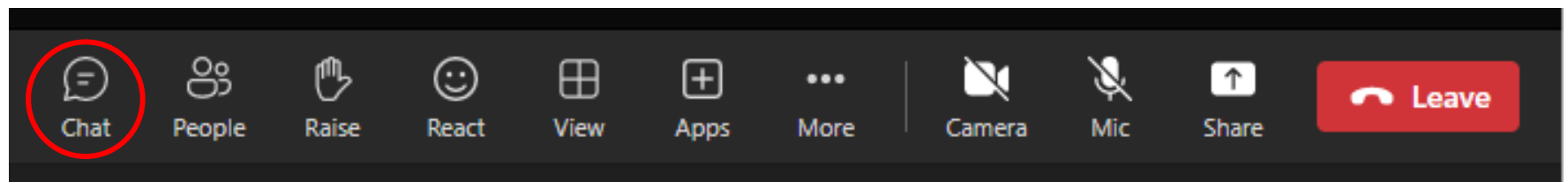


- Welcome to the Spokane & Little Spokane Rivers PCB TMDLs Development Public Outreach Webinar!
- All attendees will enter in listen only mode, but there will be ample time for questions and comments following the presentation.
- Presentation will begin promptly at 2:05 PM and last approximately 30 minutes.
- Please enter your name and any organizational affiliation in the meeting chat.





Spokane & Little Spokane Rivers PCB TMDLs Development

U.S. Environmental Protection Agency

Public Outreach Webinar

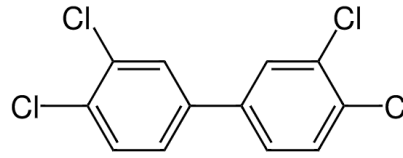
March 30, 2023

Primary Spokane PCB Pollution Challenges

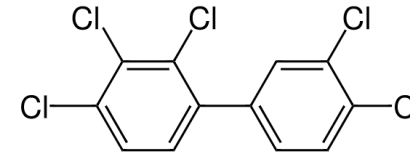
- Health risks of environmental polychlorinated biphenyls (PCBs)
 - Bioaccumulative in organisms (including humans), magnified through food chains
 - Environmental levels deemed safe are *very* low concentrations
 - Below levels most treatment technologies can presently achieve, below current detection levels, low-level monitoring is complex and costly
- PCBs are virtually everywhere and essentially don't break down
- Difficult for industries, as well as local, state, federal, and Tribal governments, to fully mitigate
- ***EPA recognizes addressing Spokane PCB issues will take tremendous dedication and that there are no simple solutions***

PCB Human Health Impacts

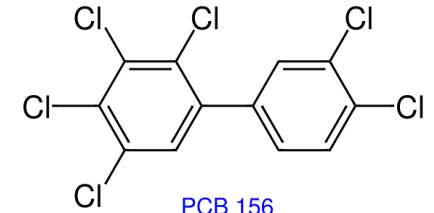
- Probable carcinogens
- Immune system impacts
- Reproductive system impacts
- Nervous system impacts
- Endocrine system impacts
- ***Highly bioaccumulative***
- ***Environmentally persistent***



