

Appendix C: Major Ions Trending Graphs

Time Series

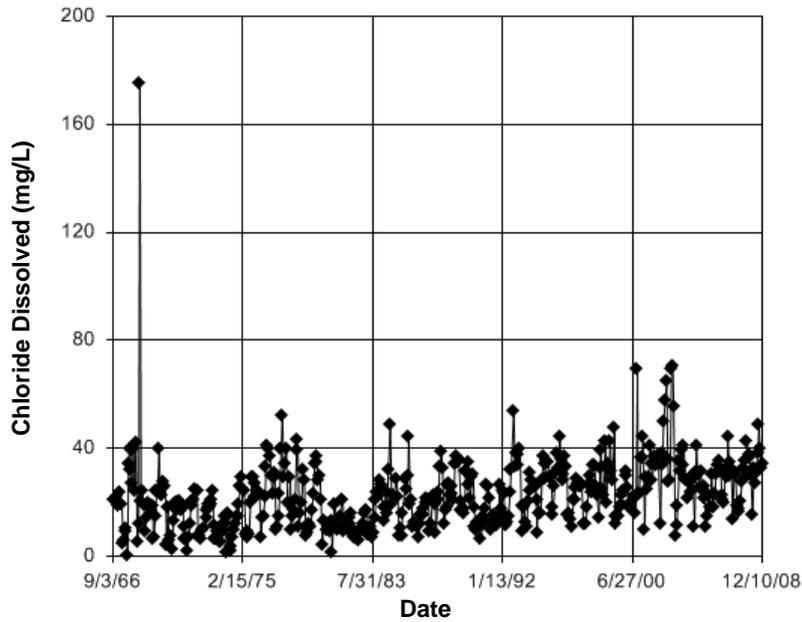


Figure C1 Battle River: Chloride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 16.32
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 51 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) = 16.32
Adjusted Kruskal-Wallis statistic (H') = 16.32

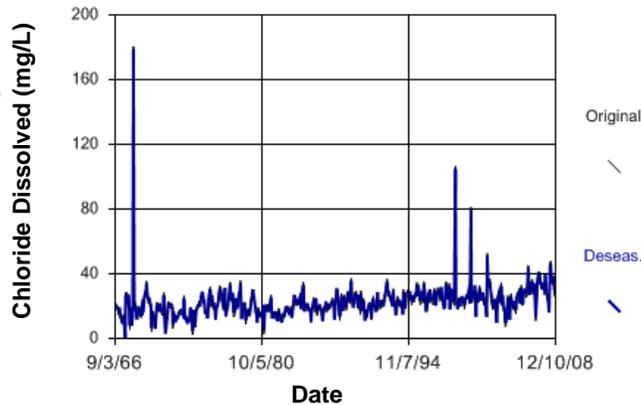


Figure C2 Battle River: Chloride Dissolved

Seasonal Kendall

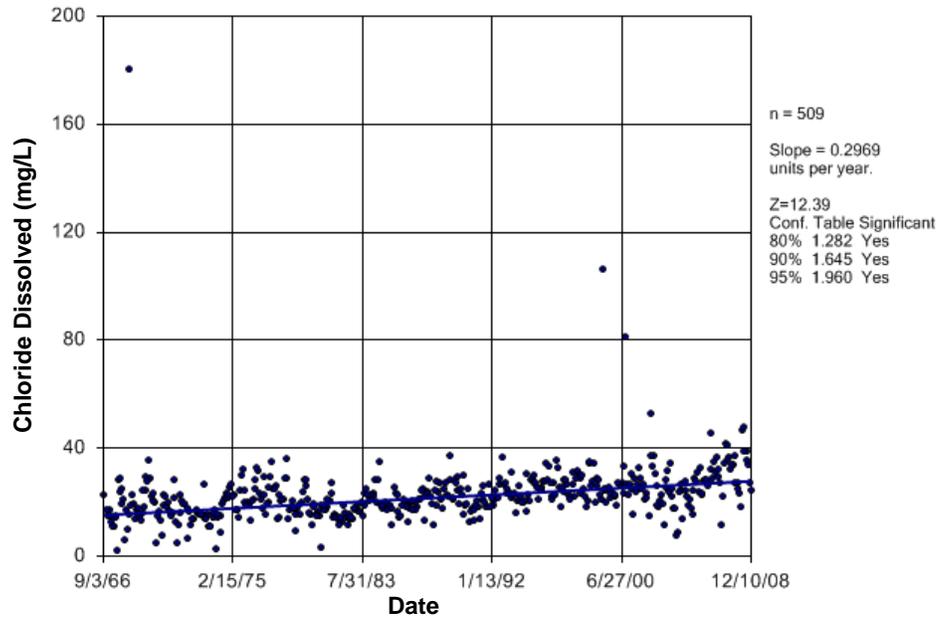


Figure C3 Battle River: Chloride Dissolved

Time Series

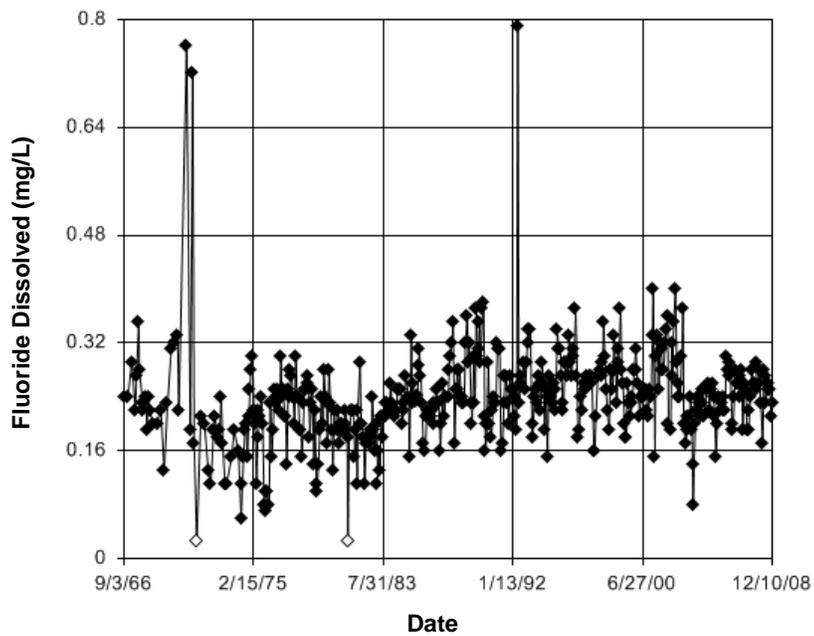


Figure C4 Battle River: Fluoride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 6.923
 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) = 6.923
 Adjusted Kruskal-Wallis statistic (H') = 6.923

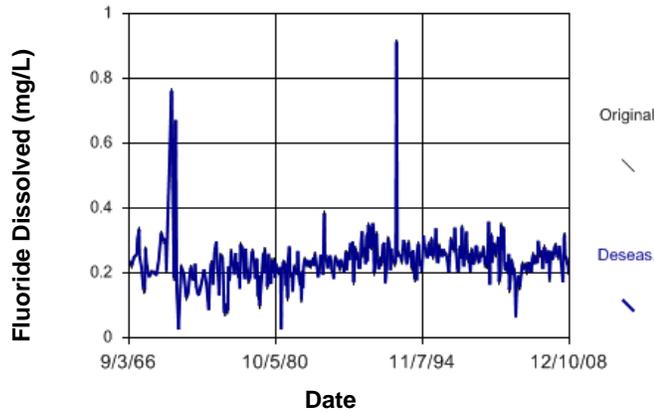


Figure C5 Battle River: Fluoride Dissolved

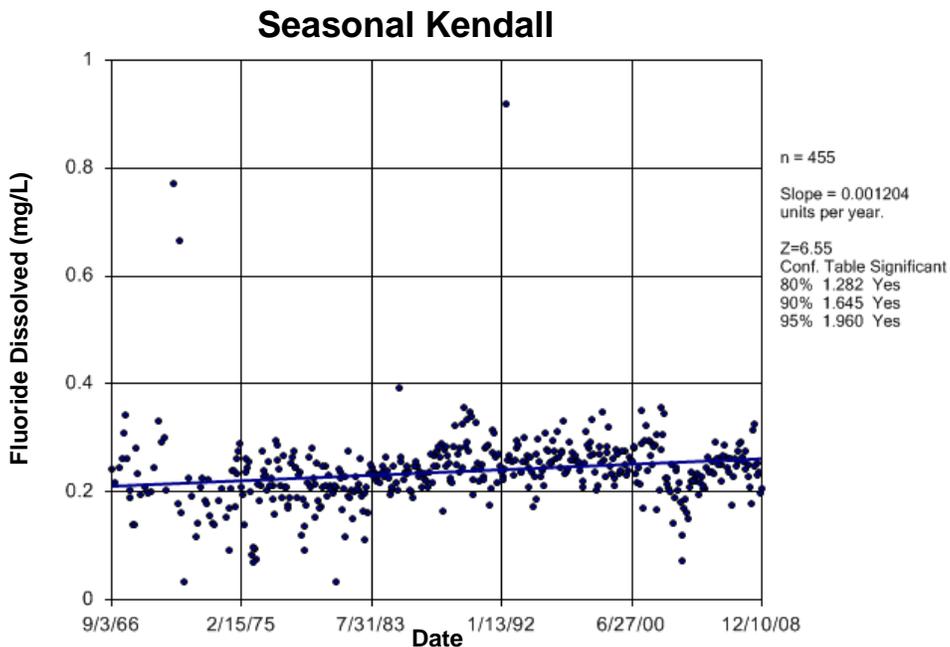


Figure C6 Battle River: Fluoride Dissolved

Time Series

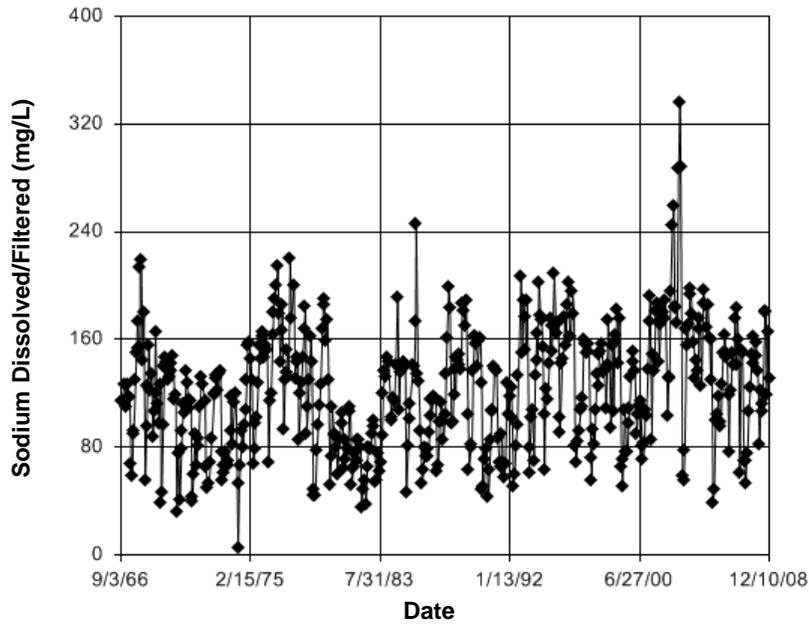


Figure C7 Battle River: Sodium Dissolved/Filtered

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 12.15
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) = 12.15
Adjusted Kruskal-Wallis statistic (H') = 12.15

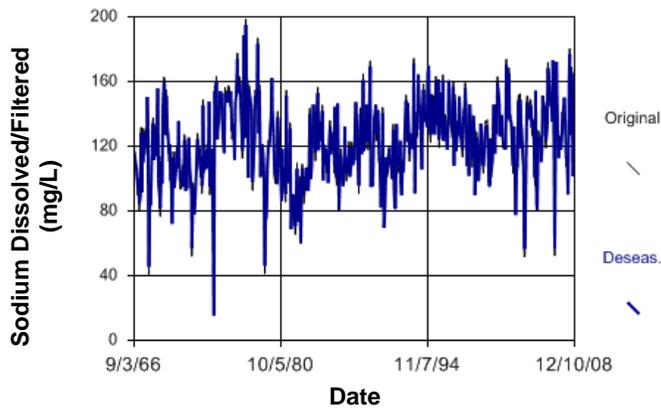


Figure C8 Battle River: Sodium Dissolved/Filtered

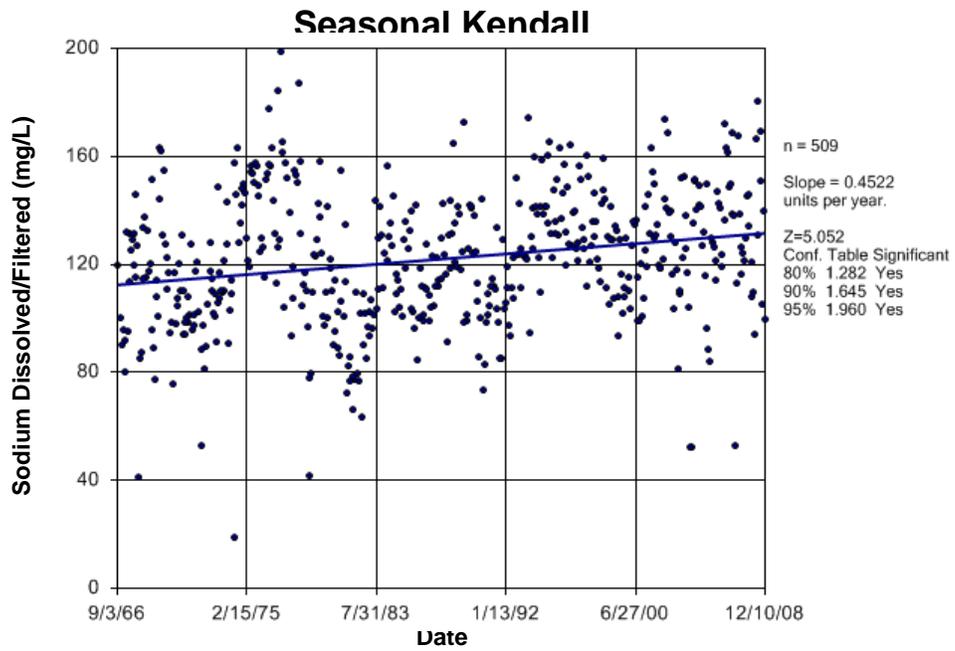


Figure C9 Battle River: Sodium Dissolved/Filtered

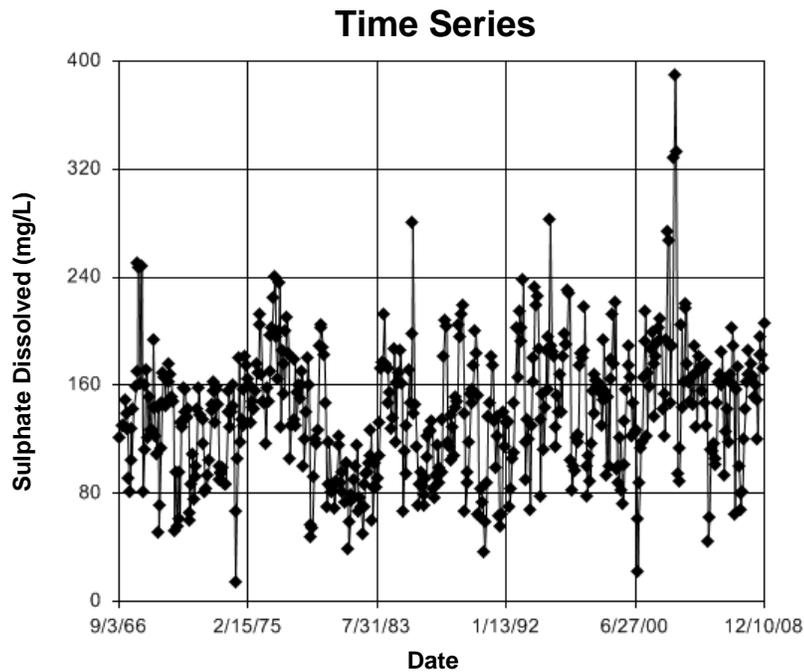


Figure C10 Battle River: Sulphate Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at 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 = 0.05026
Tabulated Chi-Squared value = 3.841 with 1 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) = 0.05026
Adjusted Kruskal-Wallis statistic (H') = 0.05026

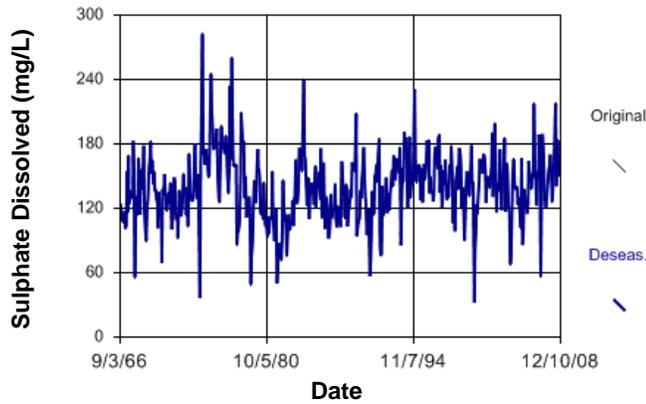


Figure C11 Battle River: Sulphate Dissolved

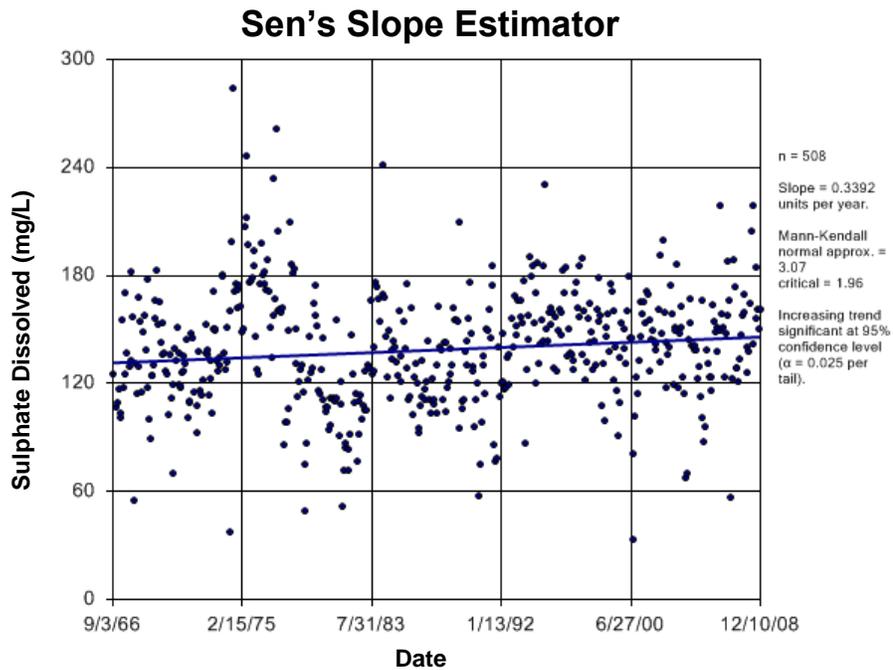


Figure C12 Battle River: Sulphate Dissolved

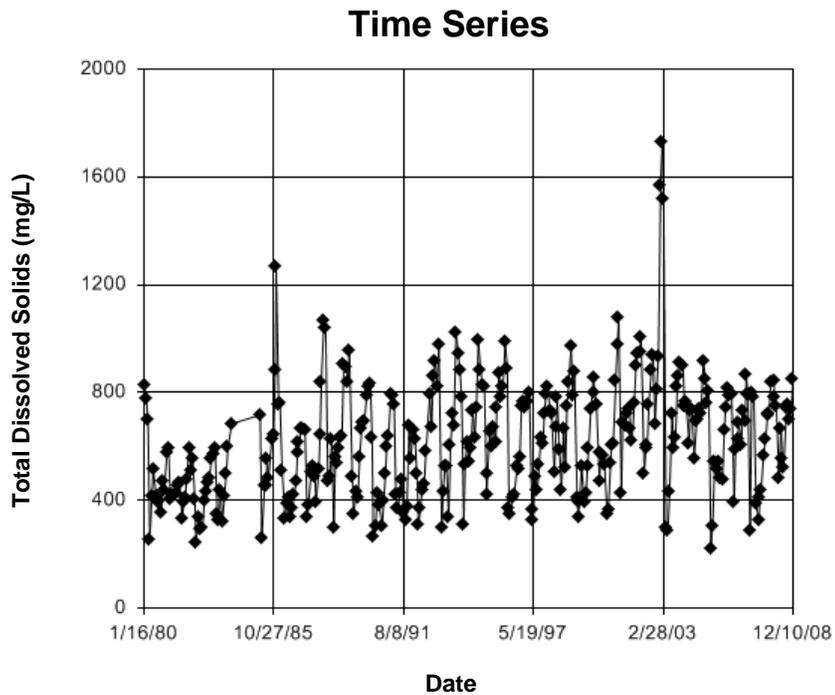


Figure C13 Battle River: Total Dissolved Solids

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 19.66
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 17 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) = 19.66
 Adjusted Kruskal-Wallis statistic (H') = 19.66

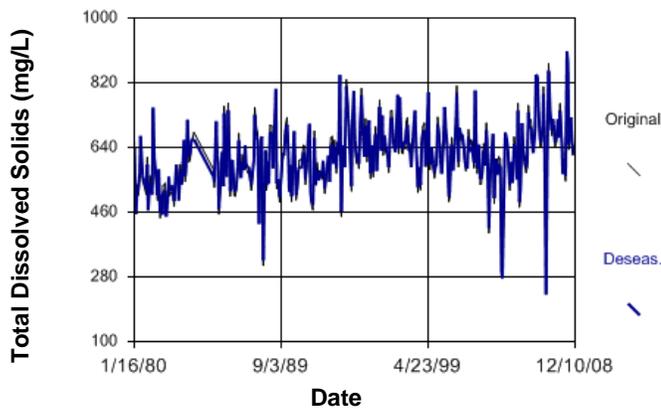


Figure C14 Battle River: Total Dissolved Solids

Seasonal Kendall

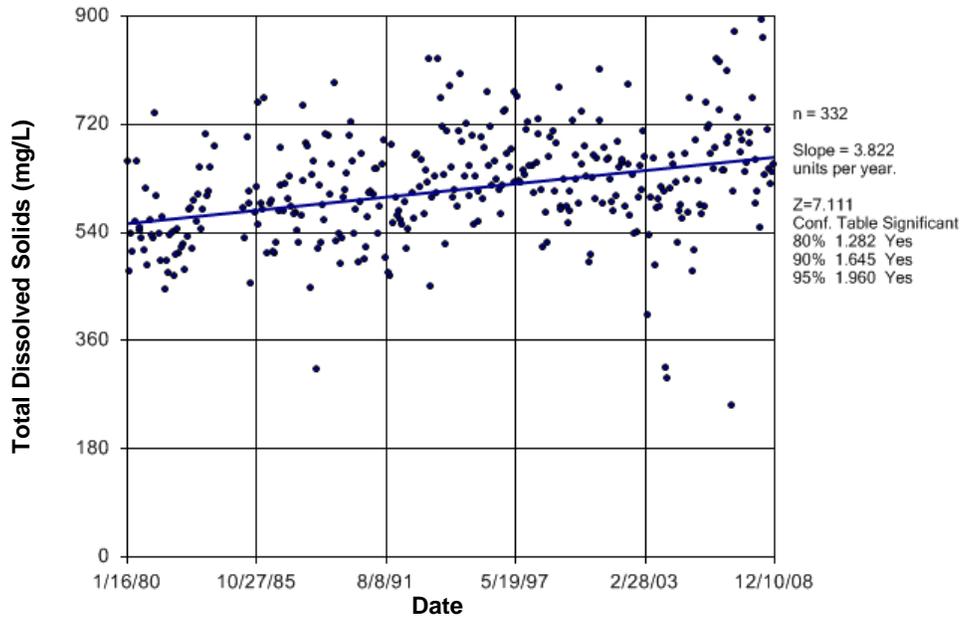


Figure C15 Battle River: Total Dissolved Solids

Time Series

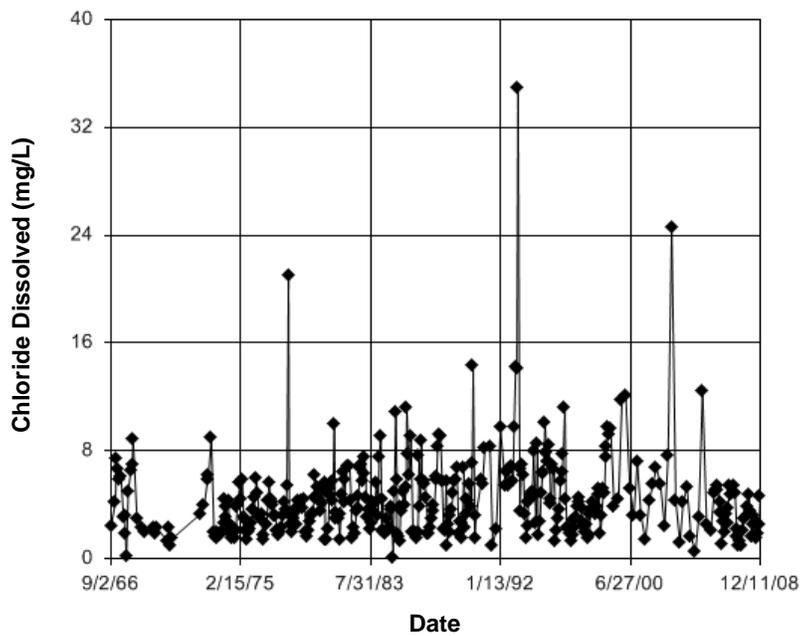


Figure C16 Beaver River: Chloride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 27.11
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 17 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) = 27.11
 Adjusted Kruskal-Wallis statistic (H') = 27.11

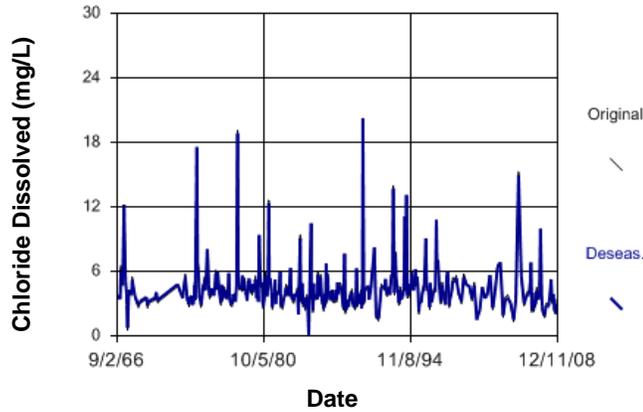


Figure C17 Beaver River: Chloride Dissolved

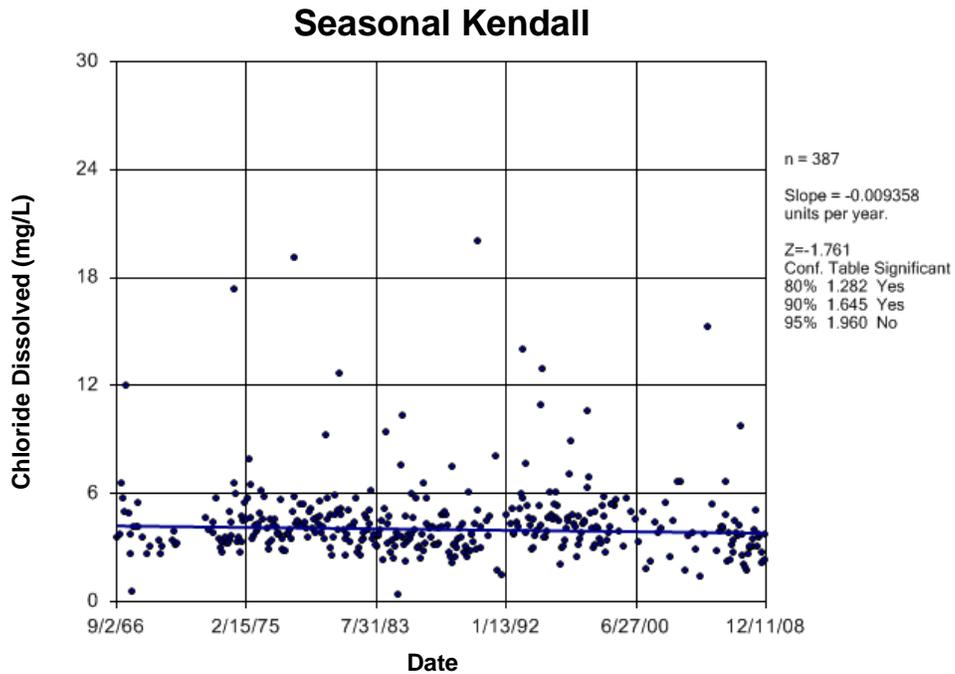


Figure C18 Beaver River: Chloride Dissolved

Time Series

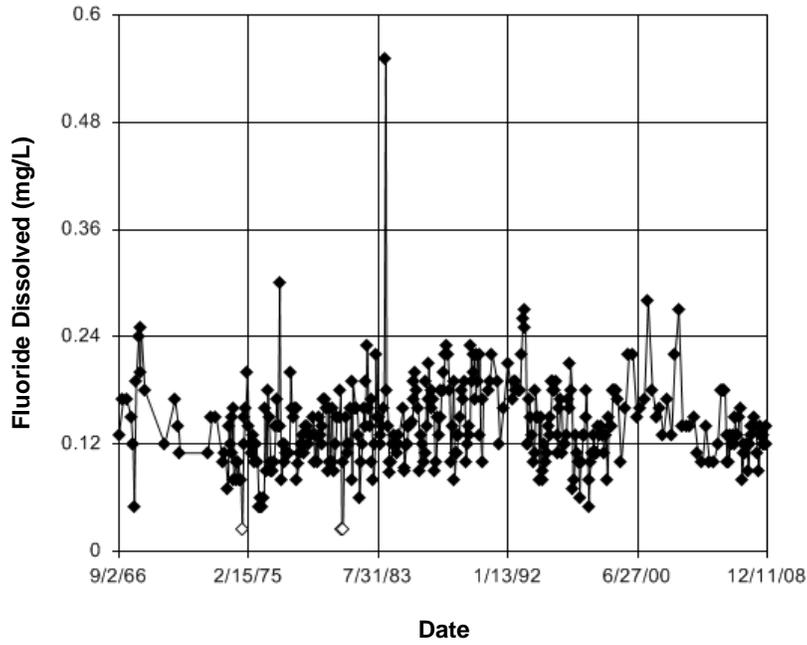


Figure C19 Beaver River: Fluoride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at 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 = 1.149
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 54 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) = 1.149
Adjusted Kruskal-Wallis statistic (H') = 1.149

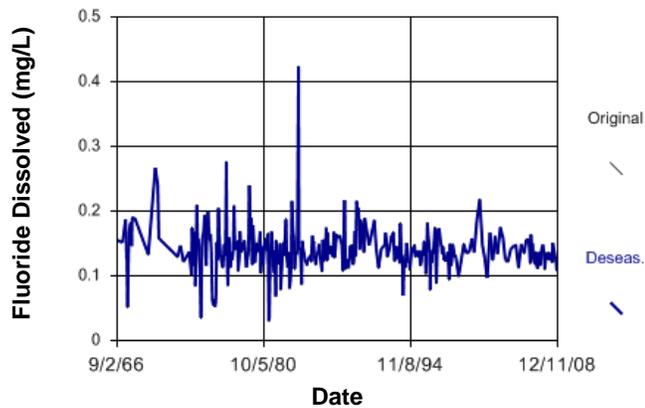


Figure C20 Beaver River: Fluoride Dissolved

Sen's Slope Estimator

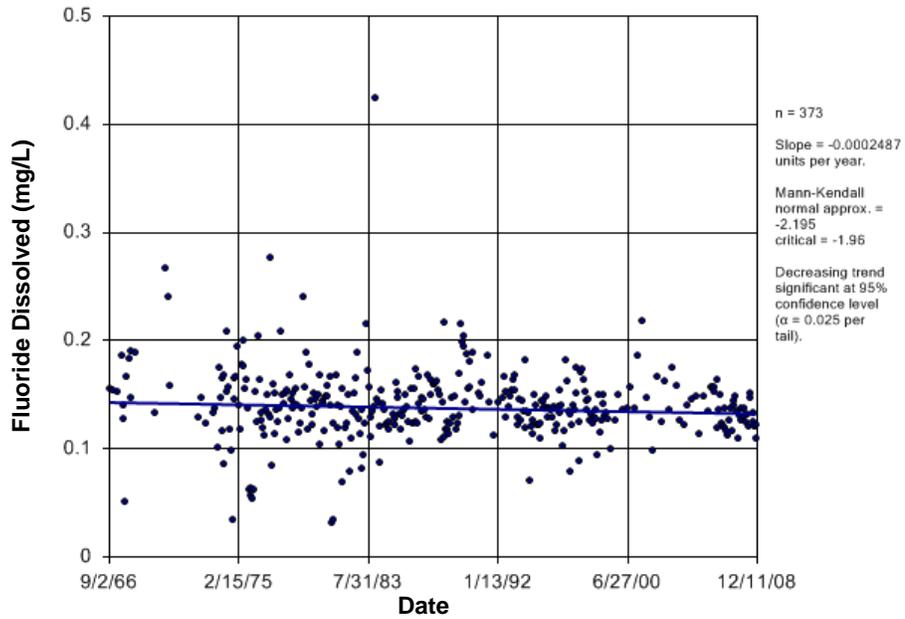


Figure C21 Beaver River: Fluoride Dissolved

Time Series

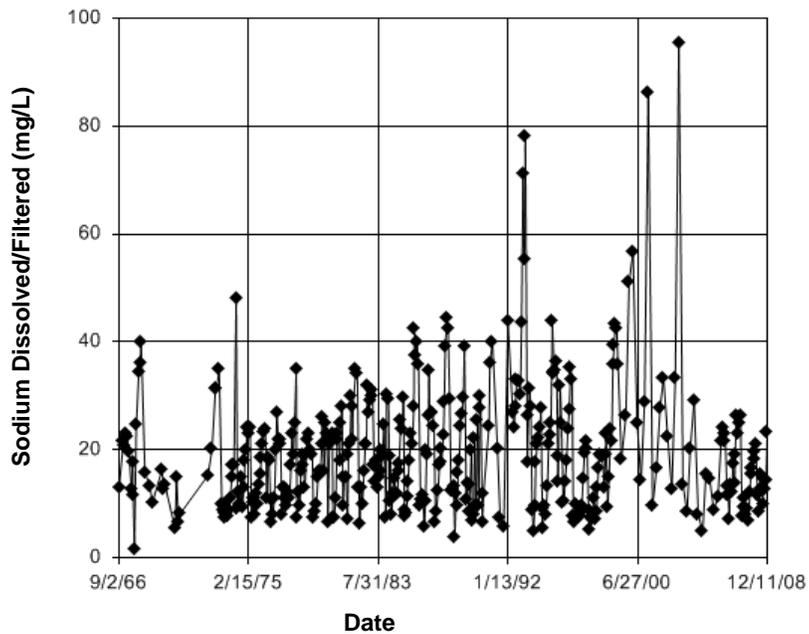


Figure C22 Beaver River: Sodium Dissolved/Filtered

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 39.32
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 41 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) = 39.32
 Adjusted Kruskal-Wallis statistic (H') = 39.32

