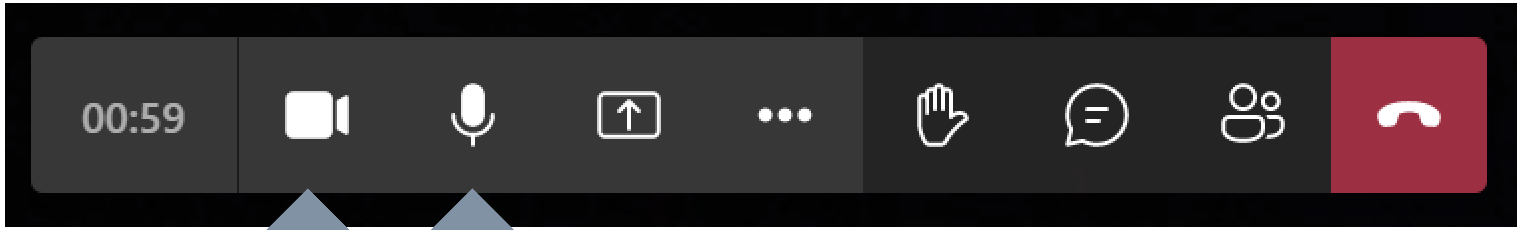
COLUMBIA RIVER BASIN
RESTORATION PROGRAM

EPA USGS

Columbia River Basin Restoration Program Toxics Monitoring Subgroup Meeting

OCTOBER 1, 2024 | 10:00 – 11:30 AM PACIFIC

MS TEAMS TIPS



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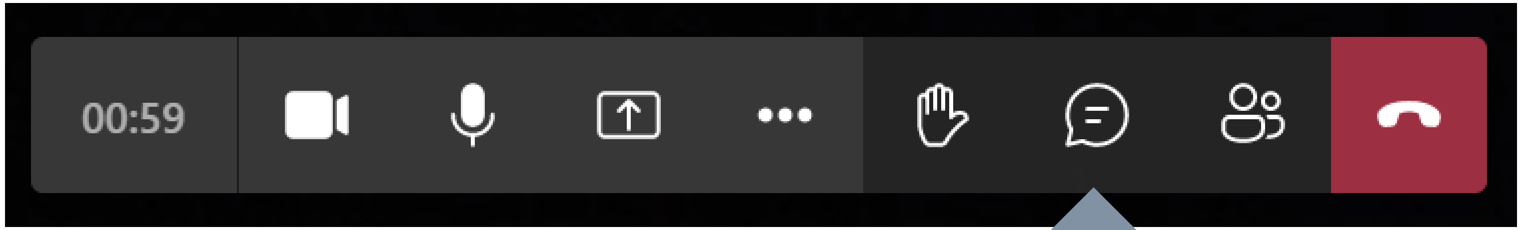
INTRODUCTIONS



Click chat icon and introduce yourself – name and affiliation

AGENDA

5 MIN	WELCOME & INTRODUCTIONS
60 MIN	LIGHTNING TALKS

- 4 presentations, Q&A after each

10 MIN	UPDATES

- CRBRP screening values progress and next steps
- WA Ecology’s recently adopted revised aquatic life criteria

15 MIN	JUNE MEETING FOLLOW UP

- Short recap of the June presentations followed by discussion and feedback on next steps

LIGHTNING TALKS

1. Clearwater River Watershed Baseline Monitoring and Toxics Assessment, Sierra Higheagle (Nez Perce Tribe Water Resource Division)

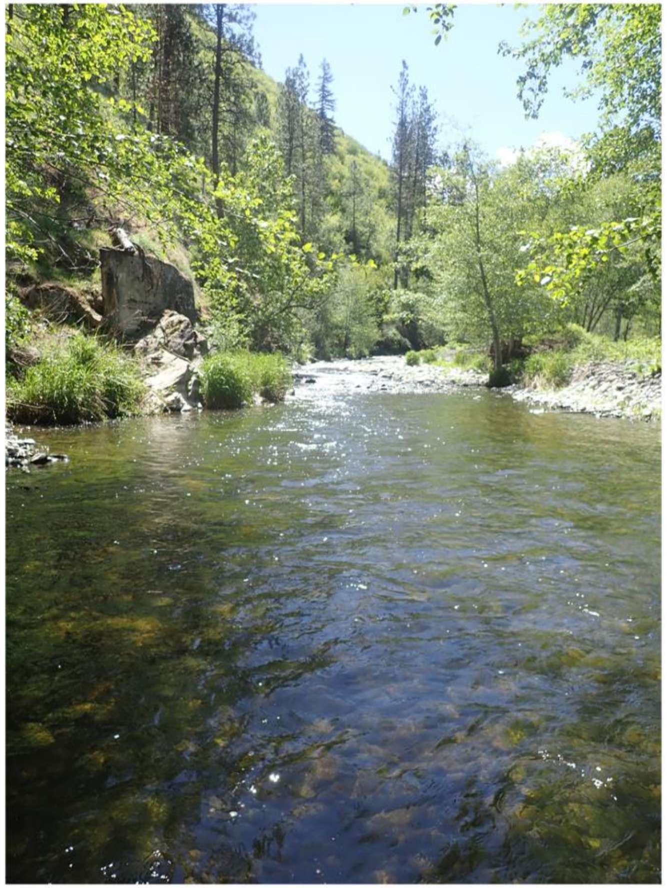
2. Oregon PFAS Wastewater Monitoring in Small and Mid-Size Cities within the Columbia Basin, Kevin Masterson (Oregon Association of Clean Water Agencies, Contractor)

3. Montana's PFAS Response, Abbie Ebert (MT DEQ)

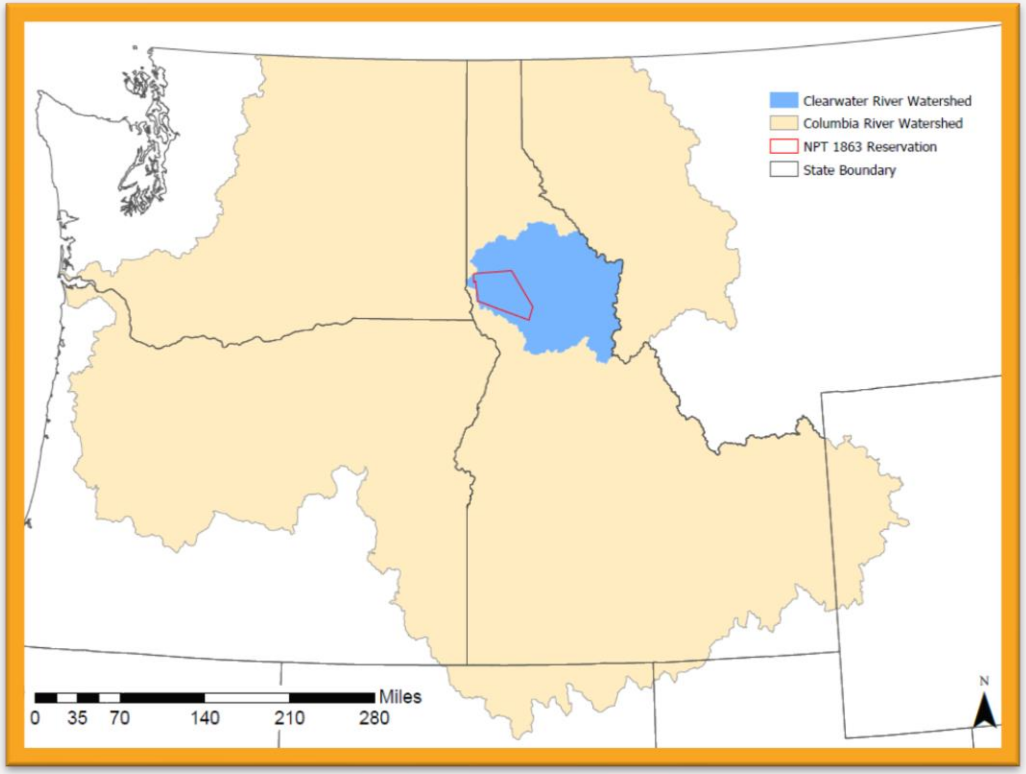
4. CTUIR Toxics Strategic Plan: Aligning Chemicals Management Towards Tribal Knowledge and Values, Negonnekodoqua Blair (Confederated Tribes of Umatilla Indian Reservation)

CLEARWATER RIVER WATERSHED BASELINE MONITORING AND TOXICS ASSESSMENT

Columbia River Basin Program Toxics Monitoring
Subgroup Meeting
October 1, 2024



CLEARWATER RIVER TOXICS ASSESSMENT & MONITORING PROJECT



Location of the Clearwater River & the Nez Perce Reservation within the Columbia River Basin

Goals for this project:

1. Supplement Clearwater River watershed data
2. Fill data gaps for the middle-upper Columbia River Basin (CRB)
3. Provide baseline data for the Clearwater River watershed to inform future monitoring and trend evaluation

PHASE I
2021

Monitor 15 tributaries of the Clearwater River for DDD, DDT, DDE, nutrients, and metals

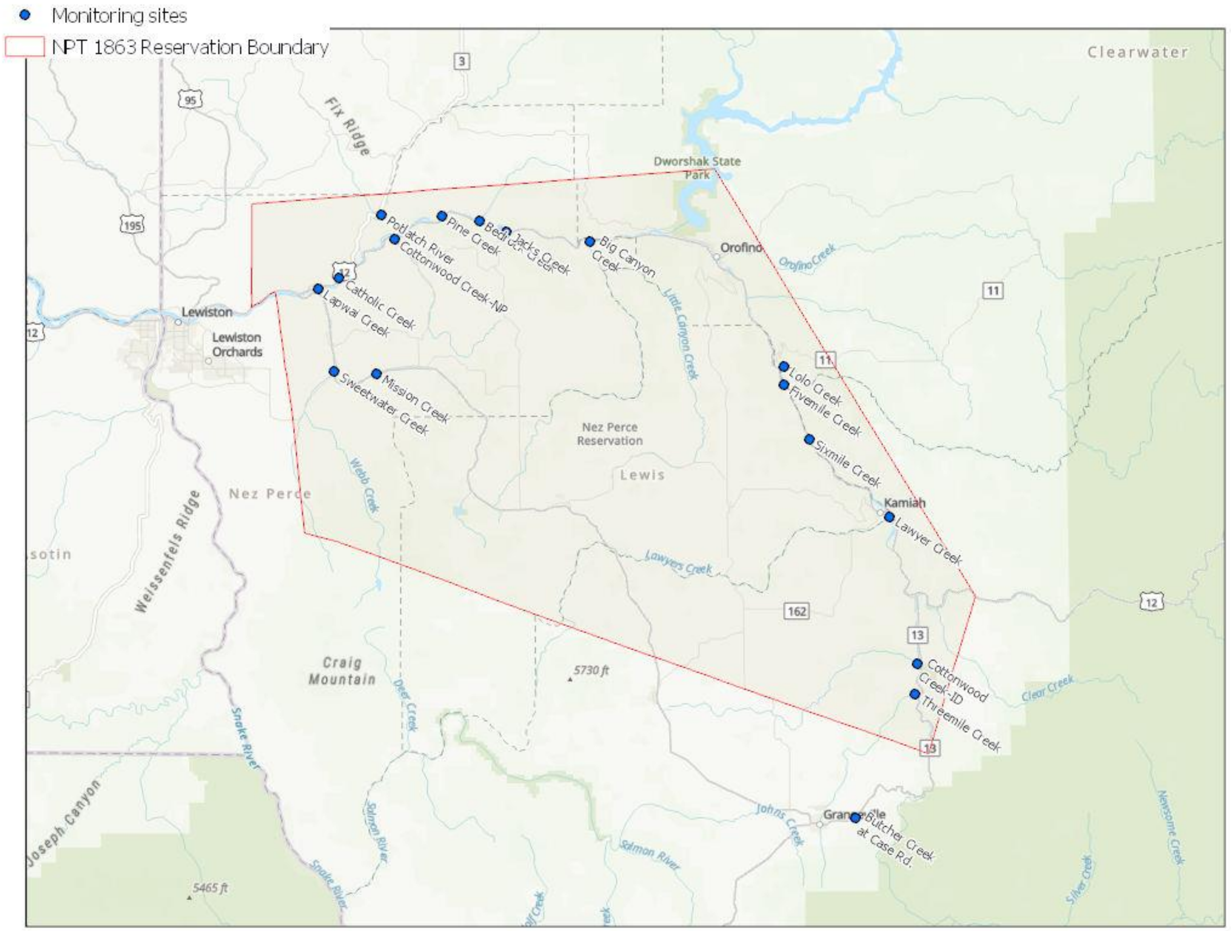
- Collected surface water samples once/month for 6 months

