Yakama Nation Fisheries

Columbia River Basin Partnership

Draft Implementation Plan for a Basin-Wide Monitoring Program

September 2025

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The Yakama Nation
Department of Natural Resources, Fisheries
Superfund Section

And

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Preface

"NOT MUCH LESS NECESSARY THAN THE ATMOSPHERE THEY BREATHED"

In 1905, the United States Supreme Court issued its landmark decision in the case known as United States v. Winans (198 U.S. 371). Rendering an opinion for an 8-1 majority, Justice Joseph McKenna wrote that for the Yakama people fishing for salmon in the Columbia River was "not much less necessary to the Indians than the atmosphere they breathed." This decision also went on to help establish one of the most important principles in Indian law, generally known as the Reserved Rights Doctrine when the court further stated that the rights retained by the Yakama Nation via their Treaty of 1855 "… was not a grant of rights to the Indians but a grant of rights from them – a reservation of those not granted."

This statement remains true today.

For millennia, the Yakama people have depended on the Columbia River and its salmon—not just for food, but for culture, economy, identity, and survival. The right to fish at all usual and accustomed places was reserved in the Treaty of 1855, not granted. Yet over the last century, the Columbia River has been altered, fragmented, and contaminated by industry, dams, and urban development. Today, fish advisories cover the entire Columbia River mainstem due to toxic pollutants such as mercury, polychlorinated biphenyls, and pesticides. The salmon runs, once numbering in the tens of millions, are a shadow of what they once were.

For decades, the Yakama Nation has advocated for and protected the Columbia River and its resources in courts, in Congress, and on the water. But advocacy alone is not enough. There remains no coordinated, permanent, and unbiased program to monitor the toxic substances that impair the river, its fish, and the health of all who depend on them. Without a clear understanding of contamination sources, pathways, and trends, restoration efforts are fragmented, incomplete, and reactive.

In response, the Yakama Nation has stepped forward.

Recognizing the need for a systematic and scientifically rigorous approach, the Yakama Nation initiated the Columbia River Mainstem Monitoring Program—a multi-phase, multi-partner effort to monitor contamination in fish, water, and sediment from Bonneville Dam to the Canadian border. Building on decades of leadership in cleanup and restoration, this program is a necessary step toward fulfilling the promise of the Treaty of 1855, advancing environmental justice and protecting the health of tribal members and all river communities.

This draft Implementation Plan reflects years of planning, outreach, pilot studies, and interagency collaboration. It also reflects an urgent truth: that unless we act now to understand and reduce toxic exposures in the Columbia River, we risk further harm to a river system that has already borne too much.

Through this work, the Yakama Nation reaffirms its responsibility to future generations. We honor the past, we confront today's realities, and we act to ensure that the Columbia River remains a source of life—not poison—for our Yakama people and our neighbors.

Executive Summary

This draft Implementation Plan for a Columbia River Basin Partnership and Monitoring Program is intended as a living roadmap and concept for the governance, funding, and communication framework for a Columbia River Basin (CRB) Partnership to implement, oversee, and manage a long-term CRB Monitoring Program. The Plan outlines an approach to initiate, govern, and sustain a formal toxics monitoring, assessment, and adaptive management program for the Columbia Basin. Also presented is a path forward to continue the existing mainstem monitoring (Figure 1) while a CRB Partnership and Monitoring Program (basin-wide) is formed. Monitoring data collection programs are currently underway in the Columbia Basin (mainstem and tributaries), but a cohesive partnership structure to unify and support long-term monitoring across multiple national, state, and local jurisdictions has not yet been created. This document envisions a pathway to establishing such a partnership to guide and execute cohesive toxics monitoring to assess status and trends in the Columbia Basin.

2016 Clean Water Act Section 123 Mandate

In 2016, Congress amended the Clean Water Act with Section 123 to establish a CRB Restoration Program, to be administered by the United States Environmental Protection Agency (EPA). The CRB Restoration Program was established as a collaborative, stakeholder-based program for environmental protection and restoration activities throughout the CRB. The CRB Restoration Program scope includes:

- Assessment and monitoring of water quality trends;
- Establishment of a CRB Restoration Funding Assistance Program and Working Group; and
- Promotion of citizen engagement and knowledge.

The 2016 Clean Water Act amendment led EPA to establish (within EPA) a CRB Restoration Program with specific duties:

1. Assess trends in water quality, including trends that affect uses of the water of the Columbia Basin;
2. Collect, characterize, and assess data on water quality to identify possible causes of environmental problems;
3. Provide grants for projects that assist the following categories: (i) eliminating or reducing pollution; (ii) cleaning up contaminated sites; (iii) improving water quality; (iv) monitoring to evaluate trends; (v) reducing runoff; (vi) protecting habitat; or (vii) promoting citizen engagement or knowledge.
4. Establish a Columbia River Basin Restoration Working Group. The Working Group shall (A) recommend and prioritize projects and actions; and (B) review the progress and effectiveness of projects and actions implemented.

The ongoing EPA-administered CRB Restoration Funding Assistance Program provides opportunities for competitive grant funding throughout the Columbia Basin, consistent with the third of the three duties. Recently, EPA revived efforts to develop a complimentary CRB Toxics Monitoring Vision and Draft Quality Assurance Project Plan Template.

Despite past efforts, there is still no cohesive plan, lead organization, or sustainable monitoring program to fulfill the first two duties outlined in the 2016 Clean Water Act amendment. EPA's 2010 CRB Toxics Reduction Action Plan called a regional, multi-agency long-term monitoring program "critical," but the CRB Restoration Working Group concluded that, given the Basin's size, complexity, and limited funding, such a plan was unrealistic at the time. As a result, the effects of cleanup and source control actions remain unverified, and decision-making is hindered by the lack of a comprehensive data set. While the 2010 Action Plan recognized the need for a coordinated monitoring initiative, it lacked a clear path forward. This draft Implementation Plan provides that path—offering a concrete strategy to realize the 2010 vision and support EPA's 2016 responsibilities.

The Need for Basin-Wide Toxics Monitoring

The Columbia River Basin and Mainstem (Figure 1) crosses international and multiple state boundaries and hosts a wide range of tribal, industrial, and public uses like fishing, cultural practices, transportation, agriculture, hydropower generation, and water-based recreation. Contaminants released into the Columbia Basin have impacted sediment, fish tissue, and water quality and have resulted in uptake by aquatic organisms, wildlife and humans.

While cleanups of individual contaminated sites along the Columbia River are progressing, these cleanups have occurred in isolation and are not integrated into information and efforts on the overall health of the Columbia River. Many upland cleanup sites do not address surface water, sediment, or fish tissue sampling in the Columbia River. In addition to industrial sites undergoing cleanups, non-point sources such as uncontrolled urban stormwater, atmospheric deposition, agricultural runoff, and natural source contaminants such as metals also contribute contaminants to the Columbia River. Both point and non-point sources of pollution have been documented for priority pollutants (polychlorinated biphenyls, dioxins, furans, arsenic, mercury, and organochlorine pesticides) as well as impacts to temperature, turbidity, and water quality and quantity (EPA, 2009) throughout the mainstem Columbia River.

Concern about the health of the aquatic ecosystem of the CRB and the potential risk to human health exists due to the exposure to contaminants found in fish, wildlife, and sediment. Moreover, several federally listed and tribally important species and their designated critical habitat and essential fish habitat are affected. As a result of contamination, site- and species-specific Fish Consumption Advisories have been issued by the Washington Department of Health, Oregon Health Authority, and other state health agencies in the CRB.

Throughout time, tribal members have relied extensively on fish for cultural resources and subsistence. Therefore, tribal fish consumption has been significantly higher than non-tribal

consumers. Exposures of tribal fishers to toxics accumulated in fish tissue put tribal members at higher health risk, while compliance with Fish Consumption Advisories results in a reduction of access to traditional food and treaty-reserved resources.

Solution: CRB Partnership and CRB Monitoring Program Framework

This draft Implementation Plan framework describes a way to initiate, govern, and sustain a formal, basin-wide, long-term program for toxics monitoring, assessment, and adaptive management for the Columbia Basin. The framework embodies:

1. **The CRB Partnership** to advance, guide, and adaptively manage a basin-wide assessment strategy for water quality and toxics monitoring. The CRB Partnership needs to be a collaborative organization that is advised by and receives substantive input and leadership from a range of entities across the Columbia Basin. Such a partnership is critical because the Columbia Basin touches one national and seven state boundaries. Only a basin-wide partnership can effectively support and implement a basin-scale monitoring effort.
2. **The CRB Monitoring Program** to establish and execute the non-biased, systematic monitoring of toxic substances in water, sediment, and biota of the Columbia Basin as a multi-agency effort to protect human and ecological health. The primary goal of the CRB Monitoring Program is the implementation of long-term monitoring to track the status and trends of toxics in fish, water, sediments, and invertebrates in the Columbia River mainstem from Bonneville Dam to the Canadian border. Future goals include supporting and/or building out the program into Columbia River tributaries and the Lower Columbia River and Estuary. This expansion could be accomplished earlier through collaboration and information sharing, provided adequate partnerships can be established and funding secured.

To research recommendations for governance, funding, and communication that will advance a formal, long-term program, this draft Implementation Plan evaluates nine existing programs designed to address similar monitoring and restoration for other waters of national significance. We studied these other programs to consider and describe a recommended framework for implementation of long-term monitoring in the CRB beginning with the mainstem then expanding into basin-wide monitoring.

This draft Implementation Plan recommends an ambitious vision and plan to improve the Columbia River for human and ecosystem health and recovery, and sustainable economic benefits. According to research, federal, state, and/or private funding sources will more readily fund a visionary, ambitious, and comprehensive program as funding sources prefer to fund a program that envisions and will produce meaningful environmental recovery.

For governance, the draft Implementation Plan recommends that the CRB Partnership and Monitoring Program become a nonprofit 501(c)(3) corporation to allow the program the most flexibility, access to diverse funding, and ultimately to be the most successful. The Plan describes a CRB Partnership governing structure with leadership board, executive director, external review,

and working teams including the CRB Monitoring Program under the director's management (Figure 2). The Plan also describes the existing Columbia River Mainstem Monitoring Program – Phase 1 and its governance organization chart as well as how it can expand into a basin-wide program. The draft Implementation Plan describes the existing Columbia River Mainstem Monitoring Program's goals, achievements, needs, and budget for monitoring, outreach, and data management. The current mainstem program executes a non-biased, systematic, long-term monitoring of toxic substances in water, sediment, fish, and other biota. The long-term goal is for the Columbia River Mainstem Monitoring Program to be enveloped by the future basin-wide CRB Monitoring Program.

For funding, as non-profit corporation, the CRB Partnership and Monitoring Program will be eligible for state and federal allocated funds and in addition can access grant funding from trusts and other non-governmental sources. Private funding may serve to diversify the overall budget and sustain the program in difficult political and economic periods. Ideally, the CRB Partnership would establish an endowment using private funding for sustainability. The draft Implementation Plan recommends continued and further cultivated collaboration with many public, private, and non-profit organizations to benefit from their funded outreach and existing programs.

For communication, the draft Implementation Plan provides a communication strategy to be developed and expanded by the leadership and collaborations of the CRB Partnership and Monitoring Program. The Strategic Communication Plan for the CRB Partnership and Monitoring Program recommends communication strategies based on evaluation of the other model programs and provides a timeline for implementation including a three-step approach for expanding the communication scope over time with the implementation of the CRB Partnership and Monitoring Program (Figure 3). As a specific example, to communicate concerns about contaminant sources, CRB Partnership and Monitoring Program may identify areas of concern on the Columbia River. This strategy can serve to elevate and focus attention on cleaning up the primary sources of contamination for the greatest recovery.

The success of the CRB Partnership and Monitoring Program rests on an Adaptive Management strategy. As information is collected and as times change, individuals in the partnership and program must be actively learning, and open to changes in approach and policy, and to new information and evolving informational needs.

The draft Implementation Plan evaluates and projects a budget for the CRB Partnership over the next decade to address both formation of the CRB Partnership and continuing the existing mainstem CRB Monitoring Program. The current phase of the CRB Monitoring Program focuses on the Columbia River Mainstem, building collaborative partnerships, and data sharing. As the CRB Monitoring Program matures, its scope will expand to include the Lower Columbia River and CRB tributaries through the growth and support of other monitoring entities and through funding expansion. The CRB Partnership and Monitoring Program should incorporate a degree of flexibility and nimbleness to respond to funding fluctuation in political and economic climates. The budget for the upcoming year will be evaluated by the end of the third quarter of the previous

year based on known and predicted funding. Recommended target funding sources and possible allocation among federal, state, and private/grant funding are also discussed. The technical monitoring and evaluation work will be the centerpiece and primary driver of budgetary requirements. Building an endowment will provide stability and operating budget of the CRB Partnership Program for the future and recovery of the Columbia River.

The success of the CRB Partnership and Monitoring Program will rest on robust relationships with Tribes, federal, state, and local government to influence policies while remaining non-political. The ultimate goal of the CRB Partnership and Monitoring Program is to provide a trusted, unbiased dataset that facilitates the evaluation of status and trends throughout the Columbia River Basin. The program provides unbiased data to inform, but not direct, policymaking. Maintaining broad support and sustained funding will require a careful balance between delivering objective data and assessments and avoiding policy advocacy or political positioning.

For the success of CRB Partnership and Monitoring Program, the Communication Strategy recommends transparent communication and adaptive management to create a culture of learning and openness to change at all levels. Data collected in one part of the Columbia River may inform data evaluation and restoration in another region. A culture of living documents and protocols will allow continual growth and improvement. Time spent by the leadership board, executive director, and CRB Monitoring Program Director on setting and agreeing on the CRB Partnership and Monitoring Program culture with communication norms will be a strong foundation for future success.

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1.0 INTRODUCTION

This draft Implementation Plan for a Basin-Wide Partnership and Monitoring Program is intended to provide a governance and communication planning framework for a Columbia River Basin (CRB) Partnership to implement, oversee, and manage a long-term CRB Monitoring Program. In this draft Implementation Plan, we outline an approach to initiate, govern, and sustain a formal toxics monitoring, assessment, and adaptive management program for the Columbia Basin. Also presented is a path forward to continue the existing mainstem monitoring while a CRB Partnership and Monitoring Program (basin-wide) is formed. Figure 1 is a map of the Columbia Basin and Mainstem.

Monitoring data collection programs are currently underway in the Columbia Basin (mainstem and tributary waterbodies), but a cohesive partnership structure to unify and support long-term monitoring across national, state, and local jurisdictions has not yet been created. This document envisions a pathway to establishing such a partnership to guide and execute cohesive toxics monitoring to assess status and trends in the Columbia Basin.

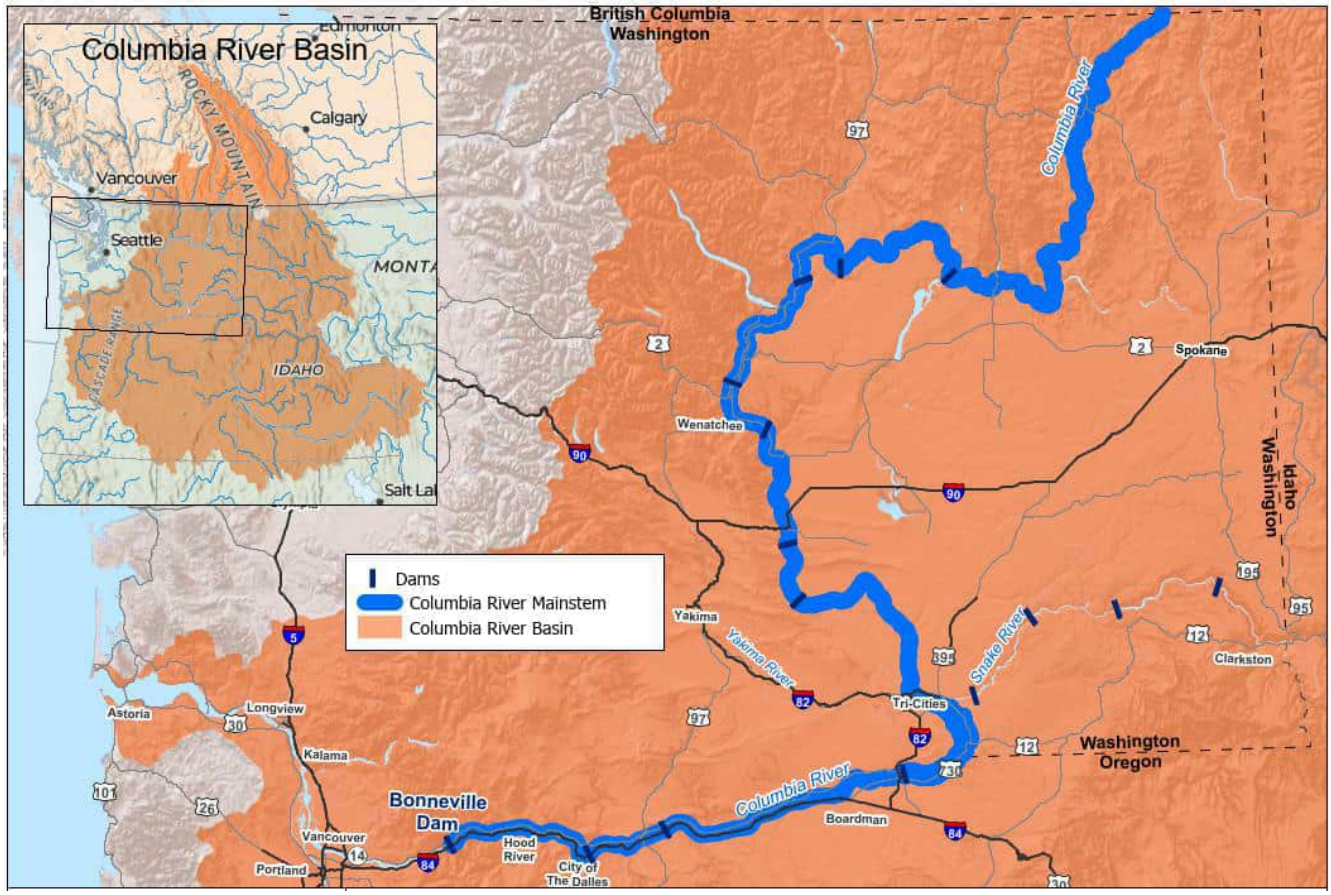

Figure 1. Columbia Basin & Mainstem, May 2025

1.1 Document Organization

This draft Implementation Plan provides a path forward for developing a Basin-Wide Partnership and Monitoring Program, building on the past Mainstem Monitoring Program and the work of other programs. The plan is intended to be a living document that will be refined by involved parties as the Partnership and Monitoring Program develops. This draft Implementation Plan is organized as follows:

- Section 1 serves as an introduction to provide important background information. It describes the Clean Water Act mandate and background, rationale, and goals for basin-wide toxics monitoring. Section 1 then presents the vision, goals, and objectives of the CRB Monitoring Program, the team who have been involved in the monitoring program, and the draft Implementation Plan's purpose and approach.
- Section 2 provides an evaluation of programs similar to the CRB Partnership and recommendations for CRB Partnership governance, funding, and communication. We evaluate existing inter-governmental programs elsewhere in the United States for governance structures, funding arrangements, and communications strategies to inform our recommendations.
- Section 3 describes the existing CRB Monitoring Program and the continuation of this work while the CRB Partnership is being created.
- Section 4 presents and evaluates a CRB Partnership budget, projecting over a 10-year period of funding and growth, subject to decisions by the governing body and adapted according to funding and needs.
- Section 5 provides initial suggestions for a strategic communication plan including communication strategies and implementation timeline to build and expand the scope of the CRB Partnership and Monitoring Program.
- The Appendices provide additional details. Appendix A describes each of the programs that were evaluated to develop the recommendations provided in this draft Implementation Plan. Appendix B is a summary of documents related to the CRB Longterm Monitoring Program. Appendix C provides basin-wide CRB Monitoring Program vision, goals, and objectives. Appendix D provides Archived Comments from reviews of previous draft Implementation Plans to be considered during the development of future documents.

1.2 Clean Water Act Mandate

In 2016, Congress amended the Clean Water Act with Section 123 to establish a CRB Restoration Program, to be administered by the United States Environmental Protection Agency (EPA). The CRB Restoration Program was established as a collaborative, stakeholder-based program for environmental protection and restoration activities throughout the CRB. The CRB Restoration Program scope includes:

- Assessment and monitoring of water quality trends;

- Establishment of a CRB Restoration Funding Assistance Program and Working Group; and
- Promotion of citizen engagement and knowledge.

Specifically, the 2016 Clean Water Act amendment[1] led EPA to establish (within EPA) a CRB Restoration Program with specific duties:

1. Assess trends in water quality, including trends that affect uses of the water of the Columbia Basin;
2. Collect, characterize, and assess data on water quality to identify possible causes of environmental problems;
3. Provide grants for projects that assist the following categories: (i) eliminating or reducing pollution; (ii) cleaning up contaminated sites; (iii) improving water quality; (iv) monitoring to evaluate trends; (v) reducing runoff; (vi) protecting habitat; or (vii) promoting citizen engagement or knowledge.
4. Establish a Columbia River Basin Restoration Working Group. The Working Group shall (A) recommend and prioritize projects and actions; and (B) review the progress and effectiveness of projects and actions implemented.

The ongoing EPA-administered CRB Restoration Funding Assistance Program provides opportunities for competitive grant funding throughout the Columbia Basin, consistent with the third of the four duties. The 500+ participant Working Group that includes states, tribes, industries, and NGOs meets semi-annually to share information on toxics reduction projects and coordinate monitoring across the Columbia River Basin. Recently, EPA revived efforts to develop a complimentary CRB Toxics Monitoring Vision and Draft Quality Assurance Project Plan (QAPP) Template.

Despite past efforts, there is still no cohesive plan, lead organization, or sustainable monitoring program to fulfill the first two duties outlined in the 2016 Clean Water Act amendment. EPA's 2010 CRB Toxics Reduction Action Plan called a regional, multi-agency long-term monitoring program "critical," but the CRB Restoration Working Group concluded that, given the Basin's size, complexity, and limited funding, such a plan was unrealistic at the time. As a result, the effects of cleanup and source control actions remain unverified, and decision-making is hindered by the lack of a comprehensive data set. While the 2010 Action Plan recognized the need for a coordinated monitoring initiative, it lacked a clear path forward. This draft Implementation Plan provides that path—offering a concrete strategy to realize the 2010 vision and support EPA's 2016 responsibilities.

1.3 Background, Rationale, and Goals for Basin-Wide Toxics Monitoring

The Columbia River Basin and Mainstem (Figure 1) crosses international and multiple state boundaries and hosts a wide range of tribal, industrial, and public uses like fishing, cultural

[1] [US Code (2016), Title 33, Chapter 26, Sub-Chapter I, Section 1275 (b)(1)&(3)]

practices, transportation, agriculture, hydropower generation, and water-based recreation. Contaminants released into the Columbia Basin have impacted sediment, fish tissue, and water quality and have resulted in uptake by aquatic organisms and wildlife, for example:

- Current and past industrial discharges into the Columbia River and tributaries have resulted in contamination of sediments and water (EPA, 2009).
- Many reaches of the Columbia River and tributaries do not meet either Washington's or Oregon's water quality standards.
- The Washington State Department of Ecology (Ecology) has greater than 80 Clean Water Act 303(d) listings for polychlorinated biphenyls and pesticides (Ecology, 2025) on the mainstem Columbia River.
- In a 2007 contaminants survey, approximately 16 percent of the Columbia River estuary area was in poor condition with respect to sediment contamination (Hayslip et al., 2007).
- Alvarez et al. (2014) found that contaminants in passive water samplers showed trends of lower concentrations in rural areas to higher concentrations at more urbanized sites in the lower Columbia River.
- Counihan et al. (2014) found that reach-specific trends in contaminants in sediment samples agreed with trends in tissue concentrations observed in birds and fish (Henny et al., 2011; Nilsen et al., 2014).
- Nilsen et al. (2014) investigated food web transport pathways in the Columbia River Estuary and documented bioaccumulation of certain contaminants and potential negative effects in multiple levels of the ecosystem, including consumers of fish.

