Appendix A: Applicable PCB Water Quality Standards

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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1 Introduction

The most stringent total polychlorinated biphenyls (PCBs) water quality criteria (WQC) applicable to PCB-impaired assessment units (AUs) of the Spokane and Little Spokane Rivers was selected as the endpoint for total maximum daily load (TMDL) calculations. This appendix summarizes the multiple PCB WQC relevant to AUs addressed in this TMDL. All of these AUs lie within the state of Washington, although two border jurisdictions of the state of Idaho and the Spokane Tribe of Indians (Spokane Tribe). The water quality of these AUs is influenced by the quality of upstream waters of the state of Idaho and the Coeur d'Alene Tribe, and subsequently influences the quality of downstream waters of the Confederated Tribes of the Colville Reservation (Colville Tribes). In addition to Washington WQC, the Spokane Tribe and the Colville Tribes WQC are presented to account for downstream use protections as required under the Clean Water Act (CWA) (40 CFR 131.10(b)). WQC for Idaho and the Coeur d'Alene Tribe are included for reference given they are applicable to headwater areas of the Spokane and Little Spokane River watersheds.

Applicability of relevant PCB WQC to the Spokane and Little Spokane Rivers are shown in Figure A-1, and AUs impaired by PCBs are shown in Figure A-2. A summary of applicable CWA effective WQC for states and Tribes, is provided in Table A-1. The WQC reflect total water column PCB concentrations, which include the sum of all congener, isomer, homolog or Aroclor analytes, expressed as picograms per liter (pg/L). Table A-2 provides AU IDs, jurisdictions, and descriptions of extents for Spokane and Little Spokane River AUs listed as impaired by PCBs in Washington's 2014-2018 CWA Integrated Report (IR), as well as descriptions of waters flowing through immediately adjacent jurisdictions.

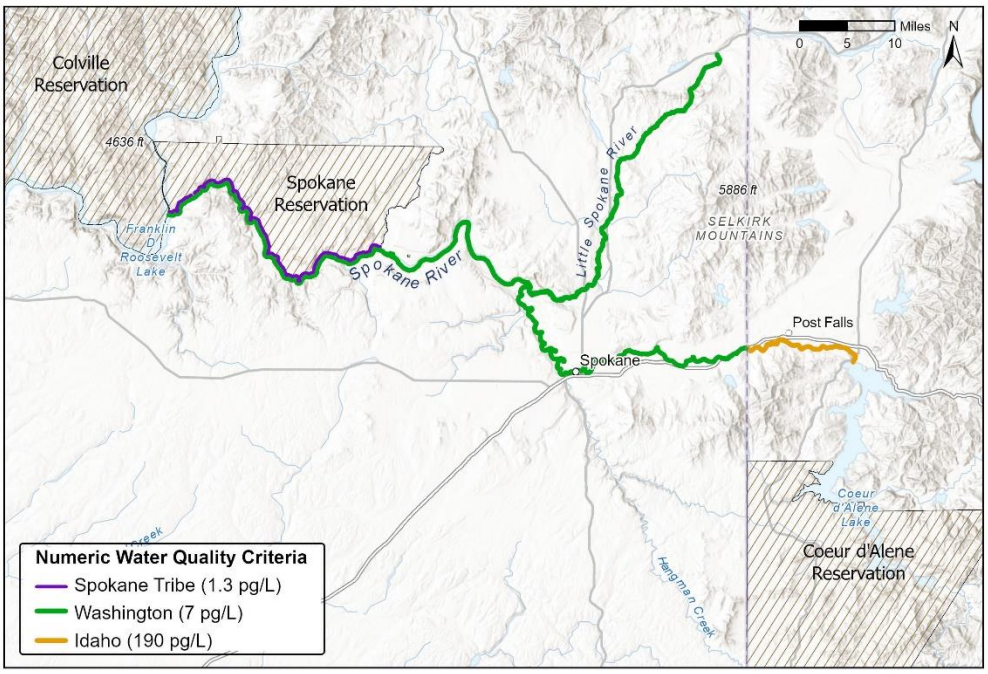

Figure A-1: Applicability of relevant total PCB WQC to the Spokane and Little Spokane Rivers.

