Appendix B: Recent PCB Monitoring Data

Technical Memorandum

Prepared For: US EPA Region 10 Spokane and Little Spokane Rivers Polychlorinated Biphenyls Total Maximum Daily Loads TMDL Team

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PCB Monitoring Data Query

The EPA focused environmental monitoring data analysis for this TMDL project on samples collected after 2010. All PCB monitoring data considered were accessed via Ecology's Environmental Information Management (EIM) database (https://ecology.wa.gov/Research-Data/Data-resources/Environmental-Information-Management-database). The EIM database is the official publicly accessible repository for environmental monitoring data collected by Ecology and their partners.

To ensure all relevant PCB environmental monitoring data was considered, a broad EIM database query was executed using the following parameters. The geographic search area was set to include all studies with samples collected from Ecology Water Resource Inventory Areas (WRIAs) 54: Lower Spokane, 55: Little Spokane, 56: Hangman, and 57: Middle Spokane. After defining the geographic scope of interest, the monitoring period of interest was constrained to only those samples collected between January 1, 2010 and March 1, 2024. Sample results that satisfied the aforementioned spatial and temporal constraints and also included a result parameter in the polychlorinated biphenyls (PCBs) parameter group were then downloaded, yielding 164,125 unique records for consideration.

Current Surface Water PCB Conditions

Of the 164,125 records returned from the above EIM query, 50,876 had "Sample_Source" values coded as "Fresh/Surface Water". Of these surface water PCB samples, 34,062 records included blank data values necessary for blank censoring. The EPA then applied the following guidelines to further constrain the surface water monitoring data used to characterize current PCB conditions in the Spokane and Little Spokane Rivers:

- Sampled and analyzed using approved QAPPs
- Analyzed using congener-specific laboratory method 1668C (see Appendix D: Water Quality Monitoring Analytical PCB Methods for additional information)
- Included associated sample blank data in Ecology's Environmental Information Management database
- Verified and assessed (QA/QC) for usability

Using this subset of PCB monitoring data (31,931 records), environmental monitoring samples were blank censored using a 5x threshold. The initial step in blank censoring involved replacing any sample and blank analyte values reported as non-detect with zero for subsequent evaluation steps. After replacing non-detect values with zeros, environmental monitoring sample analyte values were compared to associated field and method blank sample analyte values. Where environmental monitoring sample analyte values were less than 5x the associated blank sample values, those values were also replaced with zeros for subsequent evaluation steps. Once blank censoring was completed on a congener-by-conger basis, total PCB concentrations were summed to provide a single blank censored value for each sample. In all, PCB monitoring data from seven separate studies (Table B-1), collected at 28 unique locations (Figure B-1), representing 199 individual surface water PCB samples (Table B-2) satisfy all constraints necessary to characterize current Spokane and Little Spokane River PCB concentrations.

Table B-1: Considering Spokane River basin surface water PCB monitoring data collected 2010-2024, samples from seven separate studies were available to characterize current PCB conditions.

Study Name	Study ID	Study Time Period	Study Purpose
Expanded Synoptic Survey and Mass Balance Assessment of PCBs in the Spokane River	SRRTTF-2022	08/29/2022 - 09/07/2022	The study had three objectives: 1) Support a mass balance assessment to identify potential unmonitored loads of PCBs to the river, 2) measure PCB concentration in stormwater catch basin solids, and 3) measure the PCB concentration of a subsurface drainage pipe discharging to the river.
Kaiser Trentwood Remedial Investigation, Spokane, WA	FS53481373	01/23/2006 - 05/23/2022	Remedial Investigation to supplement existing knowledge about environmental conditions at the Kaiser Trentwood facility located in Spokane, Washington. The RI was conducted pursuant to the requirements outlined in the Agreed Order No. DE 2692 with the Washington State Department of Ecology, dated August 16, 2005.
Monitoring to Assist in Defining the Sources of PCB Contamination in the Spokane River Mission Reach	SRRTTF-MR2021	09/08/2021 - 09/09/2021	This project consisted of conducting monitoring of water and bed sediment to help better define the source(s) of observed PCB contamination in the Mission Reach of the Spokane River.
Spokane River Regional Toxics Task Force 2014 Synoptic Dry Weather Survey and Confidence Testing for PCBs in Surface Water	SRRTTF-2014	05/13/2014 - 08/24/2014	2014 Synoptic Survey to Identify Potential Unmonitored Dry Weather Sources of PCBs to the Spokane River. Includes data collected in May 2014 as the basis for confidence testing of PCB concentrations informing the Synoptic Survey.