Monitor sediment in the same tributaries for DDD, DDT, DDE, nutrients, and metals

- Collected samples once

Partner with ISDA- Surface Water Program to sample for pesticides

- Collected samples every 2 weeks for 12 visits



Lapwai Creek *	Lolo Creek
Catholic Creek	Fivemile Creek
Potlatch River	Sixmile Creek
Cottonwood Creek- NP	Lawyer Creek
Pine Creek	Cottonwood Creek- ID *
Bedrock Creek	Threemile Creek *
Jacks Creek	Butcher Creek *
Sweetwater Creek *	Mission Creek *

ISDA SURFACE WATER PROGRAM

Background:

- ISDA has monitored for pesticide residues on 22 Clearwater River tributaries, 21 of which are designated for salmonid spawning.
- Conducted in 2004, 2006, 2011, and 2012
- NPT WRD partnered with ISDA to revisit and monitor for pesticides at 6 tributaries
  - Lapwai Creek
    - Sweetwater Creek
    - Mission Creek
  - Butcher Creek
  - Cottonwood Creek-ID
  - Threemile Creek

Idaho Food Quality Assurance Laboratory
Water Analyte List and MDL
2020

LC/TQD Negative

Analyte	MDL (µg/L)
clopyralid	0.10
picloram	0.15
dicamba	0.10
bentazon	0.050
dacthal monoacid	0.10
bromoxynil	0.050
2,4-D	0.10
2,4-DCBA	0.050
MCPA	0.050
triclopyr	0.10
MCPP	0.050
dichlorprop	0.050
2,4-DB	0.15
3,5-Dichlorobenzoic Acid	0.050
dinoseb	0.050
pentachlorophenol	0.050

Total Dacthal

Analyte	MDL (µg/L)
total dacthal (dacthal, dacthal monoacid, dacthal di-acid)	0.080

*separate test, by request only

LC/TQD Positive

Analyte	MDL (µg/L)
2,6-DEA	0.10
3-OH carbofuran	0.025
aldicarb	0.050
aldicarb sulfone	0.050
allethrin	0.050
azinphos methyl	0.025
azoxystrobin	0.025
bensulide	0.050
benthiocarb	0.025
bromacil	0.050
carbaryl	0.025
carbofuran	0.025
coumaphos	0.050
cycloate	0.075
deisopropyl atrazine	0.050
desethyl atrazine	0.025
diflubenzuron	0.025
dimethoate	0.025
diuron	0.025
fluometuron	0.025
imidacloprid	0.025
iprodione	0.050
linuron	0.050
metalaxyl	0.050
metribuzin	0.050
methiocarb	0.050
methomyl	0.050
methyl paraoxon	0.050
MGK-264	0.050
monuron	0.025
naled	0.15
norflurazon	0.025
oryzalin	0.050
oxamyl	0.050
propargite	0.050
propazine	0.025
propiconazole	0.025
propoxur	0.050
pyraclostrobin	0.025
simazine	0.025
tebuthiuron	0.025
terbacil	0.050
thiamethoxam	0.050
tralkoxydim	0.025
triadimefon	0.025

GC/TQD

Analyte	MDL (µg/L)
alachlor	0.050
ametryne	0.050
atrazine	0.025
benfluralin	0.10
bifenthrin	0.015
boscalid (nicobifen)	0.050
chlorothalonil	0.050
chloropropham	0.075
chlorpyrifos	0.025
cyfluthrin	0.050
cypermethrin	0.050
DCPA	0.025
deltamethrin	0.040
diazinion	0.025
dichlobenil	0.10
dichlorvos	0.050
diclofop methyl	0.050
EPTC	0.050
esfenvalerate	0.040
ethalfluralin	0.10
ethoprop (ethoprophos)	0.025
etridiazole (Terrazole)	0.10
fenarimol	0.025
fenpropathrin	0.025
hexazinone	0.025
lambda cyhalothrin	0.025
malathion	0.050
methidathion	0.050
metolachlor	0.050
MGK-264	0.050
napropamide	0.025
oxyfluorfen	0.050
parathion-methyl	0.075
pendimethalin	0.025
permethrin	0.10
phorate	0.10
phosmet	0.050
piperonyl butoxide	0.060
prometon	0.025
propyzamide	0.050
resmethrin	0.030
stirofos (tetrachlorvinphos)	0.025
sumithrin (phenothrin)	0.050
terbufos	0.050
triallate	0.050
trifluralin	0.050

ISDA PESTICIDE RESULTS

Count of Pesticide / Row Labels	2004	2006	2011	2012	Grand Total
2, 4-D	1	4	5	13	23
2,4-DCBA			1		1
ATRAZINE	5				5
BENTAZON			1	3	4
BROMACIL	2				2
BROMOXYNIL			4	9	13
DESETHYL ATRAZINE			2	1	3
DICAMBA	6		1	7	14
DIMETHOATE	3	1		2	6
DIURON	7		4	1	12
HEXAZINONE	3		1	3	7
LINURON	1		2		3
MCPA			5	11	16
METALAXYL				1	1
METHOMYL	2		1	4	7
METRIBUZIN	11		16	14	41
PENDIMETHALIN			4		4
PICLORAM	4			4	8
PROMETON				2	2
SIMAZINE	1		1		2
Grand Total	46	5	48	75	174

Count of Pesticide / Location Name	LocationID	2004	2006	2011	2012	Grand Total
Butcher Creek	BC-1				3	3
Cottonwood Creek SF Clrwtr nr Stite	CW-1	14			19	33
Lapwai Creek	LC-1 (Lapwai)	2		5		7
Mission Creek	MC		1			1
Sweetwater	SWC					
Threemile Creek	TM-1				25	25
Grand Total		16	1	5	47	69

- April through October 2021- collected 12 samples at each site
- Found 8 different pesticides
- # of detects at each site:
- Significantly less detections – compared to previously sampled years
- No detects at Lapwai creek

2021 Results

2021	EPA Aquatic Life Benchmarks for Registered Pesticides	Butcher Creek	Cottonwood Creek- ID County	Mission Creek	Sweetwater Creek	Threemile Creek	Lapwai Creek
Number and Type of Pesticide Detections from April to September 2021							
2,4-D	12,500 μg/L[a]	1	2		1		
Bromacil	18,000 μg/L[b]						
Dicamba	253,600 μg/L[b]			1			
Diuron	26.4 μg/L[a]	1				2	
Prometon	6,530 μg/L[a]		2				
Thiamethoxam	20,000 μg/L[a]		2			1	
Triclopyr	26 μg/L[a]			1			
Total detections = 14		2	6	2	1	3	0

PH. 1 SURFACE WATER RESULTS

Number of Exceedances										
NO3/NO2	TP	NH3	TKN	Arsenic*	Copper*	Lead	Manganese*	Iron	Mercury*	DDT, DDD, DDE
52	15	0	28	12	0	0	1	1	0	0

- Out of 81 samples
- *EPA National Water Quality Criteria- Human Health Criteria for the consumption of water and organism
- Confirms Nutrients are the major pollutant

SEDIMENT RESULTS

- Preliminary results have found no exceedances of the consensus-based ecological guidelines for sediment (MacDonald et al. 2000).

PHASE II

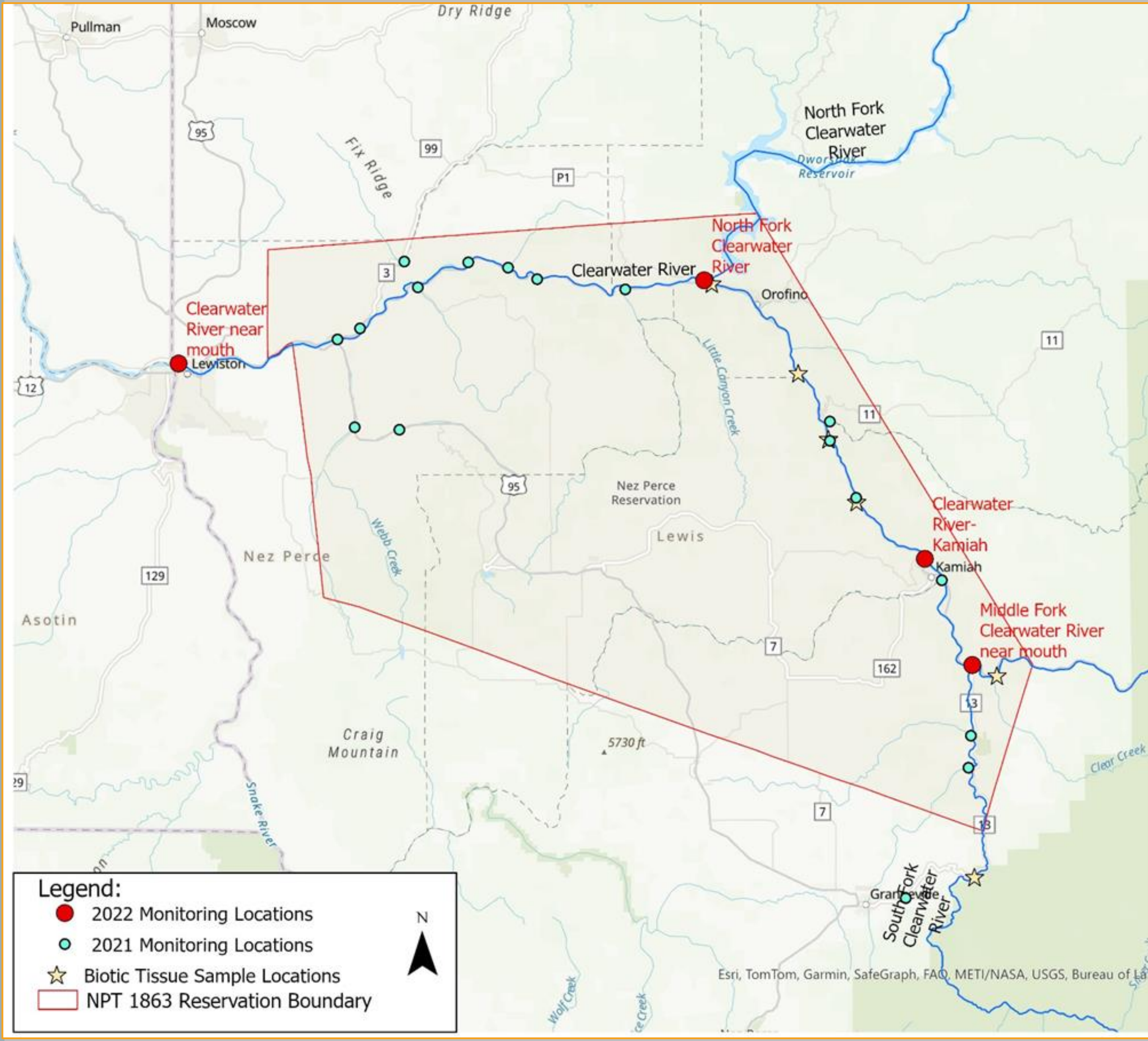
Objective 2: Establish baseline toxin/pollutant data in the Clearwater River.