Columbia River water quality monitoring requires multiple tools including the sampling of other media beyond water, per the mandate of the Clean Water Act 2016 Amendment. The sampling of fish, shellfish, surface water, porewater, sediments, and invertebrates is needed to characterize and achieve recovery of the CRB-wide water quality. This data informs exposures and risk for the food web and human health.

1.3.1 Multiple Contaminant Sources

While cleanups of individual contaminated sites along the Columbia River are progressing, these cleanups have occurred in isolation and are not integrated into information and efforts on the overall health of the Columbia River. Each contaminated site undergoing cleanup has its own project goals under various state and federal regulatory settings. These sites each have site-specific sampling and quality assurance protocols and therefore the data generated has limited comparability for characterizing the overall condition of the Columbia River. Many upland cleanup sites have limited scopes of investigation and do not address surface water, sediment, or fish tissue sampling in the Columbia River.

In addition to industrial sites undergoing cleanups, non-point sources such as uncontrolled urban stormwater, atmospheric deposition, agricultural runoff, and natural source contaminants such as metals also contribute contaminants to the Columbia River (EPA, 2009). Both point and non-point sources of pollution with polychlorinated biphenyls, dioxins, furans, arsenic, mercury, and organochlorine pesticides as well as impacts to temperature, turbidity, and water quality and quantity (EPA, 2009) have been documented throughout the mainstem Columbia River.

1.3.2 Human and Environmental Health Concerns

Concern about the health of the aquatic ecosystem of the CRB and the potential risk to human health exists due to the exposure to contaminants found in fish, wildlife, and sediment (EPA, 2009). Moreover, several federally listed and tribally important species and their designated critical habitat and essential fish habitat are affected. As a result of contamination, site- and species-specific Fish Consumption Advisories have been issued by the Washington Department of Health (WDOH) (WDOH, 2023), Oregon Health Authority (OHA), and other state health agencies in the CRB.

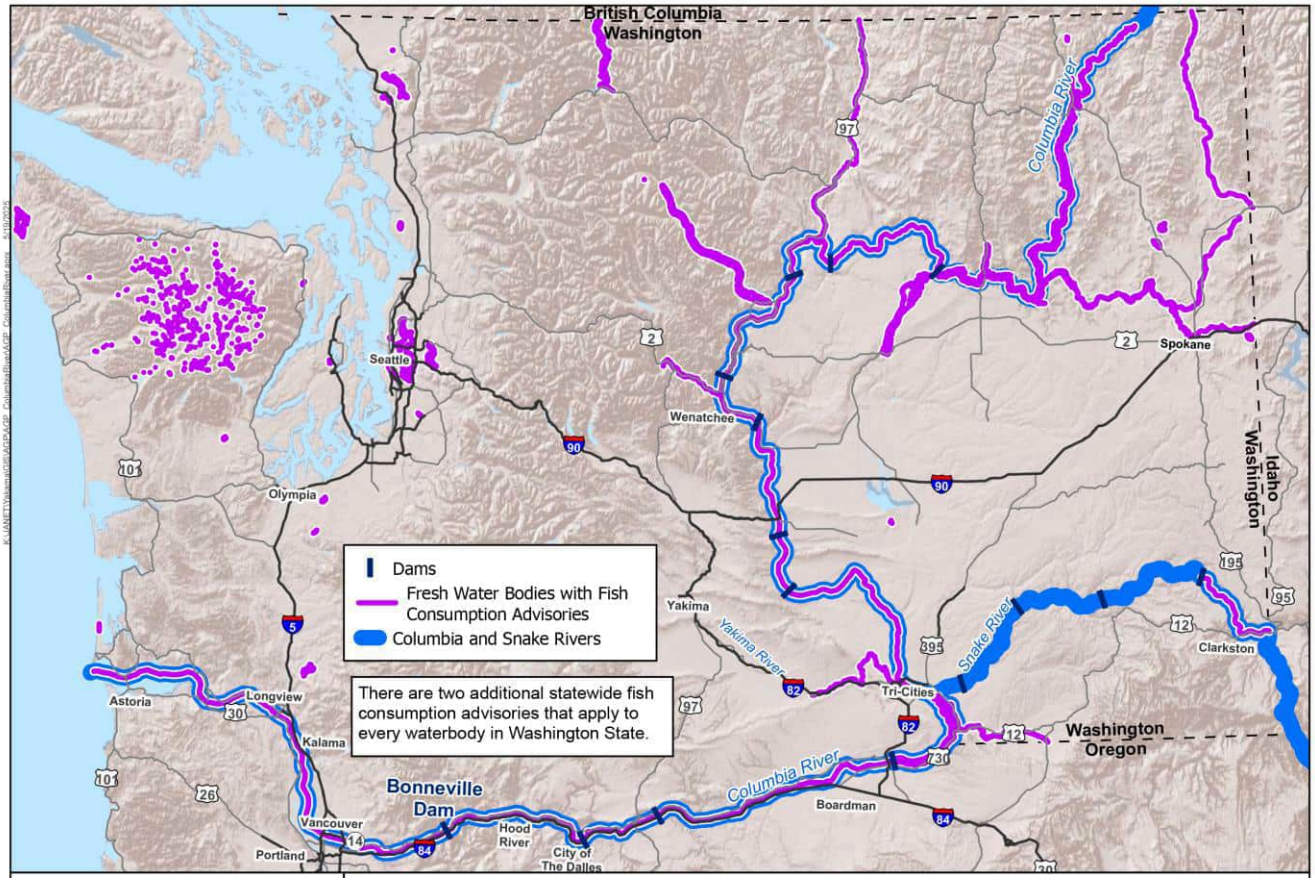

Figure 2. Fish Consumption Advisories in Washington State, July 2024

Throughout time, according to fish consumption surveys of tribes (Columbia River Inter-Tribal Fish Commission [CRITFC], 1994; Polissar and others, 2016), tribal members have relied extensively on

fish resources and fishing activities. These surveys highlight that tribal fish harvesting, use, and consumption, historically, in comparison to the average, non-tribal consumer, is significantly higher. Exposures of tribal fishers to toxics accumulated in fish tissue puts tribal members at higher health risk, but compliance with Fish Consumption Advisories results in a reduction of access to healthy food and treaty-reserved resources.

1.4 CRB Monitoring Program Vision, Goals, and Objectives

The overall goal of the CRB Monitoring Program is the implementation of long-term monitoring to track the status and trends of toxics in fish, water, sediments, and invertebrates, as in the current QAPP (Section 3.0) (Counihan et al., 2021 and pending updates expected in late-2025) in the Columbia River mainstem from Bonneville Dam to the Canadian border. Sampling for additional aquatic species (ex. shellfish, invertebrates, lamprey, sturgeon, suckers), and sediment porewater chemistry is also warranted in some areas and is being considered.

The goals of the CRB Monitoring Program include:

- Identify river segments with higher and lower contaminant concentrations;
- Evaluate contaminant trends over time;
- Assess impacts to human health;
- Assess impacts to ecological health;
- Inform prevention, cleanup, protection, and restoration efforts;
- Inform education and outreach efforts; and
- Inform and provide data compatible with the larger Columbia Basin contaminant monitoring efforts.

Appendix C provides more detail regarding vision, goals and objectives, and key questions that were developed by the team of Yakama Nation, Columbia River Intertribal Fish Commission, and State and Federal agencies. Future goals include supporting and/or building out the program into Columbia River tributaries and the Lower Columbia River and Estuary. This could be accomplished earlier through collaboration and information sharing, provided adequate partnerships can be established and funding secured.

1.5 Draft Implementation Plan Purpose and Approach

Because Columbia River mainstem monitoring is not currently a specific goal of EPA's CRB Restoration Program, the Yakama Nation seeks to forge a path to a comprehensive monitoring program that is complementary to EPA's ongoing competitive grant program, at a basin-wide scale, with monitoring initially focused on the mainstem Columbia River. This draft Implementation Plan framework describes a way to initiate, govern, and sustain a formal, basin-

wide, long-term program for toxics monitoring, assessment, and adaptive management for the Columbia Basin. The framework includes:

1. **The CRB Partnership** is needed to advance, guide, and adaptively manage a basin-wide assessment strategy for water quality and toxics monitoring. In preparing this draft Implementation Plan, the Yakama Nation intends for the CRB Partnership to be a collaborative organization that is advised by and receives substantive input and leadership from a range of entities across the Columbia Basin. Such a partnership is critical because the Columbia Basin touches one national and seven state boundaries. Only a basin-wide partnership can effectively support and implement a basin-scale monitoring effort.
2. **The CRB Monitoring Program** will be a multi-agency effort to establish and execute the non-biased, systematic monitoring of toxic substances in water, sediment, and biota of the Columbia Basin, in a phased approach:
    a. The existing mainstem Columbia River monitoring program;
    b. Expansion of mainstem monitoring to the estuary;
    c. Expansion of mainstem monitoring to the tributaries of the Columbia River; and
    d. Consideration of collaboration with Canada.

To create a framework and approach that will advance the Team's efforts to a formal, long-term program, this draft Implementation Plan evaluates a selection of existing programs designed to address the monitoring, restoration, and related information needs for other waters of national significance. We identified several existing restoration and monitoring programs of similar magnitude across the United States to identify and understand the required elements for a large scale, multi-government toxics monitoring program. We used these other programs to consider and describe a recommended framework for implementation of long-term monitoring in the CRB. The Team anticipates that the CRB Monitoring Program will initially focus on the Columbia River Mainstem (Figure 1) as well as collaborate with and grow as needed to support other basin-wide monitoring efforts (for example, Lower Columbia River and basin-wide tributaries).

The Team recognizes the need for a clear and sustainable business model for the CRB Monitoring Program. To this end, the Team envisions a self-governing CRB Partnership to provide overarching CRB Monitoring Program governance and technical and policy guidance and to execute a dynamic strategy for obtaining consistent funding and dedicated resources for implementing the CRB Monitoring Program. The formation of an independent CRB Partnership is necessary to provide both lasting value and enduring community support for the program.

The establishment of the CRB Partnership will allow the Team to first expand its ongoing efforts in the mainstem Columbia River and, ultimately, capture the full geographic extent of the river in a unified monitoring program. Our expectation is that existing programs will be part of a partnership, and we do not envision subsuming or otherwise taking ownership and direction of

other programs in existence. Even as work to develop a CRB Partnership gets underway, the Team will continue to seek funding and make progress on mainstem river monitoring work.

The discussion of the CRB Partnership in this document is focused on an approximately 10-year period. This is necessary because it addresses the essential steps to establish a program of this scale. The CRB Partnership implementation needs are expected to be dynamic in the first 10 years and to change and stabilize once the CRB Partnership is established.

2.0 CRB PARTNERSHIP EVALUATION OF PROGRAMS AND RECOMMENDATIONS

To develop the draft Implementation Plan for the CRB Partnership and Monitoring Program, research was performed into nine similar, established programs in the United States to explore models of governance, funding, and communication (Appendix A). This section describes the evaluation process and criteria of the other programs and provides recommendations for the CRB Partnership and Monitoring Program based on the evaluation. See Appendix D for archived comments to be considered during the development of future documents.

2.1 Evaluation of Model Programs

To construct the foundational business plan that will sustain the CRB Partnership and Monitoring Program for the next 100 years and beyond, the Yakama Nation evaluated related governing and funding structures in programs across the United States. These programs are being conducted at a similar spatial scale and by inter-governmental leadership and nonprofit structures. The model programs evaluated include:

- Puget Sound Partnership
- Great Lakes Monitoring Program
- Chesapeake Bay Monitoring Program
- Everglades Restoration Program
- Upper Mississippi River Restoration Program
- San Francisco Estuary Institute-Regional Monitoring Program
- Missouri River Recovery Program
- Louisiana Coast wide Reference Monitoring System
- Klamath River Renewal Corporation

Appendix A provides concise summaries of each program's governance, funding, and communications efforts and strategies. Appendix A includes a summary of our research with focus on funding (Table A-1); and a matrix and ranking of programs relative to our evaluation criteria for quick-glance comparisons (Table A-2). While we provide a total ranking, the purpose of the evaluation of model programs is not to choose one as best match for the CRB Partnership and Monitoring Program, but to gather the best qualities of each program and examine their applications to CRB Partnership and Monitoring Program. From these reviews, we have prepared a recommended framework of governance and sustainable funding in Section 2.2.

2.1.1 Evaluation Considerations

All the model programs we evaluated are currently supporting and sustaining monitoring and restoration efforts within cherished natural resource areas of the United States. Because EPA's

CRB Restoration Funding Assistance Program and monitoring directives are a direct result of a 2016 Act of Congress, this section focuses on established programs of a similar magnitude that address natural resources with comparable ecological and economic service value. Similar to the CRB, several of these are also EPA-established, geographically-based programs with Clean Water Act (CWA) mandates.

We did not expect any one model to be a perfect fit for this implementation plan because the CRB communities and services are unique. To approach our evaluation, we considered both how the CRB Partnership and Monitoring Program compares to existing programs. The Columbia River has important tribal engagement, is large in physical size and areal extent, and has great historical, ongoing, and potential future human activity. We used the features of each program to develop evaluation criteria to help compare and contrast the CRB Partnership and Monitoring Program with existing programs:

- Tribal leadership, active and proactive engagement with resource management and restoration, and commitment to program ideals
- Tribal Nations' commitment to future tribal members
- Partnerships that include Tribes, multiple states, and two federal agencies
- Types and nature of industry, including hydropower, agriculture, shipping, tourism, and data center development pressures and data center power needs, and how this affects contaminant sources, heat pollution, and impacts to fisheries
- Extent of urbanization, urban growth, and how this affects contaminant sources and impacts
- A forward-looking analysis of goals for resource management, threatened and endangered species recovery, and habitat restoration
- Whether the program has incorporated adaptive management

These considerations led to evaluation criteria developed below to guide evaluation of existing programs.

2.1.2 Evaluation Criteria

In the context of the considerations listed above, we applied a system to evaluate existing programs. The system has three pillars common to all programs:

- Governance
    - Who stewards the program through technical engagement and funding support, and how do the governing partners interact?
    - What is the business/tax structure (non-profit, state agency, federal agency, etc.)?
- Funding

  - What are the primary sources of ongoing funding?
  - How are funds used each year (e.g., in addition to the primary monitoring role, does the funding support research on emerging issues? Does the funding support education)?

- Communication
  - Who are the audiences?
  - Who are the users of the data?
  - How does the program inform efforts to improve toxics reduction and toxics control?
  - How does the program inform efforts to support restoration and recovery of species and habitat?
  - Is adaptive management meaningfully included in the program approach and communication?

Within this framework, and with the contextual information provided by the considerations listed above, we evaluated the programs listed to identify needs of the CRB Partnership and Monitoring Program for the next steps in its progression:

- Program stability – Does the program reflect changes over time? What drove the change and is it achieving its goals (e.g., to streamline the technical scope of the work, to introduce accountability measures, etc.)? Was any instability good (leading to improvements) or an indication of deeper problems? What programs are long-running and therefore withstood changes to the political climate over time?
- Richness of community engagement – Which communities are directly served? Were they the target communities? Are there deep and extensive communications within technical, political, regional, municipal, and township communities originally targeted? Is engagement balanced relative to original plans?
- Success – What are the success stories in solving environmental problems?

2.2 Recommended Governance, Funding, Communication, and Organization Chart

This section outlines the recommended plan for advancing the CRB Partnership and Monitoring Program for the first 10 years following the publication of this implementation plan. A potential organizational chart (Figure 3) is included to guide the discussion.

As an overall theme, we recommend that CRB Partnership and Monitoring Program have an ambitious vision and plan that leads with the full intent to improve the Columbia River for human and ecosystem health and recovery, and sustainable economic benefits. According to our research, federal, state, and/or private funding sources will more readily fund an ambitious and comprehensive program as funding sources want to fund a program that will produce meaningful environmental recovery.

2.2.1 Governance Options

The programs we reviewed (Appendix A) together describe three options for the type of organization that the CRB Partnership and Monitoring Program should be:

- Federal agency or program
- State agency or program
- Nonprofit 501(c)(3) Corporation

We recommend that the CRB Partnership be a nonprofit 501(c)(3) corporation.

The decision for the organization type for the CRB Partnership and Monitoring Program is influenced by:

- How to maximize funding sources (federal, state, and private)
- Whether nonprofit governance could be perceived as in competition with other nonprofits for the Columbia River[2]
- How geopolitical boundaries may affect a lead organization's ability to work basin-wide, including in communication and collaboration with Canada
- To the extent possible, remaining unbiased, science-based, and neutral to impacts of changing political climate
- A nonprofit 501 (c) 3 could maximize long-term stability with funding from federal and state, while being eligible to access funding through private trusts, foundations, and grants
- A 501(c)3 corporation provides liability protection for the Board and others and provides tax-exempt status for donations

The CRB Partnership should create a Leadership Board (serving as Board of Directors) consisting of federal, state, Tribal organizations or individual Tribes[3], and advised by:

- Subgroup committees for local governments, other stakeholders (e.g., tourism, industry, and power utilities), and academic/technical representatives for inclusion/bridge building
- Policy Team to identify how science translates into meaningful policy for Columbia River recovery

[2] This concern was shared by a director at Puget Sound Partnership. RCW 90.71.240(5) allows (but does not require) creation of a private nonprofit entity. The Puget Sound Partnership has not exercised the nonprofit option thus far due to this concern.

[3] Puget Sound Partnership has a Tribal Management Conference that oversees the Puget Sound Partnership and watches for western science bias.

The Leadership Board should balance efficiency of size for action, and inclusion of more members for networking or bridge building[4].

Other recommended CRB Partnership staffing and program roles include (Figure 3):

- Executive Director to manage programs and report back to the Leadership Board
- Administrator (not included in the organization chart) for day-to-day operations including documentation, accounting, human resources, etc. will report directly to the Executive Director
- Funding Development for funding source identification and appeal for support
- Adaptive Management Systems & Accountability Program
- Technical & Science Directors for the CRB Monitoring Program to lead and coordinate the CRB Monitoring Program (see its organization chart in Section 3.0)
- Outreach & Education Team to perform continual community outreach and education, which is essential for continued funding and community support
- Policy Team & Basin-wide Coordinator to work with the CRB Monitoring Program and Basin-wide programs to inform policy changes based on technical findings and support policy changes for meaningful CRB recovery

The CRB Partnership will solicit and welcome input from external parties including:

- The CRB Restoration Program Working Group (500+ members)
- External Expert Panels to provide external review of programs and progress for quality control, as well as input to the program to improve its methods toward meaningful CRB recovery

In order to begin implementation of the CRB Partnership and Monitoring Program, an independent lead organization will need to be formed, and Leadership Board (Board of Directors) will need to be identified. The Yakama Nation does not have the capacity to take on this lead but intends to work with interested parties to support this effort.

Figure 3 is an Organization Chart to illustrate this recommended structure.

[4] Some model programs studied have very large leadership boards that may become unwieldy at times. The CRB Partnership needs to identify the right balance of the size of the board while maintaining, building, and receiving valuable input from its network. Evaluating and evolving the Leadership Board membership as the geographic scope of monitoring expands in phases can be part of Adaptive Management to revitalize Leadership.

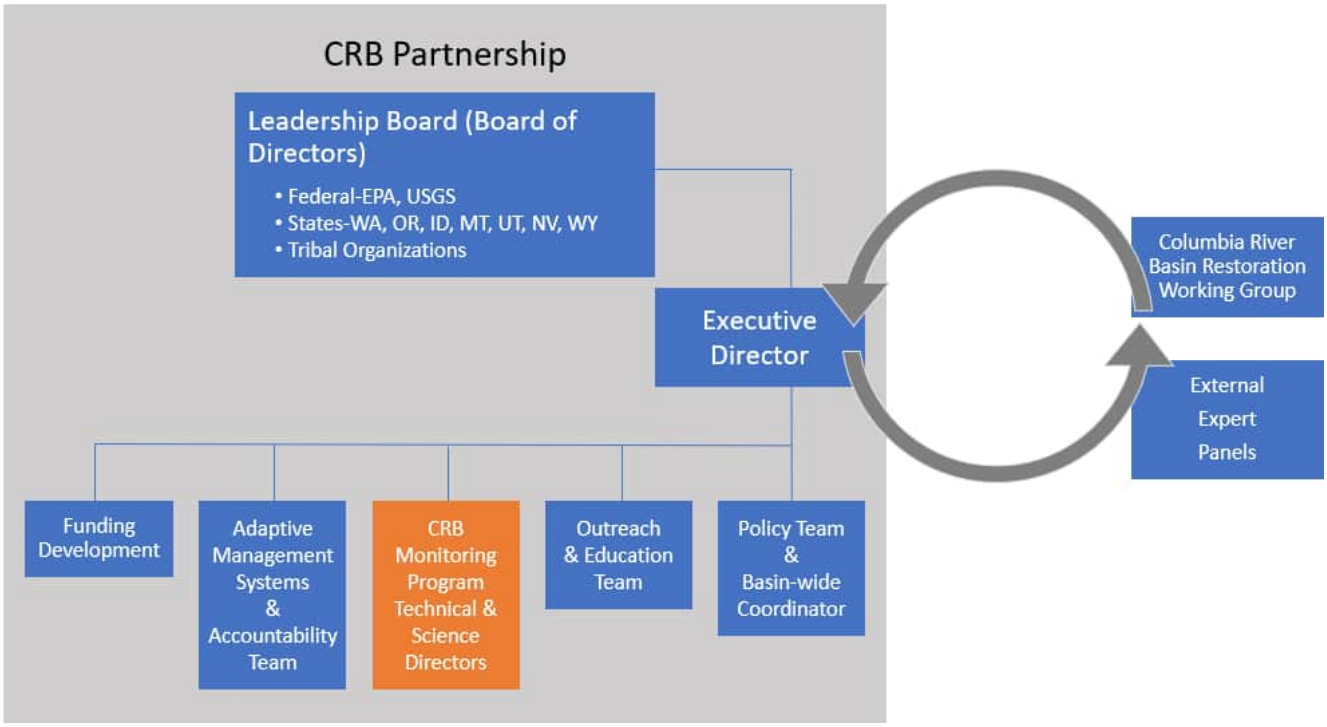

Figure 3. Conceptual CRB Partnership Organization Chart (see Figure 5 for proposed organization chart for CRB Monitoring Program)

2.2.2 Funding Approach

Funding sources will shift with the CRB Partnership and Monitoring Program decision on governance[5], but must be maximized for stability and longevity:

- As a state or federal agency, funding may be made a fairly reliable part of annual budgets, depending on changes in the funding climate. However, political and economic changes have occurred and may occur in the future.
    - Environmental funding has shifted with government priorities since the CWA and strong environmental sentiments of the 1970s through 2000s.
    - Current federal administration funding cuts may severely impact programs such as the CRB Partnership.
    - State budgets lack the flexibility of federal budgets because states must balance their budgets and can be diminished by federal funding cuts, while at the same time being responsive to shifting needs that can be hard to predict.

[5] Most monitoring programs that we reviewed (Appendix A) were primarily supported by earmarked funds in state and federal legislatures.

- As a non-profit corporation, the program will be eligible for state and federal allocated funds and in addition can access grant funding from trusts and other non-governmental sources. Private funding may serve to diversify the overall budget and sustain the program in difficult political and economic periods. Ideally, the CRB Partnership could establish an endowment using private funding for sustainability.
- Funding sources should include data center power rates[6] and economic partners (agriculture, fishing, tourism, local); the Funding Development Lead to investigate this resource.
- Leveraging of grant funds should be explored to the maximum extent practicable. For example, develop the strategy for matching fund requirements, explore grant partnerships, and consider letters of support. This needs to be balanced with the added administrative time and costs associated with individual grant requirements. The CRB Partnership and Monitoring Program may need to advance projects to 'shovel ready' plans to optimize funding opportunities.
- The CRB Partnership and Monitoring Program will seek to support other entities in their monitoring and funding procurement efforts, to the extent possible.
- Funding may be a mix of operation funds, grants, donations, and in-kind contributions of time, personnel, etc. It will be an initial task of the Funding Development Lead, to identify the structural funding plan and goals, and targeted primary, secondary, and in-kind services-based funding.