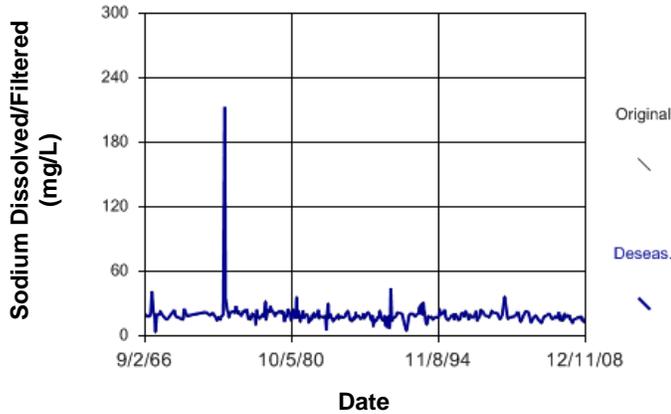


Figure C23 Beaver River: Sodium Dissolved/Filtered

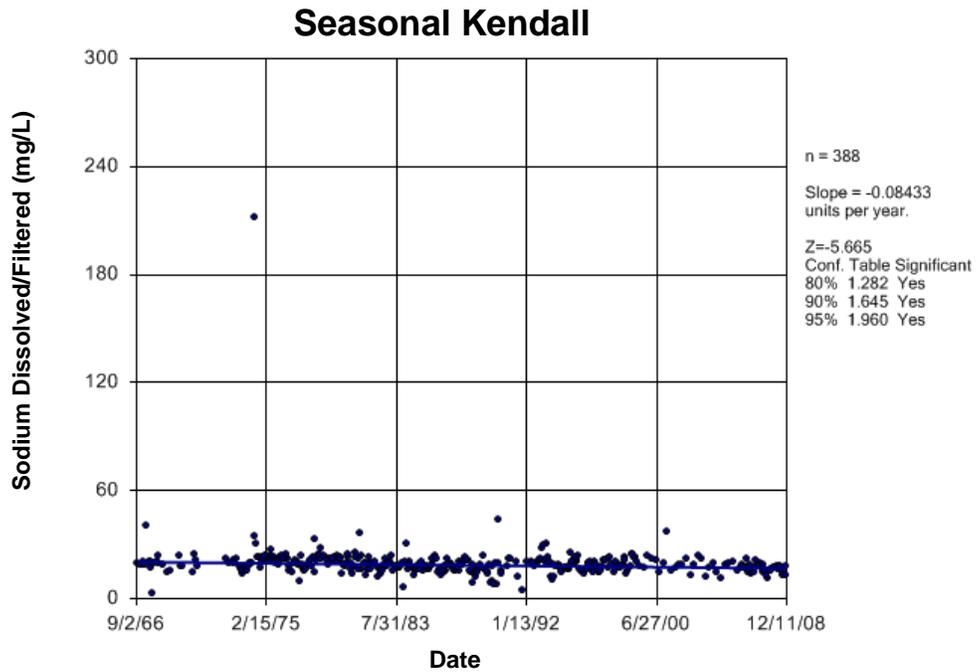


Figure C24 Beaver River: Sodium Dissolved/Filtered

Time Series

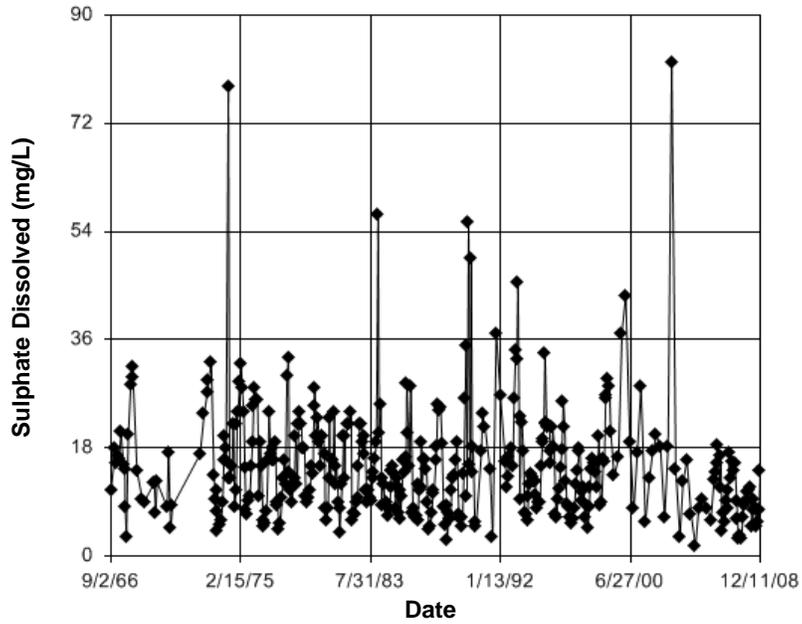


Figure C25 Beaver River: Sulphate Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 24.5
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 27 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) = 24.5
Adjusted Kruskal-Wallis statistic (H') = 24.5

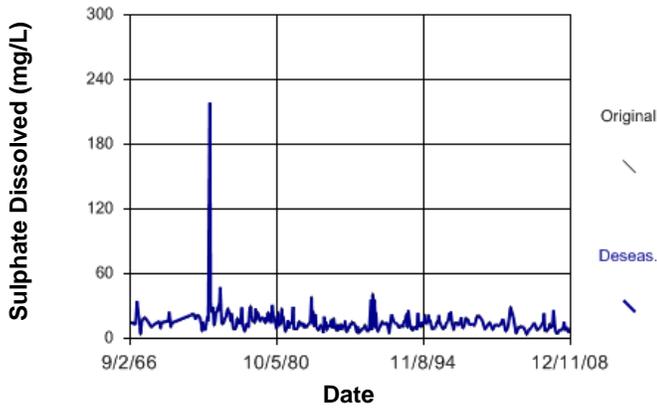


Figure C26 Beaver River: Sulphate Dissolved

Seasonal Kendall

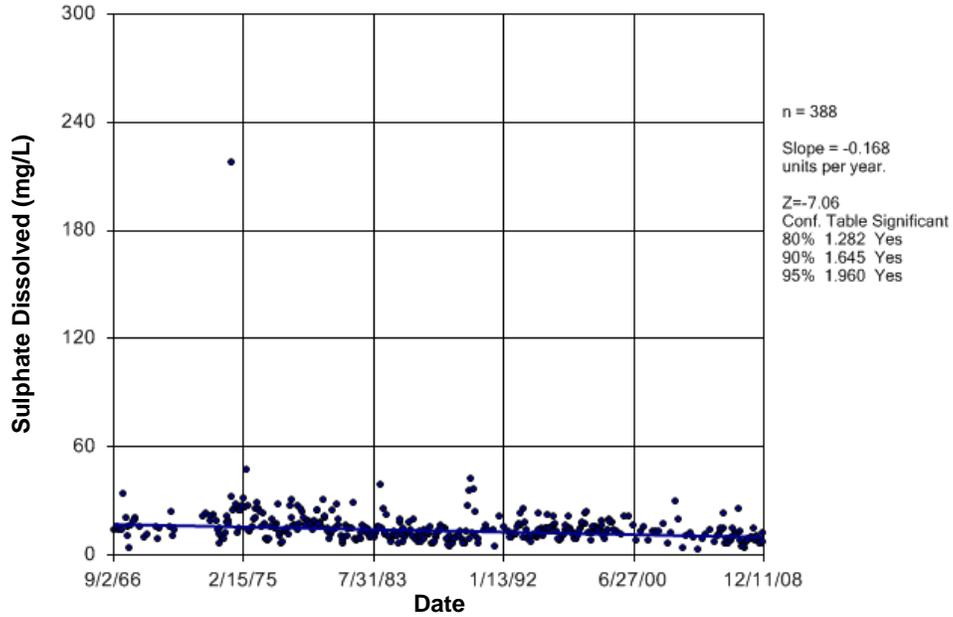


Figure C27 Beaver River: Sulphate Dissolved

Time Series

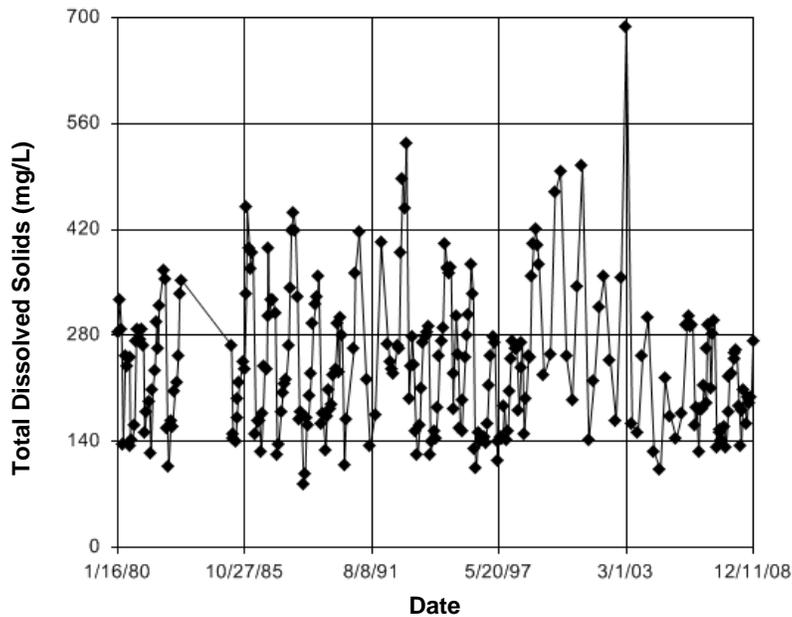


Figure C28 Beaver River: Total Dissolved Solids

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 48.67
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 22 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) = 48.67
 Adjusted Kruskal-Wallis statistic (H') = 48.67

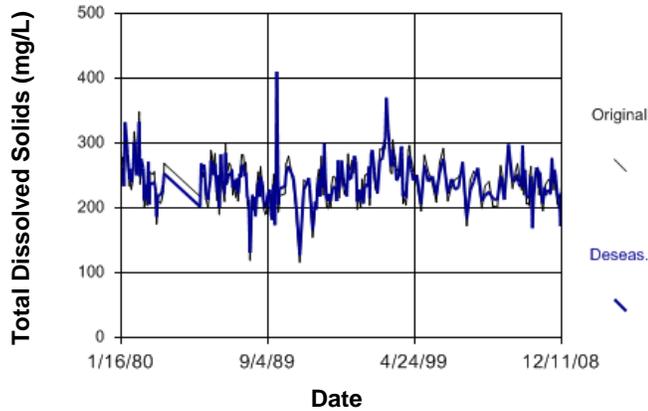


Figure C29 Beaver River: Total Dissolved Solids

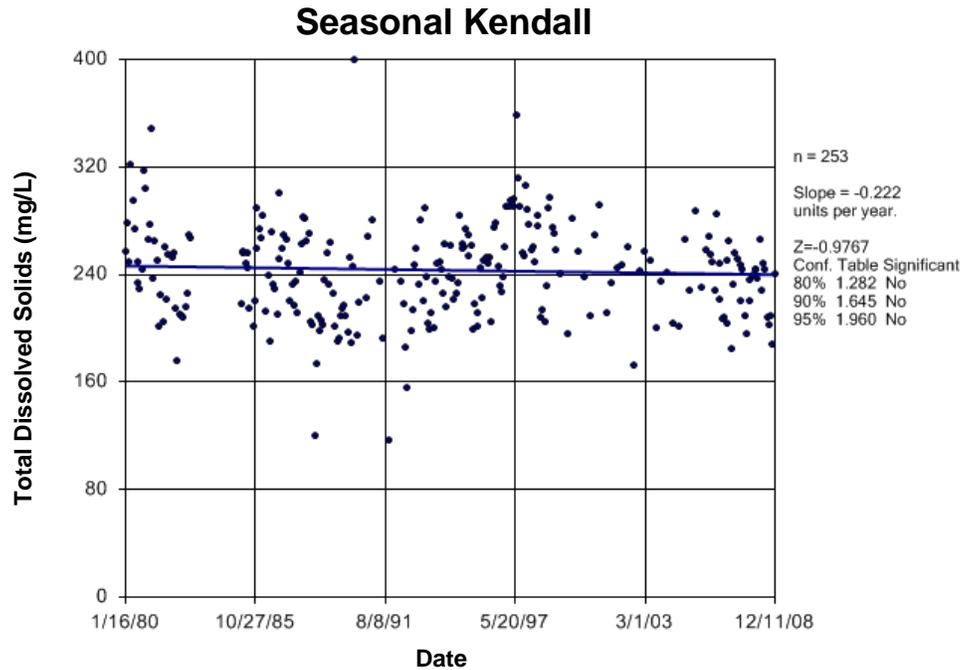


Figure C30 Beaver River: Total Dissolved Solids

Time Series

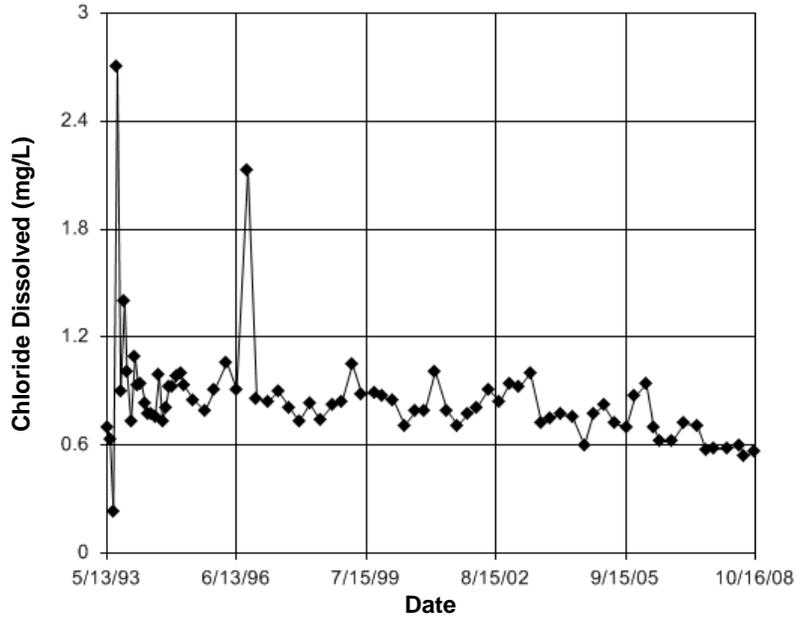


Figure C31 Cold River: Chloride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 8.657
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.

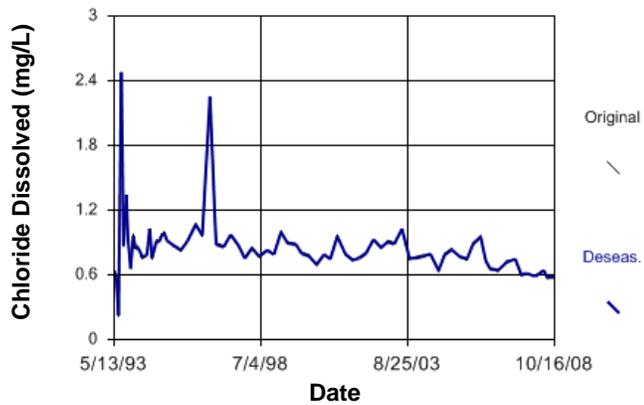


Figure C32 Cold River: Chloride Dissolved

Seasonal Kendall

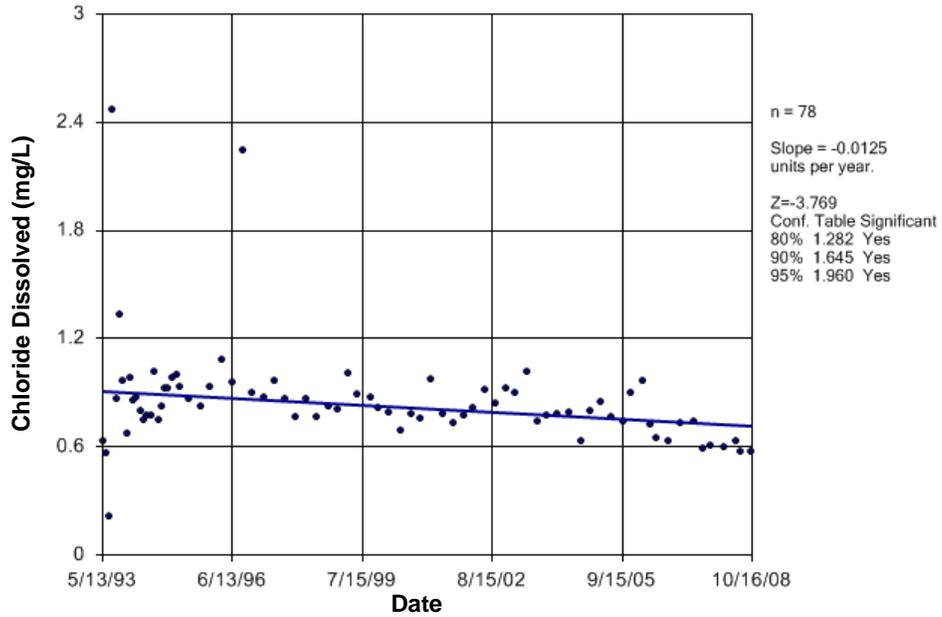


Figure C33 Cold River: Chloride Dissolved

Time Series

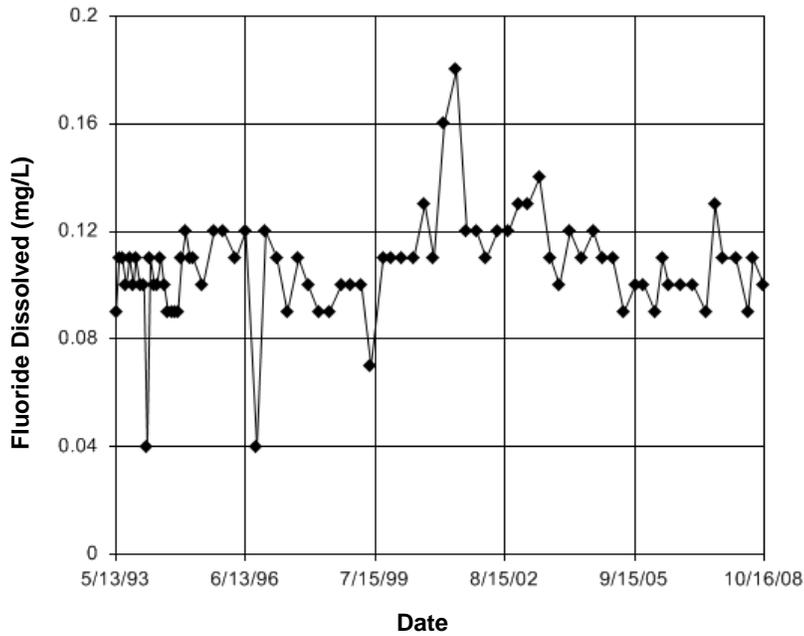


Figure C34 Cold River: Fluoride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at 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 = 1.005
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) = 0.9652
Adjusted Kruskal-Wallis statistic (H') = 1.005

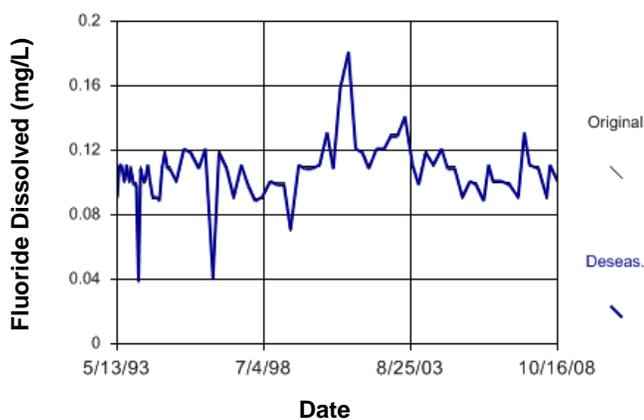


Figure C35 Cold River: Fluoride Dissolved

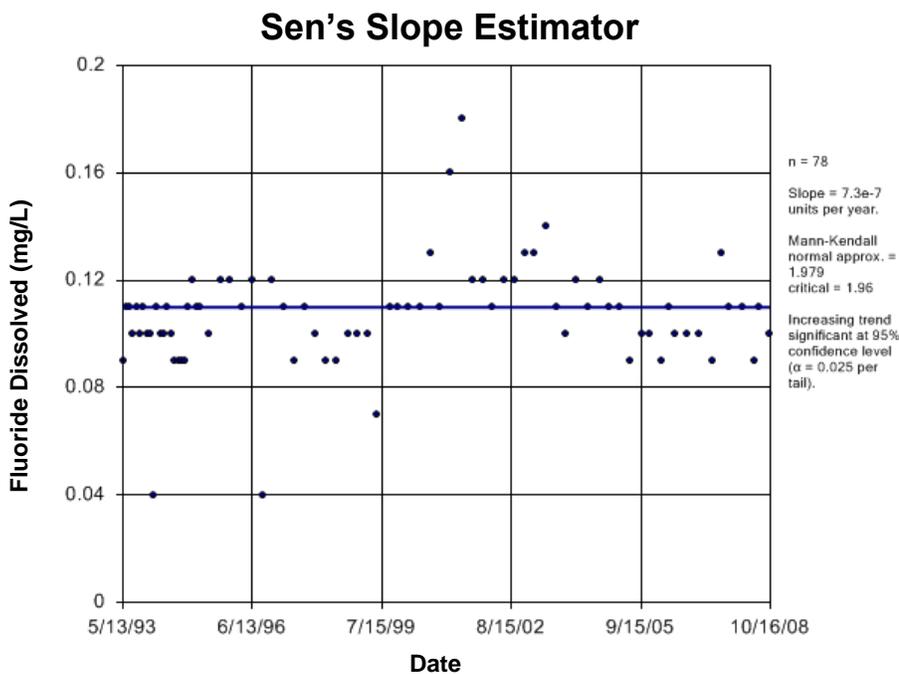


Figure C36 Cold River: Fluoride Dissolved

Time Series

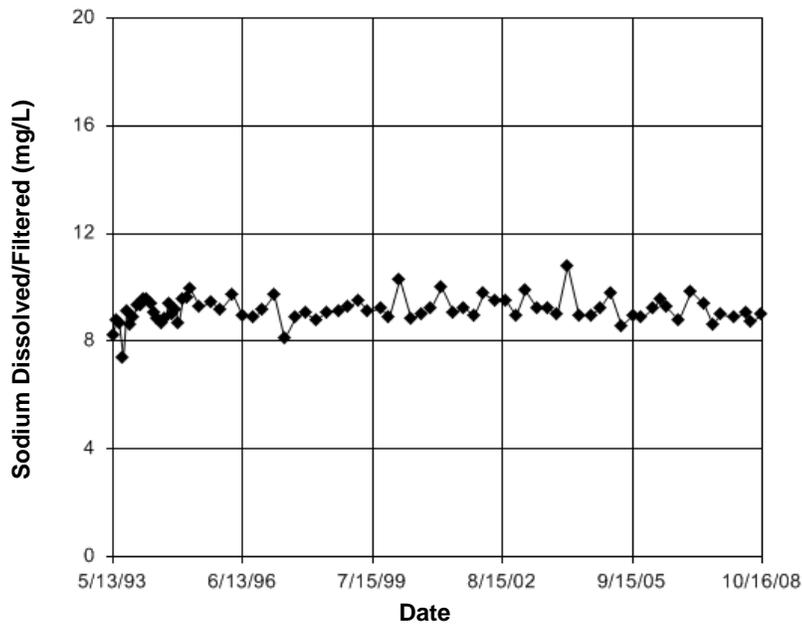


Figure C37 Cold River: Sodium Dissolved/Filtered

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 14.2
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.

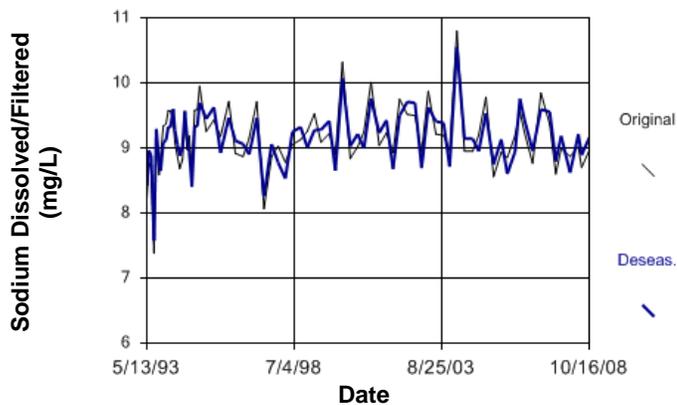


Figure C38 Cold River: Sodium Dissolved/Filtered

Seasonal Kendall

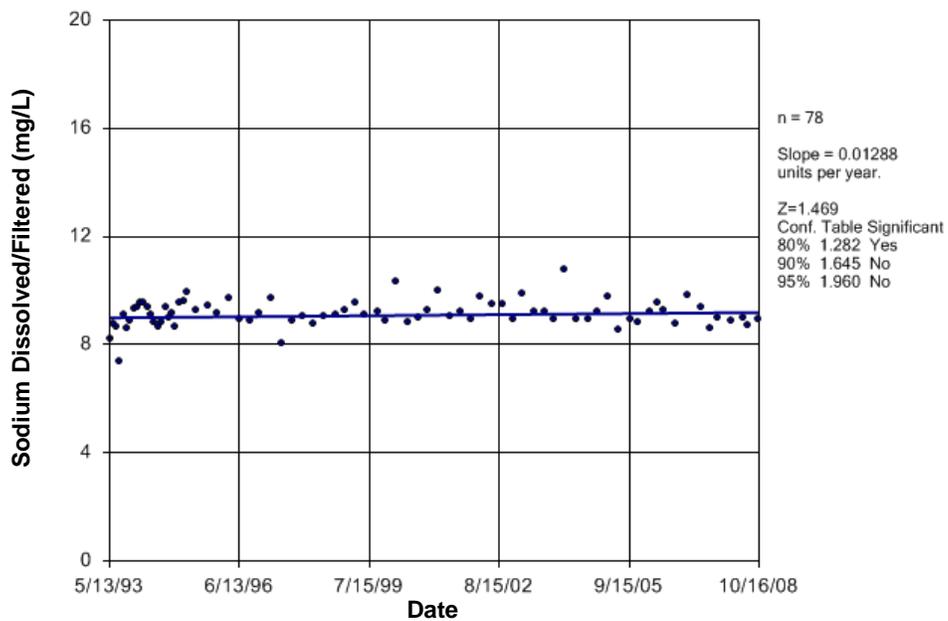


Figure C39 Cold River: Sodium Dissolved/Filtered

Time Series

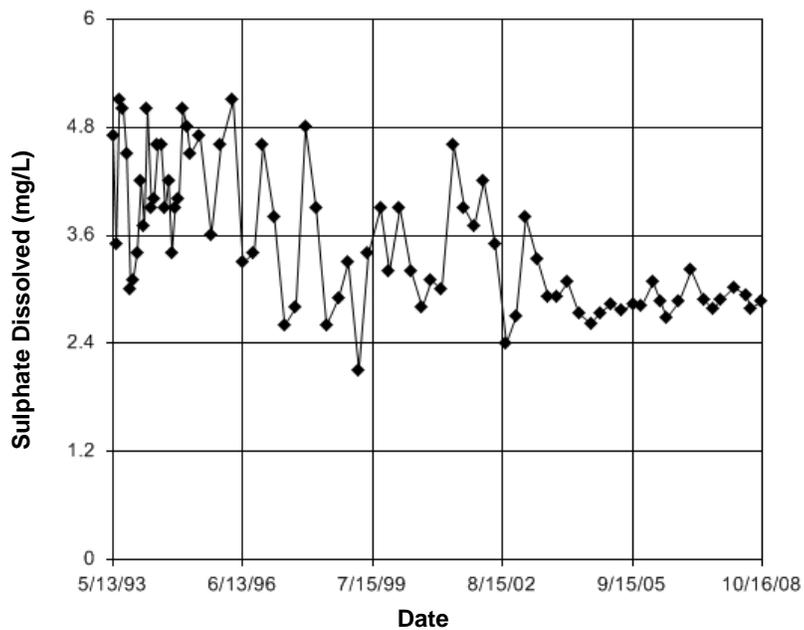


Figure C40 Cold River: Sulphate Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at 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 = 0.9261
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) = 0.926
Adjusted Kruskal-Wallis statistic (H') = 0.9261

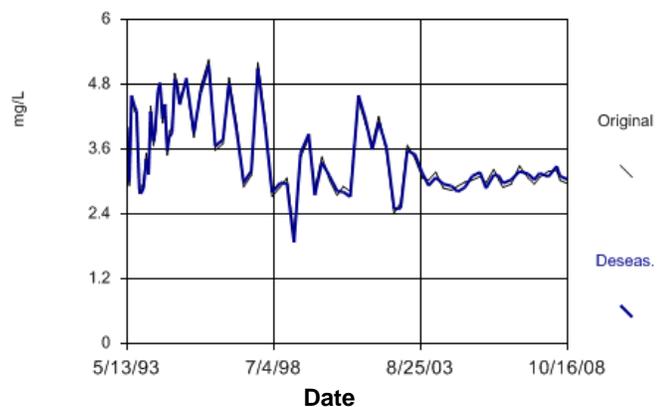


Figure C41 Cold River: Sulphate Dissolved

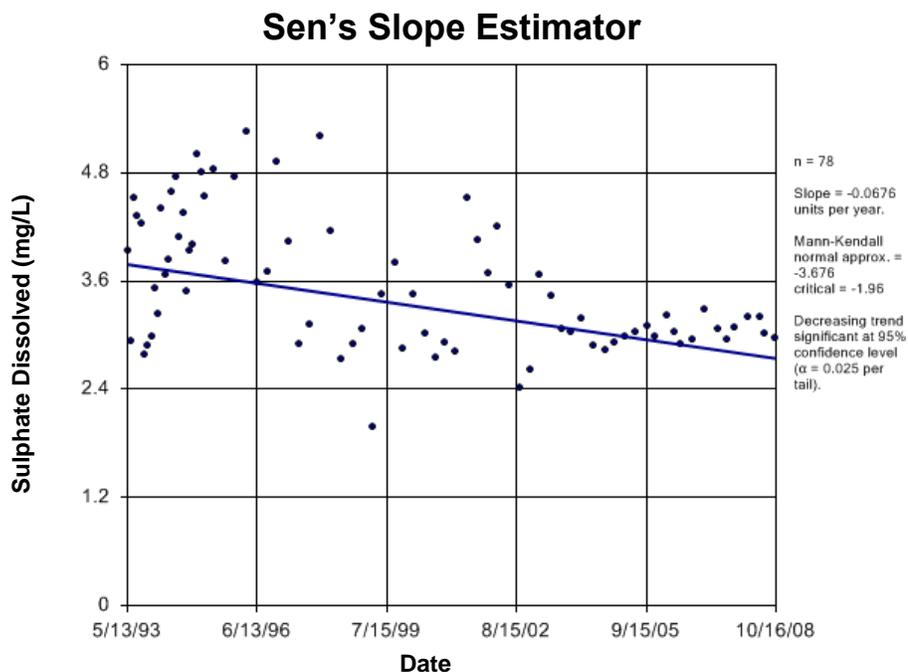


Figure C42 Cold River: Sulphate Dissolved

Time Series

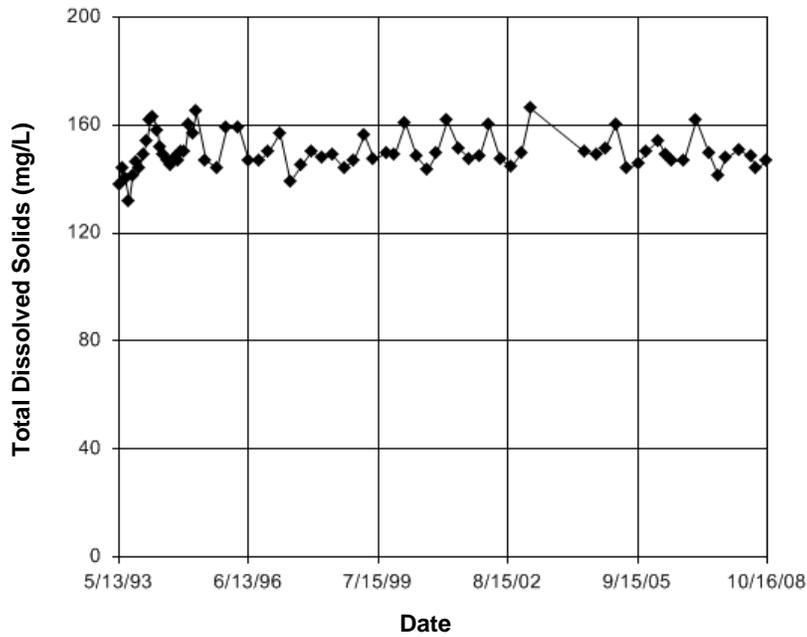


Figure C43 Cold River: Total Dissolved Solids

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 33.26
Tabulated Chi-Squared value = 3.841 with 1 degree 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) = 33.25
Adjusted Kruskal-Wallis statistic (H') = 33.26

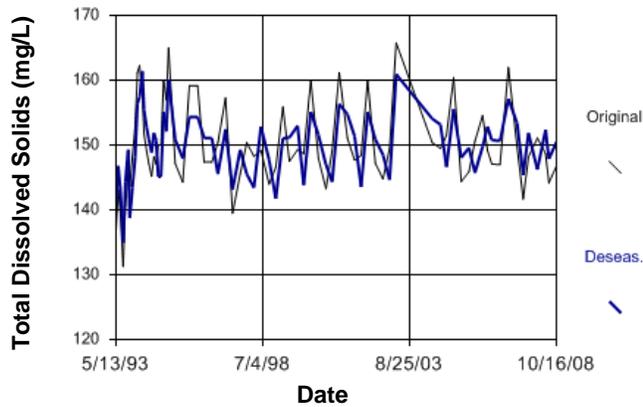


Figure C44 Cold River: Total Dissolved Solids

Seasonal Kendall

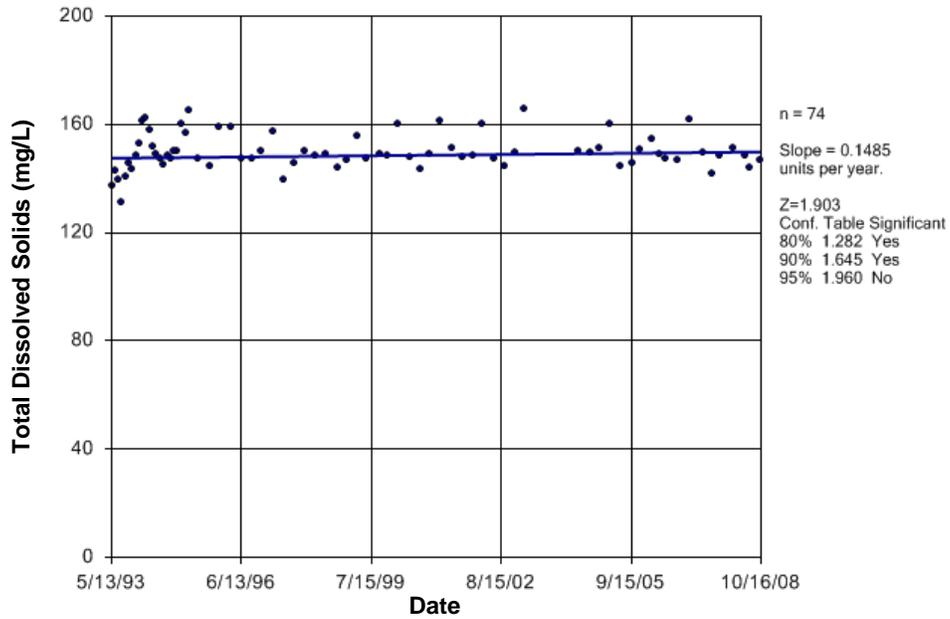


Figure C45 Cold River: Total Dissolved Solids

Time Series

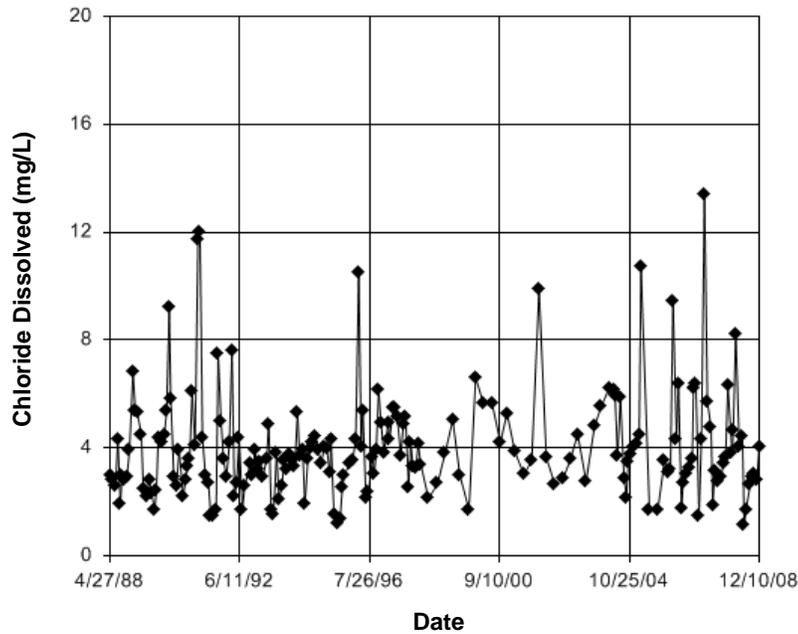


Figure C46 North Saskatchewan River: Chloride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 6.769
 Tabulated Chi-Squared value = 3.841 with 1 degree 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) = 6.769
 Adjusted Kruskal-Wallis statistic (H') = 6.769