Task 1- Surface water from 4 sites

Task 2- Sediment, fish, mussel, and lamprey ammocoete tissue samples from 4 locations

Task 3- Microplastics study on fish samples

Surface Water		**Sediment**		**Biotic Tissue: Fish, Mussel, Lamprey Ammocoete**	
Parameter	Method	Parameter	Method	Parameter	Method
		Total solids	160.3M	Total solids	160.3M
				Lipids	NOAA lipid
Nutrients (NO_3+NO_2, TKN, NH_3, OP, and total phosphorus)	353.2 ASTM D1426-08B 350.1 365.3 365.3	Nutrients (NO_3+NO_2, NH_3, & Orthophosphorus)	352.3M 350.3 365.3		
Total Hg	1631	Total Hg	1631 app.	Total Hg	1631 app.
Methyl Hg	1630 mod.	Methyl Hg	1630 mod.	Methyl Hg	1630 mod.
Metals (Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mo, Ni, Se, Ag, Tl, V, Zn)	EPA 200.8	Metals (As, Cd, Cr, Cu, Pb, Ni, Se, Zn)	6020A	Metals (As, Cd, Cr, Cu, Pb, Ni, Se, Zn)	6020A
		PCBs	1668C - HRCG/HRMS	PCBs	1668C - HRCG/HRMS
		PBDEs	1614	PBDEs	1614
		Organochlorine Pesticides	1699 - HRCG/HRMS	Organochlorine Pesticides	1699 -HRCG/HRMS



SURFACE WATER AND SEDIMENT RESULTS

Surface Water Results:

Number of Exceedances				
NO3/NO2	TP	NH3	TKN	Arsenic*
6	3	0	15	24

Sediment Results:

- There were no exceedances of the consensus-based ecological guideline for sediments in these sediment samples.
- Higher levels of Total mercury were found in the two downstream sediment samples near Orofino (11540A) and Kamiah (11559A).
- Levels of Methyl mercury were slightly higher in the two upstream sediment samples near Harpster (11217A) and Kooskia (12602A).
- Methyl mercury in sediment was lower than in any of the tissue samples suggesting bioaccumulation of methyl mercury.

BIOTIC TISSUE RESULTS

Significantly higher amounts of total mercury are found in lamprey tissue versus either of the other biotic tissues.

All lamprey ammocoete samples exceed the General Aquatic SV for total mercury, the three human health criteria for methyl mercury, and exceeded the higher consumption value by ~10 fold.

Mussels at two of the four sites (Clearwater River near Kamiah & SFCR) exceeded the General Aquatic SV for total mercury.

All SMB exceeded the General Aquatic SV for total mercury and the higher consumption human health criterion for methyl mercury at all three sites.

Methyl mercury uptake in tissue was highest for ammocoetes and lowest for mussels: mussel < smallmouth bass < lamprey ammocoete.

DDE, Dieldrin, Heptachlor epoxide, and Hexachlorobenzene were the only pesticides found above thresholds, and that was mostly in lamprey and fish tissues.

There was one site where mussels, ammocoetes, and SMB showed elevated levels of DDE and Dieldrin.

PCB Total did have biotic tissue levels above high consumer cancer screening levels for mostly lamprey and fish tissue. All four sites had SV exceedances for at least two types of organisms tested.

For all biotic tissues there were no signs of elevated PBDEs.

MICROPLASTICS

The initial analysis found MPs in all but one SMB digestive tract, suggesting the presence of MPs in Clearwater River fish.

However, when a negative control was done, it also contained some blue filaments which suggests contamination is occurring during the process.

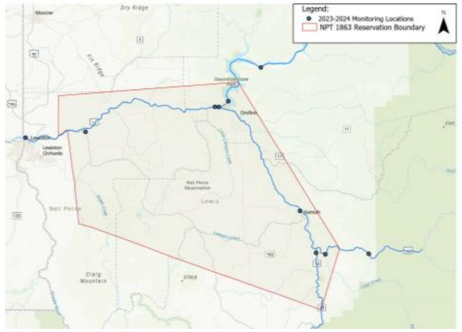
The lab could not detect any microplastics with confidence since the process they used appears to be highly susceptible to contamination.

Moving forward: NPT WRD has found funds to continue to research microplastics in the Clearwater River watershed.

PHASE III 2023-2025

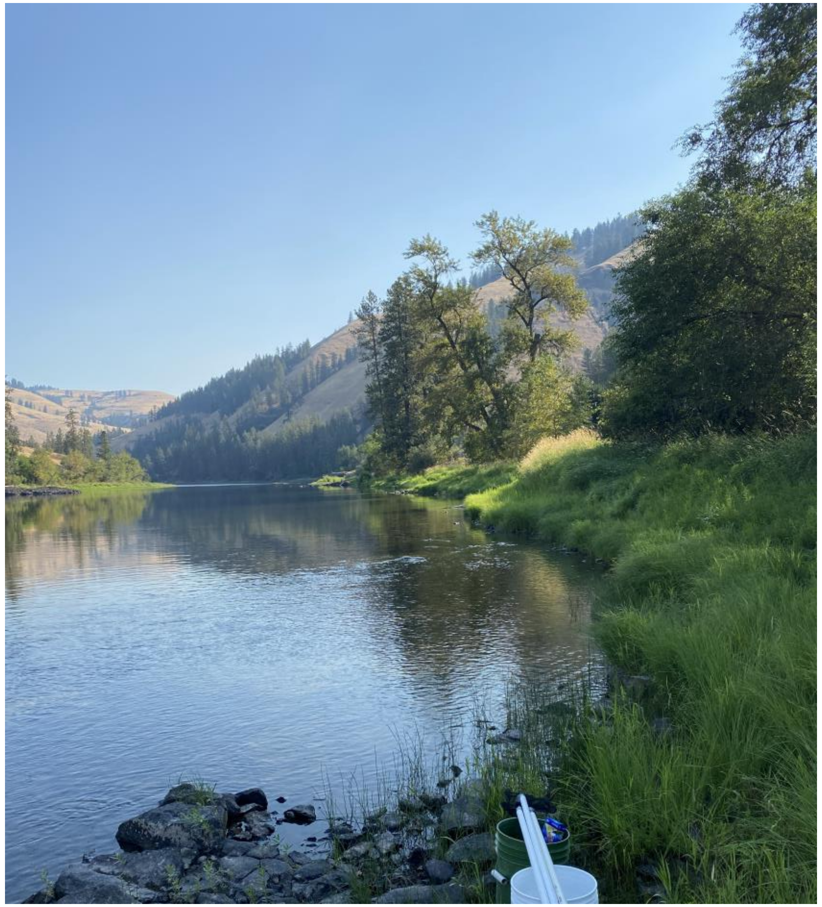
1. Monitor per & polyfluoroalkyl substances (PFAS), Polybrominated Diphenyl Ethers (PBDEs), and Pharmaceuticals and Personal Care Products (PPCPs) below identified seven (7) point sources & one control site

2. Monitor total mercury (THg) and methylmercury (MeHg) above, within, and below the Dworshak Reservoir



FUTURE SCIENCE & MONITORING

2025- Partnering with USGS to evaluate biological risk associated with chemicals and chemical mixtures in the Snake and Clearwater Rivers using passive samplers and new approach methods.



QECIYEWYEW

Thank you to Columbia River Basin Restoration Fund, EPA, and to all of our partners!

Oregon PFAS Wastewater and Biosolids Monitoring

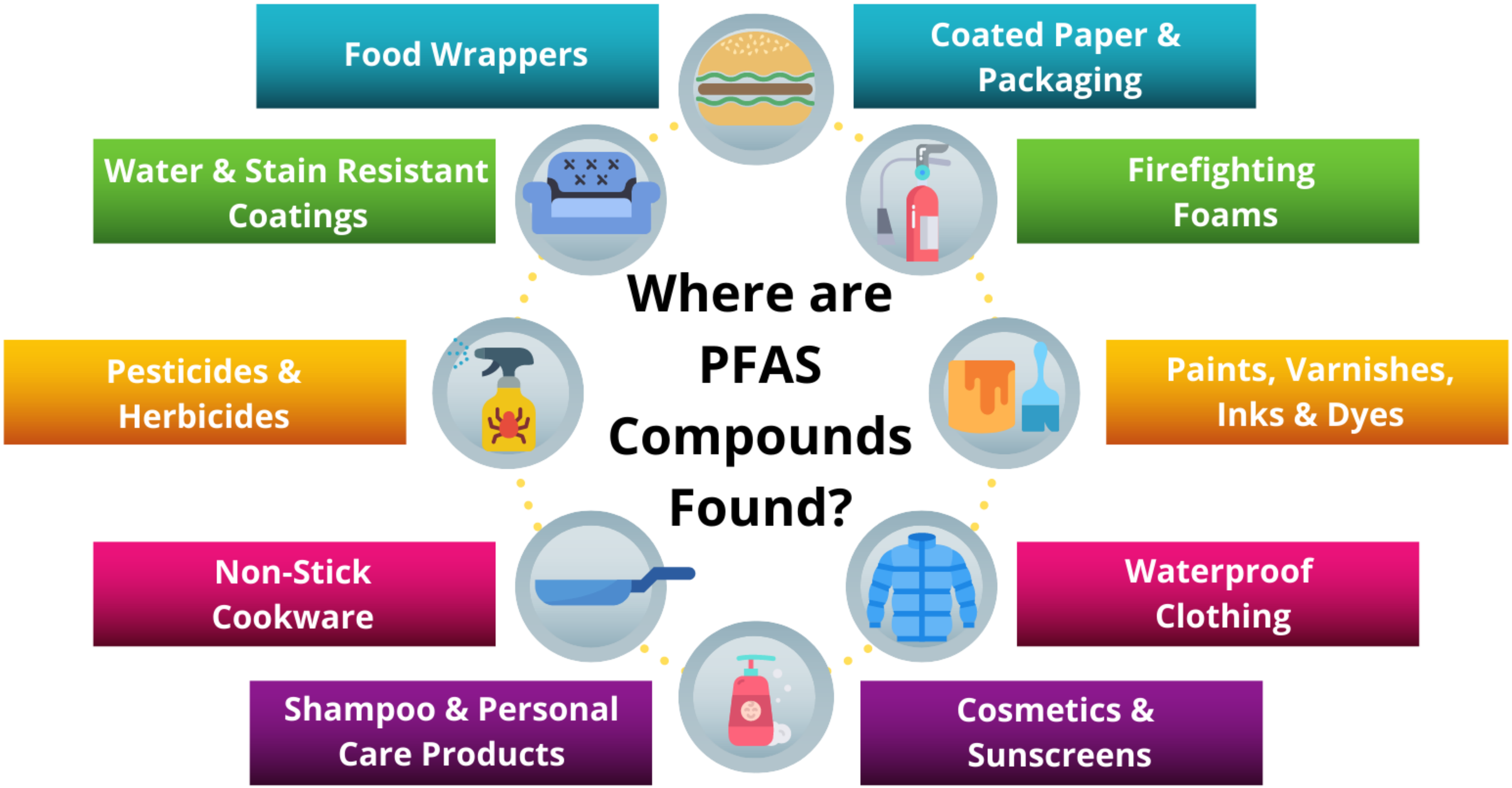
Columbia River Basin Restoration Act Monitoring Subgroup

Kevin Masterson
Stony Creek Consulting
on behalf of
oregon association of CLEAN WATER agencies