EPA's CRB Restoration Funding Assistance Program is a competitive grant structure awarded in two-year cycles. Although this is a valuable program, to date it has received relatively low funding compared to other geographically based programs. Aside from the temporary Infrastructure Investment and Jobs Act funding influx (2021), the CRB Restoration Funding Assistance Program is not projected to receive significant funding increases in the near future. In addition, the CRB Restoration Funding Assistance Program has funding objectives that compete with funding for status and trends monitoring. Therefore, other funding sources will need to be secured for the CRB Monitoring Program.

2.2.3 Supporting Agencies

To develop the CRB Partnership, participants identified to date include Project Team members and grant partners that have actively participated in work to date, including the CRITFC, USGS, Washington, and Oregon. CRITFC has provided technical and policy expertise throughout Yakama Nation-led efforts, as well as funding. USGS brings significant technical resources, monitoring experience, and expertise in other large aquatic ecosystems and has been the technical lead for

[6] Klamath River Renewal Corporation (nonprofit corporation) receives funding from PacifiCorp customer surcharges and California Proposition 1 Water Bond.

Yakama Nation-led efforts in recent years. EPA leads the Columbia River Restoration Program Working Group and has provided funding. Ecology, WDFW, WDOH, ODEQ, OHA, as well as several tribes and tribal organizations (Spokane, Colville, Upper Columbia United Tribes) provided technical expertise in Columbia River mainstem and tributary monitoring. USGS, WDFW, and the Yakama Nation performed pilot study field work. Continued involvement by these entities is critical.

The CRB Partnership and Monitoring Program Executive Director and Leads may identify more supporting agencies and explore how supporting agencies will contribute with expertise, staff, communication, etc. While the Partnership should include the many supporting agencies, the Leadership Board will need to balance the size of the Board with governance efficiencies in decision making. The Leadership Board will assist in networking and identifying supporting agencies. Potential roles and partners are explored below. Staffing could include direct employees or temporary assignments (i.e. details) from supporting partner organizations. This is not intended to be a complete list but illustrates the range and diversity of interested groups and agencies whose enthusiasm and commitment to the CRB Monitoring Program goals, and technical expertise could strengthen and provide energy for this program.

Program Review/Input, Possibly Staffing

Federal/International

- EPA (United States Environmental Protection Agency)
- USGS (United States Geological Survey)
- Environment and Climate Change Canada

State Agencies

- Washington, Oregon, Idaho, Montana, Wyoming, Nevada, Utah

Tribes and Tribal Organizations

- CRITFC (Columbia River Inter-Tribal Fish Commission)
- NWIFC (Northwest Indian Fisheries Commission)
- NCAI (National Congress of American Indians)
- UCUT (Upper Columbia United Tribes)
- Coordinated Tribal Water Quality Program
- Yakama Nation
- Colville Tribe
- Spokane Tribe

- Other interested Tribes or First Nations

Non-Governmental Organizations

- Columbia Riverkeeper
- Trout Unlimited
- Nature Conservancy
- Mountains to Sound Greenway Trust
- Washington Conservation Action
- LCEP (Lower Columbia Estuary Partnership)
- Interested universities and colleges

Other Organizations

- EPA CRB Restoration Program Working Group Membership (500+ members) and Toxics Monitoring Subgroup

Data Management Assistance/Quality Control

- TBios (Toxics Biological Information Systems), under WDFW
- EIM (Environmental Information Management Database), under Ecology
- WQX (Water Quality eXchange), under EPA
- STORET (STOrage and RETrieval), under EPA
- ScienceBase, under USGS
- NWIS (National Water Information System), under USGS

Funding/Technical Input

- USGS
- Yakama Nation
- CRITFC
- Washington State Governor's Salmon Recovery Office
- SRFB (Washington State Salmon Recovery Funding Board)
- Ecology (Washington Department of Ecology)
- WDFW (Washington Department of Fish and Wildlife)
- WDOH (Washington Department of Health)

- ODEQ (Oregon Department of Environmental Quality)
- OHA (Oregon Health Authority)
- ODFW (Oregon Department of Fish and Wildlife)
- OWEB (Oregon Watershed Enhancement Board)
- EPA
- NOAA (National Oceanic and Atmospheric Administration)
- CRB Restoration Program Working Group
- CRB Restoration Toxics Monitoring Subgroup
- USFWS (United States Fish and Wildlife Service)
- USFS (United States Forest Service)
- LCEP

Support Organizations

- WEC (Washington Environmental Coalition)
- CRK
- CRITFC
- UCUT
- ATNI (Affiliated Tribes of Northwest Indians)
- NCAI (National Congress of American Indians)

2.2.4 Adaptive Management

The success of the CRB Partnership and Monitoring Program rests on an Adaptive Management strategy. As information is collected and as times change, individuals in the partnership and program must be actively learning, and open to changes in the approach, policy, new information and the evolving informational needs. Recommended actions include:

- Adopt and agree to a culture of learning and being open to change at all levels
- Agree that documents and practices are living and evolving
- Incorporate the best available science and lessons learned from prior restoration work to[7]:
    - Identify the most critical ecosystem problems and contaminant threats

[7] This Adaptive Management approach is also used by the Puget Sound Partnership, Great Lakes Monitoring Program, Chesapeake Bay Monitoring Program, and Everglades Restoration Program.

  - Select projects that effectively address those problems
  - Assess and report on progress and effectiveness of actions
  - Inform and adjust future restoration and protection priorities
  - Consider new and emerging needs and concerns
  - Consider funding concerns and political climate
- Collaborate closely with EPA's Columbia River Basin Restoration Program, including the Working Group and Toxics Monitoring Subgroup.

3.0 CURRENT COLUMBIA RIVER MAINSTEM MONITORING PROGRAM

3.1 Introduction

The overarching basin-wide CRB Partnership and CRB Monitoring Program will be a multi-year, collaborative effort. The establishment and implementation of this basin-wide Program is beyond the Yakama Nation's capacity. While we will continue to seek partners to develop this basin-wide program, we realize that time is of the essence and waiting for a full basin-wide monitoring program to be developed would be detrimental to Columbia River resources and ultimately the Yakama people. To this end, we intend to continue implementation of mainstem monitoring efforts that are already underway through our initial work. This initial work addresses the Columbia River mainstem as a large data gap in ongoing basin-wide monitoring efforts. This section describes the existing Columbia River Mainstem Monitoring Program funded by EPA and the Pacific Coastal Salmon Recovery Fund (PCSRF; Seattle, WA; National Oceanic and Atmospheric Administration) in 2023-2025. The pilot study described in Section 3 was completed in 2024 through 2025.

To address this data gap, the Yakama Nation intends to continue the Columbia River Mainstem Monitoring Program. The program will execute a non-biased, systematic, long-term monitoring of toxic substances in water, sediment, fish, and other biota. Data, technical reporting, evaluations, recommendations, outreach, and education materials will be made publicly available to Columbia River decision-makers and end-users to help guide ecosystem recovery resulting in clean, healthy fish that are safe to eat. The Yakama Nation's long-term goal is for the Columbia River Mainstem Monitoring Program to be enveloped by the future basin-wide CRB Monitoring Program. See Appendix D for archived comments to be considered during the development of future documents.

3.2 Past Efforts

Over the years, the Yakama Nation has led efforts to address the lack of monitoring in the mainstem as a large data gap in ongoing basin-wide monitoring efforts. As a result, development of a Columbia River Mainstem Monitoring Program is well underway (including a completed pilot study), and a significant amount of groundwork has been completed to inform "shovel-ready" plans to continue mainstem monitoring from the Bonneville Dam to the Canadian Border.

3.2.1 Work Performed by the Yakama Nation and Mainstem Partners

Early work, led by the Yakama Nation and partners, has focused primarily on the Columbia River mainstem above the Bonneville Dam. This focus is partly due to legal and grant funding restrictions, as well as the need to begin with a manageable project scope. However, collaboration with EPA's basin-wide efforts has been consistent throughout this process. This mainstem monitoring work is directly applicable to the CRB-wide efforts and is intended to be

expanded upon in the CRB Partnership and Monitoring Program implementation. We plan to share the mainstem monitoring results with other entities conducting monitoring throughout the basin to help with data compatibility for status and trends analysis. The following provides a summary of the work done to date (see Appendix B for a summary of documents related to the longterm monitoring program):

- Developed a Vision: "Straw Dog" outline and outreach efforts (2016-2020);
- Engaged stakeholders, tribes, and governments (2016-ongoing);
- Produced a technical monitoring framework to inform development of the overall CRB Monitoring Program (2022);
- Developed an outreach messaging framework (2022);
- Created a publicly available website for data and documents: https://www.yakamafish-nsn.gov/restore/projects/columbia-river-mainstem-water-quality-monitoring-program (to be periodically updated);
- Conducted a pilot study in the Bonneville Reservoir for monitoring key toxics in fish (resident fish and adult/juvenile salmon) and sediment, as well as evaluating sampling methods (report pending late-2025);
- Summarized outreach in a memo (2022 and update pending late-2025);
- Provided data in a publicly available database, for example, EPA WQX and USGS NWIS (pending late-2025); and
- Developed and updating a QAPP and standardized methods (Pilot Study QAPP completed in 2023, updated QAPP pending late-2025).

3.2.2 Work Performed by EPA and Others, Including the Yakama Nation

A significant amount of work was invested by the CRB Toxics Reduction Working Group (renamed the CRB Restoration Program Working Group in 2016) and countless others in order for Congress to pass the 2016 CWA Section 123 Amendment, resulting in the CRB becoming an EPA-prioritized Geographic Program. Since 2016, EPA has implemented the CRB Restoration Funding Assistance Program (a competitive grant program) and is currently developing a CRB monitoring strategy. EPA's grant program provides funding for multiple competing purposes, including monitoring for status and trends. Other entities throughout the basin have developed monitoring projects or programs that are focused on a variety of spatial and temporal scopes and objectives but that complement a basin-wide monitoring program.

3.3 Scope for Continuation of Efforts

The following subsection describes a high-level summary of the scope of the CRB Mainstem Monitoring Program. The final updated QAPP (Yakama Nation, pending late-2025) will outline the work plan in more detail.

3.3.1 Project Area

The project area is the approximately 600-mile stretch of the Columbia River mainstem from Bonneville Dam to the Canadian border (Figure 1). The sampling design uses unbiased (probabilistic) sample locations monitored over a period of time. If logistical or safety constraints make a site inaccessible, pre-selected additional randomized sampling sites will be used as a replacement.

3.3.2 Media

The following is an estimate of samples to be collected by media for each reservoir (12 total). As an example, Figure 4 from the QAPP is a map of the Bonneville to The Dalles Dam study reach and sampling sites (Counihan et al., 2021). Additional statistical analysis will be performed for sample design, and these estimates may be modified depending on the reservoir or river reach that is being sampled.

- Fish and shellfish
    - 10 fish sampling locations (as predator and forage fish samples, whole body or composite)
    - 5 composites of five adult salmon (e.g., one composite of Chinook (June), 2 composites of Chinook (August), 1 composite of Chinook and 1 composite of Coho (September))
    - 5 composites of juvenile salmon at a fish bypass (annually)
    - Potentially other species as budget allows
- Sediment: 10 sediment samples locations at each reservoir
- Water quality samples as budget allows
- Other sampling and media as budget allows

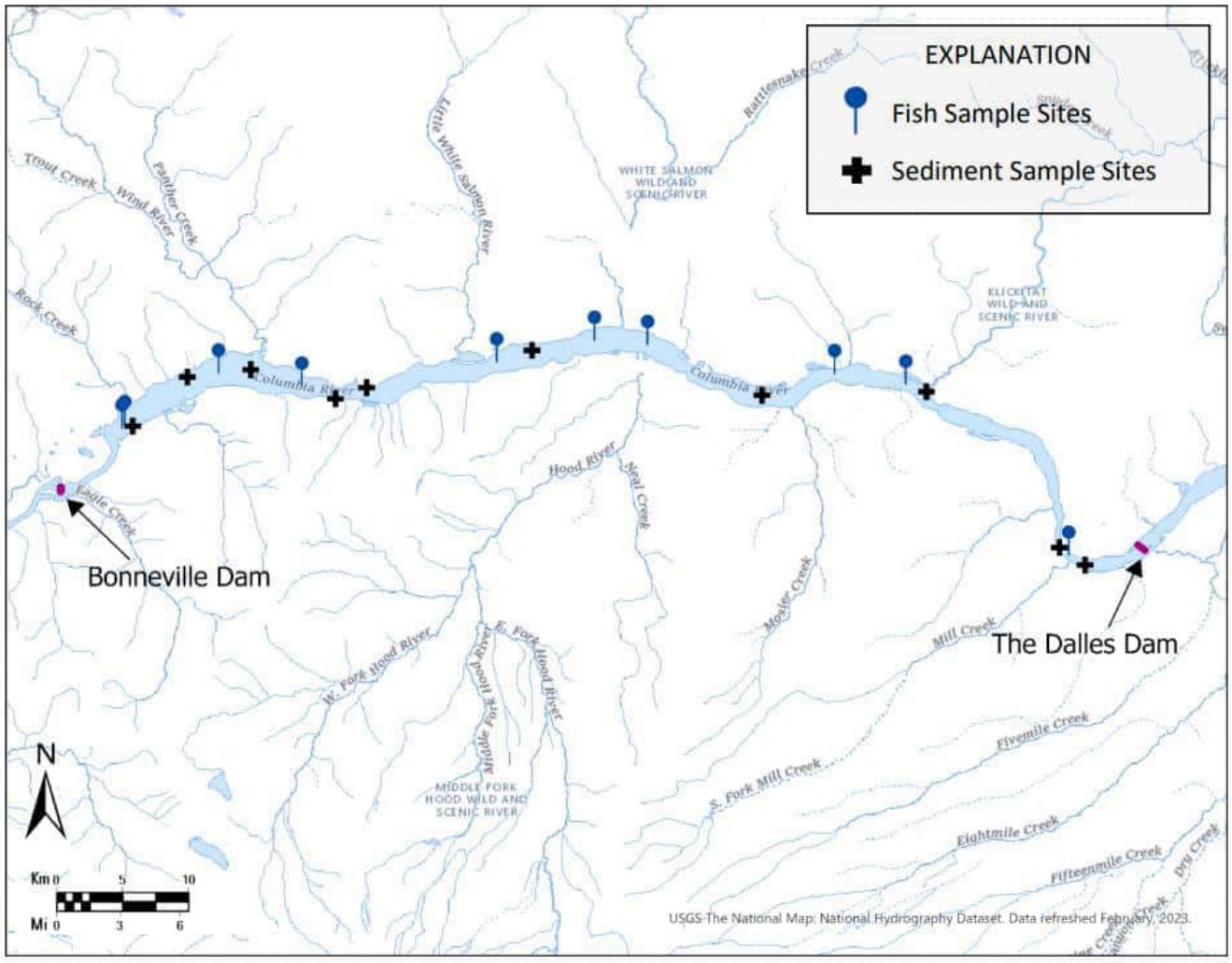

Figure 4. Map of Bonneville Dam to The Dalles Dam Study Reach

3.3.3 Analysis

The core analytes for all media to be addressed will include, but are not limited to, the priority pollutants of greatest concern in the Columbia River identified by the EPA (EPA, 2009):

- mercury
- dichlorodiphenyltrichloroethane and metabolites (DDD, DDE, and DDT)
- polychlorinated biphenyls (PCBs)
- polybrominated diphenyl ethers (PBDEs)
- field parameters

Additional chemicals could be added to the target analyte list as interest and resources allow:

- The Columbia River Toxics Reduction Working Group list of priority pollutants (https://www.epa.gov/columbiariver/prioritization-toxics-columbia-river) and the toxic pollutants listed by reference in Section 307(a)(1) of the Clean Water Act (see 40 CFR 401.15) will also be reviewed and incorporated as feasible.
- For example, in the Bonneville Reservoir Pilot Study, per- and polyfluoroalkyl substances (PFAS) and microplastics analysis were added through collaboration with USGS and Central Washington University, respectively.
- Additionally, partners and stakeholders identified the need for including polycyclic aromatic hydrocarbons (PAHs), 6PPD-quinone, and other contaminants of emerging concern in future monitoring events.
- Similarly, there are several physiological and disease conditions that could be incorporated in the monitoring program. The core sampling effort would likely yield excess tissue that can be archived or provided to independent researchers to pursue some of these interests outside of the core program.

3.3.4 Schedule

Based on funding availability, each sampling location will be revisited in a 5-year rotation where 1 of 5 river reach portions of the project area are sampled annually. With funding support, monitoring will potentially be scheduled for the river reaches as follows:

- Year 1 – Bonneville, The Dalles, John Day Reservoirs
- Year 2 – McNary Reservoir and the Hanford Reach
- Year 3 – Priest Rapids, Wanapum, Rock Island Reservoirs
- Year 4 – Rocky Reach, Wells, Chief Joseph Reservoirs
- Year 5 – Lake Roosevelt (Grand Coulee to the Canadian Border)

In 2024, the Bonneville Reservoir was sampled. The initial budget only allowed for sampling one of the three planned reaches in Year 1. If funding is secured, the remaining two reaches, The Dalles and John Day Reservoirs, would be sampled. With funding, sampling would extend throughout the mainstem.

3.3.5 Reporting

A technical memorandum and data upload will be completed annually, summarizing findings from the previous year's monitoring event. This memorandum will provide key observations, data summaries, and any preliminary evaluations relevant to that year's monitoring efforts.

At the end of each 5-year cycle to monitor across all mainstem reaches, and upon receipt of final, validated data, a comprehensive report will be compiled. This report will integrate data from all

five river reaches, offering a project-area-wide assessment of status and trends, key findings, and recommendations for future management and monitoring.

In addition to the technical deliverables, an outreach memorandum will be prepared annually, summarizing monitoring activities and findings for a broader audience, including stakeholders, partners, and the public. Data will be uploaded to an approved database website such as EPA's WQX, USGS's NWIS, ScienceBase (www.sciencebase.gov) or equivalent. Data will also be archived in a database to be developed specifically for the CR Mainstem Monitoring Program. Data, reporting, outreach, and other documents will be uploaded to a publicly available website, currently this website is: https://www.yakamafish-nsn.gov/restore/projects/columbia-river-mainstem-water-quality-monitoring-program. This website will be further developed as budget allows.

3.3.6 Outreach

Throughout the implementation of the Columbia River Mainstem Monitoring Program, we will continue to engage in our outreach efforts with partners, including tribes, and stakeholders within the CRB as well as subject matter experts both in and outside of the CRB. To facilitate meaningful outreach and education with affected citizens, we will use our Outreach Messaging Framework (Duncan and Shira, 2022). Continued coordination and collaboration with partners, stakeholders, and affected citizens will support both end-users and decision-makers, as well as adaptive management of the program over time.

In addition, outreach to other entities interested in leveraging monitoring efforts will be encouraged. For example, in the Bonneville Reservoir Study, outreach and partnerships with USGS and Central Washington University identified the need and opportunity for sample sharing and additional analysis of PFAS and microplastics.

3.3.7 Adaptive Management

Adaptive management principles will be incorporated to maximize effectiveness of the Columbia River Mainstem Monitoring Program. Limitations such as funding shortfalls, rarely detected compounds, variations in species composition throughout the river, or insufficient target species-size availability are commonly encountered. New information or concerns may necessitate additions or changes to the sampling goals and strategy.

The ability to adaptively manage the monitoring program is crucial to ensure the long-term relevance of the information produced. The data collected will be periodically reviewed and assessed to ensure that the survey design and field and analytical methods are resulting in data that inform the vision statement, goals, and objectives of the monitoring program. Adaptive management will include updating standard operating procedures or analytical methods based on new and emerging science and needs. Periodic review of the list of contaminants of greatest concern will help to ensure that the monitoring program stays relevant and is addressing current problems. The media and/or fish species sampled may be updated as well. For example, lamprey and white sturgeon are important tribal food and will likely be investigated in future iterations of

the monitoring program. Because a key component of the monitoring program involves the use of the data and information by interested groups working to recover the Columbia River and its resources, it is important to continue outreach and coordination and to incorporate into the monitoring program the information learned from others who are conducting work in the CRB and elsewhere.

3.4 Columbia River Mainstem Monitoring Program Budget

The Columbia River Mainstem Monitoring program has a shovel-ready initial phase that is ready for funding and monitoring. The estimated annual operating budget for the initial phase of the Columbia River Mainstem Monitoring Program is $6 million per year, allocated as follows:

- Columbia River Mainstem Monitoring Program: $5 million/year
- Outreach: $0.5 million/year
- Database/Website: $0.5 million/year

Columbia River Mainstem Monitoring Program: $5 million/year

This cost estimate encompasses a broad scope of activities necessary to implement and sustain the program, including:

- Program logistics and planning
- Funding and grants management
- Development of statistical sampling design
- Permit acquisition
- Fish procurement (ex. from dams or tribal fishers)
- Training for field collector teams
- Field operations and sample collection
- Sample processing (in and post-field)
- Lab analyses
- Data processing, review, validation, and summary reporting
- Uploading data results to data hosting platform
- Populating a publicly accessible website with data and documents

Outreach Activities ($0.5 million/year)

The outreach budget estimate supports the following components:

- Funding procurement and partnership development
- Coordination with basin-wide CRB basin-wide monitoring initiatives
- Engagement with data end-users and decision-makers
- Development and dissemination of educational and outreach material
- Planning and hosting outreach activities and events
- Ongoing communication of monitoring results, interpretations, data needs, and stakeholder concerns

Database and Website ($0.5 million/year)

This estimate includes the development, implementation and ongoing maintenance of the Monitoring Program's data management infrastructure:

- Staffing for development and operations
- System operation and maintenance
- Equipment procurement
- Software licensing fees
- Staff time for responding to requests from external data users and contributors

This budget estimate includes several caveats and limitations:

- It does not account for other media or analytes beyond the current scope.
- The exact number of samples per river reach has not yet been determined.
- The desired level of detectable differences in analytes has not been established.
- It excludes in-depth data analysis, interpretation, and comprehensive reporting beyond basic summary outputs.

NOTE - This budget for Columbia River Mainstem Monitoring Program is a subset of the CRB Partnership and CRB Monitoring Program. It is the first Phase of the CRB Monitoring Program and is expected to increase over time with inflation, as it expands to cover more areas basin-wide, and as data gaps are identified and added to the CRB Monitoring Program.

3.5 Program Infrastructure

The Columbia River Mainstem Monitoring Program is supported by a collaborative and evolving infrastructure built on strong partnerships, strategic funding efforts, and a long-term vision for

housing and leadership. The following sections summarize the current and future state of the program's infrastructure.

3.5.1 Leadership and Staffing

To date, the Yakama Nation has taken a leadership role in developing the Columbia River Mainstem Monitoring Program, serving as grant lead and developing valuable relationships with partner agencies including the USGS, CRITFC, ODEQ, and WDFW, and Ecology. These partnerships have been instrumental in launching and carrying forward the monitoring program and will be integral as we work to continue our efforts. The following is an organizational chart of the current team (Figure 5). As funding is secured, the CR Mainstem Monitoring Program is intended to expand technical capacity by hiring additional staff to assist with growth and workload.

