



2021 Implementation Status and 2022 Cost Estimate & Financing Plan Combined Report

Yakima River Basin Integrated Water Resource Management Plan

By

Office of Columbia River
Washington State Department of Ecology
Central Regional Office
Union Gap, WA

and

Debt Management Division
Office of the State Treasurer
Olympia, WA

April 2024, Publication 21-12-009



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Cover photo credit

- **Aerial photo of the finished Nelson Dam removal project, Naches River.**
Photo credit: Mike Shane (City of Yakima), 2023

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¹ www.ecology.wa.gov/contact

Department of Ecology's Regional Offices

Map of Counties Served



Southwest Region
360-407-6300

Northwest Region
206-594-0000

Central Region
509-575-2490

Eastern Region
509-329-3400

Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
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April 4, 2024

The Honorable Jay Inslee, Governor
Honorable Members of the Washington State Legislature
Olympia, Washington

RE: 2021 Implementation Status and 2022 Cost Estimate and Financing Plan Combined Reports for the Yakima River Basin Integrated Water Resource Management Plan

The Department of Ecology with the assistance from the Office of the State Treasurer, and feedback from Yakima Integrated Plan Workgroup members, have prepared a legislative report for you and the Legislature combining two distinct legislative report requirements for the Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan) into one report.

RCW 90.38.100 requires that the Department of Ecology prepare a legislative report in odd-numbered years as follows:

(1) By December 1, 2015, and by December 1st of every odd-numbered year thereafter, and in compliance with RCW [43.01.036](#), the department, in consultation with the United States bureau of reclamation, the Yakama Nation, Yakima river basin local governments, and key basin stakeholders, shall provide a Yakima river basin integrated water resource management plan implementation status report to the legislature and to the governor that includes: A description of measures that have been funded and implemented in the Yakima river basin and their effectiveness in meeting the objectives of chapter 11, Laws of 2013 2nd sp. sess., a project funding list that represents the state's percentage cost share to implement the integrated plan measures for the current biennium and cost estimates for subsequent biennia, a description of progress toward concurrent realization of the integrated plan's fish passage, watershed enhancement, and water supply goals, and an annual summary of all associated costs to develop and implement projects within the framework of the integrated water resource management plan for the Yakima river basin.

The 2021 Implementation Status Report, as required under RCW 90.38.100, describes how each of the Integrated Plan's seven elements has advanced since the previous report (2019 -2021) and are achieving its fish passage, habitat/watershed enhancement, and water supply goals.

RCW 90.38.120 requires that the Department of Ecology prepare a legislative report in even-numbered years as follows:

(2) The department shall deliver, consistent with the intent of this section, a cost estimate and financing plan that addresses the total estimated cost to implement the

integrated plan and analyzes various financing options. The cost estimate and financing plan must include a description of state expenditures as of September 28, 2013, incurred implementing the integrated plan and proposed state expenditures in the 2015-2017 biennium and beyond with proposed financing sources for each project.

(3) In addition, the office of the state treasurer shall prepare supplementary chapters to the cost estimate and financing plan for the department that:

(a) Identifies and evaluates potential new state financing sources to pay for the state's contribution towards the overall costs of the Yakima integrated plan's implementation;

(b) Identifies and evaluates potential new local financing sources to pay for a significant local contribution towards the overall costs of the Yakima integrated plan's implementation;

(c) Considers the viability, and evaluates the advantages and disadvantages of various financing mechanisms such as revenue bonds, general obligation bonds, and other financing models;

(d) Identifies past, current, and anticipated future costs that will be, or are anticipated to be, paid by nonstate sources such as federal sources, private sources, and local sources; and

(e) Considers how cost overruns of projects associated with the integrated plan could affect long-term financing of the overall integrated plan and provides options for how cost overruns can be addressed.

(4) The department may, in the sole discretion of the department, contract with state universities or private consultants for any part of the cost estimate and financing plan required under this section.

(5) The initial cost estimate and financing plan required by this section must be provided to the governor and the legislature, consistent with RCW [43.01.036](#), by no later than December 15, 2014, for consideration in preparing the 2015-2017 biennial budget and future budgets. The cost estimate and financing plan must be updated by September 1st of each successive even-numbered year.

The 2022 Cost Estimate and Financing Plan Report, as required under RCW 90.38.120, addresses the total estimated cost to implement the Integrated Plan, analyzes various financing options and delineates the state's expenditures since the previous report (2020 – 2022).

These two reports have been combined to gain efficiency in ensuring you have timely Integrated Plan implementation and financial information to help inform funding decisions especially as we all begin to prepare and plan for the upcoming 2025-2027 biennium and brace for a potential drought in the Yakima Basin in 2024.

During the unprecedented times felt across the globe over the past few years, the Office of Columbia River and our Yakima River Basin Integrated Water Management Plan partners adapted to a virtual environment, leveraged state dollars to gain federal investments and continued to implement projects

under all seven elements of the Integrated Plan. And while this report is delayed, we thought it was important to provide these updates that focus on previous years (2021 and 2022) and to document the critical work that carried forward in the Yakima River Basin during this 2-year period.

This report builds on previous cost estimates to implement projects under the Initial Development Phase (2013-2029), as well as cost estimates to fully build out this 35+year effort. Additionally, this report also documents progress made on implementing projects under the Initial Development Phase. This report is now available at this website: <https://apps.ecology.wa.gov/publications/SummaryPages/2112009.html>

Ecology and our partners have made significant milestones in the past two years, including construction of the Cle Elum Fish Passage and Pool Raise projects. It is important to recognize these accomplishments given the hurdles presented during this time (e.g., supply chain issues, technology advancements, construction material costs, and social distancing). The Integrated Plan partners continue to successfully work together to make progress and implement this ambitious plan. Their policy and project level feedback on this report and on project implementation is critical as we take on innovative projects like Springwood Ranch storage, Bateman Island Causeway removal and water market reallocation.

If you have any questions regarding this report or would like more information, please contact me by phone at (509) 574-3989 or by email at: thomas.tebb@ecy.wa.gov. If you would like hard copies of the report, contact Jo-Anne Carlson by phone at (509) 454-4239 or email at: jo-anne.carlson@ecy.wa.gov.

Sincerely,



G. Thomas Tebb, L.Hg., L.E.G.
Director
Office of Columbia River



Jason Richter
Deputy Treasurer, Debt Management
Office of the State Treasurer

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Statutory Directives

RCW 90.38.100

Report to the legislature and governor. (Expires December 31, 2045.)

(1) By December 1, 2015, and by December 1st of every odd-numbered year thereafter, and in compliance with RCW 43.01.036, the department, in consultation with the United States bureau of reclamation, the Yakama Nation, Yakima river basin local governments, and key basin stakeholders, shall provide a Yakima river basin integrated water resource management plan implementation status report to the legislature and to the governor that includes:

A description of measures that have been funded and implemented in the Yakima river basin and their effectiveness in meeting the objectives of chapter 11, Laws of 2013 2nd sp. sess.,

A project funding list that represents the state's percentage cost share to implement the Integrated Plan measures for the current biennium and cost estimates for subsequent biennia,

A description of progress toward concurrent realization of the Integrated Plan's fish passage, watershed enhancement, and water supply goals

An annual summary of all associated costs to develop and implement projects within the framework of the integrated water resource management plan for the Yakima river basin.

