Hinkson Creek CAM Science Team
Notes of the July 7, 2015 meeting

Team Members Present: Paul Blanchard, Joe Engeln, John Holmes, Jason Hubbart, Robb Jacobson, Dave Michaelson, Dan Obrecht, Barry Poulton

Dave provided a summary of the analysis of biological metrics collected by DNR since 2000.

1. Spring data tended to exhibit more trends relative to longitudinal positioning of Hinkson Creek sampling stations than fall.
   o More taxa richness fully supporting scores occurred upstream of the Flat Branch confluence.
   o All but one EPT Taxa score among Stations 1, 2, and 3 (downstream of Flat Branch) were *non* supporting.
   o The lowest percentage of fully supporting MSCI scores occurred downstream of the Flat Branch confluence.
   o Scrapers were relatively rare at Stations 1 and 2. This observation was not related to Flat Branch, bur rather it was probably a function of the glide/pool tendencies of these stations.
   o More shredders were present in the urban (Stations 1 - 6) than the rural reach (Stations 6.5 - 8), which is suggestive of a more sediment tolerant community.
   o More climbers (which tend to increase with fine sediment) were present at Stations 1 - 3. Burrowers, however, were most abundant at Stations 7 and 8.
2. Fall data tend to be more variable, with few notable longitudinal patterns.
3. The fall sample season for Hinkson Creek tends to show more variability in response to drought than spring samples.
4. In spring the macroinvertebrate community tended to be more pollution tolerant among downstream stations and more sensitive in the upstream reaches. Stations 1 - 3 had the lowest percentage of sensitive taxa and Stations 7 and 8 had the highest.
5. In fall, Station 1 sensitivity was similar to BIOREF percentages. BIOREFs as a whole, however, tended to have a lower percentage of sensitive taxa in fall compared to spring. Station 1 did, however, have a higher percentage of sensitive taxa in fall than spring. Stations 7 and 8 had a much lower percentage of sensitive macroinvertebrates in fall than they did in spring.
6. Genus/species level taxonomic analysis showed that true flies in the family Chironomidae (non-biting midges) accounted for nearly all of the top 10 taxa in spring. Fall samles tended to show more taxonomic diversity. Only Stations 7 and 8 had a stonefly taxon present in sufficient numbers to rank in the top 10.
7. Hinkson Creek tends to have a higher percentage of aquatic worms (Tubificidae) compared to BIOREF streams. Tubificids are generally tolerant of organic pollutants and fine sediments.
8. Unlike BIOREF streams, which have several taxa of roughly similar abundance in the top 10 taxa, Hinkson Creek samples tend to be dominated by one or two taxa.
9. Mayfly taxa commonly found in Hinkson Creek samples (*C. latipennis* and *S. femoratum*) fall within the "tolerant" range of the sensitivity spectrum.
10. Chironomids were not the overwhelmingly dominant taxa group in fall. Several stations had chironomid abundance similar to BIOREF percentages.
11. Among EPT taxa, mayflies were the most abundant of the three orders in spring samples. Mayflies were present in no more than half the abundance as BIOREFs in spring. In fall,

however, mayflies were present in percentages comparable to BIOREF streams in seven of the 11 stations.

This analysis was conducted to look for longitudinal trends in macroinvertebrate data to determine whether it can be used to better define and separate Hinkson Creek reaches (for example, the placement of waterbody IDs and Class P vs. C). He noted that sites 1 and 2 appear to compare to prairie streams, sites 3 and 3.5 exhibit a transitional nature, while sites 4-8 further upstream were a bit more similar to Ozarks border streams. The team discussed the impacts of the presence and abundance of root mats and riffles on the EPT scores. Barry noted the similarity of the lower spring scores to those observed in the Kansas City area by his group and suggested that this might reflect stress on the species from the winter season (for example, high chloride in snowmelt runoff from road salt applications). The team also discussed the absence of stoneflies below site 7 and whether this was a good indicator of something. The team noted that there appear to be segments of the stream with different characteristics that may be able to be defined, but that the data analyses to date do not support a clear definition of those segments and what they may mean with regard to the TMDL or within any other regulatory context. They also discussed which longitudinally variable habitat parameters are independent of human impacts (rocky substrate) and which are not (root mats, riffles).

The last part of this discussion focused on what scientific questions might be appropriate to the topic. There was a general feeling that this group might be able to offer insights into whether using the invertebrate criteria was appropriate and whether data from backwater reaches should be separated and analyzed separately. The division of Hinkson Creek and other streams into perennial and intermittent segments might also warrant investigation into the applicability of different subset of the invertebrate data collected within the EDU. Another discussion focused on whether one can separate bank height changes caused by human impacts from those that reflect Missouri River influences lower in the watershed.

Some thoughts on moving forward (and transforming this into a discussion of the Action Team request to consider whether the invertebrate analyses are applicable to the lower reaches of Hinkson Creek):
Can we plot sensitivity and 5 by group to show the relationships more clearly? (difficulty and level of detail)
Can we use the KS tolerance values and apply them to these data? (relatively easy; applicability)
Can we use principal component analysis to tease out signals? (key parameters; complexity; have nutrient, Chloride, pH, turbidity and conductivity collected with invertebrate data)
Can we use existing data (streamflow from Missouri and geomorphic data) to characterize backwater area?
Do tributaries mark major changes in the stream and justify segmentation for purposes of the Clean Water Act? Would the confluence of a tributary provide a more defensible point to separate Class P from Class C? Presently, the Providence Road bridge serves as the dividing line.

The team noted that their role may be providing guidance to the local partners and stakeholders who could then pursue a third party to conduct the research. The idea that garnered the greatest support was to apply the KS tolerance values, which include such indicators as sediment and metals tolerance, among others. Joe agreed to contact Bob Angelo, who worked for KDHE before moving to EPA, in order to gather his ideas on this option. More discussion will be held at the next science team meeting.

Joe relayed the request for the science team members to attend the next stakeholder meeting at which Ken Midkiff was to present data for Hinkson Creek. No further information was available, but Lynne Hooper agreed to contact Karen Miller to request that the presentation be put toward the end of the agenda and to ensure that the science team members got the agenda for the next meeting in order to determine when to arrive.

Jason announced that he would be leaving the university at the end of the calendar year. He stated that he was interested in continuing some of the Hinkson Creek projects, but would be unable to continue others.

The Broadway monitoring station has been severely vandalized and the Rogers Road site suffered as a result of a large debris pile. The continued operation of these sites will require someone to maintain and support them. It will likely be difficult to find someone to ensure continued data collection. Jason intends to continue the work with the post-doc, but will be unable to continue the monitoring of the level spreader past the end of the year.

Robb suggested that Garth Linder be asked to present some of his work on urban stream at the next science team meeting and noted his work in field-based studies.

The minutes of the February 20 team meeting were approved.

The next meeting will be held during the week of August 16. John will send out a doodle poll to help identify the best day.