Table A-1: Summary of PCB aquatic life and human health water quality criteria for states and Tribal jurisdictions from upstream to downstream.

Jurisdiction (listing)	**Parameter**	**Aquatic Life Criteria (Acute, Chronic)**	**Human Health Criteria (Water + Organisms, Organisms Only)**
Coeur d'Alene Tribe	PCB	Chronic (1.4 E+04 pg/L)	No numeric WQC[1]
Idaho	PCB	Chronic (1.4 E+04 pg/L)	190.0 pg/L
Washington	PCB	Acute (2.0E+06 pg/L) Chronic (1.4 E+04 pg/L)	7.0 pg/L
Spokane Tribe	PCB	Acute (2.0E+06 pg/L) Chronic (1.4 E+04 pg/L)	1.3 pg/L
Colville Tribes	toxic substances[2]	No numeric WQC	No numeric WQC

Notes:

[1] The Coeur d'Alene Tribe currently have no numeric HHC in effect, however the following narrative criteria applies to toxics (Coeur d'Alene Tribe, 2019): *"Toxic substances shall not be introduced into Reservation TAS Waters in concentrations which have the potential either singularly or cumulatively to adversely affect existing and designated water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the Department, except as allowed for under Mixing Zones."*

[2] There are no numeric ALC or HHC. The following narrative applies to toxic substances: *Toxic, radioactive, nonconventional, or deleterious material concentrations shall be less than those of public health significance, or which may cause acute or chronic toxic conditions to the aquatic biota, or which may adversely affect designated water uses* (40 CFR 131.35 (f)(2)(ii)(G)).

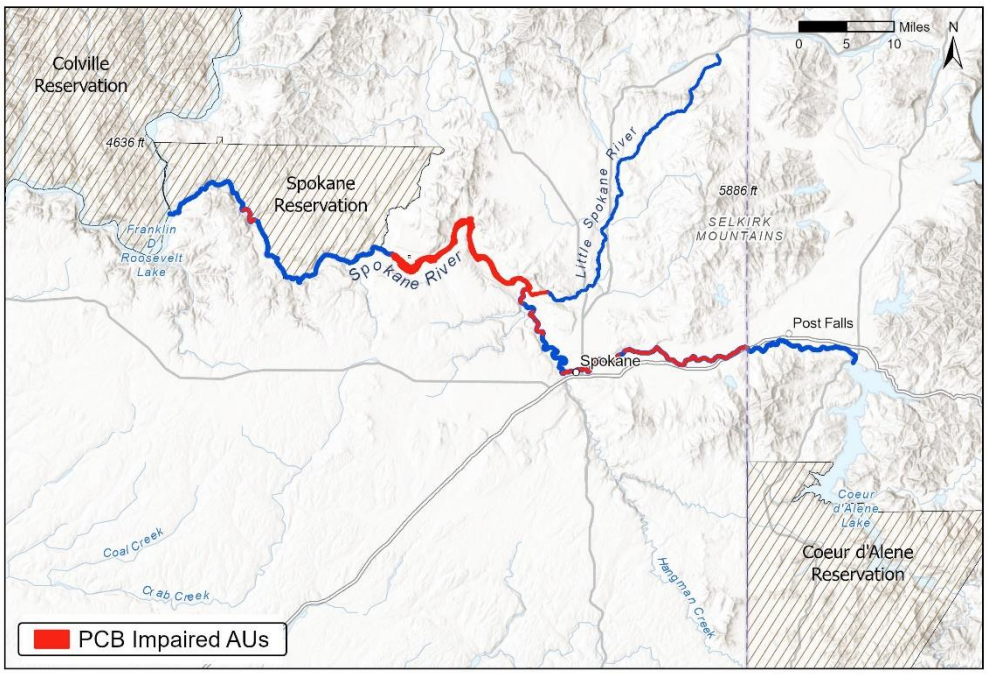

Figure A-2: Spokane and Little Spokane River AUs impaired by PCBs, based on the most recent 2014-2018 303(d) listings.

Table A-2: Summary of 2014-2018 IR Spokane and Little Spokane River PCB impaired stream segment AUs, as well as waters flowing through immediately adjacent jurisdictions, from upstream to downstream.

