

# Summary of Environmental Assessment Projects Relating to SRRTTF

FY 2014-2017

## *Projects classified as “will not do” for FY2017*

The projects below were previously submitted to EAP by ERO water quality. Prior to submission to EAP, projects are reviewed and prioritized on a statewide basis. EAP reviews the recommendations and decides whether or not to do the project, based on available resources and statewide relevance.

### FY 2017 Estimate of PCB loading in stormwater

In FY 2016 EAP performed a review of stormwater data collected by the City of Spokane. The review identifies a need for stormwater basin modeling, including a water quality component and recommends ongoing sampling the top 10 or top 30 basins. This information is an essential data gap identified by the Spokane River Regional Toxics Task Force (Task Force). The project would assist the City of Spokane in collecting this data since the City’s currently lacks monitoring and analytical staffing to conduct this level of analysis. The collection of this data will assist the Task Force in completing and implementing its Comprehensive Plan, a key component of the Task Force MOA.

This project was rated as medium priority by the water quality program. EAP has provided some technical support related to this in 2015. It is not clear if this is still an unanswered question or if more work is needed to characterize PCBs in stormwater.

### FY 2017 Sediment Sampling in the Spokane River for PCB Sources

The Spokane River Regional Toxics Task Force (SRRTTF) is tasked with identifying sources of PCBs to the Spokane River and identifying Best Management Practices (BMPs) that reduce PCB inputs to the river. PCBs in sediment could impact the water column. Two reaches of the Spokane River have the highest levels of PCBs in fish tissue, which could indicate high concentrations of PCB in sediment. This project proposes to 1) perform literature for existing studies and data, 2) plan sampling approach, and 3) collect and analyze sediments in these reaches which would help guide future source reduction activities and BMPs.

This project was rated as medium priority by the water quality program.

### FY 2017 Methodology to assess sediment loads

Calculating sediment load is labor intensive. The sampling is time consuming, expensive, and high flows can prevent data collection due to safety concerns. This proposal is for developing an easier and less expensive method to assess sediment loading that can be used to track loads over time. Such a method would provide information about the impact TMDL implementation activities are or are not having, and could be a useful effectiveness monitoring tool. Initial thoughts about how to complete this work include installing a meter in existing USGS gage houses. We envision the method being used to establish a trend analysis. This methodology would be useful in the Hangman Creek watershed because there is existing data from a sediment discharge study from 1998-2001, and in 2009 Ecology completed a turbidity TMDL. The TMDL relied on statistical tests, multiple regression analyses, and the WARMF model to set the TSS allocations. Since then, numerous riparian restoration projects and many acres of cropland have been converted from conventional tillage to direct seed. It would be good to have an idea

of the sediment loading now so we know what progress has been made. A methodology could be used for toxics TMDLs, such as the Walla Walla and Yakima toxics TMDLs which have surrogate allocations for turbidity or TSS.

We prefer to have a method established by the end of FY 2017 so that a study can be initiated the next fiscal year. Determining a methodology starting at the beginning of FY2017 (July-December 2016) would prepare EAP for TMDL data collection in Hangman Creek starting the spring of 2017.

(If funded, sediment samples can be preserved for future analysis of PCB, if needed)

### FY 2017 Spokane River at Nine Mile Groundwater Study

This proposal is to study groundwater along the Spokane River in the vicinity of Nine Mile Dam and downstream to the confluence with the Little Spokane River. The geology of the area, the terminus of the Spokane Valley-Rathdrum Prairie Aquifer, and the presence of the Nine Mile Dam create a complex situation for understanding groundwater movement in the area. This complexity came to light while trying to calculate the water balance for the model used in the Spokane River and Lake Spokane Dissolved Oxygen TMDL. The water balance indicates there is a good deal of groundwater coming into the system, but we are uncertain where the groundwater is coming from, and of what quality it is. The goal of the study would be to gather, review, and interpret existing information from the various studies and sources that exist. Additional work such as installing piezometers and nutrient sampling may be necessary if the information gathering effort is unable to produce information that increases our understanding. The need to install wells and take groundwater samples is a possibility because it appears that wells have not been installed on the west side of the river within Riverside State Park (based on the Spokane Valley-Rathdrum Prairie Aquifer Atlas 2009 update). The work should be completed before 2019.

