

**Chisholm Creek: Western**  
**SW NW SW SW Section 4-13N-3 W**  
**Oklahoma County, Oklahoma**  
**N 35 degrees 37' 30.88"**  
**W97 degrees 31' 52.39"**  
**WBID#: 620910-04-0100T**

Blue Thumb Volunteer Monitoring Data Interpretation – February 20, 2012

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**Description of Watershed and Monitoring Site**

Chisholm Creek begins around the Village area in Oklahoma City, about 2 miles east of Lake Hefner. This would be the area between W. Hefner Road and W. Britton Road and east of N. Pennsylvania Avenue. Chisholm Creek runs close to Meeker Park, in vicinity of Heritage Hall School, winding north where we test at NW 150<sup>th</sup> Street and N. Western Avenue at the First Lutheran Church. Chisholm Creek drains about 10 square miles up to this monitoring point. The creek runs through numerous neighborhoods such as Glen Lakes, Brasswood and many others. Chisholm Creek continues north-northeast almost parallel to N. Western Avenue on the east side until it empties into Cottonwood Creek.

**Stream Condition and Habitat Overview**

The habitat assessment in comparison from 8/9/2005 and 6/11/2009 showed improvement, from 82.9 to 96.7. The average high quality streams in the Central Great Plains ecoregion scored a 77.6, this serves as the reference condition. Both habitat assessments on Chisholm Creek scored well above the reference conditions. Both years Chisholm Creek scored well for canopy cover (tree shading over the creek) and streamside cover (vegetation along creeks edge for fish and bug habitat/food ). Pool variability dropped in 2009 meaning the creek lost some of its deep pools. Perhaps sediment from the new road bridge in 2007 contributed sediment to fill in the deep pools. Instream cover (vegetation, woody debris within the creek) increased from a low score to a medium score from 2005 to 2009. Pool bottom substrate also increased from low to medium meaning that the bottom of the creek became more stable for fish and creek bugs to reproduce. In both years a low score was given to the creeks flow, channel sinuosity, bank vegetation stability and channel alteration. Where we monitor Chisholm Creek it really only has good flow under N. Western Avenue and runs straight north for the quarter mile that we measured the habitat. There banks are very steep and in lots of places are actively eroding thus the low score for bank vegetation stability.

## **Biological Conditions**

### **Fish**

Over-all condition for the fish collections on Chisholm Creek was a C in 2005 and a D in 2009. Total number of fish species was lower, 11 down to 8. The reference conditions for the Central Great Plains ecoregion averaged 13 species. Most importantly there was only one pollution sensitive species (suckermouth minnow) found in 2005 and none in 2009. Also, no sensitive benthic species were found in Chisholm Creek. The reference conditions averaged 2 species. One good thing to say about Chisholm Creek's fish collections is that in both years 6 species of sunfish were collected. The reference conditions only averaged 4 species of sunfish.

### **Benthic Macro invertebrate (creek bugs)**

Benthic macro invertebrates have been collected from Chisholm Creek in the rocky riffles in both summers and winters since 2002. Over the years the winter scores have been a little higher in some areas, averaging a 'B' score. There is some questionable results in 2007, with a score of a 'C', but possibly could be linked to bridge construction on N. Western Avenue and NW 150<sup>th</sup> Street. In 2007 there were no sensitive to pollution/sediment bugs found. The 2008 winter collection was back to a 'B' score. The summer collections have not fared to well. From summer 2002 to summer 2005 collections scored a 'C' due to very few or no sensitive bugs found which leads to population low diversity. The overall scores have been increasing gradually and have scored a 'B' in summer 2006 and 2008. No collection was made in summer 2007 due to the active bridge construction.

### **Chemical Results**

Chisholm Creek at N. Western Avenue has been monthly monitored from 8/20/2001 to 8/10/2010.

### **Dissolved Oxygen**

The oxygen saturation level generally followed the summer/winter low pattern. Also, with the understanding with students doing this test periodically, given time restraints human error in collection of water and chemical testing could be affected. The lowest was recorded with a 17% on 6/15/2004 and highest with a 160% on 8/20/2001. Half of the readings are in the normal oxygen saturation range. The remaining half lies between low and high caution and low poor.

### **pH**

Ranging between 7.00 and 8.00, all of the data are well within normal values.

### **Nitrate Nitrogen**

Nitrates have nearly always been detected at low levels, ranging from 0.1mg/L to 2mg/L. On 11/8/2007 and 8/10/2010 nitrates were 8mg/L. From 12/5/2008 to 8/12/2009 nitrates were undetectable.

## **Ammonia Nitrogen**

Ammonia Nitrogen has altered back and forth between undetectable to 0.30mg/L. The highest reading was 0.70mg/L on 10/5/2009.

## **Chloride**

Chloride levels have been increasing especially in 2009. Consistently, have had to do the high range test, the results have been 160mg/L Cl or higher. This is happening without winter ice/salt on roadways.

## **Phosphorous**

There has been a constant presence of orthophosphate phosphorous but the levels have been showing a sign of decreasing since 1/12/2009. A little over half of all the readings are above the normal range of 0.05mg/L. About a quarter of the readings are in the poor range of 0.1mg/L or higher. From 6/14/2005 to 8/21/2006 all the readings were above 0.06mg/L. All the readings from 2008 were above normal of 0.05mg/L.

## **Synopsis**

Chisholm Creek runs north of Oklahoma City through Edmond neighborhoods and public business areas. Many affluent neighborhoods back right up to the creek. Highly driven roads pass over the creek many times through- out its journey through Oklahoma City/Edmond. During the bridge construction in 2007, the creek was definitely affected negatively environmentally. The concrete was dropped into the creek, fossil fuels and emissions from heavy machinery, major human impact on habitats and wildlife. But with that said, time has allowed nature to repair itself, and with continued time, our collection site will hopefully even improve more. Chisholm Creek has had issues in spring with neighborhood pools being emptied into/close to creek waters and fertilizers and insecticides from run-off of manicured lawns. A few years ago, we had some concern of this so my students designed an informational flyer and placed on doors in the neighborhood just west of test site informing them of leaving riparian vegetation along creek banks and to be careful with amounts for fertilizers they were using in their yards. There has been beaver activity throughout the years of our testing. We try not to disturb their activity until the flow of stream is corrupted. We have enjoyed seeing a few snakes and raccoons and one skunk. The large gray rocks the city put to hold the banks stable under the bridge are doing pretty good, but after hard rains the area directly below the bridge has shown some good size rivulet erosion. This will need to be addressed in near future or eventually the creek will be getting some of the sediment as a pollutant.