Study Name	Study ID	Study Time Period	Study Purpose
Spokane River Regional Toxics Task Force 2015 Synoptic Dry Weather Survey	SRRTTF-2015	08/18/2015 - 08/22/2015	2015 Synoptic Survey: Continued Identification of Potential Unmonitored Dry Weather Sources of PCBs to the Spokane River
Spokane River Regional Toxics Task Force 2016 Groundwater Sampling for PCBs in the Spokane Valley-Rathdrum Prairie Aquifer	SRRTTF-GW2016	08/24/2015 - 05/17/2016	2016 Groundwater Sampling is to provide a more complete understanding of the relationship of PCBs in groundwater and impacts to the Spokane River.
Spokane River Regional Toxics Task Force 2016 Monthly Monitoring	SRRTTF-2016	03/24/2016 - 12/13/2016	Seasonal variability of PCB concentrations in Spokane River and Tributaries

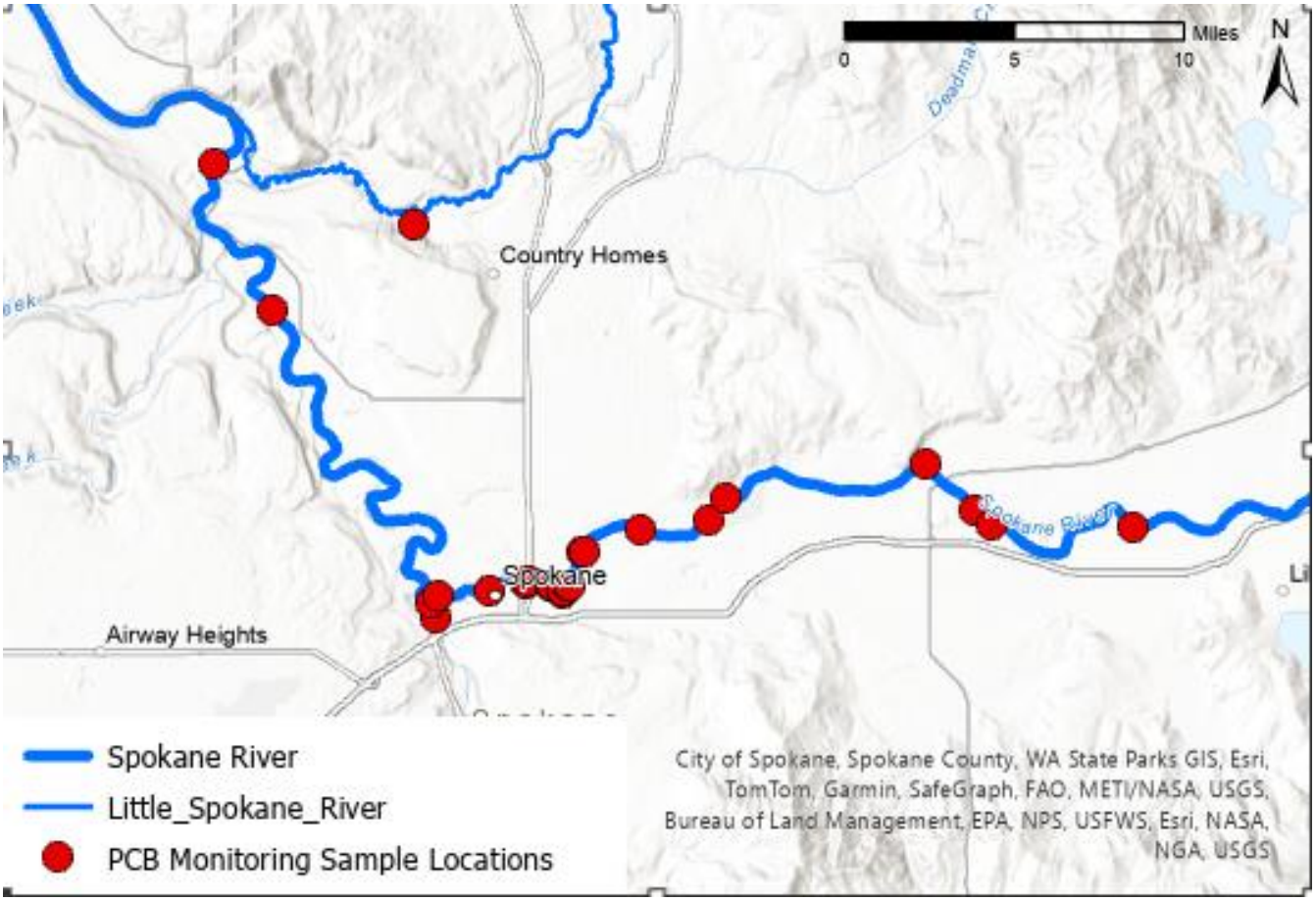

Figure B-1: Monitoring locations available to characterize current PCB conditions.

