COLUMBIA RIVER BASIN
RESTORATION PROGRAM

EPA USGS

Toxics Monitoring Subgroup Meeting

DECEMBER 3, 2025

AGENDA OVERVIEW

12:30-12:35 Welcome & Introductions

12:35-12:45 Working Group Update

12:45-1:10 TMS Tools Discussion

- Screening Values and QAPP Template Development

1:10-1:25 Partner Updates

1:25-1:30 BREAK

1:30-2:25 Monitoring Strategy and Related Updates

- CRB Monitoring Strategy Vision Update
- Lower River Strategy and Results
- Basin-Wide Implementation Plan

2:25-2:30 Wrap Up and Next Steps

TOXICS MONITORING SUBGROUP

Purpose: Develop a community of practice to share information on monitoring, and leverage activities within and outside of EPA funded grants.

Three virtual meetings and one workshop each year

TMS CORE TEAM

Role

- Support towards the coordination of a basin-wide network of toxics monitoring projects
- Support for participants in collecting, publishing, and synthesizing data

Core Team Members

- Patrick Moran, USGS
- Mark Jankowski, EPA
- Lisa Kusnierz, EPA
- Meghan Dunn, EPA
- Ashley Zanolli, EPA
- Sarah Dunn, USGS

Contact us anytime! gs-crbtoxmon@usgs.gov

WORKING GROUP UPDATES

DECEMBER 15 WG MEETING AGENDA

9:00-9:10 Welcome, Agenda Review, and Introductions

9:10-9:30 EPA Updates

9:30-10:00 Partner Updates

10:00-10:30 Transboundary Watershed Grantee Panel: ID-MT-WA Projects

10:30-10:40 BREAK

10:40-11:25 Grantee Lightening Talks: Science and Monitoring

11:25-12:25 Toxics Monitoring Subgroup Updates

- Screening Values and Monitoring Dashboard Updates
- CRB Monitoring Strategy Vision Update
- Yakama Nation Basin-wide Implementation Plan

12:25-12:30 Wrap Up and Next Steps

HOW TO STAY ENGAGED

DECEMBER 15 MEETING (virtual)
9:00 AM - 12:30 PM Pacific Time

SPRING MEETING
April 21-22, 2026 (tentative)
Day 1: TMS Workshop
Day 2: CRBR Working Group Meeting

ONGOING COMMUNITIES OF PRACTICE

- Toxics Monitoring Subgroup (December 3 Meeting)
- Toxics Reduction Lead Grantees
- Tribal Lead Grantees

WE ALWAYS WELCOME YOUR FEEDBACK!

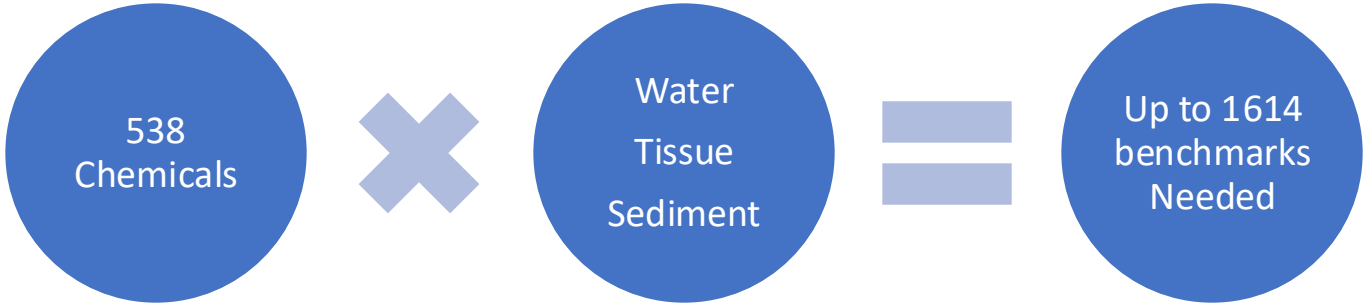
Reach out to Robin or any team member
with your suggestion(s)

Parker.robin@epa.gov

TMS TOOLS DISCUSSION

- **Screening Values** (Mark Jankowski / Patrick Moran/ Austin Baldwin)
- **QAPP Template** (Lisa Kusnierz / Meghan Dunn)

SCREENING VALUE UPDATE



- Need for consensus screening values to aid with interpretation of monitoring data across the basin for prioritization and adaptive management activities
- Started with ecological screening values, but crossover with human health is possible
- Program QAPPs have been reviewed: 538 chemicals being monitored
- Have identified resources to acquire benchmarks for some of these 538

Key Resource from Great Lakes Restoration Initiative

OXFORD

SETAC

Environmental Toxicology and Chemistry, 2025, **44(7)**, 2029–2047

https://doi.org/10.1093/etojnl/vgae002

Advance access publication: January 6, 2025

Original Article

Hazard/Risk Assessment

Derivation and characterization of environmental hazard concentrations for chemical prioritization: a case study in the Great Lakes tributaries

Erin M. Maloney[1,*], Steven R. Corsi[2], Matthew A. Pronschinske[2], Laura A. DeCicco[2], Michelle A. Nott[2], John R. Frisch[3], Neil Fuller[4], Austin K. Baldwin[5], Kimani Kimbrough[6], Michael Edwards[6], Stephanie L. Hummel[7], Natalia Vinas[8], and Daniel L. Villeneuve[9]

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[2]Geological Survey, Upper Midwest Water Science Center, Madison, WI, United States
[3]General Dynamics Information Technology, Duluth, MN, United States
[4]Consolidated Safety Services (CSS Inc), Fairfax, VA, United States
[5]Idaho Water Science Center, U.S. Geological Survey, Boise, ID, United States
[6]National Centers for Coastal Ocean Science, NOAA National Ocean Service, Silver Spring, MD, United States
[7]Ecological Services, U.S. Fish and Wildlife Service, Bloomington, MN, United States
[8]U.S. Army Engineer Research and Development Center, Vicksburg, MS, United States
[9]Great Lakes Toxicology and Ecology Division, U.S. Environmental Protection Agency, Duluth, MN, United States

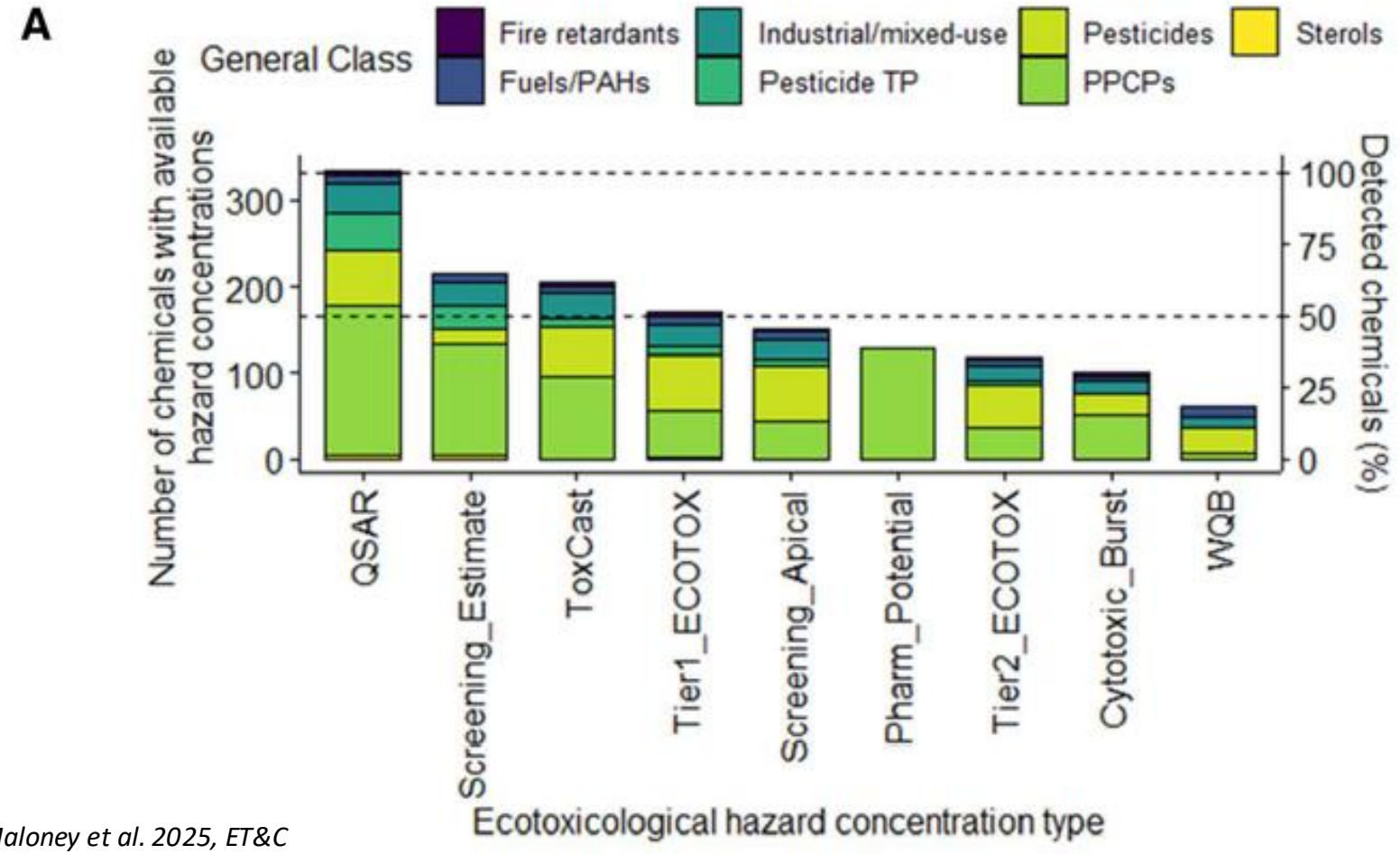
*Corresponding author: Erin M. Maloney. Email: erin.e.maloney@shell.com

Water based screening values (SVs) for 334 organic compounds

Approaches range from current water quality guidelines to QSAR estimates, depending on data availability

Work has slowed due to recent staffing limitations

Methodology from Great Lakes Restoration Initiative



Maloney et al. 2025, ET&C

- QSAR
- ToxCast
- Water quality guidelines
- ECOTOX
- Pharmacological effects

Other Considerations and Next Steps

Ecological screening values for metals will generally be current water quality guidelines (e.g., Clean Water Act 304(a) criteria)

Sediment and/or tissue benchmarks for chemicals are ‘to be determined’

We have resumed ecological screening value selection. Resources have been stretched.

Human health screening values will be addressed in coordination with partners

Quality Assurance Framework

📋 Standardized QAPPs

Quality Assurance Project Plan templates

📋 Standardized Protocols

List of common analytical methods, repository of field sampling SOPs

🤝 Partner Coordination

Consistent approaches across Basin organizations

Flexibility with Standards

Framework accommodates different pollutants and media while maintaining comparability

Quality Assurance Project Plan Template - Example

Table 5. Sample types and total number of samples planned to be collected, not including QA/QC samples.

Parameter	Sample type	Total number of samples	Collection method
PCBs, PBDE, OC pesticides, total mercury, percent lipids	Fish tissue*	30	Passive net gear
PCBs, PBDE, OC pesticides, total mercury, methylmercury, grain size, loss on ignition	Sediment	10^	Grab sample

*Adult salmonids will be bought from fisherman for analysis. ^Not to exceed number, may be less depending upon sampling success. All juvenile salmonids will be collected from Bonneville Fish Collection Facility for analysis.

Source: Yakama Nation 2023 QAPP, Implementation of the Columbia River Mainstem Fish Tissue and Sediment Quality Monitoring Program

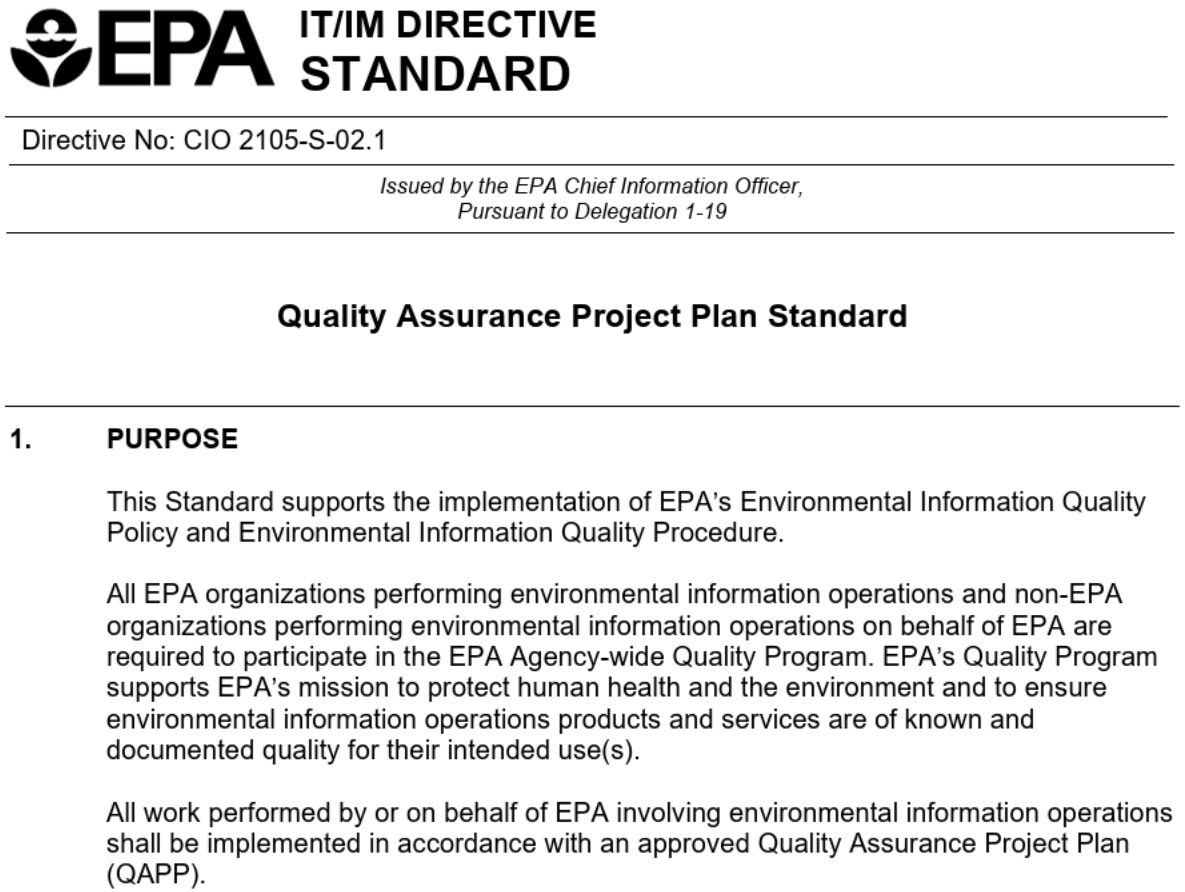
Quality Assurance Project Plan Template - Example

Quality Control Sample	Analysis Type	Analyte	Frequency	Acceptance Criteria
Field				
Replicate	Fish tissue	PBDEs, OC Pesticides, Mercury & PCBs	10% of total samples	±40%
Replicate	Sediment	PBDEs, OC Pesticides, Mercury & PCBs	10% of total samples	±40%
Equipment blank	Fish tissue Sediment	PBDEs, OC Pesticides, Mercury & PCBs	1 sample per analysis type	< MDL
Laboratory				
Blank	Fish tissue Sediment	PCBs, PBDEs & OC Pesticides	Every 20 samples	<10% of analyte value
Duplicate	Fish tissue Sediment	PCBs, PBDEs & OC Pesticides	Every 7-20 samples	≤ 40% of RPD
Matrix spike	Fish tissue Sediment	PCBs, PBDEs & OC Pesticides	Every 20 samples	60-130% recovery
Instrument purge	Sediment	Methylmercury, Total Mercury	Every 10 samples	<0.005 of peak area
Empty boat blanks	Sediment	Methylmercury, Total Mercury	Every 10 samples	<0.01 of peak area
Reagent blanks	Sediment	Methylmercury, Total Mercury	Every 10 samples	<0.05 ng/boat
Certified reference material	Sediment	Methylmercury, Total Mercury	Every 10 samples	80-120% recovery
Check standards	Sediment	Methylmercury, Total Mercury	Every 10 samples	80-120% recovery