(2) The status report required in this section for December 1, 2021, must include a statement of progress in achieving the water supply facility permit and funding milestone, as defined in RCW 90.38.010. If, after a good faith effort to achieve the water supply facility permit and funding milestone, it appears that the milestone cannot or may not be met, the department, in consultation with the United States bureau of reclamation, the Yakama Nation, Yakima river basin local governments, and key basin stakeholders, shall provide a detailed description of the impediments to achieving the milestone, describe the strategy for resolving the identified impediments, and, if necessary, recommend modifications to the milestone.

(3) This section expires December 31, 2045. [2013 2nd sp.s. c 11 § 9.]

RCW 90.38.120

Legislative intent - Cost to implement the Integrated Plan.

(1)(a) It is the intent of the legislature for the state to pay its fair share of the cost to implement the Integrated Plan. At least one-half of the total costs to finance the implementation of the Integrated Plan must be funded through federal, private, and other nonstate sources, including a significant contribution of funding from local project beneficiaries. This section applies to the total costs of the Integrated Plan and not to individual projects within the plan.

(b) The state's continuing support for the Integrated Plan shall be formally reevaluated independently by the governor and the legislature if, after December 31, 2021, and periodically thereafter, the actual funding provided through nonstate sources is less than one-half of all costs and if funding from local project beneficiaries does not comprise a significant portion of the nonstate sources.

(2) The department shall deliver, consistent with the intent of this section, a cost estimate and financing plan that addresses the total estimated cost to implement the Integrated Plan and analyzes various financing options. The cost estimate and financing plan must include a description of state expenditures as of September 28, 2013, incurred implementing the Integrated Plan and proposed state expenditures in the 2015-2017 biennium and beyond with proposed financing sources for each project.

(3) In addition, the office of the state treasurer shall prepare supplementary chapters to the cost estimate and financing plan for the department that:

- (a) Identifies and evaluates potential new state financing sources to pay for the state's contribution towards the overall costs of the Yakima Integrated Plan 's implementation;
- (b) Identifies and evaluates potential new local financing sources to pay for a significant local contribution towards the overall costs of the Yakima Integrated Plan's implementation;
- (c) Considers the viability, and evaluates the advantages and disadvantages of various financing mechanisms such as revenue bonds, general obligation bonds, and other financing models;
- (d) Identifies past, current, and anticipated future costs that will be, or are anticipated to be, paid by nonstate sources such as federal sources, private sources, and local sources; and
- (e) Considers how cost overruns of projects associated with the Integrated Plan could affect long-term financing of the overall Integrated Plan and provides options for how cost overruns can be addressed.

(4) The department may, in the sole discretion of the department, contract with state universities or private consultants for any part of the cost estimate and financing plan required under this section.

(5) The initial cost estimate and financing plan required by this section must be provided to the governor and the legislature, consistent with RCW 43.01.036, by no later than December 15, 2014, for consideration in preparing the 2015-2017 biennial budget and future budgets. The cost estimate and financing plan must be updated by September 1st of each successive even-numbered year. [2013 2nd sp.s. c 11 § 11.]

Executive Summary

The Yakima River Basin (the Basin) supports a vast agricultural economy and is the homeland of the Yakama Nation. The Yakima River Basin also supports several endangered aquatic species. Historically, limited water supplies in the Basin have been a source of conflict for those using the water to meet out-of-stream demands, as well as those working to ensure enough water remains instream for fish.

In 2009, federal, tribal, state, county, local governments, agricultural & environmental interests, water users, and other stakeholders joined forces to collaborate and build a framework for integrated water management solutions for the Basin. This created the foundation for what we now know as the Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan).

Today, the Integrated Plan is recognized across the region and the world as a model of collaborative government and commonsense approach in successfully providing water security for farms, fish, and families of the Basin.

Washington State Department of Ecology's (Ecology) Office of Columbia River (OCR), in partnership with the US Bureau of Reclamation (Reclamation), the Yakama Nation, irrigation districts and various stakeholders, continues to make tremendous progress even during these unprecedented times. For example, over the past biennium Integrated Plan efforts have achieved 69% of the initial development phase for the water conservation goal of approximately 58,869 acre-feet (ac-ft) per year.

In accordance with RCW 90.38.100, this report describes how each of the Integrated Plan's seven elements has advanced since 2019 and are achieving its fish passage, habitat/watershed enhancement, and water supply goals.



Yakima River in the Yakima Canyon.

Photo credit: Tim Poppleton (OCR), 2016

Project highlights for this report include:

- Water savings achieved through Basin conservation projects
- Progress on multiple groundwater supply feasibility studies
- Progress on determining potential locations for surface water storage in the Upper Yakima River Basin
- Construction of multiple intake ramps and the bypass tunnel for the Cle Elum Fish Passage project
- Completion of fish boom and sluice gate installation at Sunnyside Dam
- Completion of shoreline protection work at the Wish Poosh Campground and along Salmon La Sac Road
- Completion of the Basin-wide water market study

Since 2013, the legislature has appropriated biennial funds to implement the Integrated Plan:

- 2013-2015 biennium: \$143 million
 - \$99.3 million allocated for Teanaway Community Forest acquisition
- 2015-2017 biennium: \$30 million
- 2017-2019 biennium: \$32.6 million
- 2019-2021 biennium: \$40 million
- 2021-2023 biennium: \$42 million
- 2023-2025 biennium: \$75 million
 - \$49 million to the Dept of Ecology
 - \$26 million to Recreation and Conservation Office

Yakima River Basin and the Integrated Plan

Situated in the heart of Central Washington (Figure 1), the Yakima River Basin (the Basin) provides water for Kittitas and Yakima counties, and parts of Benton County. Home to around 370,000 people, including more than 10,000 members of the Yakama Nation, the Basin supports important economic, ecological, and natural resources.

The 6,155-square-mile Basin is one of the top producing agricultural regions of the state². Apples, cherries, wine grapes, and hops, among other crops, contribute \$4.5 billion annually to the state's economy and support 44,300 agricultural jobs. In addition, the Basin is home to a number of important fish species and natural resources. It offers a variety of water-based recreation, fishing, rafting, camping, and scenic hiking, which in turn support up to an additional 14,200 jobs and contribute approximately \$1.2 billion annually to the economy³.

The Basin relies on precipitation and a robust snowpack in the Cascade Range for its water supply. Slowly melting snow feeds reservoirs and rivers and recharges aquifers, providing cool, clean water to communities, farms, and fish during the hottest and driest times of the year. Facing climate change, the area is experiencing reduced snowpack. In 2021, lack of mountain snow and a tremendous heat dome in spring and summer caused an early snowpack melt that resulted in drought conditions in the Basin.

Climate predictions anticipate snowpack in the mountains will continue to decline as increased temperatures translate to more rain and less snow. Water management remains worrisome if concerted efforts by governments, Tribes, and communities do not tackle the problem head-on. With a shifting hydrograph and snowpack starting to melt increasingly earlier each year, the water storage dilemma must be addressed now to meet both current and future needs.