Table B-2: All surface water PCB samples used to estimate current PCB conditions in the Spokane River basin for this TMDL project. Only data collected after 2010 and hosted in Ecology's EIM Database as of April 1, 2024 were considered for further analysis, including blank censoring and spatial aggregation and relation to specific PCB-impaired AUs.

Waterbody Sampled	EIM Sample ID	Sample Latitude (NAD83)	Sample Longitude (NAD83)	Spokane River Mile	5x Blank Corrected total PCB concentration (pg/L)
Latah (Hangman) Creek	HC1-082922	47.653	-117.450	NA	0.00
Latah (Hangman) Creek	HC1-083122	47.653	-117.450	NA	1.18
Latah (Hangman) Creek	HC1-090222	47.653	-117.450	NA	0.00
Latah (Hangman) Creek	L21874-15	47.653	-117.450	NA	24.36
Latah (Hangman) Creek	L21877-79	47.653	-117.450	NA	5.57
Latah (Hangman) Creek	L21902-10	47.653	-117.450	NA	0.00
Latah (Hangman) Creek	L21902-17	47.653	-117.450	NA	0.00
Latah (Hangman) Creek	L21902-18	47.653	-117.450	NA	0.00
Latah (Hangman) Creek	L21910-4	47.653	-117.450	NA	16.47
Latah (Hangman) Creek	L21917-8	47.653	-117.450	NA	2,434.25
Latah (Hangman) Creek	L21932-12	47.653	-117.450	NA	202.29
Latah (Hangman) Creek	L21932-19	47.653	-117.450	NA	1.26