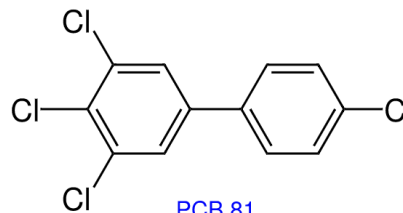
PCB 77



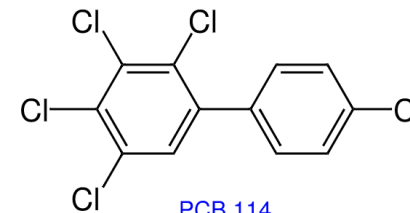
PCB 105



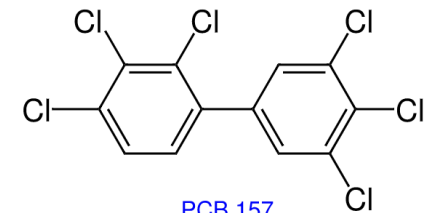
PCB 156



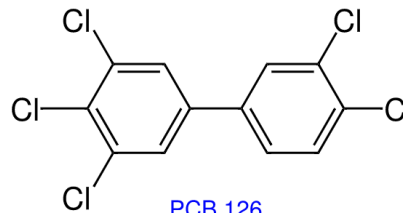
PCB 81



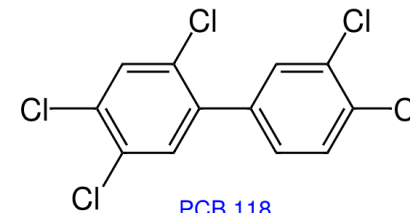
PCB 114



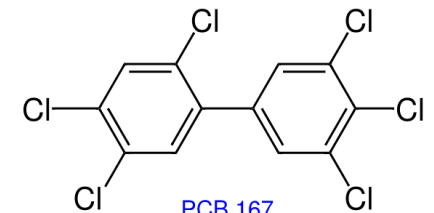
PCB 157



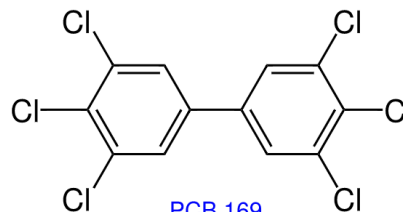
PCB 126



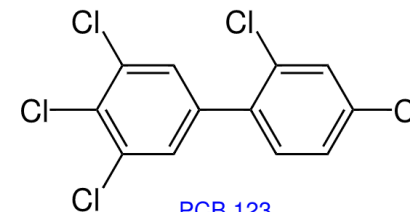
PCB 118



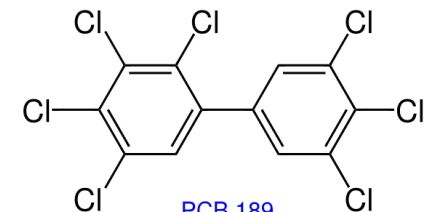
PCB 167



PCB 169



PCB 123



PCB 189

PCB Pollution Sources

- U.S. manufacture was banned in 1979, but PCBs were used in...
 - Electrical, heat transfer, and hydraulic equipment
 - Plasticizers in paints, plastics, and rubber products
 - Pigments, dyes, and carbonless copy paper
 - Fluorescent light ballasts, caulking, and floor finishes
 - MANY other industrial applications
- PCBs enter rivers through industrial and municipal wastewater, stormwater, groundwater, and atmospheric deposition
- ***Though regulated, many goods still contain PCBs. Concentrations range up to ≈800 parts per billion, while applicable water quality standards are measured in parts per quadrillion.***

General TMDL Elements

$$\text{TMDL} = \text{WLA} + \text{LA} + \text{MOS}$$

- TMDL = Total Maximum Daily Load
 - Maximum amount of pollutant that can be assimilated by a water body each day while still achieving and maintaining water quality standards
- WLA = Waste Load Allocation
 - Portion of TMDL set aside for point sources
- LA = Load Allocation
 - Portion of TMDL set aside for nonpoint sources
- MOS = Margin of Safety
 - Portion of TMDL set aside to address uncertainty in conditions and analysis

Project Overview

- EPA is developing Spokane & Little Spokane River PCB TMDLs as a result of a litigation consent decree
 - Plaintiffs: Sierra Club, Center for Environmental Law and Policy
 - Intervenor: Spokane Tribe of Indians
 - Defendant: U.S. EPA
 - Intervenors: Spokane County, Kaiser Aluminum, Washington Department of Ecology
- TMDL implementation plan will be developed by Washington Department of Ecology after TMDLs are issued



Consent Decree Provisions

- Address PCB-impaired waters of the Spokane & Little Spokane Rivers
 - Consent decree identified 19 assessment units listed as Category 5 for PCBs in 2012 Washington 303(d) list
 - 2014-2018 Washington 303(d) list identified 20 Category 5 assessment units
- Status reports to court every 180 days
 - Reports filed in August 2022 and February 2023
 - Next report due August 2023
- ***Final TMDLs to be issued no later than September 30, 2024***

