BASIN TECHNICAL SUPPORT DOCUMENT
GUADALUPE RIVER BASIN
AND THE
LAVACA-GUADALUPE COASTAL BASIN

Prepared in Cooperation with the:
Guadalupe-Blanco River Authority,
Upper Guadalupe River Authority
and the
Texas Commission on Environmental Quality
under the Authority of the Texas Clean Rivers Act

Prepared by:
PBS&J
206 Wild Basin Road
Suite 300
Austin, Texas 78746-3343

July 2003

1.0 PUBLIC INVOLVEMENT

The CRP in the Guadalupe River Basin strives to maintain active communication with the public to pursue the goals of public involvement and education in water quality issues. The GBRA and UGRA maintain a number of communication mechanisms to support this CRP effort. GBRA develops opportunities for direct public participation to ensure that community concerns are addressed. These include website, annual report, issuing press releases regarding various water topics, and making public presentations to schools and other interested groups. The UGRA has a similar level of public outreach on water quality issues.

1.1 THE GUADALUPE RIVER BASIN STEERING COMMITTEE

A major communication vehicle for the CRP is the Basin Steering Committee. This group, composed of community leaders and interested citizens from throughout the basin meets annually to review activities and advise the program on priorities for monitoring and special studies. The Steering Committee membership includes: representation from municipalities, counties, industries, homeowner organizations, Texas Soil and Water Conservation Board, Texas Parks and Wildlife Department, Texas Department of Agriculture, Texas Railroad Commission, League of Women Voters and chambers of commerce.

Steering Committee meetings are open to the public with the primary purpose of reviewing and approving achievable basin water quality objectives and priorities, considering available technology and economic impacts, and guiding work plans and the allocation of available resources. Notice of meetings of the Steering Committee is made available by way of mailed notices, as well as on the meeting page of the GBRA website (www.gbra.org).

1.2 SPECIAL SUB-COMMITTEES FOR LOCAL WATER QUALITY ISSUES

In addition to the Basin Steering Committee for the CRP, the GBRA has established the Hydroelectric Lake Citizens Advisory Committee and the Coleto Creek Reservoir Public Advisory Committee. The committees represent the user groups impacted by aquatic vegetation and by operational measures that may be implemented by GBRA. They are given the opportunity to hear, question and give input on activities to control nuisance, non-native aquatic vegetation each year. The committees have representatives from homeowners associations, potable water systems, bass clubs, boating sales companies, and industries, as well as the Texas Parks and Wildlife Department and Texas Department of Agriculture. These committees receive invitations to the CRP steering committee meetings as well.

1.3 PUBLIC EDUCATION AND VOLUNTEER MONITORING ACTIVITIES

One of the outreach activities by GBRA is the development of a middle school curriculum that includes discussion on the Clean Rivers Program, water quality, and

water and wastewater treatment. The curriculum will be distributed to all of the middle schools in the basin.

Other outreach activities include presentations to groups and classes, contributions to the Seguin Outdoor Learning Center to support water quality laboratory equipment, and the training of volunteer monitoring groups.

1.4 TEXAS WATCH

Texas Watch is a cooperative program of environmental monitoring and communication about the environment. It includes volunteers, the TCEQ and Texas Watch partners. GBRA and UGRA are partners in the Texas Watch program in the basin. The goals of the Texas Watch program are to collect environmental information needed to make environmentally-sound decisions, and to improve communications about environmental issues. The program encourages everyone to ask:

- What questions do we want to answer about the environment?
- What part of the environment are we most concerned with?
- What can I do to help preserve and protect the environment?

GBRA and UGRA support Texas Watch in the Guadalupe River Basin by:

- Providing informational sessions to promote and help establish monitoring groups.
- Providing training to monitors.
- Providing quality control sessions.
- Providing technical expertise to support, expand and maintain monitoring groups.

Further information on Texas Watch can be found on their web site:
www.texaswatch.geo.swt.edu

1.5 WEB SITES

Another mechanism used to keep the public informed is the Internet. Both authorities have Internet web pages (www.gbra.org and www.ugra.org) that provide information to the public on topics of interest in the basin.

The GBRA web page provides links to a range of information on river flows and quality conditions, including:

- Water quality data
  - Data of water quality samples collected by the two river authorities over the years along with data collected by the TCEQ and the USGS.
  - These files can be easily downloaded in pdf format.
- Special Studies Reports
  - Available for download in pdf format.
- Schedule of Monitoring Activities
  - A list of all the monitoring sites under a TCEQ-approved QAPP.

- Interactive Map of the Monitoring Sites
  - Click on each site and find out which information is being collected for that location.
- Quality Assurance Information
  - Detailed information on the type of constituents (pollutants) collected by the river authorities.
- Events Inventory
  - A listing of events related to water quality in the Guadalupe and Lavaca-Guadalupe Basins.

2.0 BASIN OVERVIEW

The Guadalupe River arises in Kerr County and flows 431.6 river miles in a southeasterly direction until it empties between Calhoun and Refugio Counties into San Antonio Bay. The basin covers an area of 6,070 square miles and extends into a portion of 21 counties. The population in the basin is about 380,000. The major cities, those with population of more than 10,000, are listed below:

City	Population (2000 Census)
Victoria	60,603
New Braunfels	36,494
San Marcos	34,733
Seguin	22,011
Kerrville	20,425
Lockhart	11,615

The Coastal Basin is located in the coastal plains between the Lavaca River and Guadalupe River and consists of the portions of Calhoun, Jackson, and Victoria Counties that flow directly to the coastal waters. The drainage area is 998 square miles. The Coastal Basin has a population of about 50,000. The City of Port Lavaca is the major city in the Coastal Basin, with a 2000 population of 12,035.

Terrain in the upper basin (Kerr, Bandera, Gillespie, Kendall, Blanco, Hays and Comal counties) is rolling hill country. One major reservoir, Canyon Lake, is located in Comal County. The Balcones fault line, which the river crosses near New Braunfels, marks the transition to the coastal plains. The coastal plain portion of the basin has relatively flat terrain. A series of small run-of-river hydro-electric reservoirs was constructed during the late 1920s and early 1930s. GBRA operates six of these reservoirs, the City of Gonzales has one, and there are two in private hands, one near Cuero and one on the San Marcos River. These facilities generate electricity and the pooled reaches of the river provide recreational and aesthetic amenities.

Figure 2-1 shows a general map of the basins and Figure 2-2 is a land cover map for the basins. The principal economic activities in the basins are agriculture, recreation, mineral extraction, and petrochemical production.

As shown in Figure 2-3, the basins lie within the following four Ecoregions:

- Edwards Plateau
- Texas Blackland Prairies
- East Central Texas Plains
- Western Gulf Coastal Plain

FIGURE 2-1
GUADALUPE RIVER BASIN AND LAVACA-GUADALUPE COASTAL BASIN

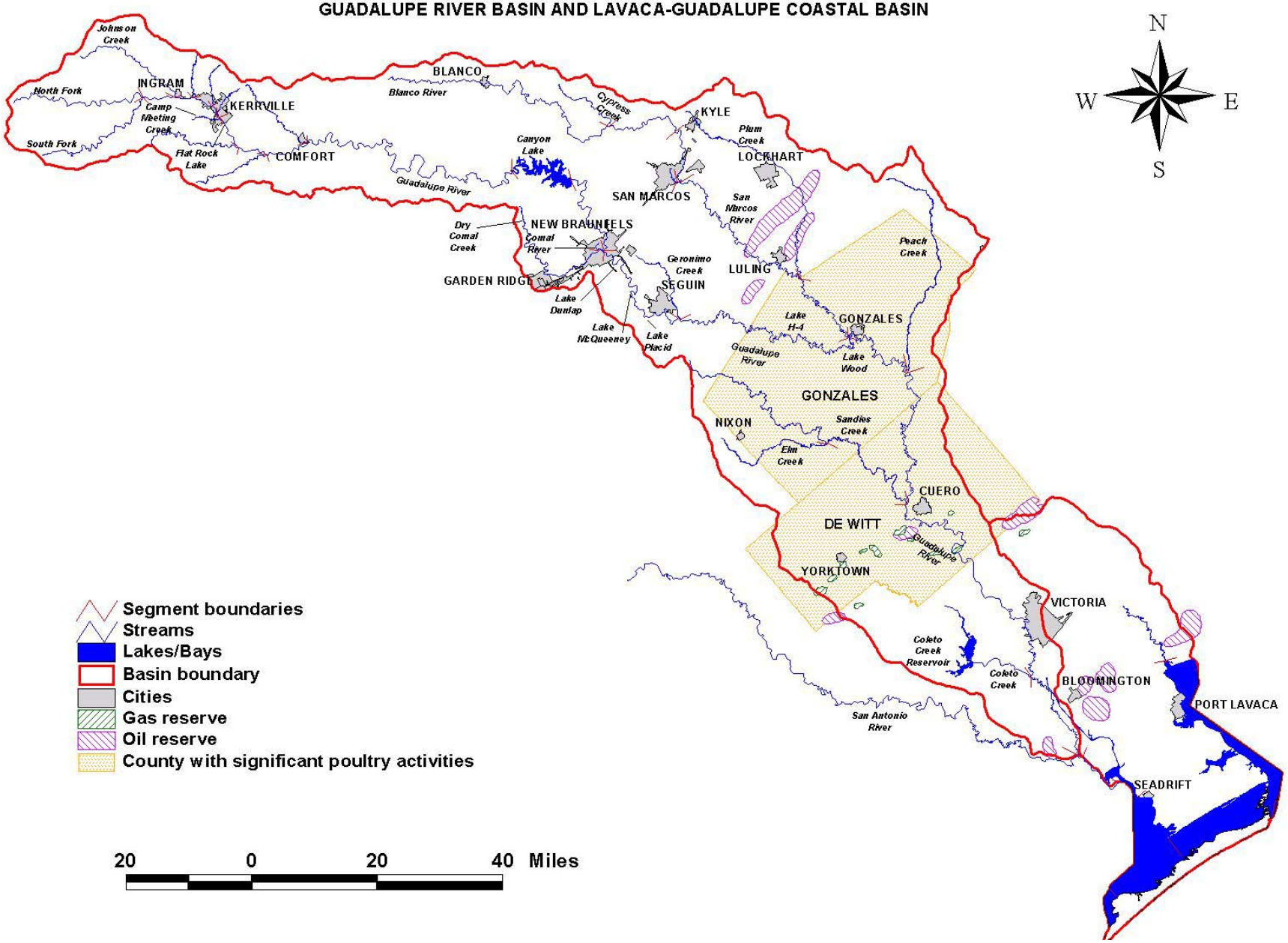


FIGURE 2-2
LAND COVER INTHE GUADALUPE RIVER BASIN AND LAVACA-GUADALUPE COASTAL BASIN

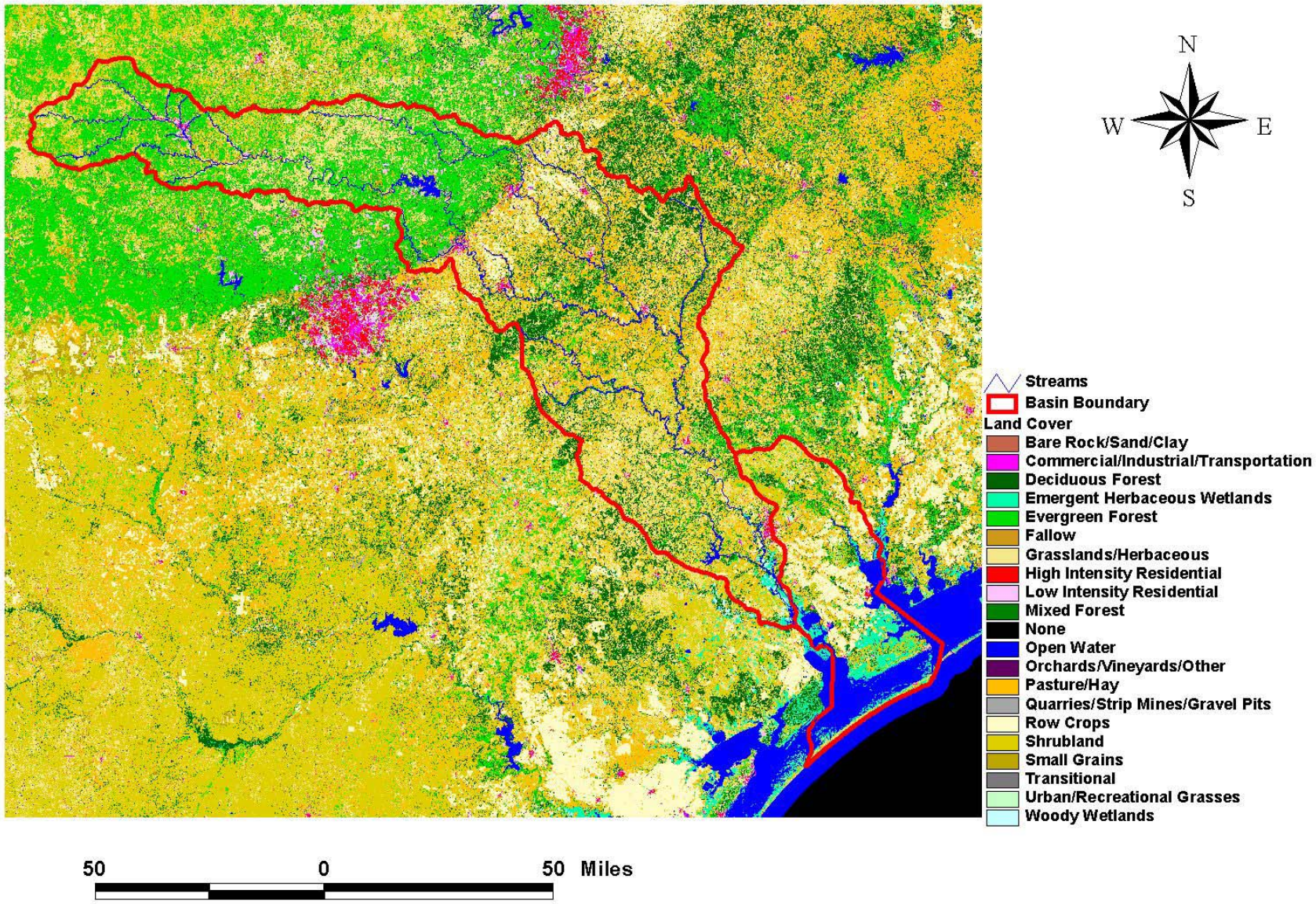
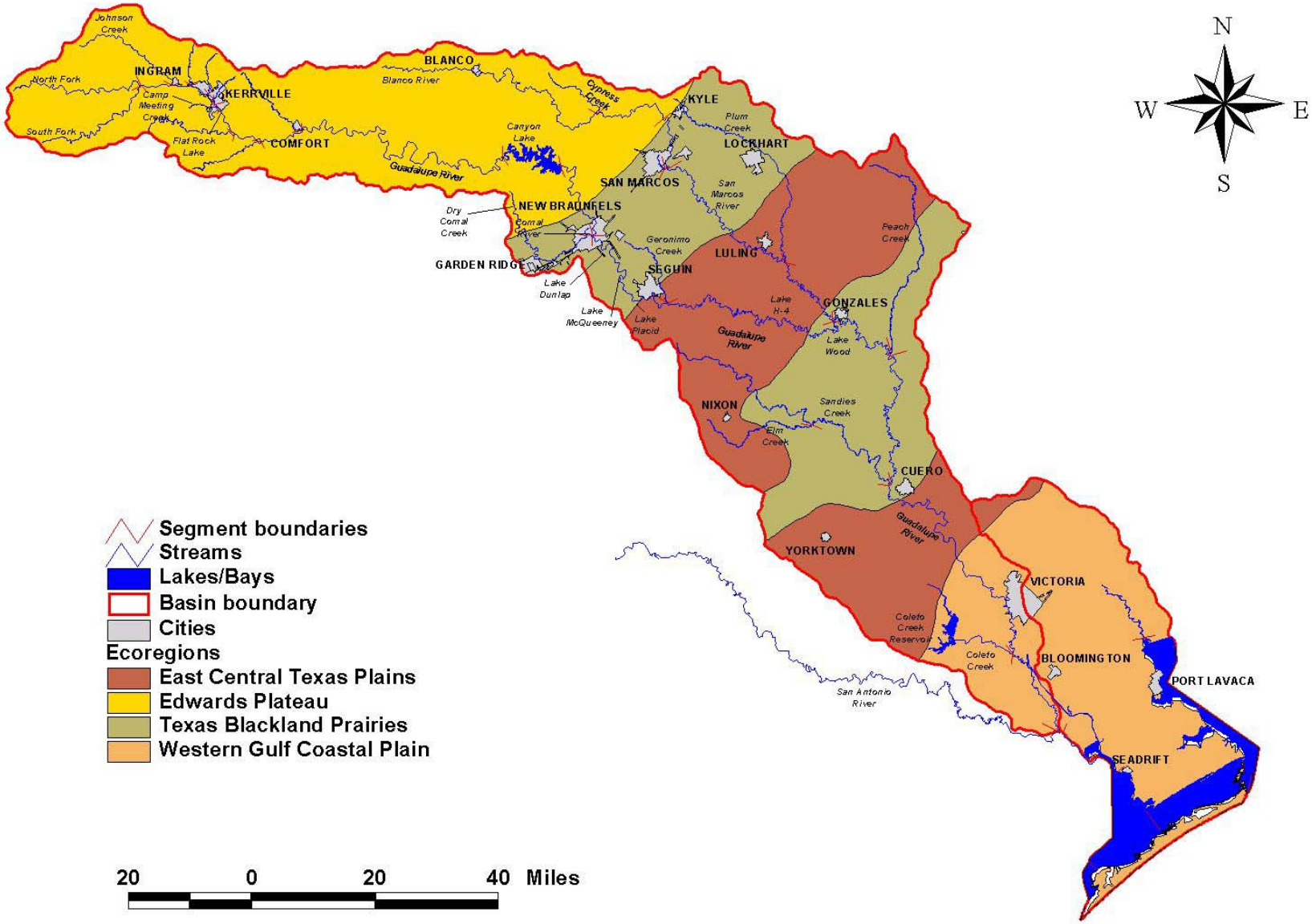


FIGURE 2-3
ECOREGIONS INTHE GUADALUPE RIVER BASIN AND LAVACA-GUADALUPE COASTAL BASIN



The annual average discharge at the mouth of the Guadalupe River is 1,240,000 acre-feet. Major tributaries to the Guadalupe River are the Blanco, San Marcos, and Comal Rivers. Their respective length and annual average discharges are:

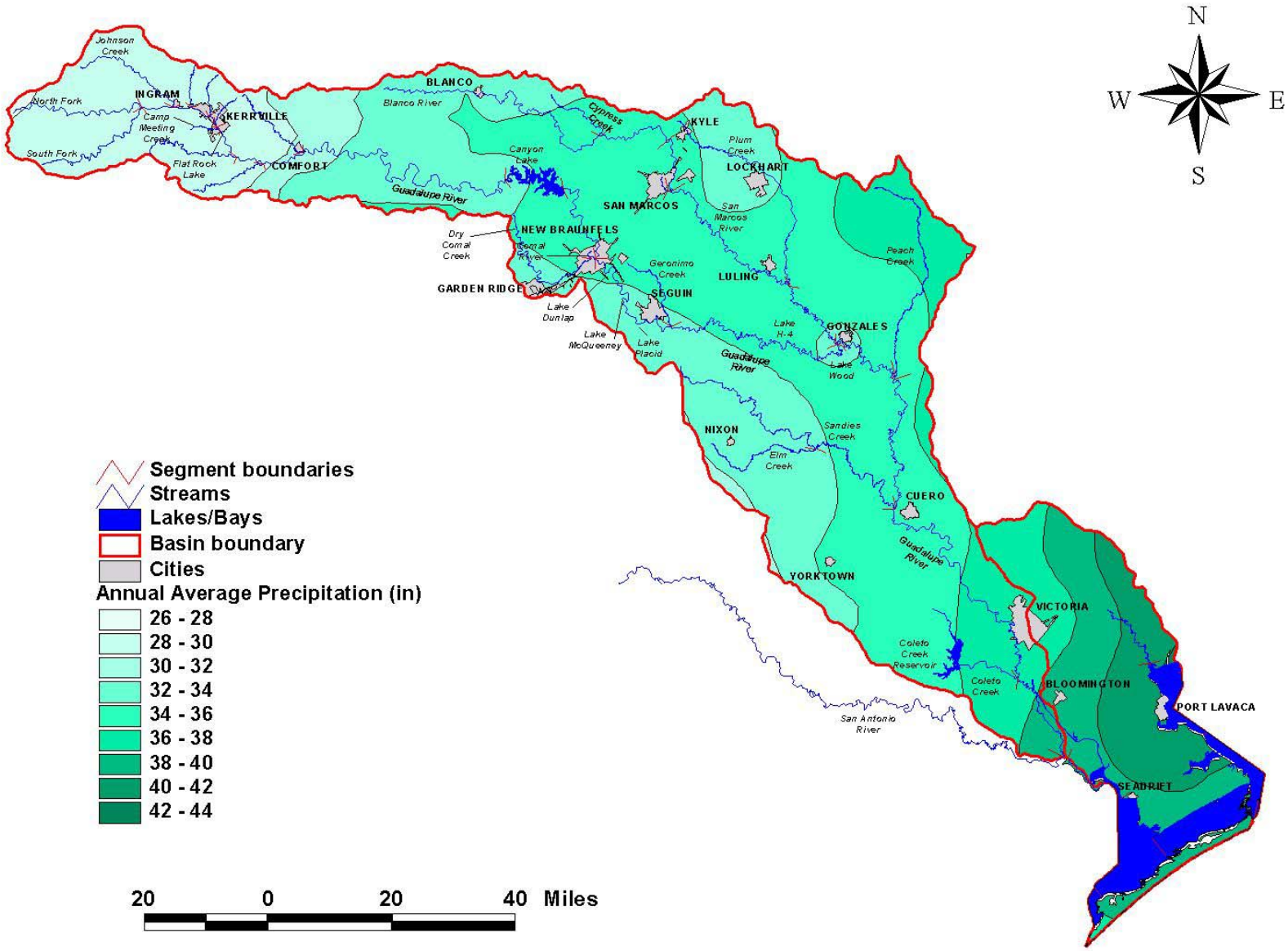
Blanco,	89.8 river miles and 110,100 acre-feet average discharge,
San Marcos,	74.2 river miles and 259,400 acre-feet average discharge,
Comal,	4.0 river miles and 219,800 acre-feet average discharge.

The Comal River has only a small drainage area. Most of the flow is from springs. The principal tributaries to the Coastal Basin include Garcitas and Placedo Creeks.

As shown in Figure 2-4, the average annual precipitation increases from about 29 inches in the upper end of the basin to over 40 inches in the Coastal Basin.

The streams in the hill country portion of the basin are supplied largely by the Edwards Aquifer. Above Canyon Lake the Edwards Plateau Water Table Aquifer supplies the bulk of the flow while lower in the basin the artesian portion of the Edwards dominates. Between these two aquifers, the river tends to have very stable base flows and excellent quality waters.

FIGURE 2-4
AVERAGE ANNUAL PRECIPITATION IN THE GUADALUPE RIVER BASIN AND LAVACA-GUADALUPE COASTAL BASIN



3.0 TREND ANALYSIS

Trend analysis was used to identify those sites and parameters that show a potential trend over time and determine if that trend still exists after accounting for stream flow and season. These analyses supplement the 305(b) assessment in identifying those water bodies that may be experiencing changes in water quality.

The following steps were performed for the trend analysis of water quality data:

1. Preparing data sets.
2. Preparing time series plots for data sets.
3. Conducting simple regression analysis to identify sites and parameters that show a potential trend.
4. Conducting additional regression analysis to account for stream flow and season.

The above steps are discussed in more details in the following sections.

3.1 PREPARING DATA SETS

Data from the TCEQ Regulatory Activity and Compliance System (TRACS) database starting from 1993 were retrieved. Table 3-1 shows the parameters selected for analysis and their STORET parameter code. Note that there are very limited ortho-phosphorus data and more total phosphorus data. Therefore, total phosphorus data were used in the trend analysis. Trend analyses for chlorophyll *a* were performed only for reservoirs, as that is the only areas where a significant amount of such data is available.

TABLE 3-1
PARAMETERS SELECTED FOR TREND ANALYSIS

Parameter	Unit	Storet Code
Water Temperature	degree C	00010
Conductivity	μmhos/cm	00094
Dissolved Oxygen (DO)	mg/L	00300
pH	Standard unit	00400
Ammonia Nitrogen (NH_3-N)	mg/L	00610
Nitrate & Nitrite Nitrogen (NO_3+NO_2-N)	mg/L	00630 or 00631
Total Phosphorus (TP)	mg/L	00665
Chloride	mg/L	00940
Sulfate	mg/L	00945
Fecal Coliform (FC)	cfu/dL	31616
E. Coli (EC)	cfu/dL	31648 or 31699
Chlorophyll *a*	μg/L	32211

Temperature significantly affects the dissolved oxygen (DO) concentration since saturation DO ranges from 7.5 mg/L at a summer temperature of 30°C to over 11 mg/L at a winter temperature of 10°C. To remove this source of variation, trend analyses were

performed for DO deficit instead of DO. The following equation was used to obtain DO deficit from DO:

DO deficit = [500 / (Temp + 35)] – DO

To remove the effect of depth variation, only data collected at or near the surface were used for the trend analysis. Data with depth greater than or equal to one meter were not used. Composite data are a different category of measurements than grab samples and were also removed from the data set.

For the analysis to be meaningful, the number of samples should not be too small and the period of record should not be too short. The requirements are that there are at least 20 measurements in a six-year period with at least 3 measurements per year for five of the six years. Data sets were prepared for the parameters and stations that satisfy these requirements. Note that the data set includes all the data from 1993 for that station and parameter, not only the six years that meet the required amount of data. However, if there is a significant data gap, only the major block of data was used for analysis.

Flow data for each station were also retrieved. If instantaneous flow measurements were not available in the TRACS database, daily flow data were retrieved from the USGS web page. However, only some of the water quality monitoring stations are also USGS gage stations. Therefore, in many cases, flow data were not available.

The season in which the sample was taken was identified. June through September was considered summer and October through May was considered winter.

3.2 PREPARING TIME SERIES PLOTS FOR DATA SETS

Reviewing the time series plots is an important step in the regression analysis. In some cases, the regression results may be heavily influenced by a few data points. Their presence may result in a potential trend that otherwise would not exist, or vice versa. Reviewing the time series plots helps identify these cases. The time series plots are shown in Appendix A.

3.3 SIMPLE REGRESSION ANALYSIS

A simple linear regression of the data versus time was performed for each data set. The following statistics were noted:

- Number of data.
- Number of censored data.
- R-squared.
- t-ratio.
- P-value.

Censored data are data reported as below detection limits. R-squared indicates the proportion of variability in the data explained by the regression. The t-ratio is a statistical

parameter used in hypothesis testing. The larger the absolute value of the t-ratio, the more likely there is a trend. The P-value indicates the likelihood of obtaining a data set such as the observed one if there is no trend in the data. Therefore, large P-values support the hypothesis that there is no trend and vice versa. The t-ratio and the P-value essentially provide the same information. A 90% confidence level was used in the trend analysis performed for this report. Hence a P-value below 0.1 indicates that there is a potential trend. In effect, this is accepting a 10% probability that an indicated or potential trend is not real.

The residuals of the regression are the differences between observed values and values calculated based on a regression line with a variable such as flow. The time series plots of residuals and the normal probability plots were reviewed to check whether assumptions in the analysis have been satisfied. If not, the data were transformed (such as taking log or square root) and the regression performed on the transformed data. It is noted that departure from normality of the data is not a serious problem in trend analysis, especially when the sample size is large (Neter et al, 1990).

3.4 ADDITIONAL REGRESSION ANALYSIS TO ACCOUNT FOR STREAM FLOW AND SEASON

For those data sets that show a potential trend, additional regressions were performed to account for flow (when available) and season. The log of flow was used due to the large range of flow values.

Accounting for flow

When flow data were available, regressions with parameter values were performed, and the regression results used in a residuals analysis. Results of those analyses are discussed along with the initial trend results.

Accounting for season

Regressions of the parameter values versus time were performed for the winter and summer data sets.

Accounting for flow and season

Regressions of the parameter values versus flow were performed separately for the winter and summer data sets. The residuals analyses are discussed with the initial trend results.

3.5 RESULTS

Detailed results of the trend analysis are presented in Appendix B.

4.0 TOXICS DATA

Most of the toxics data are non-detects. Therefore, it is not meaningful to perform trend analysis on these data sets. These data are reviewed and compared with standards or screening levels to identify significant problems in the watersheds.

4.1 ORGANICS

Organic substances include pesticides, volatile organic substances and semi-volatile organic substances. Since 1993, organics data in water column or sediment have been collected at 13 stations and there are more than 1,000 data points. Figure 4-1 shows the locations of the 13 stations.

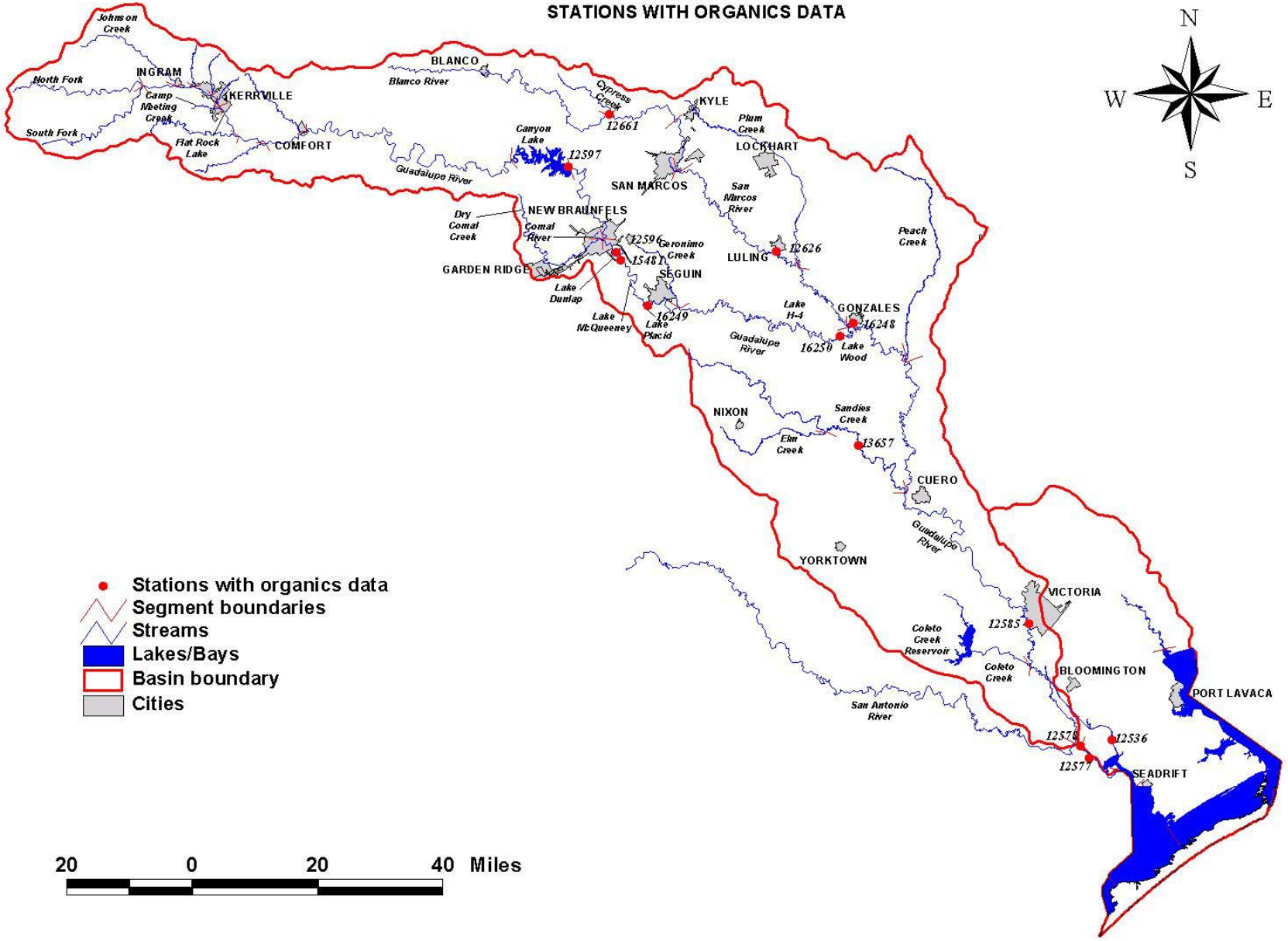
Most of organics data are below reporting limits. Only 12 data points are "detected". These values, together with the non-detect data of the same parameters at the same sites, are listed in Table C-1 of Appendix C. Screening levels have been established by TCEQ for organics in sediment. The screening levels include probable effects levels (PELs) or levels developed based on 85th percentiles of long-term data. The PELs are used to identify compounds that are likely to be elevated to toxic concentrations and are developed for freshwater or marine conditions.

As shown in Table C-1 of Appendix C, there is one detected value for diazinon at Station 12578, Guadalupe River at Lower Guadalupe Diversion Dam and Salt Water Barrier. There is currently no criterion for diazinon. The trace amount detected was from a sample in 1993. No conclusion can be drawn from one sample collected 10 years ago.

Table C-1 also shows that organics in sediment data collected at Station 12577 (Guadalupe River Tidal Bridge at SH35 NE of Tivoli) are all below screening levels except one value of di-n-butyl phthalate. The other three data points of di-n-butyl phthalate collected at this site are all below reporting limits. The high value appears to be an isolated incidence and might have been caused by laboratory contamination, a common problem with this parameter.

The organics data collected in the Victoria Barge Canal on 8/20/97 are all below the 85th percentile screening levels. The salinity in the barge canal is somewhere between fresh and marine. The parameters that appear to be above PELs are acenapthene, flourene, and phenanthrene. However, since there is only one sample for each parameter, no conclusion can be drawn.

FIGURE 4-1
STATIONS WITH ORGANICS DATA



4.2 METALS

Since 1993, metals data in the water column or sediment have been collected at 29 stations. Figure 4-2 shows the locations of these stations. At some stations, there are only a small number of samples for certain parameters. In case the number of samples is less than 6, the individual values are listed in Table D-1 of Appendix D. When there are 6 or more values, the minimum, median, mean, and maximum values are obtained and listed in Table D-2 of Appendix D together with the number of data, the number of non-detects and the maximum and minimum reporting limits. For non-detects, half of the reporting limit was used in the calculation.

There are a number of criteria for metals in water. One is for protection of aquatic life. Some of the freshwater criteria depend on the hardness of the water. Segment-specific hardness values in Table 5 of the Implementation Procedures (TCEQ, 2003) are used in calculating the criteria for the segments. For public water supply use, the criteria for surface water are the same as the maximum contaminant levels for public drinking water supplies. Another set of criteria is related to fish consumption use.

Screening levels have been established for metals in sediment. The screening levels include probable effects levels (PELs) or levels developed based on 85th percentiles of long-term data.

