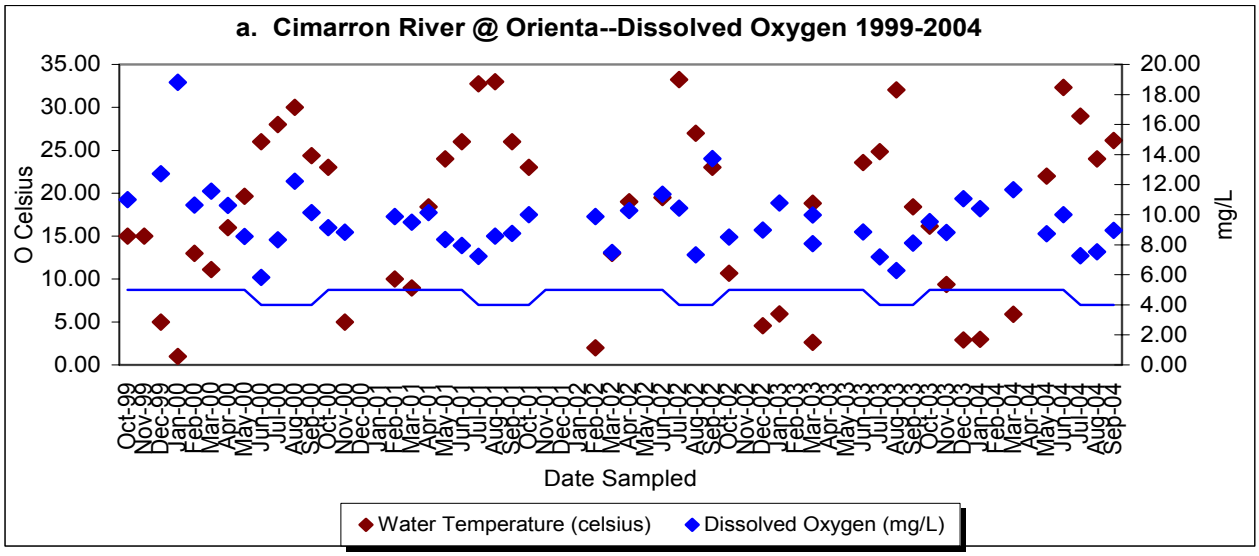
Cimarron River near Orienta

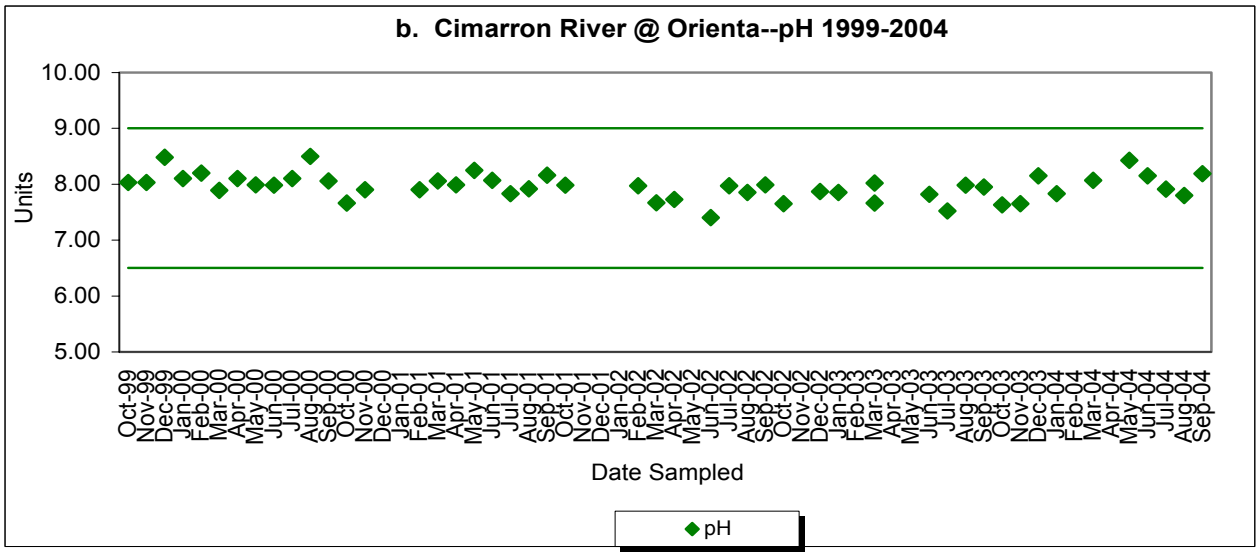
Station AT158110 (620920010010-001AT) is a permanent ambient trend monitoring station located on the Cimarron River in Oklahoma. Situated in the north central portion of Major county, the site was established northeast of the city of Orienta on US Highway 412. The station is positioned near the lower end of stream segment 620920010010 and is classified within the Lower Cimarron River - Eagle Chief Creek 8-digit HUC watershed (11050001). Water enters the stream system from several tributaries including Main Creek, Griever Creek, Cheyenne Creek, Eagle Chief Creek, and Sand Creek, among others.

