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Gunnar Johnson, EPA Region 10 TMDL Project Manager
VIA EMAIL: Johnson.gunnar@epa.gov

12 September 2023

Dear Mr. Johnson,

SUBJECT: Comments on EPA's Spokane and Little Spokane River PCB TMDL development

We at the Spokane Riverkeeper and co-signers have appreciated the opportunity to participate in the PCB TMDL process and, specifically, to attend your quarterly public webinars which provide on EPA's PCB TMDLs for Spokane River and Little Spokane River, held in March and June of 2023.

Based on our observations and participation in these workshops, we wish to offer this comment letter before the next quarterly workshop (28 September of this year), in order to maximize our opportunity for input to this important process. Based on these observations, we wish to offer several constructive comments and suggestions. The comments we are offering fall into two general categories, which are (1) the technical approach input data to the TMDL modeling process, and (2) the implementation planning phase of the project. We think it is important to bring these issues to your attention during the TMDL development process rather than solely providing comments "after the fact" on the draft PCB TMDL to be issued next year.

Technical approach and input data comments. We appreciated your technical presentation at the last workshop, but we noted some technical issues that we want to bring up. Notably, the absence of sediment PCB data as well as the apparent absence of PCB fish tissue data in your overall development of the mass balance-based model to support your calculations for your eventual proposed Load Allocations/Waste Load Allocations (LA/WLA). The model is apparently entirely based on compliance with water quality standard (WQS) values. A few issues: the rather outdated, Aroclor-based Method 8082 incorporates analytical reporting limits that do not even approach the Washington State and proposed project WQS of 7 pg/L, but can only attain limits that are many orders of magnitude higher, and congener-based Method 1668, which can attain more reasonable reporting limits, may be limited in its availability as much of the historical database for the Spokane River watershed is in fact based on the older, Aroclor-based analytical methods.

Including sediment data for PCBs and biological tissue data for PCBs would help to bridge this data gap. As we're sure you're aware, Ecology, through its Environmental Assessment Program (EAP), has collected voluminous data over the past 20 years or so for PCBs, including specific

congeners, for sediment, biological tissue, biofilm, groundwater, and other media. Some of those data reports are listed below (e.g. Serdar et al. 2011, Seiders et al. (2018), Seiders and Deligeannis (2009), Johnson et al. 2010)).

The Spokane River PCB TMDL benefits from much more voluminous data collected over the past 20 years or so than some of the more straightforward watersheds for which PCB TMDLs have been developed (e.g. lower Okanogan River, Walla Walla watershed, Palouse River, etc.) for which similar TMDLs have been developed with simpler datasets. Since we have more data available to support development of the TMDL, we would encourage use of sediment, biological tissue, biofilm, and other data in developing your mass balance-based model for the watershed.

This is consistent with important TMDL guidance developed by EPA, such as the PCB TMDL Handbook (2015) and other EPA technical support and guidance documents. As another example, EPA (2007) notes that "the availability and quality of data is of paramount importance during the TMDL development and implementation planning process". It therefore stands to reason that we need to use all the quality data we have available to reduce uncertainty in our TMDL. These guidance documents consistently specify that the *most* limiting factor for development of quality TMDLs is the existence of environmental data to help with source identification and other aspects of defining the problem, in developing and establishing load allocations, and in implementing the TMDL itself.

There have been a number of relevant case studies concerning PCBs from around the country. For example, Davis (2004, cited below) showed as part of the larger PCB TMDL in San Francisco Bay that the most influential input parameters were (in order): the degradation half-lives of PCBs in sediment, the K_{ow} partition coefficient, outflow, average PCB concentrations in sediment, and depth of the active sediment layer. Hobbs and his team at Ecology's Environmental Assessment Program (e.g. Hobbs 2016) have shown that a validated fate and transport model allows for predictions of both water and sediment concentrations, that a strong correlation between sediment and tissue concentrations can be and has been demonstrated (e.g. in San Francisco Bay), and that such models can be used to predict tissue concentrations under different water quality conditions. These predictions in turn can be used to forecast and manage risk reductions in edible fish tissue, which can have a direct effect on protecting potentially exposed fish consumers. Hobbs (2016) predicted helpful timeframes under which specific sportfish would achieve the proposed health standard of 5.3 µg/kg (mountain whitefish at Nine-mile site in 2092; suckers at Nine-mile site in 2014, mountain whitefish in 2015). This type of modeling approach appears to be directly applicable to the PCB TMDL currently under development and would help to reduce uncertainty.