(Conditional upon completion of other studies in Coulee Creek, which are underway ... see description below.)

### FY 2016 PCB in Products

The Spokane River Regional Toxics Task Force (SRRTTF) is tasked with identifying sources of PCBs to the Spokane River and developing Best Management Practices (BMPs) to reduce PCB inputs. A first step in BMP development is to gain a better understanding about consumer products used in the Spokane River watershed and the potential pathways for those products to reach the river. Recent testing by the City of Spokane and Washington State Department of Ecology has identified products of concern. This project would address additional testing that may be needed once a source has been identified. It would also provide the information for Task Force members, State and local agencies to develop appropriate Best Management Practices and implement existing purchasing regulations. Of immediate concern are hydroseed, which has been found to contain PCB up to 2.5 ppm and is routinely applied for stormwater sediment control; formulations of 2,4-D an approved aquatic herbicide; road paints that contain high levels of PCB, and caulks (bridges and buildings).

Conditional status, similar work is being done by Hazardous Wastes and Toxics Reduction.

### *Projects Accepted by EAP and Underway or Completed*

The following list of projects were submitted by ERO Water Quality and have been accepted by EAP. The final projects may have been modified from the original proposals to meet agency needs. Projects were conducted in accordance with EAP QAPPs and project plans.

#### *FY 2016 Little Spokane Case Study*

The SRRTTF is tasked with identifying sources of PCBs and identify the Best Management Practices needed to reduce PCB inputs to the Spokane River. A 2006 report raised concerns about the presence of PCB in fish food, its impact on PCB levels in fish tissue, hatchery water discharge quality, and PCB loads in the Spokane River. A case study of the Little Spokane hatchery is proposed which would address several of the data gaps that exist in the understanding of PCBs in the Spokane River. The proposed study would follow the life cycle of a “batch” of hatchery fish, collecting and measuring levels of PCB congeners in the hatchery source water, fish food, hatchery discharge effluent, and fish tissue samples. This case study would provide answer questions about the impact of hatchery discharge, and provide insight into the relationship between PCB uptake by fish from food and the water column. This study can also shed light on the question of stocked fish in the Spokane River system from other hatcheries by summarizing data regarding where stocked fish are being introduced to the system, the hatchery source of the fish and the potential PCB loading to the system due to stocking.

#### *FY 2016 Atmospheric PCB Deposition in the Spokane River Watershed*

This project proposes to use an existing air monitor network to evaluate atmospheric PCB deposition in the Spokane River Watershed. Sampling protocols would be developed that would provide the best data. This could include wet/dry deposition; gaseous; and/or active or passive monitoring. Important resources and information are available for this project including the FY 2015 Statewide Atmospheric Deposition Review; others Ecology studies such as the Duwamish; the Rutgers University study in Camden, New Jersey; the Michigan PCB TMDL which has a WLA for atmospheric PCB; and local expertise from the Spokane Regional Clean Air Agency and Washington State University. The Spokane Regional Clean Air Agency (SRCAA) operates a series of monitoring sites in rural, upwind, and urban locations and is interested in the project.