Source: Yakama Nation 2023 QAPP, Implementation of the Columbia River Mainstem Fish Tissue and Sediment Quality Monitoring Program

New EPA Quality Assurance Project Plan Standard

- Replaces EPA R5 Quality Guidance
- Grant Terms and Conditions will start referencing the new QAPP Standard for what to follow when preparing a QAPP
- https://www.epa.gov/system/files/documents/2024-04/quality_assurance_project_plan_standard.pdf



EPA IT/IM DIRECTIVE STANDARD

Directive No: CIO 2105-S-02.1

Issued by the EPA Chief Information Officer,
Pursuant to Delegation 1-19

Quality Assurance Project Plan Standard

1. PURPOSE

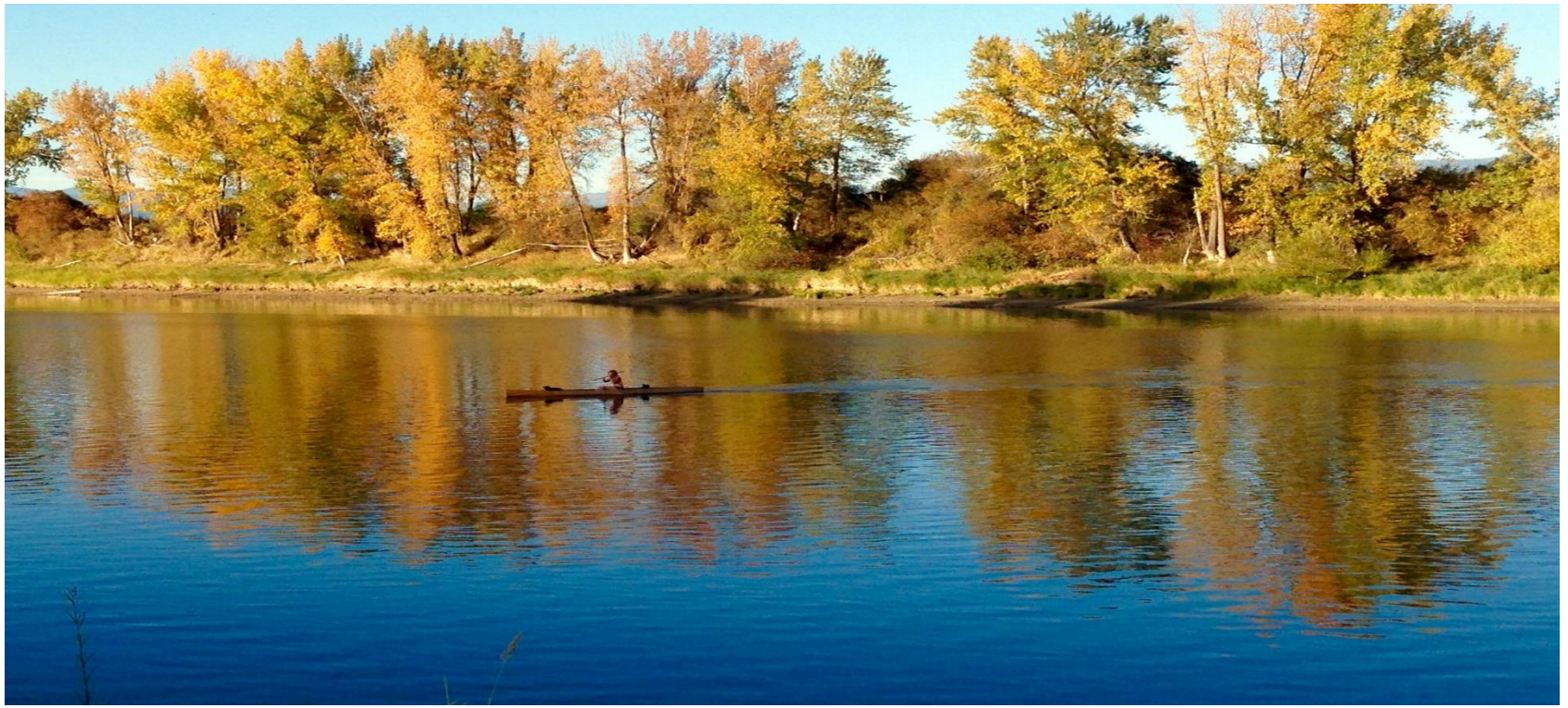
This Standard supports the implementation of EPA's Environmental Information Quality Policy and Environmental Information Quality Procedure.

All EPA organizations performing environmental information operations and non-EPA organizations performing environmental information operations on behalf of EPA are required to participate in the EPA Agency-wide Quality Program. EPA's Quality Program supports EPA's mission to protect human health and the environment and to ensure environmental information operations products and services are of known and documented quality for their intended use(s).

All work performed by or on behalf of EPA involving environmental information operations shall be implemented in accordance with an approved Quality Assurance Project Plan (QAPP).

PARTNER UPDATES

Share Your Updates!



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ROUND ROBIN

- We invite you to share updates about new monitoring on the horizon, technical challenges, or recent results.
- Raise your hand using Teams toolbar icon ->

- Keep it brief, 1-2 minutes

Image: Microsoft

MONITORING STRATEGY & RELATED UPDATES

1:30-1:50 Monitoring Strategy Update (Ashley Zanolli / Patrick Moran)

- Recap of feedback received and next steps
- TMS feedback on priorities

1:50-2:10 Lower Columbia Strategy and Results (Catherine Corbett/Sean Payne)

2:10-2:25 Basin-Wide Implementation Plan (Sherrie Duncan / Laura Shira)

DRAFT VISION FOR COLUMBIA RIVER BASIN MONITORING STRATEGY

COLUMBIA RIVER BASIN
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CWA Section 123

- **Assess trends in water quality**, including trends that affect uses of the water of the Columbia River Basin

- **Collect, characterize, and assess data on water quality** to identify possible causes of environmental problems

- **Establish a voluntary, competitive grant program** supporting actions [through pollution reduction projects]

- **Establish a Columbia River Basin Restoration Working Group** that shall
  - recommend and prioritize projects and actions; and
  - review the progress and effectiveness of projects and actions implemented.

Current Status and Engagement Process

- **Spring 2025:** Engaged 21 partner organizations and grantees in listening sessions (Thank you!)
- **Received feedback at June TMS workshop and WG Meeting** as part of ongoing engagement through summer and fall 2025
- **Strong support emerged** for voluntary, high-level strategy providing coordination
- **Respond to feedback and develop updated version** Fall 2025 – Spring 2026
- **Multiple feedback opportunities:** Written feedback through Slido, meeting discussions, future meetings

The Toxics Monitoring Strategy Vision

A comprehensive, collaborative approach for monitoring toxic pollutants to assess trends and inform water quality protection and restoration activities across jurisdictions and sub-basins in the Columbia River Basin.

The monitoring strategy should inform not only those in the Working Group but should guide implementation by all people and entities that share concern for the quality of waters of the Columbia Basin and align fragmented efforts without superseding partner priorities.

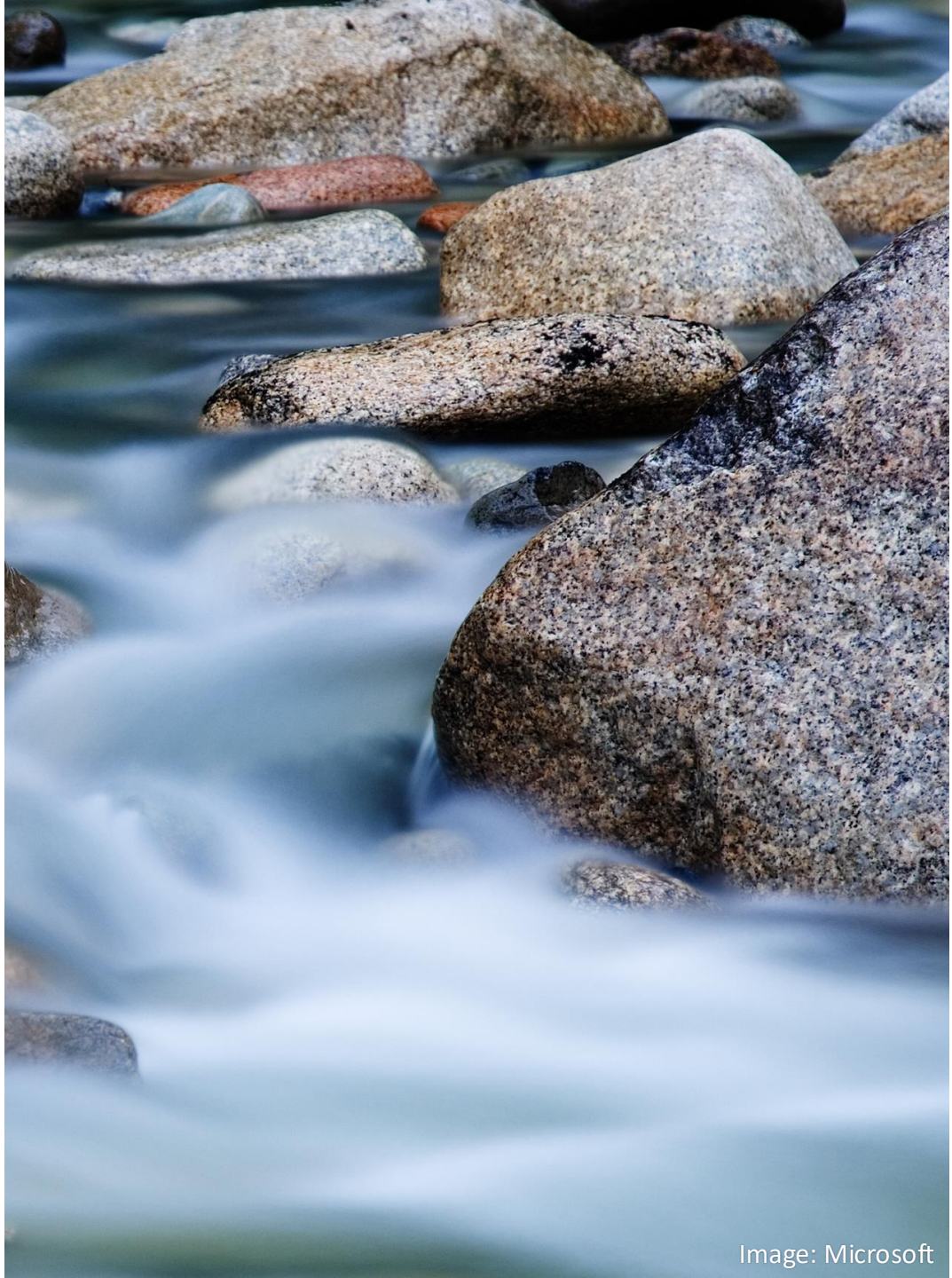
DRAFT STRATEGIC GOALS OVERVIEW

1. Sustain and grow the **partnership to monitor** toxic pollution across the Basin.

2. **Identify and prioritize pollutants** in Columbia Basin waters by evaluating risk to humans and aquatic life.

3. Assess the **status and trends** and locations of priority pollutants in water, sediment, and/or fish.

4. Utilize **new tools and approaches** to evaluate legacy, emerging chemicals, and mixtures.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Scope of Monitoring Strategy

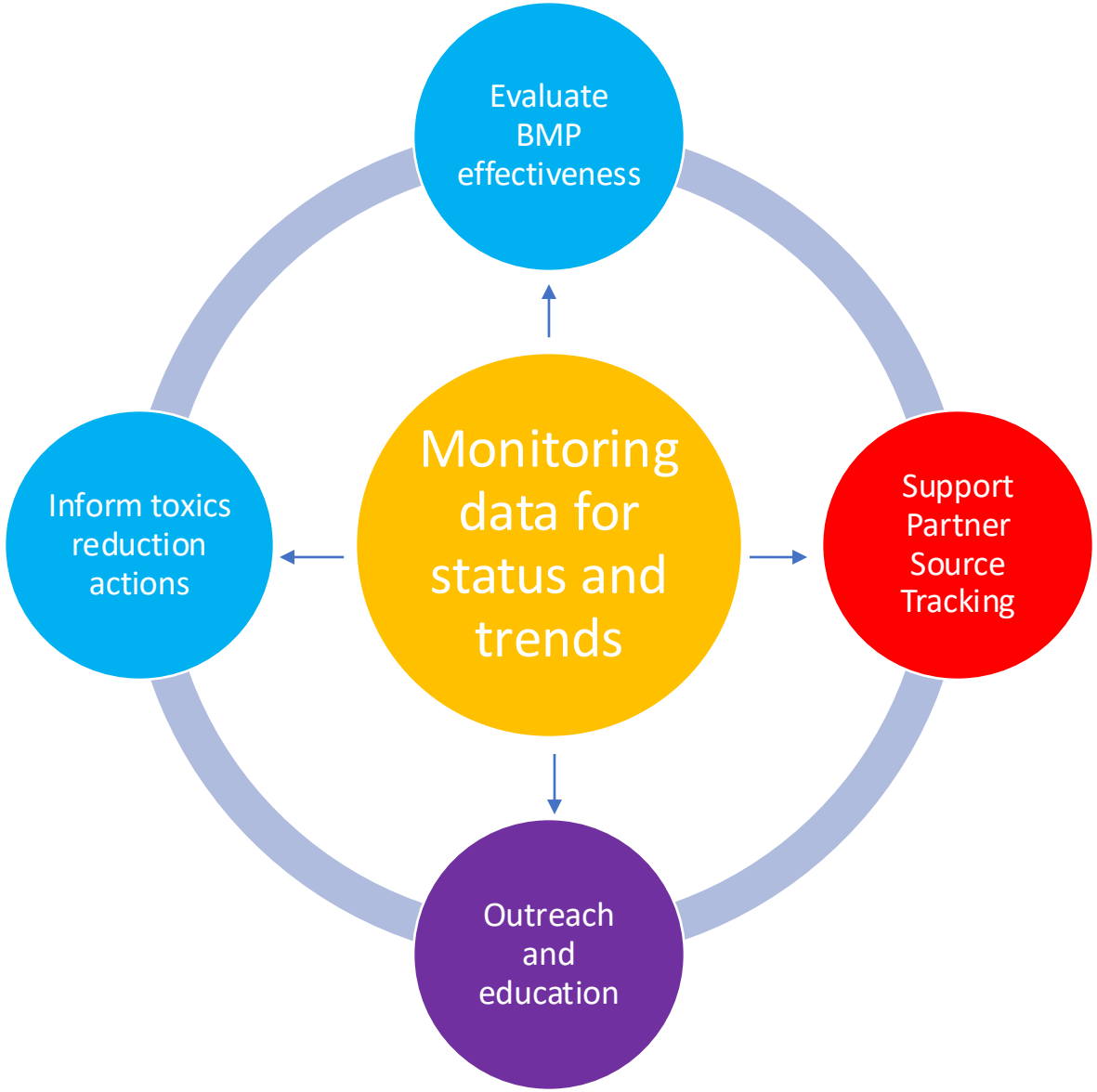
What's In Scope vs. Out of Scope

Monitoring Strategy Focus: The strategy addresses status and trends assessment per Clean Water Act Section 123, including what to monitor, where, and how to ensure data quality and comparability.