Waterbody Sampled	EIM Sample ID	Sample Latitude (NAD83)	Sample Longitude (NAD83)	Spokane River Mile	5x Blank Corrected total PCB concentration (pg/L)
Latah (Hangman) Creek	L24941-6	47.653	-117.450	NA	0.00
Latah (Hangman) Creek	L25116-5	47.653	-117.450	NA	0.00
Latah (Hangman) Creek	L25153-8	47.653	-117.450	NA	0.00
Latah (Hangman) Creek	L25297-3	47.653	-117.450	NA	0.00
Latah (Hangman) Creek	L26175-8	47.653	-117.450	NA	1,015.07
Latah (Hangman) Creek	L26749-5	47.653	-117.450	NA	0.00
Latah (Hangman) Creek	SWREP3	47.653	-117.450	NA	0.00
Little Spokane River (GW-dominated tributary)	L24686-8	47.765	-117.459	NA	5.33
Little Spokane River (GW-dominated tributary)	L24686-9	47.765	-117.459	NA	10.57
Little Spokane River (GW-dominated tributary)	L25130-10	47.765	-117.459	NA	1.22
Spokane River	L21874-22	47.678	-117.153	90.3	0.00
Spokane River	L21877-93 i	47.678	-117.153	90.3	0.00
Spokane River	L21902-23	47.678	-117.153	90.3	0.00

Waterbody Sampled	EIM Sample ID	Sample Latitude (NAD83)	Sample Longitude (NAD83)	Spokane River Mile	5x Blank Corrected total PCB concentration (pg/L)
Spokane River	L21910-15	47.678	-117.153	90.3	0.00
Spokane River	L21932-5	47.678	-117.153	90.3	0.00
Spokane River	L23783-19	47.678	-117.153	90.3	0.00
Spokane River	L23783-36	47.678	-117.153	90.3	0.00
Spokane River	L23783-37	47.678	-117.153	90.3	0.00
Spokane River	L23784-42	47.678	-117.153	90.3	0.00
Spokane River	L24358-5	47.678	-117.153	90.3	0.00
Spokane River	L24941-3	47.678	-117.153	90.3	0.00
Spokane River	L24941-4	47.678	-117.153	90.3	0.00
Spokane River	L21932-16	47.678	-117.153	90.3	1.07
Spokane River	L21932-6	47.678	-117.153	90.3	1.23
Spokane River	L21874-9	47.678	-117.153	90.3	1.77
Spokane River	L23783-21	47.678	-117.153	90.3	11.44
Spokane River	L21902-6	47.678	-117.153	90.3	31.29
Spokane River	L23783-34	47.678	-117.153	90.3	55.61
Spokane River	L21531-1	47.679	-117.214	86.6	0.00
Spokane River	L23783-18	47.679	-117.214	86.6	0.00
Spokane River	L23783-22	47.679	-117.214	86.6	0.00
Spokane River	L23783-33	47.679	-117.214	86.6	0.00
Spokane River	L23783-35	47.679	-117.214	86.6	0.00
Spokane River	L23783-46	47.679	-117.214	86.6	0.00

Waterbody Sampled	EIM Sample ID	Sample Latitude (NAD83)	Sample Longitude (NAD83)	Spokane River Mile	5x Blank Corrected total PCB concentration (pg/L)
Spokane River	L23784-41	47.679	-117.214	86.6	0.00
Spokane River	L21531-2	47.679	-117.214	86.6	3.75
Spokane River	L21466-5	47.679	-117.214	86.6	15.90
Spokane River	L21456-5	47.679	-117.214	86.6	16.82
Spokane River	L21466-4	47.679	-117.214	86.6	47.75
Spokane River	L21466-11	47.679	-117.214	86.6	78.22
Spokane River	L21476-1	47.679	-117.214	86.6	86.32
Spokane River	L21466-15	47.679	-117.214	86.6	103.26
Spokane River	L21466-16	47.679	-117.214	86.6	133.49
Spokane River	L21466-12	47.679	-117.214	86.6	151.44
Spokane River	L24358-6	47.679	-117.214	86.6	164.4
Spokane River	L21476-5	47.679	-117.214	86.6	195.57
Spokane River	RIVER AT PUMPHOUSE_102020211110	47.683	-117.221	86.2	0.00
Spokane River	RIVER@PUMPHOUSE-042922	47.683	-117.221	86.2	0.00
Spokane River	L23784-39	47.697	-117.242	84.8	0.00
Spokane River	L25116-3	47.697	-117.242	84.8	0.00
Spokane River	L25153-3	47.697	-117.242	84.8	0.00
Spokane River	SR7-082922	47.697	-117.242	84.8	0.00
Spokane River	L26175-3	47.697	-117.242	84.8	8.12
Spokane River	L25297-7	47.697	-117.242	84.8	21.04
Spokane River	SR7-090122	47.697	-117.242	84.8	24.78