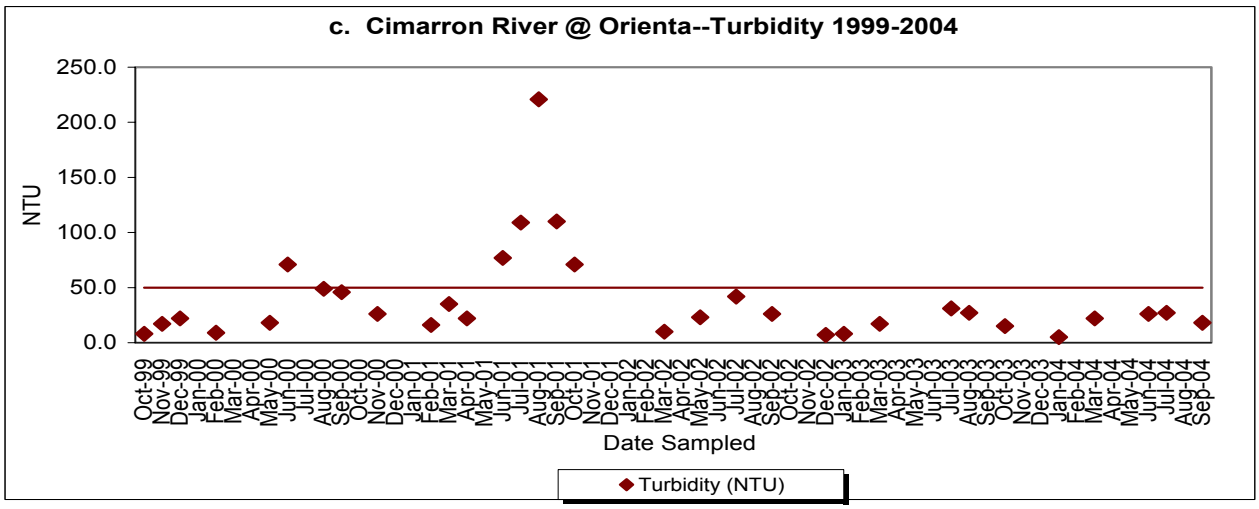
This station on the Cimarron River has been active for all water quality variables since November of 1998. The following assessment of beneficial uses is based on data collected from October of 1999 through September of 2004. For purposes of reporting, this station is representative of the Cimarron River from the confluence of Main Creek (98.8753, 36.5154) downstream to confluence of the Cimarron River with Sand Creek (-98.4192, 36.3194). As per Oklahoma Water Quality Standards, Appendix A, Table 6 of Oklahoma Administrative Code (OAC) 785:45, this water quality management segment is assigned the following designated beneficial uses: 1) Emergency Water Supply (EWS), 2) Warm Water Aquatic Community—Fish and Wildlife Propagation (WWAC), 3) Agriculture—Class III Irrigation (AG), and 4) Primary Body Contact—Recreation (PBCR).