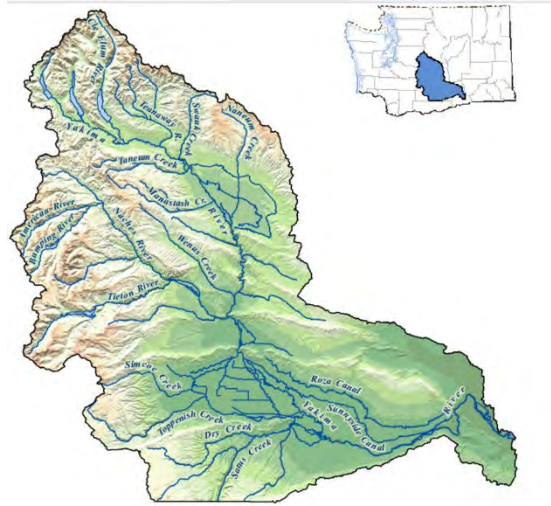


Figure 1 Map of the Yakima River Basin

² U.S. Department of Agriculture, National Agricultural Statistics Service, July 25, 2019, 2017 Census of Agriculture, Watershed Profiles, Pacific Northwest Region 17
https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/Watersheds/pn17.pdf

³ ECONorthwest. (2017). Water Security for the Yakima River Basin's Economy, Communities, and Watersheds. Washington Department of Ecology (Publication No. 17-12-010).

Integrated Plan overview

To address the many water resources and ecosystem challenges, in 2013 the Legislature charged Ecology with implementing the Yakima River Basin Water Resource Management Act embodied in chapter 90.38 RCW.

The Integrated Plan is the third phase of Yakima River Basin Water Enhancement Project (YRBWEP) (see Figure 2, next page). It is a common-sense, consensus-based collaborative governance approach to managing water supplies and restoring the Basin's ecological functions.

Provisions of the Integrated Plan include developing sufficient water supplies to support the Basin's farms, fish, and families.

Under RCW 90.38.100, Ecology must provide a status report to the Legislature and governor every odd-numbered year since December 2015. Each status report must include:

- A description of measures taken that have been funded and implemented in the Basin and their effectiveness in meeting the objectives of the 2013 legislation.
- A description of progress made towards concurrent realization of the Integrated Plan's fish passage, watershed enhancement, and water supply goals.
- A project funding list representing the state's percentage cost-share to implement the Integrated Plan for the current biennium and cost estimates for subsequent biennia.
- An annual summary of all projects' development and implementation costs within the framework of the Integrated Plan.

From YRBWEP to Integrated Plan

1979 - Studies Authorized



The Yakima River Basin Water Enhancement Project began after devastating drought in the 1970s when Congress authorized a study to find solutions to the basin's water supply problems.

1984 - YRBWEP Phase I - Fish Passage



Early studies identified fish passage issues. Fish screens and ladders were built at diversion dams to help fish move freely upstream to spawn.

1994 - YRBWEP Phase II - Conservation



The next phase conserved water for agriculture and instream flows; acquire and restore important habitat in the Yakima River watershed.

2009 - YRBWEP Phase III - Integrated Plan



The Integrated Plan is a watershed-scale, balanced approach to sustainable water supply for fish, families, farms, and forests.

Integrated Plan

The Integrated Plan is comprised of seven elements. The map below shows the location of a few example projects from each element.

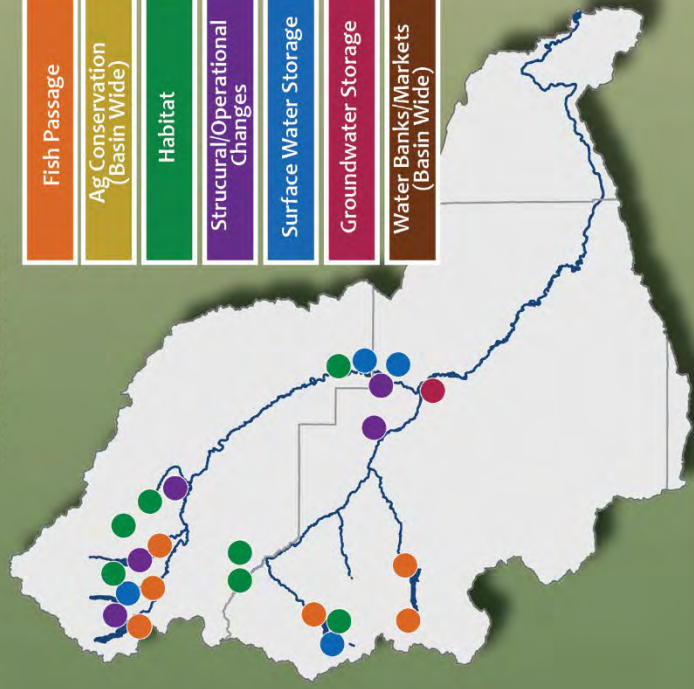


Figure 2 YRBWEP to the Integrated Plan

Goals of the Integrated Plan

Goals of the Integrated Plan are to protect and enhance fish and natural resources, improve water availability and reliability, establish more efficient water markets, manage the variability of water supplies, and prepare for the uncertainties of climate change through operational and structural changes.

As the Integrated Plan projects move towards meeting the plan’s goals, they simultaneously move OCR towards meeting the program’s own legislative goals of developing water supply for both instream and out-of-stream uses (Table 1).

Table 1 Ecology's Objectives and the Integrated Plan element equivalents

Department of Ecology Objective	Equivalent Integrated Plan Elements
Protection, mitigation, and enhancement of fish and wildlife habitat	Fish Passage Habitat/Watershed Protection and Enhancement Enhanced Water Conservation
Improvement of water availability and reliability, which includes improvements to water delivery efficiency	Surface Water Storage Groundwater Storage Enhanced Water Conservation
Increasing water market efficiency	Market Driven Reallocation
Improve operational efficiency and flexibility at existing water supply and conveyance infrastructure and facilities	Structural and Operational Improvements

Seven elements of the Integrated Plan

Projects implemented under the Integrated Plan are associated with one or more of seven essential watershed improvement elements:

Habitat/Watershed Protection and Enhancement

Protect and enhance critical habitat for anadromous⁴ and resident fish and wildlife through land acquisition, watershed protection, and habitat protection and/or enhancement.

Fish Passage

Provide upstream and downstream fish passage at all major Yakima River Basin storage reservoirs.

Enhanced Water Conservation

Aggressively implement water use efficiency measures to improve instream flows on critical stream reaches, increase water delivery precision, and achieve drought resiliency.

Structural and Operational Changes

Promote operational efficiency and flexibility at existing and new in-basin water supply and water conveyance infrastructure facilities.

Surface Water Storage

Develop an additional 450,000 ac-ft of water storage⁵ for supporting instream and out-of-stream water uses.

Groundwater Storage

Recharge aquifers with surface water for storage for later withdrawal and use, and passive aquifer recharge/infiltration for improved aquatic habitats.