Responsibilities beyond scope of Monitoring Strategy

- CRBRP & Working Group responsibilities beyond the monitoring strategy scope:
  - ❑ Direct linkages between monitoring results and toxics reduction actions
  - ❑ Storytelling and results communication for public audiences
  - ❑ BMP effectiveness monitoring integration with program evaluation
- Governance structures for implementation – see YN Implementation Plan
- Long-term funding sustainability

Monitoring Strategy Objective Compared to CRBR Working Group and Partner Responsibilities



Feedback Summary and Planned Updates

Tribal Sovereignty and Cultural Values

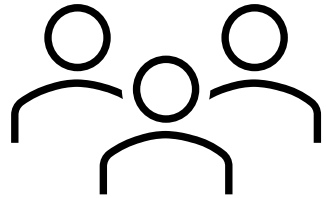
What We Heard: The critical importance of integrating tribal values, protecting sovereign rights, and monitoring tribally important species throughout the strategy.

Response:

- The strategy and CRBRP program aim to incorporate tribal values and protect fish and aquatic life, and we will continue engaging Tribes for feedback
- Tribally important species (salmon, lamprey, sturgeon) will be incorporated into monitoring priorities
- We will explore congruence with tribal toxics reduction plans and priorities in the adaptive management section

Feedback Summary and Planned Updates

Community Engagement and Public Communication



What We Heard: Strong desire for accessible public reporting, transparent monitoring activities, and support for interpreting results.

Response:

- Develop reporting mechanisms through periodic status and trends reports
- Enhance existing monitoring dashboard to show current activities and locations (improve data access by uploading data to Water Quality Portal)
- Clarify TMS network's role in results interpretation and communication
- Create community of practice support for data analysis through the TMS
- Establish regular external expert panel reviews for adaptive management

Feedback Summary and Planned Updates

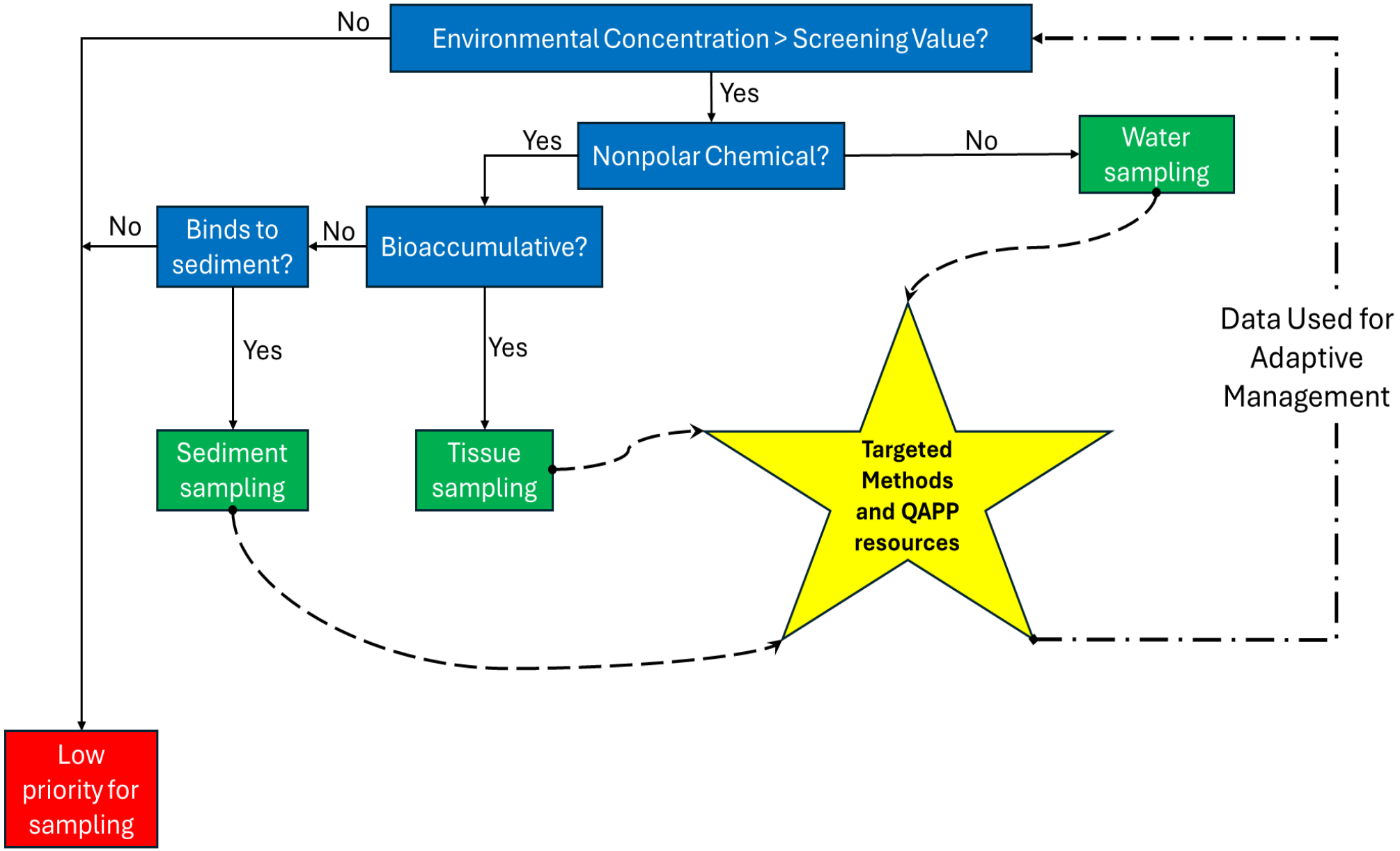
Emerging Contaminants and Historical Resources

What We Heard: Requests to prioritize the 2020 CRBRP Contaminants of Concern Framework and improve data Integration.

Response:

- Reference and integrate the 2020 basin-specific Contaminants of Concern Framework and impaired waters reference list
- Include historical studies dating back to 1985 in background section
- Work toward integrating Canadian National Pollution Release Inventory (NPRI) data for transboundary contamination (anticipated 2026)

DRAFT flowchart to guide selection of chemical monitoring priorities



Notes:

- Flow chart is for one chemical at a time
- Water sampling may include passive samplers
- Identification of "indicator species" to sample will be subject to focused TMS discussion
- Identification of "indicator pollutants" will be subject to focused TMS discussion

Feedback Summary and Planned Updates

Feedback Not Included in Planned Updates

- **Cyanotoxins:** Outside CRBRP scope as they are naturally occurring, but may be accelerated from excess nutrients.
- **PFAS Geodatabase Expansion & Microplastics:** Deferred pending clearer risk drivers and additional research. Much active research in this area currently.
- Out of scope comments mentioned previously on slide 35 that are part of the broader program.

Feedback Summary and Planned Updates

Pathway and Source Monitoring

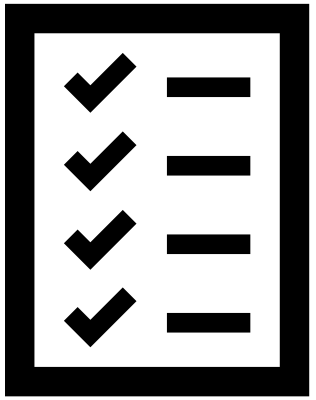
What We Heard: Interest in monitoring intermediate discharge pathways and connecting results to sources.

Response:

- Work with USGS on hydrologic modeling and GIS tools incorporating population and road density
- Note that connecting monitoring results to specific sources remains a program-wide responsibility beyond the strategy scope
- Source tracking, source reduction a program-wide challenge, and not specifically TMS

Feedback Summary and Planned Updates

Monitoring Protocols and Quality Assurance



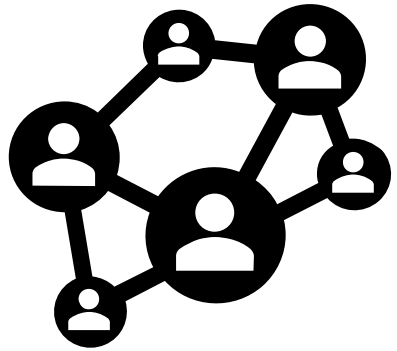
What We Heard: Support for standardized yet flexible protocols that accommodate different environmental conditions and local concerns.

Response:

- Proceed as planned with development of QAPP template including decision-tree tools that input project-specific Data Quality Objectives (DQOs) and output appropriate Standard Operating Procedures (SOPs)
- Create quality assurance templates and parameter standardization guidance for field staff
- Maintain customizable approach for local toxics concerns while ensuring basin-wide consistency

Feedback Summary and Planned Updates

Governance and Coordination



What We Heard: Questions about monitoring program governance, federal responsibility interstate mainstem waters, and coordination mechanisms.

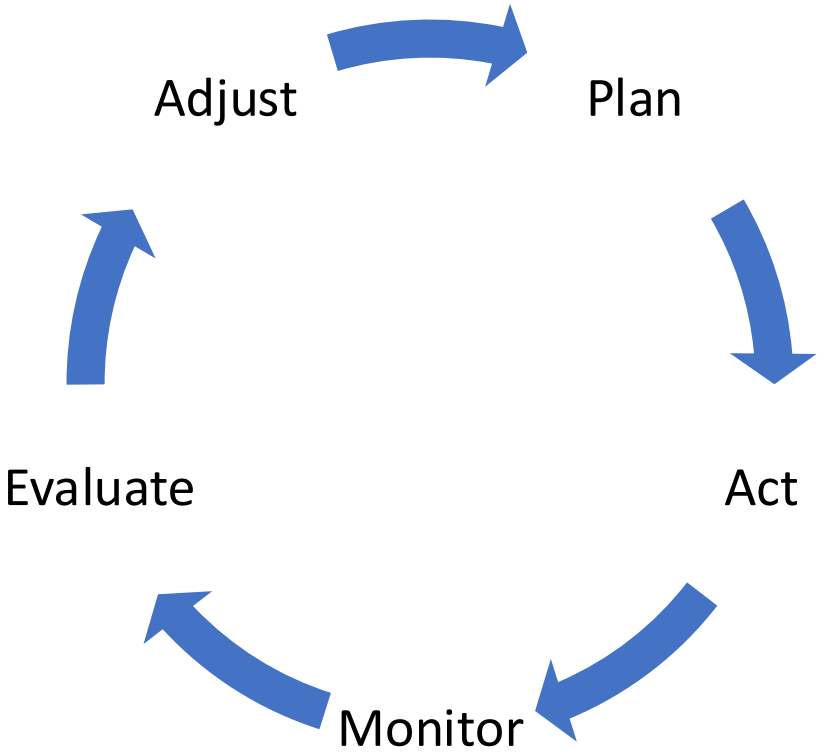
Response:

- Clarify federal responsibility for mainstem interstate boundary waters (pending additional discussion with states, Tribes, and CRB Federal Caucus)
- Continue coordination with state partners through TRL lead calls and TMS participation
- Address food security and food safety questions to the extent possible through indicator species and contaminant prioritization
- The Yakama Nation has developed a complementary implementation plan for a lead organization to address partnership-level responsibility and proposed governance, which was shared with the Working Group in June 2025.

Feedback Summary and Planned Updates

Adaptive Management

- Consider results from Tribal Reduction Lead, Tribal Lead, and Science and Monitoring grants
- Collaborate with Yakama Nation on mainstem monitoring plan and expansion into tributaries and lower basin with Lower Columbia Estuary Partnership
- Seek partner input on adaptive management decision and continual improvement
- Consider how monitoring data and reported status and trends point to areas for further investigation



MONITORING STRATEGY & RELATED UPDATES

1:50-2:10 Lower Columbia Strategy and Results (Catherine Corbett/Sean Payne)

2:10-2:25 Basin-Wide Implementation Plan (Sherrie Duncan / Laura Shira)

Tracking Toxics in the Lower Columbia River (TLC)

Catherine Corbett, Lower Columbia Estuary Partnership

In Partnership with USGS (Jennifer Morace and Sean Payne) and Columbia River Inter-Tribal Fish Commission (CRITFC)

Subset of Toxic Contaminant Monitoring in Lower Columbia River Mainstem

1989 - 1996: Bi-State Program

1995: National Estuary Program (LCEP) Created – Long-Term Monitoring Strategy approved with CCMP in 1999

1996 - Current: Synaptic Sampling

- EPA EMAP, USGS BEST, Others

2004-2007: BPA funded Ecosystem Monitoring Program (EMP)

- Habitat Monitoring, Water Quality Monitoring, Salmonid Sampling, Toxics Contaminant Model Development

Subset of Toxic Contaminant Monitoring in Lower Columbia River Mainstem

1989 - 1996: Bi-State Program

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- EPA EMAP, USGS BEST, Others

2004-2007: BPA funded Ecosystem Monitoring Program (EMP)
- Habitat Monitoring, Water Quality Monitoring, Salmonid Sampling, Toxics Contaminant Model Development

2007-2017: BPA funding shifted for EMP
- Habitat, fish, fish prey with NOAA providing inkind lab testing of fish tissue and prey for contaminants
- Stopped in 2016- no sustained contaminant testing since

2008-2010: USGS Columbia River Contaminants and Habitat Characterization (ConHab) Study (10 sites sampled; overlap with EMP)

2008 -2010: USGS Columbia River Inputs Study (WWTP vs stormwater)

2010: LCEP compiled all toxic contaminant data (in electronic form) into geodatabase, compared “current” data to historic (pre-2000) and used results to update sampling design for contaminants