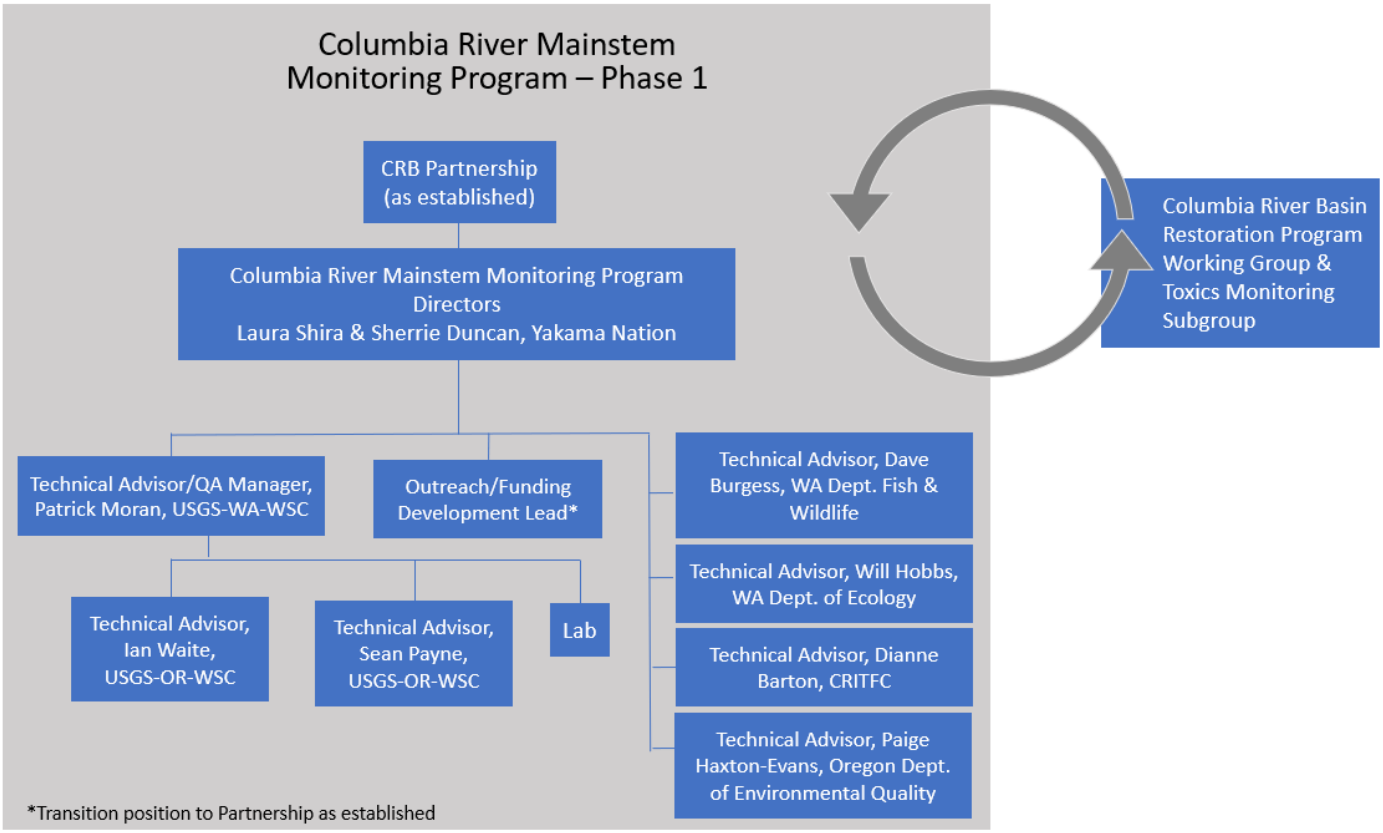

Figure 5. Columbia River Mainstem Monitoring Program Organization Chart

3.5.2 Funding

To date, our work has primarily been funded through securing grants from EPA's CRB Restoration Funding Assistance Program and Pacific Coast Salmon Recovery Funds. However, these competitive funding sources are limited and with increasing competition and changing political priorities, securing funds through these grant programs is increasingly uncertain. Management of

the six grants to date has been onerous and complicated, stretching our capacity due to application and reporting requirements, juggling grant timeline restrictions, and terms and conditions. In-kind matching funds have also been provided by our partners, including Ecology, ODEQ, CRITFC, and USGS.

The CRB Mainstem Monitoring Program has secured funding through September 2025. The Yakama Nation continues to seek additional funding opportunities with an emphasis on identifying and securing more stable, long-term funding sources. We intend to work with partners to explore the potential for congressionally codified funding, like other geographic programs that have more secure and regular funding under the CWA. We will also seek assistance from federal and state agencies, industry, and other private funding sources.

3.5.3 Housing

For both programmatic leadership and physical space, the Yakama Nation will continue our efforts to identify a long-term home and lead agency for the CRB Partnership and Columbia River Mainstem Monitoring Program. To date we have relied on the USGS and WDFW for lab space, field equipment, storage, and refrigeration. Continued access to these resources is critical for the first phases of these monitoring efforts and until a long-term housing solution is identified.

4.0 CRB PARTNERSHIP BUDGET EVALUATION

We anticipate that the first approximately 10 years of implementation will address both formation of the CRB Partnership and continuing the existing mainstem CRB Monitoring Program (see Section 3). The current phase of the CRB Monitoring Program focuses on the Columbia River Mainstem, building collaborative partnerships, and data sharing. As the CRB Monitoring Program matures, its scope will expand to include the Lower Columbia River and CRB tributaries through the growth and support of other monitoring entities and through funding expansion.

For the development and growth of the CRB Partnership, which we see as necessary to the long-term success of the CRB Monitoring Program, this section envisions a general operational budget for about the first 10 years, including and building upon the CRB Mainstem Monitoring Program budget. By studying the budgets of other model programs in the United States, we propose estimated budgets to operate the CRB Partnership and Monitoring Program. The budget estimate and allocation into different parts of the operation provide a basis for estimating necessary baseline funding requirements and spend rate expectations. Given the present (2025) economic uncertainty, the specific amounts should be seen as approximations with refinements to be developed in the first few years of establishing the CRB Partnership. Additionally, The CRB Partnership and Monitoring Program would be designed to incorporate a degree of flexibility and nimbleness, allowing it to expand or scale back as needed in response to changing or uncertain funding conditions. Like any operating organization, the budget for the upcoming year will be evaluated by the end of the third quarter of the previous year based on known and predicted funding. Recommended target funding sources and possible allocation among federal, state, and private/grant funding are also discussed.

4.1 Projected Budget

The estimated annual budget for the CRB Partnership including the CRB Monitoring Program totals approximately $10 million per year within the first 10 years of this draft Implementation Plan. The budget is estimated based on research into other similar programs. It intentionally has less certainty and detail. The lead organization and partners will develop the program with a revised, detailed budget. The budget will be organized into the following discrete categories:

- **CRB Partnership - $4 million/yr**
    - **Establishment of Governing Body** – This includes outreach and communication with the members of the CRB Partnership and appropriate federal and state filing tasks to establish the new organization. This part of the budget will likely be completed in 5 years, but the budget assumes 10 years for conservatism. Once the organization is established, unused funding for this task will be distributed across the other categories.
    - **Coordination and Outreach** – This work includes time for CRB Partnership members to identify and align all goals and specifications of the program, including identifying state-level and local level organizations for outreach. It includes

preparing recommendations for science and policy advisory groups and creating and implementing a framework for their engagement. Funds for coordination and outreach will dominate the budget for the first 10 years.

- **Program and Facilities Management** – This includes establishment of an office, leasing and equipment costs, recruiting, and technical/safety training.
- **Administration** – Administration activities include managing funds, leases, payroll, and tax reporting; facilitating grant proposals and other fundraising; establishing protocols for funds management and reporting, etc.

- **CRB Monitoring Program - $6 million/yr**
  - **Monitoring Activities** - $5 million/yr The CRB Monitoring Program design and QAPP will continue to be implemented (Section 3.0). The CRB Monitoring Program will begin as the Columbia River Mainstem Monitoring Program and expand to basin-wide over time). Technical activities including field work, data management, and data analysis and reporting will be performed in this task. This will also include Outreach, Data Management, Administration, Program Management, and Facilities Management costs.
  - **Outreach and Education** - $0.5 million/yr
  - **Data Management** - $0.5 million/yr

Figure 6 illustrates our estimated funds allocation model for the budget as a whole in the first 10 years.

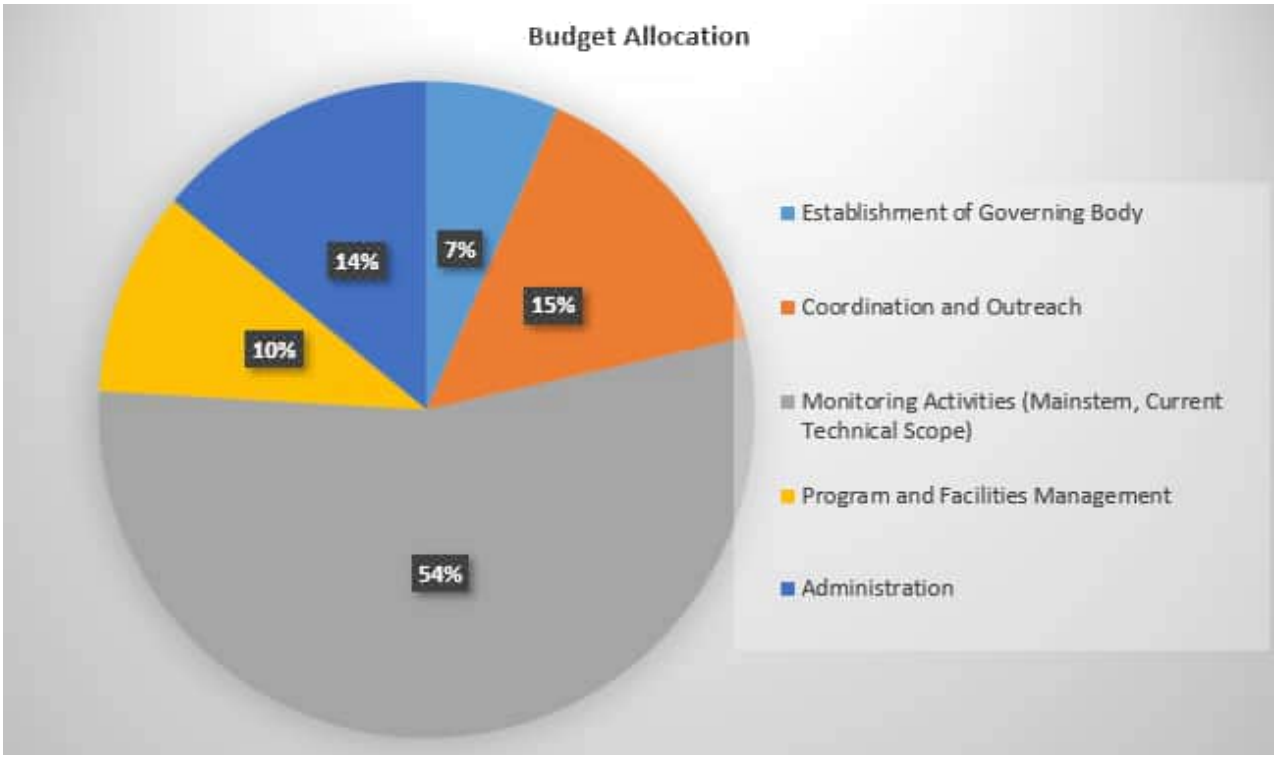

Figure 6. General Allocation of Funds for Total Expenditures in the First 10 Years

Figure 6 shows the allocation of the total costs during the initial decade. It does not show allocation for annual funds. It is presented this way because the changes in costs over time are expected for each category and will be evaluated in the third quarter of each year for the upcoming year of operations. Costs for the ongoing CRB Monitoring Program are estimated in detail (Section 3.0). Changes in this part of the budget are expected to increase predictably with inflation. In contrast, the work to conduct outreach and build the governing body of the CRB Partnership will initially be a significant effort and large part of the budget. We predict that the outreach and governing body efforts will likely continue but will level off to a lesser percentage of the total budget as efforts shift to the technical work of monitoring and reporting. Figure 7 illustrates the potential changes in total budget for each budget category over time. Similarly, outreach efforts will be intensive while soliciting support from legislators and networking in the supporting and interest groups for long term governance. Even after 10 years, communication and outreach will be a significant part of the CRB Partnership's mission and activities.

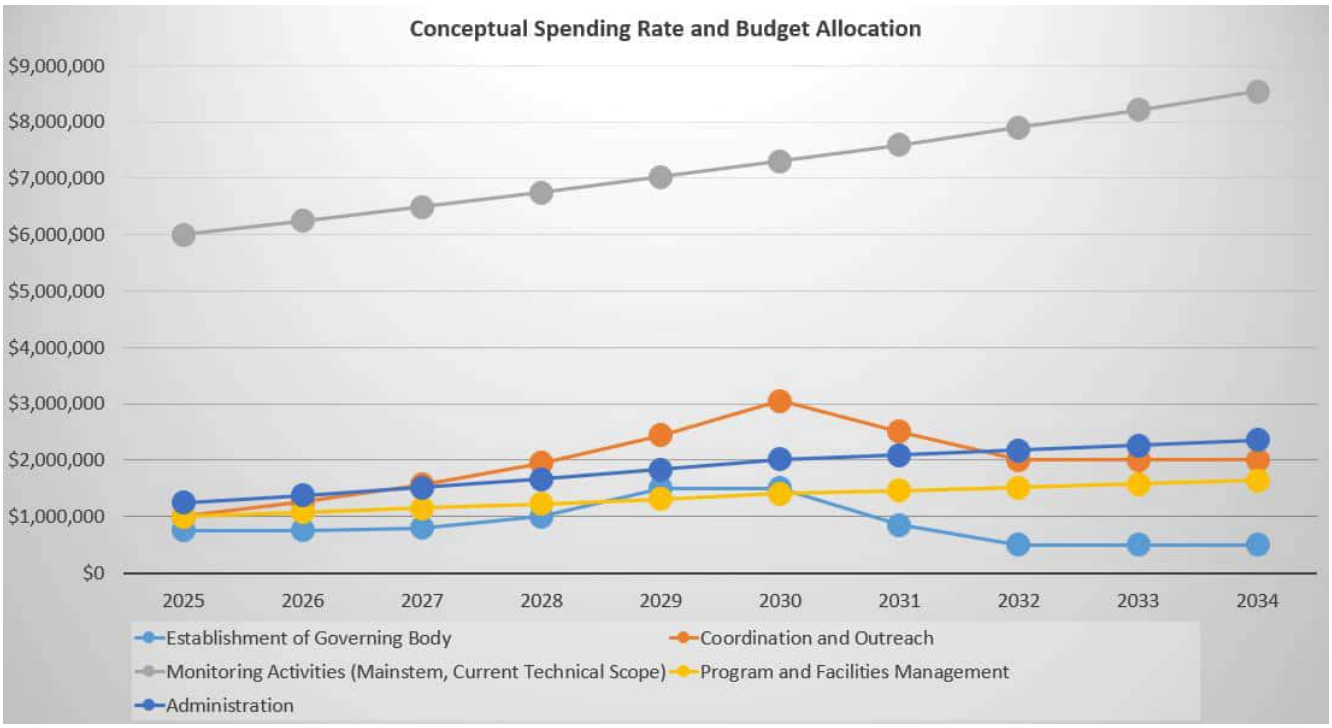

Figure 7. Conceptual Allocation of Funds to Each Category by Year in the First 10 Years

Costs of the Partnership are currently estimated at $4 million/year. Costs of the CRB Monitoring Program itself are currently estimated to cost (in 2025 dollars) $6 million/year. If inflation is four percent per year with no change in scope, the cost of monitoring will be approximately $8.5 million/year and the cost for the Partnership will be approximately $6.5 million/year in 10 years or a total of about $15 million/year in 10 years. This budget evaluation shows that the actual technical work will be the centerpiece and primary driver of budgetary requirements. This condition is not expected to change significantly in the long run. Depending on how the CRB Partnership and CRB Monitoring Program are managed and housed, efficiencies may be found in Program Administration and Facilities Management.

Cumulative CRB Partnership and CRB Monitoring Program Costs

Component	Cost
CRB Partnership	$4 million/yr
CRB Monitoring Program	$6 million/yr
TOTAL	$10 million

Notes

Annual costs are estimated in 2025 dollars and will increase with inflation, as well as program adaptation and growth. CRB Monitoring Program: Phase 1 will begin with Columbia River Mainstem monitoring and will adapt/grow as needed to basin-wide monitoring.

If there is not sufficient funding to establish the CRB Partnership and continue the CRB Monitoring Program simultaneously, efficiencies in budget can likely be found.

5.0 STRATEGIC COMMUNICATION PLAN

While funding is a key component of communication, communication also lays the groundwork for vital policy changes that will make Columbia River recovery possible. This section provides the Strategic Communication Plan for the CRB Partnership and Monitoring Program. This section also recommends communication strategies based on evaluation of the other model programs and provides a timeline for implementation including a three-step approach for expanding the communication scope over time with the implementation of the CRB Partnership and Monitoring Program.

5.1 Communication Strategy Recommendations

- Do not hesitate from communicating an ambitious vision and future for the Columbia River. Funding sources want to be a part of a program that achieves great things. Do not be apprehensive of asking for large amounts of support.
- Lead with human and ecosystem health and quality of life in communication strategy.
- Integrate Tribal values and rights in communications, with both direct statements and indigenous peoples' art, stories, and iconography.
- Include Tribal Elder and Tribal Youth representatives in presentations.
- Consider including analyses to quantify economic and monetary benefits in fisheries, tourism, shipping, jobs, and income, which are compelling tools in communication with legislators, local, and community groups.
- Include ecosystem health and recovery in messaging, highlighting benefits to salmon and orcas.
- Emphasize role of monitoring data in policy at all levels for change and meaningful Columbia River recovery.
- Promote the CRB Monitoring Program achievements and track record (Section 3.0) as a solid promise of meaningful Columbia River recovery.
- Provide regular, periodic external Expert Panel review on river monitoring and management[8] .
- Utilize results of the Expert Panel review to inform Adaptive Management decisions.
- Emphasize that the external Expert Panel review substantiates the quality of the CRB Partnership and Monitoring Program work and should contribute to adaptive management for continual improvement.

[8] San Francisco Estuary Institute Regional Monitoring Program has their adaptive management driven by program review by external estuarine monitoring and management experts.

CRB Partnership and Monitoring Program presents an integrated analysis to contextualize toxics in the Columbia River mainstem, trends, and assessment of cause-effect relationships to focus restoration and mitigation efforts. To communicate concerns about contaminant sources, CRB Partnership and Monitoring Program may identify Impaired[9] Areas of the Columbia River. This strategy can serve to elevate and focus attention on cleaning up the primary sources of contamination for the greatest recovery. The success of the CRB Partnership and Monitoring Program will rest on robust relationships with Tribes, federal, state, and local government to influence policies.

This partnership and program will not make policy decisions or recommend specific cleanup actions. However, it will provide unbiased information on data gaps, new and emerging science, contamination and toxics concerns, and community needs to inform adaptive management. To be a credible and trusted organization, the CRB Partnership and Monitoring Program must be non-political. The ultimate goal of the CRB Partnership and Monitoring Program is to provide a trusted, unbiased dataset that facilitates the evaluation of status and trends throughout the Columbia River Basin. Decision-makers are free to use this data to make policy decisions, but we risk funding success if the approach and tone is strongly political.

5.2 Implementation Timeline

Below is an illustration of a possible timeline for implementation. The timeline includes development of the CRB Partnership and Monitoring Program. We outline three steps of development that can be refined in the third quarter of each year based on that year's achievements and setting goals for the upcoming year. Our assumption is that the states (Washington and Oregon), federal agencies (USGS, EPA, etc.), and tribal entities will form the initial CRB Partnership Leadership Board, with outreach and growth of the Leadership Board into other states and into Canada to occur over time.

[9] The Great Lakes Monitoring has used Beneficial Use Impairments to make progress by identifying contaminated areas for cleanup and focus as priority for federal and state agencies. This designation serves to elevate sources of contamination and communicate to decision makers, stakeholders, and the public that they are degrading the overall environment.

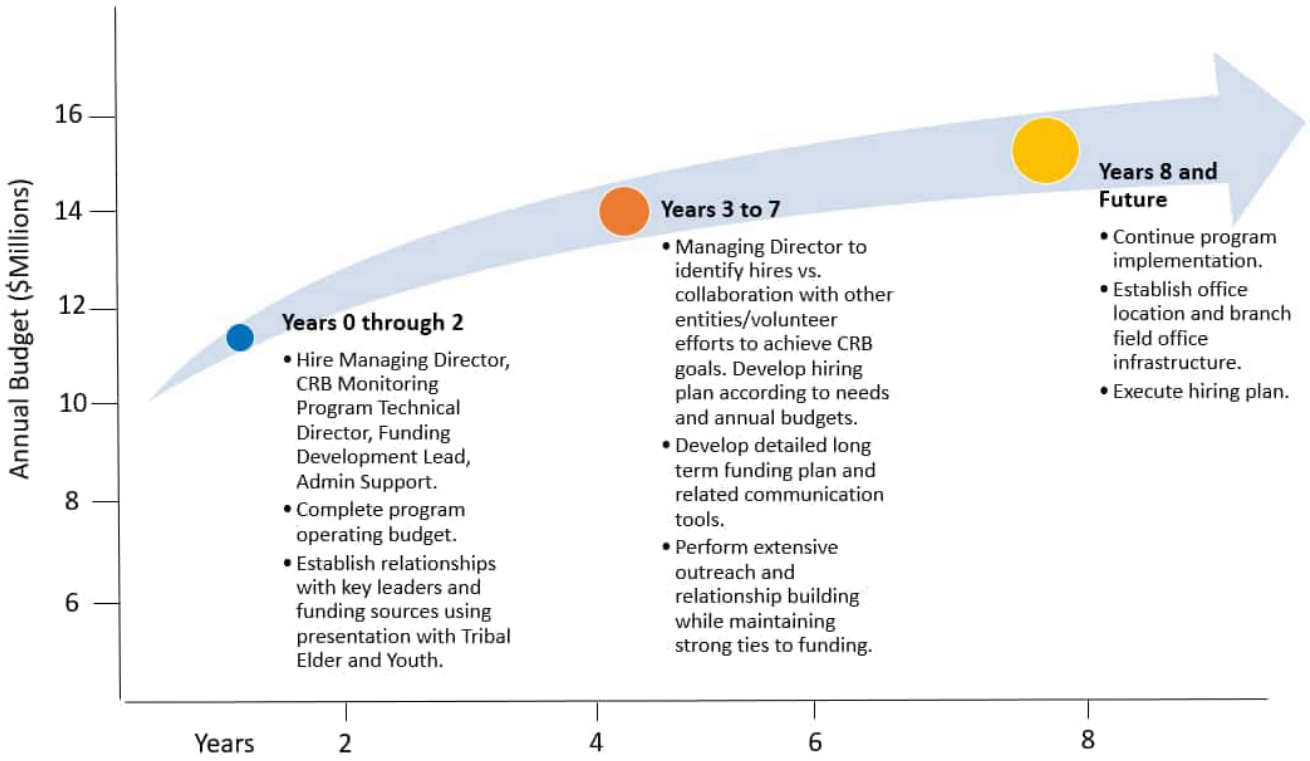

Figure 8. Timeline for Implementation of CRB Partnership and Communication Plan

5.2.1 Step 1: First Two Years

Governance decisions will be made collectively with funding and communication planning. As an initial step, exploratory lobbying, networking and legal assistance will help leadership confirm the appropriate nonprofit governance structure. In the first two years, we recommend that CRB Partnership and Monitoring Program begin meetings with the Washington State Governor's Salmon Recovery Office, federal and state legislators' environmental appropriations staff, and top private funding sources. The Leadership Board (Board of Directors) and other networks should bring to bear their suggestions and connections to assist in identifying the most promising funding sources. The priorities for initial communication are linked to funding and are recommended in the following bullet list, which may be revised by the Funding Development lead, as needed.