Washington AU ID	Jurisdiction	Extent Description
N/A: Headwaters of Latah (Hangman) Creek	Coeur d'Alene Tribe	Lands between the southern half of Coeur d'Alene Lake and the Washington-Idaho border
N/A: Idaho extent of the Spokane River	Idaho	Spokane River: Washington-Idaho border to Coeur d'Alene Lake (Spokane RMs 99.7 - 114.6)
WA17010305000012_001_001	Washington	Confluence of Spokane River and Cable Creek to Washington-Idaho border (RMs 94.8 – 96.3)
WA17010305000011_001_001	Washington	Myrtle Point Natural Area to Cable Creek Confluence (RMs 84.7 – 94.8)
WA17010305000010_001_001	Washington	Felts Field Park to Myrtle Point Natural Area (RMs 80.9 – 84.7)
WA17010305000009_001_002	Washington	Upstream of Latah (Hangman) Creek and Spokane River confluence to south of Felts Field Municipal Airport (RMs 72.7 – 80.2)
WA17010307009102_001_001	Washington	Between West Davenport and Aubrey Ln (RMs 63.1 – 64.5)

WA17010307009085_001_001	Washington	Between Seven Mile Rd and West Davenport (RMs 62.4 – 63.1)
WA17010307009615_001_001	Washington	Between McLellan Trailhead and Seven Mile Rd (RMs 61.0 - 62.1)
WA17010307000774_001_001	Washington	Nine Mile Falls to Deep Creek (RMs 58.3 – 59.3)
WA17010308000018_001_001	Washington	Little Spokane River AU: Spokane/Little Spokane River confluence to West Rutter Pkwy (Little Spokane RMs 0.0 – 4.7)
WA170103070106_01_01	Washington	East Side of Spokane Lake (RMs 45.5 – 58.3)
WA170103070107_01_01	Washington	West Side of Spokane Lake (RMs 34.2 – 45.5)
WA17010307000010_001_001	Washington	South side of Spokane Arm across from the Spokane Tribe reservation, from Porcupine Bay Campground to Blue Creek (RMs 11.0 - 12.7)
N/A: Spokane Arm of Franklin D. Roosevelt Lake (multiple AUs)	Colville Tribes, Spokane Tribe, Washington	Spokane/Columbia River confluence to Porcupine Bay Campground (Spokane RM 0.0 - 11.0)

2 Washington

Washington's numeric WQC for toxic substances (including PCBs) apply to all surface waters of the state and include acute and chronic ALC and HHC for fresh and marine waters. Fresh water designated uses in Washington include aquatic life, recreational, water supply, and miscellaneous (e.g., wildlife habitat, harvesting, commerce/navigation, boating, and aesthetics) uses (WAC 173-201A-200). Each of the impaired segments along the Spokane River are listed for harvesting and/or domestic water supply uses (Table A-3). Washington's freshwater aquatic life criteria 2E+06 pg/L (acute) and 1.4E+04 pg/L (chronic) are set as values not to exceed 24 hour-averages (WAC 173-201A-240, Table 240) and are consistent with national recommendations. Washington's HHC values were calculated using a statewide fish consumption rate of 175 g/day, the national recommendation for a water intake of 2.4 L/day, and cancer risk level of 10^{-6} (WAC 173-201A-240 (5)(b)). In Washington, HHC values for PCBs are set at 7 pg/L (40 CFR Part 131). In addition, Washington provides that all waters are to maintain a level of water quality when entering downstream waters to attain and maintain criteria of downstream waters including waters of another state (40 CFR 131.10(b)). See also EPA-820-F-14-001 for more information regarding protection of downstream waters.)

In addition to the above numeric criteria, the following narrative criteria also apply to the Spokane River, Spokane Lake, and Little Spokane River in Washington (WAC 173-201A-260):

- *Upstream actions must be conducted in manners that meet downstream water body criteria (WAC 173-201A-260(3)(b)).*
- *Where multiple criteria for the same water quality parameter are assigned to a water body to protect different uses, the most stringent criterion for each parameter is to be applied (WAC 173-201A-260(3)(c)).*

- *At the boundary between water bodies protected for different uses, the more stringent criteria apply (WAC 173-201A-260(3)(d)).*