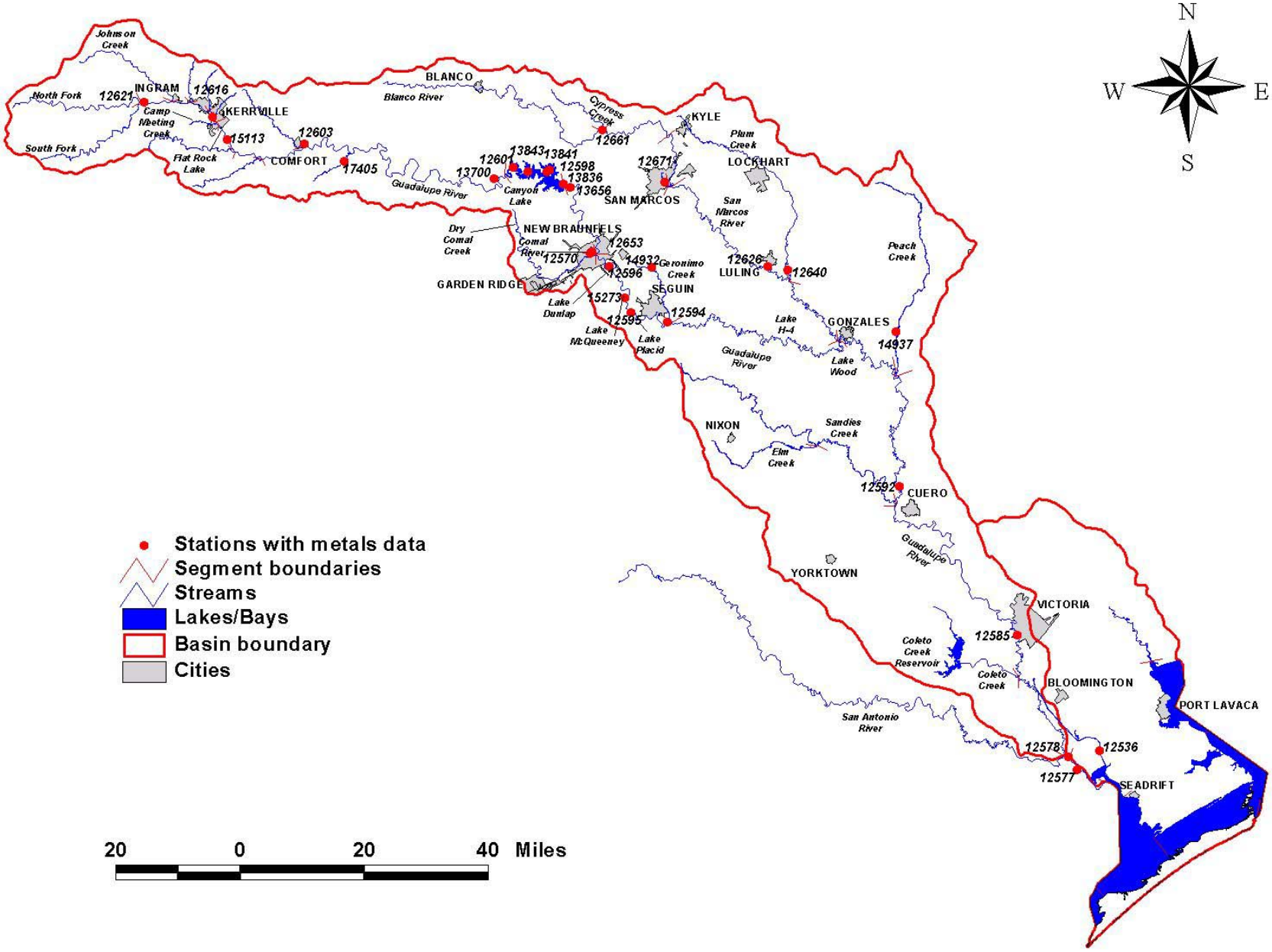
For sediment data, no value exceeds the PEL criteria. Eleven values at Station 12595 (Guadalupe River at IH10 west of Seguin) are above the 85th percentile screening levels. These data were collected in 1999 and 2000. The parameters include arsenics, chromium, copper, lead, zinc and selenium. It appears that further monitoring is needed at this site.

No water column data exceeds the public water supply criteria. In Table D-2, the mean values of the lead or cadmium data at a few sites appear to exceed the chronic criteria for protecting aquatic life. However, the exceedance was caused by non-detects that have high reporting limits. For example, many of the lead data have a reporting limit of 100 ug/L. In calculating the mean, a value of 50 was used that is significantly higher than the chronic criteria.

The acute criterion of silver for protecting aquatic life was exceeded once at Station 13700. Criteria for mercury were exceeded a few times. The human health criterion was exceeded once at Station 12592. The human health criterion was exceeded once at Station 12578, and exceeded twice at Station 12577. One value at Station 12577 also exceeded the acute criterion for protection of aquatic life.

Exceedances of metals criteria in the basin are occasional incidents. Heavy metals contamination does not appear to be a problem in the basin.

FIGURE 4-2
STATIONS WITH METALS DATA

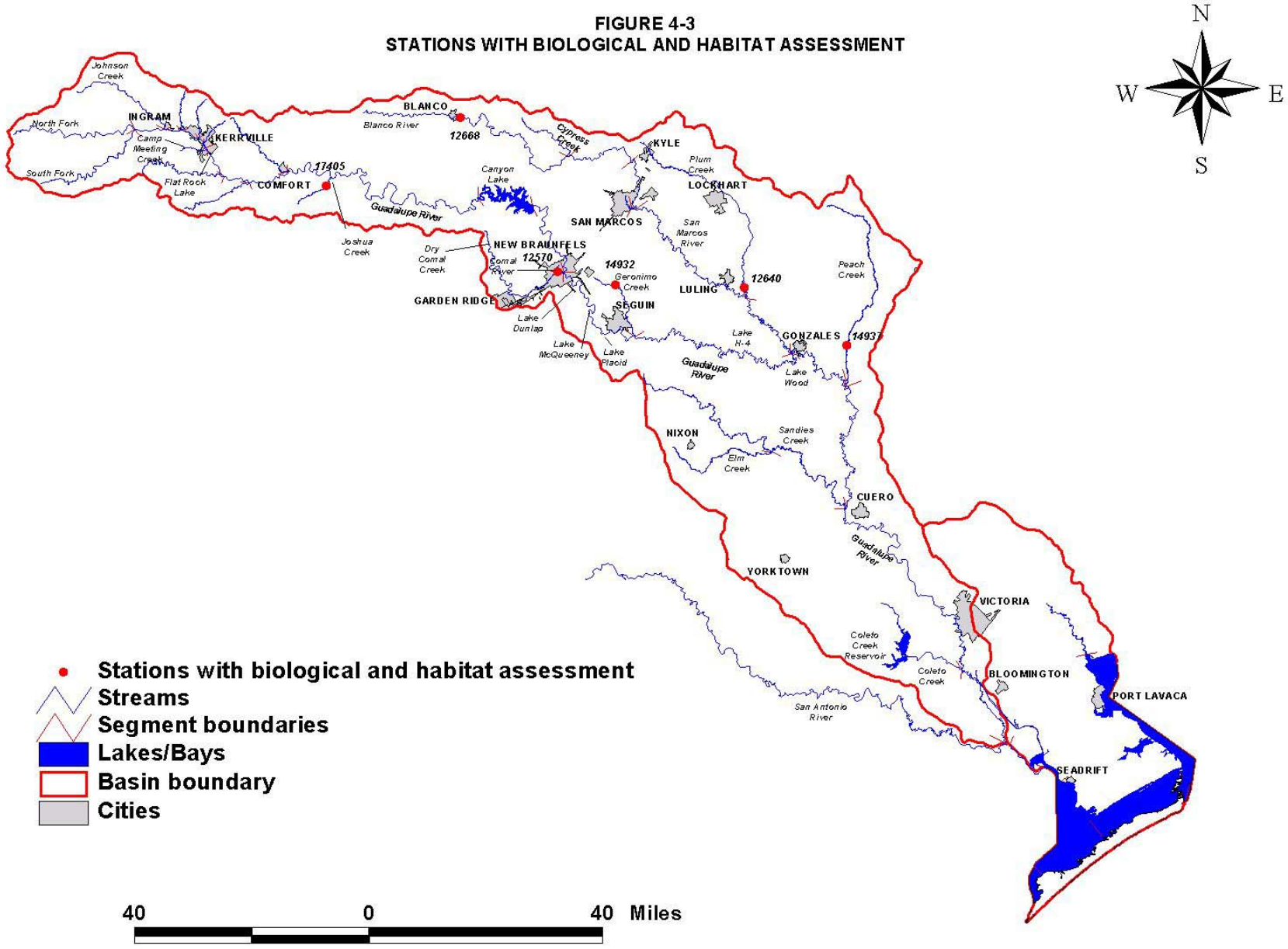


5.0 BIOLOGICAL AND HABITAT ASSESSMENT

Fish community data were collected at the sites shown in Figure 4-3. These data were used to evaluate the fish community using the index of biotic integrity (IBI, refer to Table 9 in TNRCC, 2002). The habitat quality was evaluated by measuring physical habitat parameters over a defined stream reach according to established TCEQ protocols. Nine parameters were rated to determine a multimetric habitat quality index (HQI, refer to Table 12 in TNRCC, 2002). The biological data are summarized in Table E-1 of Appendix E.

In many cases, the results indicate that the fish communities scored lower than the aquatic life use criteria. This may be partially explained by the data used for the IBI metrics. Only electrofishing data were available for this analysis. It is possible that if seine data were included, additional fish abundance and diversity may have been reflected, resulting in higher IBI scores. However, it is also possible that the fish communities are reflective of their supporting habitat. In all cases, habitat ranked as Intermediate for aquatic life use.

FIGURE 4-3
STATIONS WITH BIOLOGICAL AND HABITAT ASSESSMENT



6.0 REFERENCES

Neter, J. et al, 1990. Applied Linear Statistical Models. Richard D. Irwin, Inc., Homewood, Illinois, 1181 pages.

TNRCC, 1999. Receiving water assessment procedures manual. Surface Water Quality Monitoring Program, Texas Natural Resource Conservation Commission. Publication GI-253.

TNRCC, 2002. Guidance for Assessing Texas Surface and Finished Drinking Water Quality Data, 2002, Texas Natural Resource Conservation Commission.

TCEQ, 2003. Procedures to Implement the Texas Surface Water Quality Standards.

Data sources:

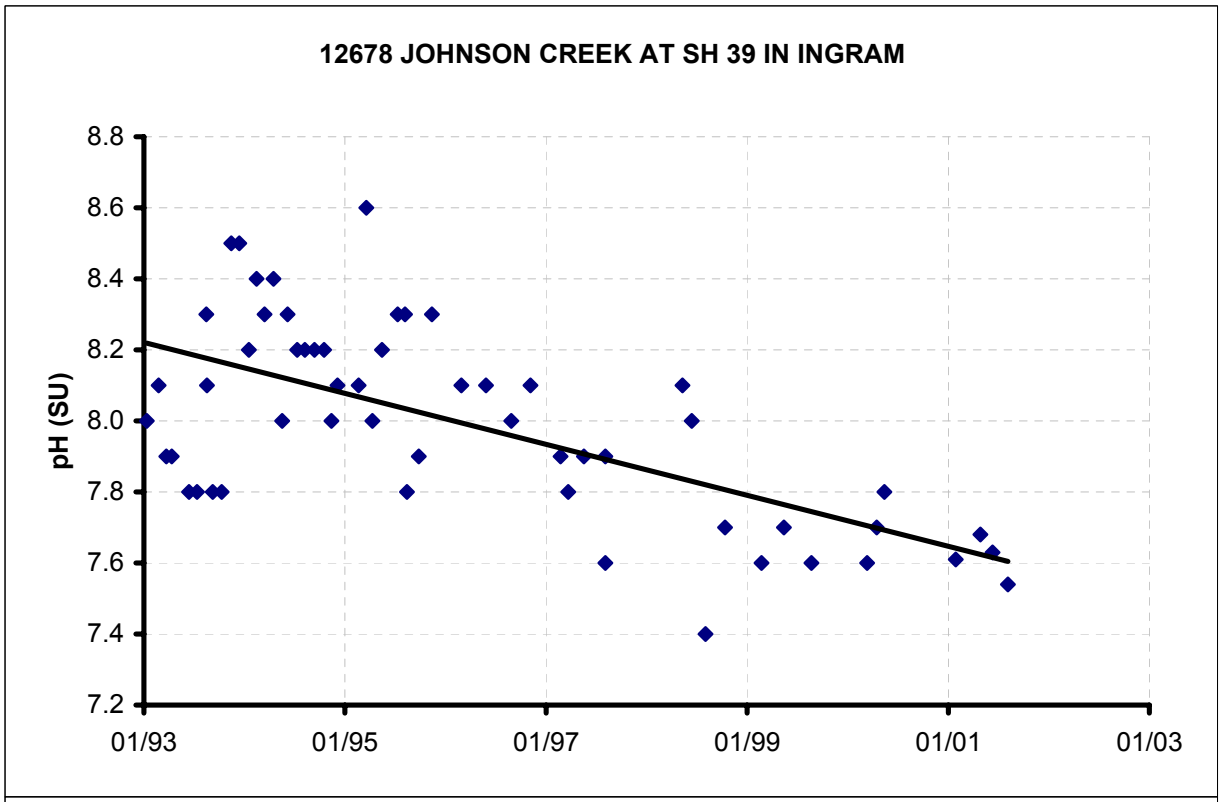
Average annual precipitation for the climatological period 1961-90:
http://www.twdb.state.tx.us/mapping/gisdata.htm

Land cover data:
http://landcover.usgs.gov/natllandcover.html

APPENDIX A

TIME SERIES PLOTS OF DATA

FIGURE A-1
TIME SERIES PLOTS OF DATA



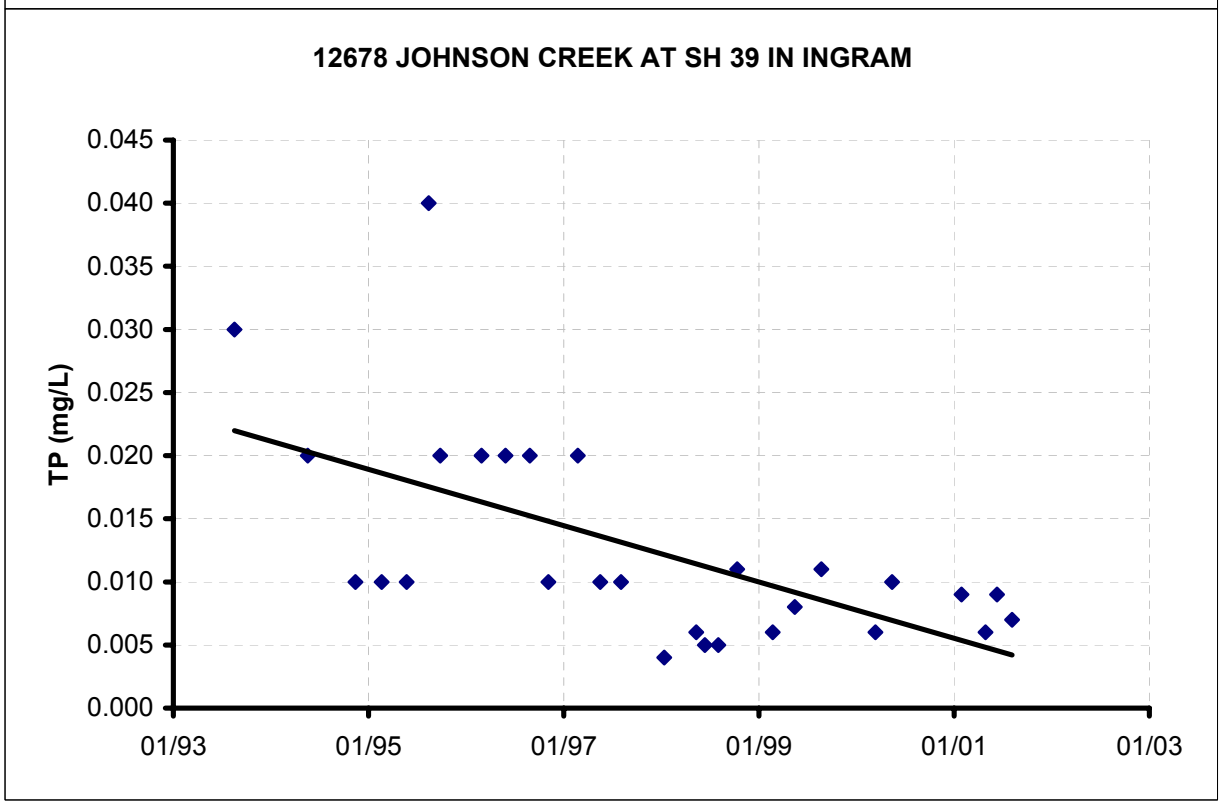
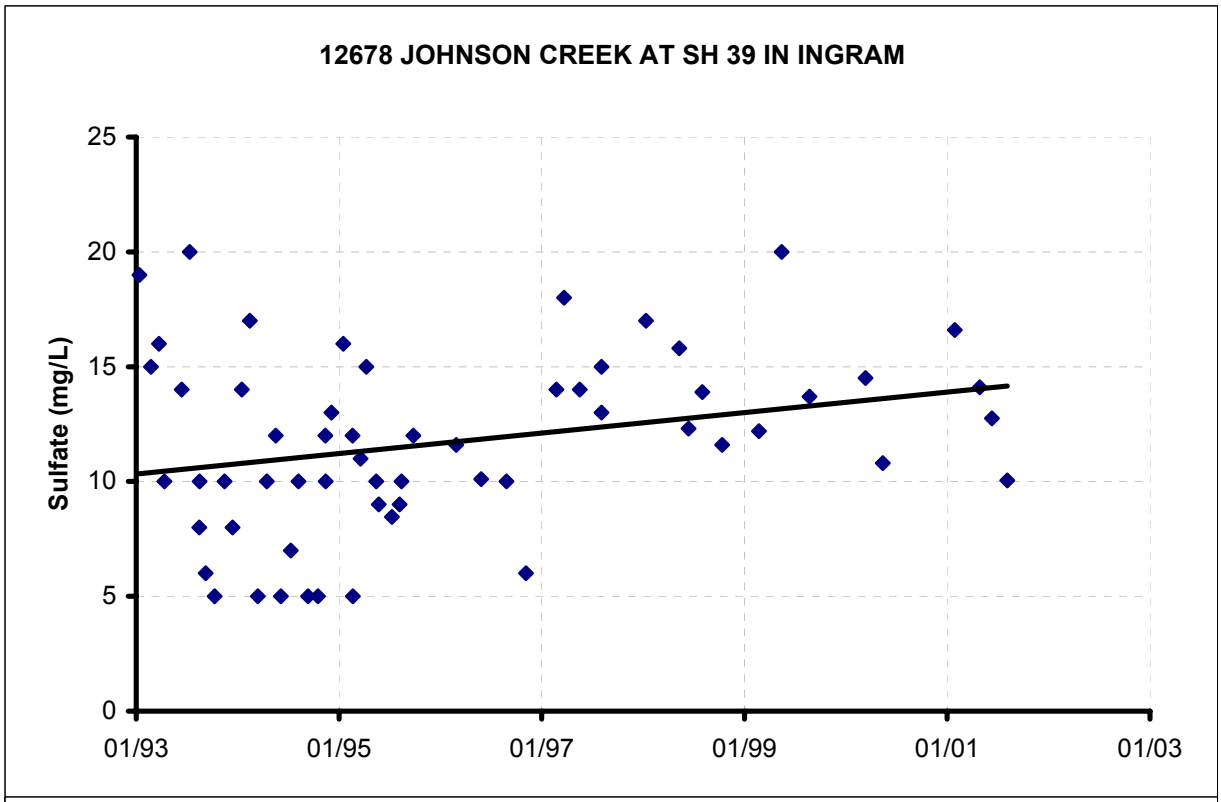


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA



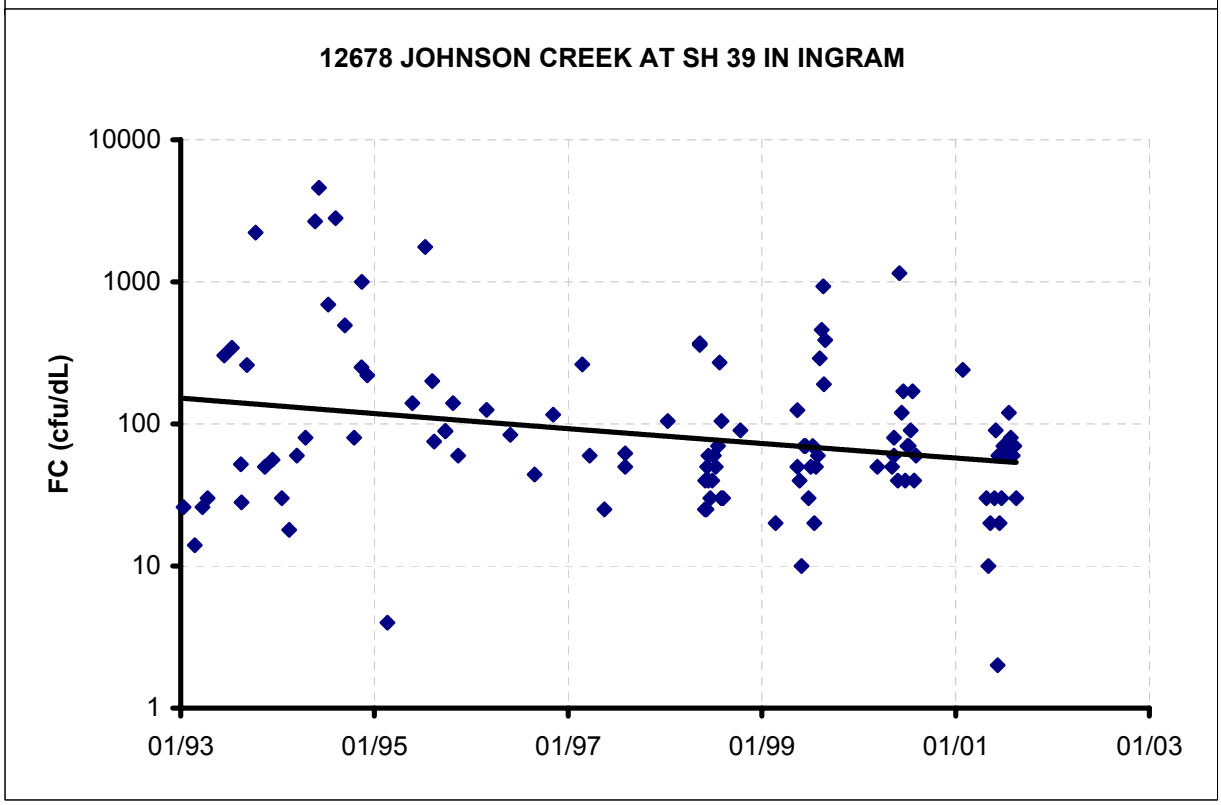


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

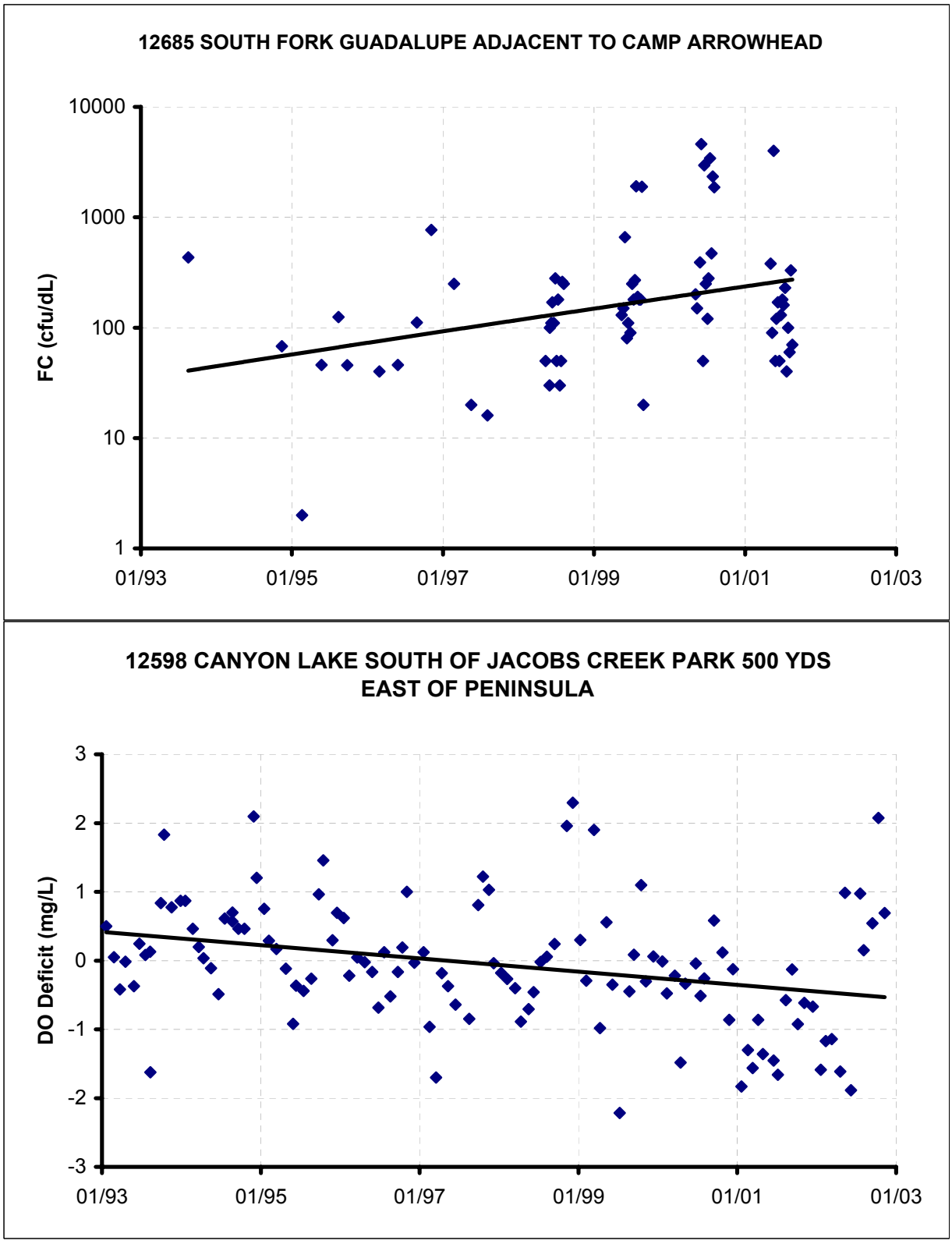


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

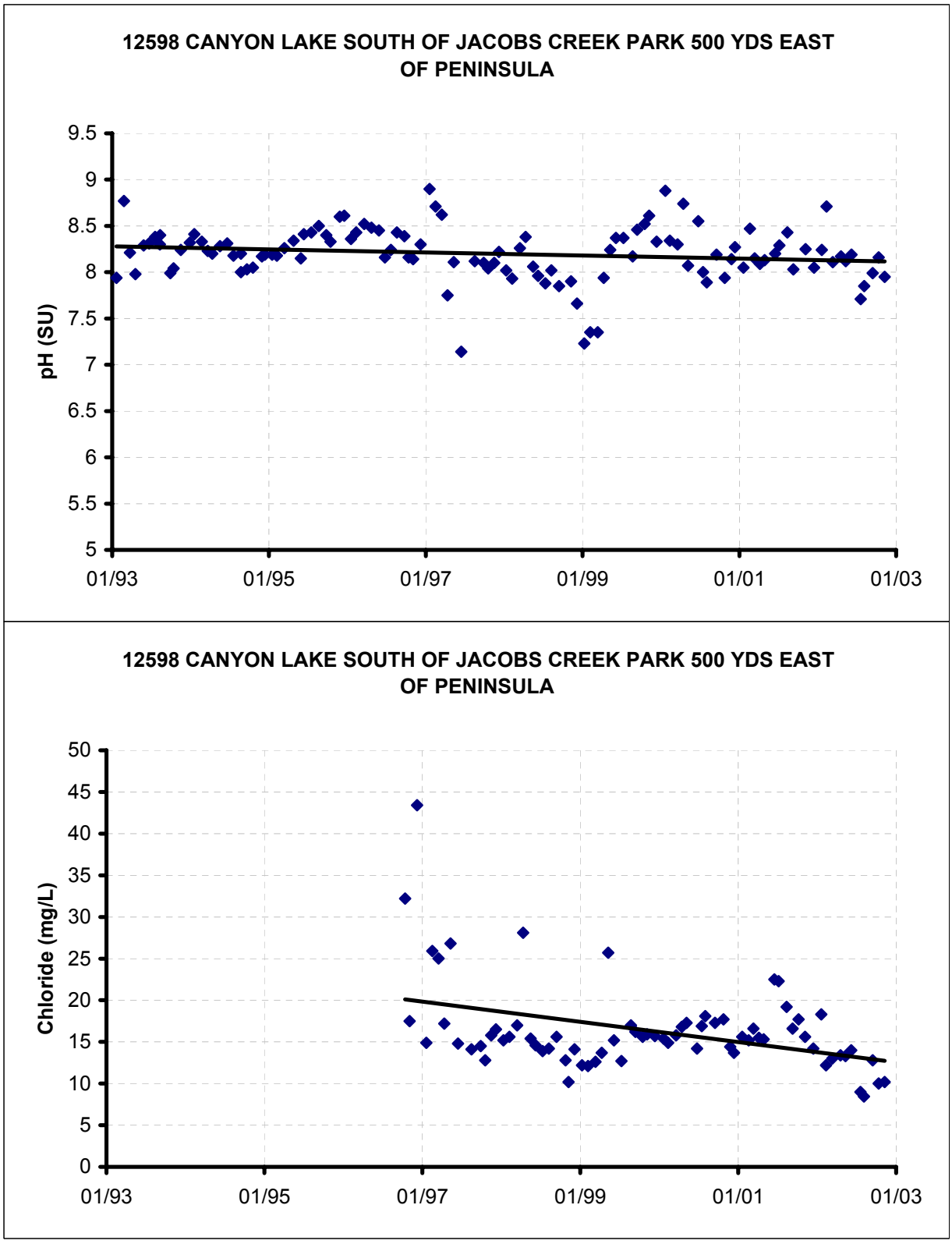


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

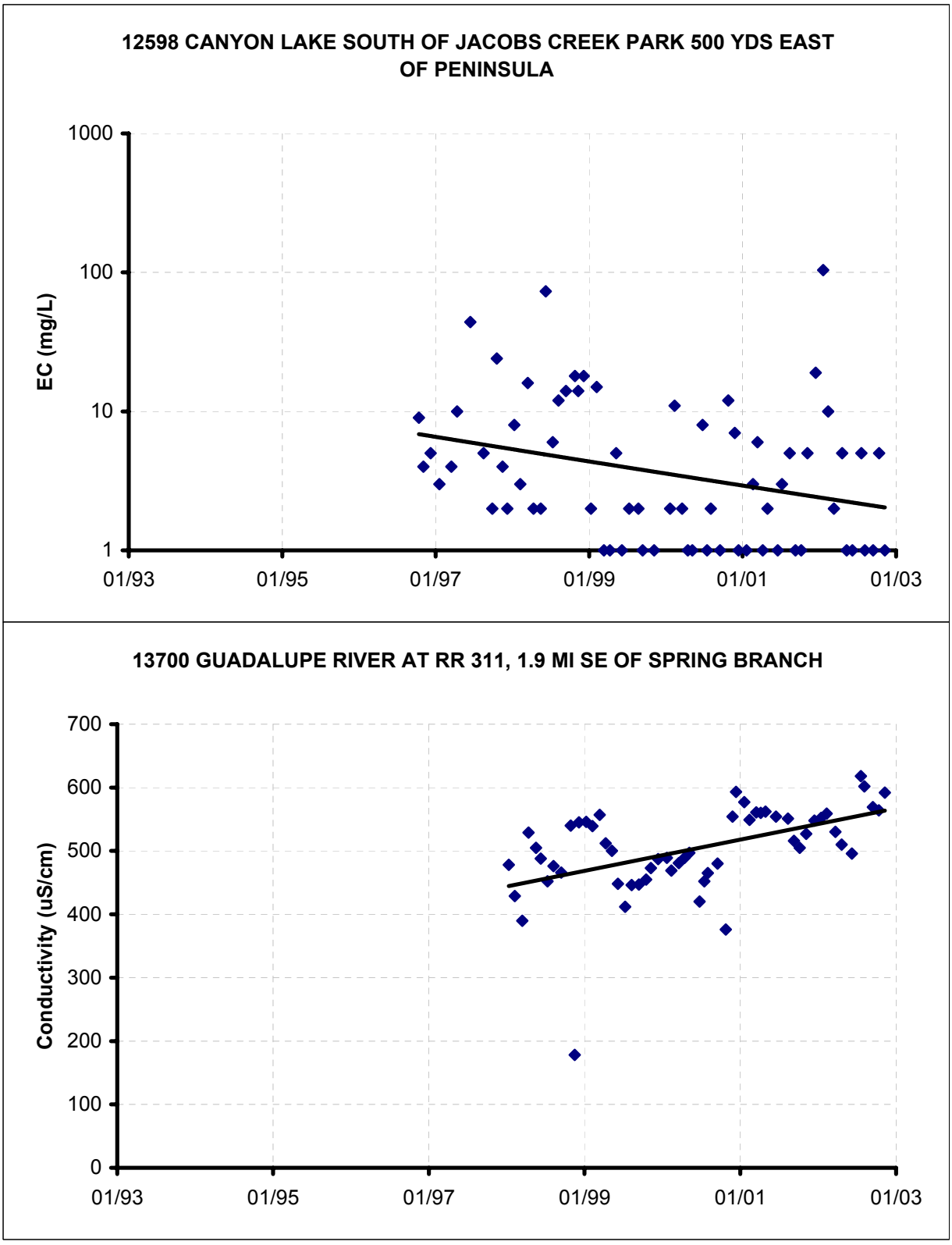
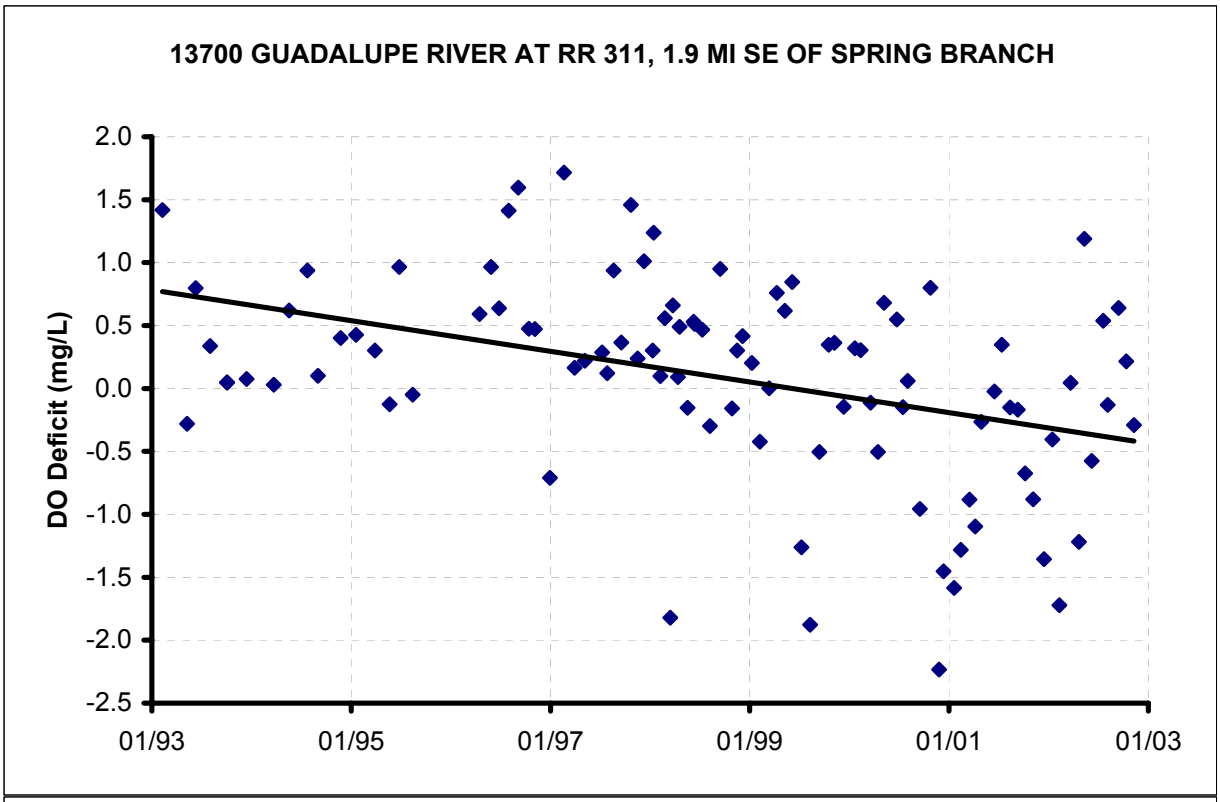


