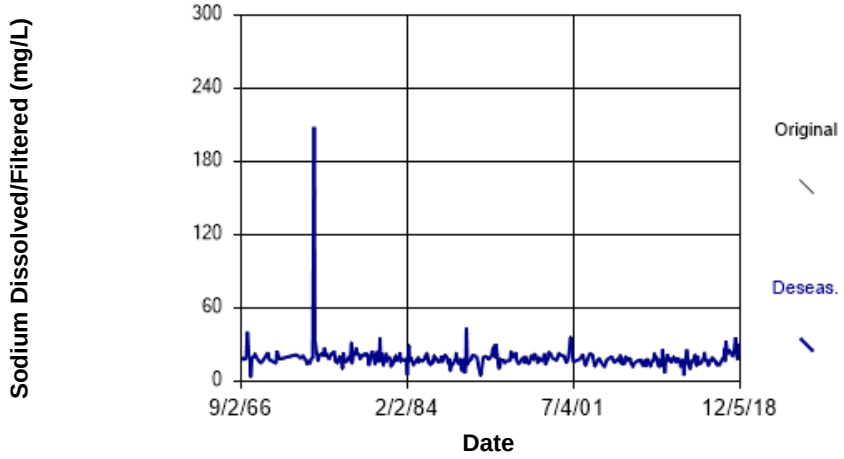

Figure C23 Beaver River: Sodium Dissolved/Filtered

Seasonal Kendall

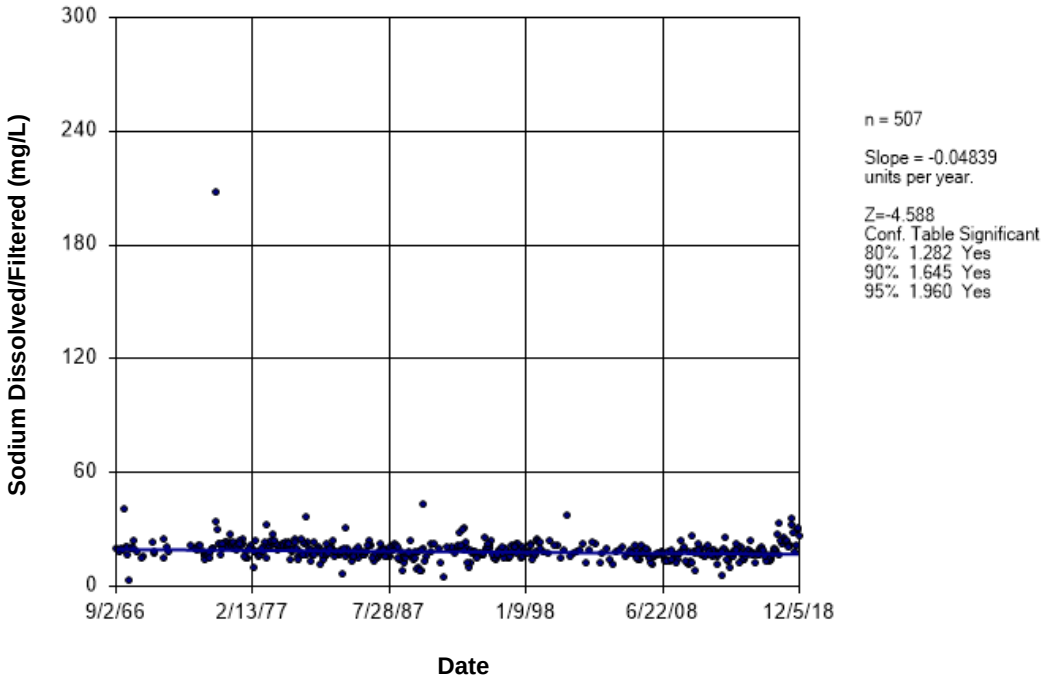

Figure C24 Beaver River: Sodium Dissolved/Filtered

Time Series

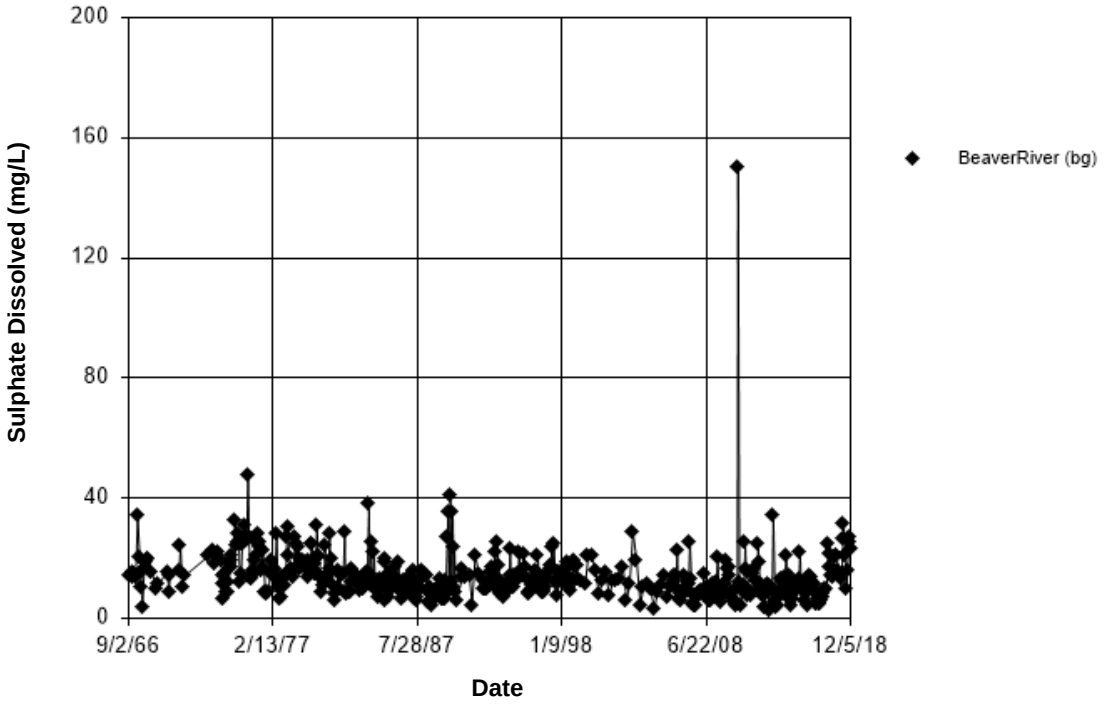

Figure C25 Beaver River: Sulphate Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 24.9
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

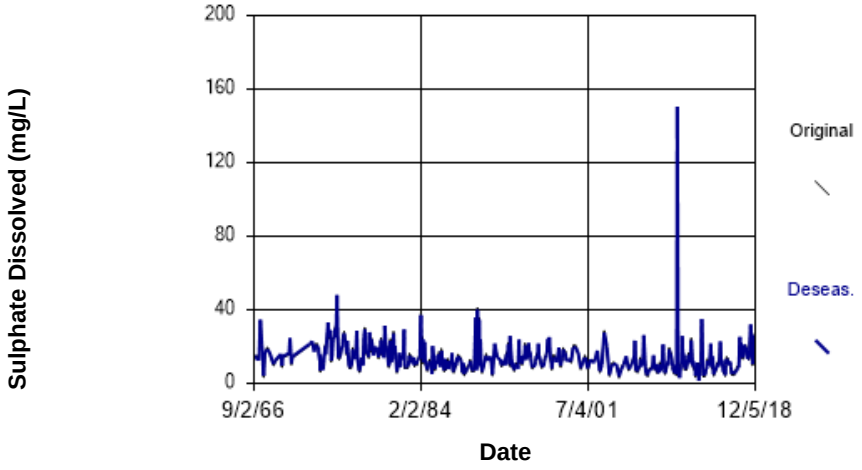

Figure C26 Beaver River: Sulphate Dissolved

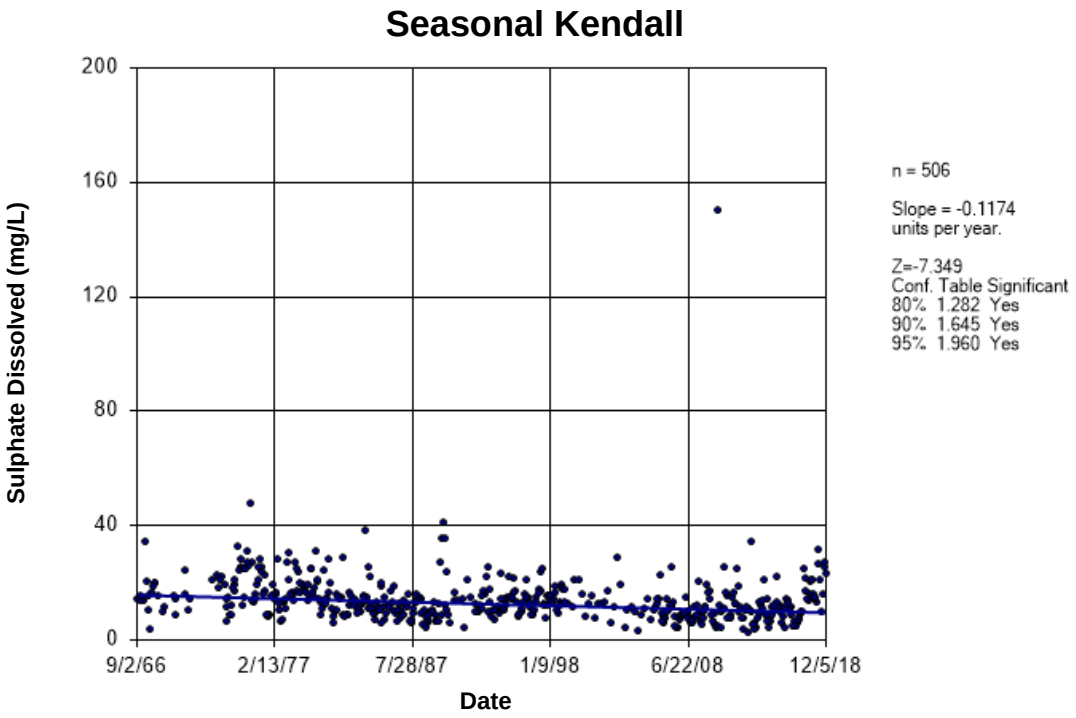

Figure C27 Beaver River: Sulphate Dissolved

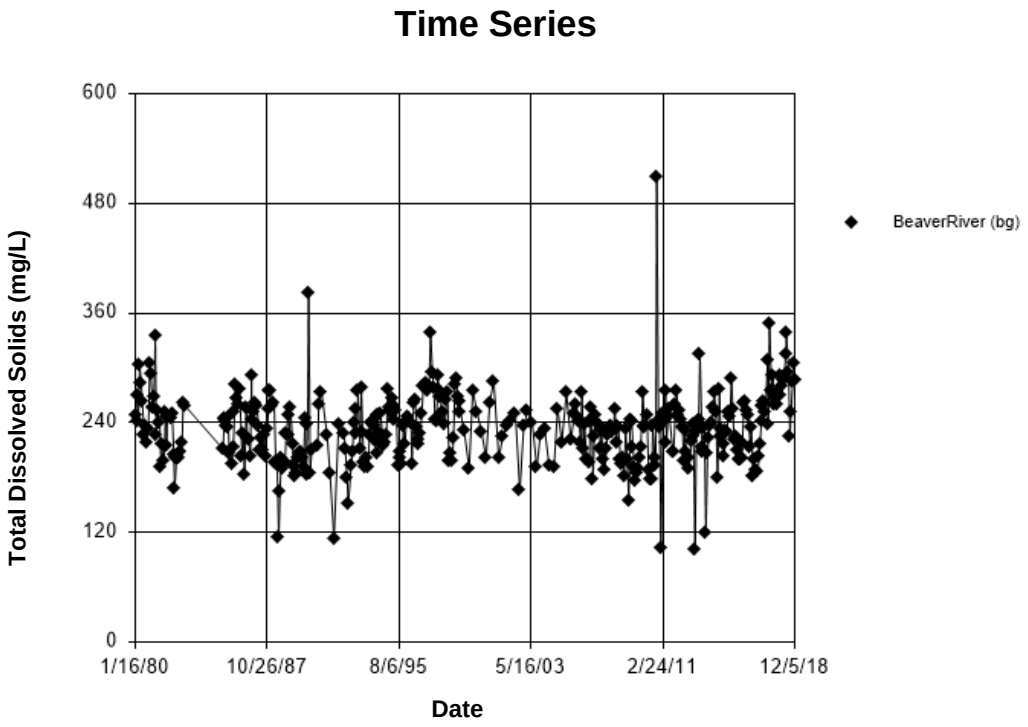

Figure C28 Beaver River: Total Dissolved Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 63.41
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

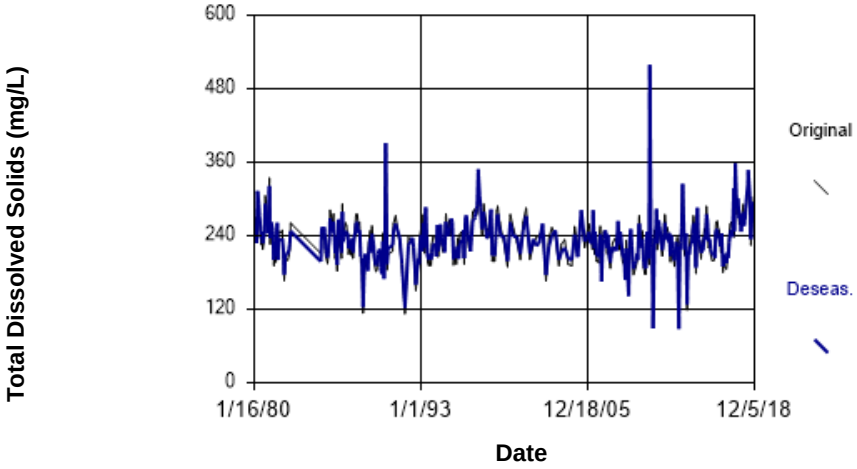

Figure C29 Beaver River: Total Dissolved Solids

Seasonal Kendall

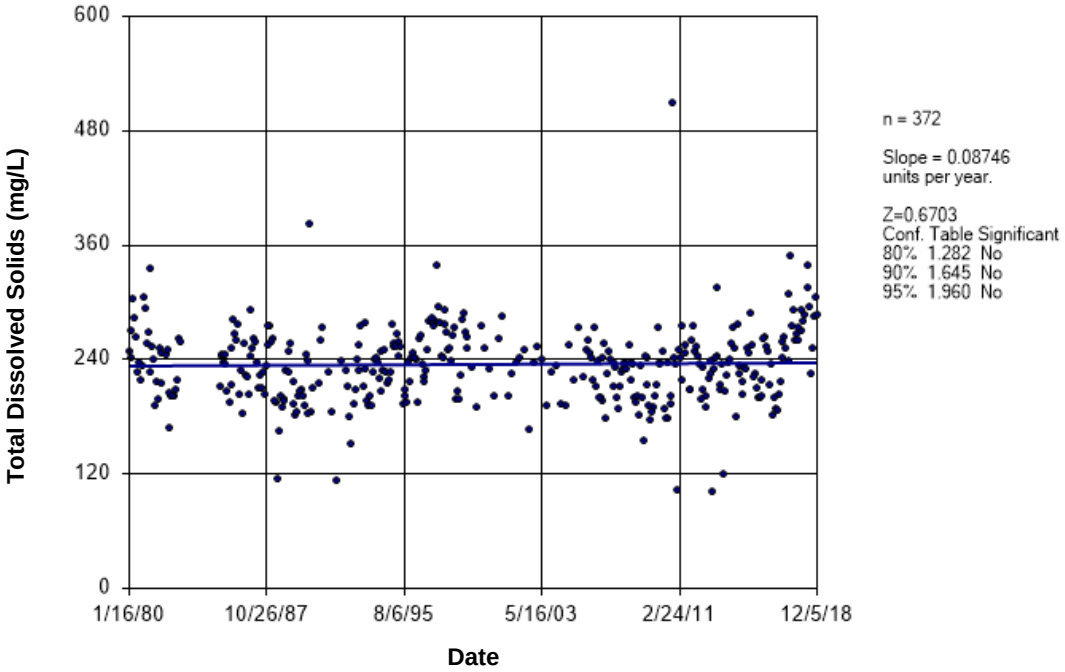

Figure C30 Beaver River: Total Dissolved Solids

Time Series

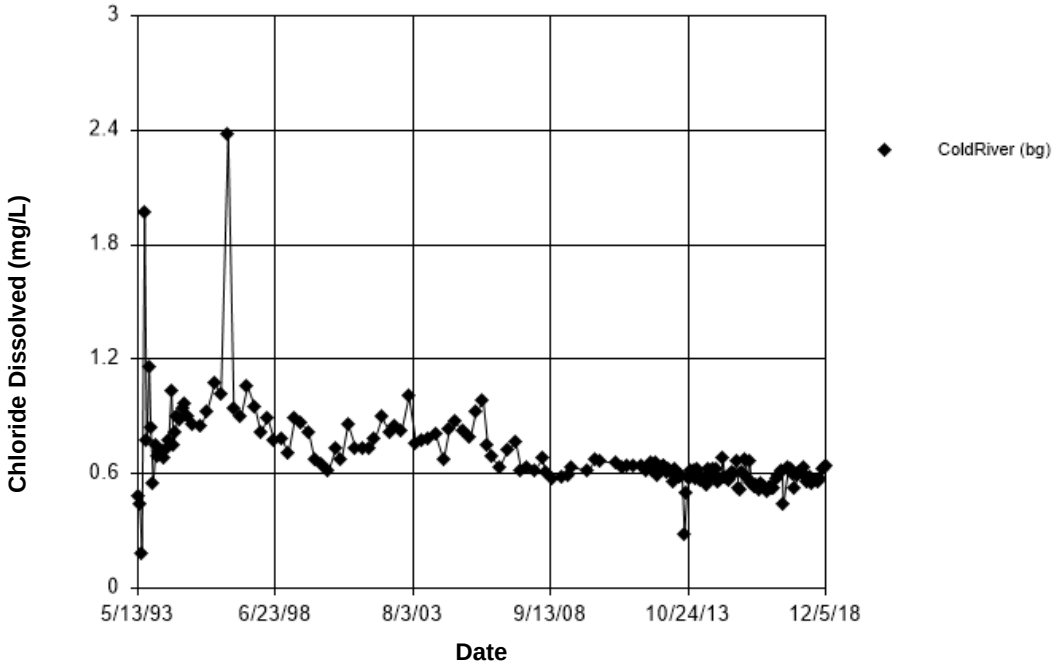

Figure C31 Cold River: Chloride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 4.522
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 4.522
Adjusted Kruskal-Wallis statistic (H') = 4.522

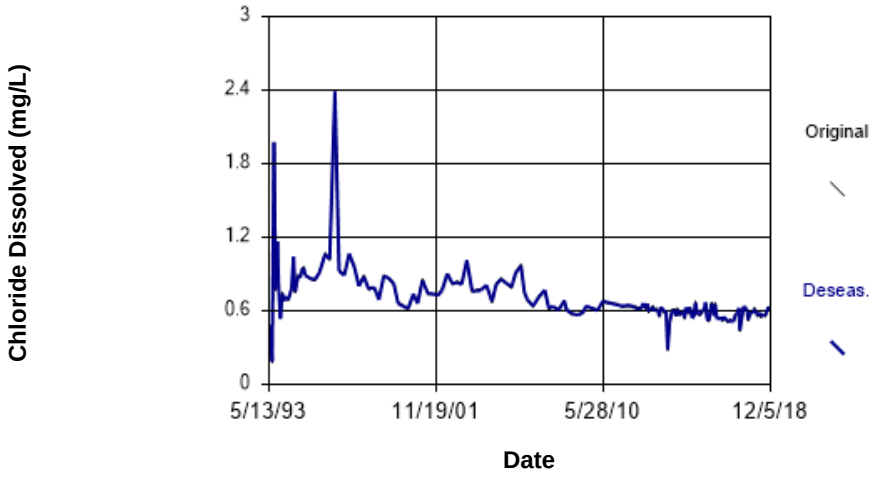

Figure C32 Cold River: Chloride Dissolved

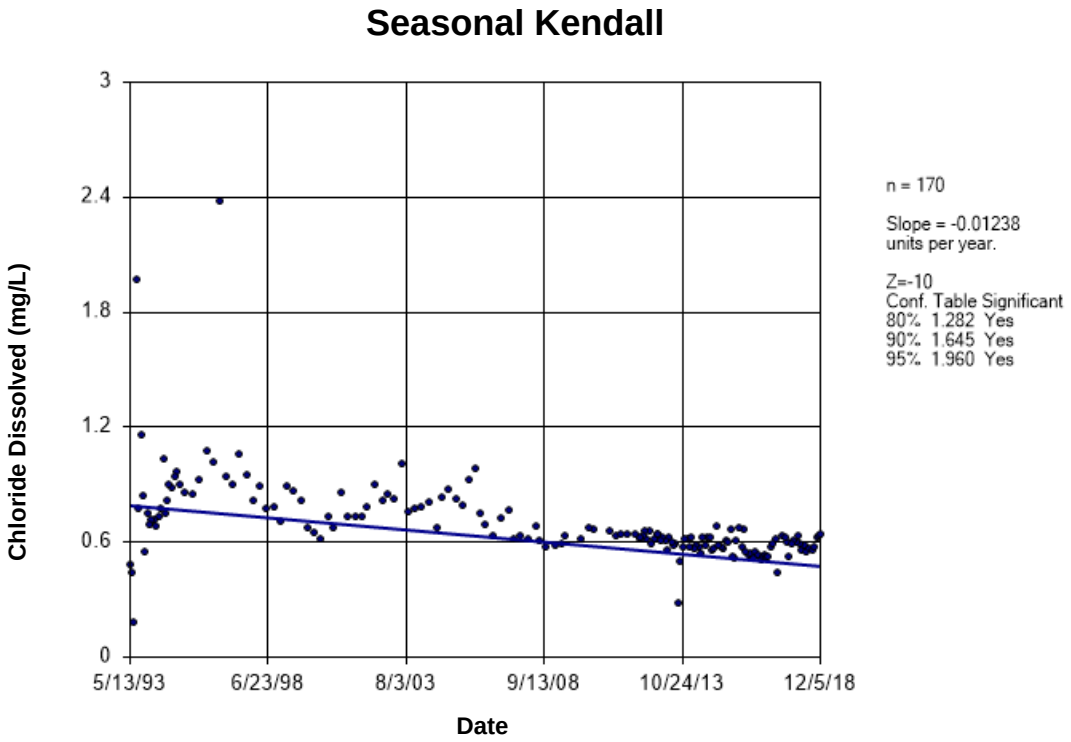

Figure C33 Cold River: Chloride Dissolved

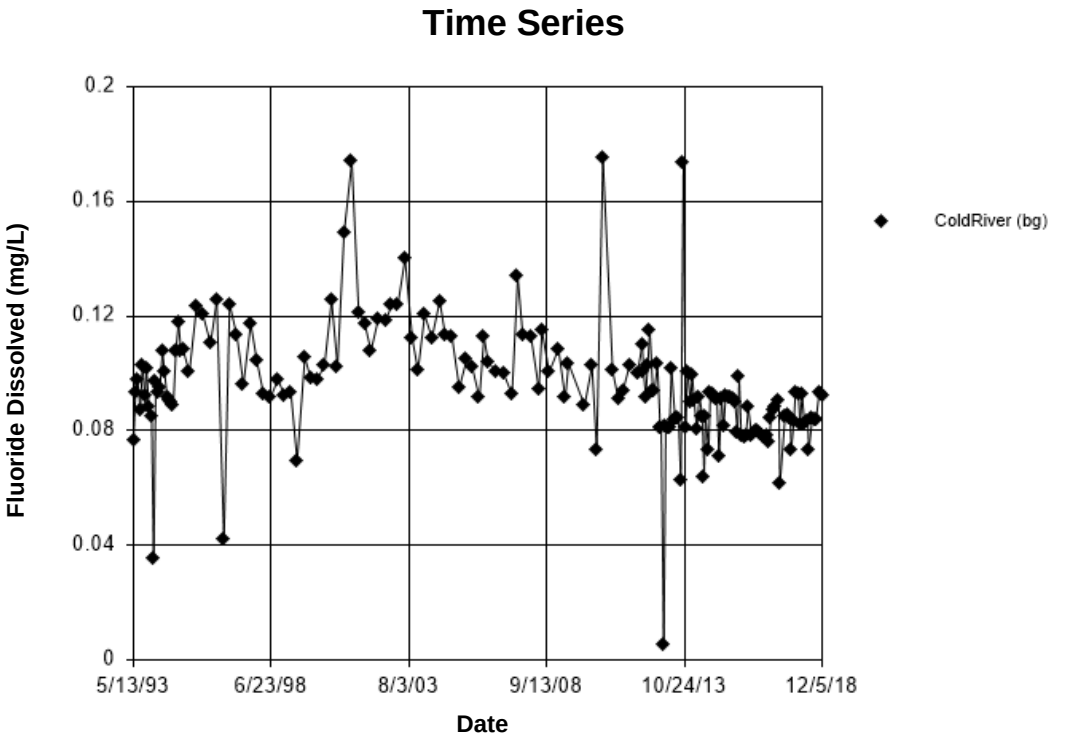

Figure C34 Cold River: Fluoride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.351
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 7 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.351
Adjusted Kruskal-Wallis statistic (H') = 0.351

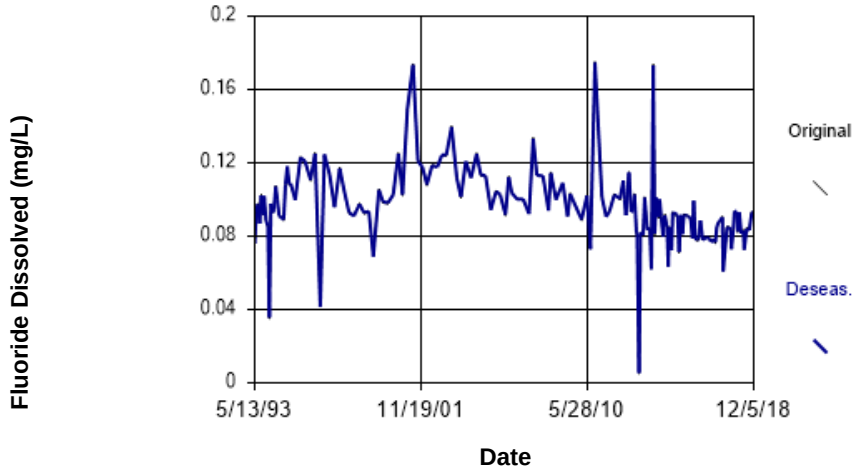

Figure C35 Cold River: Fluoride Dissolved

Sen's Slope Estimator

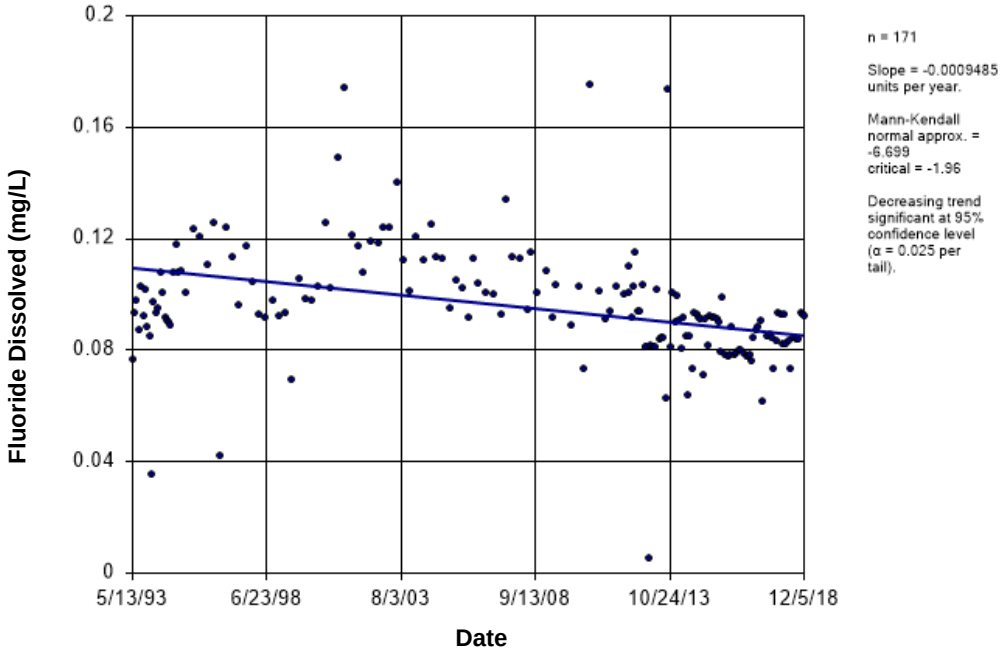

Figure C36 Cold River: Fluoride Dissolved

Time Series

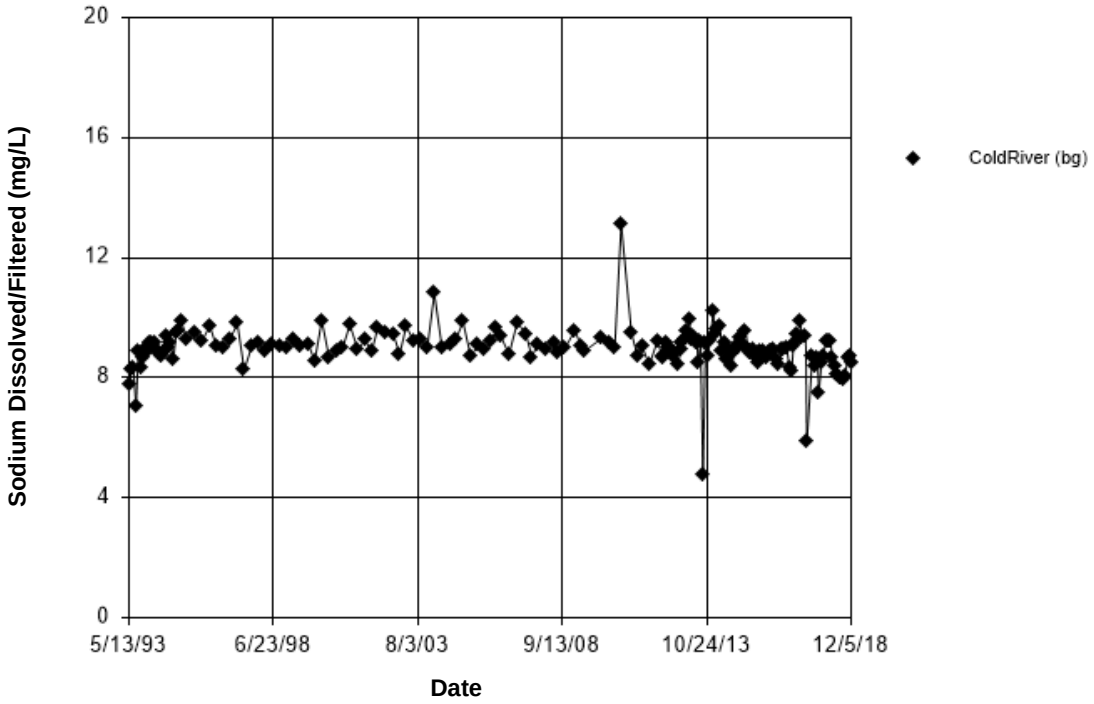

Figure C37 Cold River: Sodium Dissolved/Filtered

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 25.53
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 25.53
Adjusted Kruskal-Wallis statistic (H') = 25.53

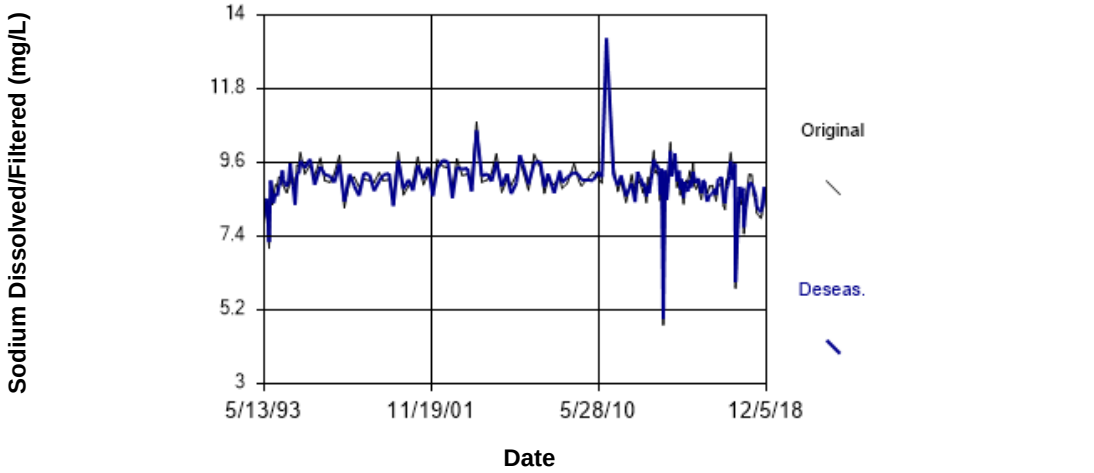

Figure C38 Cold River: Sodium Dissolved/Filtered

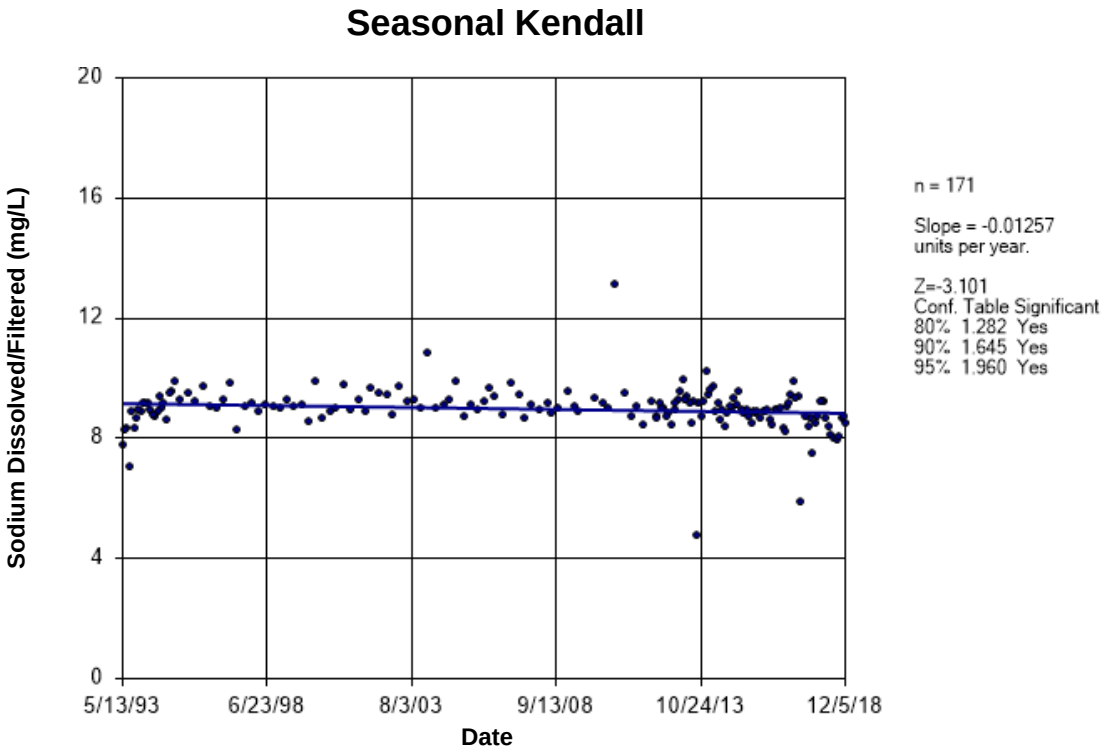

Figure C39 Cold River: Sodium Dissolved/Filtered

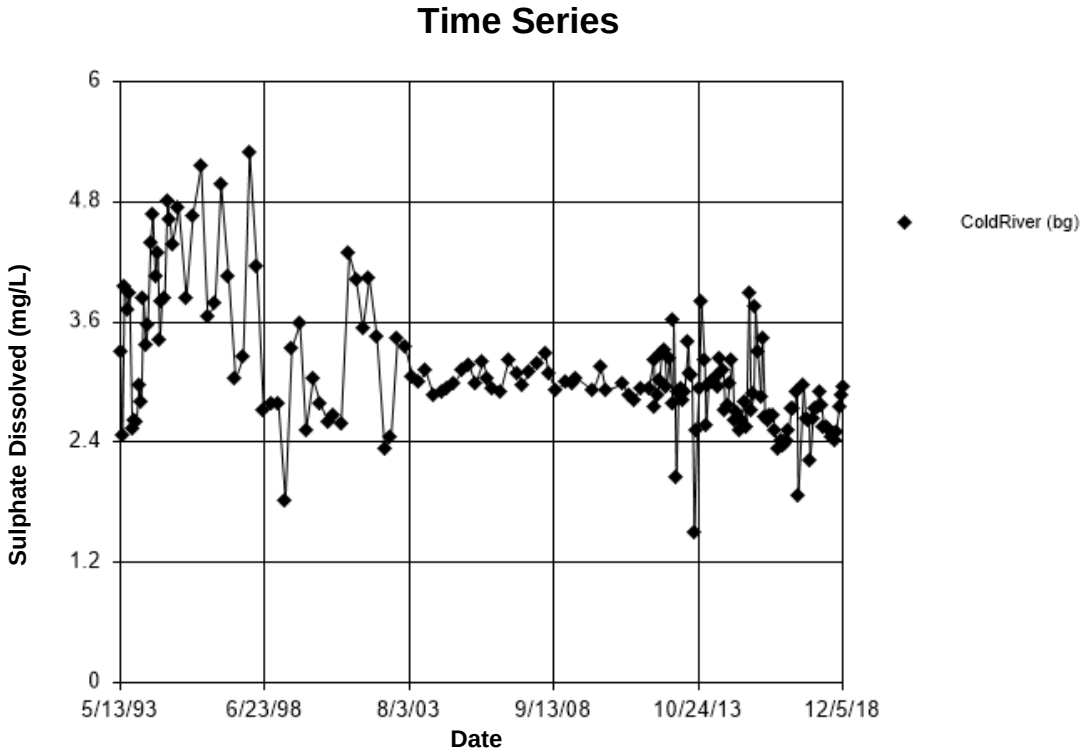

Figure C40 Cold River: Sulphate Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.5077
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.5077
Adjusted Kruskal-Wallis statistic (H') = 0.5077

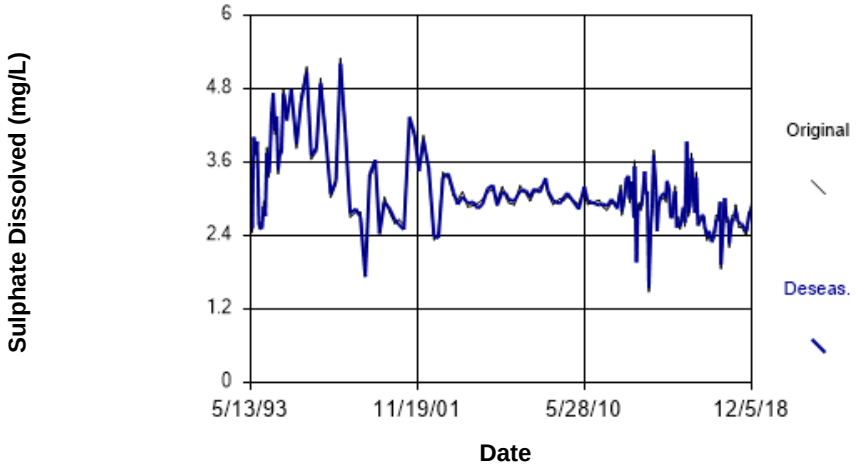

Figure C41 Cold River: Sulphate Dissolved

Sen's Slope Estimator

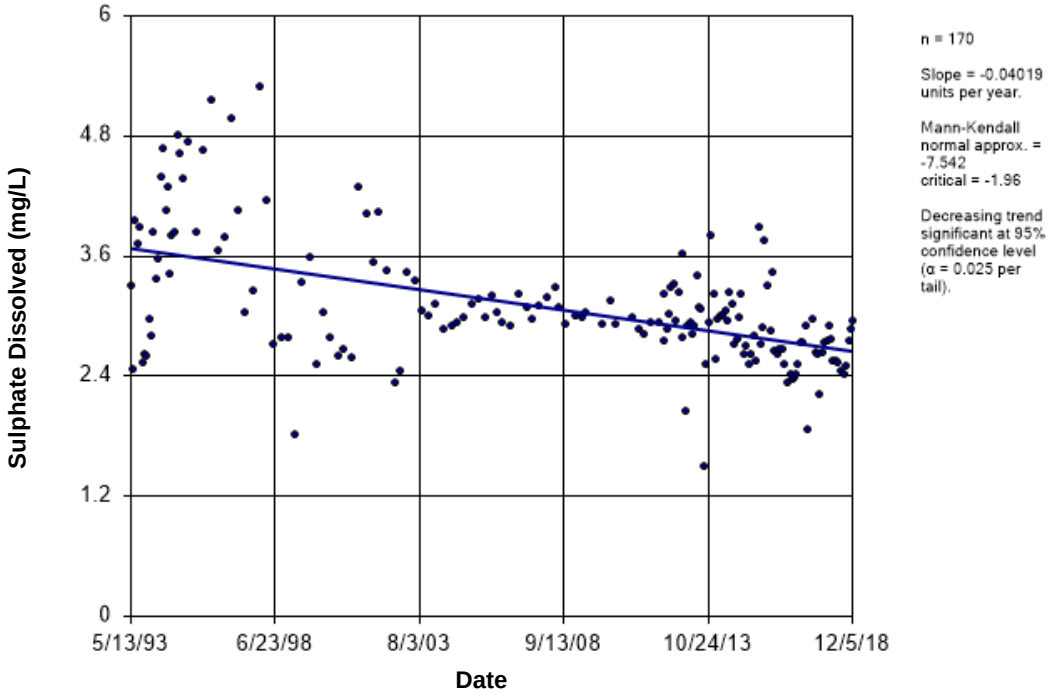

Figure C42 Cold River: Sulphate Dissolved

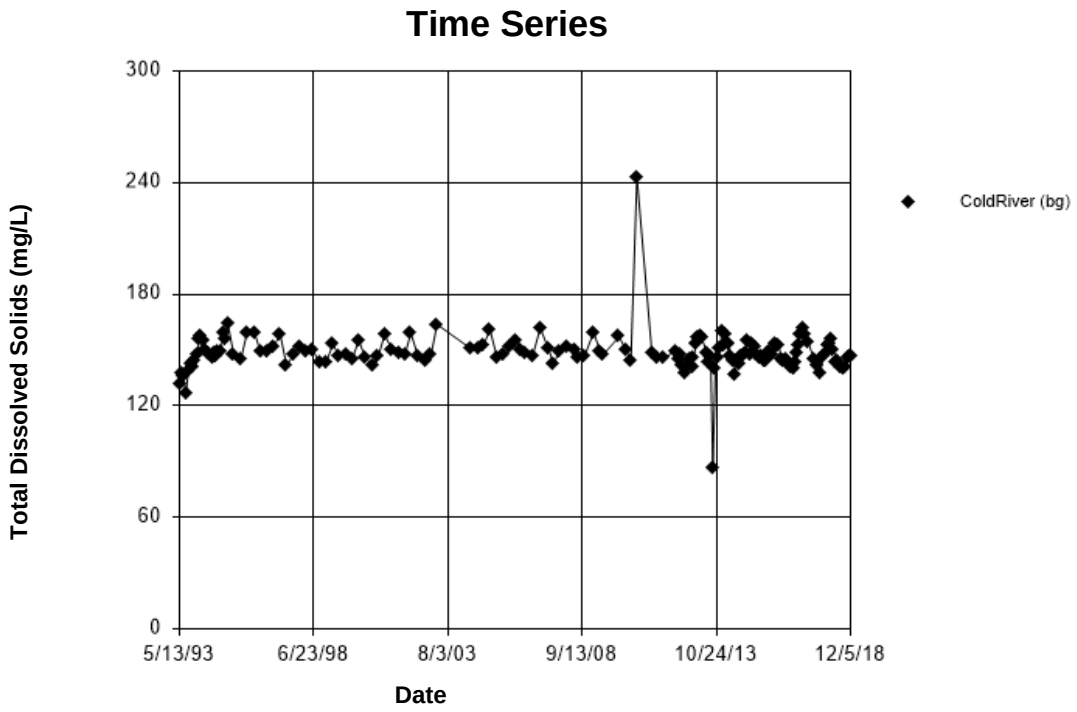

Figure C43 Cold River: Total Dissolved Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 52.25
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

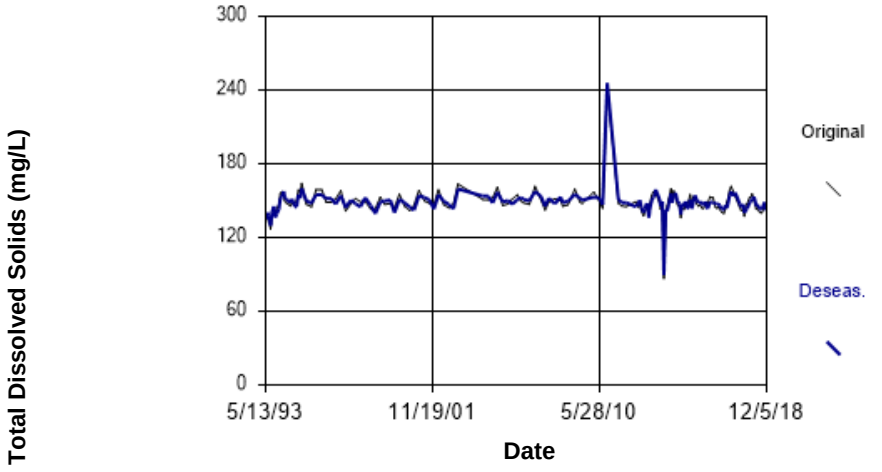

Figure C44 Cold River: Total Dissolved Solids

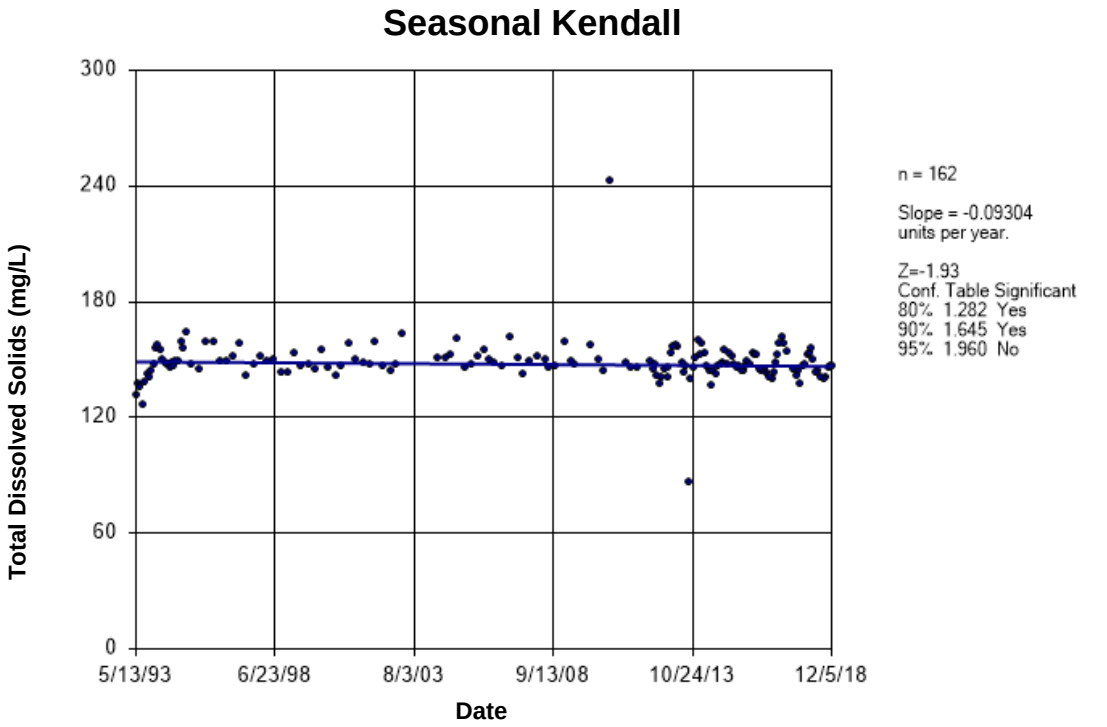

Figure C45 Cold River: Total Dissolved Solids

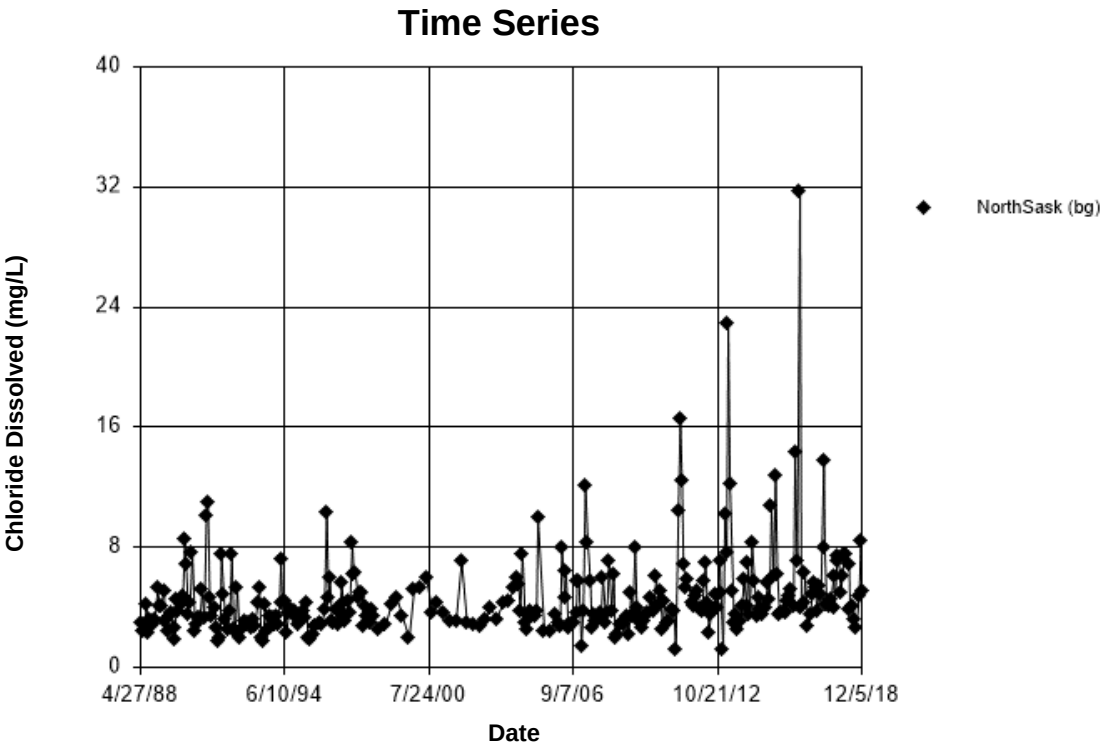

Figure C46 North Saskatchewan River: Chloride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 58.34
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

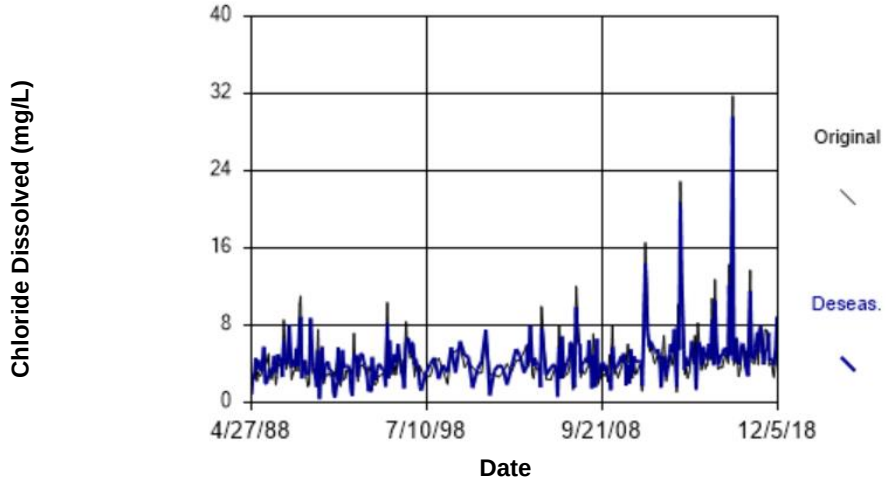

Figure C47 North Saskatchewan River: Chloride Dissolved

Seasonal Kendall

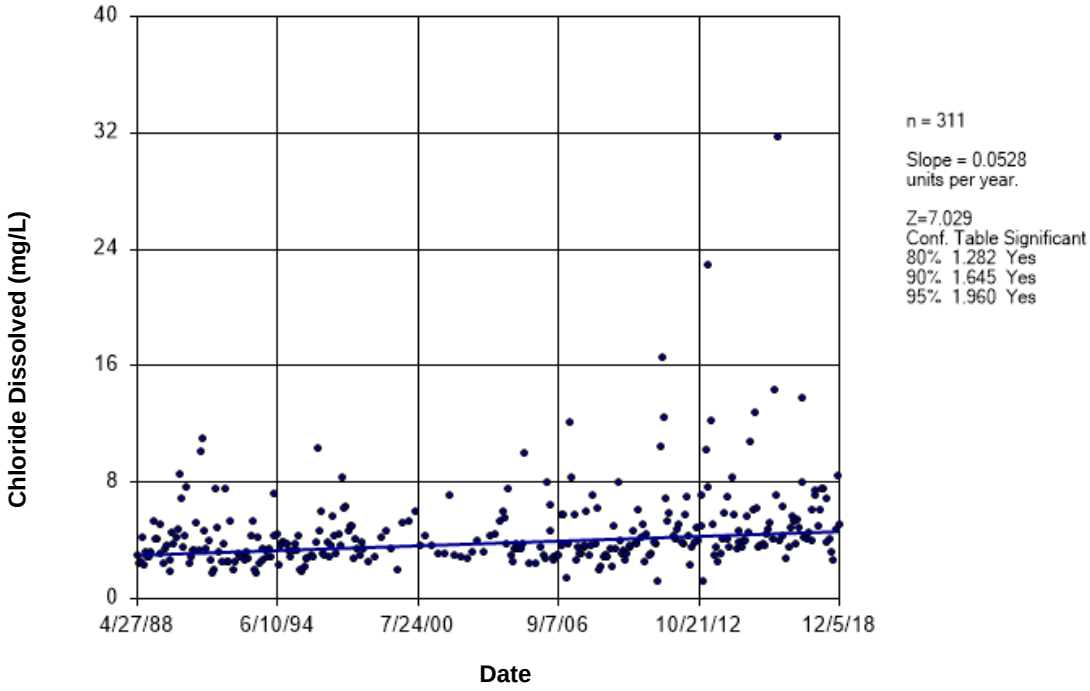

Figure C48 North Saskatchewan River: Chloride Dissolved

Time Series

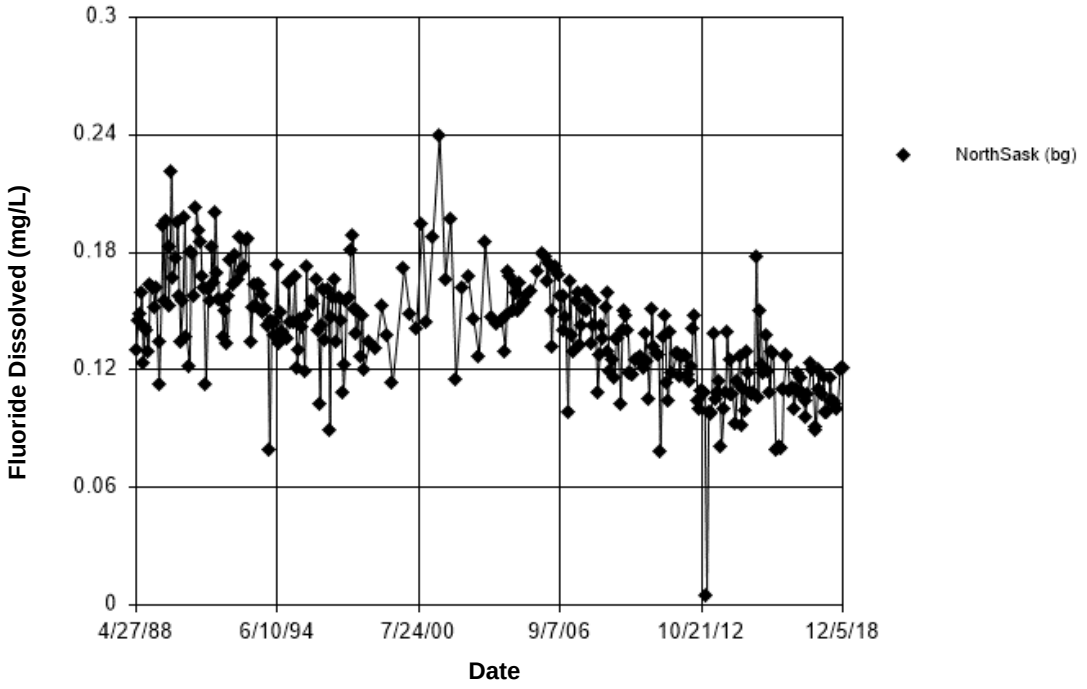

Figure C49 North Saskatchewan River: Fluoride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 4.772
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 20 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 4.772
Adjusted Kruskal-Wallis statistic (H') = 4.772

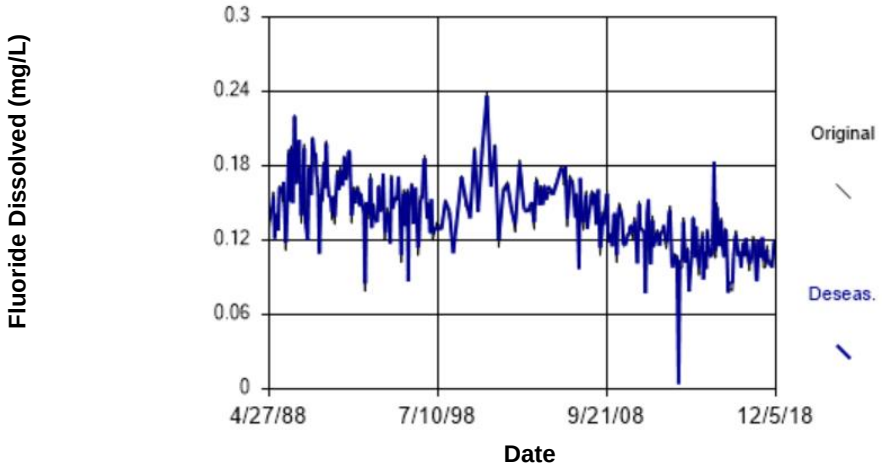

Figure C50 North Saskatchewan River: Fluoride Dissolved

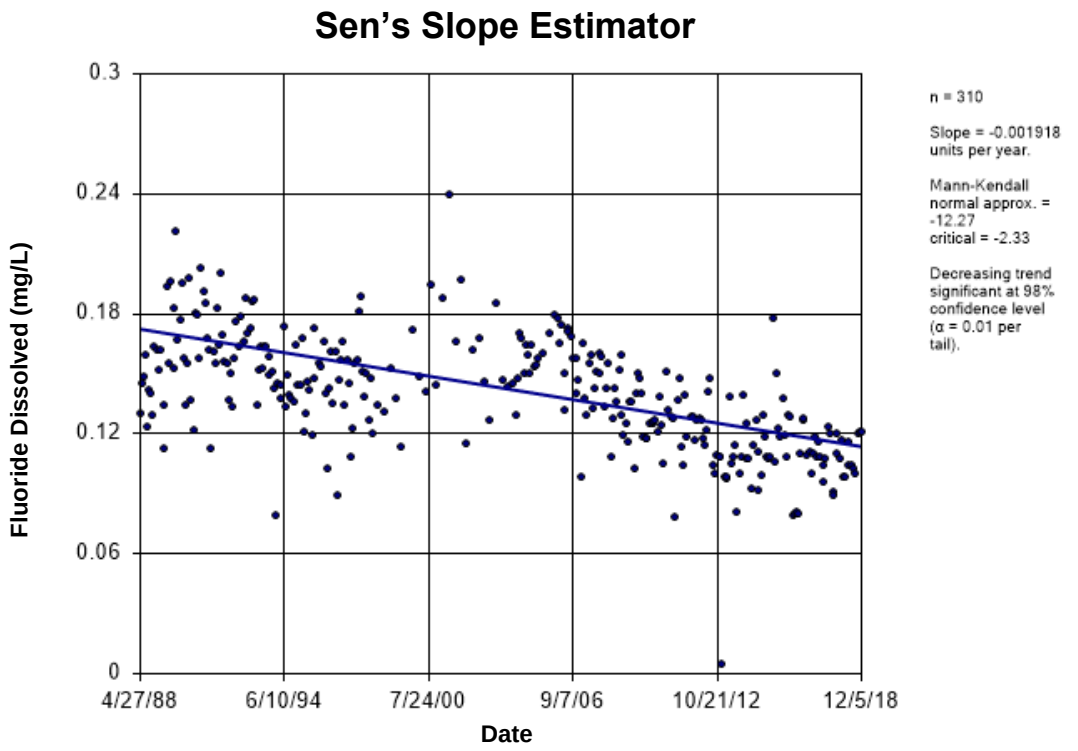

Figure C51 North Saskatchewan River: Fluoride Dissolved

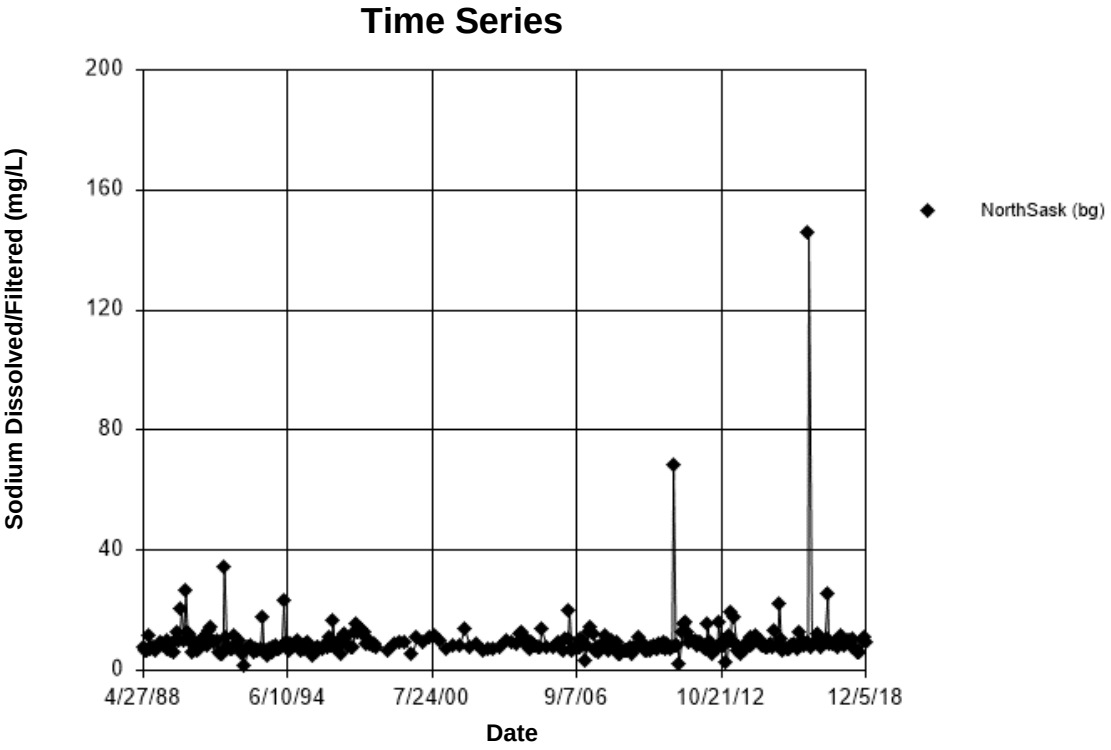

Figure C52 North Saskatchewan River: Sodium Dissolved/Filtered

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 27.85
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

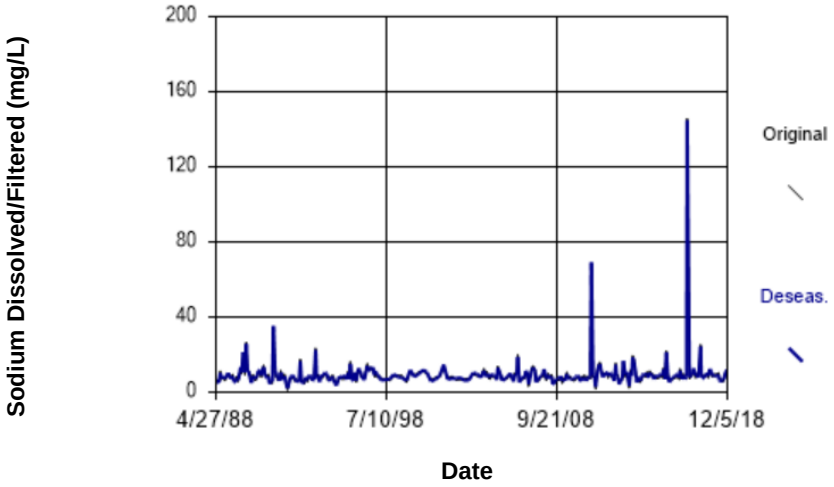

Figure C53 North Saskatchewan River: Sodium Dissolved/Filtered

Seasonal Kendall

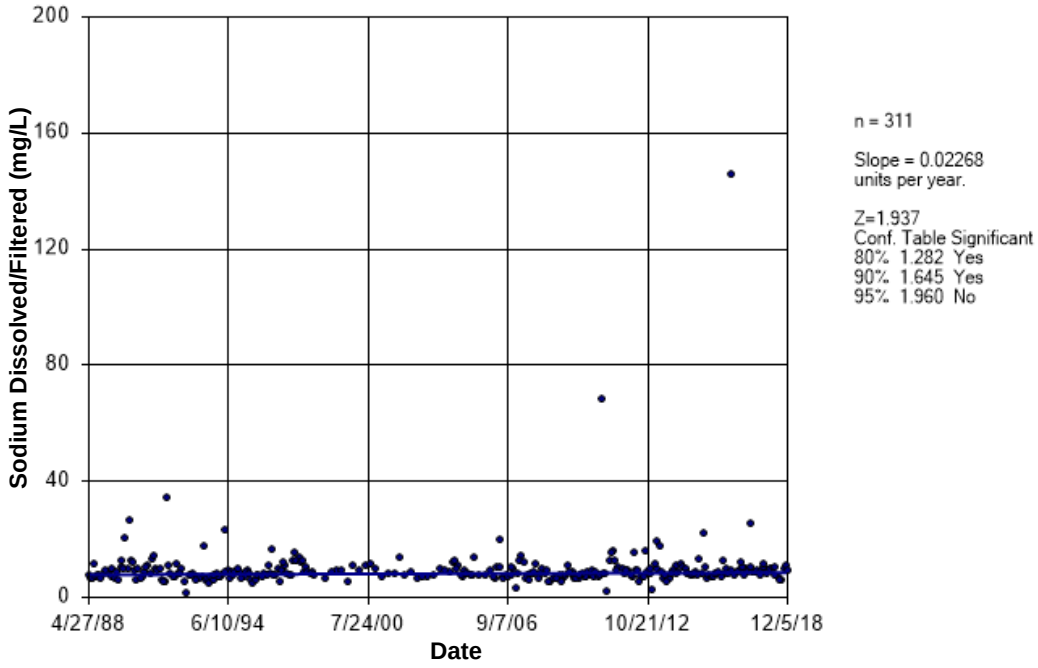

Figure C54 North Saskatchewan River: Sodium Dissolved/Filtered

Time Series

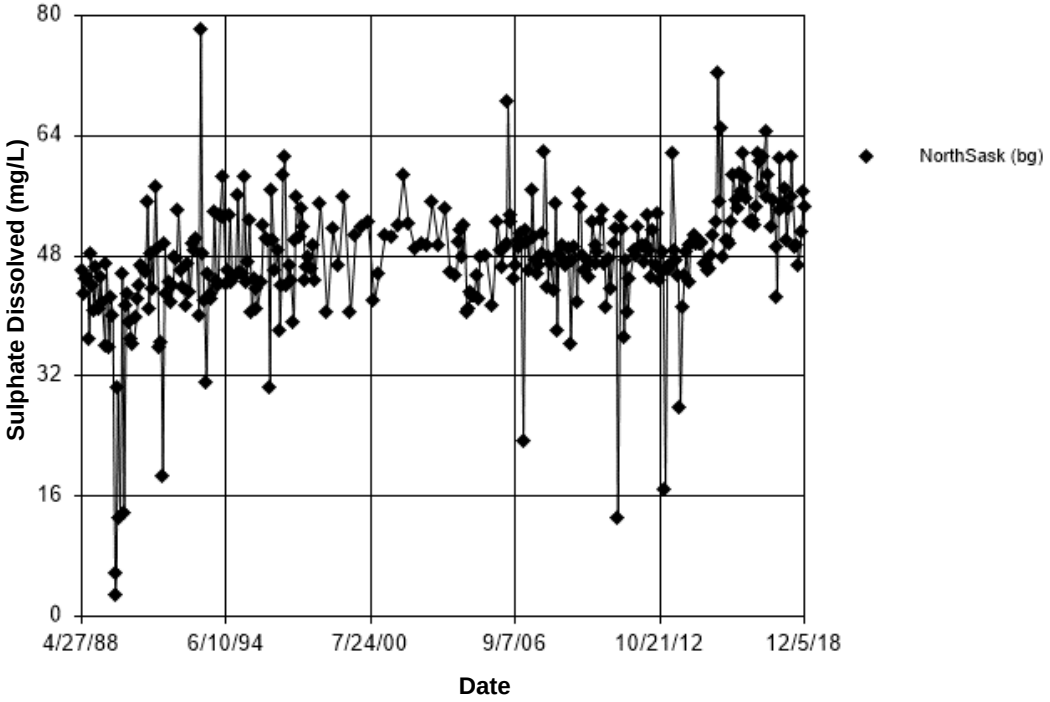

Figure C55 North Saskatchewan River: Sulphate Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 23.92
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 23.92
Adjusted Kruskal-Wallis statistic (H') = 23.92

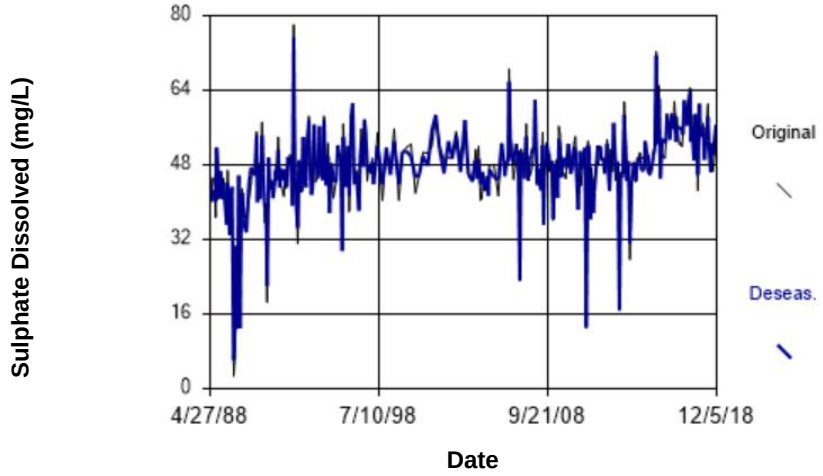

Figure C56 North Saskatchewan River: Sulphate Dissolved

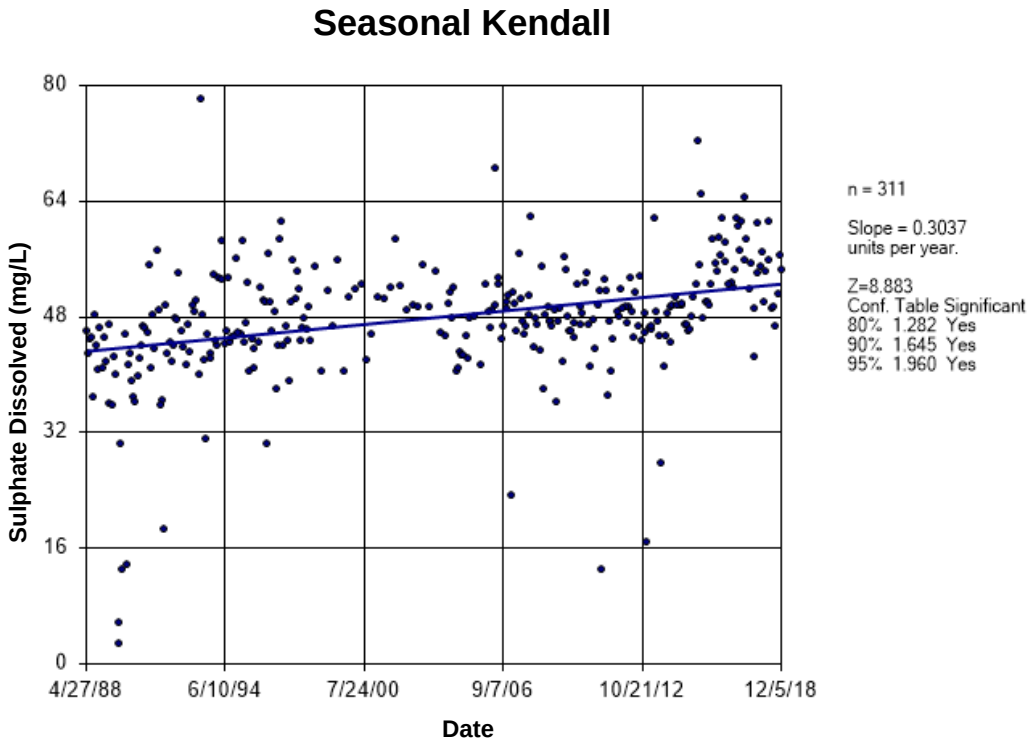

Figure C57 North Saskatchewan River: Sulphate Dissolved

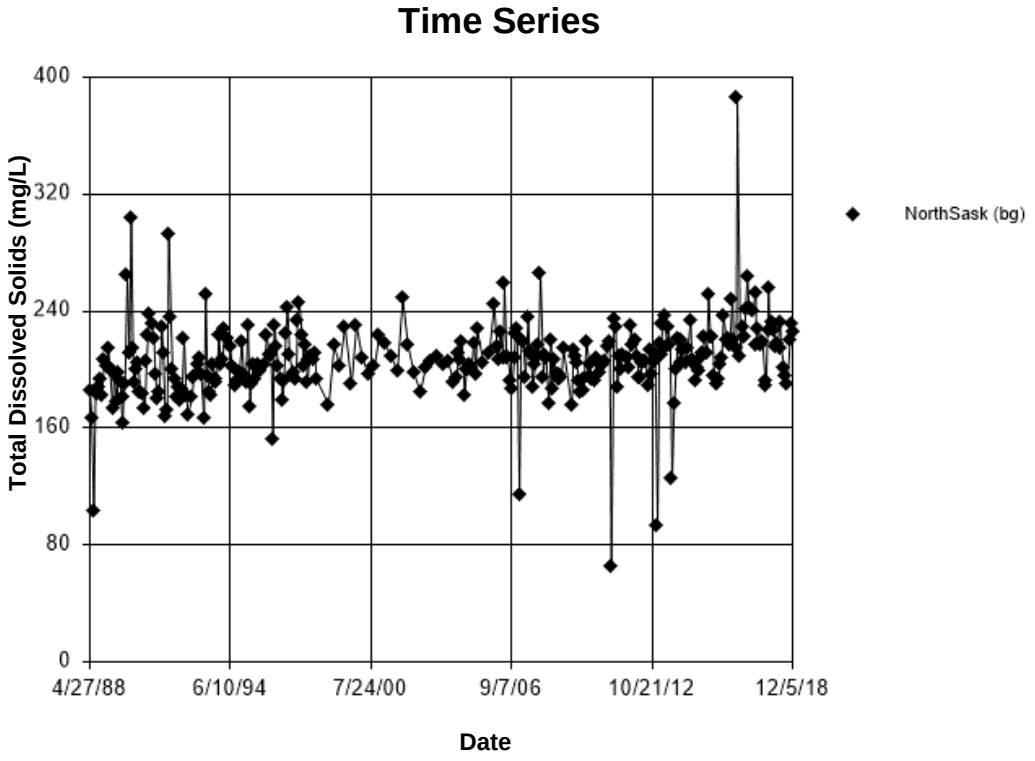

Figure C58 North Saskatchewan River: Total Dissolved Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 47
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 47
Adjusted Kruskal-Wallis statistic (H') = 47

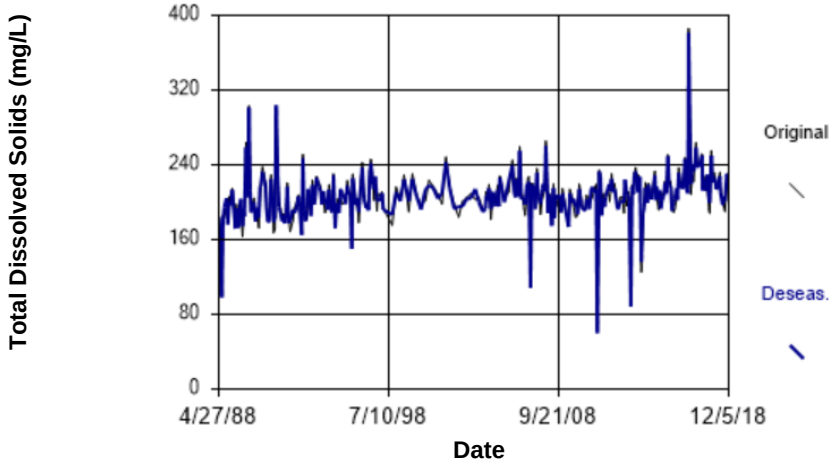

Figure C59 North Saskatchewan River: Total Dissolved Solids

Seasonal Kendall

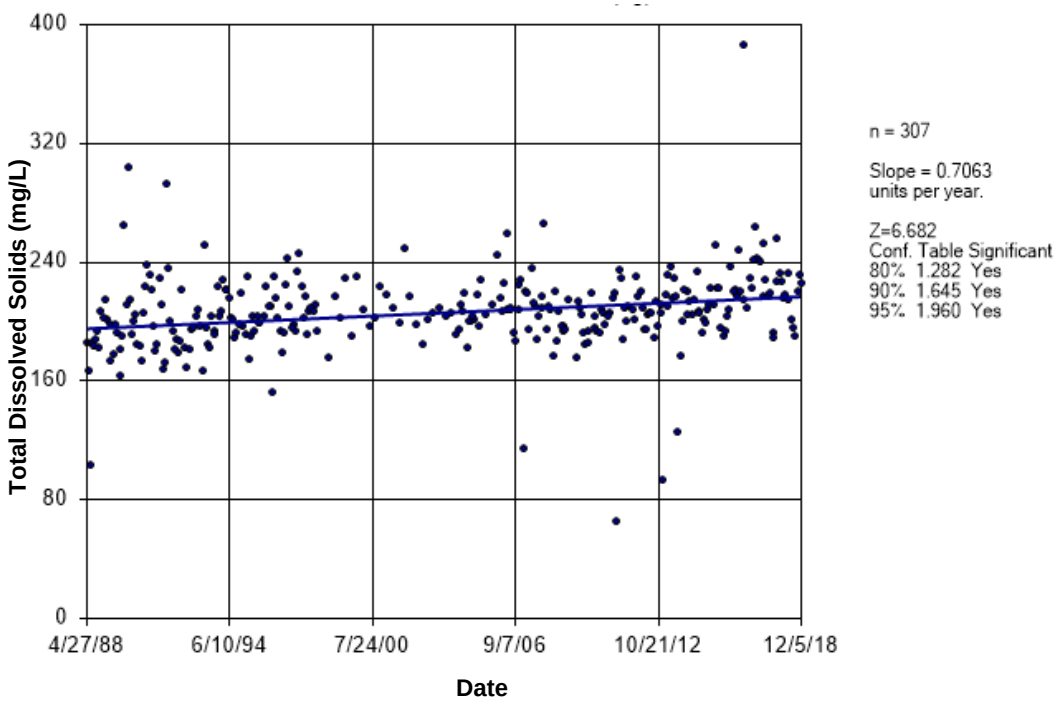

Figure C60 North Saskatchewan River: Total Dissolved Solids

Time Series

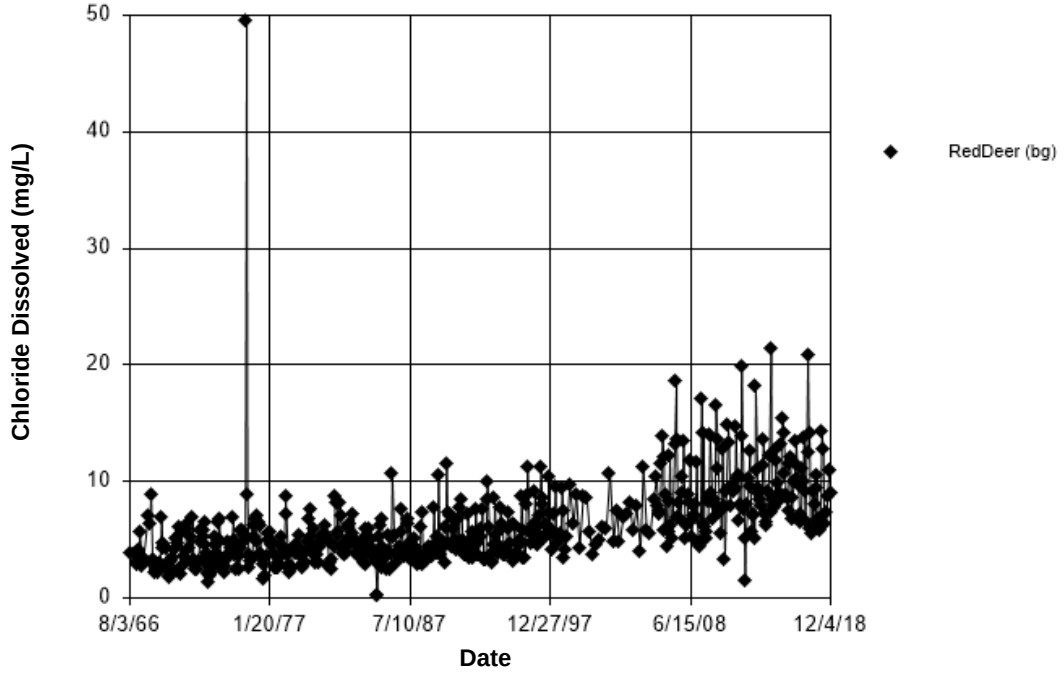

Figure C61 Red Deer River (AB-SK): Chloride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 7.835
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 7.835
Adjusted Kruskal-Wallis statistic (H') = 7.835