Regarding the technical assumptions related to "permanent burial" of PCBs in sediments, it is well known that different congeners of PCBs weather and degrade differently partly as a function of degree of chlorination, and that lower-chlorinated congeners (e.g. PCB-11) are quite soluble and while they are less persistent, they are more toxic. For example, Davis (2004) showed that half-lives of congeners ranged from 4 years for PCB 18 (lower chlorinated, less persistent) to 30 years for PCB 194 (also see Greenfield and Allen (2013). Therefore, we suggest that different congeners with their variable environmental characteristics be considered when integrating PCB contributions to overall loadings via the sediment pathway.

Selected references.

Davis, J. 2004. The long-term fate of PCBs in San Francisco Bay. Environ. Toxicol. Chem. 23(10): 2396 – 2409.

Ecology. 2022, Spokane River PCBs in biofilm, sediments, and invertebrates 2018 and 2019: screening study results. 83 pp. https://apps.ecology.wa.gov/publications/documents/2203002.pdf

Ecology 2020. Draft State Technical Support Document for PCB variances on the Spokane River (WAC 173-201A, WAS for surface water of the State). https://ecology.wa.gov/DOE/files/89/892829e8-0a74-4085-ad25-10619b014ee4.pdf

Ecology 2015. PCB Cleanup Action Plan [CAP], including Spokane River. Publ. 15-07-002. 223 pp. https://apps.ecology.wa.gov/publications/documents/1507002.pdf

Ecology. 2011. Spokane River PCB source assessment. Publ. 11-02-13. 156 pp. https://apps.ecology.wa.gov/publications/documents/1103013.pdf

EPA 2022a. Water quality standard regulations: Spokane Tribe. https://www.epa.gov/wqs-tech/water-quality-standards-regulations-spokane-tribe

EPA 2022b. Total Maximum Daily Loads (TMDL) 303(d) Impaired Water Body Technical Support Document. http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/techsupp.cfm

EPA 2015. PCB TMDL Handbook. https://www.epa.gov/sites/default/files/2015-10/documents/pcb-tmdl-handbook-fact-sheet.pdf. Also http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/pcb_tmdl_handbook.pdf.

EPA 2007. Developing effective nonpoint source TMDLs: an evaluation of other TMDL process. Jan 2007 link is[i] https://www.epa.gov/sites/default/files/2015-10/documents/developing-effective-nonpoint-source-tmdls.pdf

Greenfield, B. and R. Allen. 2013. PCB spatial patterns in San Franciso bay forage fish. Chemosphere 90: 1693 – 1703.

Hobbs, W. 2016. Predicting reductions in fish tissue PCB concentrations. Pres. Made to Spokane River Regional Toxics Task Force (SRRTTF), 2016. Environmental Assessment Program, WA Dept. of Ecology.

Johnson et al. 2010 (also Ecology 2010). An assessment of the PCB and dioxin background in Washington freshwater fish, with recommendations for prioritizing 303(d) listings. 80 pp. Publ. 10-03-007, Jan. 2010. https://apps.ecology.wa.gov/publications/SummaryPages/1003007.html

Seiders, K. et al. 2018. Freshwater fish contaminant monitoring program, 2015 results. Publ 18-03-011. 60 pp. https://apps.ecology.wa.gov/publications/SummaryPages/1803011.html

Seiders, K and C. Deligeannis. 2009. Washington State Toxics Monitoring Program: Freshwater fish tissue component 2007. Publ. 09-03-. 55 pp.

Serdar, D., B. Lubliner, A. Johnson, and D. Norton. 2011. Spokane River PCB source assessment, 2003 – 2007. Ecology Environmental Assessment Program, Apr. 2011. Publ. No. 11-03-013. 156 pp. https://apps.ecology.wa.gov/publications/documents/1103013.pdf

Comments related to TMDL implementation. It is our view that implementation of the water quality improvement plan should be developed in close coordination with Ecology. As a matter of process, this would be far preferable than working on this issue in the "silos" of TMDL development and then, separate subsequent processes of implementing the TMDL to address pollution, pathways, etc. According to the EPA: '"*A comprehensive TMDL implementation plan outlines management goals, projects, partners, priorities, schedule and finding along with tracking, monitoring and reevaluation processes.*"[1]. While we don't believe that EPA wants to replace Ecology in developing statewide standards to improve and protect water quality, we do feel that the EPA has a constructive role to play in planning and developing strategies and tactics to meet the WLAs and LAs for PCBs that are codified as part of the approved PCB TMDL.