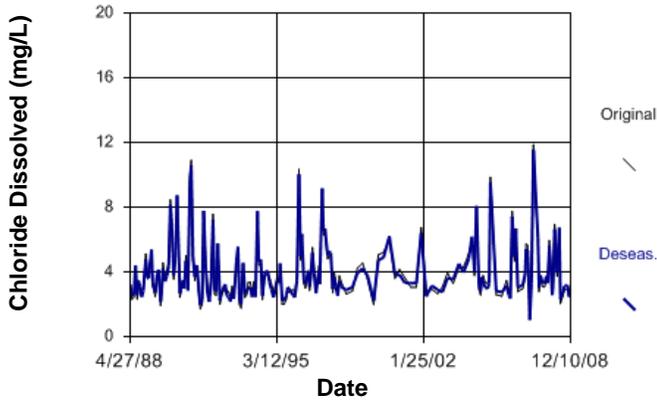


Figure C47 North Saskatchewan River: Chloride Dissolved

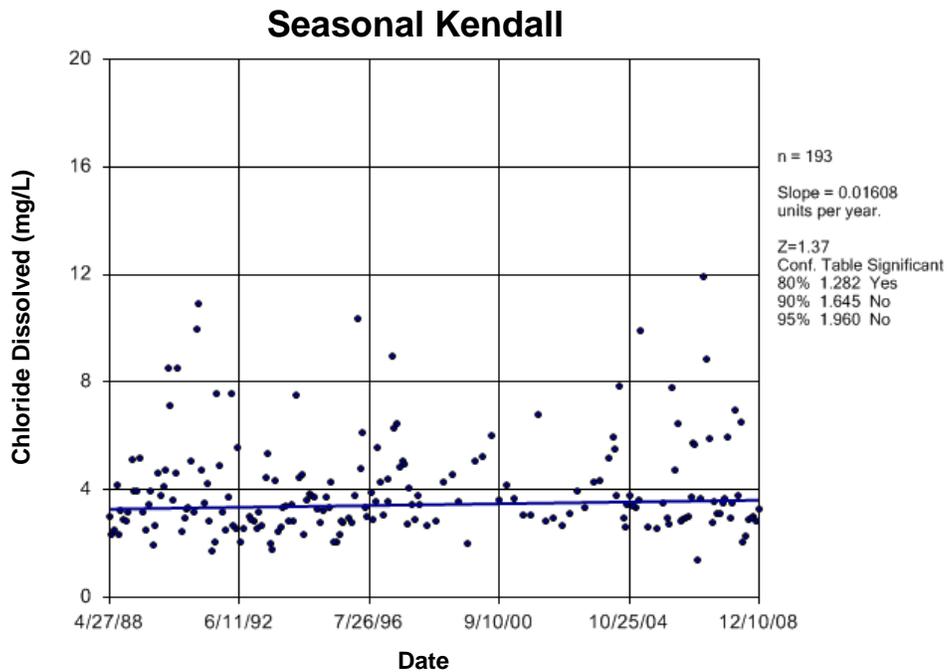


Figure C48 North Saskatchewan River: Chloride Dissolved

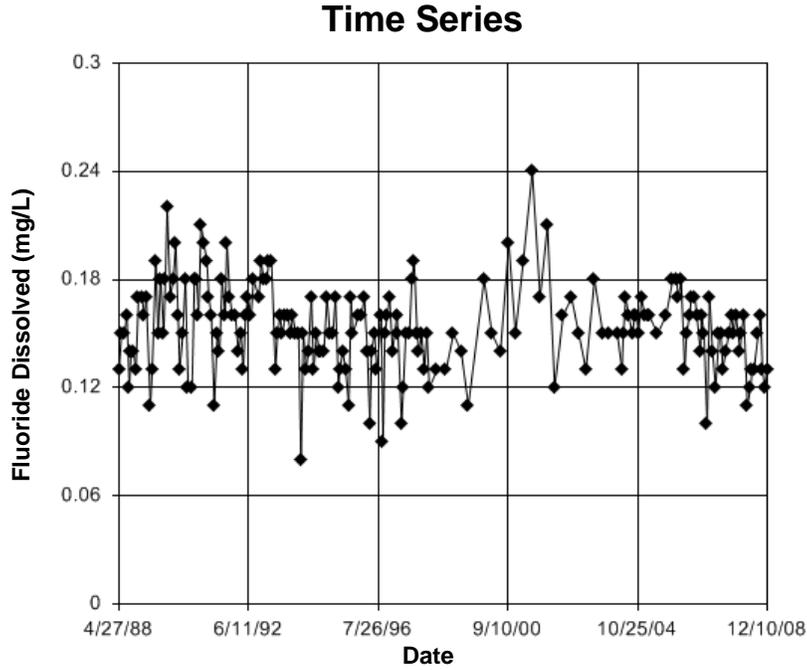


Figure C49 North Saskatchewan River: Fluoride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at 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 = 0.1147
 Tabulated Chi-Squared value = 3.841 with 1 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) = 0.1147
 Adjusted Kruskal-Wallis statistic (H') = 0.1147

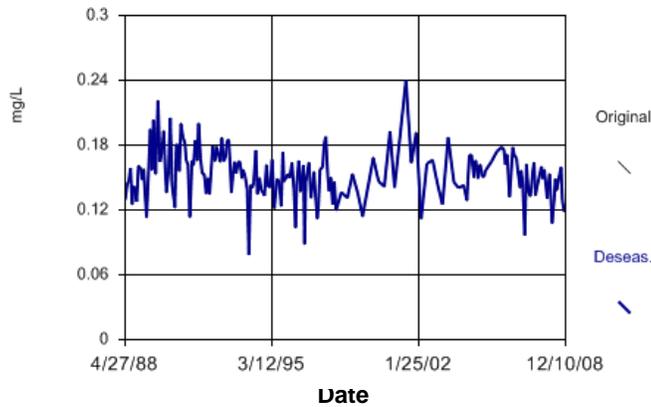


Figure C50 North Saskatchewan River: Fluoride Dissolved

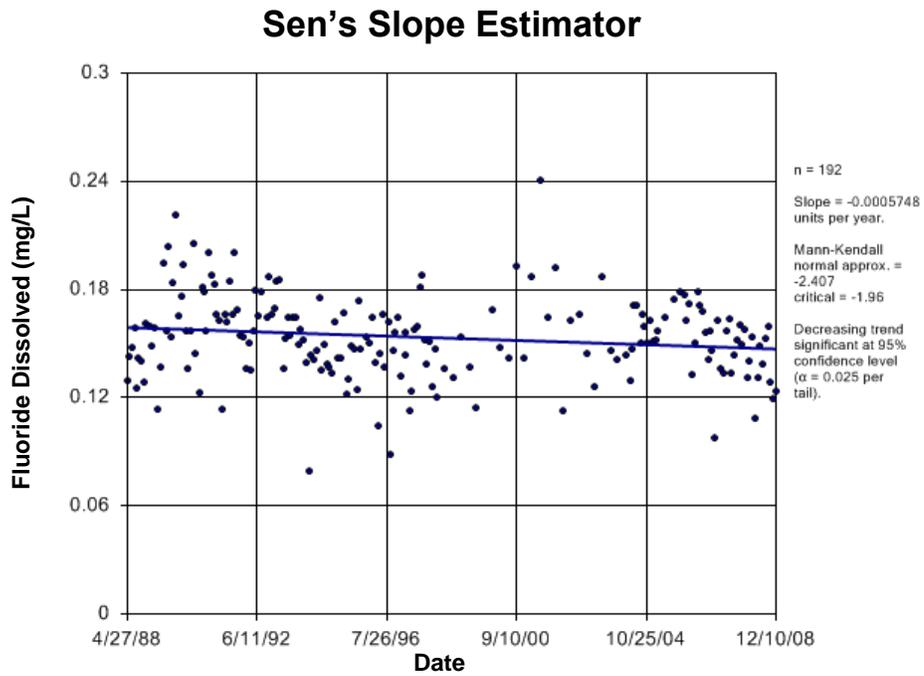


Figure C51 North Saskatchewan River: Fluoride Dissolved

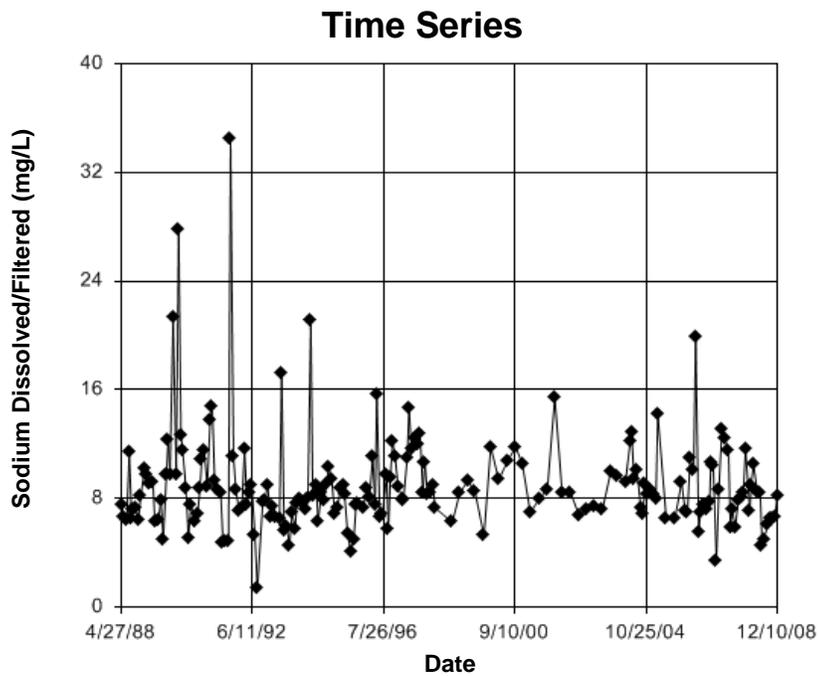


Figure C52 North Saskatchewan River: Sodium Dissolved/Filtered

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at 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 = 1.225
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) = 1.225
Adjusted Kruskal-Wallis statistic (H') = 1.225

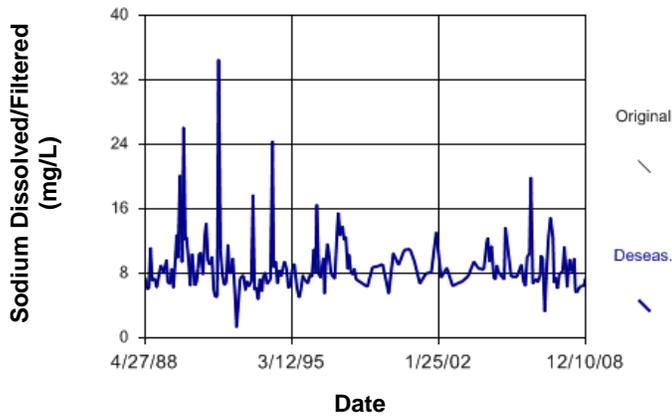


Figure C53 North Saskatchewan River: Sodium Dissolved/Filtered

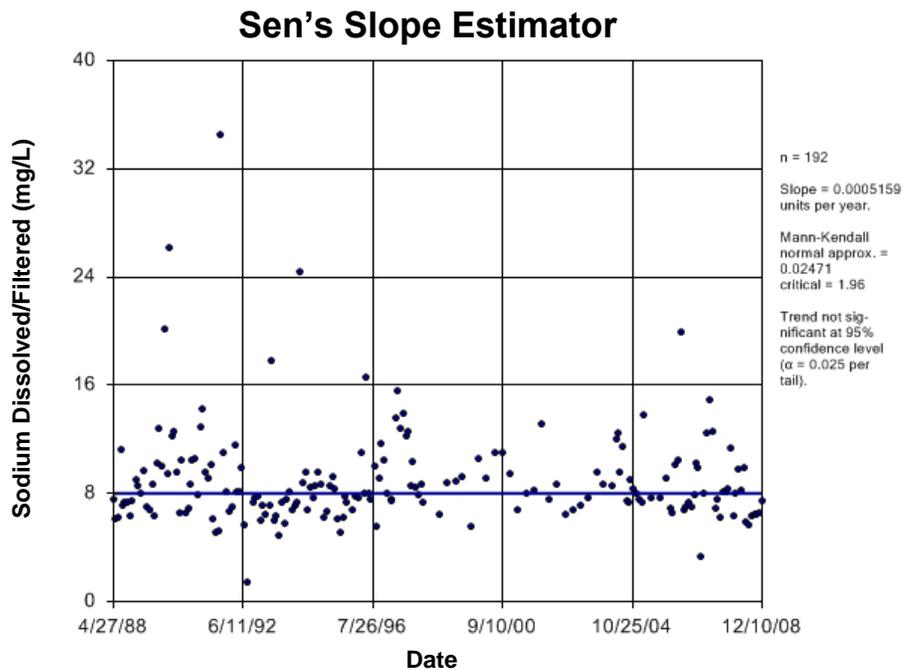


Figure C54 North Saskatchewan River: Sodium Dissolved/Filtered

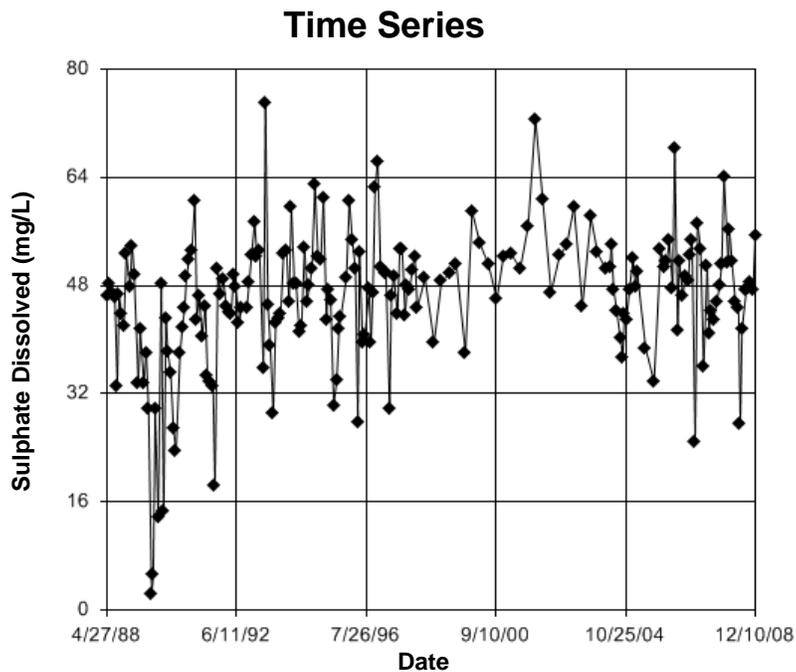


Figure C55 North Saskatchewan River: Sulphate Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at 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 = 0.2389
 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) = 0.2389
 Adjusted Kruskal-Wallis statistic (H') = 0.2389

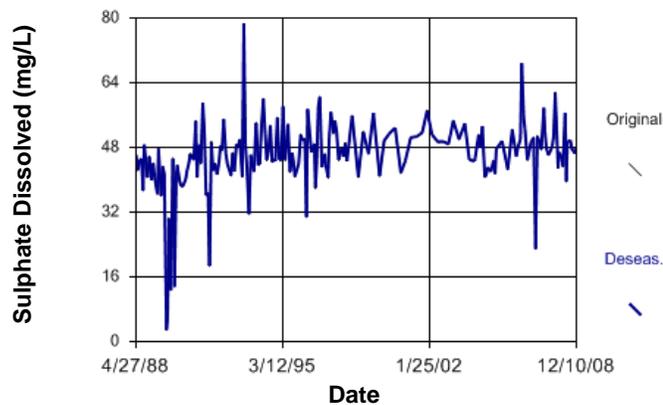


Figure C56 North Saskatchewan River: Sulphate Dissolved

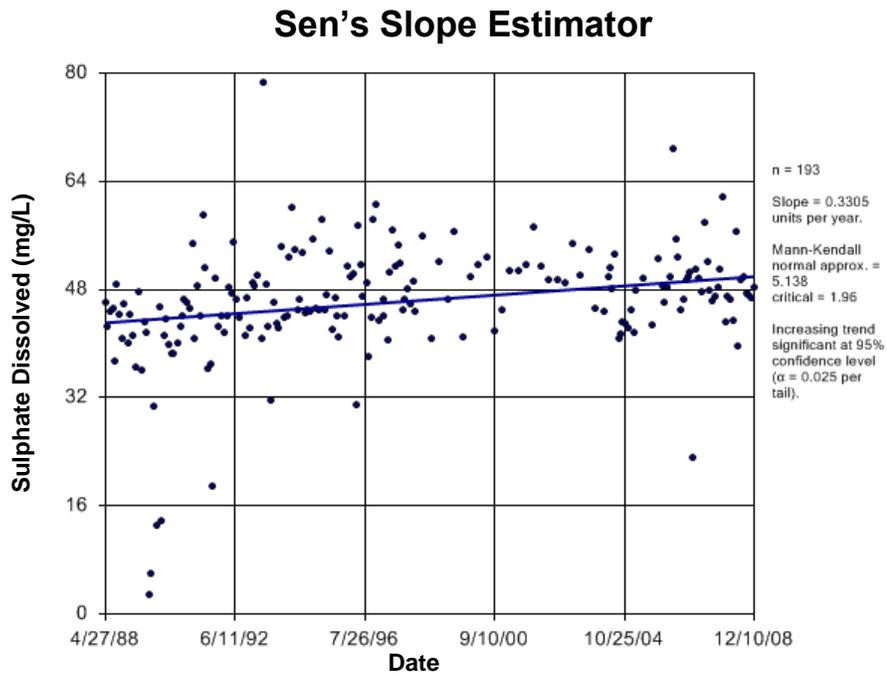


Figure C57 North Saskatchewan River: Sulphate Dissolved

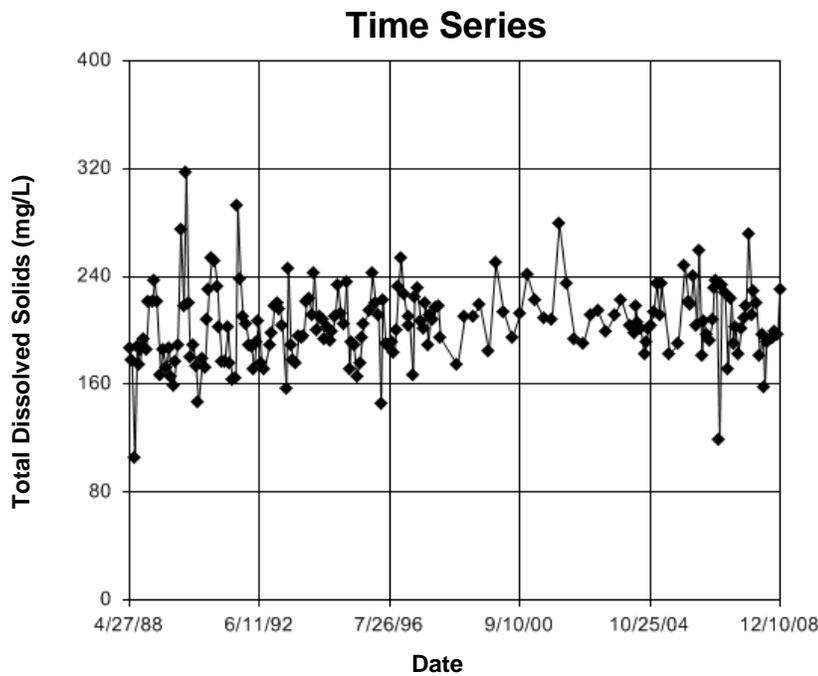


Figure C58 North Saskatchewan River: Total Dissolved Solids

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 16.05
 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) = 16.05
 Adjusted Kruskal-Wallis statistic (H') = 16.05

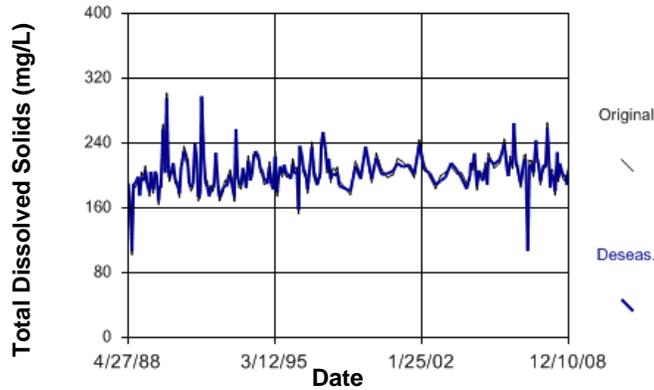


Figure C59 North Saskatchewan River: Total Dissolved Solids

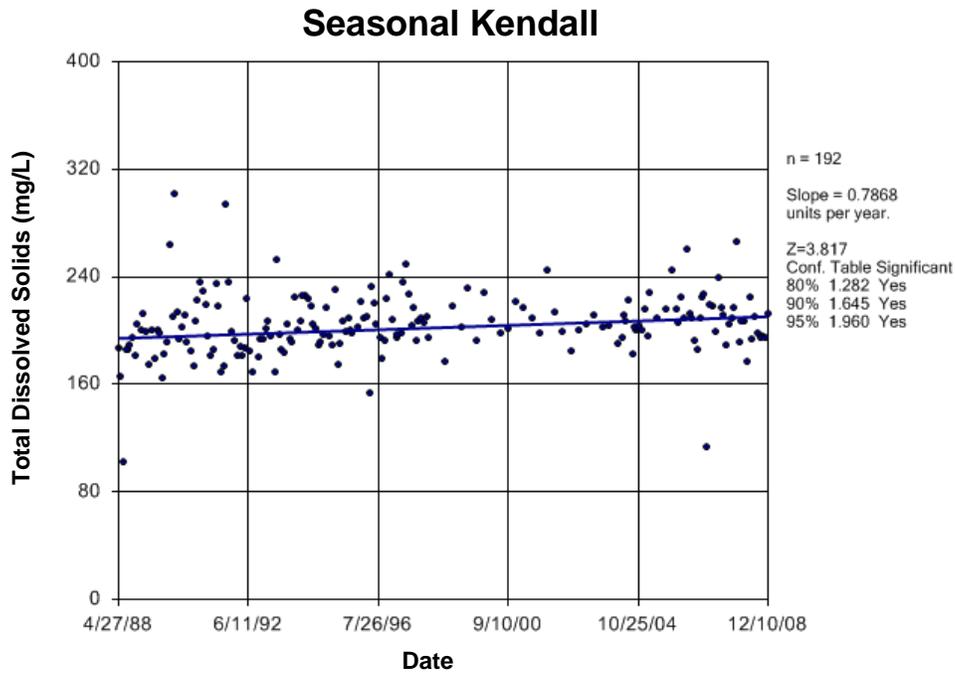


Figure C60 North Saskatchewan River: Total Dissolved Solids

Time Series

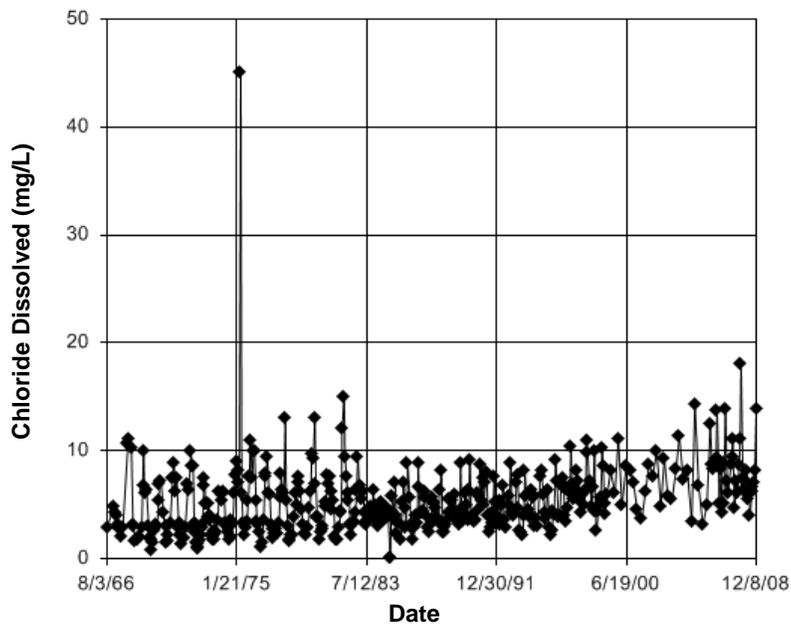


Figure C61 Red Deer River (AB-SK): Chloride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 9.631
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) = 9.631
Adjusted Kruskal-Wallis statistic (H') = 9.631

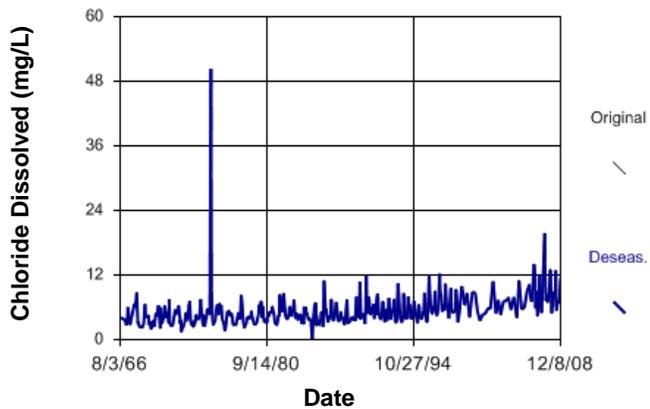


Figure C62 Red Deer River (AB-SK): Chloride Dissolved

Seasonal Kendall

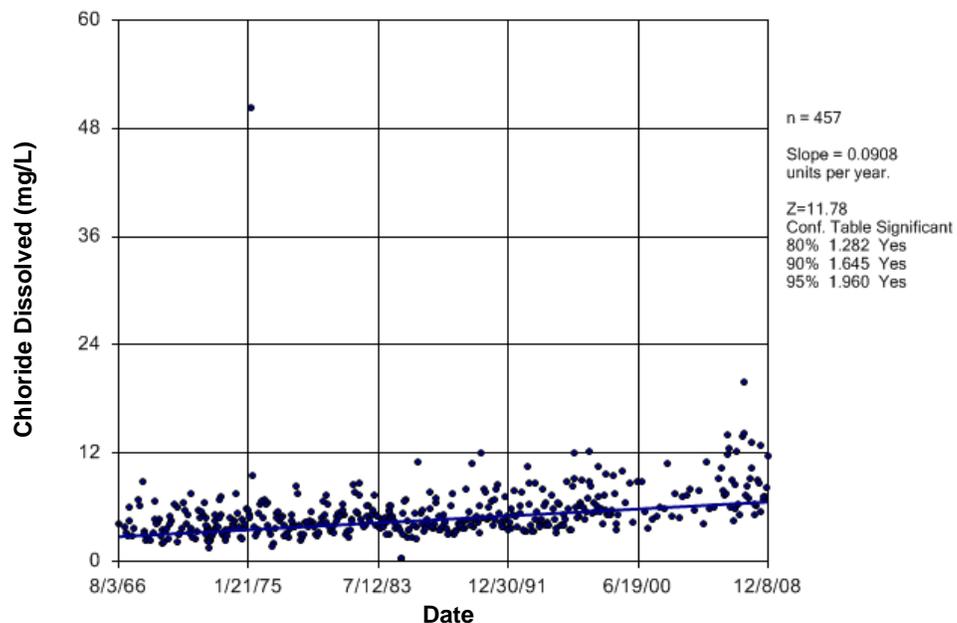


Figure C63 Red Deer River (AB-SK): Chloride Dissolved

Time Series

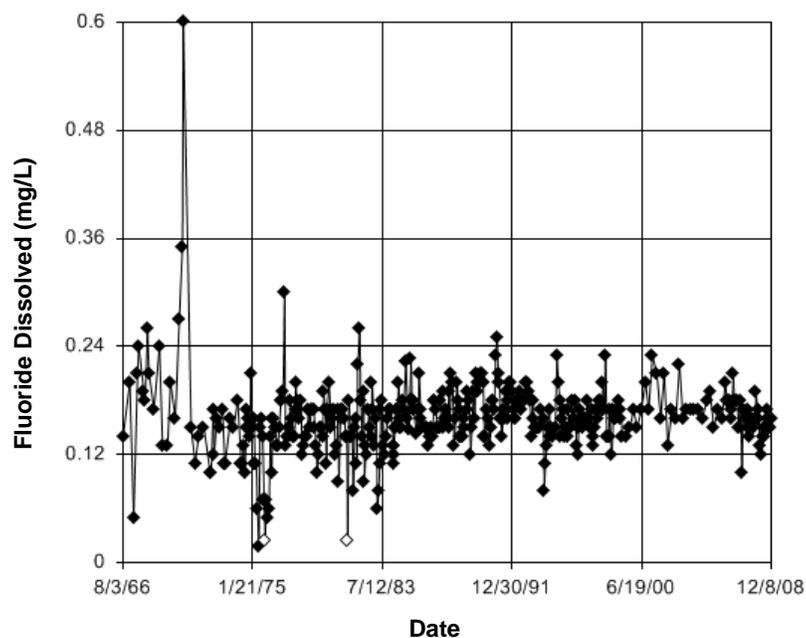


Figure C64 Red Deer River (AB-SK): Fluoride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at 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 = 1.03
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 58 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) = 1.03
 Adjusted Kruskal-Wallis statistic (H') = 1.03

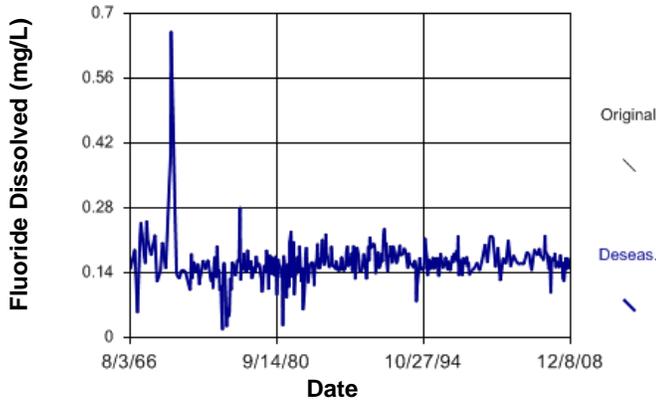


Figure C65 Red Deer River (AB-SK): Fluoride Dissolved

Sen's Slope Estimator

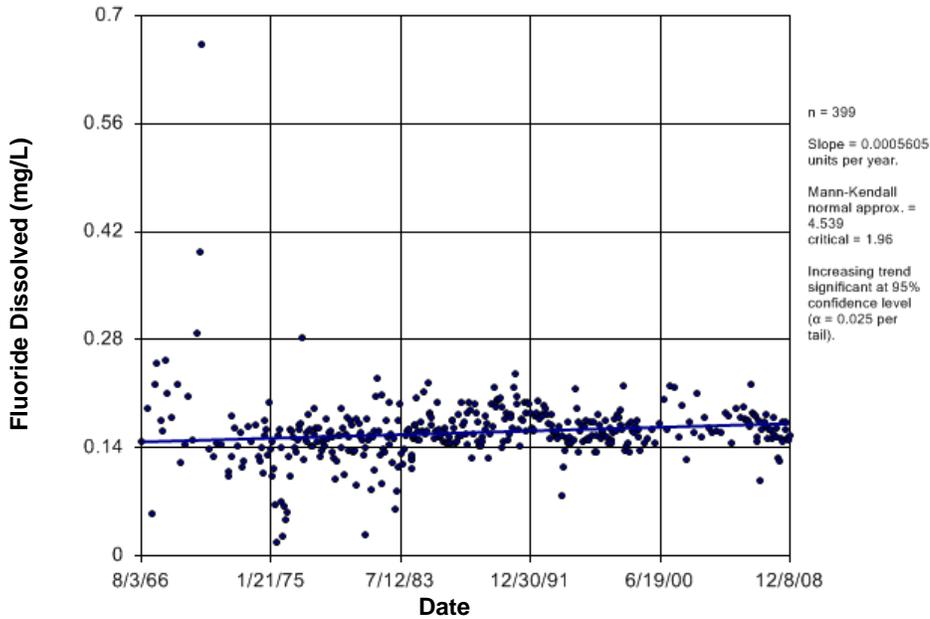


Figure C66 Red Deer River (AB-SK): Fluoride Dissolved

Time Series

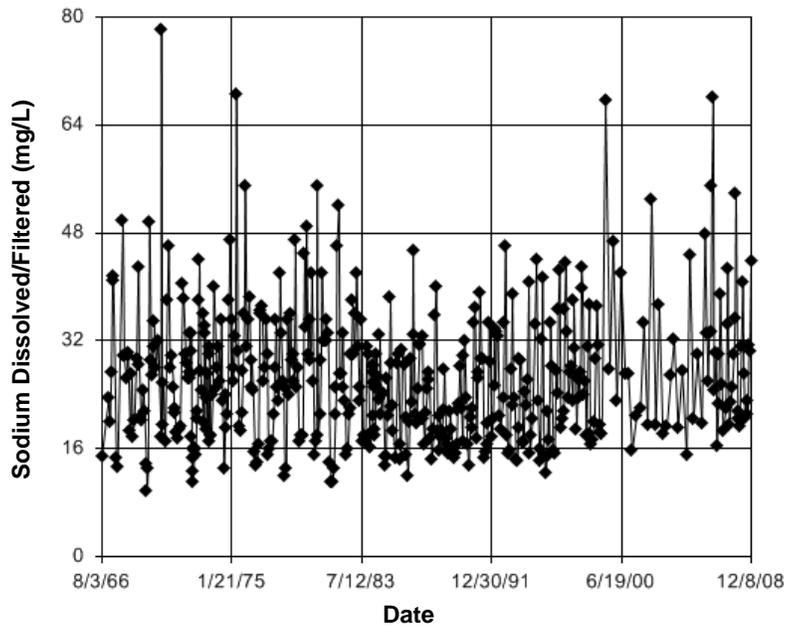


Figure C67 Red Deer River (AB-SK): Sodium Dissolved/Filtered

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at 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 = 2.09
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 37 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) = 2.09
Adjusted Kruskal-Wallis statistic (H') = 2.09

