

## Soldier Creek: Hwy 66

NE NW NW

Section 28-14N-1W

Oklahoma County

N 33.56681°; W 97.31393°

WBID# OK 520710-01-0060D

Blue Thumb Volunteer Monitoring Data Review – 6 March 2008

Written by: Elsie Harner

Soldier Creek is located on beautiful Route 66 east of Arcadia in the Cross Timbers ecoregion in the heart of Oklahoma County. To get to the site from I-35 and Hwy 66 in Edmond, go east past Arcadia one mile to the bridge that crosses Soldier Creek where you will see an old farm house on the south side of Hwy 66.

You hear the sounds of running water as you go down the 30 foot bank to a rock ledge where the span of the water varies from 25 ft. wide to 2-3 ft. wide under the south side of the bridge. Stand awhile, observe the water to see the minnows darting around and looking at insects on top of water. Look below the waterfall to see scattered watering holes next to large rocks and boulders with the crayfish darting back and forth; you may even see the remains of a crayfish a raccoon left on the bank. You may see dog tracks and deer tracks indicating that they come to drink the clear cool flowing water. From spring to fall look around on the rocky bank and enjoy the wild flowers that bloom, some beautiful all year round. Enjoy the bright color of leaves floating down stream along with some wild native pecans and walnuts. You feel the air, sometimes hot and sometimes cold; there are been times there is very little wind. You are surrounded by gentle sounds you don't hear otherwise; the rustle of tree leaves falling, cicadas buzzing, bees flitting from flower to flower, birds minding their own business in the undergrowth. Look up and see if the red-tailed hawk is circling and checking you out. Look at the underside of the bridge to see the swallow nests and hear the babies if you're lucky. To the south you may hear a cow moo at the old farm house.

Now down to business. What kind of weather is it today? Check the air temperature. What is the wind speed and which direction is it coming from? Is the stream elevated or low? Is it rising or falling? Now, lets lay the thermometer in the water at least 2 minutes or more (just don't forget before you leave) and read the temperature in the water. There is always a fair amount of algae in and around the many rocks in the water. Look around the site and mark your data sheet with all of the observations that apply and add your comments. Take some pictures. This is most helpful and fun to refer back to. Check your water clarity/secchi depth. Most of the time Soldier Creek is very clear. Now it's time to do the dissolved oxygen test, the only one done creek-side. You have more time to observe the area around you. Sometimes the Arcadia sheriff stops to check on you. He is very nice.

Soldier Creek has had running water all year round. It makes you wonder if there's a natural spring somewhere up north. In a rainy year like 2007 it was running bank to bank like a red dirt river, but the water level dropped back to normal after clearing the banks and the clear, clean water returned.

Soldier Creek begins seven miles north of the city of Arcadia and flows south-southeast ending in the Deep Fork River. The watershed of soldier creek is about 25 square miles of farm land.

Soldier creek has really good shading from the tree canopy which helps to keep the water cool; this aids in keeping a good oxygen level in the water for the fish and bugs. There are grasses and shrubs at the waters edge on the banks to offer habitat and be a food source. The banks are in decent shape but do show signs of erosion. Habitat within the creek (like woody debris, aquatic vegetation and rocks) is present in moderation. The creek bed is rather sandy/silty which

makes it unstable for fish to spawn and indicates sediment is traveling down the creek. This is reinforced by several new point bars due to erosion and sedimentation, which is not good. This part of Soldier Creek is pretty straight with little difference in water depth. Most of the pools are about knee deep. The overall habitat score for Soldier Creek is 57.9 and the high quality streams in the ecoregion averaged 84.0.

Benthic macroinvertebrates (bugs) have been collected from rocky riffles in the winters of 2006 and 2007 and the summer 2006. The winter 2006 collection scored a low B while the summer 2006 and winter 2007 collections scored A's when compared to high quality streams in the Central Great Plains ecoregion. Soldier Creek does not have as many different species of the most sensitive bugs as the high quality streams, but it has a lot of the ones it does have. The winter collections have a problem with percent dominant taxon. The majority of the bug population is spread amongst a few bug species, not evenly distributed amongst all the different bugs found. The diversity has been increasing since winter 2006. These collections indicate that Soldier Creek is somewhere between a high quality stream and a moderate quality stream.

A fish collection was conducted in the summer of 2006 and resulted in a D score when compared to the high quality streams. No sensitive benthic species were found in Soldier Creek. All 1,514 fish from 11 different species were tolerant or moderately tolerant, none were intolerant. The high quality streams averaged two intolerant species. There were five different sunfish species found: green sunfish, bluegill sunfish, longear sunfish, redear sunfish and largemouth bass. It is good to have this many.

Chemically, the dissolved oxygen, soluble nitrogen, pH, orthophosphate phosphorus and chloride have been within the normal range. There was a very small amount of *E. coli* found in the summers of 2006 and 2007. The amounts were always within the limits for safe human contact with the water.

It is a joy to go to Soldier Creek to test the water and see nature as it happens. The habitat at the Hwy 66 bridge looks pretty, but something is perhaps limiting the fish. There is erosion present, but not in excess. The farmers could lend more land to the creek to help the riparian area grow up allowing trees, shrubs, grasses to grow out 40 feet or more from the creek. This will help stabilize the banks and keep more sediment out which might give a chance for the creek bed to filter out some silt and stabilize. Several factors of the creek's habitat need to improve to give the fish a chance to exist, live, and reproduce. The bugs have a shorter life span in the creek water of only a few months and do not seem to be affected as the fish have been. During the time of this fish collection, top carnivores and many expected species were absent or rare; omnivores and tolerant species were dominant. The chemical quality of the water seems excellent for the parameters we are testing.

The three elements needed for a healthy stream are: 1) good chemical water quality plus 2) physical habitat quality plus 3) biotic quality. In Soldier Creek the basic water chemistry seems fine. The physical habitat is not as good as it should be. The bugs seem to indicate a moderately healthy stream, but the fish are not what would be expected. Perhaps the habitat is the controlling factor in a healthy fish population. If so, landowner education about best management practices could make a big difference to Soldier Creek.

Thank you,  
Elsie Harner