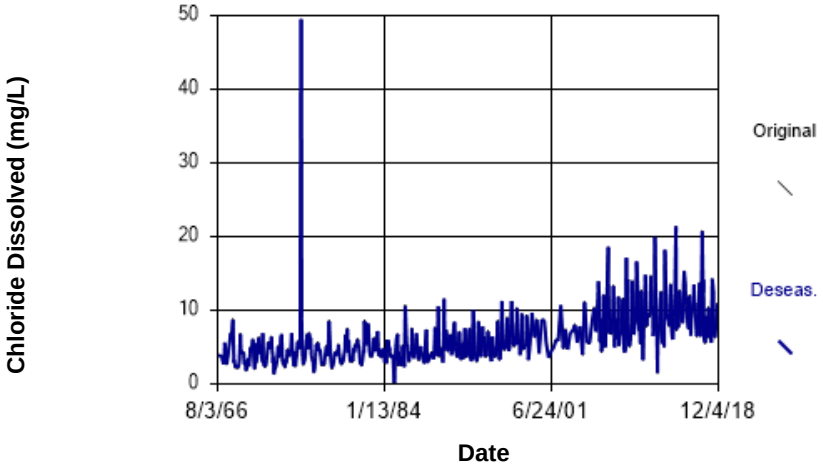

Figure C62 Red Deer River (AB-SK): Chloride Dissolved

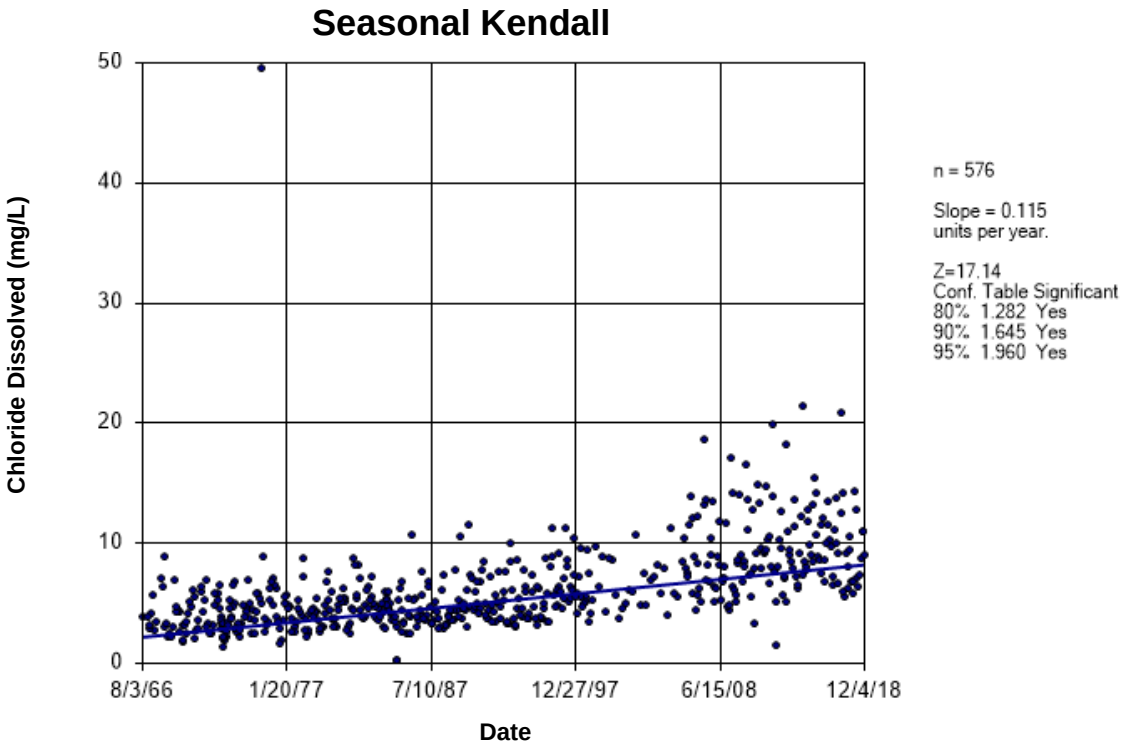

Figure C63 Red Deer River (AB-SK): Chloride Dissolved

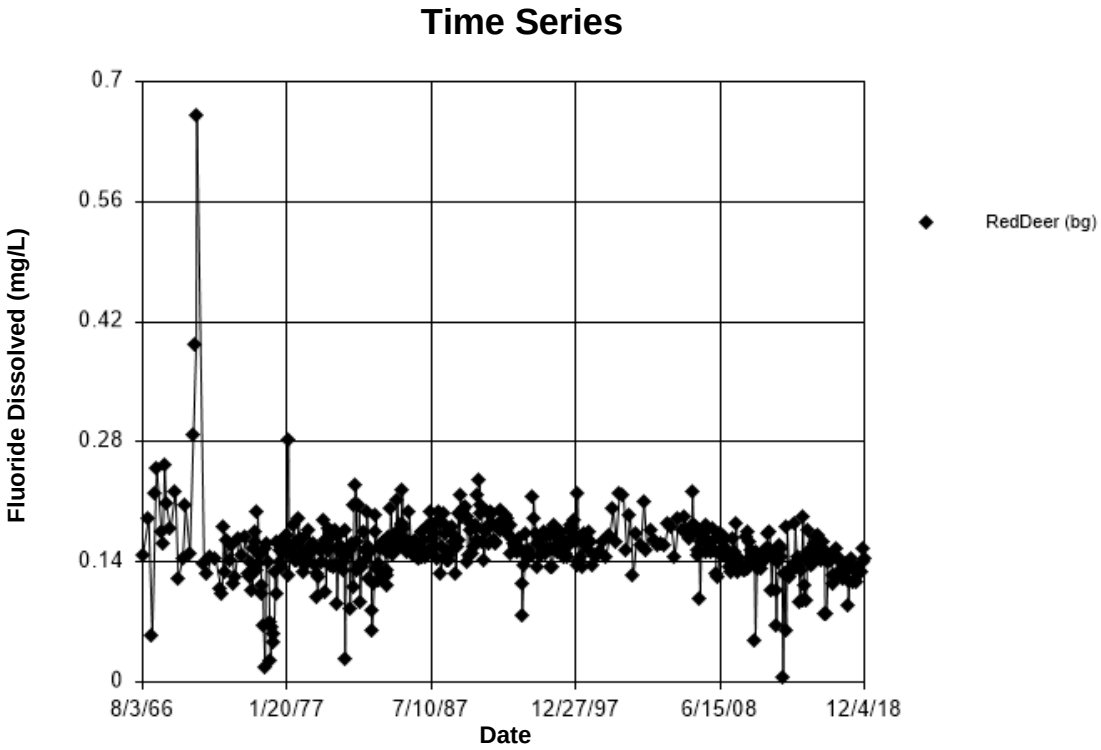

Figure C64 Red Deer River (AB-SK): Fluoride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 1.136
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 15 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 1.136
Adjusted Kruskal-Wallis statistic (H') = 1.136

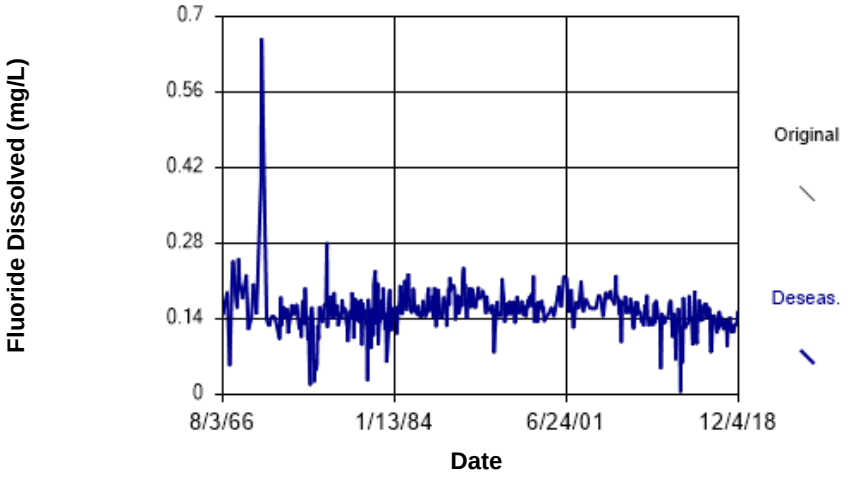

Figure C65 Red Deer River (AB-SK): Fluoride Dissolved

Sen's Slope Estimator

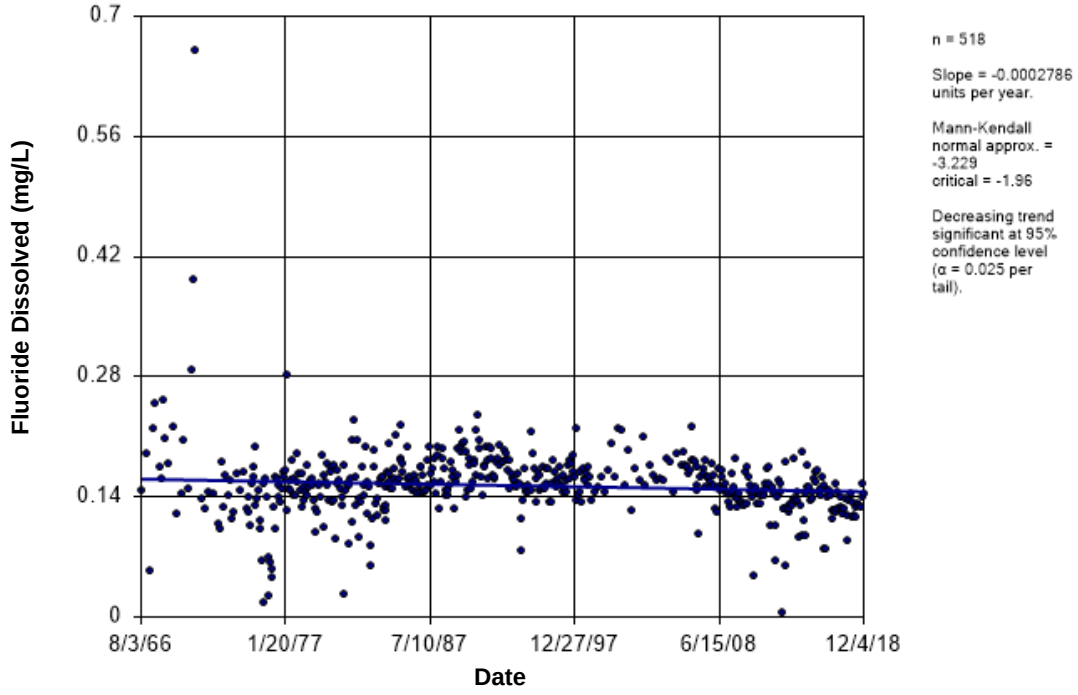

Figure C66 Red Deer River (AB-SK): Fluoride Dissolved

Time Series

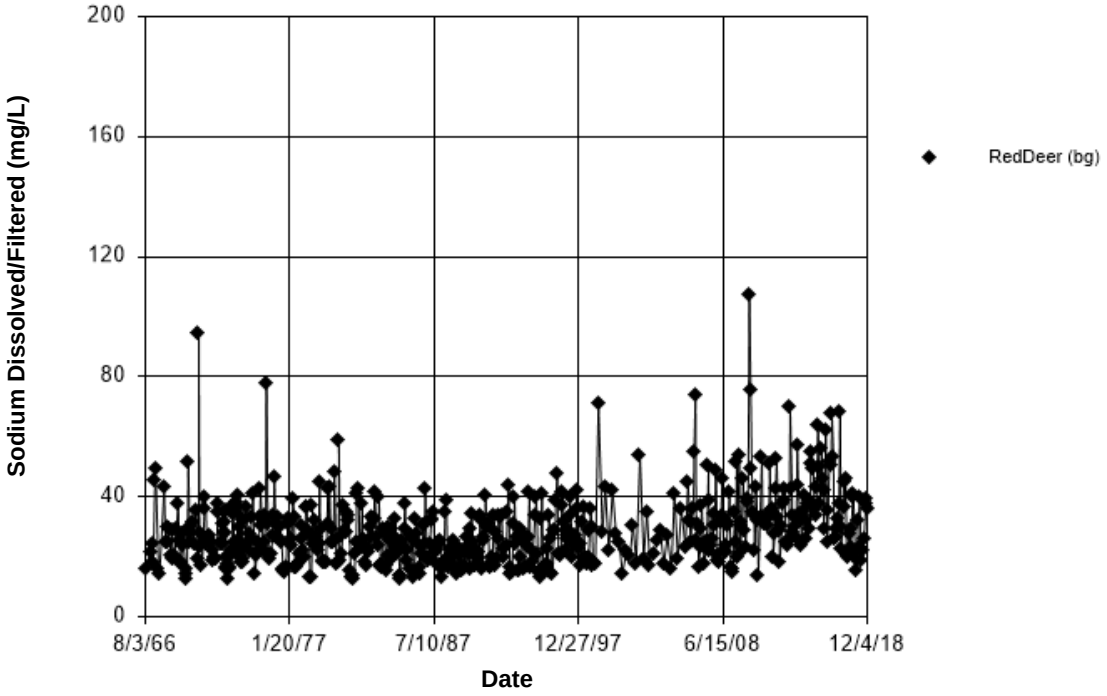

Figure C67 Red Deer River (AB-SK): Sodium Dissolved/Filtered

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 2.244
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

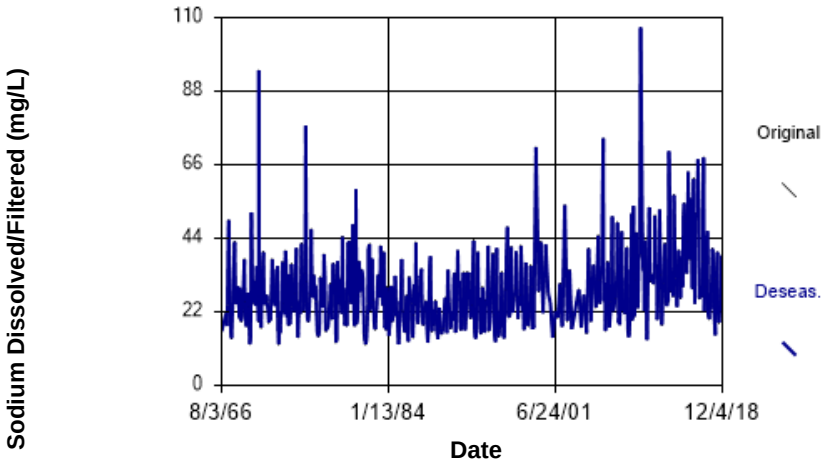

Figure C68 Red Deer River (AB-SK): Sodium Dissolved/Filtered

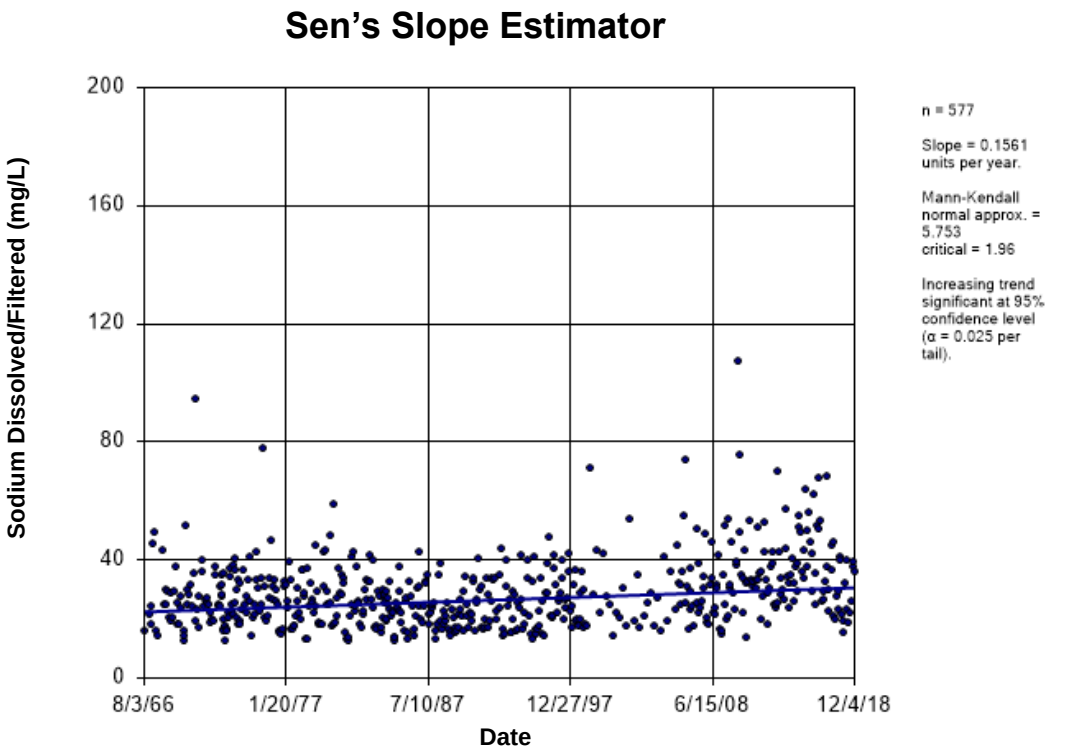

Figure C69 Red Deer River (AB-SK): Sodium Dissolved/Filtered

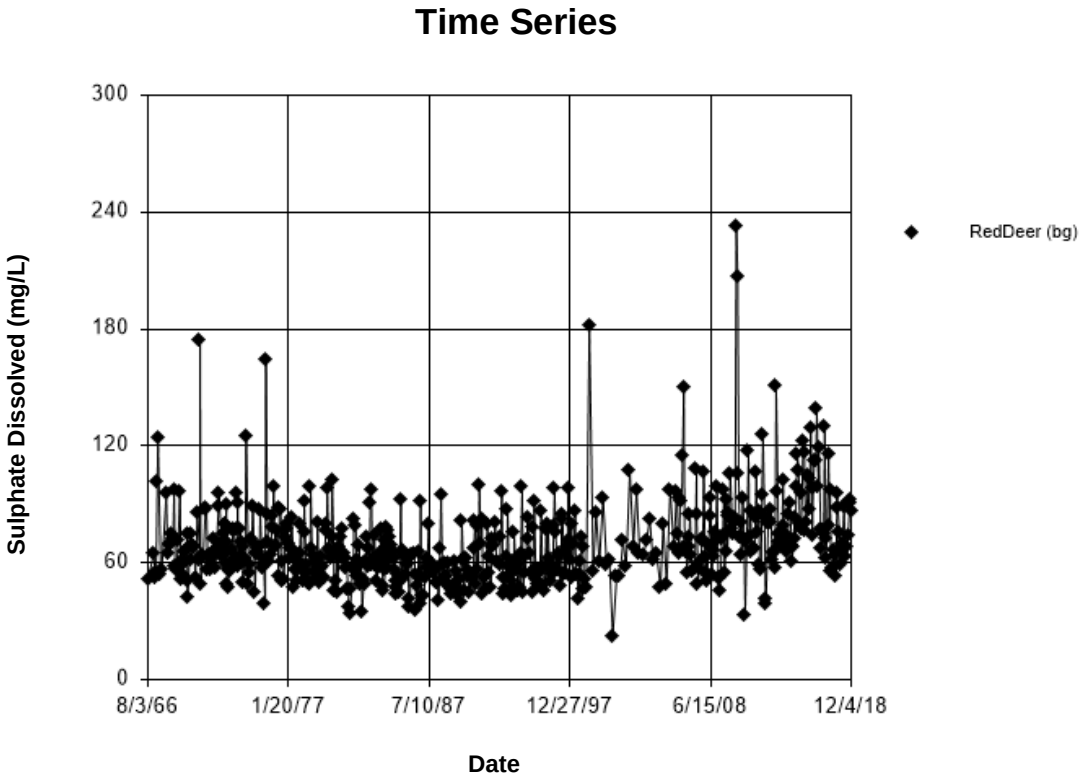

Figure C70 Red Deer River (AB-SK): Sulphate Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 1.612
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

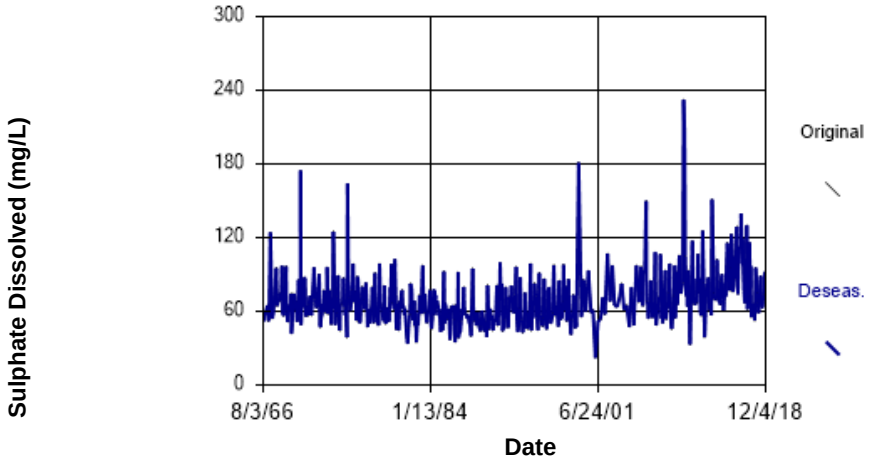

Figure C71 Red Deer River (AB-SK): Sulphate Dissolved

Sen's Slope Estimator

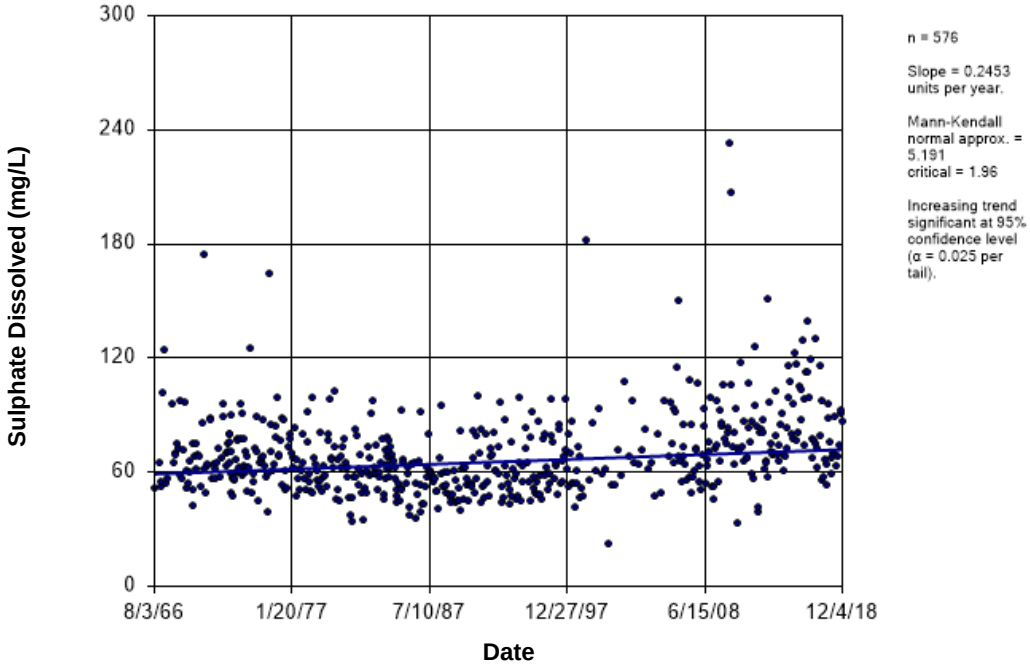

Figure C72 Red Deer River (AB-SK): Sulphate Dissolved

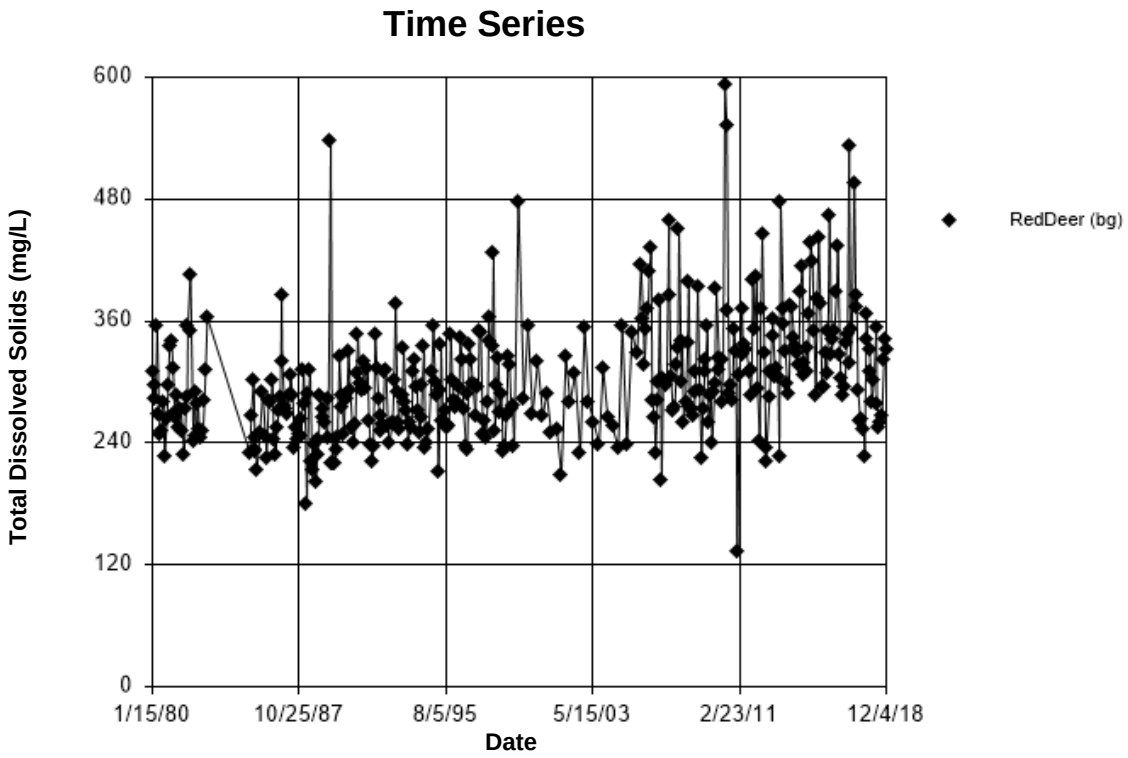

Figure C73 Red Deer River (AB-SK): Total Dissolved Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 87.3
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

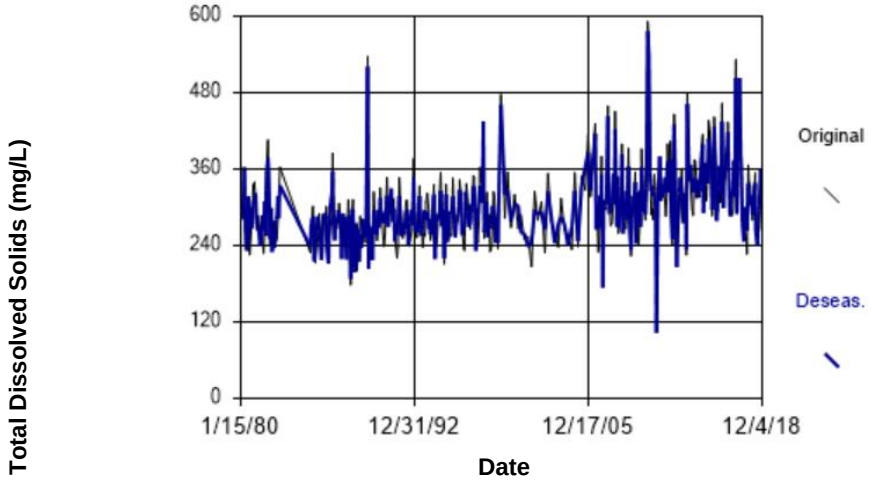

Figure C74 Red Deer River (AB-SK): Total Dissolved Solids

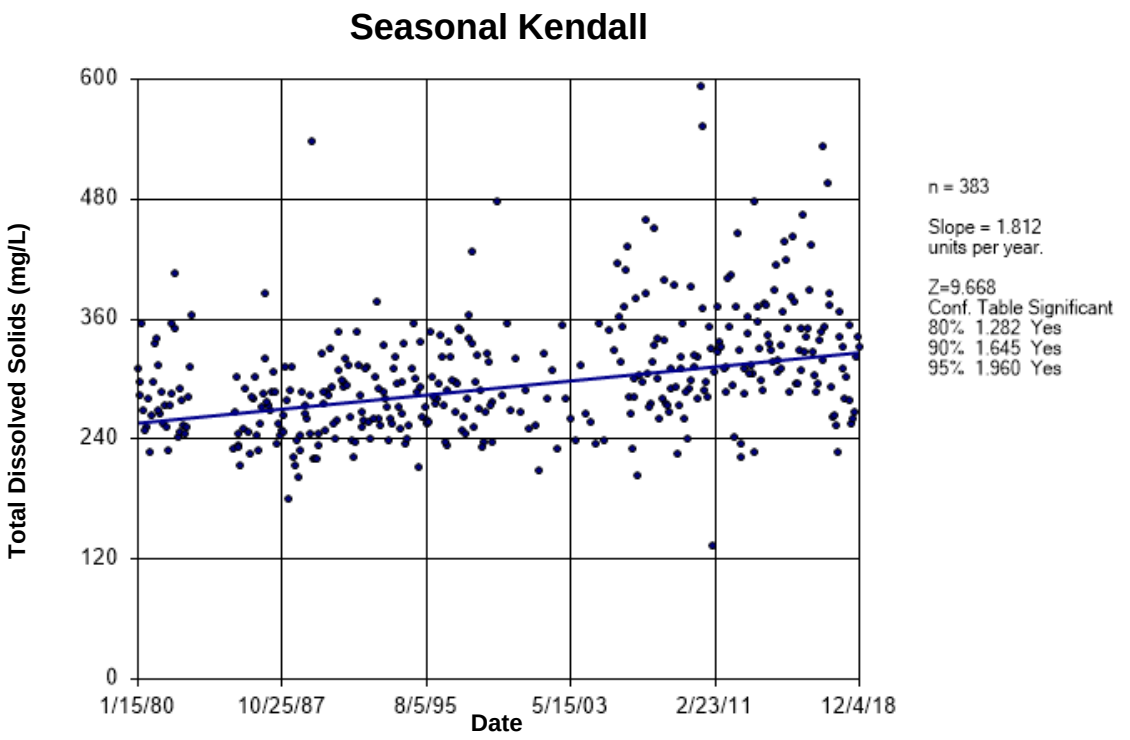

Figure C75 Red Deer River (AB-SK): Total Dissolved Solids

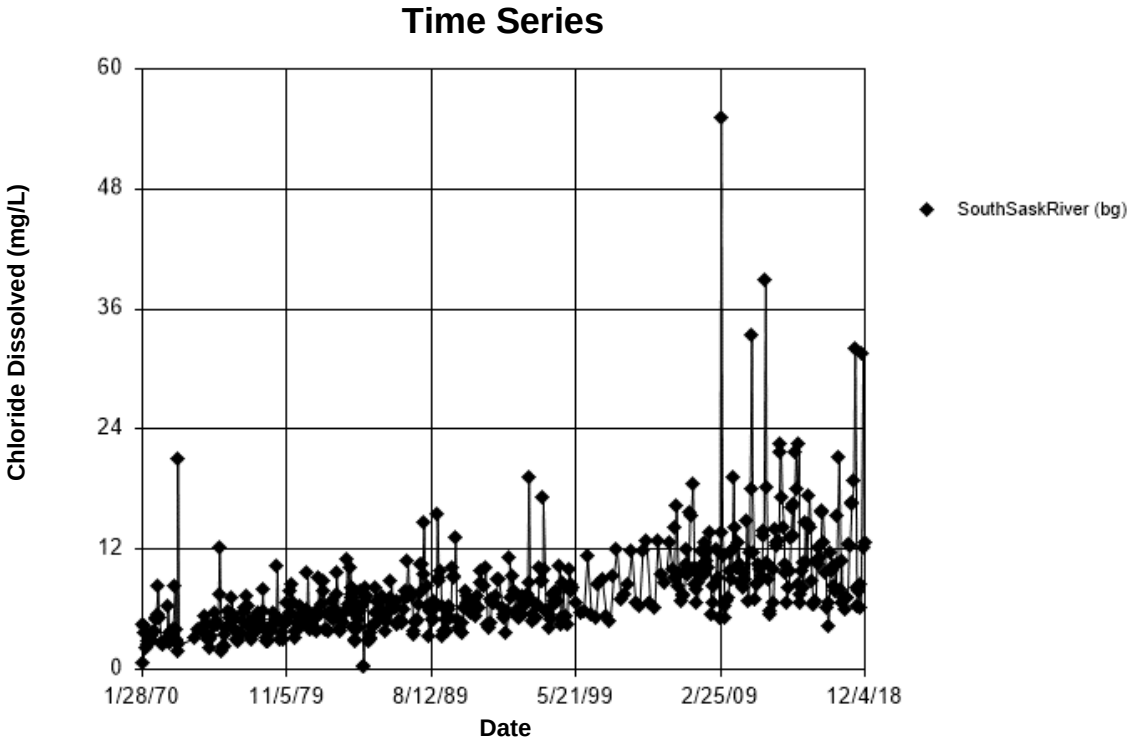

Figure C76 South Saskatchewan River: Chloride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 57.62
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

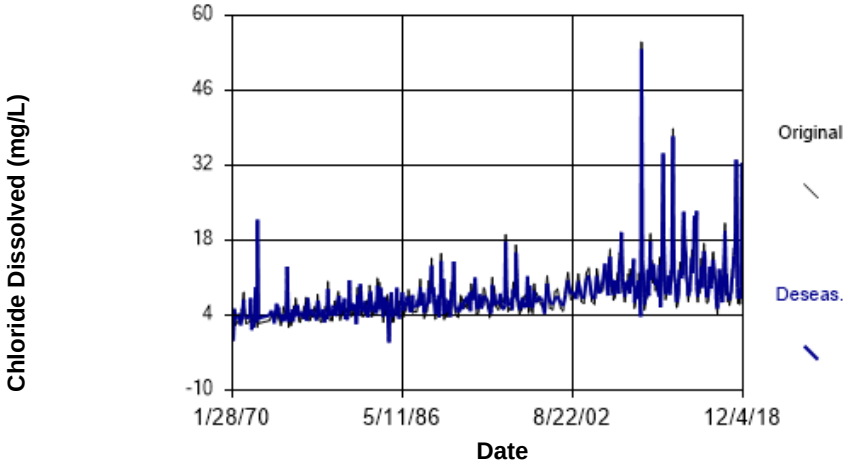

Figure C77 South Saskatchewan River: Chloride Dissolved4

Seasonal Kendall

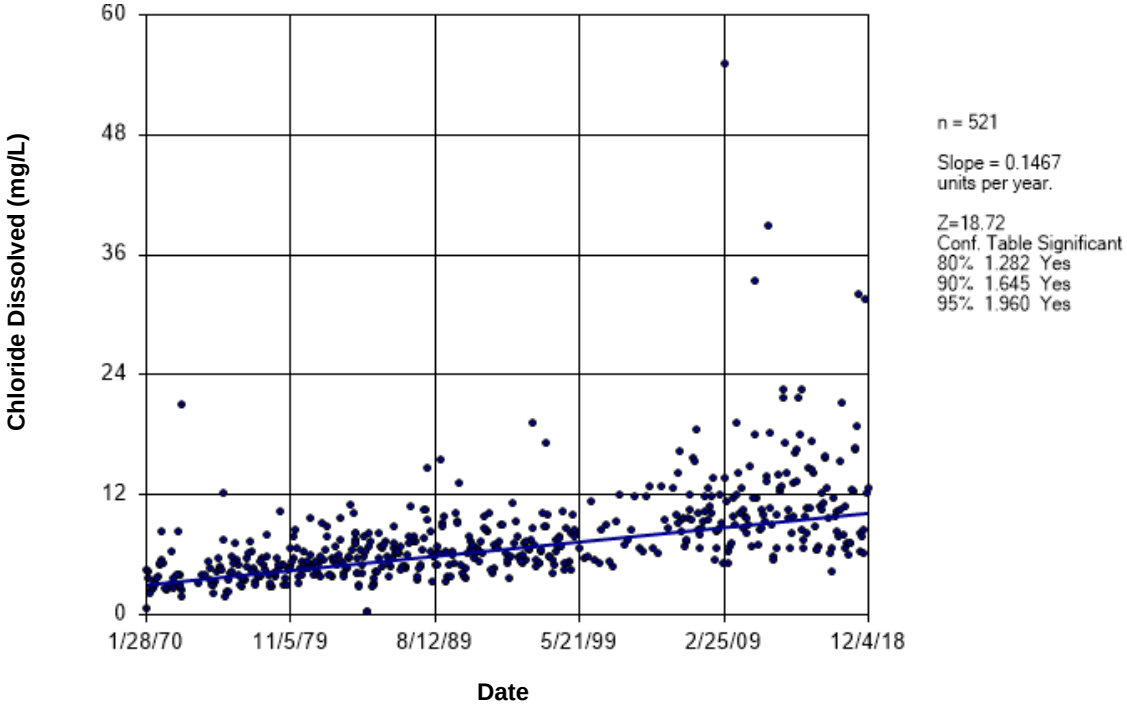

Figure C78 South Saskatchewan River: Chloride Dissolved

Time Series

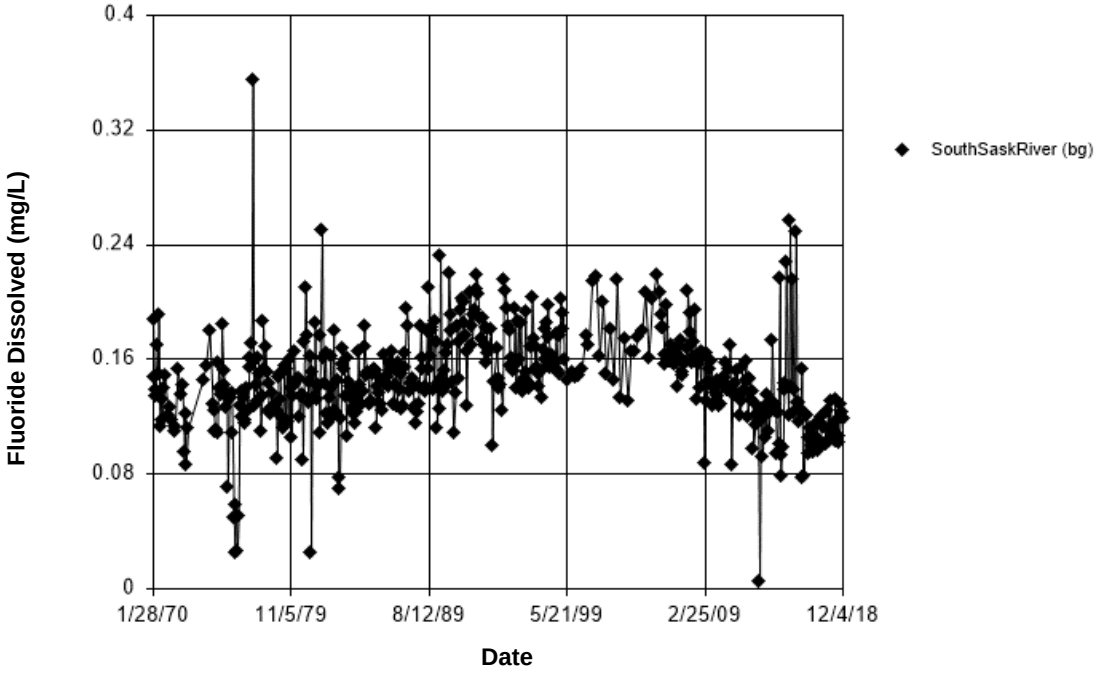

Figure C79 South Saskatchewan River: Fluoride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 18.71
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 18.71
Adjusted Kruskal-Wallis statistic (H') = 18.71

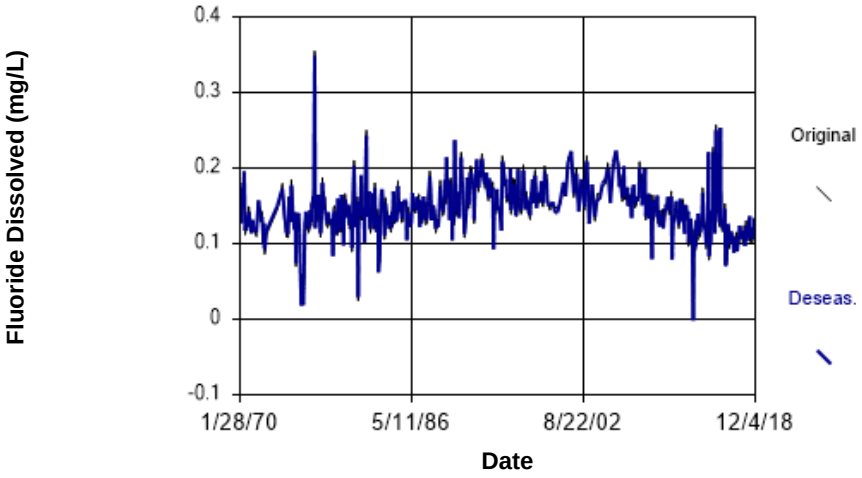

Figure C80 South Saskatchewan River: Fluoride Dissolved

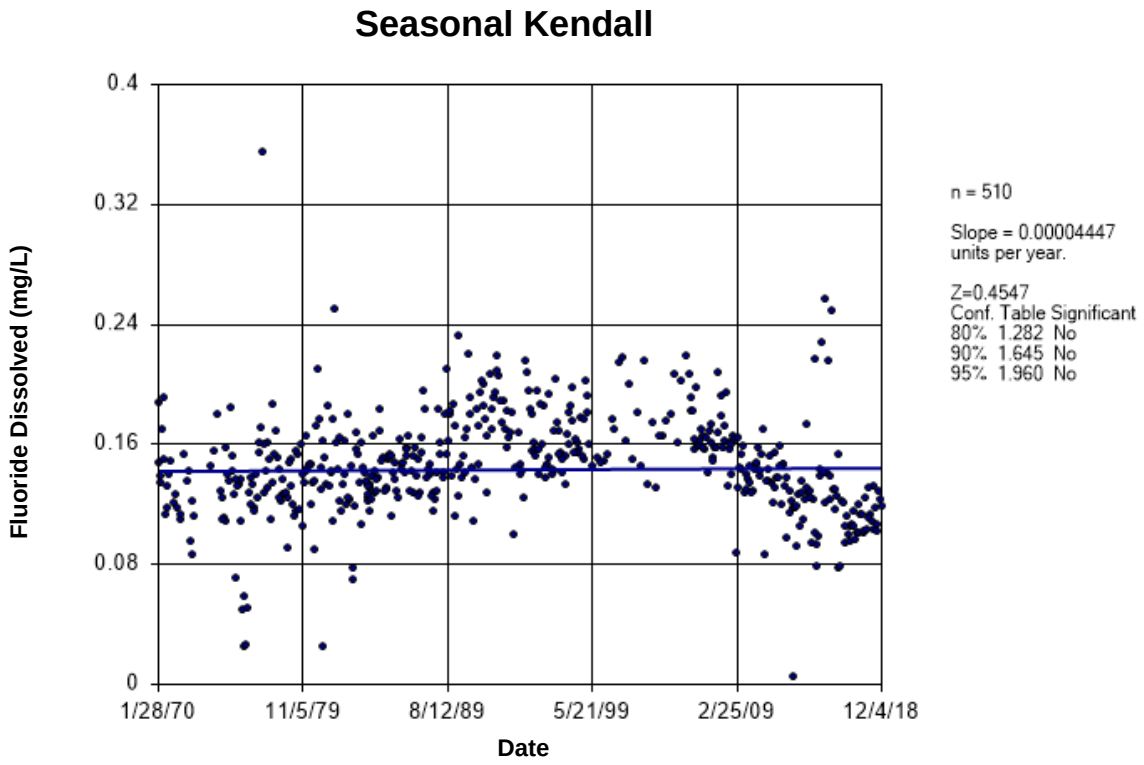

Figure C81 South Saskatchewan River: Fluoride Dissolved

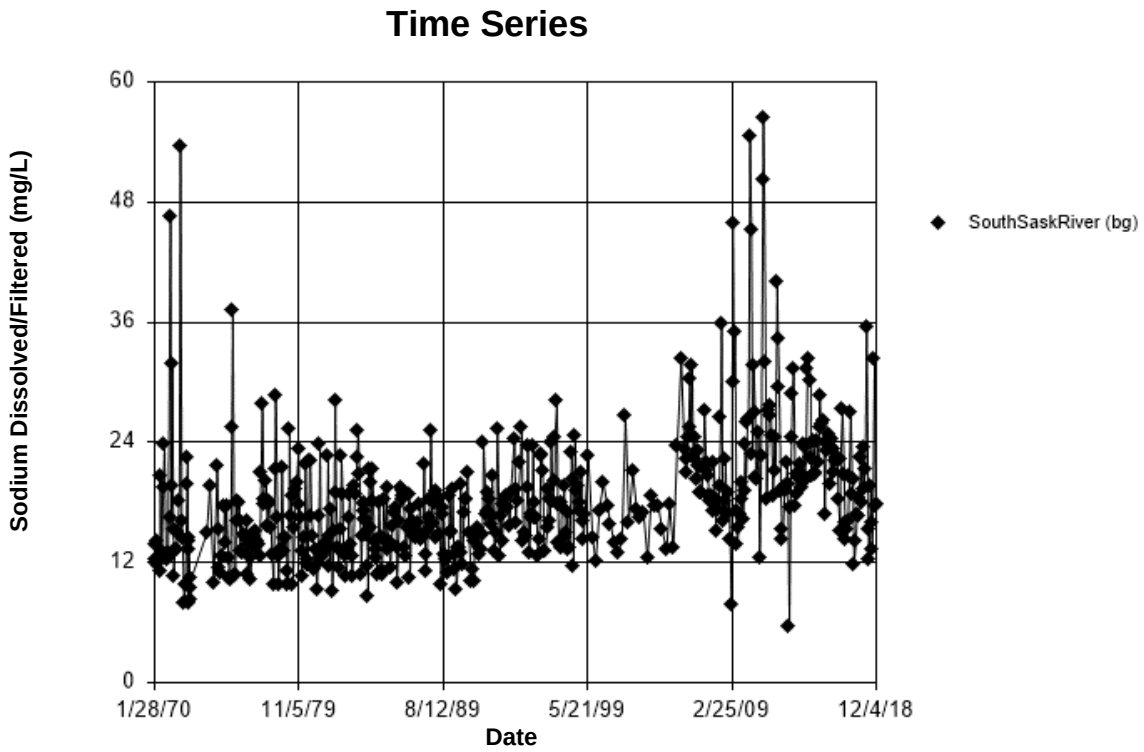

Figure C82 South Saskatchewan River: Sodium Dissolved/Filtered

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 8.969
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 8.969
Adjusted Kruskal-Wallis statistic (H') = 8.969

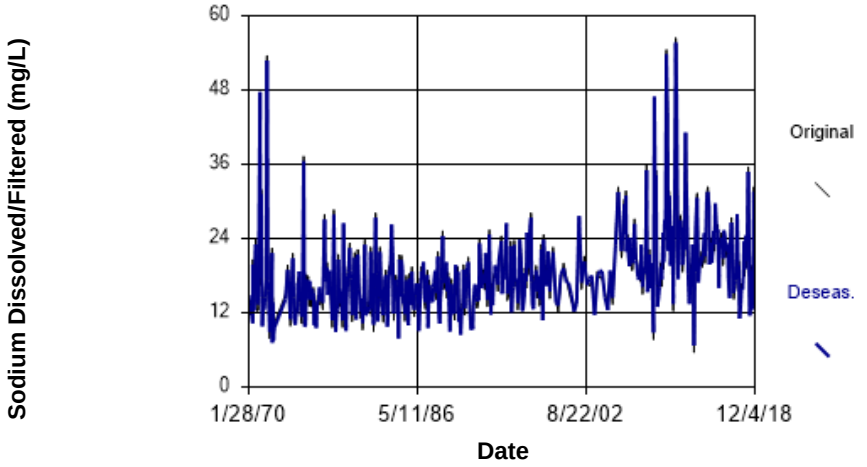

Figure C83 South Saskatchewan River: Sodium Dissolved/Filtered

Seasonal Kendall

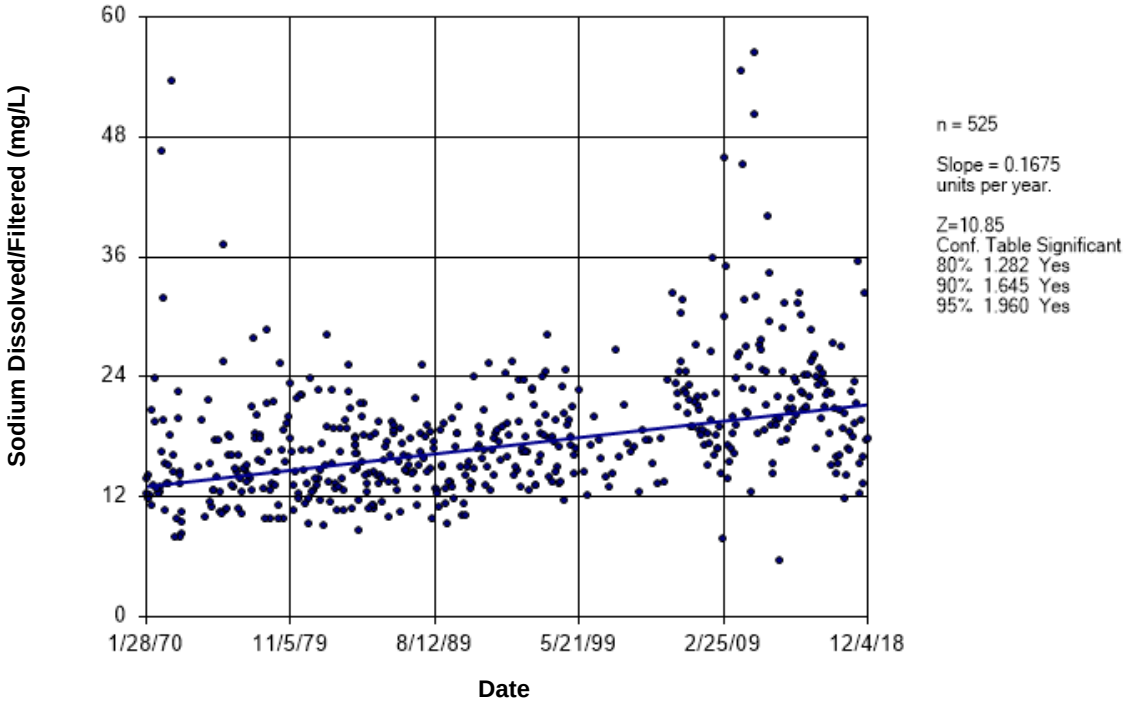

Figure C84 South Saskatchewan River: Sodium Dissolved/Filtered

Time Series

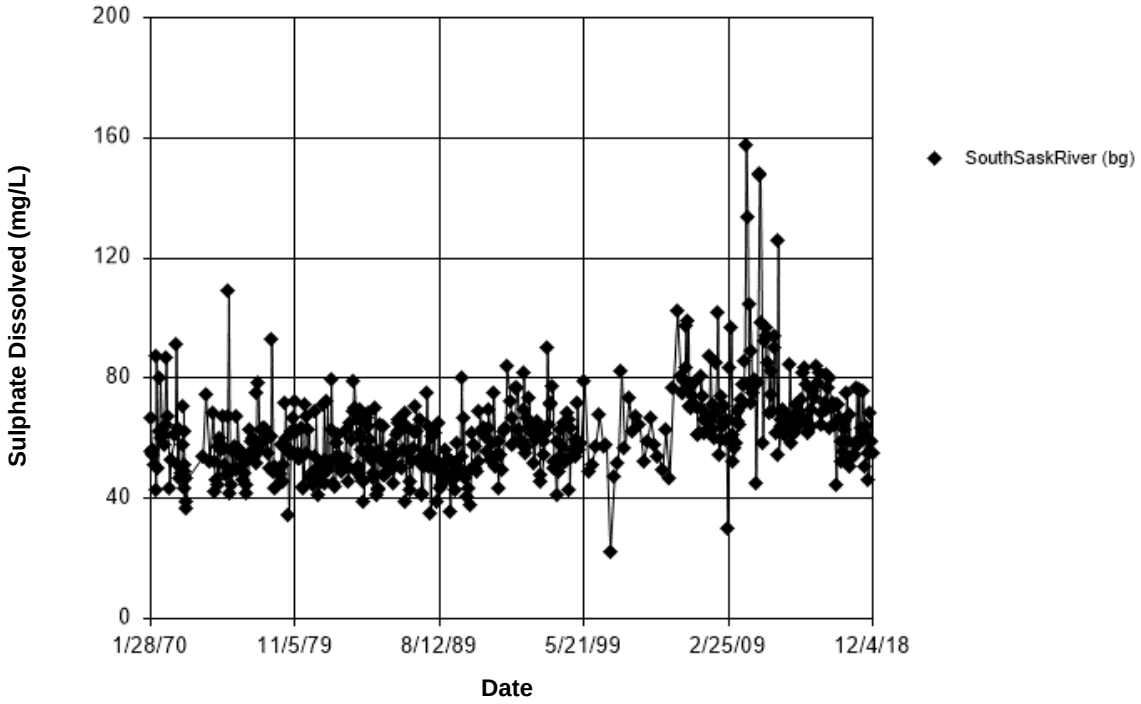

Figure C85 South Saskatchewan River: Sulphate Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.08695
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.08695
Adjusted Kruskal-Wallis statistic (H') = 0.08695

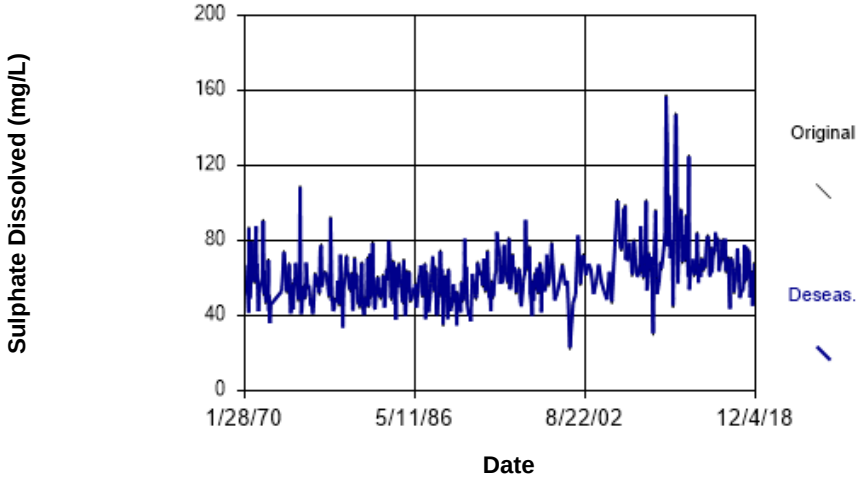

Figure C86 South Saskatchewan River: Sulphate Dissolved

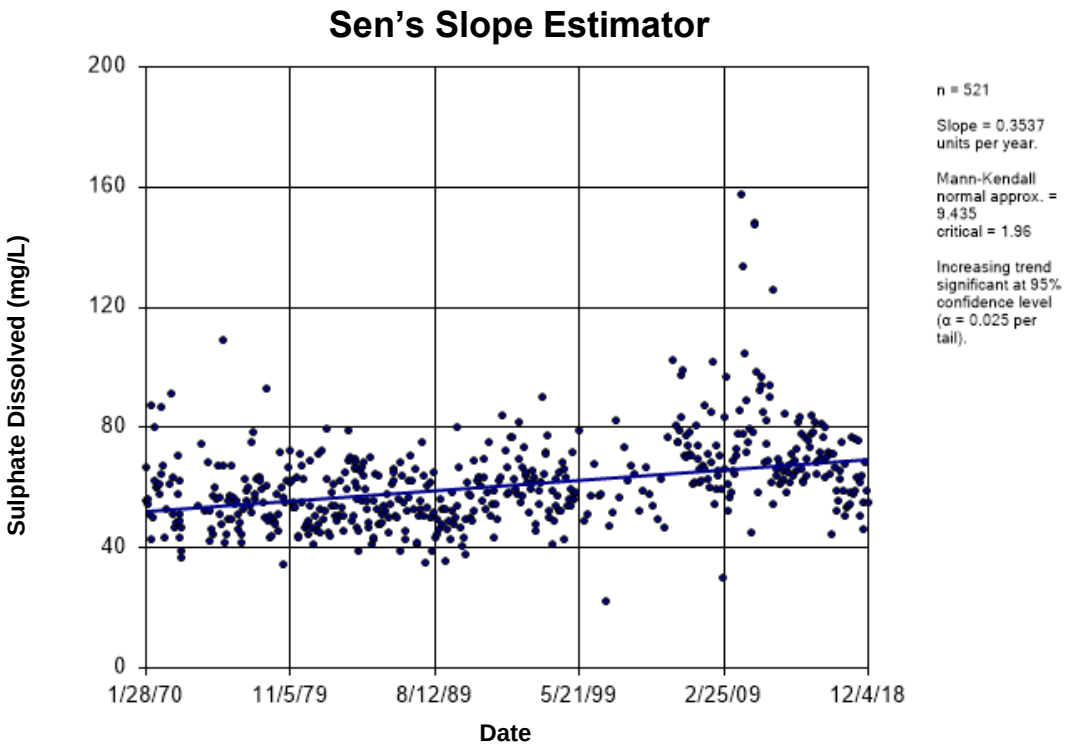

Figure C87 South Saskatchewan River: Sulphate Dissolved

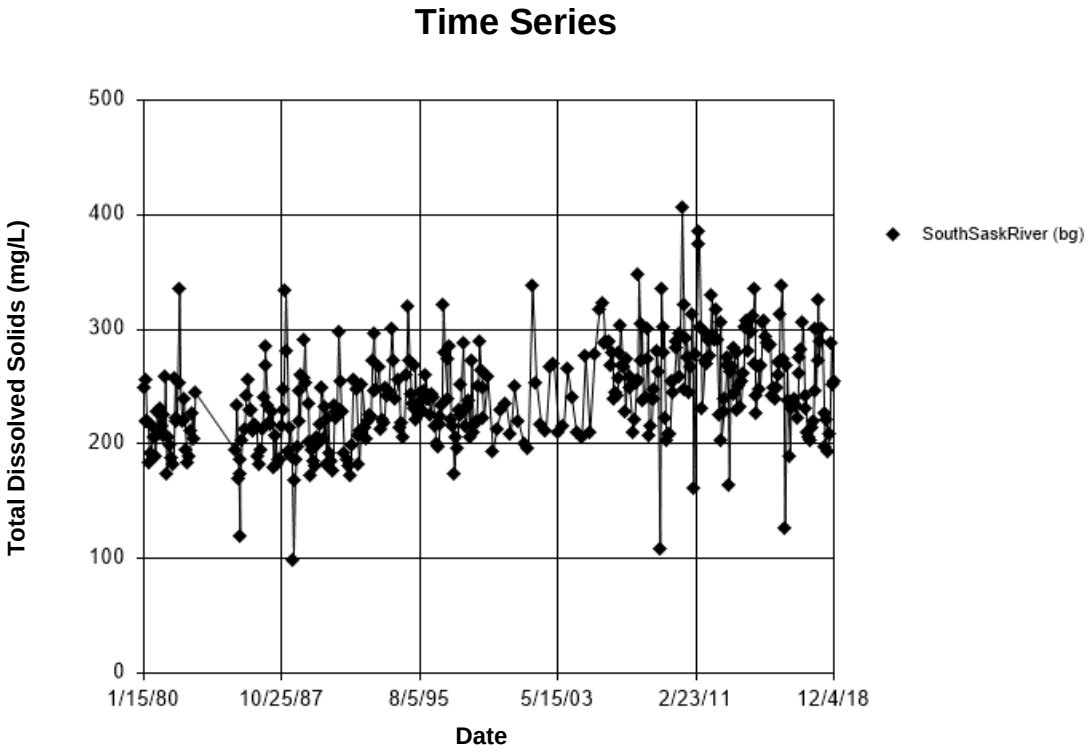

Figure C88 South Saskatchewan River: Total Dissolved Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 52.74
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

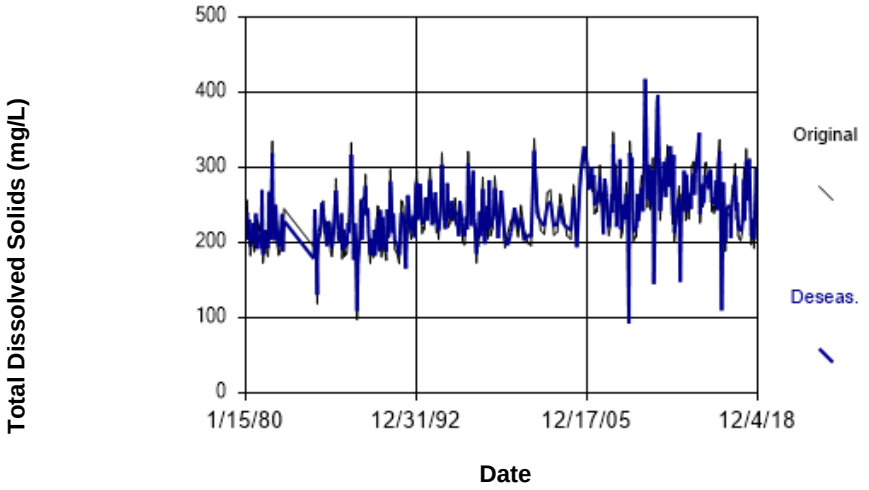

Figure C89 South Saskatchewan River: Total Dissolved Solids

Seasonal Kendall

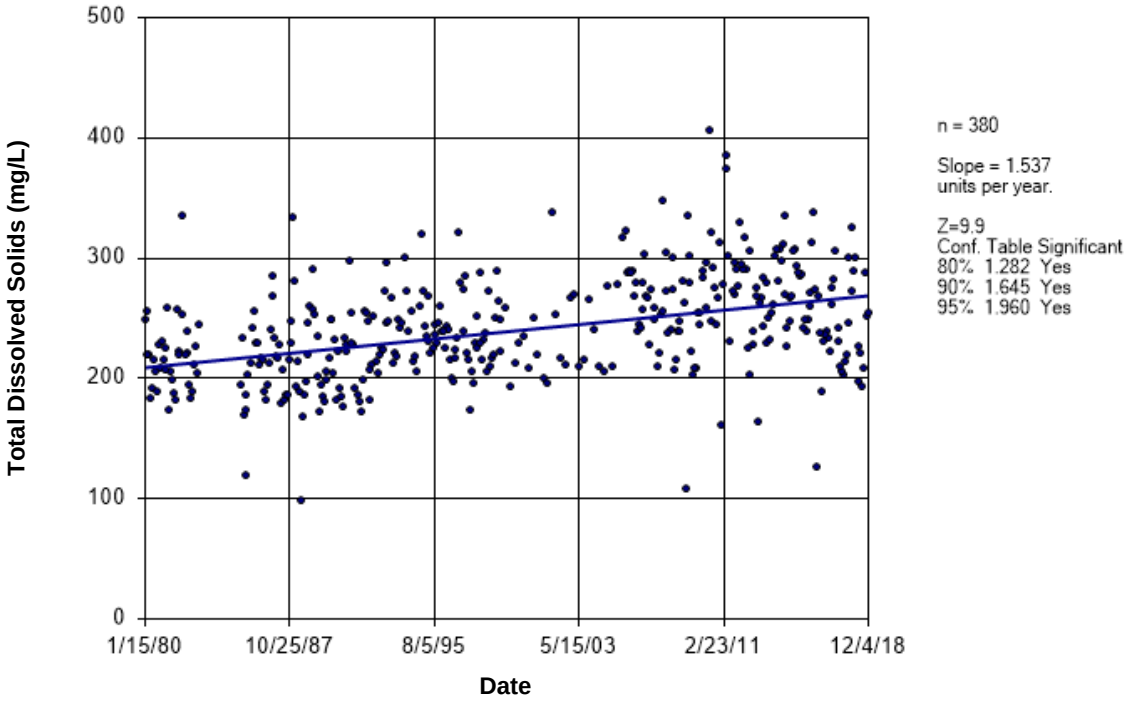

Figure C90 South Saskatchewan River: Total Dissolved Solids

Time Series

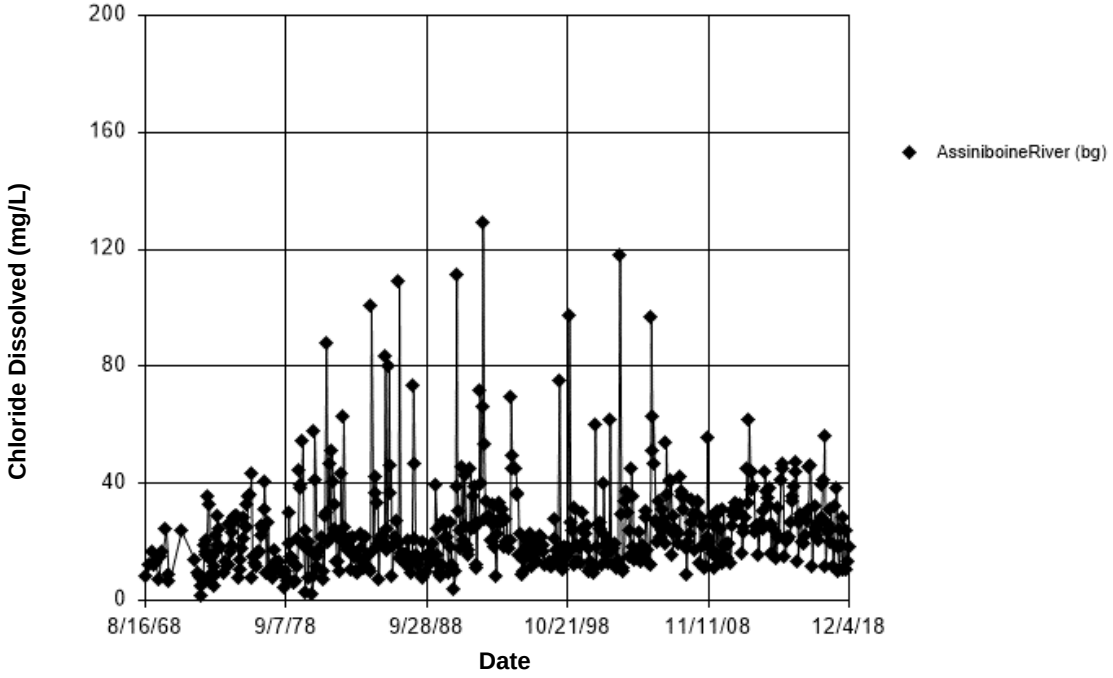

Figure C91 Assiniboine River: Chloride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 61.66
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 61.66
Adjusted Kruskal-Wallis statistic (H') = 61.66

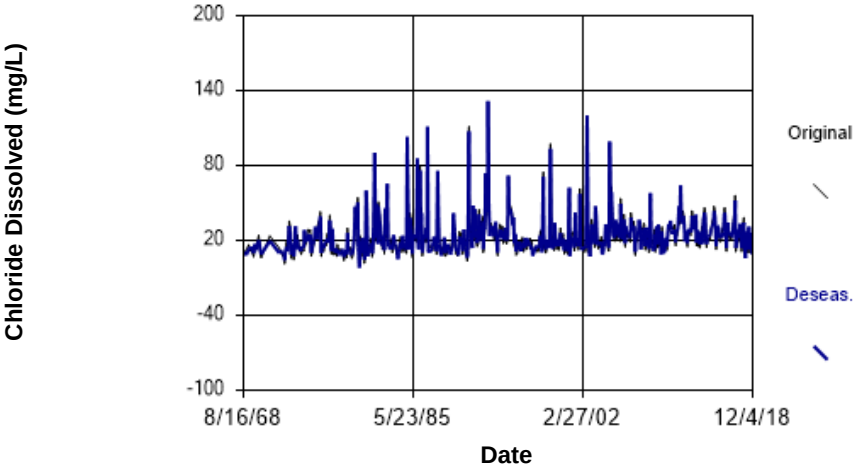

Figure C92 Assiniboine River: Chloride Dissolved

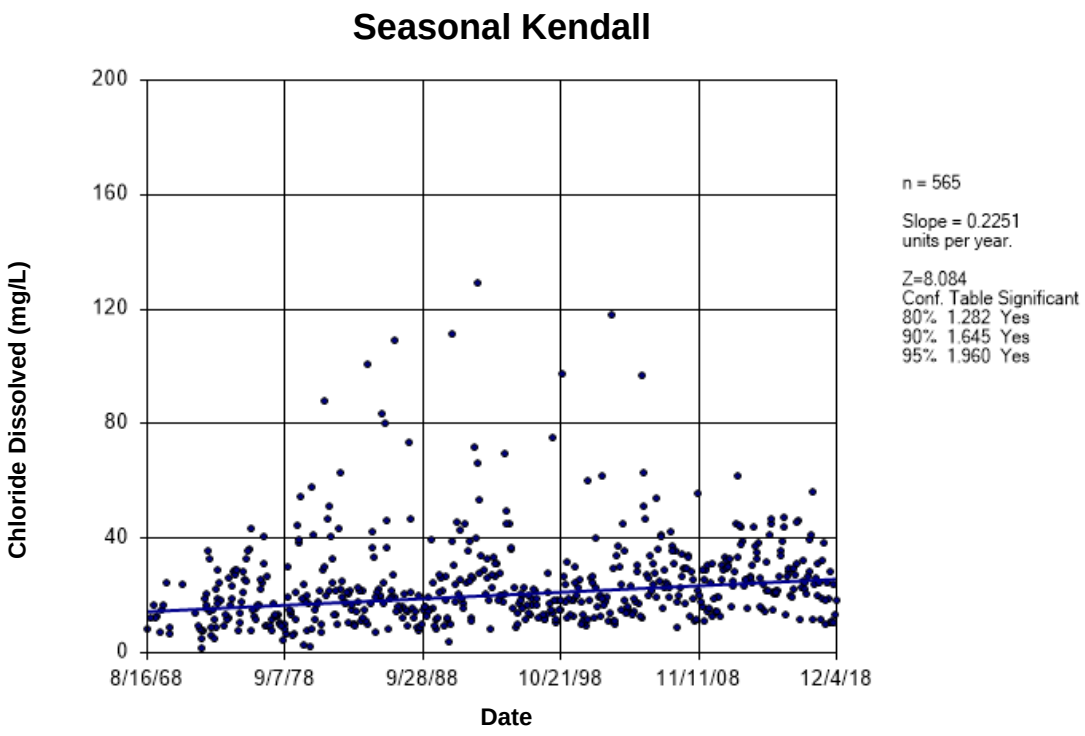

Figure C93 Assiniboine River: Chloride Dissolved

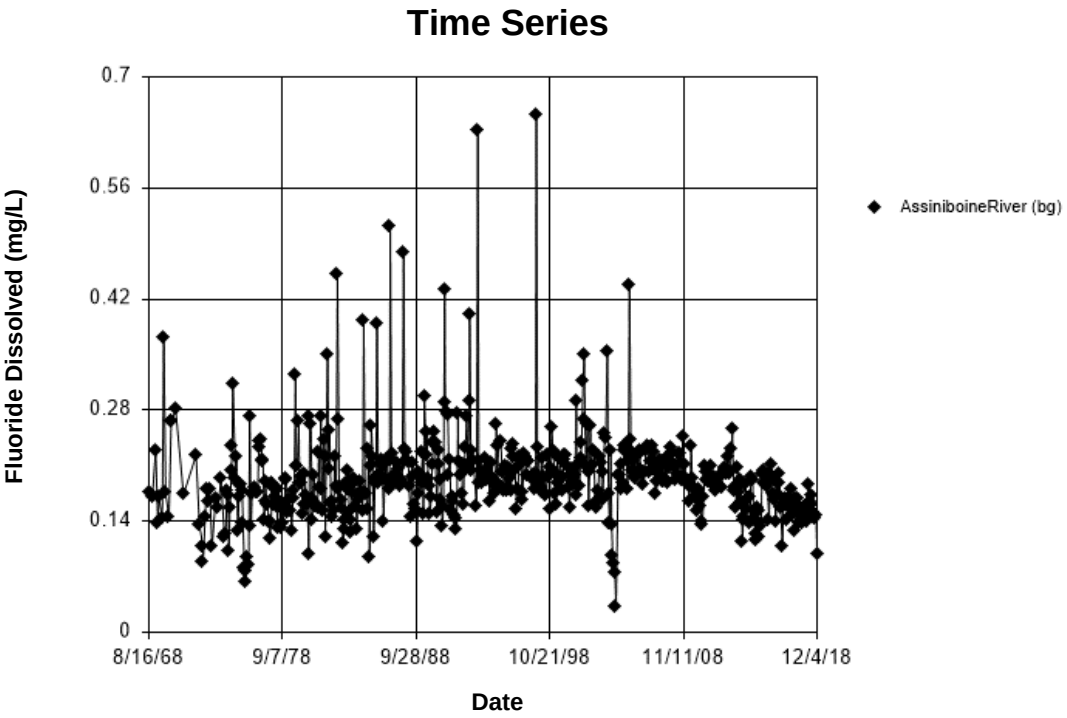

Figure C94 Assiniboine River: Fluoride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 18.86
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 8 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 18.86
Adjusted Kruskal-Wallis statistic (H') = 18.86

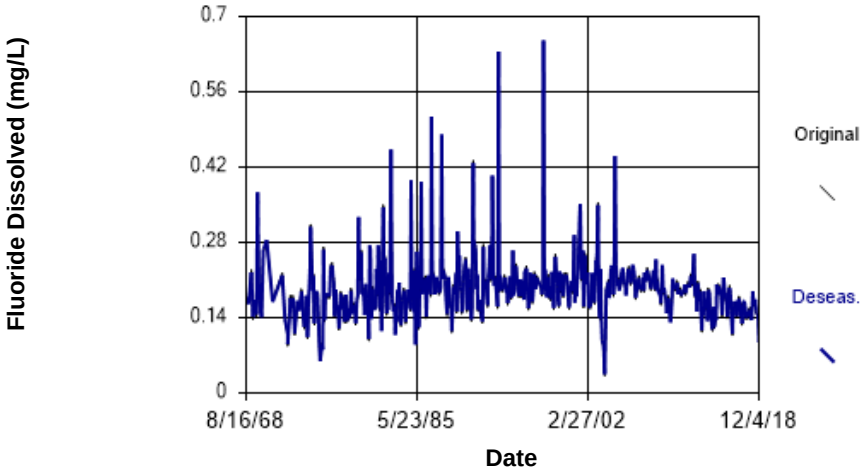

Figure C95 Assiniboine River: Fluoride Dissolved

Seasonal Kendall

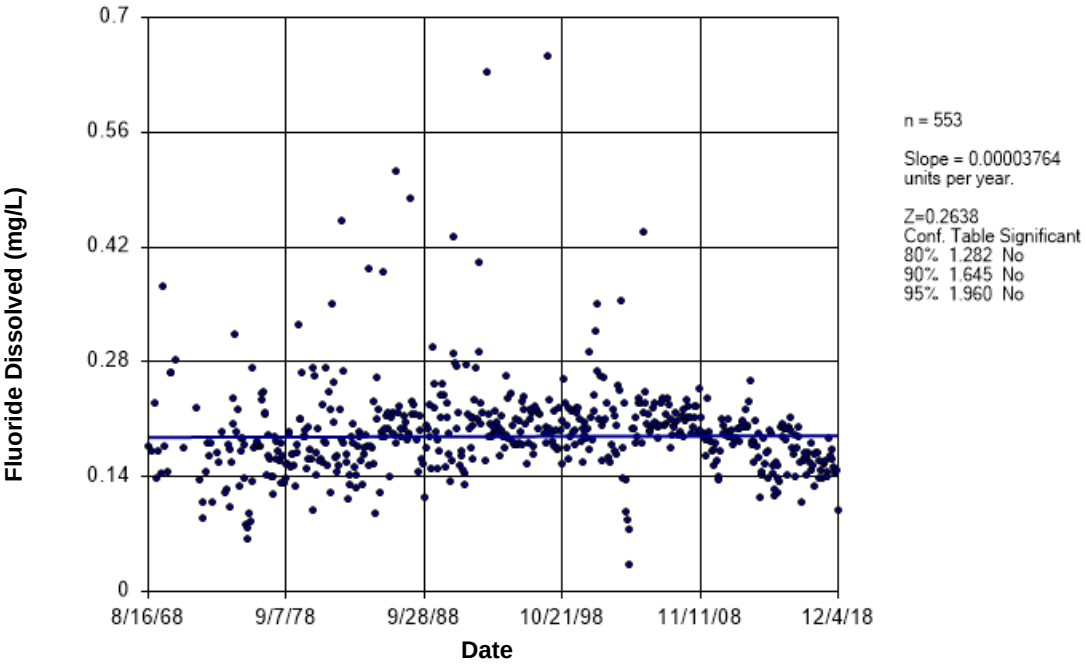

Figure C96 Assiniboine River: Fluoride Dissolved

Time Series

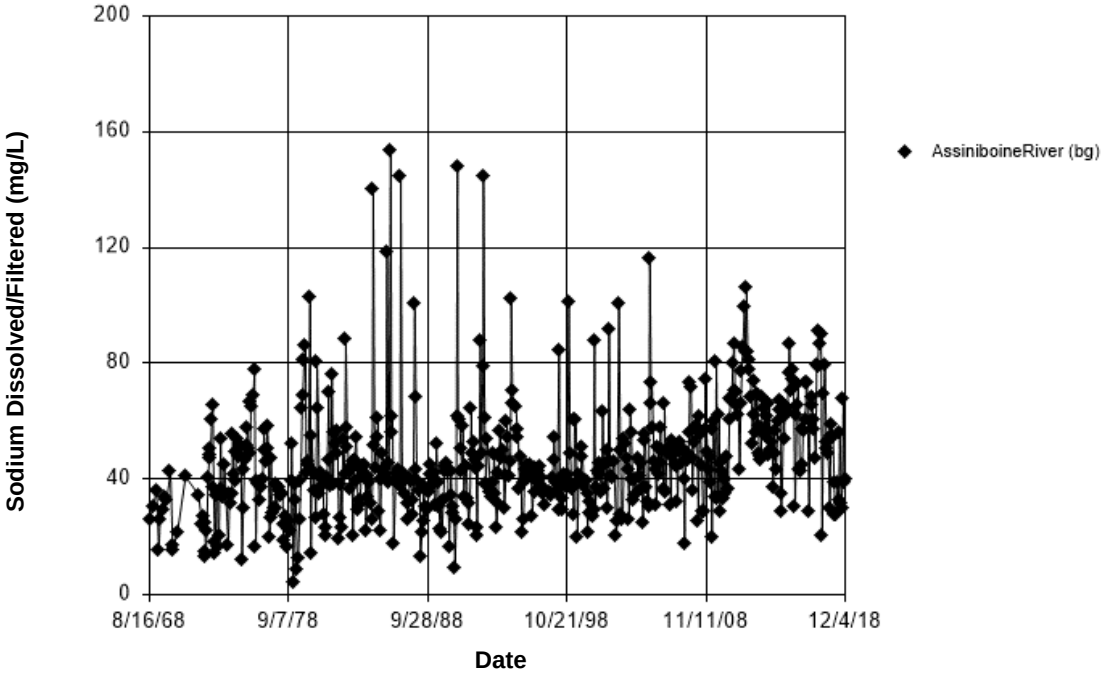

Figure C97 Assiniboine River: Sodium Dissolved/Filtered

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 45.23
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 45.23
Adjusted Kruskal-Wallis statistic (H') = 45.23

