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Project: SRRTTF9

To: Spokane River Regional Toxics Task Force **CC:**

SUBJECT: DRAFT: Review of Historical Documents to Support Spokane River PCB Source Assessment

Summary

The Spokane River Regional Toxics Task Force was formed with the intent of identifying and eliminating sources of PCB to the Spokane River. Past Task Force studies have characterized many PCB sources based upon recent data collection efforts and recognizes that other (as yet unidentified) sources may exist. The suggestion was made at a task force meeting to research [three](#) existing Ecology studies to see if they may help identify other PCB sources. Specific studies identified for review were:

- Department of Ecology 1993-94 Investigation of PCBs in the Spokane River (Ecology, 1995)
- Spokane River PCB and Source Survey, August 2000 (Ecology, 2001)
- Spokane River PCB Source Assessment, 2003-2007 (Ecology, 2011)

This memorandum describes the results of that review. Key findings are:

- [The data evaluated in these studies were collected 15 to 29 years ago, prior to the implementation of many cleanup activities, and should be viewed with caution in terms of their ability to provide information regarding present-day loads.](#)
- The large majority of PCB sources identified in these studies have already been assessed by the Task Force.
- Two potential sources of contamination were identified that had not been previously assessed by the Task Force: 1) PCB contamination at the former wastewater treatment plant serving the Spokane Industrial Park and 2) PCB-contaminated soils near the old Inland Metals facility in the Mission Reach.
- The Spokane Industrial Park wastewater treatment facility has subsequently been designated by Ecology as requiring No Further Action after undergoing a Voluntary Cleanup Program.
- PCB-contaminated shoreline soils were observed near the old Inland Metals facility after the site was designated as requiring No Further Action. These contaminated soils could be directly mobilized to the river during periods of high flow provides, representing a potential source of PCBs that have not been fully considered by the Task Force.
- The loading assessment conducted by Ecology (2011) showed that the mass load of PCBs passing through the river is much greater than the cumulative loading from known external sources. This finding suggests that other unknown sources exist, although it is also possible that the finding is an artifact resulting from the use of a small data set.

The findings of this initial review will be used to help guide future Task Force activities. The upcoming historical review will examine past activities at Spokane Industrial Park that may have involved PCB use. Other studies being considered include examination of ongoing contamination from the Inland Metals site and annual mass balance assessments using recent SPMD monitoring data. The remainder of this memorandum provides the details of the review of each document in terms of their ability to identify additional sources of PCBs to the Spokane River.

Department of Ecology 1993-94 Investigation of PCBs in the Spokane River

Ecology conducted seven surveys related to PCB contamination of the Spokane River between Post Falls, ID and the Spokane Arm of Lake Roosevelt over the period from July 1993 to September 1994. Results from fish and sediment samples indicated no significant sources of PCBs above Post Falls. The largest PCB inputs to the Spokane River were determined to have occurred between the state line and Upriver Dam.

Four facilities within this reach were identified as having elevated concentrations of PCBs in their waste streams, sludge or soil which were concluded to be current or historical sources of PCBs to the Spokane River:

- Liberty Lake sewage treatment plant (STP),
- Spokane Industrial Park (SIP),
- Kaiser Trentwood, and
- An area adjacent to the old Inland Metals site.

PCB loading from Liberty Lake and Kaiser have already been well-characterized by Task Force studies. Loading from the Spokane Industrial Park and Inland Metals site have not been previously assessed by the Task Force. The location of those latter two sites is shown in Figure 1 and relevant findings are discussed below.