ConHab Foodweb Study

Passive samplers

-contaminant analyses
-estrogen screen

Sediments

-contaminant analyses
-sediment transport modeling

Invertebrates

-contaminant analyses
-community assessment

Largescale Suckers

-contaminant analyses (organs and whole bodies)
-biomarkers

Osprey

-contaminant analyses
-productivity assessment
-well bird blood analyses

From Sept 2009 USGS, NOAA presentation to NPCC

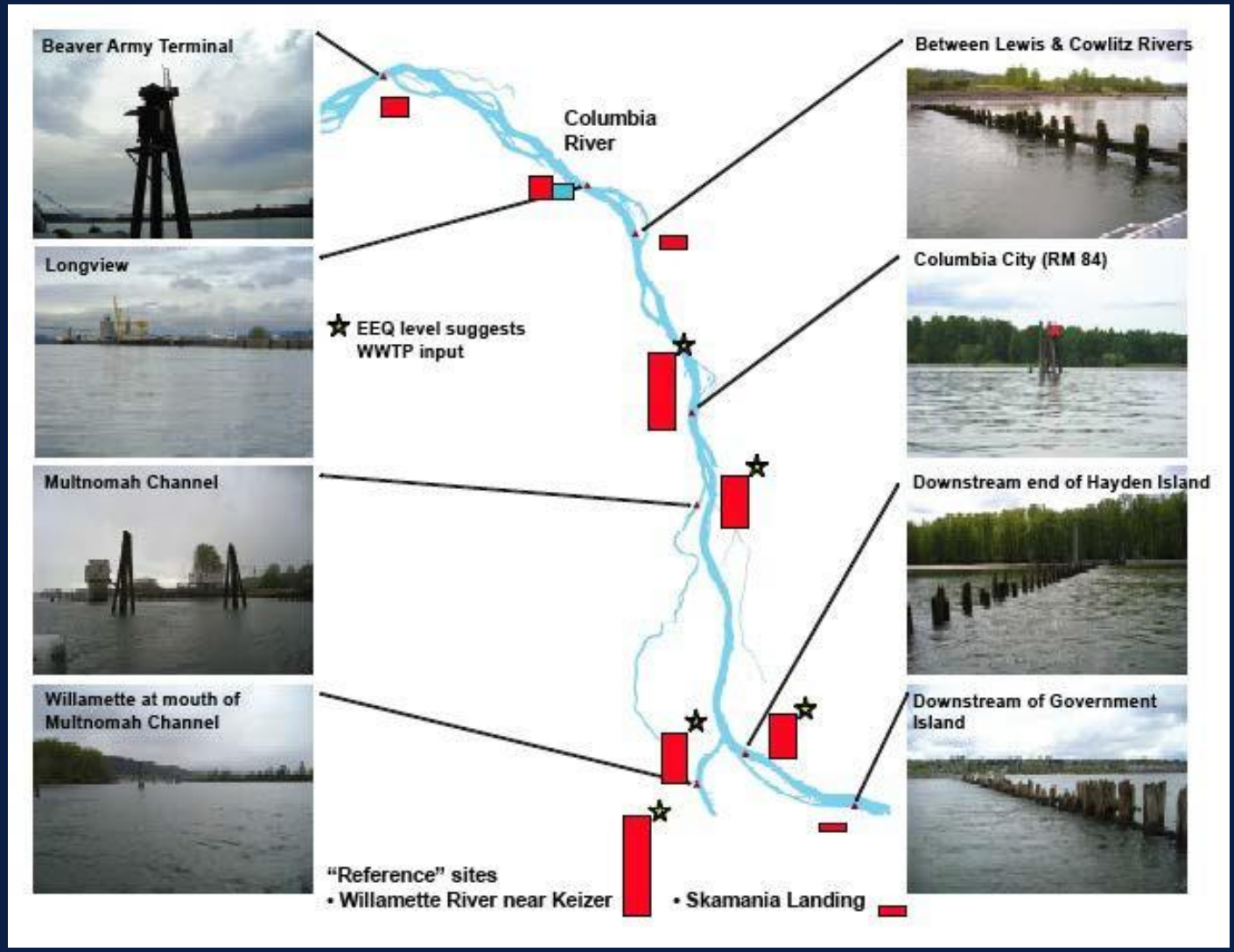
USGS science for a changing world

NOAA

ConHab Water Results

Estrogenicity,
PBDEs,
PCBs
present in CR

Higher near
urban areas



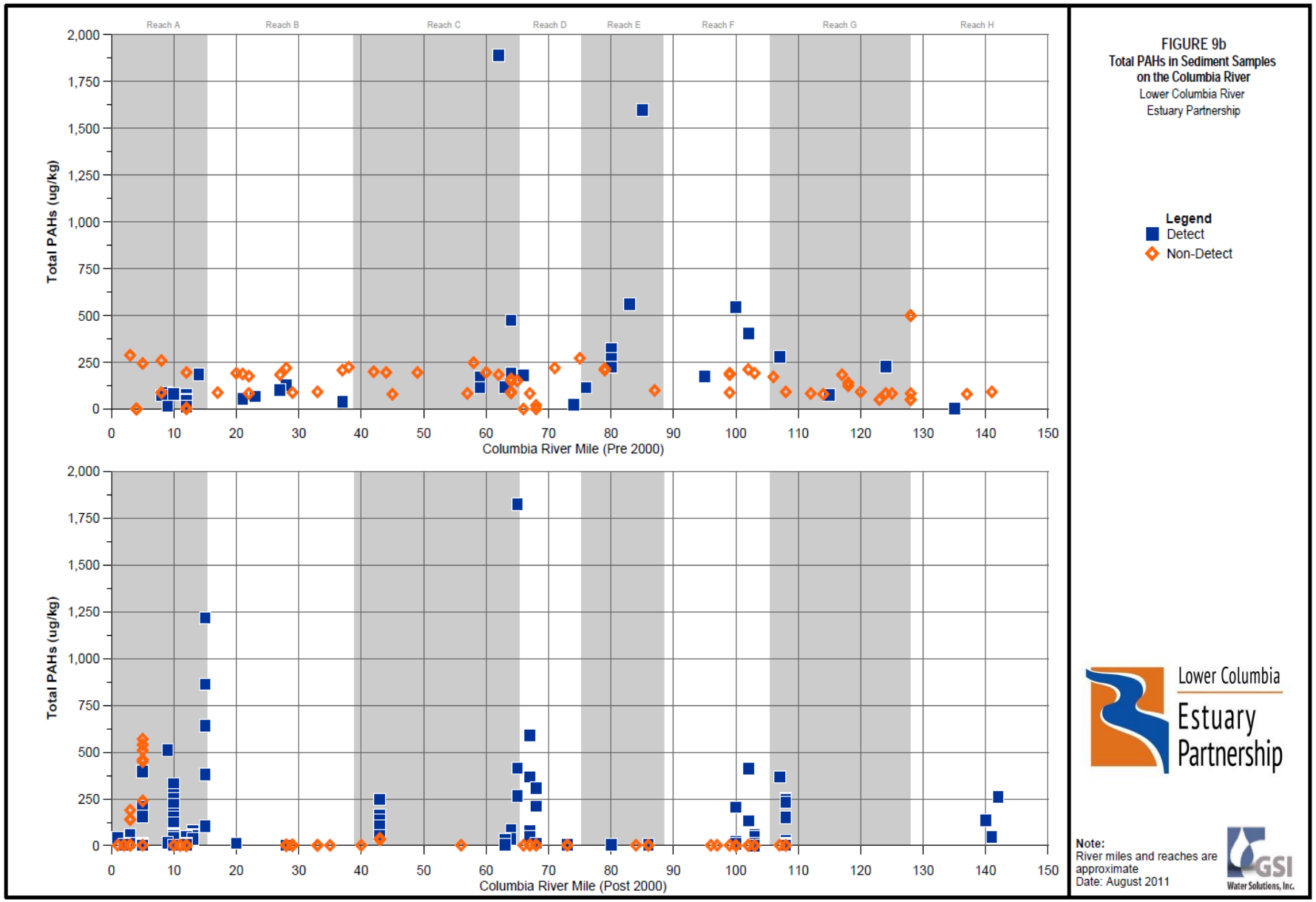
From Sept 2009 USGS, NOAA presentation to NPCC

USGS science for a changing world

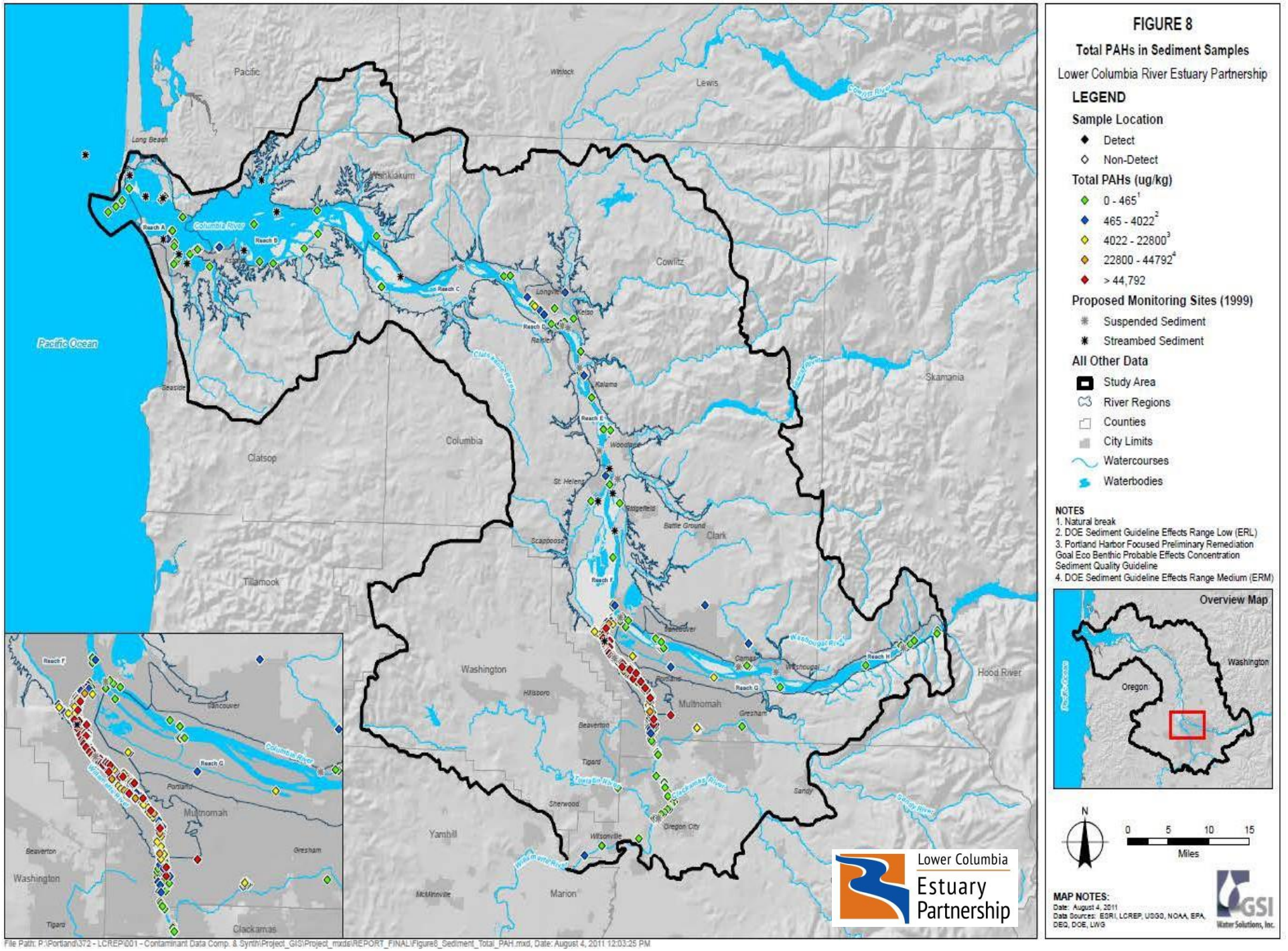
NOAA

2010 Compilation of data in lower Columbia River (in multiple media)

- **Compiled by GSI Inc**
- **Geodatabase available on our website**
- **Identification of hot spots by "classes" of toxics**
  - Metals
  - Legacy pesticides
  - Current use pesticides
  - Urban indicators
  - Others
- **Working Group used results to update sampling plan for contaminants**
  - WA Ecology
  - ODEQ
  - EPA
  - USGS
  - NOAA
  - USACE



2010 Compilation of Contaminant Data into Geodatabase



Resulted in List of Sites Selected for Further Chemical Contaminant Research in the lower Columbia River (updates 1999 sampling locations)

Original Location (recommended in LCREP 1999)	River Mile	Updated Recommended Locations (as of 4/13/11)	Type of Monitoring (status and trends or source tracking)
Columbia River, Warrendale	141	Columbia River, Warrendale @ RM 141	Status and trends
Columbia River upstream of Camas and Sandy River	122	DROPPED this station	
Columbia River downstream of Camas and Sandy River	~115	Columbia River downstream of Camas and Sandy River @~RM 115	Status and trends
		ADDED: Columbia River between RM 102 and 115	Source tracking
Columbia River upstream of the Willamette River	102	Columbia River upstream of the Willamette River @ RM 102	Status and trends
		ADDED: Columbia Slough near confluence with Willamette River	Source tracking
Willamette River upstream of mouth – St. Johns Bridge		Willamette River upstream of mouth – Morrison Street Bridge	Status and trends
Willamette River upstream of mouth – At upstream end of Multnomah Channel		Willamette River upstream of mouth – At upstream end of Multnomah Channel	Status and trends
Willamette River @ the Falls		Willamette River @ the Falls	Status and trends
Columbia River upstream of Multnomah Channel	~93/94	RM 93/94 (upstream of Multnomah Channel, downstream of Willamette)	Status and trends
Lake River – downstream of Vancouver Lake	~90?	Lake River – downstream of Vancouver Lake	Status and trends; Source tracking
Multnomah Channel downstream end near Scappoose Bay	~89?	Multnomah Channel downstream end near Scappoose Bay	Status and trends
Mouth of the Lewis River	~87	Mouth of the Lewis River	Status and trends; Source tracking
	~88	ADDED: mouth of Scappoose Bay	Source tracking
Columbia River upstream of Columbia City	85	DROPPED this station	
Columbia River @ Columbia City	83	Columbia River @ Columbia City	
Kalama River at Mouth	73	Columbia River downstream of Kalama River @~RM 73	Status and trends
Cowlitz Mouth – 2 locations upstream and downstream of mouth	68	Columbia River at confluence with Cowlitz River (1 station; see below for 2nd station)	Status and trends; Source tracking
	~65	Columbia River below confluence with Cowlitz River and downstream of Longview	Status and trends; Source tracking
Columbia River @ Beaver Army Terminal	53	Columbia River @ Beaver Army Terminal	Status and trends, ECY will continue to monitor with SPMDs
Cathlamet Channel	~49	Between RM 40 and Beaver Army Terminal	Status and trends
Columbia River Estuary – numerous locations	<40	More detailed research needed; stratified random, probabilistic design recommended	Status and trends

TLC Objectives and Design

- Kickstart a consistent long-term contaminants monitoring program in lower Columbia River by:
  - Providing up-to-date information on status of contaminants in the lower Columbia River
  - Updating the sampling design for contaminants, if needed, based on current vs historic levels of contaminants
    - Current concentration levels
    - Ultimately lead to source tracking
  - Involving critical partners, i.e., states, tribes, municipalities, in these and future steps in hopes of ultimately leading to source reduction of contaminants

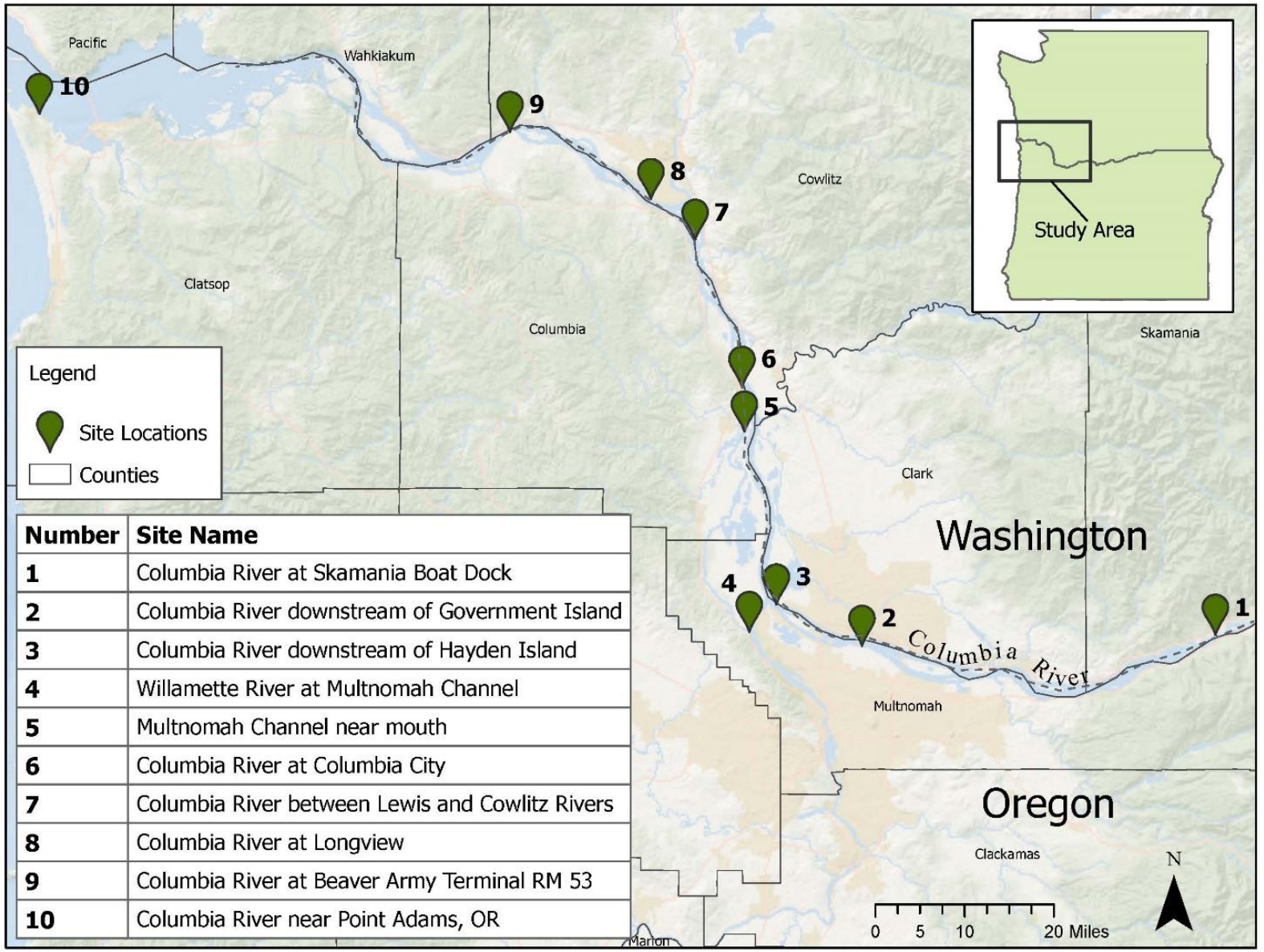
10 Sampling Locations: Repeat sites in EMP and ConHab

3 Sampling Periods: Upriver sources (Spring freshet)

Peak low and warm summer water (August)

First flush of local runoff (Oct/Nov)

Deploying SPMDs, POCIS and SPATT



Number	Site Name
1	Columbia River at Skamania Boat Dock
2	Columbia River downstream of Government Island
3	Columbia River downstream of Hayden Island
4	Willamette River at Multnomah Channel
5	Multnomah Channel near mouth
6	Columbia River at Columbia City
7	Columbia River between Lewis and Cowlitz Rivers
8	Columbia River at Longview
9	Columbia River at Beaver Army Terminal RM 53
10	Columbia River near Point Adams, OR

TLC Tasks

Task 1. Sample Collection, Lab Analysis, and Reporting of Results for Toxic Contaminants (USGS and CRITFC):

- **SPMDs (semi-permeable membrane devices)** that concentrate hydrophobic contaminants, like DDTs, PCBs, and PBDEs. They are sometimes referred to as "virtual fish" because they can mimic the bioconcentration of organic contaminants in the fatty tissues of fish
- **POCIS (polar organic chemical integrative sampler)** are deployed in the same canister as the SPMDs and concentrate hydrophilic compounds, like personal care products, many current use pesticides, and polyfluorinated “forever” chemicals (PFAS).
    - SPMDs and POCIS will be tested for PAHs, organochlorine compounds (DDTs), total PCBs, and halogenated flame retardants (PBDEs), per-and polyfluoroalkyl substances (PFAS), waste-indicator chemicals.
- **Solid Phase Adsorption Toxin Tracking (SPATT) to measure** four cyanotoxins—anatoxins, cylindrospermopsins, microcystins, and saxitoxins.