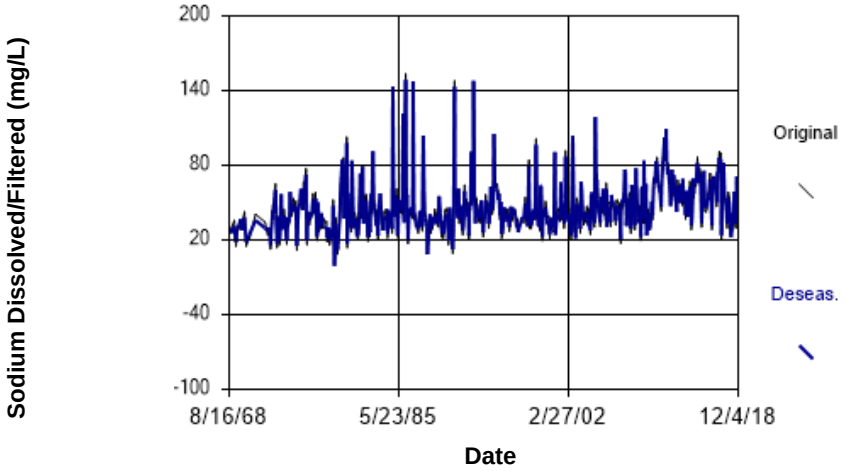

Figure C98 Assiniboine River: Sodium Dissolved/Filtered

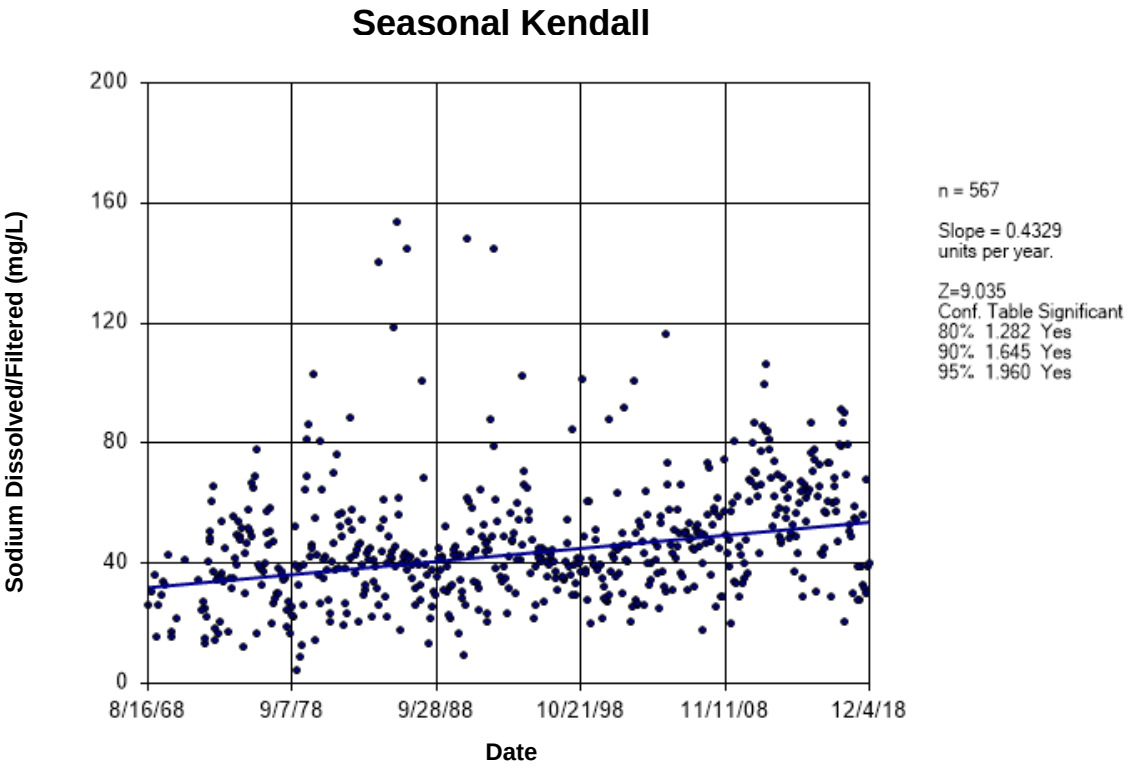

Figure C99 Assiniboine River: Sodium Dissolved/Filtered

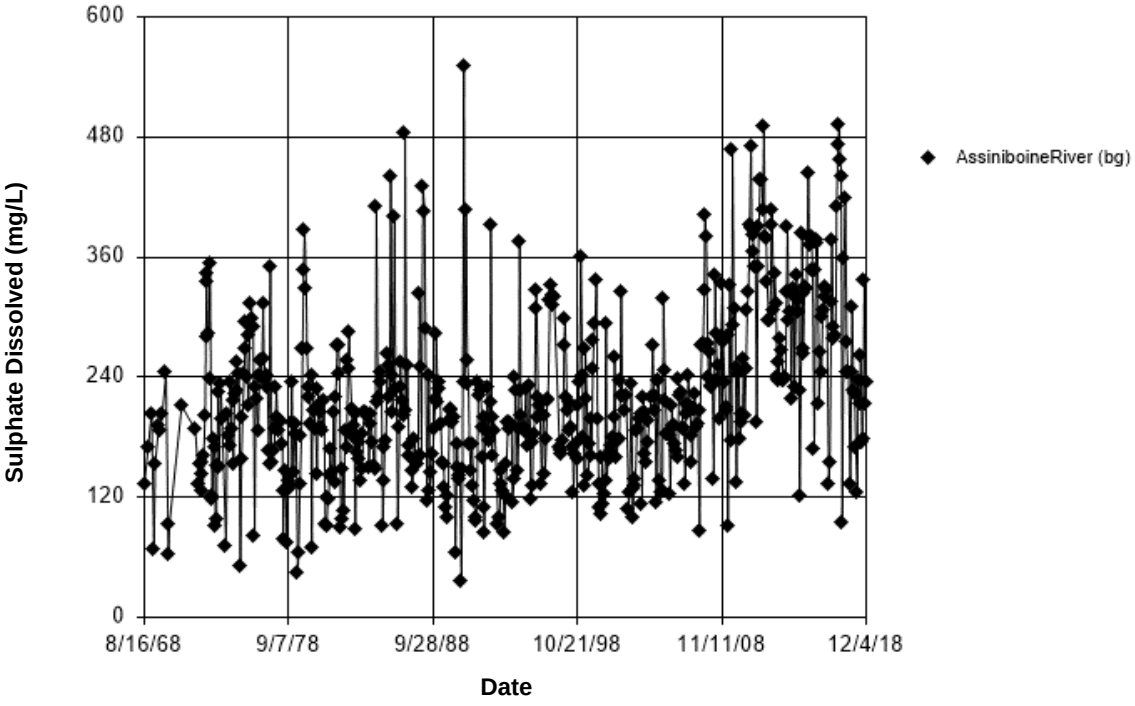

Figure C100 Assiniboine River: Sulphate Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 64.62
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 64.62
Adjusted Kruskal-Wallis statistic (H') = 64.62

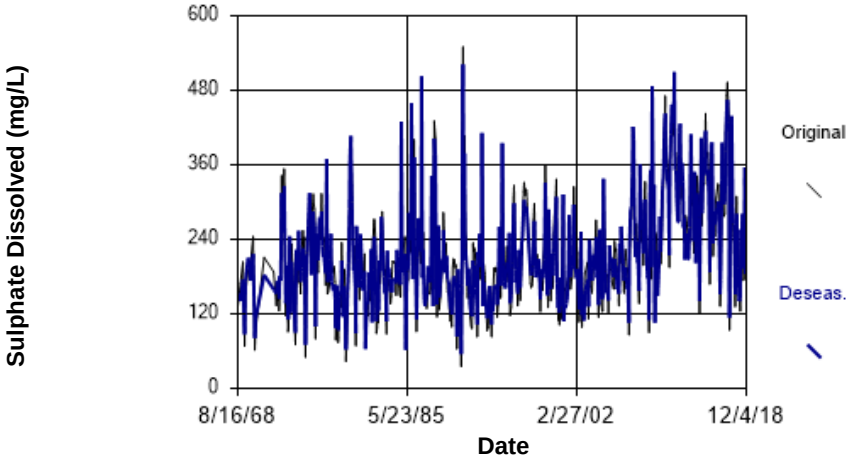

Figure C101 Assiniboine River: Sulphate Dissolved

Seasonal Kendall

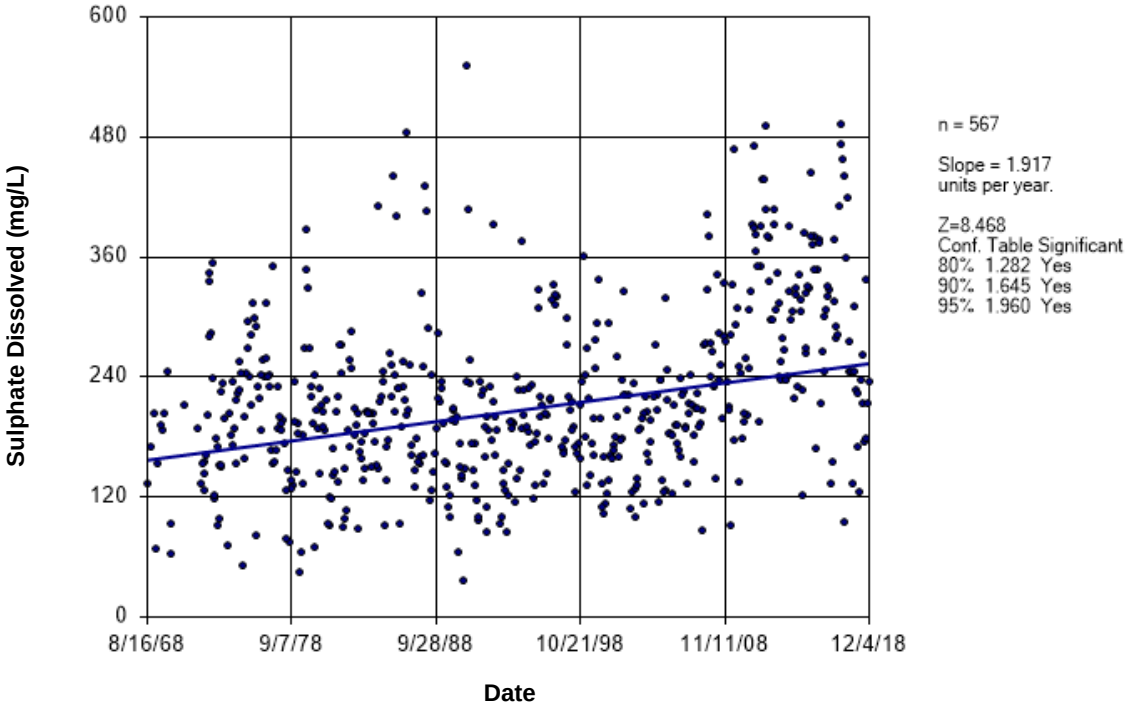

Figure C102 Assiniboine River: Sulphate Dissolved

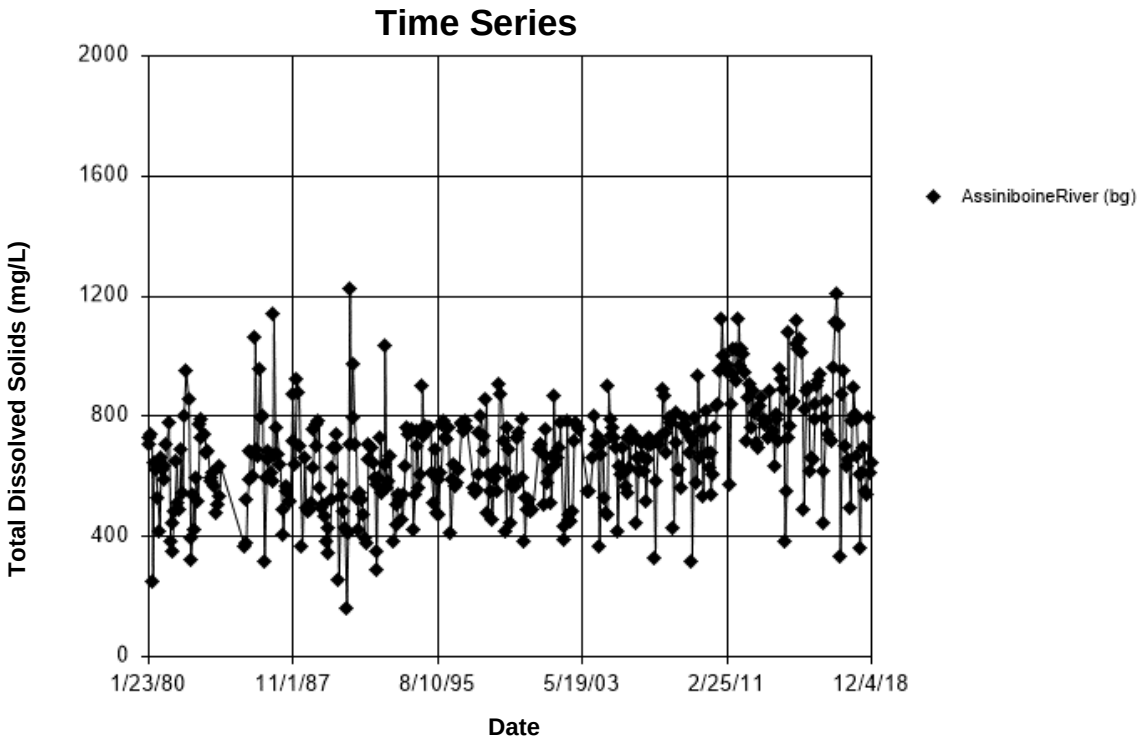

Figure C103 Assiniboine River: Total Dissolved Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 51.7
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 51.7
Adjusted Kruskal-Wallis statistic (H') = 51.7

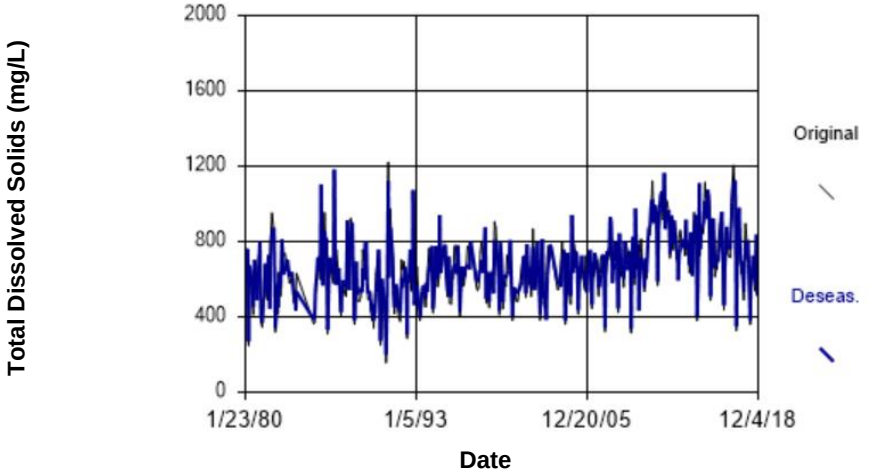

Figure C104 Assiniboine River: Total Dissolved Solids

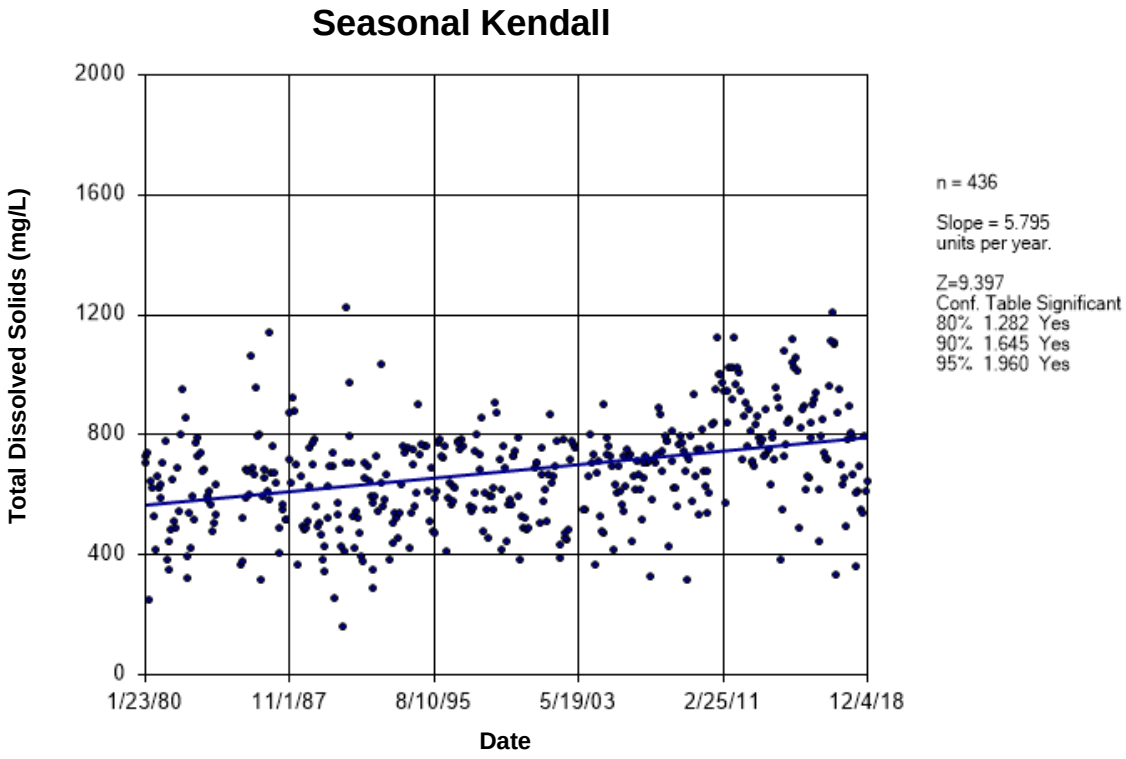

Figure C105 Assiniboine River: Total Dissolved Solids

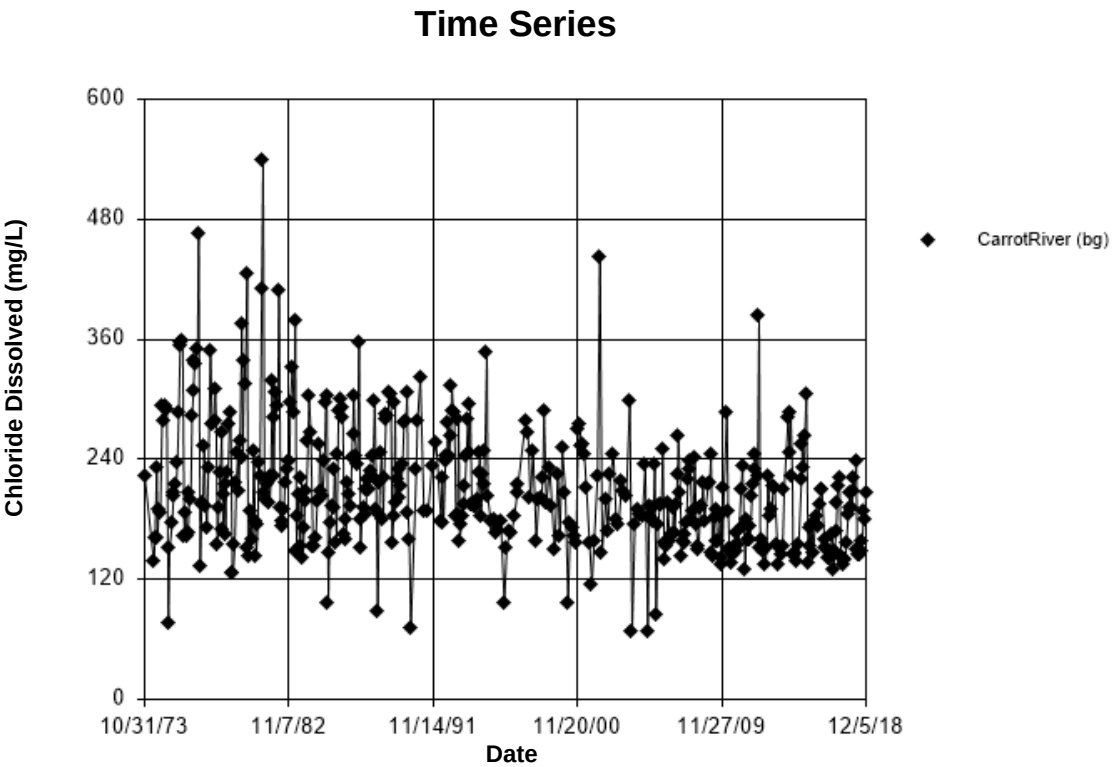

Figure C106 Carrot River: Chloride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 148.3
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 148.3
Adjusted Kruskal-Wallis statistic (H') = 148.3

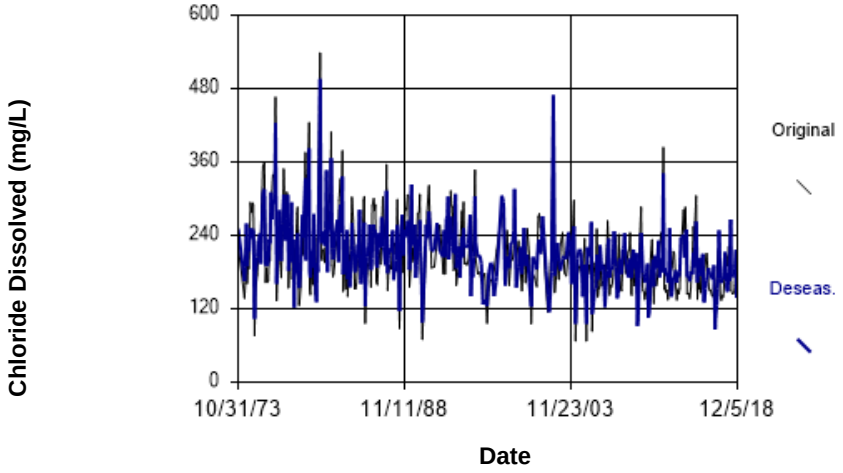

Figure C107 Carrot River: Chloride Dissolved

Seasonal Kendall

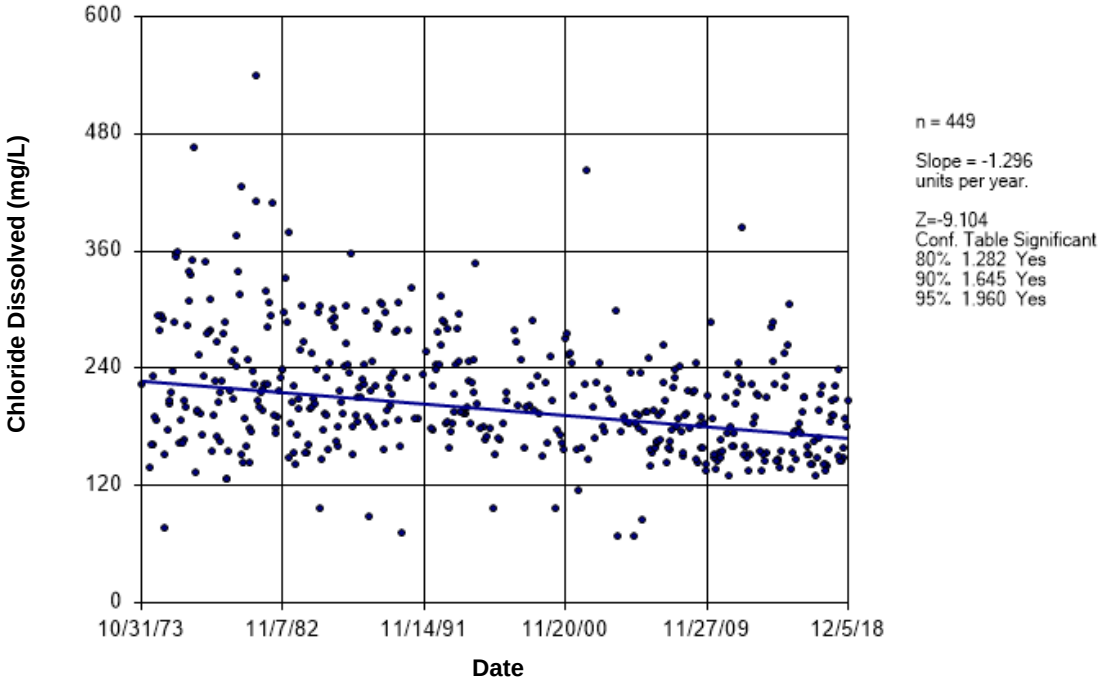

Figure C108 Carrot River: Chloride Dissolved

Time Series

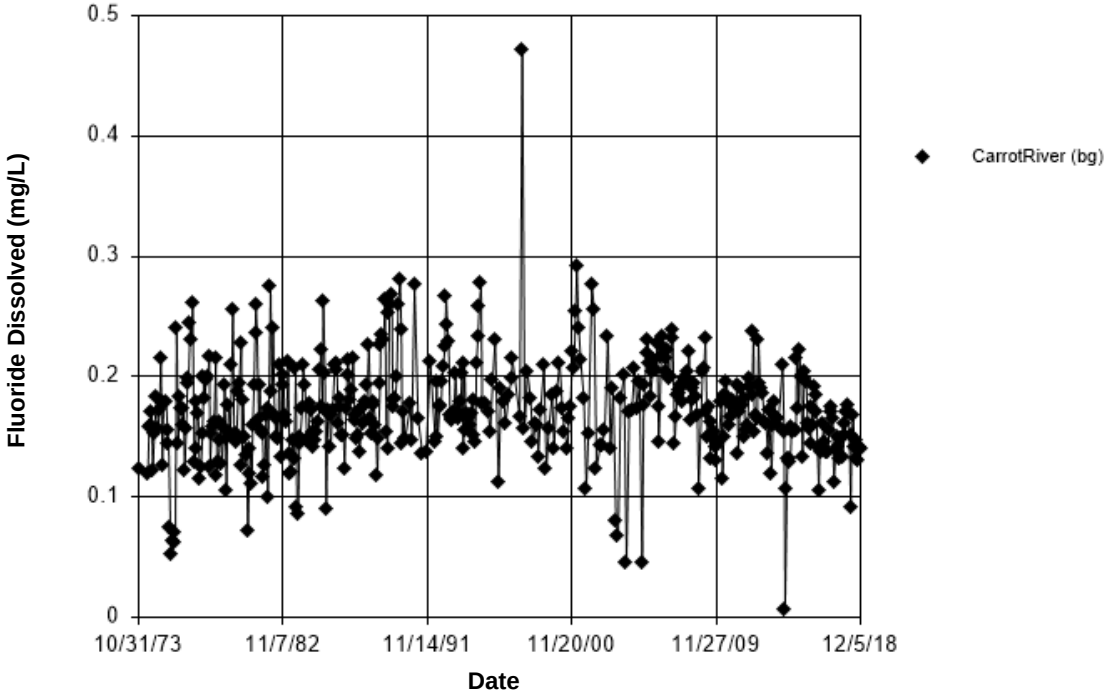

Figure C109 Carrot River: Fluoride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 71.73
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 71.73
Adjusted Kruskal-Wallis statistic (H') = 71.73

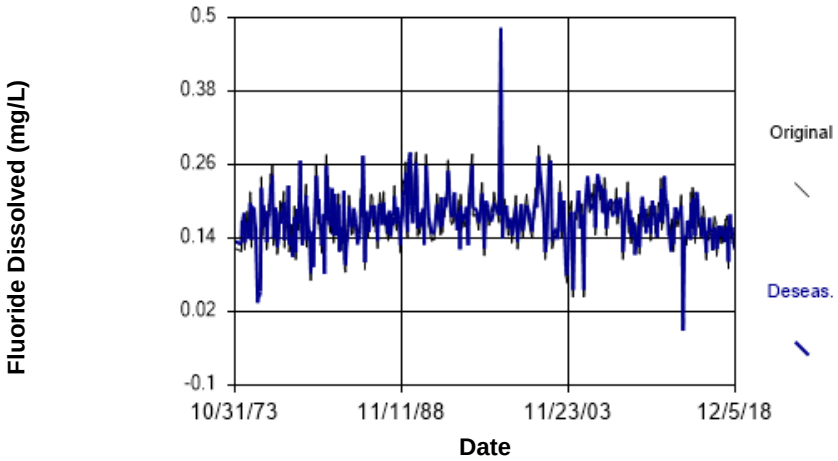

Figure C110 Carrot River: Fluoride Dissolved

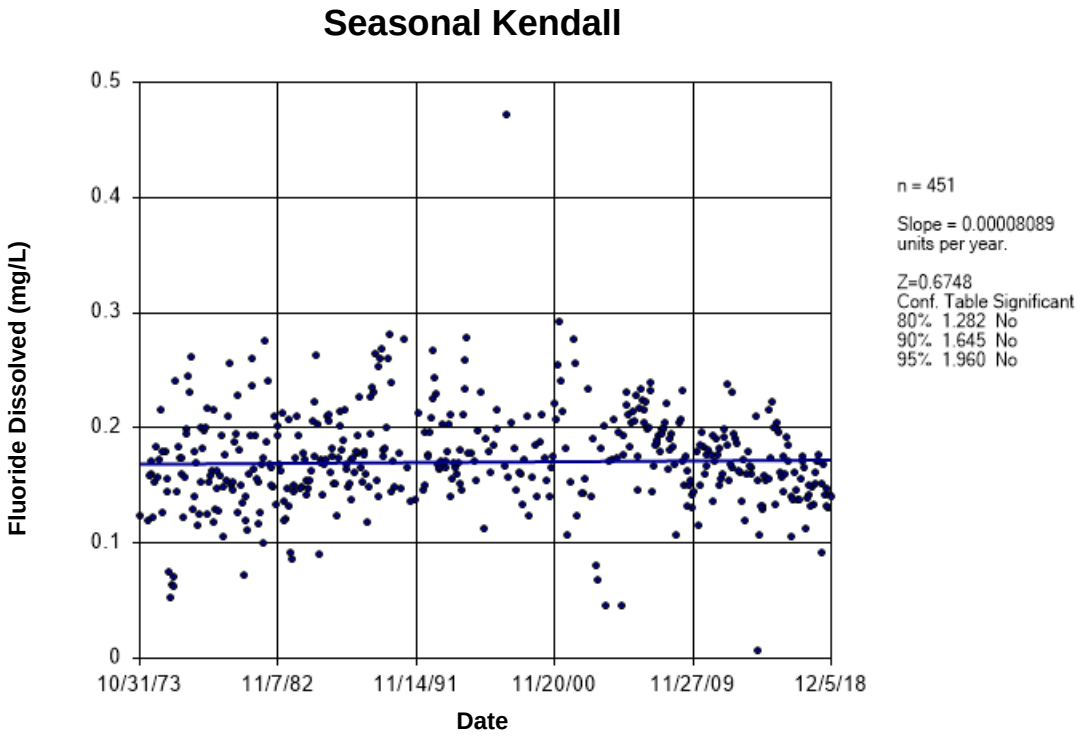

Figure C111 Carrot River: Fluoride Dissolved

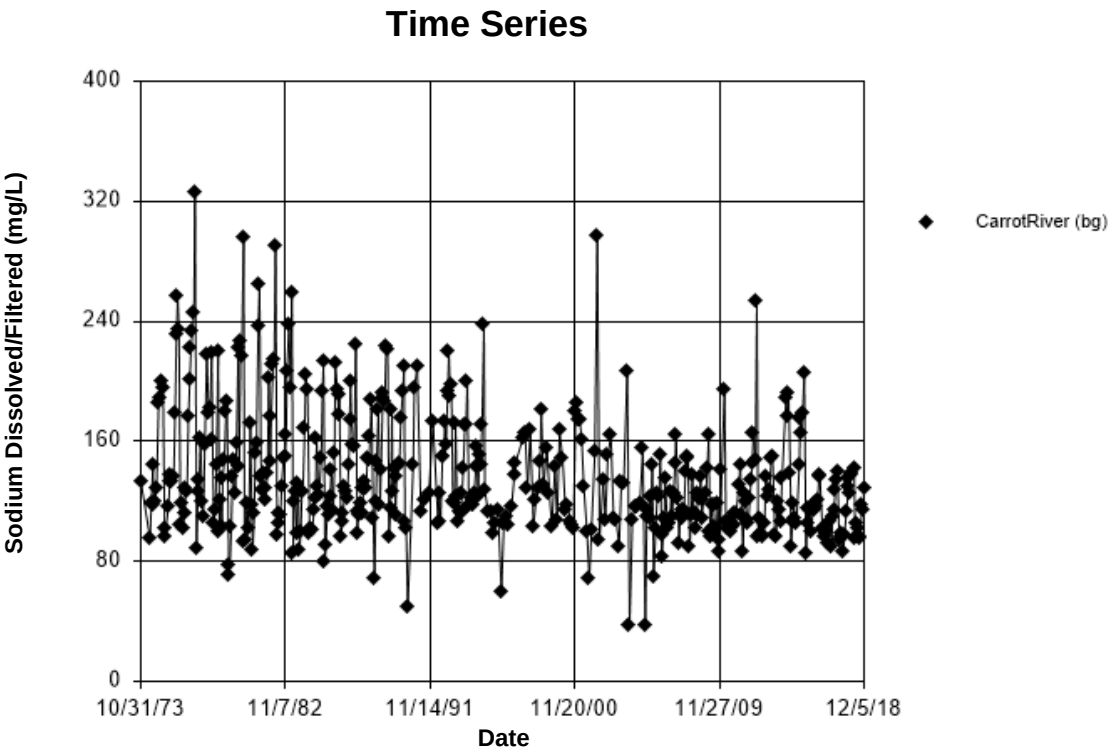

Figure C112 Carrot River: Sodium Dissolved/Filtered

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 163.5
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

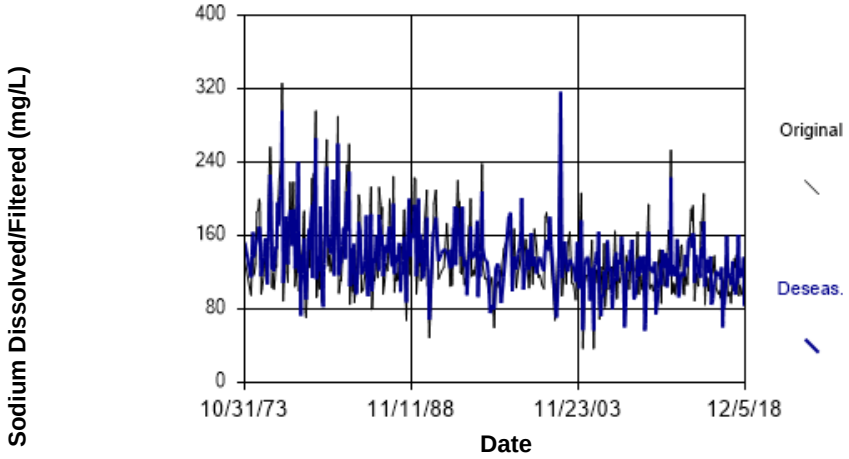

Figure C113 Carrot River: Sodium Dissolved/Filtered

Seasonal Kendall

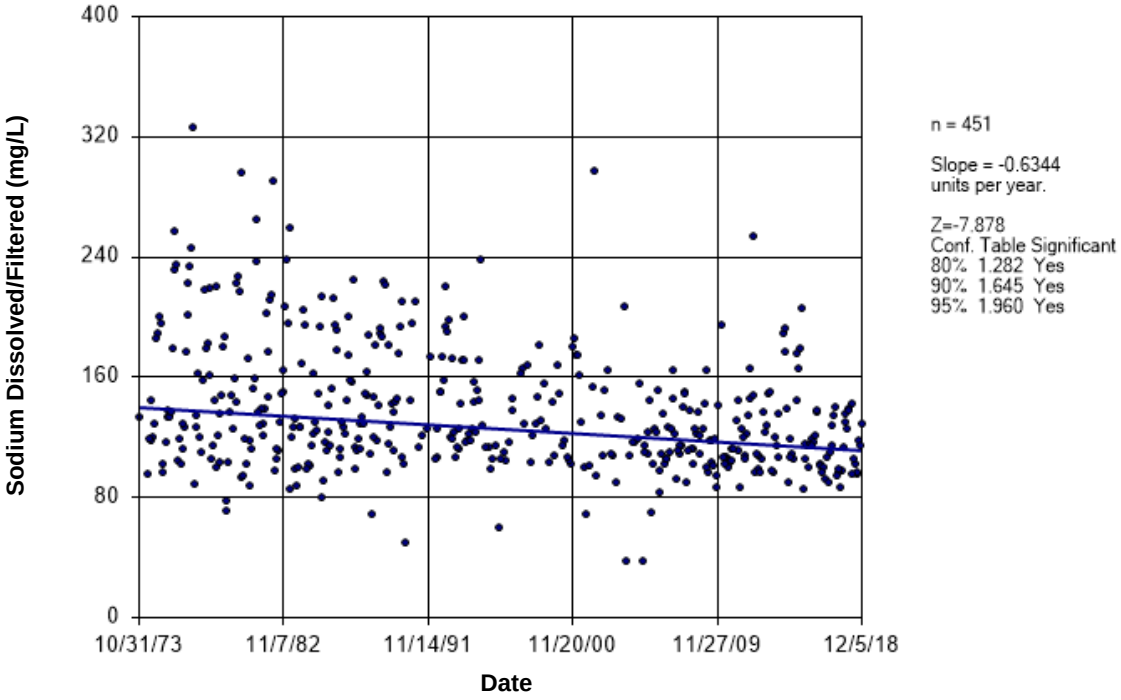

Figure C114 Carrot River: Sodium Dissolved/Filtered

Time Series

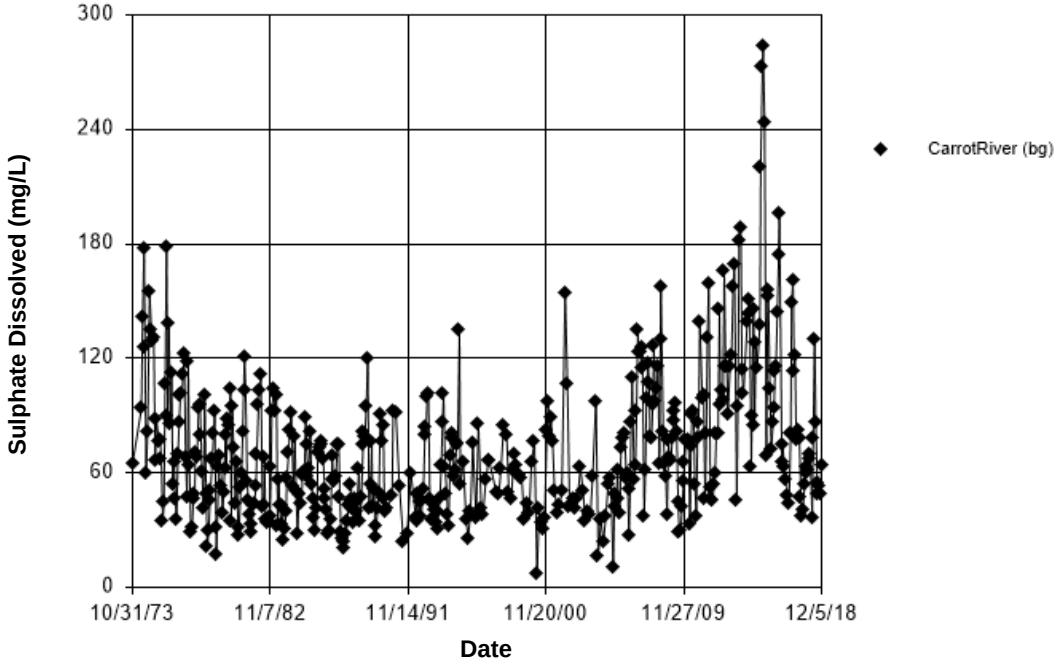

Figure C115 Carrot River: Sulphate Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 86.95
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

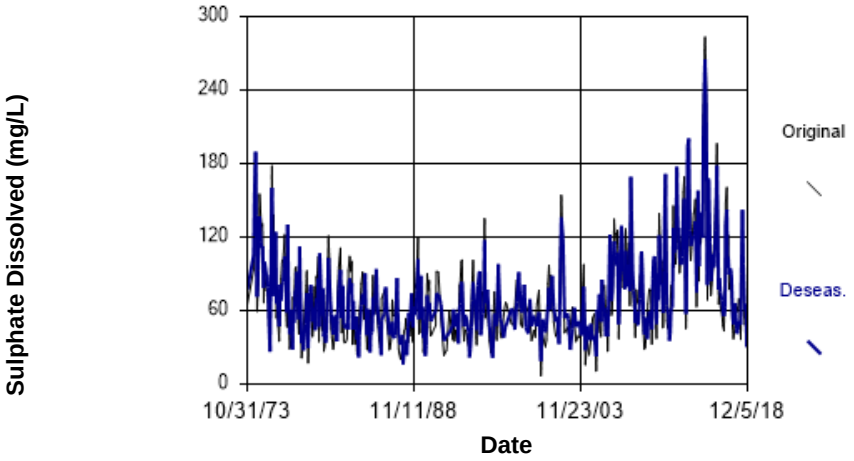

Figure C116 Carrot River: Sulphate Dissolved

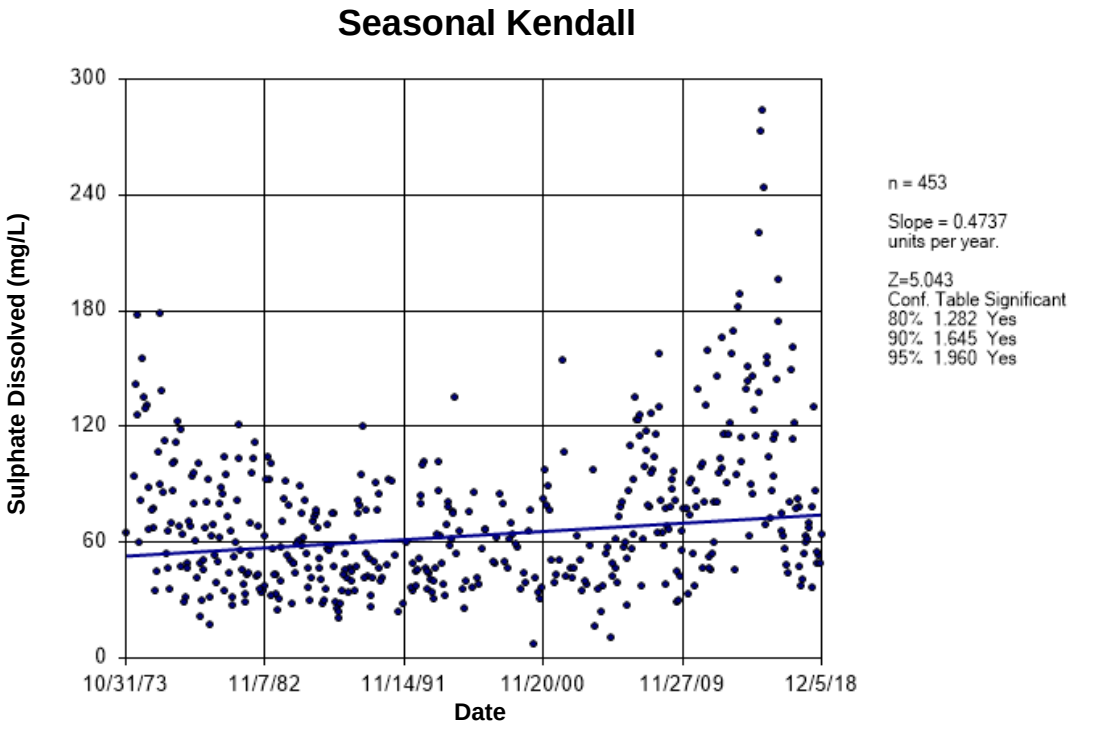

Figure C117 Carrot River: Sulphate Dissolved

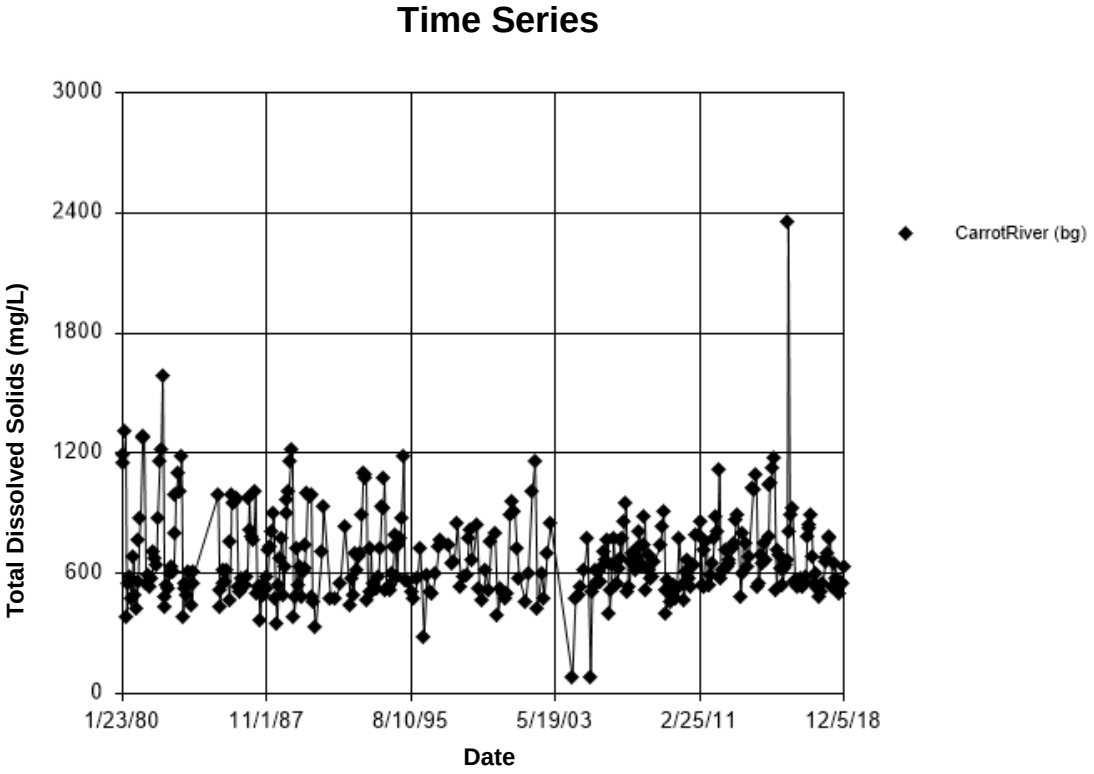

Figure C118 Carrot River: Total Dissolved Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 93.26
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

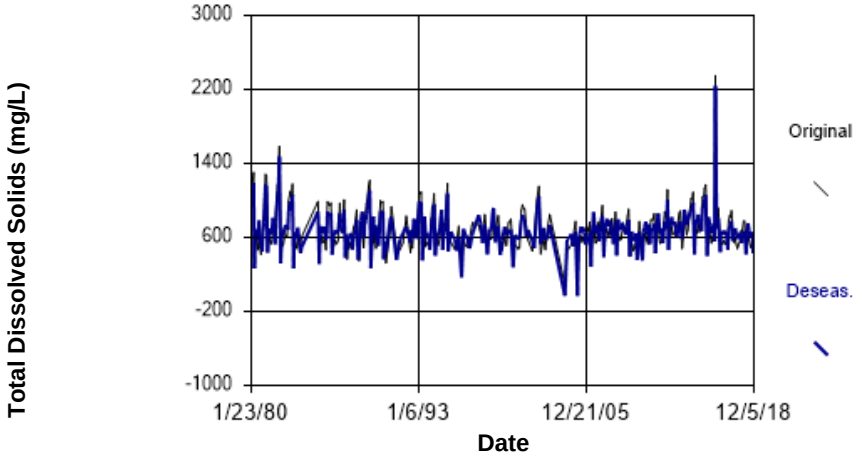

Figure C119 Carrot River: Total Dissolved Solids

Seasonal Kendall

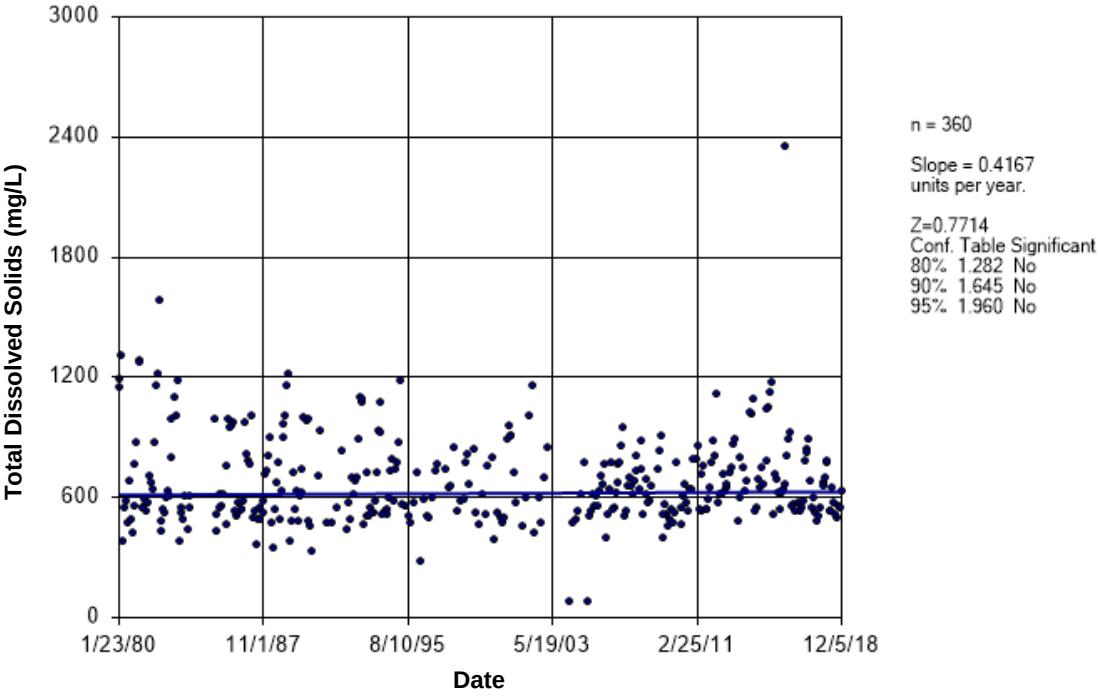

Figure C120 Carrot River: Total Dissolved Solids

Time Series

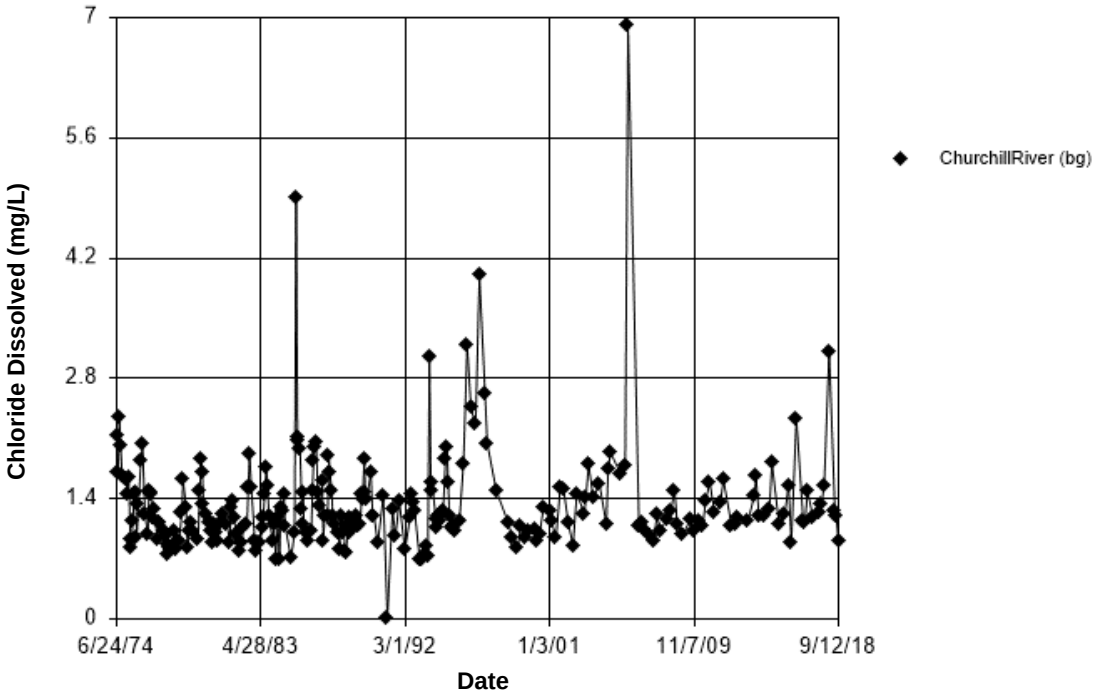

Figure C121 Churchill River: Chloride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 16.77
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 16.77
Adjusted Kruskal-Wallis statistic (H') = 16.77

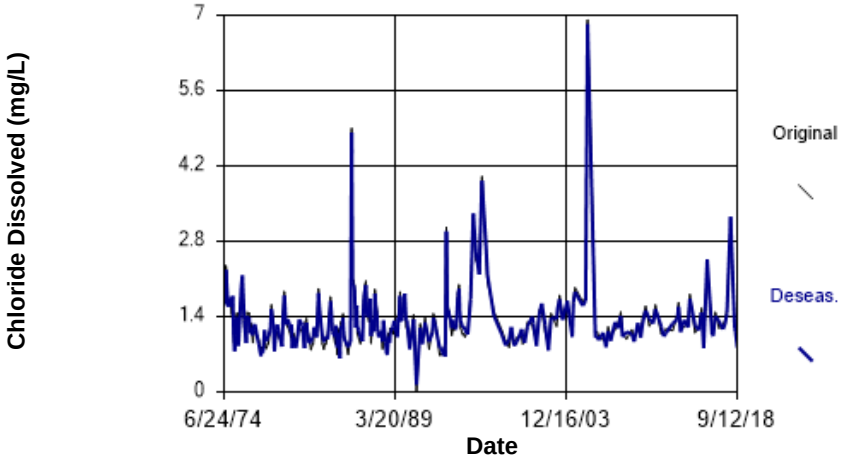

Figure C122 Churchill River: Chloride Dissolved

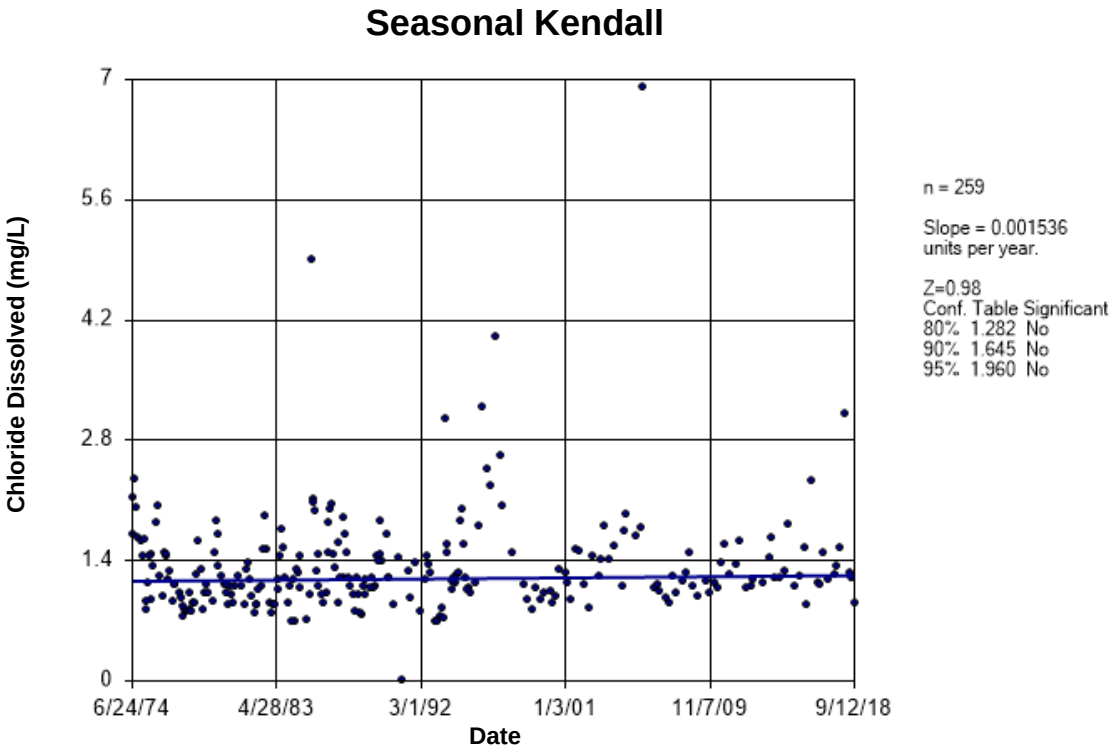

Figure C123 Churchill River: Chloride Dissolved

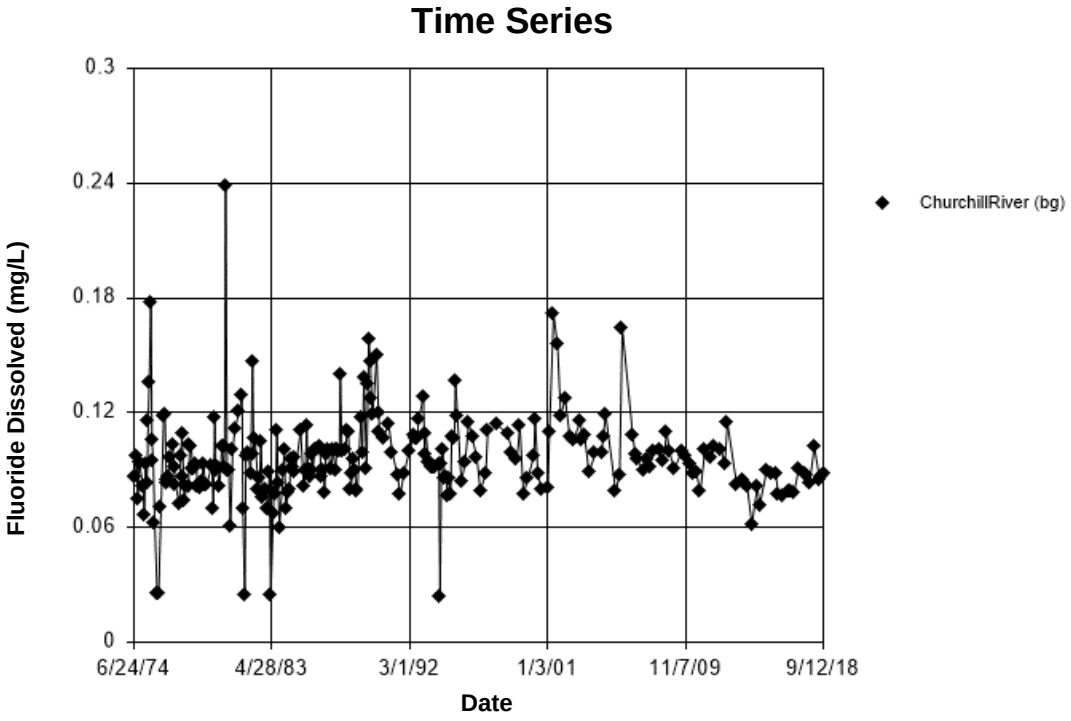

Figure C124 Churchill River: Fluoride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 6.821
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 6.821
Adjusted Kruskal-Wallis statistic (H') = 6.821

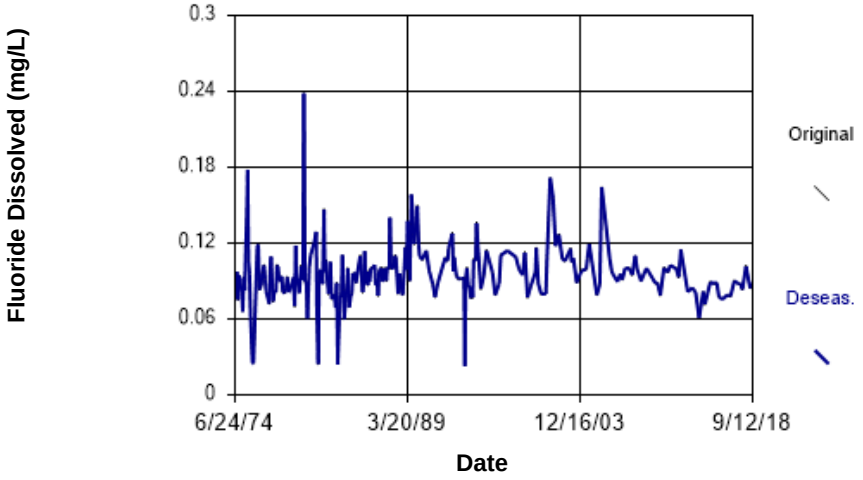

Figure C125 Churchill River: Fluoride Dissolved

Seasonal Kendall

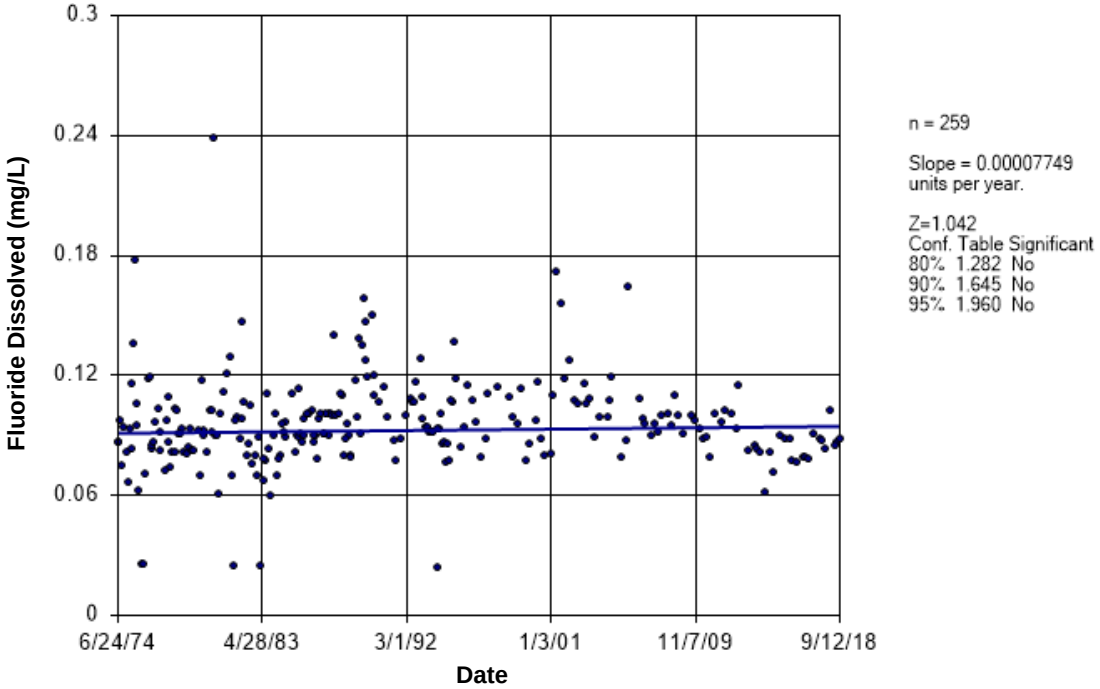

Figure C126 Churchill River: Fluoride Dissolved

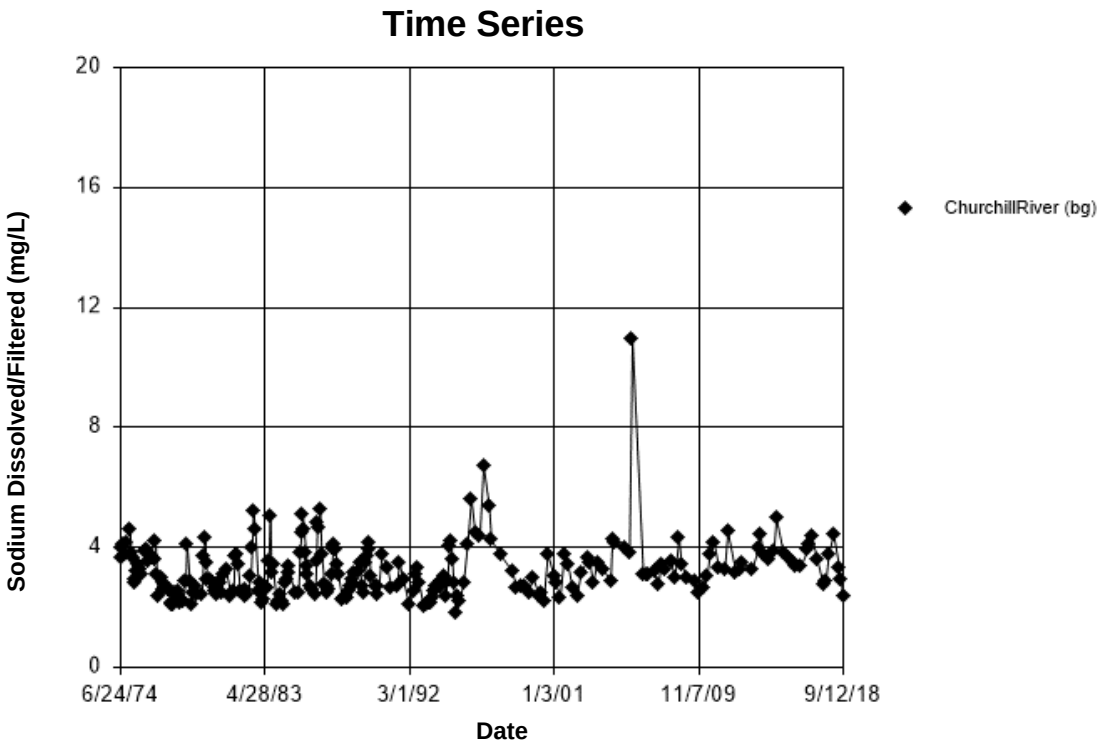

Figure C127 Churchill River: Sodium Dissolved/Filtered

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 23.42
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 23.42
Adjusted Kruskal-Wallis statistic (H') = 23.42

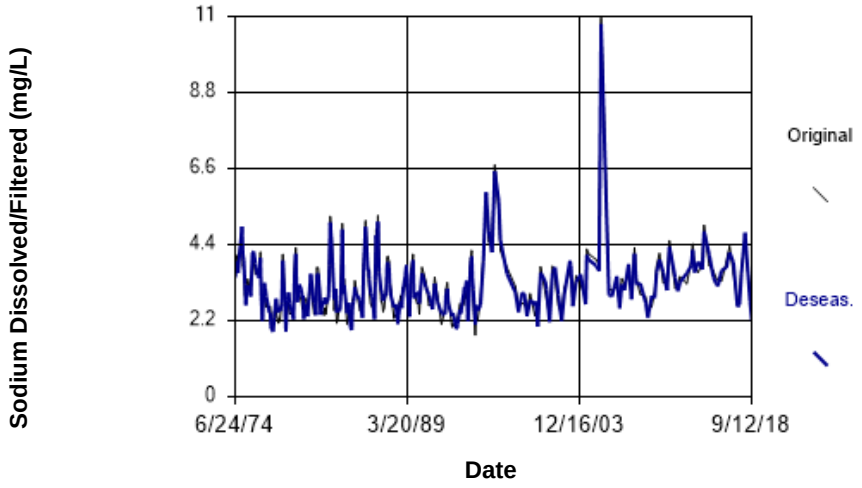

Figure C128 Churchill River: Sodium Dissolved/Filtered

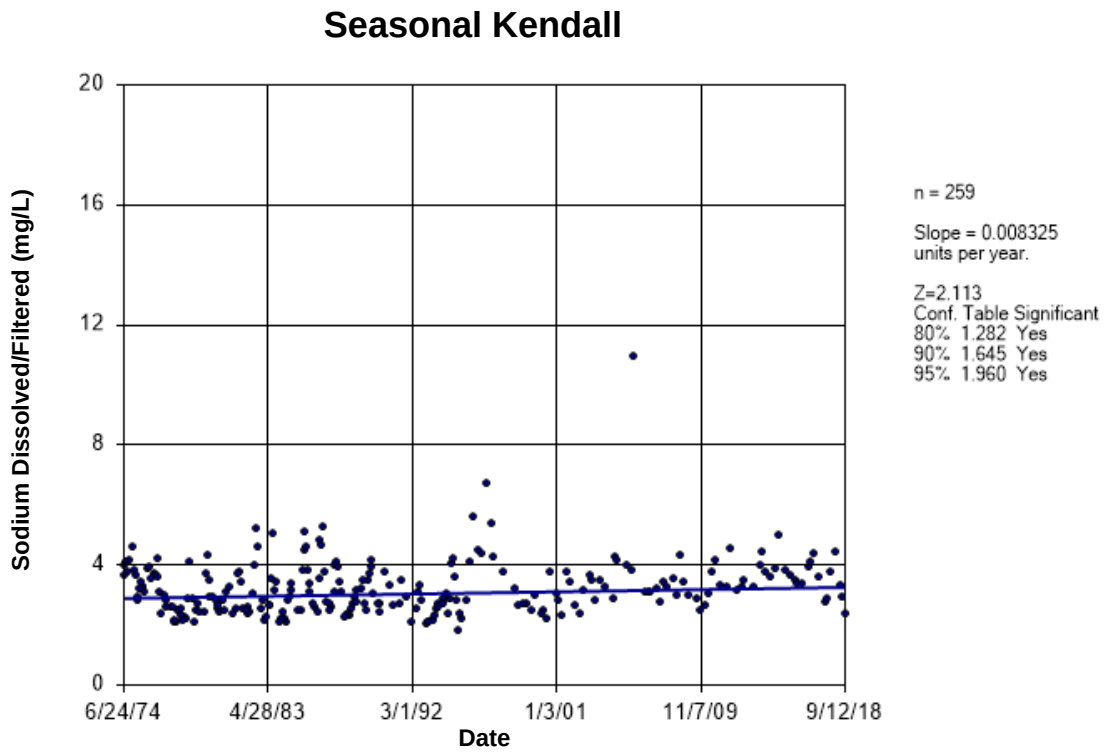

Figure C129 Churchill River: Sodium Dissolved/Filtered

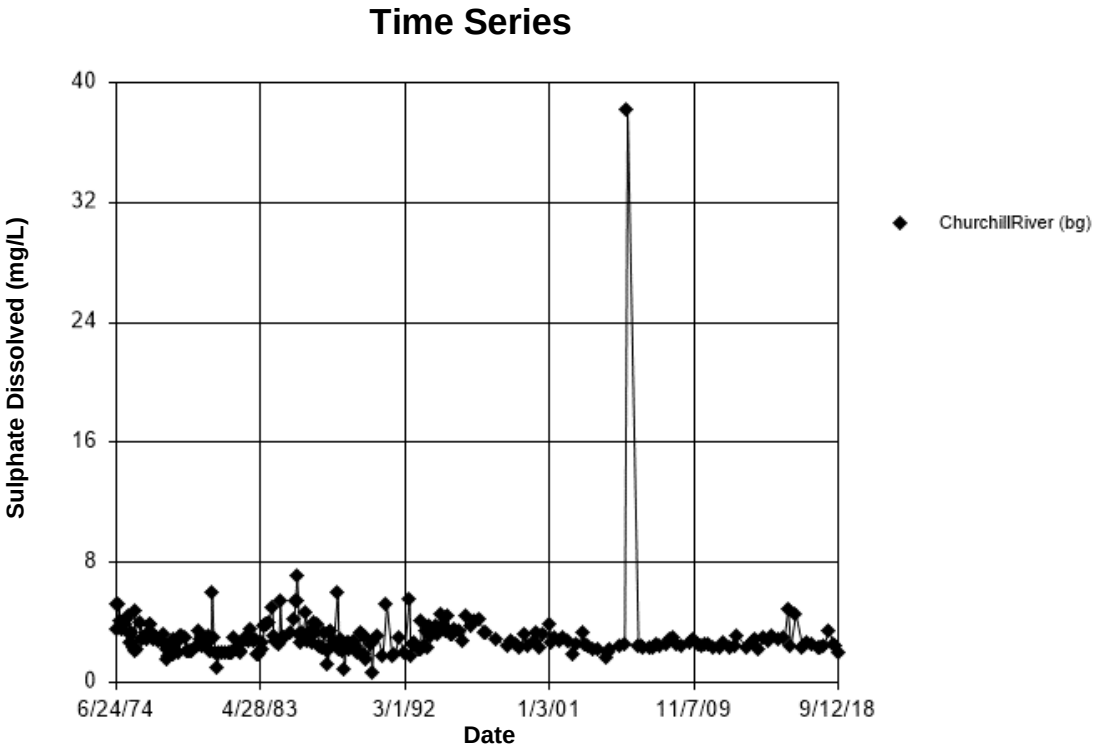

Figure C130 Churchill River: Sulphate Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.02315
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

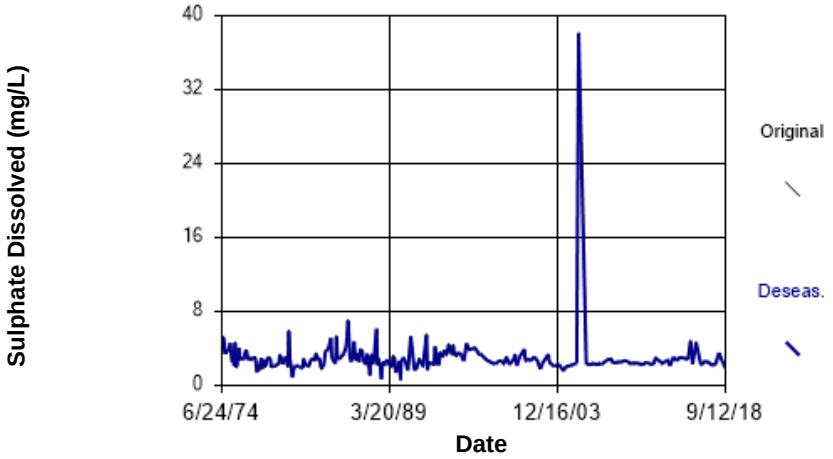

Figure C131 Churchill River: Sulphate Dissolved

Sen's Slope Estimator

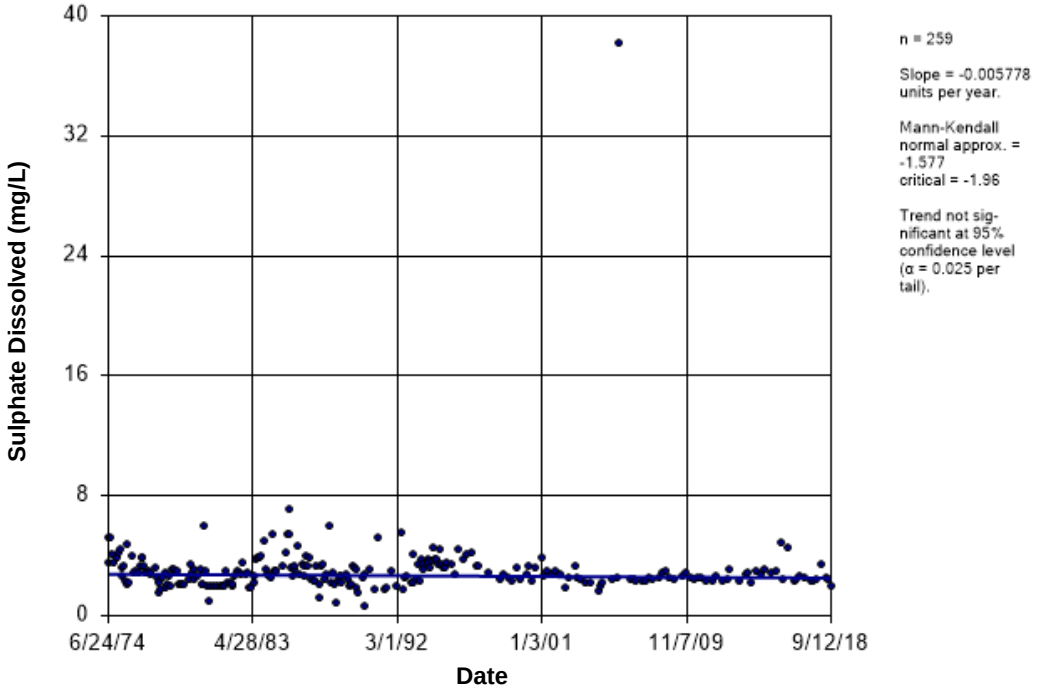

Figure C132 Churchill River: Sulphate Dissolved

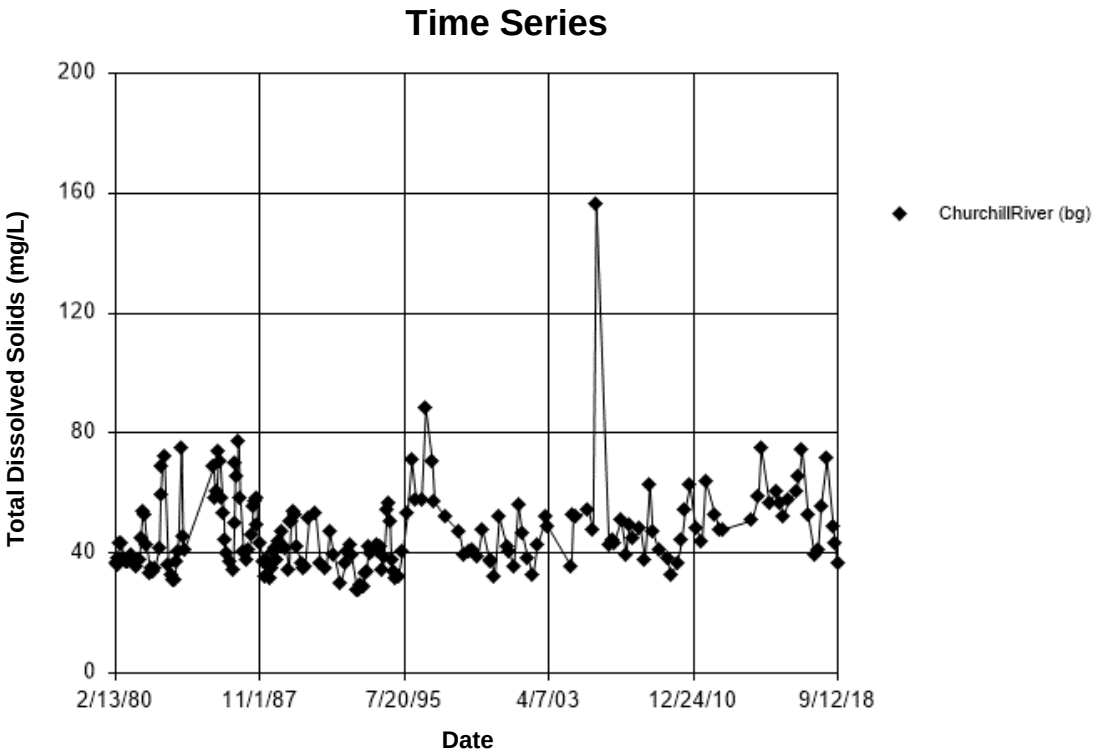

Figure C133 Churchill River: Total Dissolved Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 30.61
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

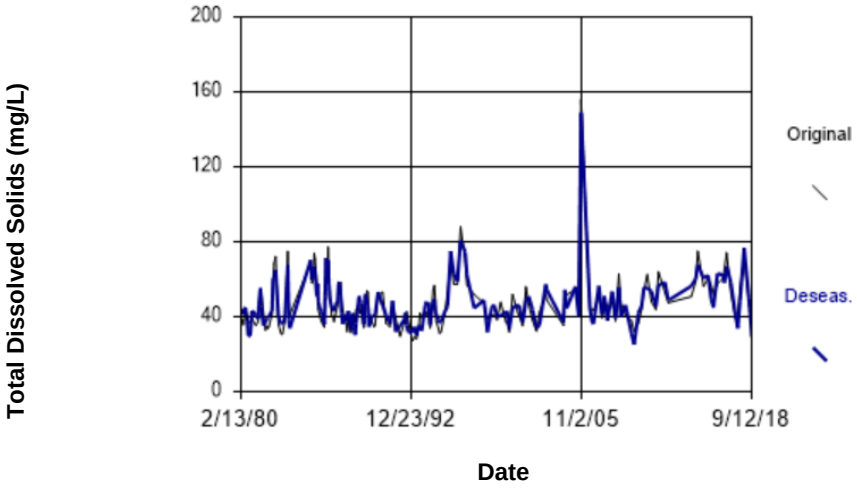

Figure C134 Churchill River: Total Dissolved Solids

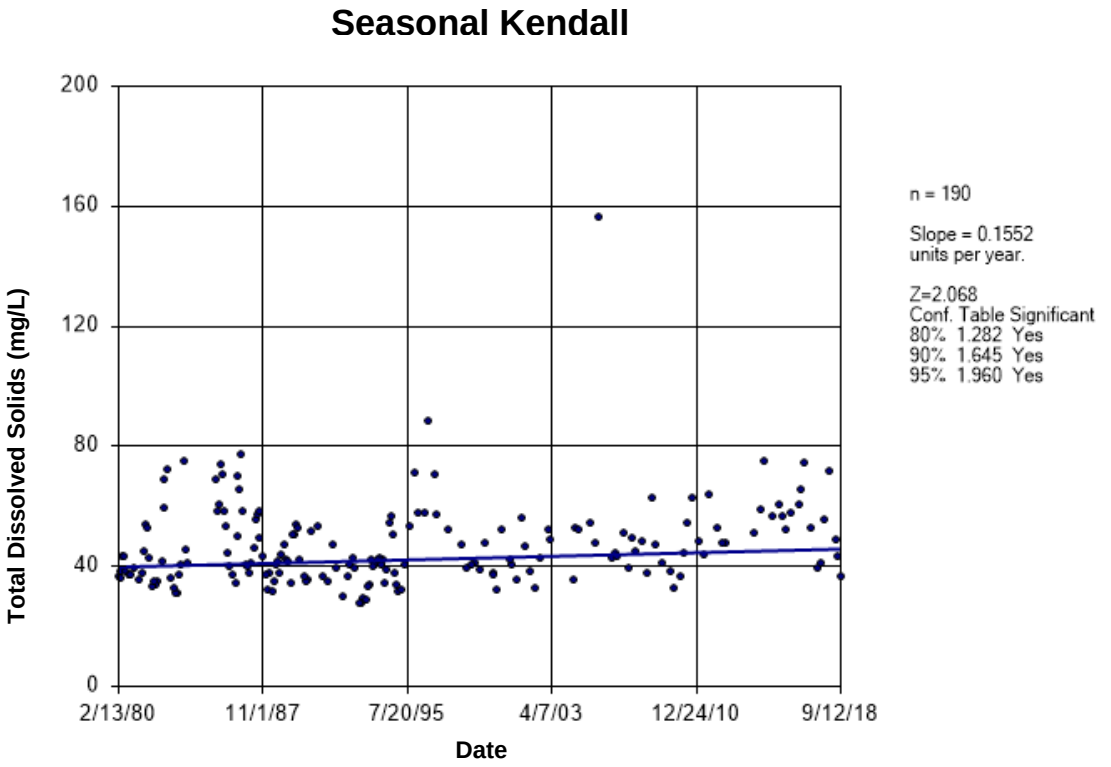

Figure C135 Churchill River: Total Dissolved Solids

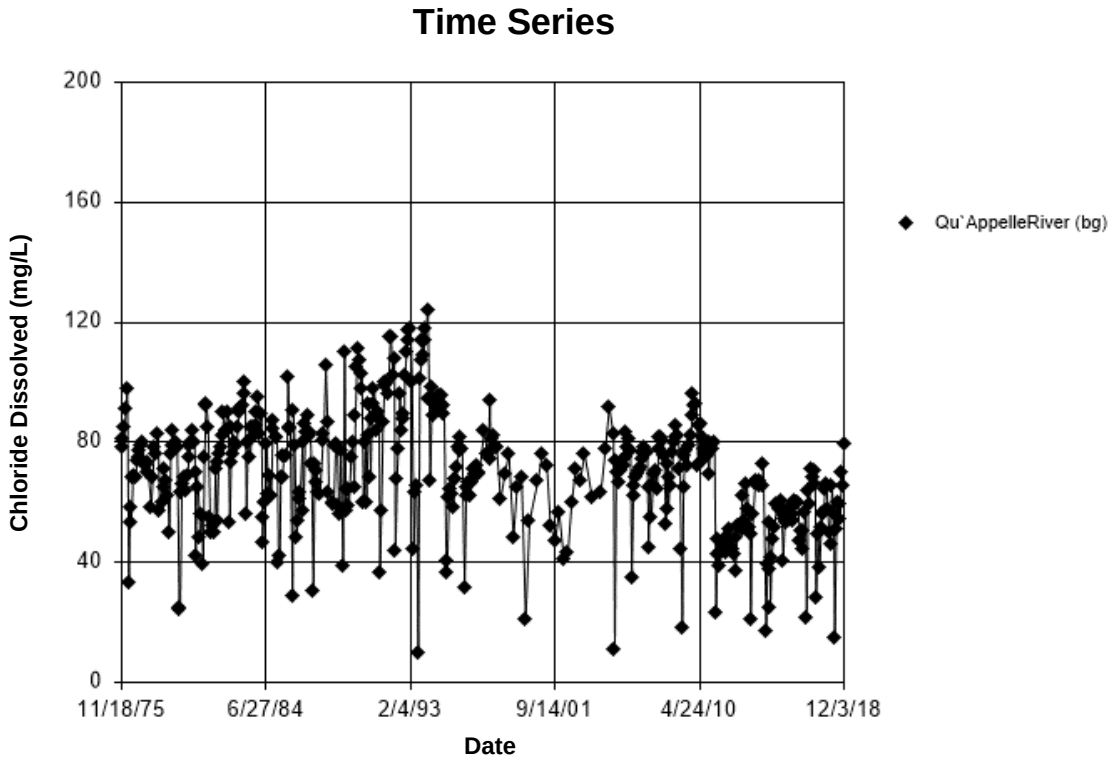

Figure C136 Qu'Appelle River: Chloride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 16.12
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 83 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 16.12
Adjusted Kruskal-Wallis statistic (H') = 16.12