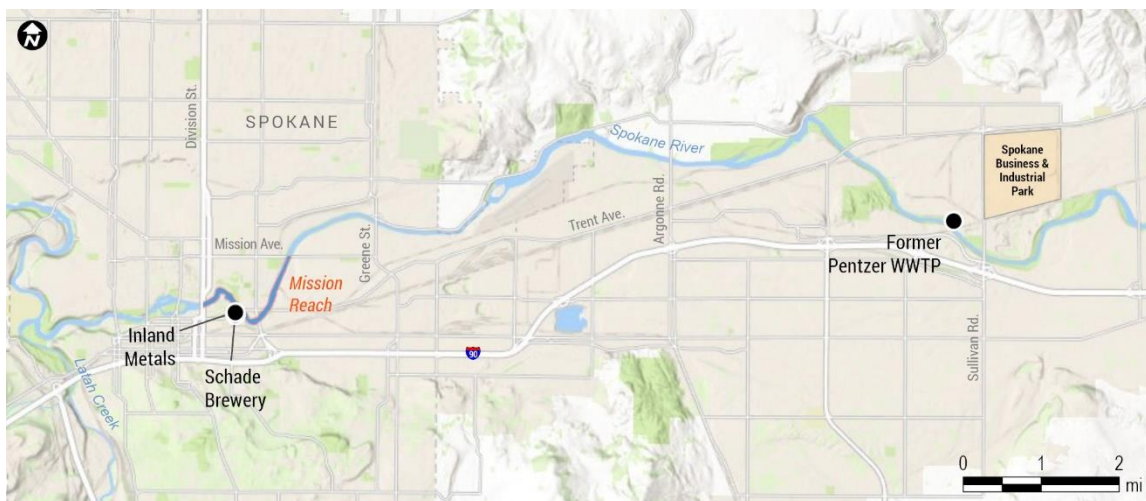


Figure 1. Areas of Interest Described in Ecology Reports

The Spokane Industrial Park discharged treated wastewater to the Spokane River via the Pentzer WWTP until being diverted to the Spokane sewage collection system in December 1993. High concentrations of PCB-1248⁺ (11,000 - 12,000 ppb) were found in Ecology's 1994 samples of

⁺ ~~Concentrations of PCB 1254 and PCB 1260 were below detection limits of 1700 to 2000 ppb.~~

sludge from SIP's inactive oxidation ditch and confirmed by split samples with the owners of Spokane Industrial Park. Concentrations of Aroclor 1254 and 1260 were at non-detect levels, although it is noted that detection levels for those samples were quite high (1720 – 2000 ug/kg). The source of PCBs at SIP was not identified in this report. The Pentzer WWTP facility site has since been remediated via Ecology's Voluntary Cleanup Program in accordance with Model Toxics Control Act requirements and has been designated as requiring No Further Action. The presence of elevated PCBs in the oxidation pond does serve as an indication of PCB use by the industries that had been served by the WWTP. A review of the nature of those industries served may provide insight regarding the potential for their contributing to ongoing groundwater contamination.

The old Inland Metals site was a scrap metals salvaging operation located in the Mission Reach that was considered to be a source of PCB-1248 and -1260 to the river. Contaminated soils were removed from this site as part of an Ecology Supervised/Conducted Cleanup and the site designated as requiring No Further Action in 1992. Subsequent soil sampling conducted for the 1993-94 PCB investigation indicated that residual contamination (PCB-1248 at 4,700 ppb and PCB-1260 at 3,900 ppb) remained along the shoreline in what appeared to have been a drainage area from the old Inland Metals site. The report noted that all or part of the area sampled was under water during high flow. To the extent that this historical contamination is still present, mobilization of the shoreline PCBs to the River during periods of high flow provides a potential source of PCBs that has not been considered by the Task Force.

A review of Ecology's "What's in My Neighborhood: Toxics Cleanup" web site shows that the Schade Brewery site, adjacent to Inland Metals, was also placed on the Hazardous Sites List by Ecology. This property was sold to Inland Metals and used for metal salvage operations. Soils on the Schade Brewery site were found to be contaminated with PCBs and metals. The site was subsequently given a No Further Action determination in 1992 following excavation of contaminated soils (<https://apps.ecology.wa.gov/cleanupsearch/site/4643>).

Spokane River PCB and Source Survey August 2000

The Washington State Department of Ecology sampled the Spokane River upstream and downstream of Kaiser Trentwood facility as well as the Kaiser effluent to determine concentrations and possible sources of PCBs to the river. Results from the river were deemed incomplete because of laboratory equipment contamination. Results of samples from the Kaiser outfall were deemed inconclusive due to highly variability, potentially attributable to apparent non-homogeneity of the effluent.