Initial Communication Priorities

- Washington State Governor's Salmon Recovery Office
- Oregon Salmon and Watersheds Program
- Federal Washington and Oregon United States all senators and select representatives

    - Meetings with senators may occur with their environmental staff. Identify key Washington and Oregon representatives based on their past environment and tribe support, as well as key committee positions
- Select State Washington and Oregon legislators based on their past environment and tribe support, and key committee positions
- For private funding, outreach presentations to organizations such as the Seattle Foundation, Social Venture Partners, Northwest Conservation Philanthropy Fellowship[10] (Spin off from Social Venture Partners), Bullitt Foundation, and Northwest Fund for the Environment

As the initial step, the following hires will be needed:

- Executive Director
- CRB Monitoring Program Technical Director
- Funding Development Lead
- Administration support

The Funding Development Lead will work with the Leadership Board to develop a concise presentation for communication. The presentations can draw from the recommended communication strategies (Section 5.1) and should be tailored to each funding source audience. Selected Board members or directors would attend based on the most strategic appeal to each funding source.

5.2.2 Step 2: Years Three through Seven

Once governance and funding are initially in place, the communication strategy will shift emphasis to further outreach and education with the public and other entities, while maintaining excellent communication with funding sources. Funding Development will draft a plan for communication with funding sources. Funding Development will update the presentations to highlight CRB achievements and progress. Personal contact is needed with key funding sources and other valuable networking contacts. Newsletters can strengthen communication with funding sources but will not replace personal contact.

In collaboration with Funding Development, the Outreach & Education Team will develop the schedule for updates. The Outreach & Education Team should collaborate with other organizations who have similar existing outreach and education programs. Academic relationships are also of great value to foster community support of CRB Partnership and Monitoring Program. This can be accomplished by building an internship program to facilitate research and analysis through graduate studies.

[10] Donations are usually at the million-dollar level. Develop a one-page pitch to communicate to approximately 90 investors and possibly presentation. This group has a likely interest in removing the dams.

Further funding and education outreach over the first 10 years includes, (but will be modified by the Funding Development lead with input from the CRB Partnership board and network):

- Federal and Idaho, Montana, Wyoming, Nevada, Utah
- Local Community Leaders, particularly cities and counties along the Columbia River
- Bonneville Power Administration
- Northwest Power and Conservation Council
- Data Center developers and other emerging energy developments
- Environmental organization partnership funding and grant pursuits (i.e., Washington Conservation Action has a Tribal Nations Program)

During Step 2 (Years 3 to 7), the Funding Development Lead, in collaboration with the Executive Director and Technical Director (CRB Monitoring Program), will develop a more detailed, long-term funding plan. The plan will allow the Executive Director to refine a hiring plan based on CRB Partnership and Monitoring Program needs, with collaboration with other entities or volunteer or internship opportunities. The plan will identify hiring needs for the Policy Team and Basin-wide Coordinator and for the Adaptive Management Systems and Accountability Team. The funding plan may consider whether these important roles can be filled by volunteers or in-kind services from other organizations and technical sources such as academia or regulatory agencies. This plan will solicit input from and be reviewed by the Board.

5.2.3 Step 3: Years Eight and Future

As outlined in Section 5.1, various communication tools can support the CRB Partnership and Monitoring Program in delivering a publicly accessible, unbiased dataset accompanied by clear evaluations of status and trends. This will provide government leaders, the scientific community, and the public with information they need to answer key questions and make informed decisions about the health of the river and its communities.

We recommend the CRB Partnership and Monitoring Program provide high-level data interpretation and communication of data related to status and trends. This should include highlighting both successes and issues of concern, such as identifying areas of concern, cleaner areas, and areas showing increasing and decreasing trends. This approach will help guide basin-wide efforts in toxics reduction, source control, cleanup, restoration, and protection.

During Step 3, we recommend establishing infrastructure to support the CRB Partnership and CRB Monitoring Program such as an office location and branch field office, as needed. The Executive Director can execute the hiring plan developed in Step 2 based on annual budgets.

In addition to the recommended overall Communication Strategy provided above, transparent communication and adaptive management will be the key to the success of CRB Partnership and Monitoring Program into the future. This is why the CRB Partnership organization chart includes an Adaptive Management Systems and Accountability Team. In Adaptive Management, we

recommend creating a culture of learning and being open to change at all levels. Data collected in one part of the Columbia River may inform data evaluation and restoration in another region. A culture of living documents and protocols will allow continual growth and improvement. Time spent by the Leadership Board, Executive Director, and CRB Monitoring Program Technical Director on setting and agreeing on the CRB Partnership and Monitoring Program culture with communication norms will be a strong foundation for success.

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7.0 APPENDIX A. MODEL PROGRAMS DESCRIPTIONS

Appendix A: Model Program Descriptions

Appendix A provides descriptions of model programs as examples of other monitoring programs to inform the Implementation Plan for CRB (Columbia River Basin) Monitoring Program. The model programs evaluated include:

- Puget Sound Partnership[1]
- Great Lakes Monitoring Program[1]
- Chesapeake Bay Monitoring Program[1]
- Everglades Restoration Program
- Upper Mississippi River Restoration Program
- San Francisco Estuary Institute-Regional Monitoring Program[2]
- Missouri River Recovery Program
- Louisiana Coastwide Reference Monitoring System
- Klamath River Renewal Corporation

For each of these programs, Appendix A provides concise summaries of each program's governance, funding, and communications efforts and strategies. Table A-1 provides a summary of our research with focus on funding. Table A-2 provides a matrix and ranking of programs relative to our evaluation criteria for quick-glance comparisons.

A-1 Evaluation Considerations

All the model programs evaluated are currently supporting and sustaining the monitoring and restoration efforts within the cherished natural resource areas of the United States. The Environmental Protection Agency's (EPA) CRB Partnership, CRB Monitoring Program, CRB Restoration Funding Assistance Program, and monitoring directives are a direct result of a 2016 Act of Congress. Therefore, this section focuses on established programs of a similar magnitude that address natural resources with comparable ecological and economic service value. Similar to the CRB Monitoring Program, several of these programs are also EPA-established, geographically-based programs with Clean Water Act (CWA) mandates.

We did not expect any one model to be a perfect fit for this Implementation Plan because the Columbia River Basin communities and services are unique. To approach our evaluation, we considered both how the CRB Partnership and CRB Monitoring Program compare to existing programs and importantly, what makes each program unique. The Columbia River is unique due to the level of tribal engagement, the physical size and areal extent of the Basin, and the magnitude and types of past, ongoing, and potential future human activity and industry that affect the Columbia Basin. We used these unique aspects to develop evaluation criteria to help compare the CRB Partnership and CRB Monitoring Program with existing programs:

- Tribal leadership, active and proactive engagement with resource management and restoration, and commitment to program ideals
- Tribal Nations' commitment to future tribal members
- Partnerships that include Tribes
- , multiple states, and two federal agencies
- Types and nature of industry, including hydropower, agriculture, shipping, tourism, and data center development pressures and data center power needs, and how this affects contaminant sources, heat pollution, and impacts to fisheries
- Extent of urbanization, urban growth, and how this affects contaminant sources and impacts

[1] The Puget Sound Partnership, Great Lakes Monitoring Program, and Chesapeake Bay Monitoring Program are geographically-based programs mandated under the CWA.

[2] Although, the San Francisco Estuary Institute-Regional Monitoring Program is not mandated under the CWA, the CWA acknowledges the importance of this program to monitor and protect the San Francisco Bay.

- A forward-looking analysis of goals for resource management, threatened and endangered species recovery and habitat restoration

These considerations led to evaluation criteria developed below to guide evaluation of existing programs.

A-2 Evaluation Criteria

In the context of the considerations listed above, we applied a system to evaluate existing programs. The system has three pillars common to all programs:

- Governance
  - Who stewards the program through technical engagement and funding support, and how do the governing partners interact?
  - What is the business/tax structure (non-profit, state agency, federal agency, etc.)?
- Funding
  - What are the primary sources of ongoing funding?
  - How are funds used each year (e.g., in addition to the primary monitoring role, does the funding support research on emerging issues? Does the funding support education)?
- Communication
  - Who are the audiences?
  - Who are the users of the data?
  - How does the program inform efforts to improve toxics reduction and toxics control?
  - How does the program inform efforts to support restoration and recovery of species and habitat?
  - Is adaptive management meaningfully included in the program approach and communication?

Within this framework, and with the contextual information provided by the considerations listed above, we evaluated the programs listed to identify needs of the CRB Partnership and CRB Monitoring Program for the next steps in its progression:

- Program stability – Does the program reflect changes over time? What drove the change and is it achieving its goals (e.g., to streamline the technical scope of the work, to introduce accountability measures, etc.). Was any instability good (leading to improvements) or an indication of deeper problems? What programs are long-running and therefore withstood changes to the political climate over time?
- Richness of community engagement – Which communities are directly served? Were they the target communities? Were the deep and extensive communications within technical, political, regional, municipal and township communities originally targeted? Is engagement balanced relative to original plans?
- Success - What are the success stories in regard to solving environmental problems?

Puget Sound Partnership

Website:

Puget Sound Partnership

The Puget Sound Partnership was officially created in 2007 by the Washington State Legislature (RCW 90.71.210) as a state agency tasked with overseeing the restoration of the environmental health of Puget Sound by 2020.

Governance

- **Lead Agency**: State of Washington
- **Leadership Boards**:
    - **Leadership Council** - The governing body of the Puget Sound Partnership. Its seven members are leading citizens chosen from around the Sound. Members are appointed by the Governor to serve four-year terms but may continue to serve until being officially reappointed or replaced by a new member. Dennis McLerran currently chairs the Leadership Council. Current members include:
        - Regional Administrator for United States Environmental Protection Agency (EPA) Region 10
        - Jefferson County Commissioner District 1
        - Retired Chief of United States Department of Agriculture's Forest Service
        - Local government planning and land use expert
        - Dean for Administration for the University of Washington's College of the Environment
        - Lower Elwha Klallam Tribe member
        - Tribal fisheries and natural resources program advisor (former co-vice chair of the Puget Sound Salmon Recovery Council
    - **Ecosystem Coordination Board** - To advise the Puget Sound Partnership's Leadership Council in carrying out its responsibilities implementing chapter 90.71 RCW, including development and implementation of the Action Agenda. The Board is made up of 27 voting members and six ex-officio members representing specific interests around the Puget Sound, including representatives from federal, state, local, and tribal governments, businesses, port districts, and environmental organizations.
    - **Science Panel** - To develop a comprehensive, science-based plan to restore Puget Sound. The 16 members, appointed by the Leadership Council, were chosen from the top scientists in Washington State.
    - **Puget Sound Salmon Recovery Council** - Advises the Puget Sound Partnership's Leadership Council on decisions relating to salmon recovery and the implementation of the Puget Sound Salmon Recovery Plan. The Puget Sound Salmon Recovery Council's recommendations help set priorities for the types of recovery work to conduct, determine what issues to focus on, and provide recommendations for future projects and funding.
- **History**: The Puget Sound Partnership is a Washington state agency created by the Legislature in 2007 to coordinate the efforts of citizens, governments, tribes, scientists and businesses to restore and protect Puget Sound.
- **General Governance Notes**:
    - Oversees Puget Sound Acquisition and Restoration Program and funds salmon recovery projects.

- Responsible for managing Puget Sound Chinook Recovery planning under the Endangered Species Act recovery plan with National Oceanic and Atmospheric Administration (NOAA) and for implementing the EPA Puget Sound National Estuary Program.
- The Northwest Indian Fish Commission is a vital partner and any/all (100s) tribes participate monthly
- Tribal Management Conference oversees partnership ("Watch for Western Science Bias"- Scott Redman, Science and Evaluation Program Director)

Funding

- The Partnership's operating budget comes from state and federal sources. State budget consists of funds from the following accounts: General Fund, Aquatic Lands Enhancement Account, and the Model Toxics Control Operating Account. The agency primarily uses these as match funds to federal grants provided by the EPA. Additionally, the Partnership receives designated funding through the Washington State Legislature.
- **Biannual (2021-2023)**: $38.7 M
  - State - $16.6 M
  - Federal (EPA) - $20.5 M
  - PCSRF - $1.3 M
  - PSAR - $300 K
- Funding is allocated to various programs by the leadership boards.
- Funding is broken down into projects outlined in the Action Agenda (updated every 4 years). Categories within the Action Agenda include:
  - Habitat
  - Water
  - Species
  - Climate change
  - Human wellbeing
  - Institutional

Communication

- **Vision**: Vibrant, enduring natural systems and communities
- **Mission**: Accelerate and advance the collective effort to recover Puget Sound
- **Goals**:
  - Healthy Human Population: A healthy population supported by a healthy Puget Sound that is not threatened by changes in the ecosystem.
  - Vibrant Quality of Life: A quality of human life that is sustained by a functioning Puget Sound ecosystem.
  - Thriving Species and Food Web: Healthy and sustaining populations of native species in Puget Sound, including a robust food web.
  - Protect and Restored Habitat: A healthy Puget Sound where freshwater, estuary, nearshore, marine, and upland habitats are protected, restored, and sustained.
  - Abundant Water Quantity: An ecosystem that is supported by good groundwater levels as well as river and stream flows sufficient to sustain people, fish, wildlife, and the natural functions of the environment.
  - Healthy Water Quality: Fresh and marine waters and sediments of a sufficient quality to support water that is safe for drinking, swimming, and other human uses and enjoyment, and which are not harmful to the native marine mammals, fish, birds, and shellfish in the region.

- **Adaptive Management:** Program uses a results-based—or adaptive—approach to managing ecosystem recovery. Since 2009, the Partnership has been developing, testing, and improving adaptive management standards with input from many partners. The standards include common taxonomies for elements of recovery efforts. This includes Vital Signs, pressures, activities, and barriers to recovery, and common decision processes to:
    - describe and document the current context
    - describe theories of change associated with recovery strategies
    - document the criteria for identifying priorities.

Great Lakes Monitoring Program

Website:

Great Lakes Monitoring | US EPA; Great Lakes Restoration Initiative

This program is the outcome of an Agreement between the United States and Canada that was initiated in 1972 to control and monitor pollution in the Great Lakes.

Governance

- **Lead Agency**: Environmental Protection Agency (EPA)
- **Includes four monitoring programs:** Great Lakes Water Quality Monitoring Program, Integrated Atmospheric Deposition Network, Great Lakes Biology Monitoring Program, Great Lakes Fish Monitoring and Surveillance Program.
- The EPA coordinates findings closely with Canada's Environment and Climate Change agency, specifically on the Great Lakes Water Quality Monitoring Program and Great Lakes Fish and Monitoring Surveillance Program. However, Canada is not a Great Lakes Restoration Initiative (GLRI) partner.
- The GLRI is coordinated by the EPA and involves multiple federal agencies, including NOAA, the U.S. Fish and Wildlife Service, and the Army Corps of Engineers. It funds projects by states, tribes, municipalities, universities, and nonprofits.
- **Leadership Boards**:
    - **Interagency Task Force**: Promotes collaboration among the members of the Task Force and members of the Regional Working Group, and with the Great Lakes States, local communities, tribes, regional bodies, and other interests in the Great Lakes region regarding policies, strategies, plans, programs, projects, activities, and priorities for the Great Lakes system. Coordinates development of consistent federal policies, strategies, projects, and priorities for the restoration and protection of the Great Lakes system and assisting in the appropriate management of the Great Lakes system. The Task Force, consists entirely of United States federal entities, including:
        - Administrator of the Environmental Protection Agency (who chairs the Task Force), Secretary of State, Secretary of the Interior, Secretary of Agriculture, Secretary of Commerce, Secretary of Housing and Urban Development, Secretary of Transportation, Secretary of Homeland Security, Secretary of the Army, Chairman of the Council on Environmental Quality.
    - **Regional Working Group (RWG)**: Coordinates GLRI activities and makes recommendations on how to implement the policies, strategies, projects and priorities of the Task Force. The RWG conducts monthly conference calls or meetings. The Regional Working Group includes only federal agency representatives:
        - United States (US) Department of Agriculture, US Department of Commerce, US Department of Army, US Department of Transportation, US Department of Interior, US Department of Health and Human Services, US Department of State, US Department of Homeland Security, and US EPA.
    - **Great Lakes Advisory Board**: Chartered to provide advice and recommendations to the Environmental Protection Agency (EPA) Administrator, through the Great Lakes National Program Manager, on matters related to implementation of the Great Lakes Restoration Initiative. It also advises on domestic matters related to implementation of the Great Lakes Water Quality Agreement between the U.S. and Canada. Composed of

approximately 15 members who generally serve as representative members of non-federal interests from the states, tribes, local, environmental groups, industry, business, agricultural, environmental justice groups, foundations, and academics.
    - No direct tribal involvement within the organizational structure of the program.
- **History**:
    - 1960s - U.S. Geological Survey agency (USGS) began monitoring fish, specifically contaminants in lake trout.
    - 1972 –Great Lakes Water Quality Agreement was signed between the United States and Canada, committing both countries to restore and maintain the chemical, physical, and biological integrity of the Great Lakes Basin ecosystem.
    - 1977 - USGS Great Lakes Science Center (GLSC) and EPA Great Lakes National Program Office initiated collaboration.
    - 1980s - Expanded Great Lakes Restoration Initiative (GLRI) partners to Great Lakes states to enable funds to be distributed to the States. Also expanded monitoring to include sport fish (chinook and coho salmon)
    - 1990 – Great Lakes Critical Programs Act was an amendment to the Clean Water Act (CWA) to address and mandate the restoration of the Great Lakes
    - 1998 – United States Food and Drug Administration withdrew from cooperative agreement to analyze contaminants in sport fish
    - 2003 - USGS-GLSC exits cooperative agreement (contaminants in whole fish), leaving GLNPO as sole supporter of program

Funding

- Funding is primarily through EPA which it distributes as GLRI funds to GLRI partners. The agencies that receive GLRI funds use multiple funding mechanisms, including interagency agreements, fund transfers, competitive grants, and capacity-building grants to Tribes and states. Agreements/contracts with state, provincial, tribal, academic (i.e., Clarkson University), private laboratories, contractor collaborators (i.e., CSRA LLC, Aquatec Environmental, Inc.).

- **FY 2024** (budgeting framework): $368 M
    - AOCs - $106.6 M
    - Invasives - $71.7 M
    - Non-Point Pollution - $76.3 M
    - Habitats - $72.1 M
    - Foundations for Future Restoration Actions - $41.3 M

Communication

- **Vision**: To accelerate efforts to protect and restore the largest system of fresh surface water in the world by providing additional resources to help achieve the most critical long-term goals for this important ecosystem.

- **Mission**: To create a new standard of care that will leave the Great Lakes better for the next generation.

- **Goals**:

    - Safe fish to eat
    - Safe water for recreation
    - Safe source of drinking water
    - All "Areas of Concern" delisted
    - Harmful/nuisance algal blooms eliminated
    - No new self-sustaining invasive species
    - Existing invasive species controlled

- Native habitat protected and restored to sustain native species

- **Adaptive Management**: The process incorporates the best available science and lessons learned from prior restoration work to:
  - Identify the most critical ecosystem problems in the Great Lakes
  - Select projects that effectively address those problems
  - Assess and report on progress and effectiveness of GLRI actions
  - Inform future restoration and protection priorities

  The adaptive management process also relies on input from state, tribal and municipal agencies, the Great Lakes Advisory Board, the scientific community, Lakewide Action and Management Plan partnerships and the general public. **This is the same adaptive management approach as Everglades, Chesapeake Bay, and Puget Sound**. GLRI Adaptive Management Process Version 1 January 2016

Chesapeake Bay Monitoring Program

Website:

Chesapeake Bay Program - Science, Restoration, Partnership

The Chesapeake Bay Monitoring Program emerged as the result of grass roots efforts to combat water pollution in the 1970s. It is currently a multi-state and federal partnership with monitoring and restoration efforts ongoing.

Governance

- **Lead Agency:** Environmental Protection Agency (EPA)
- **Leadership Boards:**
    - **Chesapeake Executive Council:** Establishes the policy direction for the restoration and protection of the Chesapeake Bay. It consists of the governors of the six watershed states, the mayor of the District of Columbia, the chair of the Chesapeake Bay Commission and the administrator of the U.S. Environmental Protection Agency. Members include representatives from:
        - State of Maryland (chair)
        - Alliance for the Chesapeake Bay
        - Chesapeake Research Consortium
        - Chesapeake Bay Commission
        - District of Columbia
        - State of Delaware
        - US EPA
        - State of New York
        - Commonwealth of Pennsylvania
        - Commonwealth of Virginia
        - State of Virginia
    - **Principals' Staff Committee**: Works on behalf of the Executive Council to translate the restoration vision into policy and implementation actions: accepting items for Council consideration and approval, setting agendas for Council meetings, providing briefings to the Watershed Agreement signatories and providing policy and program direction to the management board. Consists of members from 36 federal, state (Delaware, Pennsylvania, New York, Maryland, Virginia), and private agencies.
    - **The Management Board**: Provides strategic planning, priority setting, and operational guidance through implementation of a comprehensive, coordinated, accountable implementation strategy for the Chesapeake Bay Monitoring Program using the Chesapeake Action Plan and a management system based on adaptive management principles. Chaired by EPA and includes members from more than 20 federal, state, and private agencies.
    - No direct tribal involvement within the organizational structure of the program.
    - **Organizational Chart**: Organizational Chart
- **History**:
    - 1983 - Agreement signed by Maryland, Pennsylvania, and Virginia Governors, DC Mayor, EPA Administrator, Chesapeake Bay Commission Chair.
    - 1987 - Agreement to reduce nitrogen, phosphorus by 2000.
    - 1992 - Amendment to reduce nutrients upstream, Basinwide Toxics Reduction Strategy.

- 2000 – Chesapeake 2000 restoration strategy created that set a clear vision and strategy to guide restoration efforts through 2010.
- 2009 - Obama Executive Order 13508 - federal government to renew the effort to protect and restore the watershed. That same year, the Chesapeake Executive Council set short-term restoration goals—called two-year milestones—to hasten restoration and increase accountability.
- 2010 - EPA established the landmark Chesapeake Bay Total Maximum Daily Load.
- 2014 – Chesapeake Bay Watershed Agreement, amended in 2020 – established 10 goals and 31 outcomes to restore the Bay, its tributaries and the lands that surround them.

Funding

- Funding comes from numerous federal agencies, state and local governments, non-governmental organizations and private interests.
- **FY 2025** (requested federal funds): $584 M
  - Department of Agriculture: $352 M
  - Department of Commerce: $20 M
  - Department of Defense: $59 M
  - Department of Interior: $38 M
  - EPA: $115 M
- **FY 2025** (requested state funds): $1.45 B
  - Delaware: $3.4 M
  - District of Columbia: $214.6 M
  - Maryland: $492.4 M
  - New York: $15.1 M
  - Pennsylvania: $239.8 M
  - Virginia: $474.5 M
  - West Virginia: $9.6 M

Communication

- **Vision**: An environmentally and economically sustainable Chesapeake Bay watershed with clean water, abundant life, conserved lands and access to the water, a vibrant cultural heritage, and a diversity of engaged stakeholders.
- **Goals**: Details for goals - Chesapeake Bay Watershed Agreement
  - Sustainable Fisheries
  - Vital Habitats
  - Water Quality
  - Toxic Contaminants
  - Healthy Watersheds
  - Land Conservation
  - Stewardship
  - Public Access
  - Environmental Literacy
  - Climate Resiliency
- Program emphasizes the return on investment through fishing, tourism, recreation, real estate, agriculture, shipping economies.
- NOAA quantified annual benefits - $6B seafood, $1.4B income, 42K jobs, $21.6B tourism
- Program champions public access, education, local leadership.
- **Adaptive Management**: Adaptive management is an integral component of the Chesapeake Bay Program and implements the following adaptive management framework:
  - Articulate program goals – Identify goals

- Describe factors influencing goal attainment – Prioritize factors that influence achievement of goals
- Assess current management efforts (and gaps)
- Develop management – Coordination and planning by stakeholders
- Develop monitoring program
- Assess performance – Criteria for success/failure of program
- Manage adaptively – Based on assessment modify models and monitoring strategy

Everglades Restoration Program

Website:

Everglades Restoration Initiatives

The Everglades Restoration Program was initiated in December 2000 when the U.S. Congress approved the Comprehensive Everglades Restoration Plan (CERP) into law as part of the Water Resources Development Act, launching the largest ecosystem restoration project in U.S. history.