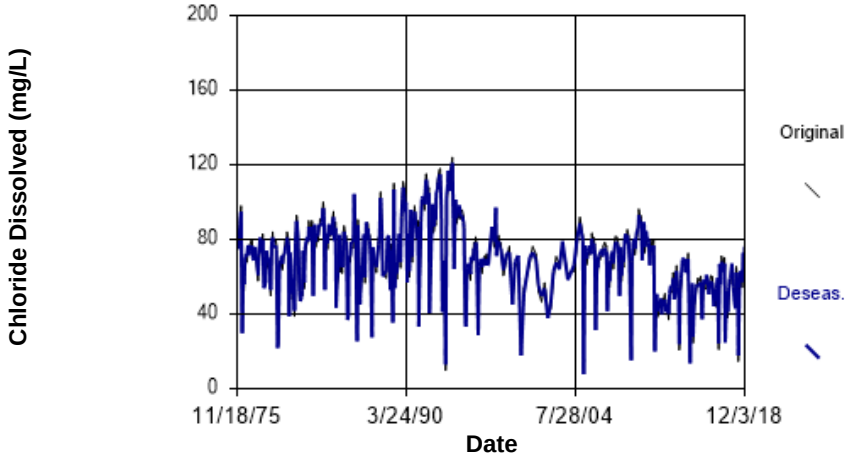

Figure C137 Qu'Appelle River: Chloride Dissolved

Seasonal Kendall

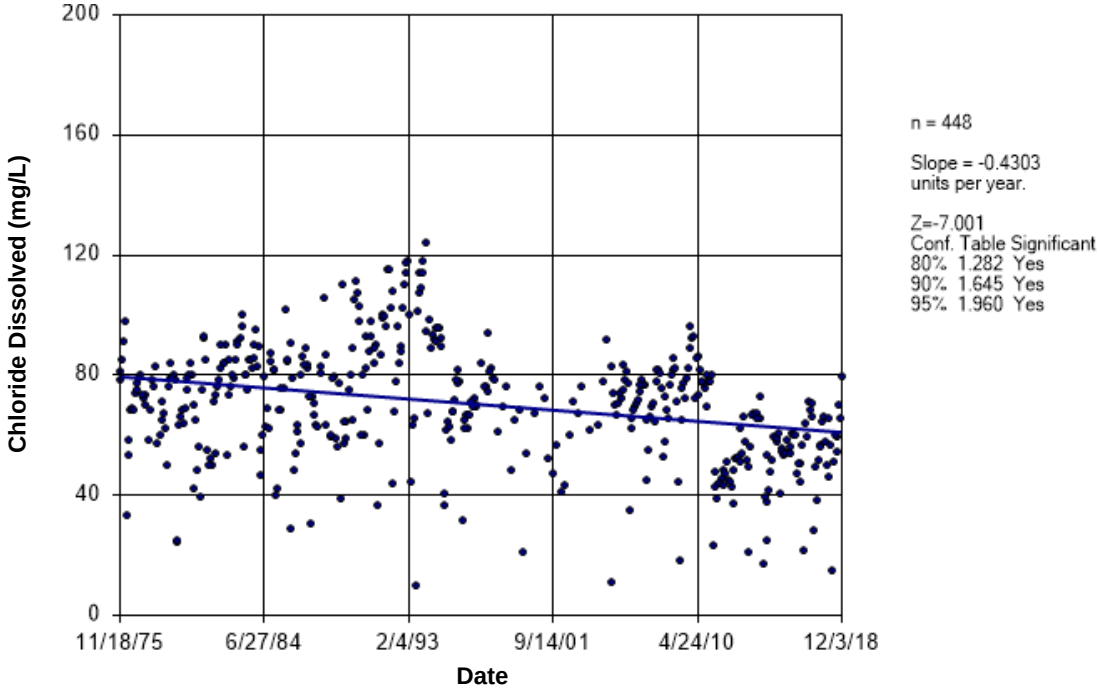

Figure C138 Qu'Appelle River: Chloride Dissolved

Time Series

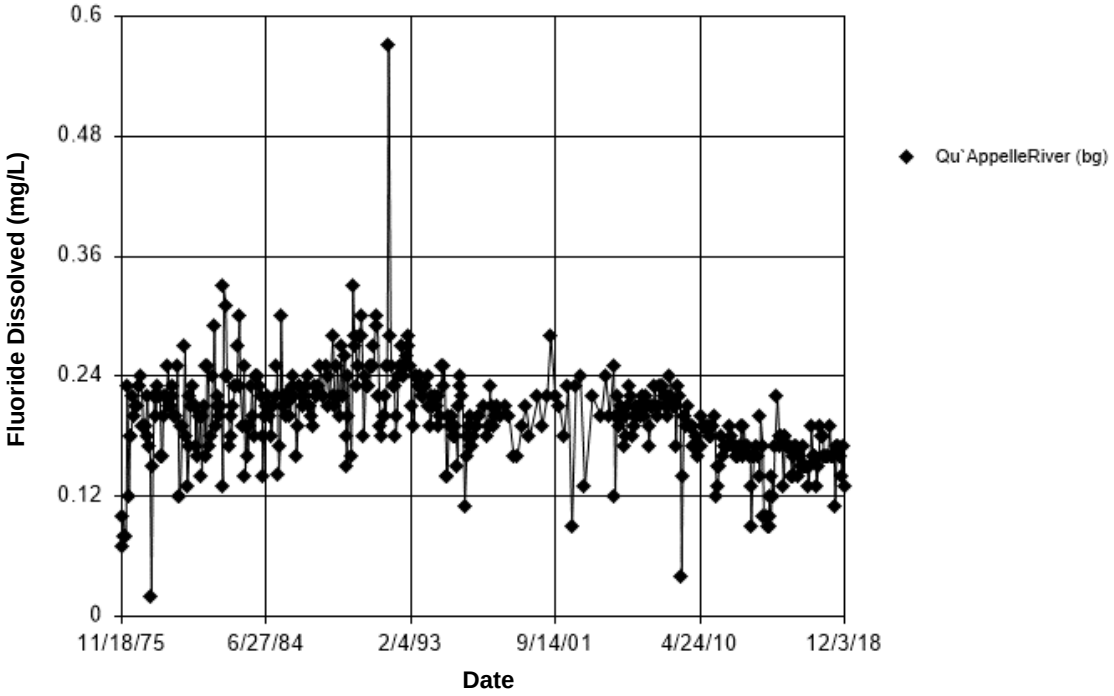

Figure C139 Qu'Appelle River: Fluoride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.419
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 24 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.4164
Adjusted Kruskal-Wallis statistic (H') = 0.419

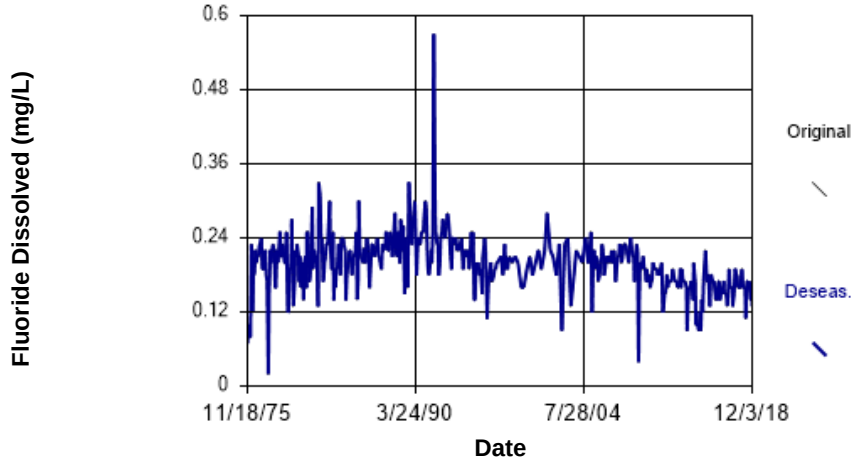

Figure C140 Qu'Appelle River: Fluoride Dissolved

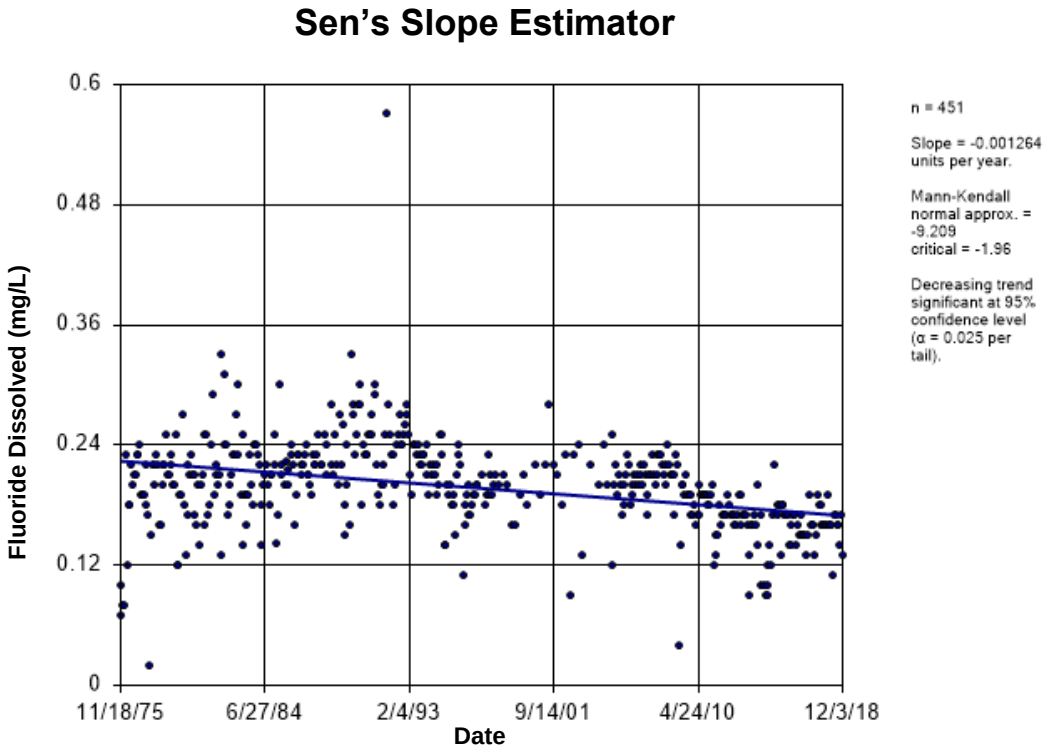

Figure C141 Qu'Appelle River: Fluoride Dissolved

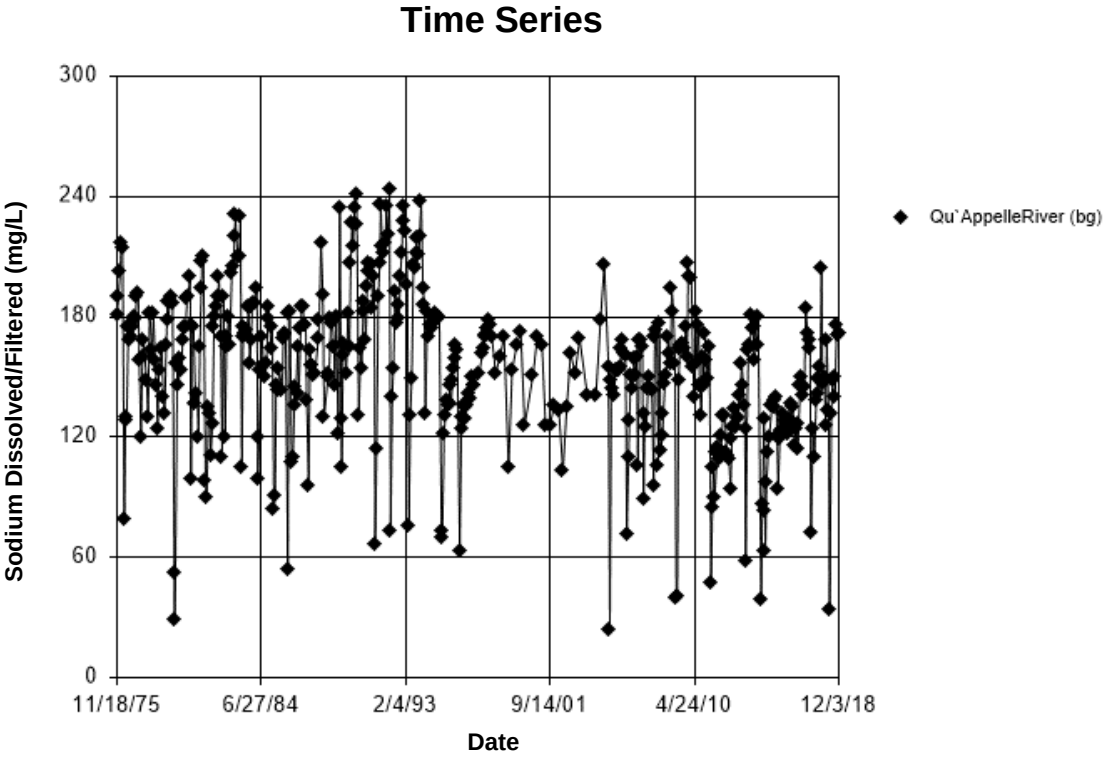

Figure C142 Qu'Appelle River: Sodium Dissolved/Filtered

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 11.19
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 89 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 11.19
Adjusted Kruskal-Wallis statistic (H') = 11.19

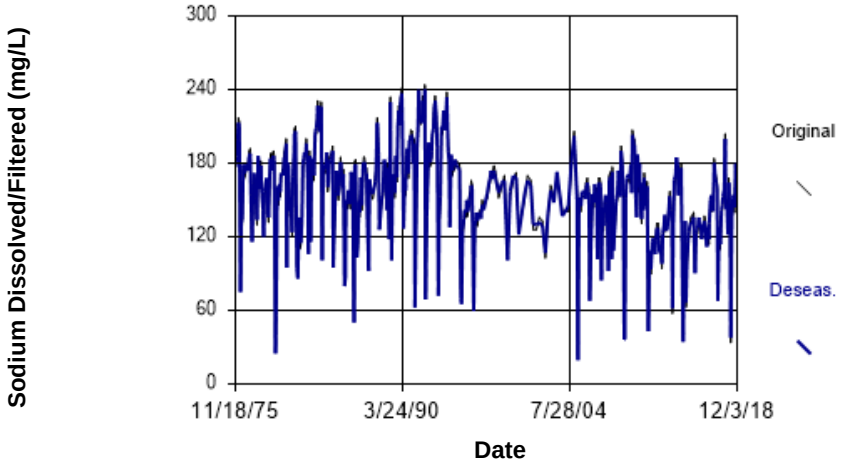

Figure C143 Qu'Appelle River: Sodium Dissolved/Filtered

Seasonal Kendall

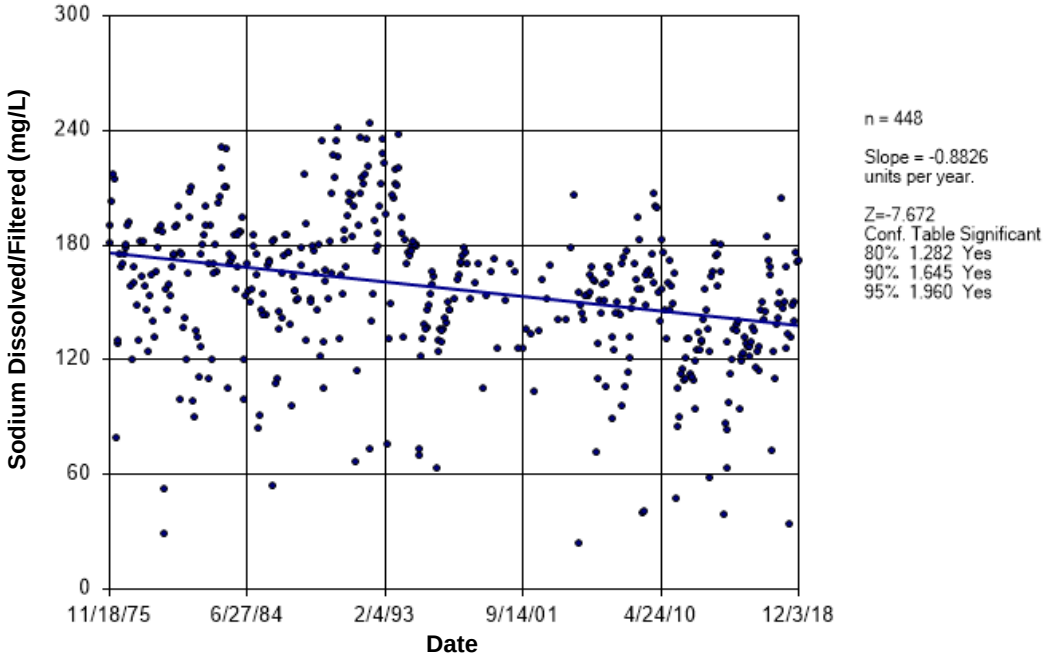

Figure C144 Qu'Appelle River: Sodium Dissolved/Filtered

Time Series

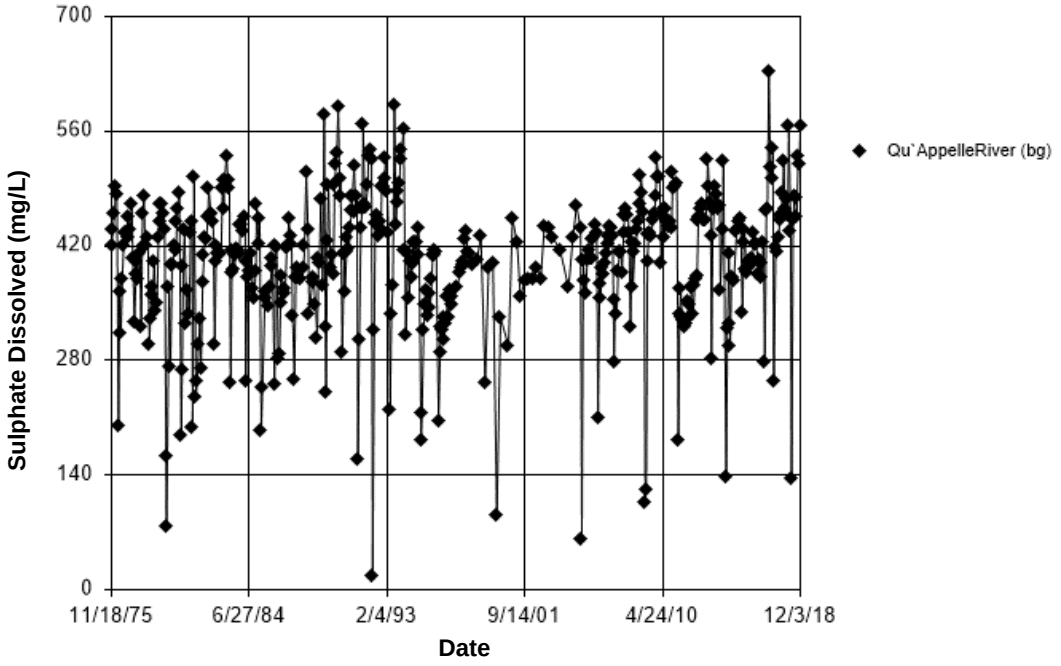

Figure C145 Qu'Appelle River: Sulphate Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 23.02
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 107 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 23.02
Adjusted Kruskal-Wallis statistic (H') = 23.02

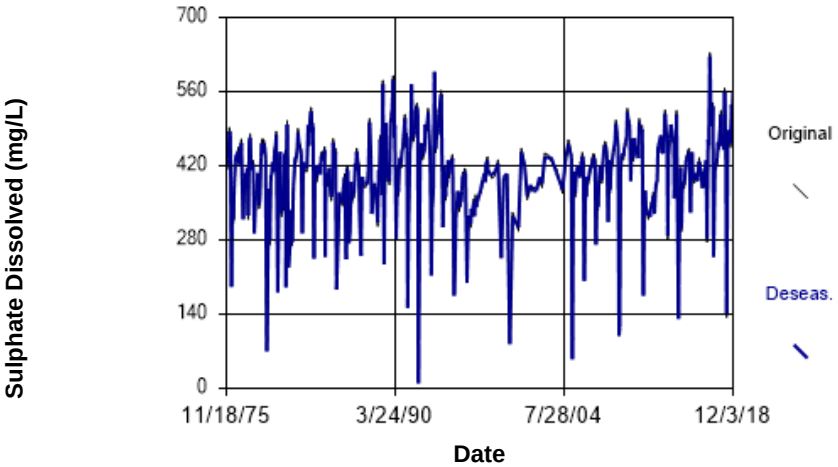

Figure C146 Qu'Appelle River: Sulphate Dissolved

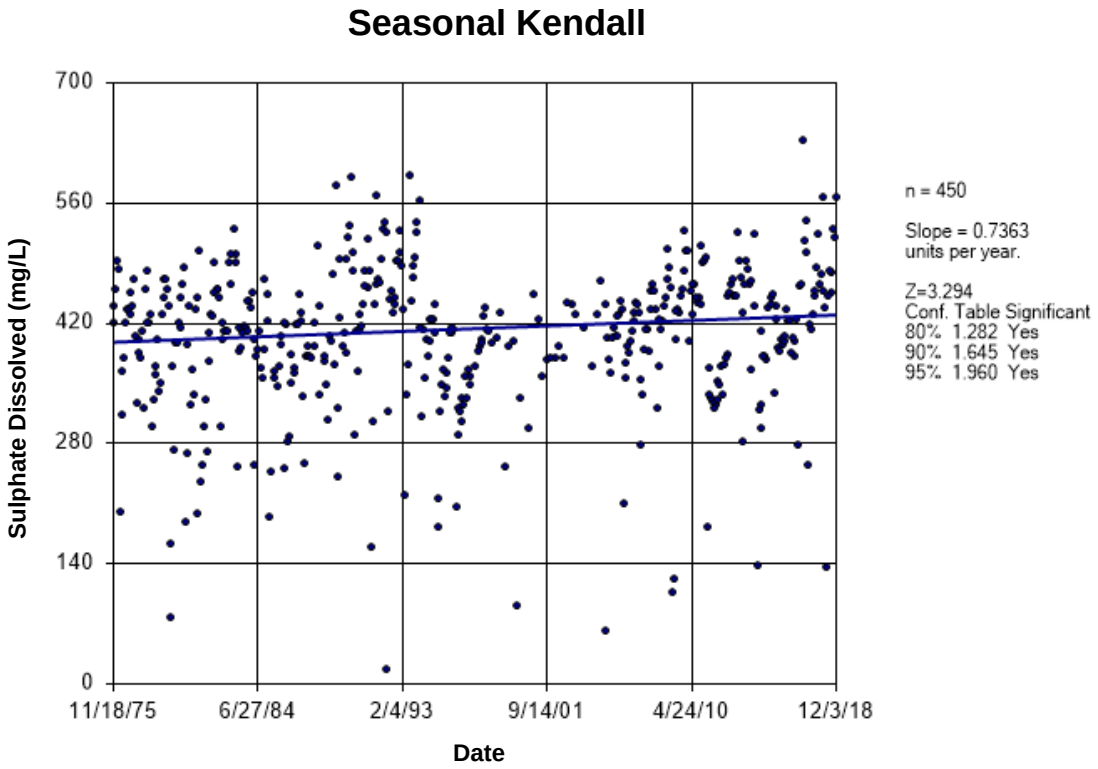

Figure C147 Qu'Appelle River: Sulphate Dissolved

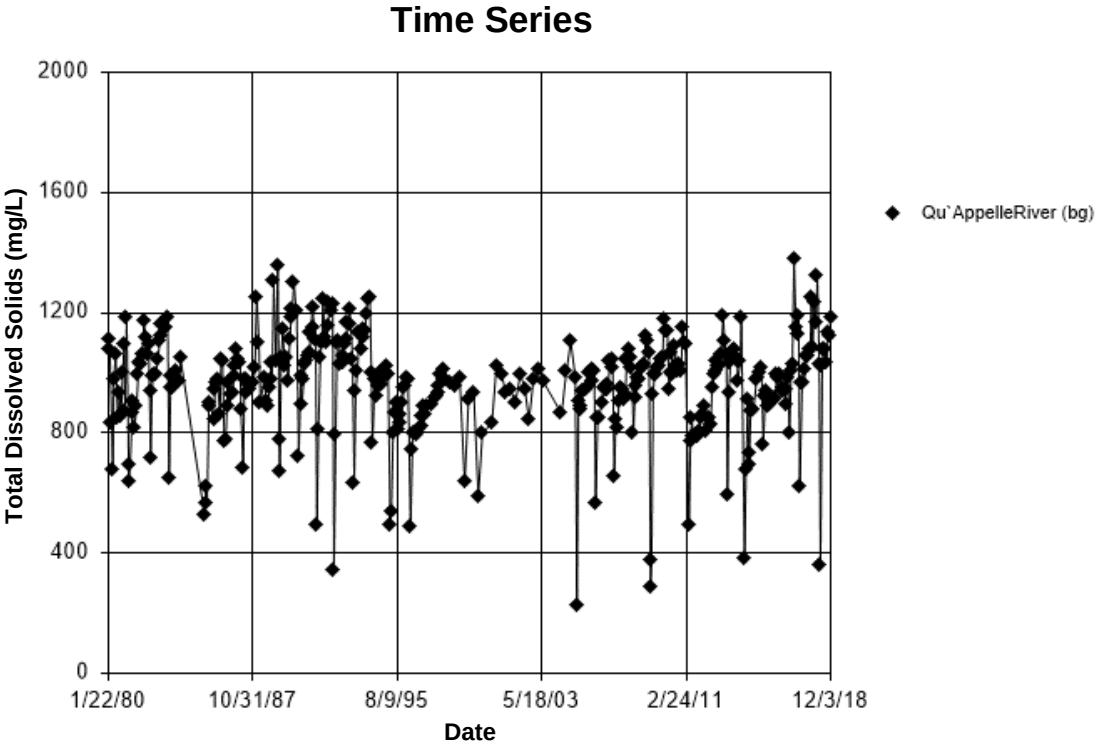

Figure C148 Qu'Appelle River: Total Dissolved Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 15.07
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 25 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 15.07
Adjusted Kruskal-Wallis statistic (H') = 15.07

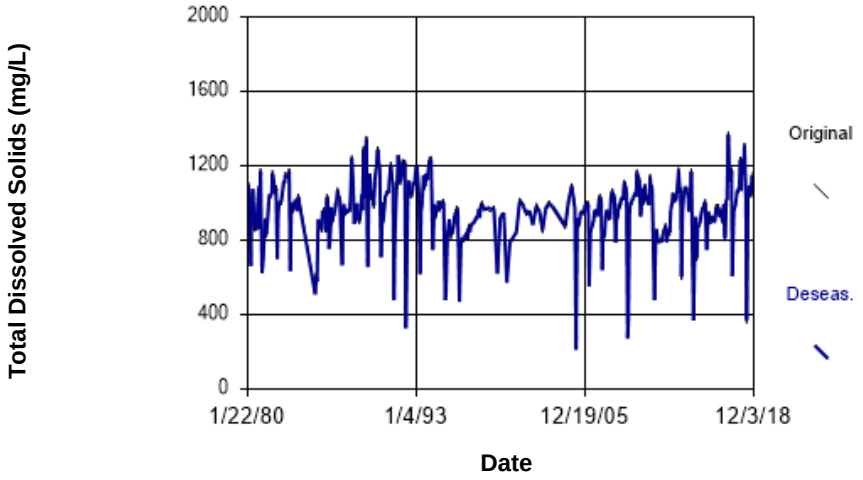

Figure C149 Qu'Appelle River: Total Dissolved Solids

Seasonal Kendall

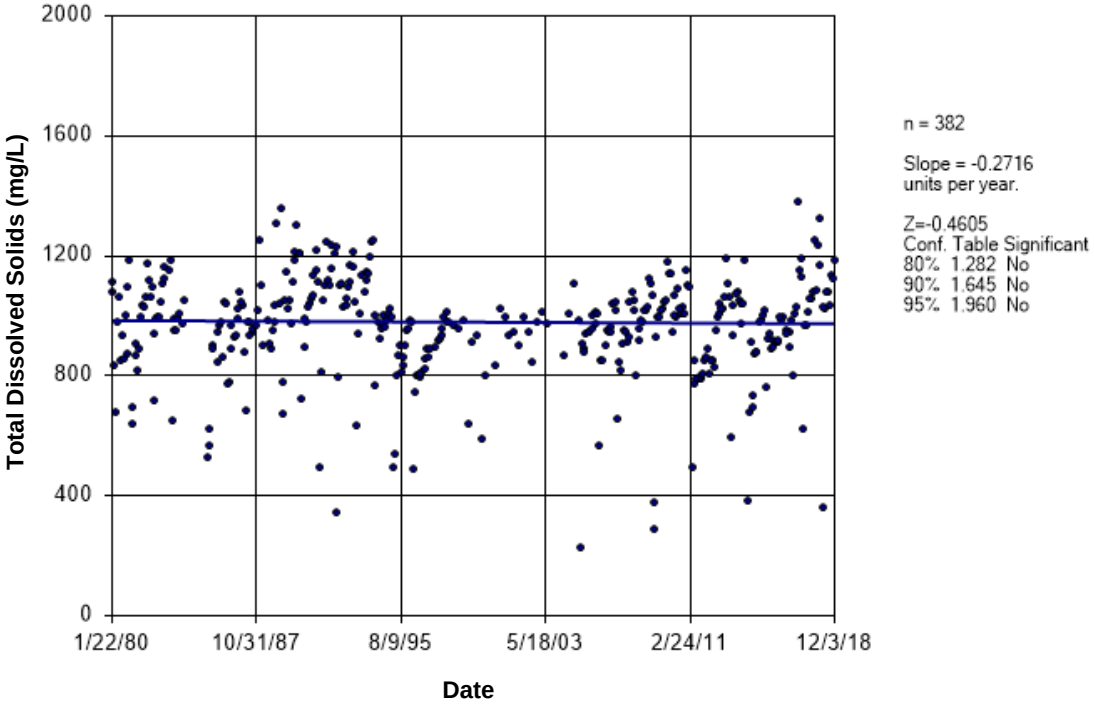

Figure C150 Qu'Appelle River: Total Dissolved Solids

Time Series

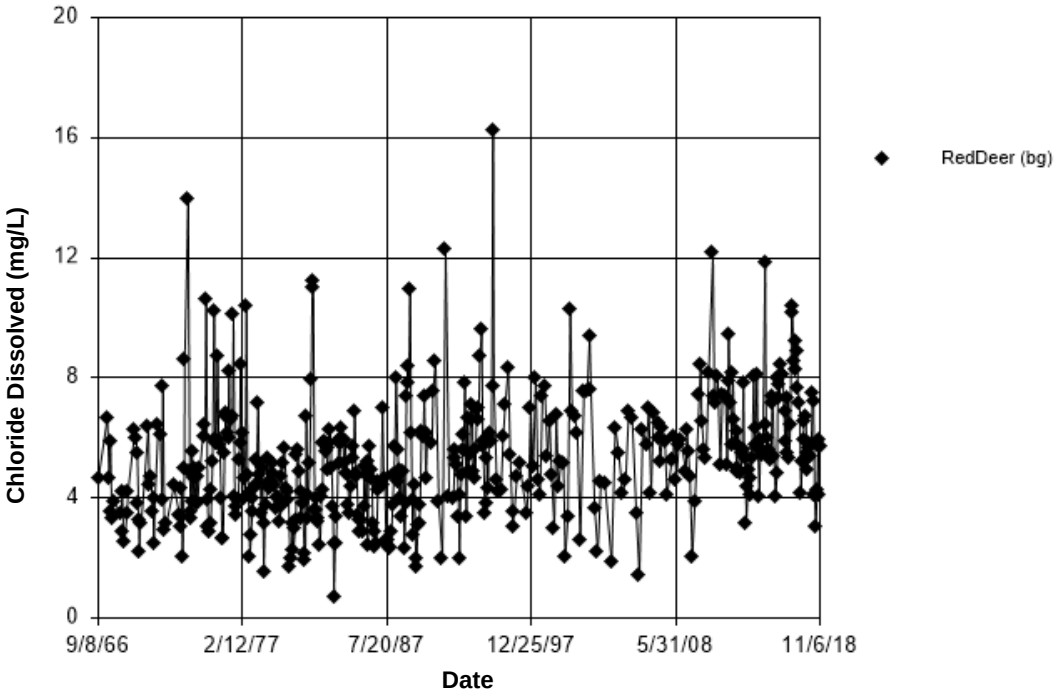

Figure C151 Red Deer River (SK-MB): Chloride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 77.41
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 77.41
Adjusted Kruskal-Wallis statistic (H') = 77.41

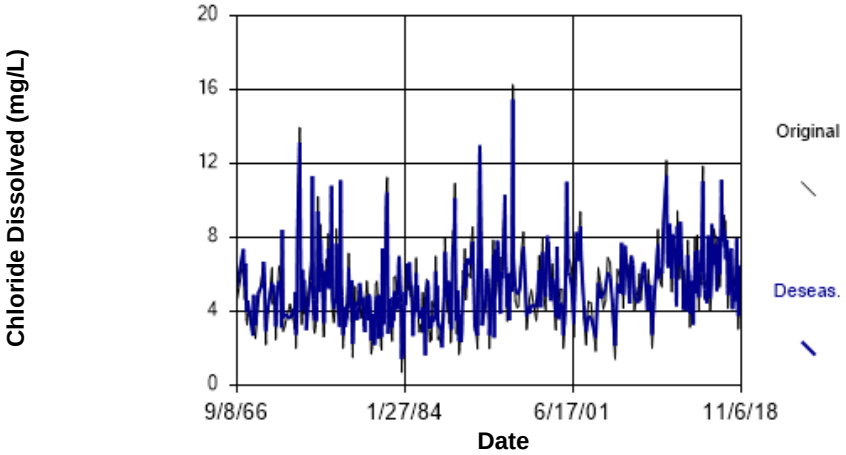

Figure C152 Red Deer River (SK-MB): Chloride Dissolved

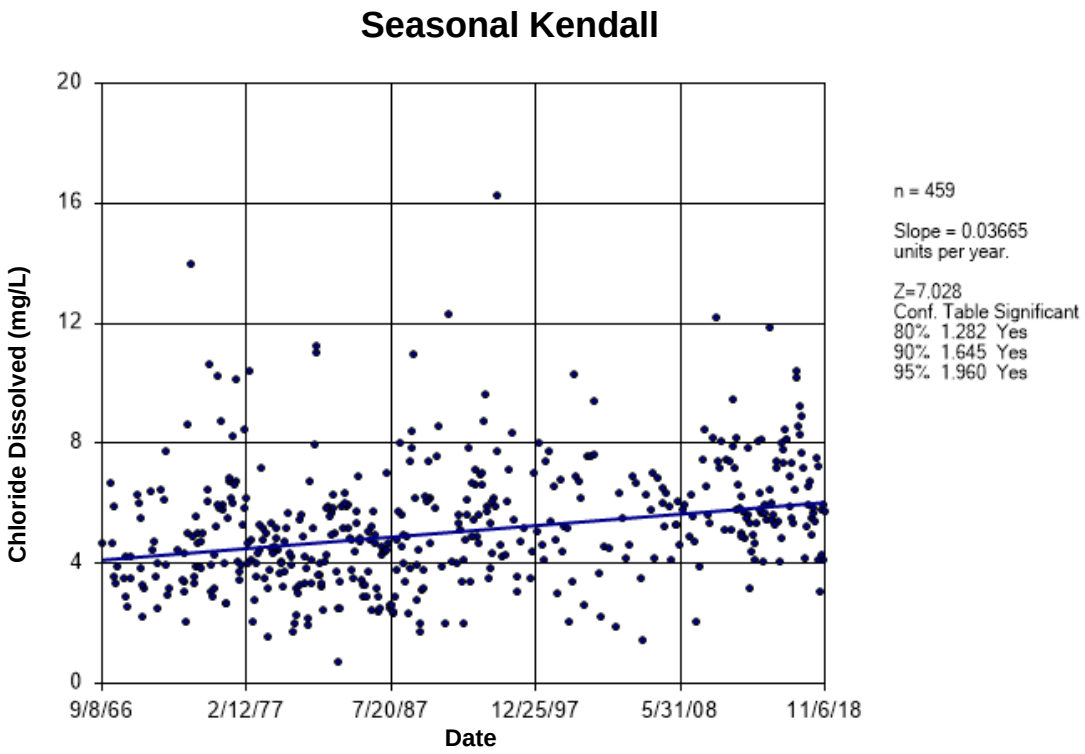

Figure C153 Red Deer River (SK-MB): Chloride Dissolved

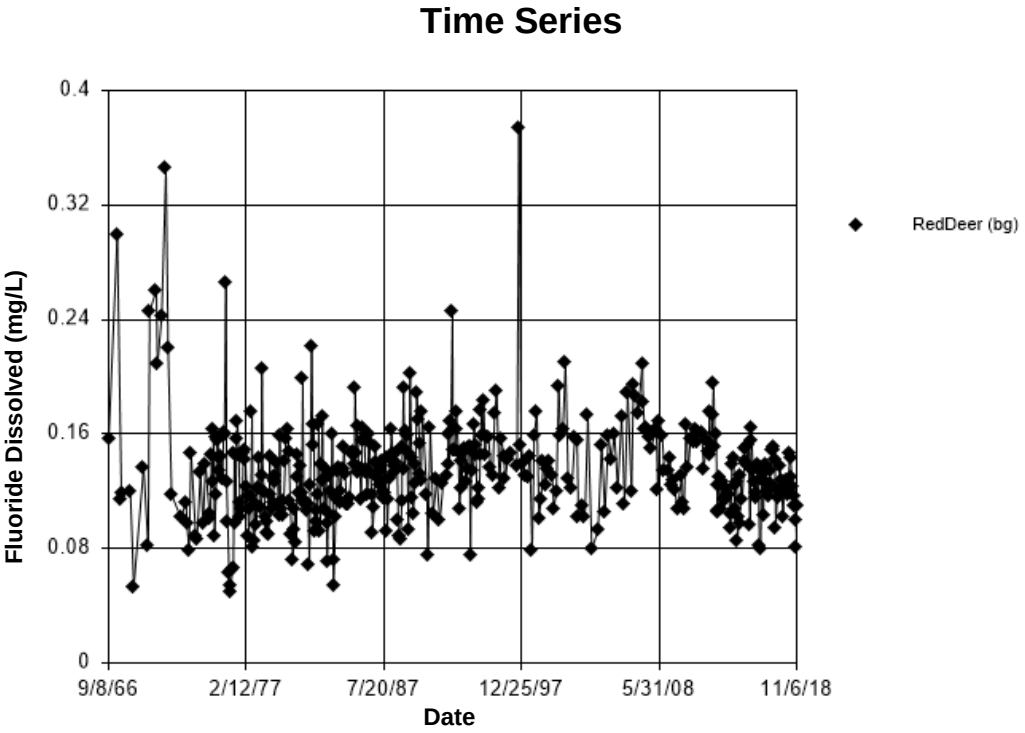

Figure C154 Red Deer River (SK-MB): Fluoride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 5.515
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 5.515
Adjusted Kruskal-Wallis statistic (H') = 5.515

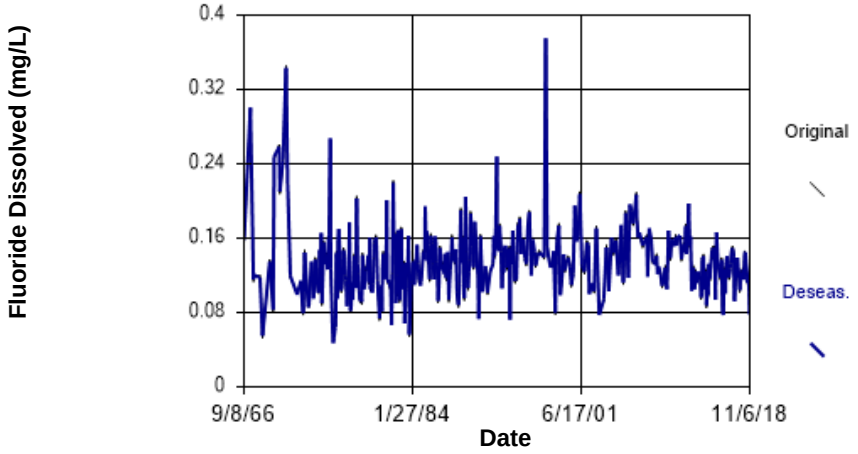

Figure C155 Red Deer River (SK-MB): Fluoride Dissolved

Seasonal Kendall

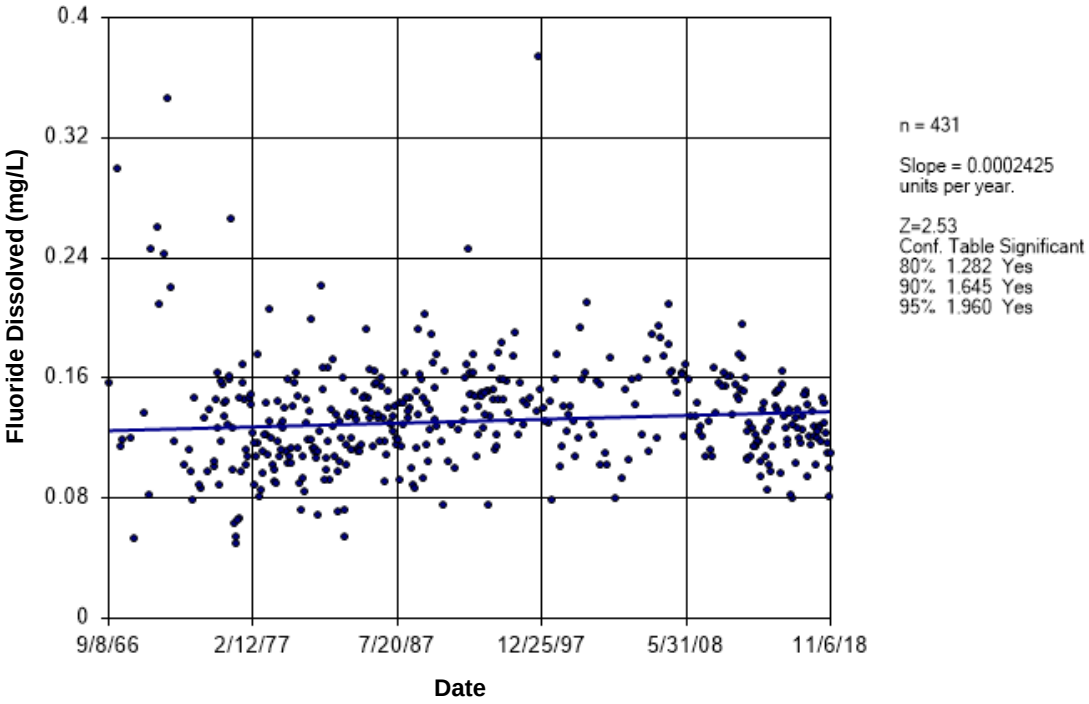

Figure C156 Red Deer River (SK-MB): Fluoride Dissolved

Time Series

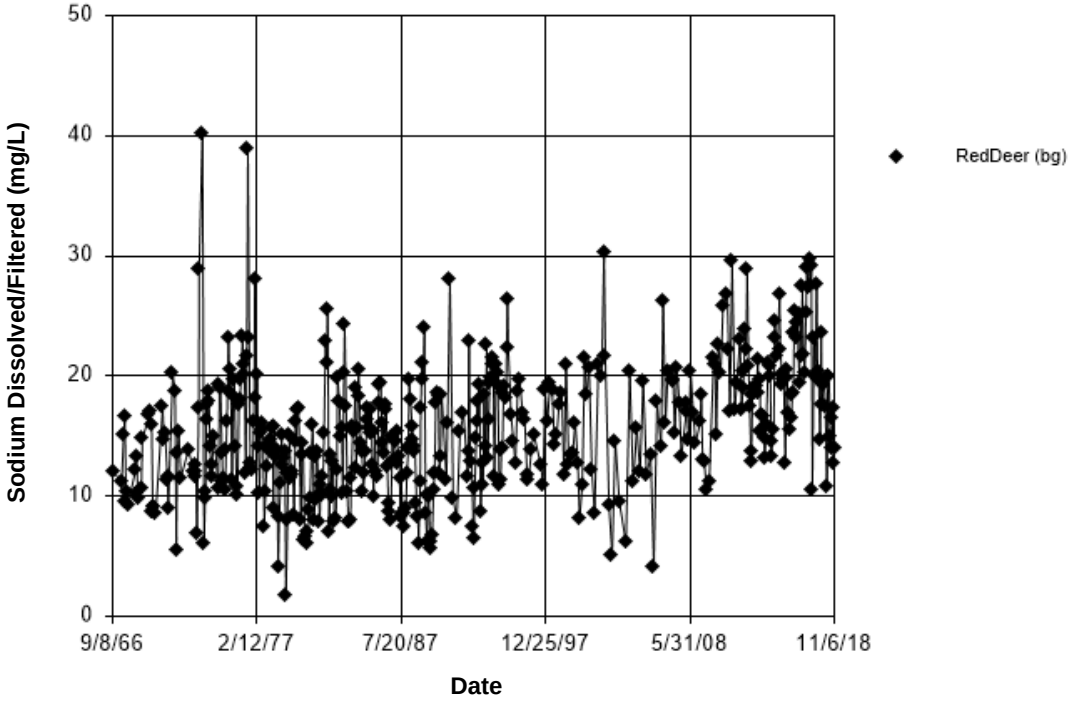

Figure C157 Red Deer River (SK-MB): Sodium Dissolved/Filtered

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 29.9
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 29.9
Adjusted Kruskal-Wallis statistic (H') = 29.9

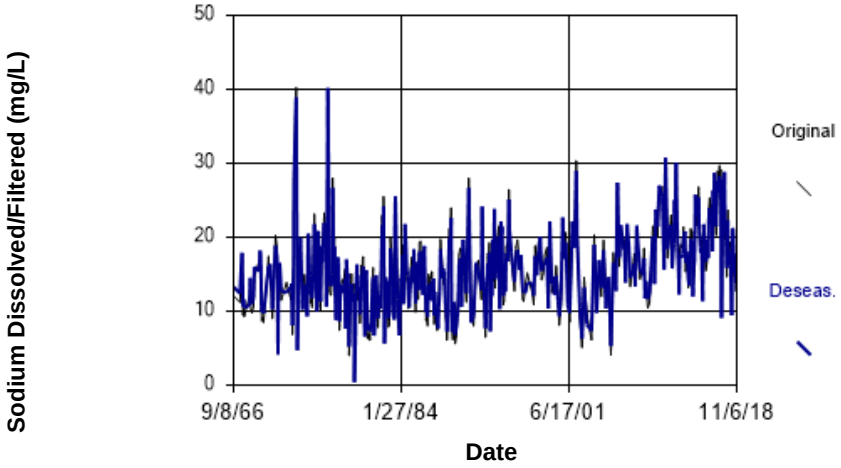

Figure C158 Red Deer River (SK-MB): Sodium Dissolved/Filtered

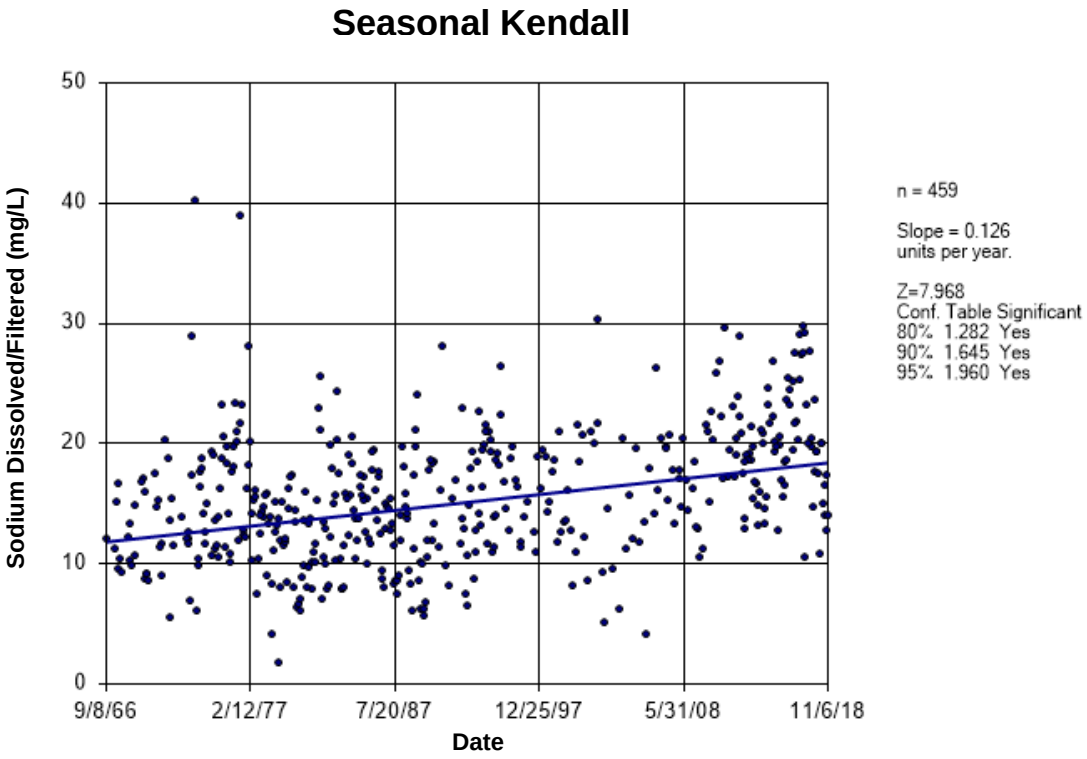

Figure C159 Red Deer River (SK-MB): Sodium Dissolved/Filtered

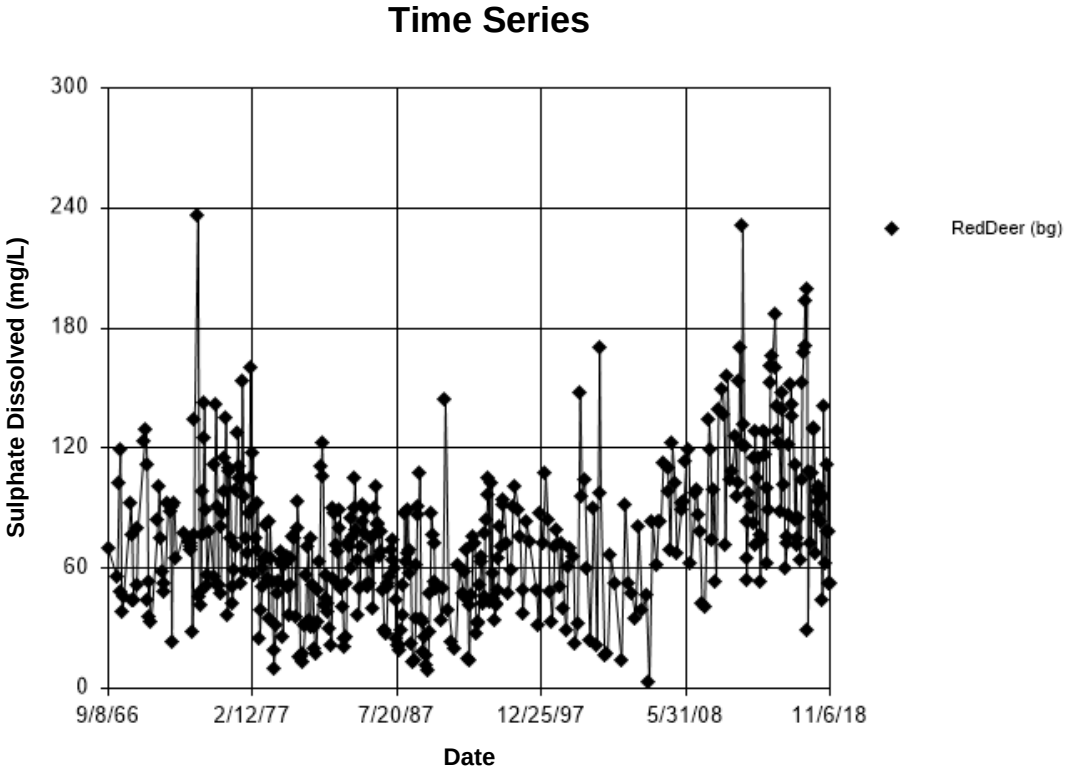

Figure C160 Red Deer River (SK-MB): Sulphate Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 27.18
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 27.18
Adjusted Kruskal-Wallis statistic (H') = 27.18

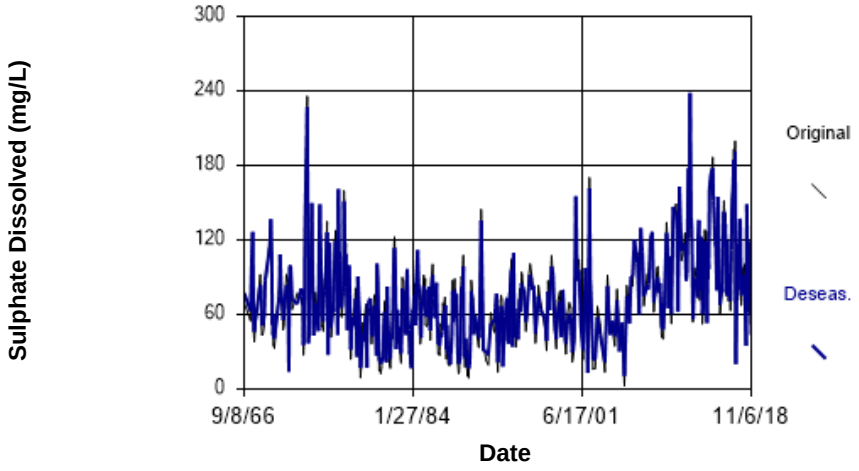

Figure C161 Red Deer River (SK-MB): Sulphate Dissolved

Seasonal Kendall

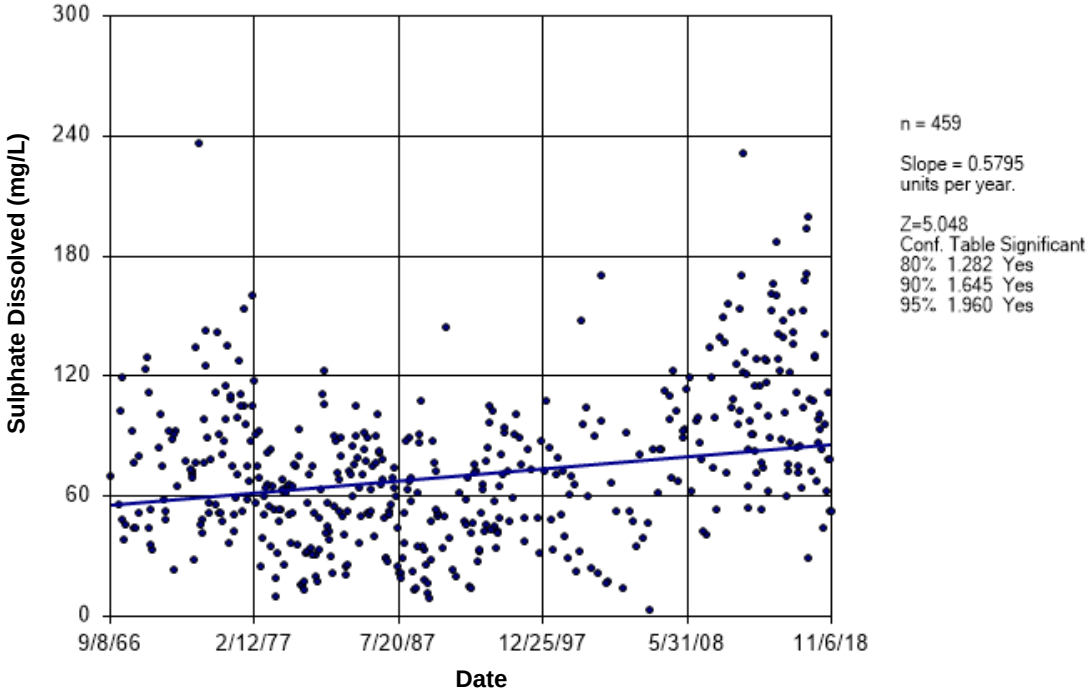

Figure C162 Red Deer River (SK-MB): Sulphate Dissolved

Time Series

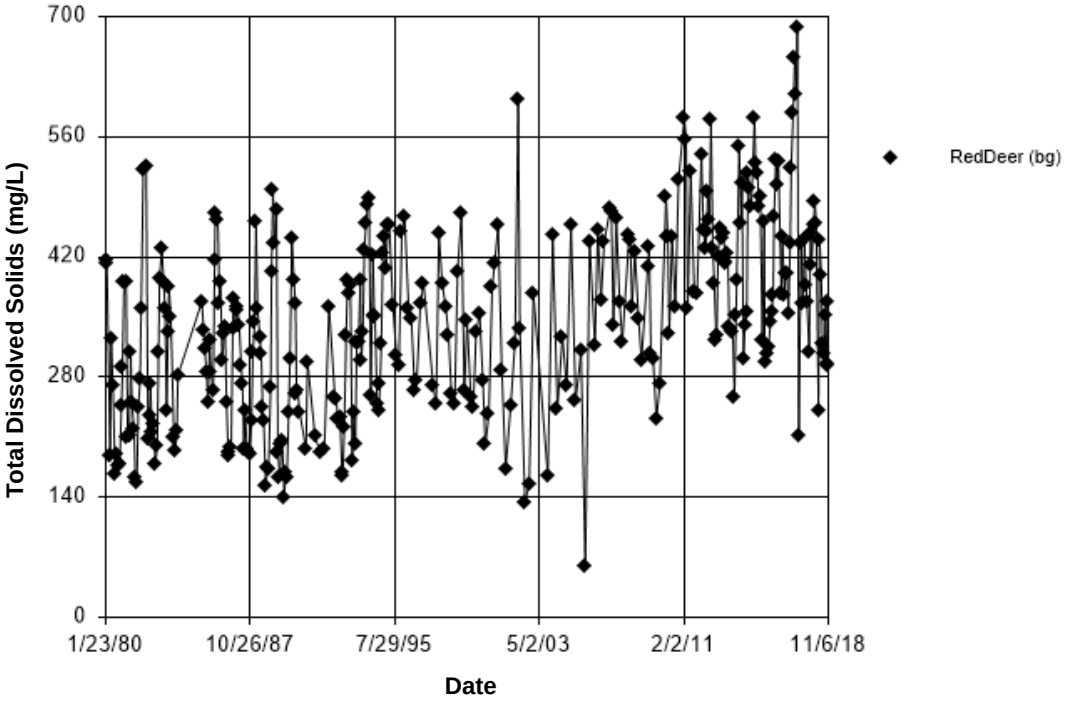

Figure C163 Red Deer River (SK-MB): Total Dissolved Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 61.01
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

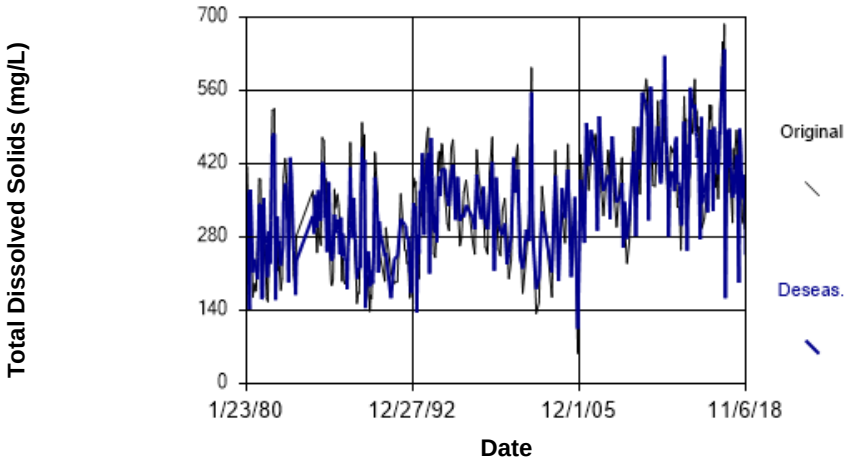

Figure C164 Red Deer River (SK-MB): Total Dissolved Solids

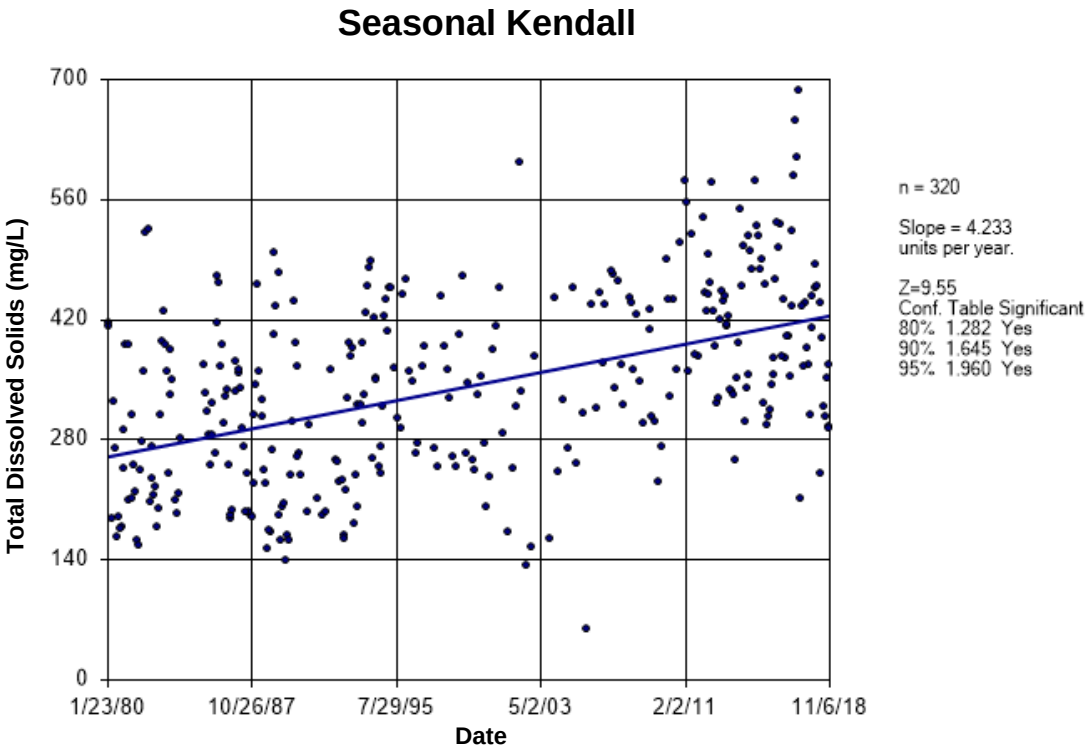

Figure C165 Red Deer River (SK-MB): Total Dissolved Solids

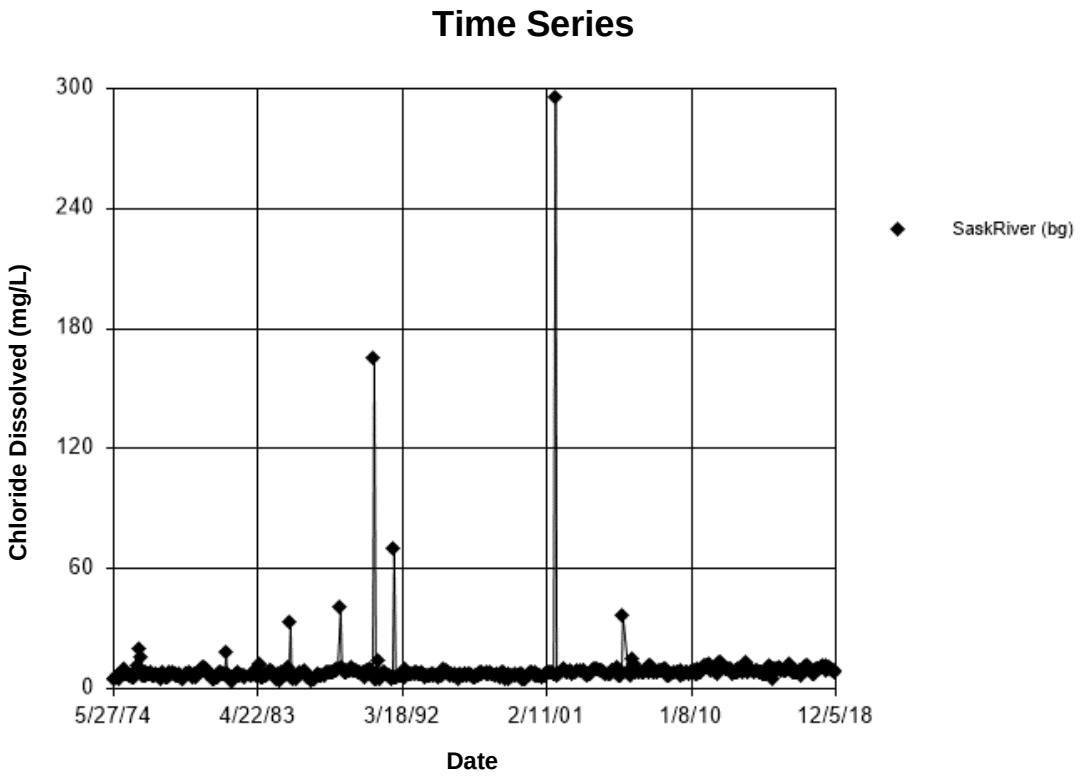

Figure C166 Saskatchewan River: Chloride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 21.85
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

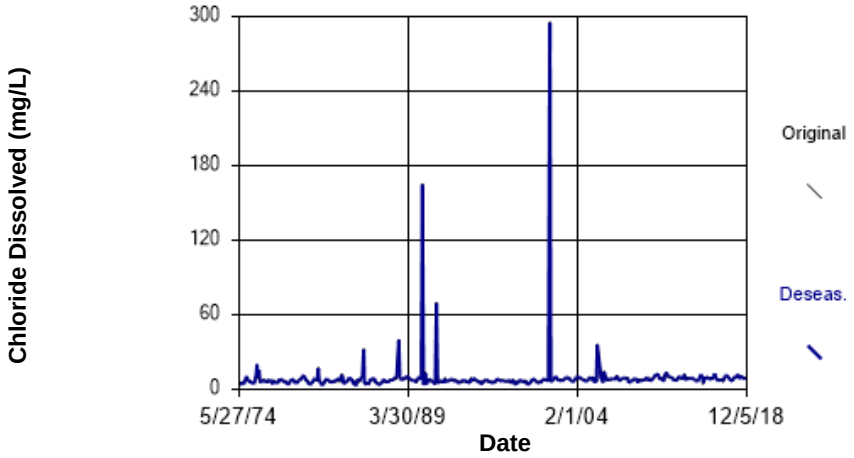

Figure C167 Saskatchewan River: Chloride Dissolved

Seasonal Kendall

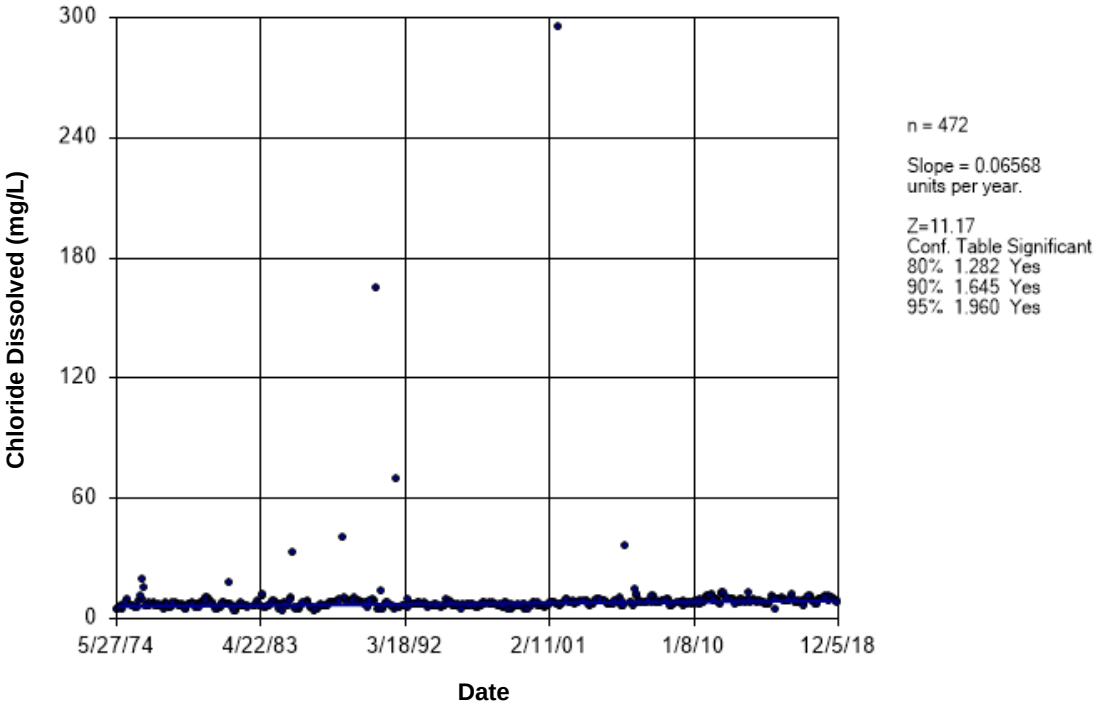

Figure C168 Saskatchewan River: Chloride Dissolved

Time Series

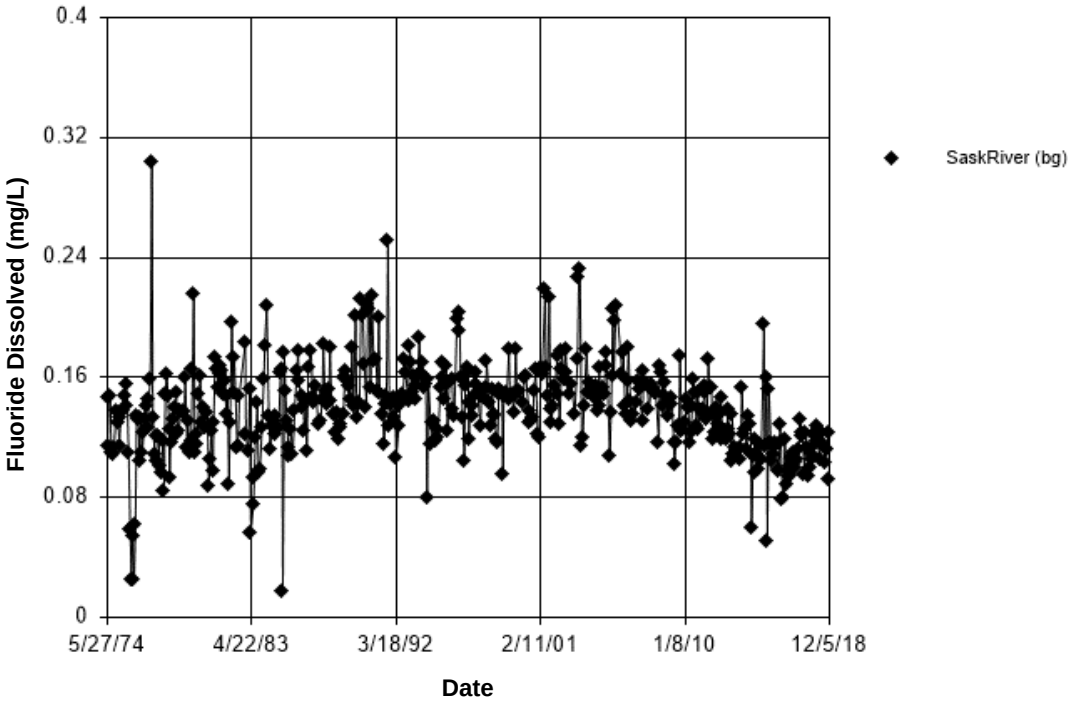

Figure C169 Saskatchewan River: Fluoride Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 9.3
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 9.3
Adjusted Kruskal-Wallis statistic (H') = 9.3

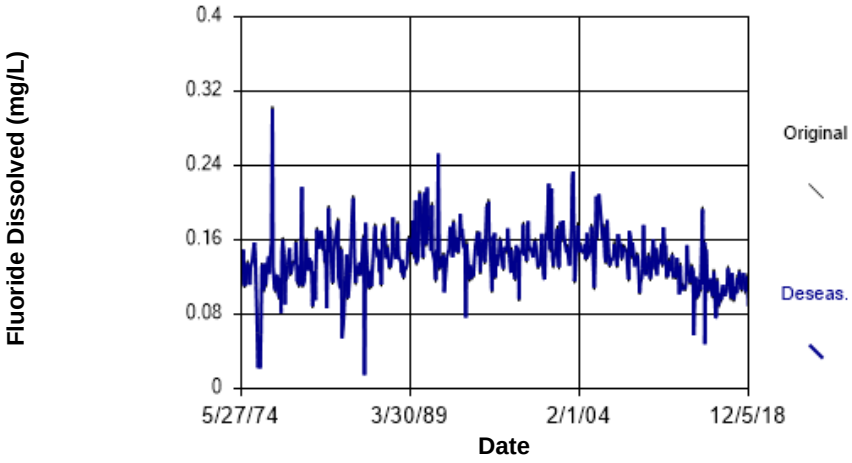

Figure C170 Saskatchewan River: Fluoride Dissolved

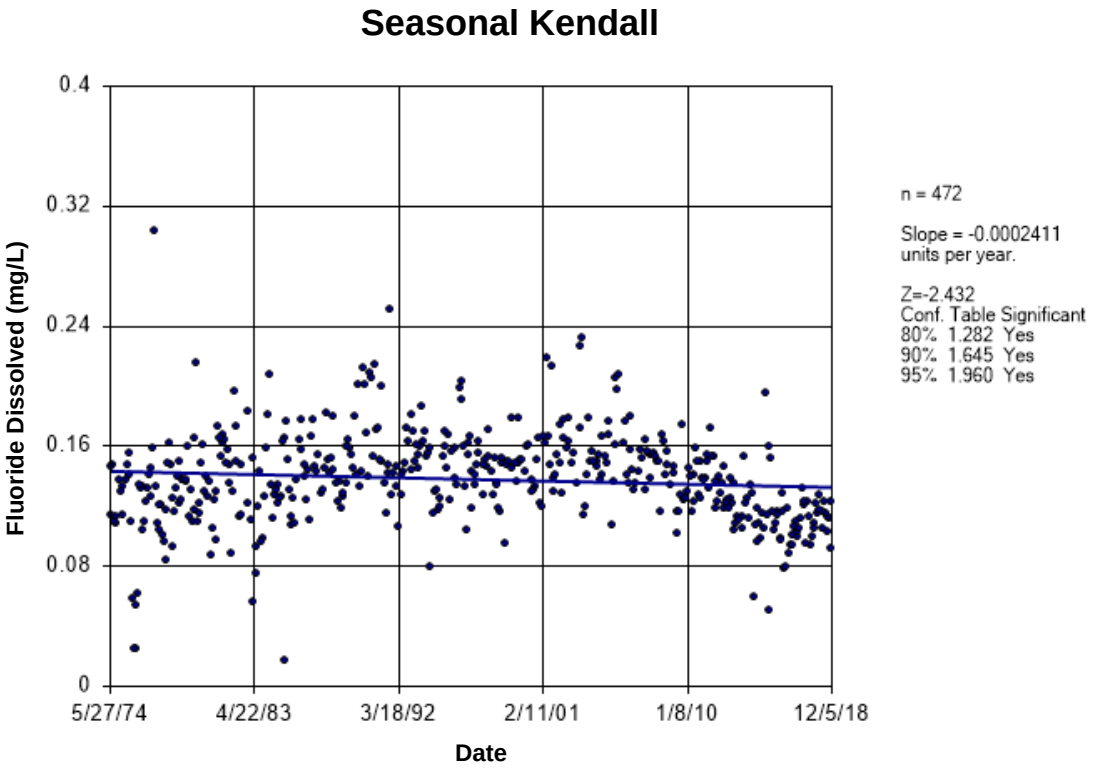

Figure C171 Saskatchewan River: Fluoride Dissolved

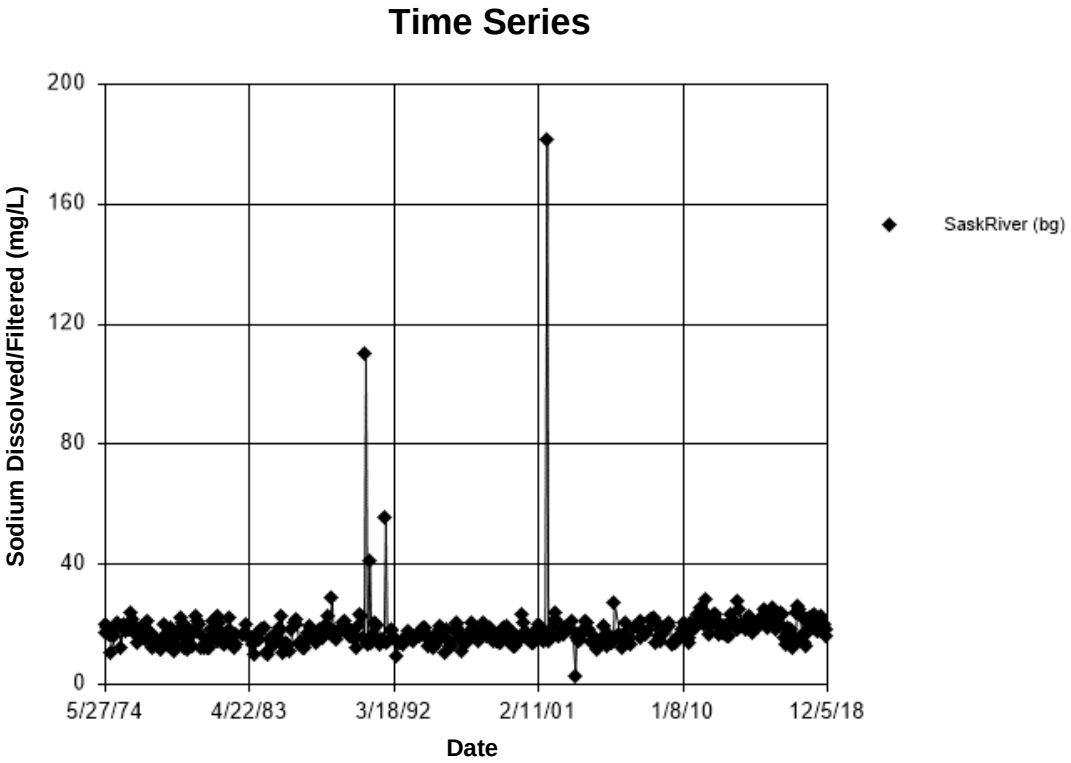

Figure C172 Saskatchewan River: Sodium Dissolved/Filtered

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 97.88
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

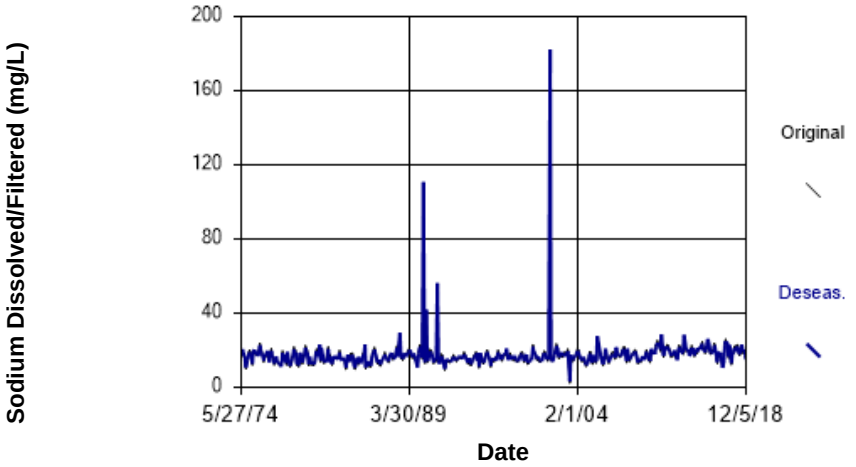

Figure C173 Saskatchewan River: Sodium Dissolved/Filtered

Seasonal Kendall

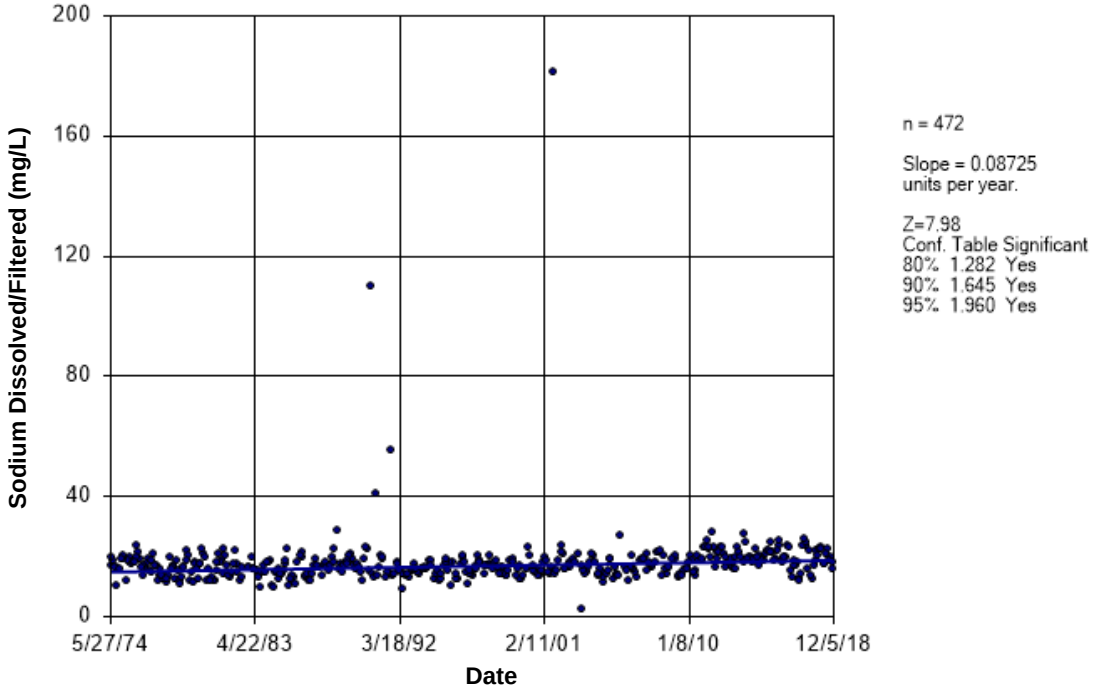

Figure C174 Saskatchewan River: Sodium Dissolved/Filtered

Time Series

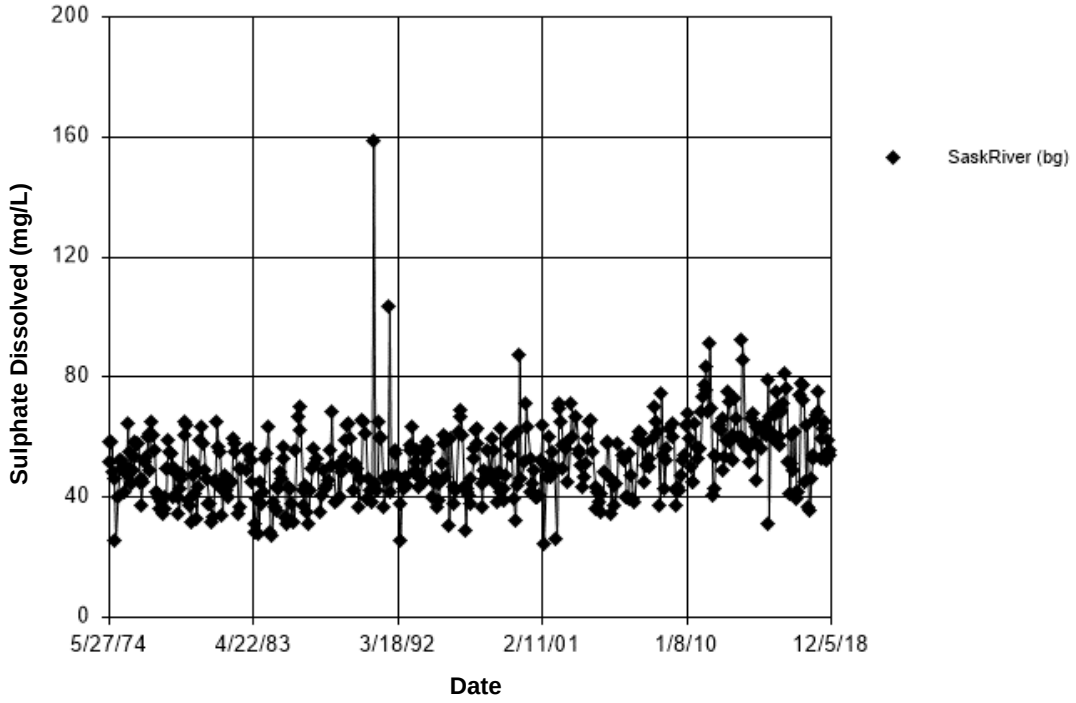

Figure C175 Saskatchewan River: Sulphate Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 105.7
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