ACWA's EPA Columbia Basin Grant Project

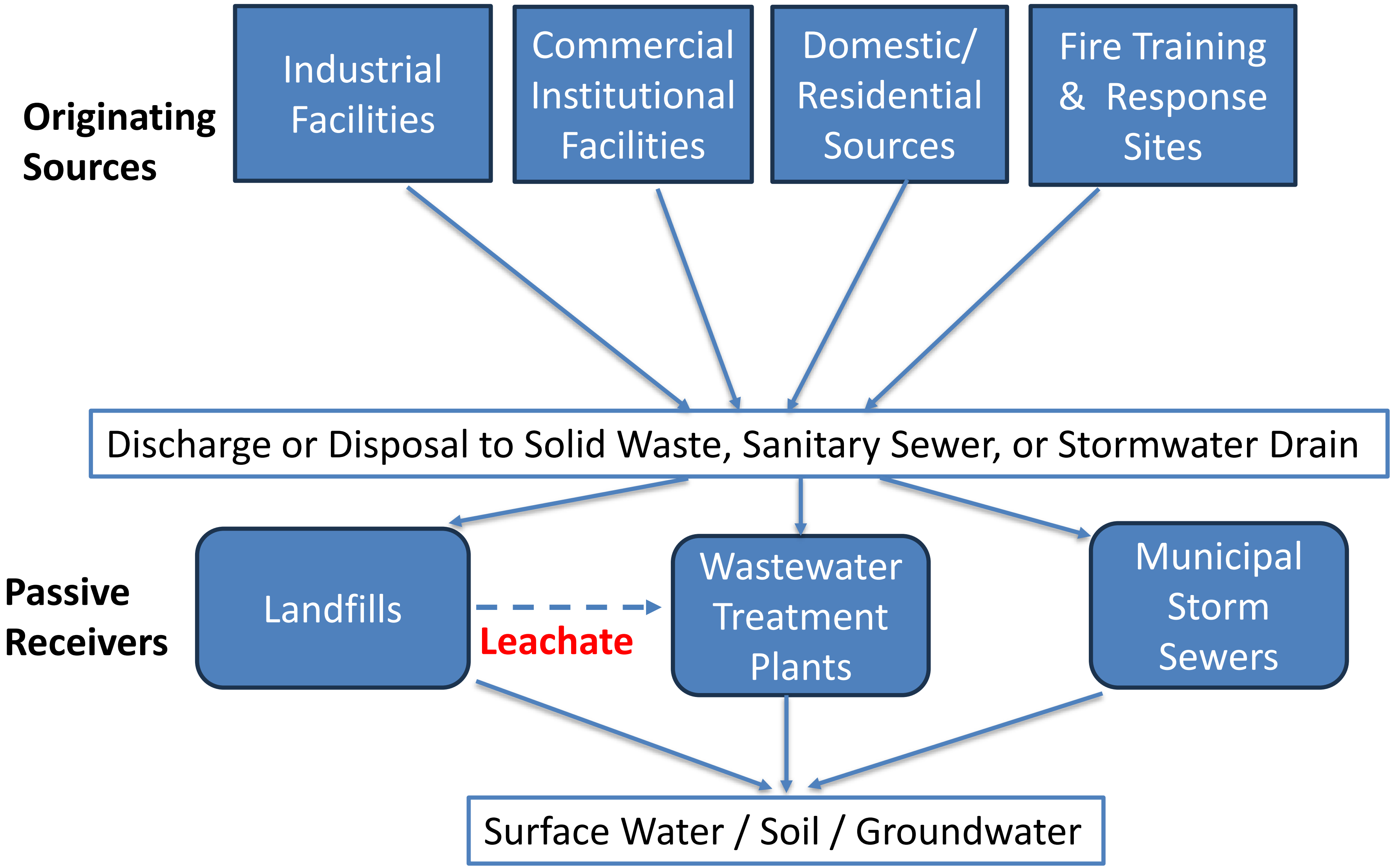
- Two-year $118K grant to reduce and assess PFAS and Phthalates
- Project elements come from ACWA strategies and 2022 PFAS White Paper
- Advisory Group, project subgroups, and Committees guiding work
  - Public outreach toolkit
  - Government purchasing guidance
  - **Targeted PFAS wastewater monitoring**
  - Industrial source summaries
  - Business outreach resources

- PFAS have been used in product manufacturing since the **1950s**
- Nearly **15,000** unique substances (EPA CompTox database)



https://www.westernvawater.org/water/water-quality/learn-about-pfas

PFAS Sources and Pathways: Generators vs. Receivers



Monitoring Objectives and Design

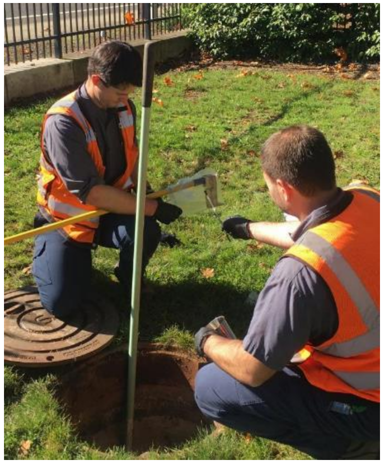
- Several larger wastewater treatment plants (WWTPs) monitoring PFAS since 2019, but little data from smaller municipalities
  - How do PFAS levels compare between large and small?
  - Are there WWTP characteristics that influence PFAS levels?
  - What industries are discharging PFAS and what are the levels?

- Grant funds focused on WWTPs serving communities between 10,000 – 50,000 population
  - 10 cities → influent, effluent, biosolids
  - 8 industries in those cities → effluent

- Test Methods Used
  - EPA 1633 – 40 PFAS compounds
  - Draft EPA 1621 – adsorbable organic fluorine
- New voluntary monitoring data from large WWTPs contributed as grant match

QA/QC and Laboratory Limit Considerations

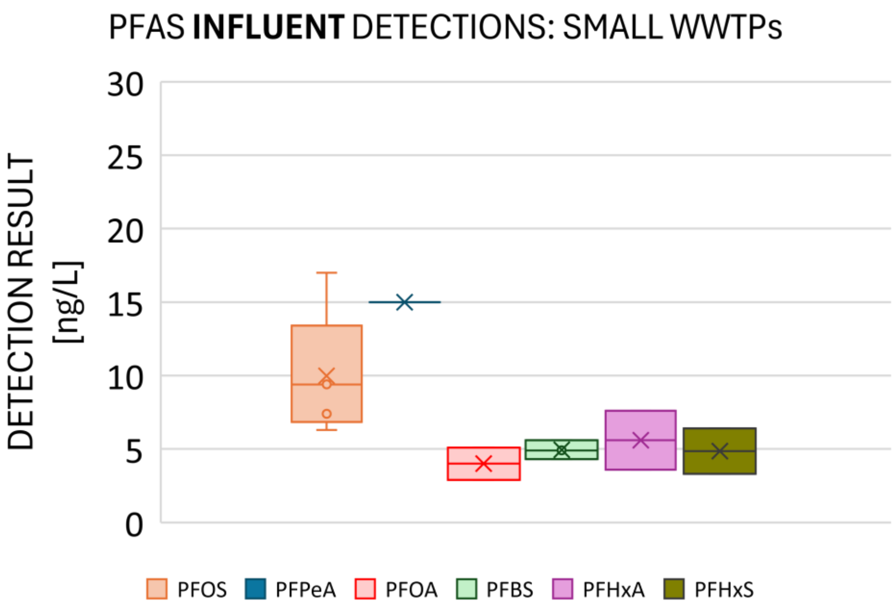
- Cross-contamination potential (e.g., rain gear, Teflon equipment) and low effects levels make field QC steps critical
  - ACWA held a training for sampling agencies to complement and reinforce key QAPP elements
  - Method blanks (20% of samples) were all non-detects (!)

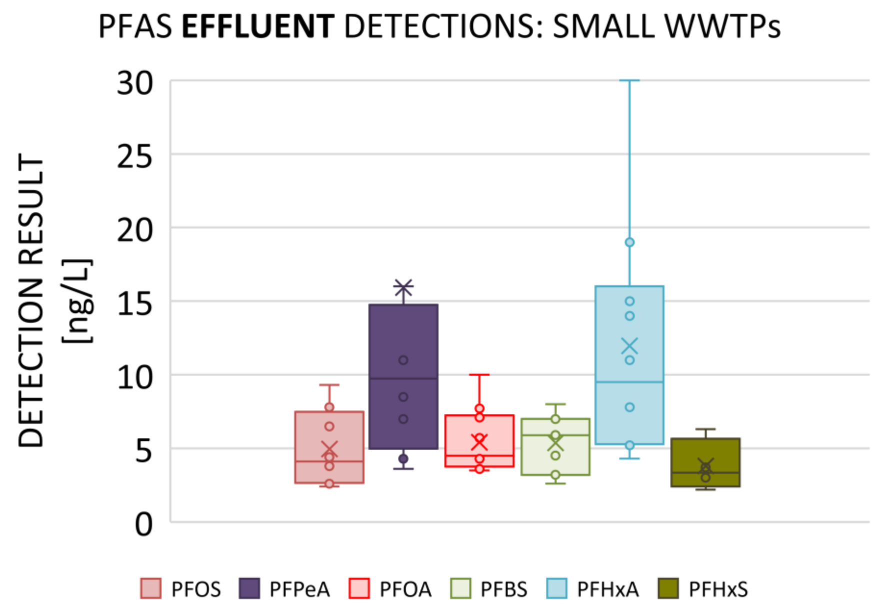


- Comparing wastewater influent and effluent can be challenging
  - Influent is generally “dirtier” than effluent, so labs need to dilute influent samples which increases reporting limits and results in more non-detects
  - Biosolids composition also varies, as do MDLs & MRLs

- Some of the larger WWTPs used a modified drinking water method before EPA 1633
  - Varying MDLs and MRLs

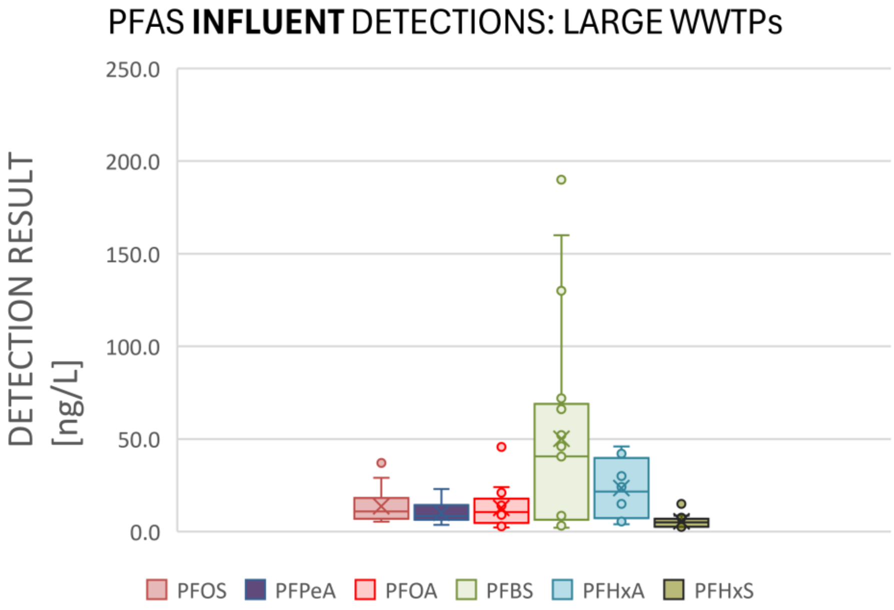
PFAS at Small WWTPs
Influent and Effluent

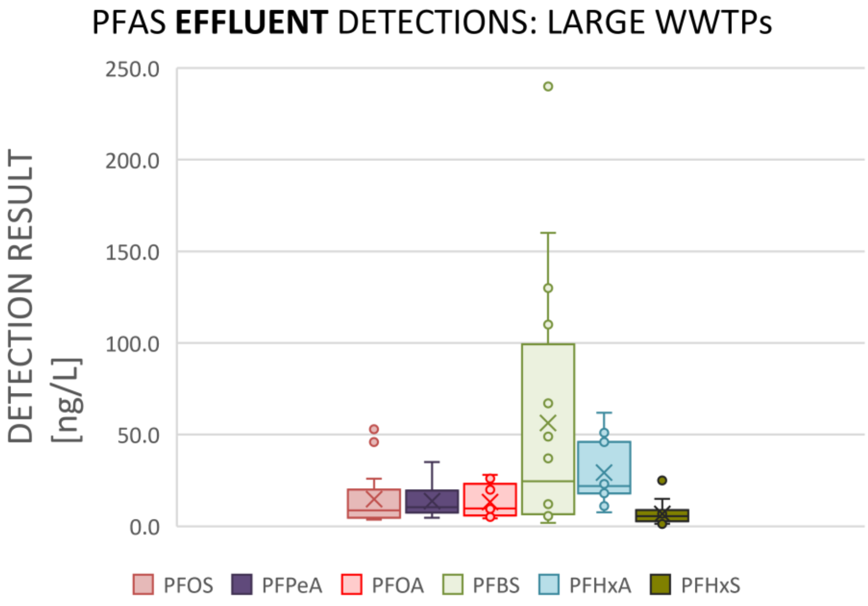




- Higher average concentrations in the effluent vs. influent for PFBS, PFOA, and PFHxA
- Lower concentrations in the effluent vs. influent for PFOS, PFPeA, and PFHxS
- Median detected PFOA and PFOS effluent concentrations = 4.5 ng/l & 4.1 ng/l → EPA proposed Drinking Water MCL = 4.0 ng/l