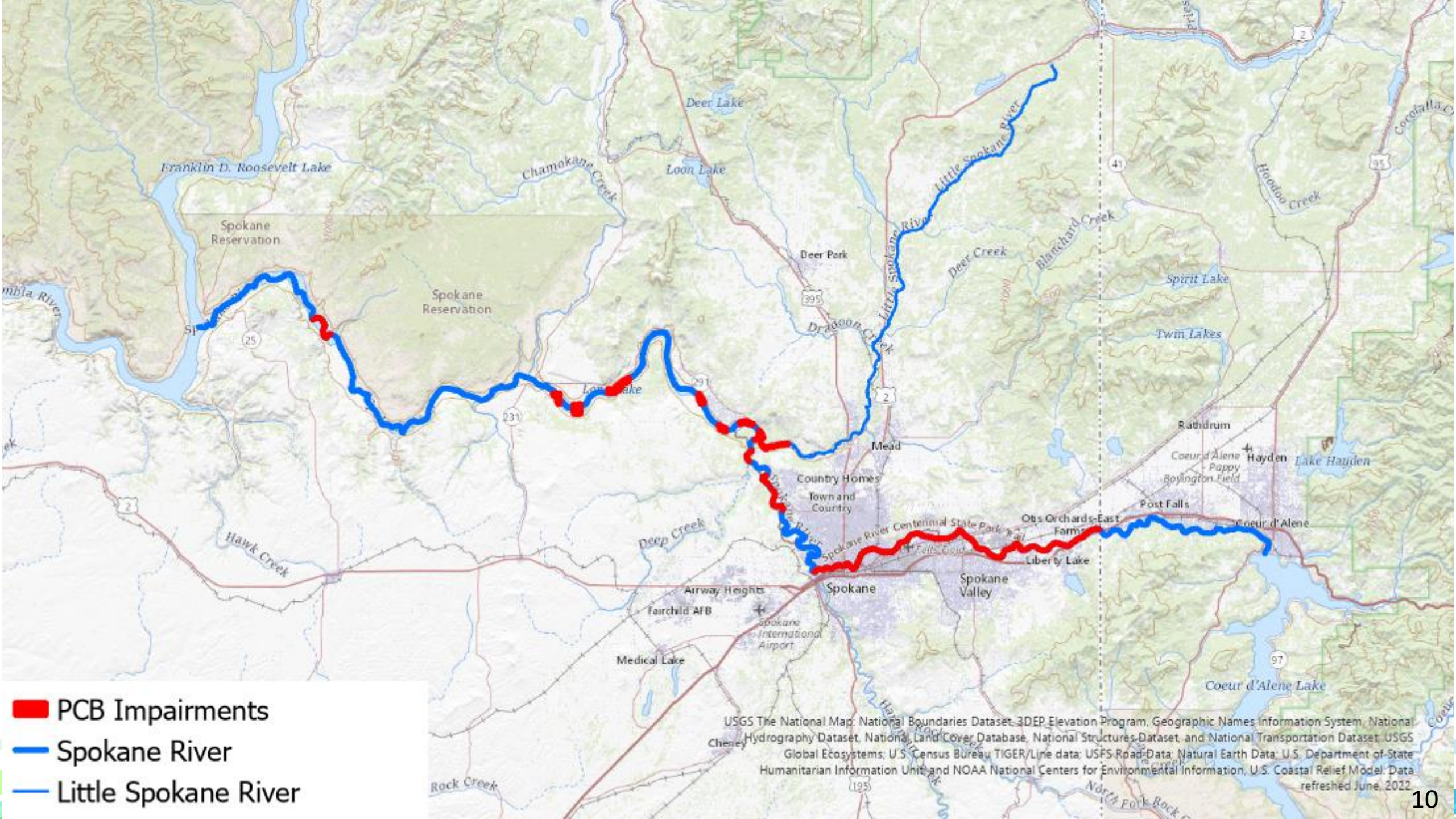
September 2024

Calendarpedia
Your source for calendars

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

Project Extent

- Washington Department of Ecology Water Resource Inventory Areas 54 Lower Spokane, 55 Little Spokane, and 57 Middle Spokane
- Spokane River
 - Confluence with Columbia River to Washington/Idaho border
 - 19 assessment units listed as Category 5 for PCBs
- Little Spokane River
 - Confluence with Spokane River to headwaters
 - 1 assessment unit listed as Category 5 for PCBs
- ***TMDLs will address all Spokane and Little Spokane River assessment units listed as Category 5 for PCBs***



A Brief Note on Picograms Per Liter (pg/L)