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA



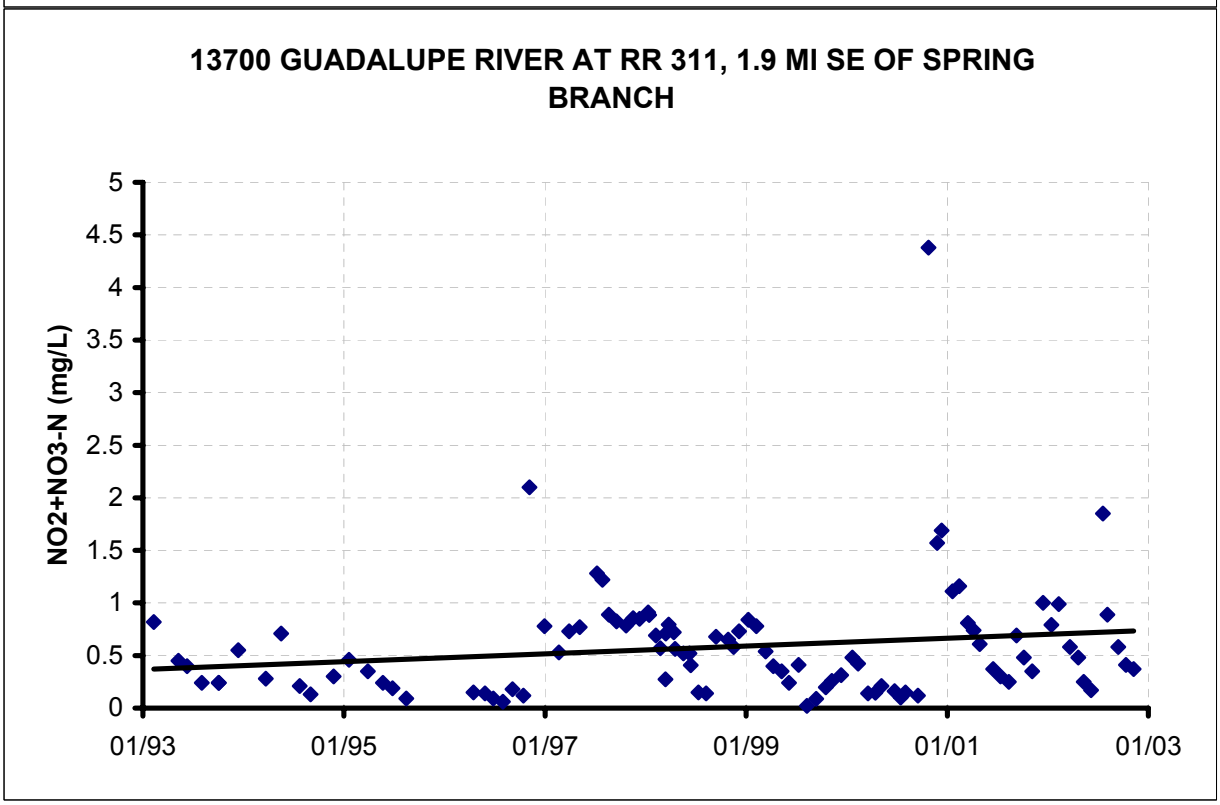


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

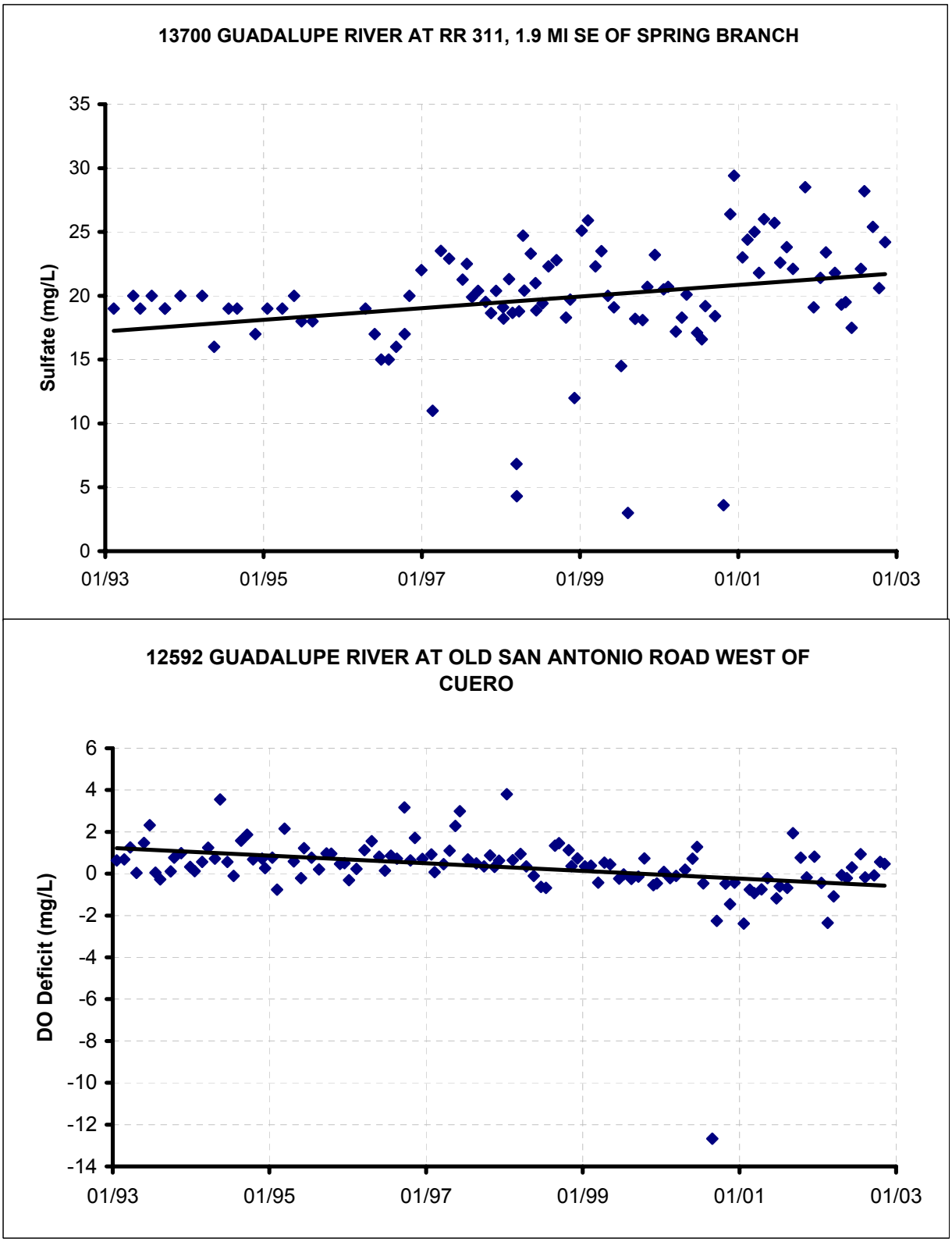


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

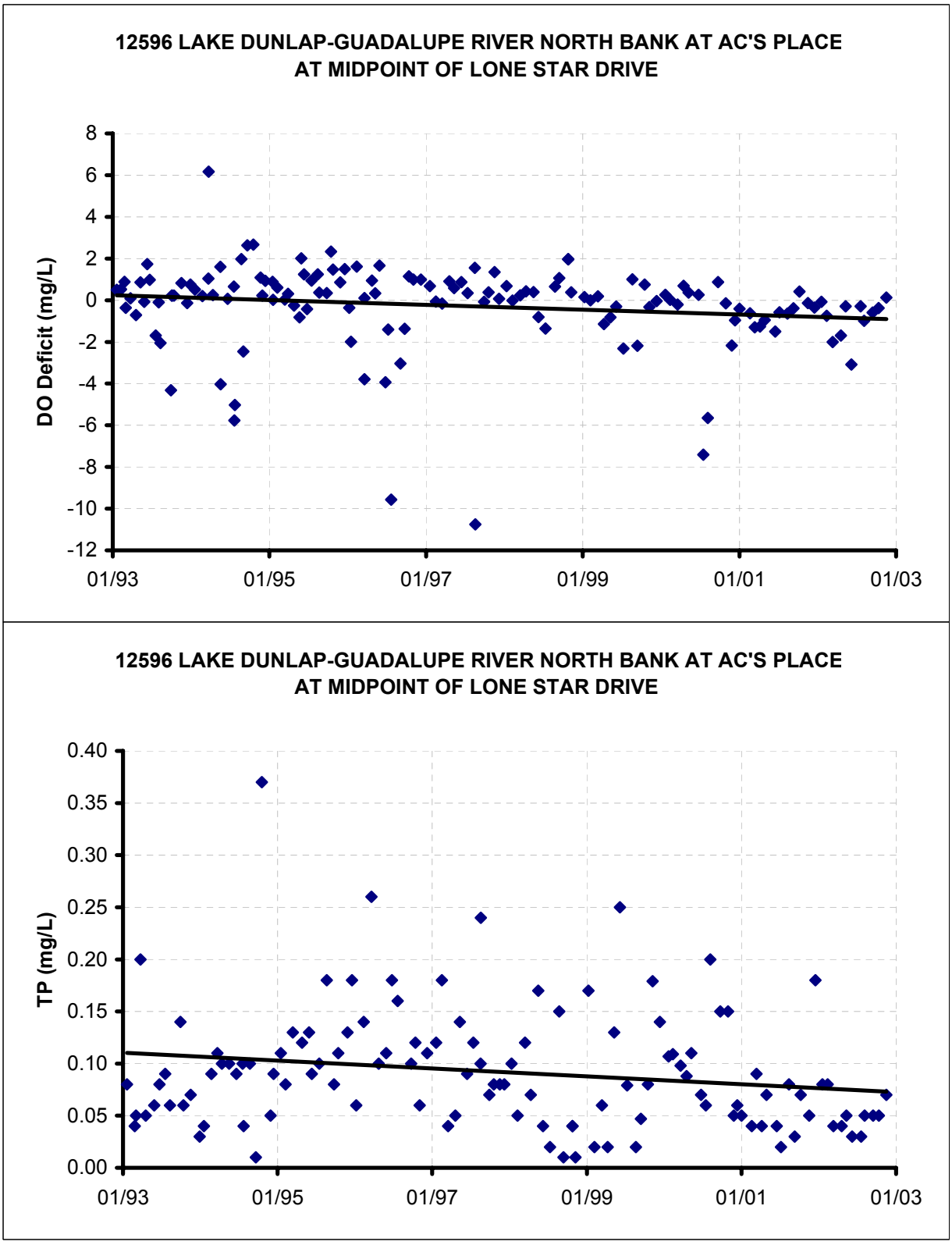
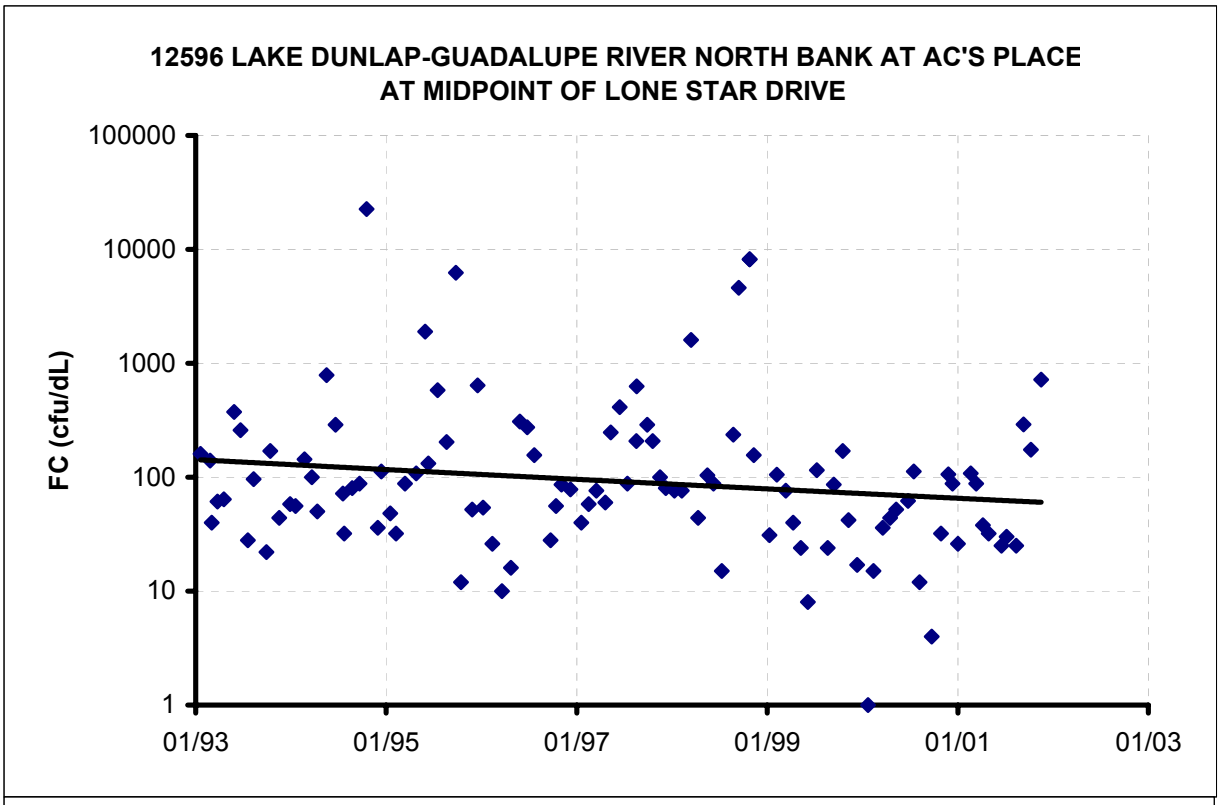


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA



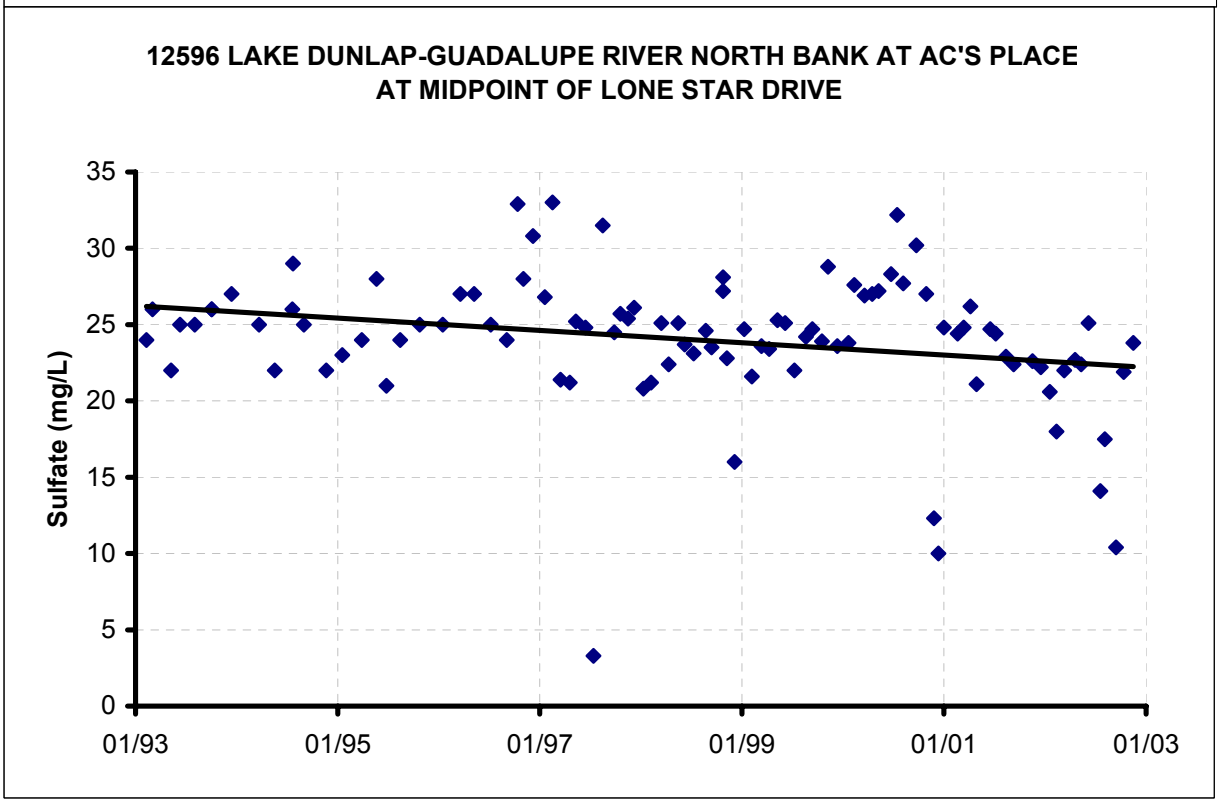
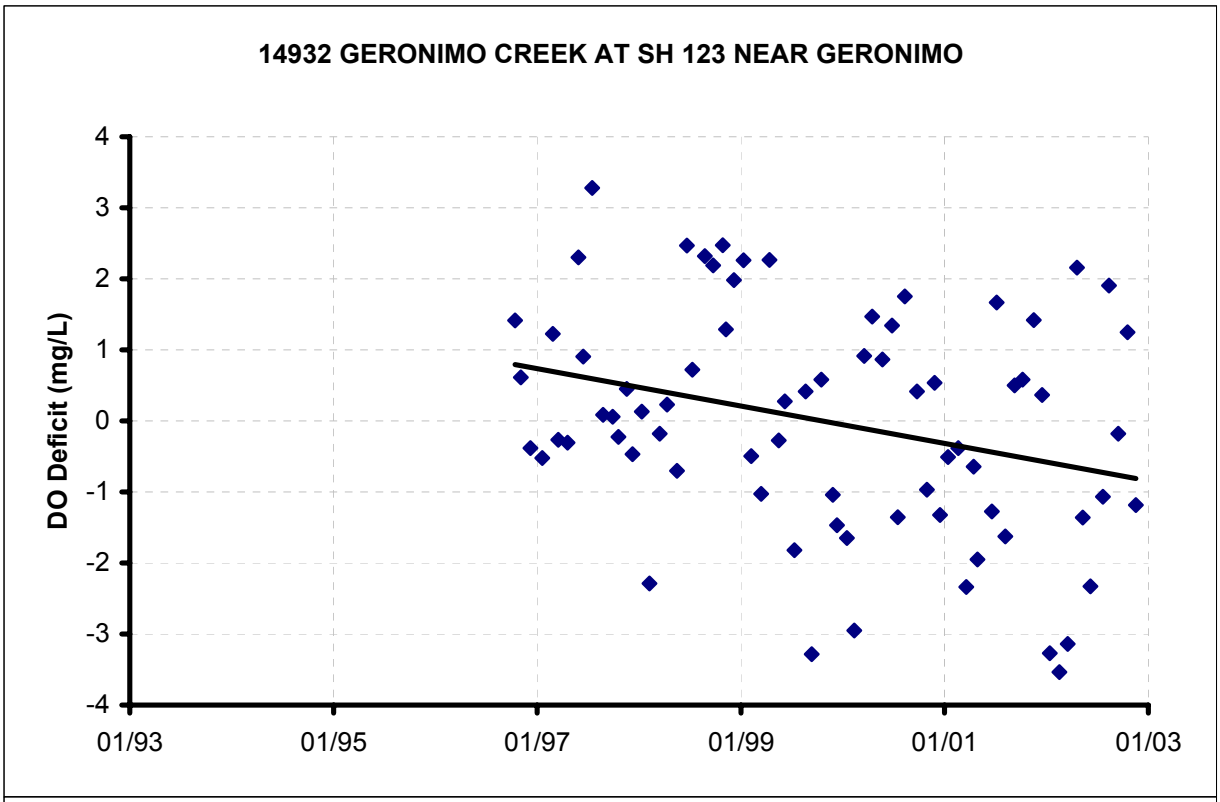


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA



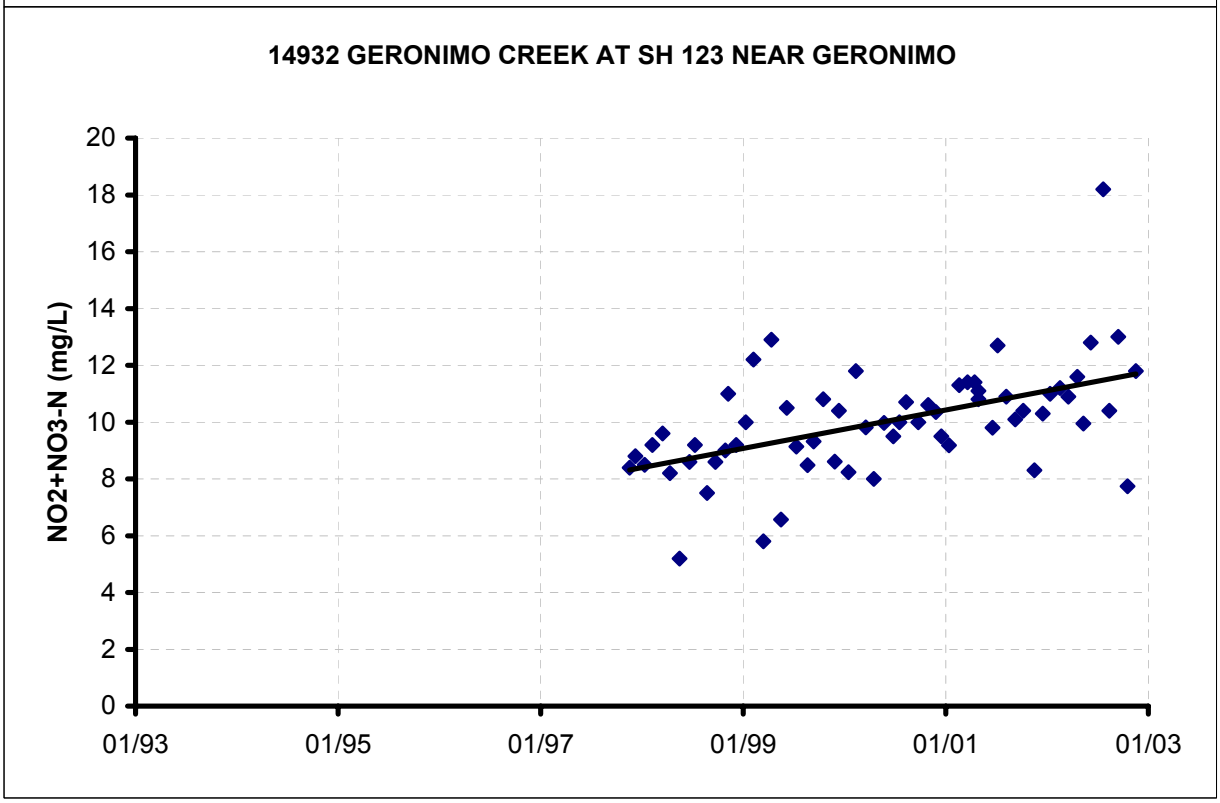
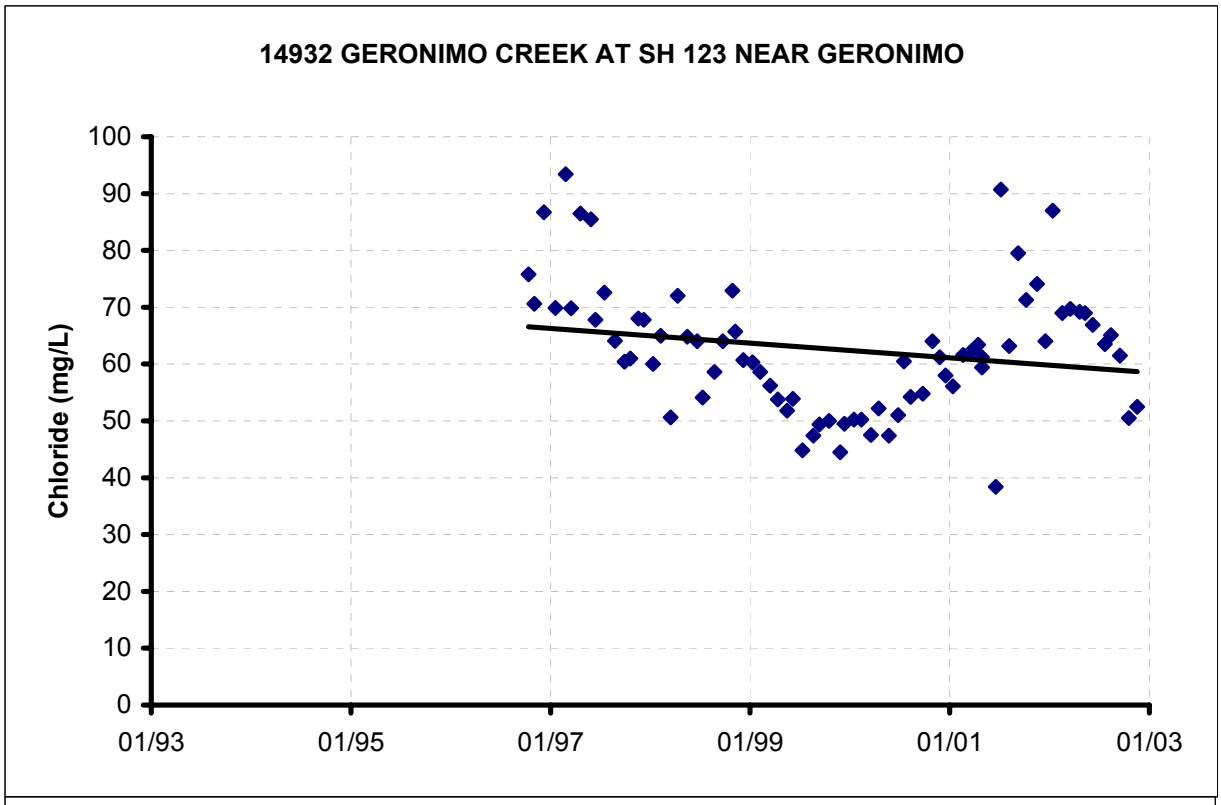


