

Little Sandy Creek: Highway 99

NW SW SW

Section 4-4N-6E

Pontotoc County

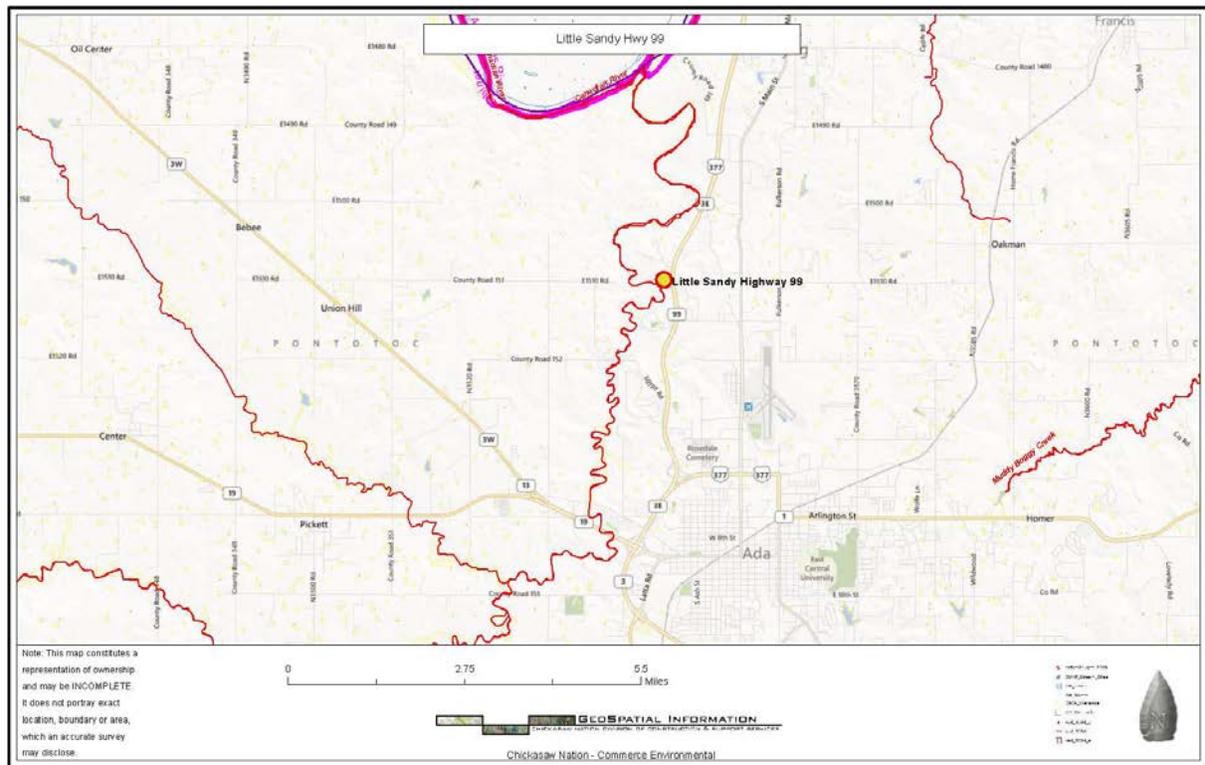
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WBID# OK520600-03-0020C

Blue Thumb Volunteer Monitoring Data Review – October 2013

Written by Chickasaw Nation Staff Ambrie Johnson, Environmental Specialist



Description of Watershed and Monitoring Site:

Little Sandy Creek is located in southeast Oklahoma in the City of Ada. The creek starts in the north part of Ada and flows northeast then makes a big curve to flow northwest and empties into the Canadian River. Little Sandy flows through many different land uses: urban, rural, near the Ada Municipal Airport, industrial areas, etc. until it the monitoring site under Highway 99 bridge northwest of Ada and just downstream from a concrete company. The watershed is about 12 square miles from headwaters to Highway 99. Little Sandy Creek is in the Cross Timbers ecoregion.

Stream Conditions & Habitat Overview:

The physical habitat of Little Sandy Creek at Highway 99 was assessed 9/21/2006 and 7/22/2010 for 400 meters starting from the bridge and going downstream. Both assessments the creek had a good score for canopy cover and shading. This creek section is more natural and tree lined creating a shady canopy over the creek to help cool the water. These trees and stream side vegetation also help protect the banks from eroding, reducing the sediment load into the creek. In 2010 the banks were half as stable as they were in 2006 even though the bank vegetation scored about the same in both years. Little Sandy in general is a very shallow creek but there were a couple of moderately deep pools. In-stream cover such as grasses, woody debris and rocks were present in moderation, better in 2006 than in 2010, to supply habitat and be a food source for fish and aquatic insects. There is very little flow and the bottom of the creek is quite sandy making it an unstable habitat for fish to spawn. In 2006 there was a medium presence of rocky riffles but in 2010 there was no presence of rocky riffles. Since 2006 there has been more sediment feeding in to the creek and also an increase in local erosion that has filled in or covered up the gravel/rocky areas in the creek. Some of these aid the creek and health of the stream and some of these factors will hamper the development and overall health of the stream. In 2006 the habitat score for Little Sandy at Highway 99 was 89.2, higher than the average of high quality streams in the Cross Timbers ecoregion. In 2010, however, Little Sandy's score dropped to 40.5 due to increased sediment that has filled in deep pools and covered up the rocks making the creek less stable and less in-stream cover.