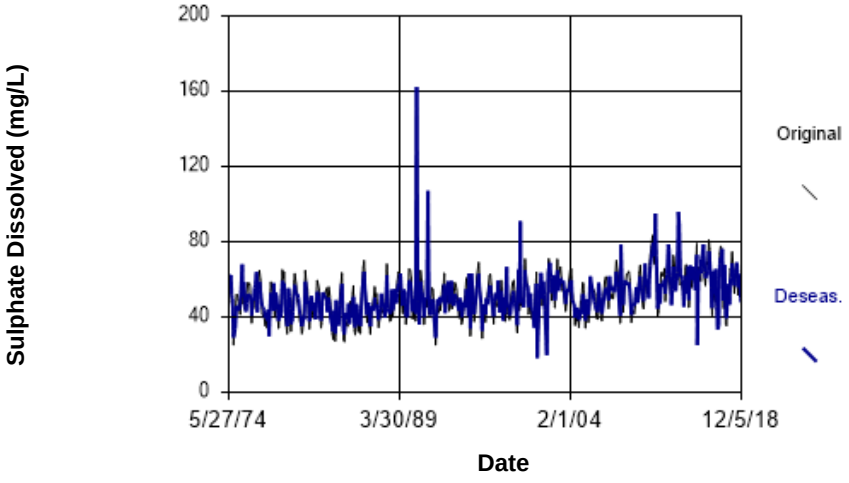

Figure C176 Saskatchewan River: Sulphate Dissolved

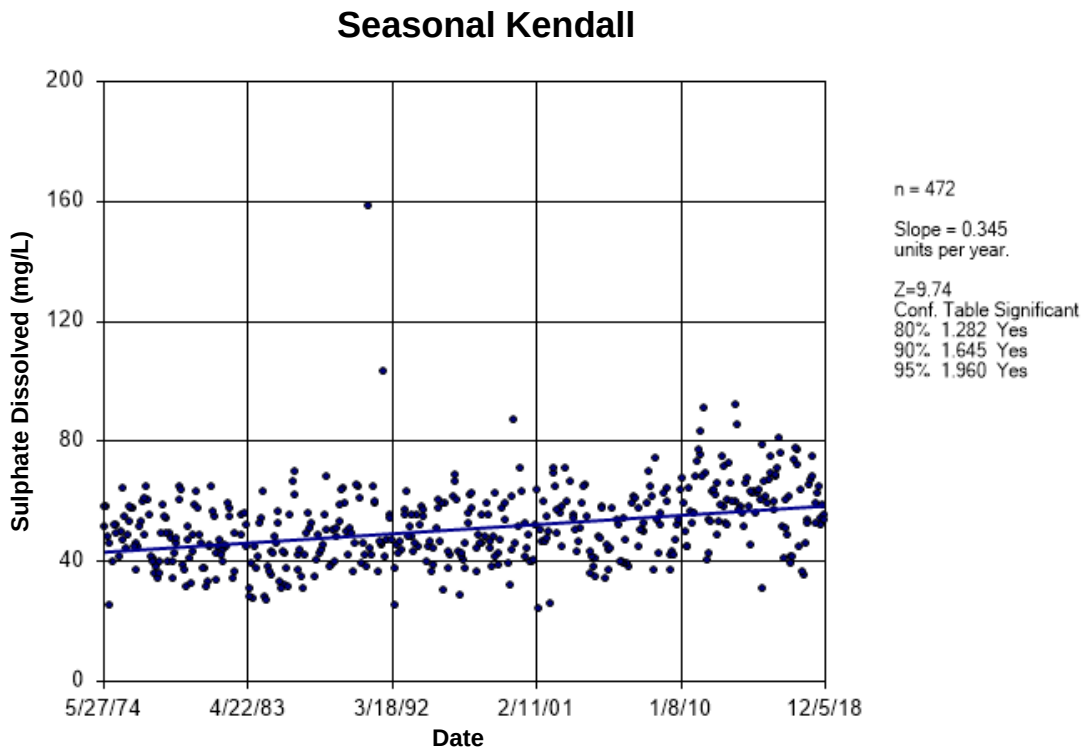

Figure C177 Saskatchewan River: Sulphate Dissolved

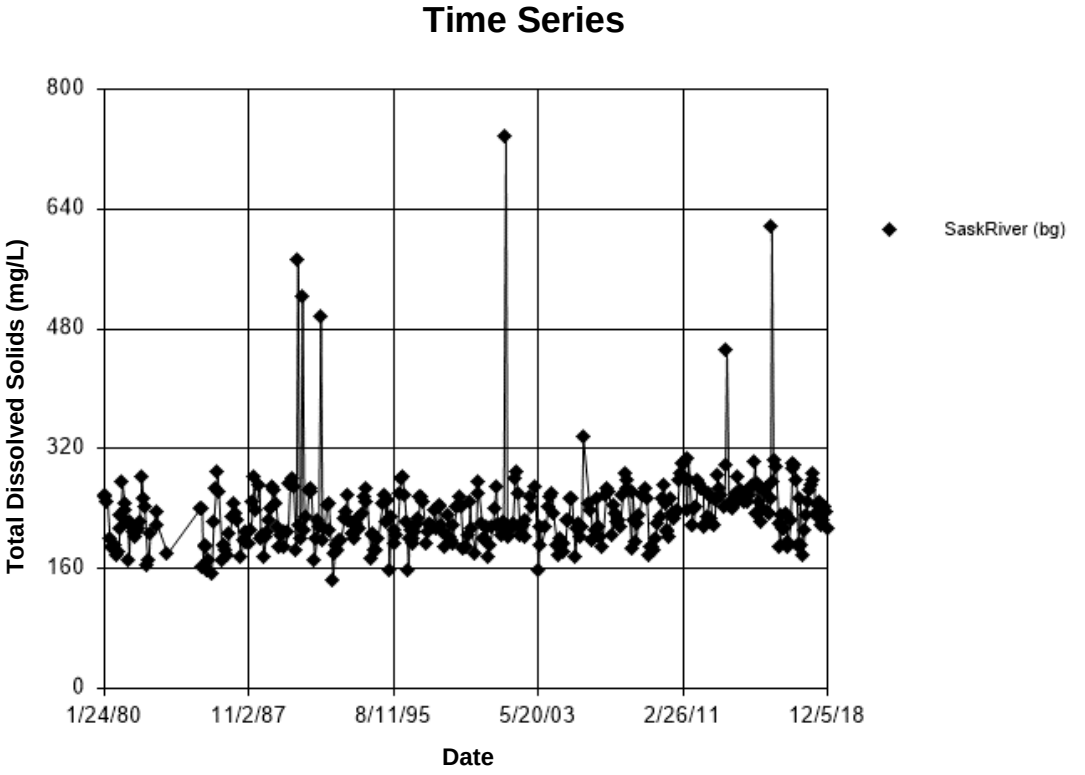

Figure C178 Saskatchewan River: Total Dissolved Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 128.9
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

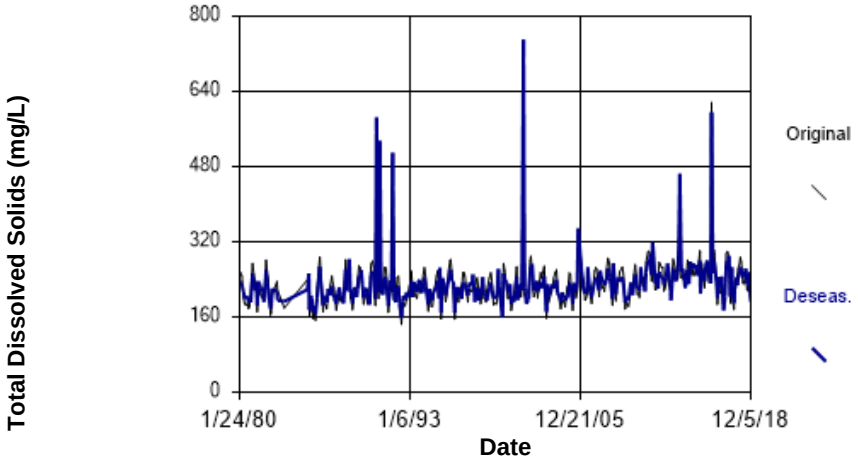

Figure C179 Saskatchewan River: Total Dissolved Solids

Seasonal Kendall

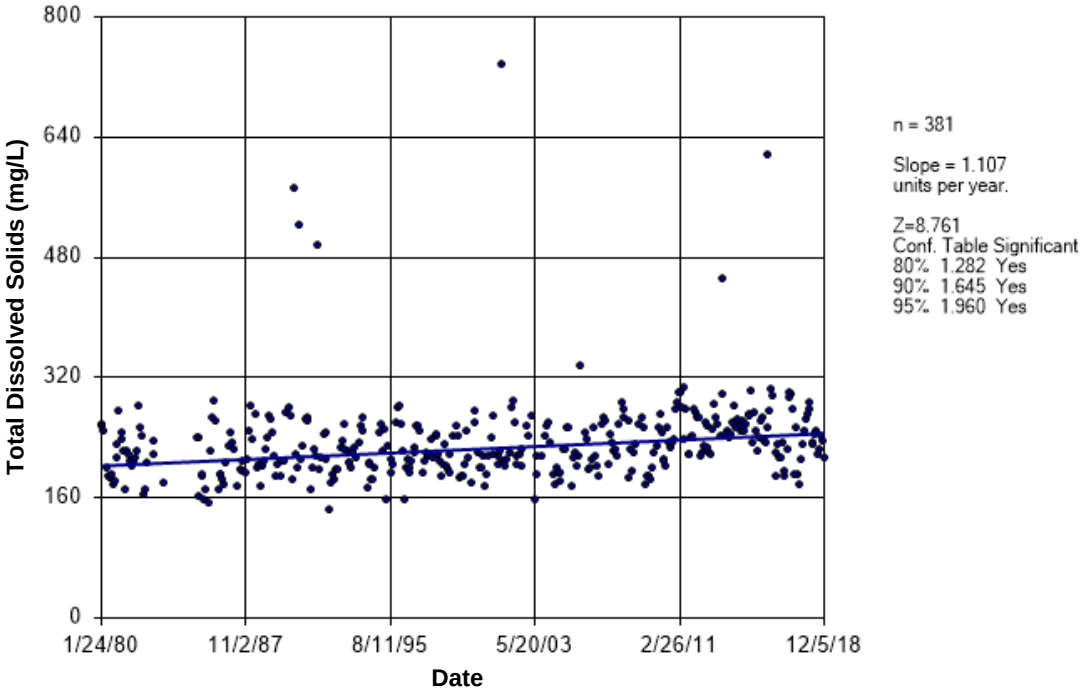

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Figure C180 Saskatchewan River: Total Dissolved Solids

Appendix D: Physicals Trending Graphs

Time Series

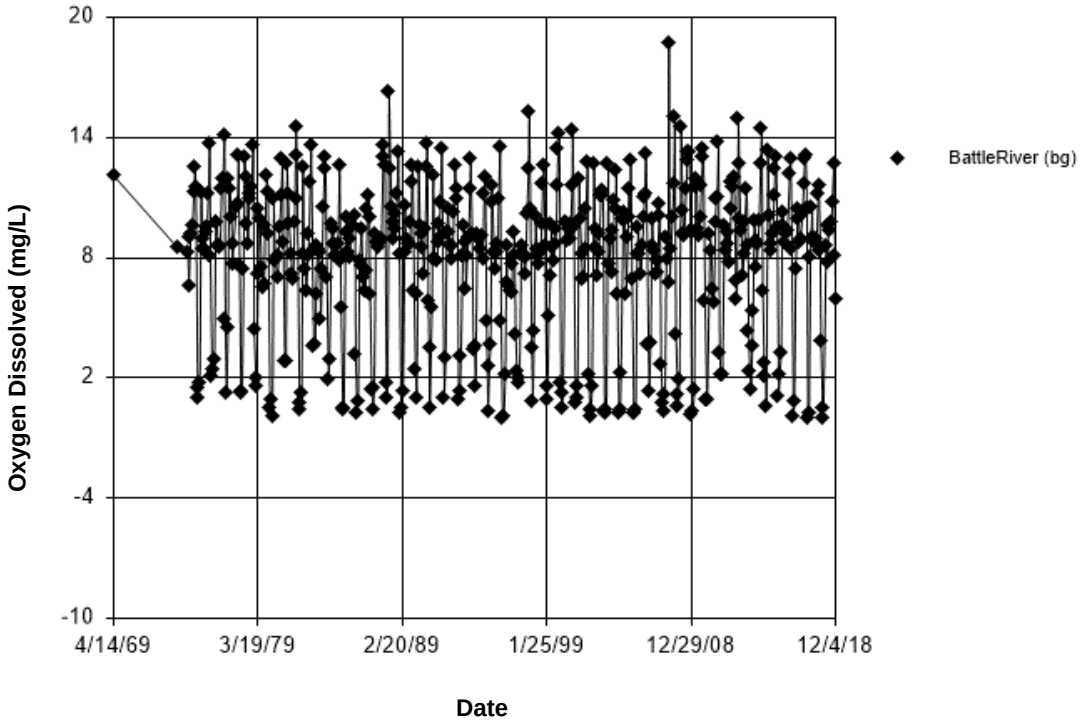

Figure D1 Battle River: Oxygen Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 70.18
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 100 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 70.17
Adjusted Kruskal-Wallis statistic (H') = 70.18

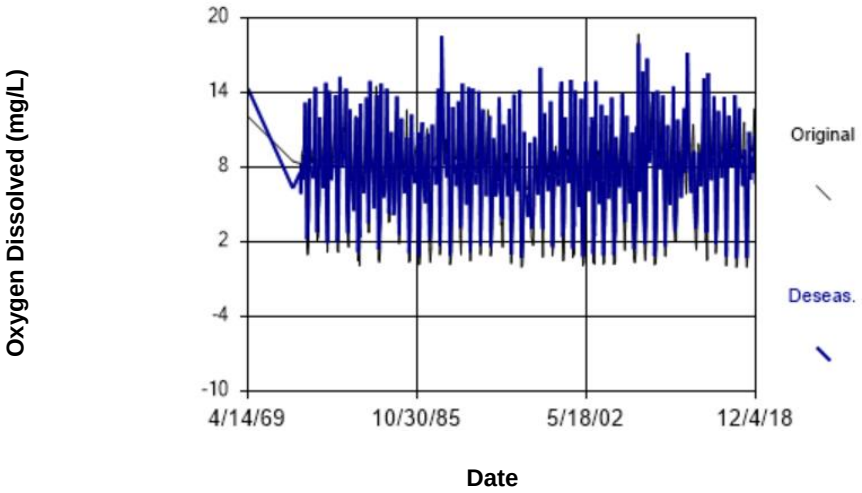

Figure D2 Battle River: Oxygen Dissolved

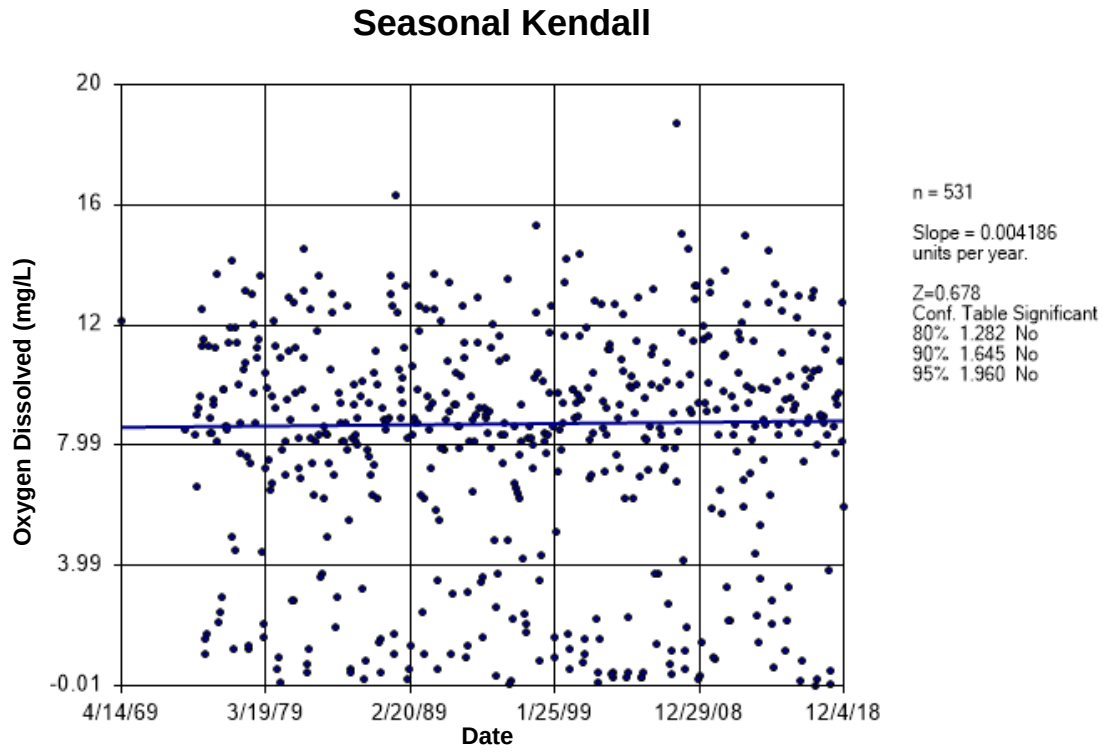

Figure D3 Battle River: Oxygen Dissolved

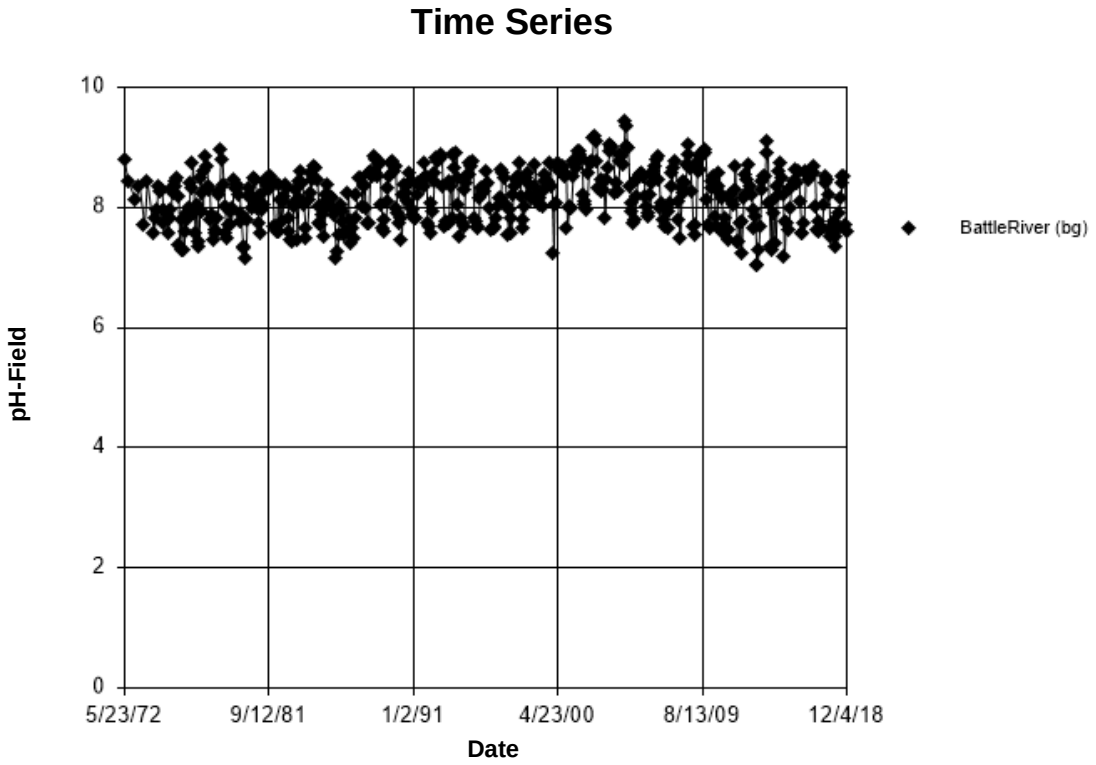

Figure D4 Battle River: pH-Field

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 127.3
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 7 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 127.3
Adjusted Kruskal-Wallis statistic (H') = 127.3

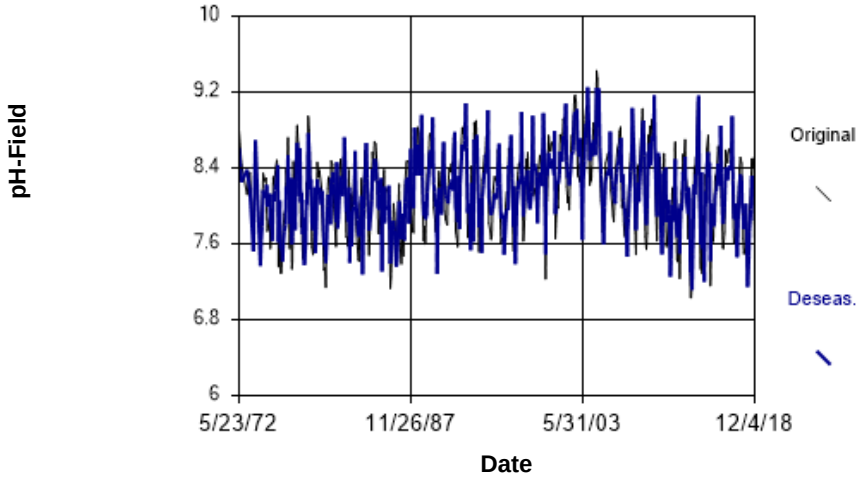

Figure D5 Battle River: pH-Field

Seasonal Kendall

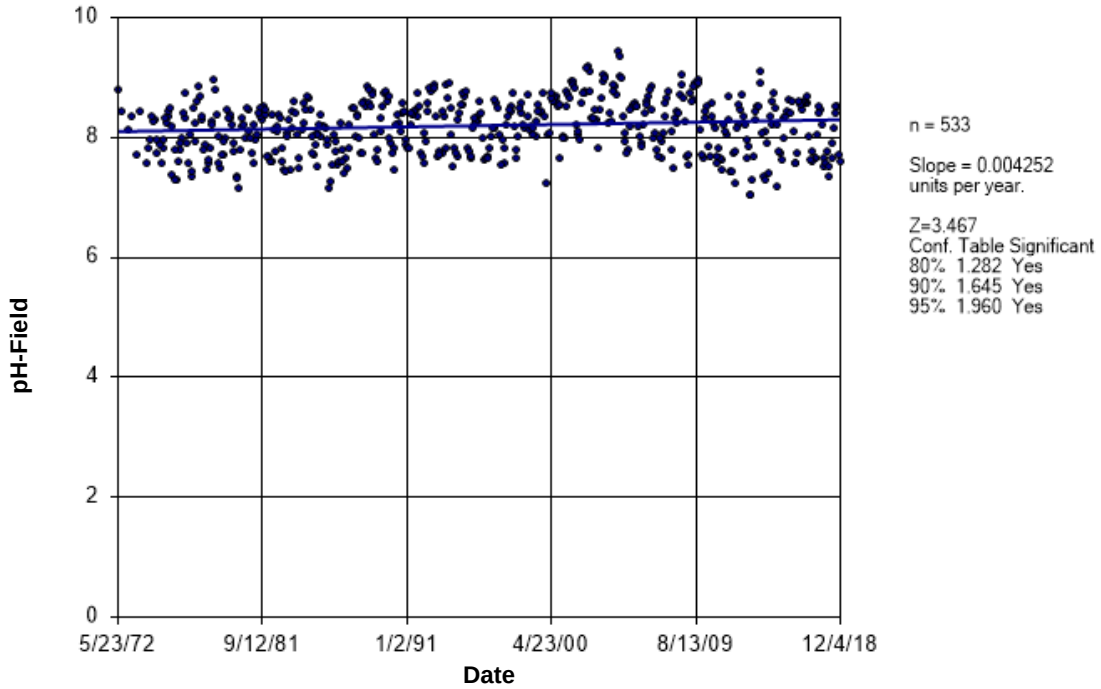

Figure D6 Battle River: pH-Field

Time Series

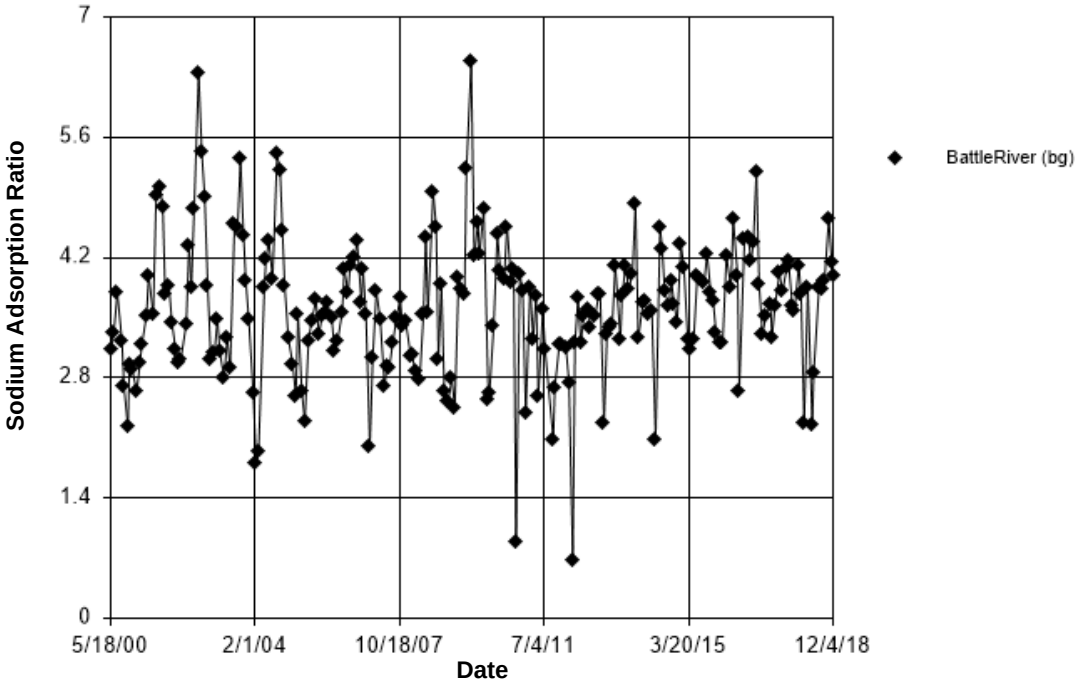

Figure D7 Battle River: Sodium Adsorption Ratio

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 22.42
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

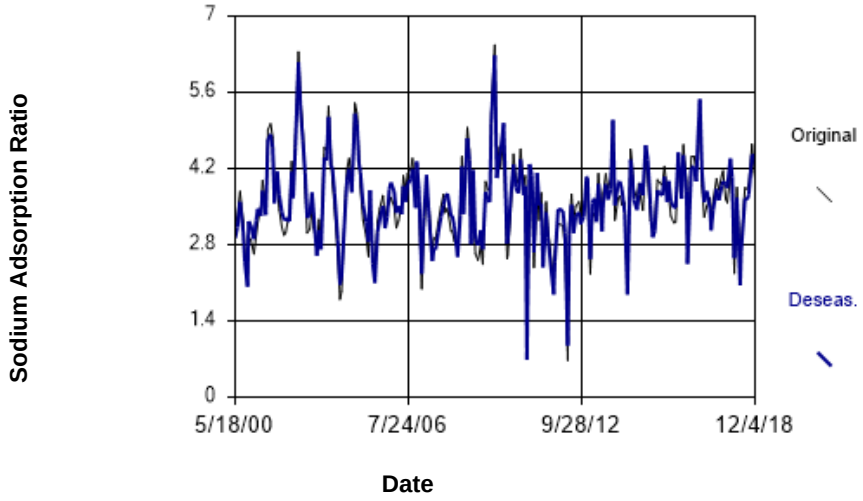

Figure D8 Battle River: Sodium Adsorption Ratio

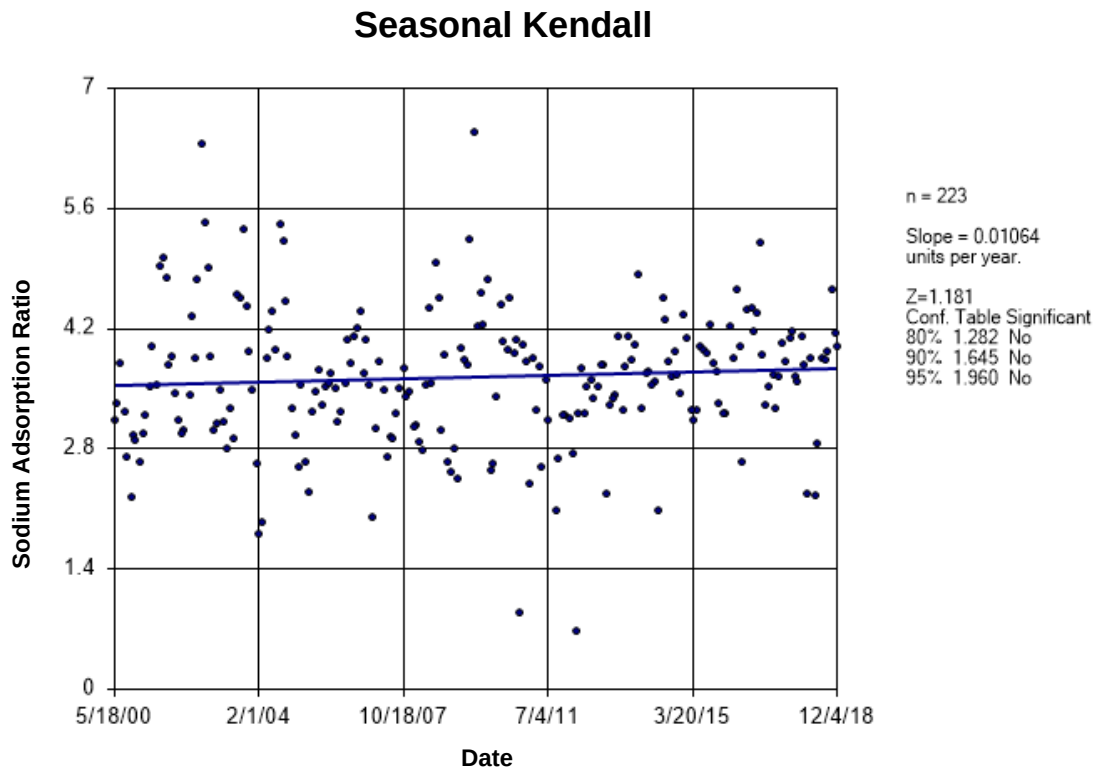

Figure D9 Battle River: Sodium Adsorption Ratio

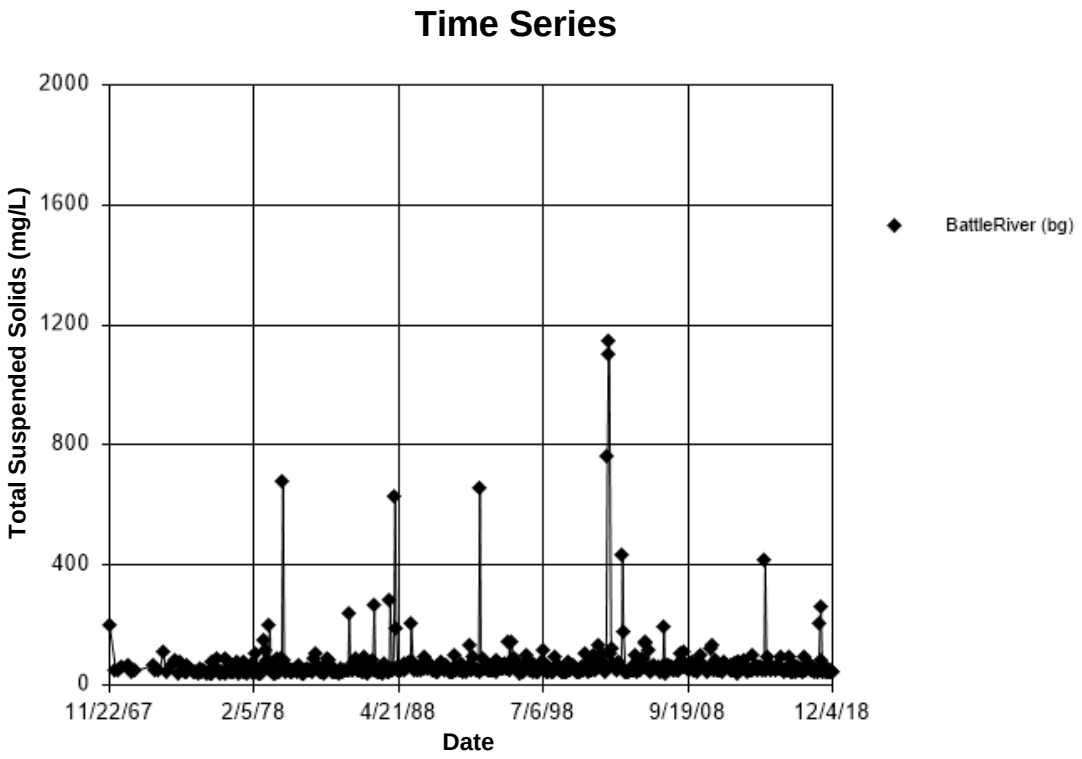

Figure D10 Battle River: Total Suspended Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 18.15
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 18.15
Adjusted Kruskal-Wallis statistic (H') = 18.15

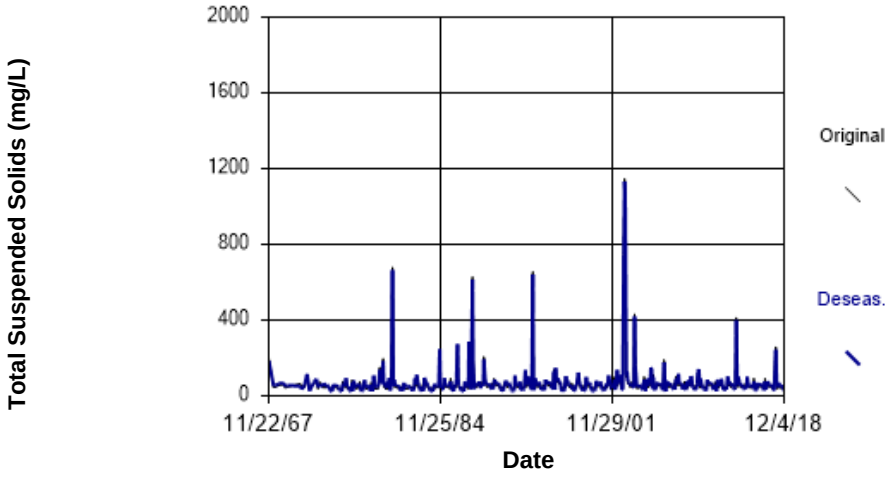

Figure D11 Battle River: Total Suspended Solids

Seasonal Kendall

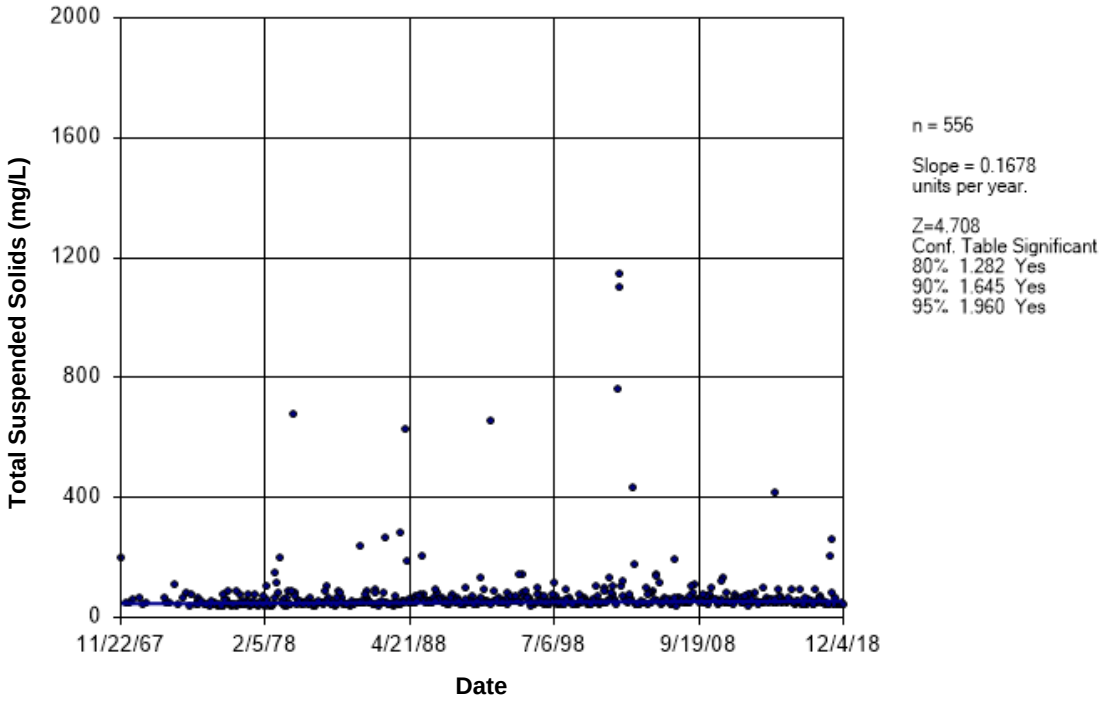

Figure D12 Battle River: Total Suspended Solids

Time Series

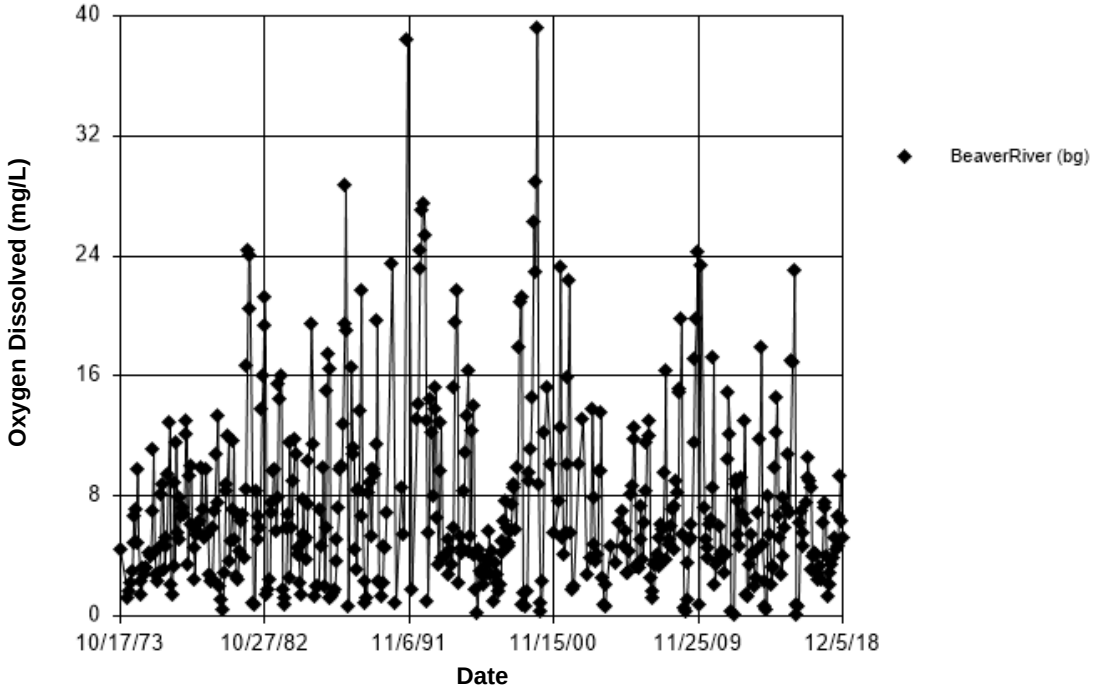

Figure D13 Beaver River: Oxygen Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 41.32
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

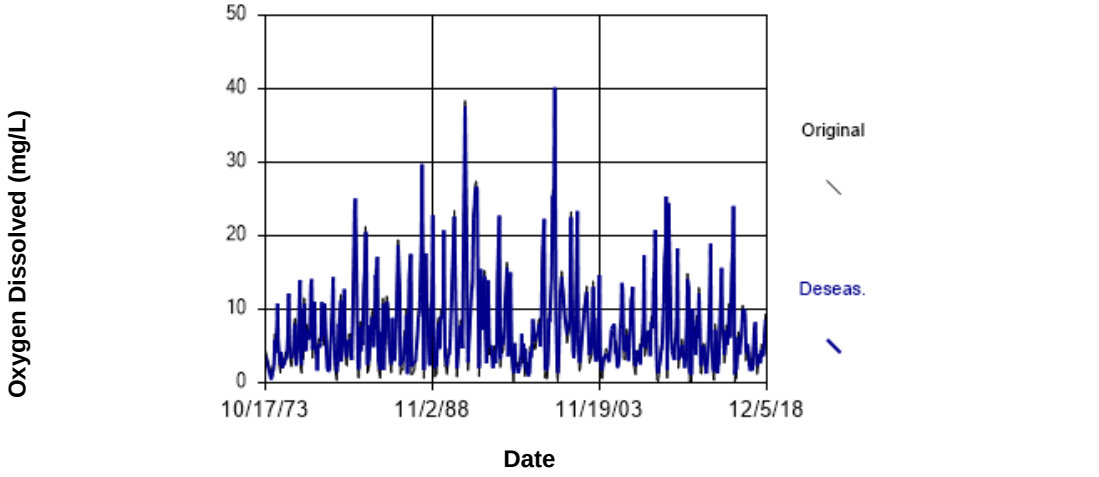

Figure D14 Beaver River: Oxygen Dissolved

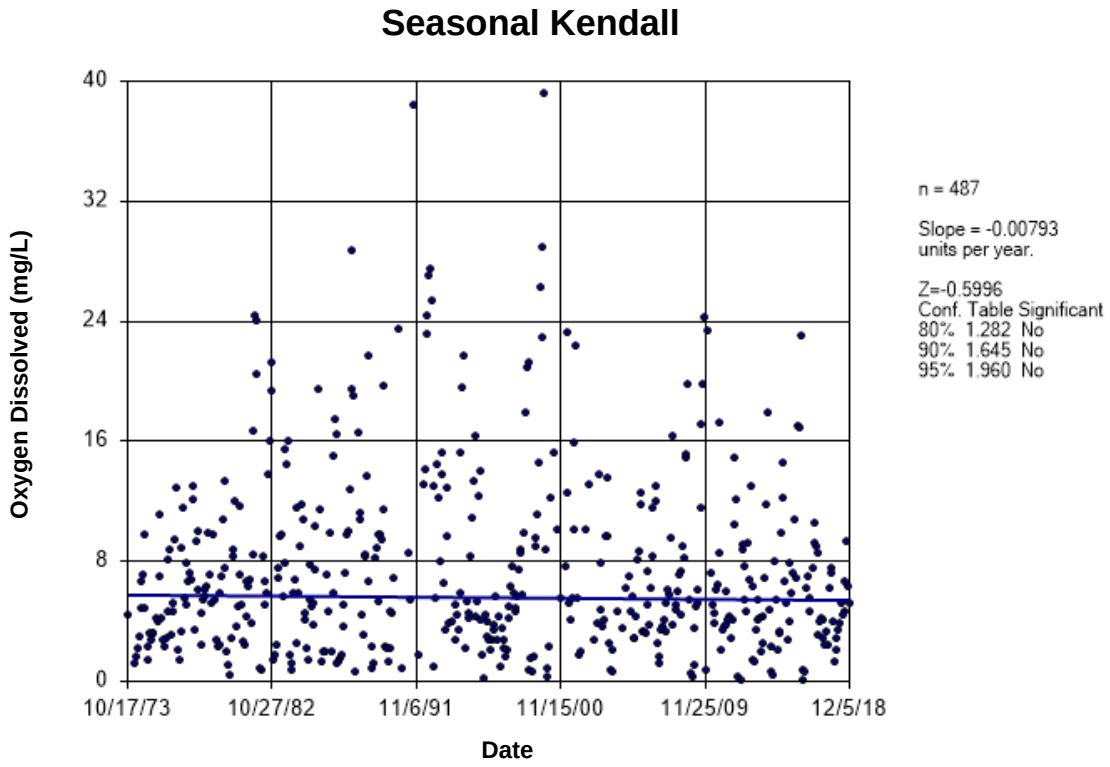

Figure D15 Beaver River: Oxygen Dissolved

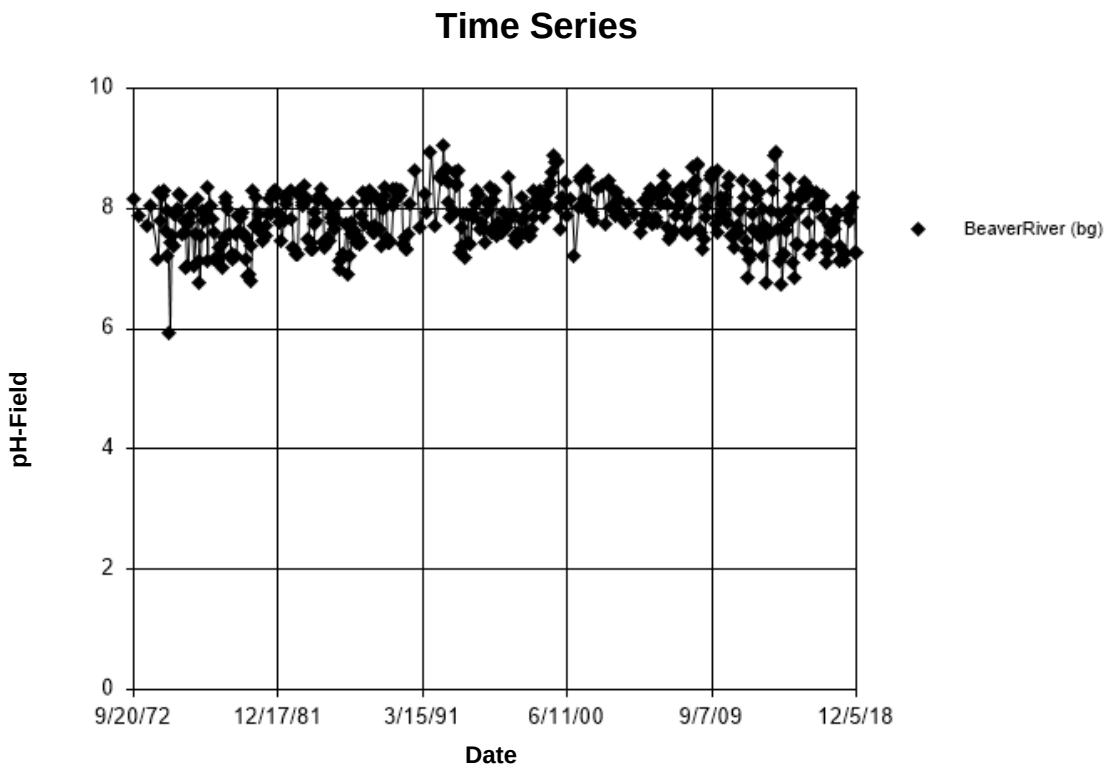

Figure D16 Beaver River: pH-Field

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 113.3
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 113.3
Adjusted Kruskal-Wallis statistic (H') = 113.3

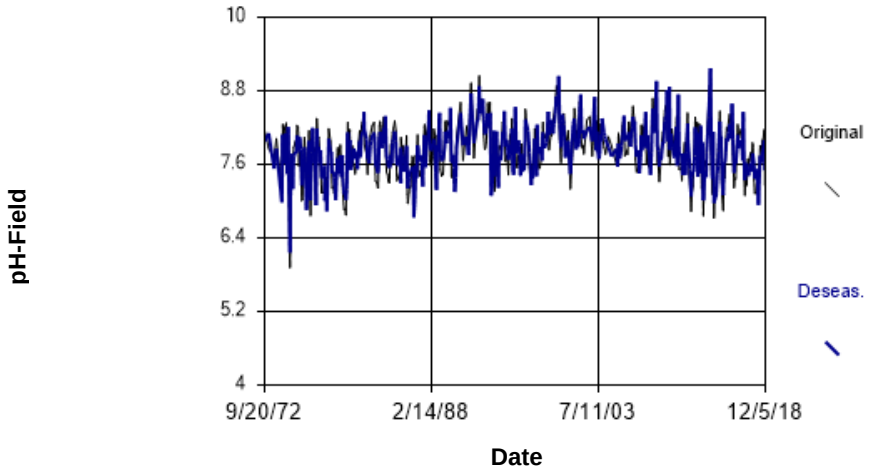

Figure D17 Beaver River: pH-Field

Seasonal Kendall

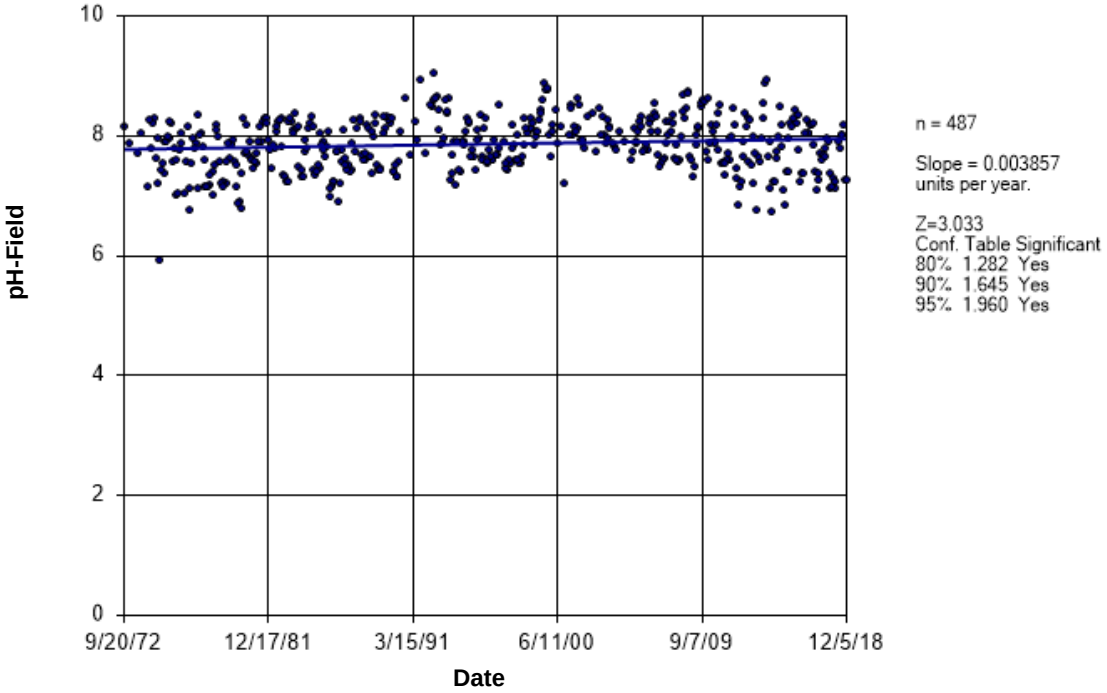

Figure D18 Beaver River: pH-Field

Time Series

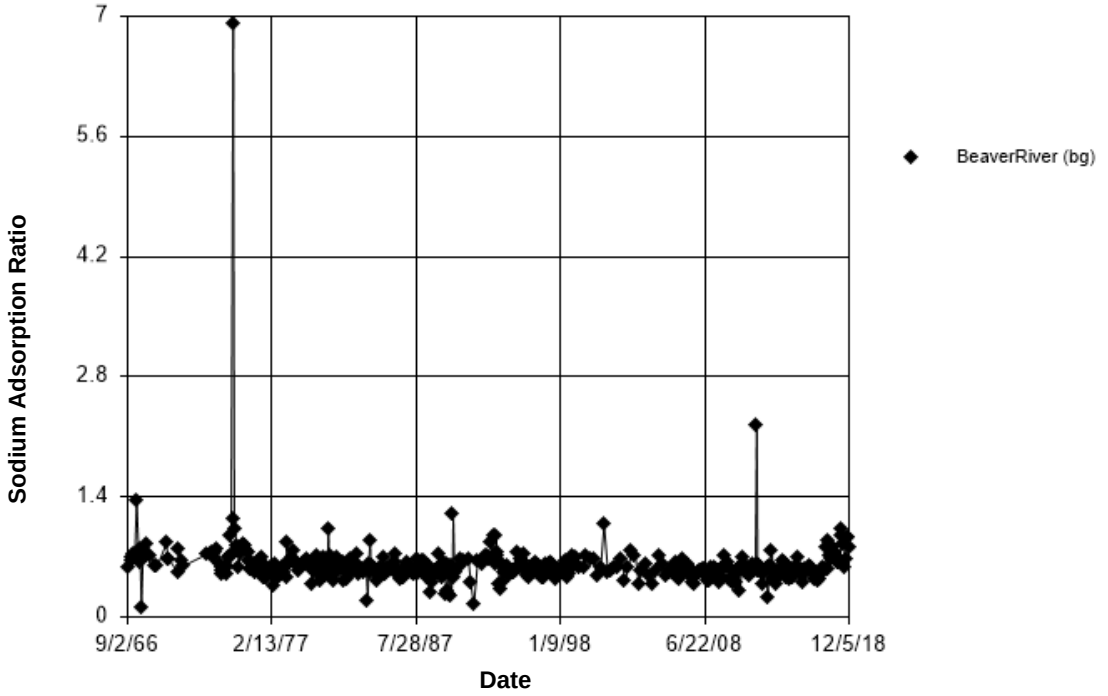

Figure D19 Beaver River: Sodium Adsorption Ratio

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 47.92
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 47.92
Adjusted Kruskal-Wallis statistic (H') = 47.92

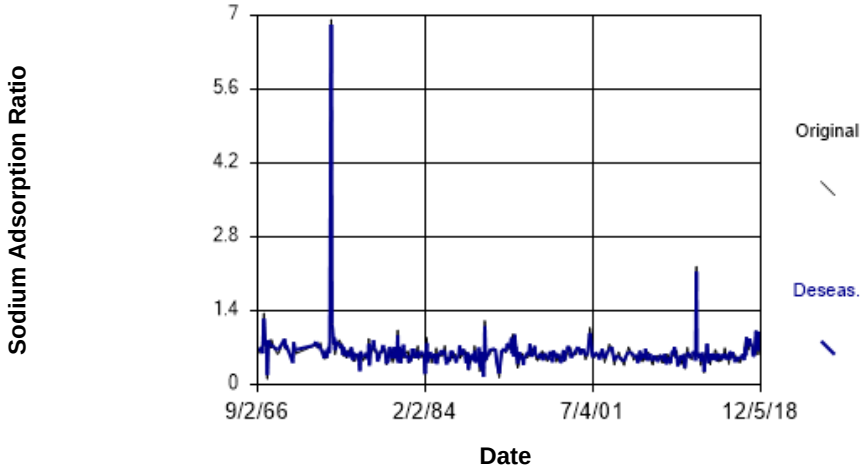

Figure D20 Beaver River: Sodium Adsorption Ratio

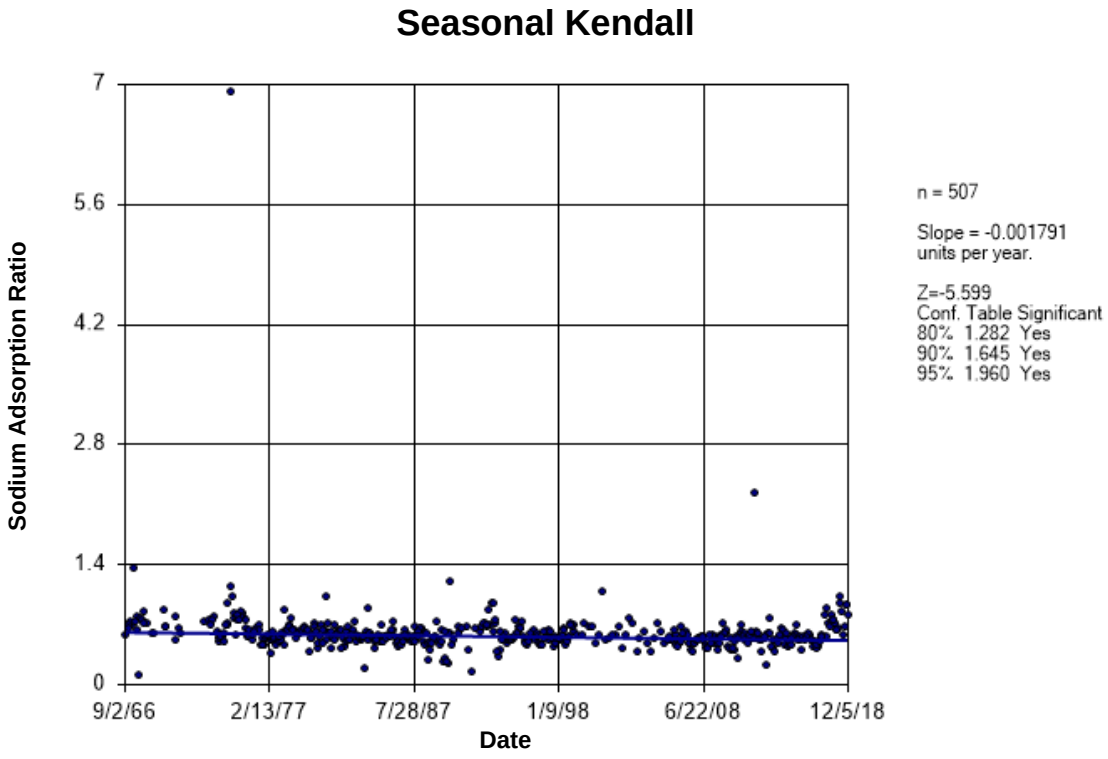

Figure D21 Beaver River: Sodium Adsorption Ratio

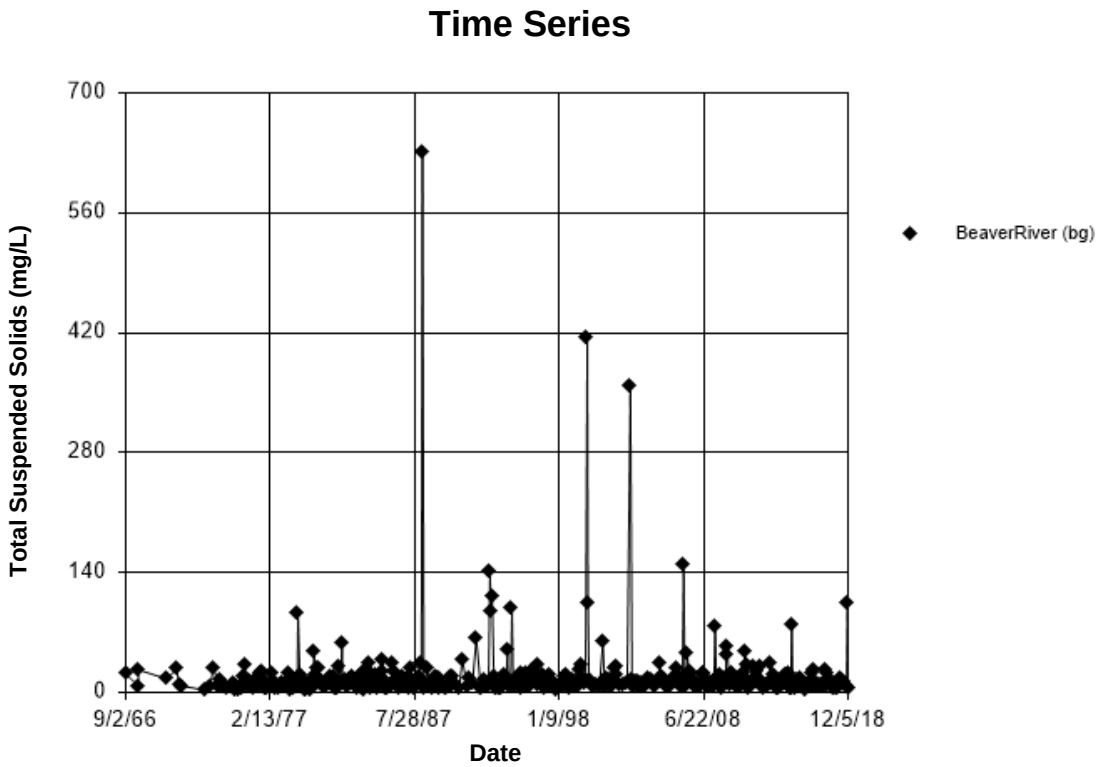

Figure D22 Beaver River: Total Suspended Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 10.49
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 10.49
Adjusted Kruskal-Wallis statistic (H') = 10.49

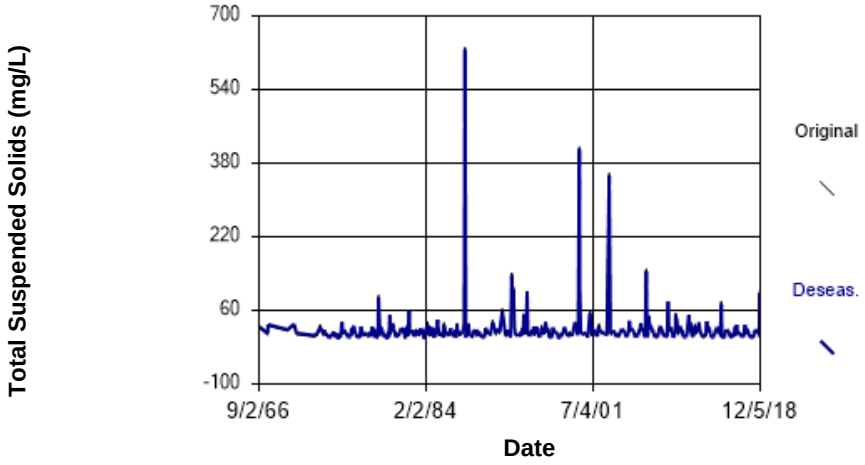

Figure D23 Beaver River: Total Suspended Solids

Seasonal Kendall

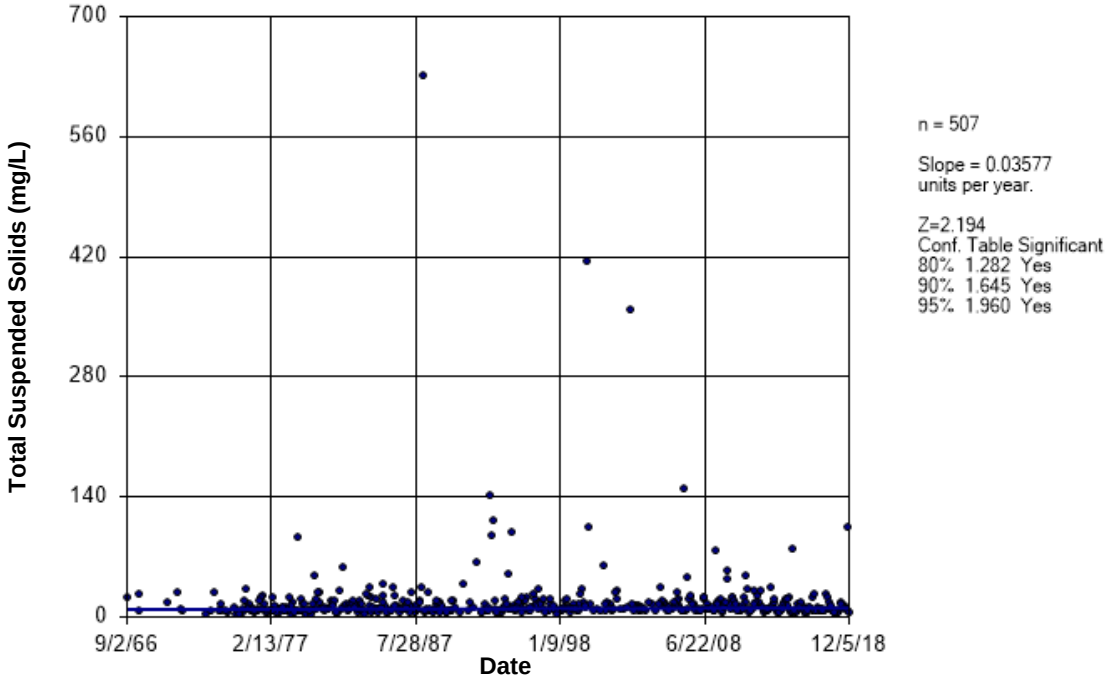

Figure D24 Beaver River: Total Suspended Solids

Time Series

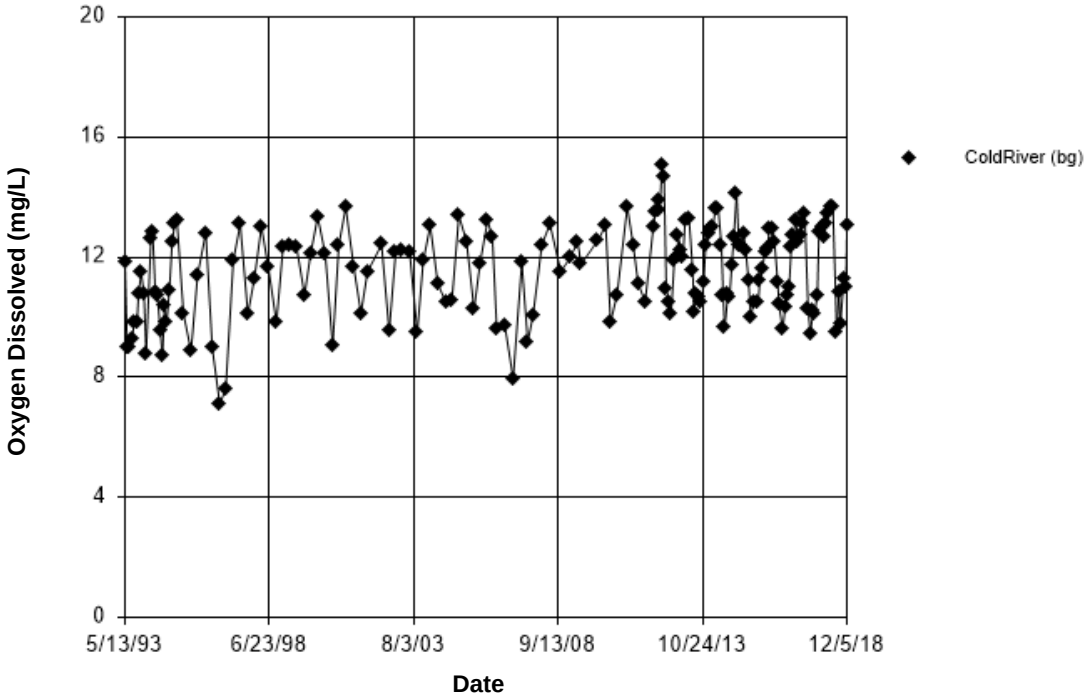

Figure D25 Cold River: Oxygen Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 22.76
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

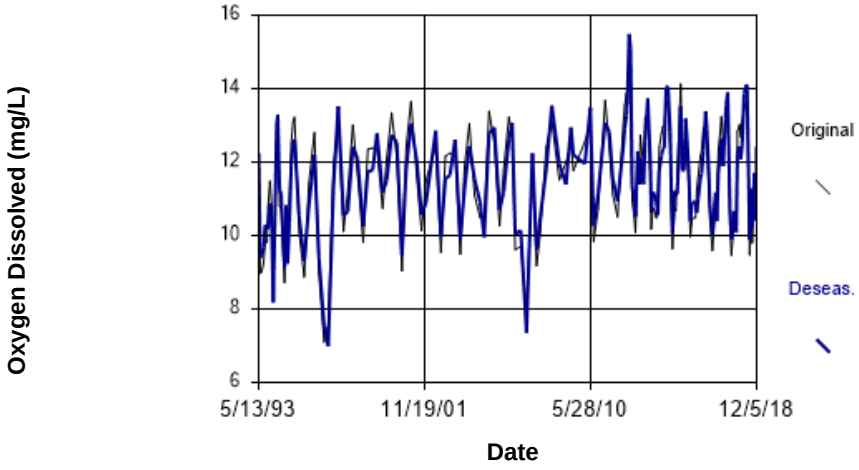

Figure D26 Cold River: Oxygen Dissolved

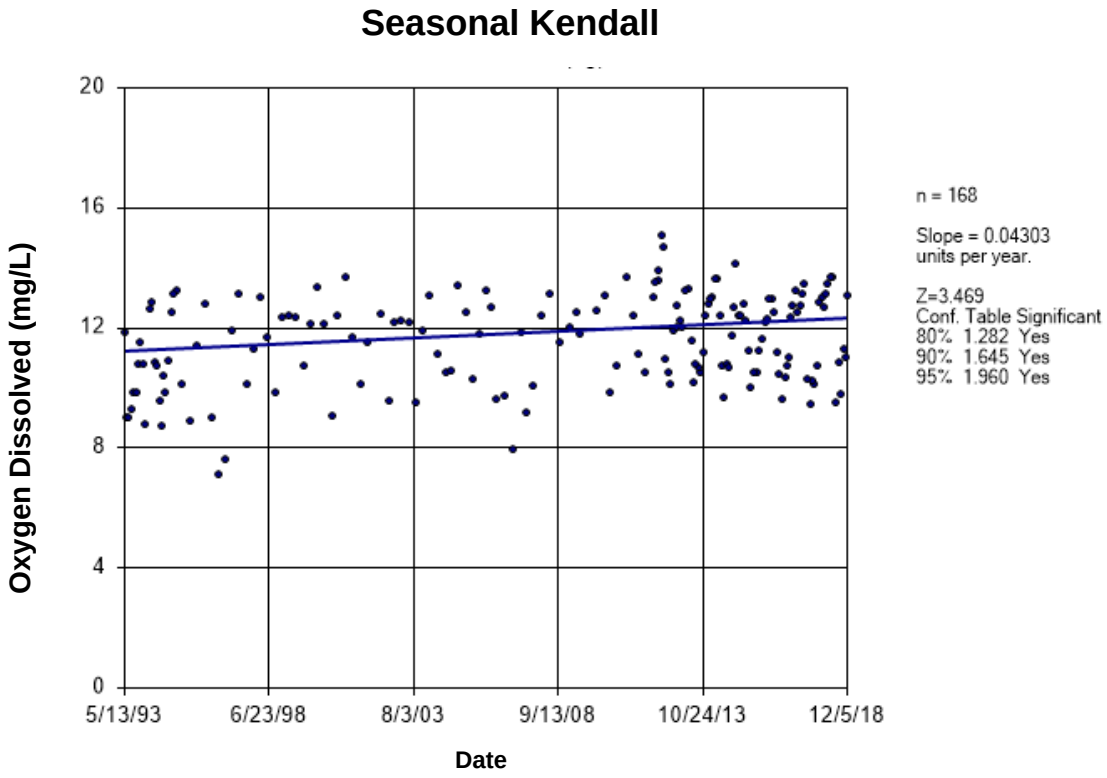

Figure D27 Cold River: Oxygen Dissolved

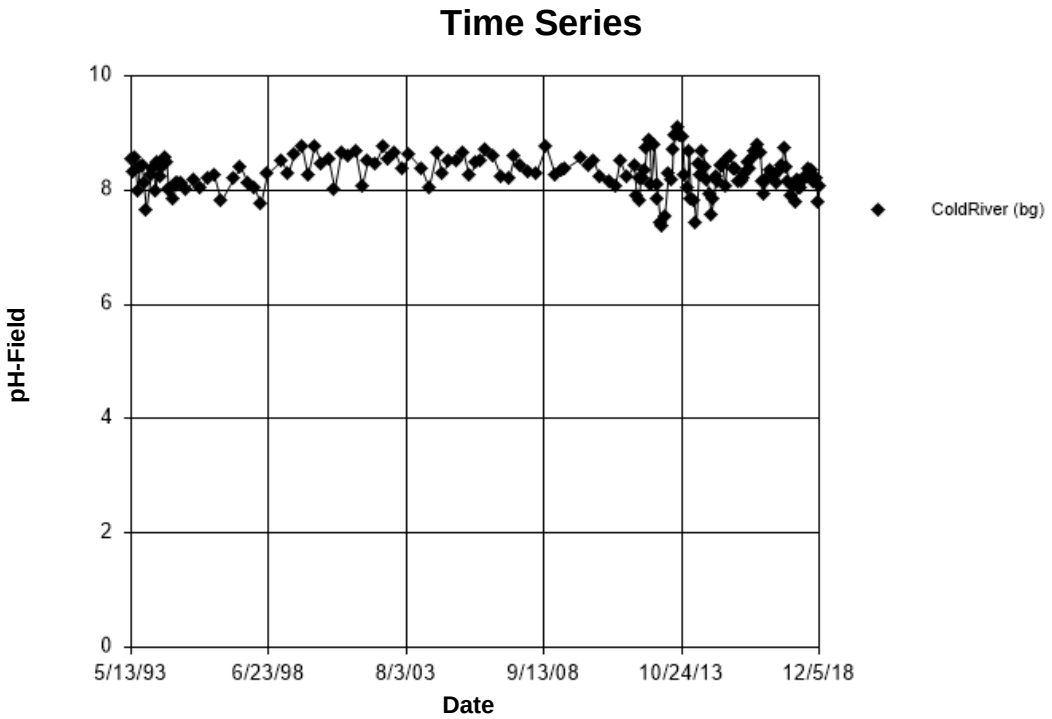

Figure D28 Cold River: pH-Field

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 26.33
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 26.33
Adjusted Kruskal-Wallis statistic (H') = 26.33

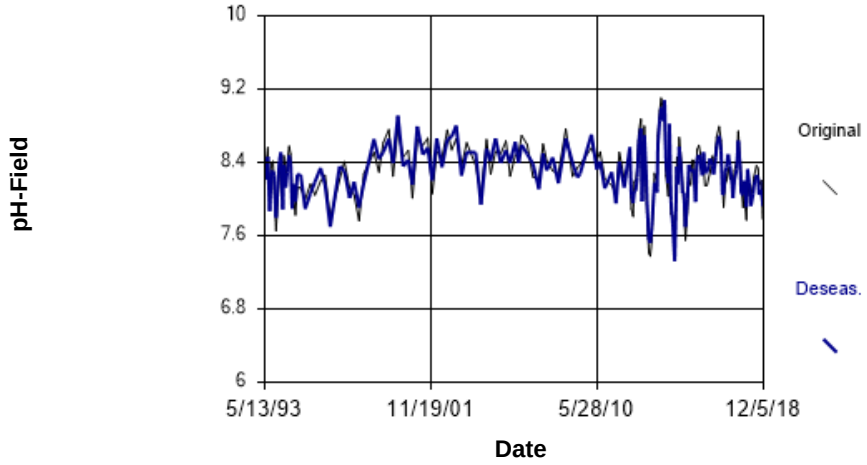

Figure D29 Cold River: pH-Field

Seasonal Kendall

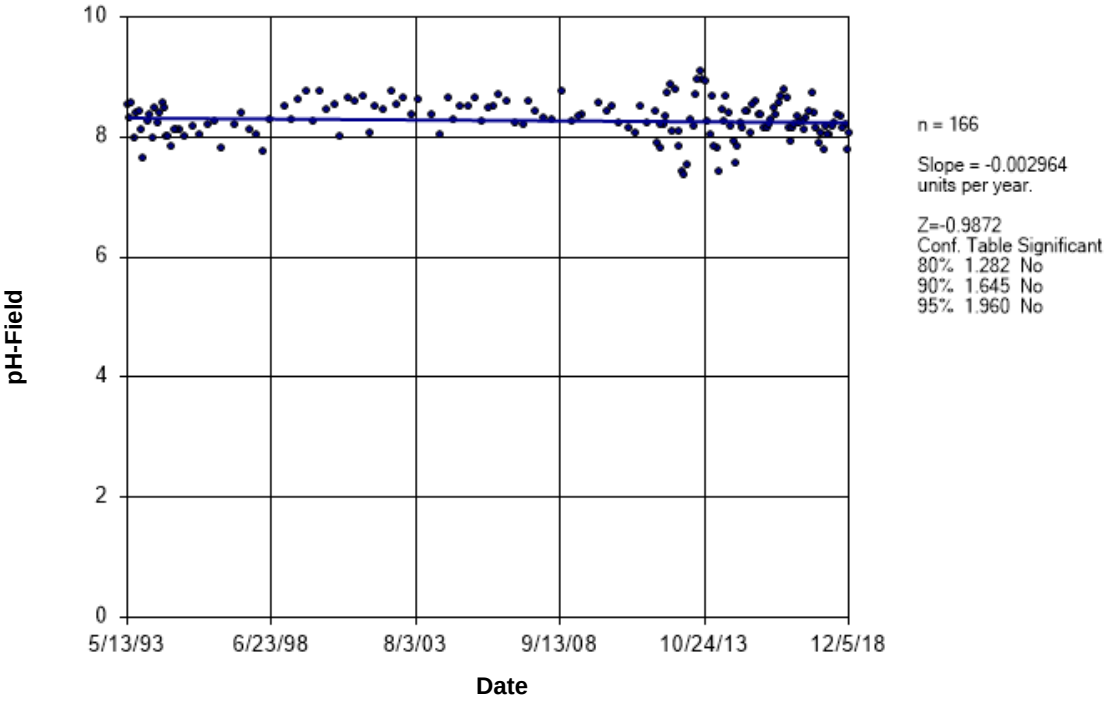

Figure D30 Cold River: pH-Field

Time Series

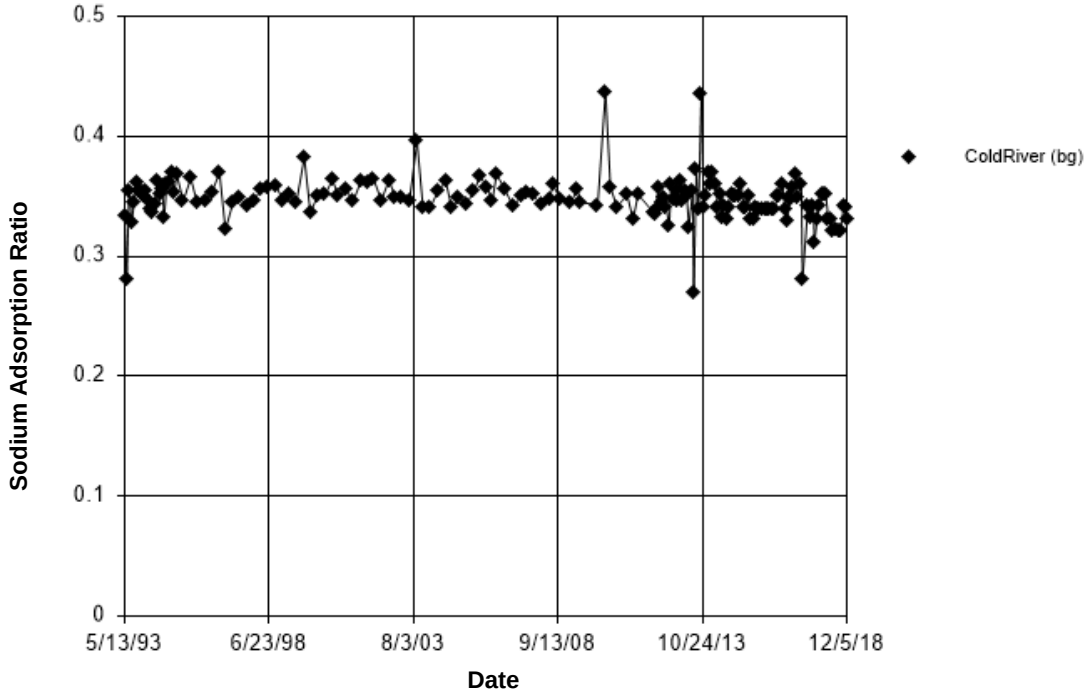

Figure D31 Cold River: Sodium Adsorption Ratio

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 3.747
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 3.747
Adjusted Kruskal-Wallis statistic (H') = 3.747