Tasks 2-3. Facilitate a Working Group focused on lower Columbia Toxics (LCEP with partners) and Disseminate Results:

- LCEP will facilitate a Working Group to guide an update of LCEP’s toxic contaminant monitoring program design
- Establish with partners a long-term contaminant reduction program for the lower Columbia River that includes status monitoring, source tracking, and contaminant reduction actions
- Develop Fact Sheets and Storymap to disseminate information to public and partners

Tracking Toxics in the Lower Columbia River Estuary

PFAS, Wastewater Indicators, and Cyanotoxins

December 3, 2025, CRBRP Toxics Monitoring Subgroup Quarterly Meeting

By Sean Payne* USGS Oregon Water Science Center

In Collaboration with the Lower Columbia Estuary Partnership and Columbia River Inter-Tribal Fish Commission

Photo Credit: USGS Staff

*Email: spayne@usgs.gov

U.S. Department of the Interior
U.S. Geological Survey

New USGS Data Release

Per- and polyfluoroalkyl substances (PFAS) and wastewater indicator compounds measured in polar organic chemical integrative samplers (POCIS), and cyanotoxin concentrations measured in solid phase adsorption toxin trackers (SPATTs), in the lower Columbia

June 24, 2025

View Data Release

Citation

Payne, S.E., Carpenter, K.D., Morace, J.L., Wise, D.R., and Alvarez, D.A., 2025, Per- and polyfluoroalkyl substances (PFAS) and wastewater indicator compounds measured in polar organic chemical integrative samplers (POCIS), and cyanotoxin concentrations measured in solid phase adsorption toxin trackers (SPATTs), in the lower Columbia River Estuary, Oregon and Washington, 2023: U.S. Geological Survey data release, https://doi.org/10.5066/P1NIA7DW.

- Currently has results for completed contaminant classes analyzed
- Results in review will be added to same data release

Link to Data release
https://www.usgs.gov/data/and-polyfluoroalkyl-substances-pfas-and-wastewater-indicator-compounds-measured-polar-organic

USGS

Contaminant Classes Analyzed

Contaminant Classes Analyzed For This Study

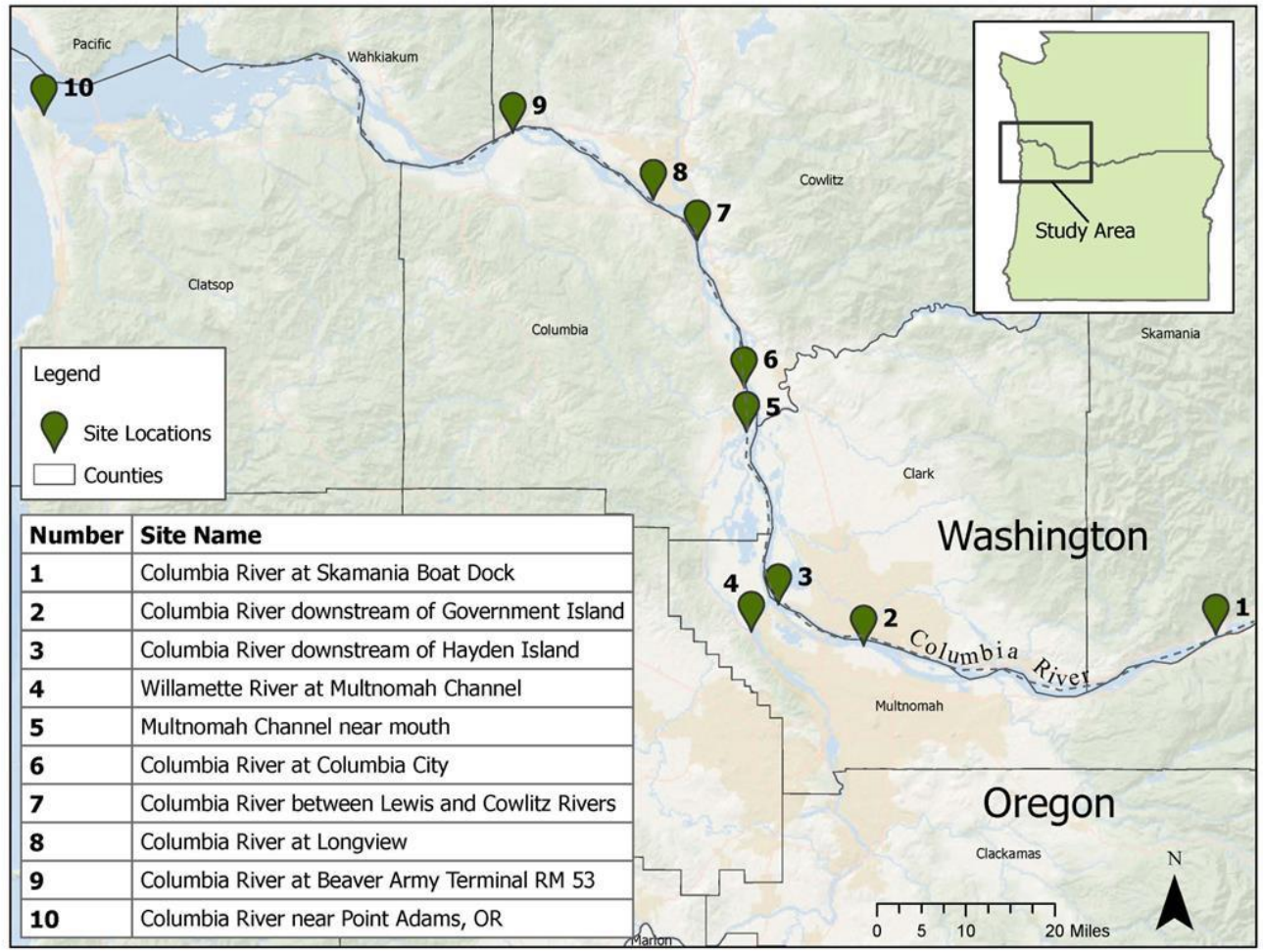
Contaminant Class	Sampler type	Total number of samples	Analyzing laboratory	Status
PCB	SPMD	28	CERC	In review
PBDE	SPMD	28	CERC	In review
OC pesticides	SPMD	28	CERC	In review
PAH	SPMD	28	CERC	In review
6PPD	***SPMD***	***28***	***CERC***	***In review***
PFAS	POCIS	28	CERC	Published
WWIs	POCIS	28	CERC	Published
Cyanotoxins	SPATT	29	ORWSC	Published

Abbreviations: 6PPD, N- (1,3-dimethylbutyl)-N' -phenyl-p-phenylenediamine; CERC, Columbia Environmental Research Center; OC, Organochlorine; ORWSC, Oregon Water Science Center; PBDE, Polybrominated diphenyl ethers; PCB, Polychlorinated biphenyls; PAH, Polycyclic aromatic hydrocarbons; PFAS, Per- and polyfluoroalkyl substance; POCIS, Polar organic chemical integrative samplers; SPATT, Solid Phase Adsorption Toxin Tracking; SPMD, Semi-permeable membrane device; WWI, Wastewater Indicator.

USGS

Project Background

Track the status and trends of toxic contaminants in the Lower Columbia River Estuary



Number	Site Name
1	Columbia River at Skamania Boat Dock
2	Columbia River downstream of Government Island
3	Columbia River downstream of Hayden Island
4	Willamette River at Multnomah Channel
5	Multnomah Channel near mouth
6	Columbia River at Columbia City
7	Columbia River between Lewis and Cowlitz Rivers
8	Columbia River at Longview
9	Columbia River at Beaver Army Terminal RM 53
10	Columbia River near Point Adams, OR

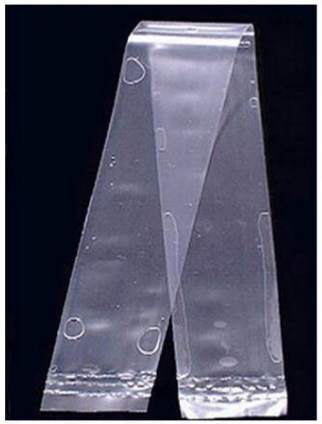
Map credit: Kiomi Pavlock

USGS

Approach

- Use of passive samplers – SPMDs, POCIS, SPATTs
- Sample during three times of the year to capture a suite of conditions
  1. During the snowmelt, spring freshet
  2. During peak summer low flow
  3. Beginning of rainy season, first flush

SPMD:
Semi-Permeable Membrane Device



Sources/Usage: Public Domain.

POCIS:
Polar Organic Compound Integrating Sampler

Sources/Usage: Public Domain.

SPATT:
Solid-Phase Adsorption Toxin Tracker

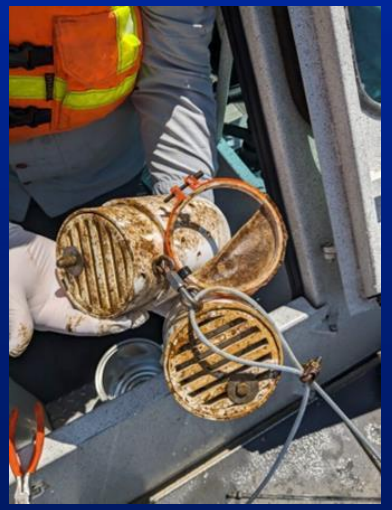


Photo credits: USGS Staff

USGS

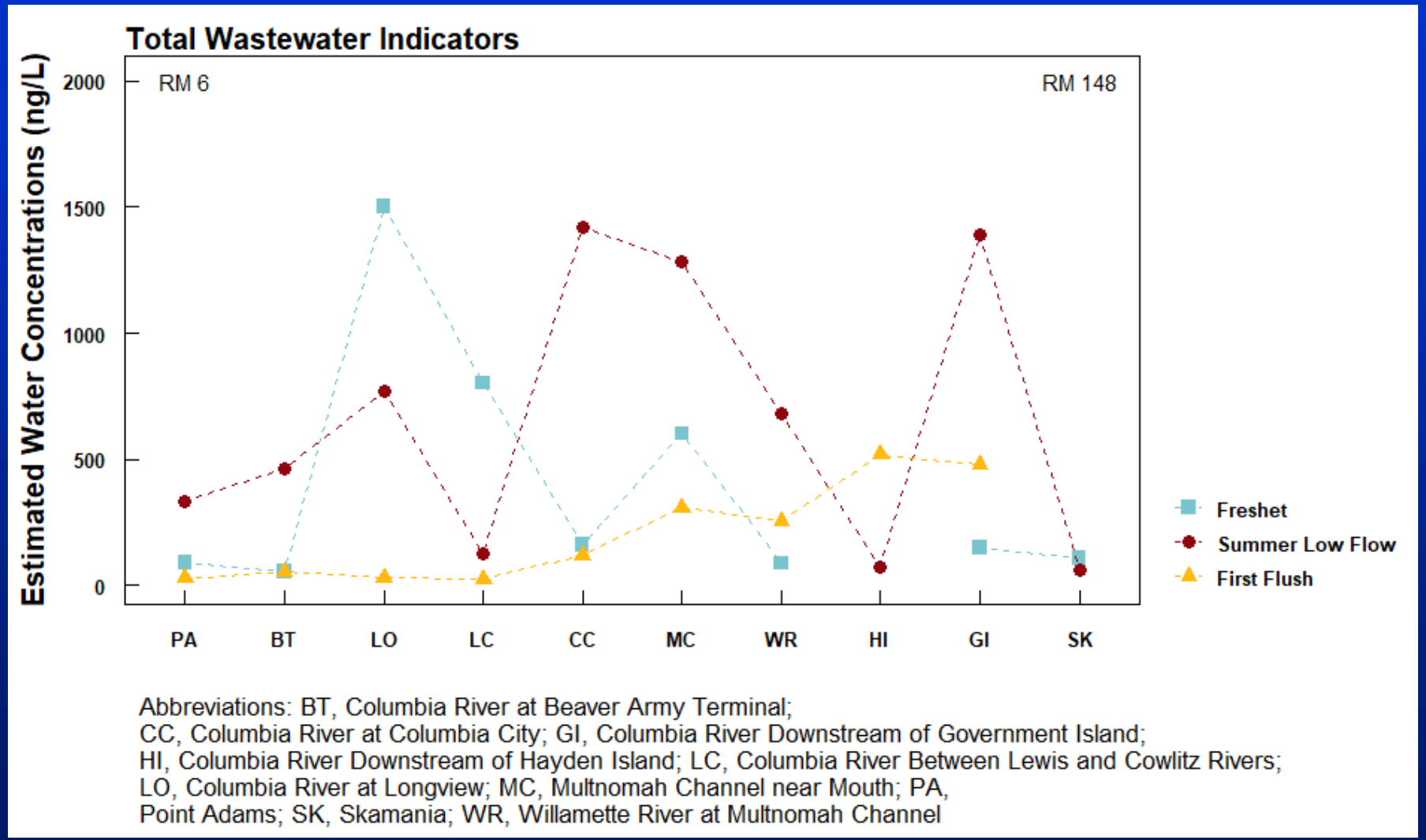
Approach

- Attach samplers to aircraft cable
- Weighed down by cinder blocks
- Attach to structures in the river
- Discrete temperature measurements during each deployment and retrieval
- Combination of field blanks and replicates used