Waterbody Sampled	EIM Sample ID	Sample Latitude (NAD83)	Sample Longitude (NAD83)	Spokane River Mile	5x Blank Corrected total PCB concentration (pg/L)
Spokane River	SR7-083022	47.697	-117.242	84.8	25.69
Spokane River	L21932-7	47.697	-117.242	84.8	27.07
Spokane River	L23783-25	47.697	-117.242	84.8	30.50
Spokane River	SR7-090222	47.697	-117.242	84.8	31.54
Spokane River	SR7-083122	47.697	-117.242	84.8	33.67
Spokane River	L26749-2	47.697	-117.242	84.8	38.63
Spokane River	L21932-17	47.697	-117.242	84.8	52.27
Spokane River	L23783-20	47.697	-117.242	84.8	66.07
Spokane River	L23783-32	47.697	-117.242	84.8	68.22
Spokane River	L21877-91 i	47.697	-117.242	84.8	87.54
Spokane River	L21902-13	47.697	-117.242	84.8	94.76
Spokane River	L23783-17	47.697	-117.242	84.8	106.23
Spokane River	L23783-41	47.697	-117.242	84.8	109.41
Spokane River	L21910-16	47.697	-117.242	84.8	126.46
Spokane River	L21902-14	47.697	-117.242	84.8	126.86
Spokane River	L21910-17	47.697	-117.242	84.8	136.90
Spokane River	L21874-10	47.697	-117.242	84.8	146.13
Spokane River	L24358-3	47.697	-117.242	84.8	171.4
Spokane River	L21902-7	47.697	-117.242	84.8	388.69
Spokane River	SR5B-082922	47.687	-117.327	80.3	18.64
Spokane River	SR5B-090222	47.687	-117.327	80.3	22.73

Waterbody Sampled	EIM Sample ID	Sample Latitude (NAD83)	Sample Longitude (NAD83)	Spokane River Mile	5x Blank Corrected total PCB concentration (pg/L)
Spokane River	SR5B-083022	47.687	-117.327	80.3	26.13
Spokane River	SR5B-083122	47.687	-117.327	80.3	34.54
Spokane River	SR5B-090122	47.687	-117.327	80.3	36.47
Spokane River	SR5A-090222	47.681	-117.334	79.8	1.20
Spokane River	SR5A-090122	47.681	-117.334	79.8	3.97
Spokane River	SR5A-082922	47.681	-117.334	79.8	7.38
Spokane River	SR5A-083022	47.681	-117.334	79.8	7.96
Spokane River	SWREP2	47.681	-117.334	79.8	16.54
Spokane River	SR5A-083122	47.681	-117.334	79.8	53.41
Spokane River	L25153-4	47.678	-117.363	78.3	0.00
Spokane River	L25153-6	47.678	-117.363	78.3	0.00
Spokane River	SR4-090222	47.678	-117.363	78.3	1.11
Spokane River	SR4-090122	47.678	-117.363	78.3	1.93
Spokane River	L26749-3	47.678	-117.363	78.3	2.50
Spokane River	SR4-082922	47.678	-117.363	78.3	6.14
Spokane River	L25297-6	47.678	-117.363	78.3	6.57
Spokane River	L21932-18	47.678	-117.363	78.3	6.98
Spokane River	SR4-083122	47.678	-117.363	78.3	9.31
Spokane River	L21932-8	47.678	-117.363	78.3	11.67
Spokane River	L23784-36	47.678	-117.363	78.3	12.56
Spokane River	L23783-28	47.678	-117.363	78.3	14.45