Market Driven Reallocation

Create conditions and remove barriers to allow for efficient water right trading between willing parties to improve water supplies and stream flow conditions.

⁴Anadromous fish are born in freshwater and travel (migrate) to saltwater (ocean) where they grow to maturity, and then return to freshwater to spawn (eggs and sperm released into water by aquatic animals) and begin the cycle again. Anadromous fish include salmon and some species of sturgeon.

⁵ The 450,000 ac-ft. water storage goal can be achieved by developing both surface water and groundwater storage.

Milestones achieved 2021-2022

- Secured⁶ 69% of the annual 85,000 ac-ft. water conservation requirement set by the federal 2019 lands package (S.4710).
- Released 592 bull trout (61 in Gold Creek and 531 in the Kachess River) in 2021 and 550 bull trout (84 in Gold Creek and 466 in the Kachess River) in 2022.
- Commenced work on the Nelson Dam Removal Project (near the city of Yakima).
- Published the 2020 Summer Sockeye Study evaluating potential fish passage challenges from Roza Dam to the mouth of the Yakima River.
- Installed fish guidance boom and sluice gate at Sunnyside Dam in response to the findings from the Lower Yakima River Smolt Survival Study.
- Removed and rebuilt the Yakama Nation Unit 2 Diversion Dam.
- Completed construction of the Cle Elum Fish Passage Facility 1,250-foot downstream bypass tunnel and several reservoir intake ramps.
- Completed Yakima Basin Managed Aquifer Recharge Assessment, identifying and ranking potential groundwater storage opportunities in the Upper Yakima Basin.
- Released the Yakima Basin Water Marketing Technical Report and Market Strategy⁷.
- Completed shoreline protection Speelyi Beach Day Use Area and Boat Launch and Wish Poosh campgrounds.

Ongoing and upcoming work

- Nelson Dam Removal Project.
- Kachess Drought Relief Pumping Plan Tier 2 Environmental Impact Statement (EIS) and Notice of Intent (NOI).
- Purchase process of Springwood Ranch.
- Debris boom placement for Cle Elum Fish Passage.
- Initial flow test of Cle Elum Fish Passage lowest intake level of the helix.
- Tjossem Ditch Headgate Decommission.
- Cle Elum Fish Passage construction of remaining intakes and gates, secant drainage system installation, and tunnel work.
- Cle Elum Pool Raise shoreline protection along the eastern shore of Cle Elum Lake.
- Bull trout rescue and captive rearing work.
- Agricultural and municipal enhanced water conservation efforts.
- Floodplain restoration work and other aquatic habitat projects.
- Support for Market Driven Reallocation.
- Study and implement groundwater recharge across the Yakima River Basin.
- Review on Clear Lake Dam fish passage design and permitting that precedes construction.

⁶ Water savings calculated from projects that are both in progress and completed.

⁷ <https://yakimabasinwatermarketing.org/yakima-basin-water-market/outreach/>

Yakama Nation Project Partners

The Yakama Nation is a key partner in the development and implementation of the Integrated Plan. Since time immemorial, the people of the Yakama Nation have resided in the Basin, relying on the land for food, water, shelter, and medicine. The Yakama Nation is an advocate and steward of salmon and the waterways vital to restoring salmon populations⁸.

Before settlers began altering waterways in the Basin, salmonid runs were measured in the hundreds of thousands to millions. By the early 1900s, the construction of dams at the Cle Elum, Kachess, and Keechelus lakes and diversion of major waterways, including the Yakima River, cut off fish passage to these vital natal spawning and rearing grounds. The final demise of the sockeye salmon run in the Basin came with the construction of the Bumping Lake Dam on the Naches River branch of the Yakima River Basin, blocking the last passage to salmonid spawning and rearing grounds.

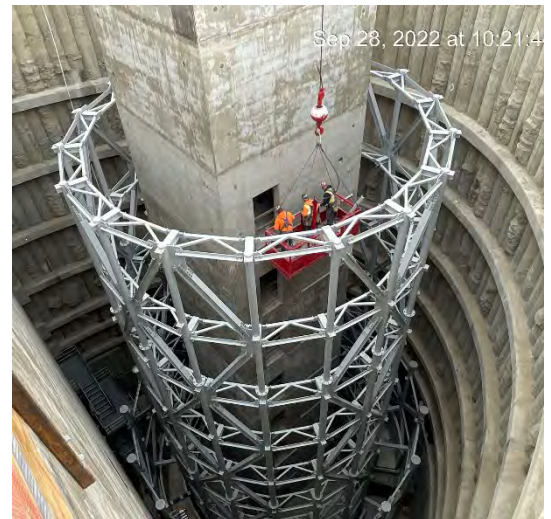
To return fish runs in the Basin to near historic numbers, fish passage to these native spawning and rearing grounds must be restored. The Yakama Nation collaborates with Integrated Plan partners to restore fish passage and enhance fish habitat so both humans and wildlife can thrive in the Basin for years to come.

Fish in, fish out

The Cle Elum Fish Passage Project is one of the Integrated Plan's most ambitious capital construction projects to-date. Currently, the Yakama Nation has been trapping adult sockeye salmon from the Yakima and Columbia rivers and hauling them to the Cle Elum Reservoir. Last year, the Yakama Nation captured and relocated 15,000 ready-to-spawn sockeye salmon. We anticipate that the Cle Elum Fish Passage facility will be completed by the time these fish return to the Cle Elum Reservoir to spawn.

This project consists of two separate facilities: a hands-off juvenile facility and an adult collection facility. The construction of the adult collection facility at the base of Cle Elum Dam, which will be operated by the Yakama Nation once it is completed. Construction of the Cle Elum Dam Adult Fish Collection Facility is expected to start July mid 2024. This facility will be located at the base of Cle Elum Dam and will be operated by the Yakama Nation upon completion.

At this facility, adult fish returning to the reservoir to spawn will be collected, measured, transported, and released in upstream tributaries and directly into the Cle Elum Reservoir.



Helix construction

Photo credit: BOR, Sept. 28, 2022

⁸ <https://yakamafish-nsn.gov/our-mission/honor-protect-restore>

The juvenile fish passage facility consists of intake ramps progressively lowering into the reservoir allowing fish to enter the innovative helix structure, where they are transported safely down to the bypass tunnel that leads to the Cle Elum River at the base of the dam. Construction of the vault that will hold the helix, the bypass tunnel, and several intake ramps that allow juvenile fish to exit the pool at different elevations is now complete. With the construction of the remaining project components underway, the project is on schedule to be up and running by 2026.



Simcoe Creek large wood floodplain restoration, Yakama Nation Reservation.

Photo credit: Shawna Warehime, Fisheries Biologist (Yakama Nation), 2022

Habitat restoration

In addition to providing fish passage to historical spawning and rearing grounds, the

Integrated Plan is also moving numerous habitat restoration projects forward to provide migrating fish with the cool, clean water vital to their survival. These projects vary widely and include removing a thermal barrier⁹ at the mouth of the Yakima River, restoring streams and floodplains, and improving in-stream flows using conserved water.