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA



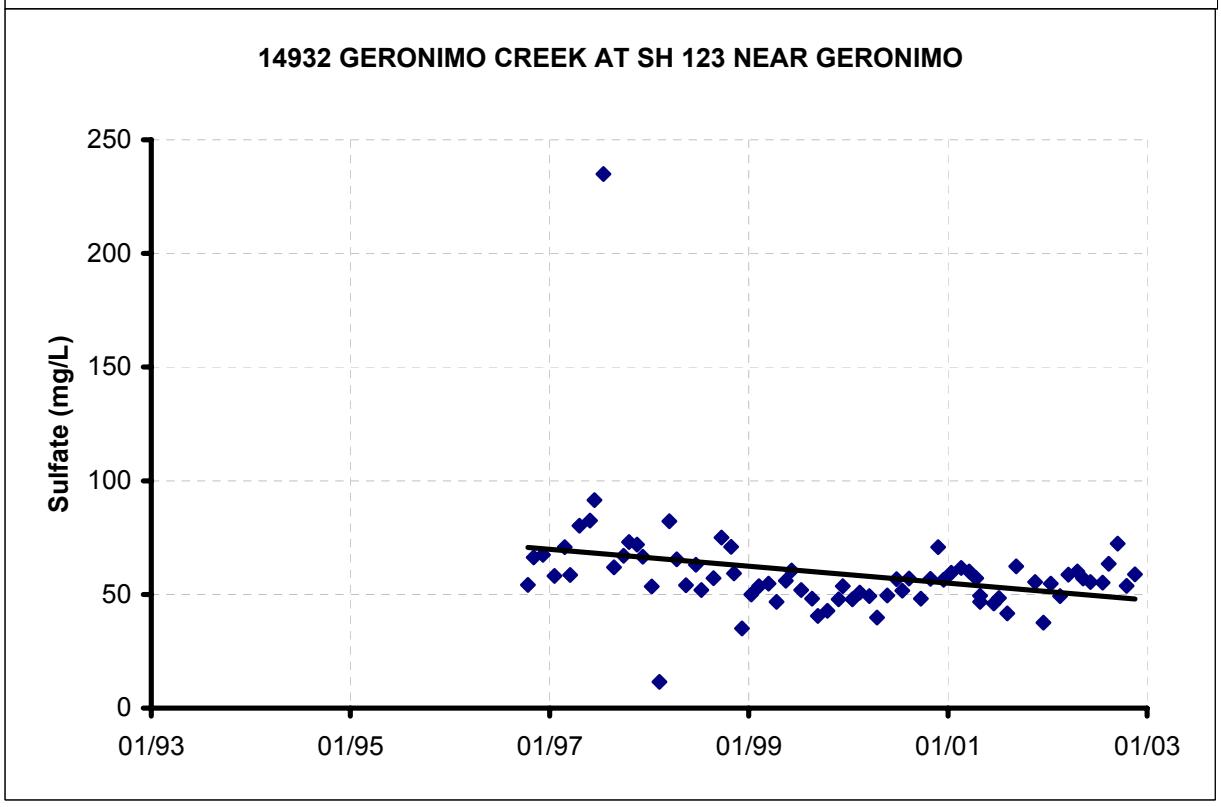


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

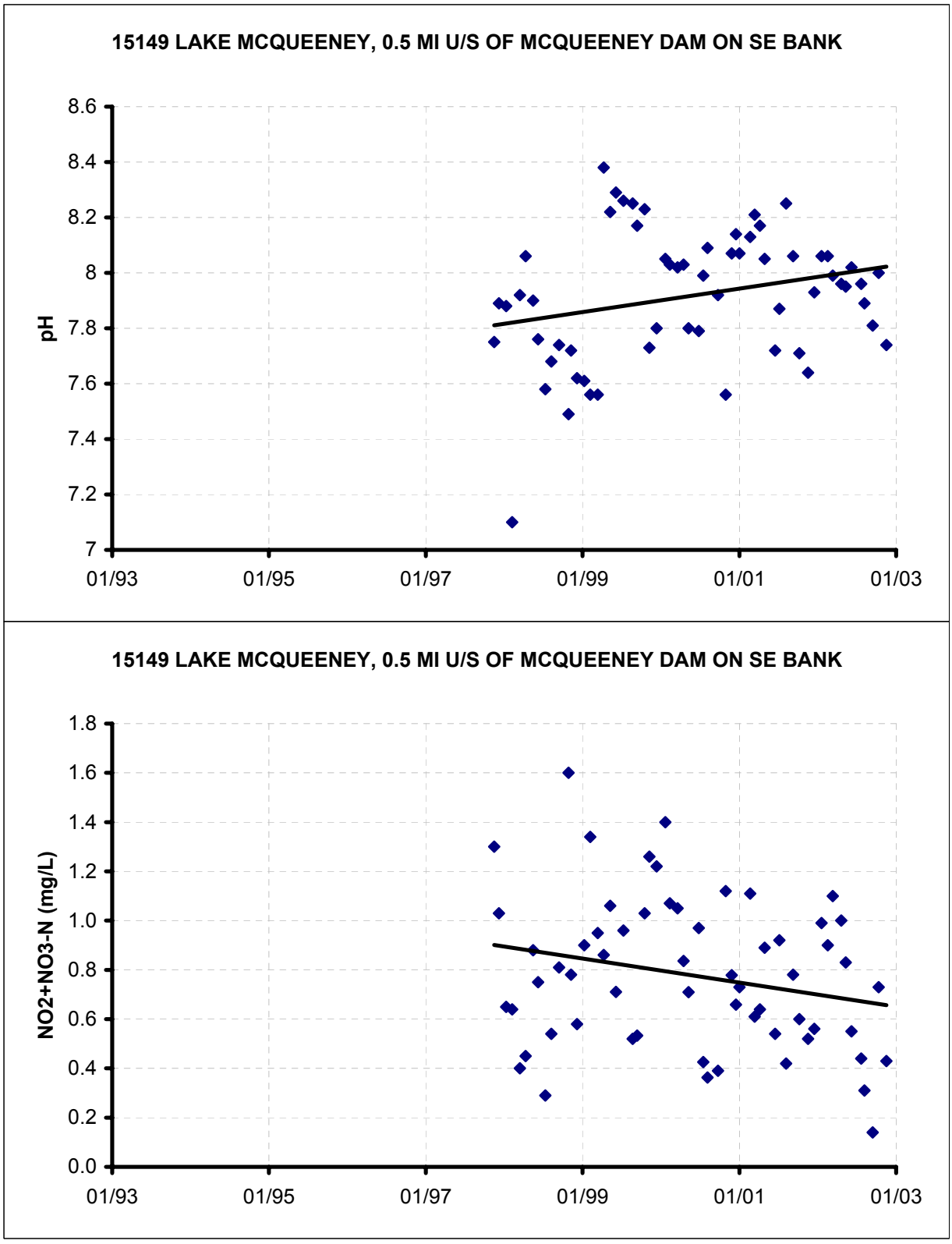


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

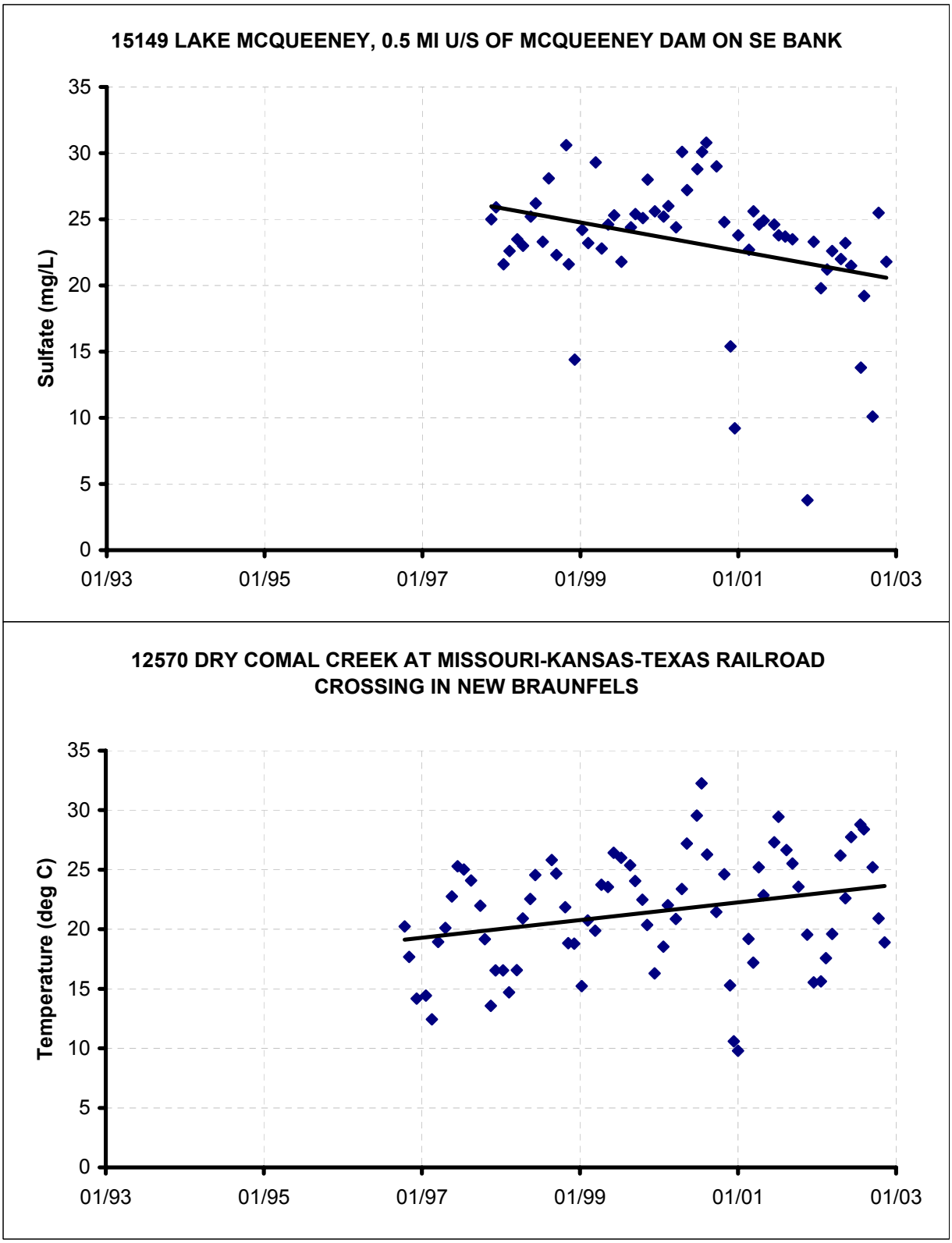


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

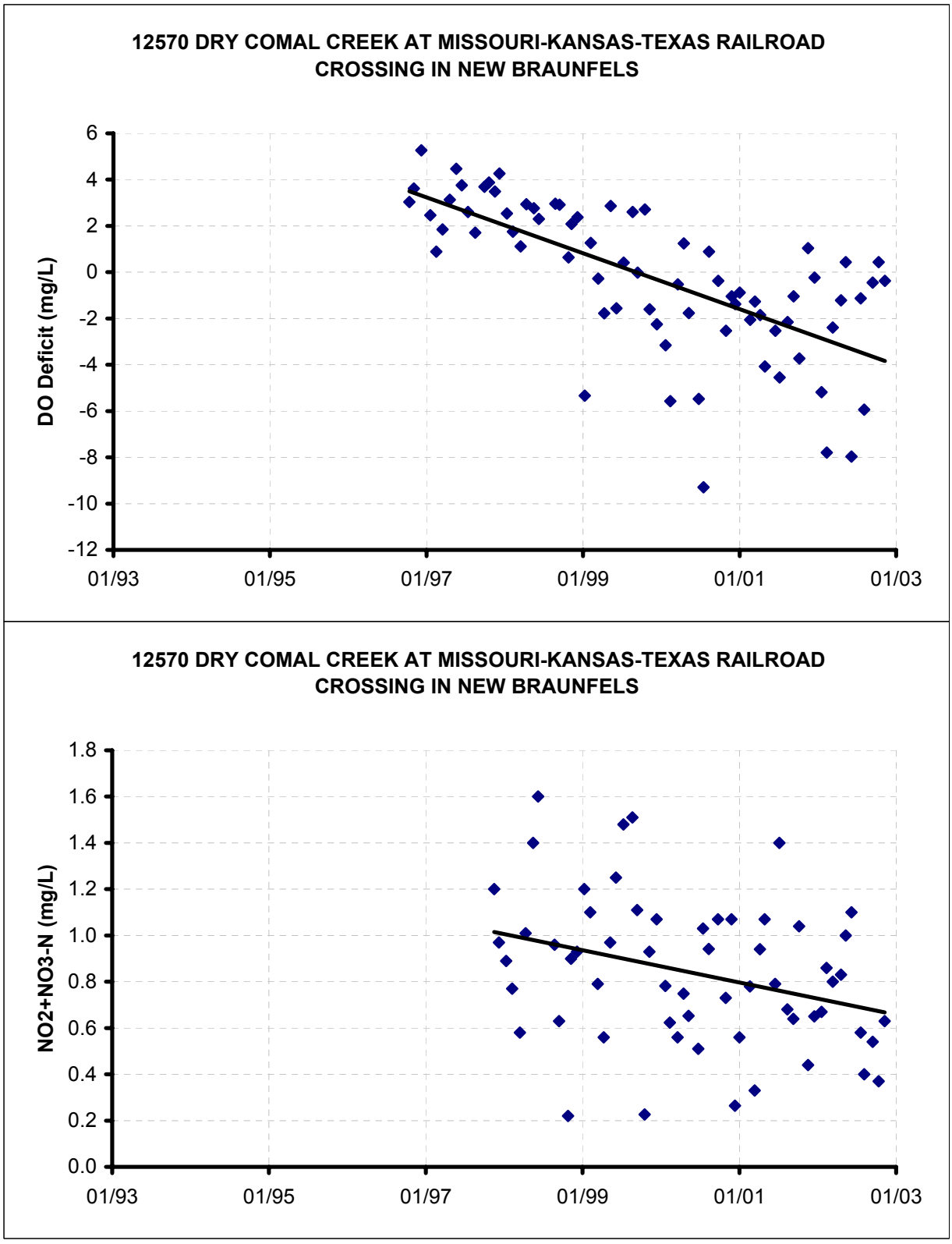


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

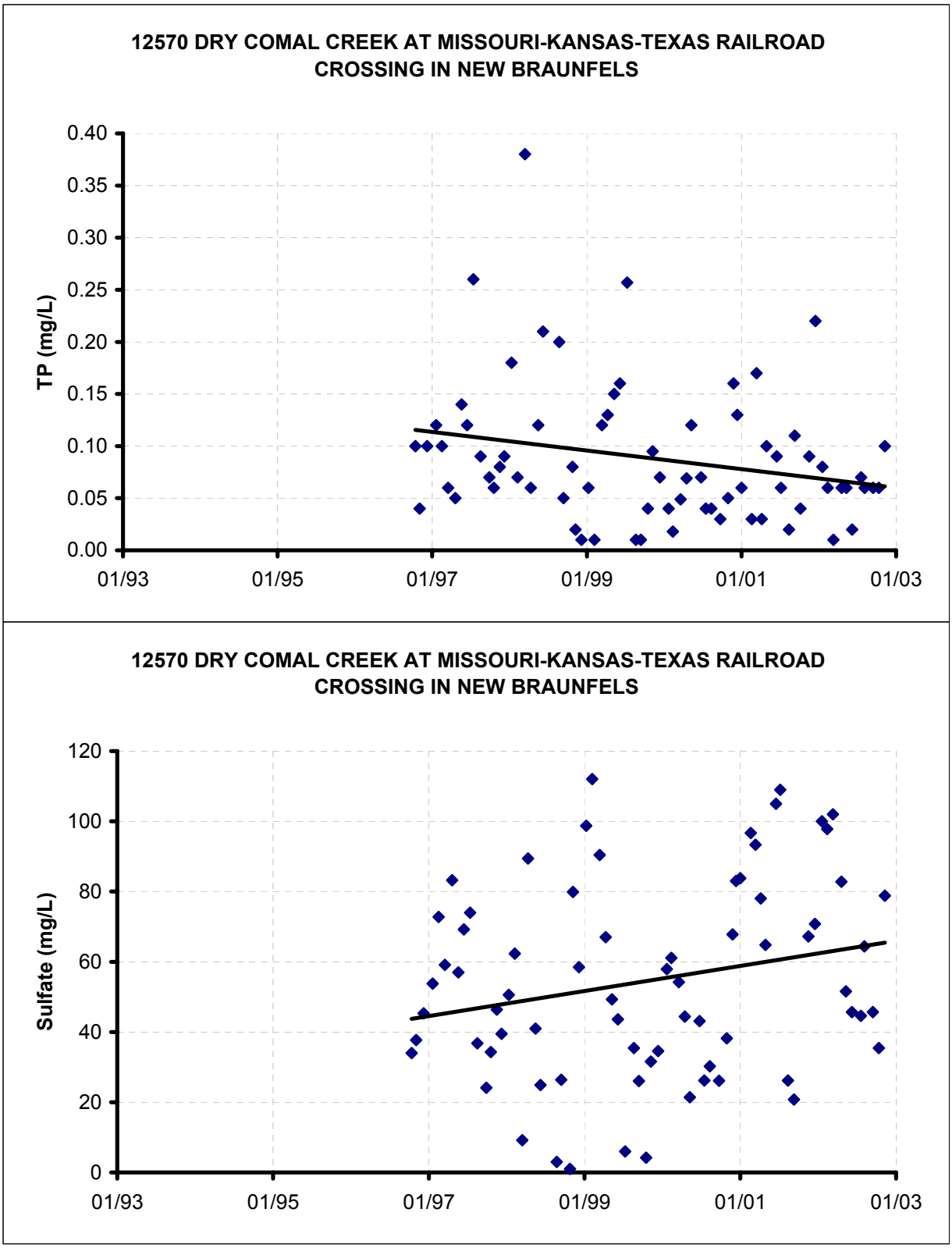


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

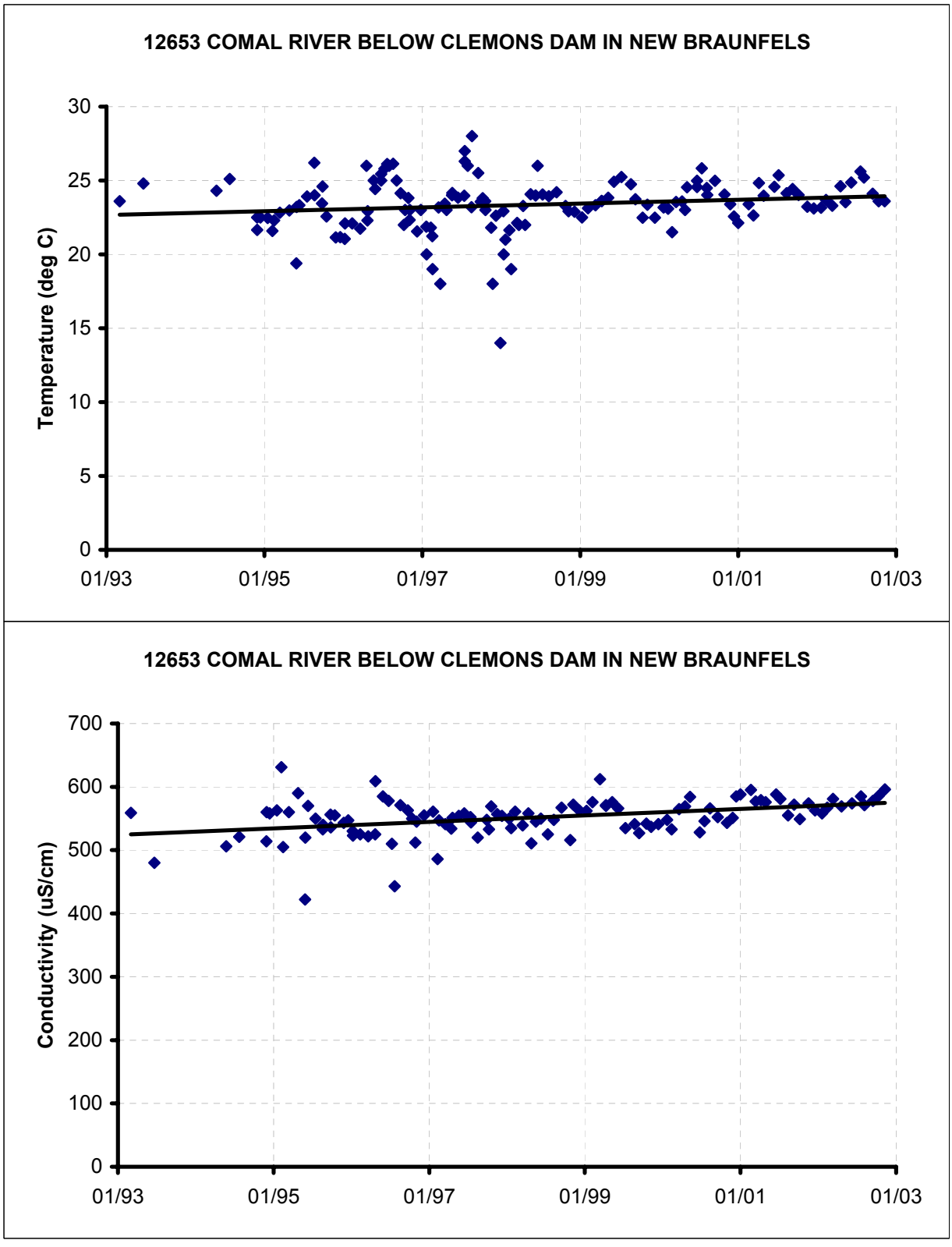
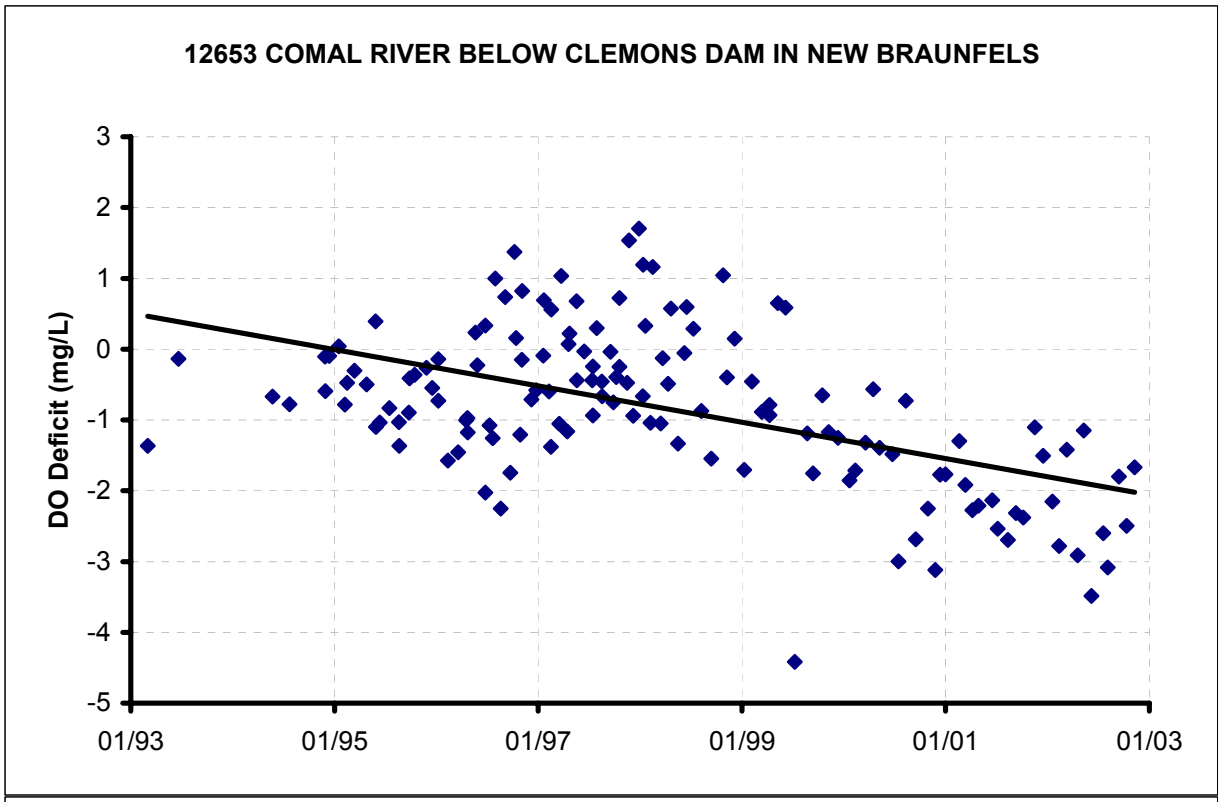


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA



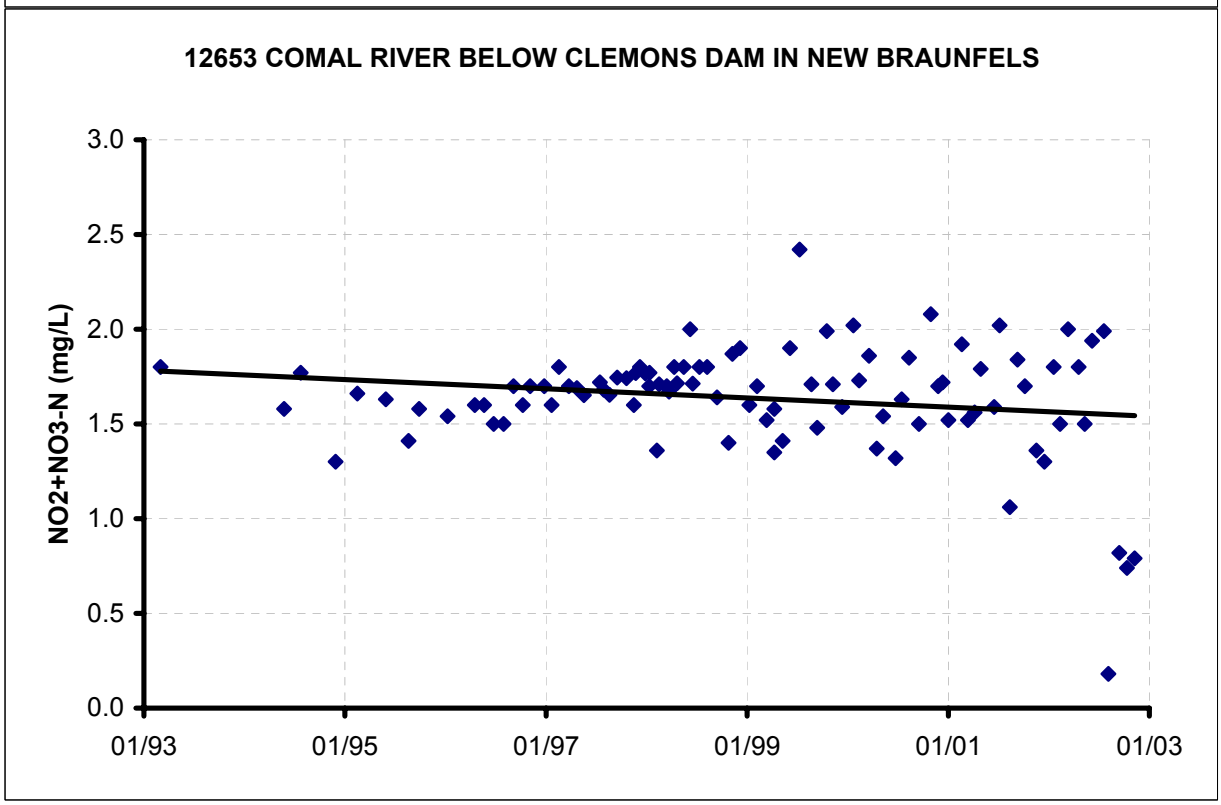


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

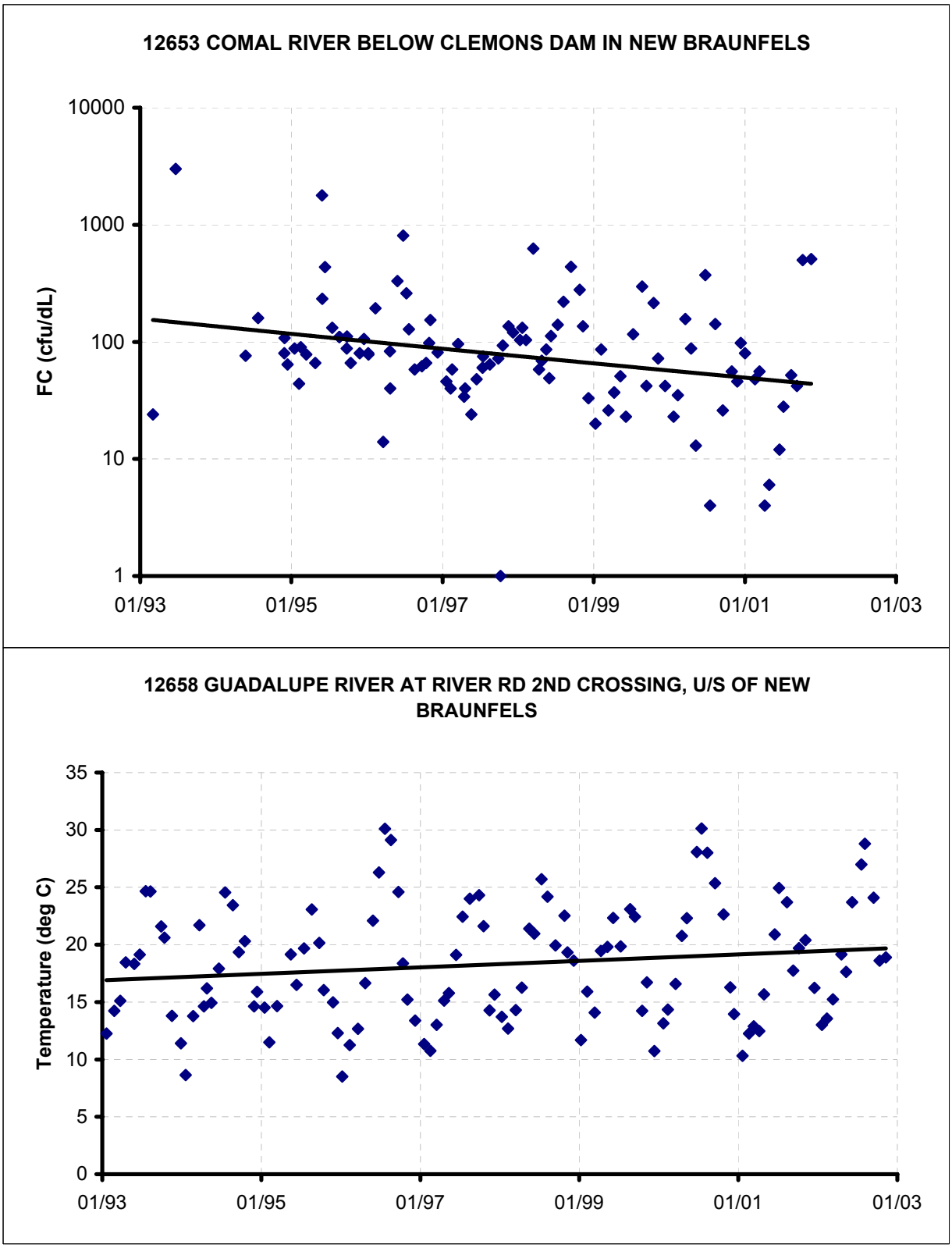
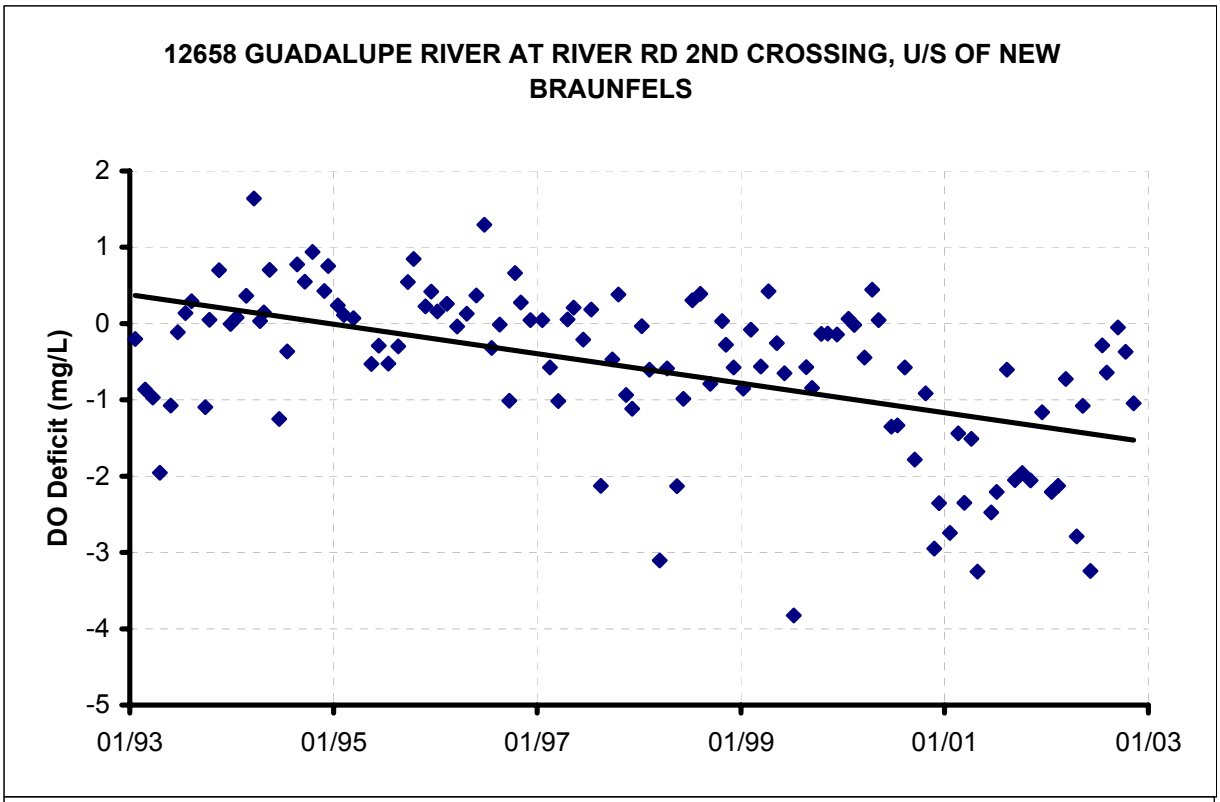


