Comments by Spokane County to: DRAFT – Magnitude of Sources and Pathways of PCBs in the Spokane River Watershed; April 1, 2016; LimnoTech

General comment:

Spokane County appreciates the opportunity to review this preliminary draft memo. Due to the significant amount of information presented and the associated comments, we anticipate a second draft will be circulated before a final product is presented.

Page 1, Summary:

Comment: Spokane County recognizes the difficulty of this task, and the inherent uncertainty in the development of various data for this document. As presented in our comments, this memo should more clearly identify those uncertain data, and recognize that small changes in data coupled with relative high values of occurrence such as river flow or mass, can significantly affect relative loading to the Spokane River.

Page 4/5, River and Lake Sediment:

Comment: The calculation of PCB mass in the Spokane River and Lake Spokane sediments presented on Page 5 utilized an estimated mass of sediments in the river and lake.  The estimated mass and reference source of the estimated sediment mass was not presented, however.

Suggestion:  Add the estimated mass and a reference for the data source that provides the estimated mass of sediments in the Spokane River and Lake Spokane.

Suggestion: This section should also consider the data and analyses provided in the “*Report on Coeur d’Alene Lake and Spokane River Sediment Routing”* *(Golder, 2005).*

Page 5, Industrial Equipment:

Comment: This section states that information was obtained from Avista.  This section should also include information from other electric utilities that provide service in the Spokane River Basin: Kootenai Electric Cooperative, Inland Power and Light, Modern Electric Water Company, Vera Water and Power, and Bonneville Power Administration.

Suggestion:  Clarify that there are other energy utilities besides Avista and their PCB releases have (or have not) been considered.

Comment:  Recently, as part of a settlement with Columbia Riverkeeper, the U.S. Army Corps of Engineers agreed to disclose pollutants, including PCBs that are discharged from their hydropower facilities on the Columbia River.  Consider estimating PCB loading from the Spokane River hydroelectric dams.

Page 6, Ongoing Sources:

Comment: There is a reference in this section to product testing studies, but the most recent study by Ecology (*PCBs in General consumer Products*, *Ecology, 2014, Alex Stone*) was not referenced.

Suggestion: Include information from the above noted study.

Page 7, Up-Watershed section:

Comment**:** Up-watershed sources as measured at the outlet of Lake Coeur d’Alene are estimated at 263 mg/day accounting for 27% of estimated PCB loading to the Spokane River, the second largest loading source identified in the memo.  The analytical results utilized to estimate this load are below concentrations at which PCBs can be measured with confidence in the environment.  Coupling this uncertainty with the high flows entering the Spokane River, this uncertainty can have a significant impact on the relative loading of PCBs to the Spokane River.

The loading in this memo was calculated using a total PCB concentration of 17 pg/L which is based on the average PCB concentration measured by the SRRTTF during confidence testing and synoptic survey.  The average of field blanks from the same confidence testing and synoptic survey, corrected in the same manner, is 27 pg/L

These results indicate that it is not possible to discern between the total PCB concentration of water collected at the outlet of Lake Coeur d’Alene and ultra-pure water from Axys Analytical that traveled with the samples.  Therefore we cannot distinguish if the PCBs were in the water at the outlet of Lake Coeur d’Alene or if it was introduced from glassware, at some point during travel, at the lab, etc.

Suggestion**:** Report the loading from Lake Coeur d’Alene as a range of 0 to 263 mg/day and add a paragraph that discusses the reliability of measuring PCBs at such low concentrations and a comparison to the field blanks.

Page 7, Magnitude of Delivery Mechanisms of PCBs to the Spokane River:

Comment: A discussion of the calculation of groundwater loading as presented on Table 2 is not included in this section.

Suggestion: Include a discussion of location and calculation of the magnitude of this source category.

Page 7, Table 2 - PCB Loading Rates Estimated for Each Delivery Mechanism:

Comment: the estimated loading rates in Table 2 are based on various data with a wide range of level of confidence including estimated values, ‘semi-quantitative’ values, and recently measured values of relatively higher confidence.

