

# **Fred Creek: Evanston Blue Thumb Data Report 1999**

NE NW SE  
Section 8-18N-13E  
Tulsa County  
Lat N 36 3' 8"  
Long W 95 56' 48"  
WBID#: OK 120420-01-0060G

The headwaters of Fred Creek begin at South 71<sup>st</sup> Street and Yale Avenue in Tulsa. The creek runs southwest through residential neighborhoods to the monitoring site at Evanston and continues through the Oral Roberts University Campus, through a light commercial area, then empties into the Arkansas River. The monitoring site is at the bridge where Evanston crosses the creek in a pooled area just east of the bridge itself. As this area has built up, portions of Fred Creek have been channelized.

The habitat at the creek has been assessed three times: 1993, 1996 and 1999 and is scheduled to be assessed again in the summer of 2007. The habitat has been better than the habitat in the average of high quality "reference" streams in the Central Irregular Plains ecoregion. Instream cover for fish is great, there is good canopy shade and the banks have good vegetative cover and are very stable. The creek has very low flow and the channel is very straight. There is a mixture of deep and shallow pools. Even though the habitat is better than reference conditions, according to the previous accumulated data the condition has been declining in the past several years. The habitat score has dropped 19 points from 110.3 in 1993 to 91.2 in 1999. It is still better than the reference average of 86.8.

There have been three collections of fish; 1993, 1996, and 1999. Another collection is scheduled for the summer of 2007. All three fish collections have been very poor. In comparison to reference averages, the number of species collected is extremely low as is the total number of fish collected. The fish that were collected were tolerant species. There were no intolerant species found. In fact, on 7/23/1999 only 14 fish were collected from the entire 400 m reach of stream and they were all the same tolerant species, the green sunfish. In comparison, you would expect a creek in this ecoregion to have 22 species of fish, three intolerant species, and six sunfish species alone.

Macroinvertebrate collections took place in the rocky riffles of Fred Creek. There were 11 summer collections beginning in 1993, and 5 winter collections since 2001. For the last five years, Fred Creek has about half the number of total species expected under reference conditions. Most significant was the absence of Ephemeroptera, Plecoptera and Tricoptera (EPT) species. With few exceptions, these insects are more sensitive to pollution than any other groups. As a stream deteriorates in quality, members of this group are the first to disappear. The diversity was also low, especially in the summer

collections. The summer collections are about 30% as good as reference conditions; winter collections are about 40% of reference conditions.

Water chemistry shows that Fred Creek has had a continuing problem with low dissolved oxygen, especially during the hottest summer months. There was a period from July 2002 through January 2003 when it was below 5 mg/L oxygen the entire time and the oxygen saturation dropped to 14% on 11/21/2002. Also during the summer months the orthophosphate phosphorus is often near or above 0.1 mg/L phosphorus. Perhaps the nutrients being applied to neighborhood lawns are making their way into Fred Creek and causing algal blooms with the consequence that the oxygen levels are low in the morning before the sun has been up long.

Fred Creek drains an urban watershed with many impervious surfaces. As development has increased, portions of the creek have been channelized. The reach of stream monitored still has very good habitat for fish and benthic macroinvertebrates. Water chemistry shows problems with excess nutrients and the amount of oxygen in the water. The fish and macroinvertebrate collections show few species and individuals present; about 30% of what would be expected in high quality streams in the Central Irregular Plains ecoregion. Fred Creek at Evanston is not a healthy stream.