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA



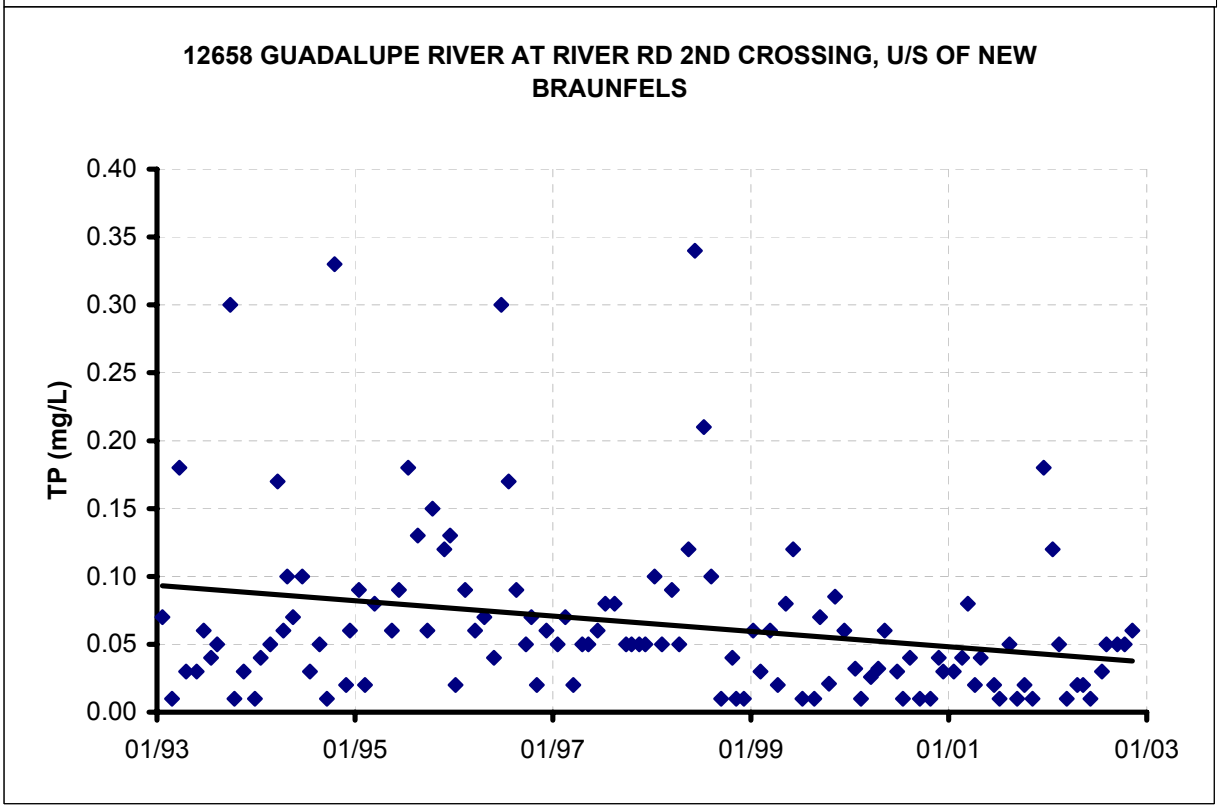


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

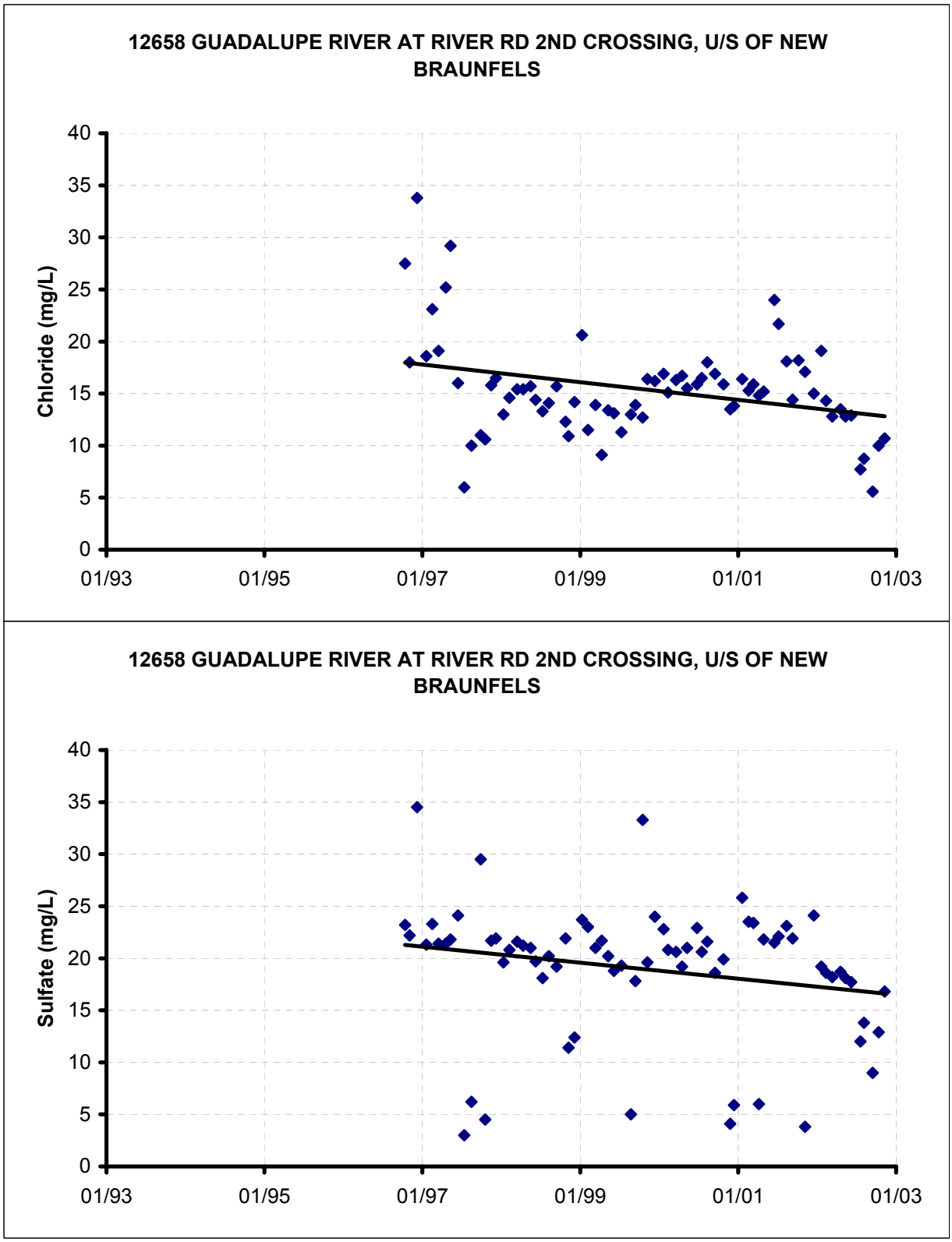


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

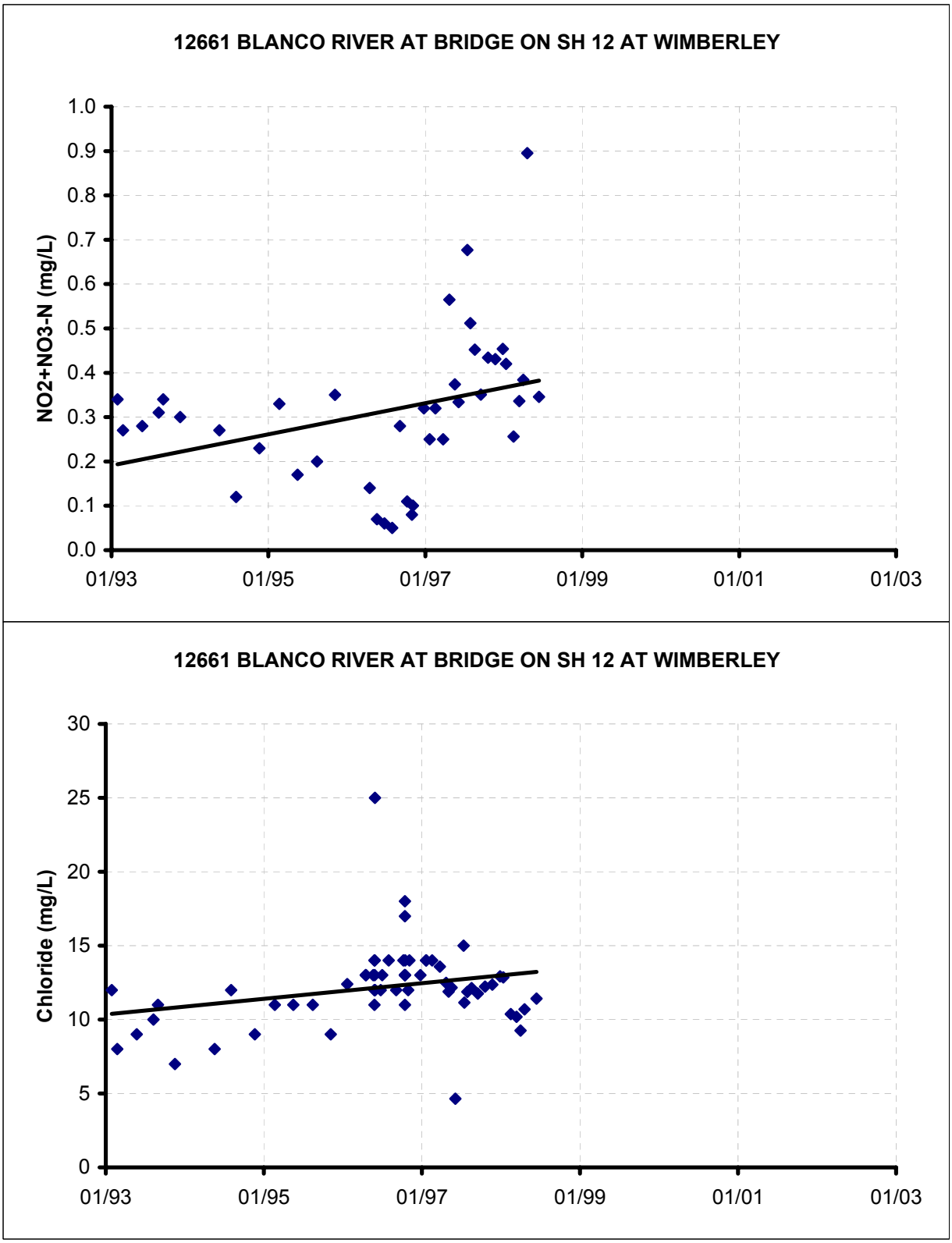


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

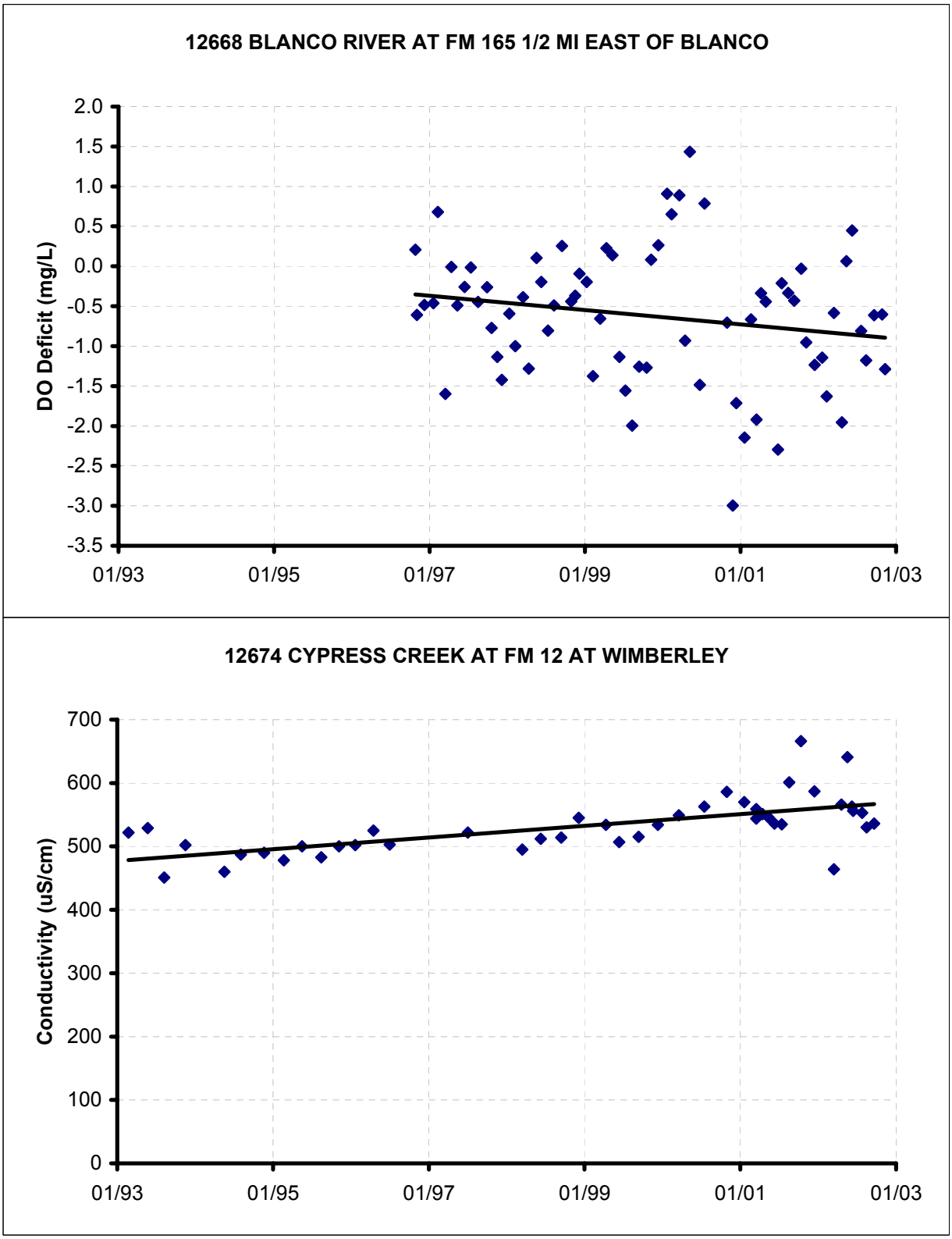
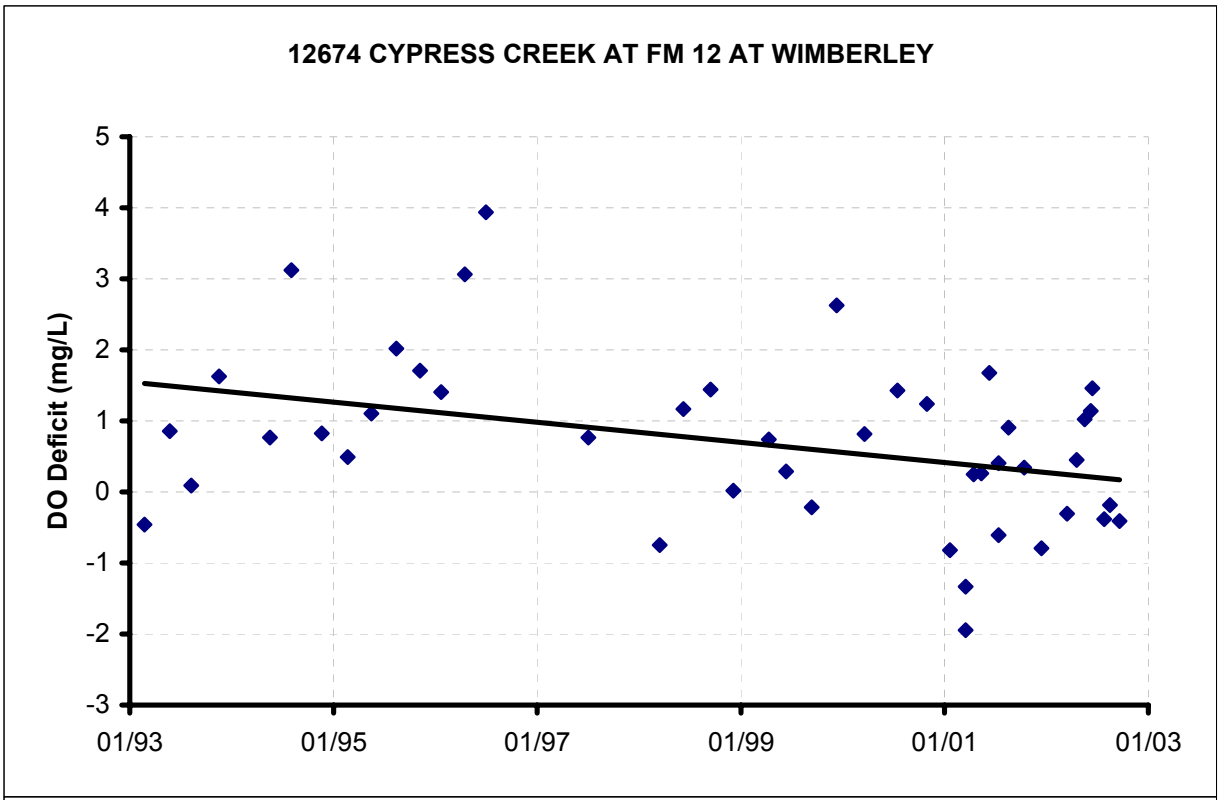


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA



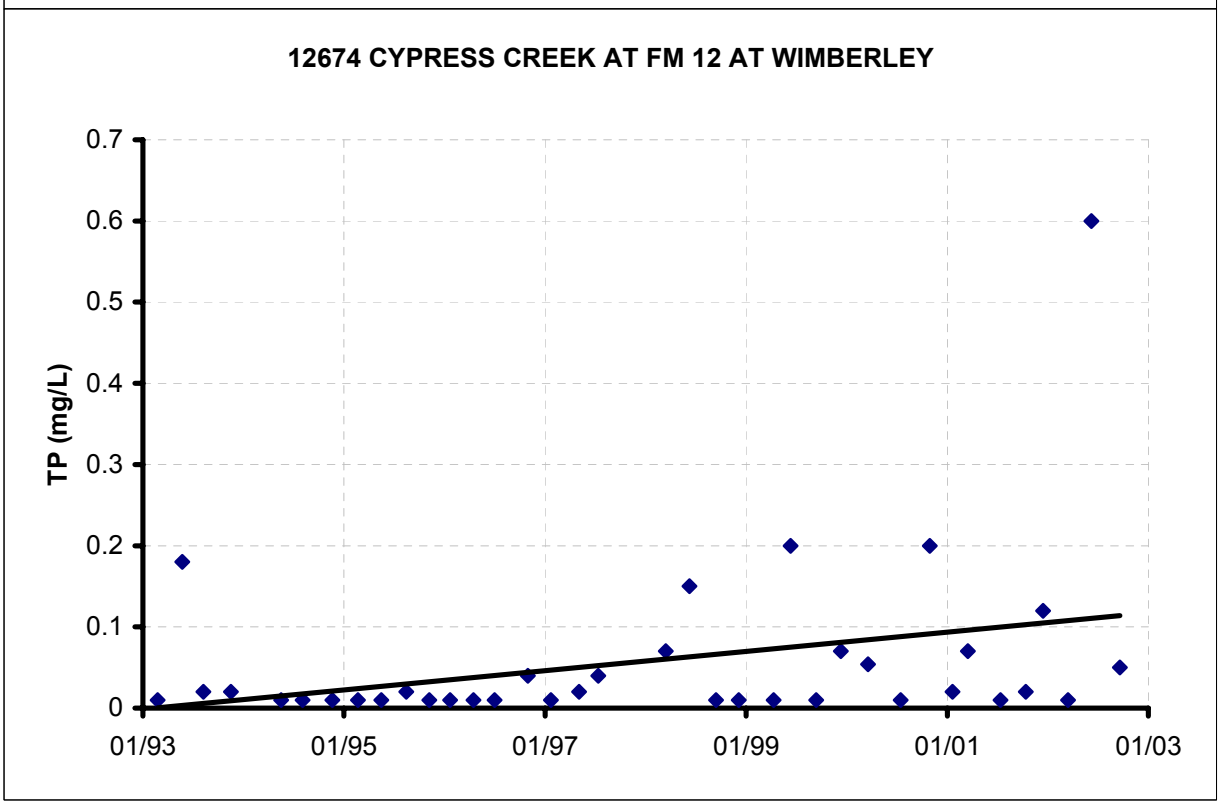
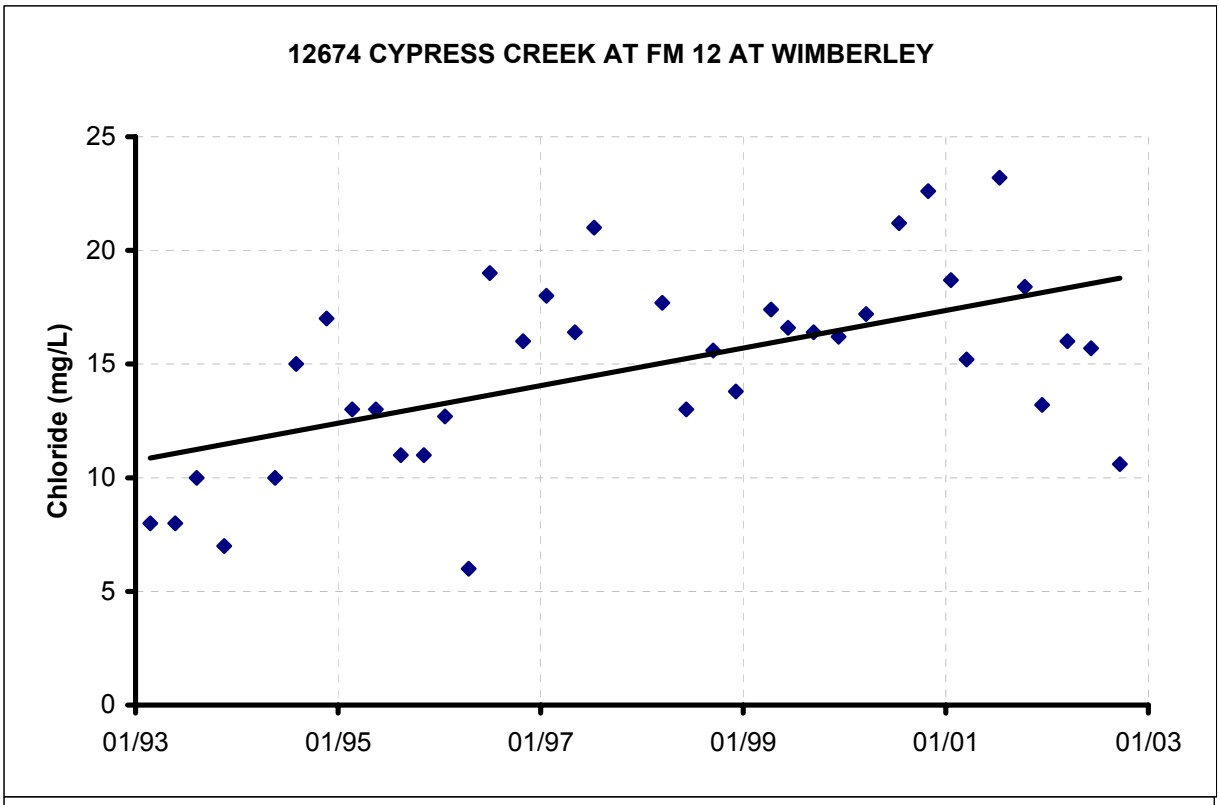


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA



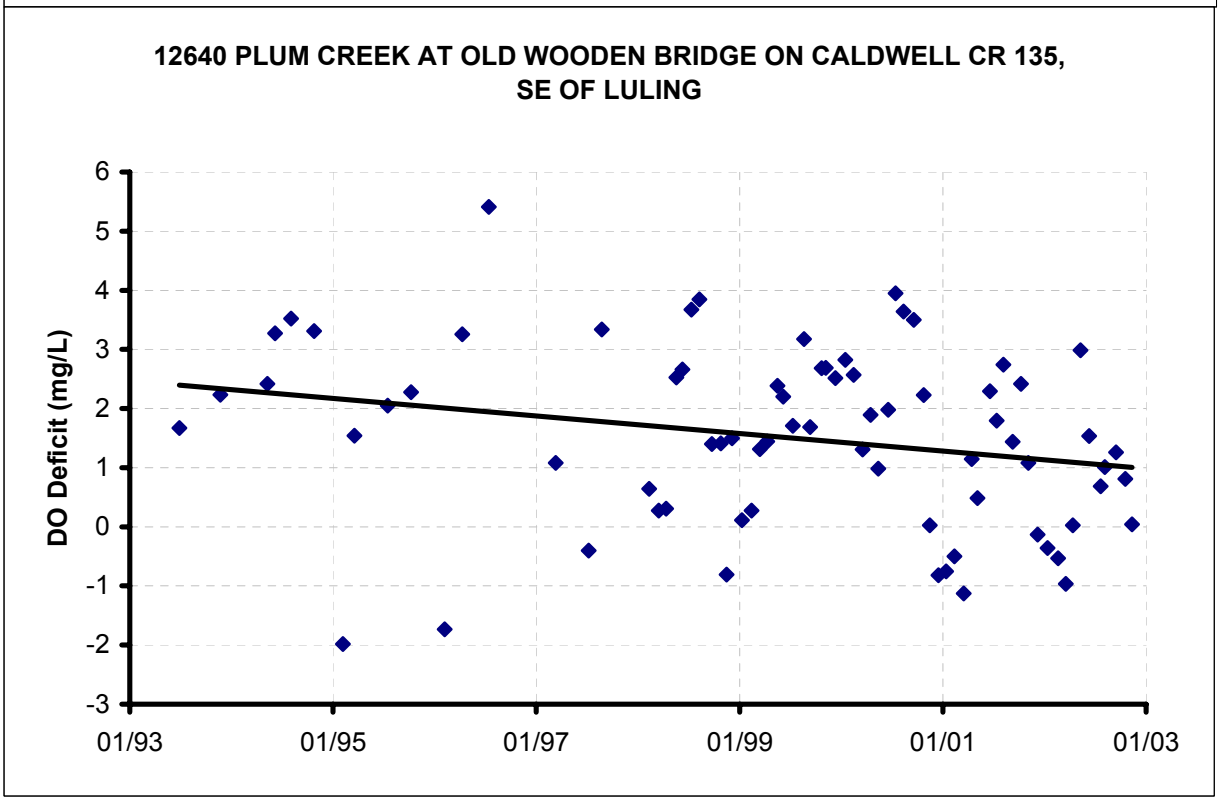
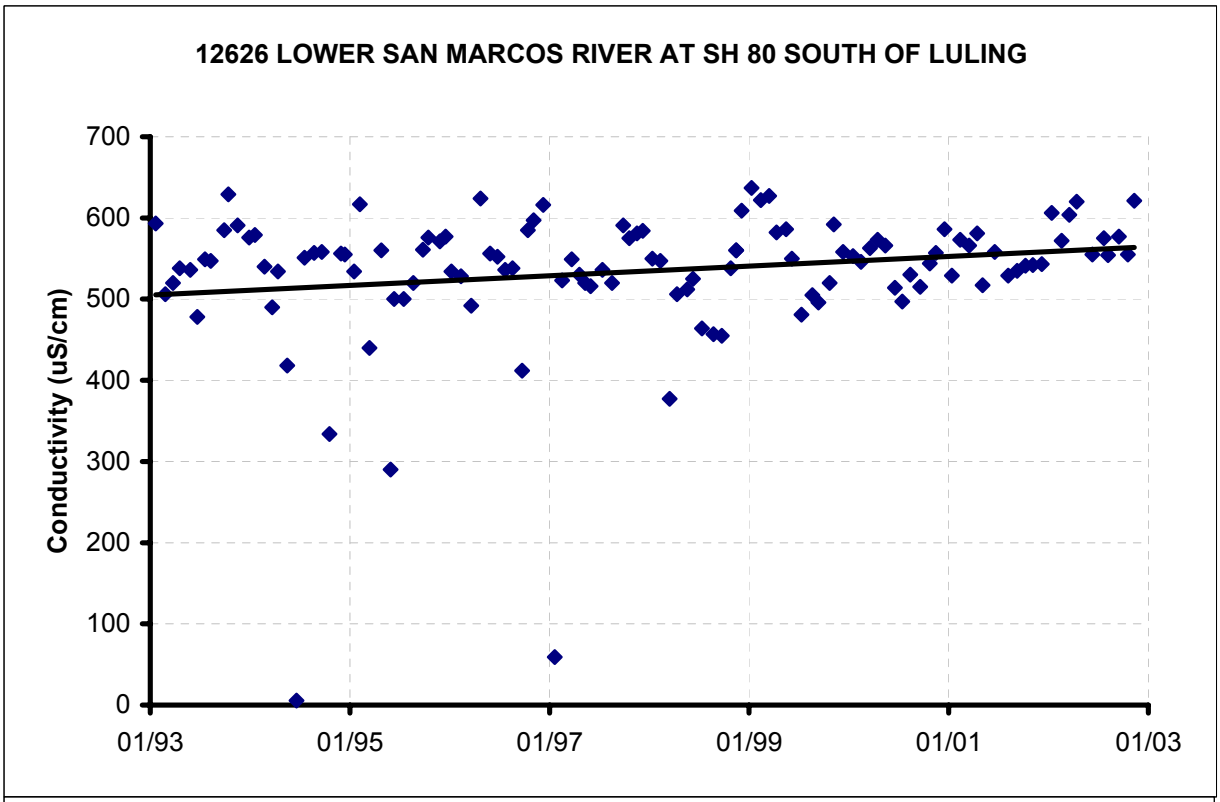


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA



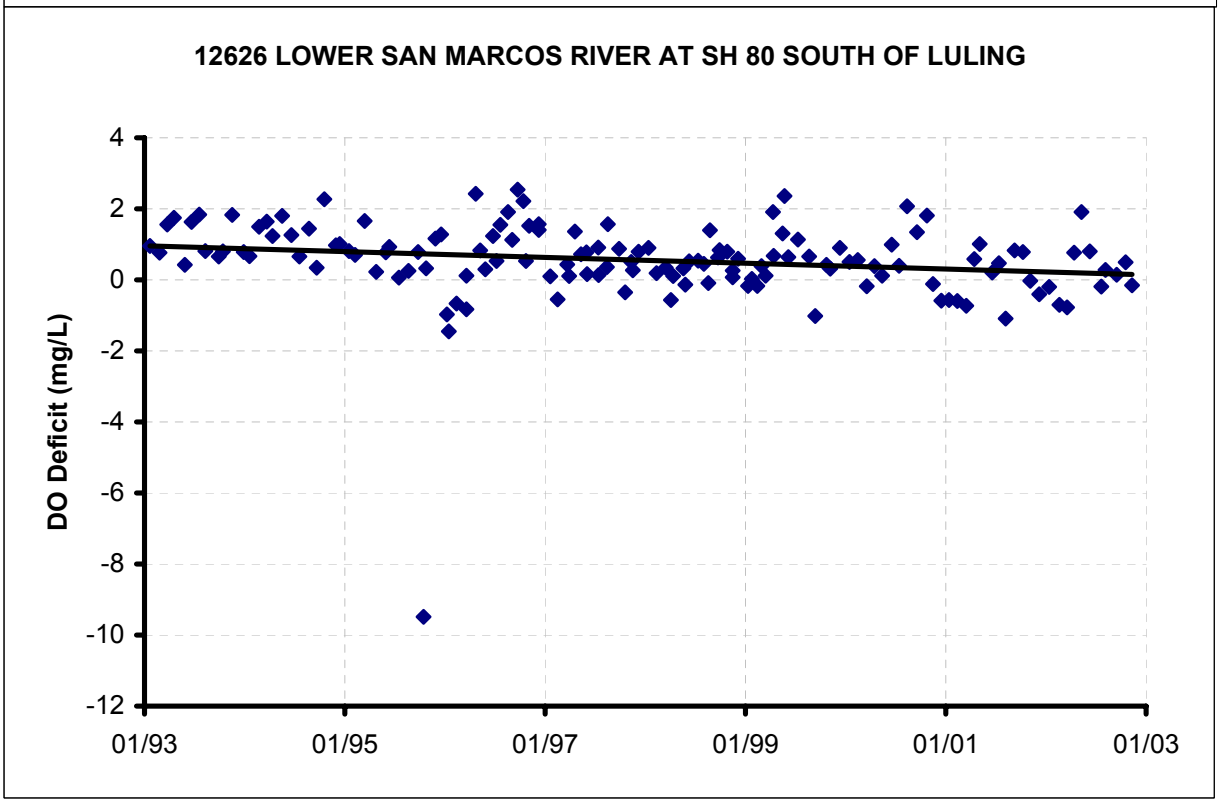


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

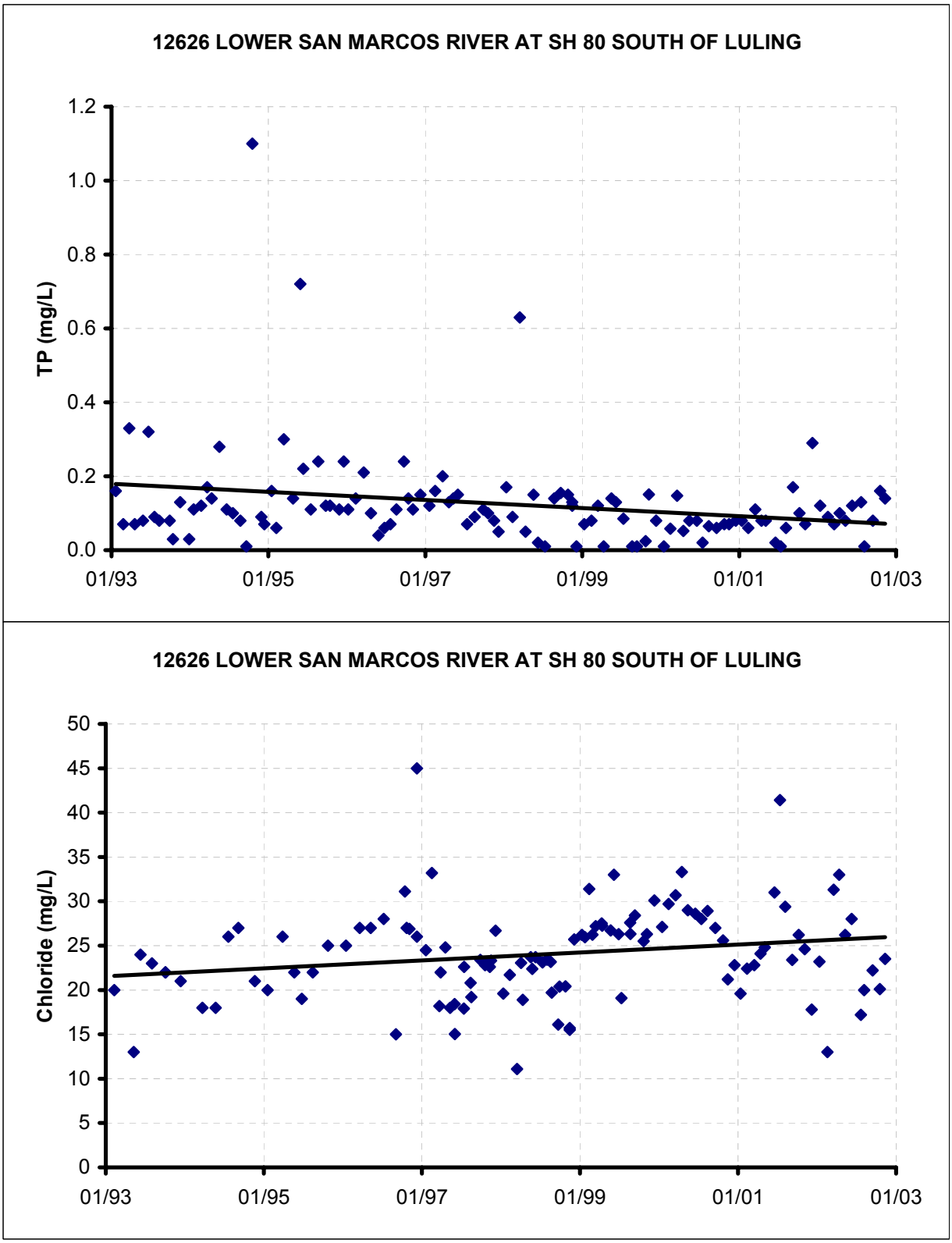


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

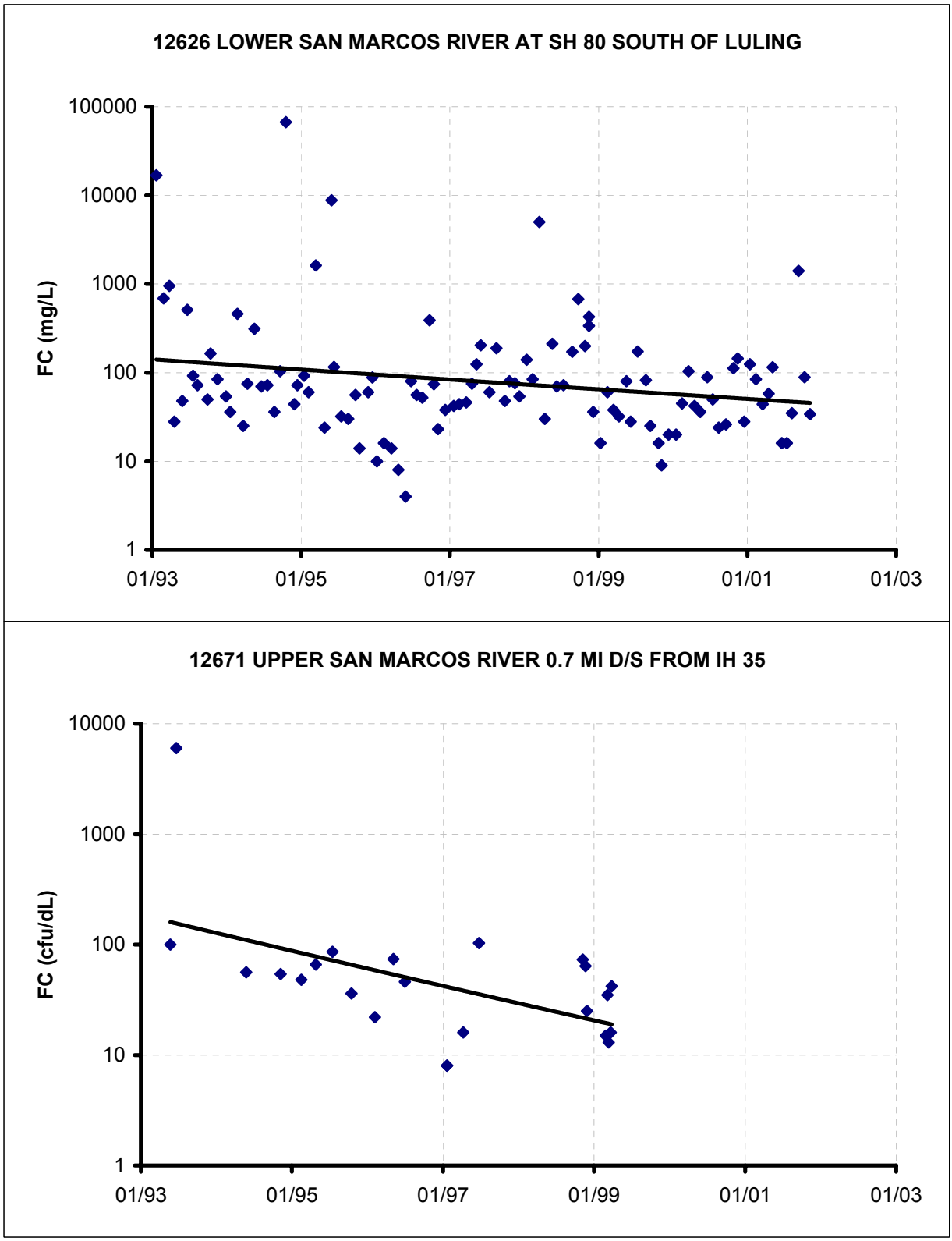


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

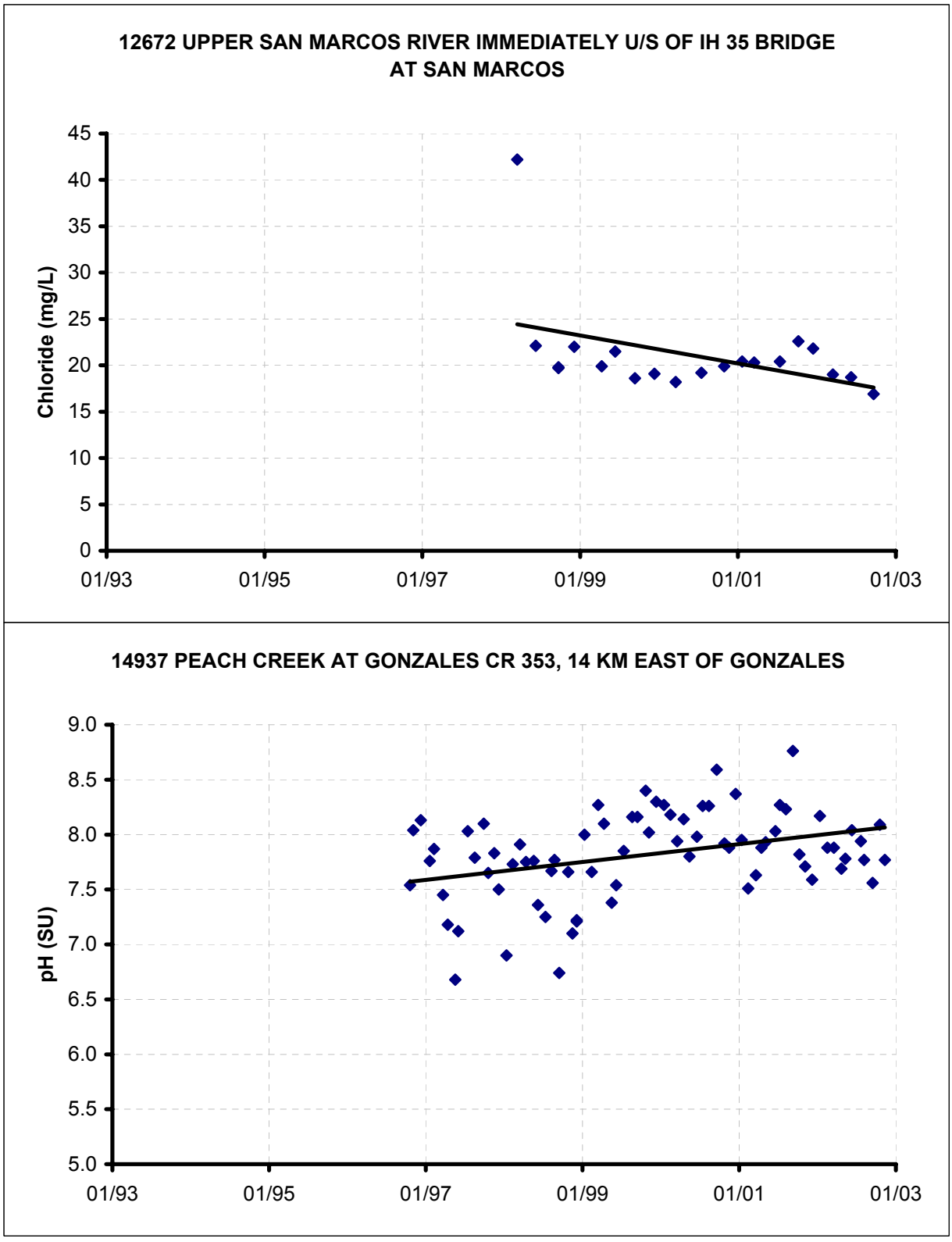
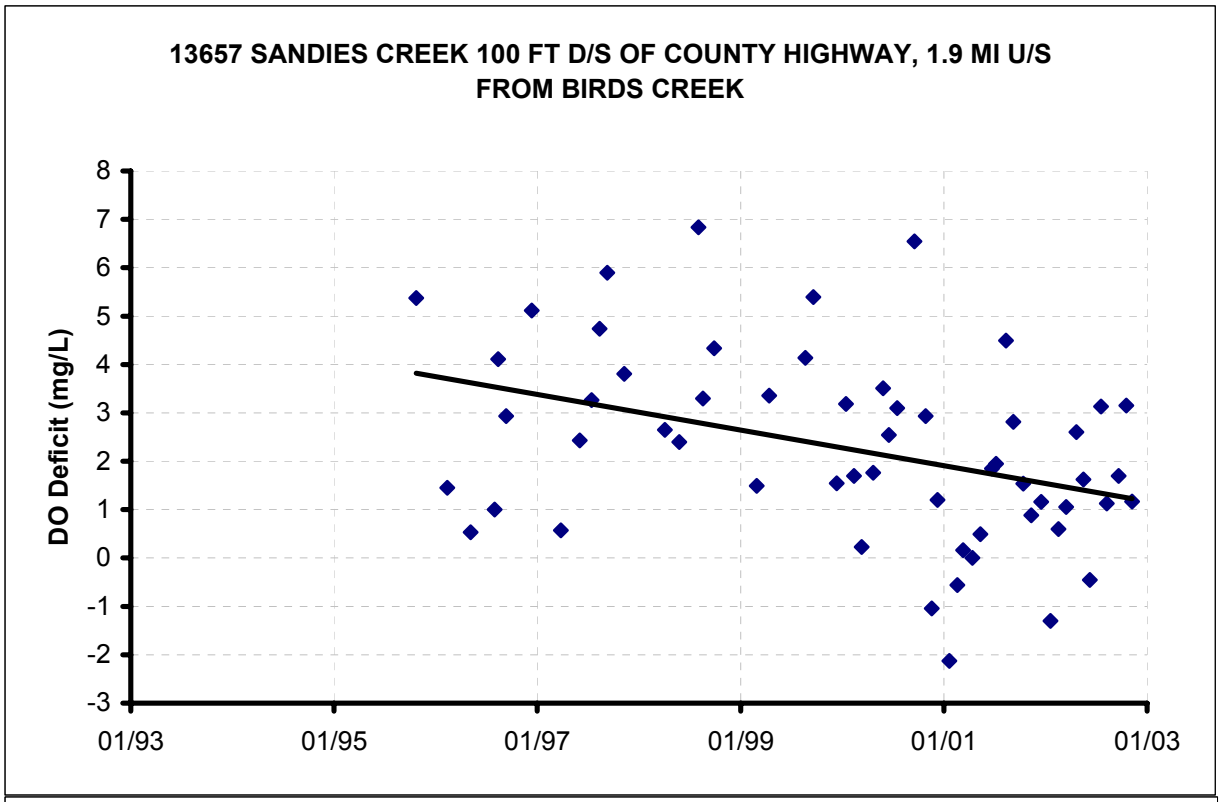