Suggestion: Table 2 should include an additional column for relative level of confidence of the supporting data.  Providing a relative rating of low, medium and high to describe the confidence of the data would be helpful in evaluating the various source categories and pathways at this point in time.

Suggestion: For clarity and to assist in prioritization, Table 2 should be ordered based on descending orders of magnitude.

Suggestion: The listing for “Municipal and Industrial WWTPs” (waste water treatment plants) should be listed separately; one line for Municipal WWTPs and one line for Industrial WWTPs

Suggestion: For historical comparison, Table 2 should include a column of the relative source category loadings from Ecology’s 2011 PCB Source Assessment report.

Suggestion: A map should be developed to identify the locations and magnitudes of all of the sources presented in Table 2

Page 8, MS4 Stormwater Runoff/Combined Sewer Overflows:

Comment: The 2011 Ecology PCB Source Assessment report is utilized in many other sections of this memo to calculate loading estimates, while in this section the loading analysis diverges significantly from the 2011 Ecology report.

Suggestion: This section should include a discussion of the large variance between the two estimates and the associated references.

Page 8, Tributaries, Latah Creek:

Comment: The loading estimate for Latah Creek utilizes data from the 2014 Synoptic Survey. That data set includes one value (2,444 pg/L) that is significantly different than all other results, and is characterized as an outlier in the 2014 Synoptic Survey Report. The loading estimate in this memo is calculated both *with* and *without* the outlier (210 mg/day and 50 mg/day, respectively). The midpoint of those two values (130 mg/day) was utilized for the loading estimate. Spokane County offers an alternative approach.

Suggestion: Use only the dataset *without* the 2,444 pg/L outlier to establish the estimated load (50 mg/day) from Latah Creek. This suggestion is based on the following:

1. Outliers for both the City of Spokane and Coeur d’Alene Treatment Plants were reported in the 2014 Synoptic Survey report, and not used in the loading estimate in this memo.
2. During the 2014 Synoptic Survey there was a field blank result of 1,064 pg/L, further demonstrating the occurrence of outliers that are not representative of the system being sampled.
3. A single composite sample from Latah Creek that included each day of the 2014 synoptic sampling event was 95 pg/L. The average of all individual samples except the outlier is 89 pg/L, while the average of all samples including the outlier is 379 pg/L. It is reasonable to expect the result of a composite sample to be similar to the average of the individual samples. This indicates that a sample with a concentration of 2,444 pg/L was not part of the composite sample for Latah Creek.

If further sampling, which is currently being conducted, shows that the value of 2,444 pg/L is indicative of actual conditions in the environment, then this loading estimate should be revisited at that time.

Page 8, Tributaries, Little Spokane River:

Comment: The Little Spokane loading estimate in this memo is based on a value of 199 pg/L which was taken from the Spokane River PCB Source Assessment (Ecology, 2011). This concentration was derived from sampling with a semi-permeable membrane device (SPMD), which is an indirect measurement of water column PCB concentrations. A more recent assessment was conducted by Ecology, *Little Spokane River PCBs: Screening Survey of Water, Sediment, and Tissue (Ecology 2016)*, and utilized a continuous low-level aquatic monitoring device, also an indirect measurement of water column concentrations. This memo utilizes the 199 pg/L value from the earlier 2011 Ecology report, due to blank contamination issues cited in Ecology’s 2016 report. Ecology’s 2016 report states in part:

*The blank contamination creates more of an issue for this study as water concentrations are so low. If water concentrations were at or above criteria (170 pg/L), the results could be more easily distinguished from the blank contamination. Even with the blank contamination issues, the results show that PCB concentrations in the Little Spokane River are low−well below the freshwater NTR criterion. (Ecology 2016)*

Ecology’s 2016 report presents estimated values for both the blanks and river samples. The largest estimated PCB concentration was 75 pg/L, as measured in one of the blanks.