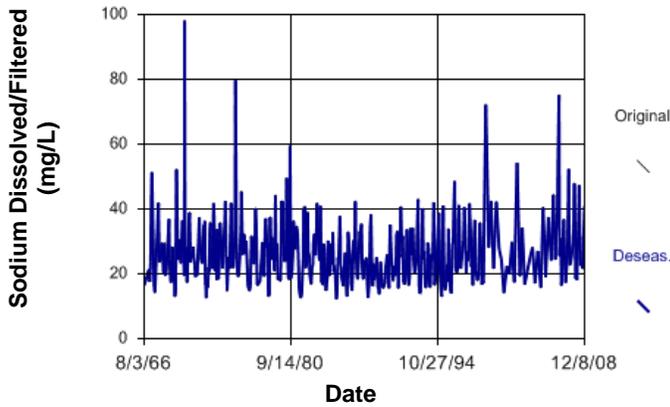


Figure C68 Red Deer River (AB-SK): Sodium Dissolved/Filtered

Sen's Slope Estimator

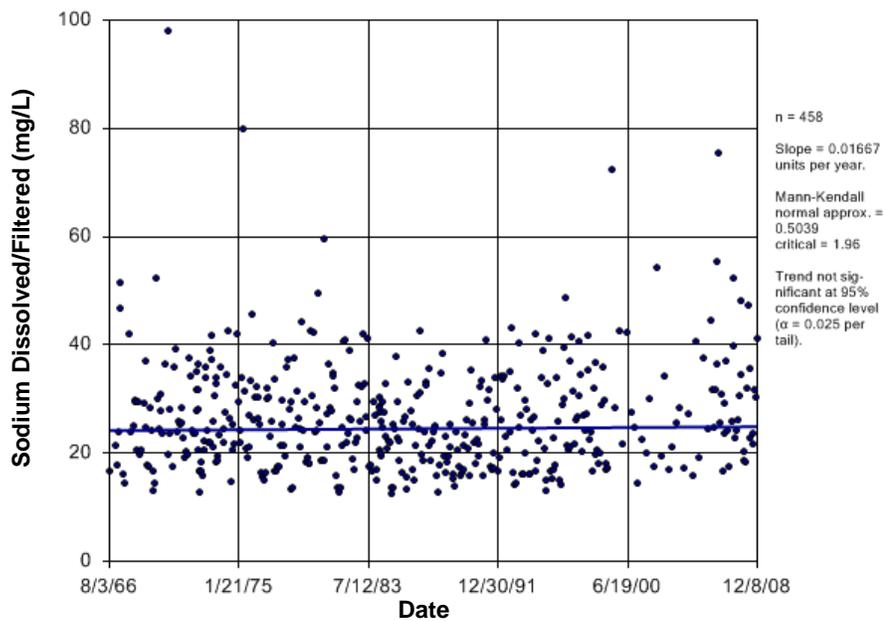


Figure C69 Red Deer River (AB-SK): Sodium Dissolved/Filtered

Time Series

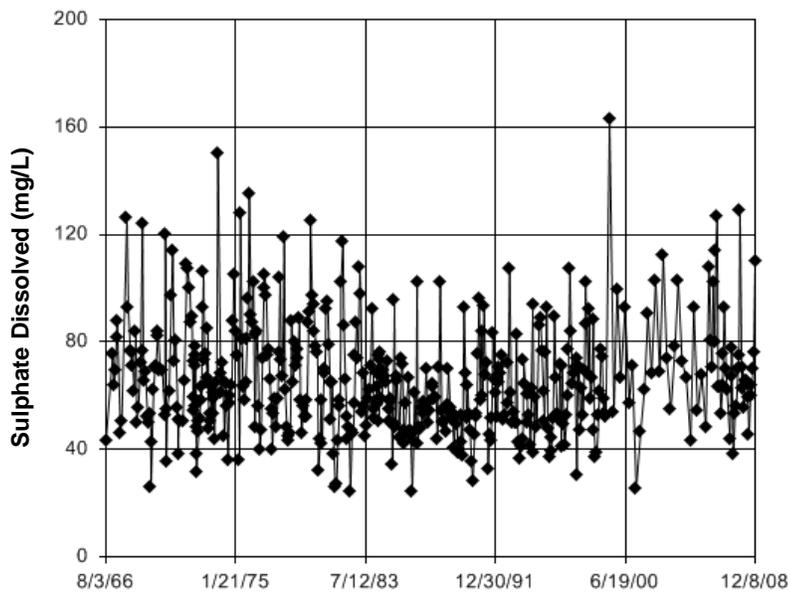


Figure C70 Red Deer River (AB-SK): Sulphate Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at 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 = 0.5743
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 16 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) = 0.5743
Adjusted Kruskal-Wallis statistic (H') = 0.5743

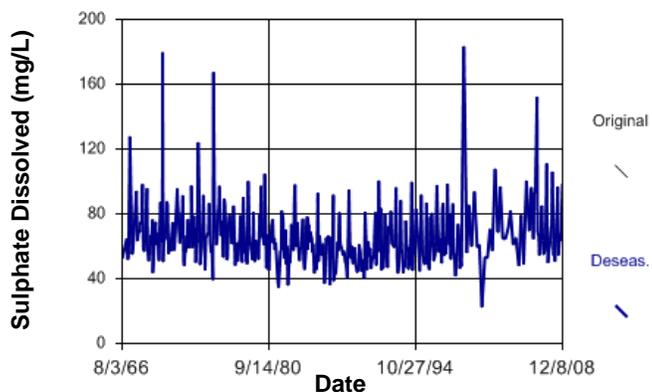


Figure C71 Red Deer River (AB-SK): Sulphate Dissolved

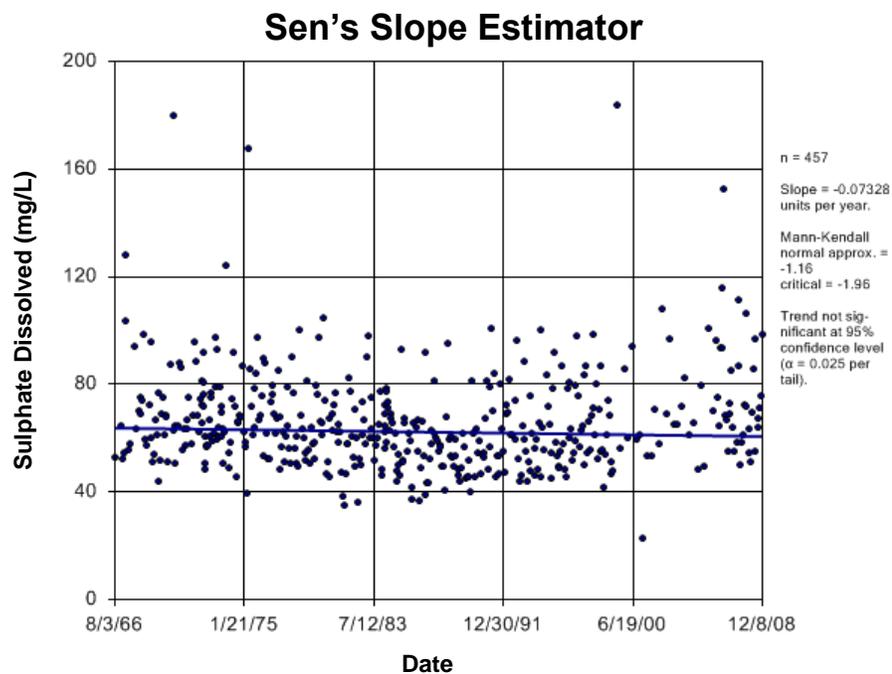


Figure C72 Red Deer River (AB-SK): Sulphate Dissolved

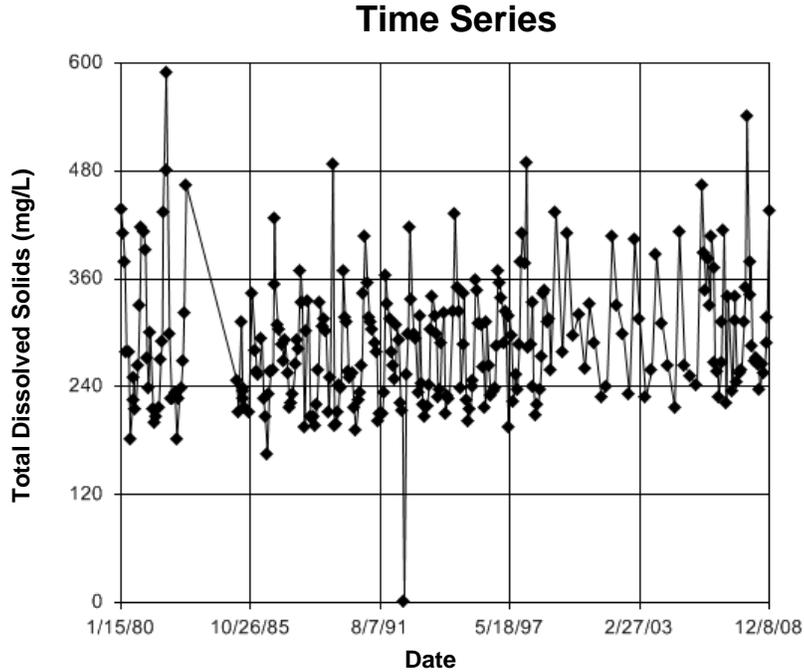


Figure C73 Red Deer River (AB-SK): Total Dissolved Solids

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 10.99
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 22 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) = 10.99
 Adjusted Kruskal-Wallis statistic (H') = 10.99

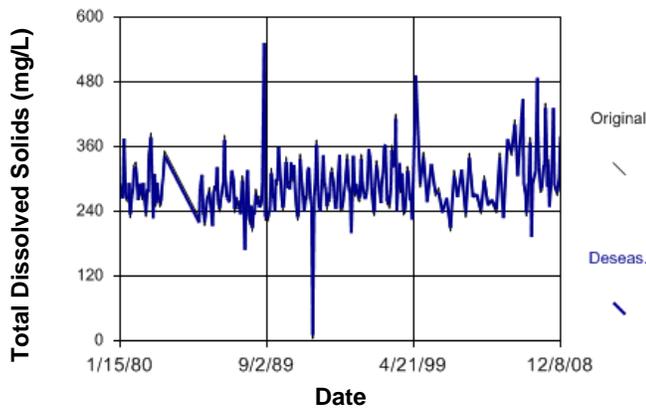


Figure C74 Red Deer River (AB-SK): Total Dissolved Solids

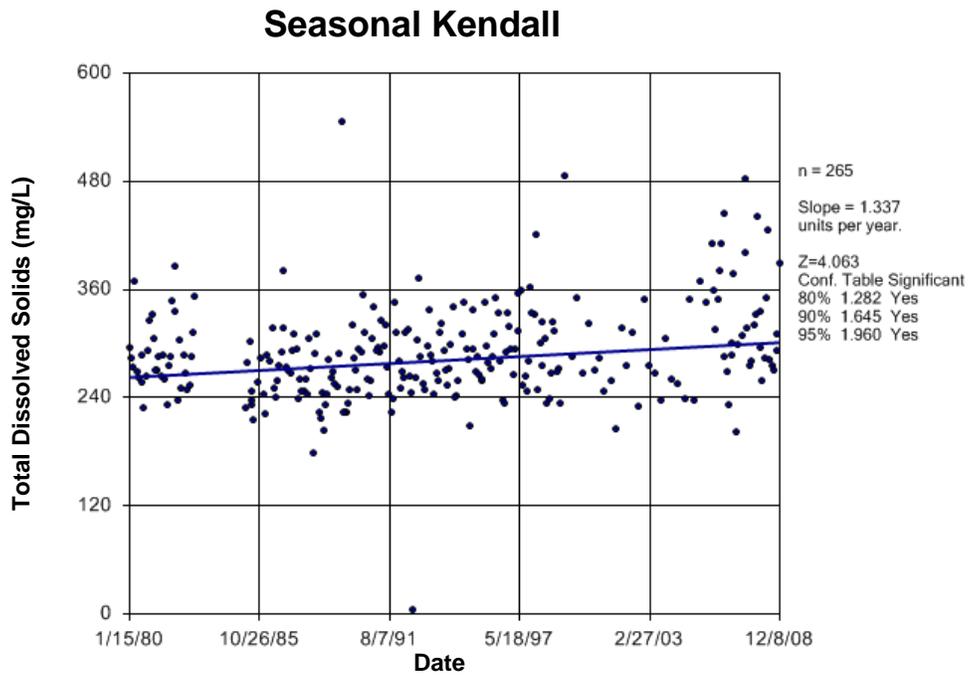


Figure C75 Red Deer River (AB-SK): Total Dissolved Solids

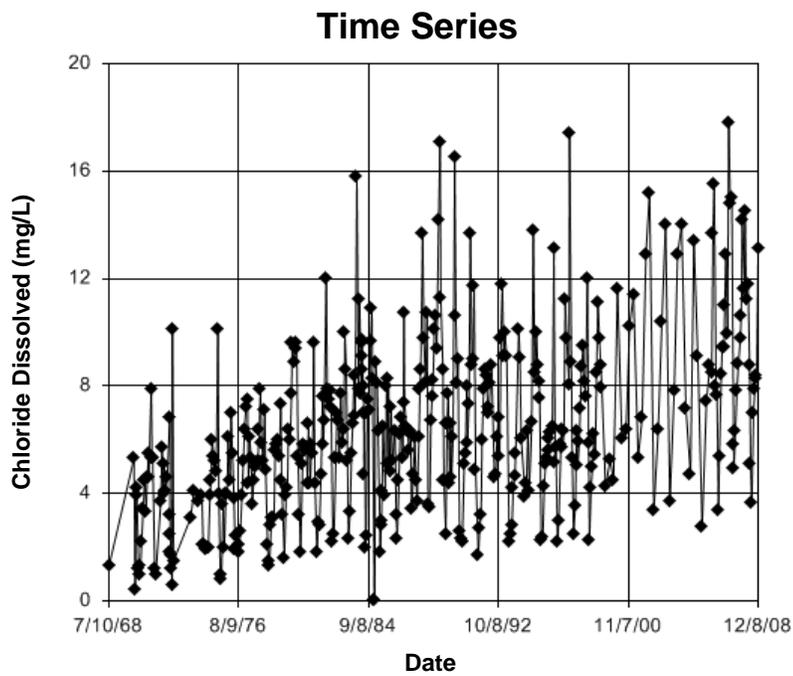


Figure C76 South Saskatchewan River: Chloride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 58.86
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 13 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) = 58.86
 Adjusted Kruskal-Wallis statistic (H') = 58.86

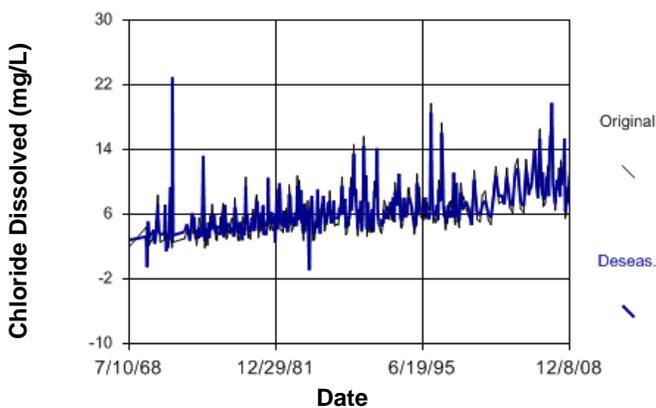


Figure C77 South Saskatchewan River: Chloride Dissolved

Seasonal Kendall

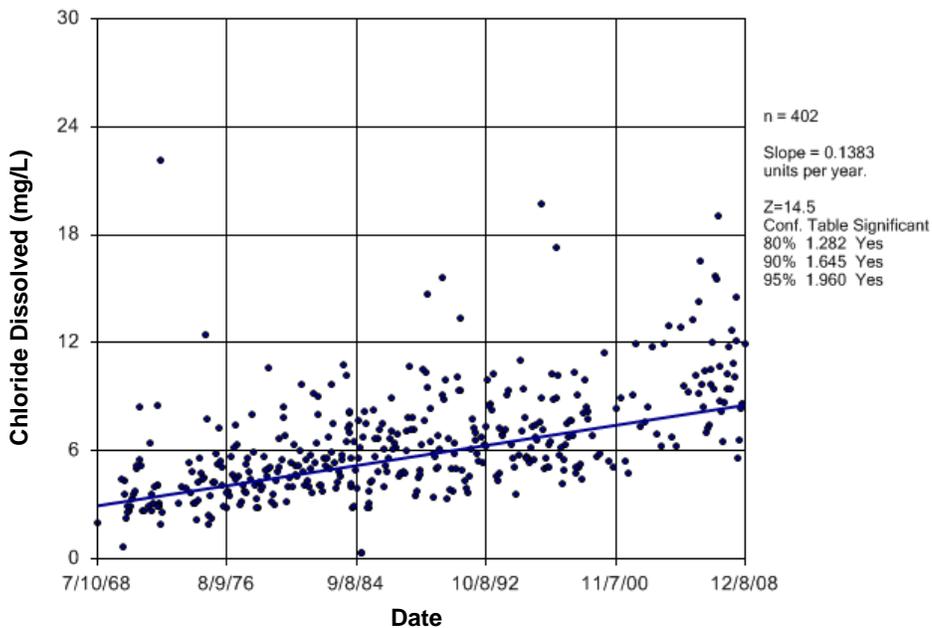


Figure C78 South Saskatchewan River: Chloride Dissolved

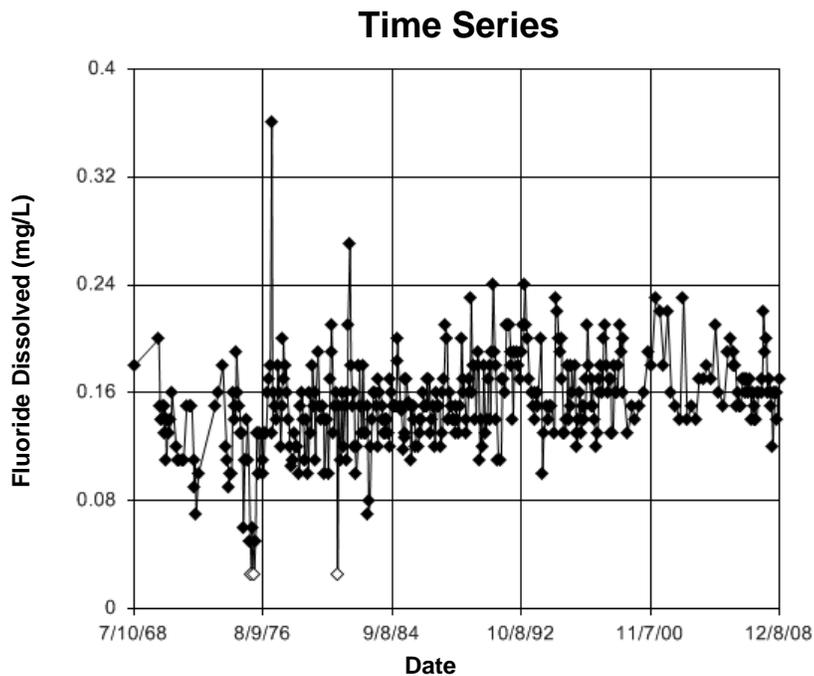


Figure C79 South Saskatchewan River: Fluoride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 25.03
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 63 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) = 25.03
 Adjusted Kruskal-Wallis statistic (H') = 25.03

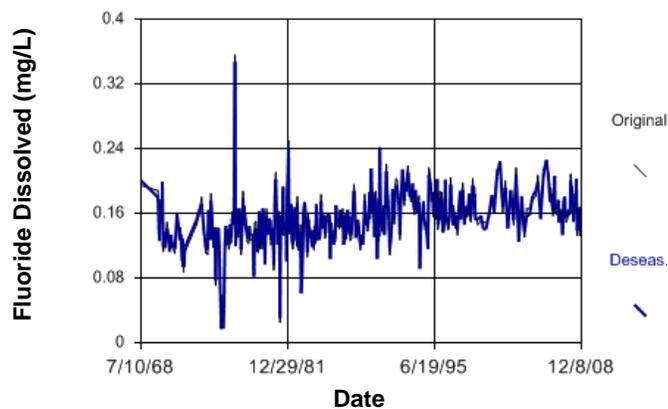


Figure C80 South Saskatchewan River: Fluoride Dissolved

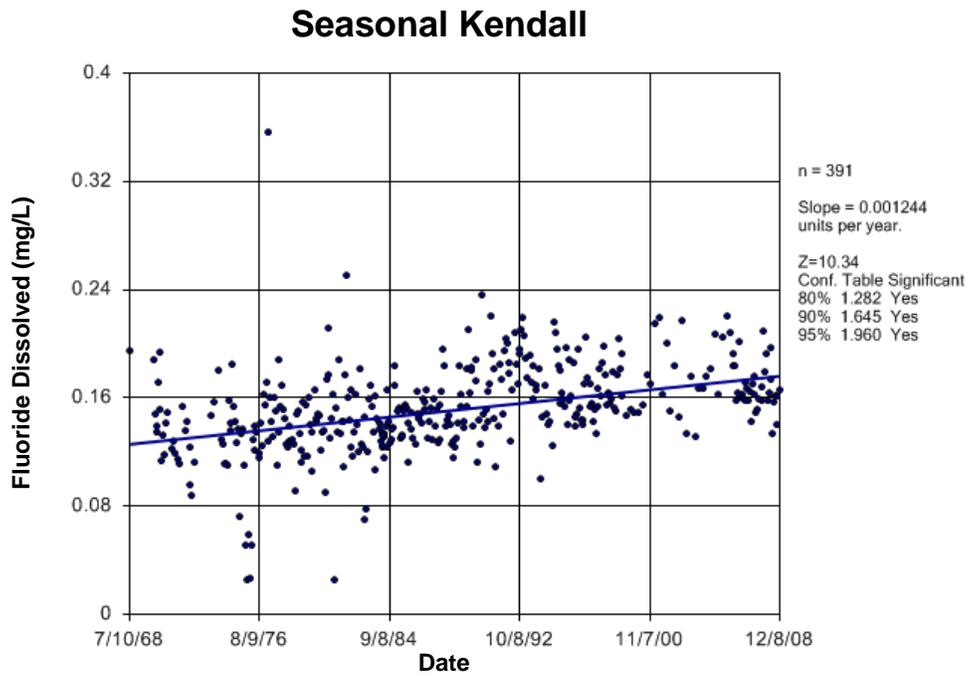


Figure C81 South Saskatchewan River: Fluoride Dissolved

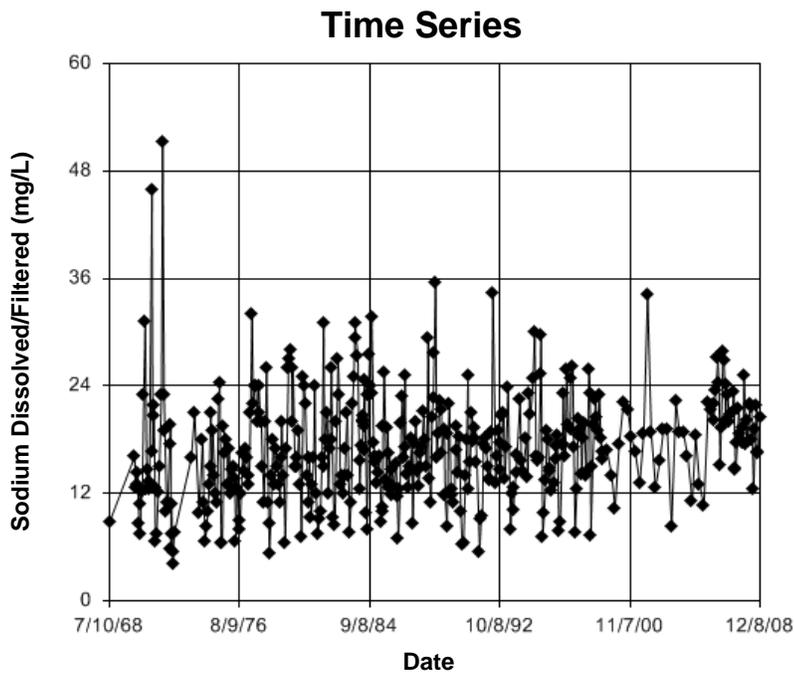


Figure C82 South Saskatchewan River: Sodium Dissolved/Filtered

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 12.4
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 39 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) = 12.4
 Adjusted Kruskal-Wallis statistic (H') = 12.4

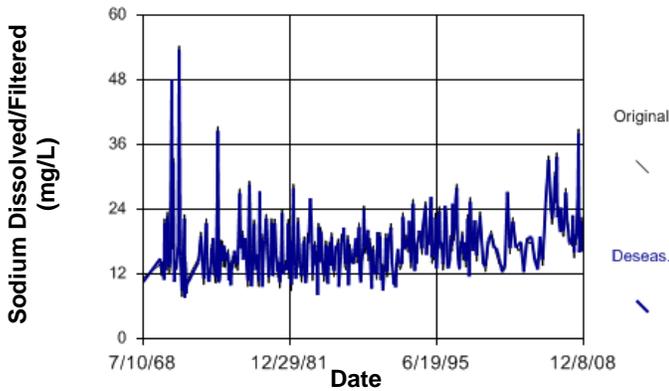


Figure C83 South Saskatchewan River: Sodium Dissolved/Filtered

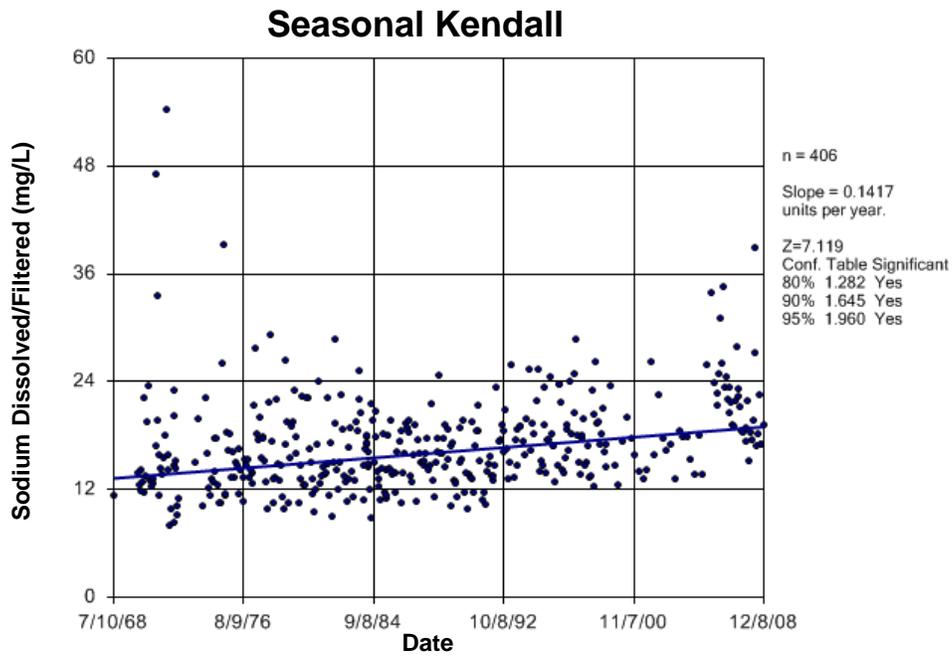


Figure C84 South Saskatchewan River: Sodium Dissolved/Filtered

Time Series

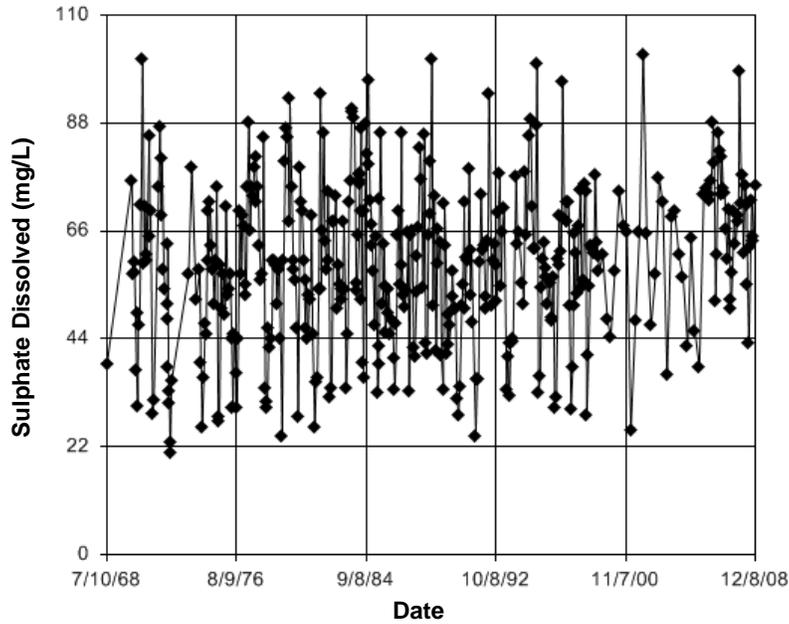


Figure C85 South Saskatchewan River: Sulphate Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at 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 = 0.07279
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 17 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) = 0.07279
Adjusted Kruskal-Wallis statistic (H') = 0.07279

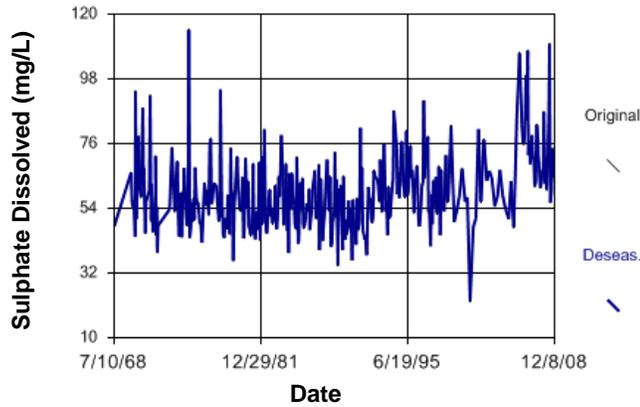


Figure C86 South Saskatchewan River: Sulphate Dissolved

Sen's Slope Estimator

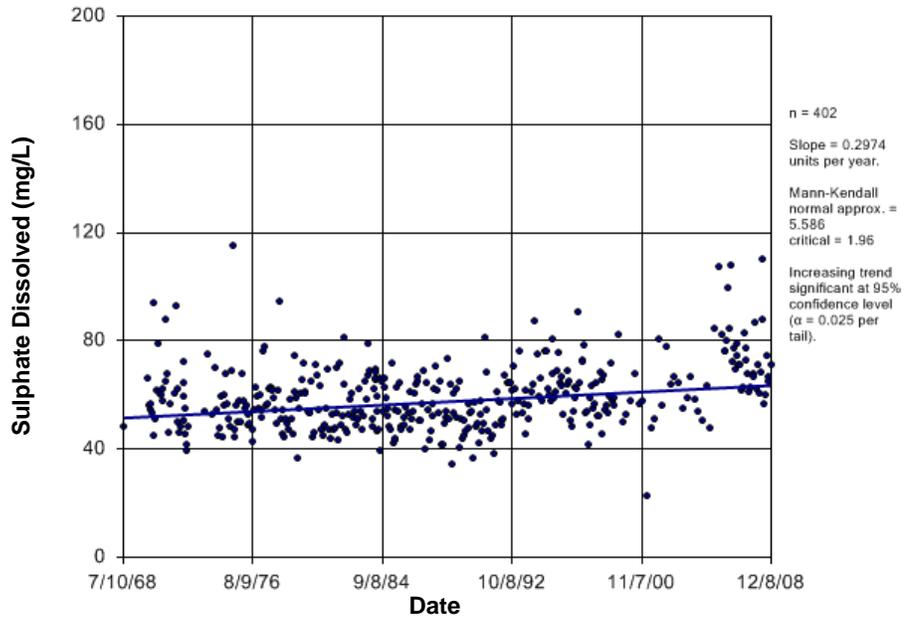


Figure C87 South Saskatchewan River: Sulphate Dissolved

Time Series

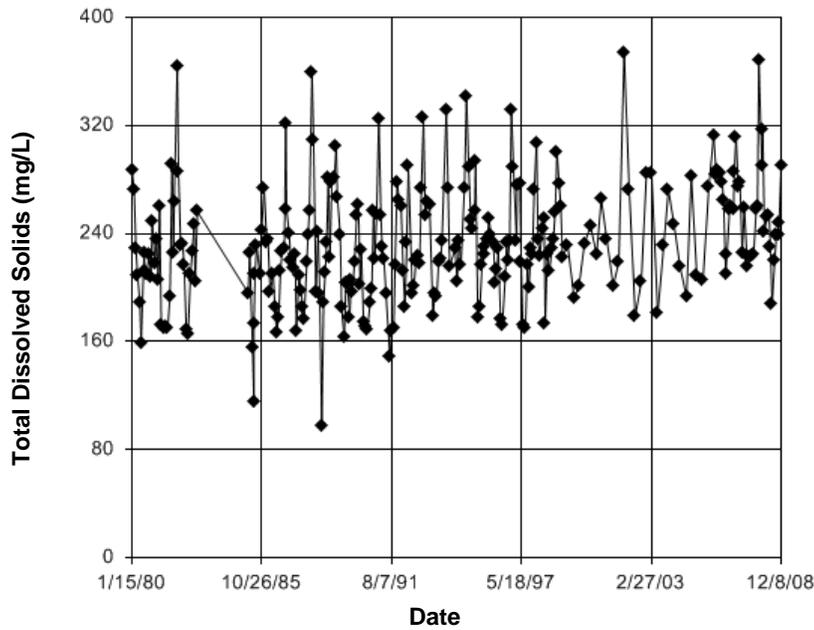


Figure C88 South Saskatchewan River: Total Dissolved Solids

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 54.45
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 21 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) = 54.45
 Adjusted Kruskal-Wallis statistic (H') = 54.45