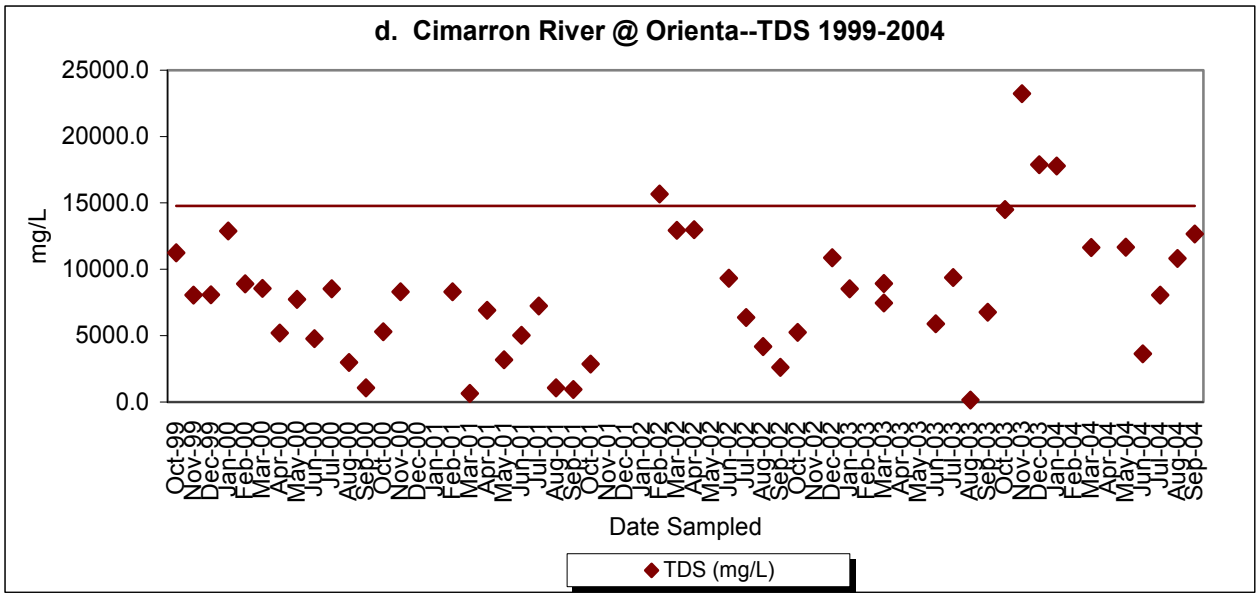
The WWAC beneficial use is partially supported. Of the thirty-two (32) turbidity samples (Figure 9c), six (6) samples (or 19%) exceeded the numerical criteria of 50. Dissolved oxygen (Figure 9a), pH (Figure 9b), and toxicant (Table 10) samples met the criteria prescribed in the WWAC beneficial use. A fish collection made during the summer of 2004 indicates that the segment biological health is indeterminate. Based on the Index of Biological Integrity (IBI) outlined in Appendix C of Oklahoma's Use Support Assessment Protocols (USAP), the station has a sample composition score of 8 (maximum 30) and fish condition score of 11 (maximum 15) for a total score of 19. This falls near the lower end of the indeterminate range of 19 to 21 assigned to streams in the Central Great Plains (proposed). The AG beneficial use is not supported (Figure 9d and Figure 9e). Of the fifty (50) chloride concentrations, seventeen (17) samples (or 34%) exceeded the prescribed sample standard of 5131.0 mg/L. Total dissolved solids and sulfates met the prescribed, site-specific criteria. The PBCR beneficial use is not supported (Table 11). Of the twenty-three (23) *E. coli* concentrations, five (5) samples exceeded the prescribed screening level of 406 cfu/mL, and the geometric mean (159.2 cfu/mL) exceeded the prescribed mean standard of 126 cfu/mL. Of the 23 enterococci concentrations, seven (7) samples exceeded the prescribed screening level of 406 cfu/mL, and the geometric mean (96.8 cfu/mL) exceeded the prescribed mean standard of 33 cfu/mL. This segment of the Cimarron River is not nutrient-threatened. The total phosphorus and nitrate/nitrite median values were below the threshold medians of 1.0 mg/L and 4.65 mg/L, respectively (Figure 9f).

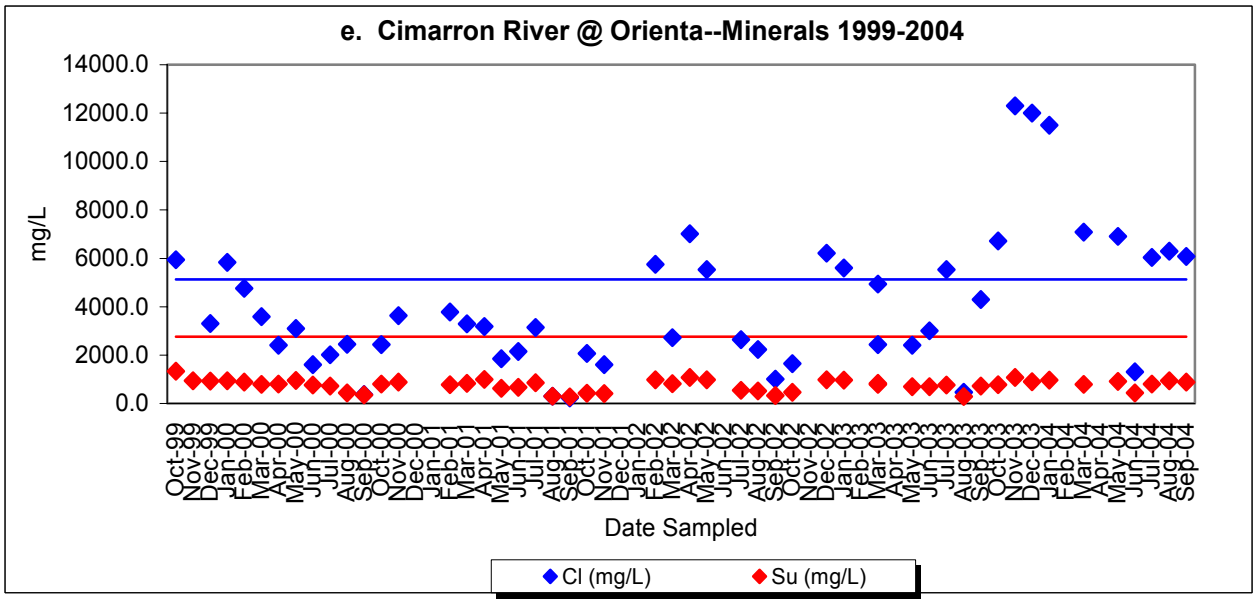
Figure 9a-f. Dissolved Oxygen (a), pH (b), Turbidity (c), Total Dissolved Solids (d), Minerals (e), and Nutrients (f) for the Cimarron River at Orienta (AT158110), 1999-2004.