Waterbody Sampled	EIM Sample ID	Sample Latitude (NAD83)	Sample Longitude (NAD83)	Spokane River Mile	5x Blank Corrected total PCB concentration (pg/L)
Spokane River	L24230-1	47.678	-117.363	78.3	15.16
Spokane River	L25116-4	47.678	-117.363	78.3	18.31
Spokane River	L24941-5	47.678	-117.363	78.3	21.38
Spokane River	L23783-31	47.678	-117.363	78.3	26.37
Spokane River	L21902-15	47.678	-117.363	78.3	59.43
Spokane River	L21902-24	47.678	-117.363	78.3	65.60
Spokane River	L21877-88	47.678	-117.363	78.3	68.07
Spokane River	L21902-8	47.678	-117.363	78.3	77.43
Spokane River	L26175-4	47.678	-117.363	78.3	82.17
Spokane River	L24358-10	47.678	-117.363	78.3	84.51
Spokane River	L21902-12	47.678	-117.363	78.3	115.28
Spokane River	L24358-4	47.678	-117.363	78.3	121.46
Spokane River	L21874-8	47.678	-117.363	78.3	142.84
Spokane River	L21910-18	47.678	-117.363	78.3	159.67
Spokane River	SR4-083022	47.678	-117.363	78.3	386.81
Spokane River	SR-7b	47.672	-117.388	76.9	98.03
Spokane River	SR-7a	47.672	-117.388	76.9	233.09
Spokane River	SR-7c	47.672	-117.387	76.9	547.11
Spokane River	SR-6c	47.662	-117.393	76.2	93.62
Spokane River	SR-6b	47.662	-117.393	76.2	120.62
Spokane River	SR-6a	47.662	-117.394	76.2	137.98

Waterbody Sampled	EIM Sample ID	Sample Latitude (NAD83)	Sample Longitude (NAD83)	Spokane River Mile	5x Blank Corrected total PCB concentration (pg/L)
Spokane River	SR-5a	47.660	-117.396	76.0	89.98
Spokane River	SR-5b	47.660	-117.396	76.0	98.80
Spokane River	SR-5c	47.660	-117.396	76.0	168.90
Spokane River	SR-4a	47.662	-117.401	75.7	78.09
Spokane River	SR-4b	47.662	-117.401	75.7	80.51
Spokane River	SR-4c	47.662	-117.402	75.7	143.03
Spokane River	SR3A-090222	47.663	-117.411	75.0	1.22
Spokane River	SR3A-083122	47.663	-117.411	75.0	38.96
Spokane River	SR3A-083022	47.663	-117.411	75.0	41.14
Spokane River	SR3A-082922	47.663	-117.411	75.0	65.81
Spokane River	SR3A-090122	47.663	-117.411	75.0	79.64
Spokane River	SWREP1	47.663	-117.411	75.0	143.26
Spokane River	SR-3	47.663	-117.411	75.0	257.67
Spokane River	SR-2	47.660	-117.427	74.2	94.8
Spokane River	L25153-7	47.659	-117.450	73.1	0.00
Spokane River	L26471-2 i	47.659	-117.450	73.1	0.00
Spokane River	L26749-6	47.659	-117.450	73.1	0.00
Spokane River	SR3-090222	47.659	-117.450	73.1	1.22
Spokane River	L23784-35	47.659	-117.450	73.1	2.91
Spokane River	L24941-7	47.659	-117.450	73.1	3.00
Spokane River	L25297-5	47.659	-117.450	73.1	3.37