Suggestion: Utilize the information as presented in Ecology’s 2016 report. Accordingly, 75 pg/L should be used in place of 199 pg/L as part of the loading estimate from the Little Spokane River. Accordingly, the loading from the Little Spokane River to the Spokane River should be reduced from 97 mg/day to 36.5 mg/day.

Suggestion: Due to the ongoing uncertainty of PCBs in the water column, the Task force should consider sampling the Little Spokane River system concurrent with other PCB sampling programs.

Page 9, Discharge from Municipal and Industrial Wastewater Treatment Plants:

Suggestion: Spokane County proposes the following modification to the memo:

Loading estimates for municipal and industrial wastewater treatment plants were calculated from effluent data collected by the facilities, and data obtained during the SRRTTF synoptic surveys. Results are summarized in Table 3. These loading estimates are presented as a range rather than one loading estimate. This is due to differences in blank correction methodology between the SRRTTF source identification studies and discharger effluent monitoring. The SRRTTF recognizes that the selection of blank correction methodology is dependent on the use of the data (Limnotech 2014). The SRRTTF has determined that a “3x blank censoring” correction methodology is appropriate for source identification studies. Ecology has indicated that a “10x blank censoring” correction methodology is appropriate for reporting effluent monitoring results. Therefore the loading estimates are based on a range bounded by the average of the values reported in the SRRTTF source identification studies and the average of values reported for discharger effluent monitoring. The mid-point of the range is utilized as appropriate in other portions of this report. ~~have some uncertainty due to different blank correction methods being applied between the SRRTTF and the assessments conducted by the dischargers themselves. This discrepancy is best highlighted by the data for the Spokane County Regional Water Reclamation Facility. The average effluent concentration reported across the 2014-2015 SRRTTF synoptic surveys assessments was 361 pg/l, while the average effluent concentration reported in the 2015 Annual Toxics Management Report (which exclude congener values <10x the sample blank) was 30 pg/l (Brown and Caldwell, 2015).~~ Entries in Table 3 are footnoted to indicate which values came from the synoptic surveys versus discharger monitoring. The range in total loading rate is 282 – 315 mg/day, with a midpoint value of 299 mg/day.

Page 9, Table 3 - Annual PCB Loading Rates from Municipal and Industrial WWTPs:

Comment: The annual average flow for the Spokane County Regional Water Reclamation Facility is 11.5 cfs.

Suggestion: For clarity and to assist in prioritization, Table 3 should be ordered based on descending orders of magnitude of loading.  For facilities with ranges presented, a midpoint could be used to establish order (i.e., Spokane County would be mid-point between .87 and 10.4).

Suggestion: A map should be developed to identify the locations and magnitudes of all of the sources presented in Table 3. This information presented could be incorporated into the suggested map for Table 2.

Page 10, Spills/Leaks of PCBs Contained in Industrial Sources

Historically, 60% of PCBs in the US were used for closed system electrical and heat transfer fluids (Voldner and Smith, 1989, as cited in Keeler et al, 1993).  While current electric utility activities are aimed at reducing future releases of PCBs from these fluids into the environment, this memo estimates the local release rate as "essentially zero".  This seems optimistic, given that spills do occur and that residual PCBs likely exist.  Developing a Spokane-area specific release rate may not be possible with existing data, but rates have been estimated in other areas.  Consider applying a release rate in this watershed. Reference: Keeler, G. J., J. M. Pacyna, T. F. Bidleman, and J. O. Nriagu, 1993, Identification of sources contributing to the contamination of the Great Waters by toxic compounds.  For US EPA.

Page 13, Private Septic Systems:

Comment: Many private septic systems are located over the SVRP Aquifer in Kootenai County, ID.

Suggestion: In the interest of completeness, the inventory of private septic systems should include all locations over the SVRP aquifer, including those located in Kootenai County, ID.

Page 13, UIC Wells:

Comment: Many UIC wells (aka dry wells) are located over the SVRP Aquifer in Kootenai County, ID.

Suggestion: In the interest of completeness, the inventory of UIC wells should include all locations over the SVRP aquifer, including those located in Kootenai County, ID.