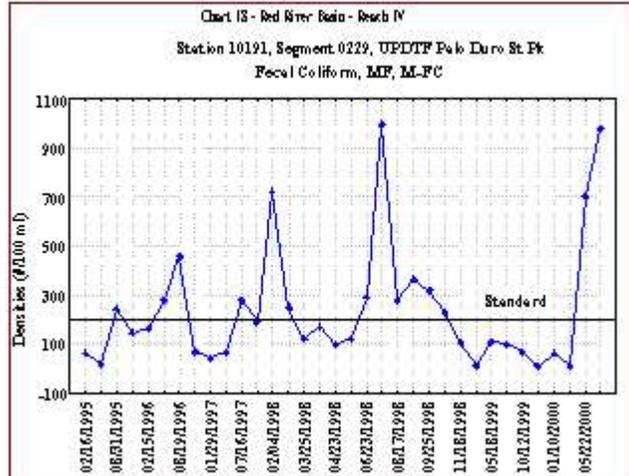
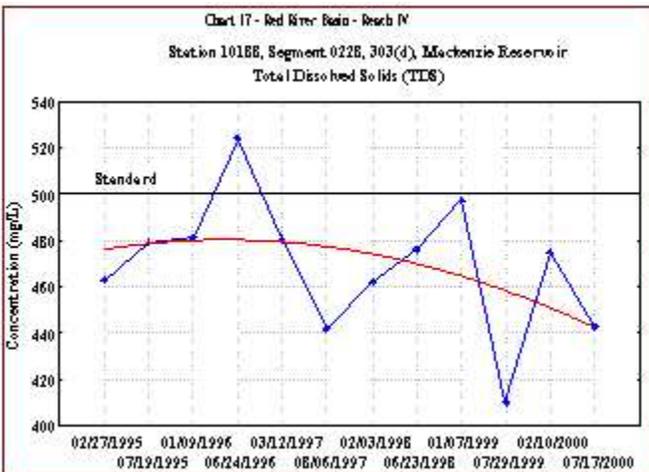
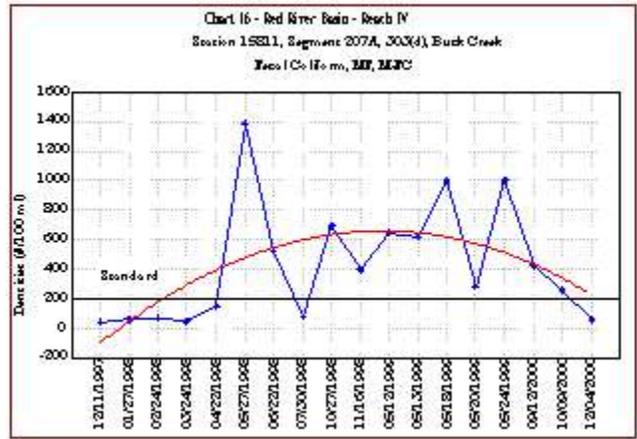
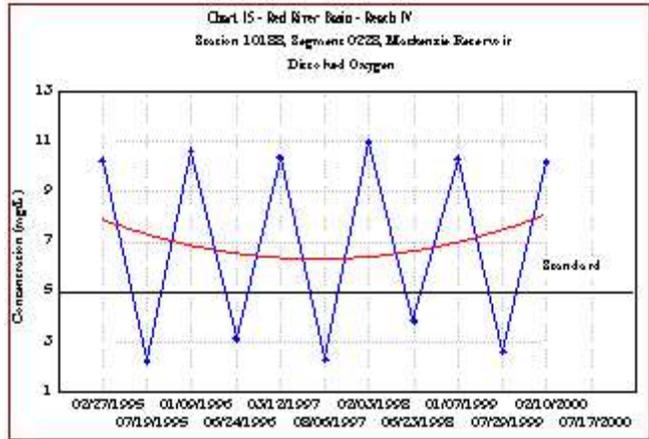
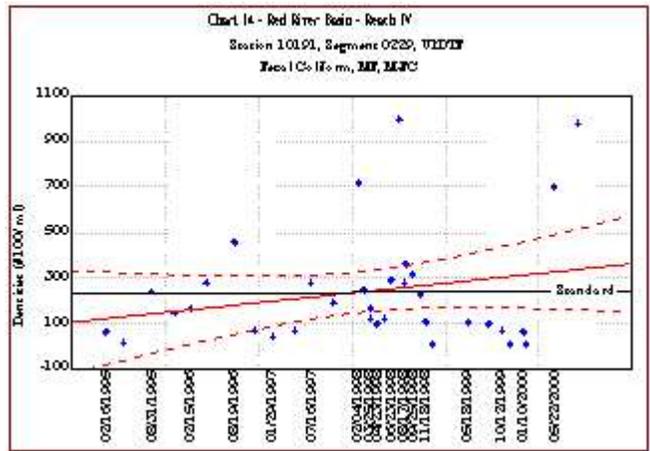
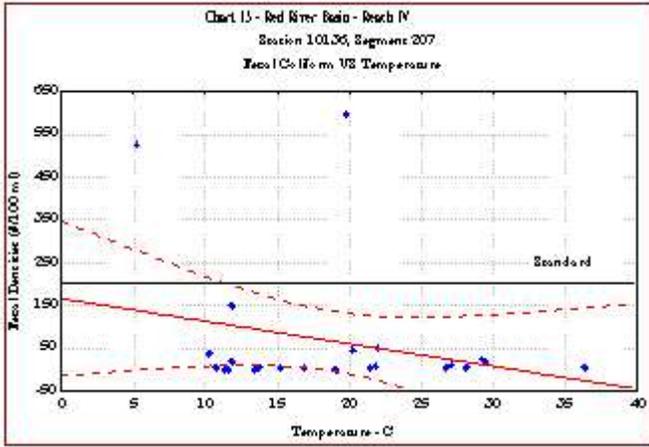