In hot water

The Bateman Island Causeway is located near the Yakima River mouth, blocking the cold water from the Columbia River from mixing with the warmer Yakima River water. As a result, this causeway creates a thermal barrier that is too hot for salmonids to survive in and prevents them from migrating upriver. In addition, this pocket of hot water is an ideal habitat for non-native fish that prey upon the salmonids trapped in the area. By removing the causeway, water temperatures can return to acceptable levels for salmonids to survive and continue their way up and down the Yakima River.

Other habitat restoration projects include restoring floodplain connectivity and removing stream channelization. This effort to return creeks to their natural flow provides hydration to parched creeks and streams and replenishes groundwater stores that flow into the adjacent waterways.

These are just a few examples of Integrated Plan efforts working in unison to restore fish runs across the Basin. Through collaboration, key partnerships, innovation solutions, and adaptive management, these and other short-term and long-term projects can succeed because of the dedicated stewards that participate in the Integrated Plan.

⁹ A thermal barrier is an area of water where temperatures are too high for fish to survive.

Seven Elements of the Integrated Plan & Status Updates

Enhanced Water Conservation

The Enhanced Water Conservation element focuses on gaining water savings through upgrading and enhancing water delivery systems by reducing leaks, changing out old irrigation methods with more efficient irrigation technologies, removing heavily water dependent landscaping by installing water-wise landscaping, and more. Water savings gained through this element benefits instream flows, drought resiliency, streamline operations and maintenance work, and reduces water delivery costs (delivering less water over time).

In particular, the Wapato Irrigation Project (WIP), federally owned and operated by the Bureau of Indian Affairs, represents the greatest potential for conservation of water. As a result, the Integrated plan partners are prioritizing water conservation projects within the WIP. In fact, WIP has recently finished up its Comprehensive Integrated Water Conservation Plan.

Over the past two years, Reclamation and Ecology have calculated the amount of water saved as water conservation projects are completed. These water savings will be applied as the Integrated Plan partners work to meet its total annual water conservation goal of 170,000 ac-ft. Since the implementation of the Integrated Plan began in 2013, projects completed or currently in progress will conserve an estimated 58,750 ac-ft. annually, with 20,985 ac-ft (35 percent) benefitting instream flows, 26,450 ac-ft. (45 percent) improving drought resiliency and operations and maintenance work, and 11,315 ac-ft. (20 percent) supporting conservation on the WIP (Figure 3).

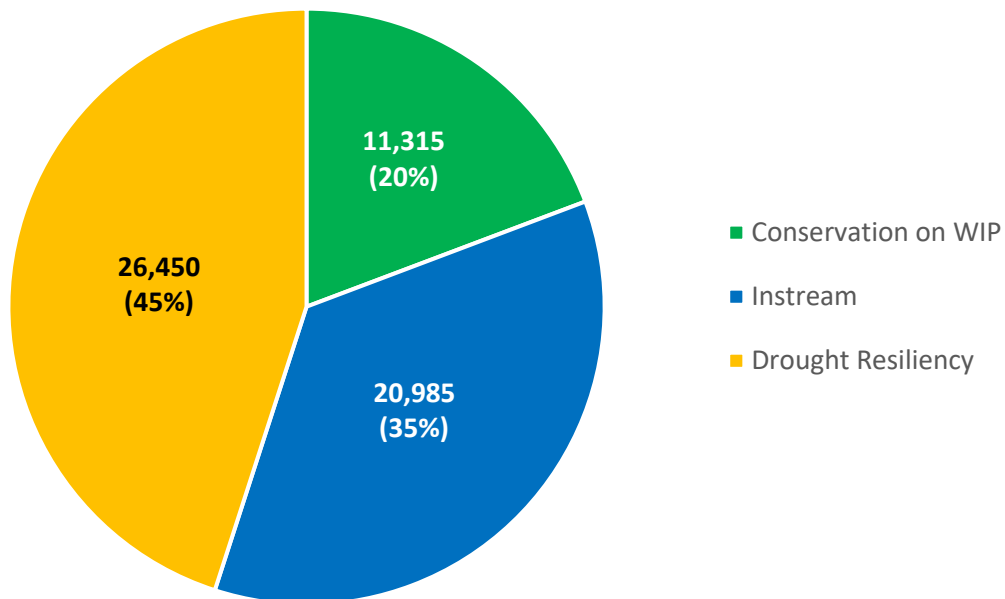


Figure 3 Water savings in ac-ft. broken out by benefit.

Water conserved through these projects could be put to use in the future for irrigating new WIP acreages. Currently, there are 126 water conservation projects, with 105 completed and 18 in progress.

The majority of funding for local water conservation projects comes from local irrigation and conservation districts (Figure 4). Many of the irrigation districts have self-funded conservation plans in place, reducing dependency on State funds to see projects to completion that are self-funded and implemented over time.

Breaking down Ecology’s funding by benefit:

- Instream flows - \$14.1 million (8,641 ac-ft.).
- Drought resiliency - \$4.9 million (2,389 ac-ft.).
- WIP - \$4.9 million (7,268 ac-ft.).

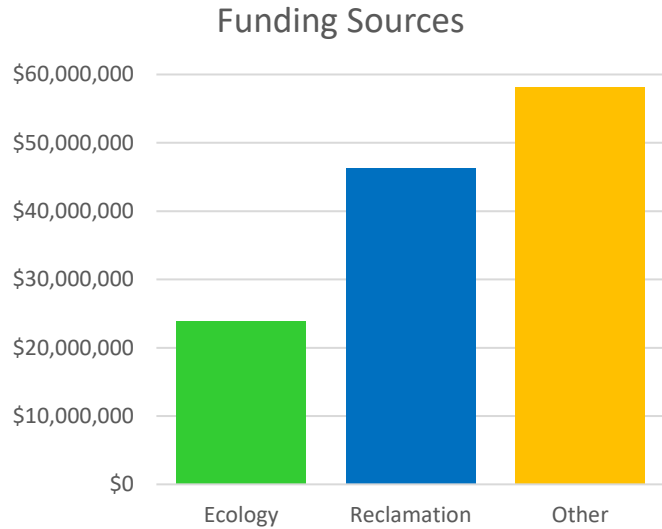


Figure 4 Enhanced Water Conservation project funding from 2013 thru 2022 broken out by source.

Overall, Ecology’s portion of these funds have saved 31% of all water savings made possible through projects under this element.

Wapato Irrigation Project

Working together with the Yakama Nation and the Bureau of Indian Affairs, the Integrated Plan’s WIP water conservation efforts have achieved 11,315 ac-ft. in annual water savings. These projects include converting open ditch canals to pipe, upgrading aging pipelines, lining open canals, installing surface flow control structures in existing canals, and more. In total, approximately 18 miles of pipeline have been installed and over 4,200 linear feet of canal have been lined.

Water conservation projects on WIP made significant headway with the completion of Satus Unit 2 canal lining and replacing leaking concrete pipeline and piping of laterals. This work is estimated to provide 6,808 ac-ft. in annual water savings. Additionally, WIP is moving forward to construct 10 long crested weir check and grade control structures. These control structures provide a more constant water level, increasing water delivery efficiency on the Satus 3 Pump Canal.