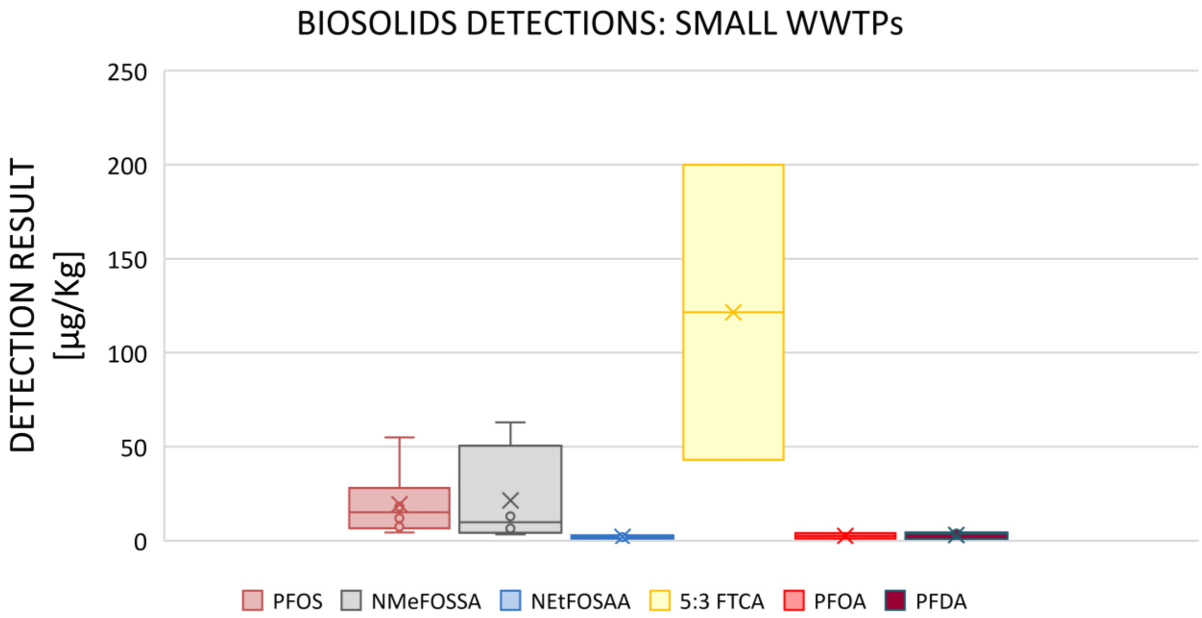
PFAS at Large WWTPs
Influent and Effluent





- As with small cities, no clear data pattern with detected influent vs. effluent concentrations (both mean and median)
- Median detected effluent concentrations for PFOA and PFOS = 8.6 ng/l and 9.4 ng/l, respectively
    - Approximately twice as high as small facilities→ looking at industrial inputs

PFAS at Small WWTPs
Biosolids



- Other than PFOS and PFOA, the PFAS compounds detected in biosolids were different than those detected in influent and effluent
- Median detected PFOS concentration = 15 µg/kg (ng/g)
  → Lowest Michigan screening value for evaluation and action = 20 µg/kg
- PFOS concentrations in same range for both large and small WWTPs

Industrial Sites in Small Communities: PFAS Monitoring Results

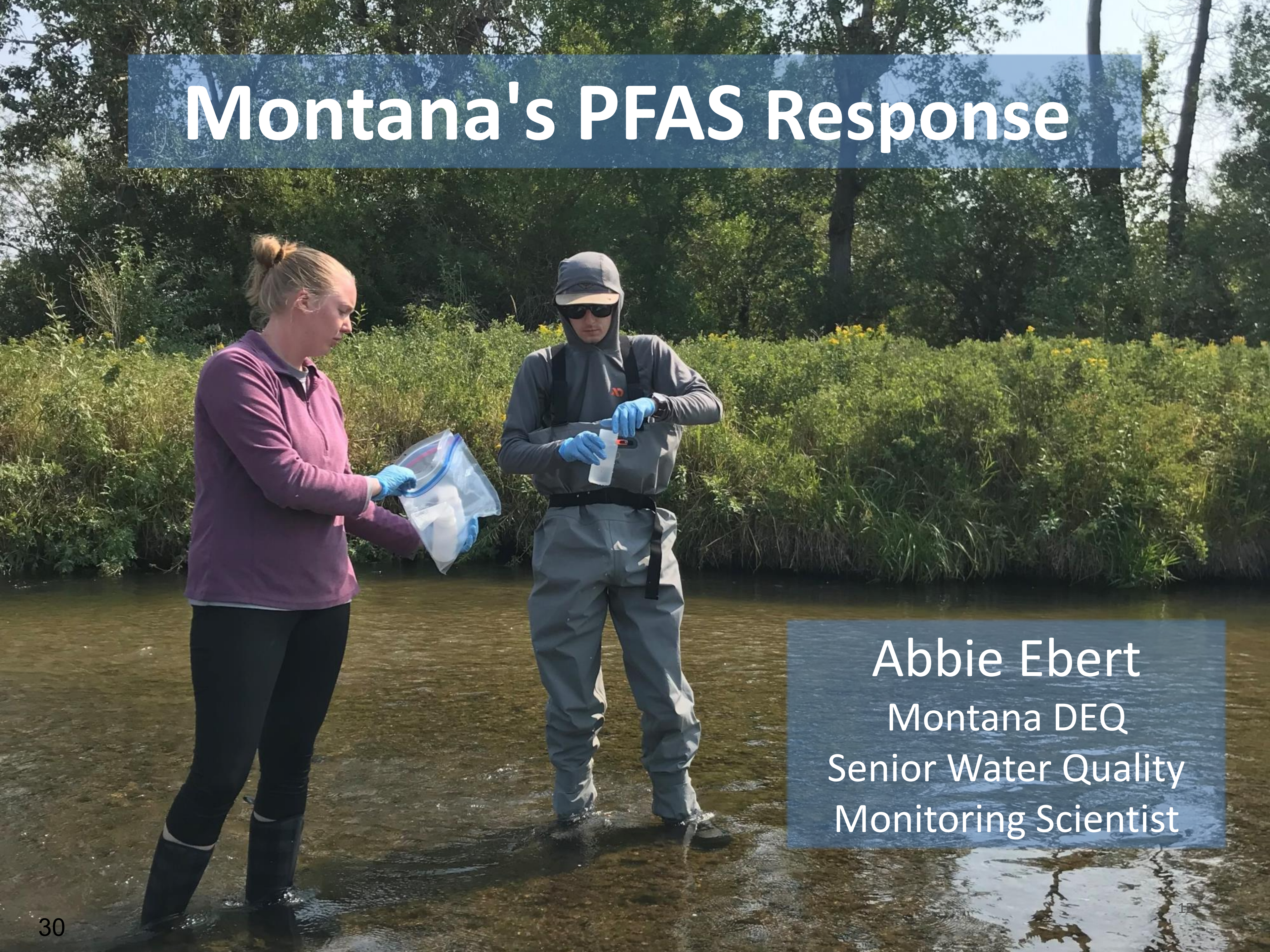
Facility Description	Method 1633 Detections	Method 1621 Detections (AOF)
Ink Manufacturer – Metal Plating Process	5 PFAS compounds (all <10 ng/l)	ND
Solid Waste Transfer Station	7 PFAS compounds (all <13 ng/l)	2 µg/l (at reporting limit)
Coatings and Resin Manufacturer	1 PFAS compound (48 ng/l)	ND
Metal Casting and Finishing Facility	ND	6.9 µg/l
Civilian Airport	ND	ND
Aluminum Parts Polishing Facility	ND	51 µg/l
Abrasive Materials Manufacturer for High Tech Industries	ND	ND
Hemp Product Manufacturer	ND	2.3 µg/l

- Focused more of the Method 1621 resources on industrial sites (expensive)
- 3 of 8 facilities had detected organic fluorine (AOF), but no individual PFAS compounds
- AOF may not represent PFAS, but good screening tool for locals
- Only 2 of the 8 facilities had zero detections of either AOF or PFAS compounds

Next Steps with ACWA PFAS Monitoring Project

- Add industrial monitoring results from large communities
  - Includes landfill leachate

- Evaluate all data relative to WWTP characteristics
  - Wastewater and biosolids treatment type
  - % Industrial flow


Montana's PFAS Response
Abbie Ebert
Montana DEQ
Senior Water Quality
Monitoring Scientist

Outline

- PFAS Work Group
- MT PFAS Action Plan and Progress Made
- PFAS Sampling Standard Operating Procedures
- DEQ's PFAS Monitoring Projects
  - 2021 Surface Water and Sediment Project
  - 2023 Fish Tissue Project

EPA Lifetime PFAS Health Advisories

2016 – EPA released a lifetime drinking water health advisory for PFOA and PFOS (individually or combined) of 70 ppt.

2022 – EPA released updated lifetime drinking water health advisory for PFOA, PFOS, PFBS, HFPO.

MT Groundwater Standard

2019 - DEQ adopted EPA’s 2016 lifetime drinking water health advisory for PFOA and PFOS as a human health groundwater standard (DEQ-7).


Working Together
Broader Perspective
Improved Results

PFAS Work Group

DEQ
Montana Department of Environmental Quality

MONTANA DPHHS

MONTANA FISH, WILDLIFE & PARKS

MONTANA DEPARTMENT OF AGRICULTURE

USGS
science for a changing world

U.S. FISH & WILDLIFE SERVICE

Lewis & Clark Public Health

MISSOULA VALLEY water quality district

Goal:

Reduce or eliminate potential risks posed by PFAS to human health and the environment.

Montana PFAS Action Plan

Objectives:

1. Identify & inventory known and potential PFAS sources/sites.
2. Provide public outreach and education.
3. Protect drinking water sources and ecology.
4. Identify resources/funding and determine legislative restrictions/potential.
5. Identify disposal options and reduce use of products that contain PFAS.

Action Plan Progress Continued

- Identified known and potential sources of PFAS.
- Staying informed in scientific knowledge and regulatory developments at a national level.
- Developed fact sheet and FAQs on DEQ's PFAS webpage.
- Provided information on PFAS disposal on DEQ's PFAS webpage.
- Providing feedback on remedial investigations at military installations.
- Developed PFAS sampling standard operating procedures (SOPs).
- Monitored public water supplies intake, groundwater, surface water, sediment, and fish tissue

Standard Operating Procedures

- Health and Safety Warnings
- Cautions
- Equipment and Supplies
- Equipment Use and Maintenance
- Interferences
- Procedural Steps
- Quality Assurance and Quality Control Requirements

DEQ
Montana Department of Environmental Quality

Standard Operating Procedure

Sampling for Per- and Polyfluoroalkyl Substances (PFAS)

Final

WQDWQDCM-02, Version 1.0
July 2021

Authors:
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Patrick Skibicki, Cleanup, Protection, and Redevelopment Section

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Scott Gestring, Cleanup, Protection, and Redevelopment Section
Libby Murray Henrikson, Public Water Supply Monitoring and Reporting Section

Procedural Steps

- Surface Water and Benthic Sediment
- Groundwater
- Public Drinking Water Supply
- Private Water Supply Wells