Governance

- **Lead Agency:** United States Army Corps of Engineers (USACE)
- **Leadership Boards:**
    - **Task Force**: To coordinate the development of consistent policies, strategies, plans, programs, and priorities for addressing the environmental concerns of the South Florida Ecosystem. The Task Force consists of 14 members from four sovereign entities. There are seven federal, two Tribal, and five state and local government representatives at the senior leadership level.
        - **Federal**: Secretary of the interior (Chairperson), Secretary of Commerce, The Secretary of the Army, The attorney General, administrator of the Environmental Protection Agency, The Secretary of Agriculture and the Secretary of Transportation. These agencies provide funding in the form of grants, equipment such as research vessels, monitoring equipment, construction equipment etc. and also provide engineering and scientific personnel with expertise in engineering, hydrology, environmental science, regulatory compliance, marine biology, oceanography etc.
        - **Tribal:** The Seminole Tribe of Florida and the Miccosukee Tribe of Indians of Florida provide tribal funding and scientific staff for land management and water quality monitoring and provide traditional land management practice and cultural preservation guidance.
        - **State/Local:** Three representatives of the Florida Department of Environmental Protection, one representative of the South Florida Water Management District, one county representative, and one municipal representative. These state and local government agencies provide monitoring and testing equipment, county environmental staff as well as local environmental and land management expertise.
    - **Working Group**: Established to formulate, recommend, coordinate, and implement the policies, strategies, plans, programs, projects, activities, and priorities of the Task Force. The work group consists of over 20 representatives from various federal, state, tribal, and local entities.
    - **Science Coordination Team**: The Science Coordination Group is established to support the Task Force in its efforts to coordinate the scientific aspects of policies, strategies, plans, programs, projects, activities, and priorities. The scientific coordination group consists of members from federal, state, local, tribal, private, and academic organizations.
- **History**:
    - 1993 - Federal Ecosystem Restoration Task Force and interagency agreement was established; Promoted consistent policies, strategies, and plans for addressing environmental concerns in South Florida.

- 1996 - Water Resources Development Act (Congress) expanded to include tribes, state, local; Mandated extensive public involvement and allowed the Task Force to address the full scope of restoration needs.
- 2020 and 2022 – Program was expanded to address invasive species and Task Force membership increased to include additional state representatives.

Funding

- The total requested federal funding for the financial year 2025 is $565 million, with the State of Florida funding total being $1.871 billion.
- **FY25** (requested): $2.44 B
  - Federal - $564.9 M
  - State - $1.871 B
- Federal funding from 1993-2001 $1.6B (33%) from DOI, USDA, EPA, NOAA, FWS, NPA and USACE.
- State funding from 1993-2001 $3.1B (66%).
- **Funding Categories**:
  - Area Management
  - Natural resources management
  - Water Quality and Habitat protection
  - Information management/assessment
  - Science: Monitoring
  - Science: Research
  - Land Acquisition
  - Infrastructure Investment

Communication

- **Vision/Mission**: Restore America's Everglades.
- **Goals**:
  - **Get the Water Right** – Addressed through projects related to CERP, Foundation Projects, Water Quality.
  - **Restore, Preserve, and Protect Natural Habitats and Species** – Addressed through projects related to Habitat Protection and Restoration, Florida's Coral Reef, and Invasive Species.
  - **Foster Compatibility of the Built and Natural Systems** – Addressed through projects related to Water Supply Planning, Flood Risk Management, and Community Resilience.
- Communication strategy focuses on water quality, habitat, built systems (flooding/water supply/community resilience), and invasives.
- **Adaptive Management**: The CERP Adaptive Management Strategy outlines a process for gaining better understanding of the south Florida ecosystem and incorporating new scientific and technical information to improve the program's overall approach. **Adaptive Management Strategy**: Comprehensive Everglades Restoration Plan Adaptive Management Strategy.

Upper Mississippi River Restoration Program

Website:

Upper Mississippi River Restoration (UMRR) Program

UMRR Program was initiated in 1986 when it was authorized by the Water Resources Development Act, becoming the first large river ecosystem restoration and monitoring program in the United States.

Governance

- **Lead Agency**: United States Army Corps of Engineers (USACE)
- **Leadership Boards**:
    - **Coordinating Committee**: Serves as the primary consultative body used to discuss and seek consensus on UMRR budgetary, policy, and implementation issues. Provide oversight regarding fiscal performance, project implementation, product quality, and other key measures of program performance. Membership consists of representatives from the U.S. Geological Survey, each of the five state resource agencies, and a variety of federal agencies that have an interest in UMRR; some may not have any specific implementation responsibilities.
        - U.S. Army Corps of Engineers
        - U.S. Fish and Wildlife Service
        - U.S. Geological Survey
        - U.S. Environmental Protection Agency
        - U.S. Maritime Administration
        - U.S. Department of Agriculture Natural Resources Conservation Service
        - Illinois Department of Natural Resources
        - Iowa Department of Natural Resources
        - Minnesota Department of Natural Resources
        - Missouri Department of Conservation
        - Wisconsin Department of Natural Resources
    - **Analysis Team**: Serves as an advisory body to the Upper Mississippi River Restoration Coordinating Committee (UMRR CC), but also communicates directly with the U.S. Army Corps of Engineers and the U.S. Geological Survey on routine Long-term Resource Monitoring (LTRM) technical questions. This team provides science and technical advice and recommendations on the LTRM element's work priorities, annual work plans, and research activities. Official members represent several scientific disciplines such as biologists and other technical staff from the federal and state member agencies.
    - No direct tribal involvement within the organizational structure of the program.
    - Nonprofits (e.g. Nature Conservancy, Ducks Unlimited, Audobon) sponsor habitat projects, comment, engage in program-level projects.
- **History**:
    - 1986 – Authorized by legislation in the Water Resources Development Act, first environmental restoration and monitoring program undertaken on a large river system in the United States.
    - The UMRR Program addresses long term stressors to the Upper Mississippi River System, such as sedimentation and increased water tables due to maintaining navigation pools during low flows. Also includes continual effective responses to new stressors on the UMRS, such as the invasive Asian carp.

Funding

- Funding comes from federal, state, and private sources, private funding contributes up to 25-35% of the budget.
- **FY 2024 Total**: $55 M
    - Regional Administration: $2.225 M
    - Regional Science and Monitoring: $15.925 M
        - Long Term Science Monitoring - $6.5 M
        - Rehabilitation/Management - $7.95 M
        - Integration/Adaptive Management - $200 K
        - Habitat Evaluation - $1.275 M
    - Habitat and Rehabilitation Planning/Construction: $36.85 M
- USACE transfers funds to USGS for Long Term Resource Monitoring and specialized projects.

Communication

- **Vision**: A healthier and more resilient Upper Mississippi River ecosystem that sustains the river's multiple uses.
- **Mission**: To work within a partnership among federal and state agencies and other organizations to construct high-performing habitat restoration, rehabilitation, and enhancement project; to produce state-of-the-art knowledge through monitoring, research, and assessment; to engage other organizations to accomplish the Upper Mississippi River Restoration Program's vision.
- **Goals**:
    - Enhance habitat for restoring and maintaining a healthier and more resilient Upper Mississippi River ecosystem.
    - Advance knowledge for restoring and maintaining a healthier and more resilient Upper Mississippi River ecosystem.
    - Engage and collaborate with other organizations and individuals to help accomplish the Upper Mississippi River Restoration vision.
    - Utilize a strong, integrated partnership to accomplish the Upper Mississippi River Restoration vision.
- Communication strategy focuses on habitat, species (mussels, fauna, birds), cultural/historical significance, and economic benefits (jobs through navigation, fisheries, tourism; energy supply; drinking water supply).
- **Adaptive management**: The primary incentive for implementing an adaptive management plan is to increase the likelihood of achieving desired project outcomes given the identified uncertainties. Uncertainties can include incomplete description and understanding of relevant ecosystem structure and function; imprecise relationships among project management actions and corresponding outcomes; engineering challenges in implementing project alternatives; and ambiguous management and decision-making processes. Additional uncertainties (i.e., scientific and technological) relating to the proposed project were identified by the project team which included:
    - Mississippi River hydrology
    - Presence and introduction of invasive species
    - Future climate change projections (e.g., flood events, growing season lengths, ice cover, migration patterns)

San Francisco Estuary Institute-Regional Monitoring Program

Website:

Science for people and nature | San Francisco Estuary Institute

The San Francisco Bay Regional Monitoring Program (RMP) was formally initiated in 1993 by the San Francisco Bay Regional Water Quality Control Board, following pilot programs from 1989 to 1992, to provide integrated, science-based water quality data for the Bay, with implementation led by the San Francisco Estuary Institute (SFEI).

Governance

- **Lead Agency**: Non-Profit (501)(c)(3) –SFEI
- **Leadership Boards**:
    - Steering Committee: The decision-making body for the RMP. All recommendations and information from various groups in the RMP governance structure ultimately flow to the Steering Committee to support its decision-making. Committee also approves Technical Review Committee recommendations and annual workplan and budget, allocates funds for key program areas and special studies, and tracks overall progress of the RMP. Participant groups include:
        - 1 seat for Bay Area Clean Water Agencies Principal Publicly Owned Treatment Works (POTWs)
        - 1 seat for Bay Area Stormwater Management Agencies Association (BASMAA) representing stormwater agencies
        - 1 seat for the Western States Petroleum Association representing industrial dischargers
        - 1 seat for Bay Planning Coalition representing dredgers
        - 1 seat for cooling water dischargers
        - 1 seat for the U.S. Army Corps of Engineers
        - 1 seat for the Regional Water Quality Control Board
    - **Technical Review Committee**: Provides oversight of the technical content and quality of scientific investigations conducted for the RMP and serves as an advisory body and critical link for recommendations that emanate from Workgroups and Strategy Teams and advance to the Steering Committee. Participants include:
        - 3 seats for POTWs, including 1 seat for South Bay dischargers
        - 1 seat for BASMAA representing stormwater agencies
        - 1 seat representing refineries
        - 1 seat representing industrial dischargers
        - 1 seat representing dredgers
        - 1 seat representing cooling water dischargers
        - 1 seat for the U.S. Army Corps of Engineers
        - 1 seat for the Regional Board
        - 1 seat for the U.S. Environmental Protection Agency, Region IX
        - 1 seat for the City of San Francisco
        - 1 seat for the City of San Jose
        - 1 seat for a non-governmental organization that specializes in water quality in the Bay.

    - **Workgroups and Strategy Teams**: Guide the planning and implementation of pilot and special studies. Specifically, the Workgroups and Strategy Teams make recommendations to the Technical Review Committee regarding research priorities and technical products of specific Program areas. Workgroups cover broad themes (e.g., Emerging Contaminants) whereas Strategy Teams focus on more specific topics (e.g., PCB Strategy). Workgroups also provide peer review for specific Program areas.
- Details of the organization chart and relationships/responsibilities are provided in the RMP charter: SF Bay RMP Charter.pdf.
- Tribes are not involved/referenced in the organizational partnering team.

Funding

- Funding comes from state, federal, and local sources
- **FY 2025** (estimated): $34 M
- **FY 2024**: $35.3 M
    - State: $19.1 M
    - Federal: $12.7 M
    - Local: $2.3 M
- Funding is allocated among participant groups, with the following percentages: publicly owned treatment works (POTWs) (44%), stormwater agencies (23.5%), dredgers (17.5%), refineries and industrial dischargers (11%), and cooling water dischargers (4%).

Communication

- **Vision**: We believe in the power of nature to heal and restore. We work towards a healthy and resilient future by deepening our understanding of the Bay and its surrounding landscapes and translating this knowledge into tools and guidance for decision makers working in the San Francisco Bay Area and across the State.
- **Goals**:
    - **Clean Water -** Ensuring strong stewardship through water quality science
    - **Environmental Informatics** – Developing technologies to bring SFEI's science to life
    - **Resilient Landscapes –** Fostering healthy, resilient landscapes so people and ecosystems thrive
    - **Science Communications –** Bridging the gap between complex scientific research and usable guidance
- The program emphasizes transparent decision-making and regular communication with participants and the public. This includes posting meeting agendas and summaries on the RMP website, maintaining an Interested Parties mailing list, and holding open meetings.
- The Steering Committee is responsible for communicating relevant decisions and information to each of its members.
- **Adaptive management**: Performed through program review by external estuarine monitoring/management experts. Includes review by an external third-party science panel.

Missouri River Recovery Program

Website:

Missouri River Recovery Program (MRRP); Missouri River Recovery Implementation Committee (MRRIC) | Missouri River Conservation Districts Council

The Missouri River Recovery Program (MRRP) was initiated following the 1986 Water Resources Development Act, with further mandates in 1999 and 2007, to restore habitat and comply with the Endangered Species Act after a 2000 Biological Opinion found that river operations jeopardized species like the pallid sturgeon, piping plover, and interior least tern.

Governance

- **Lead Agency**: United States Army Corps of Engineers
- **Leadership Boards**:
    - **Missouri River Recovery Implementation Committee (MRRIC)**: A 70-member committee made up of federal, state, tribal, and stakeholder representatives from throughout the basin. MRRIC serves as a collaborative forum developing a shared vision and comprehensive plan for the restoration of the Missouri River ecosystem. The committee provides guidance and recommendations to federal, tribal, state, local and private entities in the basin on the current MMRP for the river's threatened and endangered species, working to restore their habitats while sustaining the river's many uses.
    - **Missouri River Conservation District Council**: A group of 15 conservation districts in the Missouri River including:
        - Big Sandy Conservation District
        - Blaine County Conservation District
        - Broadwater Conservation District
        - Cascade Conservation District
        - Choteau County Conservation District
        - Fergus County Conservation District
        - Lewis and Clark Conservation District
        - McCone County Conservation District
        - Petroleum County Conservation District
        - Phillips County Conservation District
        - Richland County Conservation District
        - Roosevelt County Conservation District
        - Valley County Conservation District
- 2007 Water Resources Development Act (WRDA) established the MRRIC, an assemblage of stakeholders representing local, state, tribal, and federal interests throughout the Missouri River Basin, to make recommendations and provide guidance on MRRP activities.
- Structured to address the following components:
    - Construction of habitat for the listed species
    - Propagation and hatchery support for the pallid sturgeon
    - Research, monitoring and evaluation
    - Adaptive Management through an Integrated Science Program
    - Collaboration with the MRRIC
    - Public involvement

- **History**:
    - 2000 – USFWS released a biological opinion that continued use and navigation in the Missouri River would jeopardize the continued existence of the pallid sturgeon, interior least tern, and piping plover. Required USACE to take actions to mitigate impacts to these species.
    - 2003 – Record of decision issued regarding the biological opinion.
    - 2006 – USACE established the MRRP.
    - 2016 – Science and Adaptive Management Plan for MRRP created.

Funding

- **FY 2024**: $340 M
- **FY 2007**: $85 M
    - Shallow Water Habitat: $29.8 M
    - Emergent Sandbar Habitat: $6.5 M
    - Fish Propogation Program: $0.8 M
    - Monitoring and Assessment: $19.4 M
    - MRRIC: $0.8 M
    - Project Management: $2.3 M
    - Ecosystem Restoration Floodplain: $25.4 M

Communication

- **Vision**: There appears to be no defined overarching vision for the program.
- **Mission**: The mission of the Council is to represent natural resource and environmental interests on the Missouri River, the associated uplands, and tributaries. This Council believes the conservation of the river and the sustainability of its various uses can best be accomplished through grassroots collaboration, education, incentives, and voluntary action.
- **Goals**:
    - Encourage and promote sound conservation practices, such as "Best Management Practices" (BMPs) for multiple use of the river and adjoining lands.
    - Facilitate conservation districts' voice in partnerships that affect the river corridor.
    - Enhance community involvement in river stewardship.
    - Maintain and improve water quality.
    - Maintain and improve water quantity at critical times.
    - Support bird, fish, and wildlife habitat and wildlife programs compatible with agriculture and multiple use.
- Program leads with the need to re-establish habitat for plover, tern, and sturgeon. Secondary need listed is to improve river navigation.
- **Adaptive Management**: Periodic updates every several years to improve by learning from monitoring, assessing effectiveness of management actions. A specific timescale for updates to monitoring and management plans is not provided.

Louisiana Coastwide Reference Monitoring System

Websites:

CRMS; Coastwide Reference Monitoring System (CRMS) | U.S. Geological Survey

The Louisiana Coastwide Reference Monitoring System (CRMS) was initiated in the early 2000s under the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) to scientifically monitor and evaluate the effectiveness of coastal restoration projects across Louisiana's wetlands using a standardized, coastwide network of ecological monitoring sites.

Governance

- **Lead Agency**: U.S. Geological Survey agency (USGS)
- **Leadership Boards**:
    - **Task Force**: Provides guidance and direction to subordinate organizations of the program through the Technical Committee, which reports to the Task Force. The Task Force is charged by the Act to make final decisions concerning issues, policies, and procedures necessary to execute the Program and its projects. The Task Force makes directives for action to the Technical Committee, and the Task Force makes decisions in consideration of Technical Committee recommendations. It consists of one member from five Federal Agencies (US Fish and Wildlife Service, Natural Resources Conservation Service of the US Department of Agriculture, National Marine Fisheries Service of Department Commerce, US EPA, and USACE) and the Local Cost Share Sponsor, which is the State of Louisiana.
    - **Technical Committee**: Provide advice and recommendations for execution of the Program and projects from a number of technical perspectives, including engineering, environmental, economic, real estate, construction, operation and maintenance, and monitoring. Provides guidance and direction to subordinate organizations of the program through the Planning & Evaluation Subcommittee, made up of members from the USGS, Louisisana Coastal Protection Authority, Natural Resources Conservation Service, USACE, USFWS, NOAA, and EPA.
    - **Public Outreach Committee**: Comprised of members from the participating federal agencies, the State of Louisiana, and non-profit organizations. The committee is currently responsible for formulating information strategies and public education initiatives, maintaining a Web site of complex technical and educational materials, developing audio-visual presentations, exhibits, publications and news releases, conducting special events and project dedications and groundbreakings.
    - **Organizational Chart**: Organization
- The Coastwide Reference Monitoring System (CRMS) was designed to monitor the effectiveness of restoration actions at multiple spatial scales from individual projects to the influence of projects on the entire coastal landscape.
- **History**:
    - 1990 - Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) to address the Louisiana land loss crisis.
    - 1990 – 2018 - From 1990 to 2018, the CWPPRA program has authorized 218 coastal restoration and protection projects.

Funding

- Funding for the program comes from the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA), a federal-state partnership established in 1990 to address Louisiana's coastal land

loss crisis, Natural Resource Damage Assessment settlements, and the RESTORE Act, which allocates funds from Deepwater Horizon oil spill penalties.

- **FY 2025-2030** (requested): $36.5 M
- **FY 2019-2024**: $23.5 M
    - Fisheries - $6.619 M
    - CRMS - $11.722 M
    - Dolphin Photo ID - $402 K
    - Waterbird Monitoring - $430 K
    - Marsh Birds - $1.441 M
    - Adaptive Monitoring/Strategy Planning - $2.098 M
    - Lower Trophic Level Sampling - $785 K
- Federal with Louisiana State Wetlands Authority

Communication

- **Vision**: Lead the Nation in 21st-century integrated research, assessments, and prediction of natural resources and processes to meet society's needs.
- **Mission**: The USGS monitors, analyzes, and predicts current and evolving Earth-system interactions and delivers actionable information at scales and timeframes relevant to decision makers.
- **Goals**:
    - **Core Science Systems Monitoring Area**: To understand, monitor, and detect changes that affect the Nation's natural and agricultural resources, the economy, public safety, and security.
    - **Ecosystems Mission Area**: Benefit the health, safety, and prosperity of the American people by providing trusted and timely information to help address the Nation's toughest management and conservation issues impacting public lands and the surrounding communities that benefit from them.
    - **Energy and Mineral Resources Mission Area**: Deliver actionable science that informs crucial resource management decisions and investments impacting the Nation.
    - **Natural Hazards Mission Area**: To monitor, assess, and conduct targeted research on a wide range of natural hazards so that policymakers and the public have the understanding they need to enhance preparedness, response, and resilience.
    - **Water Resources Mission Area**: To monitor, assess, conduct targeted research, and deliver information on a wide range of water resources and conditions including streamflow, groundwater, water quality, and water use and availability.
- **Education**: Supports environmental educational initiatives by providing free informational and educational materials on the importance of protecting our wetlands, including materials that are suitable for a range of ages and resources for K-12 educators in multiple content areas.

Klamath River Renewal Corporation

Website:

Klamath River Renewal

The Klamath River Renewal Corporation (KRRC) was initiated in 2016 as a nonprofit organization specifically created to take ownership of four PacifiCorp hydroelectric dams on the Klamath River and oversee their removal, as outlined in the amended Klamath Hydroelectric Settlement Agreement, with the goal of restoring river health and supporting tribal, ecological, and community interests.

Governance

- **Lead Agency**: Non-Profit (501)(c)(3) – KRRC
- **Leadership Boards:**
    - **Signatories of the Klamath Hydroelectric Settlement Agreement:**
        - California
        - Oregon
        - Local Governments
        - Yoruk, Karuk, and Klamath Tribes
        - PacifiCorp
        - Irrigators
        - Several conservation and fishing groups
    - **Board of Directors:** Consists of 14 members from:
        - Columbia River Gorge Commission
        - Karuk Tribe
        - Attorney from Bartkiewicz Kronick & Shanahan
        - Humbolt County Supervisor
        - Element Consulting Inc.
        - Former Idaho Supervisor
        - Yurok Tribe
        - 7 Lakes Alliance
        - Trout Unlimited
        - Former Oregon Governor
        - Former NFWF Board Member
        - Water Foundation
        - Northwest Regional Director and Salmon Protection Program Director
        - Professor of Law, University of Virginia
- **History**:
    - 2016 - Settlement Agreement Completed and KRRC formed, sought approval from Federal Energy Regulatory Commission to transfer dam ownership.

Funding

- Funding for the program comes from PacifiCorp customer surcharges and CA Proposition 1 water bond.
- Additional funding information was not publicly available.

Communication

- **Vision**: Re-establish the natural vitality of the Klamath River so that it can support all communities in the Basin.

- **Goals/Outreach:**
    - **Environmental Benefits:**
        - Dam decommissioning to improve habitat and health of fisheries.
        - Improving water quality and eliminating algal blooms to benefit the region's wildlife, recreation, economy, and health.
    - **Financial Benefits:**
        - Benefits to rate payers
        - Additional local jobs
        - Strengthen commercial and recreational fishing opportunities
        - Disaster relief
    - **Benefits for Local Communities:**
        - Native American Communities through restoration of fish health and habitat leading to increased populations and overall all health for tribal communities.
        - Irrigation-dependent Communities
- There is a significant focus on community and tribal wellbeing and economic benefits. Economic benefits highlighted:
    - World War II veterans' homesteads and family farms, which benefit from the region's nutrient-rich soil.
    - A robust agriculture industry, which provides over 5,000 local jobs and brings in $600 million per year in revenues.
    - Commercial salmon fisheries worth $150 million per year.
    - Six federally recognized Indian Tribes who depend upon the basin's fish stocks, clean water, and healthy forest ecosystem for their health, livelihoods, and spiritual and cultural practices.
    - Recreational activities, such as fishing, duck hunting, camping, hiking, and whitewater rafting.
    - Six National Wildlife Refuges that provide habitat for most of the migratory waterfowl on the Pacific Flyway.