Future WIP projects include the acquisition of a right-of-way for construction of a regulation reservoir in the Unit 2 West Branch Canal. This new regulation reservoir will provide increased stability and operational flexibility in water delivery by reducing the amount of spill at the end of the system. Once complete, this reservoir project is estimated to provide 7,700 ac-ft. in annual water savings.

Upgrading and enhancing water delivery systems have allowed WIP to improve the area’s overall drought resiliency. Additionally, the instream flows of Toppenish Creek are also benefiting from these water savings as farmers are now able to rely on water delivered through these new upgraded water delivery systems instead of water provided by Toppenish Creek.

Completed projects conserving 11,315 ac-ft. of water annually

- Installed surface flow control structure in existing canals.
- Modified and upgraded irrigation application systems (2,777 ac-ft.).
- Replaced 77,000 feet of old pipeline (4,093 ac-ft.).
- Converted 2.75 miles of open ditch to pipeline (1,730 ac-ft.).
- Lined 4,230 feet of canals (1,445 ac-ft.).
- Piped and lined Satus Unit 2 canals (1,270 ac-ft.).

Pending projects

Modifying and upgrading existing diversion infrastructure.



Completed Unit 2 diversion dam rebuild

Photo credit: Sepideh Sadeghi (OCR), 2022

Roza Irrigation District

Roza Irrigation District (Roza) water conservation projects are calculated to save 12,903 ac-ft. of water annually when all are completed. These water savings are achieved by lining and sealing canals, converting open laterals to pipe, and installing advanced flow meters. These water savings will improve Roza's drought resiliency. Roza has funded the majority of their water conservation projects cost (76%), with remaining funds coming from Ecology (22%) and Reclamation (2%).

Roza has completed several projects since 2013, including the conversion of approximately 8 miles of open lateral canals to pipe, providing 6,016 ac-ft. in annual water savings, along with the installation of advanced flow meters that improve the precision and control of water releases. In 2023, Roza finished sealing 2.5 miles of the main canal that is anticipated to 2,500 ac-ft. in water savings.

Water-wise landscaping and heritage gardens

The North and South Yakima Conservation Districts continue their partnership with the Heritage Garden Program (created by the Benton Conservation District and the Columbia Basin Chapter of the Washington Native Plant Society) in providing public outreach and education opportunities on the benefits of water-wise landscaping and heritage gardens in place of traditional lawns. Heritage gardens are a type of water-wise landscaping that incorporates the unique cultural features of the local area, using less water intensive native plants and benefits the local wildlife.

In 2020 and 2021, workshops previously held in-person transitioned to a virtual setting to provide continued outreach and education while maintaining social distancing during the COVID-19 pandemic. By the end of 2021, 12 home gardens had been certified as Heritage Gardens that conserve at total of 1.2 ac-ft. of water per year by converting traditional lawns with native drought resistant plants.



Roza main canal sealing complete. Dry (top) and full (bottom) canal comparison.

Photo credit: Roza Irrigation District, 2022 (dry canal) and Kevin Haydon (OCR), 2022 (full canal)

Kittitas County Conservation District

Irrigation efficiencies

Kittitas County Conservation District (KCCD) partnered with Trout Unlimited (TU) and Washington Water Trust to promote KCCD's on-farm Irrigation Efficiencies Grant Program. This program provides incentives to landowners to upgrade irrigation and water delivery systems to more efficient methods. By the end of the 2022 calendar year, 2,150 acres of farmland have been converted from flood irrigation to sprinkler, and 4 miles of earthen ditch have been converted to pipe, saving 2,724 ac-ft. of water annually. Currently, KCCD has secured funding for more on-farm irrigation conversions projected to save up to 809 ac-ft. annually. These water savings are put towards restoring instream flows of upper Yakima Basin tributaries. KCCD and their partners continue to reach out to eligible landowners to promote this project¹⁰.

Toppenish to Teanaway

In partnership with the Yakama Nation and U.S. Department of Agriculture Regional Conservation Partnership Program, KCCD Toppenish to Teanaway Conservation Partnership Program continues to seek potential project location sites in the upper Yakima River Basin. Working with landowners in key subbasins, including Naneum Creek, Dry Creek, and Taneum Creek in Kittitas County, this program focuses on gaining water savings through improvements to outdated water conveyance and irrigation systems. Water savings will be put to use in improving instream flows, enhancing fish habitat, and improving water quality in these critical stream reaches.

In addition to these programs, KCCD and TU are also in the process of acquiring 2,120 ac-ft. of stockwater water rights in the upper basin, which will go towards augmenting instream flows.

Completed projects and associated water savings

- Converted 2,150 acres of farmland from flood irrigation to sprinkler, providing 2,724 ac-ft. in annual water savings.
- Converted 4 miles of earthen ditch to pipe, providing 574 ac-ft. in annual water savings.

Ongoing projects

- Converting 471 acres of farmland from flood irrigation to sprinkler, providing 809 ac-ft. in annual water savings.

Kittitas Reclamation District

Kittitas Reclamation District (KRD) water conservation projects are currently calculated to save 9,437 ac-ft. of water per year. These water saving projects include lining leaky canals and siphons, and installing new and upgrading existing pipes. Water previously lost through leaky water delivery infrastructure, is now put to use supplementing instream flows and restoring riparian and aquatic habitats of Big, Little, Manastash, Taneum, and Tucker creeks. These

¹⁰ For more information regarding the Irrigation Efficiency Grant Program, you can visit KCCD's website: <https://www.kccd.net/irrigation-efficiencies-program>

efforts have allowed for coho salmon to be reintroduced into Tucker Creek and Little Creek during winter of 2021. Coho salmon were last seen in these creeks almost 100 years ago.

Completed projects

- Piped and upgraded the 13.6 and 13.8 laterals, and constructed a permanent turnout to Manastash Creek, providing 1,300 ac-ft. in annual water savings.
- Lined 3.4 miles of North Branch Canal, providing 4,738 ac-ft. in annual water savings.
- Worked with Trout Unlimited to unstack redundant water rights along Manastash Creek, resulting in 337 ac-ft. in water rights savings that directly benefit the instream flows of Manastash Creek.

Ongoing projects

- Phase 2 of the South Branch Canal piping project, which will convert an open canal to pipe, saving 1,741 ac-ft. per year.
- Lining an additional 5,600 linear feet of North Branch Canal, saving 1,110 ac-ft. per year.



KRD tributary supplementation for Little Creek.

Photo credit: Jennifer Stephens (OCR), 2019

Habitat/Watershed Protection and Enhancement

In addition to improving fish passage to historical spawning and rearing grounds, the Integrated Plan continues to advance numerous habitat restoration projects that provide migrating fish with the cool, clean water vital to their survival. These habitat conservation, restoration, and enhancement actions include addressing the thermal barrier¹¹ at the mouth of the Yakima River, restoring stream habitats, reconnecting floodplains, and protecting and restoring upper Basin tributaries. With previous efforts under this element focusing more on upper basin projects, the Integrated Plan now includes more projects in the lower river too.

The Integrated Plan's Watershed Lands Conservation Subcommittee published its Phase 2 Plan in June 2021. This plan focuses on land acquisition, designations on public lands, river corridors, and forest health management for continued implementation of the habitat protection element over the next 10 years.