Action Plan Progress Continued

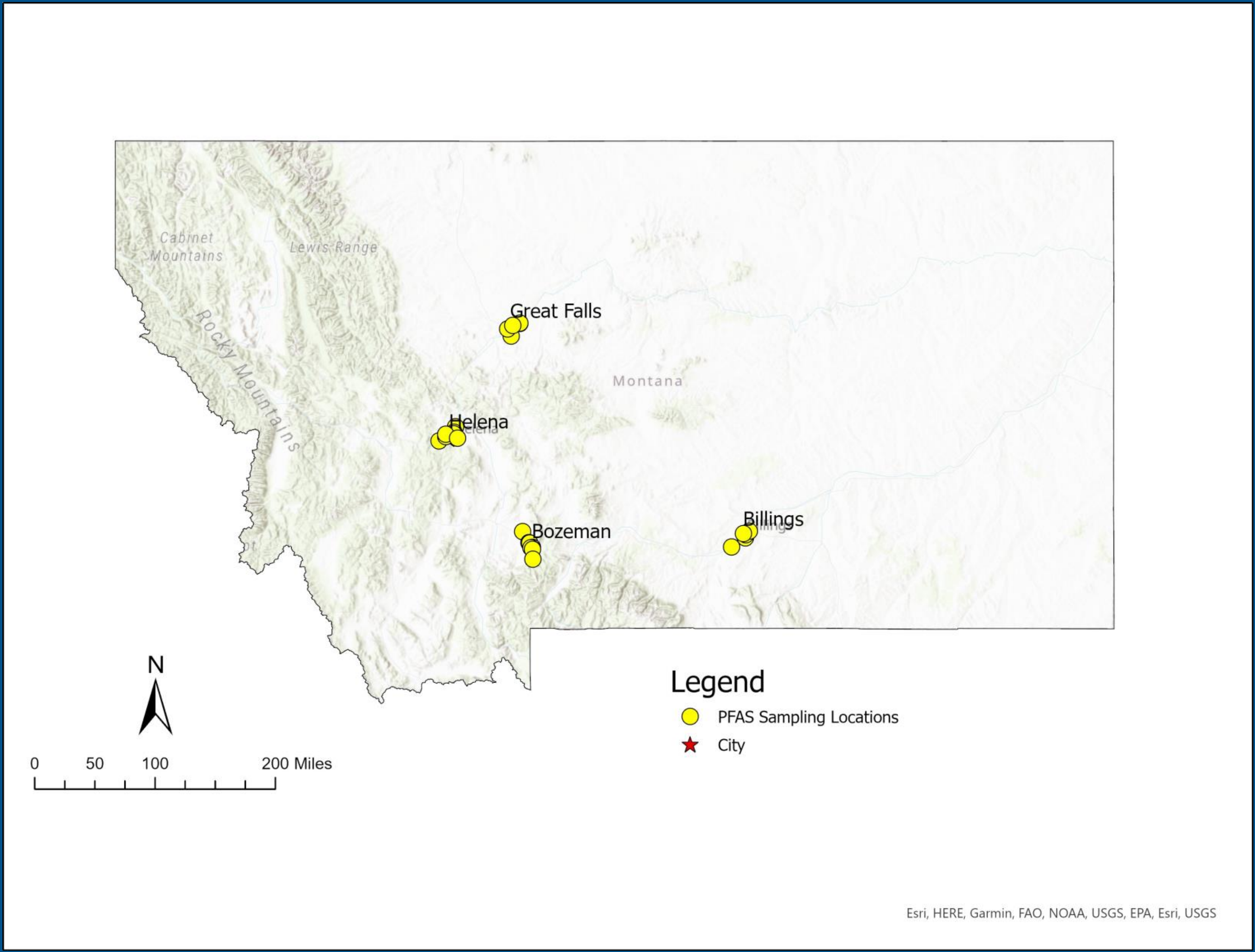
- Identified known and potential sources of PFAS.
- Staying informed in scientific knowledge and regulatory developments at a national level.
- Developed fact sheet and FAQs on PFAS webpage.
- Provides information on PFAS disposal on PFAS webpage.
- Providing feedback on Remedial Investigations at military installations.
- Developed PFAS sampling standard operating procedures (SOPs).
- **Monitoring public water supplies intake, groundwater, surface water, sediment, and fish tissue**

Work Group Monitoring Projects

- Voluntary PWS Intake Monitoring
- Groundwater Monitoring Projects
  - Helena Area Groundwater Study
  - Department of Agriculture Well Monitoring
- Surface Water Monitoring Projects
  - 2021 Surface Water and Sediment Project
  - 2023 Fish Tissue and Surface Water Project

DEQ Project Reports can be found on the PFAS webpage.

2021 PFAS Surface Water and Sediment Project



Project Objective

Conducted a water quality monitoring project to determine the prevalence and magnitude of PFAS contamination in surface water in at-risk areas of Montana.

Site Selection

- Targeted sampling approach
- Risk Analysis
- 4 at-risk areas: Helena, Great Falls, Bozeman, and Billings.
- Waterbodies within two miles of a potential or confirmed source were considered for monitoring
- Low-risk Sites
- 26 total sampling sites

Monitoring Methods

- One sampling event occurred for surface water and sediment in each at-risk area.
  - Sampling occurred during baseflow.
- Followed DEQ's PFAS Standard Operating Procedure (SOP).
- EPA Method 537 Modified (E537 M) analyzed for 28 PFAS

Results Summary

- One sample exceeded the surface water screening level: Whitmore Ravine in Great Falls (1,188 ppt)
- No sites exceeded the sediment screening level
- 80% of low-risk sites reported non-detect results in surface water and sediment
- 67% (14 out of 21) of at-risk sites reported detections of one or more PFAS in surface water
- 58% (15 out of 26) of all sites sampled reported detections of PFAS in surface water

Per- and Polyfluoroalkyl Substances (PFAS) Fish Tissue and Surface Water Project - 2023

Abbie Ebert, Trevor Selch, and Dawn Nelson

DEQ
Montana Department of Environmental Quality

MONTANA DPHHS

MONTANA FISH, WILDLIFE & PARKS

Monitoring Goal

- To screen for PFAS contamination in consumable sized fish in waterbodies throughout Montana.

Monitoring Approach

- The five waterbodies selected by DEQ had previous PFAS detections in surface water and/or sediment in 2021, can support consumable sized fish, and are fisheries often used by the public.
- The five waterbodies selected by FWP were selected based on an equal distribution of sampling across most FWP regions, are fisheries often used by the public, and are at-risk of PFAS contamination.

Monitoring Approach

- Sampling 13 sites between April and October.
- Targeted fish species and size classes are determined per waterbody to represent commonly consumed fish by the local population.
- Skin on fillets
- 40 PFAS compounds analyzed using Draft EPA Method 1633

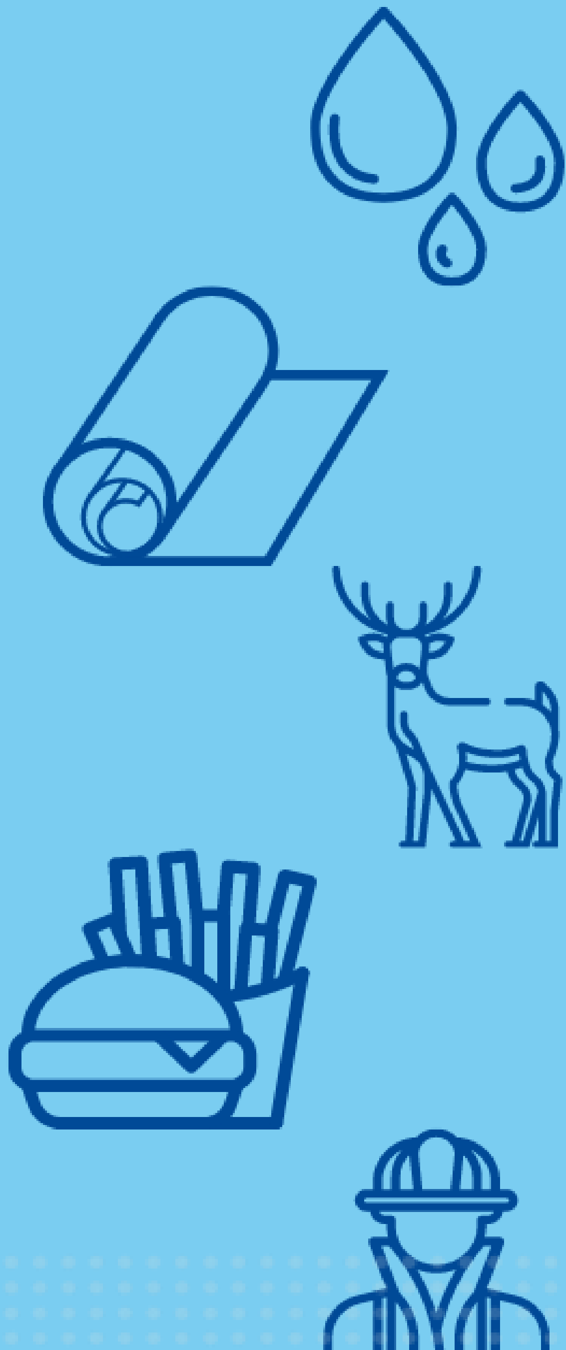
Screening Levels

Surface Water

- 2019 – DEQ adopted EPA's lifetime of exposure standard for PFOA and PFOS (individually or combined) for groundwater at 70 ppt.

Fish Tissue

- MT Fish Consumption Advisory Committee has developed Interim PFOS Fish Consumption Guidance.
- Used EPA updated fish consumption guidance for PFOS, PFOA, PFBS, PFNA, PFHxS.



What’s Next

- Fish Consumption Report and Advisories
- Tribal Outreach & Coordination
- Public Outreach

Questions?

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CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION

CTUIR Toxics Strategic Planning

Negonnekodoqua Blair
Department of Natural Resources
Energy and Environmental Sciences Program