3 Idaho

Idaho's WQC are included for reference based on its proximity to the TMDL study area and the need to protect downstream water quality. Idaho's designated uses applicable to the Spokane River include aquatic life (cold water communities and salmonid spawning), primary contact recreation, and domestic water supply uses. ALC and HHC correlate to these uses (IDAPA 58-01-02-100 and IDAPA 58-01-02-110(12)). The ALC for PCBs consists of a chronic value (1.4E+04 pg/L) and is not to exceed a 4-day average more than once every 3 years (Table 1, IDAPA 58--01-02-210(01)(a)). HHC for PCBs are set at 190 pg/L for both water + organism and organism only criteria values and are not to be exceeded based on the annual harmonic mean (Table 2, IDAPA 58-01-02-210(01)(b); IDEQ Human Health Criteria Technical Support Document, 2015).

In addition to the above numeric criteria, the following narrative criterion also applies to downstream water quality protections for segments of the Spokane River across the Washington-Idaho border:

- *All waters shall maintain a level of water quality at their pour point into downstream waters that provides for the attainment and maintenance of the water quality standards of those downstream waters, including waters of another state or tribe (IDAPA 58-01-02-070(08))*

4 Spokane Tribe of Indians

EPA found the Spokane Tribe eligible to administer a WQS program under CWA Section 303, 33 U.S.C § 1313 in 2002, with standards originally approved by EPA in 2003 and subsequently updated in 2010 (40 CFR Part 131.35). The Spokane Tribe's WQS updates were partially approved and partially disapproved by EPA in 2013.

The Spokane Tribe's applicable WQC are provided by reference in the EPA's *Technical Support Document for Action on the Revised Surface Water Quality Standards of the Spokane Tribe of Indians (December 2013).* Criteria apply within the reservation boundaries, which extend from Chamokane Creek (starting at the 48th parallel in latitude) along the eastern bank of this creek until it joins the confluence of the Spokane River. The boundary continues westward along the southern bank of the Spokane River until reaching the confluence with the Columbia River, then continues north along the Columbia River until reaching the 48th parallel in latitude (*Approval of the Spokane Tribe of the Spokane Reservation of Washington Application for Treatment in the Same Manner as a State for Sections 303(c)and 401 of the Clean Water Act, 2002*) (Figure A-1).

Designated uses are assigned using a system of classes for surface water protection: AA (extraordinary), A (excellent) and Lake (Spokane Tribe WQS, 2013). The Spokane River is assigned to Class A, which has water quality protections for several uses including primary contact ceremonial and spiritual, cultural, water supply, stock watering, fish and shellfish (i.e., migration, rearing, spawning and harvesting), primary contact recreation, and commerce and navigation (Spokane Tribe WQS, 2013 - Section 9. Part 2 Subpart b: i-vii). For Class A waterbodies, numeric criteria for toxic substances apply to all surface waters with aquatic life and human health protections, and consist of acute and chronic ALC and water + organism and organism-only HHC (Spokane Tribe WQS, 2013 - Section 6. Part–9 - Table 1: *Water Quality Criteria for Toxic Pollutants*) (Table A-1).

The Spokane Tribe's freshwater aquatic life criteria are 2E+06 pg/L (acute) and 1.4E+04 pg/L (chronic) and set as one hour concentrations not to be exceed more than once every three years. The Spokane Tribe revised their HHC in 2010. The updated criteria were calculated using a localized fish consumption rate of 865 g/day and a drinking water intake of 4 L/day, resulting in HHC tailored to protect Tribal members living a typical subsistence lifestyle. The HHC for PCBs is 1.3 pg/L, which is the most stringent HHC of those applicable to this TMDL.

5 Confederated Tribes of the Colville Reservation (Colville Tribes)

The Colville Tribes water quality standards were promulgated by the EPA in 1989 (40 CFR 131.35). Criteria apply within the reservation boundaries, from the northern and western shorelines to the midpoint of the Columbia River along a more than 150-mile section of the upper Columbia River, from RM 534 – 690 (Figure A-1). The Spokane River flows into the Columbia River in this reach at approximately RM 639. In the final EPA-promulgated standards for the Colville Tribes, there is no classification for the Columbia River, but 40 CFR 131.35(g)(8) states that all waters of the reservation not specifically assigned a classification are designated as Class II. This means that the default narrative toxic substances criteria for streams applies and protects salmonid migration, rearing, spawning, and harvesting, in addition to other uses:

- *Toxic, radioactive, nonconventional, or deleterious material concentrations shall be less than those of public health significance, or which may cause acute or chronic toxic conditions to the aquatic biota, or which may adversely affect designated water uses* (40 CFR 131.35 (f)(2)(ii)(G)).