#### *FY2016 Groundwater Sampling at Coulee Creek*

Two years of data from two ambient stations make up the information we know about Coulee and Deep creeks; the remaining information is based on assumptions. Deep Creek is a tributary to Coulee Creek, which is a tributary to the Spokane River. Coulee Creek enters the Spokane River downstream of the ambient station at Riverside State Park (#54A120) and upstream of the Nine Mile Dam station (#54A090). For the Spokane River DO TMDL, Ecology assumed that the water quality of Coulee and Deep creeks are similar to Hangman Creek. However, the ambient data indicates the assumptions we used in the TMDL are incorrect. Another confounding factor is that the creek dries up about two miles upstream from the confluence with the Spokane River. The creek only has surface flows to the river during rain-on-frozen ground conditions. To understand the nutrient pollution in the Coulee Creek watershed and better guide implementation activities, ERO-WQ proposes a project to sample groundwater for nutrients at the mouth of Coulee Creek. The project would consist of a network of groundwater wells near the mouth of Coulee Creek to estimate flow and monitor for the suite of nutrients. This groundwater sampling complements our proposal for additional monitoring upstream in the watershed for development of an STI.

### [FY2016 Performance Evaluation of High Volume Water Sampling Systems](#)

This project builds on work that being undertaken by the SRRTTF and has statewide applicability. High volume water sampling methods, or surrogate metrics like particulate measurements, are needed in water bodies that have low concentrations of PCB. This is particularly true for the Spokane River during high water events where the PCB concentrations are so low that they can't be determined using grab sampling methods. There are a number of high volume sampling approaches that could be used (SPMDs, CLAMs, Infiltrax System, PV2900, manufacture custom resin columns or other passive, samplers). This project would evaluate the effectiveness of these approaches for low-level PCB analysis and also address specific issues associated with the CLAM: flow measurement and analytical bias.

### [FY 2016 Spokane River Technical Support for SRRTTF](#)

Provide sampling and analysis support to the SRRTTF in order to supplement studies needed to fill data gaps and implement the Technical Work Plan. The details of the FY 2016 projects to be determined at the Technical Workshop in January 2015. Results of the SRRTTF 2014 sampling events were presented and are being discussed. A set of recommendations for implementing the next phase of the SRRTTF Technical Work Plan is being considered. Scope of work and laboratory budget to be determined during February - March 2015.

### [FY 2016 Load toxics data into EIM for the Spokane River Urban Waters project.](#)

Load toxics data into EIM for the Spokane River Urban Waters project.

### [FY 2015 Sampling for Spokane Synoptic Studies](#)

The Spokane River Regional Toxics Task Force (SRRTTF) is planning synoptic studies to measure PCB concentrations in the Spokane River, beginning in July, 2014. The purpose of this project is to assist the SRRTTF with water quality sample collection during these studies. The Sampling Analysis Plan and Quality Assurance Project Plan is being developed by the Technical Consultant. Sampling activities will need to be in conformance with these plans. More information about the scope and nature of this project will be available in mid-February. This project consists of assistance with sample collection. Data will be generated by the SRRTTF. No lab budget is associated with this activity. This project is in coordination with SRRTTF's technical consultant work plan and answers an identified data gap (the influence of low flow, high flow, and groundwater on PCB loading) and needed to characterize PCB loading to the Spokane River. This will help in identification of sources, source reduction activities, and applicable Best Management Practices.

### [FY 2015 Spokane River WQ Long Term Trends](#)

Continuation of the long-term Spokane River Water Quality monitoring network for the purpose of toxics trends monitoring in the Spokane River Main Stem. This project aligns the existing program with the monitoring and assessment that is being done by the Spokane River Regional Toxics Task Force (SRRTTF). Prepare long term trends monitoring plan. Obtain baseline information at reference points. Prepare reports. Consider seasonable variability in the Spokane Headwaters PCB Loading as part of the baseline information. The current assessment report by Ecology for the Spokane River contains Semi Permeable Membrane Device (SPMD) data at specific locations at varying times of the study year. If this concentration data is paired with the actual flow data for the SPMD deployment period a very high percentage of the mass loading of PCB occurred during the spring snowmelt runoff period. In order to

gain a better understanding of season variability in PCB river levels, weekly grab samples could be collected at the Lake Coeur d'Alene discharge gauging station on a weekly basis. These weekly samples could be composited into a monthly average PCB river concentration on a flow proportional basis using the gauging station data on flow.