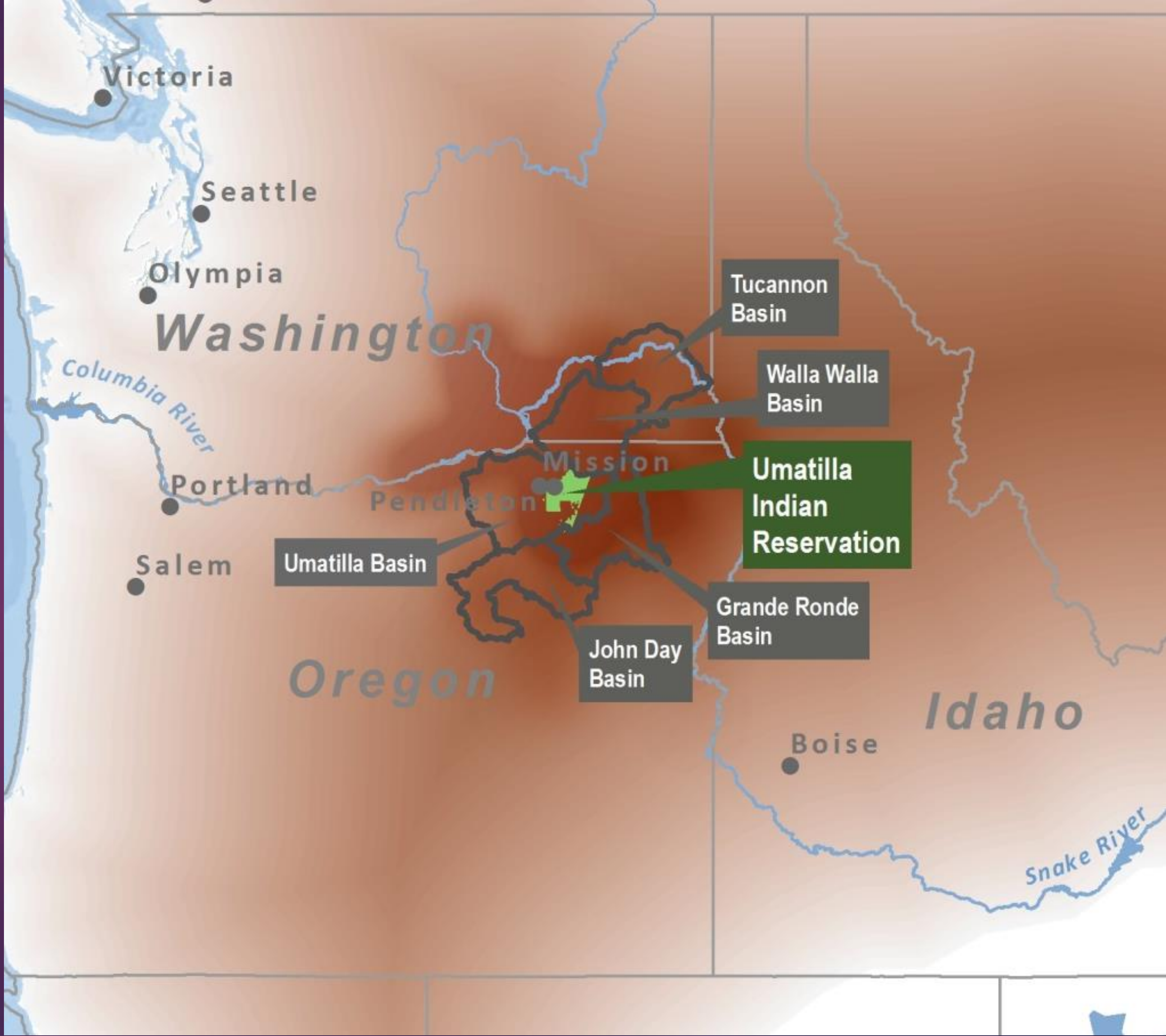
October 1, 2024

Confederated Tribes of the Umatilla Indian Reservation

CTUIR Treaty of 1855

Confederation of:
- Umatilla
- Walla Walla
- Cayuse Tribes

6.4 million acre ceded lands



Umatilla River Vision

A healthy river is one that provides cultural continuity for the Tribe

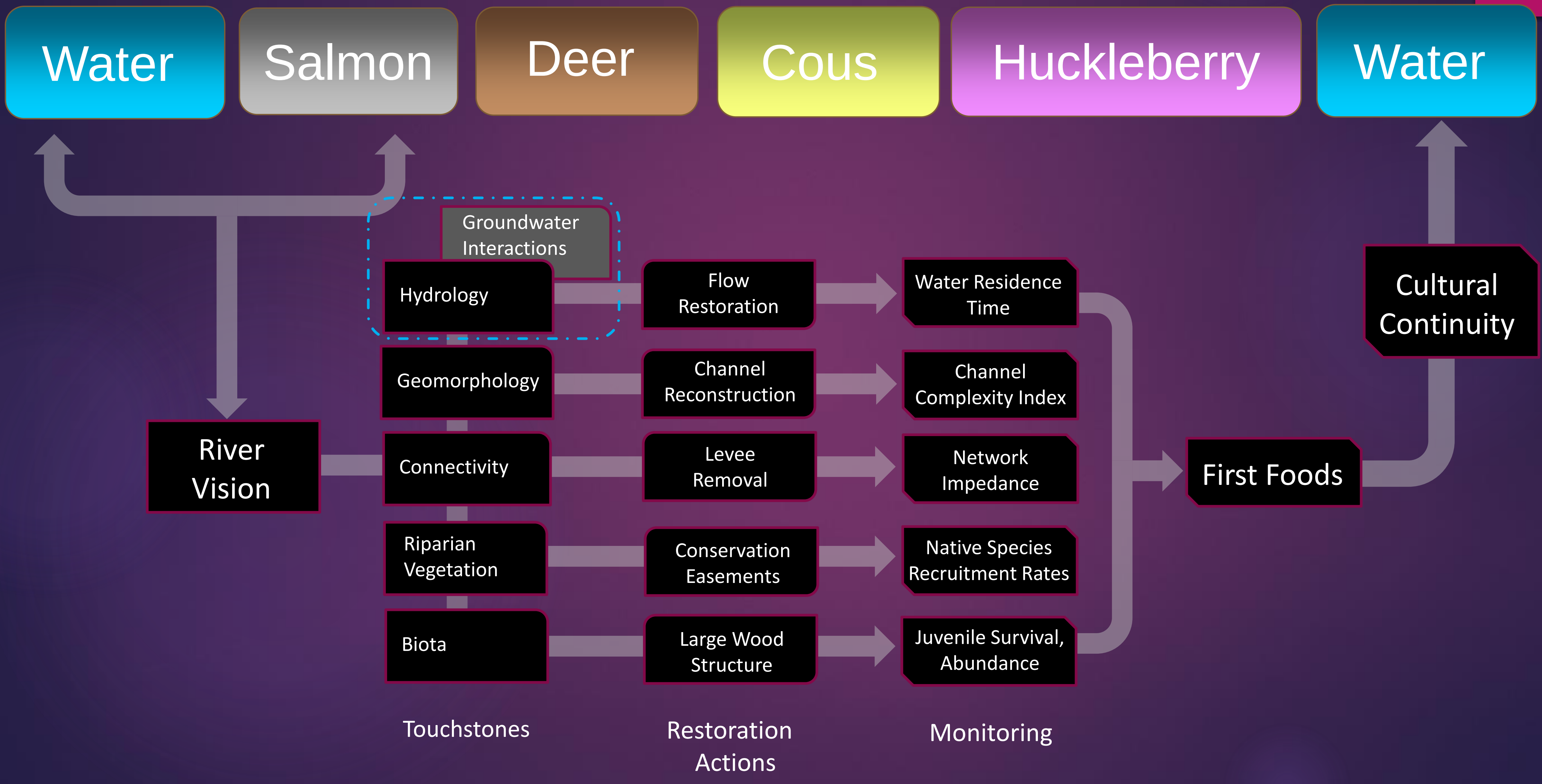
First Foods Serving Order





Water	Salmon	Deer	Cous	Huckleberry	Water
	Chinook	Mule deer	Biscuit root	Chokecherry	
	Coho	Elk	Wild Celery	Service berry	
	Steelhead	White tail deer	Bitterroot	Stawberry	
	Mussels	Bison	Luksh	Black currant	
	Lamprey	Bighorn sheep	Camas	Golden currant	
	Sturgeon	Moose	Black Moss	Red currant	
	Smelt	Mtn Goat	Wapato	Elderberry	
		Birds	Mariposa Lilly	Thimbleberry	

First Foods Management with River Vision Implementation



First Foods and Cultural Continuity

Restoration of Eco-cultural Systems

Access

Teaching
Learning
Harvesting
Preparing

Consumption
Celebration

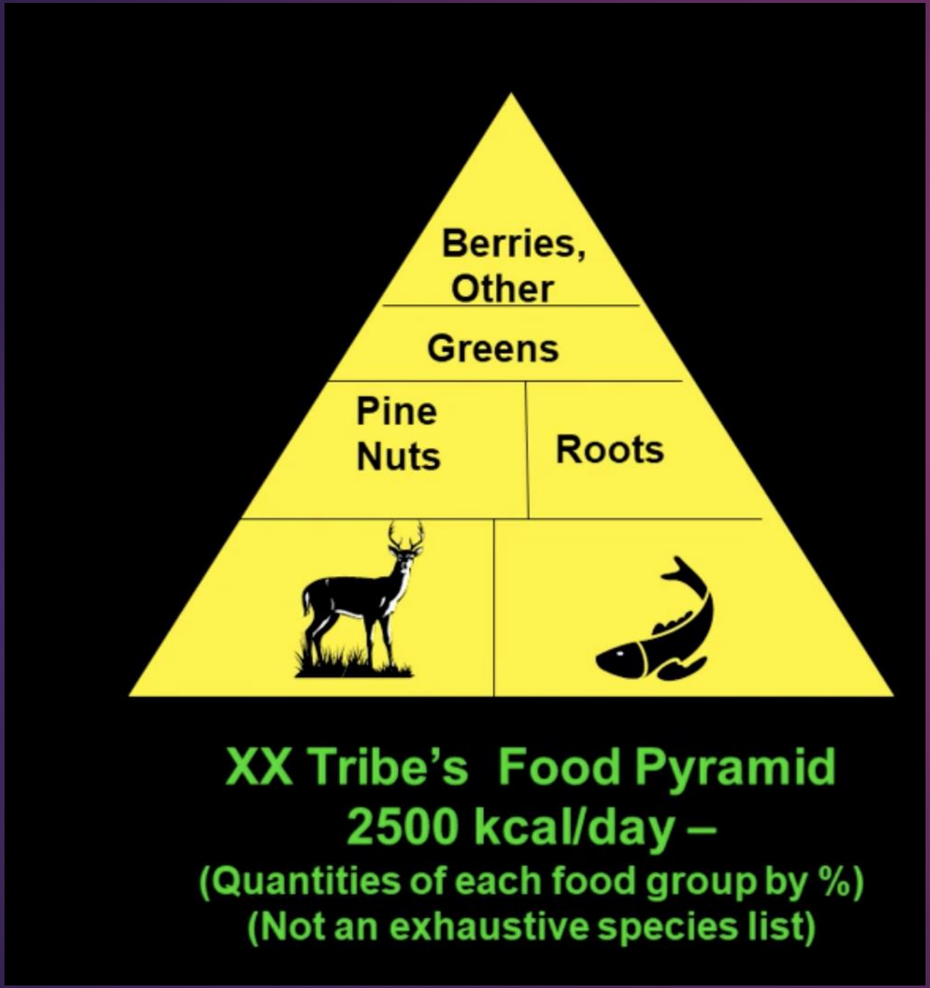
Reciprocity:
Sharing;
Care

Difficulty evaluating toxicity thresholds

- Indirect Effects (e.g. food web changes)
- Chemical Mixtures
- Multiple Stressors (e.g. temperature, pathogens)
- Non-typical dose response relationships
- Subthreshold effects
- Unknown contaminants
- Data gaps in toxicity information
- Tribes at high risk of cumulative effects


RESOURCES VARIED AND NOT LINKED TO HOME ADDRESS
CULTURAL ACTIVITIES MAY INCREASE BOTH DIRECT AND INDIRECT EXPOSURES
MONTANE RESOURCES
FOREST RESOURCES
RIPARIAN RESOURCES
RIVERINE RESOURCES
WETLANDS RESOURCES
DESERT RESOURCES
MARINE RESOURCES
AIR AND DUST INHALATION
SMOKE INHALATION
DIRECT SOIL EXPOSURE
PROCESSING
SWEAT LODGE & CEREMONIES
GAME
GAME MEAT
GARDEN PRODUCE
IRRIGATION
NON-STANDARD HOUSING, SEASONAL CAMPING
SPRINGS & GROUND WATER
WEAVING, BASKETRY HARVESTING & PROCESSING
AQUATIC FOODS- reptiles, fish and shellfish HARVESTING & PROCESSING
POTTERY
MARINE RESOURCES HARVESTING, PROCESSING, AND FOODS- shellfish, fish, & marine mammals
SURFACE WATER USE
SEDIMENT EXPOSURE
GATHERED FOODS
Harper & Harris 2006 (with modifications by NTTC 2018)

Fish Advisories, More Broken Treaties



Fish Ingestion Rates

g/day	Source
17.5	EPA- general US population
175	State of Oregon
540	CTUIR traditional
1,646	Heritage rates- Kootenai Tribe

Harper & Harris (1997). Risk Analysis. 17(6)
EPA (2011) Exposure Factors Handbook. 10.6

“Chemical Assimilation”

- Forced dependency on Western industrial food systems as First Foods become less abundant and more toxic

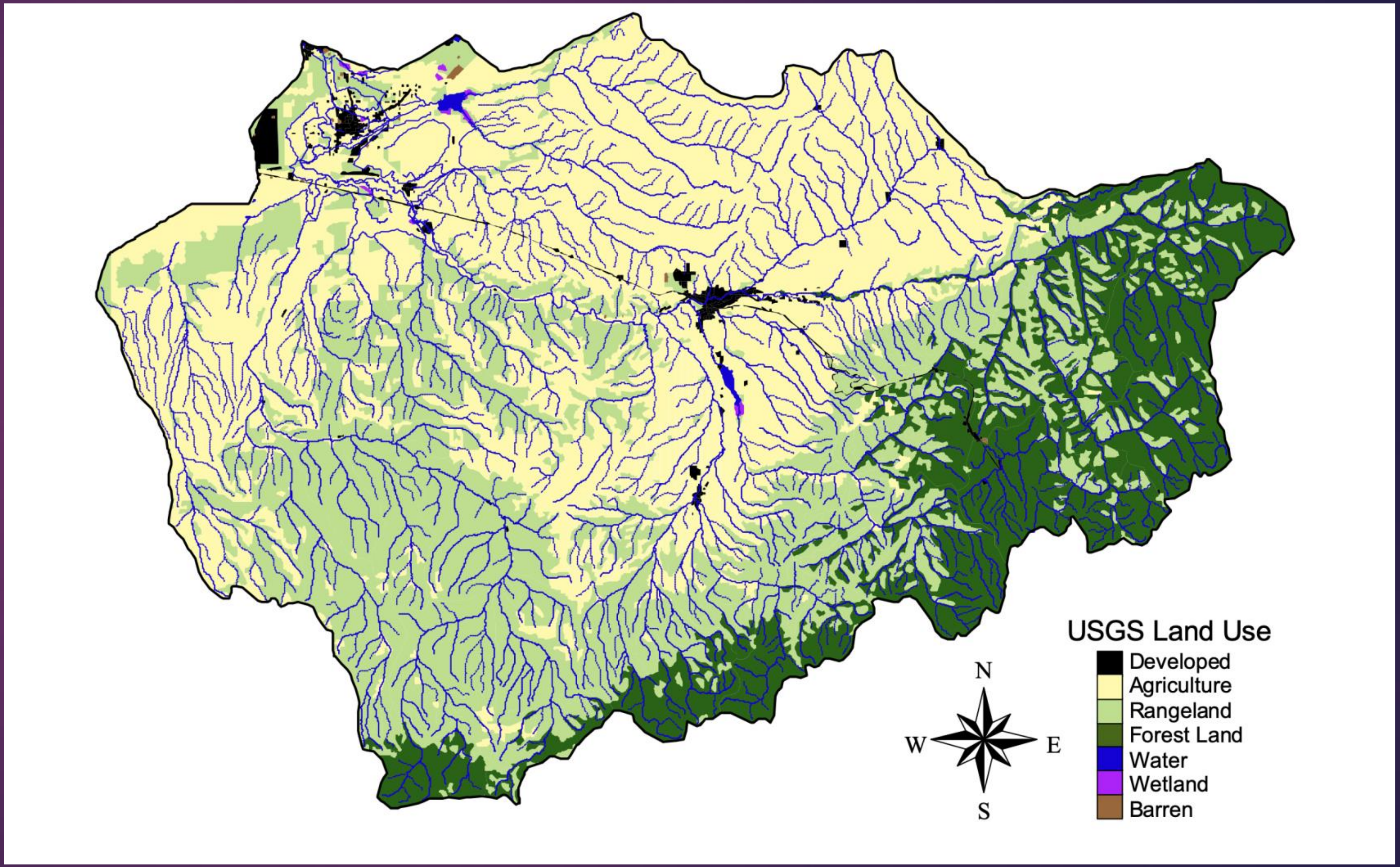
Food Quality Protection Act (1996)