Photo credits: USGS Staff

USGS

Wastewater Indicator Results

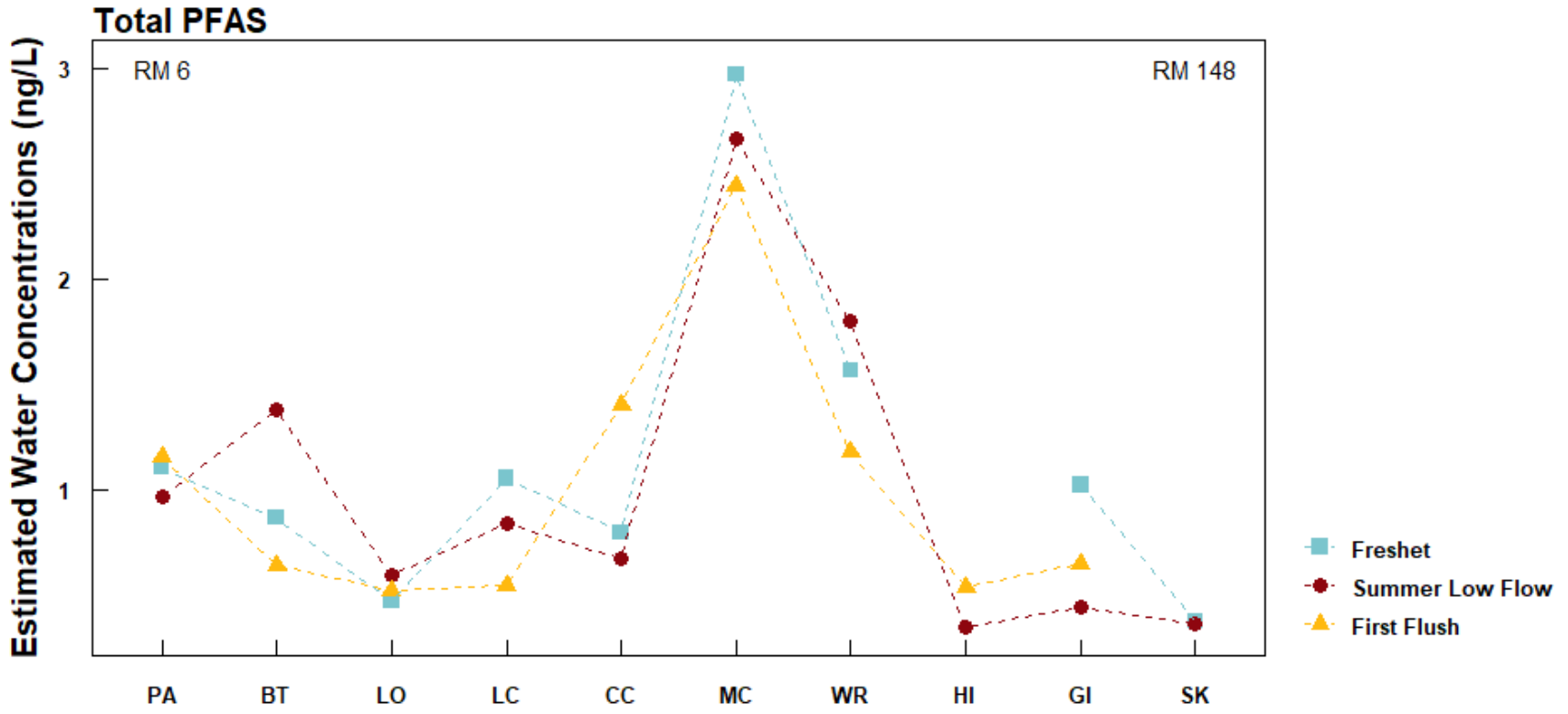


Abbreviations: BT, Columbia River at Beaver Army Terminal;
CC, Columbia River at Columbia City; GI, Columbia River Downstream of Government Island;
HI, Columbia River Downstream of Hayden Island; LC, Columbia River Between Lewis and Cowlitz Rivers;
LO, Columbia River at Longview; MC, Multnomah Channel near Mouth; PA,
Point Adams; SK, Skamania; WR, Willamette River at Multnomah Channel

Payne and others, 2025; Graph unpublished, do not cite or publish

USGS

PFAS Results



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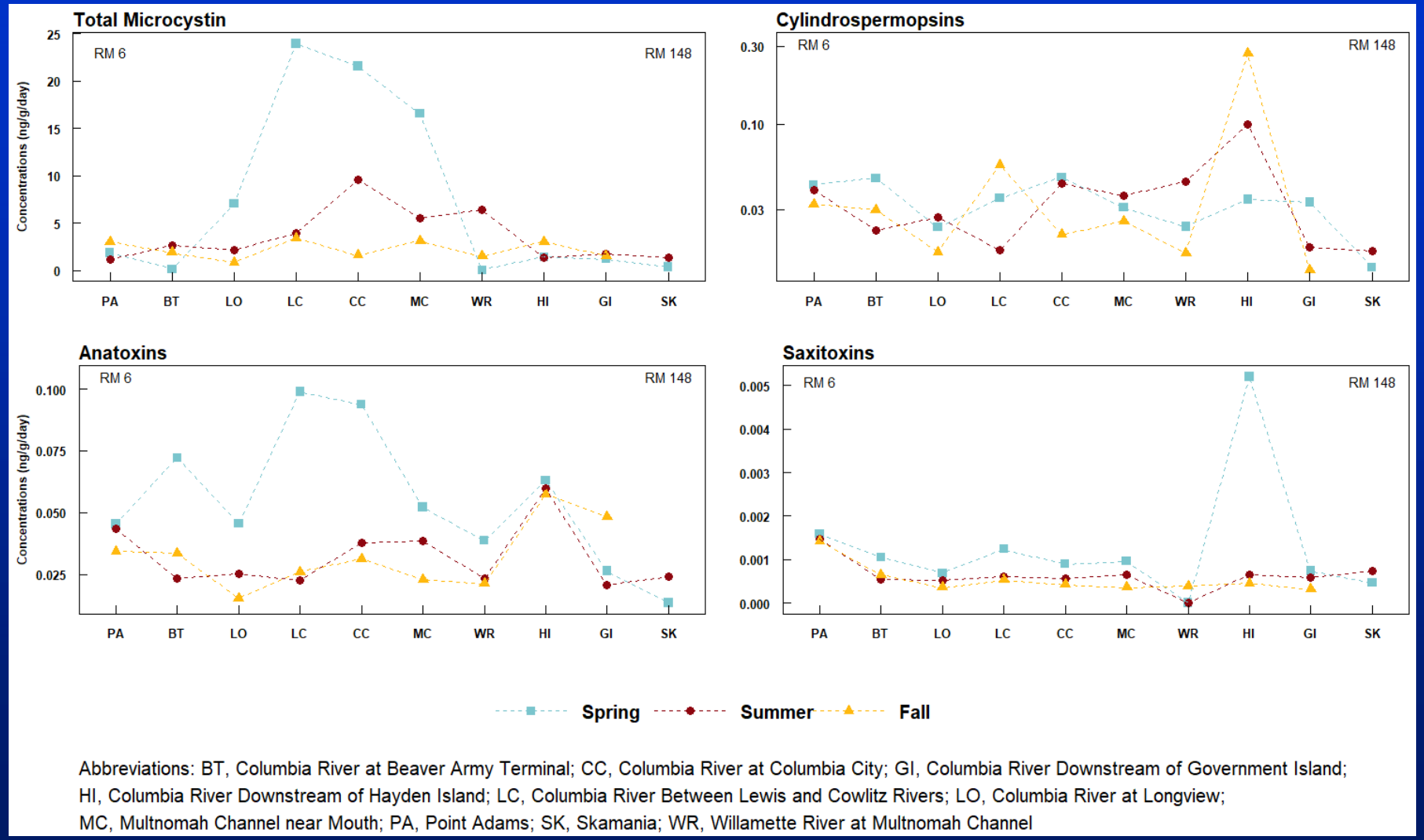
LO, Columbia River at Longview; MC, Multnomah Channel near Mouth; PA,
Point Adams; SK, Skamania; WR, Willamette River at Multnomah Channel

Payne and others, 2025, Graph unpublished, do not cite or publish

USGS

Cyanotoxins Results



Abbreviations: BT, Columbia River at Beaver Army Terminal; CC, Columbia River at Columbia City; GI, Columbia River Downstream of Government Island; HI, Columbia River Downstream of Hayden Island; LC, Columbia River Between Lewis and Cowlitz Rivers; LO, Columbia River at Longview; MC, Multnomah Channel near Mouth; PA, Point Adams; SK, Skamania; WR, Willamette River at Multnomah Channel

Payne and others, 2025; Graph unpublished, do not cite or publish

USGS

Acknowledgments

Organizations

Clackamas River Water (CRW)

Columbia Environmental Research Center (CERC)

Columbia River Intertribal Fish Commission (CRITFC)

Lower Columbia Estuary Partnership (LCEP)

Oregon Water Science Center (ORWSC)

U.S. Environmental Protection Agency (EPA)

Colleagues and Partners

Andrés Salazar, CRITFC

Catherine Corbett, LCEP

Dan Wise, ORWSC

Dave Alvarez, CERC

David Piatt, ORWSC

David Weathers, ORWSC

Elena Nilsen, ORWSC

Jennifer Morace, ORWSC

Kurt Carpenter, ORWSC

Michael Wilkin, CRITFC

Nora Herrera, ORWSC

Tracy Triplett, CRW

USGS

Future Considerations

USGS

Columbia River Basin Monitoring Program Implementation Plan

Presented by Laura Shira and Sherrie Duncan, Yakama Nation

Image: Steven Pauley

Yakama Nation Columbia River Basin

Draft Implementation Plan for a Basin-Wide Monitoring Program

June 10 and 12, 2025

Laura Shira and Sherrie Duncan, Yakama Nation Fisheries

Columbia River Basin Partnership

Draft Implementation Plan for a Basin-Wide Monitoring Program

The Yakama Nation
Department of Natural Resources, Fisheries
Superfund Section

And

Janet Knox, LG

MOTT MACDONALD

May 2025

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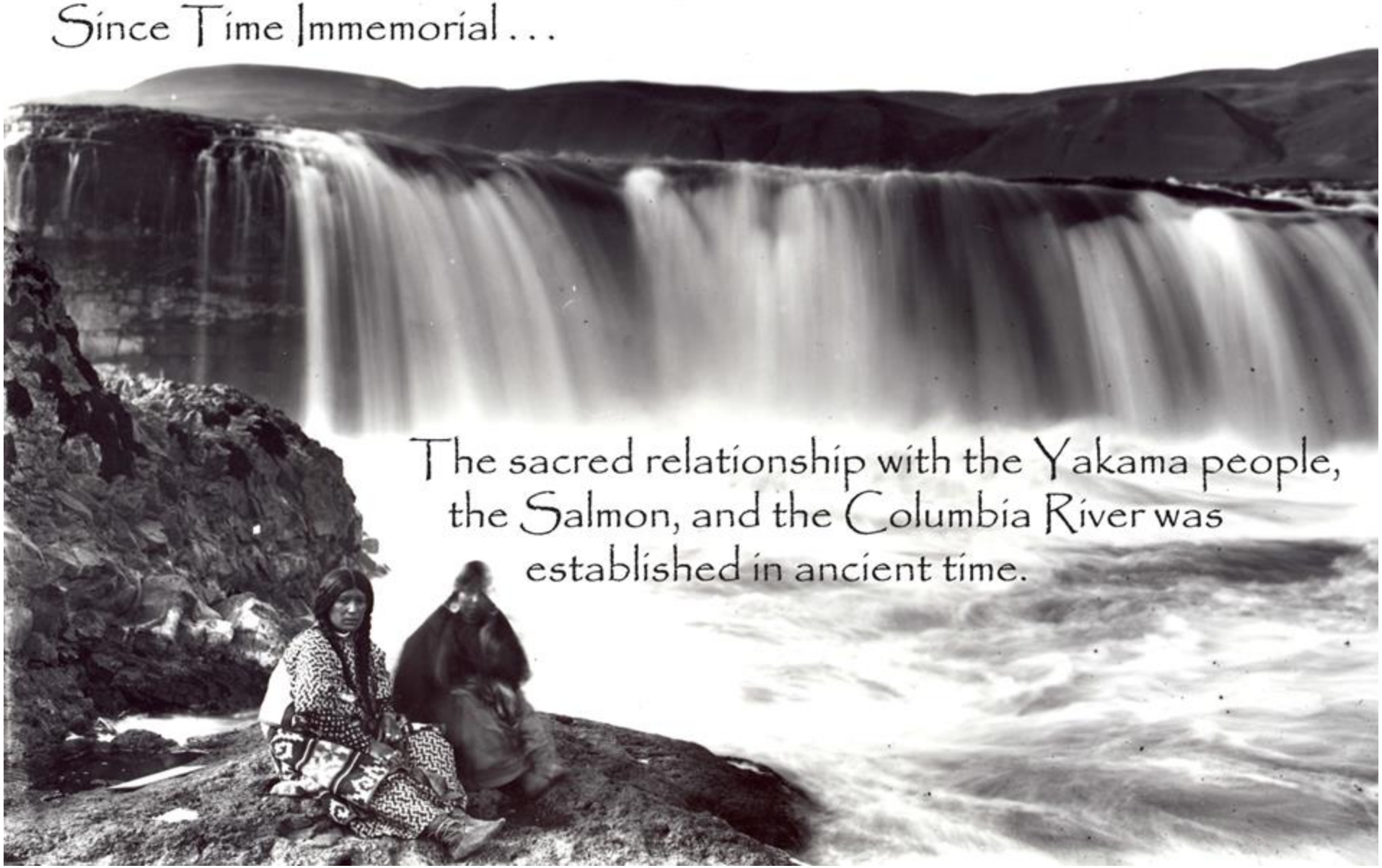
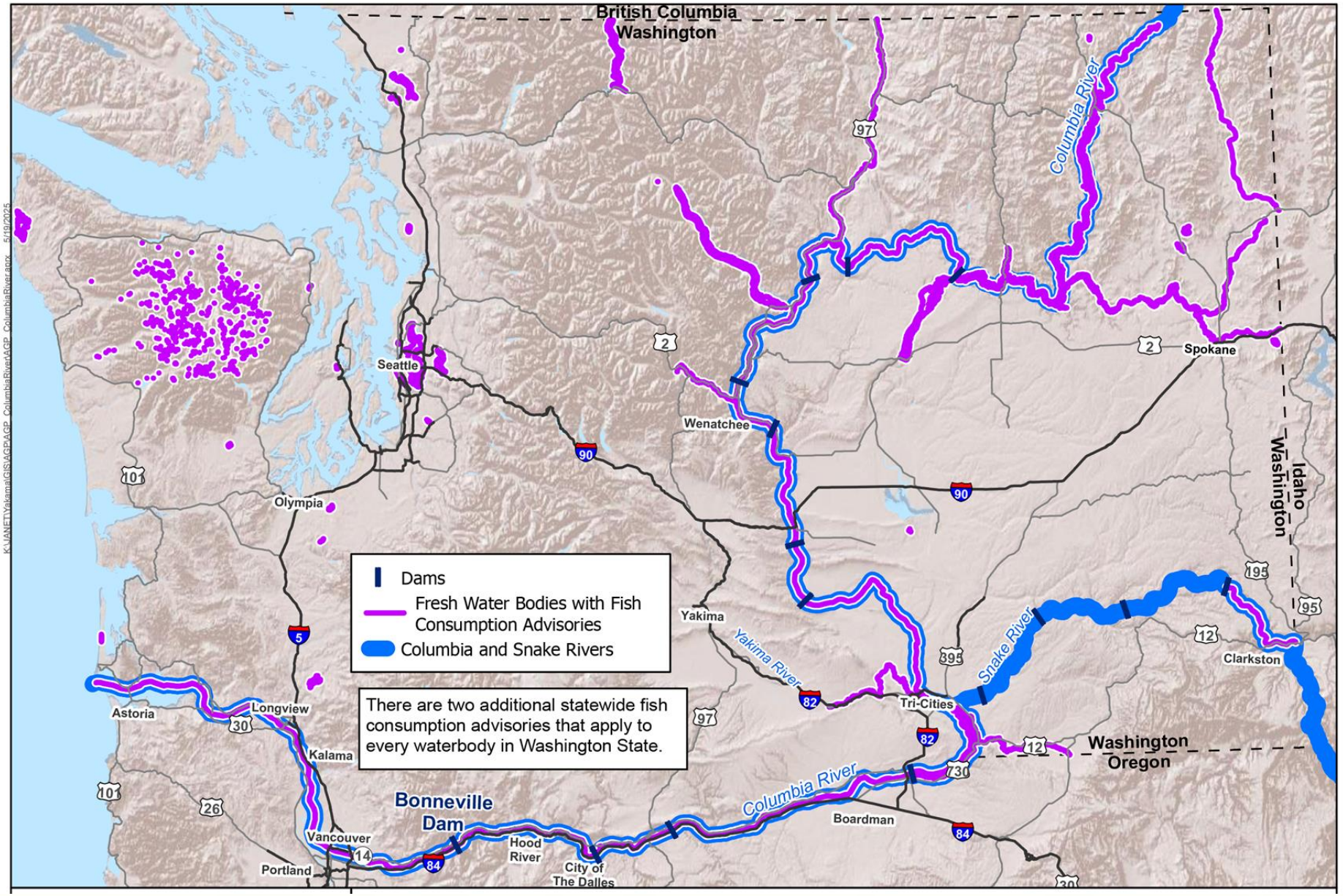
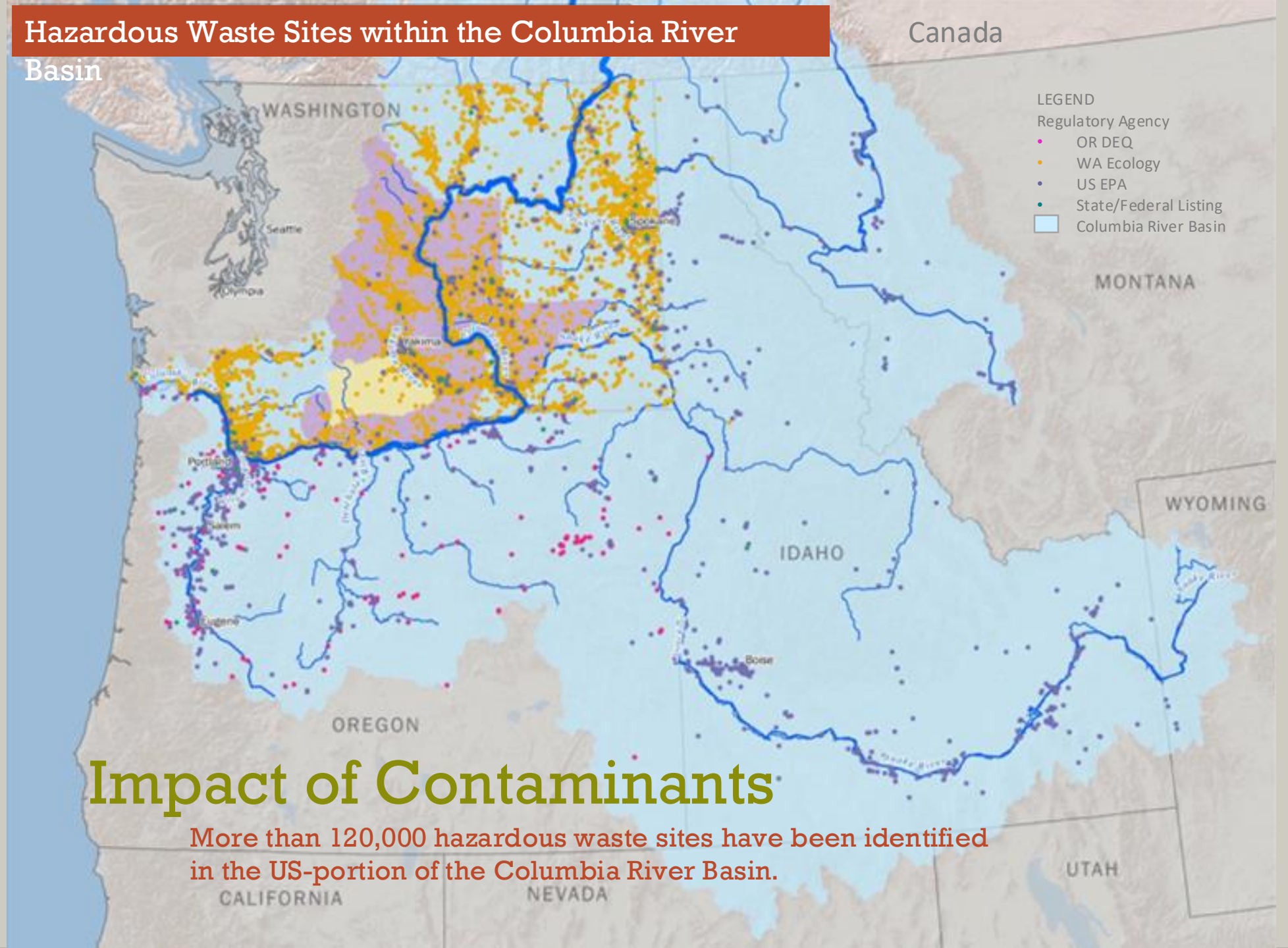