#### [FY 2015 Wet and Dry Deposition of PCB in Spokane River Watershed](#)

The collection of wet and dry deposition data for PCB would provide information on PCB levels that would actually be reaching runoff surfaces. If coordinated with wet weather river sampling, this data could provide some perspective on the relative amount of PCB in runoff that may originate from deposition as opposed to existing land use sources. In addition, if multiple locations were monitored for wet and dry deposition, a better understanding of local source contribution could be gained. Sampling and analysis protocols will need to be developed, implemented. Laboratory budget is needed. A good understanding of the dynamics of PCB in the atmosphere and its relationship with stormwater/surface water is needed to assess and do a mass balance of PCB loading to the river. The project assists in filling an important data gap, as identified by the SRRTTF Technical Consultant. Funding is needed for coordination, sampling methodology, QAPP development and analysis.

(see FY 2016 Atmospheric PCB Deposition in the Spokane River Watershed.)

#### [FY 2015 Atmospheric Deposition of PCB](#)

Air deposition of toxic chemicals (PCB, PBDE, PCDD/Fs, and mercury) can contribute to loading in the Spokane River. Sources of these chemicals can be local, regional, or global and transported in the atmosphere before deposition. There is limited data on this for Washington State and none for Eastern Washington. This project would coordinate with other Ecology departments and the local air pollution control district to collect data about PCB deposition. This project would use existing air monitoring locations to collect ambient air samples. An initial assessment of PCB quantities and types (congeners) of PCB in the air would be made using filters that have already been collected by the local air district. This information would be used to characterize PCB being deposited in the watershed, assist with source identification and the design of source reduction activities in the watershed. Further studies may be indicated to characterize the PCBs. The information from this project will also assist in with the related project, "FY 2015 Wet and Dry Deposition of PCB in the Spokane River Watershed." This project would be performed in cooperation with the Spokane Regional Clean Air Agency (SCRAA), using existing air quality monitoring sites and archived filter media. Primary data collection would involve laboratory analysis of this media. Funding is needed for coordination with the SCRAA, QAPP development and analysis of filter media.

(see FY 2016 Atmospheric PCB Deposition in the Spokane River Watershed.)

#### [FY 2015 Verification of PCB listing on Little Spokane River](#)

This project is the result of questions posed by the Spokane River Regional Toxics Task Force (SRRTTF) regarding whether the Little Spokane hatchery has an impact on PCB concentrations in fish tissue and the river. The Little Spokane River is listed for PCB due to a fish tissue sample below the hatchery. The studies that lead to the listing are more than 18 years old. This study should be four-part: 1) verify whether current listing still shows impairment due to PCB concentrations; 2) examine the extent of impairment upstream (upstream of fish hatchery and above and below historical Kaiser Mead facility); 3) conduct a source assessment and verify via appropriate sampling (fish food, painted areas, caulk, and

influent) from the hatchery whether they are sources of concern; 4) determine hatchery fish PCB levels to determine if stocking Lake Spokane could contribute to increased PCB concentrations. PCBs have been found in fish hatcheries in Washington State. Fish food has been identified as a possible source. There is a question about the impact of fish stocking on PCB levels in the Spokane River. Future uses of the hatchery include stocking Lake Spokane. New data needs to be collected, which will incur laboratory costs. Funding is needed for sampling and analysis of hatchery and in-stream native fish. Water quality column concentrations should also be measured. Method 1668 should be used.

#### [FY 2015 Assessment of PCB Concentrations in Spokane Valley Groundwater](#)

The Spokane River Regional Toxics Task Force (SRRTTF) is assessing the loading of PCBs in the Spokane River. More than half of the PCB loading to the river is unaccounted for. A better understanding of the affect of groundwater on PCB loadings to the river is needed. Monitoring wells are already in place in the Spokane aquifer that could be used to sample and evaluate levels of PCB in groundwater. This project would consist of two parts: I) Planning phase (FY 2015): Identify and evaluate existing data and data resources; coordinate with the recommendations from the SRRTTF Technical Consultant regarding PCB model inputs and data availability from other monitoring efforts (i.e., USGS NAWQA) and data gaps/needs; define the scope and SOP's (i.e., coordinate with the SRRTTF on methodologies); so data can be used to identify/estimate PCB inputs and loads to the Spokane River from ground water. II) (FY 2016) Implementation phase: Coordinate with the recommendations of the SRRTTF Technical consultant regarding data gaps and modeling of the PCB inputs to the river. Focus initial efforts on monitoring/sampling locations that are the most relevant for estimating PCB loading (i.e., gaining reaches).