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA



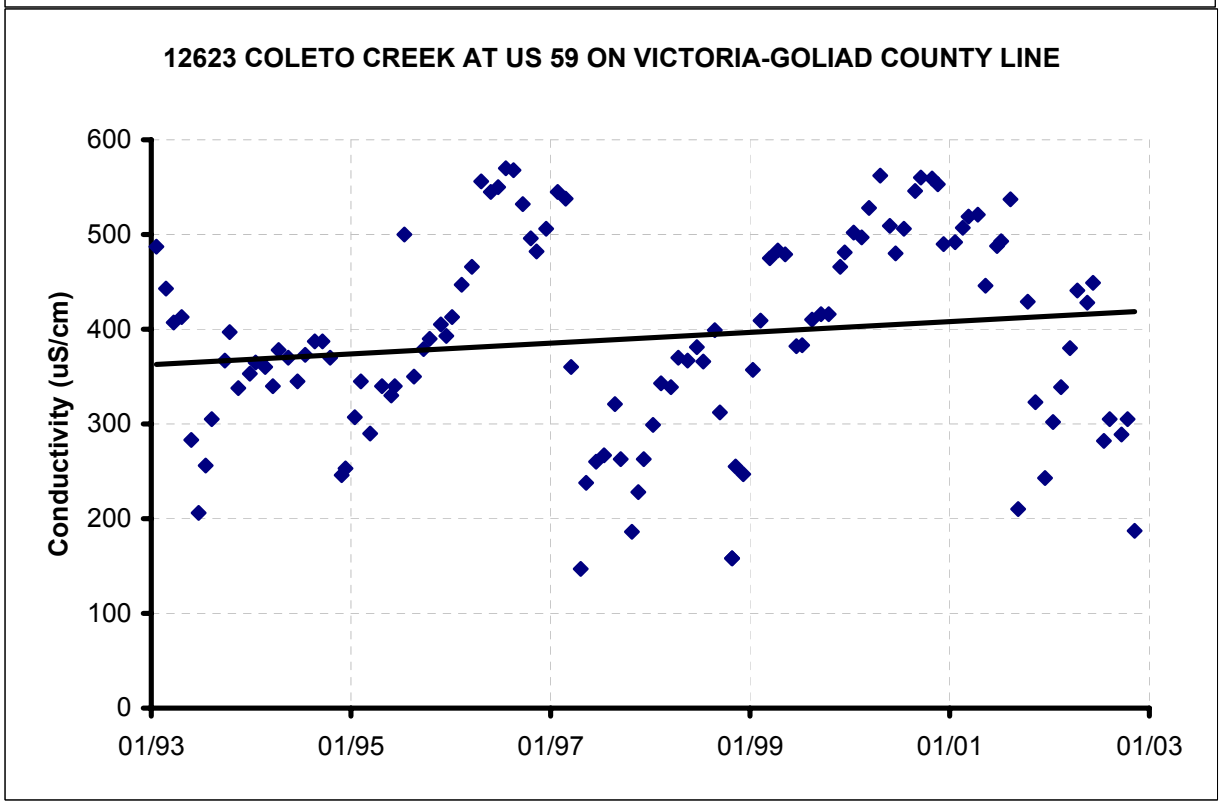


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

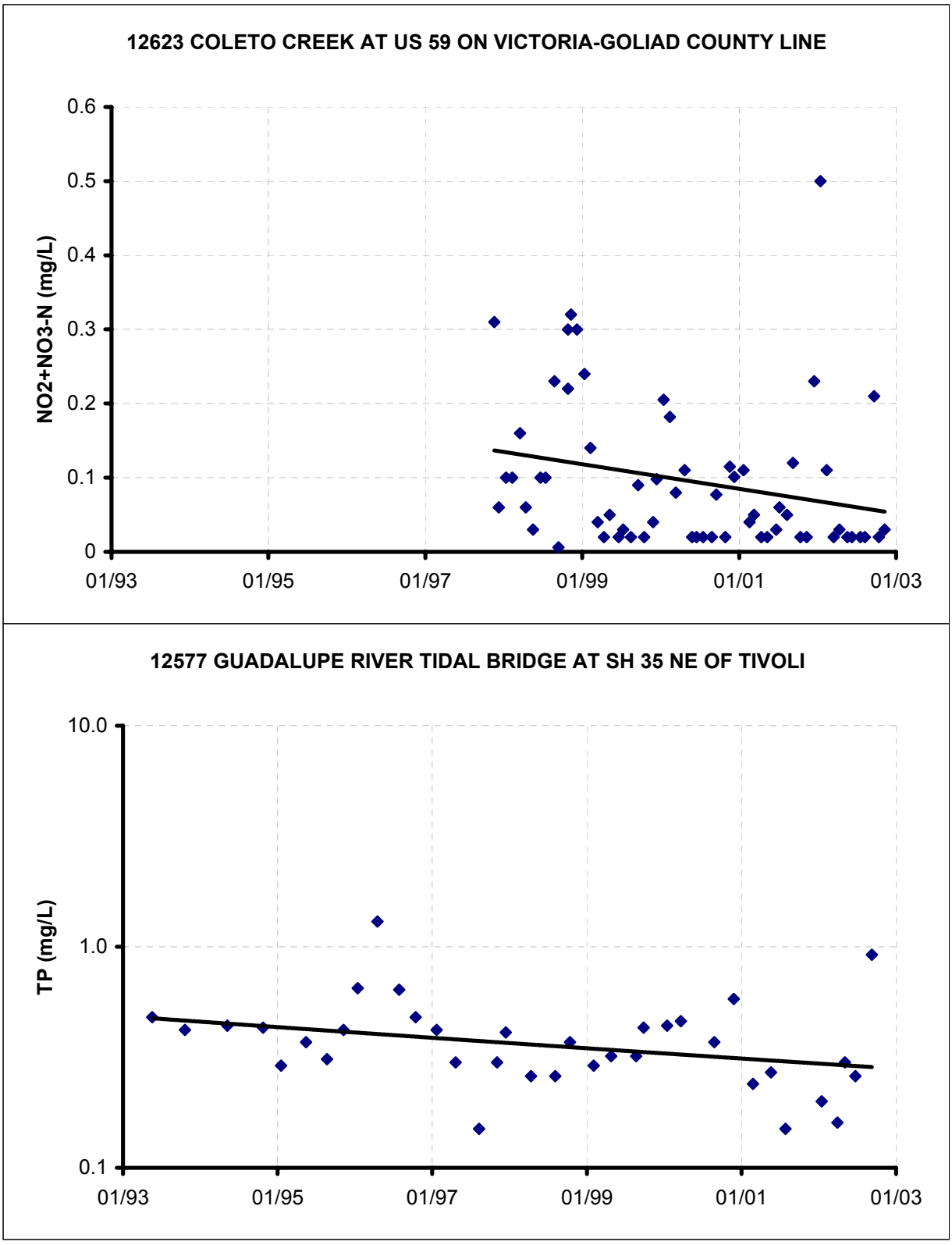


FIGURE A-1 (CONTINUED)
TIME SERIES PLOTS OF DATA

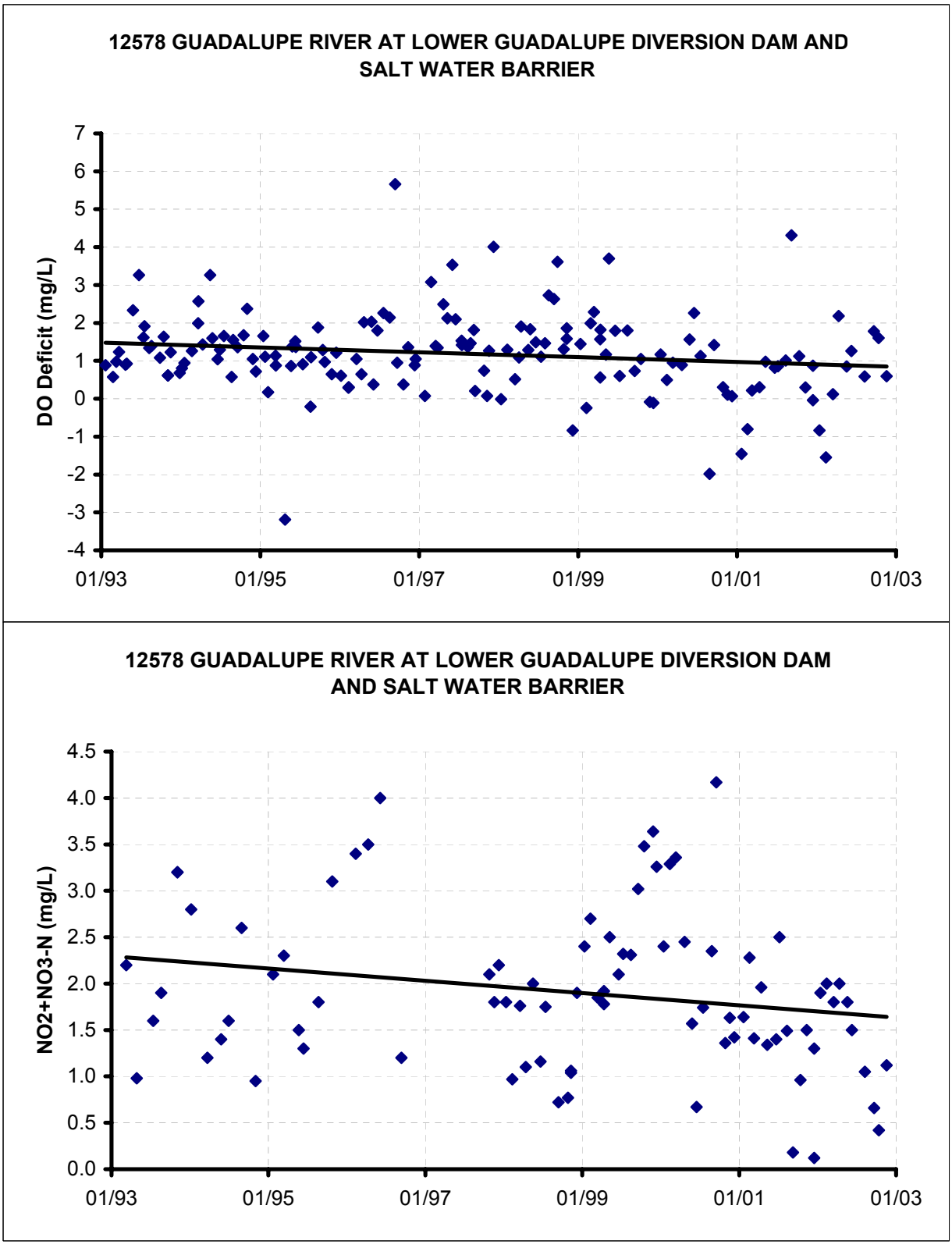
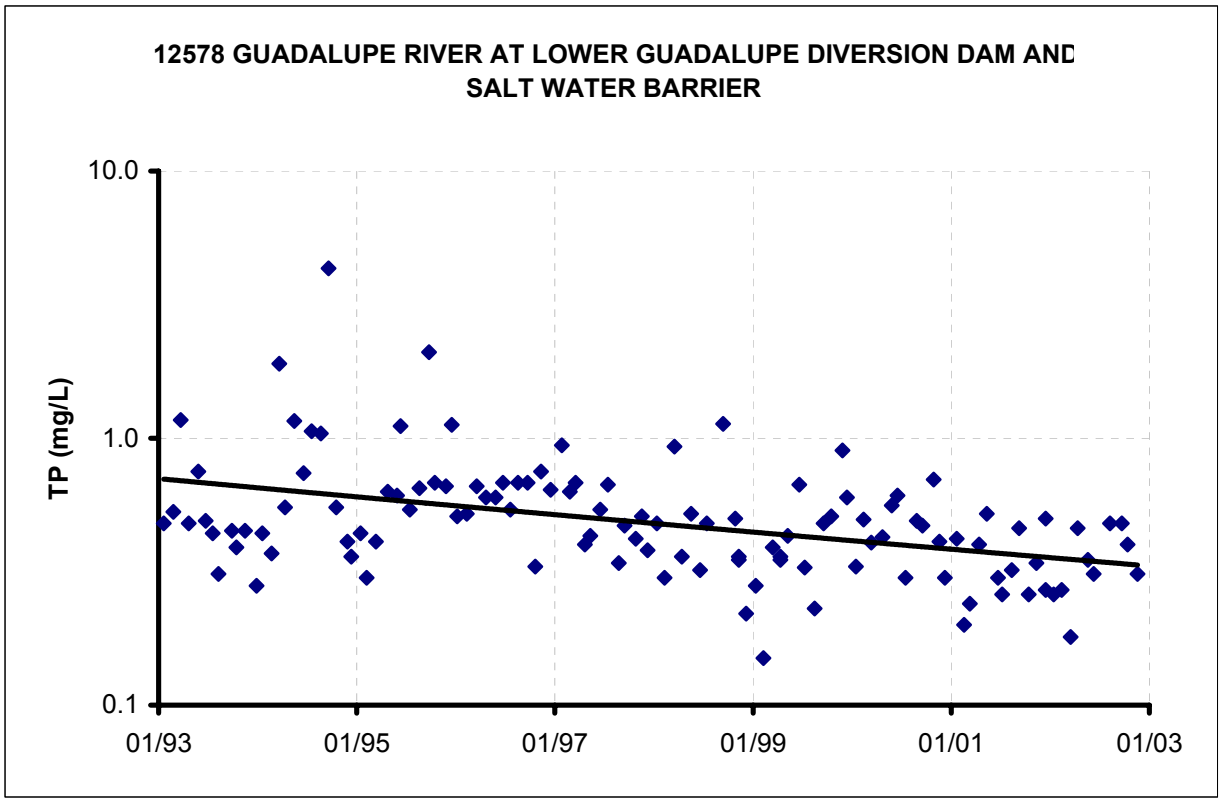


FIGURE A-1 (CONCLUDED)
TIME SERIES PLOTS OF DATA



APPENDIX B

TREND ANALYSIS RESULTS

TABLE B-1
P-VALUES OF TREND ANALYSIS

Watershed Upper Guadalupe River above Comfort
Station ID 12678
Station location JOHNSON CREEK AT SH 39 IN INGRAM
Segment 1816

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	N								
Dissolved Oxygen Deficit	N								
pH	-6.94E-08			-0.00000953			-0.002337		
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen									
Total Phosphorus	-0.00057			-0.01831			-0.010676		
Chloride	N								
Sulfate	0.035483			0.078362			N		
Fecal Coliform	-0.006071			N			-0.000582		
E Coli									

Watershed Upper Guadalupe River above Comfort
Station ID 12685
Station location SOUTH FORK GUADALUPE ADJACENT TO CAMP ARROWHEAD
Segment 1818

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature									
Conductivity									
Dissolved Oxygen Deficit									
pH									
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen									
Total Phosphorus									
Chloride									
Sulfate									
Fecal Coliform	0.006367			0.018855			N		
E Coli									

Note: Absolute values of the numbers shown are P-values of regression. Positive number indicates that there is an increasing trend or a positive correlation. Negative number indicates that there is a decreasing trend or a negative correlation. "N" means no potential trend or correlation.

TABLE B-1 (CONTINUED)
P-VALUES OF TREND ANALYSIS

Watershed Upper Guadalupe River above Comfort
Station ID 12681
Station location NORTH FORK GUADALUPE RIVER AT FM 1340
Segment 1817

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	N								
Dissolved Oxygen Deficit	N								
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen									
Total Phosphorus									
Chloride	N								
Sulfate	N								
Fecal Coliform	N								
E Coli									

Watershed Upper Guadalupe River below Comfort
Station ID 12598
Station location CANYON LAKE SOUTH OF JACOBS CREEK PARK 500 YARDS EAST OF PENINSULA
Segment 1805

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	N								
Dissolved Oxygen Deficit	-0.000563			-0.001707			N		
pH	-0.079007			N			N		
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	N								
Total Phosphorus	N								
Chloride	-0.000361			-0.000233			N		
Sulfate	N								
Fecal Coliform	N								
E Coli	-0.011549			N			-0.004741		
Chlorophyll a	N								

Note: Absolute values of the numbers shown are P-values of regression. Positive number indicates that there is an increasing trend or a positive correlation. Negative number indicates that there is a decreasing trend or a negative correlation. "N" means no potential trend or correlation.

TABLE B-1 (CONTINUED)
P-VALUES OF TREND ANALYSIS

Watershed Upper Guadalupe River below Comfort
Station ID 13700
Station location GUADALUPE RIVER AT RR 311, 1.9 MI. SE OF SPRING BRANCH, 7.5 MI. DOWNSTREAM FROM CURRY CREEK
Segment 1806

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	0.0000612	N	0.000111	0.007329	N	0.007116	0.000276	0.007791	0.003535
Dissolved Oxygen Deficit	-0.0000333	N	-0.0000513	-0.000532	N	-0.000645	-0.020956	N	-0.020761
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	0.078752	0.00000065	N	N			N		
Total Phosphorus	N								
Chloride	N								
Sulfate	0.008674	N	0.007347	0.039386	-0.007224	0.01726	N		
Fecal Coliform									
E Coli	N								

Watershed Middle Guadalupe River
Station ID 12592
Station location GUADALUPE RIVER AT OLD SAN ANTONIO ROAD WEST OF CUERO
Segment 1803

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	N								
Dissolved Oxygen Deficit	-0.000197			-0.0000136			-0.078417		
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	N								
Total Phosphorus	N								
Chloride	N								
Sulfate	N								
Fecal Coliform	N								
E Coli	N								

Note: Absolute values of the numbers shown are P-values of regression. Positive number indicates that there is an increasing trend or a positive correlation. Negative number indicates that there is a decreasing trend or a negative correlation. "N" means no potential trend or correlation.

TABLE B-1 (CONTINUED)
P-VALUES OF TREND ANALYSIS

Watershed Middle Guadalupe River
Station ID 15110
Station location GUADALUPE RIVER IMMEDIATELY DOWNSTREAM OF H-5 DAM AT WOOD LAKE, SW OF GONZALES, TX
Segment 1804

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	N								
Dissolved Oxygen Deficit	N								
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	N								
Total Phosphorus	N								
Chloride	N								
Sulfate	N								
Fecal Coliform	N								
E Coli	N								

Watershed Middle Guadalupe River
Station ID 15149
Station location LAKE MCQUEENEY, 0.5 MI. UPSTREAM OF MCQUEENEY DAM ON SOUTHEAST BANK
Segment 1804

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	N								
Dissolved Oxygen Deficit	N								
pH	0.041616			0.055887			N		
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	-0.065218			N			N		
Total Phosphorus	N								
Chloride	N								
Sulfate	-0.012501			N			-0.018336		
Fecal Coliform									
E Coli	N								
Chlorophyll a	N								

Note: Absolute values of the numbers shown are P-values of regression. Positive number indicates that there is an increasing trend or a positive correlation. Negative number indicates that there is a decreasing trend or a negative correlation. "N" means no potential trend or correlation.

TABLE B-1 (CONTINUED)
P-VALUES OF TREND ANALYSIS

Watershed Middle Guadalupe River
Station ID 12596
Station location LAKE DUNLAP-GUADALUPE RIVER NORTH BANK AT AC'S PLACE AT MIDPOINT OF LONE STAR DRIVE
Segment 1804

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	N								
Dissolved Oxygen Deficit	-0.050364			-0.002486			N		
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	N								
Total Phosphorus	-0.037788			N			N		
Chloride	N								
Sulfate	-0.013587			-0.018652			N		
Fecal Coliform	-0.083298			N			N		
E Coli	N								
Chlorophyll a	N								

Watershed Middle Guadalupe River
Station ID 12656
Station location GUADALUPE RIVER AT THE BEGINNING OF CYPRESS BEND PARK IN NEW BRAUNFELS
Segment 1812

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature									
Conductivity									
Dissolved Oxygen Deficit									
pH									
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen									
Total Phosphorus	N								
Chloride	N								
Sulfate	N								
Fecal Coliform	N								
E Coli									

Note: Absolute values of the numbers shown are P-values of regression. Positive number indicates that there is an increasing trend or a positive correlation. Negative number indicates that there is a decreasing trend or a negative correlation. "N" means no potential trend or correlation.

TABLE B-1 (CONTINUED)
P-VALUES OF TREND ANALYSIS

Watershed Middle Guadalupe River
Station ID 12658
Station location GUADALUPE RIVER AT RIVER RD 2ND CROSSING, UPSTREAM OF NEW BRAUNFELS
Segment 1812

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	0.077233			N			0.063032		
Conductivity	N								
Dissolved Oxygen Deficit	-7.99E-10			-1.92E-07			-0.001522		
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	N								
Total Phosphorus	-0.005181			-0.051333			-0.035899		
Chloride	-0.005306	-0.045143	-0.000577	-0.000448			N		
Sulfate	-0.067322	N	N	-0.03466			N		
Fecal Coliform	N								
E Coli	N								

Watershed Middle Guadalupe River
Station ID 12570
Station location DRY COMAL CREEK AT MISSOURI-KANSAS-TEXAS RAILROAD CROSSING IN NEW BRAUNFELS
Segment 1811

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	0.01691	-0.035254	0.017904	N			0.016368	N	N
Conductivity	N								
Dissolved Oxygen Deficit	-0.00001	N	-0.0000167	-1.01E-07	N	-0.001113	-0.00024	N	-0.010786
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	-0.012111	-0.00065	-0.030572	-0.072212	-0.003358	N	-0.015779	N	-0.051512
Total Phosphorus	-0.040942	0.006022	-0.007818	N			-0.072801	0.027414	-0.035838
Chloride	N								
Sulfate	0.052304	0.002377	N	0.023659			N		
Fecal Coliform	N								
E Coli	N								

Note: Absolute values of the numbers shown are P-values of regression. Positive number indicates that there is an increasing trend or a positive correlation. Negative number indicates that there is a decreasing trend or a negative correlation. "N" means no potential trend or correlation.

TABLE B-1 (CONTINUED)
P-VALUES OF TREND ANALYSIS

Watershed Middle Guadalupe River
Station ID 12653
Station location COMAL RIVER BELOW CLEMONS DAM IN NEW BRAUNFELS
Segment 1811

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	0.054706	-0.01754	0.004161	0.014386	N	0.032734	N		
Conductivity	0.00000314	0.013075	0.000134	0.000554	N	0.005781	0.001117	0.090042	0.006397
Dissolved Oxygen Deficit	-1.25E-11	-0.02994	-4.73E-09	-6.47E-08	-0.004074	-0.0000551	-0.0000412	N	-0.000428
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	-0.073038	N	N	N			N		
Total Phosphorus	N								
Chloride	N								
Sulfate	N								
Fecal Coliform	-0.005272	N	-0.010319	N			-0.000753	N	-0.001132
E Coli	N								

Watershed Middle Guadalupe River
Station ID 14932
Station location GERONIMO CREEK AT SH 123 NEAR GERONIMO, TX
Segment 1804

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	N								
Dissolved Oxygen Deficit	-0.009956	N	-0.03428	-0.037417	N	-0.022381	-0.083621	N	N
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	0.000016	0.011913	0.005319	0.009947	N	0.063218	0.000315	0.002253	N
Total Phosphorus	N								
Chloride	-0.078315	N	N	-0.022482	N	N	N		
Sulfate	-0.016777	N	N	-0.039964	N	N	-0.057332	N	N
Fecal Coliform	N								
E Coli	N								

Note: Absolute values of the numbers shown are P-values of regression. Positive number indicates that there is an increasing trend or a positive correlation. Negative number indicates that there is a decreasing trend or a negative correlation. "N" means no potential trend or correlation.

TABLE B-1 (CONTINUED)
P-VALUES OF TREND ANALYSIS

Watershed Blanco River
Station ID 12661
Station location BLANCO RIVER AT BRIDGE ON SH 12 AT WIMBERLEY
Segment 1813

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity									
Dissolved Oxygen Deficit	N								
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	0.031513	0.000399	0.0522	0.094693	0.015973	0.07669	N		
Total Phosphorus	N								
Chloride	0.0428	-0.0000502	0.004049	0.029466	-0.000476	0.010547	N		
Sulfate	N								
Fecal Coliform									
E Coli									

Watershed Blanco River
Station ID 12674
Station location CYPRESS CREEK AT FM 12 AT WIMBERLEY
Segment 1815

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	0.00000109	N	0.000513	0.000466	N	0.019699	0.0000178		
Dissolved Oxygen Deficit	-0.011577	-0.015964	-0.063011	-0.063534			-0.030063		
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen									
Total Phosphorus	0.05132	N	N	N			N		
Chloride	0.000248			0.00025			N		
Sulfate	N								
Fecal Coliform									
E Coli									

Note: Absolute values of the numbers shown are P-values of regression. Positive number indicates that there is an increasing trend or a positive correlation. Negative number indicates that there is a decreasing trend or a negative correlation. "N" means no potential trend or correlation.

TABLE B-1 (CONTINUED)
P-VALUES OF TREND ANALYSIS

Watershed Blanco River
Station ID 12668
Station location BLANCO RIVER AT FM 165 1/2 MILE EAST OF BLANCO
Segment 1813

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	N								
Dissolved Oxygen Deficit	-0.098076			N			N		
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	N								
Total Phosphorus	N								
Chloride	N								
Sulfate	N								
Fecal Coliform	N								
E Coli	N								

Watershed Plum Creek
Station ID 12640
Station location PLUM CREEK AT OLD WOODEN BRIDGE ON CALDWELL CR 135, SE OF LULING
Segment 1810

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	N								
Dissolved Oxygen Deficit	-0.036349	-3.49E-10	N	N			N		
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	N								
Total Phosphorus	N								
Chloride	N								
Sulfate	N								
Fecal Coliform	N								
E Coli	N								

Note: Absolute values of the numbers shown are P-values of regression. Positive number indicates that there is an increasing trend or a positive correlation. Negative number indicates that there is a decreasing trend or a negative correlation. "N" means no potential trend or correlation.

TABLE B-1 (CONTINUED)
P-VALUES OF TREND ANALYSIS

Watershed San Marcos River
Station ID 12626
Station location LOWER SAN MARCOS RIVER AT SH 80 SOUTH OF LULING
Segment 1808

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	0.032802	N	0.096381	N			N		
Dissolved Oxygen Deficit	-0.024851	N	-0.031365	N			-0.013473	N	-0.022053
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	N								
Total Phosphorus	-0.009733	7.28E-07	-0.000315	-0.047874	0.0000514	-0.005467	-0.029131	0.023451	-0.005012
Chloride	0.022662	-5.17E-12	0.0000111	N			0.071605	-0.0000695	0.006957
Sulfate	N								
Fecal Coliform	-0.023479	1.1E-12	-0.007219	-0.035626	2.41E-10	-0.004251	N		
E Coli	N								

Watershed San Marcos River
Station ID 12671
Station location UPPER SAN MARCOS RIVER 0.7 MILE DOWNSTREAM FROM IH 35
Segment 1814

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature									
Conductivity									
Dissolved Oxygen Deficit									
pH									
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen									
Total Phosphorus									
Chloride									
Sulfate									
Fecal Coliform	-0.009031	N	-0.000608	-0.077272	N	-0.007503			
E Coli									

Note: Absolute values of the numbers shown are P-values of regression. Positive number indicates that there is an increasing trend or a positive correlation. Negative number indicates that there is a decreasing trend or a negative correlation. "N" means no potential trend or correlation.

TABLE B-1 (CONTINUED)
P-VALUES OF TREND ANALYSIS

Watershed San Marcos River
Station ID 12672
Station location UPPER SAN MARCOS RIVER IMMEDIATELY UPSTREAM OF IH 35 BRIDGE AT SAN MARCOS
Segment 1814

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity									
Dissolved Oxygen Deficit	N								
pH									
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	N								
Total Phosphorus	N								
Chloride	-0.066333								
Sulfate									
Fecal Coliform									
E Coli	N								

Watershed Peach Creek
Station ID 14937
Station location PEACH CREEK AT GONZALES CR 353, 14.0KM EAST OF GONZALES
Segment 1803

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	N								
Dissolved Oxygen Deficit	N								
pH	0.001202	N	N	0.023068	N	N	0.029829	N	0.05041
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	N								
Total Phosphorus	N								
Chloride	N								
Sulfate	N								
Fecal Coliform	N								
E Coli	N								

Note: Absolute values of the numbers shown are P-values of regression. Positive number indicates that there is an increasing trend or a positive correlation. Negative number indicates that there is a decreasing trend or a negative correlation. "N" means no potential trend or correlation.

TABLE B-1 (CONTINUED)
P-VALUES OF TREND ANALYSIS

Watershed Sandies Creek
Station ID 13657
Station location SANDIES CREEK 100 FT. DOWNSTREAM OF COUNTY HIGHWAY, 1.9 MI. UPSTREAM FROM BIRDS CREEK, 2.0 MI. NE OF WESTHOFF
Segment 1803

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity									
Dissolved Oxygen Deficit	-0.002731	-0.0000987	-0.024331	-0.014617	-0.000274	N	N		
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen									
Total Phosphorus									
Chloride	N								
Sulfate	N								
Fecal Coliform									
E Coli									

Watershed Coleto Creek
Station ID 12622
Station location COLETO CREEK AT US 77 SOUTH OF VICTORIA
Segment 1807

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature									
Conductivity									
Dissolved Oxygen Deficit									
pH									
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen									
Total Phosphorus	N								
Chloride	N								
Sulfate	N								
Fecal Coliform									
E Coli									

Note: Absolute values of the numbers shown are P-values of regression. Positive number indicates that there is an increasing trend or a positive correlation. Negative number indicates that there is a decreasing trend or a negative correlation. "N" means no potential trend or correlation.

TABLE B-1 (CONTINUED)
P-VALUES OF TREND ANALYSIS

Watershed Coleto Creek
Station ID 12623
Station location COLETO CREEK AT US 59 ON VICTORIA-GOLIAD COUNTY LINE
Segment 1807

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	0.095419			N			N		
Dissolved Oxygen Deficit	N								
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	-0.0556			-0.090651			N		
Total Phosphorus	N								
Chloride	N								
Sulfate	N								
Fecal Coliform	N								
E Coli	N								

Watershed Lower Guadalupe River
Station ID 12577
Station location GUADALUPE RIVER TIDAL BRIDGE AT SH 35 NE OF TIVOLI
Segment 1801

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature									
Conductivity									
Dissolved Oxygen Deficit									
pH									
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen									
Total Phosphorus	-0.053768			-0.011354			N		
Chloride	N								
Sulfate	N								
Fecal Coliform									
E Coli									

Note: Absolute values of the numbers shown are P-values of regression. Positive number indicates that there is an increasing trend or a positive correlation. Negative number indicates that there is a decreasing trend or a negative correlation. "N" means no potential trend or correlation.

TABLE B-1 (CONCLUDED)
P-VALUES OF TREND ANALYSIS

Watershed Lower Guadalupe River
Station ID 12578
Station location GUADALUPE RIVER AT LOWER GUADALUPE DIVERSION DAM AND SALT WATER BARRIER
Segment 1802

Parameter	All data			Winter (Oct to May) data			Summer (Jun to Sep) data		
	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time	Parameter vs Time	Parameter vs Flow	Residuals vs Time
Water Temperature	N								
Conductivity	N								
Dissolved Oxygen Deficit	-0.042227			-0.010536			N		
pH	N								
Ammonia Nitrogen									
Nitrite & Nitrate Nitrogen	-0.049793			-0.067352			N		
Total Phosphorus	-0.000272			-0.0000283			-0.003567		
Chloride	N								
Sulfate	N								
Fecal Coliform	N								
E Coli	N								

Note: Absolute values of the numbers shown are P-values of regression. Positive number indicates that there is an increasing trend or a positive correlation. Negative number indicates that there is a decreasing trend or a negative correlation. "N" means no potential trend or correlation.

APPENDIX C

ORGANICS DATA

TABLE C-1
STATIONS AND PARAMETERS WITH DETECTED ORGANICS DATA

Station ID	Location	Parameter	Storetcode	Unit	Date	Conc	Screening level [1]		
							Probable effect level		85th Percentile
							Freshwater	Marine	of tidal stream
12536	VICTORIA BARGE CANAL AT SH 35 NORTH OF SEADRIFT	Acenapthene in sediment	34208	ug/kg	08/20/97	260	-	88.9	1709.0
		Fluoranthene in sediment	34379	ug/kg	08/20/97	1080	2355.0	1493.54	2176.9
		Fluorene in sediment	34384	ug/kg	08/20/97	315	-	144.35	1800.0
		Phenanthrene in sediment	34464	ug/kg	08/20/97	1110	515.0	543.53	1800.0
		Pyrene in sediment	34472	ug/kg	08/20/97	639	875.0	1397.6	2100.0
		Benzo (a) anthracene in sediment	34529	ug/kg	08/20/97	265	385.0	692.53	1800.0
12577	GUADALUPE RIVER TIDAL BRIDGE AT SH 35 NE OF TIVOLI	Chloroform in sediment	34318	ug/kg	05/19/93	2.5	-	-	300.0
					05/09/94	< 310			
					08/23/95	< 5.7			
					07/30/96	< 7.7			
		Methylene chloride in sediment	34426	ug/kg	05/19/93	1.1	-	-	315.0
					05/09/94	< 310			
					08/23/95	< 5.7			
					07/30/96	< 7.7			
		Toluene in sediment	34483	ug/kg	05/19/93	0.9	-	-	312.5
					05/09/94	< 310			
					08/23/95	< 5.7			
					07/30/96	< 7.7			
		Di-n-butyl phthalate in sediment	39112	ug/kg	05/19/93	< 0.8	-	-	2800.0
					05/09/94	< 700			
					08/23/95	37338.2			
					07/30/96	< 1200.3			
		DDT in sediment	39373	ug/kg	05/19/93	< 0.002	4450.0	51.7	37.0
					05/09/94	4.8			
					08/23/95	< 20.47			
					07/30/96	< 21.7			
12578	GUADALUPE RIVER AT LOWER GUADALUPE DIVERSION DAM AND SALT WATER BARRIER	Diazinon	39570	ug/L	07/14/93	0.01			

[1] From Table 20 of Guidance for Assessing Texas Surface and Finished Drinking Water Quality Data, 2002.