6 Coeur d'Alene Tribe

The Coeur d'Alene Tribe's water quality standards originally became effective for waters in which the Tribe has Treatment in a Similar Manner as a State (TAS) in 2014 (Coeur d'Alene Tribe WQS, 2019). The Tribe does not have effective HHC for toxic substances. The Tribe's criteria are effective under the CWA for the following Reservation Waters: St Joe River and Coeur d'Alene Lake. The following designated use classifications apply for Coeur d'Alene Lake (upstream/adjacent to Spokane River): (1) domestic water supply, (3) recreational and cultural water uses, and (4a) aquatic life uses for bull trout and cutthroat trout with reservation boundaries extending from the Washington-Idaho border to the southern extent of Coeur d'Alene Lake. In addition to these site-specific use classifications, consideration of attaining and maintaining downstream water quality standards is accounted for as part of the Water Use Classification (Coeur d'Alene Tribe WQS, 2019 - Section 18). The Tribe's adopted ALC for PCBs is 1.4E+04 pg/L (Table A-1), which is based on the nationally recommended criteria. This is only applicable to the Reservation TAS Waters mentioned above. Relevant to Reservation Waters without TAS for water quality standards, the *Federal Baseline Water Quality Standards for Indian Reservations* rule was proposed in the Federal Register in April 2023 (40 CFR 130, 131, 230). Further action on this proposed rule can be tracked at the EPA's webpage (Promulgation of Tribal Baseline Water Quality Standards under the Clean Water Act, https://www.epa.gov/wqs-tech/promulgation-tribal-baseline-water-quality-standards-under-clean-water-act). Currently, the Coeur d'Alene Tribe has no HHC for PCBs, therefore the ALC is the most protective of designated uses.

7 Detailed PCB Water Quality Criteria by Jurisdiction

Table A-3 provides a summary of PCB ALC and HHC, designated uses for segments along the Spokane River, including upstream (Idaho, Coeur d'Alene Tribe) and downstream (Spokane Tribe and Colville Tribes) jurisdictions. Washington 2014-2018 303(d) listings for PCBs are also identified.

Table A-3: Summary of PCB water quality criteria and designated uses for segments along the Spokane and Little Spokane Rivers, including upstream (Idaho, Coeur d'Alene Tribe) and downstream (Spokane Tribe, Colville Tribes) jurisdictions.

Washington AU ID	2014-2018 WA 303(d) Listing ID	Jurisdiction	Aquatic Life-Acute (pg/L)	Aquatic Life-Chronic (pg/L)	Human Health Criteria (pg/L)****
N/A: Headwaters of Latah (Hangman) Creek	N/A	Coeur d'Alene Tribe	-	1.40E+04	-
N/A: Idaho extent of the Spokane River	N/A	Idaho***	-	1.40E+04	190
WA17010305000012_001_001	14397	Washington	1.40E+04	1.40E+04	7
WA17010305000011_001_001	8201	Washington	1.40E+04	1.40E+04	7
WA17010305000010_001_001	8207	Washington	1.40E+04	1.40E+04	7
WA17010305000009_001_002	8202	Washington	1.40E+04	1.40E+04	7
WA17010307009102_001_001	14400	Washington	1.40E+04	1.40E+04	7
WA17010307009085_001_001	78968	Washington	1.40E+04	1.40E+04	7
WA17010307009615_001_001	14385	Washington	1.40E+04	1.40E+04	7
WA17010307000774_001_001	9033	Washington	1.40E+04	1.40E+04	7
WA17010308000018_001_001	9051	Washington	1.40E+04	1.40E+04	7
WA170103070106_01_01	9021	Washington	1.40E+04	1.40E+04	7
WA170103070107_01_01	9015	Washington	1.40E+04	1.40E+04	7
WA17010307000010_001_001	9027	Washington	1.40E+04	1.40E+04	7