(Literature search and Technical Memo completed).

#### [FY2014 Aerial Deposition of PCB](#)

This project is a follow up to the 2011 literature review about air deposition of toxic chemicals (PCB, PBDE, PCDD/Fs, and mercury) and the contribution to their loading in the Spokane River. Sources of these chemicals can be local, regional, or global and transported in the atmosphere before deposition. There is limited data on this for Washington State and none for Eastern Washington. This project would coordinate with other Ecology departments and the local air pollution control district to collect data about PCB deposition. Existing air monitoring locations can be used to collect ambient air samples. 1) A planning phase consisting of an initial assessment of PCB quantities and types (congeners) of PCB in the air can be made using filters that are already being collected by the local air district. This information could be used to characterize PCB being deposited in the watershed and/or identify if alternative sampling methods are warranted. 2) If needed, other sampling protocols may be warranted (such as collecting air samples on XAD resin filled tubes) depending on the results of the initial assessment. The ultimate goal is to obtain a congener analysis for atmospherically deposited PCB, which would assist in source identification. This information would be used to identify the specific actions needed to significantly reduce these toxic materials from the watershed.

(see FY 2016 Atmospheric PCB Deposition in the Spokane River Watershed.)

#### [FY 2014 Assessment of PCB Concentrations in Spokane Valley Groundwater](#)

The Spokane River Regional Toxics Task Force is in the process of assessing the contributions of PCB to the river load. More than half of the PCB loading to the river is unaccounted for. A better understanding

of the affect of groundwater on PCB loadings to the river is needed. Monitoring wells are already in place in the Spokane aquifer that could be used to sample and evaluate levels of PCB in groundwater. This project would consist of two parts: I) Planning phase (year 1): Identify and evaluate existing data and data resources; coordinate with the recommendations from the SRRTTF Technical Consultant regarding PCB model inputs and data availability from other monitoring efforts (i.e., USGS NAWQA) and data gaps/needs; define the scope and SOP's (i.e., coordinate with the SRRTTF on methodologies); so data can be used to identify/estimate PCB inputs and loads to the Spokane River from ground water. II) Implementation phase: This phase would be best completed beginning year two in order to coordinate with the recommendations of the SRRTTF Technical consultant regarding data gaps and modeling of the PCB inputs to the river. Focus initial efforts on monitoring/sampling locations that are the most relevant for estimating PCB loading (i.e., gaining reaches). Funding will be needed for project design, sampling, chemical analysis, and characterization of the PCB in the groundwater.

(Literature search and Technical Memo completed).

#### [FY 2014 Sampling Lake Spokane Carp for Toxics](#)

Avista has proposed a carp reduction plan for phosphorus removal in its "Lake Spokane Water Quality Implementation Plan." Carp potentially contain PCB and other toxic substances. Removal of carp can potentially remove a source of PCB and other toxic substances from the environment. Quantifying the amount of PCB and other toxic substances in carp would benefit the goal of the Spokane River Regional Toxics Task Force (SRRTTF) by establishing a measure of progress. It would also provide information to the public and health department regarding the concentrations of PCB in fish. The specific toxics of interest include: PCB, dioxin, TCDDs, PBDE, Arsenic, Cadmium, Lead, and Zinc. This request is for analysis for these constituents should be coordinated with the "Carp Population Reduction Study Plan," scheduled to take place in 2014-2015 as well as Avista's culling and removal activities in order to ensure that samples are frozen for analysis.