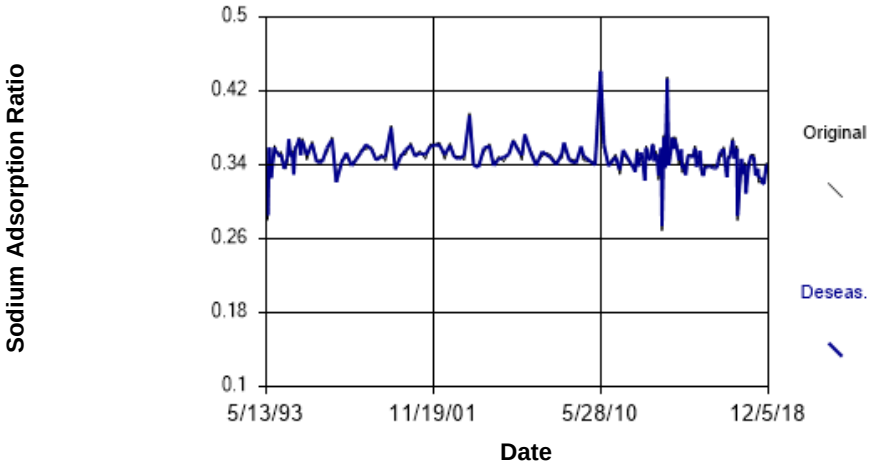

Figure D32 Cold River: Sodium Adsorption Ratio

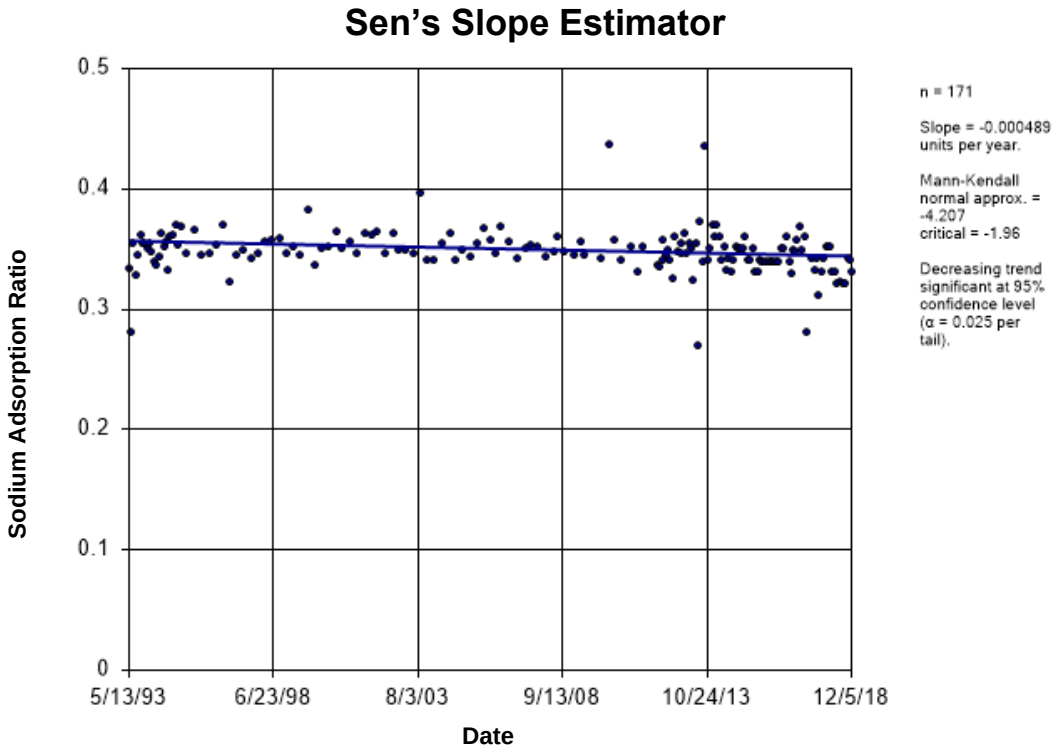

Figure D33 Cold River: Sodium Adsorption Ratio

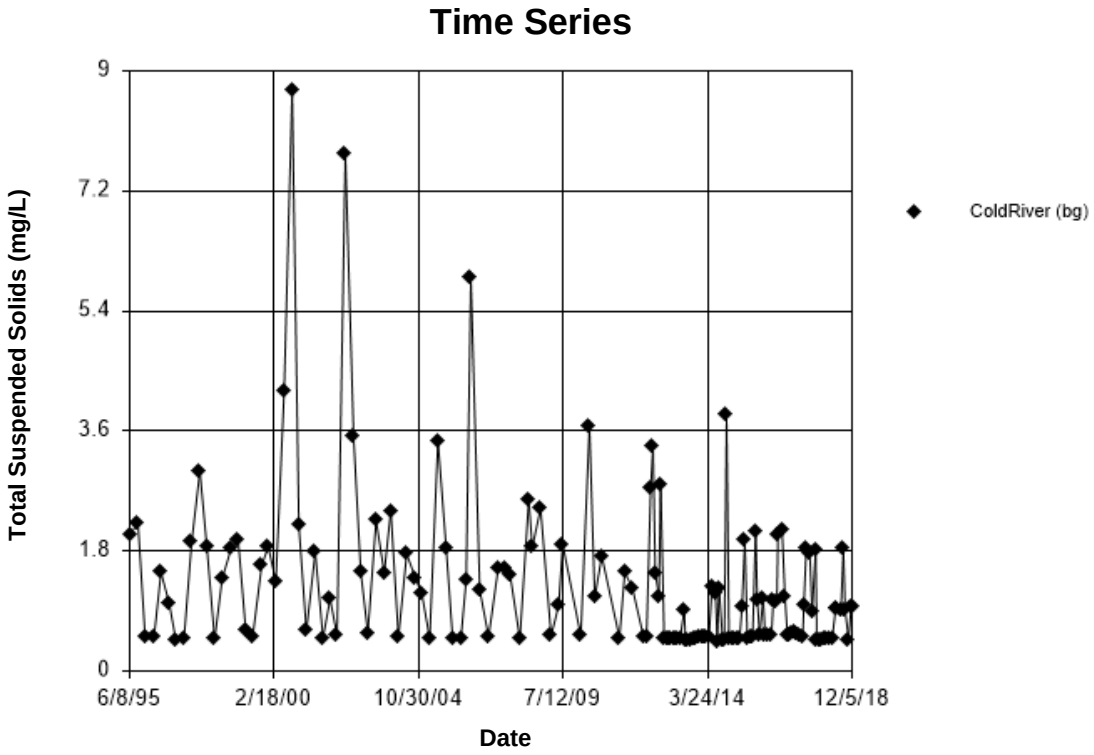

Figure D34 Cold River: Total Suspended Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 19.68
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 19.68
Adjusted Kruskal-Wallis statistic (H') = 19.68

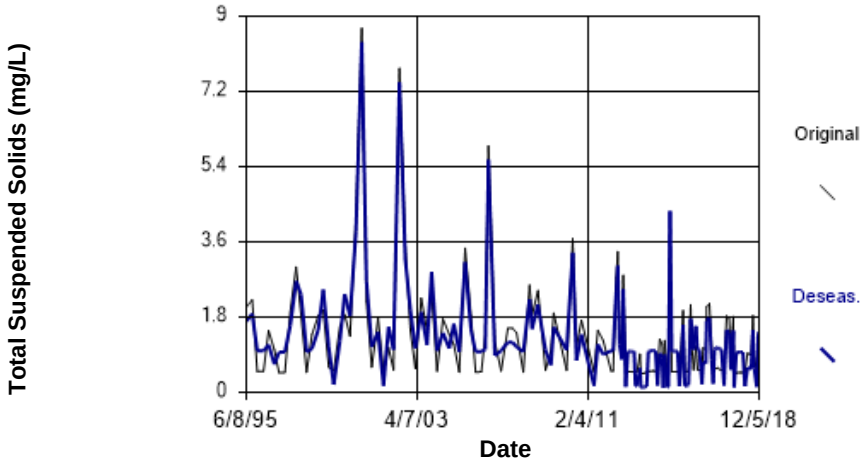

Figure D35 Cold River: Total Suspended Solids

Seasonal Kendall

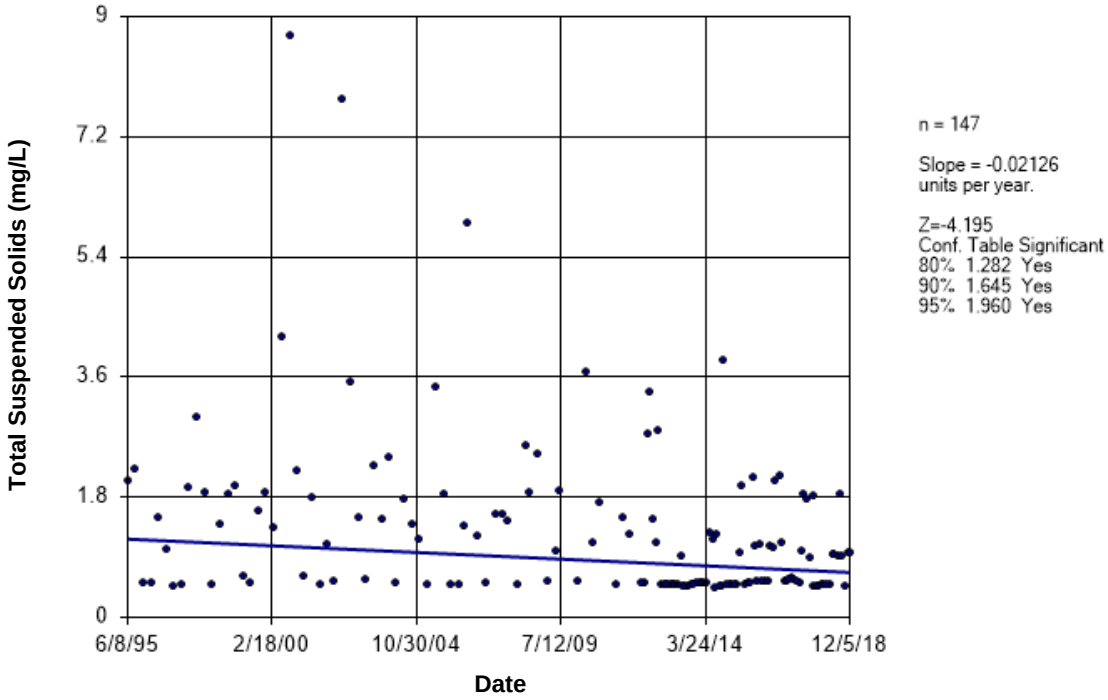

Figure D36 Cold River: Total Suspended Solids

Time Series

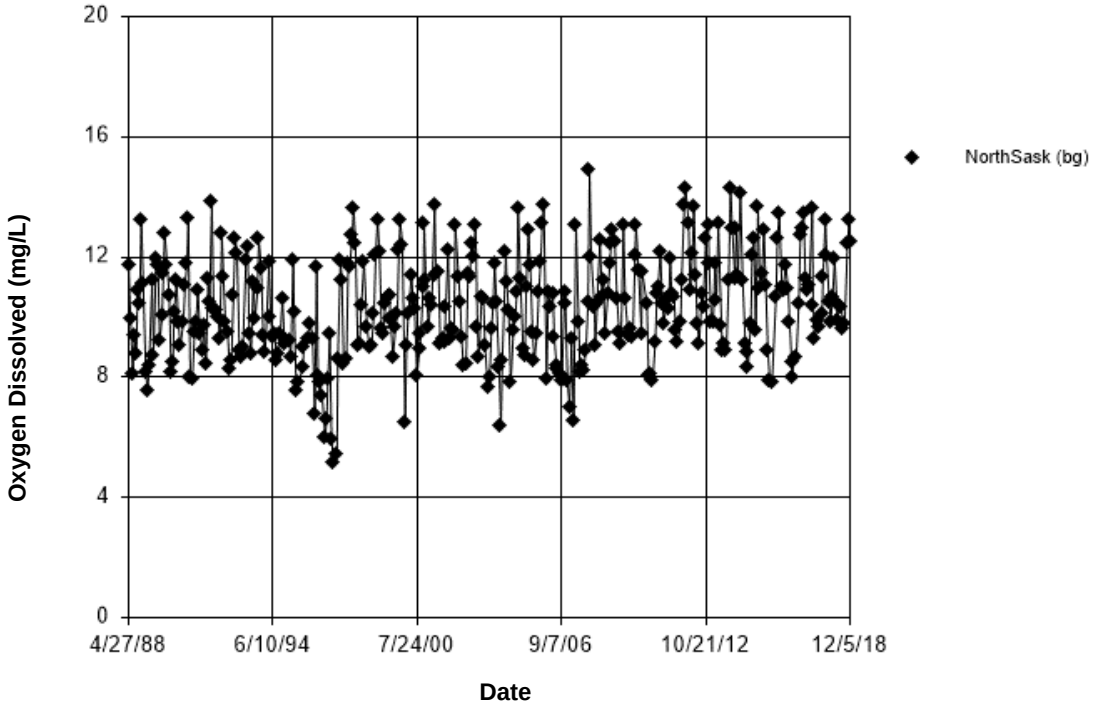

Figure D37 North Saskatchewan River: Oxygen Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 45.62
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 45.62
Adjusted Kruskal-Wallis statistic (H') = 45.62

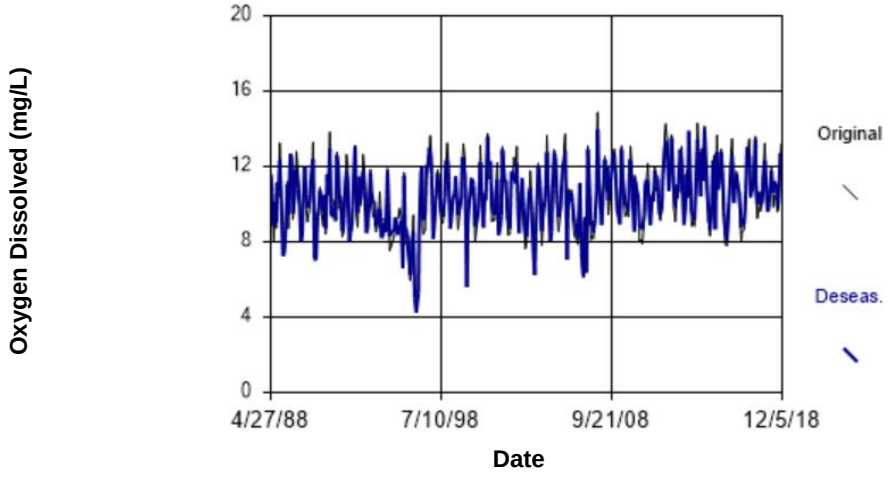

Figure D38 North Saskatchewan River: Oxygen Dissolved

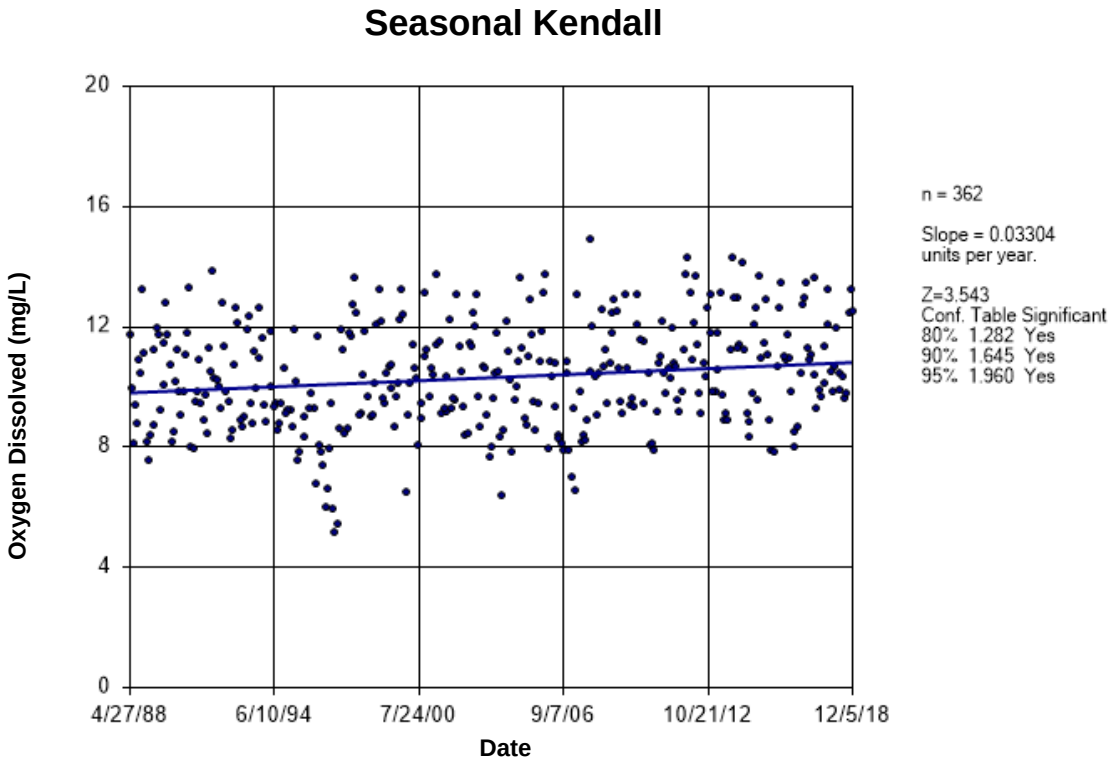

Figure D39 North Saskatchewan River: Oxygen Dissolved

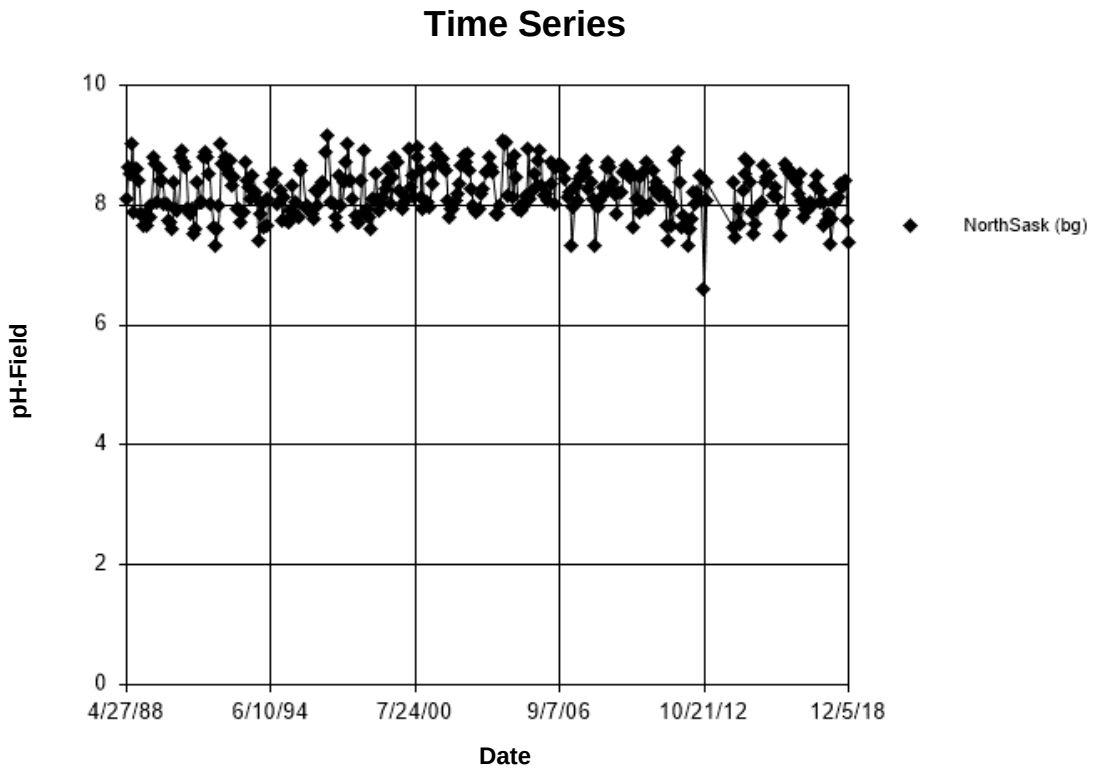

Figure D40 North Saskatchewan River: pH-Field

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 110.6
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 110.6
Adjusted Kruskal-Wallis statistic (H') = 110.6

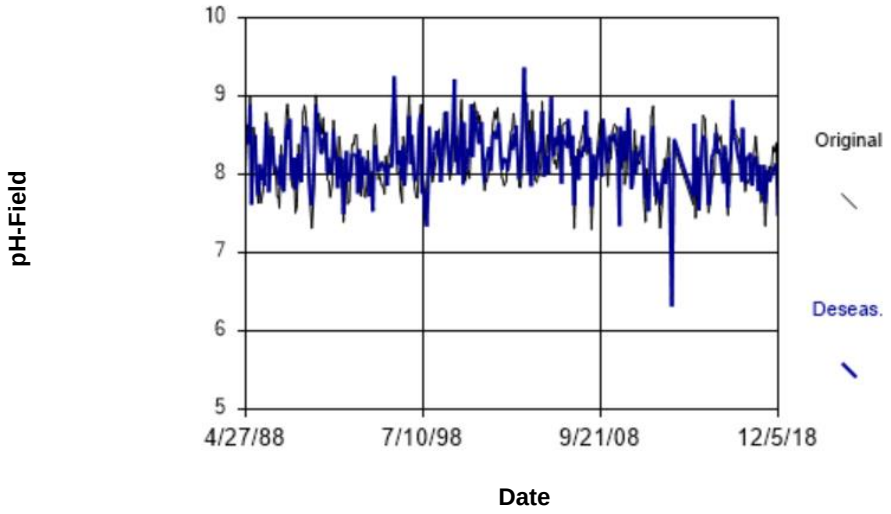

Figure D41 North Saskatchewan River: pH-Field

Seasonal Kendall

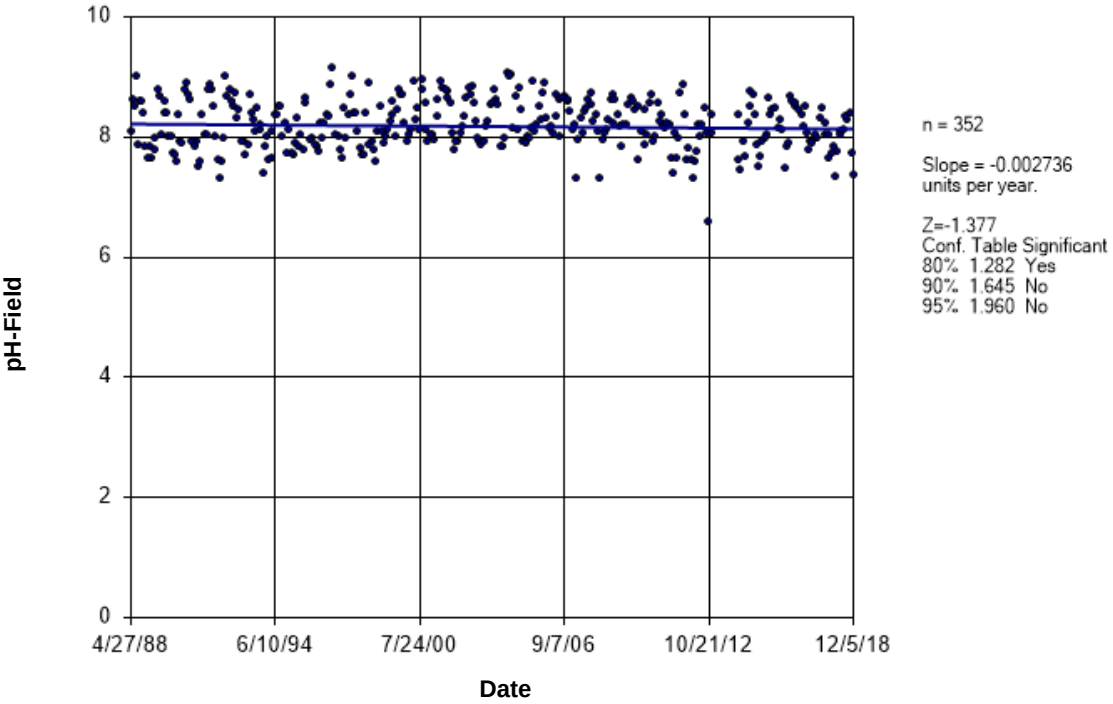

Figure D42 North Saskatchewan River: pH-Field

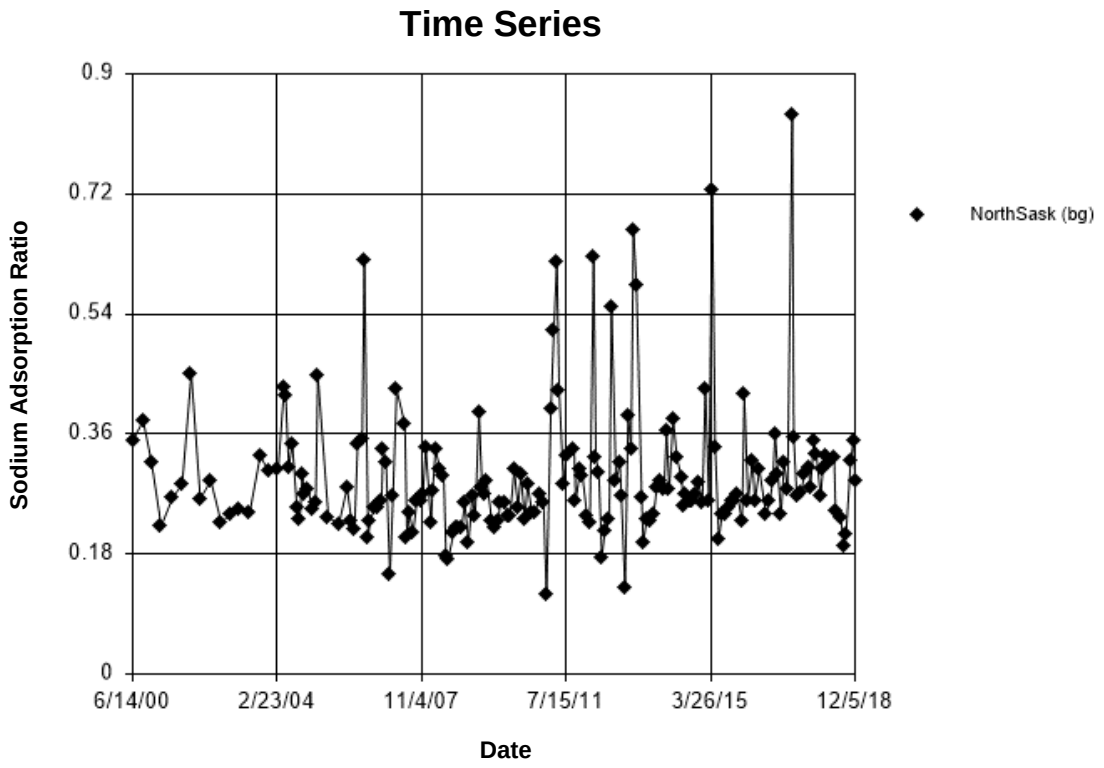

Figure D43 North Saskatchewan River: Sodium Adsorption Ratio

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 25.84
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 25.84
Adjusted Kruskal-Wallis statistic (H') = 25.84

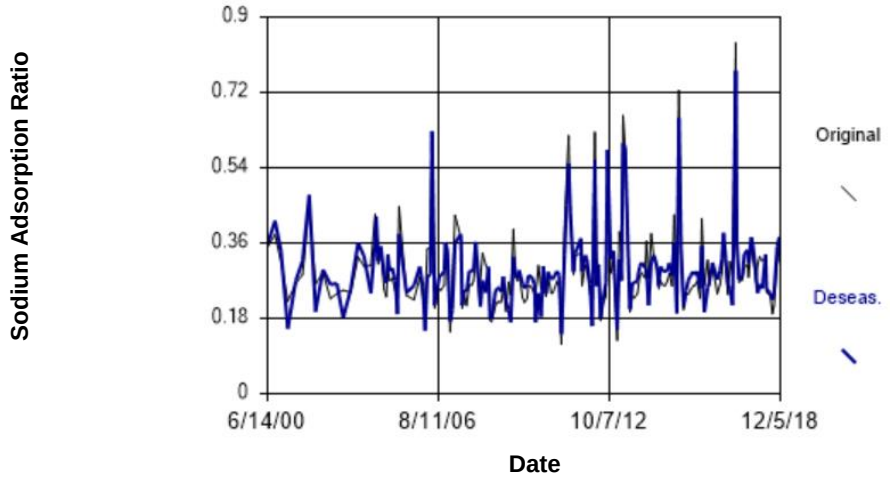

Figure D44 North Saskatchewan River: Sodium Adsorption Ratio

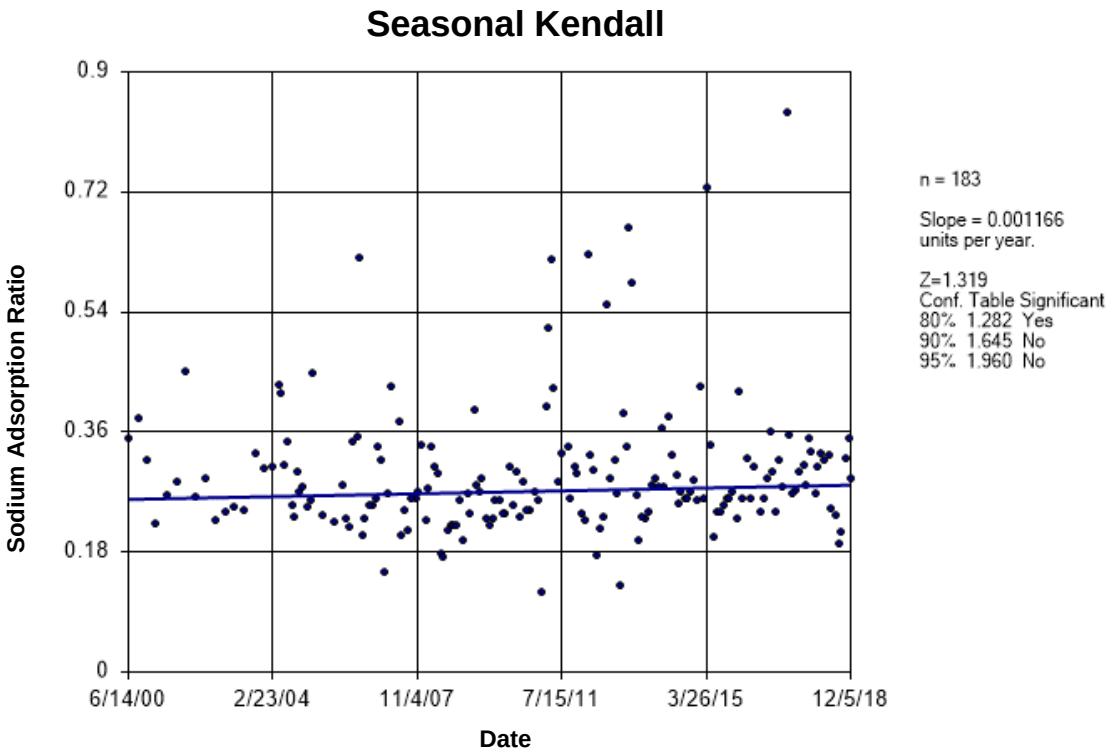

Figure D45 North Saskatchewan River: Sodium Adsorption Ratio

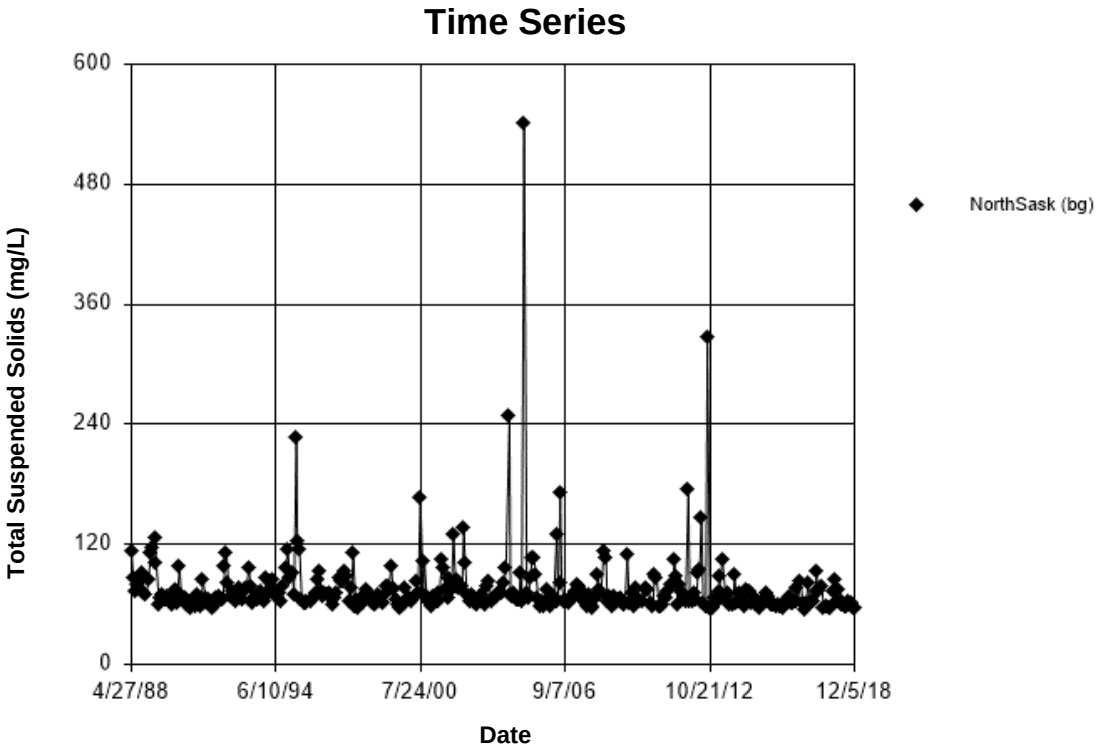

Figure D46 North Saskatchewan River: Total Suspended Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 56.62
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 56.62
Adjusted Kruskal-Wallis statistic (H') = 56.62

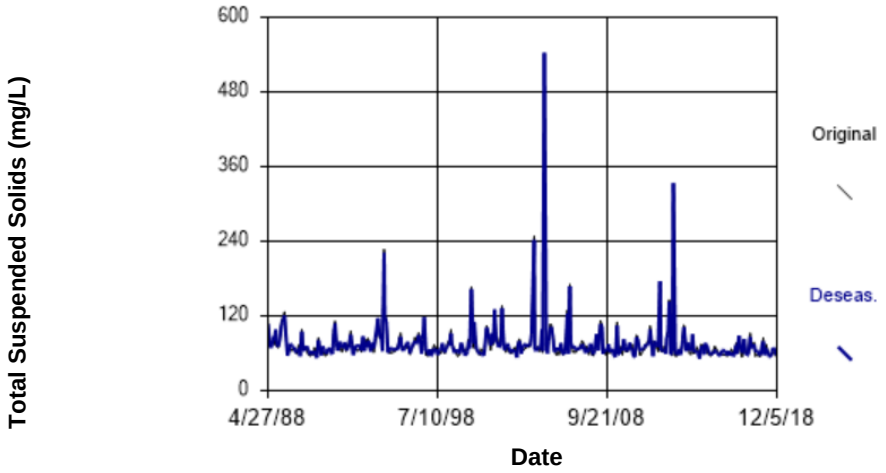

Figure D47 North Saskatchewan River: Total Suspended Solids

Seasonal Kendall

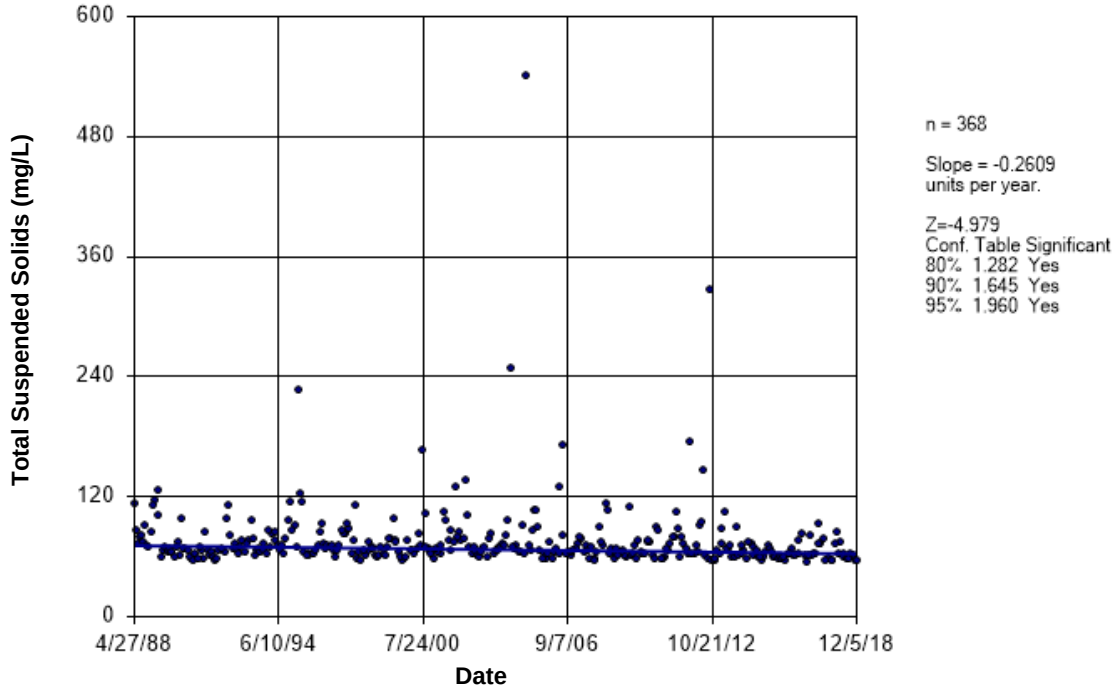

Figure D48 North Saskatchewan River: Total Suspended Solids

Time Series

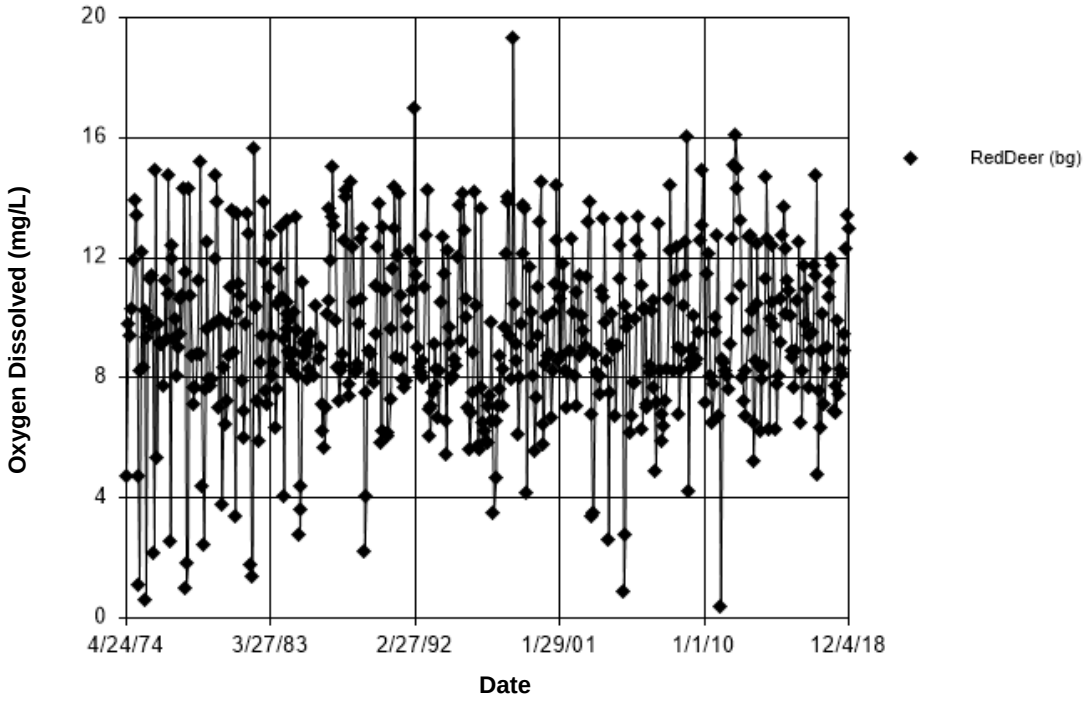

Figure D49 Red Deer River (AB-SK): Oxygen Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 17.43
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 17.43
Adjusted Kruskal-Wallis statistic (H') = 17.43

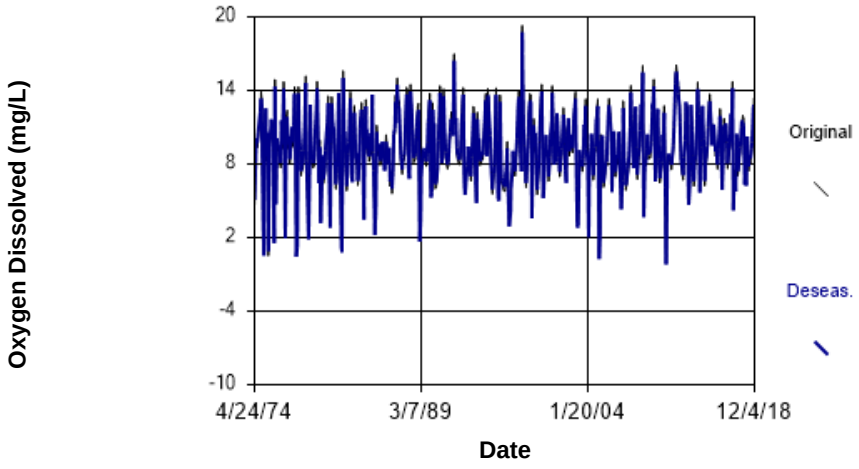

Figure D50 Red Deer River (AB-SK): Oxygen Dissolved

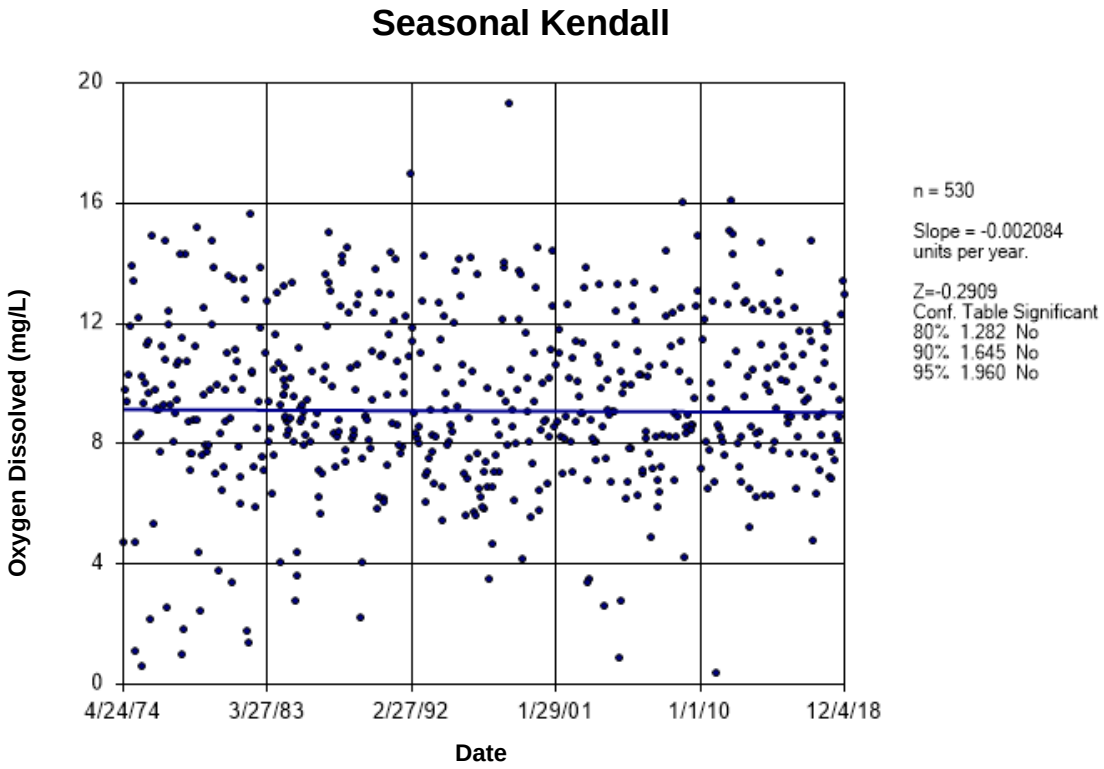

Figure D51 Red Deer River (AB-SK): Oxygen Dissolved

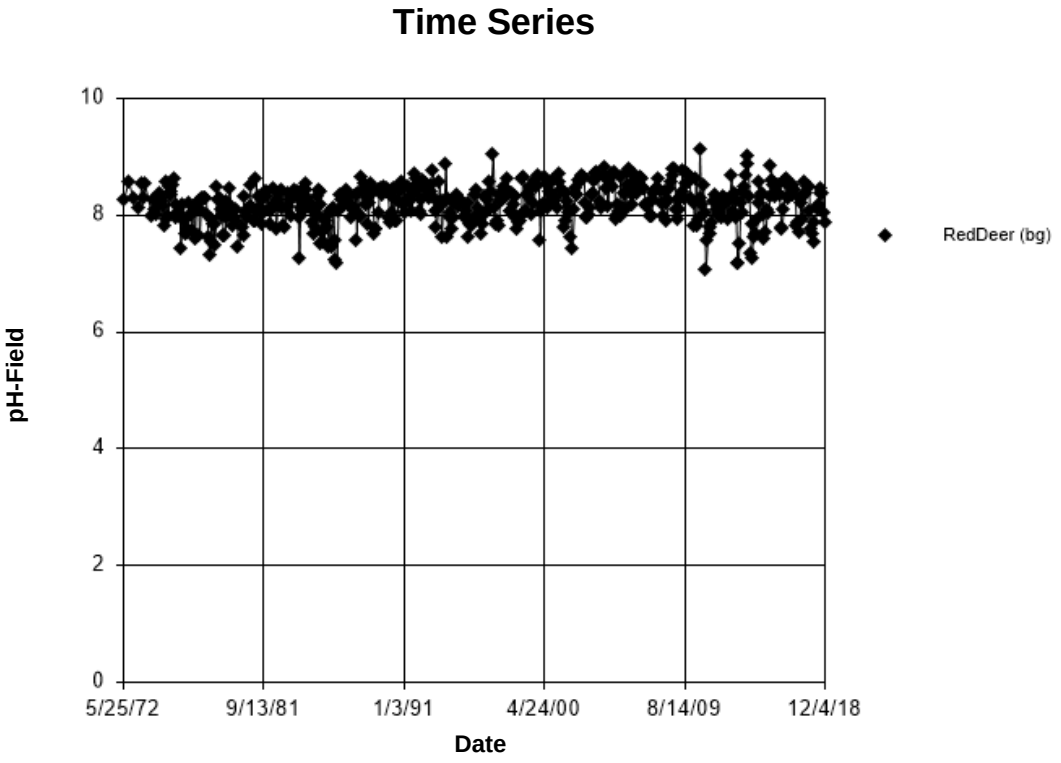

Figure D52 Red Deer River (AB-SK): pH-Field

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 25.62
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 8 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 25.62
Adjusted Kruskal-Wallis statistic (H') = 25.62

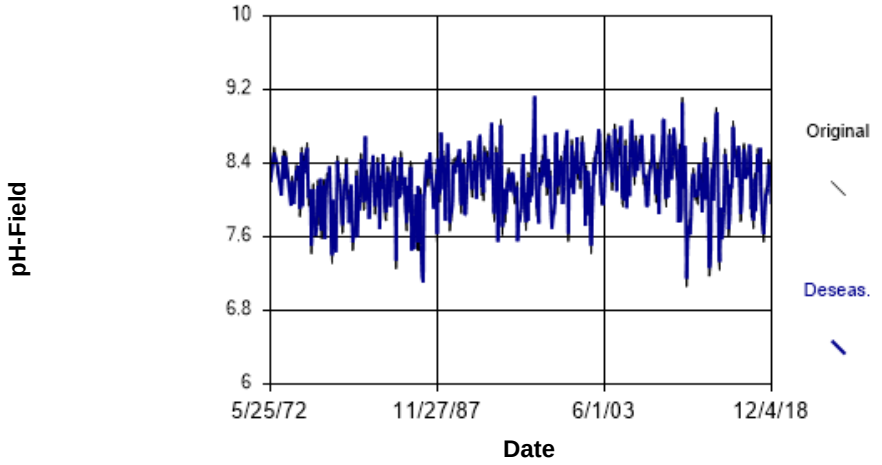

Figure D53 Red Deer River (AB-SK): pH-Field

Seasonal Kendall

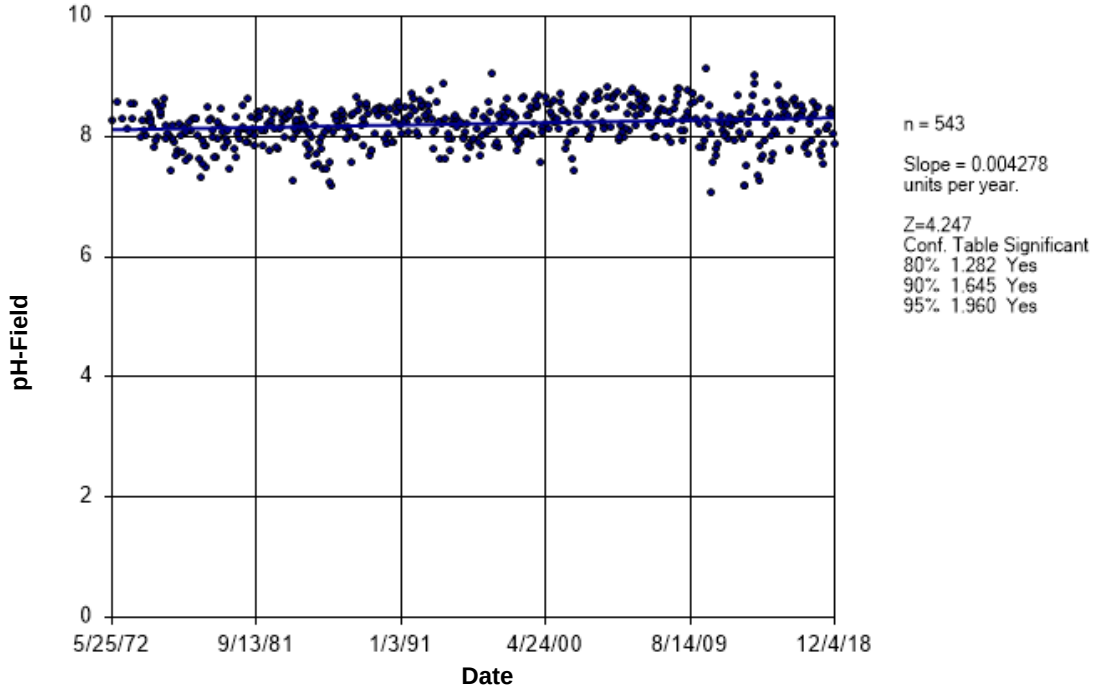

Figure D54 Red Deer River (AB-SK): pH-Field

Time Series

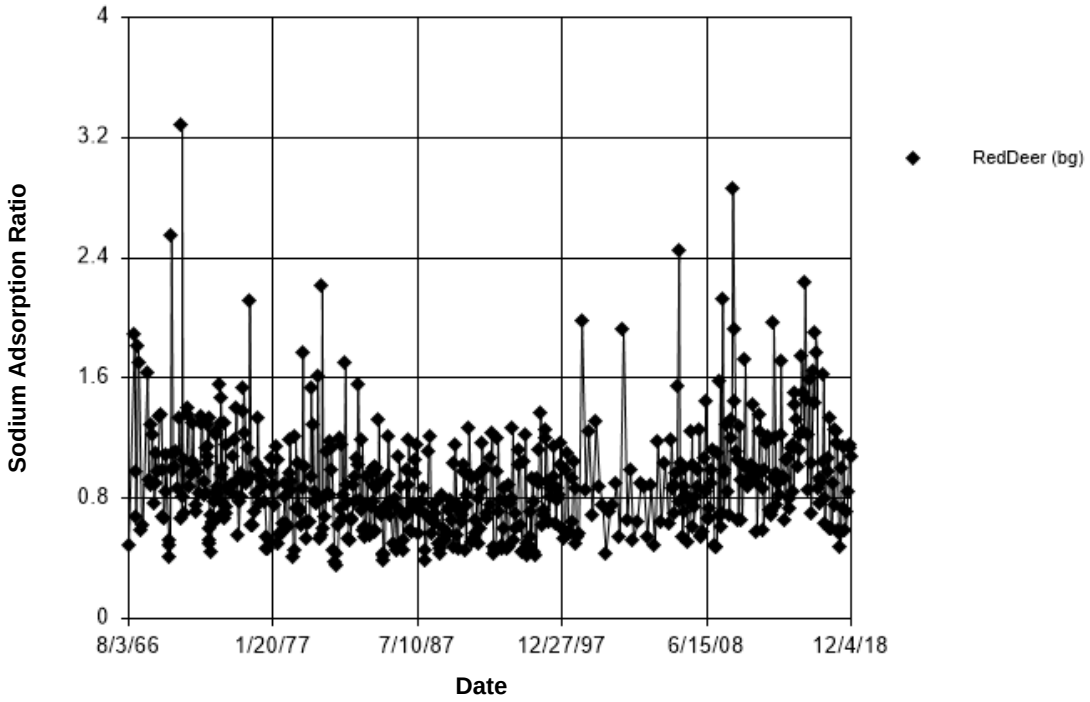

Figure D55 Red Deer River (AB-SK): Sodium Adsorption Ratio

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 24.12
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 24.12
Adjusted Kruskal-Wallis statistic (H') = 24.12

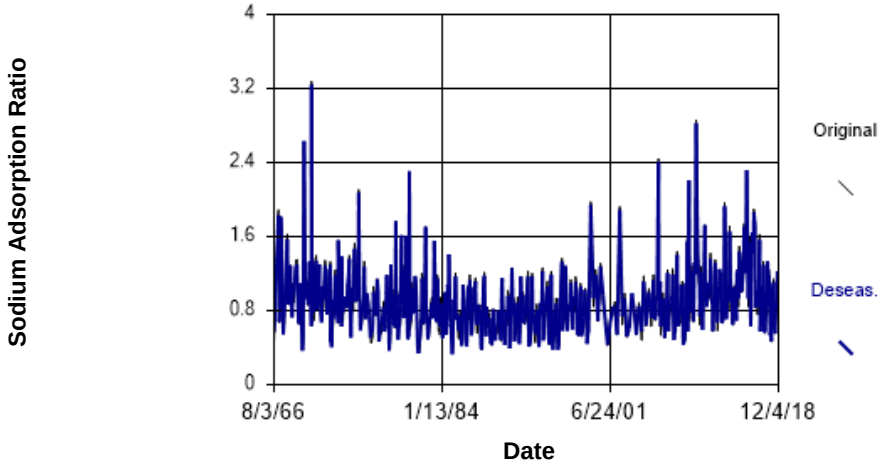

Figure D56 Red Deer River (AB-SK): Sodium Adsorption Ratio

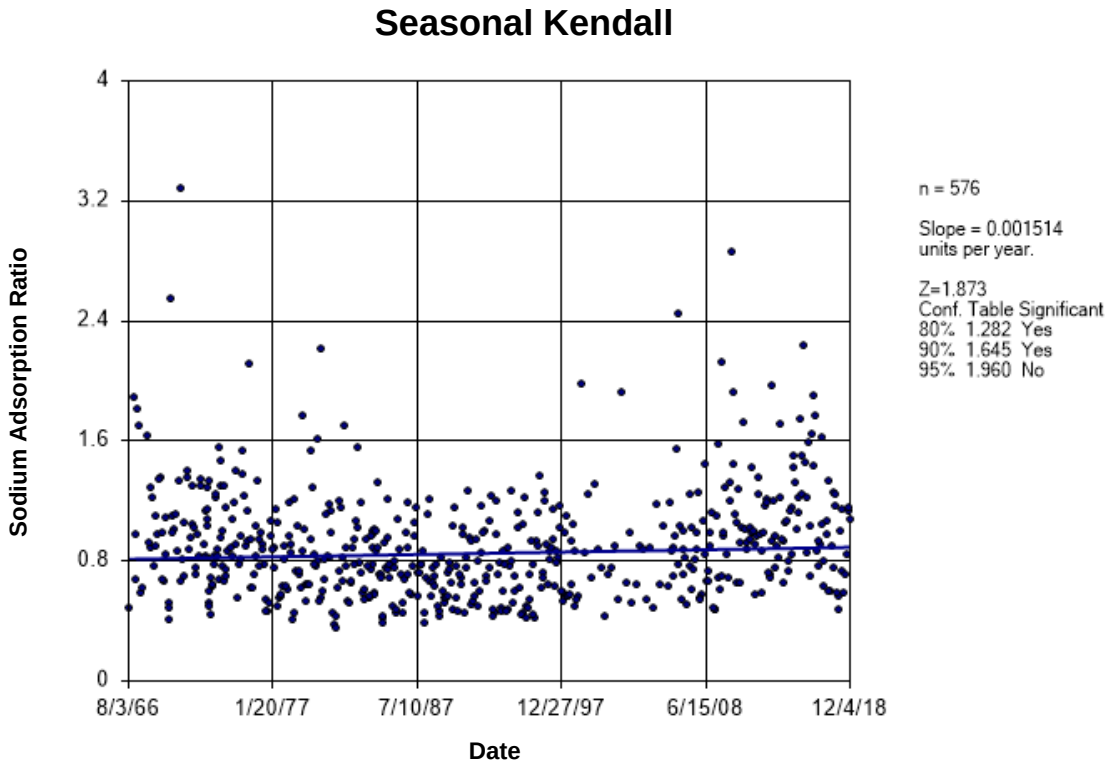

Figure D57 Red Deer River (AB-SK): Sodium Adsorption Ratio

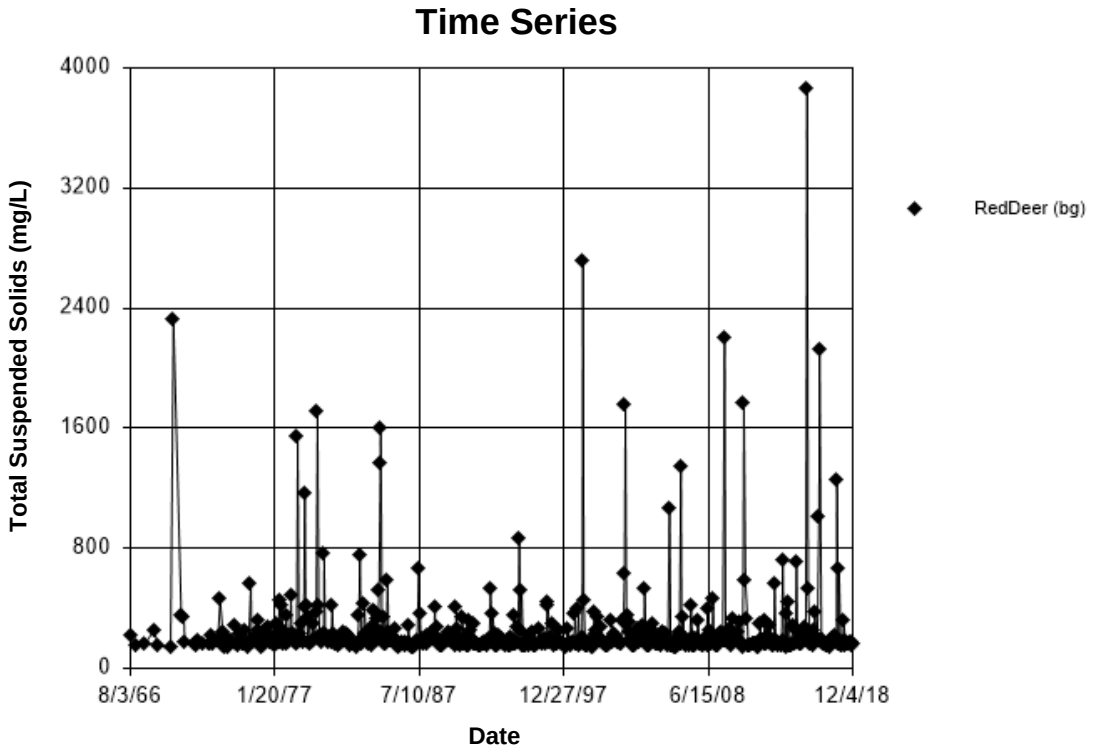

Figure D58 Red Deer River (AB-SK): Total Suspended Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 29.78
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 29.78
Adjusted Kruskal-Wallis statistic (H') = 29.78

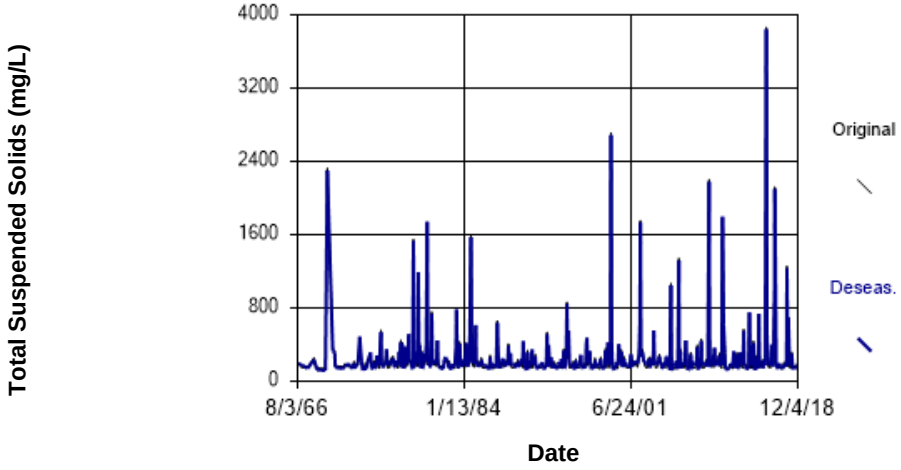

Figure D59 Red Deer River (AB-SK): Total Suspended Solids

Seasonal Kendall

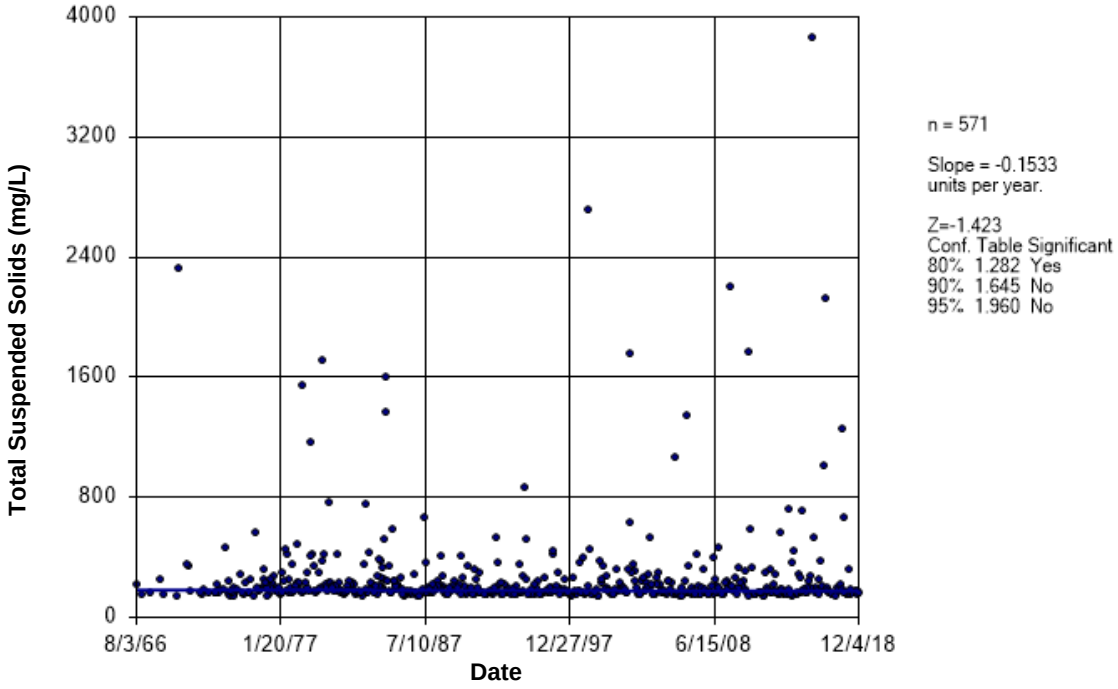

Figure D60 Red Deer River (AB-SK): Total Suspended Solids

Time Series

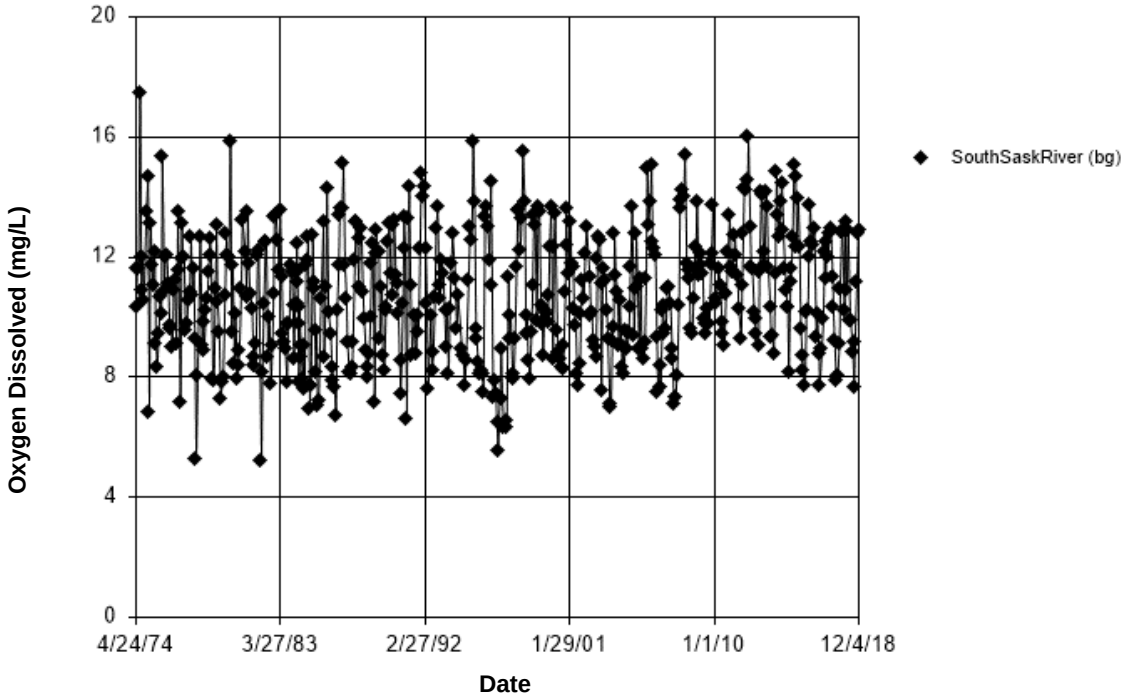

Figure D61 South Saskatchewan River: Oxygen Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 158.2
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 158.2
Adjusted Kruskal-Wallis statistic (H') = 158.2

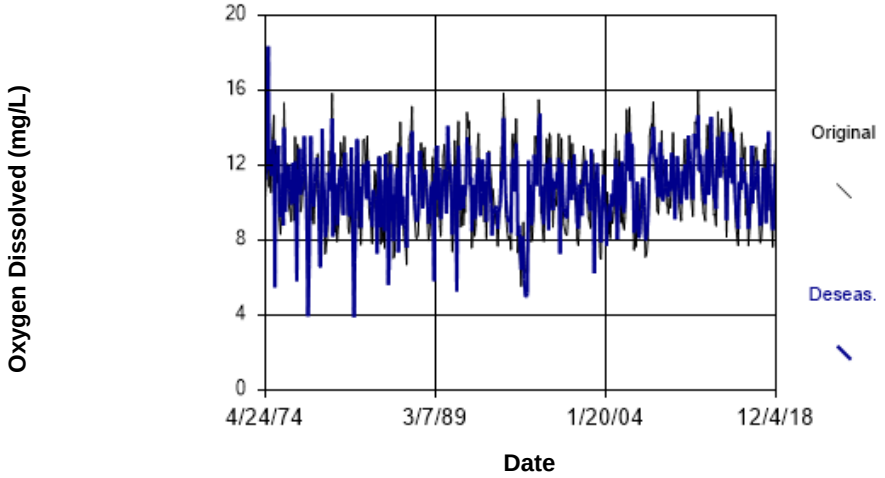

Figure D62 South Saskatchewan River: Oxygen Dissolved

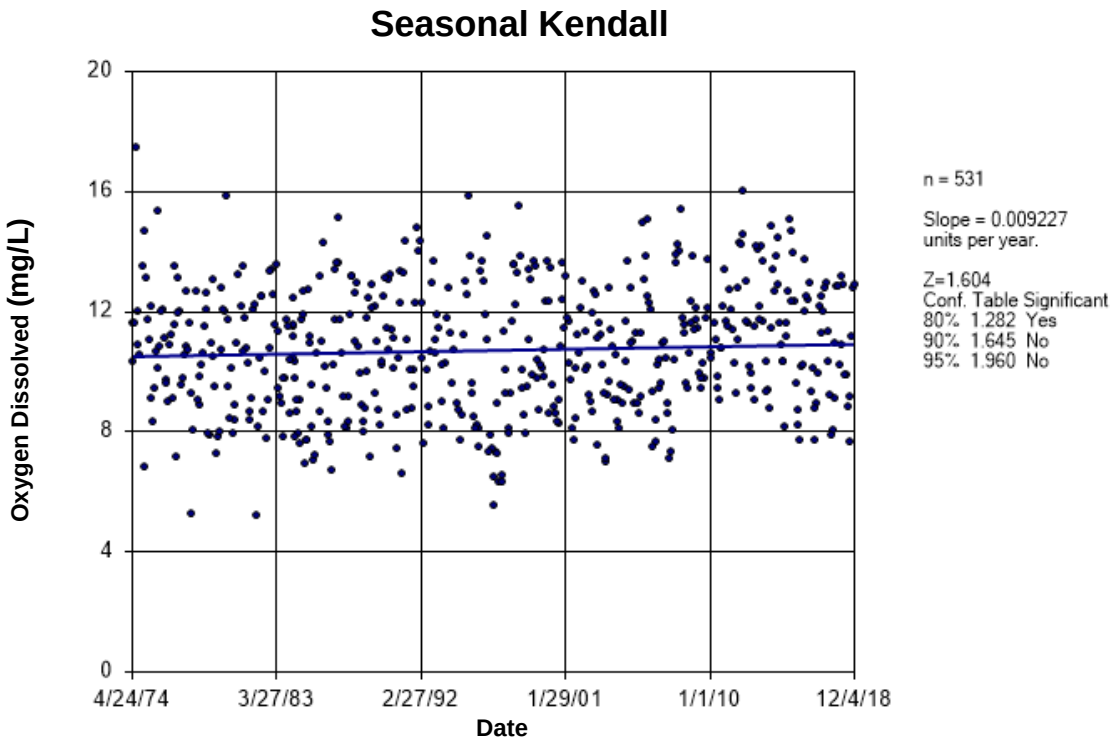

Figure D63 South Saskatchewan River: Oxygen Dissolved

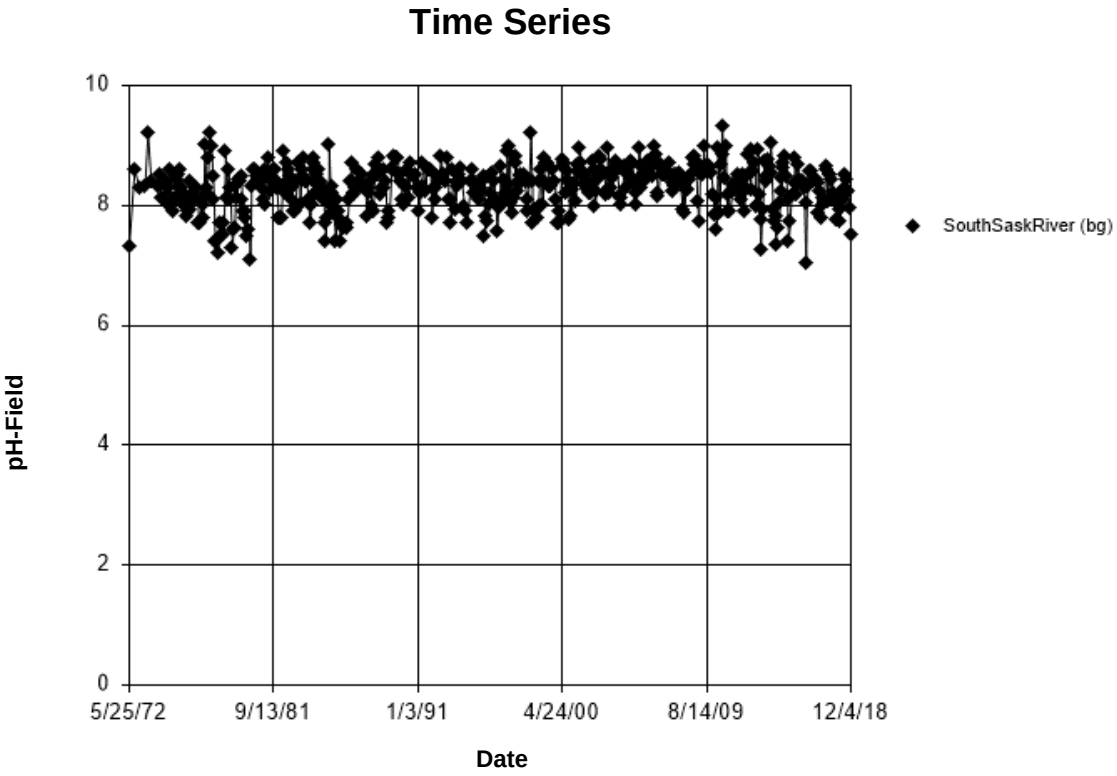

Figure D64 South Saskatchewan River: pH-Field

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 90.04
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 90.04
Adjusted Kruskal-Wallis statistic (H') = 90.04

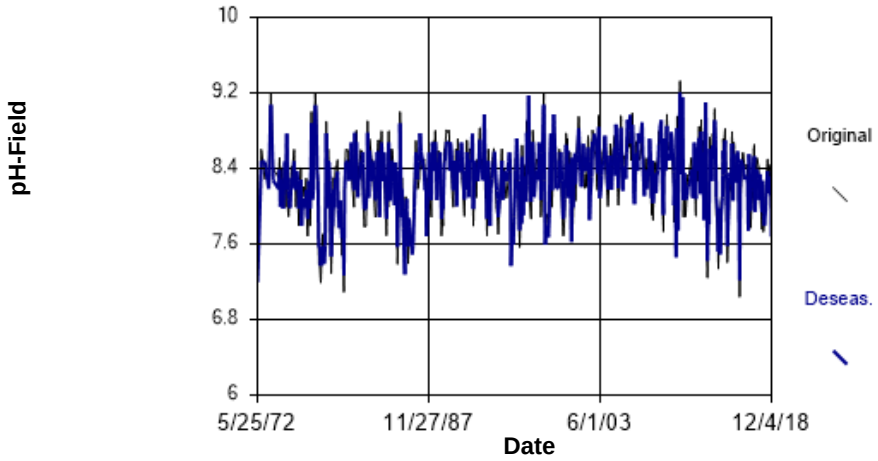

Figure D65 South Saskatchewan River: pH-Field

Seasonal Kendall

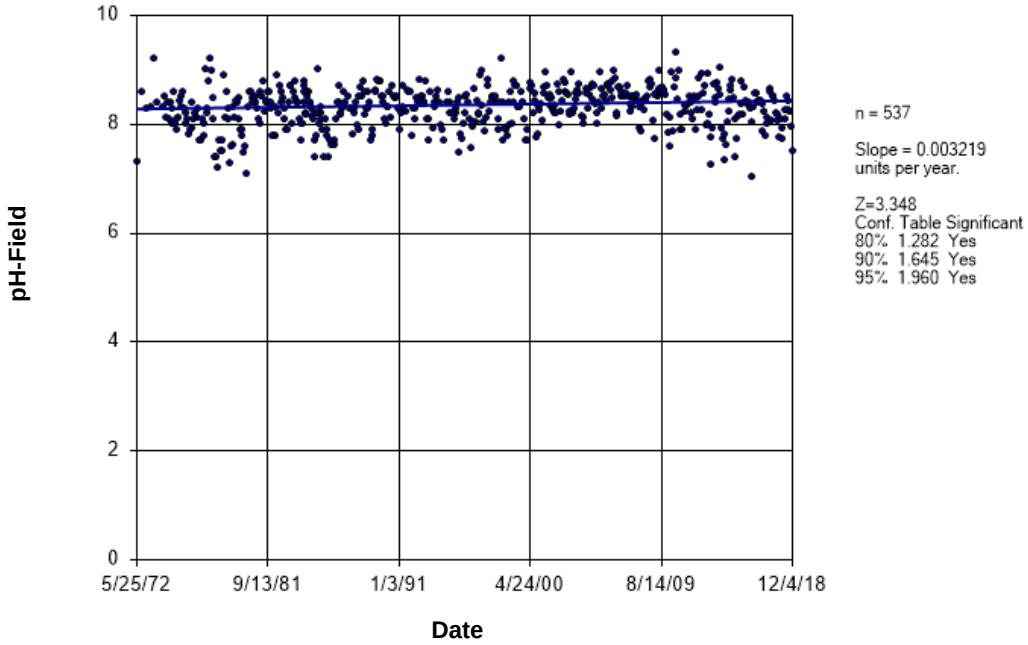

Figure D66 South Saskatchewan River: pH-Field

Time Series

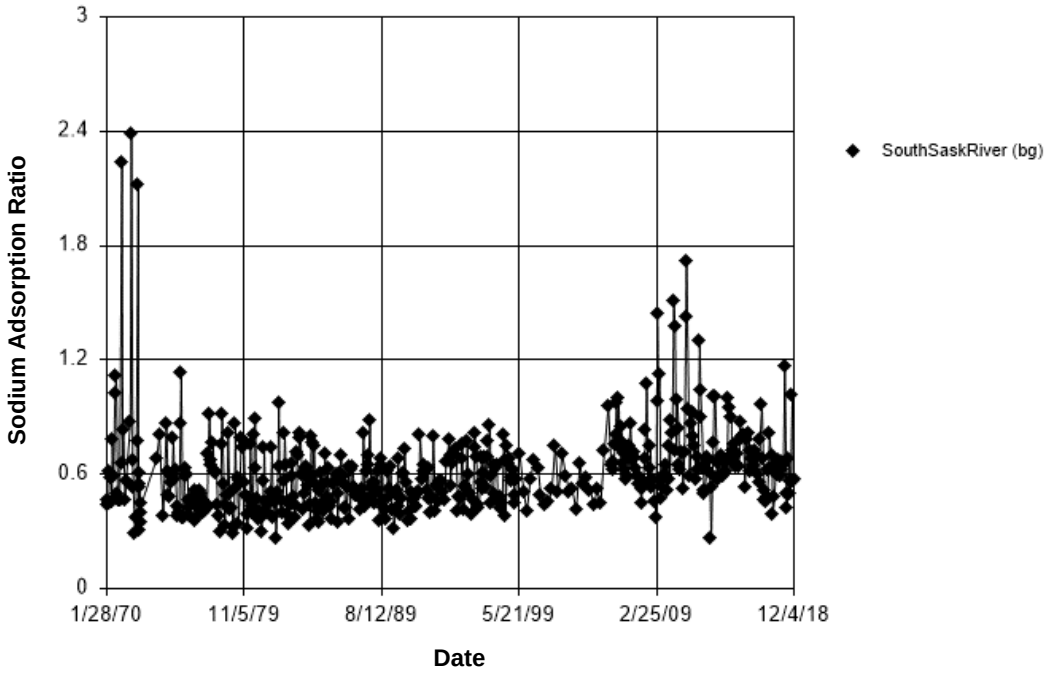

Figure D67 South Saskatchewan River: Sodium Adsorption Ratio

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 47.92
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