Table A-1: Program Research Summary

Monitoring Program	Program Model/Governance (Federal, State, Non-Profit)	Most Recent Funding Totals	Funding Allocation	Communication Strategy	Longevity	Tribal Involvement
Puget Sound Partnership	State Lead - Washington	**Puget Sound Partnership** Biannual (2021-2023): $38.7 M State - $16.6 M Federal (EPA) - $20.5 M PCSRF - $1.3 M PSAR - $300 K **Puget Sound Budget** FY 2025-2027 (Puget Sound - Proposed Agency Budget): $3.67 B FY 2024 (Puget Sound - Enacted Budget): $282.33 M	**FY 2025 -2027** (Puget Sound - Proposed Agency Budget): $3.67 B Habitat - $1.8 B Water - $1.5 B Species - $126.8 M Climate Change - $78.2 M Human Wellbeing - $60.4 M Institutional - $32.8 M **FY 2024** (Puget Sound - Enacted Budget): $282.33 M Habitat - $1.8 B Water - $1.5 B Species - $126.8 M Climate Change - $78.2 M Human Wellbeing - $60.4 M Institutional - $32.8 M	**Vision**: Vibrant, enduring natural systems and communities **Mission**: Accelerate and advance the collective effort to recover Puget Sound **Goals/Messaging**: - Healthy Human Population - Vibrant Quality of Life -Thriving Species and Food Web - Protect and Restored Habitat - Abundant Water Quantity - Healthy Water Quality **Outreach/Communication Lead Program**: Puget Sound Partnership's Communications Program is the lead entity responsible for outreach and communication, engaging partners and the public to build trust, foster relationships, and support informed decision-making for Puget Sound recovery	2007-Present	Tribes are represented as members of the leadership boards and third-party technical support teams.
Great Lakes Monitoring Program	Federal - EPA	**FY 2024** (budgeting framework): $368 M	**FY 2024**: $368 M AOCs - $106.6 M Invasives - $71.7 M Non-Point Pollution - $76.3 M Habitats - $72.1 M Foundations - $41.3 M	**Vision**: To accelerate efforts to protect and restore the largest system of fresh surface water in the world by providing additional resources to help achieve the most critical long-term goals for this important ecosystem. **Mission**: To create a new standard of care that will leave the Great Lakes better for the next generation. **Goals**: - Fish safe to eat - Water safe for recreation - Safe source of drinking water - All Areas of Concern delisted - Harmful/nuisance algal blooms eliminated - No new self-sustaining invasive species - Existing invasive species controlled - Native habitat protected and restored to sustain native species **Outreach/Communication Lead**: Great Lakes Inventory & Monitoring Network of the National Park Service (NPS), serves as the primary entity responsible for all aspects of outreach and communication about the network's monitoring programs.	1978-Present; significant modifications to members and structure over time	Tribes are represented as stakeholders and members of the advisory board. Limited involvement in overall governance.
Chesapeake Bay Monitoring Program	Federal - EPA	**FY 2025** (requested federal funds): $584 M **FY 2025** (requested state funds): $1.45 B	**FY 2025** (requested federal funds): $584 M Department of Agriculture: $352 M Department of Commerce: $20 M Department of Defense: $59 M Department of Interior: $38 M EPA: $115 M **FY 2025** (requested state funds): $1.45 B Delaware: $3.4 M District of Columbia: $214.6 M Maryland: $492.4 M New York: $15.1 M Pennsylvania: $239.8 M Virginia: $474.5 M West Virginia: $9.6 M	**Vision**: An environmentally and economically sustainable Chesapeake Bay watershed with clean water, abundant life, conserved lands and access to the water, a vibrant cultural heritage, and a diversity of engaged stakeholders. **Goals**: - Sustainable Fisheries - Vital Habitats - Water Quality - Toxic Contaminants - Healthy Watersheds - Land Conservation - Stewardship - Public Access - Environmental Literacy - Climate Resiliency **Outreach/Communication Lead**: The Chesapeake Monitoring Cooperative (CMC) provides technical, programmatic, and outreach support to integrate community science and volunteer-based monitoring data into the Chesapeake Bay Program's centralized data systems.	1983-Present	Limited tribal involvement; tribes not included in governance structure.

Everglades Restoration Program	Federal - USACE	**FY 2024** (enacted): $3.054 B Federal - $552.5 M CERP: $428.9 M Non-CERP: $123.6 M State - $2.5 B CERP: $566.7 M Non-CERP: $1.935 B **FY 2025** (Requested): $2.436 B Federal - $564.9 M State - $1.871 B	Breakdown and allocation of funds was not readily available.	**Vision/Mission**: Restore America's Everglades **Goals**: - Get the Water Right - Restore, Preserve, and Protect Natural Habitats and Species - Foster Compatibility of the Built and Natural Systems Communication strategy focuses on water quality, habitat, built systems (flooding/water supply/community resilience), and invasives. **Outreach/Communication Lead**: The Office of Everglades Restoration Initiatives (OERI) within the U.S. Department of the Interior coordinates interagency communication, public engagement, and educational outreach.	1993-Present	Tribes are represented as members of the leadership boards and science coordination teams.
Upper Mississippi River Restoration Program	Federal - USACE	**FY 2024**: $55 M	**FY 2024 Total**: $55 M Regional Administration: $2.225 M Regional Science and Monitoring: $15.925 M Long Term Science Monitoring - $6.5 M Rehabilitation/Management - $7.95 M Integration/Adaptive Management - $200 K Habitat Evaluation - $1.275 M Habitat and Rehabilitation Planning/Construction: $36.85 M	**Vision**: A healthier and more resilient Upper Mississippi River ecosystem that sustains the river's multiple uses. **Mission**: To work within a partnership among federal and state agencies and other organizations to construct high-performing habitat restoration, rehabilitation, and enhancement project; to produce state-of-the-art knowledge through monitoring, research, and assessment; to engage other organizations to accomplish the Upper Mississippi River Restoration Program's vision. **Goals**: - Enhance habitat for restoring and maintaining a healthier and more resilient Upper Mississippi River ecosystem - Advance knowledge for restoring and maintaining a healthier and more resilient Upper Mississippi River ecosystem - Engage and collaborate with other organizations and individuals to help accomplish the Upper Mississippi River Restoration vision - Utilize a strong, integrated partnership to accomplish the Upper Mississippi River Restoration vision **Outreach/Communication Lead**: The lead entity governing outreach and communication for the Upper Mississippi River Restoration (UMRR) Program is the U.S. Army Corps of Engineers (USACE), particularly through its Rock Island District.	1986-Present	No direct tribal involvement within governance or organizational structure of the program.
San Francisco Estuary Institute-Regional Monitoring Program	501(c)(3) Nonprofit Organization	**FY 2024**: $35.3 M State: $19.1 M Federal: $12.7 M Local: $2.3 M **FY 2025** (Estimated Budget): $34 M	Breakdown and allocation of funds was not readily available.	**Vision**: We believe in the power of nature to heal and restore. We work towards a healthy and resilient future by deepening our understanding of the Bay and its surrounding landscapes and translating this knowledge into tools and guidance for decision makers working in the San Francisco Bay Area and across the State. **Goals**: - **Clean Water** - Ensuring strong stewardship through water quality science - **Environmental Informatics** – Developing technologies to bring San Francisco Estuary Institute's science to life - **Resilient Landscapes** – Fostering healthy, resilient landscapes so people and ecosystems thrive - **Science Communications** – Bridging the gap between complex scientific research and usable guidance The program emphasizes transparent decision-making and regular communication with participants and the public. This includes posting meeting agendas and summaries on the Regional Monitoring Program website, maintaining an Interested Parties mailing list, and holding open meetings. The steering committee are responsible for communicating relevant decisions and information to each of its members. **Outreach/Communication Lead**: SFEI facilitates program development, convenes stakeholder meetings, manages data and reporting, and leads communication efforts to ensure that scientific findings are accessible and actionable for decision-makers, regulators, and the public.	1993-Present	No direct tribal involvement within governance or organizational structure of the program.

Missouri River Recovery Program	Federal - USACE	**FY 2024**: $340 M **FY 2007**: $85 M	**FY 2007**: $85 M Shallow Water Habitat: $29.8 M Emergent Sandbar Habitat: $6.5 M Fish Propogation Program: $0.8 M Monitoring and Assessment: $19.4 M Missouri River Recovery Implementation Committee: $0.8 M Project Management: $2.3 M Ecosystem Restoration Floodplain: $25.4 M	**Vision**: There is no defined overarching vision for the program. **Mission**: The mission of the Council is to represent natural resource and environmental interests on the Missouri River, the associated uplands, and tributaries. This Council believes the conservation of the river and the sustainability of its various uses can best be accomplished through grassroots collaboration, education, incentives, and voluntary action. **Goals**: - Encourage and promote sound conservation practices, such as “Best Management Practices” (BMPs) for multiple use of the river and adjoining lands. - Facilitate conservation districts’ voice in partnerships that affect the river corridor. - Enhance community involvement in river stewardship. - Maintain and improve water quality. - Maintain and improve water quantity at critical times. - Support bird, fish, and wildlife habitat and wildlife programs compatible with agriculture and multiple use. **Outreach/Communication Lead**: The lead entity governing outreach and communication for the Missouri River Recovery Program (MRRP) is the Missouri River Recovery Implementation Committee (MRRIC), a federally authorized advisory group established in 2008 that includes representatives from tribes, states, federal agencies, and stakeholders	2000-Present	Limited tribal involvement; tribes not included in governance structure.
Louisiana Coastwide Reference Monitoring System	Federal - USGS	**2019-2024**: $23.5 M **2025-2030**: $36.5 M	**2019-2024**: $23.5 M Fisheries - $6.619 M CRMS - $11.722 M Dolphin Photo ID - $402 K Waterbird Monitoring - $430 K Marsh Birds - $1.441 M Adaptive Monitoring/Strategy Planning - $2.098 M Lower Trophic Level Sampling - $785 K	**<u>Vision</u>**: Lead the Nation in 21st-century integrated research, assessments, and prediction of natural resources and processes to meet society’s needs. **<u>Mission</u>**: The USGS monitors, analyzes, and predicts current and evolving Earth-system interactions and delivers actionable information at scales and timeframes relevant to decision makers. **<u>Goals</u>**: - **Core Science Systems** : To understand, monitor, and detect changes that affect the Nation’s natural and agricultural resources, the economy, public safety, and security. - **Ecosystems**: Benefit the health, safety, and prosperity of the American people by providing trusted and timely information to help address the Nation’s toughest management and conservation issues impacting public lands and the surrounding communities that benefit from them. - **Energy and Mineral Resources** : Deliver actionable science that informs crucial resource management decisions and investments impacting the Nation. - **Natural Hazards** : To monitor, assess, and conduct targeted research on a wide range of natural hazards so that policymakers and the public have the understanding they need to enhance preparedness, response, and resilience. - **Water Resources**: To monitor, assess, conduct targeted research, and deliver information on a wide range of water resources and conditions including streamflow, groundwater, water quality, and water use and availability. - **Education**: Supports environmental educational initiatives by providing free informational and educational materials on the important of protecting our wetlands. **Outreach/Communication Lead**: The U.S. Geological Survey (USGS) Wetland and Aquatic Research Center, which manages the CRMS website, data visualizations, and public-facing tools in collaboration with the Coastal Protection and Restoration Authority (CPRA) of Louisiana.	1990-Present	No direct tribal involvement within governance or organizational structure of the program.

Klamath River Renewal Corporation	501(c)(3) Nonprofit Organization	Not publicaly available. Requires access request.	Not publicaly available. Requires access request.	**Vision**: Re-establish the natural vitality of the Klamath River so that it can support all communities in the Basin. **Goals/Outreach**: - **Environmental Benefits**: Dam decommissioning to improve habitat and health of fisheries. Improving water quality and eliminating algal blooms to benefit the region's wildlife, recreation, economy, and health. - **Financial Benefits**: Benefits to ratepayers Additional local jobs Strengthen commercial and recreational fishing opportunities Disaster relief - **Benefits for Local Communities**: Native American Communities through restoration of fish health and habitat leading to increased populations and overall all health for tribal communities. Irrigation-dependent Communities **Outreach/Communication Lead**: Klamath River Renewal Corporation (KRRC) Community Affairs team, serves as the primary media and public affairs contact during the planning and implementation of the Klamath River dam removal project.	2016-Present	Tribes are represented as members of the leadership boards and science coordination teams.

Acronyms:
B - Billion Dollars
CERP - Comprehensive Everglades Restoration Program
EPA - United States Environmental Protection Agency
FY - Fiscal Year
PCSRF - Pacific Coastal Salmon Recovery Fund
PSAR - Puget Sound Rapid Response Fund
M - Million Dollars
USACE - United States Army Corps of Engineers
USGS - United States Geological Survey

Table A-2: Program Evaluation Criteria

Evaluation Criteria

- Tribal leadership, engagement with the issues, and interest in the program
- Tribal nations' commitment to future tribal members
- Partnerships that include Tribes, multiple states, and two federal agencies
- Types and nature of industry within the watershed, including hydropower, agriculture, shipping, tourism, and upcoming data centers and their power needs, and how this affects contaminant sources and impacts
- Extent of urbanization and how this affects contaminant sources and impacts
- A forward-looking analysis of resource management goals

Monitoring Program	Tribal Leadership/ Engagement	Commitment to Future Tribal Members	Partnerships: Tribes, multiple states, two federal agencies	Industry: Hydropower	Industry: Agriculture	Industry: Tourism	Urbanization Impacts	Forward-looking Analysis of Resource Management Goals	Total
Puget Sound Partnership	1	1	0	0	1	1	1	1	6
Great Lakes Monitoring Program	0	1	1	0	1	1	1	1	6
Chesapeake Bay Monitoring Program	0	1	1	0	1	1	1	1	6
Everglades Restoration Program	1	1	0	0	1	1	1	1	6
Upper Mississippi River Restoration Program	0	1	0	1	1	0	1	1	5
San Francisco Estuary Institute-Regional Monitoring Program	0	0	0	0	1	1	1	1	4
Missouri River Recovery Program	1	0	1	1	1	0	1	1	6
Louisiana Coastwide Reference Monitoring System	0	0	0	0	0	1	1	1	3
Klamath River Renewal Corporation	1	1	0	1	1	1	1	1	7

Notes:

1 - Program contains the evaluation criteria

0 - Program does not contain the evaluation criteria or it was unable to be identified

8.0 APPENDIX B. SUMMARY OF DOCUMENTS RELATED TO COLUMBIA RIVER BASIN LONGTERM MONITORING PROGRAM

Appendix B: Summary of recent documents related to Columbia River Basin Monitoring Program

Appendix B provides examples of recent documents from other organizations that advocate for the funding and implementation of a Columbia River Basin Monitoring Program. These documents are summarized to serve as a reference and to understand how the CRB Monitoring Program is used by other organizations and provides needed data to assess the health of the Columbia River.

B-1 2014/2020 NORTHWEST POWER AND CONSERVATION COUNCIL (NPCC) COLUMBIA RIVER BASIN FISH AND WILDLIFE (F&W) PROGRAM MEASURES

The following are the measures related to water quality and toxic contaminants in the Columbia River. The Program documents are updated every five years. The Yakama Nation, Columbia River Intertribal Fish Commission (CRITFC), and 6 Sovereigns are requesting stronger language be included in the documents to address these issues in the 2025 amendment process.

Existing Measures

1. To support ongoing regional efforts to identify, assess and reduce toxic contaminants in the Columbia River Basin, the Council may initiate and will participate in, support, and coordinate periodic science/policy workshops on characterizing the state of the science related to toxic contaminant issues. The Council will also assist regional parties in advancing public education and information on toxics issues.

2. The federal action agencies, in cooperation with the EPA and other federal, tribal, regional, and state agencies, should:

    a. Support implementation of the regional 2010 Columbia River Basin Toxics Reduction Action Plan. Both the Water Quality Portal and the Toxics Reduction Action Plan are comprehensive regional documents containing water quality monitoring, research, and improvement measures needed to enhance the survival of anadromous and native resident fish and to meet Northwest Power Act, Endangered Species Act, and Clean Water Act responsibilities. The Council will continue to encourage preventive and remedial actions such as those identified by the Water Quality Portal and the Toxics Reduction Action Plan.

    b. Monitor water quality parameters and implement water quality improvement measures to reduce toxic contaminants, as appropriate, to meet state, EPA-approved tribal, and federal water quality standards to improve the health, condition, and survival of anadromous and native resident fish, as well as their related spawning and rearing habitat, in the Columbia Basin.

3. The federal action agencies should partner with and support ongoing federal, state, tribal, and regional agencies' efforts to:

    a. Monitor, assess and map high priority toxic contaminant hot spots in the Columbia River Basin and evaluate their relationship, if any, to the development and operation of the hydro system.

    b. Identify and assess the effects of toxic contaminants, alone or in combination with other stressors, on native fish, including sturgeon and lamprey, wildlife, and food webs in toxic hot spots in the Columbia River Basin.

4. The federal action agencies should partner with and support federal, state, tribal and regional agencies' efforts to conduct targeted monitoring in the Columbia River Basin of vulnerable native fish and wildlife species for specific, high-priority toxic contaminants and other priority contaminants of emerging concern, including in the middle and upper Columbia reaches and in the Snake River, and evaluate if toxic contaminants limit the reproductive success of native fish.

5. At each hydropower project, federal and non-federal project operators in the Columbia River Basin should: (a) monitor and report oil spills and leakages; (b) replace all lubricating oils and fluids containing PCBs with non-PCB oils and fluids; and (c) develop and implement best practices for reducing spills and leakages of oils and lubricating fluids.

6. Using all available water quality data, Bonneville and the other federal action agencies should continue to identify areas where aquatic habitat restoration projects implemented under the program may be affected by toxic contaminants and incorporate pollution reduction and mitigation techniques into restoration projects when toxic contamination is a concern.

The Council urges Congress to provide funding, similar to the funding provided to other large aquatic ecosystems, to protect and restore water quality in the Columbia River Basin, including efforts to:

- Develop sensitive diagnostic indicators of chemical exposure and salmon health, such as biomarkers, for use in field studies in the Columbia Basin
- Determine the extent to which toxics limit prey quality and abundance in degraded habitats and otherwise affect the food web
- Improve understanding of contaminants of emerging concern, such as endocrine-disrupting pharmaceuticals and chemicals in personal care products, and their effects on salmonids, sturgeon, and lamprey.

B-2 2019 CRB LTMP Phase 2 Grant Funding Work Plan

Contamination in fish, sediments, water, and invertebrates have the potential to be exacerbated by climate change factors such as high summer stream temperatures, seasonal low stream flows during summer, and winter flooding. This project has the potential to reduce stressors to human health and the environment, including salmon, a treaty reserved resource. If major contamination issues in the mainstem Middle and Upper Columbia River are identified and tracked, cleanup and restoration and protection activities can be activated fostering resilience and adaptation to climate change and environmental conditions. Cleanup of contaminants from the mainstem Columbia River will aide salmon by reducing stressors from contamination. Contamination in the mainstem Columbia River directly affects protected resources that are critical to the Tribal member's health and welfare by reducing fish growth and compromising immune fitness during outmigration, reducing overall survival and population growth year after year. Climate change is impacting aquatic and terrestrial resources including culturally important plants. Contaminated fish will further reduce access to clean food impeding ultimate goal of availability and access to clean, healthy fish.

Monitoring metadata, including contamination levels in biota and media, along with environmental parameters such as temperature, will be publicly available through the Monitoring Program database.

B-3 2021 Yakama Nation Fisheries Strategic Plan

Includes a section dedicated to contamination and cleanup and cleanup and restoration of those site to support salmonid and aquatic habitat recovery. Summarizes Superfund Sections work.

B-4 2022 Framework for the Development of the Columbia River Mainstem Fish Tissue and Water Quality Monitoring Program – Bonneville Dam to Canadian Border

The 2022 Framework provides the justification and needs for developing, funding and implementing a monitoring program. It provides the framework and approach.

B-5 2023 Columbia Basin Restoration Initiative (CBRI) – Six Sovereigns

Specifically calls out a monitoring program for Columbia River.

Water quality in the Columbia Basin is also significantly impacted by the presence of toxic substances in the Columbia River and its tributaries. Current priorities to address toxics concerns should be supported via funding and collaborative participation, and include:

- Fund and implement a Columbia River Long-Term Monitoring Program to assess toxin levels in fish tissue and water quality in the mainstem Columbia and Snake rivers. Yakama Nation is partnering with CRITFC, USGS, Oregon DEQ, and Washington Department of Ecology on this work. The purpose is to monitor toxic substances, including contaminants behind dams and throughout the reservoirs, in perpetuity to establish trends and guide ecosystem recovery resulting in clean, healthy fish that are safe to eat.
- Fund and implement a Columbia Basin Toxics Reduction Program, which includes clean-up efforts targeted at Superfund Sites.

B-6 Columbia River, Lower Willamette River and Puget Sound

The following is just a snapshot of the studies conducted over the years addressing contamination as a limiting factor to salmonid recovery. A large body of work exists on this topic. Over the years, many other studies have been conducted and reported by these researchers and others cited within their papers.

Johnson et. al., 2012. This study measured concentrations of persistent organic pollutants in juvenile Chinook Salmon from various Columbia River stocks and life history types to evaluate the potential for adverse effects in these threatened and endangered fish.

Ludin et.al., 2019. Life cycle model found that 54% improved juvenile survival—potentially as a result of future remediation activities—could increase adult Chinook salmon population abundance by more than 20%.

Ludin et. al., 2021. PAHs and certain PCBs, which were elevated in juvenile Chinook collected throughout sites within Portland Harbor relative to those captured upstream. First-year growth is an established predictor of individual survival and eventual reproductive success in Chinook salmon. Therefore, our results indicate that legacy pollution may be limiting the population abundance of threatened Willamette River Chinook salmon, and future habitat remediation or restoration actions may benefit ongoing species recovery efforts.

Oneil et. al., 2015. As juvenile Chinook salmon transition into saltwater, they are particularly sensitive to stressors such as toxic contaminants. Chemicals released into Puget Sound from human activities and development reduces the health and productivity of salmon and their food supply. Juvenile Chinook salmon residing and feeding in the more urbanized and industrial estuary, nearshore marine, and offshore habitats of Puget Sound are exposed to higher concentrations of toxic contaminants than those in less developed habitats. In addition, we hypothesized that the elevated contaminant concentrations in the more urban areas are high enough to affect juvenile Chinook survival through reductions in growth, disease resistance, and altered hormone and protein levels.

Ridofli, 2012. Supporting Data Report for Lower Columbia River toxic impacts on salmonids

- Includes a large list of references on uptake of contaminants.
- Impair survival, distribution, reproductive success.
- Bioaccumulate. Biomagnify. Degraded habitat and prey resources. Herring>Chinook>Killer Whale… People.
- Access to spawning habitat and high-quality rearing habitats with good water quality is critical for salmonid recovery. Transitioning into saltwater – osmoregulation – is particular sensitive time to stressors like toxics.
- Poor water quality has led to fish kills in the past.
- Development and land use practices impact water quality via air-borne pollutants, industrial wastewater, stormwater runoff, nonpoint source pollution, and contaminated sediments from past and current industrial activities. Water quality is further impaired by altered flow regimes and extraction of groundwater, increased water temperatures, low dissolved oxygen, pH, nutrients, high turbidity and fine sediments. Several streams throughout the watershed are listed on Washington State's 303(d) list of impaired water bodies because they do not meet water quality standards.

Roni, 2010. The percentage of floodplain and in-channel habitat that would have to be restored in the modeled watershed to detect a 25% increase in coho salmon and steelhead smolt production (the minimum level detectable by most monitoring programs) was 20%. However, given the large variability in fish response (changes in density or abundance) to restoration, 100% of the habitat would need to be restored to be 95% certain of achieving a 25% increase in smolt production for either species. Our study demonstrates that considerable restoration is needed to produce measurable changes in fish abundance at a watershed scale.

References the above studies

Lyndal Johnson, Bernadita Anulacion , Mary Arkoosh , O. Paul Olson , Catherine Sloan , Sean Y. Sol , Julann Spromberg , David J. Teel , Gladys Yanagida & Gina Ylitalo. (2013). Persistent Organic Pollutants in Juvenile Chinook Salmon in the Columbia River Basin: Implications for Stock Recovery. Transactions of the American Fisheries Society, 142:1, 21-40. https://www.estuarypartnership.org/sites/default/files/resource_files/JohnsonEtAl2013.pdf.