[2] There is no criterion for Diazinon.

APPENDIX D

METALS DATA

TABLE D-1
METALS DATA FOR DATA SETS WITH LESS THAN SIX SAMPLES

Stationid	Enddate	Parameter	Storetcode	Gtlt	Value
12536	07/24/95	Arsenic - Dissolved	01000		13.4
12536	07/30/96	Arsenic - Dissolved	01000	<	33
12536	08/20/97	Arsenic - Dissolved	01000		11.7
12536	07/27/94	Arsenic in Sediment	01003		1.21
12536	07/24/95	Arsenic in Sediment	01003		2.68
12536	07/30/96	Arsenic in Sediment	01003		2.56
12536	08/20/97	Arsenic in Sediment	01003		1.29
12536	04/04/02	Arsenic in Sediment	01003		3.45
12536	07/27/94	Barium in Sediment	01008		60.4
12536	07/24/95	Barium in Sediment	01008		72.7
12536	07/30/96	Barium in Sediment	01008		37.4
12536	08/20/97	Barium in Sediment	01008		62.8
12536	04/04/02	Barium in Sediment	01008		72.5
12536	07/24/95	Cadmium - Dissolved	01025	<	4
12536	07/30/96	Cadmium - Dissolved	01025	<	4
12536	08/20/97	Cadmium - Dissolved	01025	<	5
12536	07/27/94	Cadmium in Sediment	01028	<	0.011
12536	07/24/95	Cadmium in Sediment	01028		0.036
12536	07/30/96	Cadmium in Sediment	01028		0.022
12536	08/20/97	Cadmium in Sediment	01028	<	0.021
12536	04/04/02	Cadmium in Sediment	01028		0.071
12536	07/27/94	Chromium in Sediment	01029		8.81
12536	07/24/95	Chromium in Sediment	01029		11.1
12536	07/30/96	Chromium in Sediment	01029		6.66
12536	08/20/97	Chromium in Sediment	01029		6.6
12536	04/04/02	Chromium in Sediment	01029		11.9
12536	07/24/95	Chromium - Dissolved	01030	<	3
12536	07/30/96	Chromium - Dissolved	01030	<	3
12536	08/20/97	Chromium - Dissolved	01030	<	3
12536	07/24/95	Copper - Dissolved	01040	<	4
12536	07/30/96	Copper - Dissolved	01040	<	4
12536	08/20/97	Copper - Dissolved	01040	<	3
12536	07/27/94	Copper in Sediment	01043		5.21
12536	07/24/95	Copper in Sediment	01043		5.03
12536	07/30/96	Copper in Sediment	01043		2.64
12536	08/20/97	Copper in Sediment	01043		3.3
12536	04/04/02	Copper in Sediment	01043		3.51
12536	07/24/95	Lead - Dissolved	01049	<	1
12536	07/30/96	Lead - Dissolved	01049	<	31
12536	08/20/97	Lead - Dissolved	01049	<	1
12536	07/27/94	Lead in Sediment	01052		6.99
12536	07/24/95	Lead in Sediment	01052		6.02
12536	07/30/96	Lead in Sediment	01052		2.97
12536	08/20/97	Lead in Sediment	01052		6.74
12536	04/04/02	Lead in Sediment	01052		5.55
12536	07/27/94	Manganese in Sediment	01053		132
12536	07/24/95	Manganese in Sediment	01053		142
12536	07/30/96	Manganese in Sediment	01053		93
12536	08/20/97	Manganese in Sediment	01053		111
12536	04/04/02	Manganese in Sediment	01053		140
12536	07/24/95	Nickel - Dissolved	01065	<	9
12536	07/30/96	Nickel - Dissolved	01065		14
12536	08/20/97	Nickel - Dissolved	01065	<	11
12536	07/27/94	Nickel in Sediment	01068		4.93
12536	07/24/95	Nickel in Sediment	01068		6.8
12536	07/30/96	Nickel in Sediment	01068		3.96
12536	08/20/97	Nickel in Sediment	01068		4.16
12536	04/04/02	Nickel in Sediment	01068		6.74
12536	07/24/95	Silver - Dissolved	01075	<	0.5
12536	07/30/96	Silver - Dissolved	01075	<	3
12536	08/20/97	Silver - Dissolved	01075	<	0.5

TABLE D-1 (CONTINUED)
METALS DATA FOR DATA SETS WITH LESS THAN SIX SAMPLES

Stationid	Enddate	Parameter	Storetcode	Gtlt	Value
12536	07/24/95	Silver in Sediment	01078	<	0.29
12536	07/30/96	Silver in Sediment	01078	<	0.25
12536	08/20/97	Silver in Sediment	01078	<	0.294
12536	04/04/02	Silver in Sediment	01078	<	0.399
12536	07/24/95	Zinc - Dissolved	01090	<	3
12536	07/30/96	Zinc - Dissolved	01090	<	3
12536	08/20/97	Zinc - Dissolved	01090	<	4
12536	07/27/94	Zinc in Sediment	01093	<	23.3
12536	07/24/95	Zinc in Sediment	01093	<	24.1
12536	07/30/96	Zinc in Sediment	01093		16.8
12536	08/20/97	Zinc in Sediment	01093		19.5
12536	04/04/02	Zinc in Sediment	01093		23.6
12536	07/24/95	Aluminum - Dissolved	01106	<	34
12536	07/30/96	Aluminum - Dissolved	01106	<	34
12536	08/20/97	Aluminum - Dissolved	01106	<	41
12536	07/24/95	Aluminum in Sediment	01108		1.49
12536	07/30/96	Aluminum in Sediment	01108		9460
12536	08/20/97	Aluminum in Sediment	01108		9650
12536	04/04/02	Aluminum in Sediment	01108		15800
12536	07/24/95	Selenium - Dissolved	01145	<	2
12536	07/30/96	Selenium - Dissolved	01145	<	36
12536	08/20/97	Selenium - Dissolved	01145	<	2
12536	07/30/96	Selenium - Total	01147	<	35
12536	08/20/97	Selenium - Total	01147	<	6
12536	07/27/94	Selenium in Sediment	01148	<	0.22
12536	07/24/95	Selenium in Sediment	01148	<	0.229
12536	07/30/96	Selenium in Sediment	01148		0.244
12536	08/20/97	Selenium in Sediment	01148	<	1.25
12536	04/04/02	Selenium in Sediment	01148	<	0.133
12536	07/24/95	Chromium, Hexavalent - Dissolved	01220	<	3
12536	07/24/95	Mercury - Dissolved	71890	<	0.01
12536	07/30/96	Mercury - Dissolved	71890	<	0.01
12536	08/20/97	Mercury - Dissolved	71890	<	0.01
12536	07/24/95	Mercury - Total	71900	<	0.01
12536	07/30/96	Mercury - Total	71900	<	0.01
12536	08/20/97	Mercury - Total	71900	<	0.01
12536	07/27/94	Mercury in Sediment	71921	<	0.6
12536	07/24/95	Mercury in Sediment	71921		0.022
12536	07/30/96	Mercury in Sediment	71921		0.002
12536	08/20/97	Mercury in Sediment	71921		0.005
12570	05/09/01	Arsenic - Dissolved	01000		2.71
12570	07/30/01	Arsenic - Dissolved	01000		1.1
12570	05/09/01	Barium - Dissolved	01005		72.4
12570	07/30/01	Barium - Dissolved	01005		66.8
12570	05/09/01	Cadmium - Dissolved	01025	<	0.2
12570	07/30/01	Cadmium - Dissolved	01025	<	0.2
12570	05/09/01	Chromium - Dissolved	01030	<	10
12570	07/30/01	Chromium - Dissolved	01030	<	10
12570	05/09/01	Copper - Dissolved	01040	<	5
12570	07/30/01	Copper - Dissolved	01040	<	5
12570	05/09/01	Iron - Dissolved	01046		23
12570	07/30/01	Iron - Dissolved	01046	<	0.05
12570	05/09/01	Lead - Dissolved	01049	<	2
12570	07/30/01	Lead - Dissolved	01049	<	2
12570	05/09/01	Manganese - Dissolved	01056		30.2
12570	07/30/01	Manganese - Dissolved	01056		8.49
12570	05/09/01	Molybdenum - Dissolved	01060		2.87
12570	07/30/01	Molybdenum - Dissolved	01060		1.17
12570	05/09/01	Nickel - Dissolved	01065	<	15
12570	07/30/01	Nickel - Dissolved	01065	<	15
12570	05/09/01	Silver - Dissolved	01075	<	0.5

TABLE D-1 (CONTINUED)
METALS DATA FOR DATA SETS WITH LESS THAN SIX SAMPLES

Stationid	Enddate	Parameter	Storetcode	Gtlt	Value
12570	07/30/01	Silver - Dissolved	01075	<	0.5
12570	05/09/01	Zinc - Dissolved	01090		12.9
12570	07/30/01	Zinc - Dissolved	01090	<	5
12570	05/09/01	Aluminum - Dissolved	01106	<	50
12570	07/30/01	Aluminum - Dissolved	01106	<	50
12570	05/09/01	Selenium - Total	01147	<	2
12570	07/30/01	Selenium - Total	01147	<	2
12570	05/09/01	Mercury - Total	71900	<	0.2
12570	07/30/01	Mercury - Total	71900	<	0.2
12577	05/19/93	Arsenic in Sediment	01003		1.6
12577	05/09/94	Arsenic in Sediment	01003		4.57
12577	08/23/95	Arsenic in Sediment	01003		2.34
12577	07/30/96	Arsenic in Sediment	01003		1.91
12577	08/12/97	Arsenic in Sediment	01003		1.56
12577	05/19/93	Barium in Sediment	01008		62
12577	08/23/95	Barium in Sediment	01008		36.8
12577	07/30/96	Barium in Sediment	01008		57
12577	08/12/97	Barium in Sediment	01008		91.5
12577	05/19/93	Cadmium in Sediment	01028	<	0.5
12577	05/09/94	Cadmium in Sediment	01028	<	0.012
12577	08/23/95	Cadmium in Sediment	01028		0.054
12577	07/30/96	Cadmium in Sediment	01028		0.061
12577	08/12/97	Cadmium in Sediment	01028		0.13
12577	05/19/93	Chromium in Sediment	01029		7.6
12577	05/09/94	Chromium in Sediment	01029		23.6
12577	08/23/95	Chromium in Sediment	01029		4.92
12577	07/30/96	Chromium in Sediment	01029		8.71
12577	08/12/97	Chromium in Sediment	01029		8.97
12577	05/19/93	Copper in Sediment	01043		2.7
12577	05/09/94	Copper in Sediment	01043		9.53
12577	08/23/95	Copper in Sediment	01043		2.96
12577	07/30/96	Copper in Sediment	01043		3.96
12577	08/12/97	Copper in Sediment	01043		6.29
12577	05/19/93	Lead in Sediment	01052		7
12577	05/09/94	Lead in Sediment	01052		15.48
12577	08/23/95	Lead in Sediment	01052		3.26
12577	07/30/96	Lead in Sediment	01052		4.37
12577	08/12/97	Lead in Sediment	01052		9.11
12577	05/19/93	Manganese in Sediment	01053		166
12577	05/09/94	Manganese in Sediment	01053		302
12577	08/23/95	Manganese in Sediment	01053		108
12577	07/30/96	Manganese in Sediment	01053		155
12577	08/12/97	Manganese in Sediment	01053		222
12577	05/19/93	Nickel in Sediment	01068		5.3
12577	05/09/94	Nickel in Sediment	01068		13
12577	08/23/95	Nickel in Sediment	01068		4.06
12577	07/30/96	Nickel in Sediment	01068		6.07
12577	08/12/97	Nickel in Sediment	01068		6.45
12577	05/19/93	Silver in Sediment	01078	<	1.4
12577	05/09/94	Silver in Sediment	01078		0.287
12577	08/23/95	Silver in Sediment	01078	<	0.25
12577	07/30/96	Silver in Sediment	01078	<	0.25
12577	08/12/97	Silver in Sediment	01078	<	0.397
12577	05/19/93	Zinc in Sediment	01093		20.8
12577	05/09/94	Zinc in Sediment	01093		55
12577	08/23/95	Zinc in Sediment	01093	<	12.1
12577	07/30/96	Zinc in Sediment	01093		22.9
12577	08/12/97	Zinc in Sediment	01093		30.5
12577	08/23/95	Aluminum in Sediment	01108		5.32
12577	07/30/96	Aluminum in Sediment	01108		11200
12577	08/12/97	Aluminum in Sediment	01108		10900

TABLE D-1 (CONTINUED)
METALS DATA FOR DATA SETS WITH LESS THAN SIX SAMPLES

Stationid	Enddate	Parameter	Storetcode	Gtlt	Value
12577	05/19/93	Selenium in Sediment	01148	<	0.31
12577	05/09/94	Selenium in Sediment	01148		0.317
12577	08/23/95	Selenium in Sediment	01148	<	0.172
12577	07/30/96	Selenium in Sediment	01148		0.321
12577	08/12/97	Selenium in Sediment	01148	<	0.405
12577	08/23/95	Chromium, Hexavalent - Dissolved	01220	<	5
12577	05/19/93	Mercury in Sediment	71921	<	0.036
12577	05/09/94	Mercury in Sediment	71921		0.213
12577	08/23/95	Mercury in Sediment	71921		0.023
12577	07/30/96	Mercury in Sediment	71921		0.01
12577	08/12/97	Mercury in Sediment	71921		0.013
12578	05/14/01	Aluminum - Dissolved	01106	<	50
12578	07/31/01	Aluminum - Dissolved	01106	<	50
12578	05/14/01	Selenium - Total	01147	<	2
12578	07/31/01	Selenium - Total	01147	<	2
12578	05/14/01	Mercury - Total	71900	<	0.2
12578	07/31/01	Mercury - Total	71900		0.207
12592	05/14/01	Arsenic - Dissolved	01000		0.69
12592	07/31/01	Arsenic - Dissolved	01000		1.4
12592	05/14/01	Barium - Dissolved	01005		44.8
12592	07/31/01	Barium - Dissolved	01005		47.6
12592	05/14/01	Cadmium - Dissolved	01025	<	0.2
12592	07/31/01	Cadmium - Dissolved	01025	<	0.2
12592	05/14/01	Chromium - Dissolved	01030	<	10
12592	07/31/01	Chromium - Dissolved	01030	<	10
12592	05/14/01	Copper - Dissolved	01040	<	5
12592	07/31/01	Copper - Dissolved	01040	<	5
12592	05/14/01	Iron - Dissolved	01046		8
12592	07/31/01	Iron - Dissolved	01046	<	0.05
12592	05/14/01	Lead - Dissolved	01049	<	2
12592	07/31/01	Lead - Dissolved	01049	<	2
12592	05/14/01	Manganese - Dissolved	01056		3.63
12592	07/31/01	Manganese - Dissolved	01056		2
12592	05/14/01	Molybdenum - Dissolved	01060	<	1
12592	07/31/01	Molybdenum - Dissolved	01060		1.6
12592	05/14/01	Nickel - Dissolved	01065	<	15
12592	07/31/01	Nickel - Dissolved	01065	<	15
12592	05/14/01	Silver - Dissolved	01075	<	0.5
12592	07/31/01	Silver - Dissolved	01075	<	0.5
12592	05/14/01	Zinc - Dissolved	01090	<	5
12592	07/31/01	Zinc - Dissolved	01090		5.71
12592	05/14/01	Aluminum - Dissolved	01106	<	50
12592	07/31/01	Aluminum - Dissolved	01106		53.4
12592	05/14/01	Selenium - Total	01147	<	2
12592	07/31/01	Selenium - Total	01147	<	2
12592	05/14/01	Mercury - Total	71900	<	0.2
12592	07/31/01	Mercury - Total	71900		0.2
12594	07/22/97	Arsenic - Dissolved	01000	<	2
12594	07/22/97	Cadmium - Dissolved	01025	<	5
12594	07/22/97	Chromium - Dissolved	01030	<	3
12594	07/22/97	Copper - Dissolved	01040		8
12594	07/22/97	Lead - Dissolved	01049	<	1
12594	07/22/97	Nickel - Dissolved	01065	<	11
12594	07/22/97	Silver - Dissolved	01075	<	0.5
12594	07/22/97	Zinc - Dissolved	01090	<	4
12594	07/22/97	Aluminum - Dissolved	01106	<	41
12594	07/22/97	Selenium - Dissolved	01145	<	2
12594	07/22/97	Mercury - Dissolved	71890	<	0.01
12595	08/31/00	Arsenic - Dissolved	01000		1.21
12595	08/10/99	Arsenic in Sediment	01003		9.16
12595	05/08/00	Arsenic in Sediment	01003		5.99

TABLE D-1 (CONTINUED)
METALS DATA FOR DATA SETS WITH LESS THAN SIX SAMPLES

Stationid	Enddate	Parameter	Storetcode	Gtlt	Value
12595	08/31/00	Arsenic in Sediment	01003		8.44
12595	08/10/99	Barium in Sediment	01008		127
12595	05/08/00	Barium in Sediment	01008		108
12595	08/31/00	Barium in Sediment	01008		117
12595	08/31/00	Cadmium - Dissolved	01025	<	4
12595	08/10/99	Cadmium in Sediment	01028		0.36
12595	05/08/00	Cadmium in Sediment	01028		0.303
12595	08/31/00	Cadmium in Sediment	01028		0.367
12595	08/10/99	Chromium in Sediment	01029		34
12595	05/08/00	Chromium in Sediment	01029		33.8
12595	08/31/00	Chromium in Sediment	01029		36.3
12595	08/31/00	Chromium - Dissolved	01030	<	3
12595	08/31/00	Copper - Dissolved	01040	<	3
12595	08/10/99	Copper in Sediment	01043		10.9
12595	05/08/00	Copper in Sediment	01043		13.4
12595	08/31/00	Copper in Sediment	01043		15.7
12595	08/31/00	Lead - Dissolved	01049	<	1
12595	08/10/99	Lead in Sediment	01052		19.4
12595	05/08/00	Lead in Sediment	01052		18.1
12595	08/31/00	Lead in Sediment	01052		22.3
12595	08/10/99	Manganese in Sediment	01053		410
12595	05/08/00	Manganese in Sediment	01053		511
12595	08/31/00	Manganese in Sediment	01053		531
12595	08/31/00	Nickel - Dissolved	01065	<	10
12595	08/10/99	Nickel in Sediment	01068		14.8
12595	05/08/00	Nickel in Sediment	01068		13.6
12595	08/31/00	Nickel in Sediment	01068		13.5
12595	08/31/00	Silver - Dissolved	01075	<	0.25
12595	08/10/99	Silver in Sediment	01078	<	0.721
12595	05/08/00	Silver in Sediment	01078	<	0.587
12595	08/31/00	Silver in Sediment	01078	<	0.753
12595	08/31/00	Zinc - Dissolved	01090	<	8
12595	08/10/99	Zinc in Sediment	01093		71.5
12595	05/08/00	Zinc in Sediment	01093		89.7
12595	08/31/00	Zinc in Sediment	01093		98.2
12595	08/31/00	Aluminum - Dissolved	01106	<	26
12595	08/10/99	Aluminum in Sediment	01108		40500
12595	05/08/00	Aluminum in Sediment	01108		38700
12595	08/31/00	Aluminum in Sediment	01108		40400
12595	08/31/00	Selenium - Dissolved	01145	<	1
12595	08/31/00	Selenium - Total	01147	<	1
12595	08/10/99	Selenium in Sediment	01148	<	0.96
12595	05/08/00	Selenium in Sediment	01148		1.14
12595	08/31/00	Selenium in Sediment	01148		1.29
12595	08/10/99	Mercury in Sediment	71921		0.03
12595	05/08/00	Mercury in Sediment	71921		0.034
12596	05/09/01	Arsenic - Dissolved	01000	<	0.5
12596	07/30/01	Arsenic - Dissolved	01000		0.6
12596	05/09/01	Barium - Dissolved	01005		33.3
12596	07/30/01	Barium - Dissolved	01005		40.6
12596	05/09/01	Cadmium - Dissolved	01025	<	0.2
12596	07/30/01	Cadmium - Dissolved	01025	<	0.2
12596	05/09/01	Chromium - Dissolved	01030	<	10
12596	07/30/01	Chromium - Dissolved	01030	<	10
12596	05/09/01	Copper - Dissolved	01040	<	5
12596	07/30/01	Copper - Dissolved	01040	<	5
12596	05/09/01	Iron - Dissolved	01046		8.1
12596	07/30/01	Iron - Dissolved	01046	<	0.05
12596	05/09/01	Lead - Dissolved	01049	<	2
12596	07/30/01	Lead - Dissolved	01049	<	2
12596	05/09/01	Manganese - Dissolved	01056		2.67

TABLE D-1 (CONTINUED)
METALS DATA FOR DATA SETS WITH LESS THAN SIX SAMPLES

Stationid	Enddate	Parameter	Storetcode	Gtlt	Value
12596	07/30/01	Manganese - Dissolved	01056		2.65
12596	05/09/01	Molybdenum - Dissolved	01060	<	1
12596	07/30/01	Molybdenum - Dissolved	01060		1.23
12596	05/09/01	Nickel - Dissolved	01065	<	15
12596	07/30/01	Nickel - Dissolved	01065	<	15
12596	05/09/01	Silver - Dissolved	01075	<	0.5
12596	07/30/01	Silver - Dissolved	01075	<	0.5
12596	05/09/01	Zinc - Dissolved	01090		13.2
12596	07/30/01	Zinc - Dissolved	01090	<	5
12596	05/09/01	Aluminum - Dissolved	01106	<	50
12596	07/30/01	Aluminum - Dissolved	01106	<	50
12596	05/09/01	Selenium - Total	01147	<	2
12596	07/30/01	Selenium - Total	01147	<	2
12596	05/09/01	Mercury - Total	71900	<	0.2
12596	07/30/01	Mercury - Total	71900	<	0.2
12598	08/24/94	Arsenic - Dissolved	01000	<	2
12598	08/24/94	Cadmium - Dissolved	01025	<	4
12598	08/24/94	Chromium - Dissolved	01030	<	3
12598	08/24/94	Copper - Dissolved	01040		8
12598	08/24/94	Lead - Dissolved	01049	<	1
12598	08/24/94	Nickel - Dissolved	01065	<	9
12598	08/24/94	Silver - Dissolved	01075	<	0.5
12598	08/24/94	Zinc - Dissolved	01090	<	10.2
12598	08/24/94	Aluminum - Dissolved	01106	<	34
12598	08/24/94	Selenium - Dissolved	01145	<	2
12598	08/24/94	Mercury - Dissolved	71890	<	0.06
12601	11/19/97	Selenium in Sediment	01148	<	0.895
12601	02/25/98	Selenium in Sediment	01148		2.22
12601	02/23/99	Selenium in Sediment	01148	<	1.15
12601	06/04/01	Selenium in Sediment	01148		1.06
12601	08/01/01	Selenium in Sediment	01148	<	1.01
12601	11/19/97	Mercury in Sediment	71921		0.021
12601	02/25/98	Mercury in Sediment	71921		0.019
12601	02/23/99	Mercury in Sediment	71921		0.036
12603	12/12/96	Arsenic - Dissolved	01000	<	1
12603	12/12/96	Barium - Dissolved	01005		39
12603	12/12/96	Beryllium - Dissolved	01010	<	1
12603	12/12/96	Cadmium - Dissolved	01025	<	1
12603	12/12/96	Chromium - Dissolved	01030		2
12603	12/12/96	Cobalt - Dissolved	01035	<	1
12603	12/12/96	Copper - Dissolved	01040	<	1
12603	12/12/96	Iron - Dissolved	01046	<	3
12603	06/05/97	Iron - Dissolved	01046	<	3
12603	12/12/96	Lead - Dissolved	01049	<	1
12603	12/12/96	Manganese - Dissolved	01056		2
12603	06/05/97	Manganese - Dissolved	01056		1.9
12603	12/12/96	Molybdenum - Dissolved	01060		1
12603	12/12/96	Nickel - Dissolved	01065	<	1
12603	12/12/96	Silver - Dissolved	01075	<	1
12603	12/12/96	Zinc - Dissolved	01090		3
12603	12/12/96	Antimony - Dissolved	01095	<	1
12603	12/12/96	Aluminum - Dissolved	01106		3
12603	12/12/96	Selenium - Dissolved	01145	<	1
12603	12/12/96	Uranium, Natural - Dissolved	22703	<	1
12616	05/16/01	Arsenic - Dissolved	01000	<	0.5
12616	07/23/01	Arsenic - Dissolved	01000		1.4
12616	05/16/01	Barium - Dissolved	01005		43.6
12616	07/23/01	Barium - Dissolved	01005		36.2
12616	05/16/01	Cadmium - Dissolved	01025	<	0.2
12616	07/23/01	Cadmium - Dissolved	01025	<	0.2
12616	05/16/01	Chromium - Dissolved	01030	<	10

TABLE D-1 (CONTINUED)
METALS DATA FOR DATA SETS WITH LESS THAN SIX SAMPLES

Stationid	Enddate	Parameter	Storetcode	Gtlt	Value
12616	07/23/01	Chromium - Dissolved	01030	<	10
12616	05/16/01	Copper - Dissolved	01040	<	5
12616	07/23/01	Copper - Dissolved	01040	<	5
12616	05/16/01	Iron - Dissolved	01046		7.9
12616	07/23/01	Iron - Dissolved	01046	<	0.05
12616	05/16/01	Lead - Dissolved	01049	<	2
12616	07/23/01	Lead - Dissolved	01049	<	2
12616	05/16/01	Manganese - Dissolved	01056		0.86
12616	07/23/01	Manganese - Dissolved	01056		1.49
12616	05/16/01	Molybdenum - Dissolved	01060	<	1
12616	07/23/01	Molybdenum - Dissolved	01060	<	1
12616	05/16/01	Nickel - Dissolved	01065	<	15
12616	07/23/01	Nickel - Dissolved	01065	<	15
12616	05/16/01	Silver - Dissolved	01075	<	0.5
12616	07/23/01	Silver - Dissolved	01075	<	0.5
12616	05/16/01	Zinc - Dissolved	01090	<	5
12616	07/23/01	Zinc - Dissolved	01090	<	5
12616	05/16/01	Aluminum - Dissolved	01106	<	50
12616	07/23/01	Aluminum - Dissolved	01106	<	50
12616	05/16/01	Selenium - Total	01147	<	2
12616	07/23/01	Selenium - Total	01147	<	2
12616	05/16/01	Mercury - Total	71900	<	0.2
12616	07/23/01	Mercury - Total	71900	<	0.2
12621	12/11/96	Arsenic - Dissolved	01000	<	1
12621	12/11/96	Barium - Dissolved	01005		35
12621	12/11/96	Beryllium - Dissolved	01010	<	1
12621	12/11/96	Cadmium - Dissolved	01025	<	1
12621	12/11/96	Chromium - Dissolved	01030		3
12621	12/11/96	Cobalt - Dissolved	01035	<	1
12621	12/11/96	Copper - Dissolved	01040	<	1
12621	12/11/96	Iron - Dissolved	01046	<	3
12621	06/04/97	Iron - Dissolved	01046		3.28
12621	12/11/96	Lead - Dissolved	01049	<	1
12621	12/11/96	Manganese - Dissolved	01056		1
12621	06/04/97	Manganese - Dissolved	01056	<	1
12621	12/11/96	Molybdenum - Dissolved	01060	<	1
12621	12/11/96	Nickel - Dissolved	01065	<	1
12621	12/11/96	Silver - Dissolved	01075	<	1
12621	12/11/96	Zinc - Dissolved	01090		7
12621	12/11/96	Antimony - Dissolved	01095	<	1
12621	12/11/96	Aluminum - Dissolved	01106		4
12621	12/11/96	Selenium - Dissolved	01145	<	1
12621	12/11/96	Uranium, Natural - Dissolved	22703	<	1
12626	05/14/01	Arsenic - Dissolved	01000	<	0.5
12626	07/23/01	Arsenic - Dissolved	01000		0.73
12626	05/14/01	Barium - Dissolved	01005		35.5
12626	07/23/01	Barium - Dissolved	01005		33.6
12626	05/14/01	Cadmium - Dissolved	01025	<	0.2
12626	07/23/01	Cadmium - Dissolved	01025	<	0.2
12626	05/14/01	Chromium - Dissolved	01030	<	10
12626	07/23/01	Chromium - Dissolved	01030	<	10
12626	05/14/01	Copper - Dissolved	01040	<	5
12626	07/23/01	Copper - Dissolved	01040	<	5
12626	05/14/01	Iron - Dissolved	01046	<	8
12626	07/23/01	Iron - Dissolved	01046	<	0.05
12626	05/14/01	Lead - Dissolved	01049	<	2
12626	07/23/01	Lead - Dissolved	01049	<	2
12626	05/14/01	Manganese - Dissolved	01056		3.02
12626	07/23/01	Manganese - Dissolved	01056		2.83
12626	05/14/01	Molybdenum - Dissolved	01060		2.78
12626	07/23/01	Molybdenum - Dissolved	01060		2.14

TABLE D-1 (CONTINUED)
METALS DATA FOR DATA SETS WITH LESS THAN SIX SAMPLES

Stationid	Enddate	Parameter	Storetcode	Gtlt	Value
12626	05/14/01	Nickel - Dissolved	01065	<	15
12626	07/23/01	Nickel - Dissolved	01065	<	15
12626	05/14/01	Silver - Dissolved	01075	<	0.5
12626	07/23/01	Silver - Dissolved	01075	<	0.5
12626	05/14/01	Zinc - Dissolved	01090	<	5
12626	07/23/01	Zinc - Dissolved	01090	<	5
12626	05/14/01	Aluminum - Dissolved	01106	<	50
12626	07/23/01	Aluminum - Dissolved	01106	<	50
12626	05/14/01	Selenium - Total	01147	<	2
12626	07/23/01	Selenium - Total	01147	<	2
12626	05/14/01	Mercury - Total	71900	<	0.2
12626	07/23/01	Mercury - Total	71900	<	0.2
12640	08/25/97	Arsenic - Dissolved	01000		9.25
12640	08/25/97	Arsenic in Sediment	01003		4.33
12640	08/25/97	Barium in Sediment	01008		82
12640	08/25/97	Cadmium - Dissolved	01025	<	5
12640	08/25/97	Cadmium in Sediment	01028	<	0.017
12640	08/25/97	Chromium in Sediment	01029		8.42
12640	08/25/97	Chromium - Dissolved	01030	<	3
12640	08/25/97	Copper - Dissolved	01040	<	3
12640	08/25/97	Copper in Sediment	01043		5.36
12640	08/25/97	Lead - Dissolved	01049	<	1
12640	08/25/97	Lead in Sediment	01052		5.59
12640	08/25/97	Manganese in Sediment	01053		245
12640	08/25/97	Nickel - Dissolved	01065	<	11
12640	08/25/97	Nickel in Sediment	01068		8.11
12640	08/25/97	Silver - Dissolved	01075	<	0.5
12640	08/25/97	Silver in Sediment	01078	<	0.337
12640	08/25/97	Zinc - Dissolved	01090	<	4
12640	08/25/97	Zinc in Sediment	01093		24.1
12640	08/25/97	Aluminum - Dissolved	01106	<	41
12640	08/25/97	Aluminum in Sediment	01108		9740
12640	08/25/97	Selenium - Dissolved	01145	<	2
12640	08/25/97	Selenium in Sediment	01148	<	1.02
12640	08/25/97	Mercury - Dissolved	71890		0.044
12640	08/25/97	Mercury in Sediment	71921		0.016
12653	12/26/96	Arsenic - Dissolved	01000	<	1
12653	12/26/96	Barium - Dissolved	01005		51
12653	12/26/96	Beryllium - Dissolved	01010	<	1
12653	12/26/96	Cadmium - Dissolved	01025	<	1
12653	12/26/96	Chromium - Dissolved	01030		3
12653	12/26/96	Cobalt - Dissolved	01035	<	1
12653	12/26/96	Copper - Dissolved	01040	<	1
12653	12/26/96	Lead - Dissolved	01049	<	1
12653	12/26/96	Molybdenum - Dissolved	01060	<	1
12653	12/26/96	Nickel - Dissolved	01065	<	1
12653	12/26/96	Silver - Dissolved	01075	<	1
12653	12/26/96	Zinc - Dissolved	01090		3
12653	12/26/96	Antimony - Dissolved	01095	<	1
12653	12/26/96	Aluminum - Dissolved	01106		3
12653	12/26/96	Selenium - Dissolved	01145	<	1
12653	12/26/96	Uranium, Natural - Dissolved	22703	<	1
12661	01/29/93	Arsenic - Dissolved	01000	<	1
12661	08/30/93	Arsenic - Dissolved	01000	<	1
12661	12/26/96	Arsenic - Dissolved	01000	<	1
12661	01/29/93	Beryllium - Dissolved	01010	<	0.5
12661	08/30/93	Beryllium - Dissolved	01010	<	0.5
12661	12/26/96	Beryllium - Dissolved	01010	<	1
12661	01/29/93	Cadmium - Dissolved	01025	<	1
12661	08/30/93	Cadmium - Dissolved	01025		2
12661	12/26/96	Cadmium - Dissolved	01025	<	1