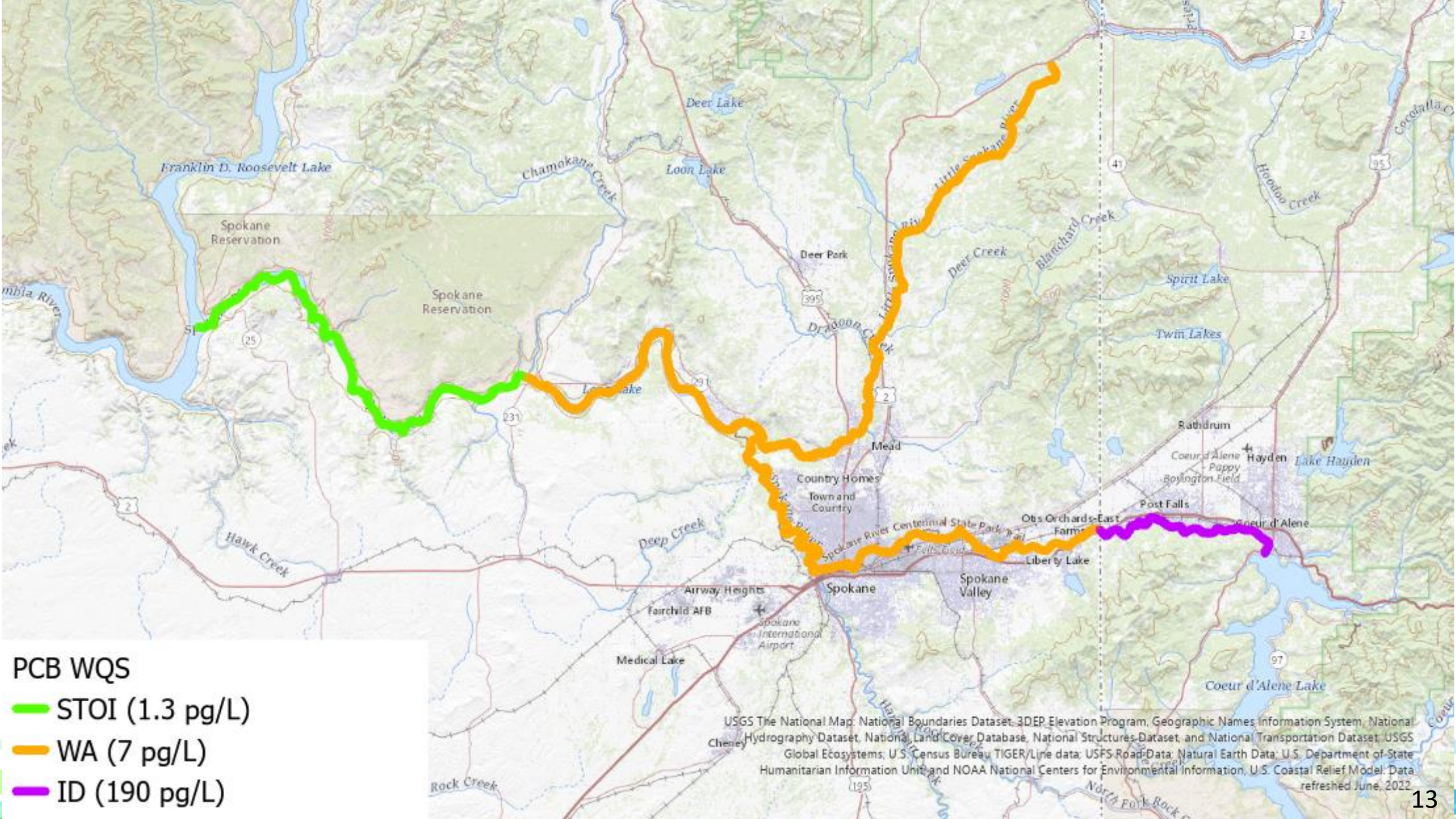
- Relevant PCB Standards are expressed in pg/L
- 1 pg/L is equal to *one part per quadrillion*
- One part per quadrillion is analogous to...
 - 1 human hair out of all the hair on all the heads of all the people on Earth
 - 1 postage stamp on a letter the size of California and Oregon
 - 1 mile on a journey of 170 light years
 - 1 penny in 10 trillion dollars
 - 1 minute in 2 billion years
 - 1 drop of water in a cube as tall as the Empire State building

Orders of Magnitude		
Hundred	100	2 zeros
Thousand	1,000	3 zeros
Million	1,000,000	6 zeros
Billion	1,000,000,000	9 zeros
Trillion	1,000,000,000,000	12 zeros
Quadrillion	1,000,000,000,000,000	15 zeros