British Columbia
Washington
Columbia River
Seattle
Spokane
Wenatchee
Olympia
Idaho
Washington
Dams
Fresh Water Bodies with Fish Consumption Advisories
Columbia and Snake Rivers
There are two additional statewide fish consumption advisories that apply to every waterbody in Washington State.
Yakima
Yakima River
Snake River
Clarkston
Tri-Cities
Washington
Oregon
Astoria
Longview
Kalama
Bonneville Dam
Columbia River
Boardman
Vancouver
Portland
Hood River
City of The Dalles

Hazardous Waste Sites within the Columbia River Basin



Impact of Contaminants

More than 120,000 hazardous waste sites have been identified in the US-portion of the Columbia River Basin.

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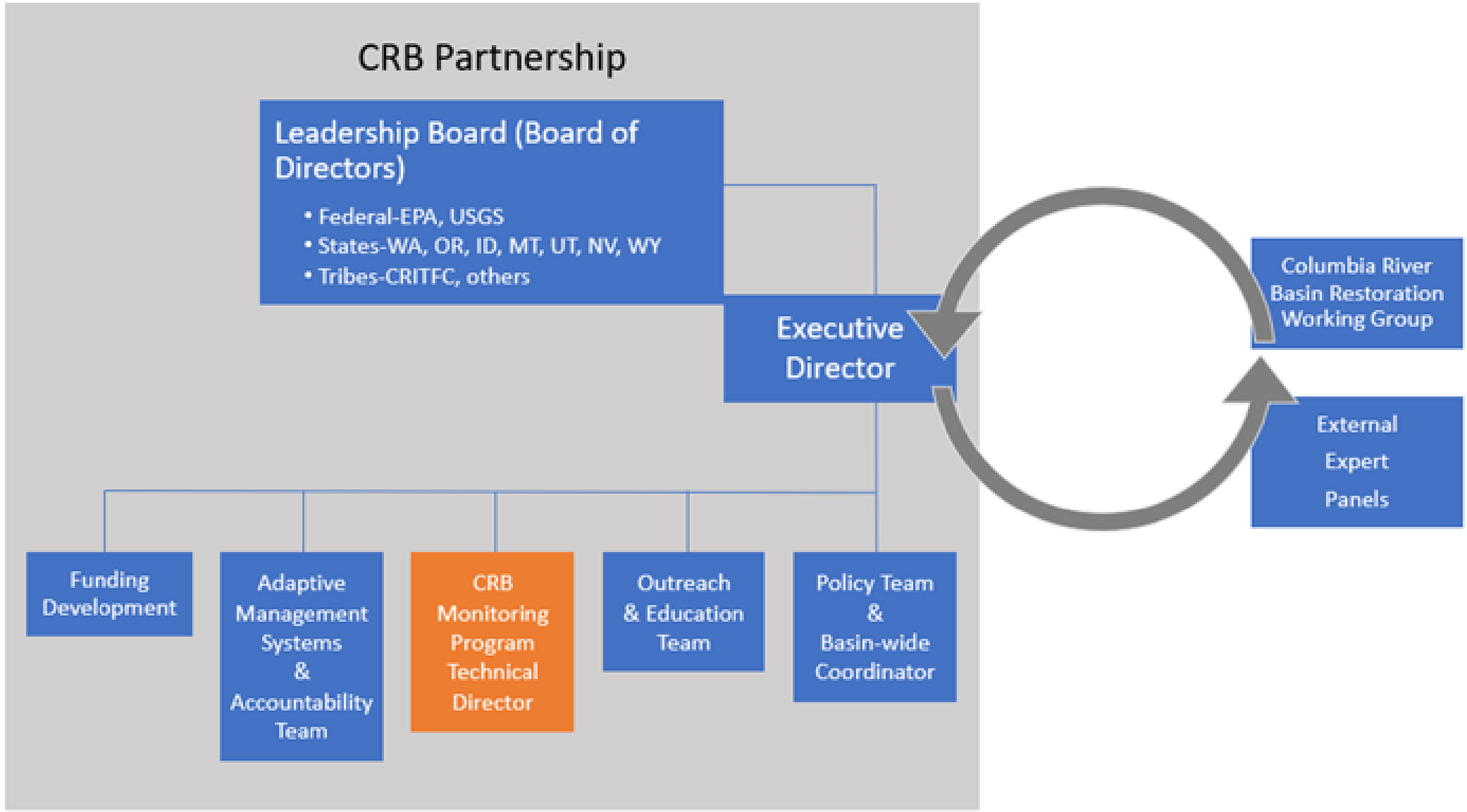
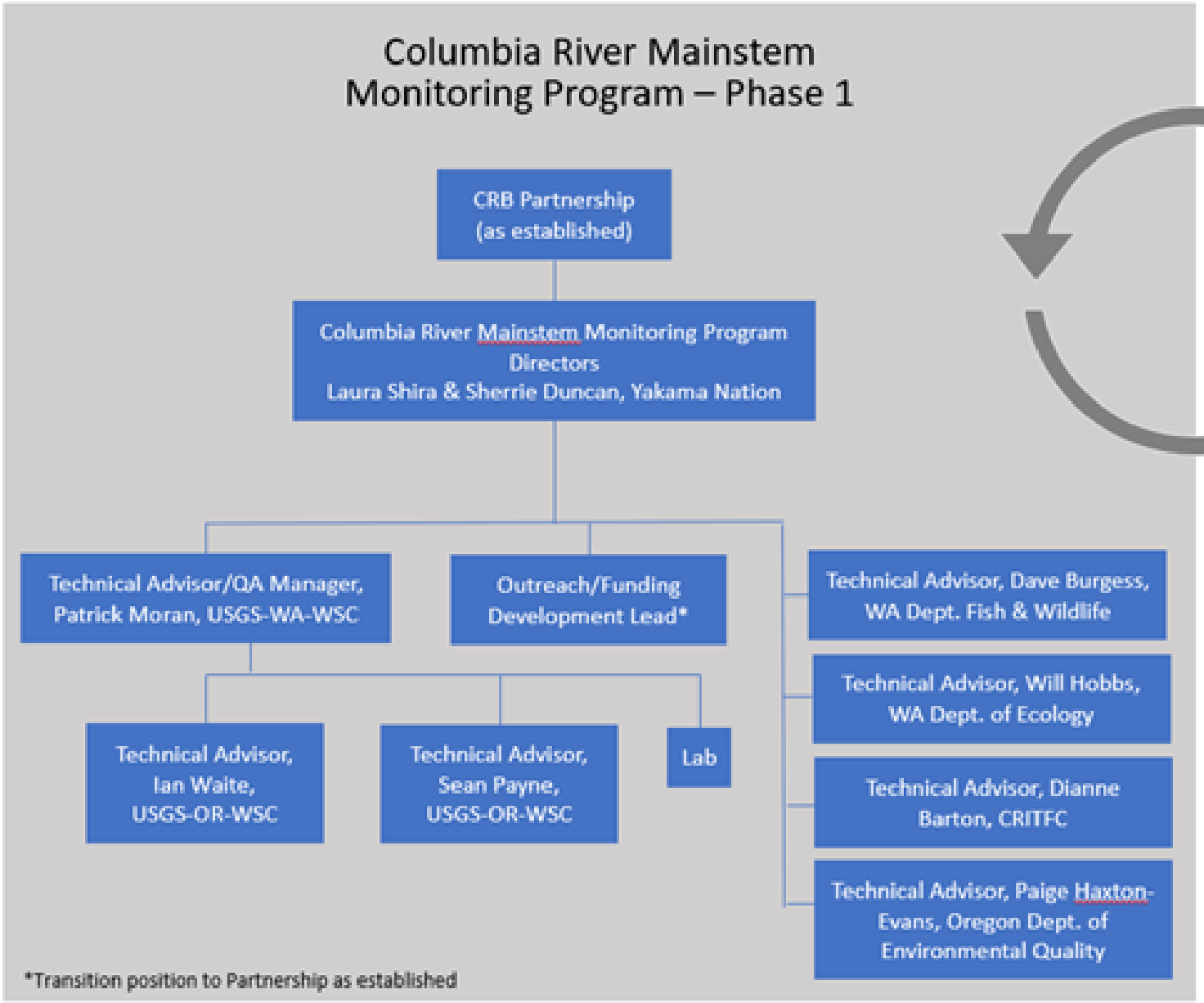
Impacts from Contaminated Sediment Sites

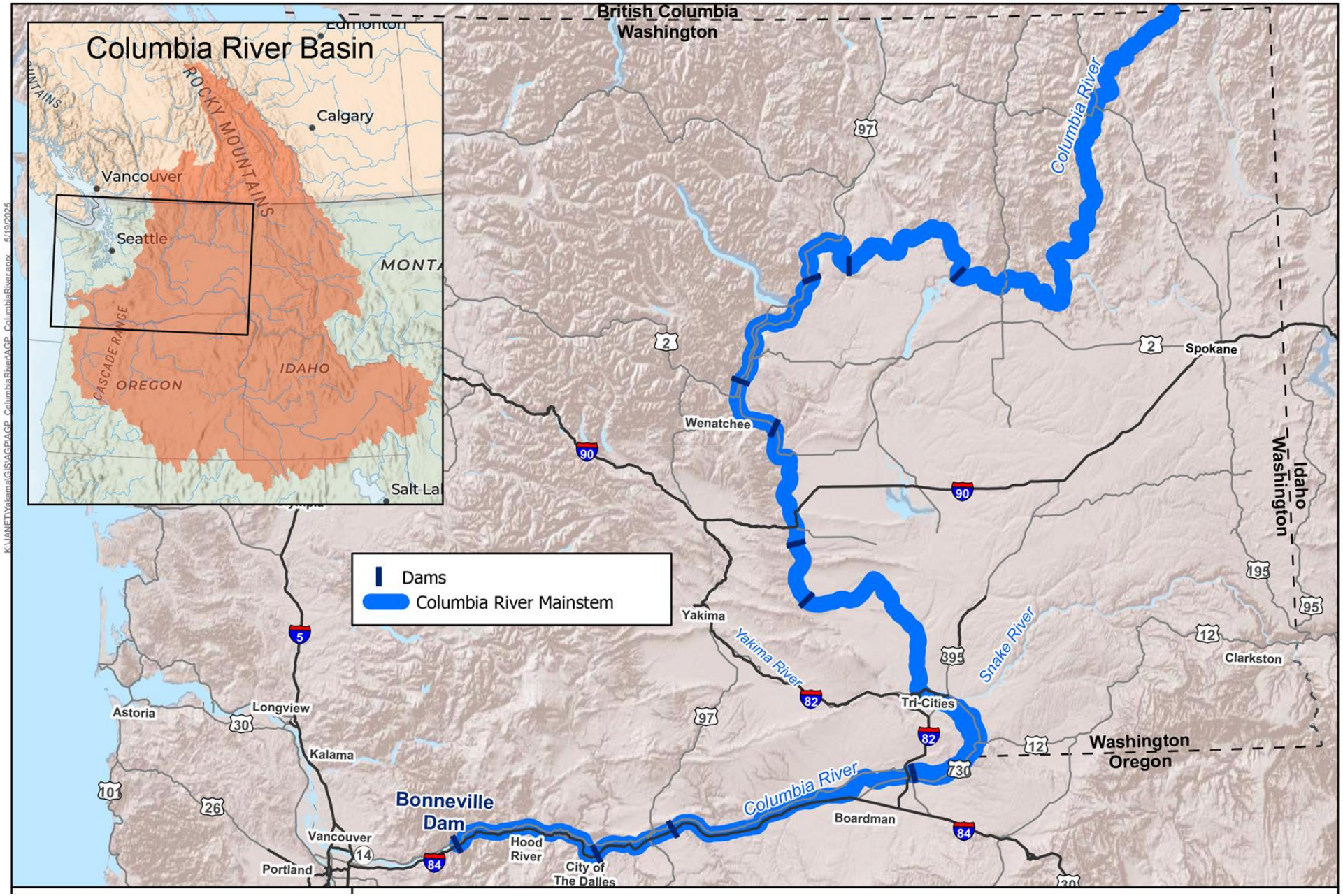
Above. Two Yakama girls cradle Asum for release into the Yakima River.