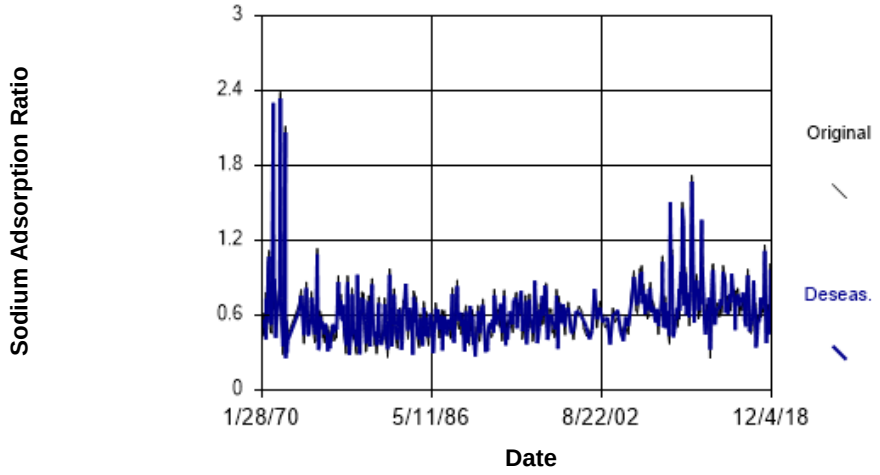

Figure D68 South Saskatchewan River: Sodium Adsorption Ratio

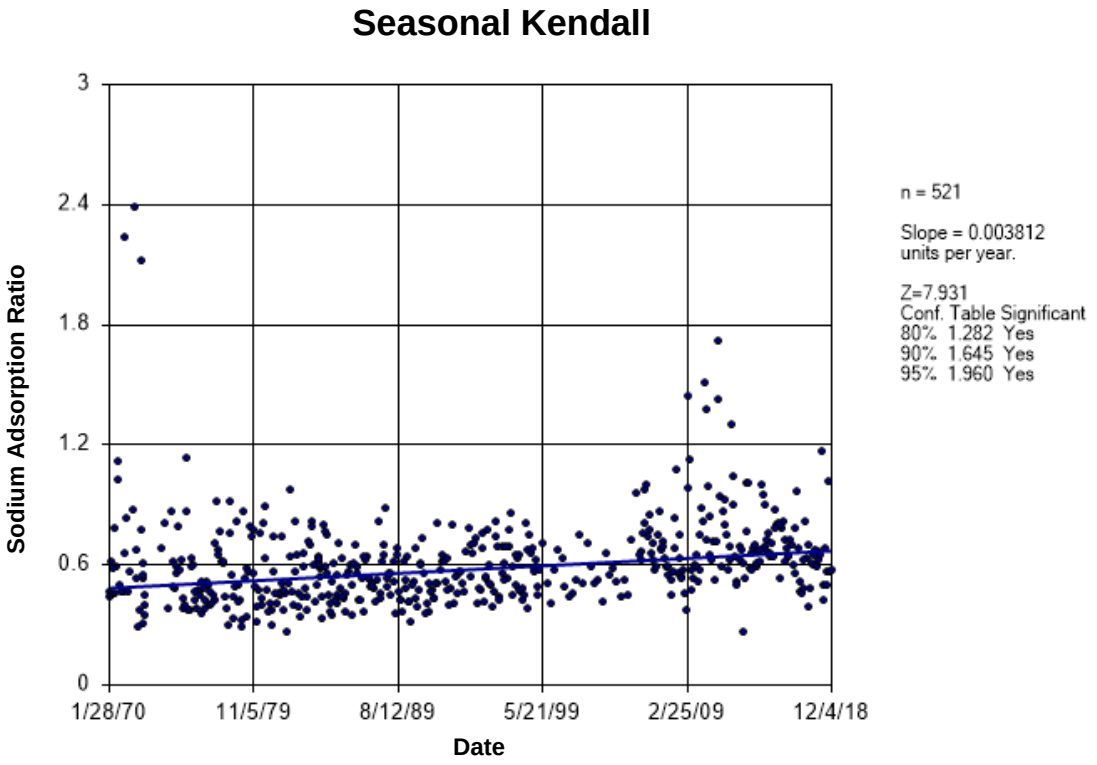

Figure D69 South Saskatchewan River: Sodium Adsorption Ratio

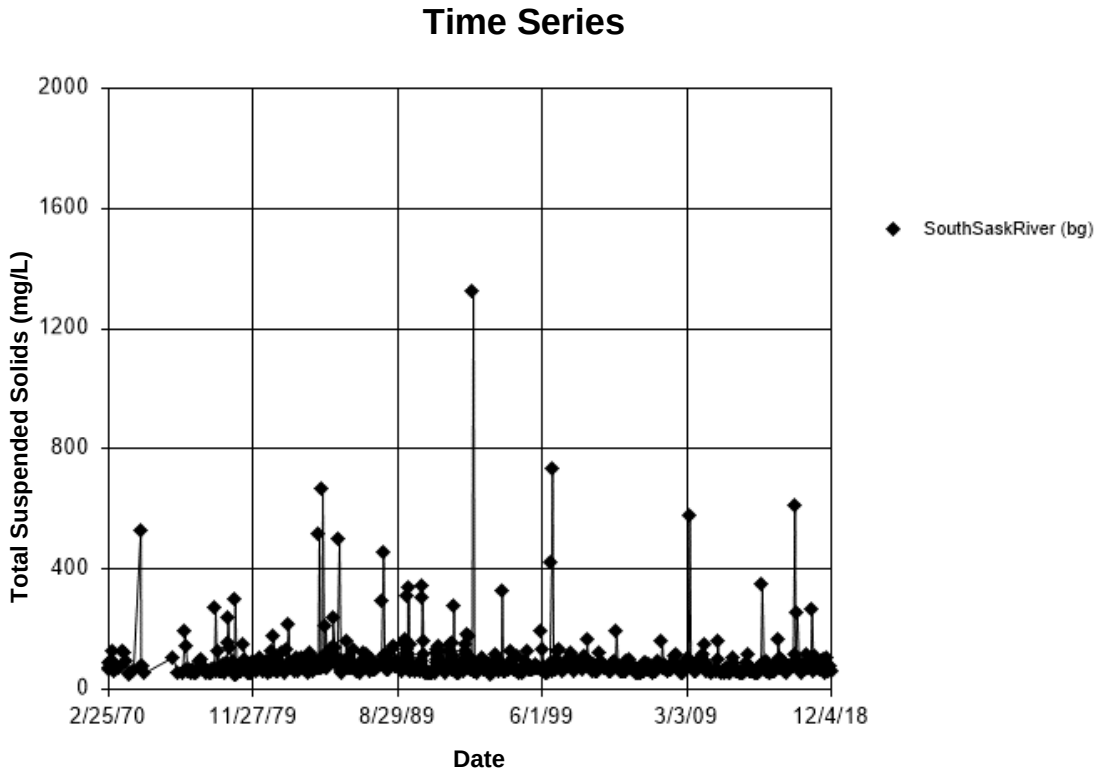

Figure D70 South Saskatchewan River: Total Suspended Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 65.02
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

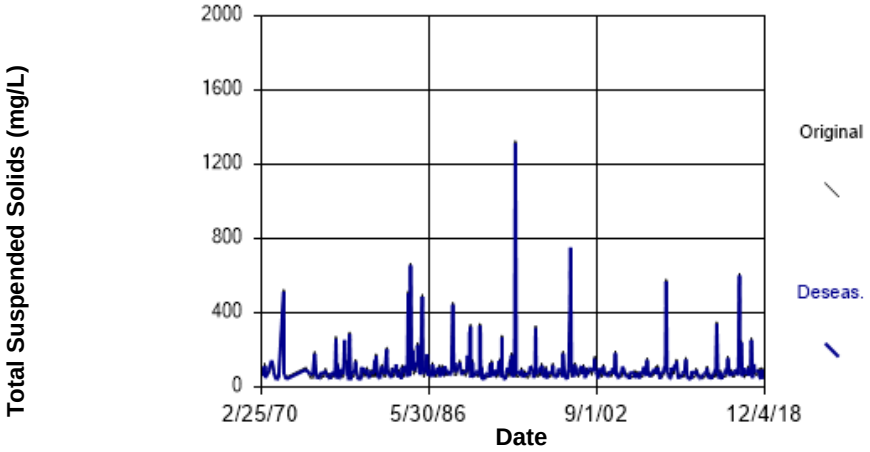

Figure D71 South Saskatchewan River: Total Suspended Solids

Seasonal Kendall

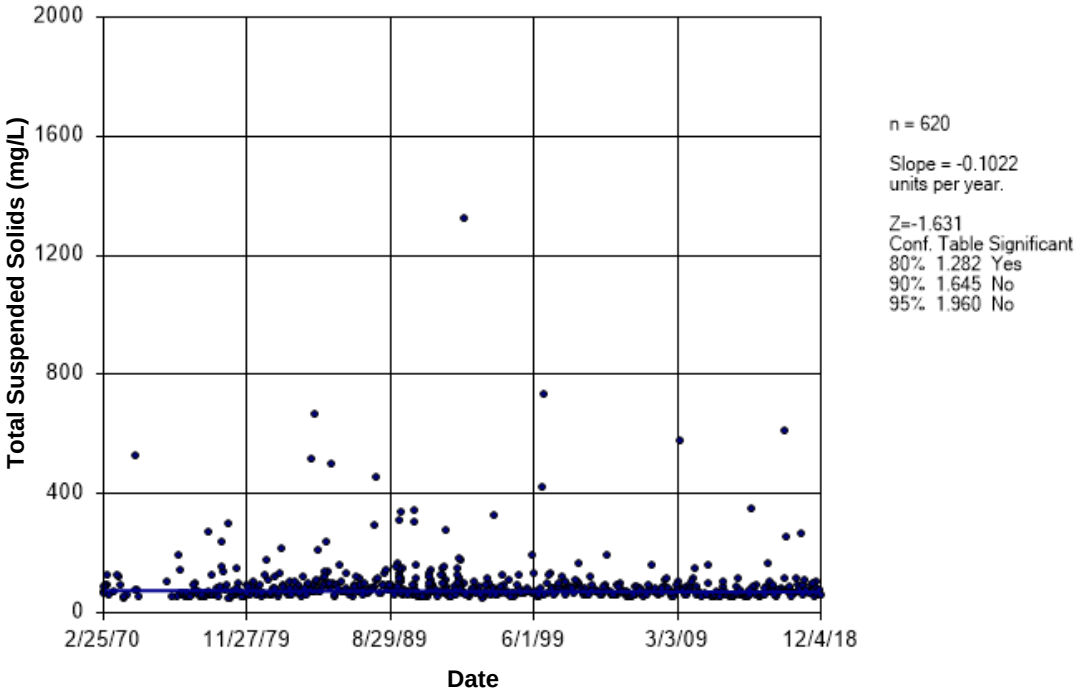

Figure D72 South Saskatchewan River: Total Suspended Solids

Time Series

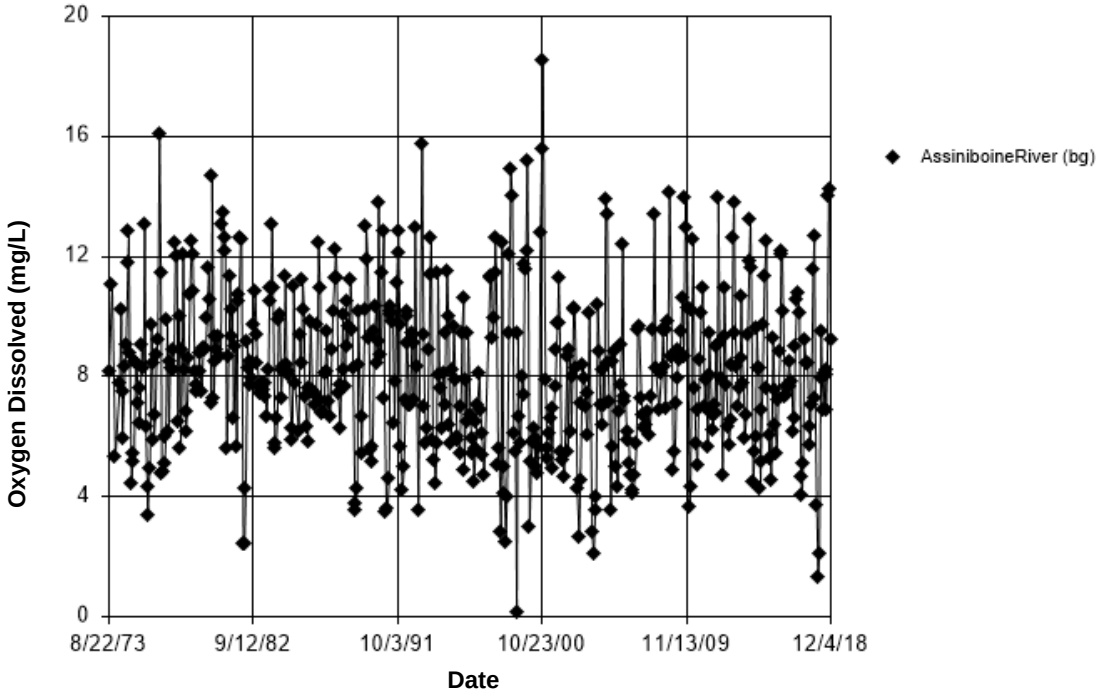

Figure D73 Assiniboine River: Oxygen Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 15.29
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 15.29
Adjusted Kruskal-Wallis statistic (H') = 15.29

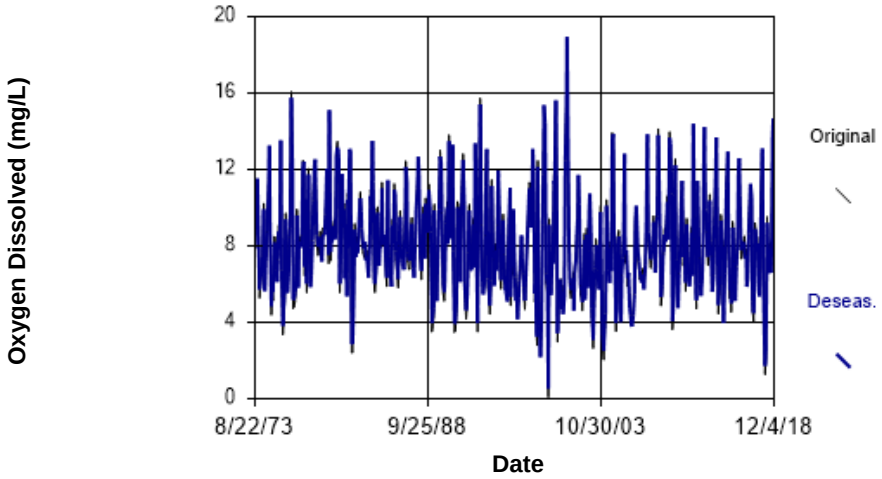

Figure D74 Assiniboine River: Oxygen Dissolved

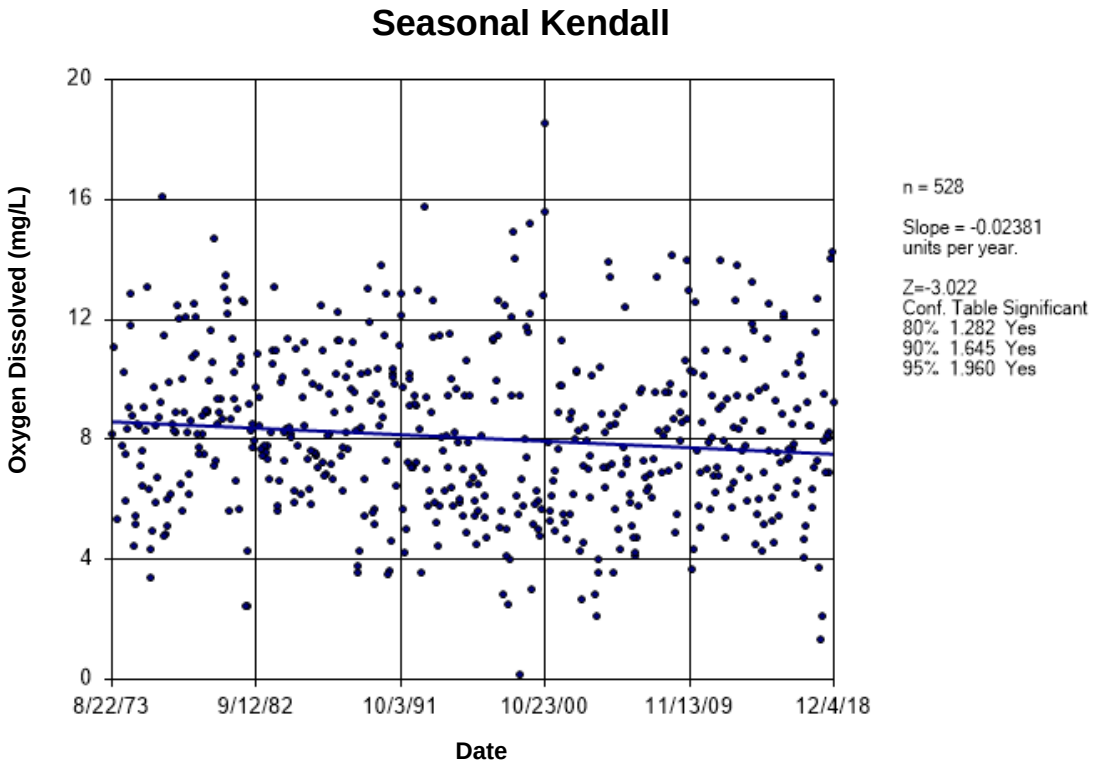

Figure D75 Assiniboine River: Oxygen Dissolved

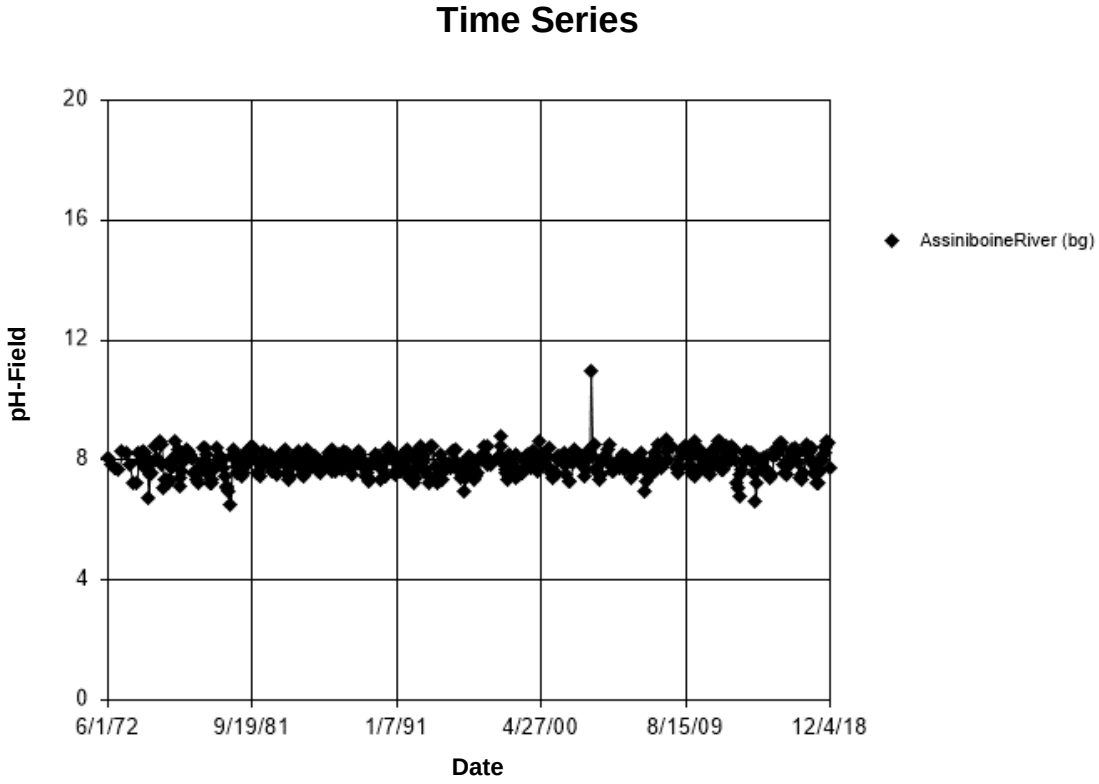

Figure D76 Assiniboine River: pH-Field

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 125.8
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 125.8
Adjusted Kruskal-Wallis statistic (H') = 125.8

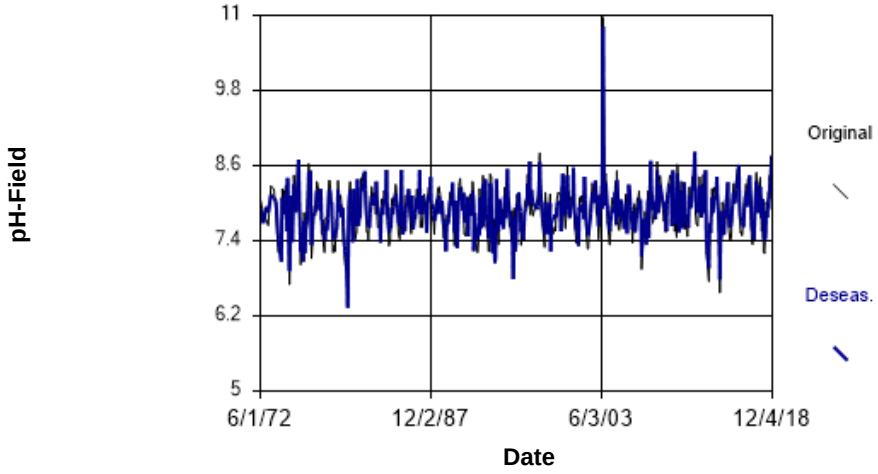

Figure D77 Assiniboine River: pH-Field

Seasonal Kendall

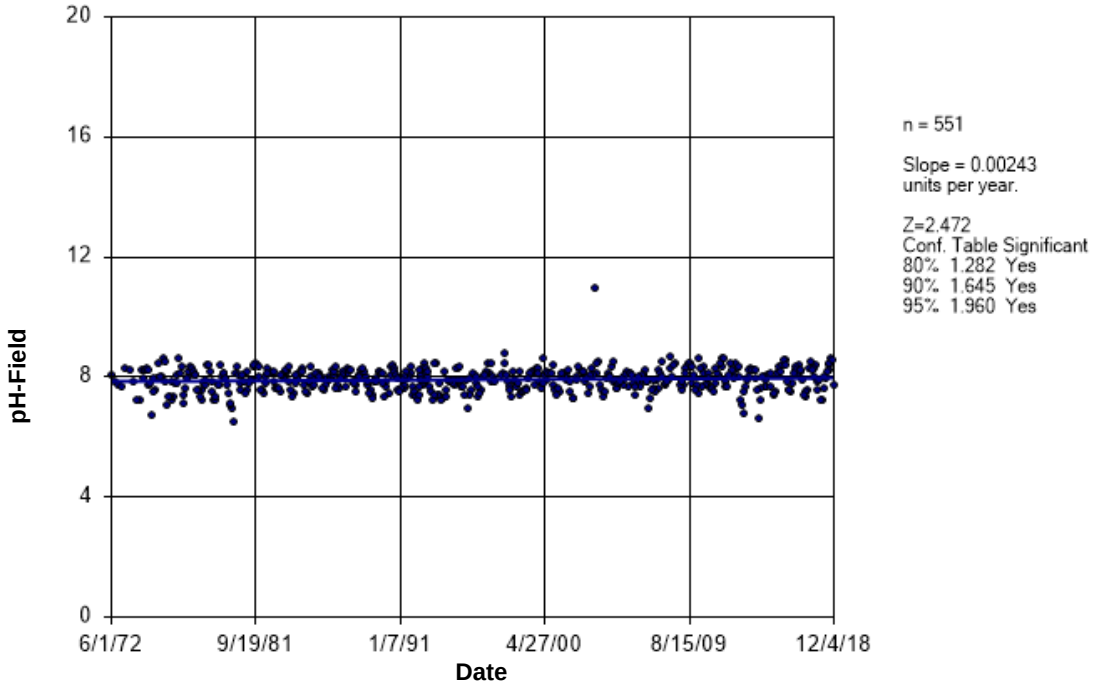

Figure D78 Assiniboine River: pH-Field

Time Series

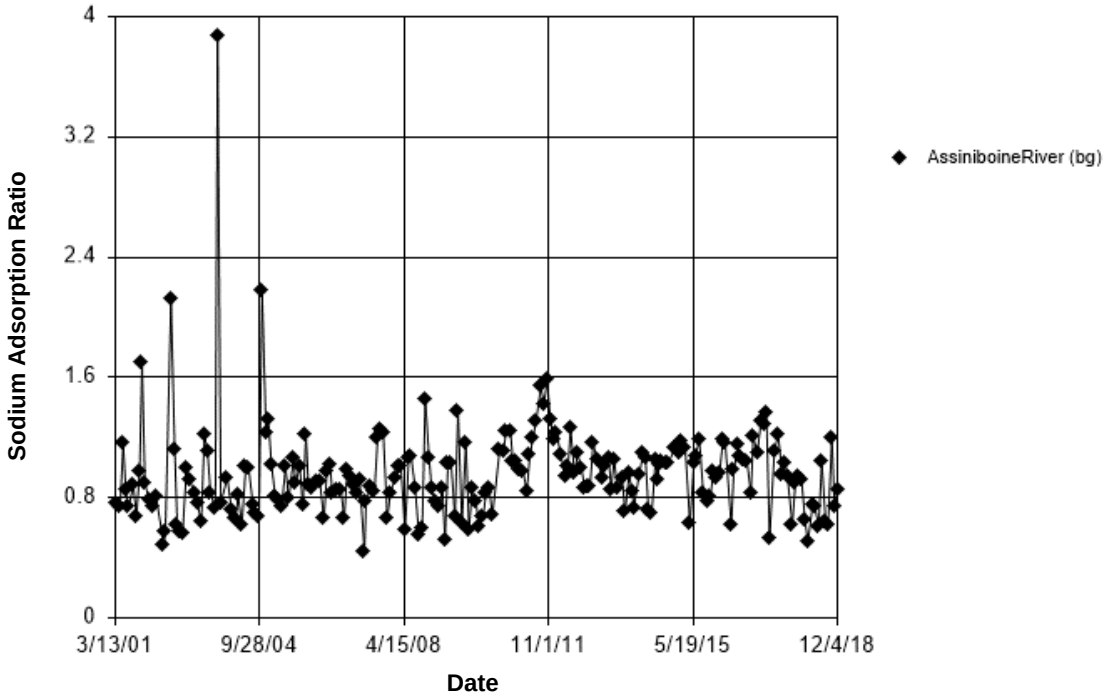

Figure D79 Assiniboine River: Sodium Absorption Ratio

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.6231
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

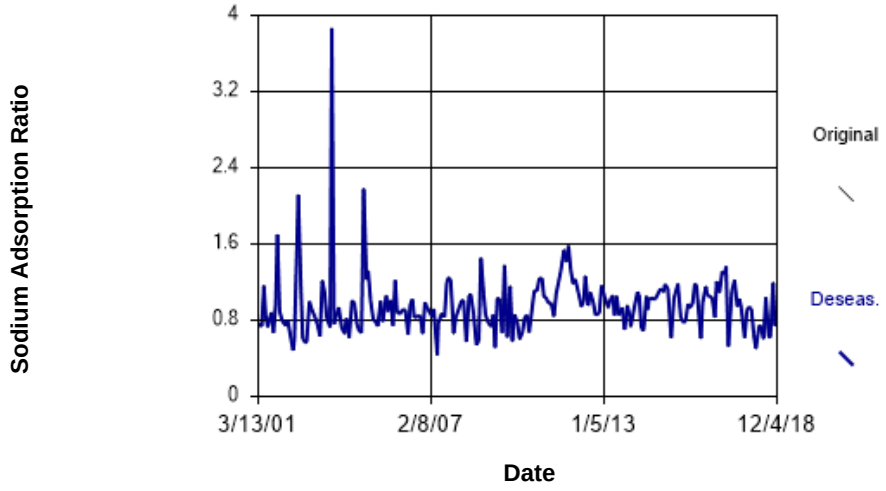

Figure D80 Assiniboine River: Sodium Adsorption Ratio

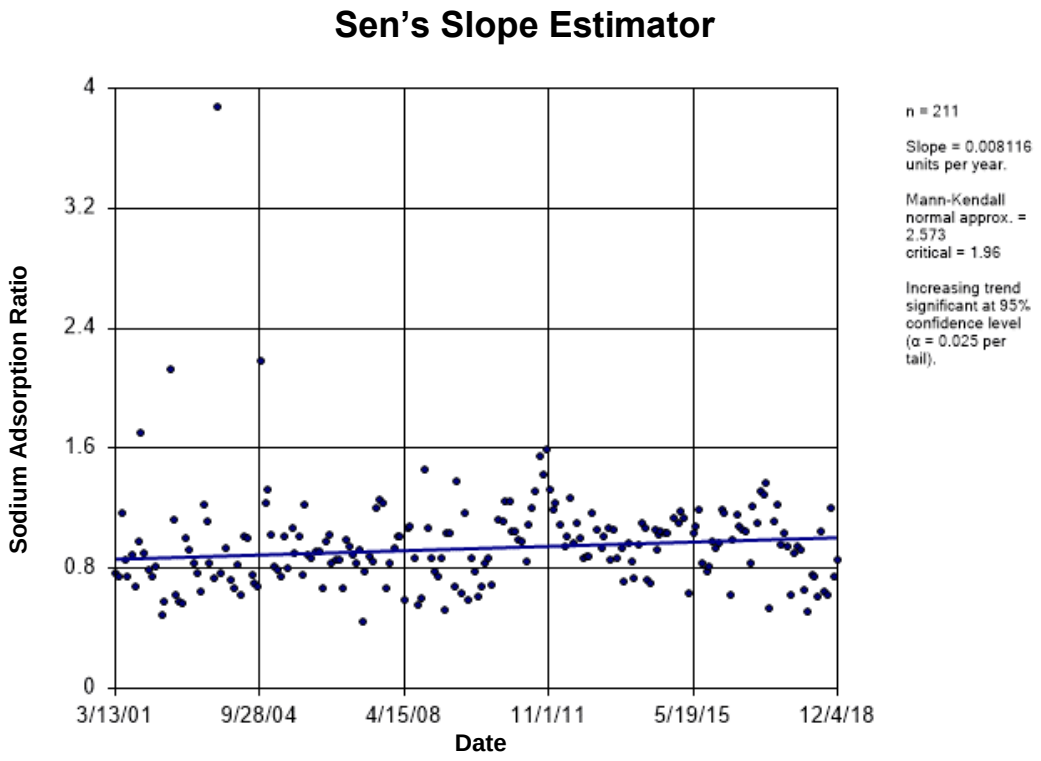

Figure D81 Assiniboine River: Sodium Adsorption Ratio

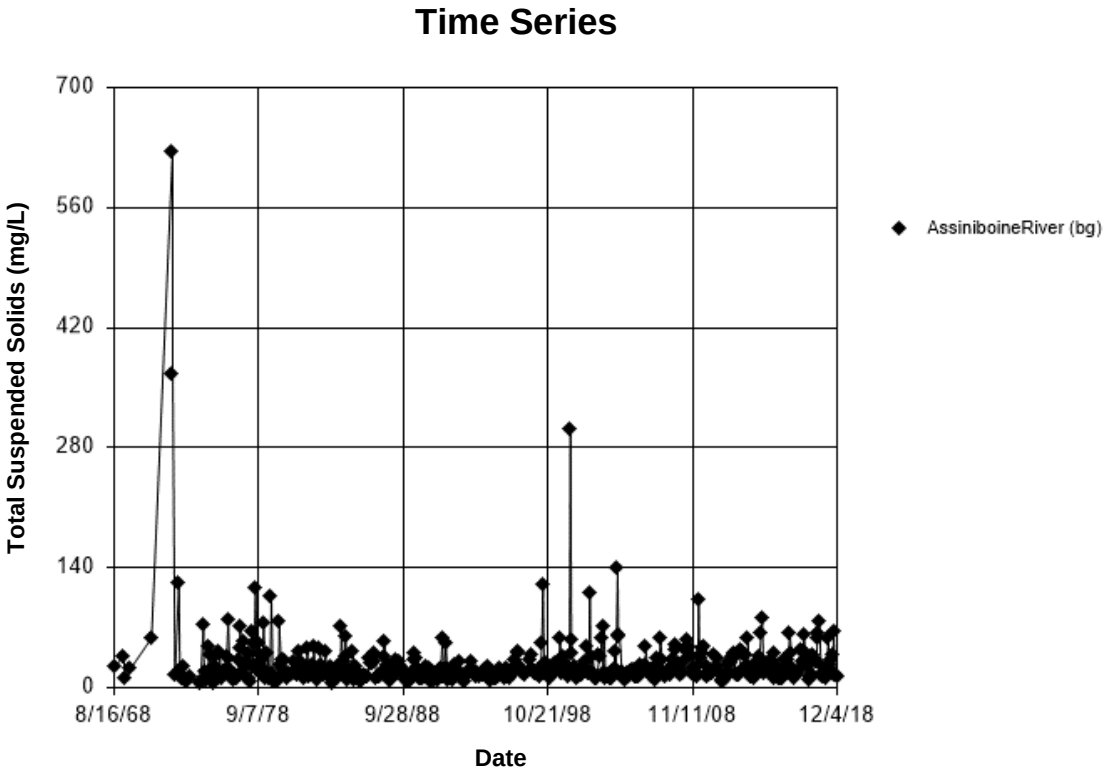

Figure D82 Assiniboine River: Total Suspended Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 124.8
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 124.8
Adjusted Kruskal-Wallis statistic (H') = 124.8

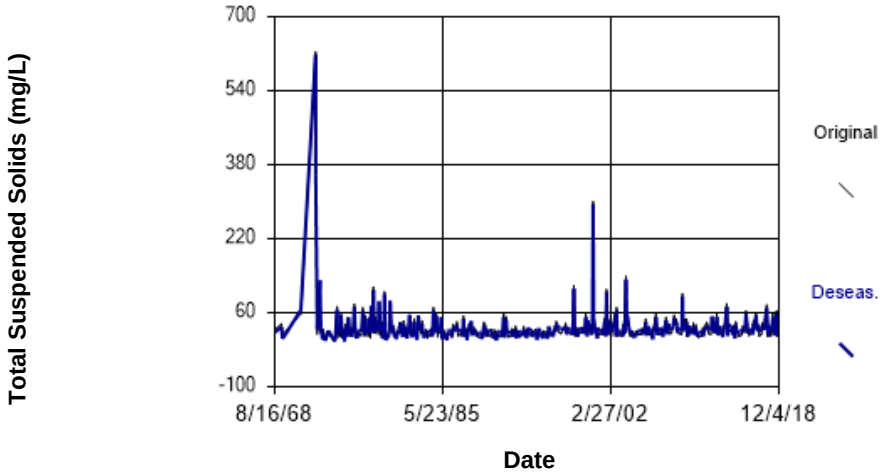

Figure D83 Assiniboine River: Total Suspended Solids

Seasonal Kendall

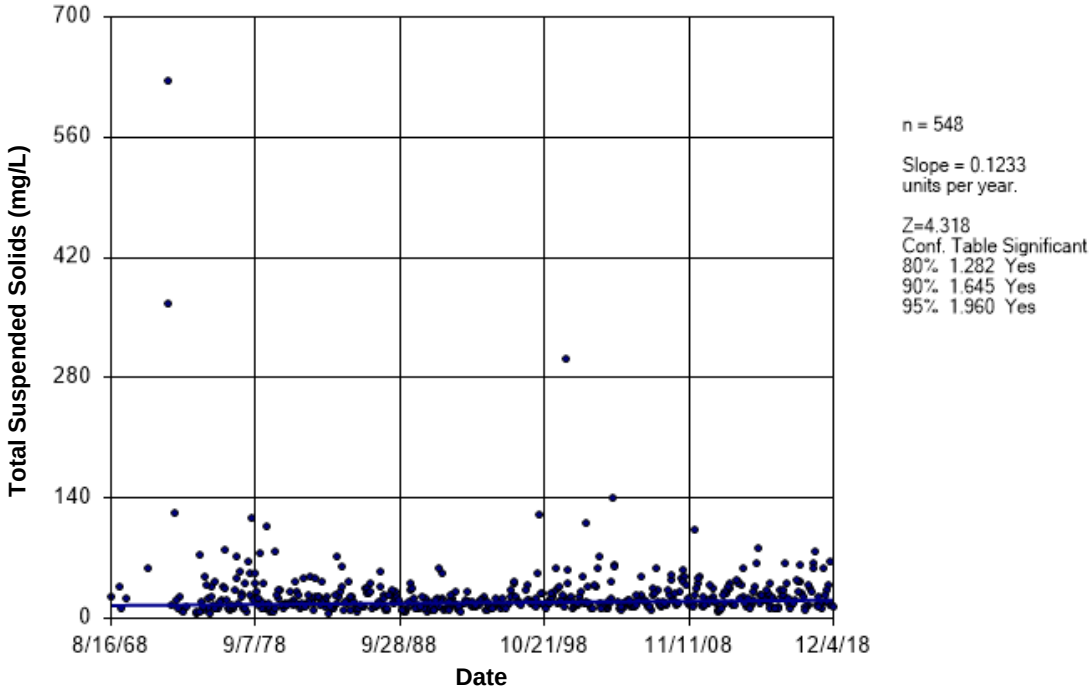

Figure D84 Assiniboine River: Total Suspended Solids

Time Series

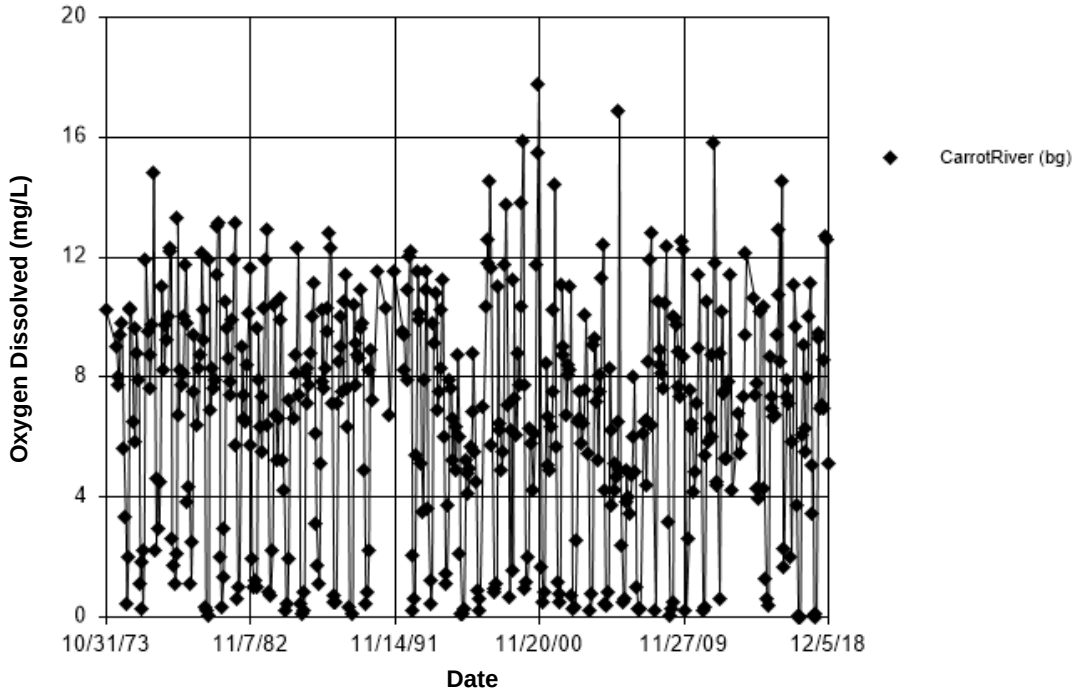

Figure D85 Carrot River: Oxygen Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 112.1
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 93 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 112.1
Adjusted Kruskal-Wallis statistic (H') = 112.1

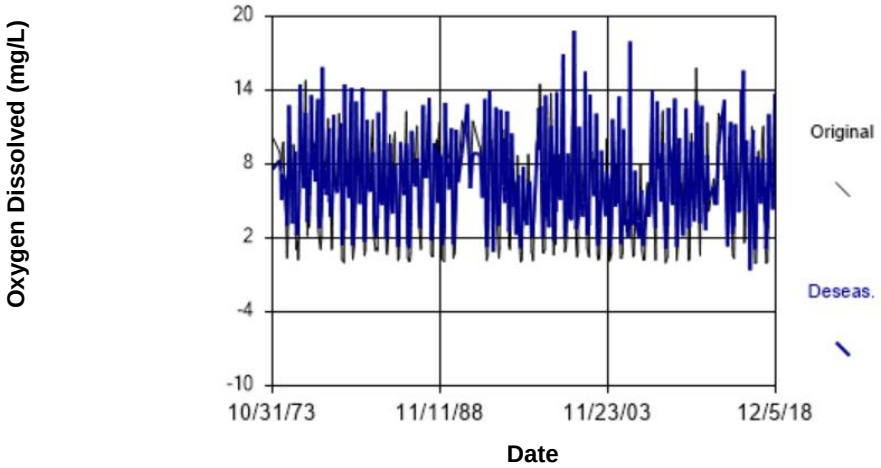

Figure D86 Carrot River: Oxygen Dissolved

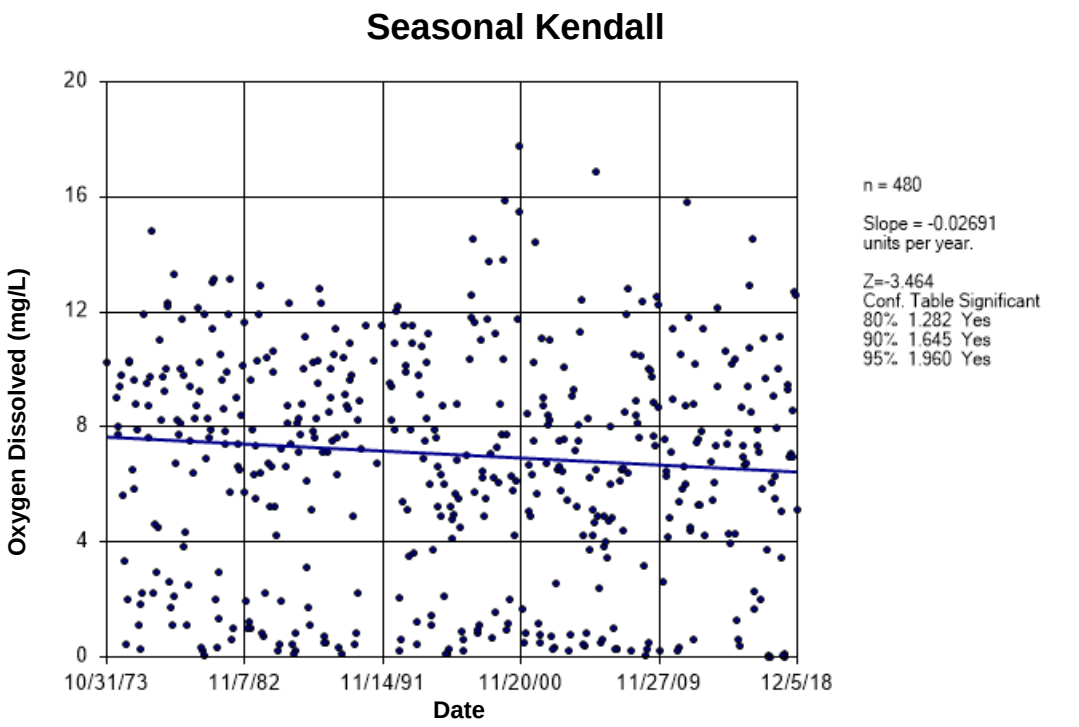

Figure D87 Carrot River: Oxygen Dissolved

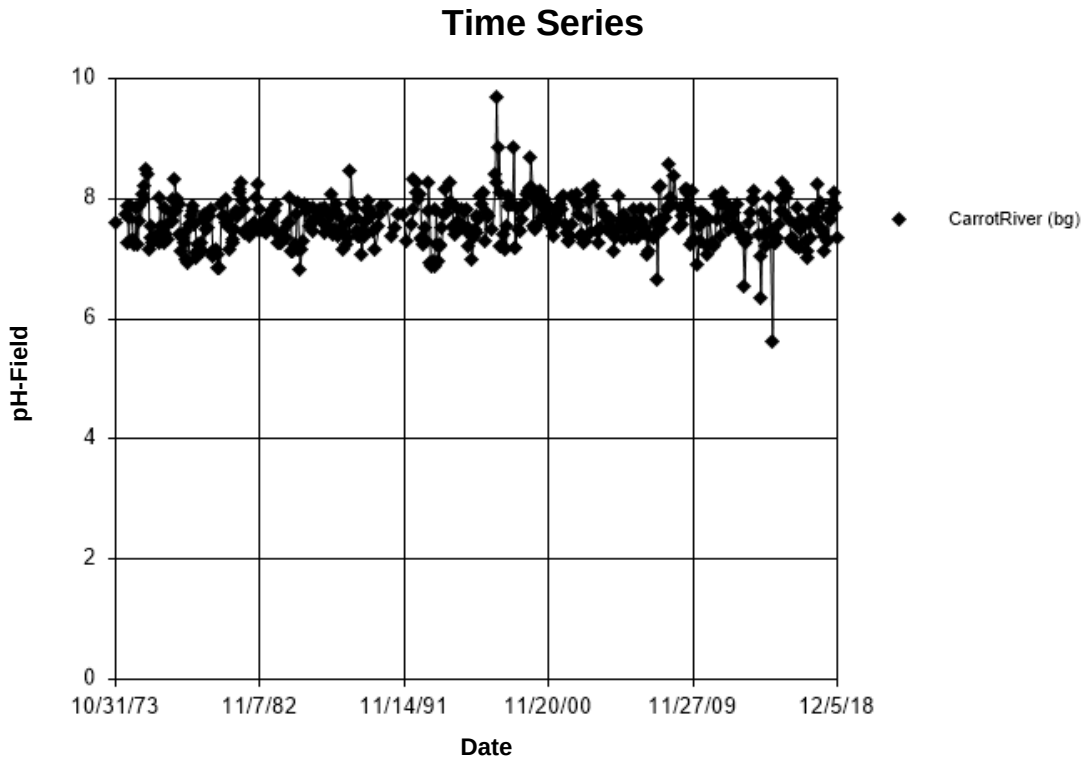

Figure D88 Carrot River: pH-Field

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 97.83
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 5 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 97.83
Adjusted Kruskal-Wallis statistic (H') = 97.83

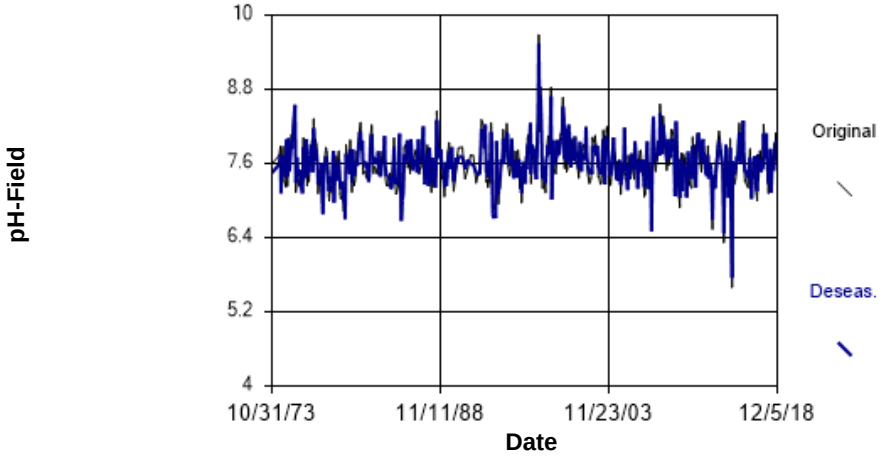

Figure D89 Carrot River: pH-Field

Seasonal Kendall

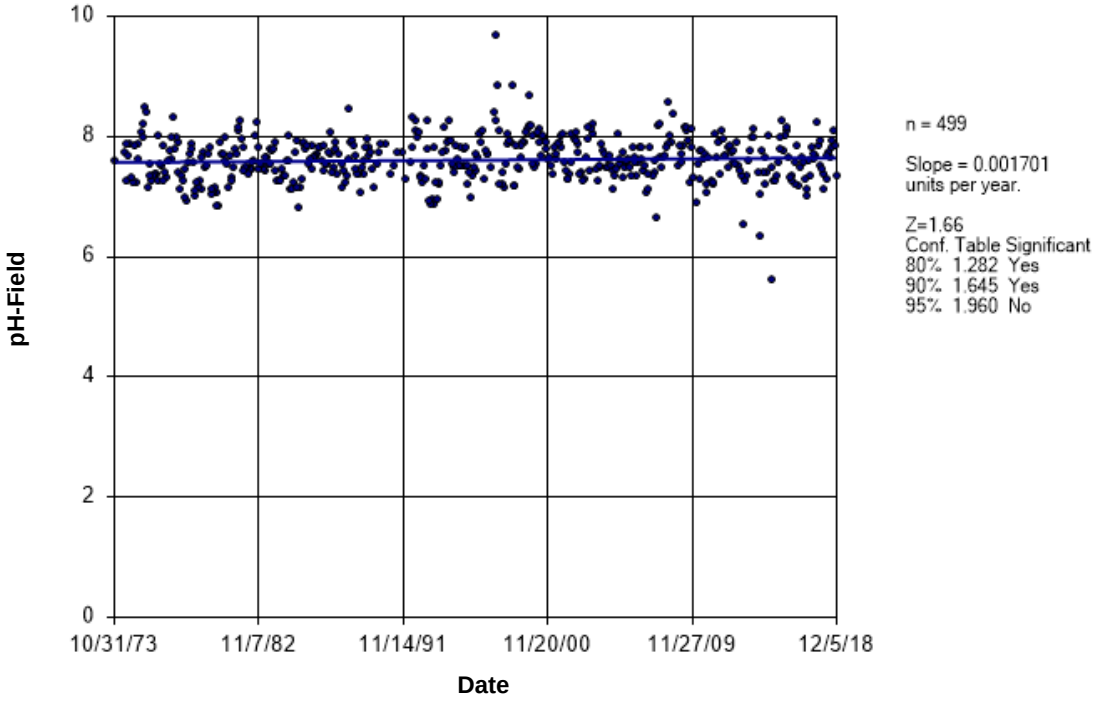

Figure D90 Carrot River: pH-Field

Time Series

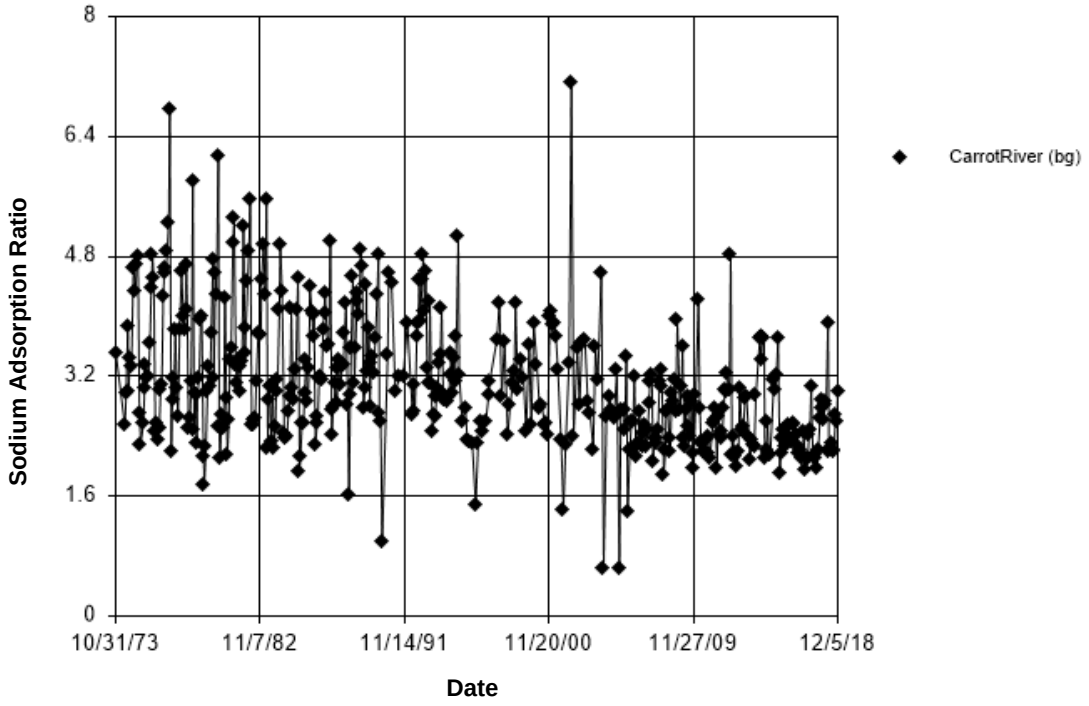

Figure D91 Carrot River: Sodium Absorption Ratio

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 68.29
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

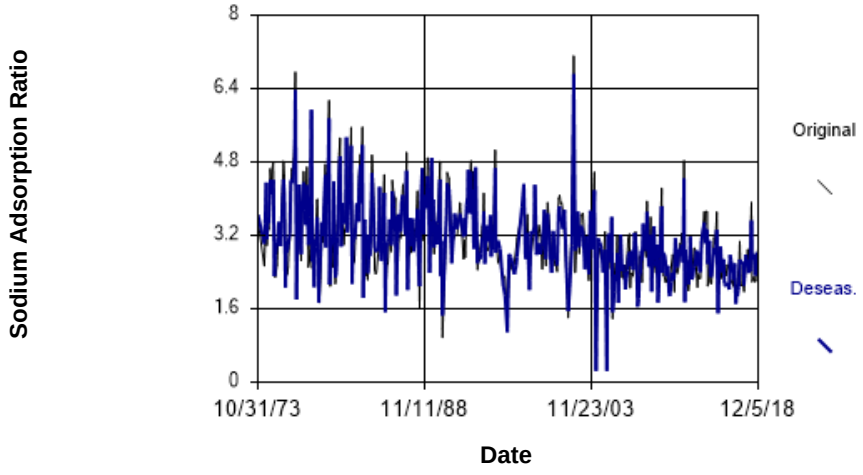

Figure D92 Carrot River: Sodium Adsorption Ratio

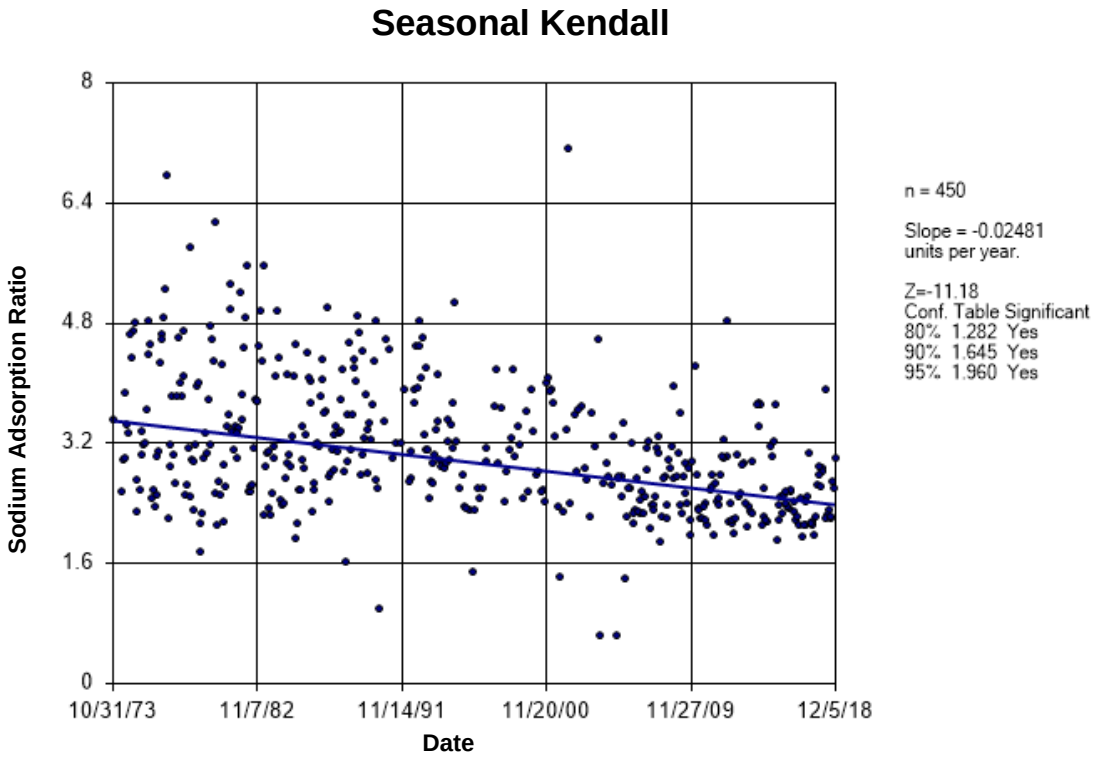

Figure D93 Carrot River: Sodium Adsorption Ratio

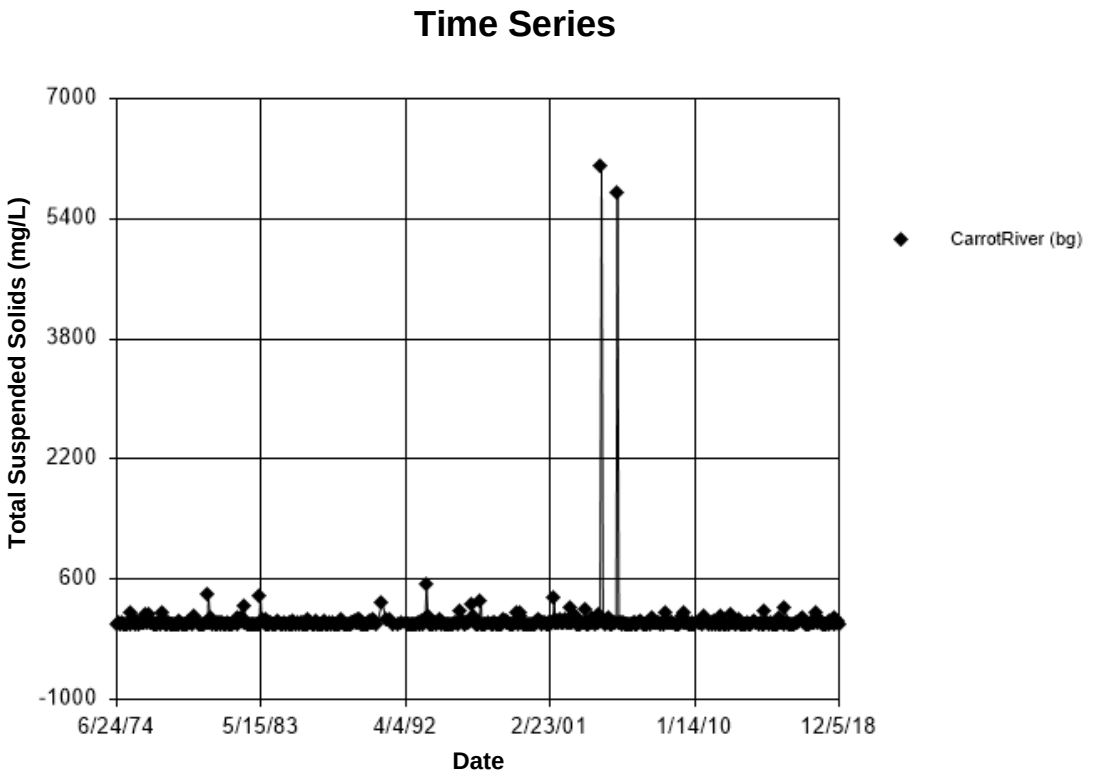

Figure D94 Carrot River: Total Suspended Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 59.98
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

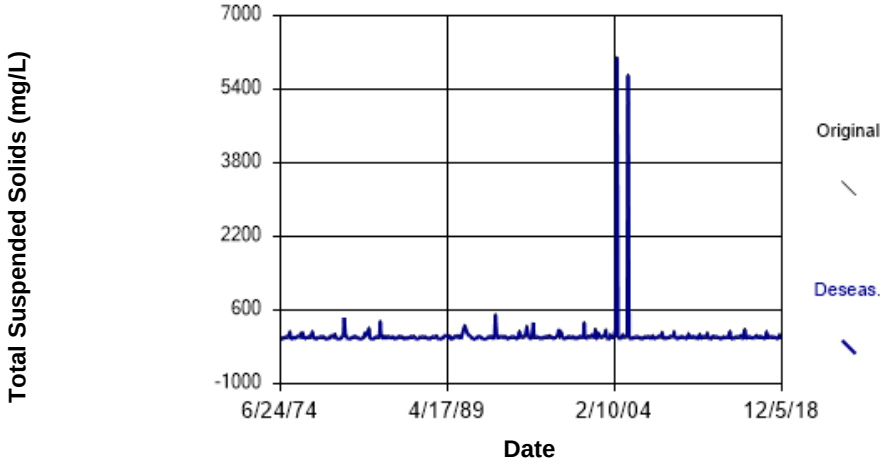

Figure D95 Carrot River: Total Suspended Solids

Seasonal Kendall

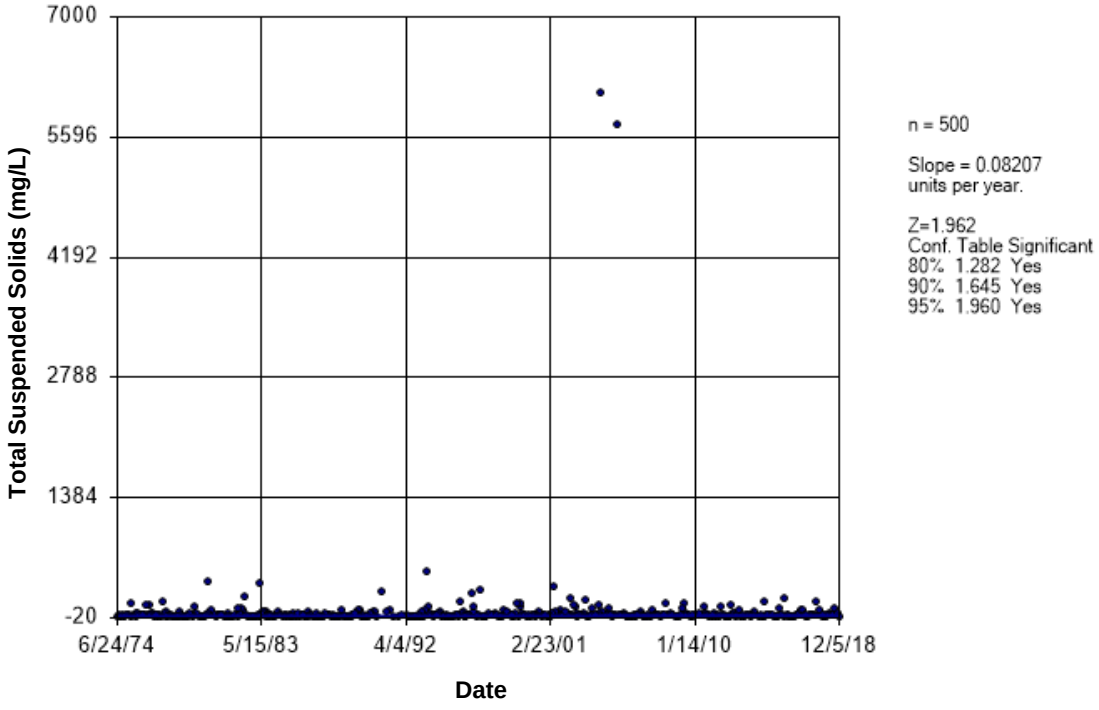

Figure D96 Carrot River: Total Suspended Solids

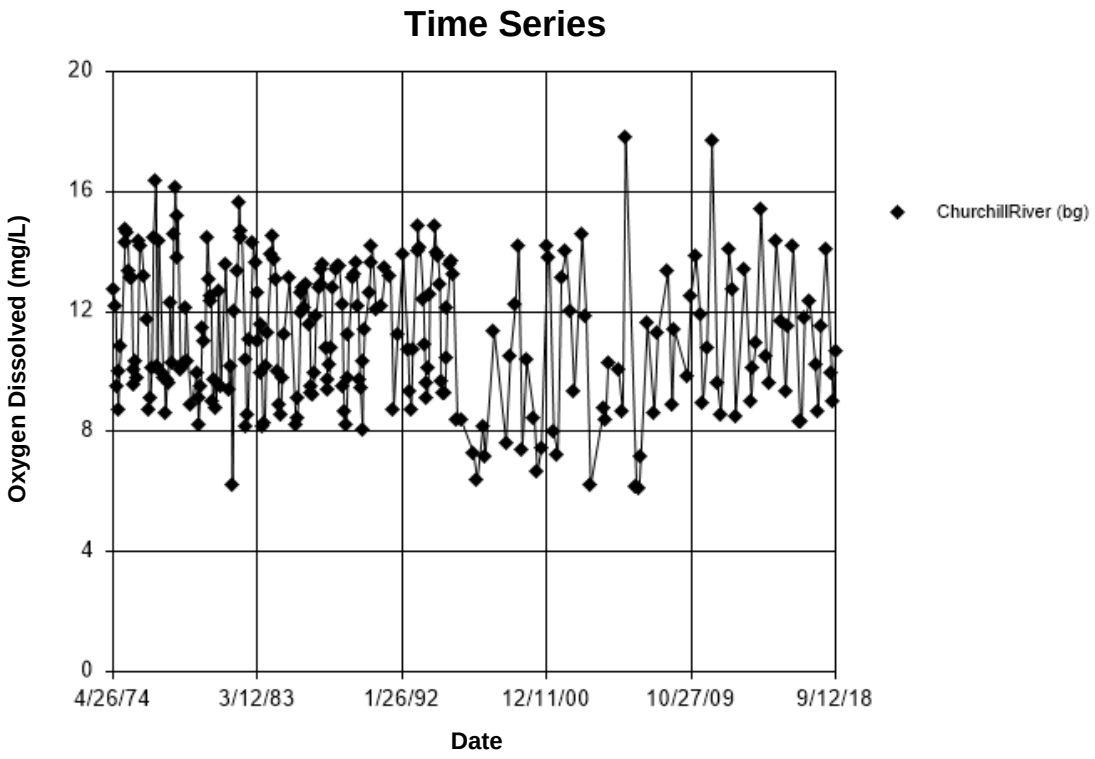

Figure D97 Churchill River: Oxygen Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 100.3
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

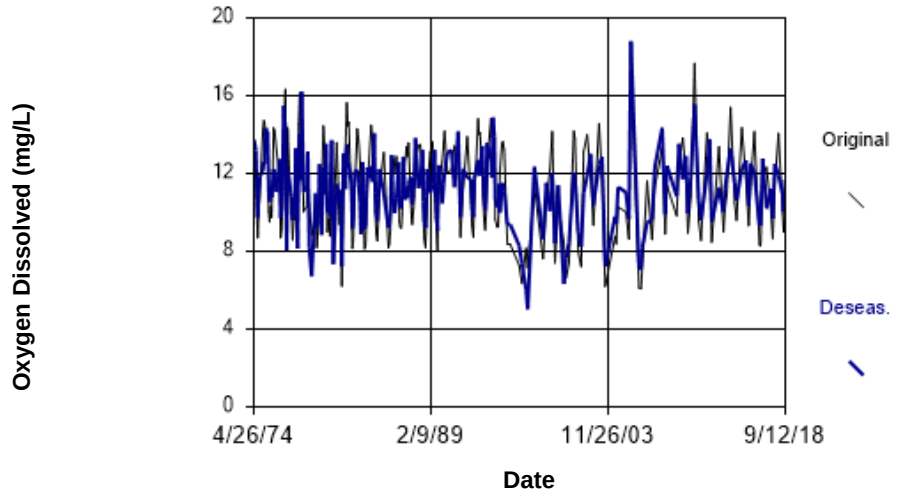

Figure D98 Churchill River: Oxygen Dissolved

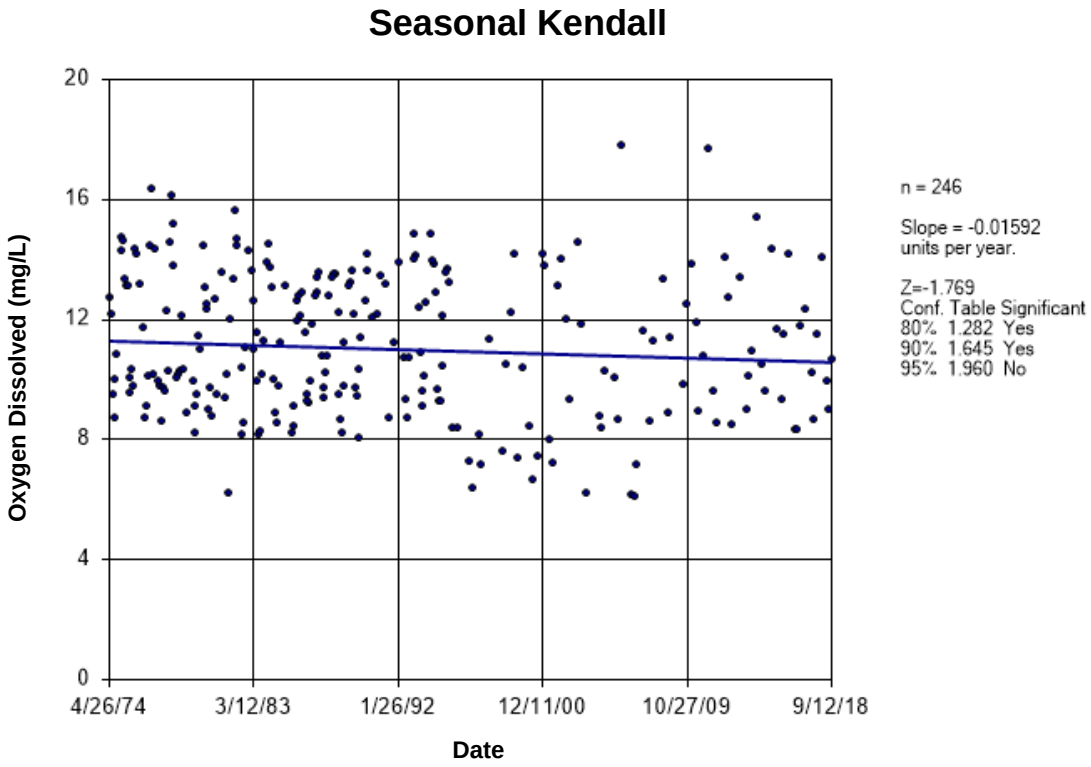

Figure D99 Churchill River: Oxygen Dissolved

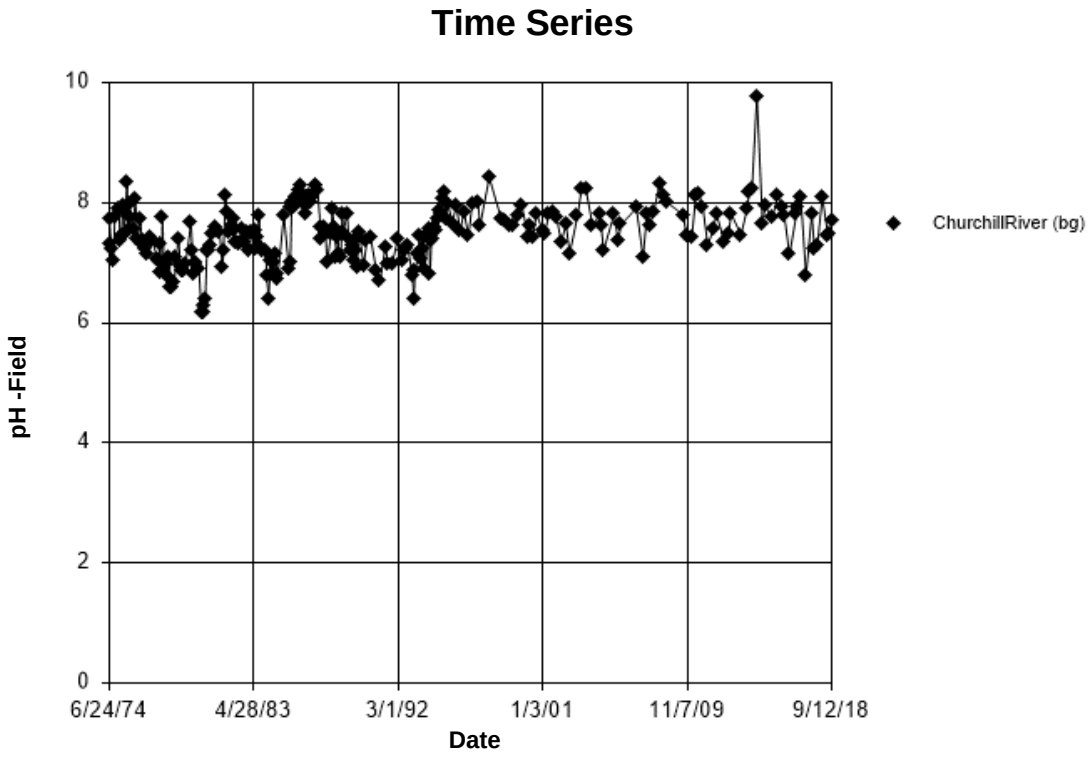

Figure D100 Churchill River: pH-Field

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.3889
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.3889
Adjusted Kruskal-Wallis statistic (H') = 0.3889

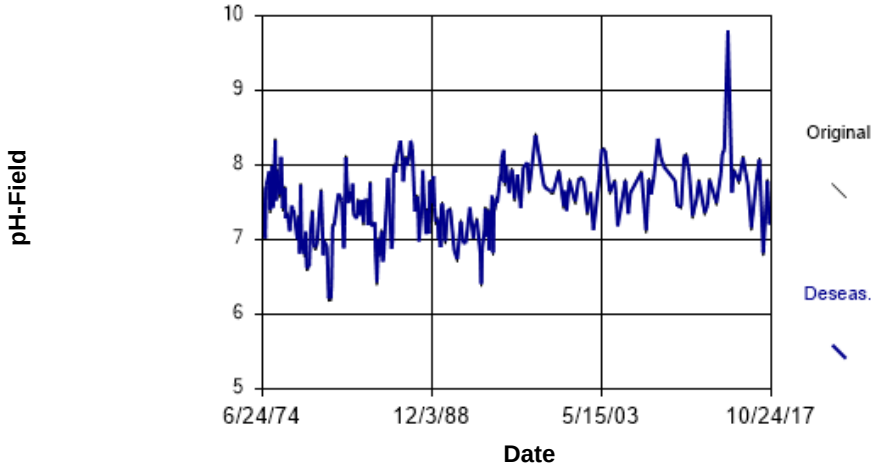

Figure D101 Churchill River: pH-Field

Sen's Slope Estimator

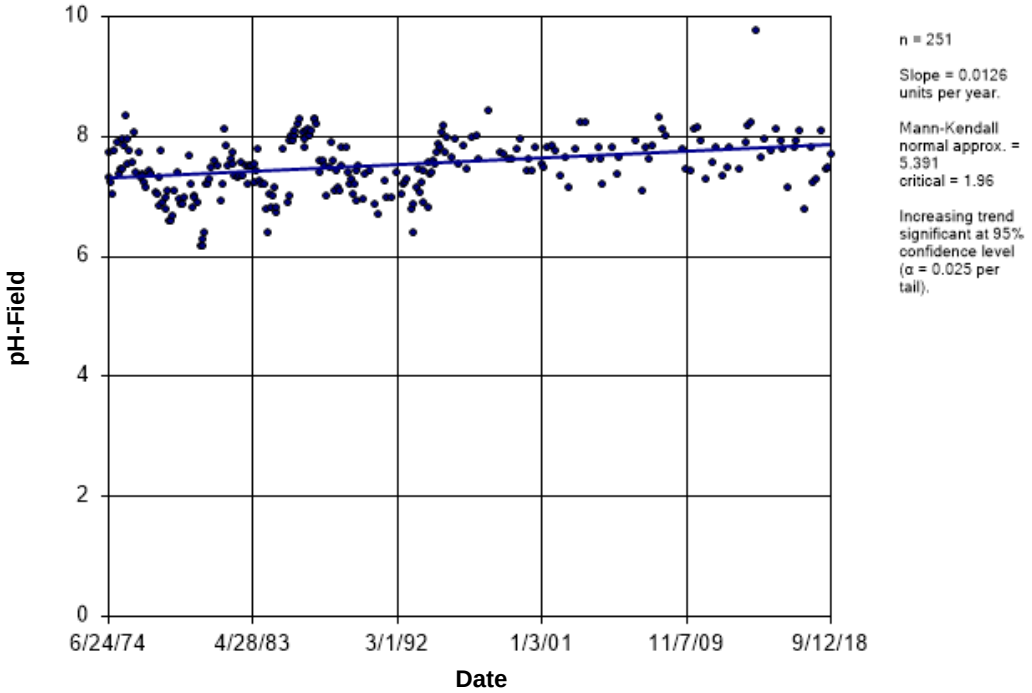

Figure D102 Churchill River: pH-Field

Time Series

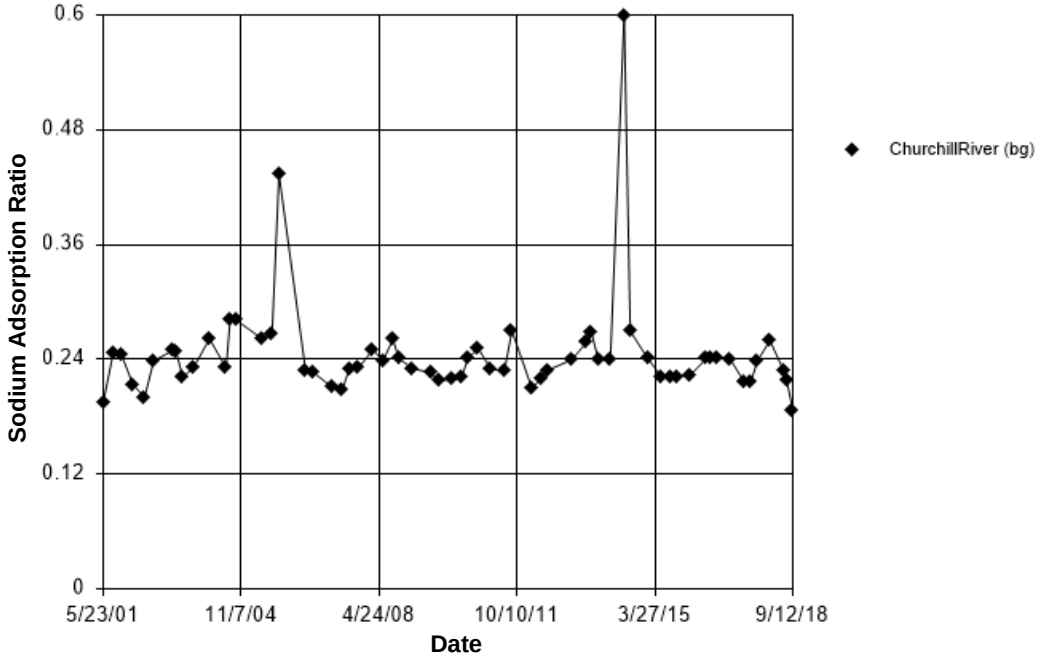

Figure D103 Churchill River: Sodium Adsorption Ratio

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.008632
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

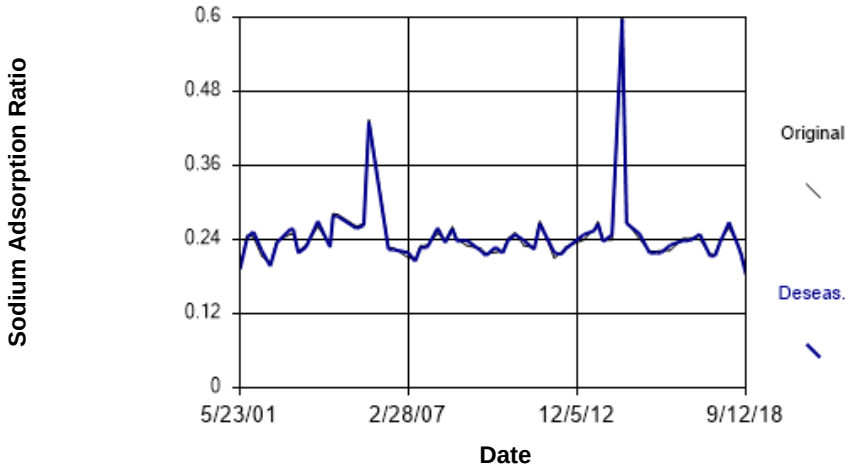

Figure D104 Churchill River: Sodium Adsorption Ratio

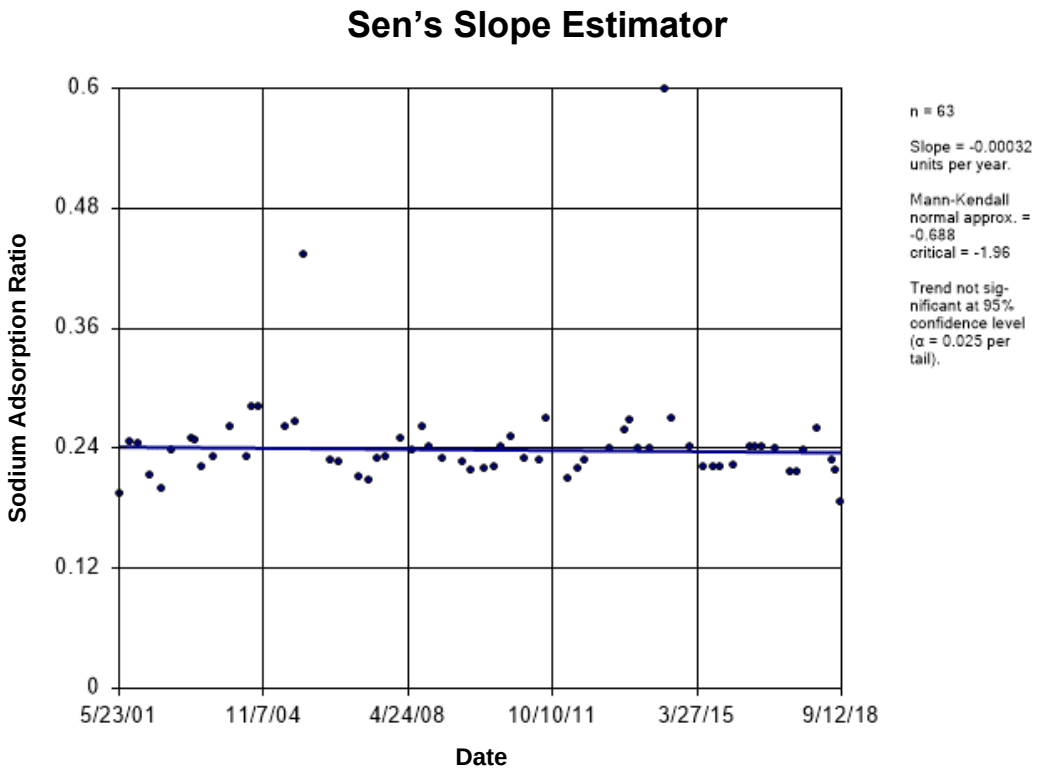

Figure D105 Churchill River: Sodium Adsorption Ratio

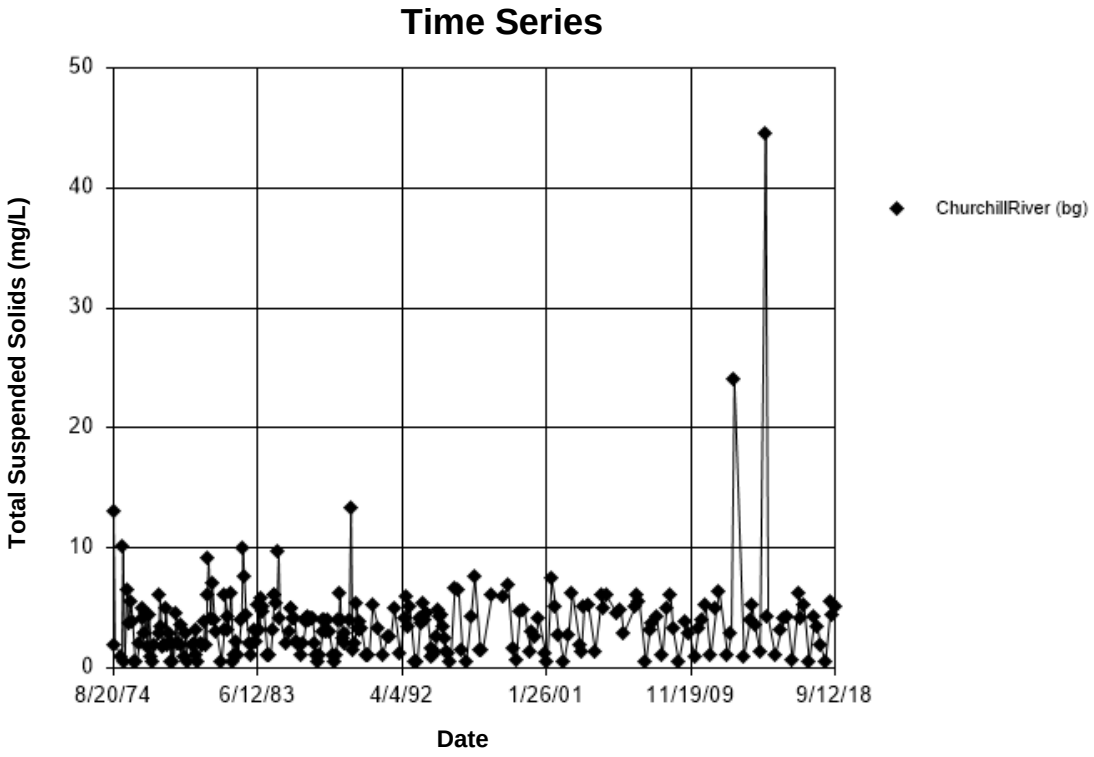

Figure D106 Churchill River: Total Suspended Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 124.5
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 7 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 124.5
Adjusted Kruskal-Wallis statistic (H') = 124.5