Relevant PCB Water Quality Standards

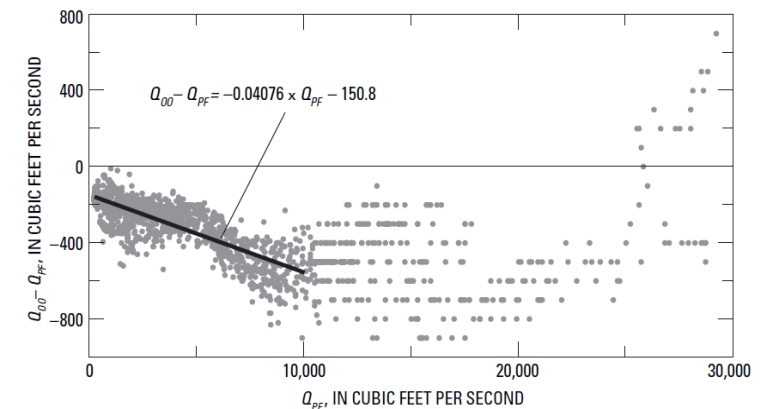
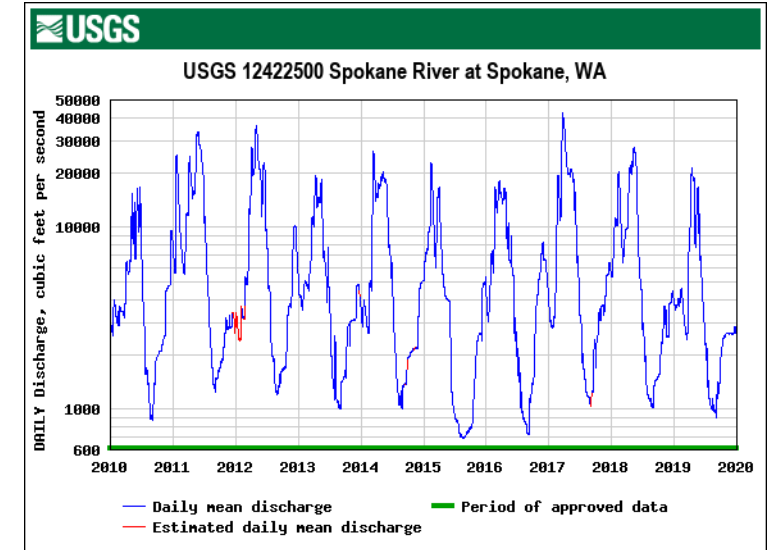
- Spokane Tribe of Indians = 1.3 pg/L
 - Columbia River to Spokane River mile \approx 35.5
- Washington = 7 pg/L
 - Spokane River mile \approx 35.5 to \approx 99.5
 - Entirety of Little Spokane River (\approx 52 miles long)
- Idaho = 190 pg/L
 - Spokane River mile \approx 99.5 to Coeur d'Alene Lake
- *TMDLs must...*
 - ***Achieve and maintain all applicable water quality standards***
 - ***Be protective of applicable downstream water quality standards***





Overview of TMDL Elements

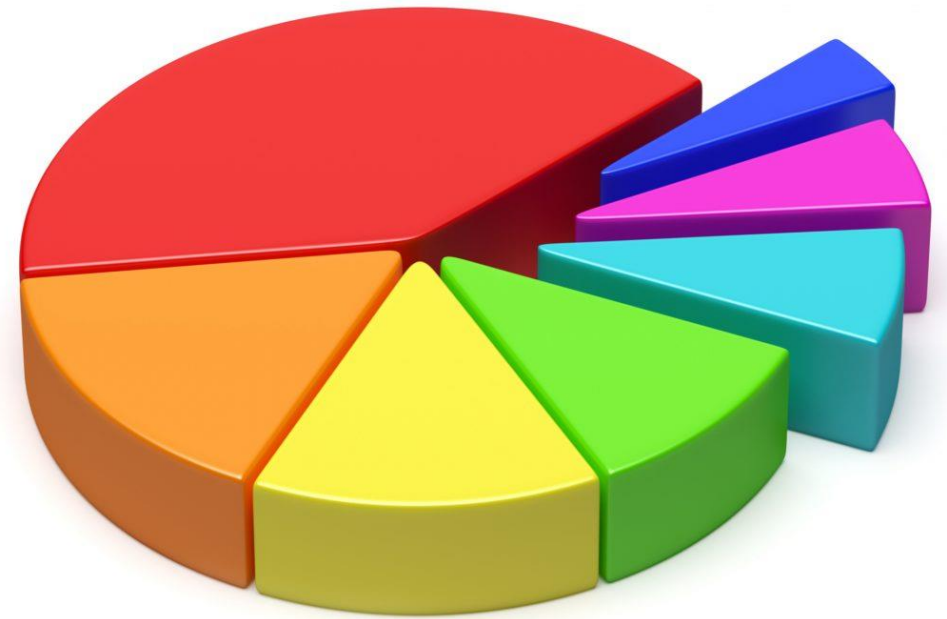
- Target parameter = total water column PCBs
- Target values
 - ≤ 7.0 pg/L in Washington state waters
 - ≤ 1.3 pg/L in Spokane Tribe of Indians waters
- Design conditions for loading capacity calculations
 - Annual harmonic mean river flow
 - 30 year record of gaged river flows
 - Groundwater flow based on USGS studies