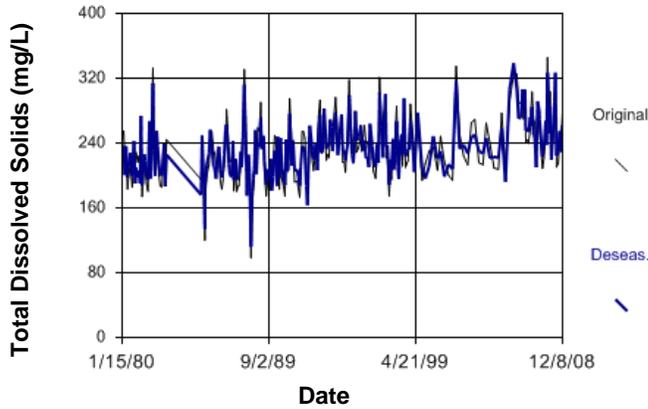


Figure C89 South Saskatchewan River: Total Dissolved Solids

Seasonal Kendall

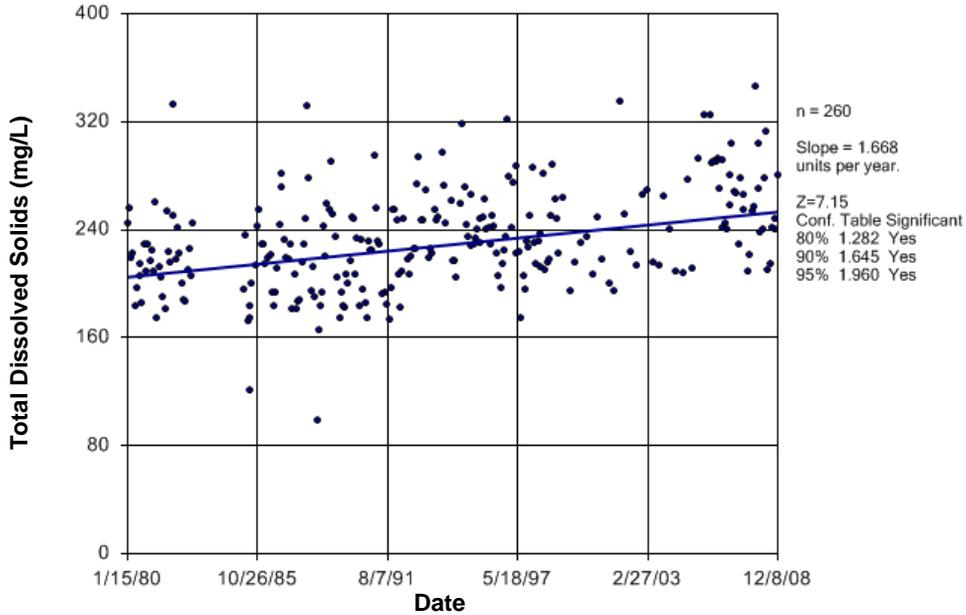


Figure C90 South Saskatchewan River: Total Dissolved Solids

Time Series

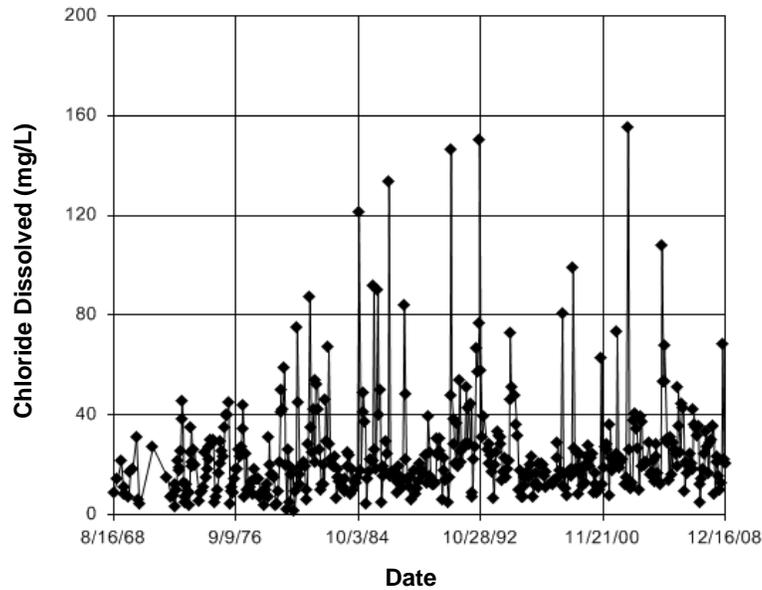


Figure C91 Assiniboine River: Chloride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 47.7
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 19 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) = 47.7
Adjusted Kruskal-Wallis statistic (H') = 47.7

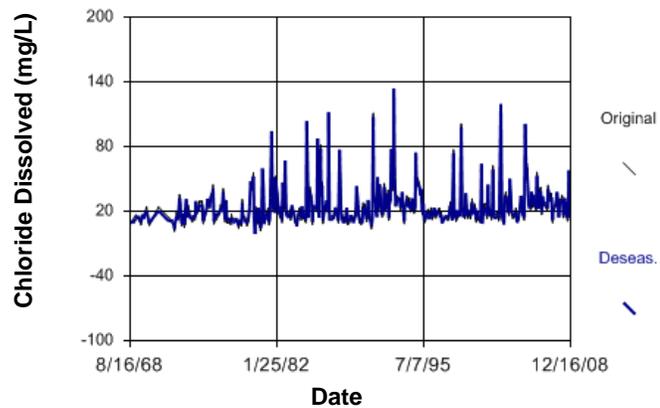


Figure C92 Assiniboine River: Chloride Dissolved

Seasonal Kendall

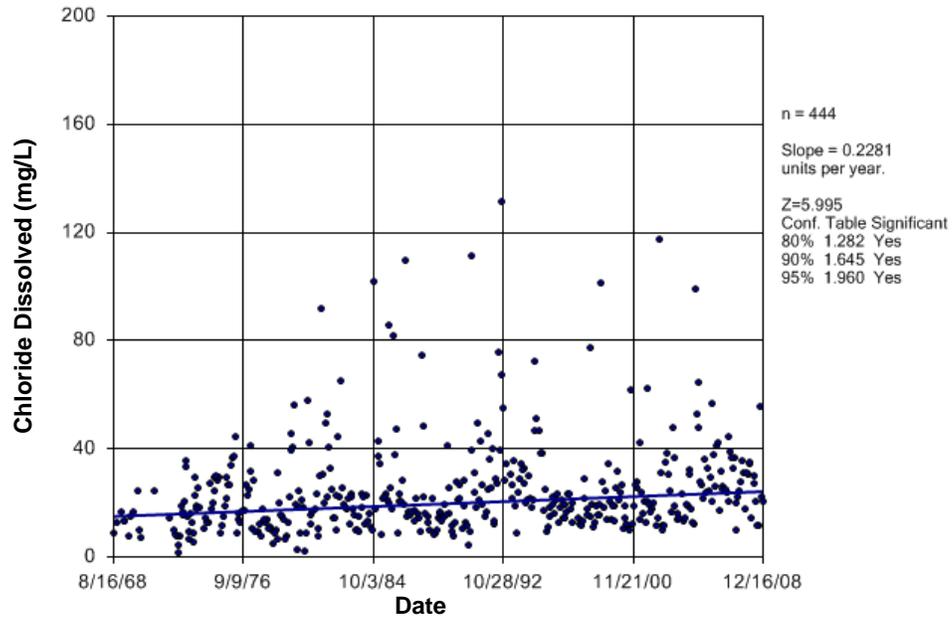


Figure C93 Assiniboine River: Chloride Dissolved

Time Series

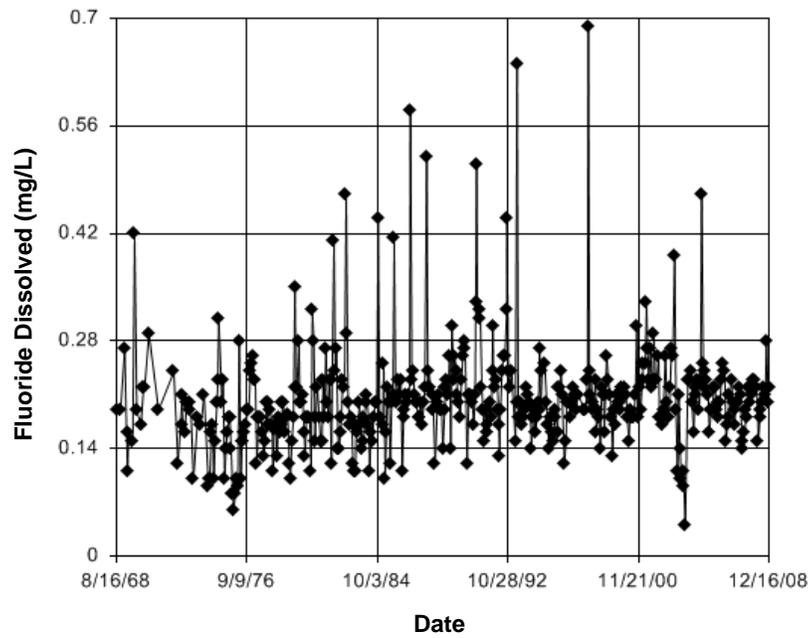


Figure C94 Assiniboine River: Fluoride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 23.59
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 41 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) = 23.59
 Adjusted Kruskal-Wallis statistic (H') = 23.59

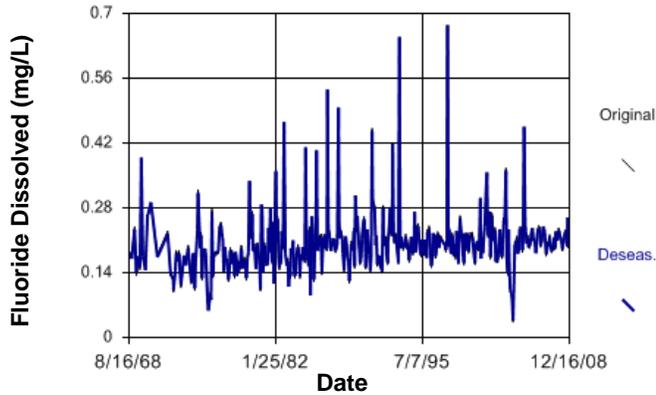


Figure C95 Assiniboine River: Fluoride Dissolved

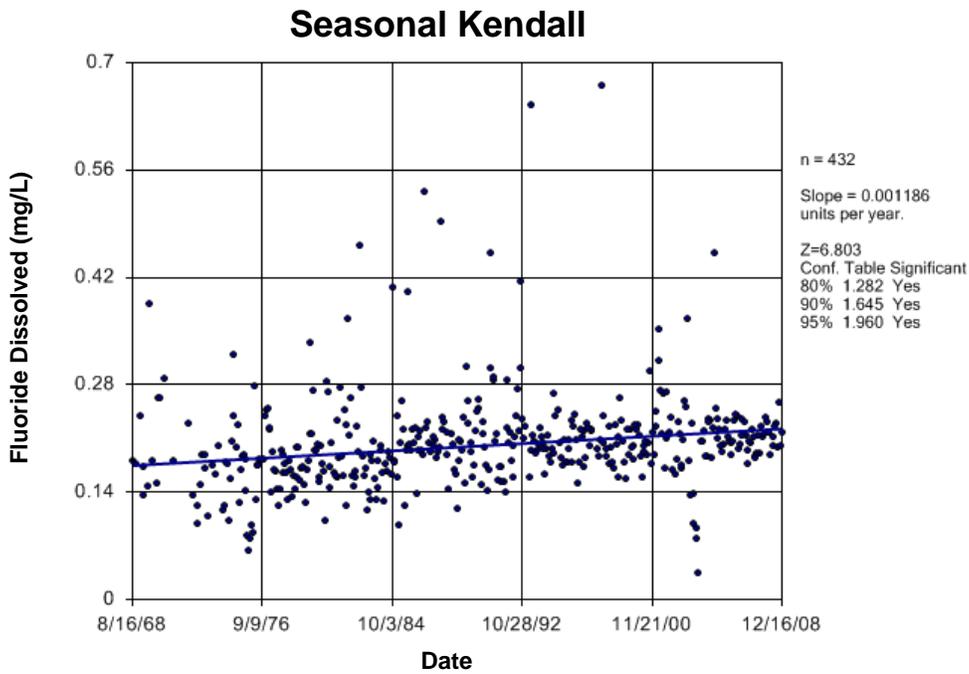


Figure C96 Assiniboine River: Fluoride Dissolved

Time Series

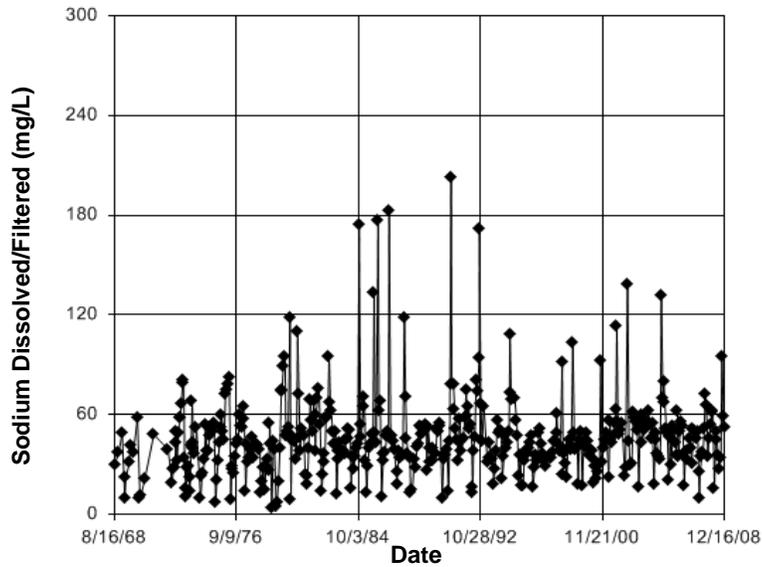


Figure C97 Assiniboine River: Sodium Dissolved/Filtered

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 39.36
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 22 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) = 39.36
Adjusted Kruskal-Wallis statistic (H') = 39.36

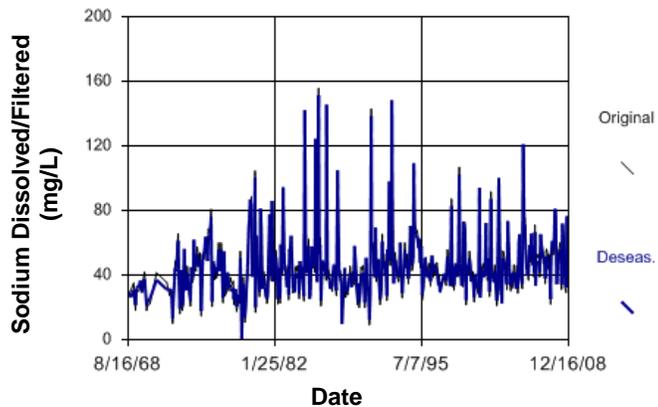


Figure C98 Assiniboine River: Sodium Dissolved/Filtered

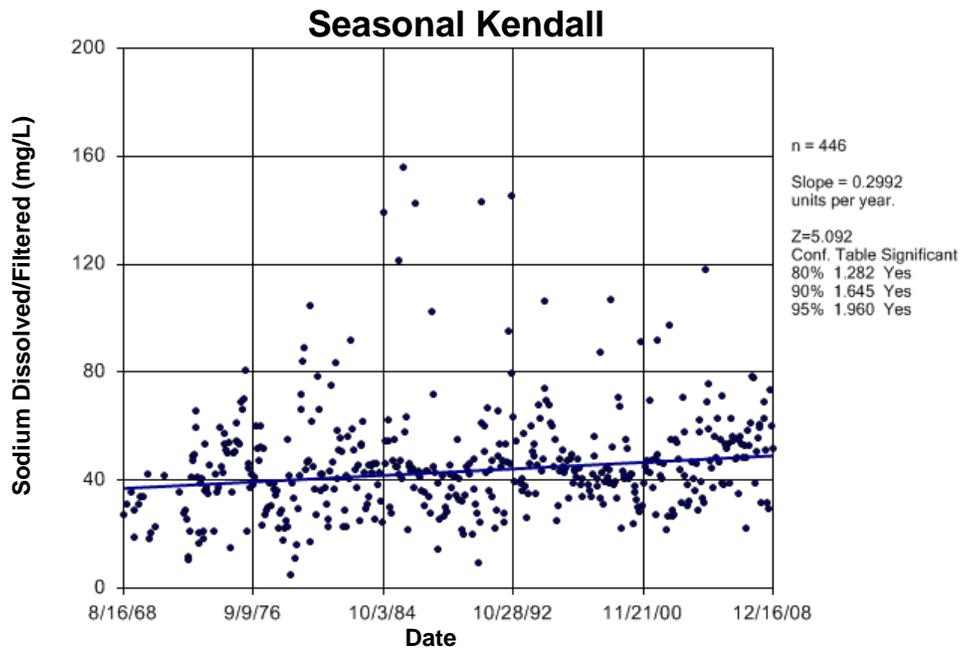


Figure C99 Assiniboine River: Sodium Dissolved/Filtered

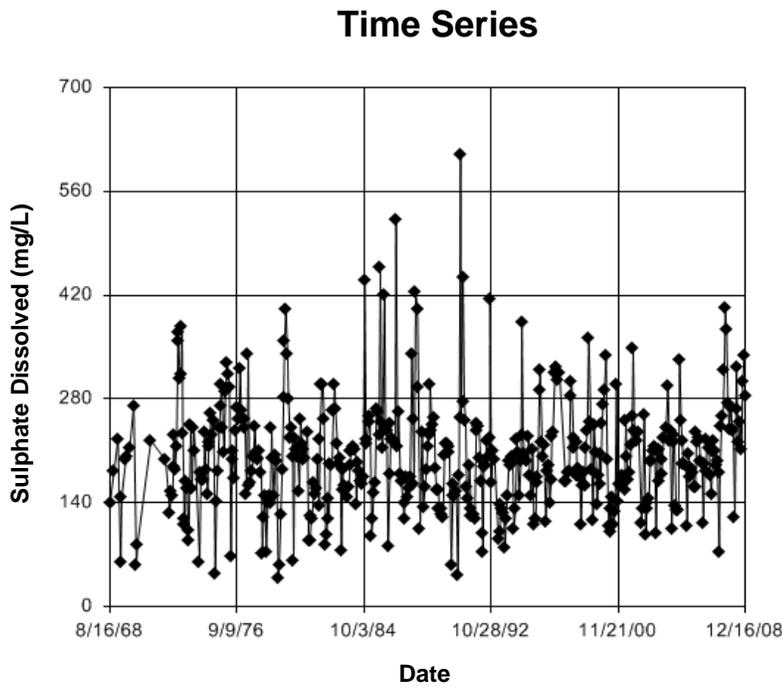


Figure C100 Assiniboine River: Sulphate Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 62.78
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 43 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) = 62.78
 Adjusted Kruskal-Wallis statistic (H') = 62.78

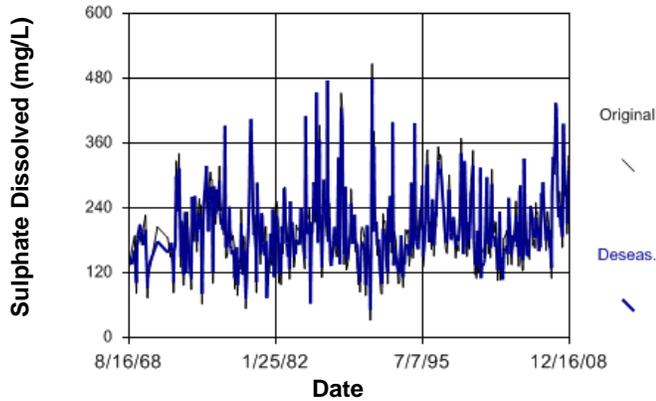


Figure C101 Assiniboine River: Sulphate Dissolved

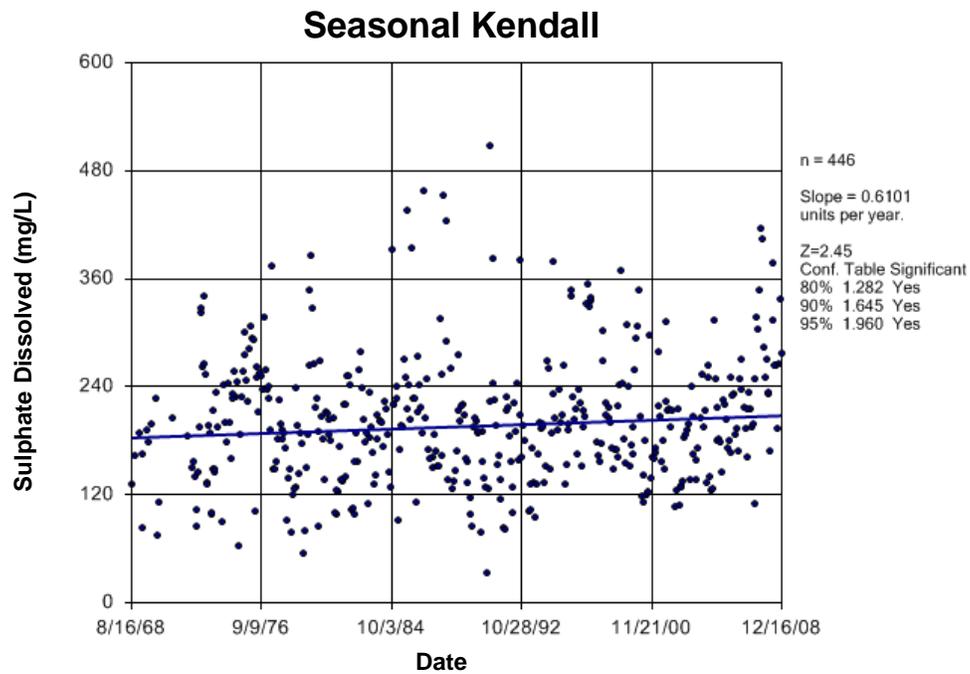


Figure C102 Assiniboine River: Sulphate Dissolved

Time Series

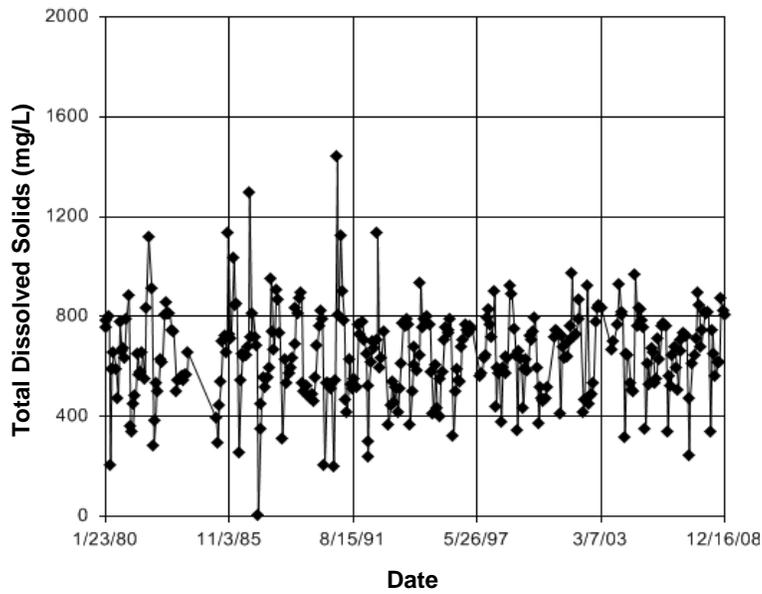


Figure C103 Assiniboine River: Total Dissolved Solids

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 95
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) = 95
Adjusted Kruskal-Wallis statistic (H') = 95

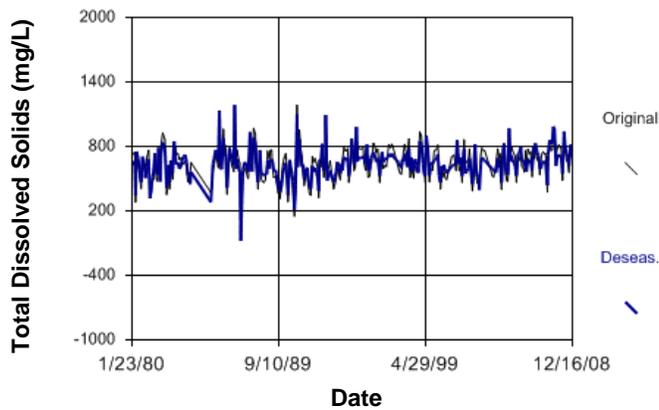


Figure C104 Assiniboine River: Total Dissolved Solids

Seasonal Kendall

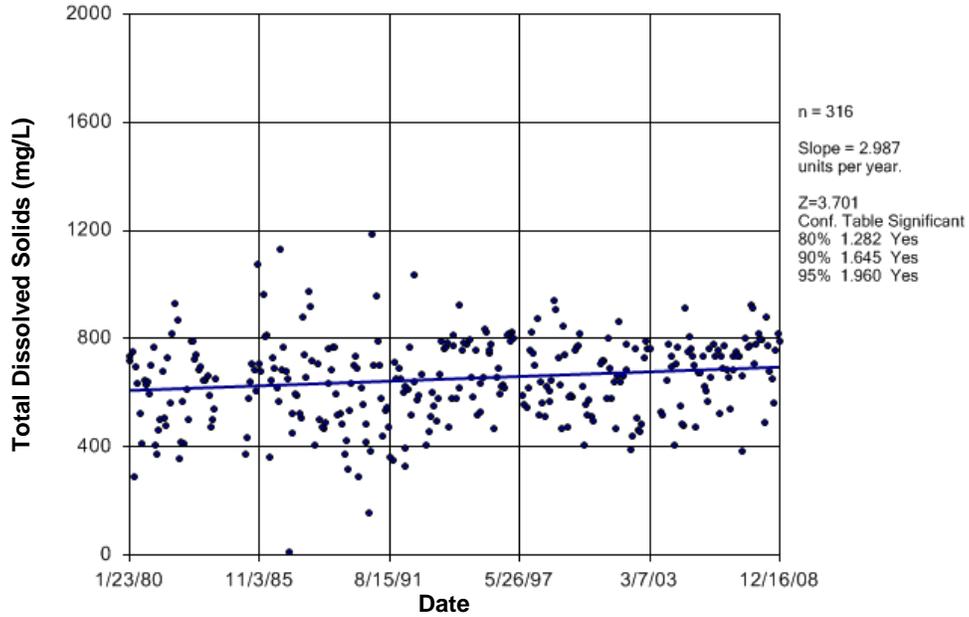


Figure C105 Assiniboine River: Total Dissolved Solids

Time Series

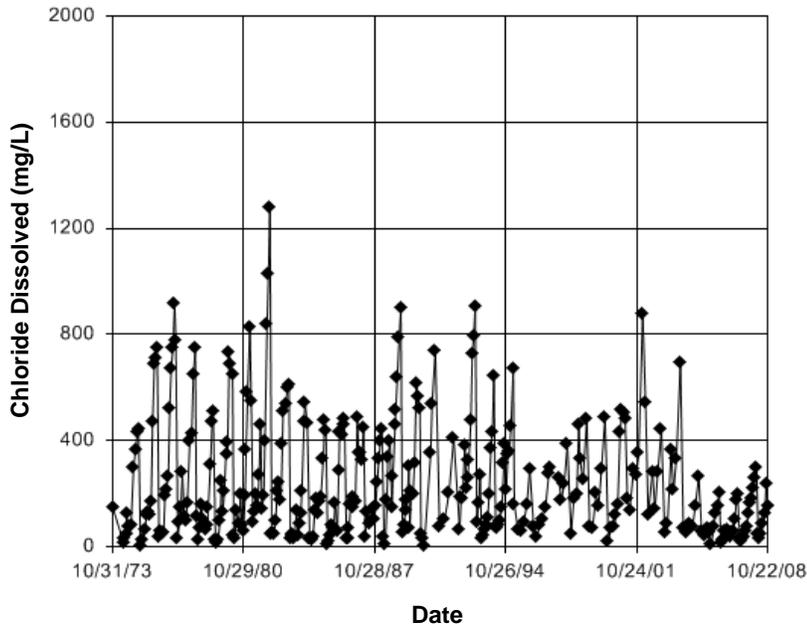


Figure C106 Carrot River: Chloride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 63.08
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 23 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) = 63.08
 Adjusted Kruskal-Wallis statistic (H') = 63.08

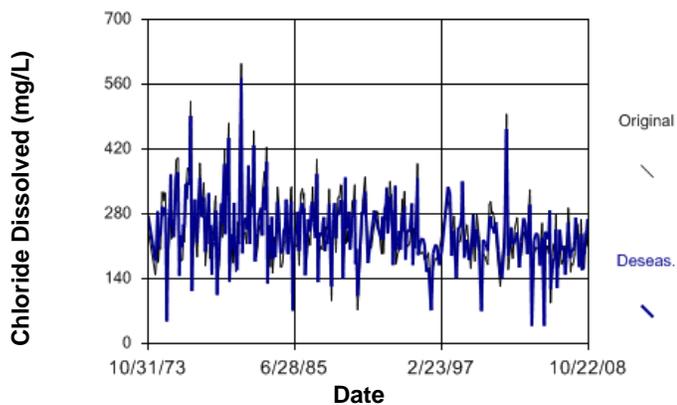


Figure C107 Carrot River: Chloride Dissolved

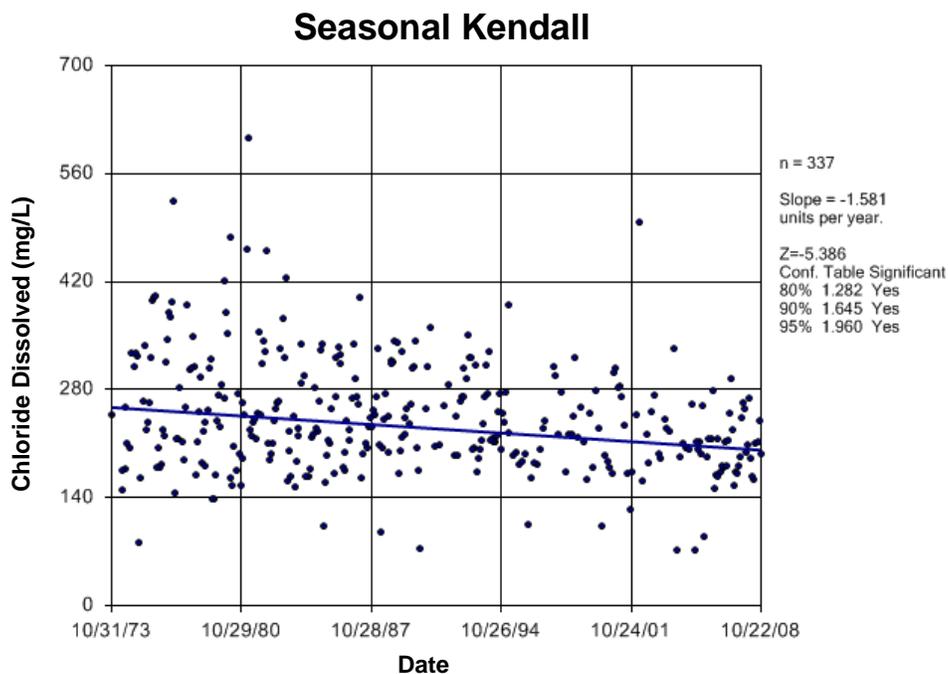


Figure C108 Carrot River: Chloride Dissolved

Time Series

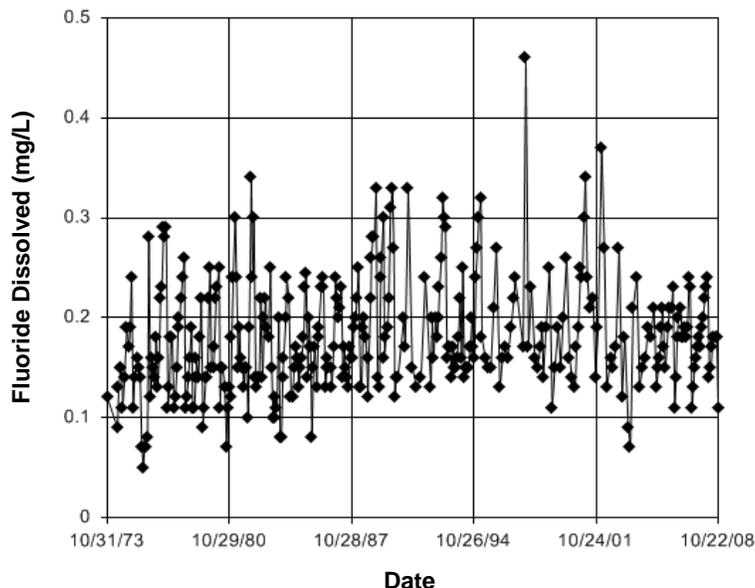


Figure C109 Carrot River: Fluoride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 30.3
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 27 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) = 30.3
Adjusted Kruskal-Wallis statistic (H') = 30.3

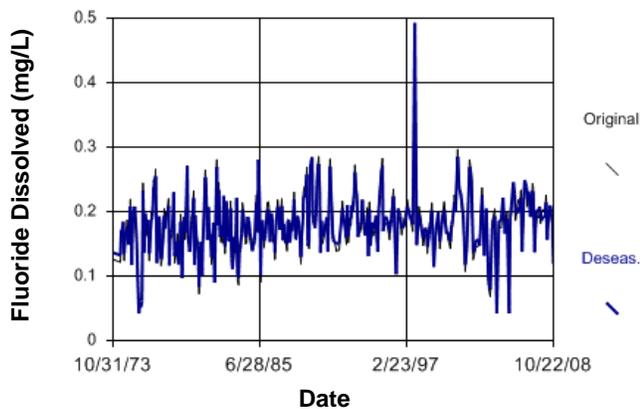


Figure C110 Carrot River: Fluoride Dissolved

Seasonal Kendall

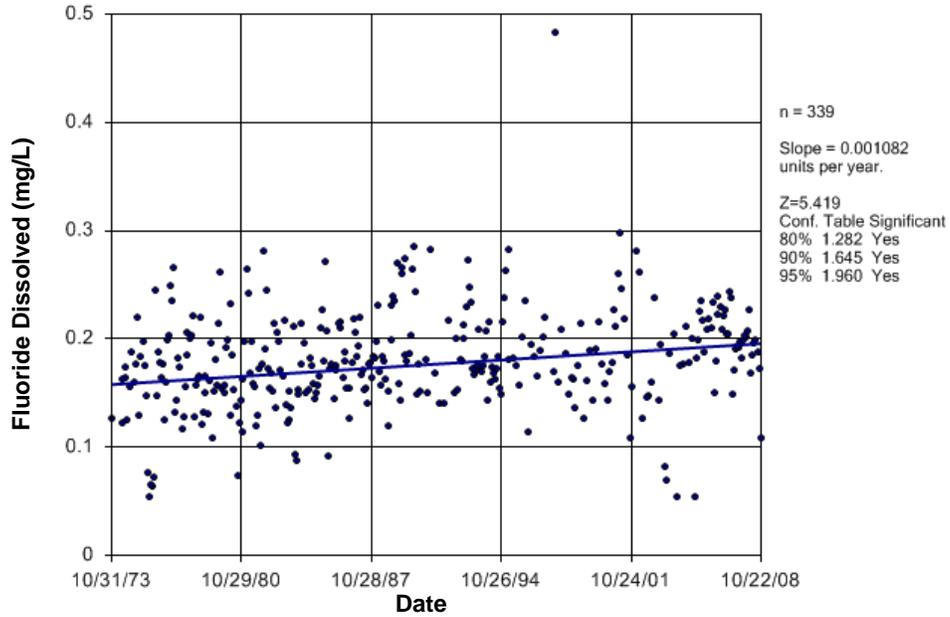


Figure C111 Carrot River: Fluoride Dissolved

Time Series

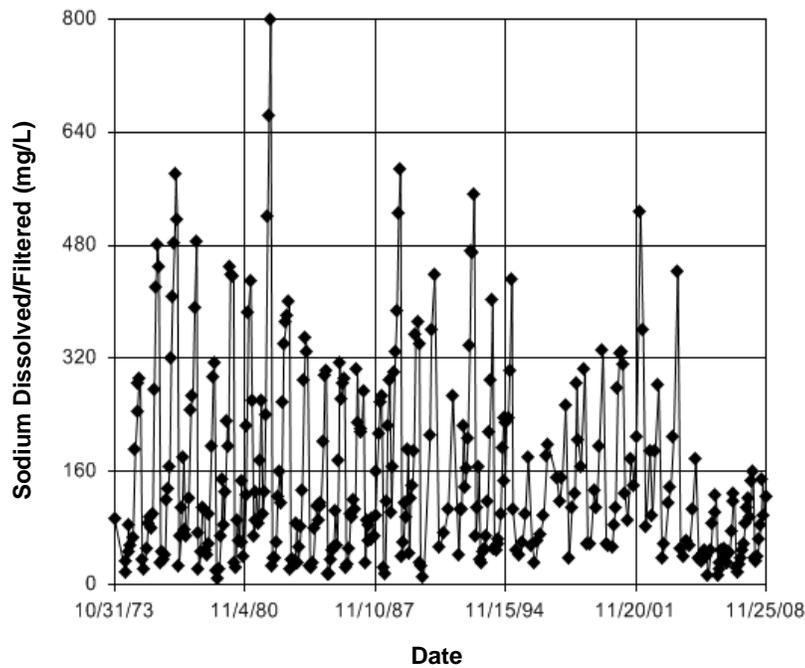


Figure C112 Carrot River: Sodium Dissolved/Filtered

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 64.67
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 42 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) = 64.67
 Adjusted Kruskal-Wallis statistic (H') = 64.67