Spokane River PCB Source Assessment, 2003-2007

This report contains an assessment of PCB sources to the Spokane River from the State Line at with Idaho down to Long Lake Dam. The sources considered in this report largely match those already being considered by the Task Force. The study contained one aspect of particular interest with respect to the Task Force's mission of identifying PCBs sources, by comparing the mass load of PCBs passing through the river to the cumulative loading from known external sources² (Figure 1). Subsequent analysis of these results (e.g., Borgias and Schmidt, 2014) showed that External loads between the State Line and Nine Mile-Long Lake Dam explain only 60% less than

² Figure 2 represents external PCB loads for the period 2003-2007. Present-day wastewater loads are much lower due to the subsequent adoption of advanced wastewater treatment processes.



half of the total instream load observed at Nine Mile Long Lake Dam. This mass balance assessment differed from the ones subsequently conducted by the Task Force by examining annual conditions based on seasonal deployment of semi-permeable membrane devices, where the Task Force assessments considered summer low flow periods using grab samples.

This finding ~~is significant in that it~~ represents the potential existence of currently unidentified sources of PCBs being delivered to the river, although it is possible that the finding is an artifact resulting from the use of a small data set with high variability. Annual mass balance assessments using recent SPMD monitoring data should be considered by the Task Force to determine whether these recent data indicate the presence of unknown loads.

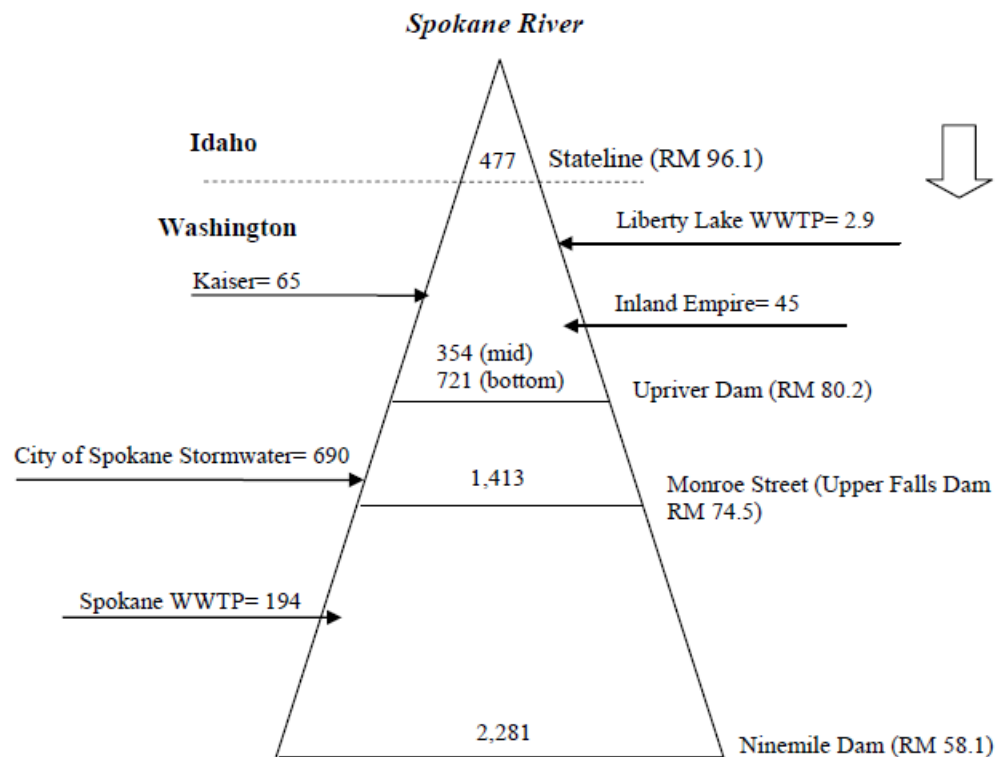


Figure 2. Schematic of PCB Sources and Instream Loads in the Spokane River (total PCB, mg/day), adapted from Ecology (2011).

References

Borgias, A and L. Schmidt, 2014. A Direct-to-Implementation Approach to Toxics Reductions in the Spokane River. Spokane River Forum Conference. Coeur d'Alene, ID. November 20, 2014.

Ecology, 2011. Spokane River PCB Source Assessment, 2003-2007. Publication No. 11-03-013. April 2011.

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