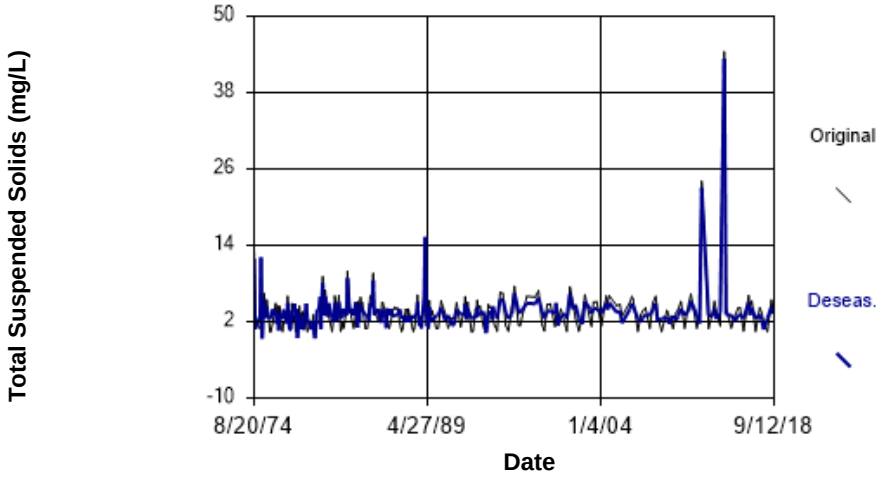

Figure D107 Churchill River: Total Suspended Solids

Seasonal Kendall

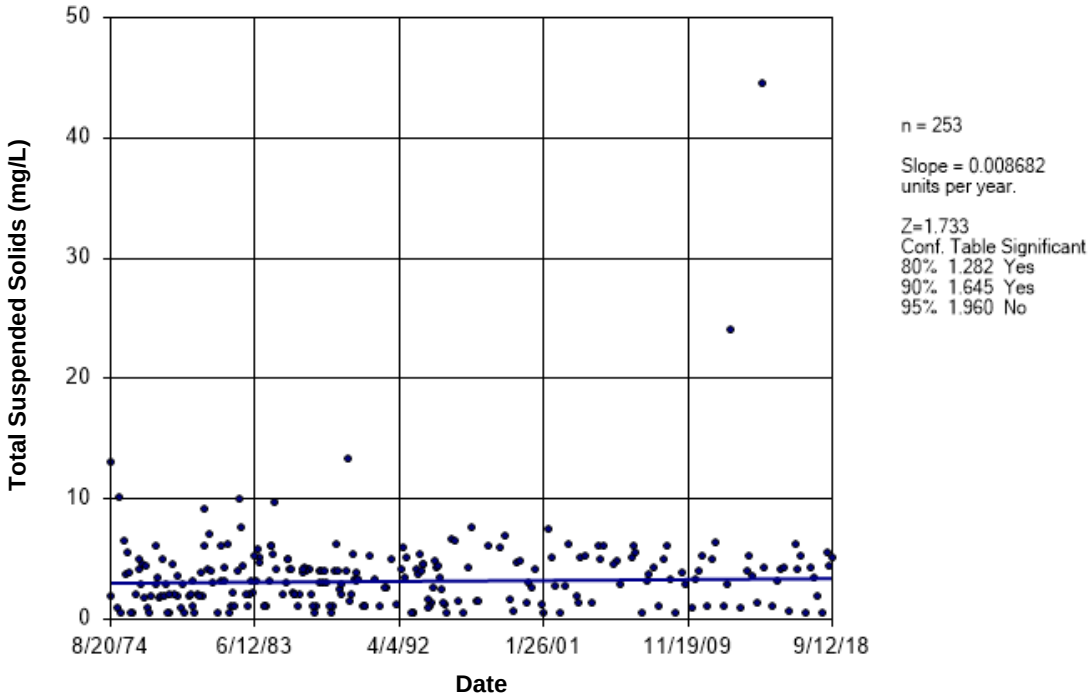

Figure D108 Churchill River: Total Suspended Solids

Time Series

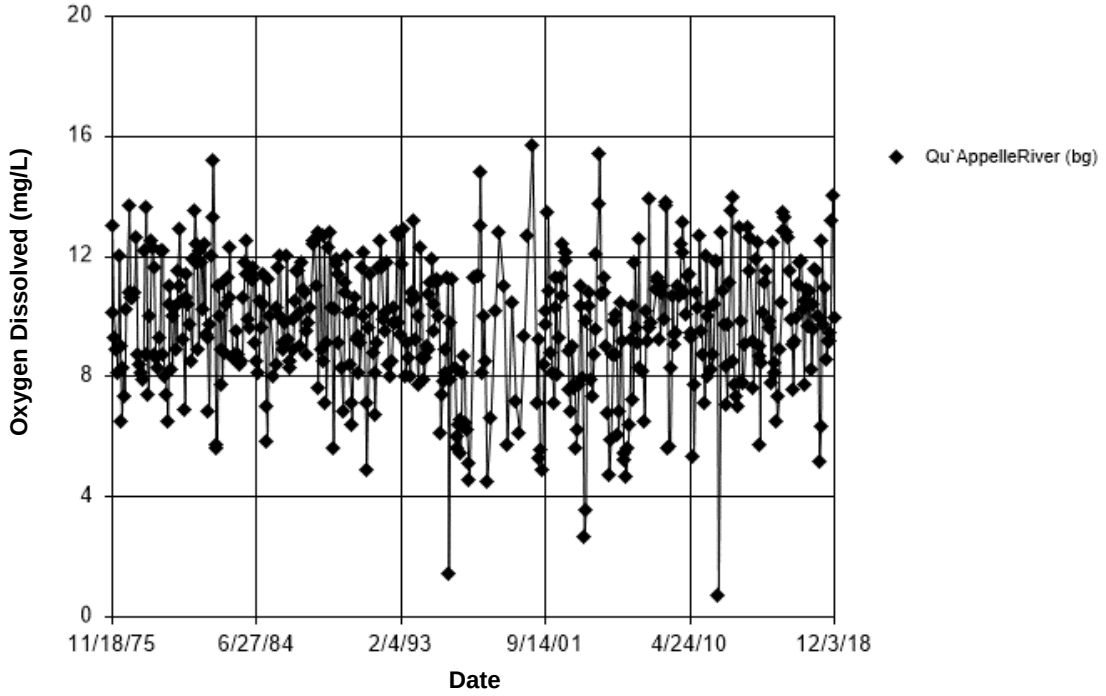

Figure D109 Qu'Appelle River: Oxygen Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 28.05
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 84 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 28.05
Adjusted Kruskal-Wallis statistic (H') = 28.05

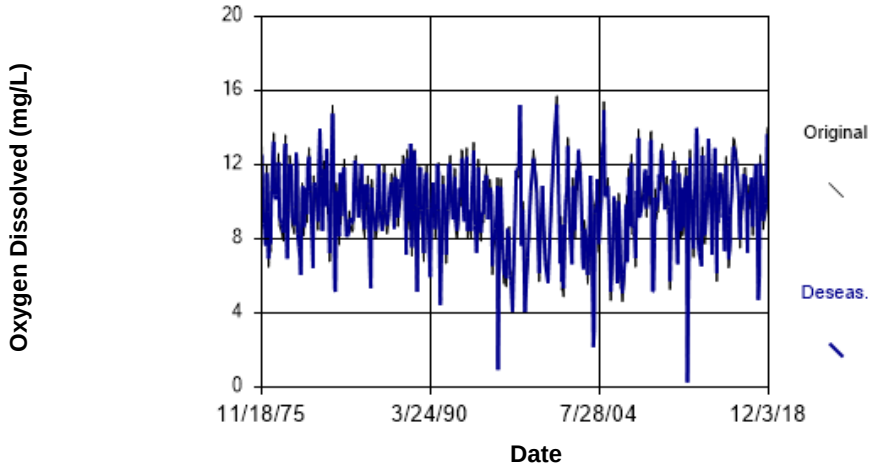

Figure D110 Qu'Appelle River: Oxygen Dissolved

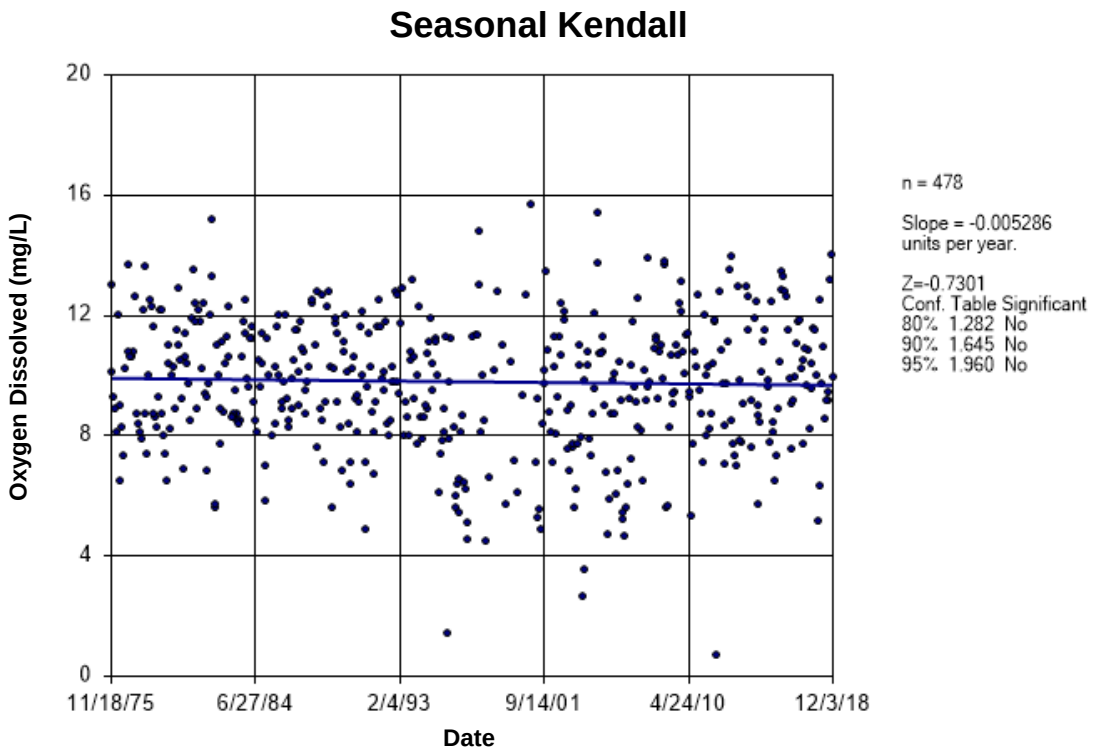

Figure D111 Qu'Appelle River: Oxygen Dissolved

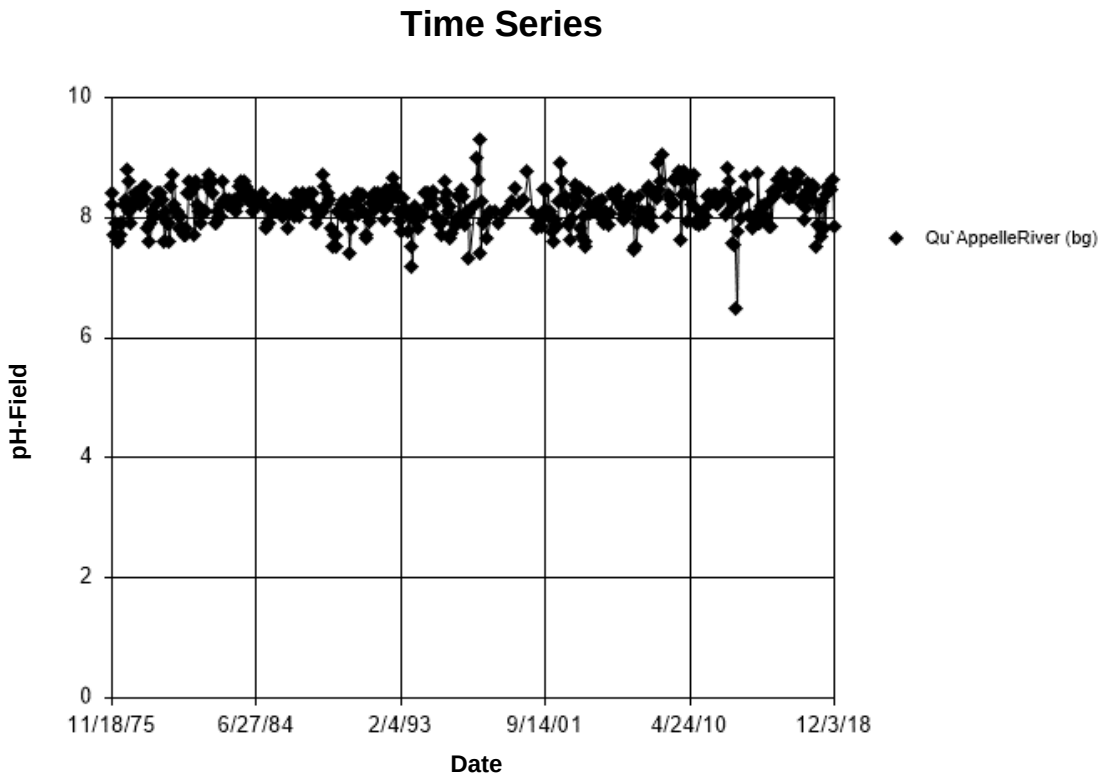

Figure D112 Qu'Appelle River: pH-Field

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 50.51
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 77 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 50.45
Adjusted Kruskal-Wallis statistic (H') = 50.51

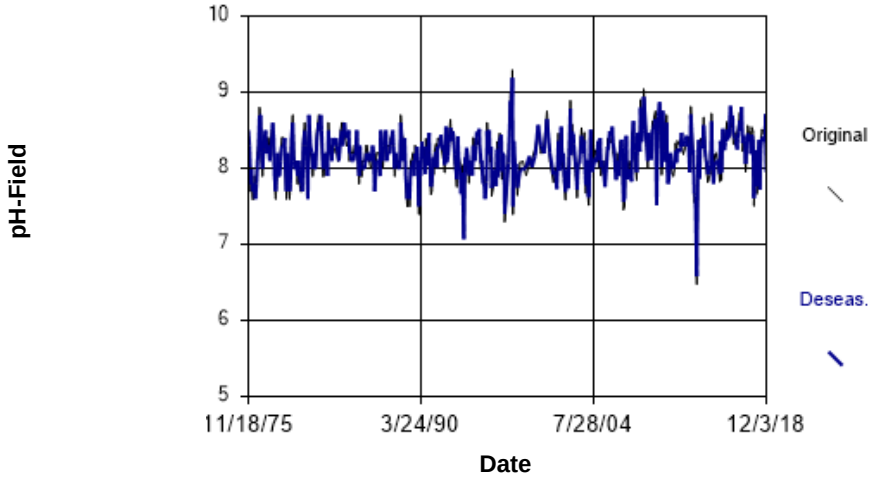

Figure D113 Qu'Appelle River: pH-Field

Seasonal Kendall

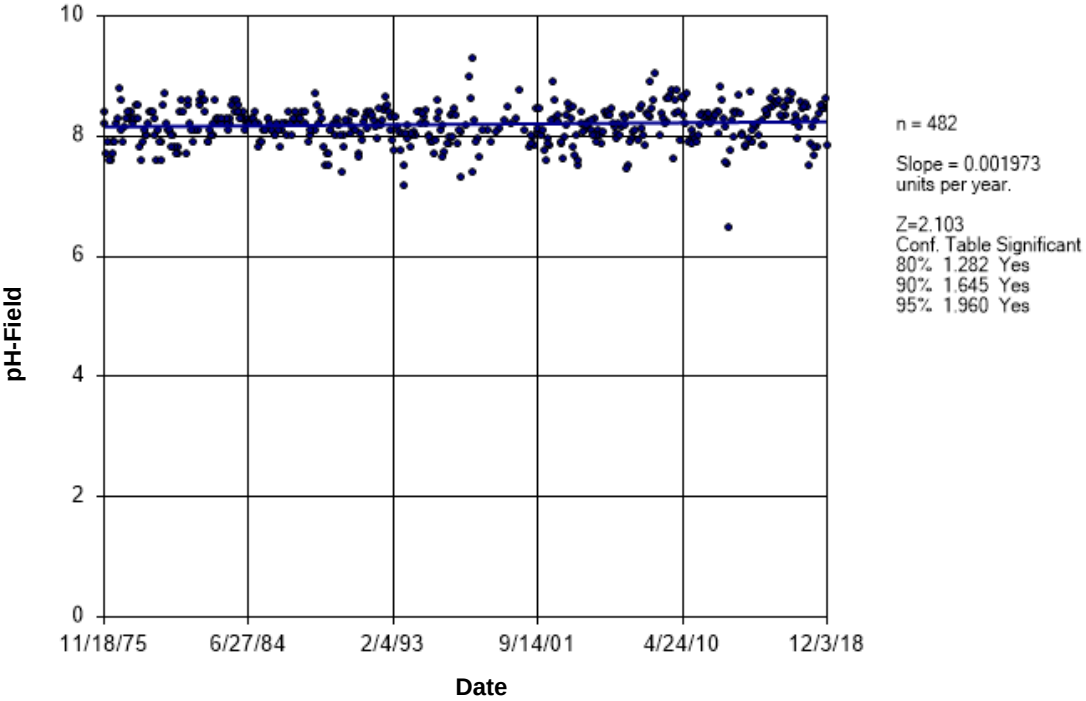

Figure D114 Qu'Appelle River: pH-Field

Time Series

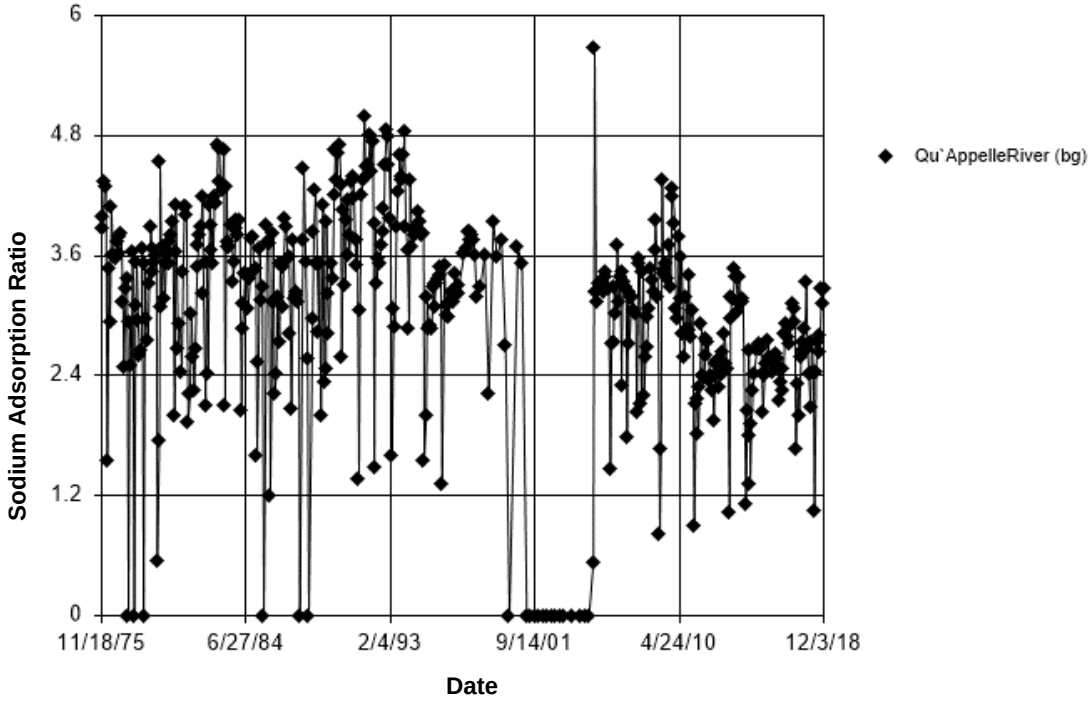

Figure D115 Qu'Appelle River: Sodium Absorption Ratio

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 0.1241
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 112 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.1241
Adjusted Kruskal-Wallis statistic (H') = 0.1241

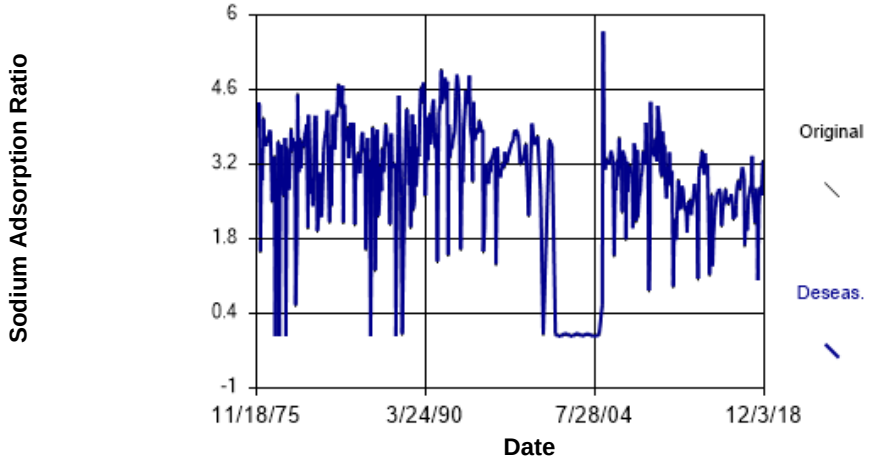

Figure D116 Qu'Appelle River: Sodium Adsorption Ratio

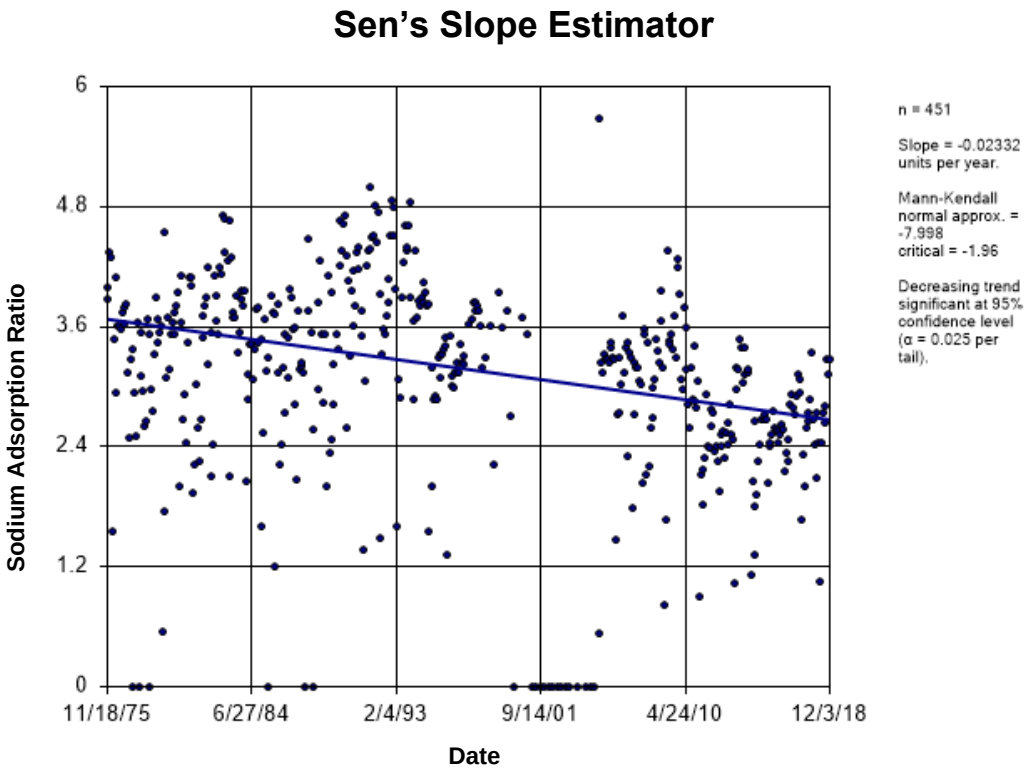

Figure D117 Qu'Appelle River: Sodium Adsorption Ratio

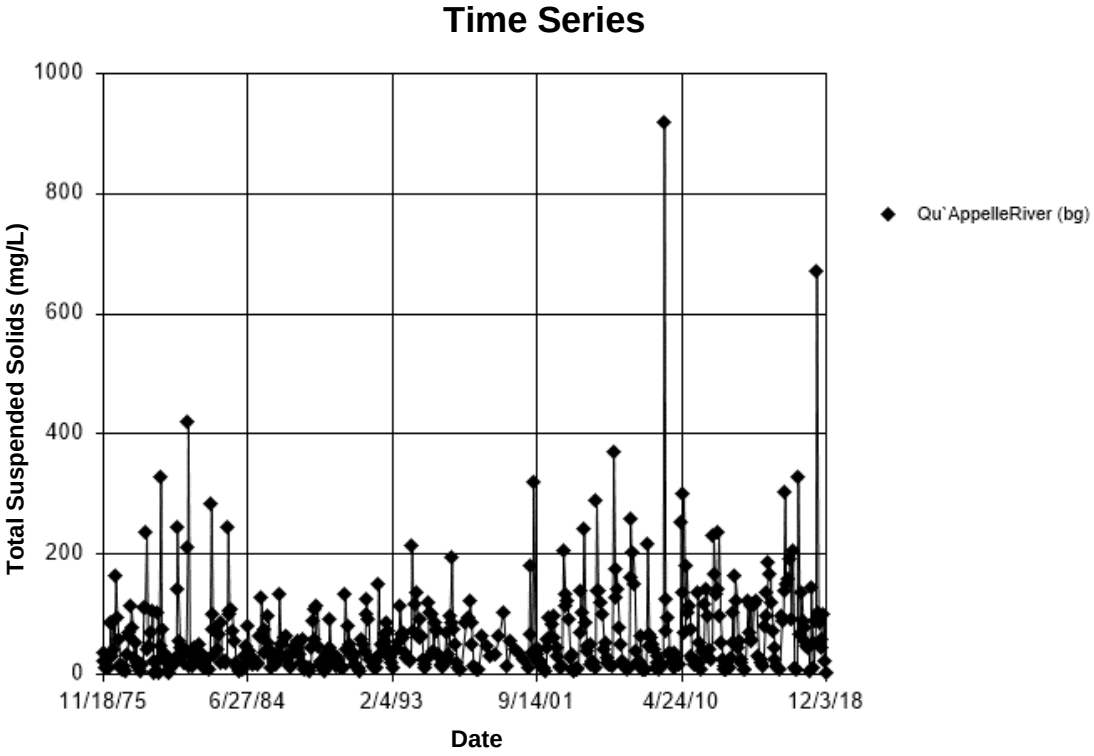

Figure D118 Qu'Appelle River: Total Suspended Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 133.1
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 111 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 133.1
Adjusted Kruskal-Wallis statistic (H') = 133.1

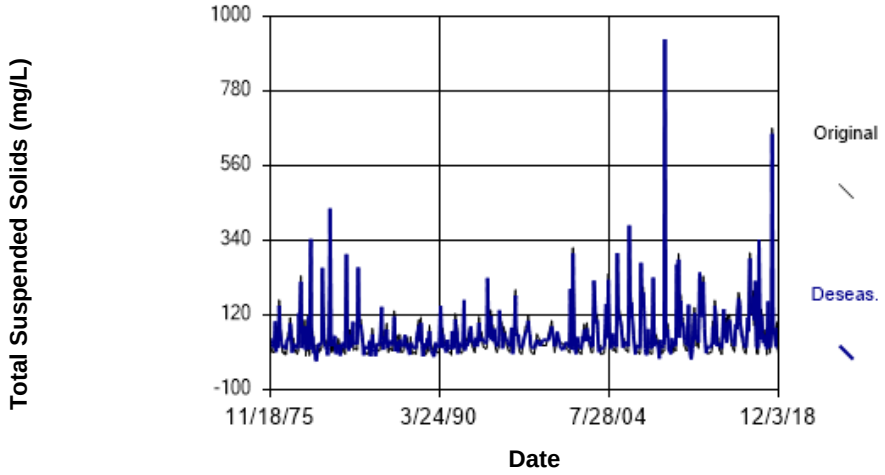

Figure D119 Qu'Appelle River: Total Suspended Solids

Seasonal Kendall

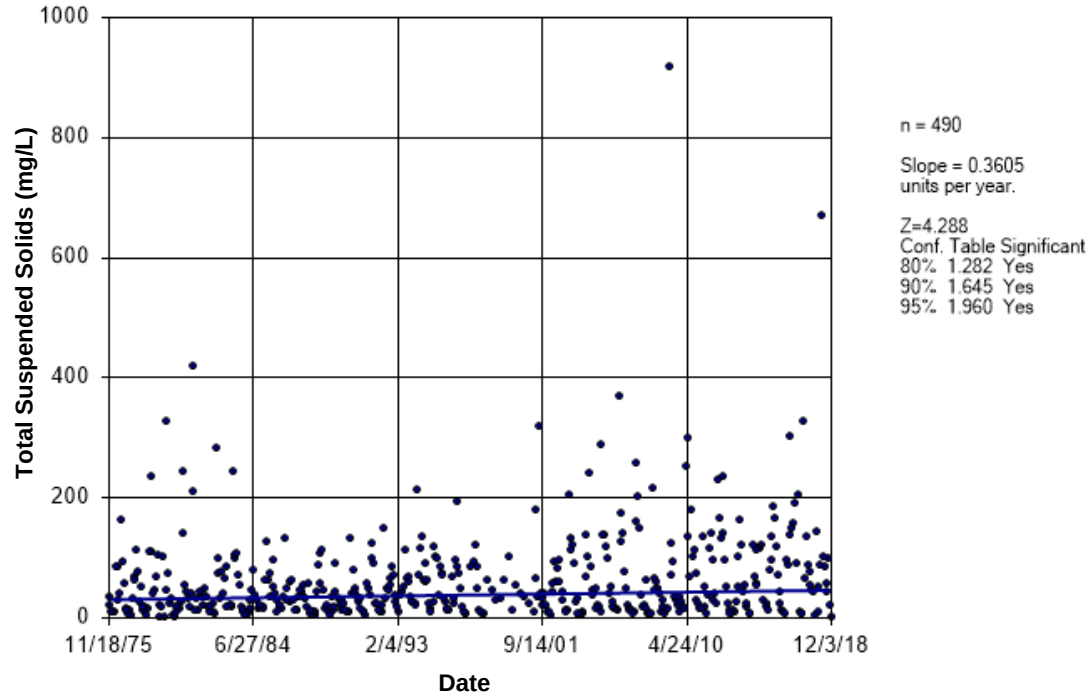

Figure D120 Qu'Appelle River: Total Suspended Solids

Time Series

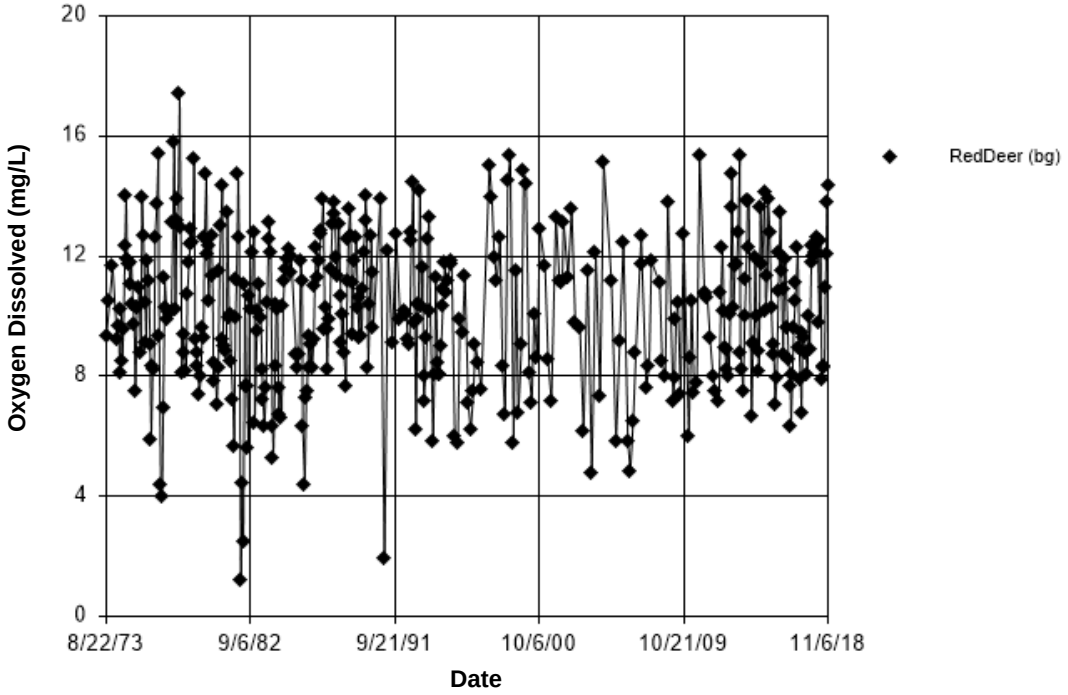

Figure D121 Red Deer River (MB-SK): Oxygen Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 30.09
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

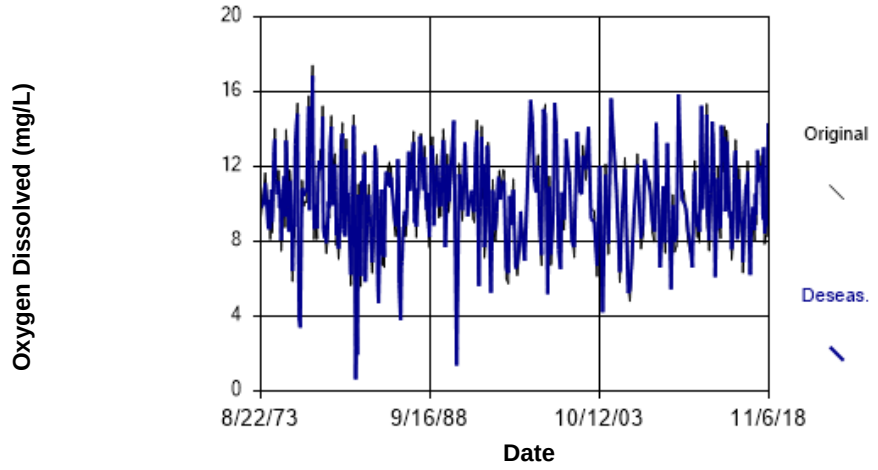

Figure D122 Red Deer River (SK-MB): Oxygen Dissolved

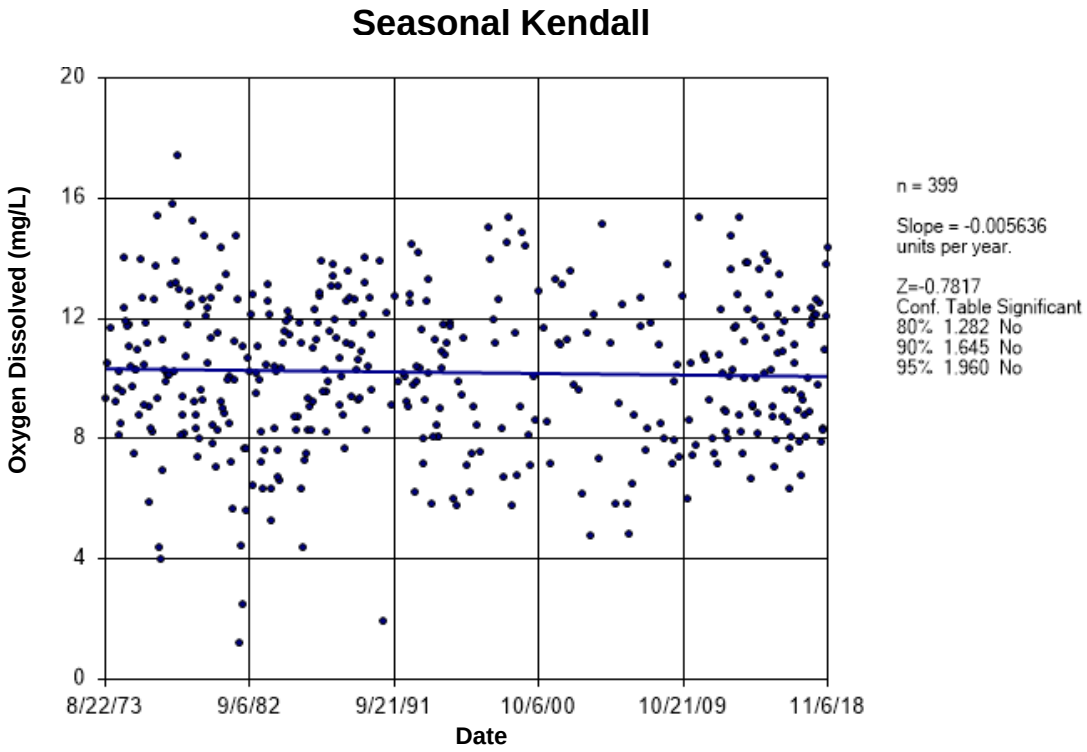

Figure D123 Red Deer River (SK-MB): Oxygen Dissolved

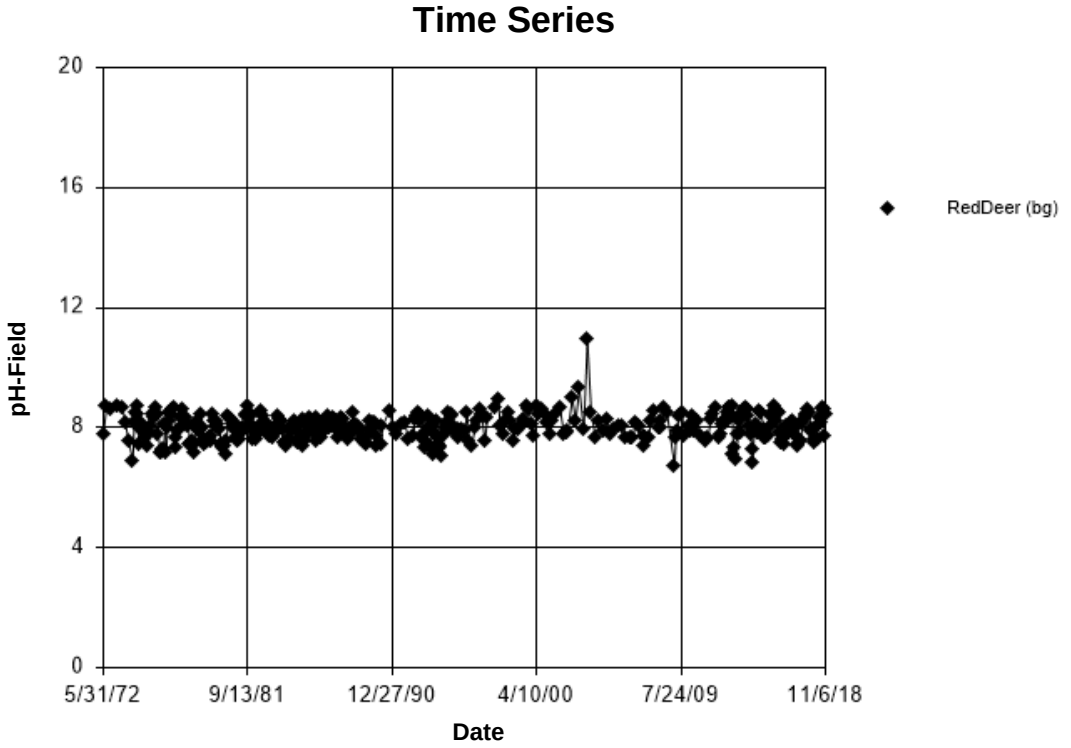

Figure D124 Red Deer River (MB-SK): pH-Field

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 111.1
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 111.1
Adjusted Kruskal-Wallis statistic (H') = 111.1

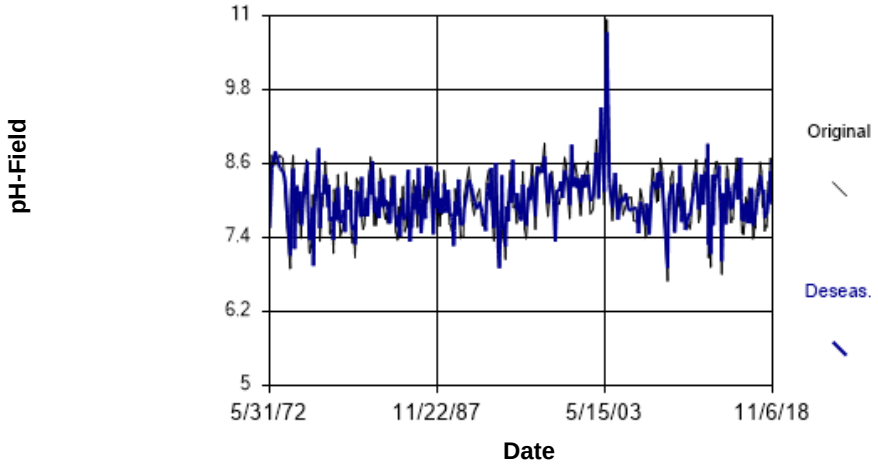

Figure D125 Red Deer River (SK-MB): pH-Field

Seasonal Kendall

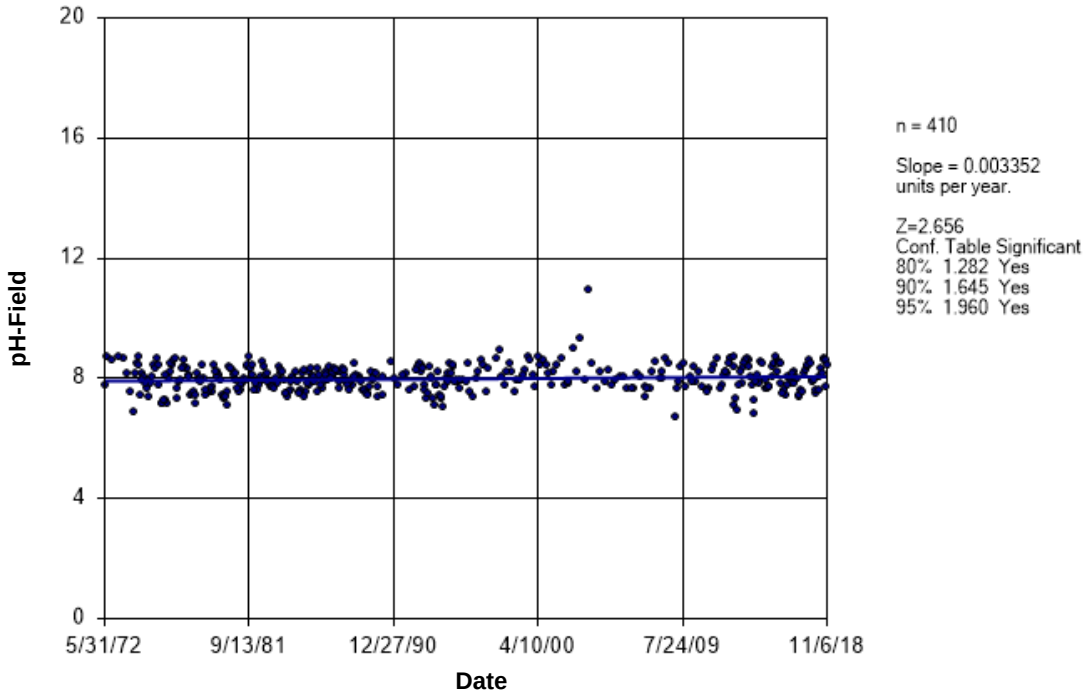

Figure D126 Red Deer River (SK-MB): pH-Field

Time Series

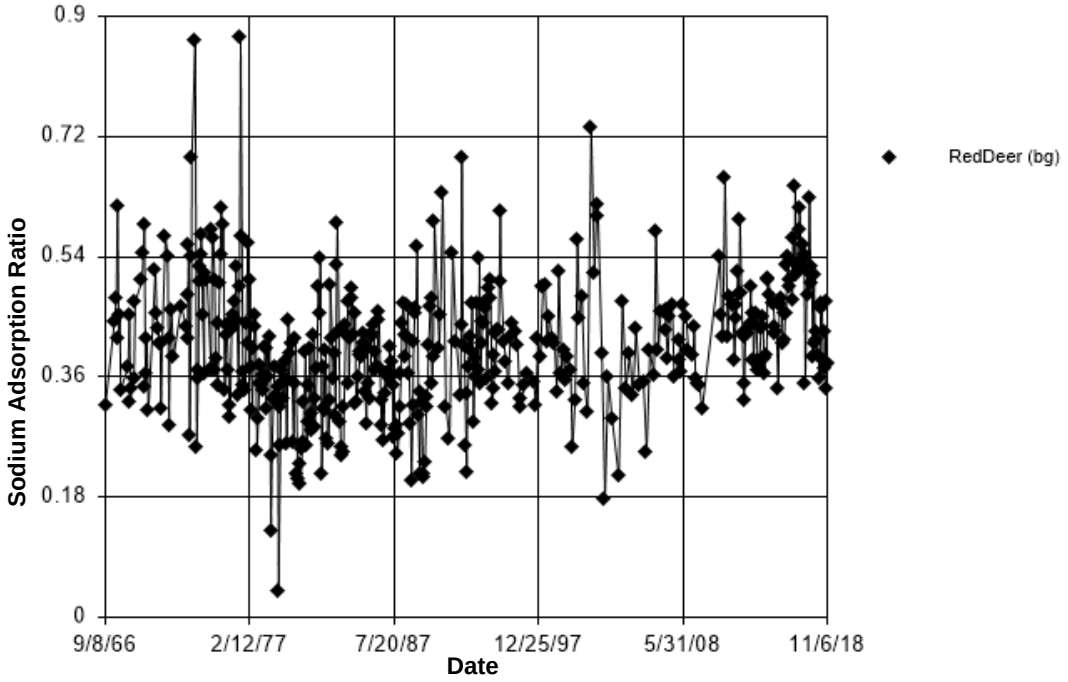

Figure D127 Red Deer River (MB-SK): Sodium Absorption Ratio

Seasonality

For the selected data, the Kruskal-Wallis test indicates NO SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 3.07
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 3.07
Adjusted Kruskal-Wallis statistic (H') = 3.07

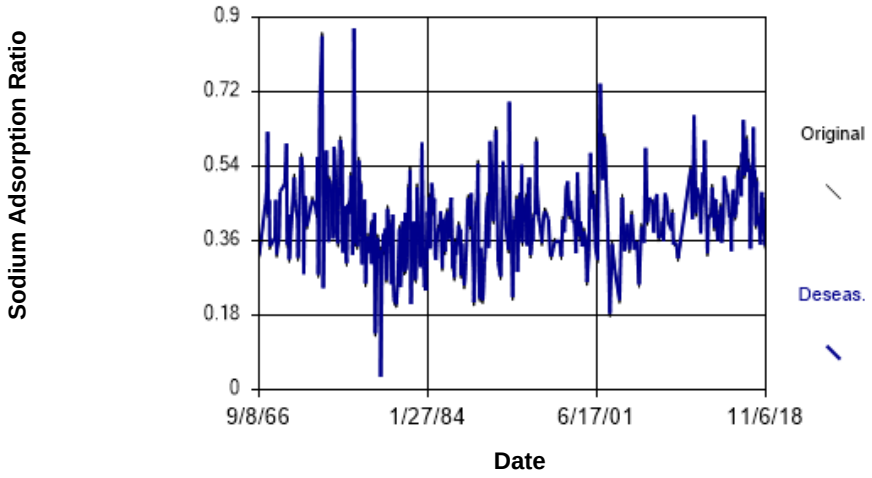

Figure D128 Red Deer River (SK-MB): Sodium Adsorption Ratio

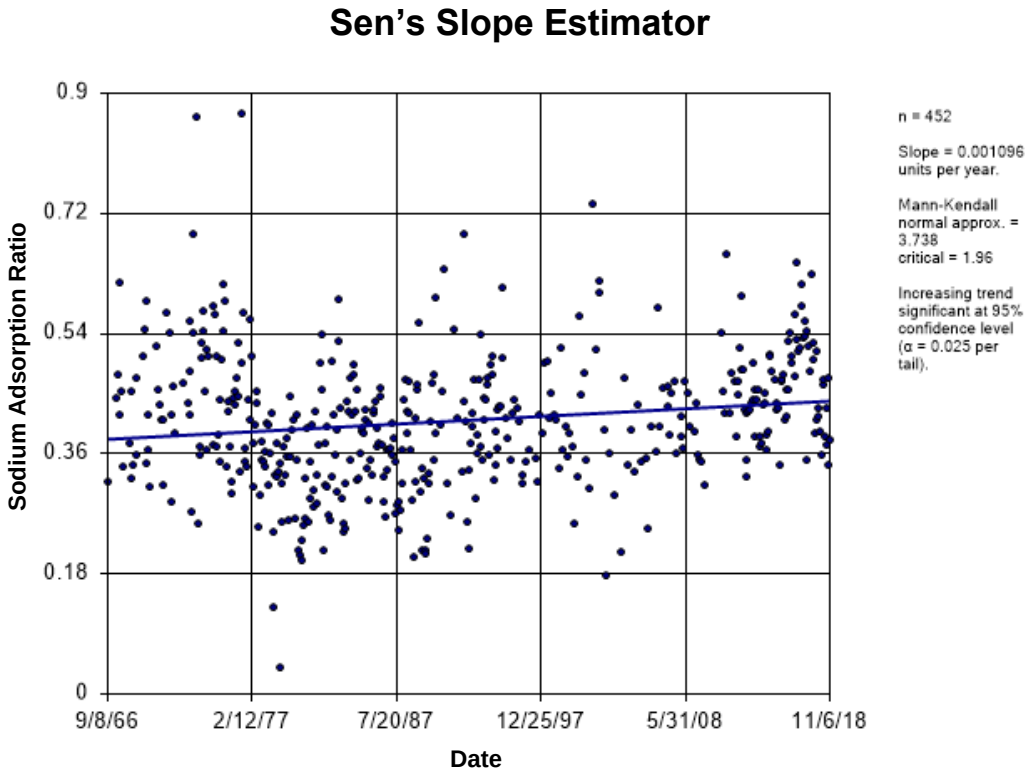

Figure D129 Red Deer River (SK-MB): Sodium Adsorption Ratio

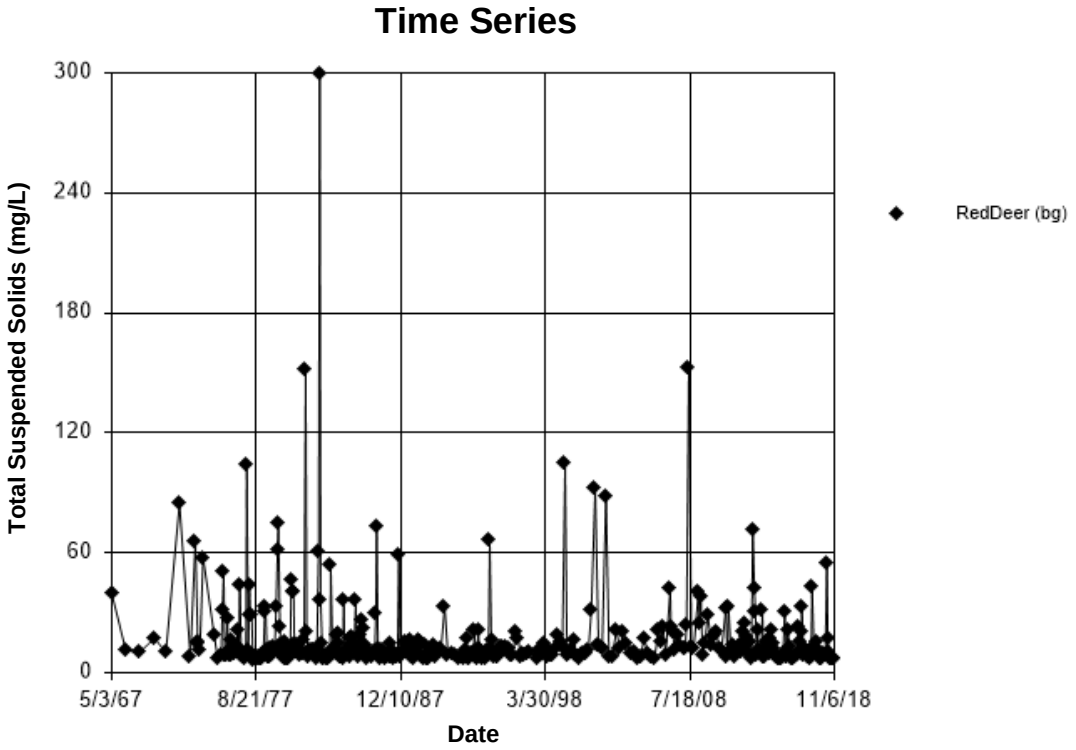

Figure D130 Red Deer River (MB-SK): Total Suspended Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 12.17
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 12.17
Adjusted Kruskal-Wallis statistic (H') = 12.17

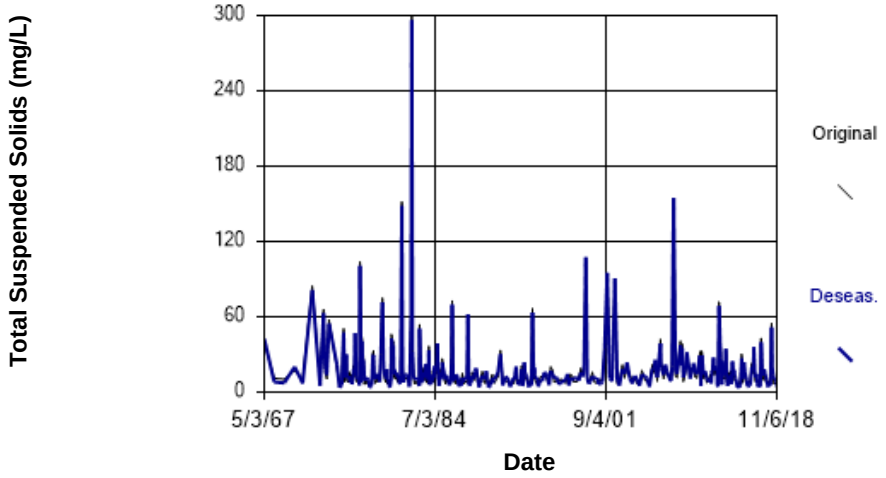

Figure D131 Red Deer River (SK-MB): Total Suspended Solids

Seasonal Kendall

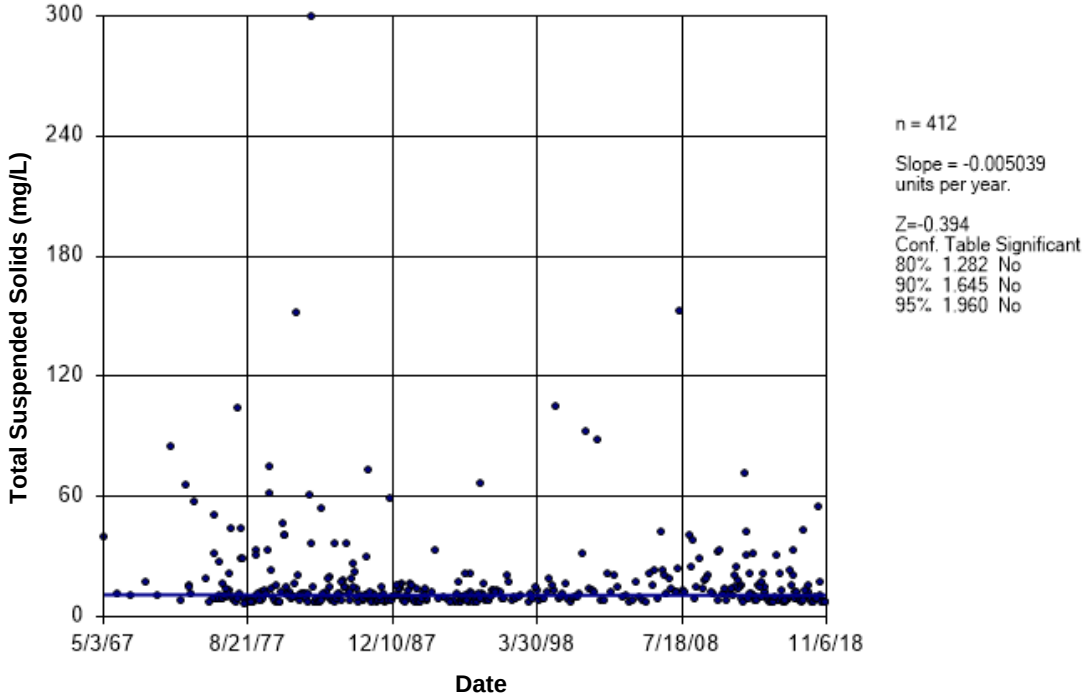

Figure D132 Red Deer River (SK-MB): Total Suspended Solids

Time Series

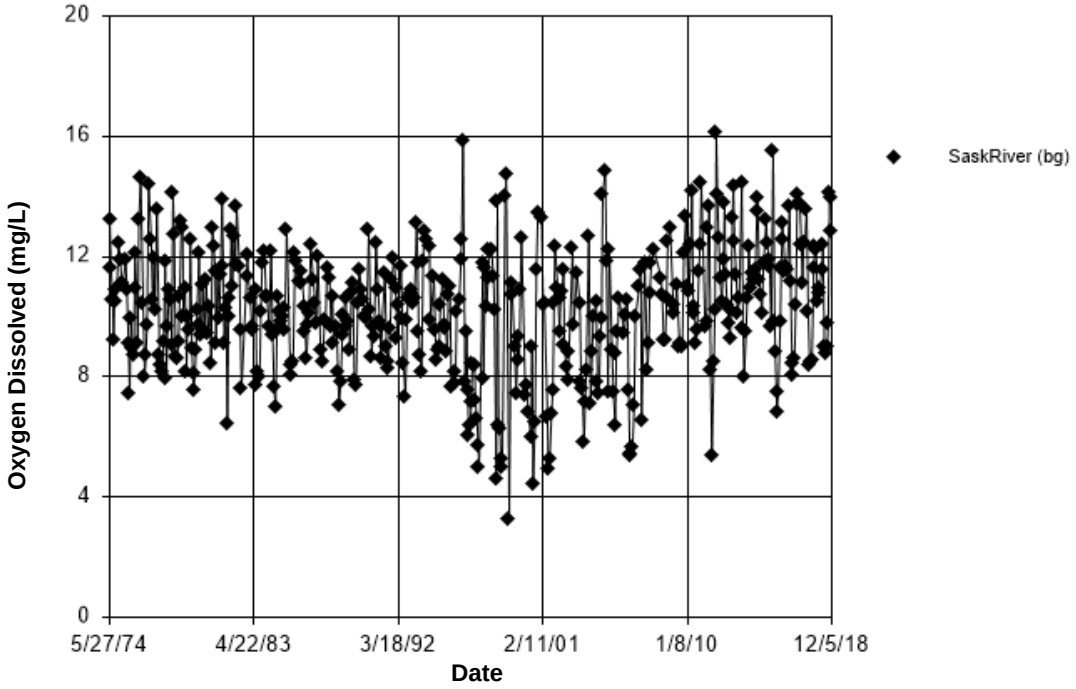

Figure D133 Saskatchewan River: Oxygen Dissolved

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 29.95
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

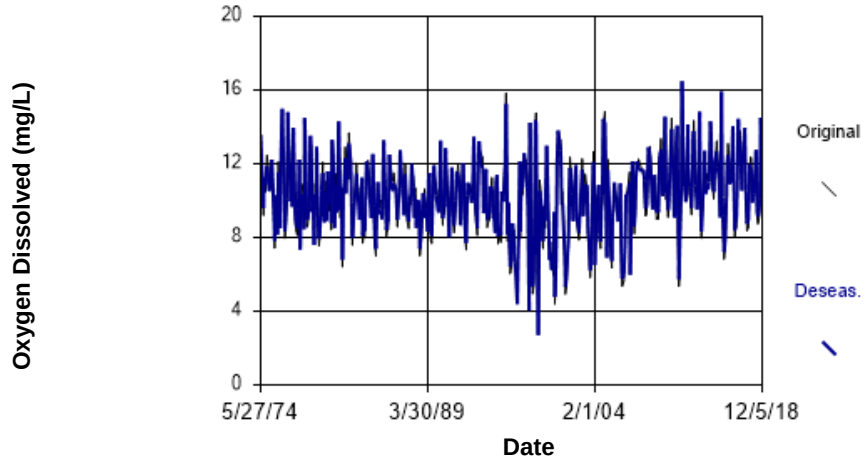

Figure D134 Saskatchewan River: Oxygen Dissolved

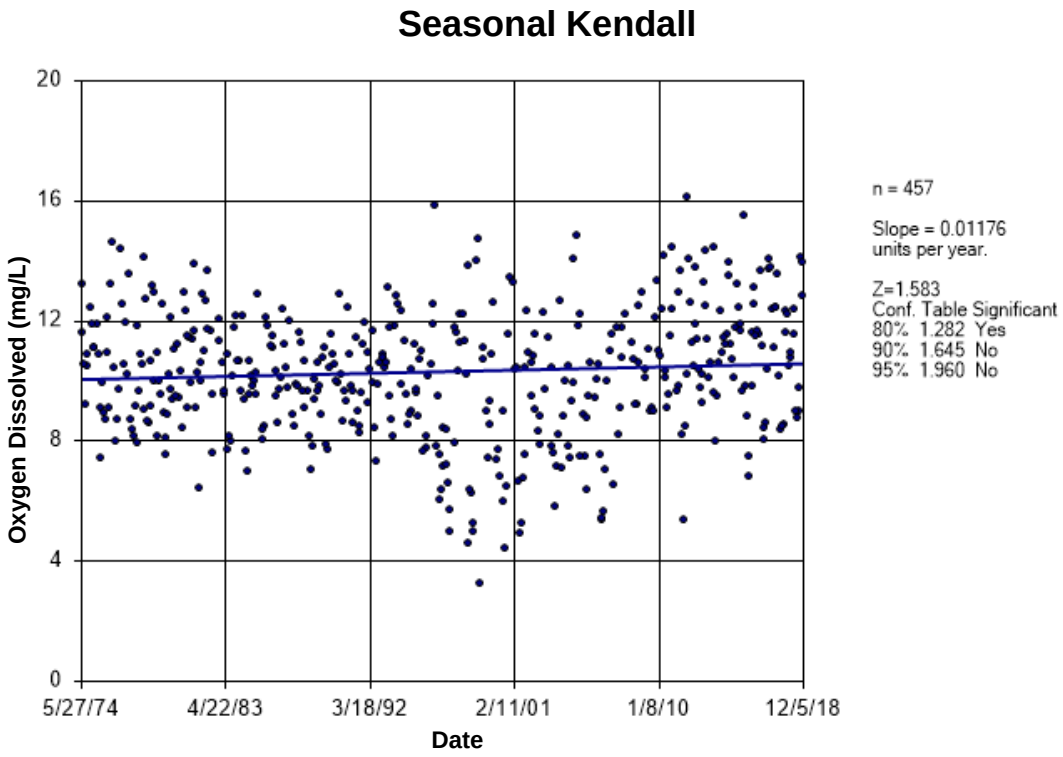

Figure D135 Saskatchewan River: Oxygen Dissolved

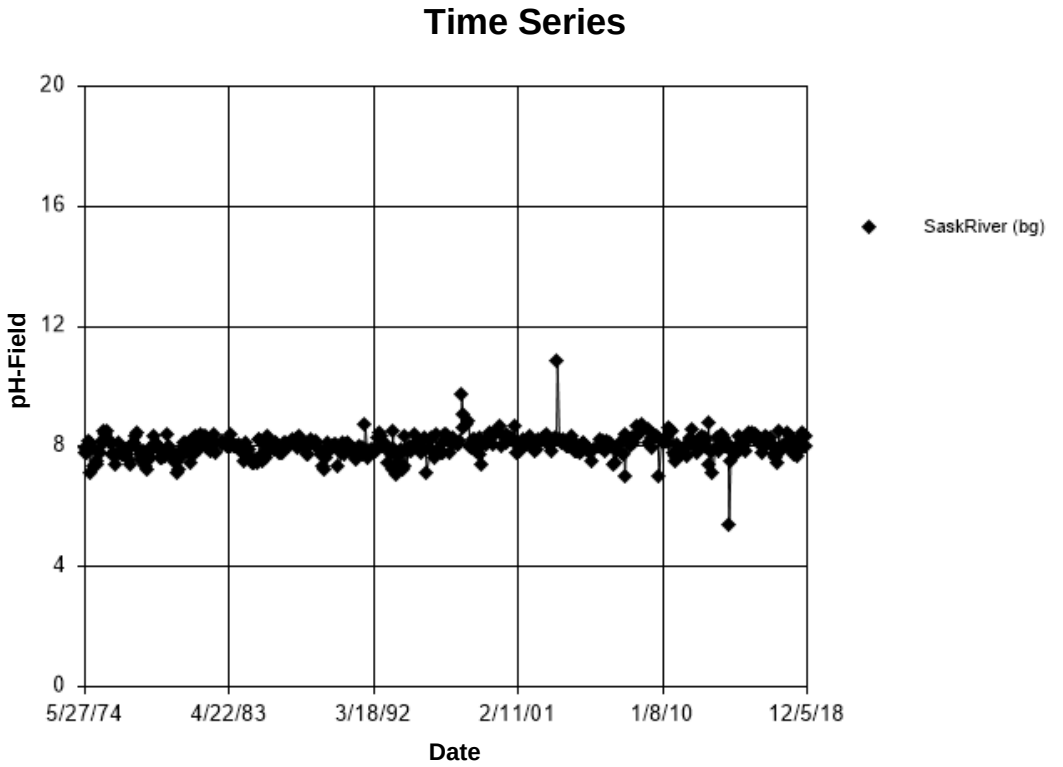

Figure D136 Saskatchewan River: pH-Field

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 22.58
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 22.58
Adjusted Kruskal-Wallis statistic (H') = 22.58

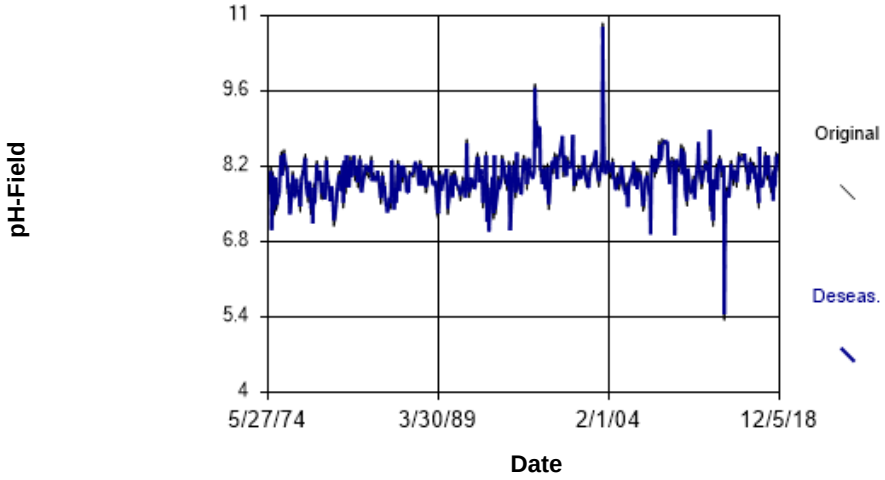

Figure D137 Saskatchewan River: pH-Field

Seasonal Kendall

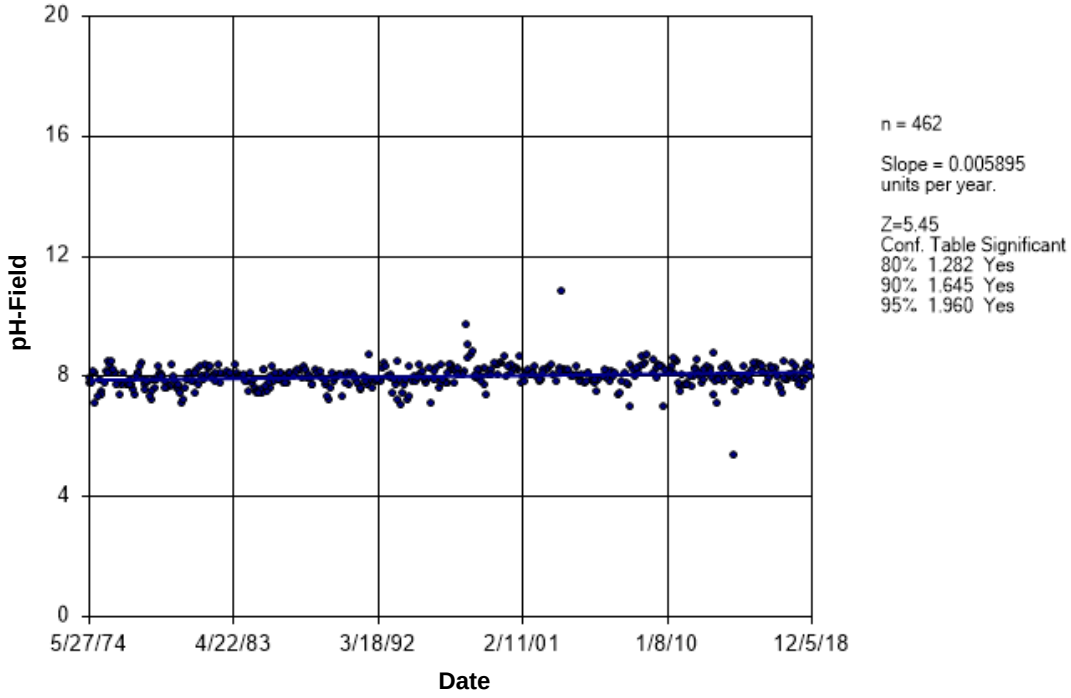

Figure D138 Saskatchewan River: pH-Field

Time Series

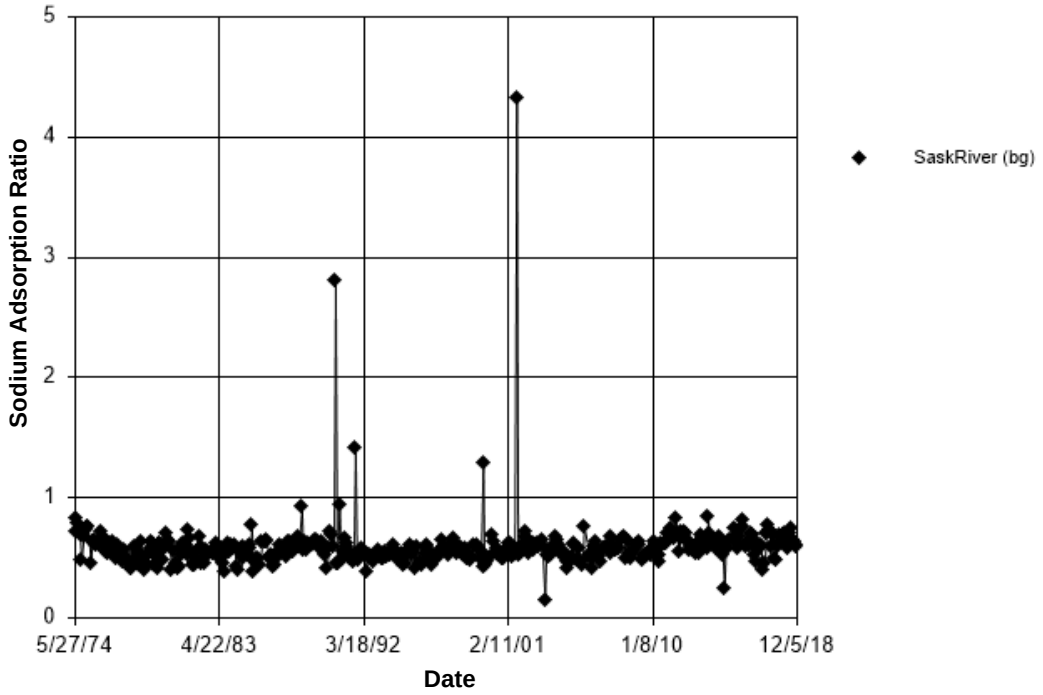

Figure D139 Saskatchewan River: Sodium Absorption Ratio

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 50.82
Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

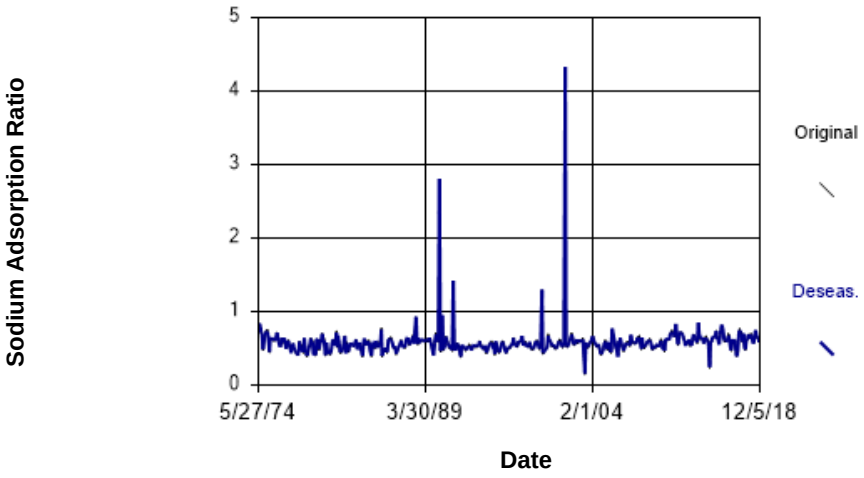

Figure D140 Saskatchewan River: Sodium Adsorption Ratio

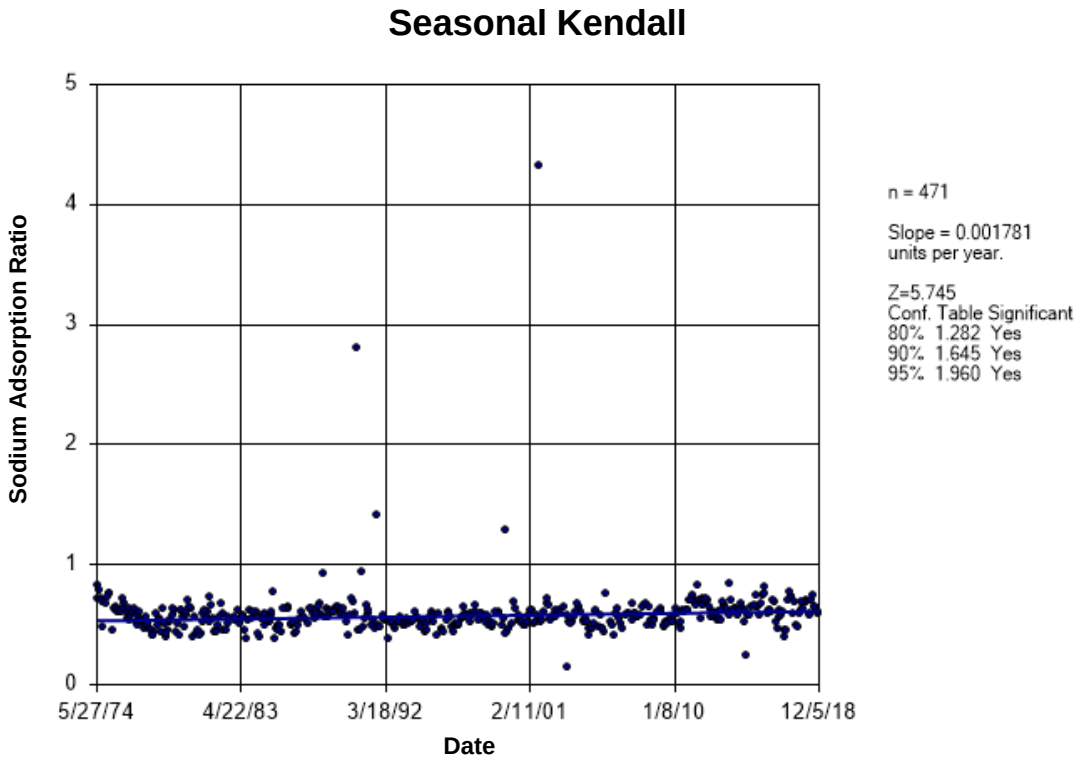

Figure D141 Saskatchewan River: Sodium Adsorption Ratio

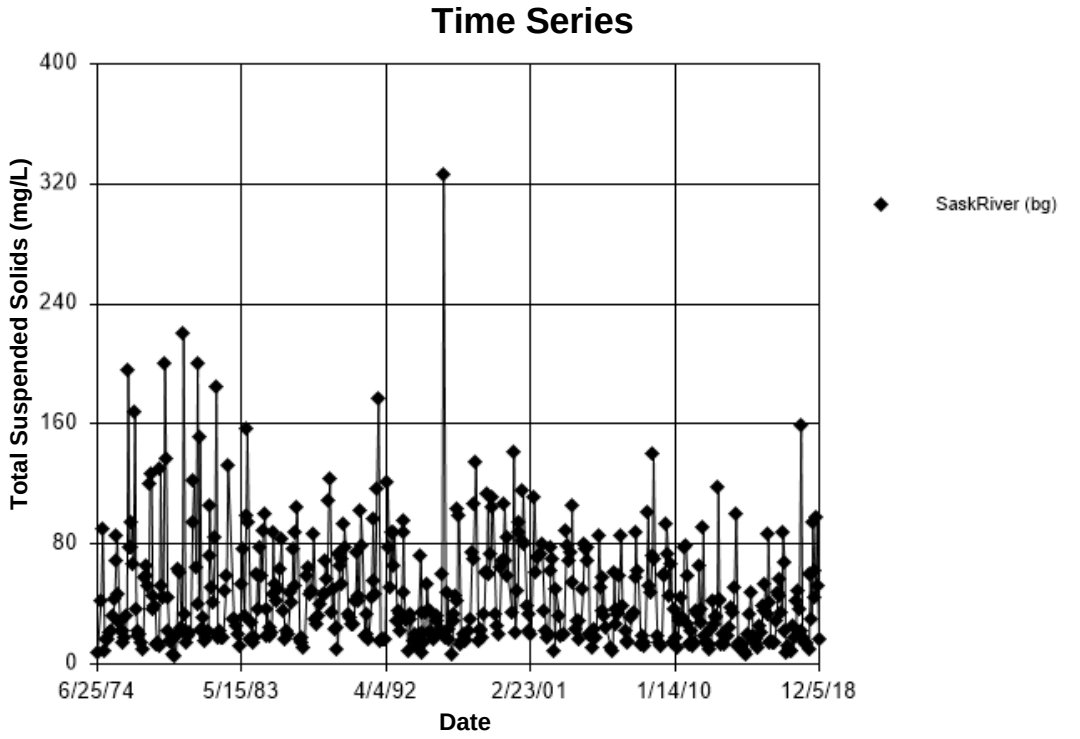

Figure D142 Saskatchewan River: Total Suspended Solids

Seasonality

For the selected data, the Kruskal-Wallis test indicates SEASONALITYat the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
Calculated Kruskal-Wallis statistic = 202.5
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

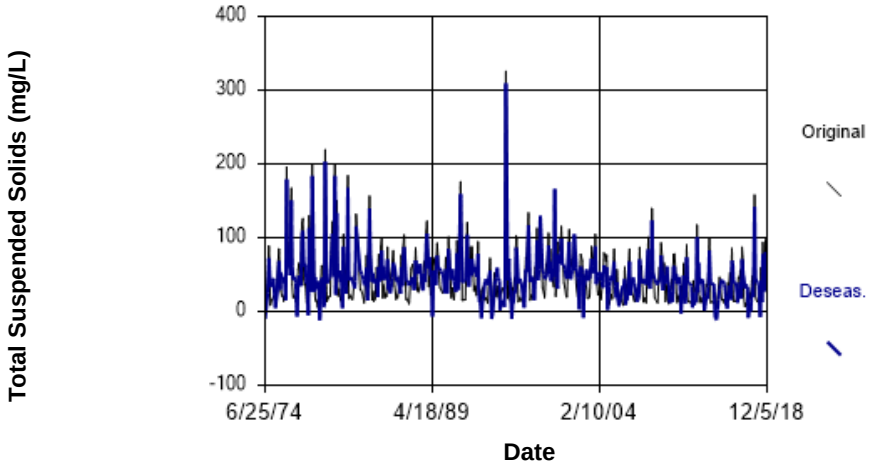

Figure D143 Saskatchewan River: Total Suspended Solids

Seasonal Kendall

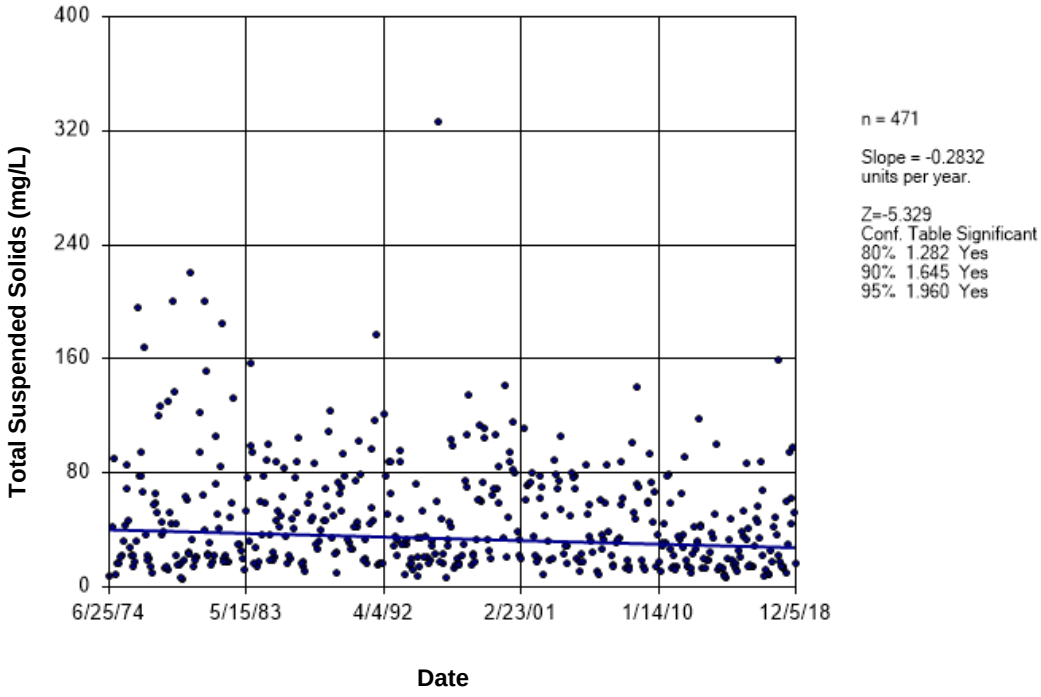

Figure D144 Saskatchewan River: Total Suspended Solids