Lundin JI, Spromberg JA, Jorgensen JC, Myers JM, Chittaro PM, Zabel RW, et al. (2019) Legacy habitat contamination as a limiting factor for Chinook salmon recovery in the Willamette Basin, Oregon, USA. PLoS ONE 14(3): e0214399. https://doi.org/10.1371/journal.pone.0214399.

Jessica I. Lundin, Paul M. Chittaro, Gina M. Ylitalo, John W. Kern, David R. Kuligowski, Sean Y. Sol, Keri A. Baugh, Daryle T. Boyd, Mary C. Baker, Robert M. Neely, Kennith G. King, and Nathaniel L. Scholz. (2021). Decreased Growth Rate Associated with Tissue Contaminants in Juvenile Chinook Salmon Out-Migrating through an Industrial Waterway. Environmental Science & Technology 2021 55 (14), 9968-9978. DOI: 10.1021/acs.est.1c01526. https://pubs.acs.org/doi/10.1021/acs.est.1c01526.

Sandra M. O'Neill, Andrea J. Carey, Jennifer A. Lanksbury, Laurie A. Niewolny, Gina Ylitalo, Lyndal Johnson, and James E. West. (2015). Toxic contaminants in juvenile Chinook salmon (Oncorhynchus tshawytscha) migrating through estuary, nearshore and offshore habitats of Puget Sound. Washington Department of Fish and Wildlife Marine Resources Division and Northwest Fisheries Science Center Environmental Fish Science Division. https://wdfw.wa.gov/sites/default/files/publications/01796/wdfw01796.pdf

Ridofli 2012. Supporting Data Report: Lower Columbia River Natural Resources Damages. Prepared for Yakama Nation. February.

Roni, Phil & Pess, G. & Beechie, Timothy & Morley, Sarah. (2010). Estimating Changes in Coho Salmon and Steelhead Abundance from Watershed Restoration: How Much Restoration Is Needed to Measurably

Increase Smolt Production? North American Journal of Fisheries Management. 30. 1469-1484. 10.1577/M09-162.1.

B-7 Marine Survival Project Salish Sea

https://marinesurvivalproject.com/

Toxic contaminant inputs have increased, affecting marine survival of salmon through reductions in growth and resistance to disease - TMDLS; Remediation; Source Control; Monitoring

B-8 Puget Sound Vital Signs – Toxics in Aquatic Life

https://vitalsigns.pugetsoundinfo.wa.gov/VitalSign/Detail/28

Contaminants in Adult Salmon Target

- By 2030, 95% of the samples gathered across Puget Sound habitats exhibit a declining trend of contaminant levels or are below thresholds of concern for species or human health.
- By 2050, 95% of the samples gathered across Puget Sound habitats exhibit contaminant levels below thresholds of concern for species or human health and show no increasing trends.

Contaminants in Juvenile Salmon Target

- By 2030, 95% of the samples gathered across Puget Sound habitats exhibit a declining trend of contaminant levels or are below thresholds of concern for species or human health.

By 2050, 95% of the samples gathered across Puget Sound habitats exhibit contaminant levels below thresholds of concern for species or human health and show no increasing trends.

9.0 APPENDIX C. TEAM OF YAKAMA NATION, COLUMBIA RIVER INTERTRIBAL FISH COMMISSION, AND STATE AND FEDERAL AGENCIES VISION, GOALS, AND OBJECTIVES FOR A BASIN-WIDE CRB MONITORING PROGRAM

As a recipient of EPA's grant funding under the CRB Restoration Program, the Yakama Nation has teamed with several agency partners to work toward a comprehensive toxics monitoring and outreach strategy. This collaborative team includes the CRITFC, U.S. Geological Survey (USGS), Ecology, Washington Department of Fish and Wildlife (WDFW), Oregon Department of Environmental Quality (ODEQ), and the Yakama Nation (the Team).

The Team has formulated and established its vision, goals, and objectives (Yakama Nation and USGS, 2022) that could be considered for the basin-wide CRB Monitoring Program:

Vision Statement

Assess the status and trends of contaminants in the Columbia River ecosystem to guide recovery resulting in clean, healthy fish for current and future generations.

Goals and Objectives

Goal 1. Conduct long-term monitoring to assess the spatial and temporal status and trends of toxics in fish, water, sediment, and other potential media in the Columbia River mainstem, from Bonneville Dam to the Canadian Border in perpetuity.

- Objective 1) Conduct monitoring across the study area to identify areas with higher concentration of toxics in fish and other media.
- Objective 2) Conduct monitoring across the study area to identify areas with low concentrations of toxics in fish and other media that need protection.
- Objective 3) Conduct sampling periodically to assess whether toxic concentrations in fish and other media are improving, staying the same, or getting worse over time in the study area and in subdivisions of the study area.

Goal 2. Stimulate conversion of science into action by providing information to facilitate future decision making that improves ecosystem function and reduces contaminants in all levels of the food chain.

- Objective 1) Identify or design and implement a program-specific data management system, including long-term storage and information sharing.
- Objective 2) Engage and collaborate with the Project Team, key stakeholders, and organizations interested in improving the health and resilience of the Columbia River.
- Objective 3) Provide recommendations for further investigation, cleanup, source control, and restoration.
- Objective 4) Implement a Community Engagement and Outreach Plan.
- Objective 5) Support research into key questions, described below.

Goal 3. Adaptively manage the program to 1) address new key questions, 2) incorporate new and emerging science advancements, and 3) respond to community information needs.

- Objective 1) Conduct a periodic review of the Program to assess whether aspects of the monitoring design need to be adjusted (e.g., do more samples or additional contaminants need to be collected/analyzed to achieve the goals of the program).
- Objective 2) Conduct a periodic review of field and analytical methods to assess whether new technologies can be incorporated into the monitoring program.
- Objective 3) Conduct a periodic review of the program to assess whether there are new objectives or questions that need to be addressed.

Key Questions

- Are fish in the Columbia River safe to eat?
- What is the status (what is the condition now) and trends (comparisons over time) of contaminants in fish and other media?
- How are contaminants affecting the population viability of anadromous and resident fish species and other biota?
- How are contaminants affecting ecosystem components that affect fish populations?
- Are efforts to mitigate the introduction of toxic substances into CRB waters reducing the contamination of fish and other media in the Columbia River?
- Based on monitoring information, what areas need further investigation, cleanup, source control, restoration, and/or protection to support ecosystem and salmon recovery?

Details on the Mainstem Monitoring Program's accomplishments to date are provided in Section 3.

10.0 APPENDIX D. ARCHIVED COMMENTS

Organization	Name of Commentor	Comment Archived	Comment Reference	Section Reference
CRITFC	Dianne Barton	In the discussion of Model Programs, in addition to funding and governance I wonder if successes or failures or lessons learned from the Model Programs was discovered during example, how many cleanup/restoration actions resulted as an outcome of these contaminants had the most significant impacts – nutrients or legacy or emerging? Were management plans effective at making changes to the program. Some of these programs I think showing the remediation or health (human or wildlife) impact benefit of large scale would be helpful in supporting the need for the CRB Program.		2.1.2 Evaluation Criteria
CRITFC	Dianne Barton	In section 5.1 it is stated that the Program will “not recommend specific cleanup actions”. At the same time, the Section 5.1 also states that purpose of the Program is to assess “cause-effect relationships to focus restoration and mitigation efforts”, to “identify Impaired Areas”, to “elevate and cleaning up the primary sources of contamination”. While I understand the need to be unbiased and non political, I would argue that stating that the partnership program will not make policy decisions is sufficient. In fact, I would like to see the Program recommend cleanup actions which to me to assessing “cause-effect relationships to focus restoration and mitigation efforts”, to Areas”, to “elevate and focus attention on cleaning up the primary sources of	This partnership and program will not make policy decisions or recommend specific cleanup actions. However, it will provide unbiased information on data gaps, new and emerging science, contamination and toxics concerns…	Section 5.1 Team of Yakama Nation, Columbia River Intertribal Fish Commission, and State and Federal Agencies
CRITFC	Dianne Barton	I was wondering if adding laboratory analysis capacity in house was considered as an considering that one of the Program Goals is to continue in perpetuity.		
DEQ	David Gruen	Recommend framing this as a question of risk, rather than safety (i.e., what are the health risks or toxic exposure rates/risks from consuming resident/anadromous fish in the Columbia River?)	Are the fish in the Columbia River safe to eat?	Section 5.1 Team of Yakama Nation, Columbia River Intertribal Fish Commission, and State and Federal Agencies
DEQ	David Gruen	Additional specificity or definition of "area" would be useful here - is this intended to be river reaches? Would these reaches align 1 to 1 with the monitoring reaches or would they be different?	Based on monitoring information, what areas need further investigation, cleanup, source control, restoration, and/or protection to support ecosystem and salmon recovery?	Section 5.1 Team of Yakama Nation, Columbia River Intertribal Fish Commission, and State and Federal Agencies
DEQ	Paige Haxton-Evans	It might provide some clarity in this section to specify whether this list of analytes is intended for all the media listed above (which I assume it is) or abbreviated depending on the media type of the sample. Also, you may mention it later on, or just in the QAPP, but it may be relevant to mention partnerships with local/available laboratories that are accredited for these analytical methods desired and the methods for those contaminants of emerging concern.	The core analytes for all media to be addressed will include, but are not limited to, the priority pollutants of greatest concern in the Columbia River identified by the EPA	3.3.3 Analysis

DEQ	David Gruen	Recommend including an estimated range based on existing budget assumptions if possible to bolster understanding of relative scope, understanding that future per-sample costs are difficult to forecast accurately.	The exact number of samples per river reach has not yet been determined.	3.4 Columbia River Mainstem Monitoring Program Budget
ECY	Jakub Bednarek	Not sure if this is a summary statistic? I'm pretty sure there are more listings. I counted 83 listings for PCB and pesticides. 98 if you include metals (between Bonneville and Canada). 97 based on fish tissue and 1 based on high lead in water affecting aquatic life designated uses. I can provide spreadsheet if needed or see: WA 303d list WA also has 60 category 2 listings (water of concern but not enough data to prove impairment). Nearly the entire river in Washington is threatened by toxics. Oregon state also has the entirety of the Columbia River along the Oregon border listed as impaired under CWA.	Current and past industrial discharges into the Columbia River and tributaries have resulted in contamination of sediments and water (EPA, 2009).	1.3 Background, Rationale, and Goals for Basin-Wide Toxics Monitoring
ECY	Jakub Bednarek	This bulleted list could be improved for visual clarity. Such as goal list in previous sections looks very nice. Perhaps Vision Statement can be formatted as subheading instead of a bullet - no need for a one item bullet list. Goals and objectives again as subheading format then goals as bullet. All text in bullet should be to the right of the bullet if the goal is multiple lines long (currently, the hanging indent is set left of the first line indent.) Objectives could be indented deeper to distinguish from goals. Maybe paragraph spacing between each bulleted item? Bulleted lists Apply same bullet list formatting throughout document.	Vision Statement	1.5 Team of Yakima Nation, Columbia River and Intertribal Fish Commission, and State and Federal Agencies
ECY	Jakub Bednarek	Could say "clean water and healthy fish"	Assess the status and trends of contaminants in the Columbia River to guide ecosystem to guide recovery resulting in clean, healthy fish for current and future generations:	1.5 Team of Yakima Nation, Columbia River and Intertribal Fish Commission, and State and Federal Agencies
ECY	William Hobbs	If anadromous fish are the focus, I'm not sure the impact of contaminants in the CR are relevant. Unless we're thinking about contaminant impacts to juvenile health and successful migration. If you refer to the status and trends of contaminants in the CR and you're measuring tissues of anadromous fish, I think it implies	Assess the status and trends of contaminants in the Columbia River to guide ecosystem to guide recovery resulting in clean, healthy fish for current and future generations:	1.5 Team of Yakima Nation, Columbia River and Intertribal Fish Commission, and State and Federal Agencies

		the contaminants are accumulating while the salmon are in the CR (which is not so). However if you refer to the status and trends in the CR ecosystem, to me that includes the harvesting of returning anadromous fish as a component of that ecosystem.		
ECY	William Hobbs	Will assessment include ecological or human health thresholds? All the PSEMP indicators are assessed relative to some threshold (status). I'm not quite sure where in the document to include some mention of	Objective 3) Conduct sampling periodically to assess whether toxic concentrations in fish and other media are improving, staying the same, or getting worse over time in the study area and in the subdivisions of the study area.	1.5 Team of Yakima Nation, Columbia River and Intertribal Fish Commission, and State and Federal Agencies
ECY	Jakub Bednarek	Maybe simplify to something like: Use spatial and temporal data to guide decisions and actions that improve ecosystem function and reduces contamination…	Goal 2. Stimulate conversion of science into action by providing information to facilitate the future decision making that improves ecosystem function and reduces contaminants in all levels of the food chain	1.5 Team of Yakima Nation, Columbia River and Intertribal Fish Commission, and State and Federal Agencies
ECY	Jakub Bednarek	Has water quality portal or EIM been considered or is a new system preferred? Perhaps data stored inWater Quality Portal but CRB related studied displayed or distilled into a dashboard or map. water quality portal EIM	Objective 1) Identify or design and implement a program specific data management system, including long-term storage and information sharing	1.5 Team of Yakima Nation, Columbia River and Intertribal Fish Commission, and State and Federal Agencies
ECY	Jakub Bednarek	Great and economical design for long term trends. However, one sample from a site will not be enough to inform on human health standards for Washington. That's okay, Ecology's fish monitoring program can supplement to meet those needs. May want to consult with ODEQ and OHA and WDOH to see what sampling requirements are for consumption advisories. I believe for ODEQ - if there's a consumption advisory - it automatically gets listed on 303(d). In WA there are two pathways for 303(d). Fish Consumption Advisory AND human health criteria - but three samples from one location are needed to compare to health criteria. 303(d) and Consumption Advisories are the primary pathways, in my opinion, to initiate or prioritize action (cleanup or reduction strategies).	10 resident fish locations (as predator and forage fish samples)	3.3.2 Media
ECY	Jakub Bednarek	2 springers, 1 fall and 1 coho makes 4 adult salmon. Are we doing another species too or	5 composites of five adult salmon (e.g., one composite of Chinook (June), 2 composites of	3.3.2 Media

		Hatchery chinook or wild caught? From the adult fish facilities? Will we know the source basin of the chinook i.e. Entiat River chinook vs hood River chinook?	Chinook (August), 1 composite of Chinook and 1 composite of Coho (September))	
ECY	Jakub Bednarek	I like this and it would be good to tie in what concentrations in juvenile chinook are problematic. Are they meeting aquatic life standards (generally compared to a concentration in water) but there are other research showing concentration in fish that lead to negative effects (Sloan, Johnson, Arkoosh ca. 2010).	5 composites of juvenile salmon at a fish bypass (annually)	3.3.2 Media
ECY	Jakub Bednarek	This is good too. Some researchers are finding toxics in waterfowl and deer - which people eat. Especially PFAS - but maybe there is a PCB or DDT connection too. People who hunt and eat their catch may be at risk.	Potentially other species as budget allows	3.3.2 Media
ECY	Jakub Bednarek	Do methods need to be specified (eg EPA 245.6 for mercury? Probably not - but perhaps a recommendation to use accredited labs and at minimum some kind of QA procedures like duplicates. Or maybe that's too detailed for this document. Just an idea.	Mercury	3.3.3 Analysis
ECY	Jakub Bednarek	Are other water quality concerns outside the scope of the partnership efforts? Nutrients, temperature, Dissolved Oxygen?	Additional chemicals could be added to the target analyte list as interest and resources allow	3.3.3 Analysis
ECY	William Hobbs	This should probably be an online dashboard with downloadable report templates or	A technical memorandum and data upload will be completed annually, summarizing findings from the previous year's monitoring events.	3.3.5 Reporting
ECY	William Hobbs	Do you envision all the equipment and monitoring being housed under the Partnership or will there be in-kind support of staff and equipment from the partners (similar to the pilot study)?	Columbia River Mainstem Monitoring Program: $5 million/year	3.4 Columbia River Mainstem Monitoring Program Budget
Confederated Tribes of the Colville Reservation - Fish & Wildlife Program	Charles Brushwood, Colville Confederated Tribes	The proposed governance framework for the CRB Partnership does not guarantee equal representation for all sovereign Tribal Nations directly affected by monitoring activities. While the Colville Tribes is listed as a *potential* participant, they are not assured a decision-making role. Recommend revising the governance structure to guarantee equal, permanent representation for all sovereign Tribal Nations in the Columbia Basin on the Leadership Board.	Section 2.2.1 describes governance options and recommends that the CRB Partnership be established as a nonprofit 501(c)(3). It calls for a Leadership Board consisting of federal, state and Tribal organizations or individual Tribes and allows for subgroup committees and policy teams. The section does not state that each sovereign Tribal Nation will have equal or permanent representation or decision-making authority.	Section 2.2.1 (p. 11); Section 2.2.3 (p. 15)

Confederated Tribes of the Colville Reservation - Fish & Wildlife Program	Charles Brushwood, Colville Confederated Tribes	The Implementation Plan describes Yakama Nation-led monitoring and CRITFC participation in the Columbia River Basin, potentially including in areas that encompass Colville Tribes' Reservation and ceded lands. There is no acknowledgment of jurisdictional overlap with the Colville Tribes or the Spokane Tribe, nor a process for consent before monitoring or outreach occurs in these territories if to be conducted by external entities. Recommend adding explicit inter-tribal/inter-partner coordination and formal MOU requirements prior to any fieldwork or data collection within another Tribe's sovereign territory.	In Section 2.2.3 on supporting agencies, the Plan notes that CRITFC has provided technical and policy expertise to Yakama Nation-led efforts and acknowledges that Spokane, Colville and Upper Columbia United Tribes provided technical expertise for mainstem and tributary monitoring. Section 3.1. and 3.2 describe work performed by Yakama Nation and partners but does not include reference to work or contributions made by other Tribes. The Plan does not describe a process for obtaining consent before monitoring within other Tribes' territories.	Section 2.2.3 (p. 15); Section 3.1. (p. 19); Section 3.2 (p. 20)
Confederated Tribes of the Colville Reservation - Fish & Wildlife Program	Charles Brushwood, Colville Confederated Tribes	The Plan proposes centralized data management but does not address Tribal data sovereignty. No reference is made to OCAP (ownership, control, access, and possession) principles or equivalent Tribal data governance frameworks. Recommend adding provisions that any data collected within a Tribal Nation's jurisdiction or traditional and ceded areas remains the property of that Nation, and that access, storage, and sharing must be governed by written Tribal consent agreements.	Section 2.2.3 lists agencies and other organizations that can provide "Data Management Assistance/Quality Control," including state and federal databases such as TBiOS, EIM, WQX, STORET, ScienceBase and NWIS. Appendix C describes designing a program-specific data management system to store and share information. The Plan does not mention tribal data sovereignty or OCAP principles.	Section 2.2.3 (p. 16); Appendix C
Confederated Tribes of the Colville Reservation - Fish & Wildlife Program	Charles Brushwood, Colville Confederated Tribes	The adaptive management framework emphasizes science-based decision-making but does not commit to co-developing monitoring priorities with sovereign Tribal Nations. Recommend amending the framework to require Tribal co-leadership in determining target contaminants, selecting sampling sites, and adjusting program design to reflect evolving Tribal priorities and traditional ecological knowledge.	Section 2.2.4 outlines an adaptive management strategy and lists actions such as adopting a culture of learning, treating documents and practices as living, and incorporating best available science to identify problems, select projects, and assess progress. The section does not reference co-developing priorities or requiring co-leadership from sovereign Tribal Nations.	Section 2.2.4 (p. 17)
Confederated Tribes of the Colville Reservation - Fish & Wildlife Program	Charles Brushwood, Colville Confederated Tribes	Section 3.0 describes the current Columbia River Mainstem Monitoring Program without noting the existence of monitoring efforts by the Colville Tribes or the Spokane Tribe - the two Tribal Nations in the U.S. portion of the Columbia River Basin whose Reservation lands and boundary waters include the Columbia River. This omission risks duplication, conflicting methodologies, and competition for funding. Recommend adding an implementation step to inventory and integrated Tribal monitoring efforts prior to expansion of mainstem monitoring into overlapping territories.	Section 3.0 introduces the Columbia River Mainstem Monitoring Program and explains that the Yakama Nation plans to continue non-biased, systematic monitoring of toxic substances in water, sediment, fish and other biota. It describes past efforts led by the Yakama Nation and partners but does not mention monitoring efforts operated by the Colville Tribes or the Spokane Tribe. Section 2.2.3 acknowledges that Colville and Spokane have provided technical expertise but their independent monitoring efforts are not described or acknowledged.	Section 3.0 (p. 19)

Confederated Tribes of the Colville Reservation - Fish & Wildlife Program - Okanogan Basin Monitoring and Evaluation Program	Charles Brushwood, Colville Confederated Tribes	Toxics monitoring should prioritize locally-abundant resident predator fishes (e.g. SMB, walleye, rainbow trout, white sturgeon) as they have more exposure to toxins in the localized area of collection; prey species and adult salmon should be a secondary priority. Coho salmon are not currently present in Lake Roosevelt or Lake Rufus Woods. Recommend prioritizing sampling both pelagic and benthic resident predator fishes (whole body or composite) over anadromous species.	Section 3.3.2 estimates samples to be collected in each reservoir that include predator and forage fish samples, adult salmon (specifically incuding Coho), juvenile salmon, and other species as budget allows.	Section 3.3.2 (p. 21)
Confederated Tribes of the Colville Reservation - Fish & Wildlife Program - Okanogan Basin Monitoring and Evaluation Program	Charles Brushwood, Colville Confederated Tribes	Recommend constructing and periodically updating a public-facing cloud-based dashboard for the Program rather than or in addition to technical memoranda. Additionally, recommend including use of EPA's Central Data Exchange (CDX) for Program reporting and data exchange to lower costs, comply with CROMERR standards, streamline data upload and exchange processes for both internal and external partners by providing centralized services while also ensuring transparency and making data publically-available where appropriate.	Section 3.3.5. describes completing and uploading data, technical and outreach memoranda, and other documents to an approved database or publically-available websites hosted by individual Program partners without reference to CDX.	Section 3.3.5 (p. 23)
Confederated Tribes of the Colville Reservation - Fish & Wildlife Program - Okanogan Basin Monitoring and Evaluation Program	Charles Brushwood, Colville Confederated Tribes	Adaptive management is important to refine methods, Program objectives, and optimize outputs but should be balanced with Program consistency over time to observe change in status and trends in the data. Recommend identifying and articulating key uncertainties and data gaps in final draft Plan; reviewing and considering adoption of comparable program metrics, methods, design, and conceptual models to ensure Program consistency and comparability over time.	Section 3.3.7 describes incorporation of adaptive management principles without reference to specific strategies to ensure Program efficiency and effectiveness in observing status and trends using consistent metrics, monitoring and data collection methods and protocols, and/or conceptual models.	Section 3.3.7 (p. 24)

Confederated Tribes of the Colville Reservation - Fish & Wildlife Program	Charles Brushwood, Colville Confederated Tribes	The funding approach does not identify mechanisms to ensure equitable allocation of resources to Tribal governments, particularly those already conducting relevant monitoring. Recommend adding a funding equity policy with dedicated set-asides or sub-awards for Tribal-led work within their jurisdictions to avoid inequities in resource distribution.	Section 4.0 estimates an annual budget of about $10 million for the CRB Partnership and Monitoring Program. It allocates funding into categories such as governance, coordination and outreach, program and facilities management, administration, and monitoring activities. The budget narrative focuses on overall funding needs and flexibility but does not describe set-aside funding or mechanisms to ensure equitable allocation to Tribal governments.	Section 4.0 (p. 29)