- Contaminated sediments result in contaminated fish.
- Tribal populations (including children) consume significantly more fish than other populations.
- There are extensive fish advisories on the Willamette and Columbia rivers.
- Risks from contaminated sediments and fish have negative impacts to health and well being.
- Contamination of First Foods is a form of violence and injustice experienced specifically by Indigenous people.


CRB Partnership
Leadership Board (Board of Directors)
• Federal-EPA, USGS
• States-WA, OR, ID, MT, UT, NV, WY
• Tribes-CRITFC, others
Executive Director
Columbia River Basin Restoration Working Group
External Expert Panels
Funding Development
Adaptive Management Systems & Accountability Team
CRB Monitoring Program Technical Director
Outreach & Education Team
Policy Team & Basin-wide Coordinator

Columbia River Mainstem Monitoring Program – Phase 1





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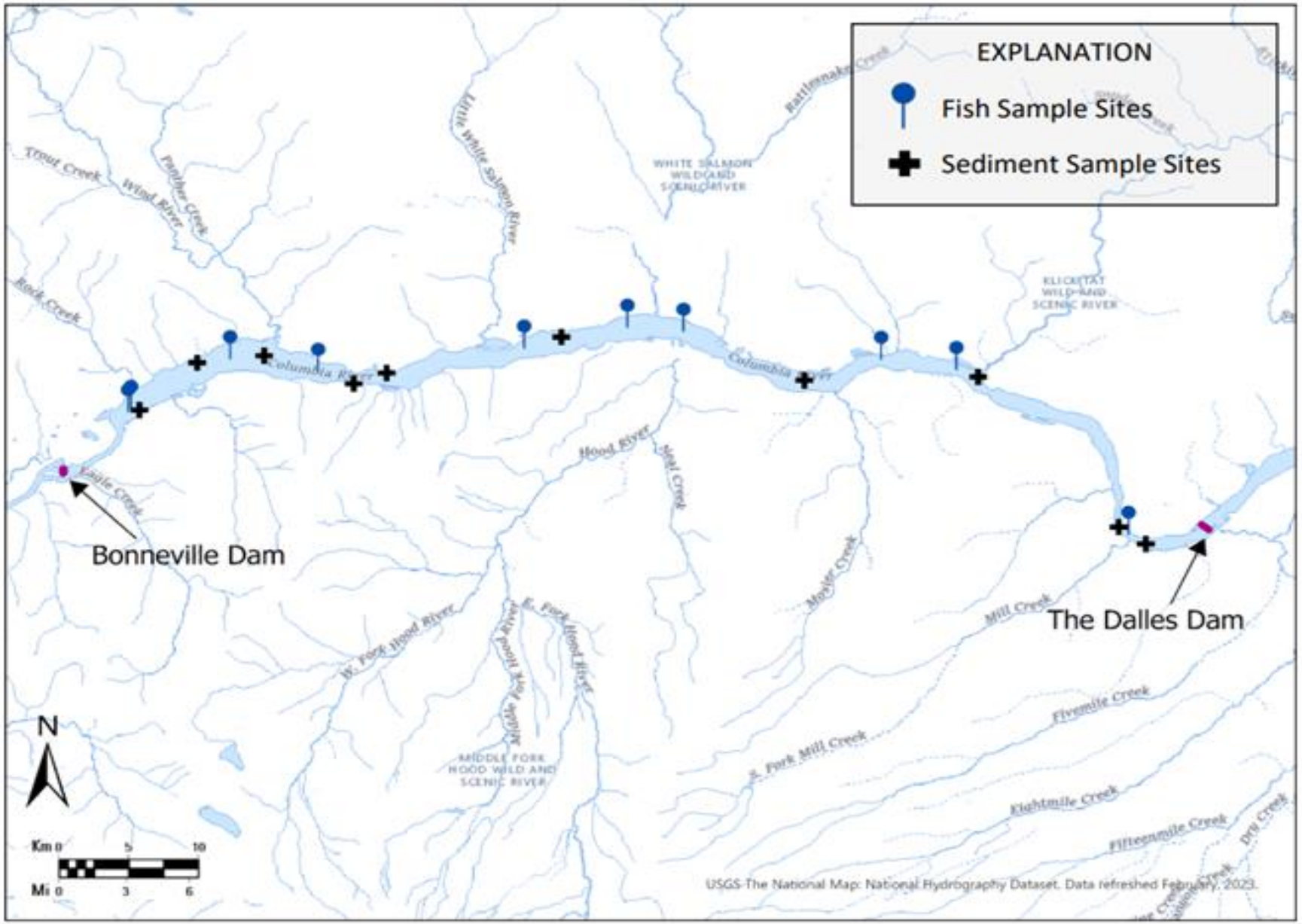

Yakama Nation Fisheries

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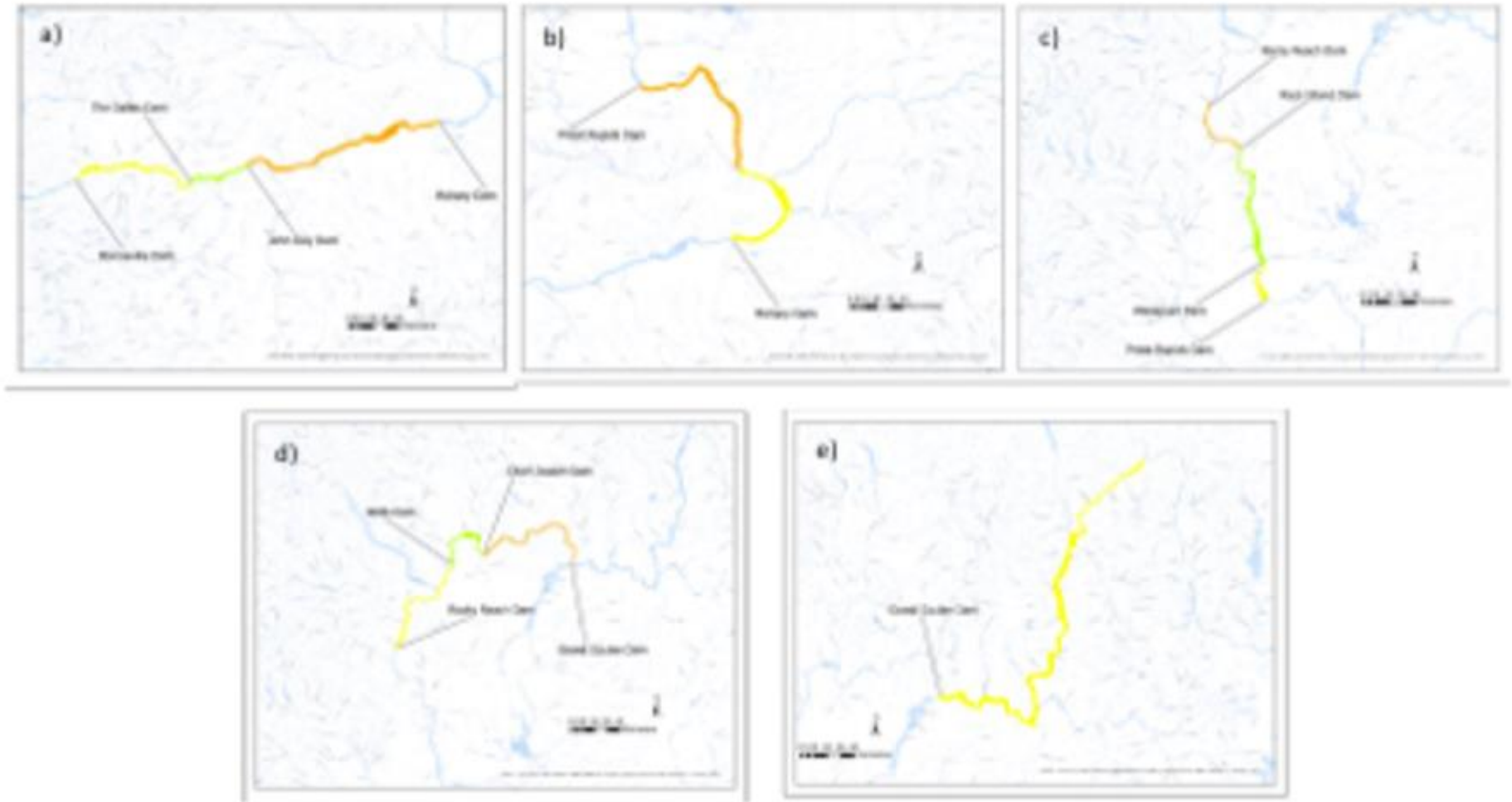
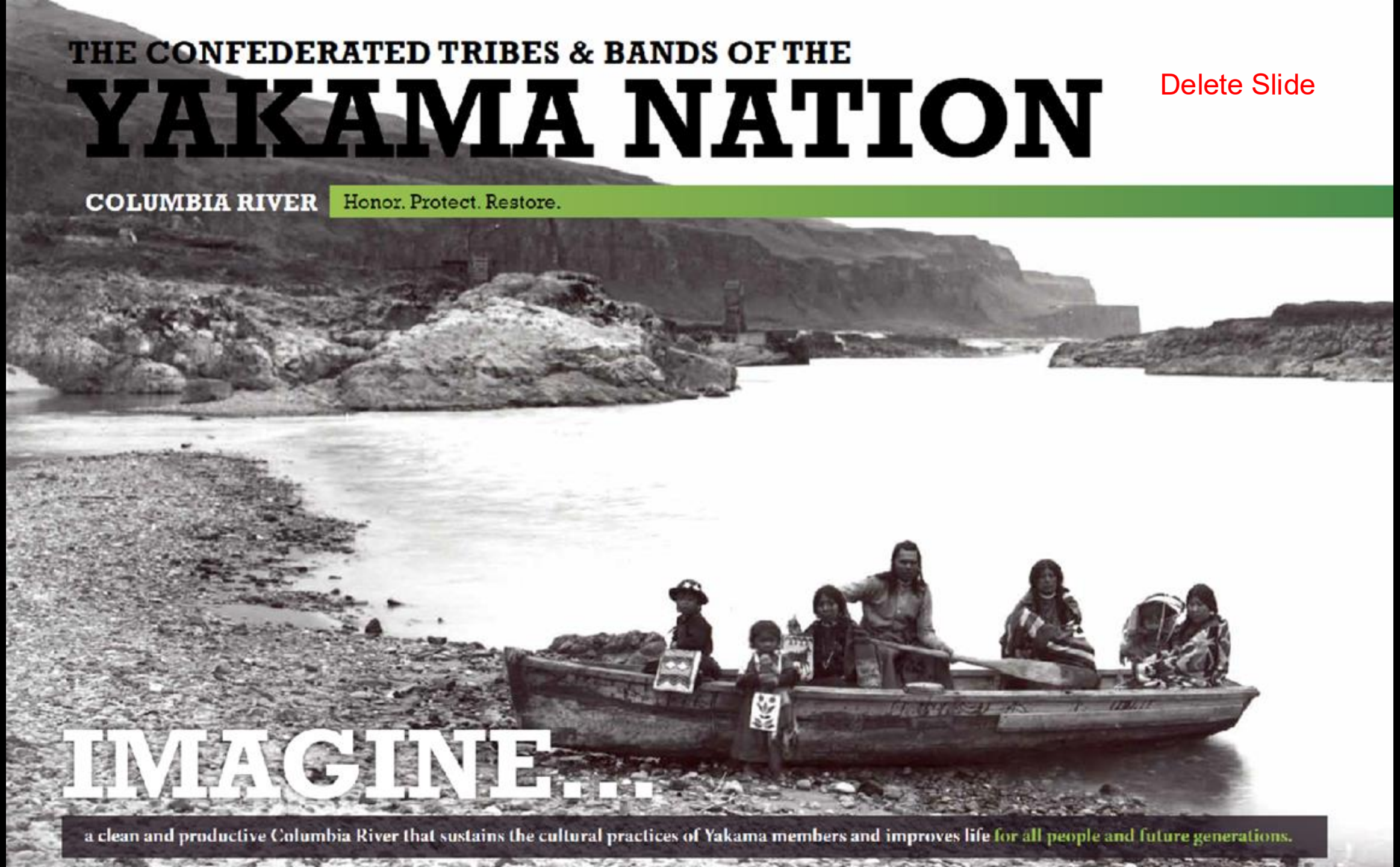


Figure 2. Example of reservoir groupings that would allow the study area, from Bonneville Dam to the international border with Canada, to be sampled in a 5-year rotation. Example groupings depicted are a) Bonneville, The Dalles, and John Day reservoirs; b) McNary reservoir and the Hanford Reach; c) Priest Rapids, Wanapum, and Rock Island reservoirs, d) Rocky Reach, Wells, and Chief Joseph reservoirs, and e) Lake Roosevelt. See Table S1 for additional details about the reaches. Source: USGS-TNM, USGS The



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HONOR. PROTECT. RESTORE.

Resources

- Confederated Tribes and Bands of the Yakama Nation - https://www.yakama.com/
- Yakama Nation Fisheries - https://www.yakamafish-nsn.gov/restore/projects/columbia-river-mainstem-water-quality-monitoring-program
- “Land of the Yakamas” - https://yakamafish-nsn.gov/LandOfTheYakamas

Next Steps

TMS meeting – December 3, 2025

Feedback on Monitoring Strategy shared with Working Group – December 15, 2025

Share updated draft and engage TMS and Working Group – April 21-22, 2026

Finalize strategy – Fall 2026


Image: Amy Puls

WANT TO GET INVOLVED?!

Reach out to us anytime!

The TMS Core Team

- Patrick Moran (USGS)
- Mark Jankowski (EPA)
- Lisa Kusnierz (EPA)
- Meghan Dunn (EPA)
- Ashley Zanolli (EPA)
- Sarah Dunn (USGS/PNAMP)

Questions?
Want to join the TMS distribution list?
Email us at gs-crbtoxmon@usgs.gov

WRAP UP

COLUMBIA RIVER BASIN
RESTORATION PROGRAM

EPA USGS

EPA GRANTEE RESOURCES

Columbia River Basin Restoration Program Home:
https://www.epa.gov/columbiariver

Columbia River Basin Restoration Program Funding Assistance Page:
https://www.epa.gov/columbiariver/columbia-river-basin-restoration-funding-assistance-program

QAPP Resources:
https://www.epa.gov/r10-tribal/quality-assurance-project-plans-tribes-region-10
https://www.epa.gov/quality/quality-assurance-project-plan-development-tool

Paperwork Reduction act Guidance:
Refer to this if you (the grantee) need to do a survey or gather input from the public
https://work.epa.gov/innovation/policy-guidelines-checklist-participatory-science-projects

WQX Home:
https://www.epa.gov/waterdata/water-quality-data-upload-wqx

WQX Trainings:
https://youtu.be/4doKGKUySNk
https://youtu.be/KA6QPEiZfZ8
Quick WQX Web User guide

THANKS FOR JOINING US!

Questions? Want to join the TMS distribution list?
Email us at gs-crbtoxmon@usgs.gov

Image: Amy Puls