Bull Trout Enhancement

Through the Bull Trout Enhancement (BTE) Memorandum of Understanding, Ecology, Reclamation, Washington State Department of Fish and Wildlife (WDFW), U.S. Forest Service, and U.S. Fish and Wildlife Service (USFWS) continue working together with water and fish managers throughout the Basin to improve and increase bull trout resiliency. This effort led to the Gold Creek Restoration project, which is funded through the Integrated Plan and other non-state funding sources. BTE work centers on improving fish passages and enhancing, restoring, and protecting vital fish habitat. Efforts are underway in many of the tributaries from the headwaters of the Yakima River to where it meets the Columbia River. The Yakama Nation, WDFW, and USFWS, will continue to closely monitor Kachess River and Box Canyon Creek to determine success of repopulation efforts.

Bull Trout Working Group

The Yakima Bull Trout Working Group (BTWG) is an informal group consisting of representatives from federal and state agencies, the Yakama Nation, conservation non-profits, and the public. In addition to advocating for bull trout recovery in the Basin, BTWG shares data, brainstorming innovative recovery project ideas, and provides funding recommendations and feedback on bull trout projects.

¹¹ Thermal barrier: an area of water where the temperatures are too high for migrating salmon to survive.

Bull Trout Task Force

The Bull Trout Task Force (BTTF) is a team of on-the-ground crew members that carries out bull trout recovery activities in the Basin. Work includes public outreach, removing recreational rock dams, emergency fish salvage, monitoring passage conditions to spawning grounds, and tracking populations. By the end of the 2022 calendar year, BTTF has removed over 780 recreational rock dams, provided outreach to over 8,000 individuals¹², and posted 97 educational signs on bull trout entrapment issues and bull trout habitat in Kittitas and Yakima counties¹³.



Bull Trout Task Force

Photo credit: BTTF, 2022

2022 crew members (from left to right) Aimee Taylor (Field Biologist), Sam Scherck (Field Lead), Kristi Morrison (BTTF Tech), and Avery Bryant (BTTF Tech)

Bull trout salvaging

The Yakama Nation and WDFW are leaders in bull trout salvage, or the rescue of young fish stranded in small pools created when stream flows drop. These young fish are rescued and reared in captivity until they are large enough to be released back into their natal streams: Gold Creek, Kachess Creek, and Box Canyon Creek. Providing these fish with a safe place to grow to a larger size improves survival rates.

Lower Yakima River

For fish returning to their spawning and rearing grounds, high water temperatures in late summer can impede their migration. Cold water contributions from upper Basin tributaries is vital for fish to survive in the lower stretches of the Yakima River. As summer temperatures in the Basin continue to climb, and instream flows continue to drop in these tributaries, this hampers the Yakima River mainstem to maintain those crucial cooler temperatures at critical downstream reaches.

The Lower River Subgroup is studying these problems and have initiated several studies listed below:

- Smolt survival rates at several lower Yakima River diversion dams
- Continuous temperature and dissolved oxygen monitoring (data available online¹⁴)
- Improving water mixing where the Columbia and Yakima rivers meet
- Impacts to water quality due to flora overgrowth and physical barriers

¹² <http://midcolumbiafisheries.org/restoration/bull-trout-recovery/>

¹³ <http://midcolumbiafisheries.org/wp-content/uploads/2022/01/Bull-Trout-Task-Force-2021-summary.pdf>

¹⁴ <https://www.usgs.gov/data/2018-longitudinal-water-temperature-profiles-yakima-river-washington>



Sunnyside fish guidance boom.

Photo credit: Kevin Haydon (OCR), 2022

Lower Yakima River Smolt Survival Study

The Lower Yakima River Smolt Survival Study examines factors affecting smolt survival in the Yakima River from the City of Yakima (mid-basin) to where the Columbia and Yakima rivers meet. In 2020, the U.S. Geographic Survey (USGS) and Yakama Nation continued fish tagging efforts and were able to release over 1,200 smolt at the Wapato, Sunnyside, and Prosser dams. Data analysis from these tagged fish is ongoing.

Data from this study will focus on reporting results for the past three years and monitoring the Sunnyside Dam fish guidance boom project. Early indications suggest that juvenile fish survival is higher if fish can be redirected to stay in the river and not enter the canal head gates (and take a small side trip through some infrastructure before making their way back to the river via a fish bypass). More information on this project can be found on page 33.

Bateman Island causeway removal

For the past 80 years, the Bateman Island Causeway has hindered cooler water from the Columbia River from mixing with the warmer water from the Yakima River where these two rivers converge. This mixing zone is important for fish migrating to spawning and rearing grounds in the upper Yakima River Basin. If the water at the mouth of the Yakima River is too hot, the fish are trapped there; this creates ideal conditions for predators.

Once the causeway is removed, the mixing of Columbia and Yakima River waters will reduce water temperatures and turbidity, flush out toxic algae currently thriving in the stagnated

waters impounded by the causeway, and increase dissolved oxygen levels at the mouth of the Yakima River. Providing cooler and cleaner water at the mouth of the Yakima River will aid return rates of migrating fish to their spawning grounds. The U.S. Army Corp of Engineers are working with Ecology, WDFW and Mid-Columbia Fisheries Enhancement Group (MCFEG) on environmental review and early design for the removal of the Bateman Island Causeway. The removal design is anticipated to reach 30% by the end of 2024.

Stargrass removal

Native to the rivers and streams of the Basin, water stargrass (*Heteranthera dubia*) can be found along the shore and in calm waters of the Yakima River. Under normal streamflow conditions, water stargrass grows along the sunny banks of the Yakima River where it is fed upon by wading birds and ducks¹⁵. When stream conditions are altered and flows are slowed down due to high out-of-stream demands, culverts, dikes, and levees to accommodate roadways, these calm and slow waters become ideal for water stargrass to flourish. Overgrowth of this aquatic plant increases dissolved oxygen levels and water temperature and can also block salmon from reaching gravelly river bottoms for spawning¹⁶.

With support from Ecology, MCFEG and Benton County Conservation District (BCCD) are in the process of creating an emergency drought response plan to remove water stargrass from Prosser Dam to the mouth of the Yakima River. MCFEG began mapping the distribution of water stargrass in the Yakima River in 2021. A comprehensive map of the location of dense water stargrass patches is one of the first steps in developing the emergency drought response plan.

In 2021, BCCD unveiled a new custom-designed aquatic plant harvester that removes the entire plant by pulling it up by the roots. By using the harvester versus labor intensive manual removal, BCCD is able to remove more water stargrass in less time to help maintain healthy river flows and improve water quality. Between 2022 and 2023, BCCD has harvested an estimated total of 500,000 pounds of stargrass. BCCD plans to continue using the aquatic plant harvester for the 2024 stargrass removal season (spring to fall) .

Lower Yakima River Thermal Refuge Assessment and Enhancement Project

Cool water refuge sites in the lower Yakima River provide resting and recuperating stops for adult salmon migrating upstream during times when water temperatures are too high for survival. Such thermal refuge sites may also provide vital rearing habitats for juvenile fish in the colder winter months¹⁷. This project focuses on collecting water temperatures in the lower Yakima River and utilizing this data to locate potential thermal refuge habitat project locations.