Pesticides must show ‘reasonable certainty of no harm’ before registering

Conceptual Site Model for Umatilla River

Point Sources
- WWTP
- Industrial
- Power Generation

Non-point sources
- Agriculture
- Rangeland
- Transportation
- Historical sites



Assessments of Eco-Cultural Risk

Tribal Health
- Cancer risk
- Non-cancer risk
- Vulnerable and susceptible subpopulations
- Cumulative impacts from loss of First Foods

River Health
- Sensitive/Indicator species
- First Food species
- Multiple-stressors (e.g. temperature, nutrients)
- Indirect effects (e.g. food webs)
- Chemical mixtures (effects based on similar MOA)

First Foods and Language

Measurable Actions & Indicators of Progress

First Salmon
First Kill

First Digging
First Picking

Special Thanks:

- Devan Noblit
- Nadine French
- Eric Quaempts
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- Kathleen Elliott
- Mildred Quaempts
- Wenix Red Elk
- Matthew Campbell
- Lauren Lewis
- Deshon Dick
- CTUIR Community Members

SHORT UPDATES

Image: Microsoft

Columbia Basin Ecological Screening Values

- Challenge: Hundreds of chemicals being measured in CB, many to be detected, can we prioritize aquatic risk consistently across projects/Basin?
- Review existing screening values
  - Relevance to PNW Species and US regulations (CWA, ESA, etc.)
  - Consider internationally developed values, if relevant and useful
  - Past Compendiums of Screening Values
    - EPA Eco-Risk Guidelines
    - Env. Canada 1999 Compendium
    - Great Lake publication review, in press (2024)

- List all chemicals currently measured in CRBRP grants- (underway)
  - QAPP and analytical methods therein
  - Track by CAS Number

Proposed Plan for CB-wide screening values

- Compare Lists- CRBRP CAS Numbers vs. Table of Screening Values
- Identify Overlap, Data Gaps, review usability of existing SV(s)
- Develop Workflow Dichotomous Key
  - IF no SV, then:

    -Search Ecotox Knowledgebase for relevant and reliable LC/EC data

    -Compile LC/EC Data, select summary value, such as HC05 +/- 95% C.I.

    IF no (too little) Ecotox Data:

    -Apply New Approach Methods (e.g. ToxCast) per chemical

    -Note that NAMs often are human health based; resultant SVs may be considered "One Health values"

Further Steps in Process

- If multiple screening values available-
  - Eco-Health focused values
  - Assess level of certainty in background data
  - Date of value established (up to date?)

- Single Chemicals- 1^{st}

- Commonly measured mixture exposures- 2nd

  -Strength of NAMs and effects based monitoring

- Reality Check(s)-
  - Once we compare 2 lists, we will know if a few or a lot are needed.
  - Measured vs. Detected may also modify the list.

Aquatic Life Toxics Rulemaking

Water Quality Program

Final Rulemaking

October 1, 2024

What are Aquatic Life Toxics Criteria?

- Protect aquatic life (fish, invertebrates, and plants) from toxic substances known to affect growth, reproduction, and survival

- Short- and long-term effects
  - **Acute** exposure = reduced survival
  - **Chronic** exposure = effects to growth, reproduction, or survival

- Freshwater (FW) and saltwater (SW) protective values

Rule Approach

1. **Do not change** WA existing criteria when consistent with EPA and there are no endangered species concerns

2. **Adopt EPA recommendations** if WA existing criteria is inconsistent with EPA and there were no likely to adversely affect (LAA) or jeopardy determinations for similarly listed species in Idaho or Oregon

3. **Review new scientific studies** if there were LAA or jeopardy determinations in Idaho or Oregon for similarly listed species in WA

4. **Review new scientific studies and increase protection level** if new science alone did not provide adequate protection to endangered species

Final Rule Details: Aquatic Life Toxics

1. **Some criteria were not changed (60 criteria)**
   - Meeting EPA recommendations and no endangered species concerns

2. **Adopt EPA criteria recommendations (49 criteria)**
   - WA existing criteria differs from EPA and there are no known endangered species concerns

3. **New criteria to WA (36 criteria)**
   - EPA added pollutants to their recommendations since WA last updated their criteria

4. **Developed state-specific criteria from new studies (14 criteria)**
   - A likely to adversely affect or jeopardy determination in Idaho or Oregon for a similarly listed species in WA
   - EPA had existing recommendations that were outdated

Final Rule Details: Aquatic Life Toxics

5. **Propose to not adopt EPA criteria recommendations (7 criteria)**
   - Lack of scientific support or high natural variability of pollutant throughout the state that presents challenges for statewide criteria

6. **Increased protection level of criteria and reviewed new studies (6 criteria)**
   - There was a jeopardy determination for these criteria in Idaho or Oregon for a similarly listed species in WA. Updating criteria using new science alone was not protective of endangered species

7. **Developed state-specific criteria based on new tools/science (5 criteria)**
   - State-specific direction was most appropriate for emerging chemicals (e.g., 6PPD-q), or new science and tools were available (e.g., silver and copper)
   - EPA does not have criteria recommendations for chemicals/methods we used

Existing

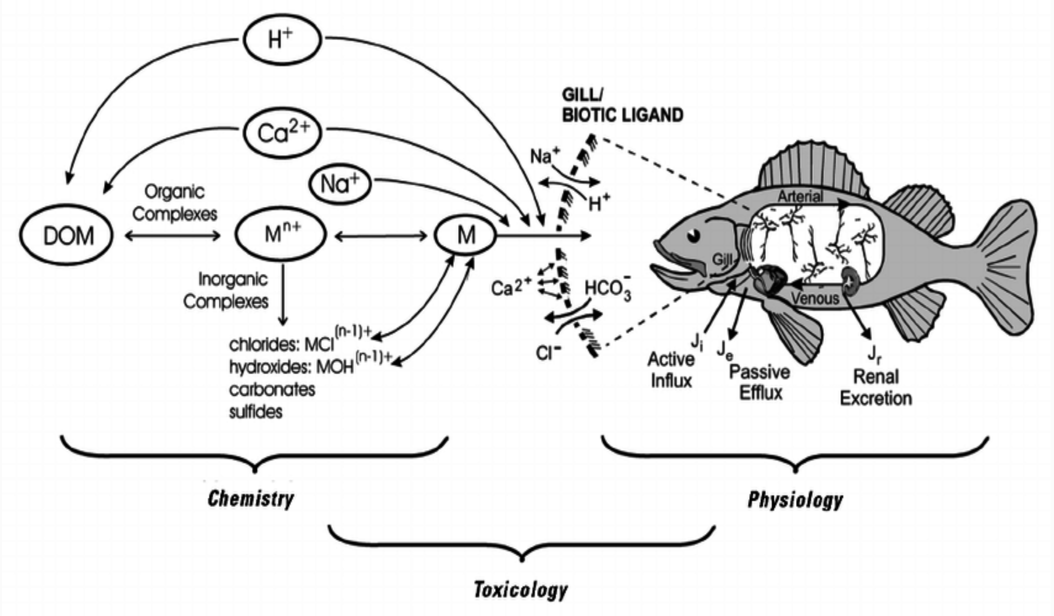
Toxics	Freshwater Acute	Freshwater Chronic	Saltwater Acute	Saltwater Chronic
Aldrin	↑ ●		↑ ●	
Arsenic	↓ ●	↓ ●		
Cadmium	↓ ●	↓ ●	↓ ●	↓ ●
Chromium III	↓ ●	↓ ●		
Chromium VI	↑ ●	↓ ●		
Copper	●	●		
Cyanide	↓ ●	↓ ●		
Dieldrin	↓ ●	↑ ●		
Endrin	↓ ●	↑ ●		
gamma-BHC	↓ ●			
Mercury	↓ ●			
Nickel	↓ ●	↓ ●		
Pentachlorophenol	● ↓	↓ ●		↓ ●
Selenium	●	●		
Silver	↓ ●		↓ ●	
Zinc	↓ ●	↓ ●		

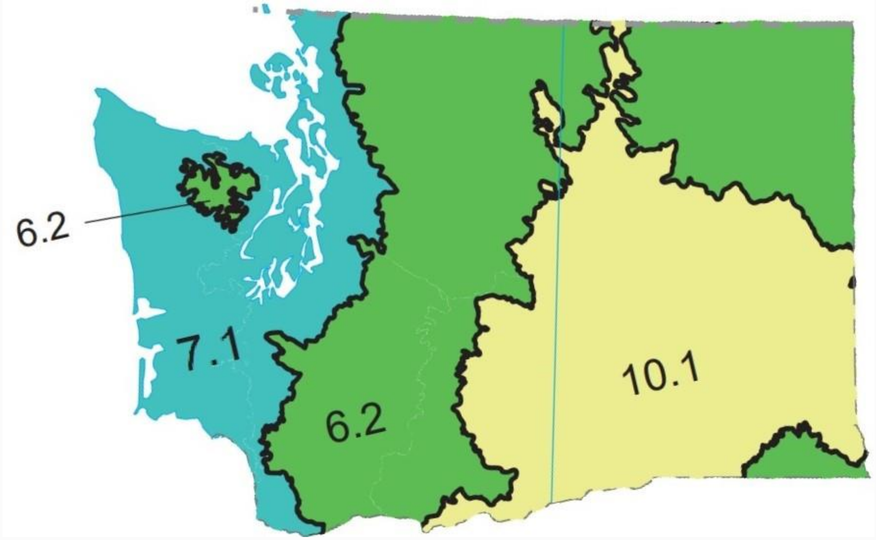
New

Toxics	Freshwater acute	Freshwater Chronic	Saltwater Acute	Saltwater Chronic
6PPD-quinone	●			
Aluminum	●	●		
Acrolein	●	●		
Carbaryl	●	●	●	
Demeton		●		●
Diazinon	●	●	●	●
Guthion		●		●
Malathion		●		●
Methoxychlor		●		●
Mirex		●		●
Nonylphenol	●	●	●	●
PFOS	●	●	●	
PFOA	●	●	●	
Tributyltin	●	●	●	●
Silver		●		●

Overview of MLR Model

- Used for aluminum and copper
- Model that uses pH, hardness, and dissolved organic carbon (DOC) to predict metal bioavailability and toxicity
- When pH, hardness, and DOC data are available for a waterbody, then calculate a site-specific water quality criteria
- When pH, hardness, and DOC data are not available, 5th percentile default criteria are the applicable criteria





Questions?

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DEPARTMENT OF ECOLOGY
State of Washington

JUNE MEETING FOLLOW UP

Here's the form to learn more and provide your feedback

Image: Microsoft

UPCOMING MEETINGS

Next CRBRP Working Group Meeting

- October 31, 2024
- Virtual, costumes encouraged

Next TMS Meeting

- January, date TBD
- Virtual

TMS Workshop

- In conjunction with the May 2025 CRBRP Working Group Meeting
- Hybrid

THANKS FOR JOINING US!

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

Image: Luke Detwiler