TABLE D-1 (CONTINUED)
METALS DATA FOR DATA SETS WITH LESS THAN SIX SAMPLES

Stationid	Enddate	Parameter	Storetcode	Gtlt	Value
12661	01/29/93	Chromium - Dissolved	01030	<	5
12661	08/30/93	Chromium - Dissolved	01030	<	5
12661	12/26/96	Chromium - Dissolved	01030		4
12661	01/29/93	Cobalt - Dissolved	01035	<	3
12661	08/30/93	Cobalt - Dissolved	01035	<	3
12661	12/26/96	Cobalt - Dissolved	01035	<	1
12661	01/29/93	Copper - Dissolved	01040	<	10
12661	08/30/93	Copper - Dissolved	01040	<	10
12661	12/26/96	Copper - Dissolved	01040	<	1
12661	01/29/93	Molybdenum - Dissolved	01060	<	10
12661	08/30/93	Molybdenum - Dissolved	01060	<	10
12661	12/26/96	Molybdenum - Dissolved	01060		1
12661	01/29/93	Nickel - Dissolved	01065	<	10
12661	08/30/93	Nickel - Dissolved	01065	<	10
12661	12/26/96	Nickel - Dissolved	01065	<	1
12661	01/29/93	Silver - Dissolved	01075	<	1
12661	08/30/93	Silver - Dissolved	01075	<	1
12661	12/26/96	Silver - Dissolved	01075	<	1
12661	01/29/93	Vanadium - Dissolved	01085	<	6
12661	08/30/93	Vanadium - Dissolved	01085	<	6
12661	12/26/96	Antimony - Dissolved	01095	<	1
12661	12/26/96	Aluminum - Dissolved	01106		3
12661	01/29/93	Selenium - Dissolved	01145	<	1
12661	08/30/93	Selenium - Dissolved	01145	<	1
12661	12/26/96	Selenium - Dissolved	01145	<	1
12661	12/26/96	Uranium, Natural - Dissolved	22703	<	1
13656	12/28/96	Antimony - Dissolved	01095	<	1
13656	12/28/96	Aluminum - Dissolved	01106		3
13656	12/28/96	Uranium, Natural - Dissolved	22703	<	1
13700	12/31/96	Antimony - Dissolved	01095	<	1
13700	12/31/96	Aluminum - Dissolved	01106		4
13700	12/31/96	Uranium, Natural - Dissolved	22703	<	1
14932	05/09/01	Arsenic - Dissolved	01000		0.88
14932	07/23/01	Arsenic - Dissolved	01000		1.4
14932	05/09/01	Barium - Dissolved	01005		92.6
14932	07/23/01	Barium - Dissolved	01005		89.2
14932	05/09/01	Cadmium - Dissolved	01025	<	0.2
14932	07/23/01	Cadmium - Dissolved	01025	<	0.2
14932	05/09/01	Chromium - Dissolved	01030	<	10
14932	07/23/01	Chromium - Dissolved	01030	<	10
14932	05/09/01	Copper - Dissolved	01040	<	5
14932	07/23/01	Copper - Dissolved	01040	<	5
14932	05/09/01	Iron - Dissolved	01046	<	8
14932	07/23/01	Iron - Dissolved	01046	<	0.05
14932	05/09/01	Lead - Dissolved	01049	<	2
14932	07/23/01	Lead - Dissolved	01049	<	2
14932	05/09/01	Manganese - Dissolved	01056		4.09
14932	07/23/01	Manganese - Dissolved	01056		3.33
14932	05/09/01	Molybdenum - Dissolved	01060	<	1
14932	07/23/01	Molybdenum - Dissolved	01060	<	1
14932	05/09/01	Nickel - Dissolved	01065	<	15
14932	07/23/01	Nickel - Dissolved	01065	<	15
14932	05/09/01	Silver - Dissolved	01075	<	0.5
14932	07/23/01	Silver - Dissolved	01075	<	0.5
14932	05/09/01	Zinc - Dissolved	01090		8.46
14932	07/23/01	Zinc - Dissolved	01090	<	5
14932	05/09/01	Aluminum - Dissolved	01106	<	50
14932	07/23/01	Aluminum - Dissolved	01106	<	50
14932	05/09/01	Selenium - Total	01147	<	2
14932	07/23/01	Selenium - Total	01147		2.1
14932	05/09/01	Mercury - Total	71900	<	0.2

TABLE D-1 (CONTINUED)
METALS DATA FOR DATA SETS WITH LESS THAN SIX SAMPLES

Stationid	Enddate	Parameter	Storetcode	Gtlt	Value
14932	07/23/01	Mercury - Total	71900	<	0.2
14937	05/16/01	Arsenic - Dissolved	01000		1.7
14937	07/23/01	Arsenic - Dissolved	01000		3.94
14937	05/16/01	Barium - Dissolved	01005		100
14937	07/23/01	Barium - Dissolved	01005		31.5
14937	05/16/01	Cadmium - Dissolved	01025	<	0.2
14937	07/23/01	Cadmium - Dissolved	01025	<	0.2
14937	05/16/01	Chromium - Dissolved	01030	<	10
14937	07/23/01	Chromium - Dissolved	01030	<	10
14937	05/16/01	Copper - Dissolved	01040	<	5
14937	07/23/01	Copper - Dissolved	01040	<	5
14937	05/16/01	Iron - Dissolved	01046		122
14937	07/23/01	Iron - Dissolved	01046		0.589
14937	05/16/01	Lead - Dissolved	01049	<	2
14937	07/23/01	Lead - Dissolved	01049	<	2
14937	05/16/01	Manganese - Dissolved	01056		77.7
14937	07/23/01	Manganese - Dissolved	01056		27.7
14937	05/16/01	Molybdenum - Dissolved	01060	<	1
14937	07/23/01	Molybdenum - Dissolved	01060	<	1
14937	05/16/01	Nickel - Dissolved	01065	<	15
14937	07/23/01	Nickel - Dissolved	01065	<	15
14937	05/16/01	Silver - Dissolved	01075	<	0.5
14937	07/23/01	Silver - Dissolved	01075	<	0.5
14937	05/16/01	Zinc - Dissolved	01090		13.7
14937	07/23/01	Zinc - Dissolved	01090	<	5
14937	05/16/01	Aluminum - Dissolved	01106		79.3
14937	07/23/01	Aluminum - Dissolved	01106		121
14937	05/16/01	Selenium - Total	01147	<	2
14937	07/23/01	Selenium - Total	01147	<	2
14937	05/16/01	Mercury - Total	71900	<	0.2
14937	07/23/01	Mercury - Total	71900	<	0.2
15113	05/16/01	Arsenic - Dissolved	01000		0.57
15113	07/23/01	Arsenic - Dissolved	01000		1.4
15113	05/16/01	Barium - Dissolved	01005		42.8
15113	07/23/01	Barium - Dissolved	01005		37.9
15113	05/16/01	Cadmium - Dissolved	01025	<	0.2
15113	07/23/01	Cadmium - Dissolved	01025	<	0.2
15113	05/16/01	Chromium - Dissolved	01030	<	10
15113	07/23/01	Chromium - Dissolved	01030	<	10
15113	05/16/01	Copper - Dissolved	01040	<	5
15113	07/23/01	Copper - Dissolved	01040	<	5
15113	05/16/01	Iron - Dissolved	01046	<	8
15113	07/23/01	Iron - Dissolved	01046	<	0.05
15113	05/16/01	Lead - Dissolved	01049	<	2
15113	07/23/01	Lead - Dissolved	01049	<	2
15113	05/16/01	Manganese - Dissolved	01056		0.43
15113	07/23/01	Manganese - Dissolved	01056		1.85
15113	05/16/01	Molybdenum - Dissolved	01060	<	1
15113	07/23/01	Molybdenum - Dissolved	01060		1.59
15113	05/16/01	Nickel - Dissolved	01065	<	15
15113	07/23/01	Nickel - Dissolved	01065	<	15
15113	05/16/01	Silver - Dissolved	01075	<	0.5
15113	07/23/01	Silver - Dissolved	01075	<	0.5
15113	05/16/01	Zinc - Dissolved	01090	<	5
15113	07/23/01	Zinc - Dissolved	01090	<	5
15113	05/16/01	Aluminum - Dissolved	01106	<	50
15113	07/23/01	Aluminum - Dissolved	01106	<	50
15113	05/16/01	Selenium - Total	01147	<	2
15113	07/23/01	Selenium - Total	01147	<	2
15113	05/16/01	Mercury - Total	71900	<	0.2
15113	07/23/01	Mercury - Total	71900	<	0.2

TABLE D-1 (CONTINUED)
METALS DATA FOR DATA SETS WITH LESS THAN SIX SAMPLES

Stationid	Enddate	Parameter	Storetcode	Gtlt	Value
15273	08/20/97	Arsenic - Dissolved	01000	<	2
15273	08/31/00	Arsenic - Dissolved	01000		3.19
15273	08/20/97	Arsenic in Sediment	01003		2.17
15273	05/08/00	Arsenic in Sediment	01003		7.58
15273	08/31/00	Arsenic in Sediment	01003		7.13
15273	08/20/97	Barium in Sediment	01008		79.7
15273	05/08/00	Barium in Sediment	01008		109
15273	08/31/00	Barium in Sediment	01008		103
15273	08/20/97	Cadmium - Dissolved	01025	<	5
15273	08/31/00	Cadmium - Dissolved	01025	<	4
15273	08/20/97	Cadmium in Sediment	01028		0.2
15273	05/08/00	Cadmium in Sediment	01028		0.295
15273	08/31/00	Cadmium in Sediment	01028		0.368
15273	08/20/97	Chromium in Sediment	01029		9.79
15273	05/08/00	Chromium in Sediment	01029		30.5
15273	08/31/00	Chromium in Sediment	01029		29.2
15273	08/20/97	Chromium - Dissolved	01030	<	3
15273	08/31/00	Chromium - Dissolved	01030	<	3
15273	08/20/97	Copper - Dissolved	01040	<	3
15273	08/31/00	Copper - Dissolved	01040	<	3
15273	08/20/97	Copper in Sediment	01043		11.9
15273	05/08/00	Copper in Sediment	01043		13.3
15273	08/31/00	Copper in Sediment	01043		14.1
15273	08/20/97	Lead - Dissolved	01049	<	1
15273	08/31/00	Lead - Dissolved	01049	<	1
15273	08/20/97	Lead in Sediment	01052		19.3
15273	05/08/00	Lead in Sediment	01052		15.2
15273	08/31/00	Lead in Sediment	01052		23.6
15273	08/20/97	Manganese in Sediment	01053		316
15273	05/08/00	Manganese in Sediment	01053		500
15273	08/31/00	Manganese in Sediment	01053		476
15273	08/20/97	Nickel - Dissolved	01065		17
15273	08/31/00	Nickel - Dissolved	01065	<	10
15273	08/20/97	Nickel in Sediment	01068		6.23
15273	05/08/00	Nickel in Sediment	01068		12.7
15273	08/31/00	Nickel in Sediment	01068		13.9
15273	08/20/97	Silver - Dissolved	01075	<	0.5
15273	08/31/00	Silver - Dissolved	01075	<	0.25
15273	08/20/97	Silver in Sediment	01078	<	1.2
15273	05/08/00	Silver in Sediment	01078	<	0.683
15273	08/31/00	Silver in Sediment	01078	<	0.681
15273	08/20/97	Zinc - Dissolved	01090	<	4
15273	08/31/00	Zinc - Dissolved	01090	<	8
15273	08/20/97	Zinc in Sediment	01093		49.1
15273	05/08/00	Zinc in Sediment	01093		67.2
15273	08/31/00	Zinc in Sediment	01093		75.8
15273	08/20/97	Aluminum - Dissolved	01106	<	41
15273	08/31/00	Aluminum - Dissolved	01106	<	26
15273	08/20/97	Aluminum in Sediment	01108		10300
15273	05/08/00	Aluminum in Sediment	01108		38800
15273	08/31/00	Aluminum in Sediment	01108		35400
15273	08/20/97	Selenium - Dissolved	01145	<	2
15273	08/31/00	Selenium - Dissolved	01145	<	1
15273	08/31/00	Selenium - Total	01147	<	1
15273	08/20/97	Selenium in Sediment	01148	<	0.938
15273	05/08/00	Selenium in Sediment	01148		1.3
15273	08/31/00	Selenium in Sediment	01148		1.47
15273	08/20/97	Selenium in Sediment	01149	<	1
15273	08/20/97	Mercury - Dissolved	71890	<	0.01
15273	08/20/97	Mercury in Sediment	71921		0.036
15273	05/08/00	Mercury in Sediment	71921		0.017

TABLE D-1 (CONCLUDED)
METALS DATA FOR DATA SETS WITH LESS THAN SIX SAMPLES

Stationid	Enddate	Parameter	Storetcode	Gtlt	Value
17405	06/14/02	Arsenic - Dissolved	01000	<	0.5
17405	08/31/02	Arsenic - Dissolved	01000		0.57
17405	06/14/02	Cadmium - Dissolved	01025	<	0.1
17405	08/31/02	Cadmium - Dissolved	01025	<	0.1
17405	06/14/02	Chromium - Dissolved	01030		2.17
17405	08/31/02	Chromium - Dissolved	01030	<	1
17405	06/14/02	Copper - Dissolved	01040		0.34
17405	08/31/02	Copper - Dissolved	01040		0.38
17405	06/14/02	Lead - Dissolved	01049	<	0.1
17405	08/31/02	Lead - Dissolved	01049	<	0.1
17405	06/14/02	Nickel - Dissolved	01065		1.07
17405	08/31/02	Nickel - Dissolved	01065		1.98
17405	06/14/02	Silver - Dissolved	01075	<	0.1
17405	08/31/02	Silver - Dissolved	01075	<	0.1
17405	06/14/02	Zinc - Dissolved	01090		0.51
17405	08/31/02	Zinc - Dissolved	01090	<	0.5
17405	06/14/02	Aluminum - Dissolved	01106	<	2
17405	08/31/02	Aluminum - Dissolved	01106	<	2
17405	06/14/02	Selenium - Total	01147		0.18
17405	08/31/02	Selenium - Total	01147		0.57
17405	06/14/02	Mercury - Total	71960		0.001
17405	08/31/02	Mercury - Total	71960		0

TABLE D-2
SUMMARY OF METALS DATA FOR DATA SETS WITH AT LEAST SIX SAMPLES

Stationid	Parameter	Storetcode	Unit	Number of data	Mean	Median	Max	Min	Nondetects		
									Number	Max reporting limit	Min reporting limit
12577	Arsenic - Dissolved	01000	ug/L	8	4.06	3.595	8.46	2.05	0		
12577	Cadmium - Dissolved	01025	ug/L	8	2.63	2	6	2	7	5	4
12577	Chromium - Dissolved	01030	ug/L	8	1.56	1.5	2.5	1	8	5	2
12577	Copper - Dissolved	01040	ug/L	8	2.88	1.75	7	0.5	5	4	1
12577	Lead - Dissolved	01049	ug/L	8	0.63	0.5	1	0.5	8	2	1
12577	Nickel - Dissolved	01065	ug/L	8	5.00	5	5.5	4.5	8	11	9
12577	Silver - Dissolved	01075	ug/L	7	0.34	0.25	1	0.125	7	2	0.25
12577	Zinc - Dissolved	01090	ug/L	8	12.06	4	73	1.5	5	8	3
12577	Aluminum - Dissolved	01106	ug/L	8	16.50	16.75	28	4	7	41	8
12577	Selenium - Dissolved	01145	ug/L	8	1.30	1	3.13	0.5	6	3	1
12577	Selenium - Total	01147	ug/L	6	1.24	1.065	2.24	0.55	4	3	1.1
12577	Mercury - Dissolved	71890	ug/L	7	0.02	0.005	0.096	0.005	6	0.01	0.01
12577	Mercury - Total	71900	ug/L	7	0.50	0.005	3.4	0.005	5	0.01	0.01
12578	Arsenic - Dissolved	01000	ug/L	10	2.59	2.765	6	1	0		
12578	Barium - Dissolved	01005	ug/L	10	87.72	81.5	120	67	0		
12578	Beryllium - Dissolved	01010	ug/L	8	0.28	0.25	0.5	0.25	7	0.5	0.5
12578	Cadmium - Dissolved	01025	ug/L	10	2.87	4	4	0.1	10	8	0.2
12578	Chromium - Dissolved	01030	ug/L	10	3.00	2.5	5	2.5	10	10	5
12578	Cobalt - Dissolved	01035	ug/L	8	1.50	1.5	1.5	1.5	8	3	3
12578	Copper - Dissolved	01040	ug/L	10	4.50	5	5	2.5	10	10	5
12578	Iron - Dissolved	01046	ug/L	10	4.95	1.5	29	0.025	6	3	0.05
12578	Lead - Dissolved	01049	ug/L	10	35.70	50	50	1	10	100	2
12578	Manganese - Dissolved	01056	ug/L	10	3.09	2	9.68	1	0		
12578	Molybdenum - Dissolved	01060	ug/L	10	5.45	5	10	1.19	6	10	10
12578	Nickel - Dissolved	01065	ug/L	10	5.50	5	7.5	5	10	15	10
12578	Silver - Dissolved	01075	ug/L	10	0.60	0.5	2	0.25	9	1	0.5
12578	Strontium - Dissolved	01080	ug/L	8	626.25	635	760	450	0		
12578	Vanadium - Dissolved	01085	ug/L	8	5.50	5	9	3	4	6	6
12578	Zinc - Dissolved	01090	ug/L	10	4.49	2.75	16	1.5	5	5	3
12578	Lithium - Dissolved	01130	ug/L	8	18.00	19	25	13	0		
12578	Selenium - Dissolved	01145	ug/L	8	0.50	0.5	0.5	0.5	8	1	1
12585	Barium - Dissolved	01005	ug/L	8	64.38	65	81	41	0		
12585	Cobalt - Dissolved	01035	ug/L	8	1.50	1.5	1.5	1.5	8	3	3

TABLE D-2 (CONTINUED)
SUMMARY OF METALS DATA FOR DATA SETS WITH AT LEAST SIX SAMPLES

Stationid	Parameter	Storetcode	Unit	Number of data	Mean	Median	Max	Min	Nondetects		
									Number	Max reporting limit	Min reporting limit
12585	Iron - Dissolved	01046	ug/L	8	19.13	5.5	120	1.5	2	3	3
12585	Manganese - Dissolved	01056	ug/L	8	3.75	4	5	2	0		
12585	Molybdenum - Dissolved	01060	ug/L	8	5.63	5	10	5	7	10	10
12585	Nickel - Dissolved	01065	ug/L	8	0.94	1	2	0.5	3	1	1
12585	Silver - Dissolved	01075	ug/L	8	0.50	0.5	0.5	0.5	8	1	1
12585	Strontium - Dissolved	01080	ug/L	8	450.00	480	530	150	0		
12585	Vanadium - Dissolved	01085	ug/L	8	3.50	3	7	3	7	6	6
12585	Aluminum - Dissolved	01106	ug/L	8	16.25	5	90	5	6	10	10
12585	Lithium - Dissolved	01130	ug/L	8	9.38	10	12	5	0		
12585	Selenium - Dissolved	01145	ug/L	8	0.50	0.5	0.5	0.5	8	1	1
12601	Arsenic in Sediment	01003	mg/kg	6	5.61	5.525	8.04	3.2	0		
12601	Barium in Sediment	01008	mg/kg	6	76.33	82.1	94.1	56.5	0		
12601	Cadmium in Sediment	01028	mg/kg	6	0.30	0.29	0.37	0.2	1	0.526	0.526
12601	Chromium in Sediment	01029	mg/kg	6	17.09	18.6	23	9.13	0		
12601	Copper in Sediment	01043	mg/kg	6	8.67	8.81	9.64	7.56	0		
12601	Lead in Sediment	01052	mg/kg	6	10.82	10.55	14.3	6.62	0		
12601	Manganese in Sediment	01053	mg/kg	6	313.67	324	352	234	0		
12601	Nickel in Sediment	01068	mg/kg	6	10.28	11.15	12.8	7	0		
12601	Silver in Sediment	01078	mg/kg	6	0.29	0.28825	0.3795	0.2215	6	0.759	0.443
12601	Zinc in Sediment	01093	mg/kg	6	38.20	40.3	49.3	26.9	0		
12601	Aluminum in Sediment	01108	mg/kg	6	25066.67	27050	33400	14300	0		
12653	Iron - Dissolved	01046	ug/L	25	2.40	1.5	5	1.5	24	10	3
12653	Manganese - Dissolved	01056	ug/L	25	1.27	1.067	2	0.5	15	4	1
12661	Barium - Dissolved	01005	ug/L	18	29.89	30	34	25	0		
12661	Boron - Dissolved	01020	ug/L	15	61.59	60.9	69.7	52	0		
12661	Iron - Dissolved	01046	ug/L	44	3.44	1.5	22	1.5	36	10	3
12661	Lead - Dissolved	01049	ug/L	18	42.25	50	50	0.5	18	100	1
12661	Manganese - Dissolved	01056	ug/L	44	1.82	2	6	0.5	16	4	1
12661	Strontium - Dissolved	01080	ug/L	17	505.88	570	740	240	0		
12661	Zinc - Dissolved	01090	ug/L	18	6.58	2.25	29	1.5	9	3	3
12661	Lithium - Dissolved	01130	ug/L	17	4.00	4	8	2	6	4	4
12671	Barium - Dissolved	01005	ug/L	6	32.50	34	36	23	0		
12671	Boron - Dissolved	01020	ug/L	6	68.00	66.4	94.1	53.6	0		

TABLE D-2 (CONTINUED)
SUMMARY OF METALS DATA FOR DATA SETS WITH AT LEAST SIX SAMPLES

Stationid	Parameter	Storetcode	Unit	Number of data	Mean	Median	Max	Min	Nondetects		
									Number	Max reporting limit	Min reporting limit
12671	Iron - Dissolved	01046	ug/L	6	12.58	7.75	37	1.5	3	3	3
12671	Lead - Dissolved	01049	ug/L	6	50.00	50	50	50	6	100	100
12671	Manganese - Dissolved	01056	ug/L	6	17.75	23.5	29	0.5	1	1	1
12671	Strontium - Dissolved	01080	ug/L	6	625.00	625	730	550	0		
12671	Zinc - Dissolved	01090	ug/L	6	4.75	3.75	10	1.5	3	3	3
12671	Lithium - Dissolved	01130	ug/L	6	12.50	12.5	16	8	0		
13656	Arsenic - Dissolved	01000	ug/L	10	0.90	1	2	0.5	4	1	1
13656	Barium - Dissolved	01005	ug/L	10	33.40	33	48	29	0		
13656	Beryllium - Dissolved	01010	ug/L	10	0.28	0.25	0.5	0.25	10	1	0.5
13656	Cadmium - Dissolved	01025	ug/L	10	2.60	4	4	0.5	10	8	1
13656	Chromium - Dissolved	01030	ug/L	10	2.45	2.5	2.5	2	9	5	5
13656	Cobalt - Dissolved	01035	ug/L	10	1.55	1.5	3	0.5	9	3	1
13656	Copper - Dissolved	01040	ug/L	10	4.55	5	5	0.5	10	10	1
13656	Iron - Dissolved	01046	ug/L	11	10.36	1.5	80	1.5	7	10	3
13656	Lead - Dissolved	01049	ug/L	10	32.05	50	50	0.5	9	100	1
13656	Manganese - Dissolved	01056	ug/L	11	20.25	4.739	79	0.5	4	1	1
13656	Molybdenum - Dissolved	01060	ug/L	10	6.10	5	10	1	6	10	10
13656	Nickel - Dissolved	01065	ug/L	10	5.05	5	10	0.5	9	10	1
13656	Silver - Dissolved	01075	ug/L	10	0.50	0.5	0.5	0.5	10	1	1
13656	Strontium - Dissolved	01080	ug/L	9	397.78	400	420	360	0		
13656	Vanadium - Dissolved	01085	ug/L	9	3.00	3	3	3	9	6	6
13656	Zinc - Dissolved	01090	ug/L	10	5.15	4.5	10	1.5	3	3	3
13656	Lithium - Dissolved	01130	ug/L	9	3.67	4	6	2	4	4	4
13656	Selenium - Dissolved	01145	ug/L	10	0.55	0.5	1	0.5	10	2	1
13700	Arsenic - Dissolved	01000	ug/L	9	0.61	0.5	1	0.5	7	1	1
13700	Barium - Dissolved	01005	ug/L	9	38.22	38	40	36	0		
13700	Beryllium - Dissolved	01010	ug/L	9	0.28	0.25	0.5	0.25	9	1	0.5
13700	Cadmium - Dissolved	01025	ug/L	9	2.89	4	4	0.5	8	8	1
13700	Chromium - Dissolved	01030	ug/L	9	2.44	2.5	2.5	2	8	5	5
13700	Cobalt - Dissolved	01035	ug/L	9	1.67	1.5	4	0.5	8	3	1
13700	Copper - Dissolved	01040	ug/L	9	4.50	5	5	0.5	9	10	1
13700	Iron - Dissolved	01046	ug/L	32	6.46	2.25	87	1.5	21	10	3
13700	Lead - Dissolved	01049	ug/L	9	34.50	50	50	0.5	9	100	1

TABLE D-2 (CONCLUDED)
SUMMARY OF METALS DATA FOR DATA SETS WITH AT LEAST SIX SAMPLES

Stationid	Parameter	Storetcode	Unit	Number of data	Mean	Median	Max	Min	Nondetects		
									Number	Max reporting limit	Min reporting limit
13700	Manganese - Dissolved	01056	ug/L	32	1.58	1.3045	8	0.5	15	4	1
13700	Molybdenum - Dissolved	01060	ug/L	9	5.11	5	10	1	7	10	10
13700	Nickel - Dissolved	01065	ug/L	9	4.50	5	5	0.5	9	10	1
13700	Silver - Dissolved	01075	ug/L	9	0.72	0.5	2	0.5	7	1	1
13700	Strontium - Dissolved	01080	ug/L	8	492.50	515	530	390	0		
13700	Vanadium - Dissolved	01085	ug/L	8	3.00	3	3	3	8	6	6
13700	Zinc - Dissolved	01090	ug/L	9	3.89	3	13	1.5	4	3	3
13700	Lithium - Dissolved	01130	ug/L	8	4.38	4	10	2	3	4	4
13700	Selenium - Dissolved	01145	ug/L	9	0.50	0.5	0.5	0.5	9	1	1
13836	Iron - Dissolved	01046	ug/L	30	8.35	5	81	1.5	22	10	3
13836	Manganese - Dissolved	01056	ug/L	30	26.15	5	280	0.5	19	10	1
13841	Iron - Dissolved	01046	ug/L	24	28.35	3.5	260	1.5	17	10	3
13841	Manganese - Dissolved	01056	ug/L	24	32.29	5	260	0.5	13	10	1
13843	Iron - Dissolved	01046	ug/L	25	47.24	5	380	1.5	15	10	3
13843	Manganese - Dissolved	01056	ug/L	25	36.76	4	320	0.5	12	10	1

TABLE D-3
ACUTE CRITERIA FOR METALS IN WATER FOR PROTECTION OF AQUATIC LIFE
(All values in ug/L, except hardness in mg/L)

StationID	Segment	Hardness	Fresh or tidal water	Arsenic 01000	Cadmium 01025	Chromium (Tri) 01030	Copper 01040	Lead 01049	Mercury 71900	Nickel 01065	Selenium 01147	Silver 01075	Zinc 01090
12536	1701		Tidal	149.00	45.40		13.50	133.00	2.10	118.00	564.00	2.00	92.70
12577	1801	157.0	Tidal	149.00	45.40		13.50	133.00	2.10	118.00	564.00	2.00	92.70
12570	1811	221.0	Fresh	360.00	80.19	1050.56	38.90	199.18	2.40	2768.45	20.00	0.80	224.08
12578	1802	200.6	Fresh	360.00	71.89	970.45	35.51	176.08	2.40	2550.66	20.00	0.80	206.43
12585	1803	190.9	Fresh	360.00	67.98	931.85	33.89	165.31	2.40	2445.92	20.00	0.80	197.94
12592	1803	190.9	Fresh	360.00	67.98	931.85	33.89	165.31	2.40	2445.92	20.00	0.80	197.94
12594	1804	199.0	Fresh	360.00	71.24	964.11	35.24	174.29	2.40	2533.44	20.00	0.80	205.03
12595	1804	199.0	Fresh	360.00	71.24	964.11	35.24	174.29	2.40	2533.44	20.00	0.80	205.03
12596	1804	199.0	Fresh	360.00	71.24	964.11	35.24	174.29	2.40	2533.44	20.00	0.80	205.03
12598	1805	159.0	Fresh	360.00	55.31	802.25	28.52	130.98	2.40	2095.38	20.00	0.80	169.53
12601	1805	159.0	Fresh	360.00	55.31	802.25	28.52	130.98	2.40	2095.38	20.00	0.80	169.53
12603	1806	196.0	Fresh	360.00	70.03	952.19	34.74	170.95	2.40	2501.09	20.00	0.80	202.41
12616	1806	196.0	Fresh	360.00	70.03	952.19	34.74	170.95	2.40	2501.09	20.00	0.80	202.41
12621	1806	196.0	Fresh	360.00	70.03	952.19	34.74	170.95	2.40	2501.09	20.00	0.80	202.41
12626	1808	214.0	Fresh	360.00	77.33	1023.23	37.74	191.18	2.40	2694.08	20.00	0.80	218.05
12640	1810	202.0	Fresh	360.00	72.45	976.00	35.74	177.64	2.40	2565.71	20.00	0.80	207.65
12653	1811	221.0	Fresh	360.00	80.19	1050.56	38.90	199.18	2.40	2768.45	20.00	0.80	224.08
12661	1813	166.0	Fresh	360.00	58.06	831.06	29.70	138.37	2.40	2173.16	20.00	0.80	175.83
12671	1814	226.0	Fresh	360.00	82.24	1069.99	39.73	204.93	2.40	2821.35	20.00	0.80	228.37
13656	1812	178.0	Fresh	360.00	62.82	879.95	31.72	151.22	2.40	2305.35	20.00	0.80	186.55
13700	1806	196.0	Fresh	360.00	70.03	952.19	34.74	170.95	2.40	2501.09	20.00	0.80	202.41
13836	1805	159.0	Fresh	360.00	55.31	802.25	28.52	130.98	2.40	2095.38	20.00	0.80	169.53
13841	1805	159.0	Fresh	360.00	55.31	802.25	28.52	130.98	2.40	2095.38	20.00	0.80	169.53
13843	1805	159.0	Fresh	360.00	55.31	802.25	28.52	130.98	2.40	2095.38	20.00	0.80	169.53
14932	1804	199.0	Fresh	360.00	71.24	964.11	35.24	174.29	2.40	2533.44	20.00	0.80	205.03
14937	1803	190.9	Fresh	360.00	67.98	931.85	33.89	165.31	2.40	2445.92	20.00	0.80	197.94
15113	1806	196.0	Fresh	360.00	70.03	952.19	34.74	170.95	2.40	2501.09	20.00	0.80	202.41
15273	1804	199.0	Fresh	360.00	71.24	964.11	35.24	174.29	2.40	2533.44	20.00	0.80	205.03

Notes:
1. Hardness from Table 5 of Implementation Procedure (2003).
2. Total metal for mercury and selenium, dissolved fraction for other parameters.
3. For silver, criteria corrected to free ionic form for individual samples.

TABLE D-4
CHRONIC CRITERIA FOR METALS IN WATER FOR PROTECTION OF AQUATIC LIFE
(All values in ug/L, except hardness in mg/L)

StationID	Segment	Hardness	Fresh or tidal water	Arsenic 01000	Cadmium 01025	Chromium (Tri) 01030	Copper 01040	Lead 01049	Mercury 71900	Nickel 01065	Selenium 01147	Zinc 01090
12536	1701		Tidal	78.00	10.00		3.60	5.30	1.10	13.10	136.00	84.20
12577	1801	157.0	Tidal	78.00	10.00		3.60	5.30	1.10	13.10	136.00	84.20
12570	1811	221.0	Fresh	190.00	1.92	340.79	24.19	6.91	1.30	307.46	5.00	204.62
12578	1802	200.6	Fresh	190.00	1.78	314.80	22.27	6.11	1.30	283.27	5.00	188.50
12585	1803	190.9	Fresh	190.00	1.71	302.28	21.34	5.74	1.30	271.64	5.00	180.75
12592	1803	190.9	Fresh	190.00	1.71	302.28	21.34	5.74	1.30	271.64	5.00	180.75
12594	1804	199.0	Fresh	190.00	1.77	312.75	22.12	6.05	1.30	281.36	5.00	187.23
12595	1804	199.0	Fresh	190.00	1.77	312.75	22.12	6.05	1.30	281.36	5.00	187.23
12596	1804	199.0	Fresh	190.00	1.77	312.75	22.12	6.05	1.30	281.36	5.00	187.23
12598	1805	159.0	Fresh	190.00	1.48	260.24	18.26	4.55	1.30	232.71	5.00	154.81
12601	1805	159.0	Fresh	190.00	1.48	260.24	18.26	4.55	1.30	232.71	5.00	154.81
12603	1806	196.0	Fresh	190.00	1.75	308.88	21.83	5.93	1.30	277.77	5.00	184.83
12616	1806	196.0	Fresh	190.00	1.75	308.88	21.83	5.93	1.30	277.77	5.00	184.83
12621	1806	196.0	Fresh	190.00	1.75	308.88	21.83	5.93	1.30	277.77	5.00	184.83
12626	1808	214.0	Fresh	190.00	1.87	331.93	23.53	6.64	1.30	299.20	5.00	199.12
12640	1810	202.0	Fresh	190.00	1.79	316.60	22.40	6.17	1.30	284.94	5.00	189.62
12653	1811	221.0	Fresh	190.00	1.92	340.79	24.19	6.91	1.30	307.46	5.00	204.62
12661	1813	166.0	Fresh	190.00	1.53	269.59	18.94	4.80	1.30	241.35	5.00	160.56
12671	1814	226.0	Fresh	190.00	1.96	347.09	24.66	7.11	1.30	313.33	5.00	208.54
13656	1812	178.0	Fresh	190.00	1.62	285.45	20.11	5.25	1.30	256.03	5.00	170.35
13700	1806	196.0	Fresh	190.00	1.75	308.88	21.83	5.93	1.30	277.77	5.00	184.83
13836	1805	159.0	Fresh	190.00	1.48	260.24	18.26	4.55	1.30	232.71	5.00	154.81
13841	1805	159.0	Fresh	190.00	1.48	260.24	18.26	4.55	1.30	232.71	5.00	154.81
13843	1805	159.0	Fresh	190.00	1.48	260.24	18.26	4.55	1.30	232.71	5.00	154.81
14932	1804	199.0	Fresh	190.00	1.77	312.75	22.12	6.05	1.30	281.36	5.00	187.23
14937	1803	190.9	Fresh	190.00	1.71	302.28	21.34	5.74	1.30	271.64	5.00	180.75
15113	1806	196.0	Fresh	190.00	1.75	308.88	21.83	5.93	1.30	277.77	5.00	184.83
15273	1804	199.0	Fresh	190.00	1.77	312.75	22.12	6.05	1.30	281.36	5.00	187.23

Notes:
1. Hardness from Table 5 of Implementation Procedure (2003).
2. Total metal for mercury and selenium, dissolved fraction for other parameters.

APPENDIX E

BIOLOGICAL AND HABITAT ASSESSMENT

TABLE E-1
BIOLOGICAL AND HABITAT ASSESSMENT

Water body	Station ID	Site	Date	Aquatic Life Use according to TCEQ	Index of Biotic Integrity * IBI	Habitat Quality Index HQI
Blanco River	12668	BLANCO RIVER AT FM 165 1/2 MILE EAST OF BLANCO	05/20/98	Exceptional	40	15.5
			02/09/99		36	15.5
			06/14/99		40	15.5
			06/28/01		40	15.5
			08/16/01		40	15.5
Dry Comal Creek	12570	DRY COMAL CREEK AT MISSOURI-KANSAS-TEXAS RAILROAD	06/12/01	Limited	40	17
			08/16/01		38	17
Geronimo Creek	14932	GERONIMO CREEK AT SH 123 NEAR GERONIMO, TX	06/27/01	High	38	16
			08/16/01		34	16
Joshua Creek	17405	BIG JOSHUA CREEK AT WARING-WELFARE ROAD NORTH OF BOERNE	06/14/02	**	40	18.5
Peach Creek	14937	PEACH CREEK AT GONZALES CR 353, 14.0KM EAST OF GONZALES	05/21/98	High	38	16
			09/15/99		34	16
			05/16/00		32	16
			06/11/01		32	16
			05/28/02		38	16
Plum Creek	12640	PLUM CREEK AT OLD WOODEN BRIDGE ON CALDWELL CR 135, SE OF LULING	02/09/99	High	34	17.5
			06/19/99		34	17.5
			05/09/00		34	17.5
			06/26/01		36	17.5

* Statewide criteria
** Use not determined since stream flow type has not been assigned to this water body.

IBI Score for Aquatic Life Use Subcategories:

58 - 60	Exceptional
48 - 52	High
40 - 44	Intermediate
< 34	Limited

HQI Score for Aquatic Life Use Subcategories:

26 - 31	Exceptional
20 - 25	High
14 - 19	Intermediate
13 - 8	Limited
<= 7	Minimal