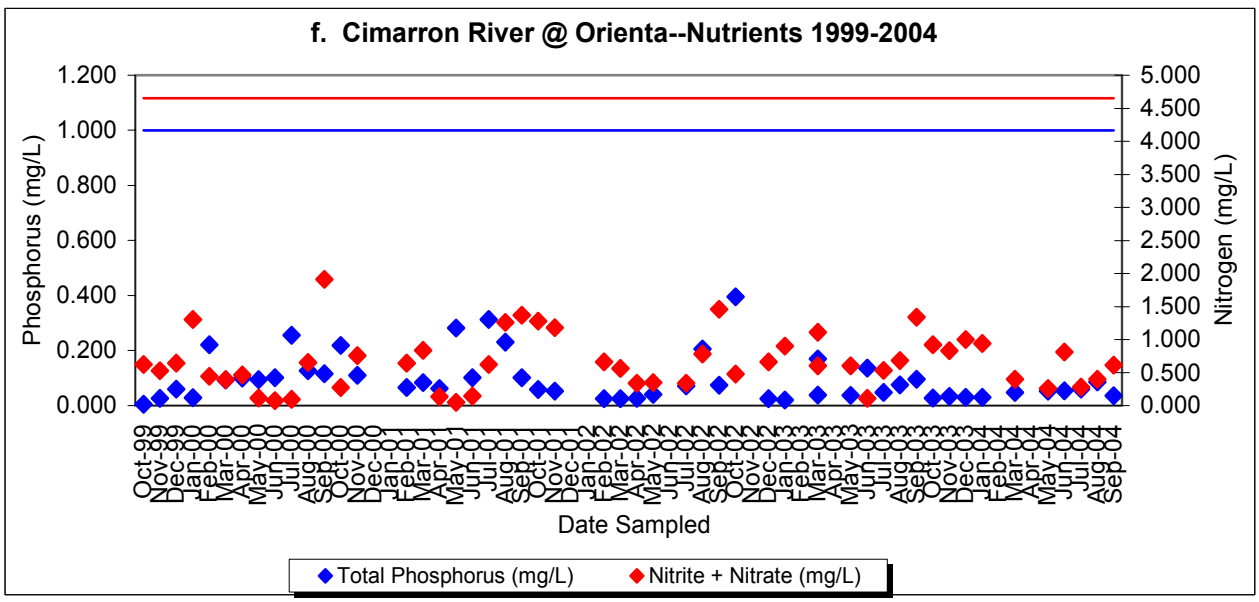







d. Cimarron River @ Orienta--TDS 1999-2004
25000.0
20000.0
15000.0
10000.0
5000.0
0.0
mg/L
Date Sampled
TDS (mg/L)


e. Cimarron River @ Orienta--Minerals 1999-2004
14000.0
12000.0
10000.0
8000.0
6000.0
4000.0
2000.0
0.0
mg/L
Date Sampled
Cl (mg/L)
Su (mg/L)


f. Cimarron River @ Orienta--Nutrients 1999-2004
1.200
1.000
0.800
0.600
0.400
0.200
0.000
Phosphorus (mg/L)
5.000
4.500
4.000
3.500
3.000
2.500
2.000
1.500
1.000
0.500
0.000
Nitrogen (mg/L)
Date Sampled
Total Phosphorus (mg/L)
Nitrite + Nitrate (mg/L)