A. Daily streamflow gain (positive value) or loss (negative value) on the Spokane River between gaging stations near Post Falls (Q_{PF}) and near Otis Orchards (Q_{00}) and streamflow at gaging station near Post Falls.

Anticipated TMDL Allocations

- Sources upstream of the Washington/Idaho border
 - Single load and/or concentration assigned at border
- Permitted municipal and industrial point sources
- Toxics cleanup sites
- Stormwater
 - Both point and nonpoint sources
- Major tributaries
 - Loads and/or concentrations at mouths
- Regional groundwater inflow
- Atmospheric deposition
- Nonpoint sources not captured in other allocations



Technical Approach

- Spreadsheet based mass balance model
- Conservative margin of safety assumptions
 - No attenuation or decay of PCBs along rivers
 - No settling of particulate PCBs out of water column
- Model applications
 - Assessment unit/river mile TMDL loading capacities
 - PCB reduction scenario explorations

Anticipated Project Schedule

Year	2022				2023				2024		
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Ancillary GIS and hydrology analysis											
Collate PCB monitoring data*											
Develop and refine technical approach											
PCB monitoring data analysis											
Public/stakeholder outreach											
Issue public comment draft of TMDLs											
Respond to public comments											
Issue final approved TMDLs											

**2023 Q2-Q3 extension to accommodate recently collected PCB data, if made available*

Next Webinar Topics

- Available environmental PCB data and detailed model assumptions
 - Current PCB conditions and monitoring data summary
 - Hydrology summary, including stormwater and groundwater estimates
- Initial PCB mass balance model
 - Source assessment analysis
 - TMDL concentration calculator
- Tentatively scheduled for late June 2023
 - Project website will be updated and invitations will be sent to email list

June 2023 Calendarpedia
Your source for calendars

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	1

© Calendarpedia® www.calendarpedia.com Data provided as is without warranty

Additional Project Information

- Spokane River PCB TMDLs project website
 - <https://www.epa.gov/tmdl/spokane-river-pcb-tmdls>
 - Background information, PCB and TMDL resources, project updates
 - Interested parties can also join EPA's email list for project updates
- Comments and Questions
 - Please contact Gunnar Johnson (Washington State TMDL Coordinator)
 - Johnson.Gunnar@epa.gov
 - 360-753-9543
 - U.S. EPA, 300 Desmond Drive SE, Lacey, WA, 98503

Further References & Resources

- General PCB facts: <https://www.epa.gov/pcbs/learn-about-polychlorinated-biphenyls-pcbs>
- Inadvertent PCBs: <https://www.epa.gov/pcbs/inadvertent-pcbs>,
<https://apps.ecology.wa.gov/publications/documents/1604024.pdf>,
https://cfpub.epa.gov/si/si_public_record_Report.cfm?dirEntryId=355517&Lab=CEMM
- Integrated Risk Information System (IRIS) PCB risks: https://iris.epa.gov/ChemicalLanding/&substance_nmbr=294
- Harmonic mean design flows: <https://www.federalregister.gov/d/00-27924/p-166>
- Washington water quality impairments: <https://apps.ecology.wa.gov/waterqualityatlas/wqa/map>
- Water quality standards: <https://www.epa.gov/wqs-tech/water-quality-standards-regulations-spokane-tribe>,
<https://www.epa.gov/wqs-tech/water-quality-standards-regulations-washington>, <https://www.epa.gov/wqs-tech/federal-human-health-criteria-washington-state-waters>, <https://www.epa.gov/wqs-tech/water-quality-standards-regulations-idaho>
- PCB TMDL handbook: <https://www.epa.gov/system/files/documents/2021-08/p100dp8k.pdf>
- USGS hydrological data: <https://waterdata.usgs.gov/nwis>

- Thank you all for joining us today!
- Presentation slides have been added to the meeting chat and will also be posted on the project website.
- The duration of our time today will be used to answer questions and address comments.
- Please enter your questions and comments in the meeting chat *or* use the hand raise function if you prefer to provide them verbally.

