

From Lisa Rodenburg: 6/1/2016 – regarding PMF and Fingerprinting SOW

I have answered each question below. To summarize, I think that analyzing the surface water data will get you about 60% of the way to answering most of your questions, so that should be prioritized. I had budgeted 80 hours per data set. The surface water will probably take the longest of any of the data sets because (as I wrote in the Work Plan) it will probably have to be analyzed both with and without blank correction. So I think that 80 hours is probably a minimum for that data set, plus 10 hours of mapping and 10 hours of writing the report.

Yes, it would really help to have all of the data in a standard format, especially the DRBC Access database format. In addition, it would REALLY help if you could do all of the blank correction for me. In the blank corrected data, it would be most helpful if you could provide (1) the blank corrected concentrations of all congeners, with anything that blank corrects to less than or equal to zero just set to zero, and (2) the value of the blank that was subtracted from each measured value to get the blank corrected value (this value is presumably different for each sampling event). If you could do all of this, it would probably save me at least 10 hours, so the total would be $80+10+10-10=90$ hours. 90 hours @ \$200 per hour = \$18,000. This would be a maximum and I would only bill you for the hours I actually work. For this relatively small project, I would not go through Rutgers, so that saves a lot of time and paperwork.

Question 1: What can be said about the ultimate origin (e.g. legacy sources, inadvertently produced PCBs) of PCBs in the Spokane River?

Question 2: Does the nature of the source (or the PCB signature/signal) change as one moves downstream?

We can go a long way toward answering these two questions by analyzing the surface water data alone.

Question 3: Can you draw any conclusions regarding relative importance of (1) storm water, (2) groundwater, and (3) wastewater effluent (industrial and municipal) as contributors to observed Spokane River concentrations?

Once the PMF analysis of the surface water is conducted, I can try to match the surface water PMF factors to raw data from stormwater, groundwater, and WW effluent without actually doing PMF analysis on those phases. It is hard for me to guess how effective this approach will be until I see the data, but it will probably tell us something.

Question 4: Can the handful (three in the Spokane River, two in Latah Creek) of anomalously high river PCB concentrations observed during patchy wet weather during the August 2014 synoptic survey be linked to wet weather sources?

As I noted in the Work Plan, this question is going to be hard to answer no matter what, but analyzing the surface water data alone will tell us something.

Question 5: Does the contaminated groundwater up-gradient of Kaiser show as a significant contributor to the concentrations observed at Trent Ave. Bridge during the synoptic surveys?

This is basically the same approach as Q3. I can try to match the Kaiser groundwater fingerprint from the raw data to the PMF factors derived for the surface water and see if there is a match. This success of this depends on whether the Kaiser groundwater fingerprint is constant. If the fingerprint in the groundwater does not change from sample to sample, then if the fingerprint matches what is observed at Trent Ave, the answer is clear. If the groundwater pattern is variable, then the matching is less conclusive.

Lisa