3.4 WATER QUALITY SUMMARY OF REACH IV

Basin Reach IV represents the Prairie Dog Town Fork Red River from the confluence of Buck Creek and Red River upstream to the Texas-New Mexico state-line (Childress/Collingsworth Counties to Deaf Smith/Parmer Counties). Reach IV contains five subwatersheds with 7,626 square miles of contributing drainage in Texas and Oklahoma; 7,084 square miles are in Texas.

There are three classified stream segments (0207, 0228, 0229) in this basin reach. There are 78 permitted municipal and industrial discharges, 17 permitted solid waste disposal sites, about 2,886 petroleum storage tanks, 63 confined animal feeding operations, and approximately 159,923 persons within this reach. There are nine water quality monitoring stations (7 routine and 2 systematic) that provided data for screening in this basin reach. The Authority conducted 48 monitoring events during this period and 1,832 parameters were evaluated.

Results of the data screening indicated that fecal coliform in segment 0229 at station 10191 (Upper Prairie Dog Town Fork of the Red River in Palo Duro State Park) and dissolved oxygen in segment 0228 at station 10188 (Mackenzie Reservoir) were identified as parameters that exceeded the screening criteria and warrant further study. Refer to **Charts 13** and **14** for details. The elevated levels of fecal coliform at station 10191 appear to be due to wastewater discharges below the City of Amarillo’s wastewater treatment plant, and livestock watering in the stream. It should be noted that the City of Amarillo recently upgraded this facility and further monitoring should show a reduction in fecal loading in the near future. These concerns will be addressed more specifically as a TMDL has been scheduled for this segment in the near future.



The depressed levels of dissolved oxygen at station 10188 (Mackenzie Reservoir) as shown in **Chart 15** continue to fall below the stream standards, but correlate well with seasonal temperature changes. This appears to be a natural occurring phenomenon associated with the extremely arid climate.

Segment 0207A (station 15811, Buck Creek in Childress County) has been included on the CWA §303(d) list for elevated levels of fecal coliform bacteria. Although **Chart 16** shows a significant shift downward over the last year, fecal densities continue to exceed the screening criteria at this station. There appears to be a correlation with storm water runoff, which is indicative of runoff of agriculture areas. Livestock appear to have unlimited access to the stream for watering, which is evident for several miles upstream.

Segment 0228 (Mackenzie Reservoir in Briscoe County) has been included on the CWA §303(d) list for elevated levels of total dissolved solids. However, no stream standard violations have been recorded since August 1996, and then only once. **Chart 17** indicates that the trend appears to be declining and the noted increase correlates with heavy rainfall events creating runoff from farm and ranch lands that have been parched from the extremely dry climate conditions. This is a common occurrence for this region of the state. Therefore, this segment should be removed from the §303(d) list of impaired water bodies.

Segment 0229 (Lake Tanglewood) showed an exceedance for pH and dissolved oxygen. The depressed dissolved oxygen is shown in **Chart 19** and appears to be influenced predominantly by seasonal changes. pH exceeded the screening criteria for partial supporting by 13% as shown on **Chart 20**. This may be attributed to watershed runoff from the community located around the lake and agricultural areas upstream.

Refer to **Table 3** for a statistical summary of the parameters exceeding the screening criteria.