Waterbody Sampled	EIM Sample ID	Sample Latitude (NAD83)	Sample Longitude (NAD83)	Spokane River Mile	5x Blank Corrected total PCB concentration (pg/L)
Spokane River	L25297-4	47.659	-117.450	73.1	3.49
Spokane River	L25116-6	47.659	-117.450	73.1	11.60
Spokane River	SR3-082922	47.659	-117.450	73.1	11.92
Spokane River	L21932-9	47.659	-117.450	73.1	12.88
Spokane River	SR3-090122	47.659	-117.450	73.1	14.61
Spokane River	SR3-083022	47.659	-117.450	73.1	21.03
Spokane River	SR3-083122	47.659	-117.450	73.1	23.83
Spokane River	L23783-30	47.659	-117.450	73.1	37.02
Spokane River	L23783-29	47.659	-117.450	73.1	38.79
Spokane River	L23783-45	47.659	-117.450	73.1	60.90
Spokane River	L24358-9	47.659	-117.450	73.1	78.91
Spokane River	L21877-87	47.659	-117.450	73.1	85.48
Spokane River	L21902-11	47.659	-117.450	73.1	93.11
Spokane River	L21902-19	47.659	-117.450	73.1	94.38
Spokane River	L21917-9	47.659	-117.450	73.1	144.43
Spokane River	L21874-17	47.659	-117.450	73.1	150.55
Spokane River	L24358-8	47.659	-117.450	73.1	154.08
Spokane River	L26175-7	47.659	-117.450	73.1	167.07
Spokane River	L21910-5	47.659	-117.450	73.1	171.87
Spokane River	L21902-20	47.659	-117.450	73.1	295.72
Spokane River	L21932-13	47.659	-117.450	73.1	304.03

Waterbody Sampled	EIM Sample ID	Sample Latitude (NAD83)	Sample Longitude (NAD83)	Spokane River Mile	5x Blank Corrected total PCB concentration (pg/L)
Spokane River	SR-1	47.657	-117.452	72.9	212.70
Spokane River	SR1A-090222	47.740	-117.520	62.1	2.66
Spokane River	SR1A-083122	47.740	-117.520	62.1	3.52
Spokane River	SWREP4	47.740	-117.520	62.1	3.88
Spokane River	SR1A-082922	47.740	-117.520	62.1	7.21
Spokane River	SR1A-083022	47.740	-117.520	62.1	8.95
Spokane River	SR1A-090122	47.740	-117.520	62.1	199.51
Spokane River	SR1-083022	47.783	-117.545	57.8	4.82
Spokane River	SR1-090222	47.783	-117.545	57.8	5.10
Spokane River	SR1-082922	47.783	-117.545	57.8	5.26
Spokane River	L24941-8	47.783	-117.545	57.8	5.39
Spokane River	L25297-2	47.783	-117.545	57.8	5.92
Spokane River	L25153-5	47.783	-117.545	57.8	11.15
Spokane River	L26749-4	47.783	-117.545	57.8	18.63
Spokane River	L21932-10	47.783	-117.545	57.8	33.30
Spokane River	L26175-6	47.783	-117.545	57.8	34.98
Spokane River	L25116-7	47.783	-117.545	57.8	35.18
Spokane River	L21932-11	47.783	-117.545	57.8	36.59
Spokane River	SR1-090122	47.783	-117.545	57.8	42.54
Spokane River	L26175-5	47.783	-117.545	57.8	56.70
Spokane River	L21902-9	47.783	-117.545	57.8	82.74

Waterbody Sampled	EIM Sample ID	Sample Latitude (NAD83)	Sample Longitude (NAD83)	Spokane River Mile	5x Blank Corrected total PCB concentration (pg/L)
Spokane River	L21877-81	47.783	-117.545	57.8	94.53
Spokane River	L21902-16	47.783	-117.545	57.8	96.47
Spokane River	L21874-14	47.783	-117.545	57.8	148.41
Spokane River	L21910-3	47.783	-117.545	57.8	156.87
Spokane River	L21874-16	47.783	-117.545	57.8	181.94
Spokane River	L21917-7	47.783	-117.545	57.8	200.68