

Budget Request for Mission Reach Sediment/Biofilm Sampling

April 20, 2022 Draft

Background

Monitoring data indicating PCB concentration in Mission Reach biofilm and bed sediments are of interest because: 1) they can potentially identify the location where previously unidentified sources of PCBs enter the river, and 2) they represent PCB exposure to the base of the benthic food chain and can be informative in terms of describing bioaccumulation of PCBs in fish. Previous monitoring of PCBs in these media in Mission Reach, conducted by Ecology and the Task Force, has shown a large degree of spatial variability, with highly elevated concentrations intermixed with lower concentrations. The data are too patchy to provide definitive evidence of the location of unknown sources or the average PCB concentration throughout the reach.

Purpose

The purpose of this authorization is to conduct additional 2022 sediment and biofilm monitoring to address the following:

- Provide better spatial resolution regarding where unknown loads may be entering the Mission Reach: The available data indicate areas of localized contamination but are at too coarse of a spatial resolution to be useful in pinpointing the location where PCB sources are entering Mission Reach. Additional sampling at higher spatial resolution would provide better definition of where the unknown sources are entering.
- Investigate significance of metallic objects identified during object detection surveys: The 2021 object detection survey identified multiple metallic objects buried in the Mission Reach riverbed. It is currently unknown whether these objects represent previously unknown sources of PCBs (e.g., drums, transformers, other). Sediment and/or biofilm sampling immediately downstream of each location could provide strong evidence of whether those objects were a source of PCBs to the river.
- Provide a better description of sediment conditions throughout Mission Reach: The limited number of (and high variability in PCB concentration in) the available sediment PCB data makes estimation of average PCB concentrations in Mission Reach sediments highly uncertain. This uncertainty translates into uncertainty in the contribution of sediment PCB contamination to fish tissue contamination, to the extent that future studies examining the importance of sediment vs. water column sources to fish tissue concentrations are of interest.

Scope

The scope of work consists of the collection of 10 to 50 sediment and/or biofilm samples. The low end of this range would allow sampling near all objects detected by Gravity and marginally improve spatial coverage. The high end corresponds to the number of samples needed to provide sufficient spatial resolution to identify where new sources are located is select targeted areas, based on prior geostatistical analyses.

The specific number of samples from each sampling medium will be defined by the SRRTF Technical Track Work Group. The decision of whether to collect biofilm or sediment samples will be based upon

site-specific characteristics of each sampling location. Sediment sampling will be conducted following the same procedures (Gravity, 2018) used during the sediment sampling conducted by the Task Force in 2021. Biofilm sampling will be conducted in a manner consistent with that performed by Ecology (Wong and Era-Miller, 2019) in their 2018 and 2019 biofilm monitoring.

Samples will be shipped overnight to SGS AXYS and SVL laboratories for analysis of PCBs and conventional parameters, respectively. Laboratory results will be validated in accordance with the project QAPP.

The observed PCB concentrations (both total and individual homologs) will be documented in a technical report, and interpretation provided regarding what the observed data indicate regarding PCB sources to the Mission Reach. Individual congener results will be uploaded to Ecology's Environmental Information Management (EIM) database.

Deliverables and Schedule

The expected deliverables and schedule for delivery are provided in Table 1.

Table 1. Deliverables and Schedule

Deliverable	Completion Date
Draft QAPP	May 18, 2022
Final QAPP	July 22, 2022
Samples collected	August 31, 2022
Laboratory Results	October 31, 2022
Draft technical report	December 16, 2022
Final technical report	January 21, 2023
Data loaded to Ecology's EIM	February 28, 2023

Budget

The cost for conducting this work ranges from \$56,000 to \$150,000, depending upon the number of samples collected, as detailed in Table 2.

Table 2. Itemized Budget

Item	Budget	
	10 samples	50 samples
Scopes of Work	\$4000	\$5000
Draft QAPP	\$3000	\$3000
Final QAPP	\$3000	\$3000
Field labor and coordination	\$16,000	\$40,000
Laboratory analyses	\$12,000	\$60,000
Data validation	\$3000	\$9,000
Reporting	\$6000	\$12,000
Data uploading	\$4000	\$8,000
Project management	\$5000	\$10,000
Total	\$56,000	\$150,000

References

Gravity Consultants, 2018. Standard Operating Procedure (SOP) SW-19 - Surface Sediment Sampling with Grab Sampler.

Wong, S. and B. Era-Miller. 2019. Quality Assurance Project Plan: Measuring PCBs in Biofilm, Sediment, and Invertebrates in the Spokane River: Screening Study. Publication 19-03-103. Washington State Department of Ecology, Olympia.
<https://fortress.wa.gov/ecy/publications/SummaryPages/1903103.html>