Ideally, this coordination should be under way while the Spokane River watershed is being examined and the WLAs and LAs are under development prior to the final approval of the Spokane River PCB TMDL. Such an implementation plan should be phased to extend far beyond the formal approval of the TMDL and be projected to only conclude at a time when the WLA and LA are met, and the Spokane River is in compliance with Washington State WQS.

EPA guidance actually suggests a critical role for itself inside the implementation process to include advising, guiding and/or coordinating. We would call your attention to the following sections regarding EPA review guidelines for TMDLs on the EPA web page:

> *EPA issued review guidelines for TMDL submissions in Guidelines for Reviewing TMDLs under Existing Regulations Issued in 1992. Below is a TMDL Review Checklist with the minimum recommended elements that should be present in a TMDL document.*
>
> - *Identification of Waterbody, Pollutant of Concern, Pollutant Sources and Priority Ranking.*
> - *Applicable WQS and Numeric Water Quality Target.*
> - *Loading Capacity.*
> - *Load Allocations and Waste Load Allocations.**

[1] https://www.epa.gov/tmdl/effectively-implementing-tmdls

- *Margin of Safety.*
- *Consideration of Seasonal Variation.*
- *Reasonable Assurance for PS/NPS.*
- ***Monitoring Plan to Track TMDL Effectiveness.***
- ***Implementation Plan****.*
- *Public Participation.*

In the TMDL Guidance Document "Guidelines for Reviewing TMDLs under Existing Regulations issued in 1992" [2] It is stated that:

> *"Implementation EPA policy encourages Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired by nonpoint sources. Regions may assist States/Tribes in developing implementation plans that include reasonable assurances that nonpoint source LAs established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. In addition, EPA policy recognizes that other relevant watershed management processes may be used in the TMDL process. EPA is not required to and does not approve TMDL implementation plans.*"
>
> If the EPA chooses to constructively partner and/or coordinate with the WDOE and coordinate in building a framework for implementation goals, strategies and tactics then it ensures that the PCB TMDL will have a higher likelihood of final success.

If the EPA simply produces a PCB TMDL without coordinating on and contributing to a functional implementation plan, a key opportunity to ensure success will have been missed. We encourage the EPA to begin a substantive, regular dialogue with Ecology to discuss the strategies, tactics, timelines and benchmarks that need to be taken to meet the eventual WLAs and LAs and bring the Spokane River into compliance with State WQS and the CWA.

We offer our sincere thanks for the opportunity to allow us to provide these comments to you concerning the PCB TMDL and hope they are helpful. If you have any questions, need clarification, or wish to discuss the issues covered in this letter, we invite you to contact us at your convenience. We look forward to continuing to work with you on this important project.

Kind Regards,

Jerry White, Jr.
Executive Director
Spokane Riverkeeper

[2] https://www.epa.gov/sites/default/files/2015-10/documents/2002_06_04_tmdl_guidance_final52002.pdf

Allan B. Chartrand, DABT
Toxicologist and Water Quality Expert for Sierra Club and the Spokane Riverkeeper

Trish Rolfe
Executive Director
Center for Environmental Law & Policy

Spokane River Team
Upper Columbia River Group - Sierra Club

CC via email:

- Dan Opalski, Region 10 Administrator, Opalski.dan@epa.gov
- Jennifer Wu, Region 10 Environmental Engineer, wu.jennifer@epa.gov
- Lucy Edmondson, Region 10 Washington Operations Office edmondson.lucy@epa.gov
- Vince McGowen, Water Quality Program Manager vincent.mcgowan@ecy.wa.gov
- Brooke Beeler Eastern Region Director, BBEE461@ecy.wa.gov
- Adriane Borgias Section manager Water Quality Program, Eastern Region, ABOR461@ecy.wa.gov