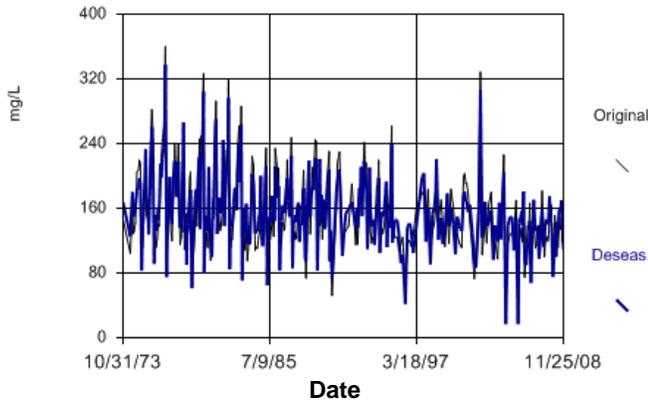


Figure C113 Carrot River: Sodium Dissolved/Filtered

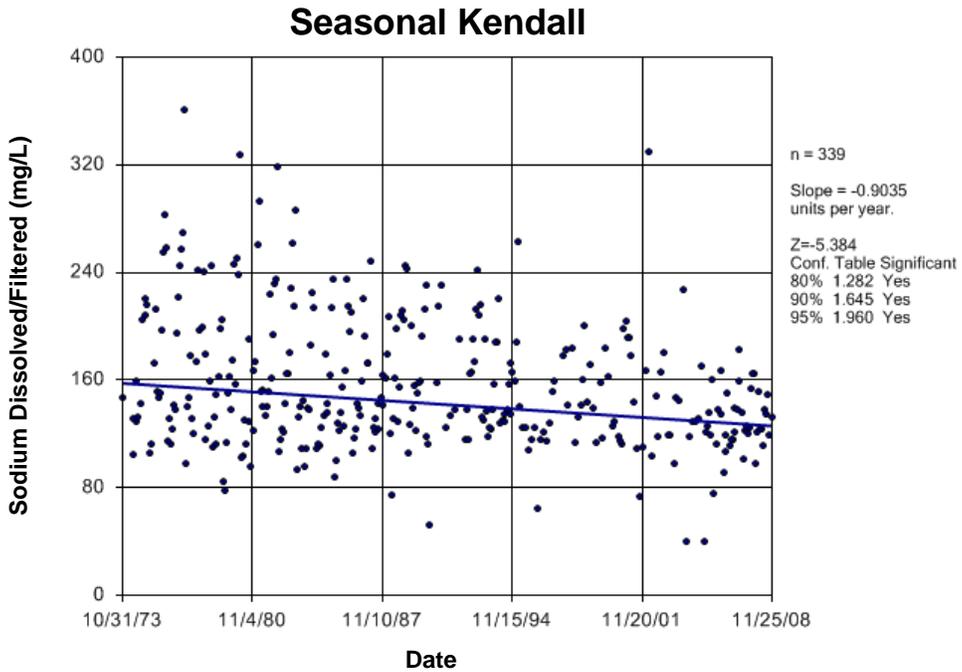


Figure C114 Carrot River: Sodium Dissolved/Filtered

Time Series

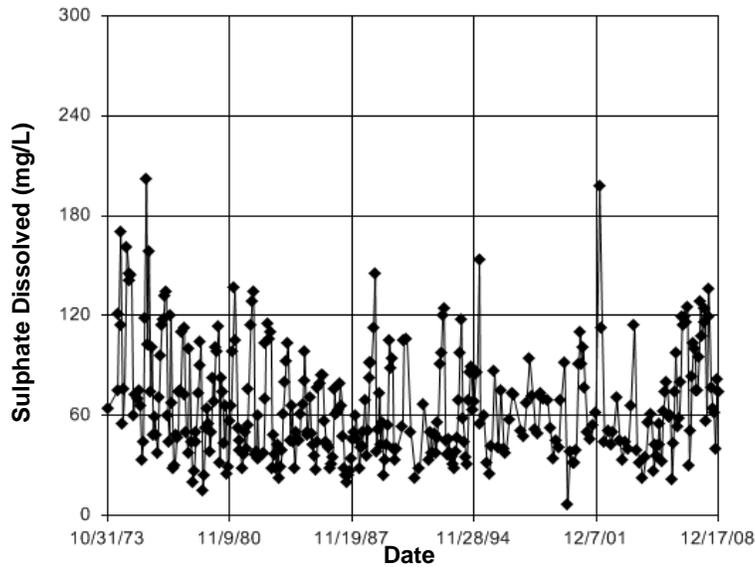


Figure C114 Carrot River: Sodium Dissolved/Filtered

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 54.17
Tabulated Chi-Squared value = 3.841 with 1 degree 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) = 54.17
Adjusted Kruskal-Wallis statistic (H') = 54.17

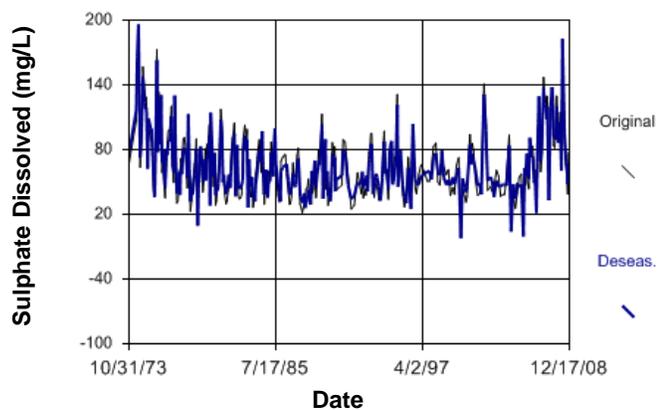


Figure C116 Carrot River: Sulphate Dissolved

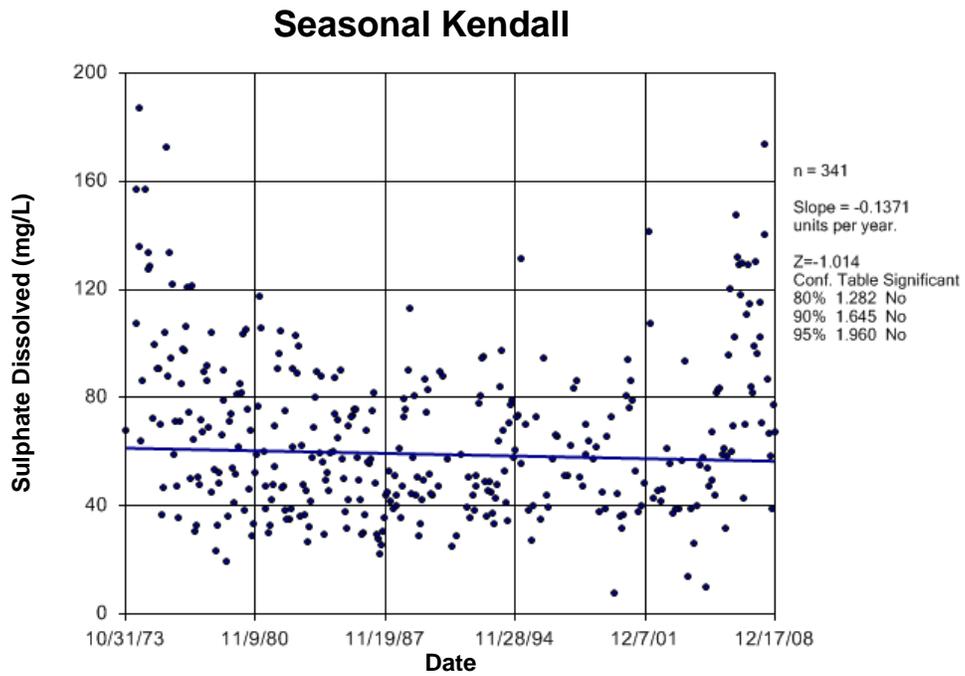


Figure C117 Carrot River: Sulphate Dissolved

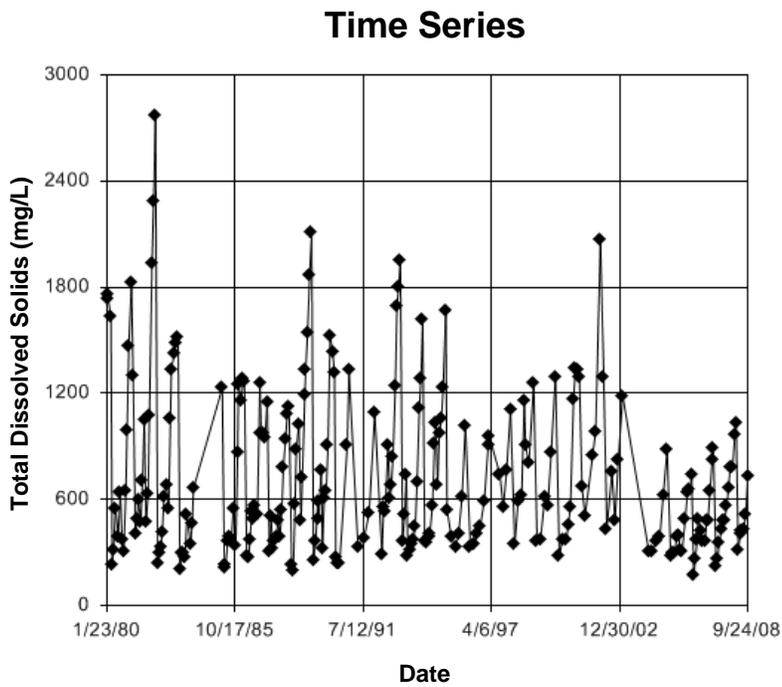


Figure C118 Carrot River: Total Dissolved Solids

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 63.64
 Tabulated Chi-Squared value = 3.841 with 1 degree 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) = 63.64
 Adjusted Kruskal-Wallis statistic (H') = 63.64

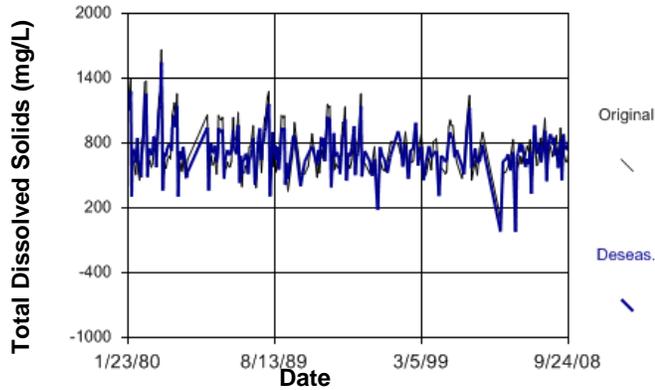


Figure C119 Carrot River: Total Dissolved Solids

Seasonal Kendall

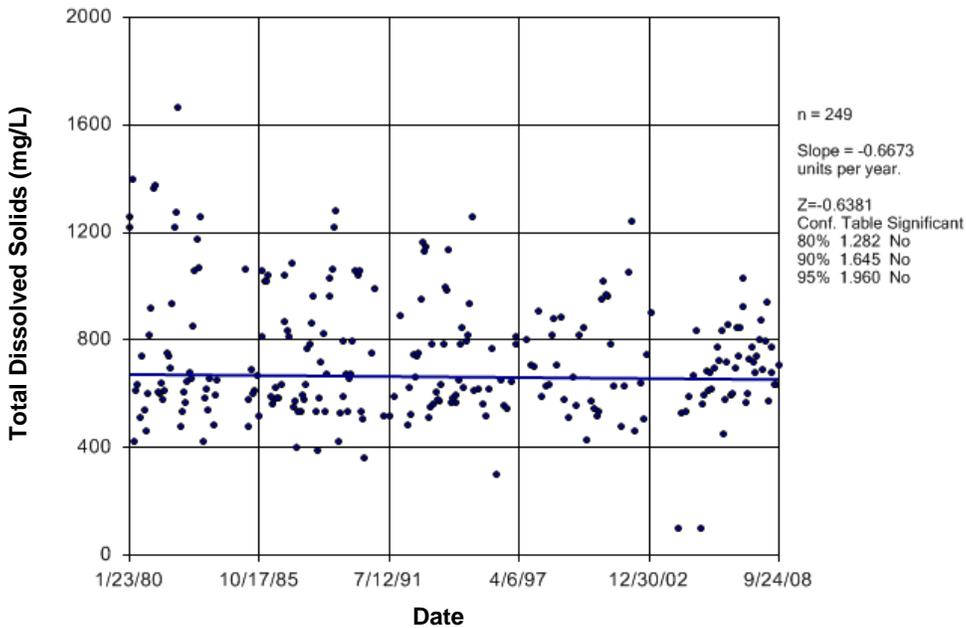


Figure C120 Carrot River: Total Dissolved Solids

Time Series

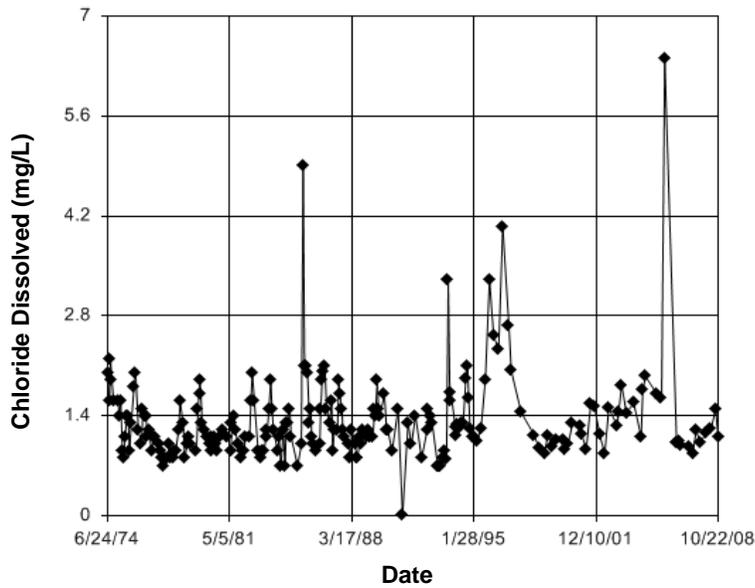


Figure C121 Churchill River: Chloride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 15.89
Tabulated Chi-Squared value = 3.841 with 1 degree 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) = 15.89
Adjusted Kruskal-Wallis statistic (H') = 15.89

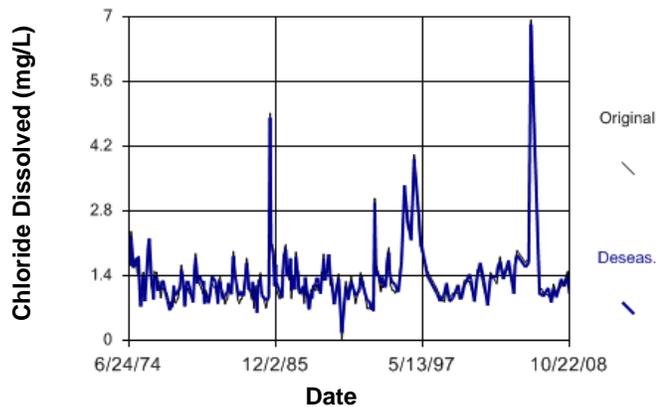


Figure C122 Churchill River: Chloride Dissolved

Seasonal Kendall

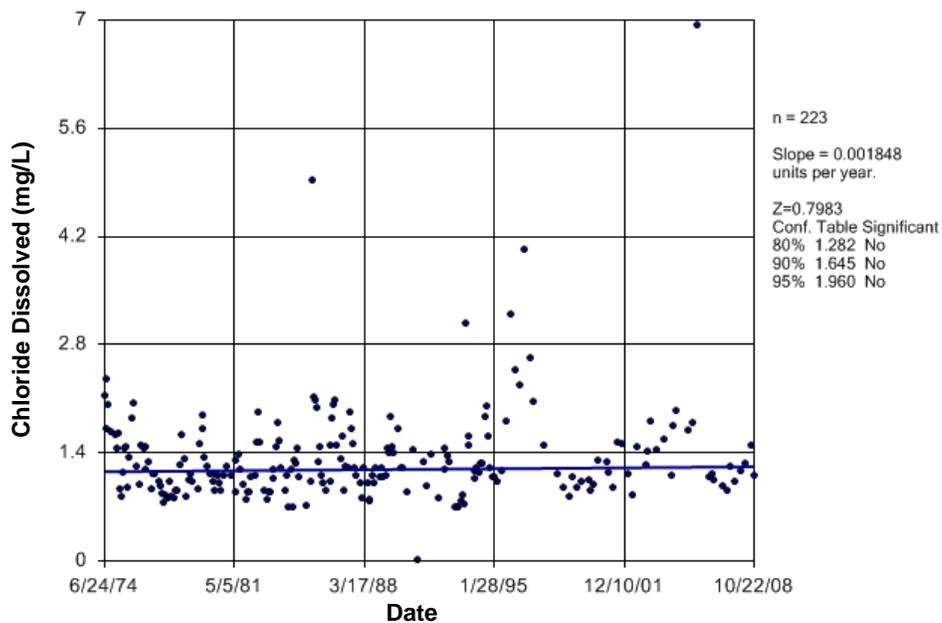


Figure C123 Churchill River: Chloride Dissolved

Time Series

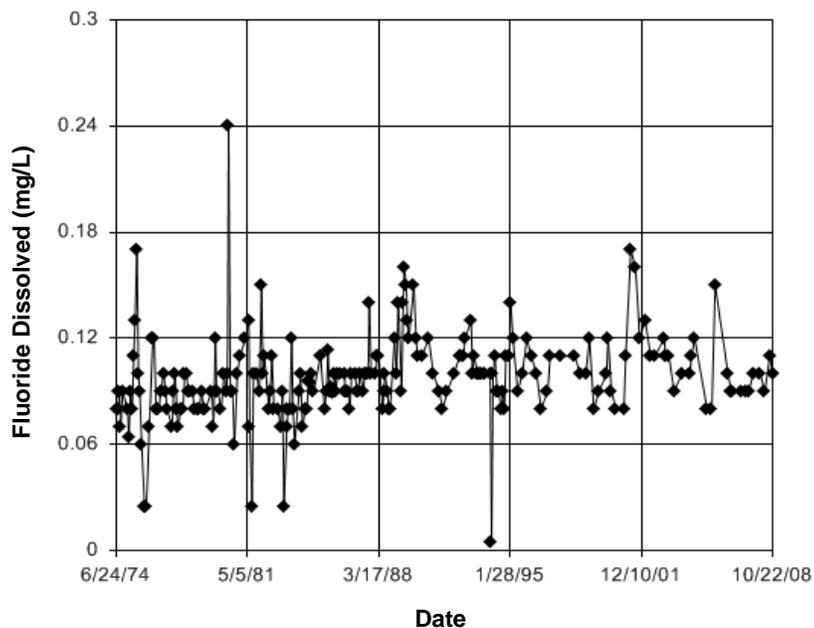


Figure C124 Churchill River: Fluoride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 5.083
Tabulated Chi-Squared value = 3.841 with 1 degree 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) = 5.083
Adjusted Kruskal-Wallis statistic (H') = 5.083

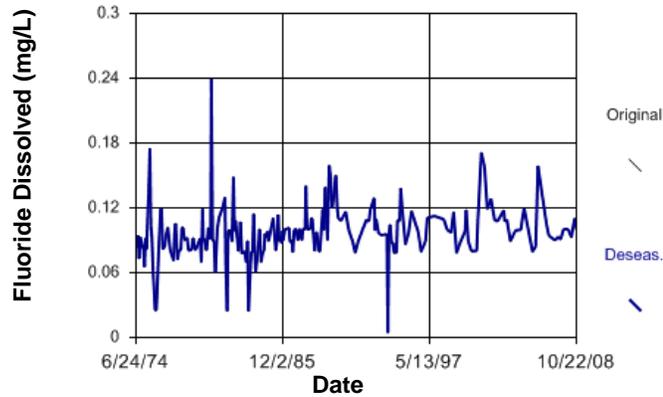


Figure C125 Churchill River: Fluoride Dissolved

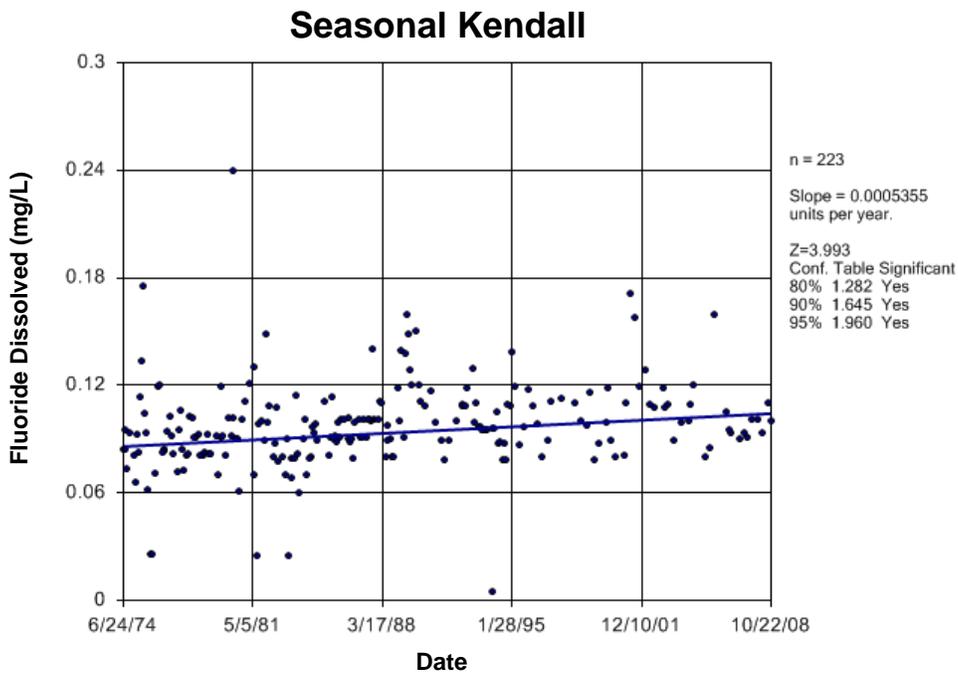


Figure C126 Churchill River: Fluoride Dissolved

Time Series

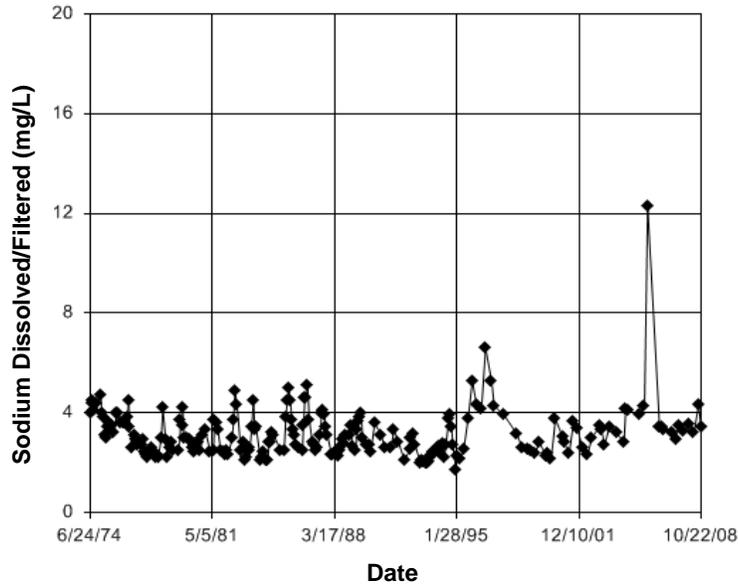


Figure C127 Churchill River: Sodium Dissolved/Filtered

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 22.71
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) = 22.71
Adjusted Kruskal-Wallis statistic (H') = 22.71

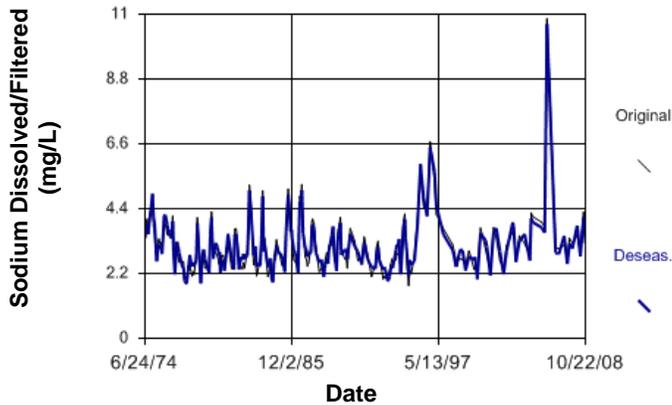


Figure C128 Churchill River: Sodium Dissolved/Filtered

Seasonal Kendall

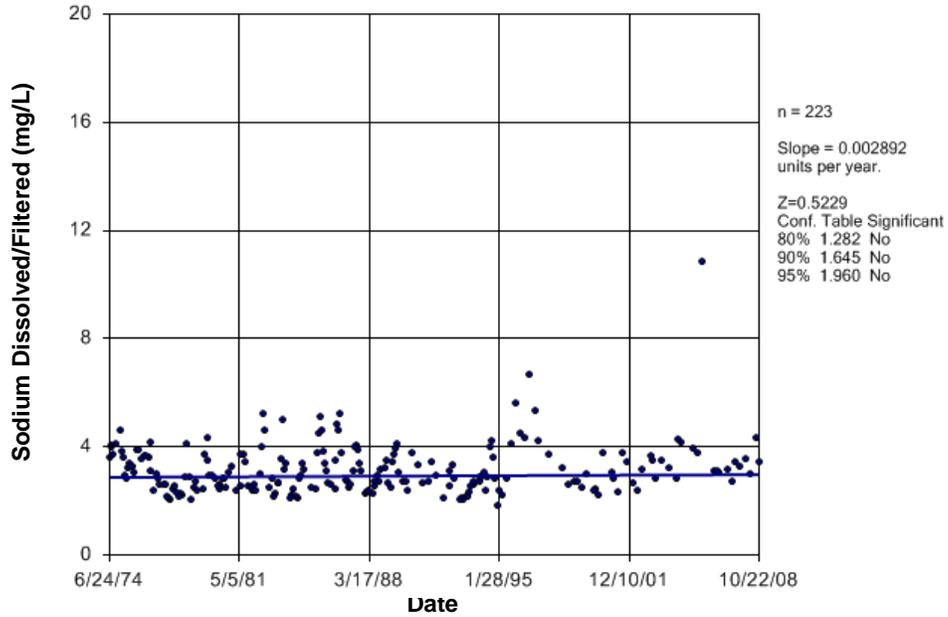


Figure C129 Churchill River: Sodium Dissolved/Filtered

Time Series

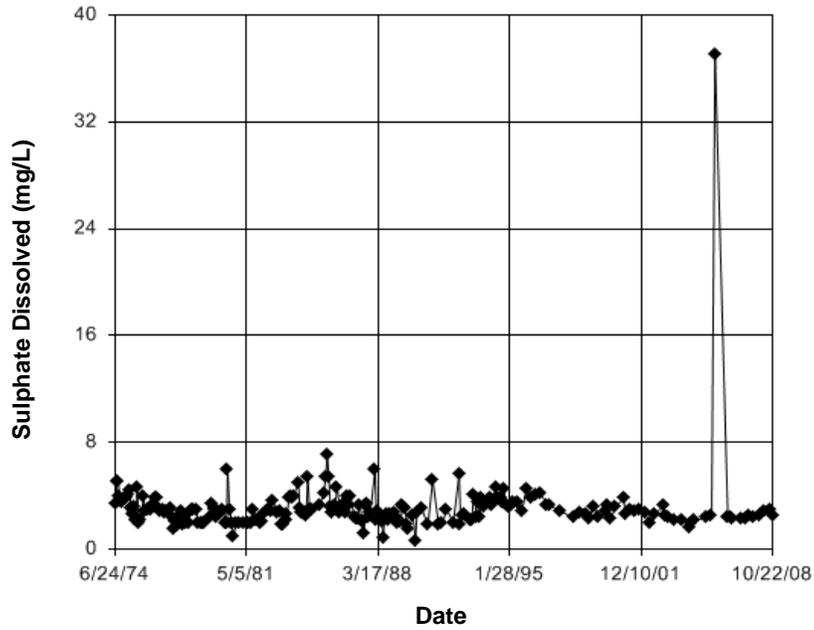


Figure C130 Churchill River: Sulphate Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at 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 = 0.3238
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) = 0.3238
Adjusted Kruskal-Wallis statistic (H') = 0.3238

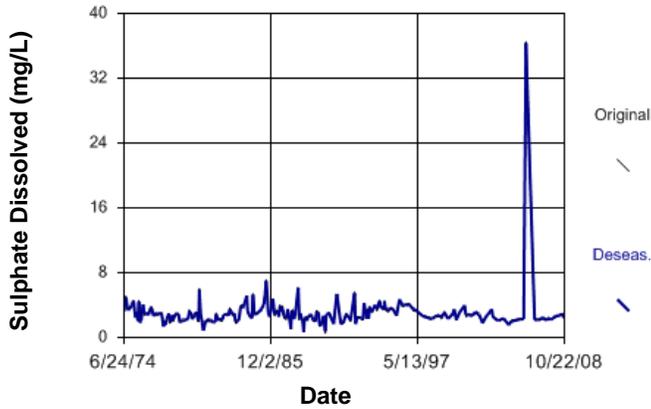


Figure C131 Churchill River: Sulphate Dissolved

Sen's Slope Estimator

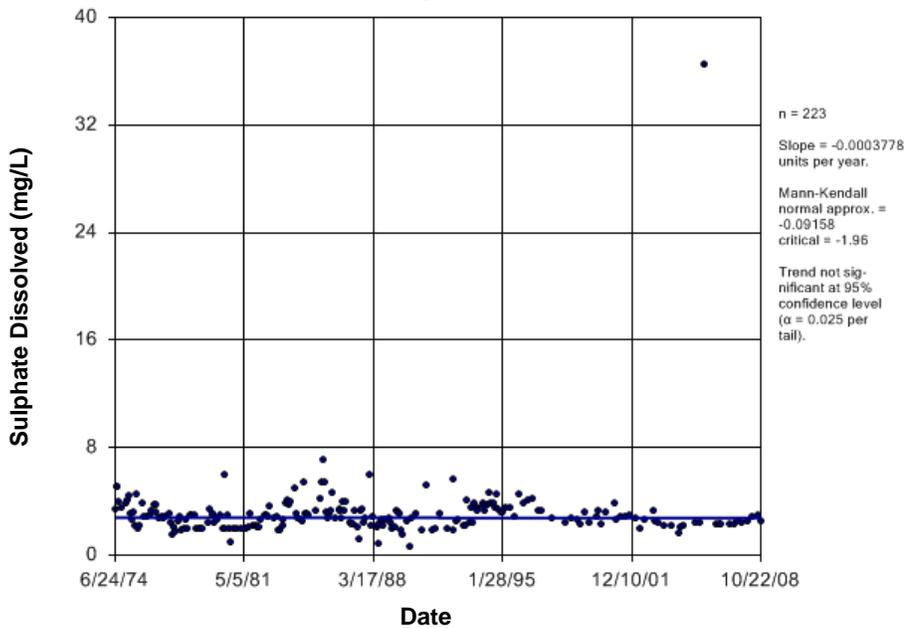


Figure C132 Churchill River: Sulphate Dissolved

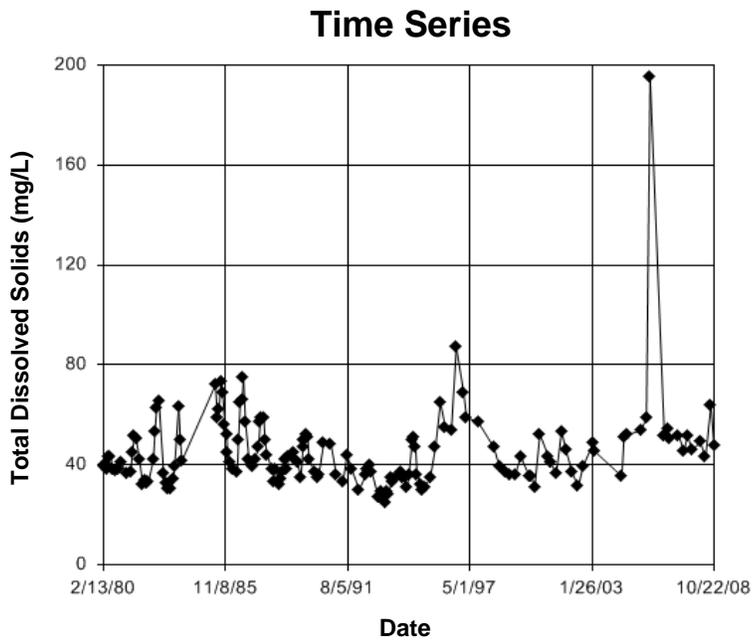


Figure C133 Churchill River: Total Dissolved Solids

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 21.82
 Tabulated Chi-Squared value = 3.841 with 1 degree 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) = 21.82
 Adjusted Kruskal-Wallis statistic (H') = 21.82

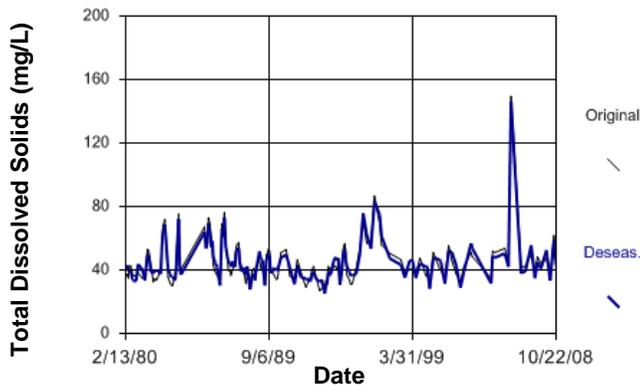


Figure C134 Churchill River: Total Dissolved Solids

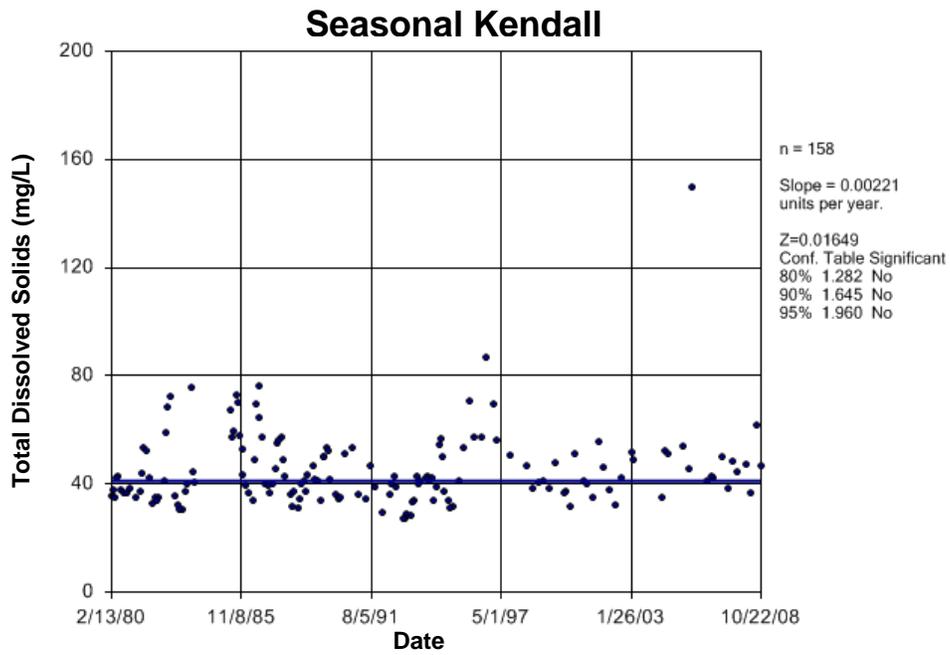


Figure C135 Churchill River: Total Dissolved Solids

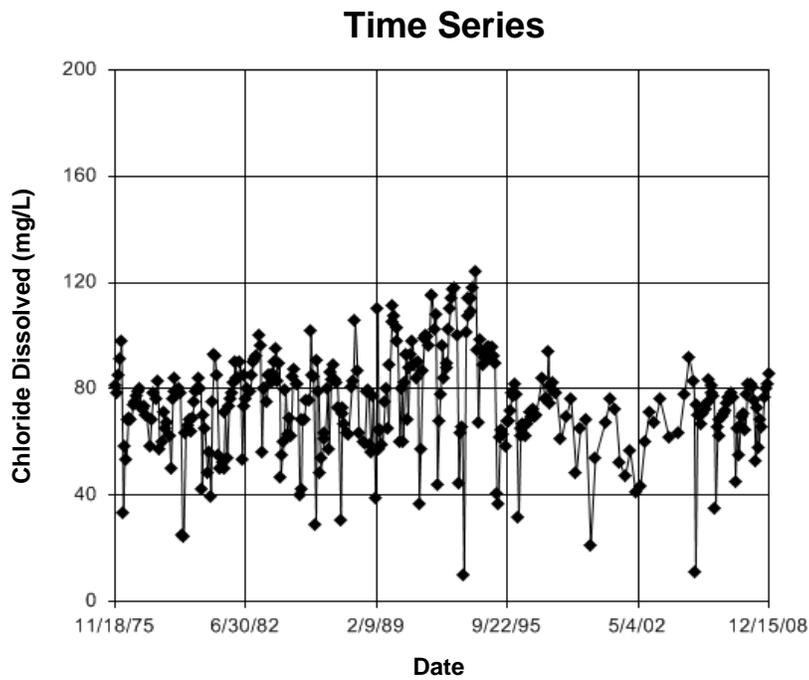


Figure C136 Qu'Appelle River: Chloride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 18.94
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 12 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) = 18.94
 Adjusted Kruskal-Wallis statistic (H') = 18.94