Biological Conditions:

Fish

Fish were collected on 9/21/2006 and 7/22/2010 for the same 400 meter section as the habitat assessments. When compared to Cross Timbers reference streams the 2006 collection scored 82% a "B" and the 2010 collection scored 73% a "C". Both collections had 16 species of fish vs. 19 for reference conditions. There was 1 sensitive bottom dwelling fish, suckermouth minnow, in 2006 but none were found in 2010 and reference conditions averaged 4 species. Both collections caught comparable numbers of sunfish species as reference conditions. Species diversity was low in 2006 and even lower in 2010. In 2006 the total population was 62% tolerant to pollution whereas that number increased to 88% in 2010. Reference conditions averaged 70% population tolerant to pollution. There were way more insect eating minnows in 2006, way above reference conditions which is a good sign. In 2010 this minnow population drastically dropped. Overall, both fish collections on Little Sandy Creek at Highway 99 were missing sensitive fish (in both species and numbers) and the 2010 collection was also missing insect eating minnows.

Benthic Macroinvertebrates (bugs)

Benthic macroinvertebrates live on the stream bottom and on debris found in the creek. They are a link in the aquatic food chain as both a consumer of nutrients and food for fish. Several are intolerant of pollution or poor water quality and are indicators of stream condition; such as mayflies, stoneflies and caddisflies.

Bugs were collected from rocky riffles at Little Sandy Creek in the winters of 2005, 2006, 2010 and summer of 2007. The streams condition varies from a grade of a “C” (39%) to a “D” (8%). When compared to a high quality stream in the Cross Timbers ecoregion Little Sandy creek supports half the number of species of bugs. No sensitive bugs were found in the winter collections and only 2 species were found in the winter, reference conditions averaged 5 in winter and 7 in summer. In all the collections from Little Sandy the bugs are a lot more tolerant to organic pollution as well. There is also a big lack in population diversity in all samples as well.

Chemical Testing:

Chemical data were collected bi-monthly from January 2005 through September 2008.

- DO** Dissolved oxygen saturation shows when there are problems with the amount of oxygen available in the water for aquatic life. Too little or too much are indicators of problems. Chemical data showed Little Sandy Creek majority in the normal condition (80%-130%) with 3 times under 80% and 4 times over 130%.
- pH** pH is on a scale of 1-14 and measures the concentration of hydrogen ions. Low numbers are acidic, neutral is 7 and high numbers are basic. Little Sandy Creek is in normal range with a median of 8.0.
- Nitrogen** Nitrogen is a nutrient and can be an indicator for such cases as fertilizers or pesticides being overused or leaking septic tanks running off into the streams. An estimate of soluble nitrogen is made by adding the amounts of ammonia, nitrate and nitrite nitrogen found in the water. Little Sandy Creek levels of soluble nitrogen are in the cautionary (0.8-1.5mg/L N) to poor (>1.5mg/L N) levels, with a high outlier of 5.3mg/L N on 9/4/2008.
- Phosphorus** Little Sandy Creek is mostly in the cautionary level (0.05-1.0mg/L P) for phosphorous with a high outlier of 1.83mg/L P on 9/17/2006. Phosphorous can also be an indicator of fertilizer runoff. Further investigation is needed.
- Chloride** Chloride is the measure of the amount of salts in a creek. Little Sandy Creek is a little high for the area with a median value of 120mg/L Cl. There was a huge spike of 351mg/L Cl on 2/10/2006 which was probably from highway de-icing.

Synopsis:

Little Sandy Creek begins in the City of Ada and flows north eventually ending in the Canadian River. The sampling site at Highway 99 was quite natural with the good tree and bank vegetation to filter the water. The natural habitat will impact the fish and bug population recovering from the in town stream portion of Little Sandy. The habitat has taken a down turn, mainly due to increased sediment that has filled in deep pool and covered up in-stream cover and created a very unstable creek bottom. The fish showed signs of decreasing intolerant species between 2006 and 2010 collections. The bugs are showing an even harder hit. So it looks like Little Sandy is heading on a down-ward spiral. The bugs are the first to be affected and then later on the fish, and this is what the data showed for Little Sandy at Highway 99. The chemical nutrient levels are in the cautionary range and may indicate runoff and poor land use from someplace. Further investigation is needed. This level of nutrients is what is supporting a large amount of algal growth here. Little Sandy Creek is a struggling creek in desperate need of some community care to give it a chance to try and heal itself.