N/A: Northern half of the Spokane Arm of Franklin D. Roosevelt Lake adjacent to the Spokane Tribe's reservation	N/A	Spokane Tribe	2.00E+06	1.40E+04	1.3
Downstream sections of Franklin D. Roosevelt Lake/Columbia River	N/A	Colville Tribes	-	-	-
Notes: '-' indicates that there is no applicable numeric criteria for the jurisdiction, and that the narrative criterion for toxic substances should be applied. '*' – 'Water Supply' Uses include Domestic, Industrial, and Agricultural water supplies, in addition to Stock watering. '**' – 'Miscellaneous' Uses include Wildlife habitat, Fish harvesting, Commerce and navigation, Boating, and Aesthetic Values. '***' – Indicates that the Idaho WQC and Designated Uses apply to both Idaho extents given in Table A-2. '****' – The Human Health Criteria (in pg/L) has the same numeric standard for both water & organisms and organisms only, for all jurisdictions with applicable numeric WQC.					

8 Relevant Assessment Units

This project was originally intended to address 19 Spokane and Little Spokane River assessment units listed as impaired by PCBs in Washington's 2012 Integrated Report (IR). Shortly after initiation of work on this project, Washington's combined 2014-2018 IR, featuring updated AU GIS, was submitted. The GIS update affected many of the 2012 PCB impaired AUs, but all 2014-2018 IR PCB impairment are addressed by this TMDL. Assessment units connected with Spokane Lake (AU starting with 4711…) in the 2012 IR were inactivated and rolled into new AU identification numbers for the 2014-2018 IR (Table A-4). This is a result Washington changing the AU type on Lake Spokane from a gridded lake to two large river AU segments, resulting in 10 grids on Lake Spokane getting rolled into one of two new AUs (170103070106_01_01 and 170103070107_01_01). As a result of these AU changes, 2012 IR listing IDs have also been rolled into two 2014-2018 IR listing IDs (9021 and 9015).

Table A-4: Summary of assessment unit ID changes between 2012 IR and 2014-2018 IR AU GIS update, arranged from upstream impaired segments at the Washington-Idaho border to downstream impaired waters adjacent to the Spokane Tribe reservation.

Waterbody Name	**2012 IR Assessment Unit ID**	**2014-2018 IR Assessment Unit ID**	**2014-2018 WA 303(d) Listing ID**
SPOKANE RIVER	17010305000012	WA17010305000012_001_001	14397
SPOKANE RIVER	17010305000011	WA17010305000011_001_001	8201
SPOKANE RIVER	17010305000010	WA17010305000010_001_001	8207

SPOKANE RIVER	17010305000009	WA17010305000009_001_002	8202
SPOKANE RIVER	17010307009102	WA17010307009102_001_001	14400
SPOKANE RIVER	17010307009085	WA17010307009085_001_001	78968
SPOKANE RIVER	17010307009615	WA17010307009615_001_001	14385
SPOKANE RIVER	17010307000774	WA17010307000774_001_001	9033
LITTLE SPOKANE RIVER	17010308000018	WA17010308000018_001_001	9051
SPOKANE LAKE	47117H5I3	WA170103070106_01_01	9021
SPOKANE LAKE	47117H5J8	WA170103070106_01_01	9021
SPOKANE LAKE	47117I5A4	WA170103070106_01_01	9021
SPOKANE LAKE	47117I5A5	WA170103070106_01_01	9021
SPOKANE LAKE	47117I6C1	WA170103070106_01_01	9021
SPOKANE LAKE	47117I7D4	WA170103070107_01_01	9015
SPOKANE LAKE	47117I8C2	WA170103070107_01_01	9015
SPOKANE LAKE	47117I7B9	WA170103070107_01_01	9015
SPOKANE LAKE	47117I7D3	WA170103070107_01_01	9015
SPOKANE LAKE	47117I7E2	WA170103070107_01_01	9015
SPOKANE RIVER	17010307000010	WA17010307000010_001_001	9027*
'*' – Spokane Tribe WQC apply to the northern portion of the Spokane Arm adjacent to the Spokane Tribe reservation, Washington WQC apply to the southern portion.			

9 References

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