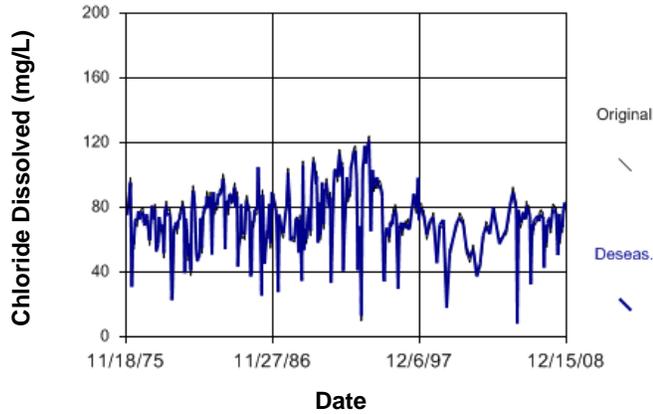


Figure C137 Qu'Appelle River: Chloride Dissolved

Seasonal Kendall

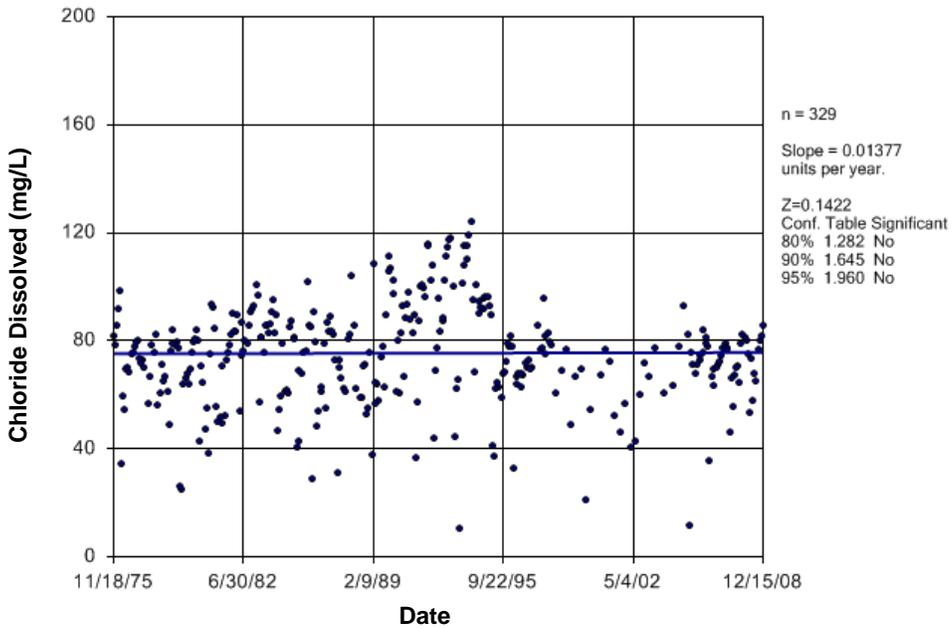


Figure C138 Qu'Appelle River: Chloride Dissolved

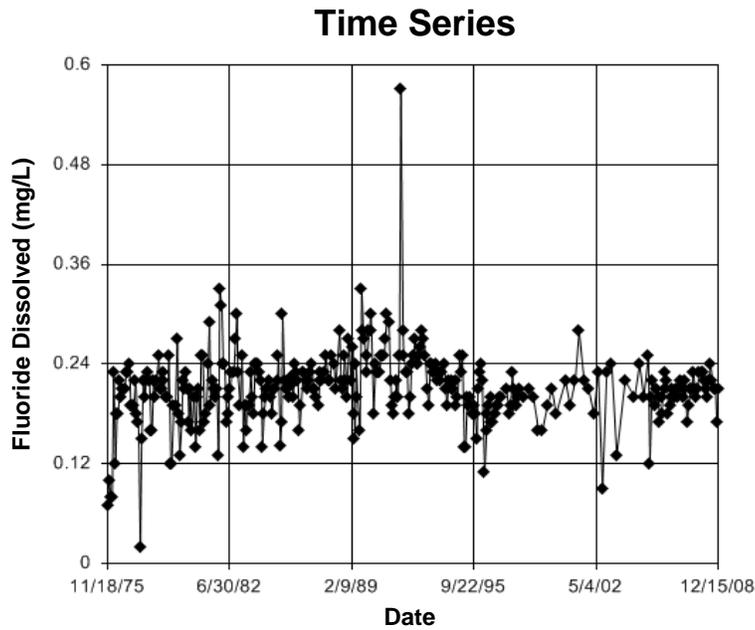


Figure C139 Qu'Appelle River: Fluoride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at 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 = 1.019
 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) = 1.019
 Adjusted Kruskal-Wallis statistic (H') = 1.019

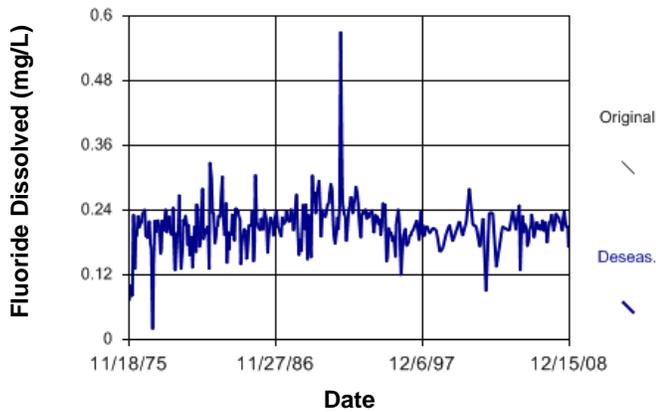


Figure C140 Qu'Appelle River: Fluoride Dissolved

Sen's Slope Estimator

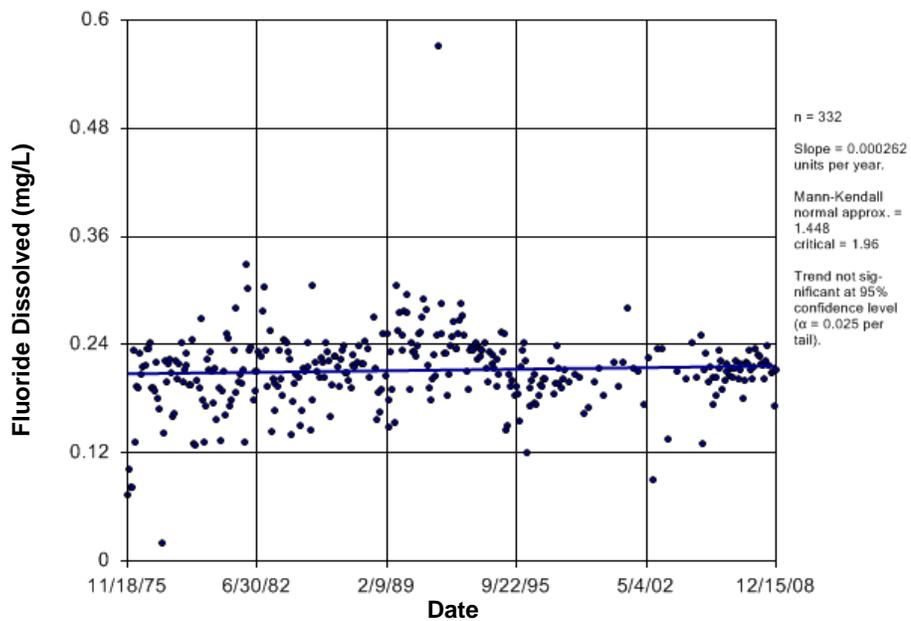


Figure C141 Qu'Appelle River: Fluoride Dissolved

Time Series

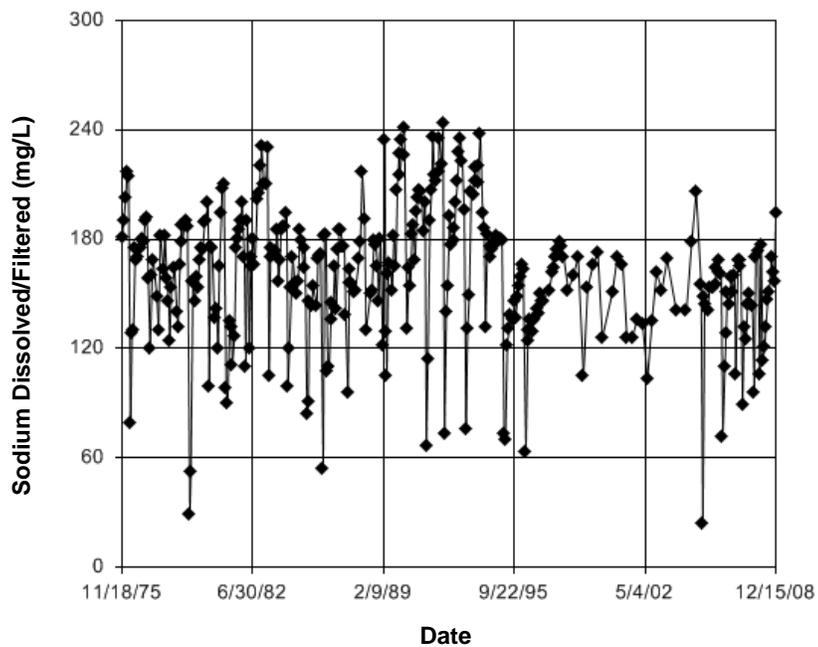


Figure C142 Qu'Appelle River: Sodium Dissolved/Filtered

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 10.82
 Tabulated Chi-Squared value = 3.841 with 1 degree 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) = 10.82
 Adjusted Kruskal-Wallis statistic (H') = 10.82

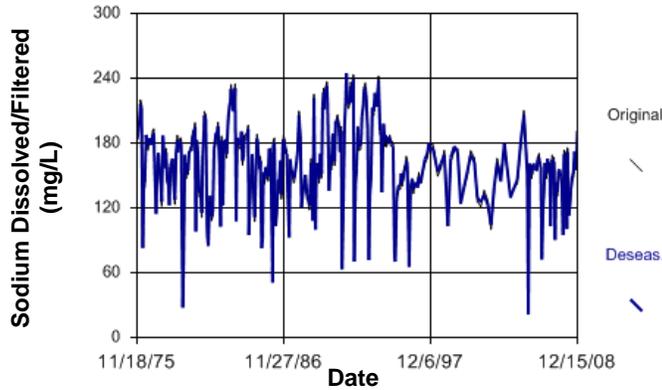


Figure C143 Qu'Appelle River: Sodium Dissolved/Filtered

Seasonal Kendall

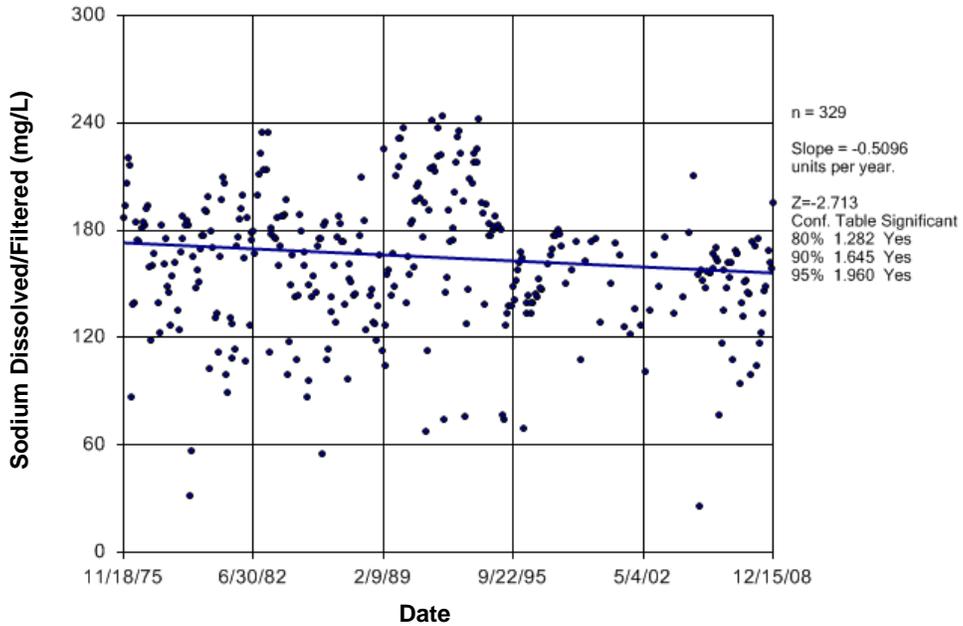


Figure C144 Qu'Appelle River: Sodium Dissolved/Filtered

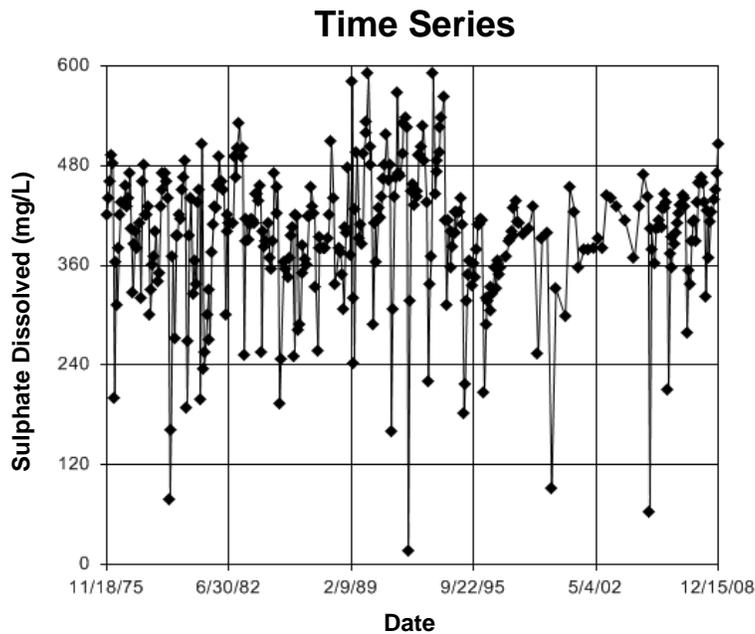


Figure C145 Qu'Appelle River: Sulphate Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 18.52
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 19 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) = 18.52
 Adjusted Kruskal-Wallis statistic (H') = 18.52

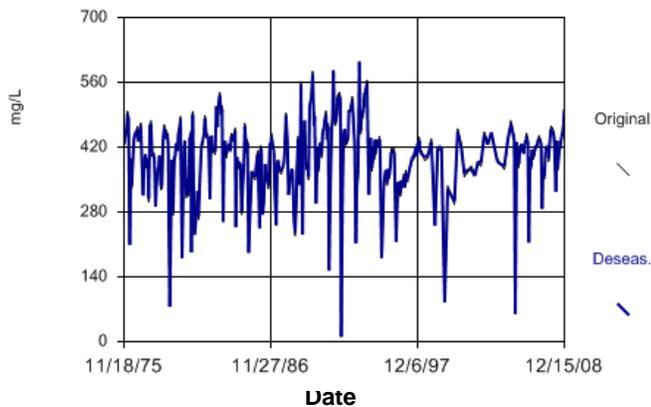


Figure C146 Qu'Appelle River: Sulphate Dissolved

Seasonal Kendall

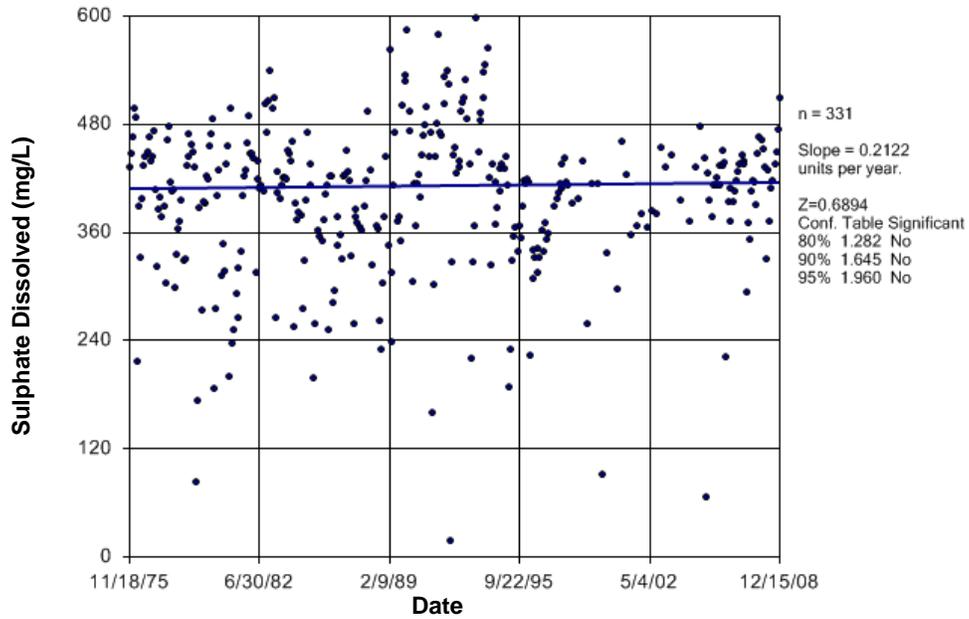


Figure C147 Qu'Appelle River: Sulphate Dissolved

Time Series

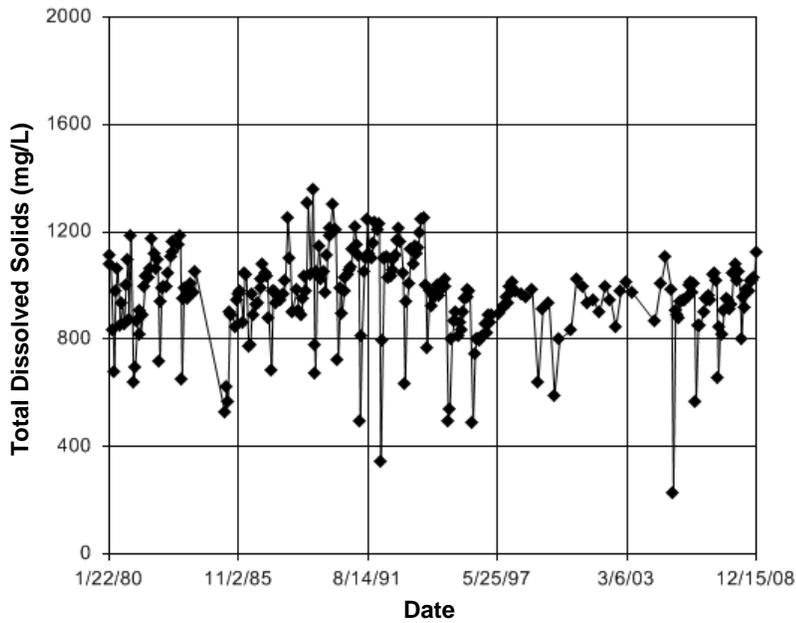


Figure C148 Qu'Appelle River: Total Dissolved Solids

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 9.113
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 22 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) = 9.113
 Adjusted Kruskal-Wallis statistic (H') = 9.113

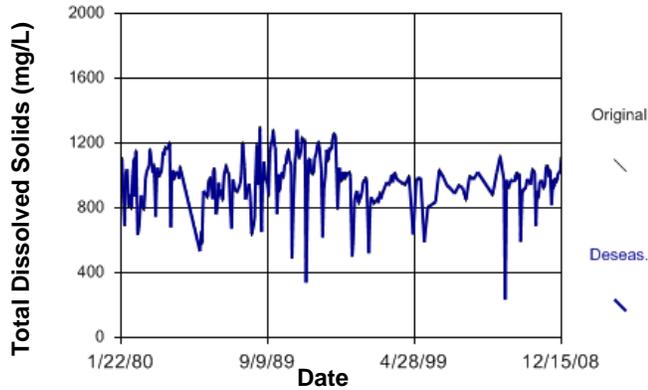


Figure C149 Qu'Appelle River: Total Dissolved Solids

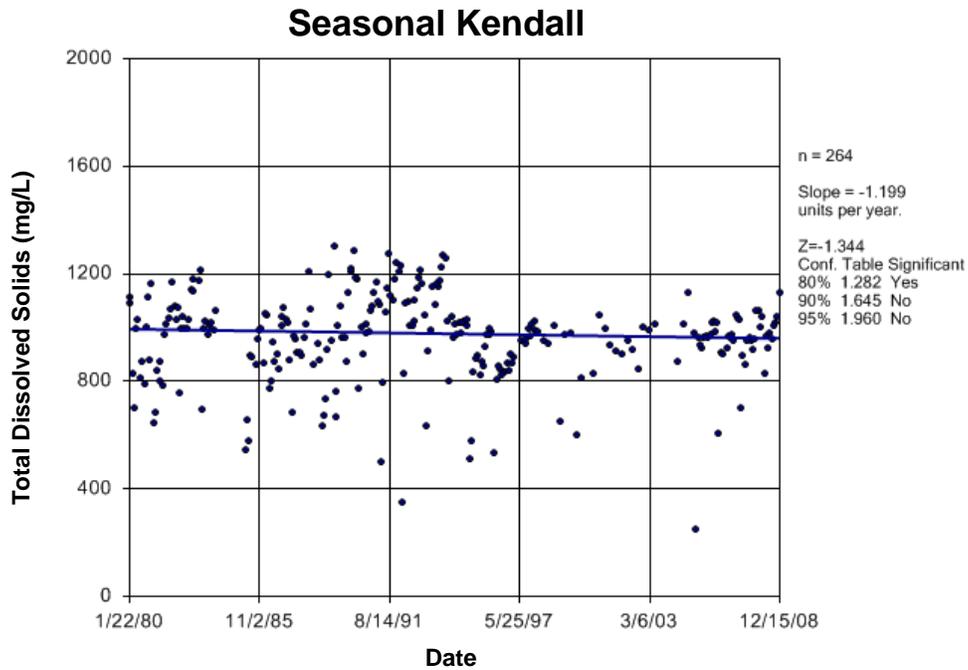


Figure C150 Qu'Appelle River: Total Dissolved Solids

Time Series

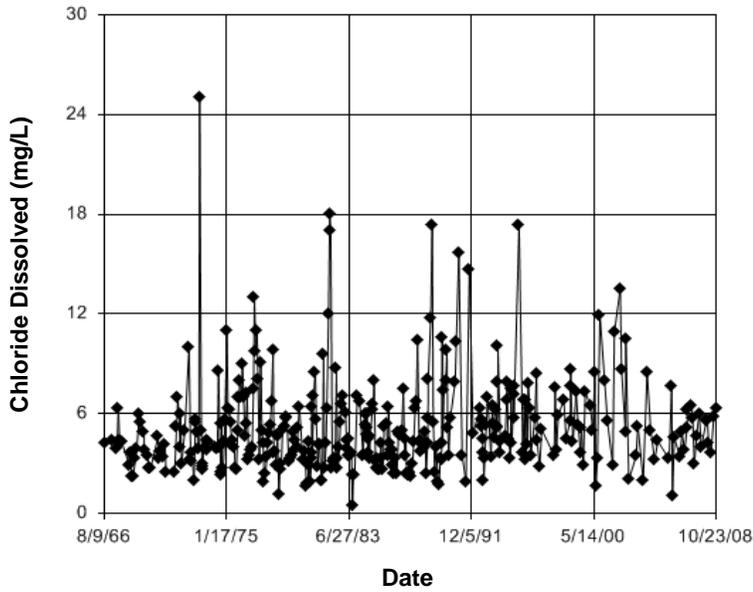


Figure C151 Red Deer River (SK-MB): Chloride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 48.19
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 13 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) = 48.19
Adjusted Kruskal-Wallis statistic (H') = 48.19

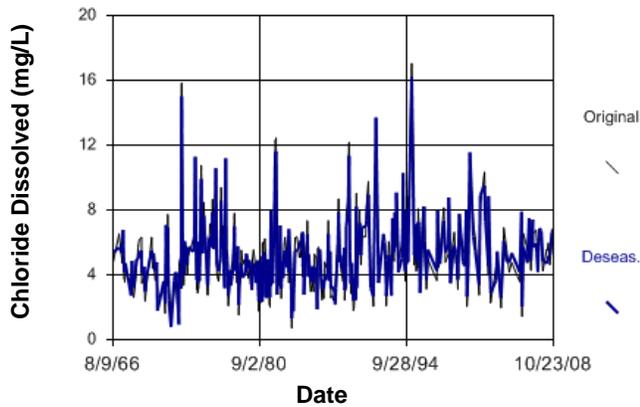


Figure C152 Red Deer River (SK-MB): Chloride Dissolved

Seasonal Kendall

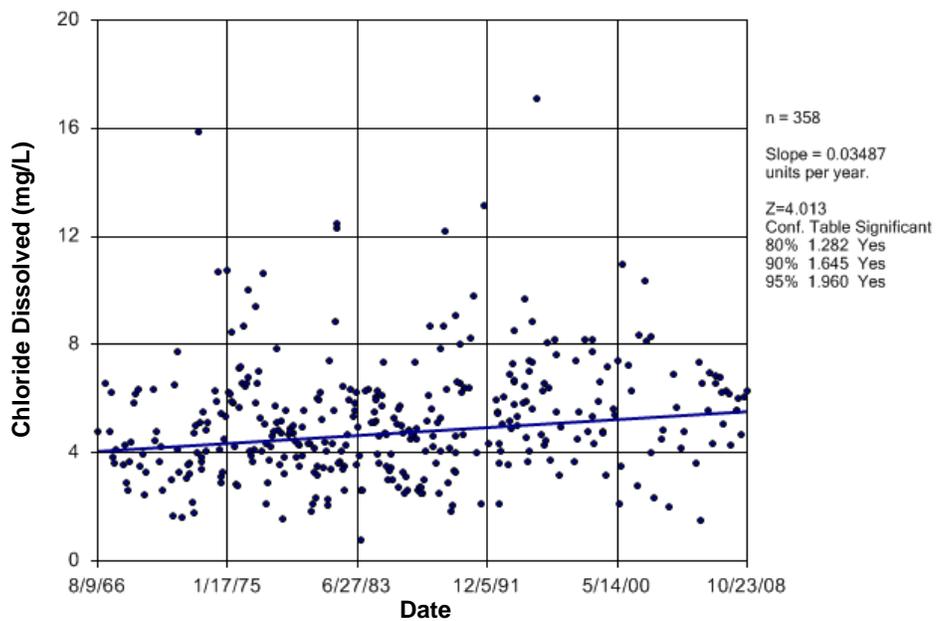


Figure C153 Red Deer River (SK-MB): Chloride Dissolved

Time Series

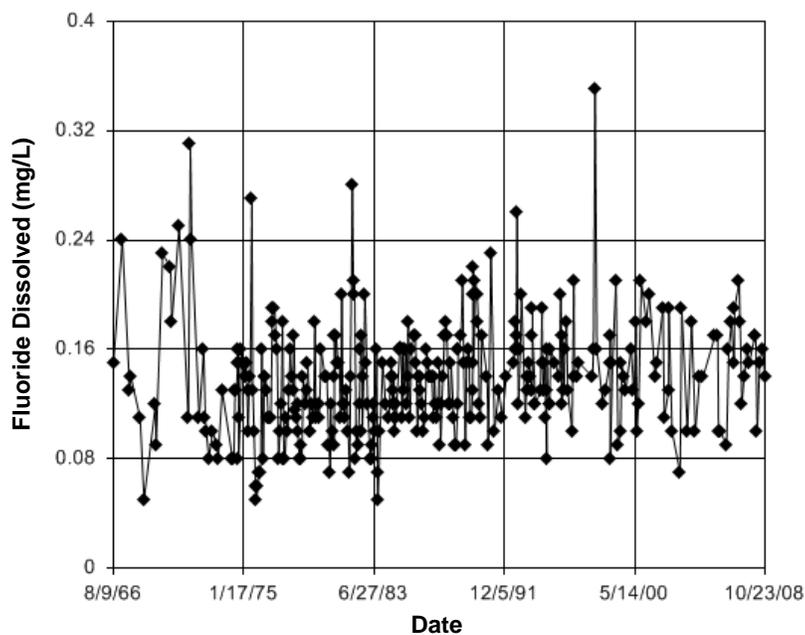


Figure C154 Red Deer River (SK-MB): Fluoride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at 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 = 1.552
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 37 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) = 1.552
Adjusted Kruskal-Wallis statistic (H') = 1.552

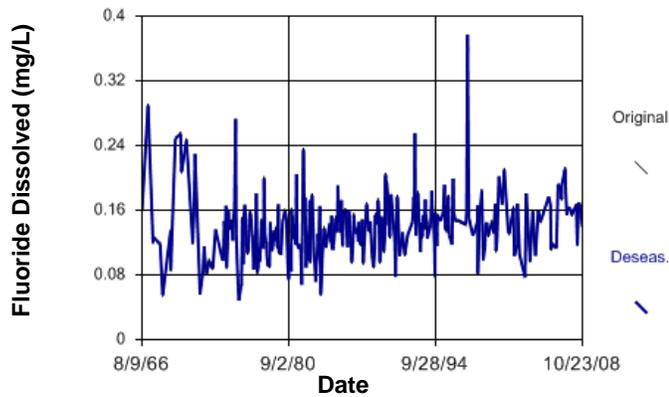


Figure C155 Red Deer River (SK-MB): Fluoride Dissolved

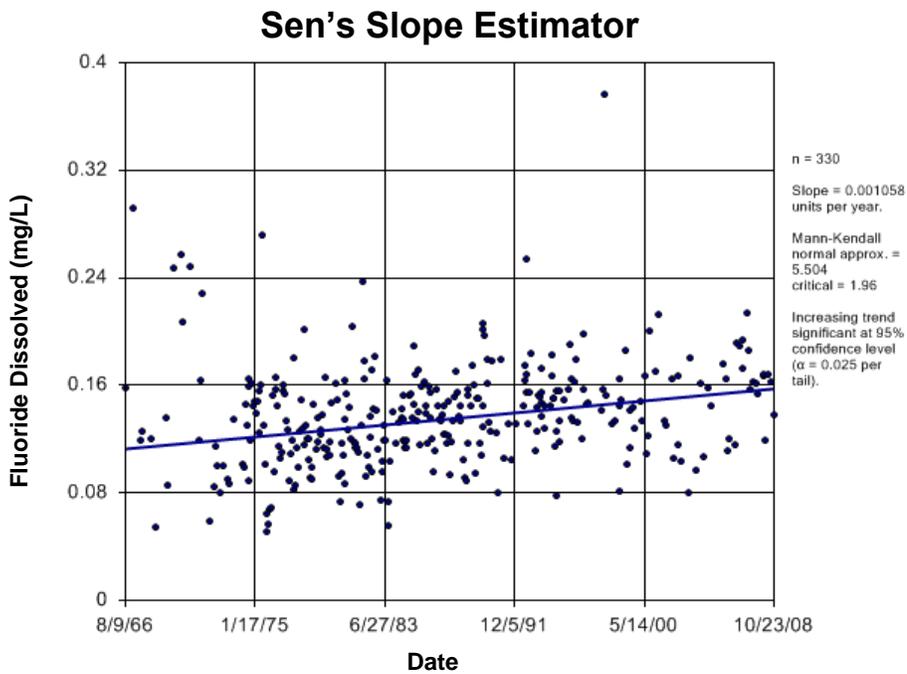


Figure C156 Red Deer River (SK-MB): Fluoride Dissolved

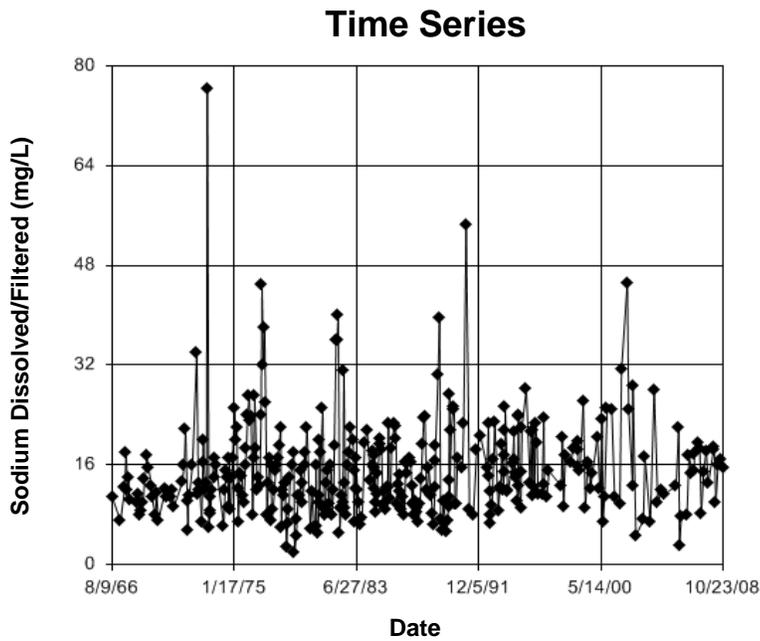


Figure C157 Red Deer River (SK-MB): Sodium Dissolved/Filtered

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 13.49
 Tabulated Chi-Squared value = 3.841 with 1 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) = 13.49
 Adjusted Kruskal-Wallis statistic (H') = 13.49

