

APPENDIX C

Explanation of Statistical Analysis of Trends

LCRA conducted a trend analysis of eight water quality variables collected over an 11-year period. Spatial analysis was not performed. River and reservoir data were analyzed separately, with each type of water body being further subdivided by season (All data, November – April and May – October). Seasonal data is not reported in this document, but can be requested from LCRA by calling (512) 473-3200, Ext. 2495.

Some of the data used were censored, meaning that if the result reported by the laboratory was lower than the minimum detection limit, the value was converted to the detection limit. Dissolved oxygen data were converted to dissolved oxygen deficit in order to remove any effect that time of day had in the data sets. cursory examination of the data revealed no data points that could reasonably be excluded from the analysis. Consequently, no statistical tests were used to remove outliers from the data set.

Data from river sites were first regressed to log-transformed flow to remove any flow effects, and the trend analysis was carried out using the resulting residuals. If there was no significant relationship between a variable and flow, the data were regressed to time. Reservoir sites were simply regressed to time.

Simple linear regression was used to determine the presence or absence of trends. Trends were termed significant if the slopes were different from zero at $p < 0.05$. Although water quality data is generally not normally distributed, it was assumed that the size of the data sets (n for each variable at each site ranged between 50 and 75 data points) made linear regression robust enough for this analysis.