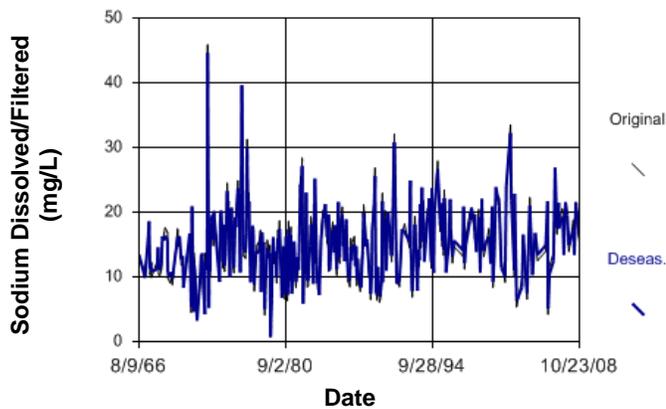


Figure C158 Red Deer River (SK-MB): Sodium Dissolved/Filtered

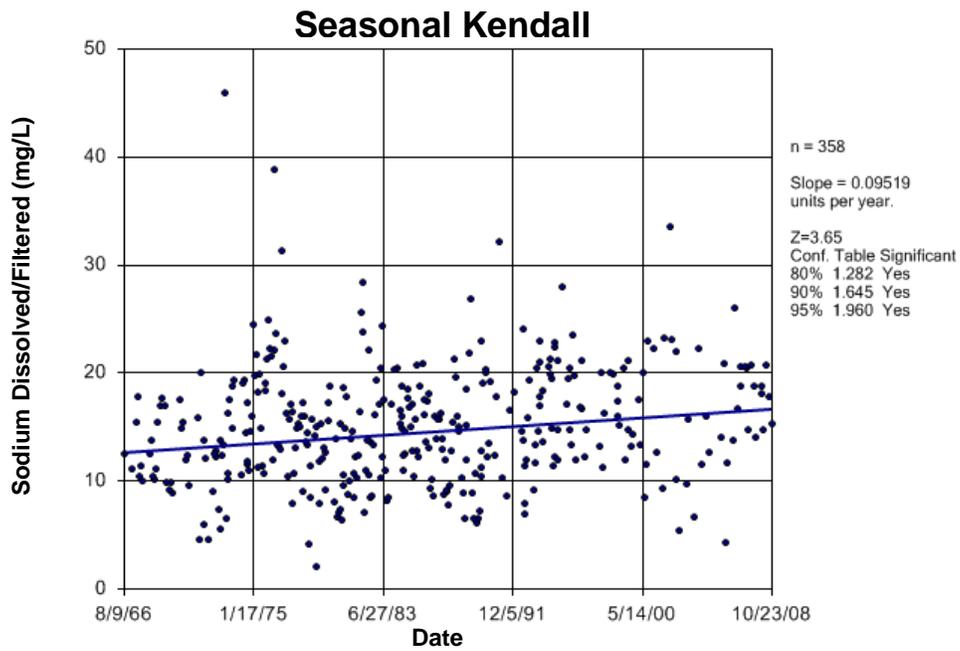


Figure C159 Red Deer River (SK-MB): Sodium Dissolved/Filtered

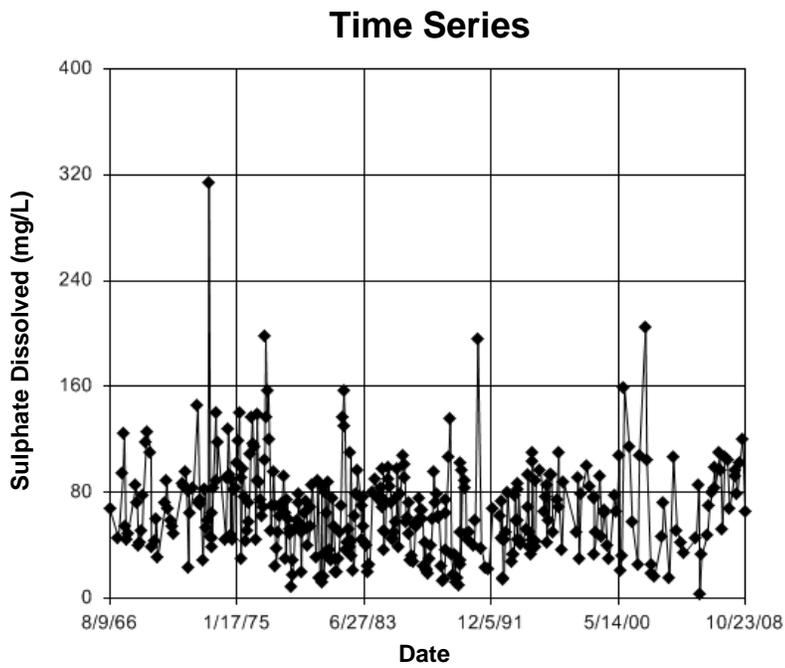


Figure C160 Red Deer River (SK-MB): Sulphate Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 15.31
 Tabulated Chi-Squared value = 3.841 with 1 degree 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) = 15.31
 Adjusted Kruskal-Wallis statistic (H') = 15.31

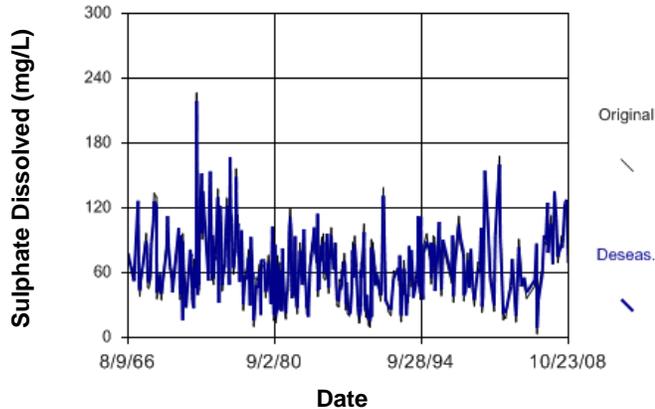


Figure C161 Red Deer River (SK-MB): Sulphate Dissolved

Seasonal Kendall

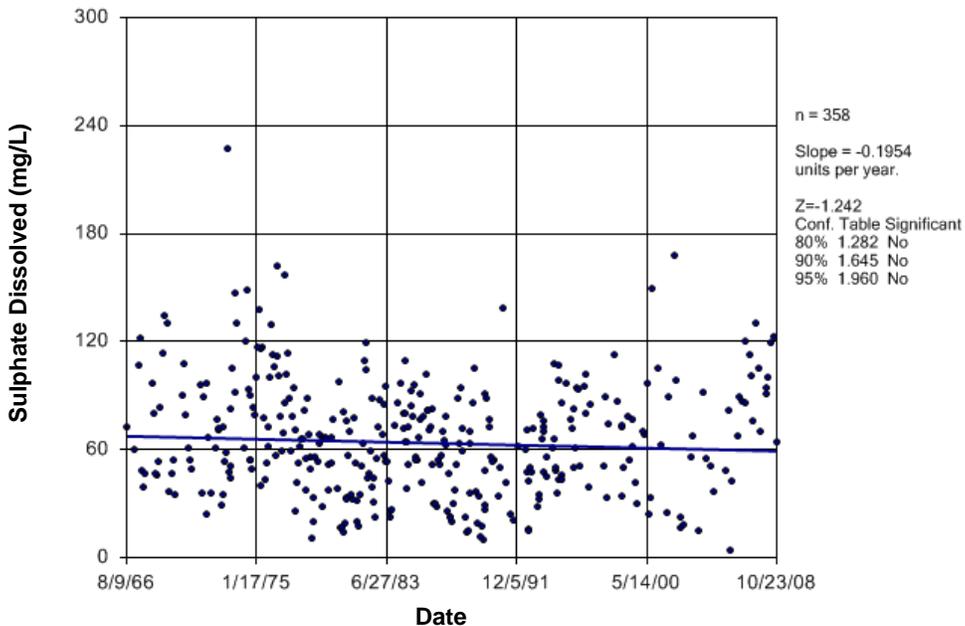


Figure C162 Red Deer River (SK-MB): Sulphate Dissolved

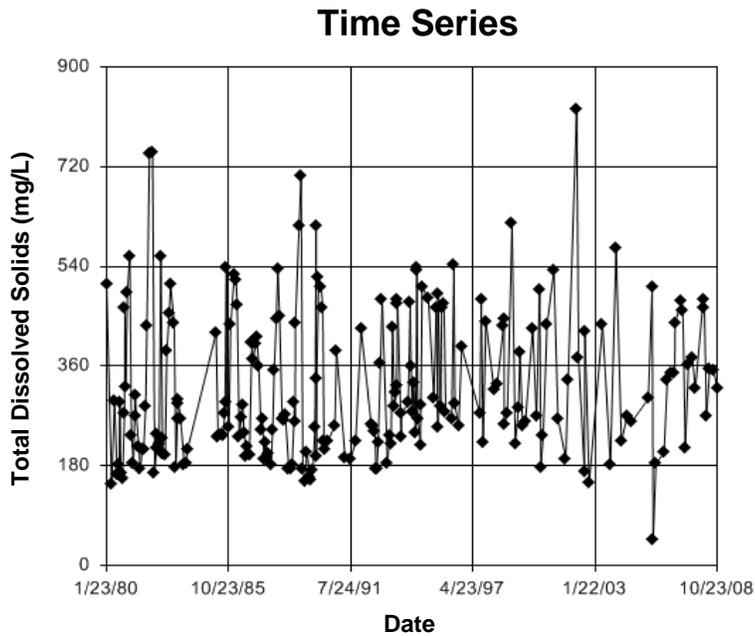


Figure C163 Red Deer River (SK-MB): Total Dissolved Solids

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 20.86
 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) = 20.86
 Adjusted Kruskal-Wallis statistic (H') = 20.86

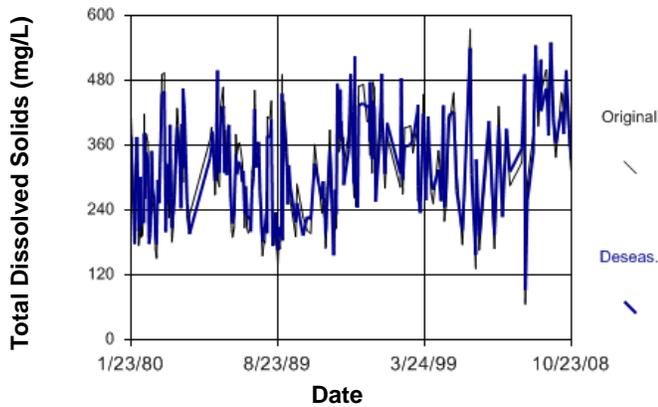


Figure C164 Red Deer River (SK-MB): Total Dissolved Solids

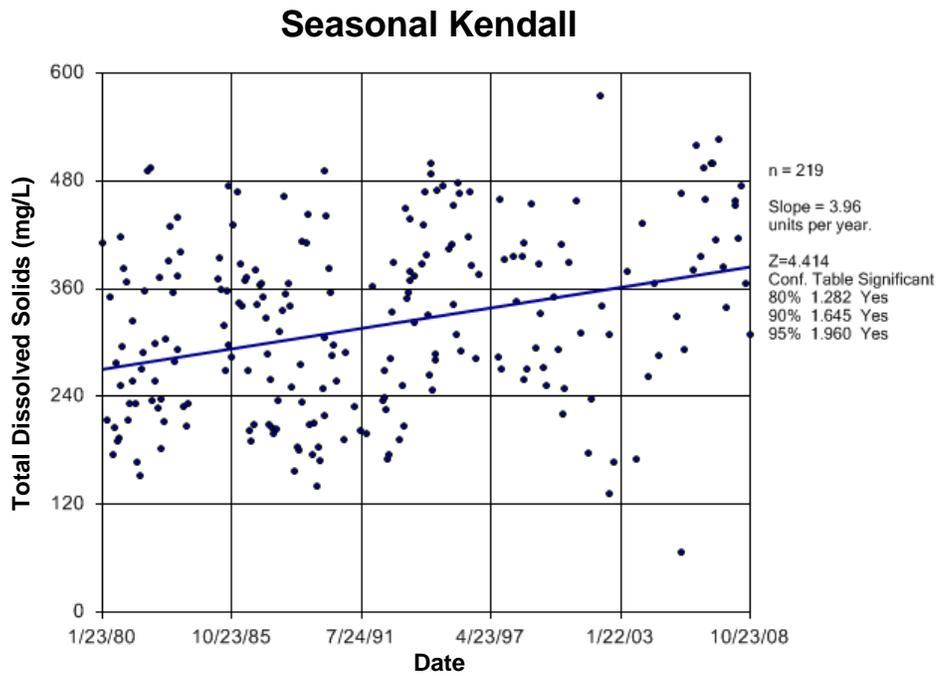


Figure C165 Red Deer River (SK-MB): Total Dissolved Solids

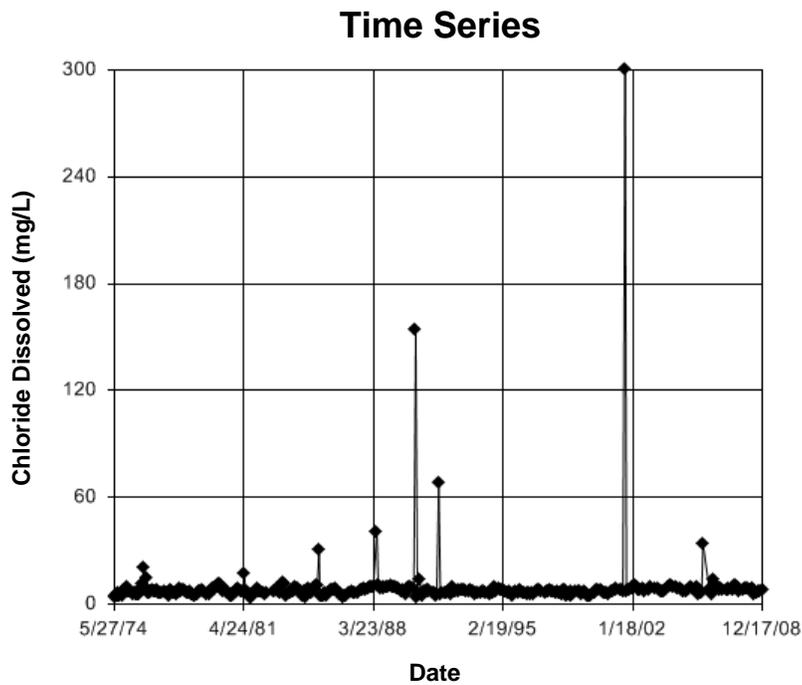


Figure C166 Saskatchewan River: Chloride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 28.66
 Tabulated Chi-Squared value = 3.841 with 1 degree 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) = 28.66
 Adjusted Kruskal-Wallis statistic (H') = 28.66

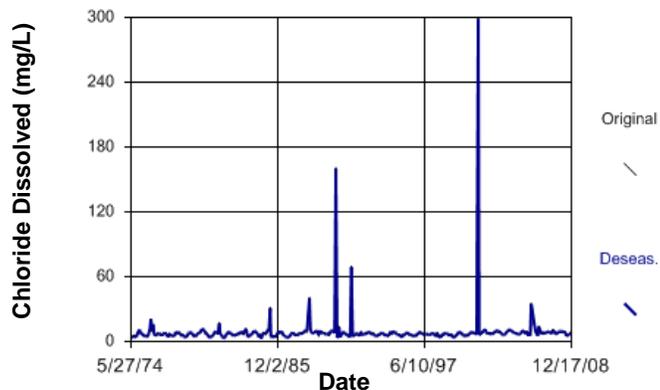


Figure C167 Saskatchewan River: Chloride Dissolved

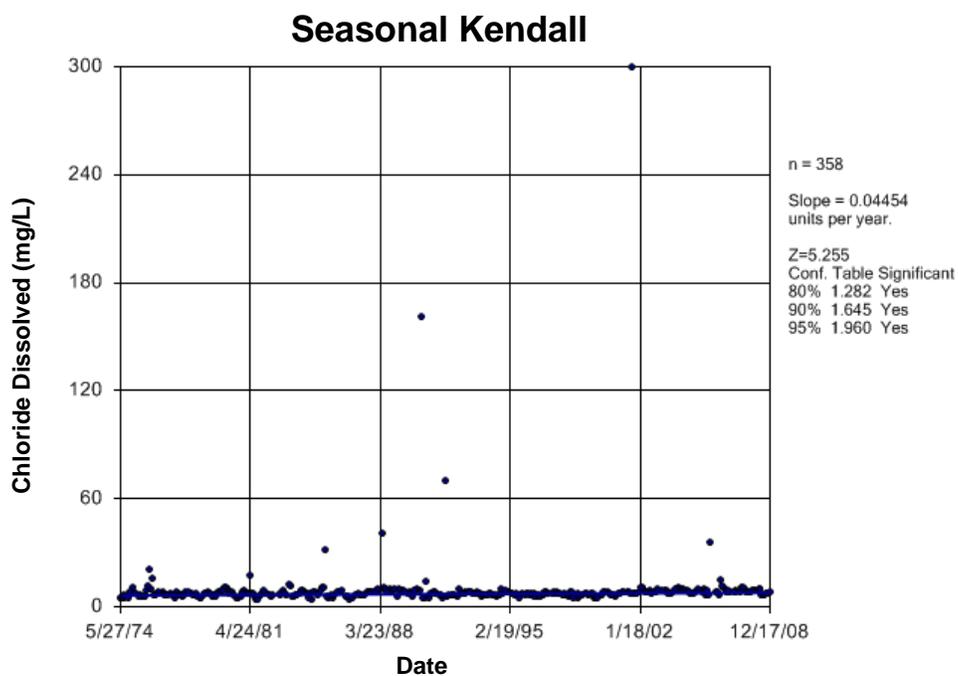


Figure C168 Saskatchewan River: Chloride Dissolved

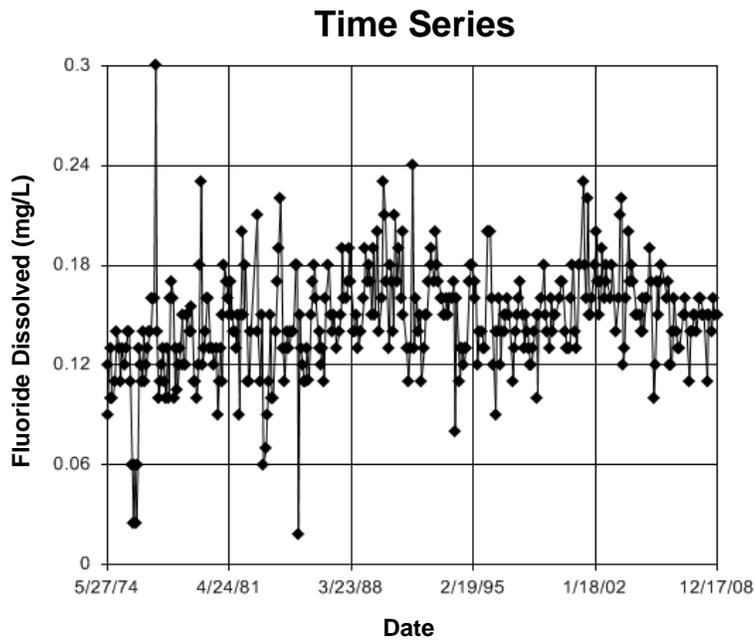


Figure C169 Saskatchewan River: Fluoride Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 36.5
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 65 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) = 36.5
 Adjusted Kruskal-Wallis statistic (H') = 36.5

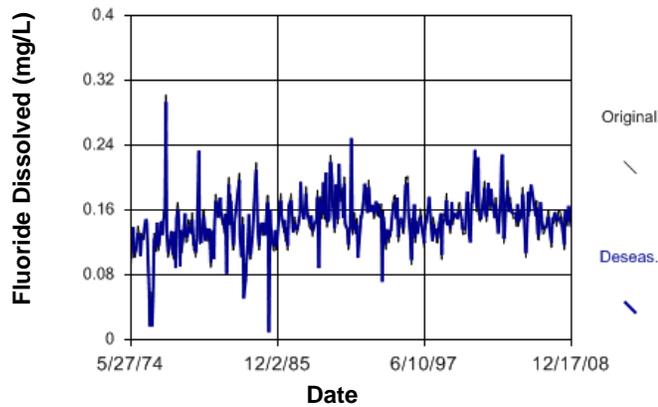


Figure C170 Saskatchewan River: Fluoride Dissolved

Seasonal Kendall

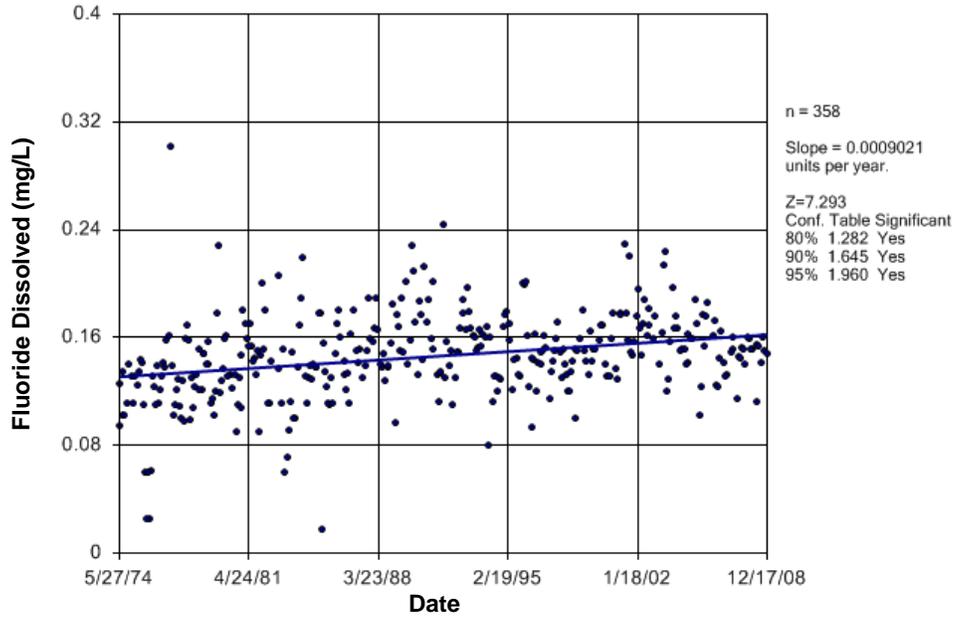


Figure C171 Saskatchewan River: Fluoride Dissolved

Time Series

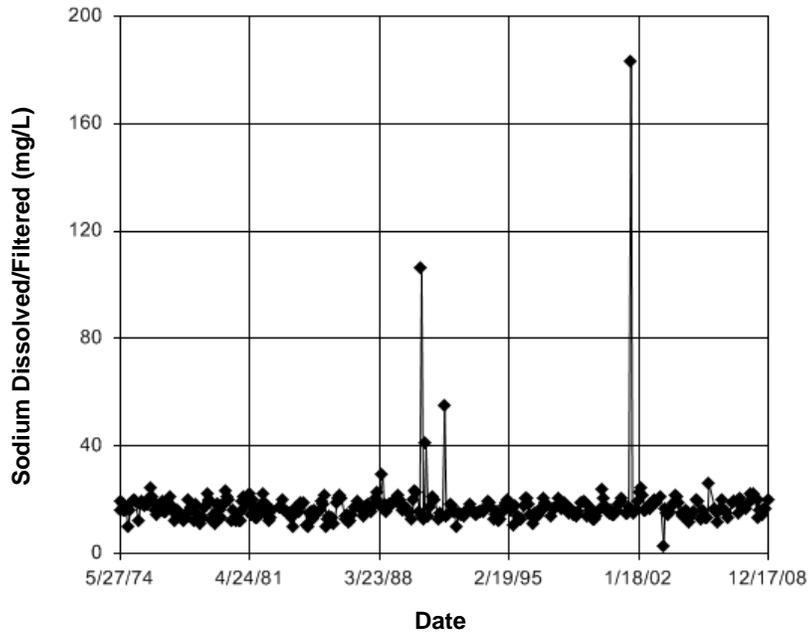


Figure C172 Saskatchewan River: Sodium Dissolved/Filtered

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 101.9
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 54 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) = 101.9
 Adjusted Kruskal-Wallis statistic (H') = 101.9

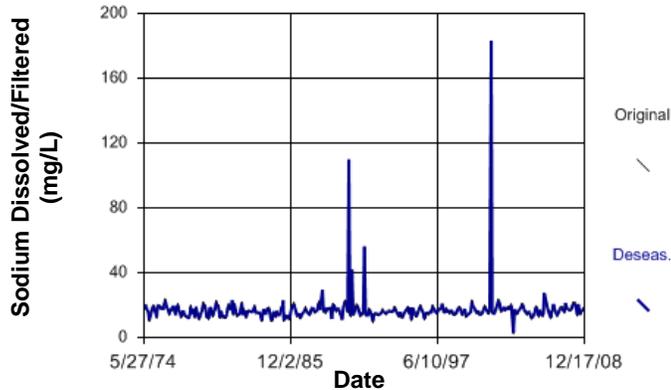


Figure C173 Saskatchewan River: Sodium Dissolved/Filtered

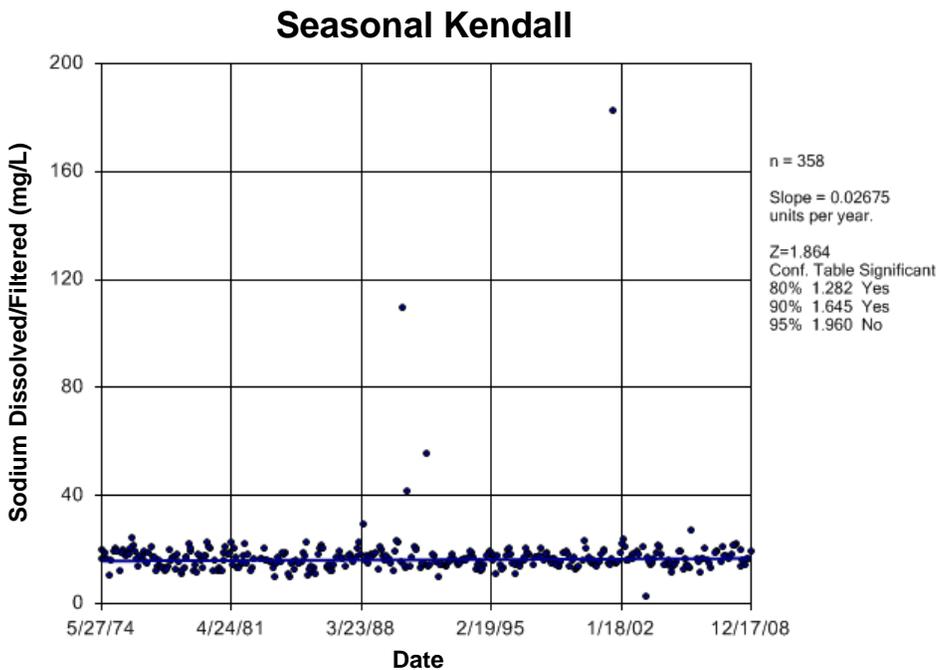


Figure C174 Saskatchewan River: Sodium Dissolved/Filtered

Time Series

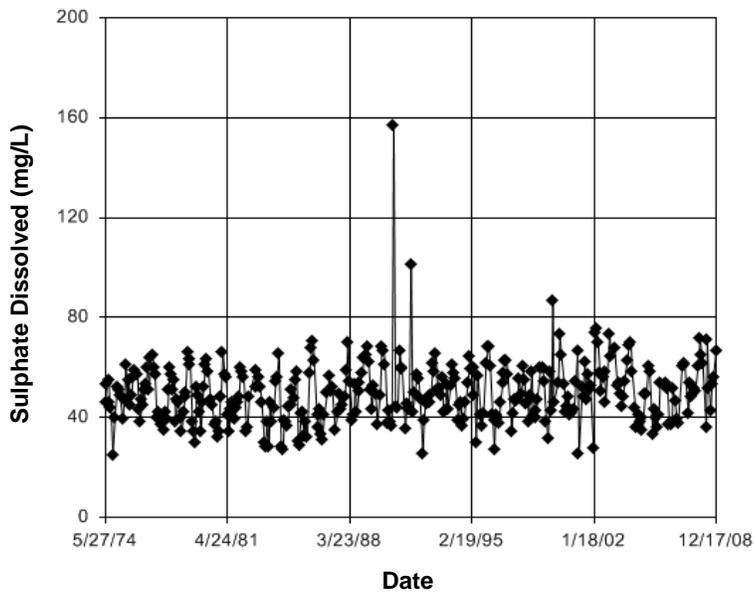


Figure C175 Saskatchewan River: Sulphate Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 122.5
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 12 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) = 122.5
Adjusted Kruskal-Wallis statistic (H') = 122.5

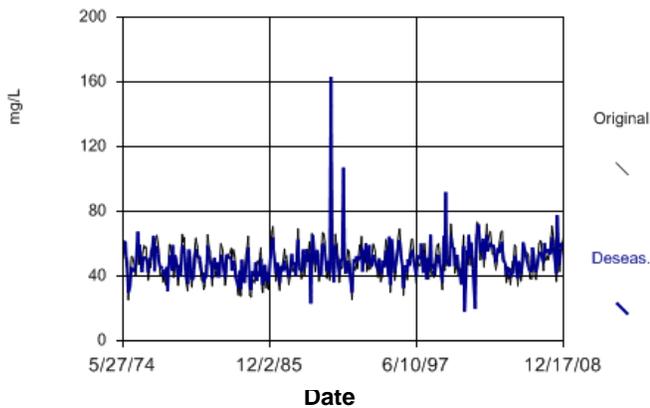


Figure C176 Saskatchewan River: Sulphate Dissolved

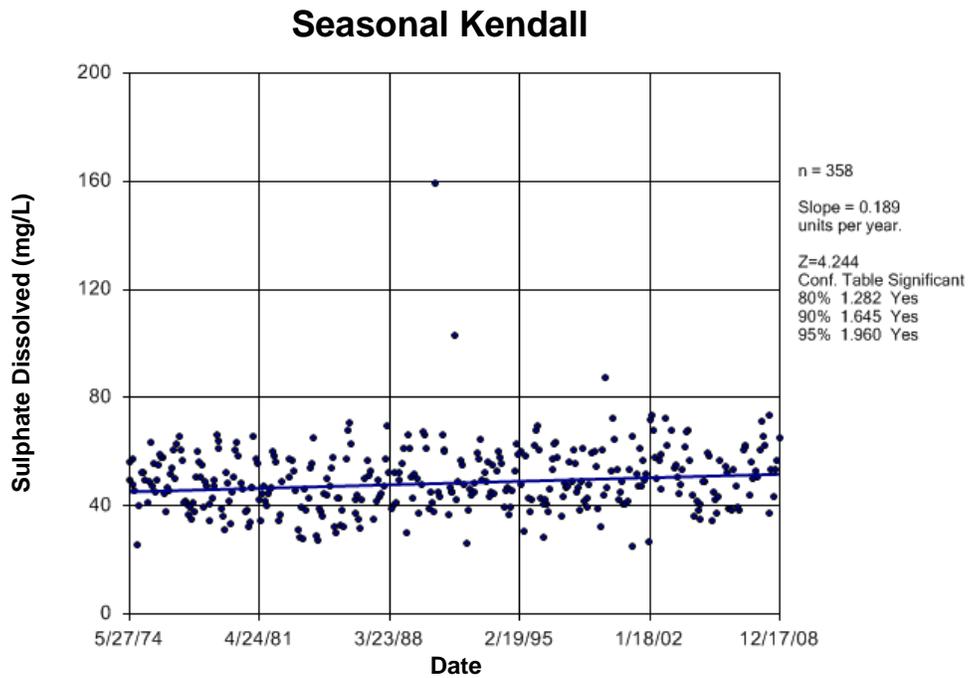


Figure C177 Saskatchewan River: Sulphate Dissolved

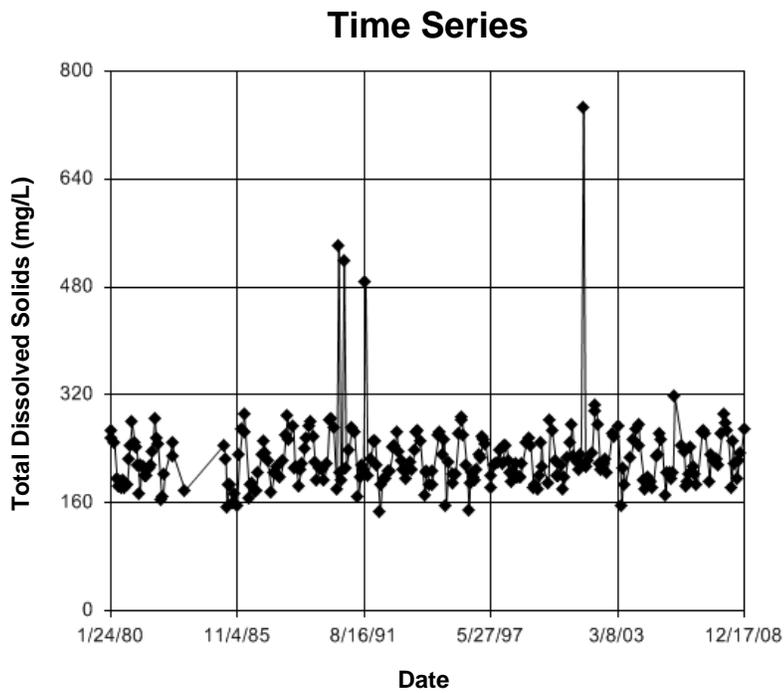


Figure C178 Saskatchewan River: Total Dissolved Solids

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at 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 = 125.7
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 32 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) = 125.7
 Adjusted Kruskal-Wallis statistic (H') = 125.7

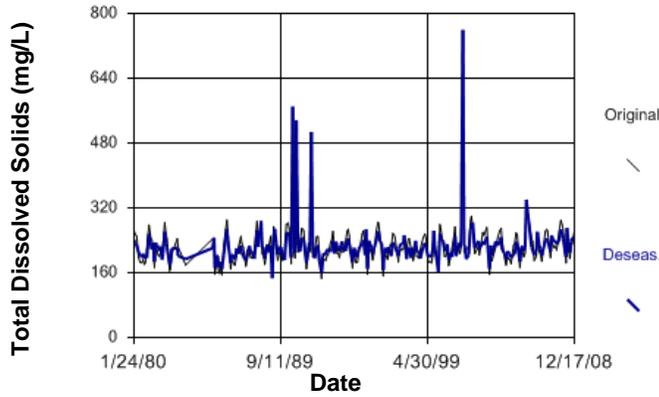


Figure C179 Saskatchewan River: Total Dissolved Solids

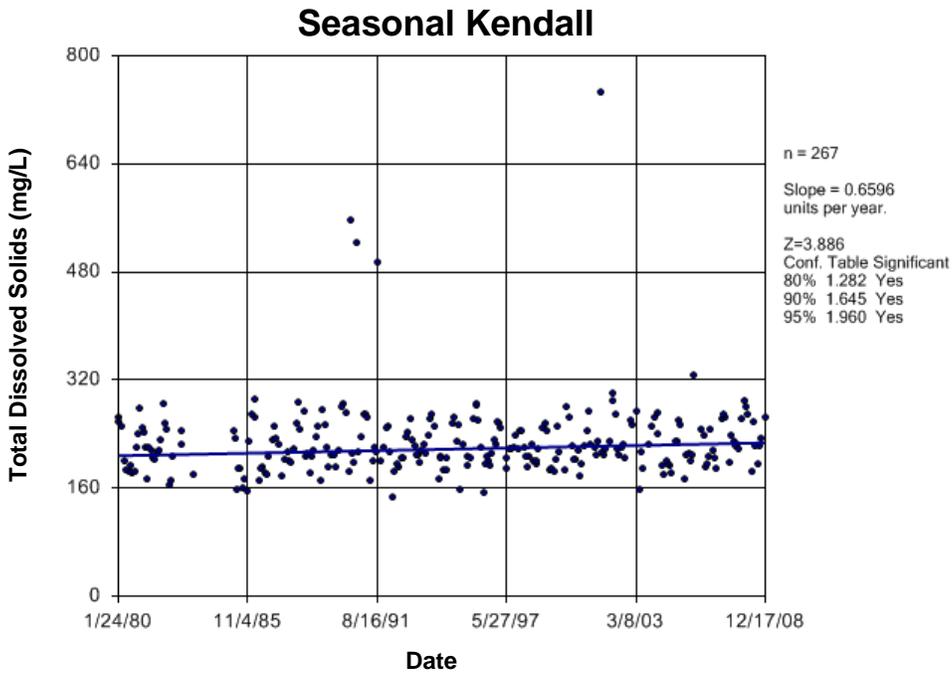


Figure C180 Saskatchewan River: Total Dissolved Solids