¹⁵ Burke Herbarium Image Collection Vascular Plants, Macrofungi, & Lichenized Fungi of Washington, <http://biology.burke.washington.edu/>

¹⁶ More information can be found online at <http://midcolumbiafisheries.org/>

¹⁷ Cool water refuge projects – lower yakima river. Mid-Columbia Fisheries Enhancement Group. (n.d.). <https://midcolumbiafisheries.org/restoration/lower-yakima-river/cool-water-refuge-projects-rm-2-5-and-4-9/>

As of the end of the 2022 calendar year, the highest recorded temperature was 84.5 degrees Fahrenheit¹⁸, well above the 79.7 degrees Fahrenheit survival limit for salmon¹⁹.

Previous studies of water temperatures in the lower Yakima River did not provide information regarding salmon use of cool water refuge sites, cool water seep stability, or seasonal temperature fluxes. The data collected in the lower Yakima River Thermal Refuge Assessment will fill in those data gaps and provide a more complete picture of the thermal dynamics in the lower Yakima River. Preliminary findings of this study are expected to be released by the end of the 2024 calendar year. Data collection and analysis are ongoing.

Yakima Basin Water Quality Inventory database

BCCD and Washington State University at Tri-Cities are working on developing a comprehensive Yakima Basin Water Quality Inventory database²⁰ of streamflow rates, water temperature, and dissolved oxygen levels on the Yakima River mainstem and tributaries. This vital information is currently disjointed and stored in multiple state, federal, and other databases. The new comprehensive database will join these databases and also cross-link with bull trout monitoring data and offer mapping capabilities. This will streamline research efforts and reduce the time it takes to gather data.

Basin-wide floodplain restoration

A significant component of the Integrated Plan's watershed protection element is the restoration of floodplain functionality. Properly functioning floodplains are essential to maintaining a healthy watershed. Floodplains are wide, flat areas adjacent to waterways that act as a sponge when water levels breach river and stream banks during flood events. When waterways are cut off from their floodplain their streambanks can start to incise, water quality suffers, and water tables drop.

Floodplains provide upland and instream benefits and aid in recovery of adfluvial²¹ and anadromous²² fish, including salmon, bull trout and the federally listed steelhead. They also buffer the impacts of flood events to both rural and urban developments, reducing the financial risks and threats to human safety commonly associated with flood events.

There are many ways to restore a floodplain. Redesigning roads and removing structures, such as levees that cut waterways off from floodplains are just a few examples. By removing these barriers, floodplains are able to reconnect naturally over time as flood events start to create

¹⁸ <https://ecology.wa.gov/Blog/Posts/August-2018/Floating-the-Yakima-River-with-a-purpose>

¹⁹ Richter, A. & Kolmes, S. A. (2005). Maximum Temperature Limits for Chinook, Coho, and Chum Salmon, and Steelhead Trout in the Pacific Northwest. <https://www.noaa.gov/sites/default/files/legacy/document/2020/Oct/07354626288.pdf>

²⁰ More information can be found online at <https://www.bentoncd.org/resource-library>

²¹ Adfluvial fish species spawn in tributary streams where the young rear from 1 to 4 years before migrating to a lake system, where they grow to maturity.

²² Anadromous fish species spawn in fresh water but spend a significant portion of their life in the ocean.

side channels and bring in sediment and other materials that will settle across the area, widening the once narrow and incised floodplain.

To date, the Integrated Plan has completed several large wood placement projects in the upper Basin. Placing large logs and root wads in strategic locations within the Basin's tributaries slows the flow of water and causes water to spread across the floodplain where it infiltrates into the water table. This type of work has been completed at 14 waterways²³ throughout the Basin.

Other floodplain restoration projects

Completed work

- Schaake Habitat Improvement project
 - Floodplain reconnection²⁴ - 130 acres
 - Floodplain enhancements²⁵ - 11 acres
 - Levee removal - 0.9 miles
 - Wetland restoration and enhancement - 40 acres
- Gap-to-Gap
 - Floodplain reconnection - 1,900 acres
- Naches River
 - Completion of the Trout Meadow pilot channels
 - Removal of 600 feet of McCormick Levee
 - Land acquisition - 140 acres - located between Ramblers Park and Trout Meadows
 - Construction of 2,500 feet of approach channels and road armoring

Completed barrier removal projects

- Yakima River Mile 89.5 levee breach
- Wapato levee breach
- Toppenish Creek
 - Island Road and Mile 89.5 designs
 - 3-way levee setback

²³ Umtanum, Little Rattlesnake, Satus, North Fork Manastash, Jungle, Rye, Indian, First, Middle, Dicky, Jack, Carlson and Lick Creeks, and the Little Naches River.

²⁴ Floodplain reconnection work can include levee setbacks, right of way acquisitions, side channel excavation, restoring floodplain hydrology, and more.

²⁵ Floodplain enhancement work can include weed management, native vegetation plantings, and more.



Construction on the Nelson Dam removal project, Naches River.

Photo credit: Mike Shane (City of Yakima), 2023

Ongoing work

- Selah Gap-to-Union Gap (component of Gap-to-Gap)
 - Blue Slough reconnection study
 - Levee setbacks
 - Right of way acquisition
- Naches River
 - Floodplain reconnection - 82 acres
 - Nelson Dam removal and rebuild
- Ringer Loop Road
 - Floodplain reconnection and enhancement - 422 acres
- Schaake Habitat Improvement project
 - Floodplain reconnection and enhancement - 70 acres
- Toppenish Creek
 - Island Road Floodplain Reconnection project
 - Fan Habitat Restoration Project
 - Mile 89.5 Floodplain Reconnection project
 - Upper Toppenish Creek Restoration and Floodplain Reconnection at Pom Pom Road
- Donald Wapato Conveyance Improvement project (improve habitat and riparian establishment in the Wapato reach of the Yakima River mainstem)
- Tjossem Road ditch headgate decommission
- WIP Satus Creek diversion dam removal and floodplain restoration

Teanaway Community Forest

In 2013, the Washington State Legislature purchased the Teanaway Community Forest²⁶ (TCF). It is one of the largest community forests in the state. TCF co-managers (Washington Department of Natural Resources and WDFW) work with the TCF Advisory Committee to develop and implement sustainable management plans.

This work provides benefits ranging from expanding recreational opportunities to maintaining the TCF as a sustainable working forest. Critical habitats and headwaters within the TCF are protected through sustainable management practices and restoration work to improve watershed function. Large wood restoration projects have been completed in eight creeks (Jungle, Rye, Jack, Indian, First, Middle, Dickey, Lick, and Carlson), as well as the North Fork Teanaway River. Large wood restoration work is ongoing in the Mainstem Teanaway.

Central Washington University (CWU) is monitoring groundwater level responses to large wood placement in Yakima River tributaries located in the TCF. CWU's data analysis will provide valuable insight into the groundwater levels associated with large wood floodplain restoration.



Completed work on the North Fork Teanaway River.

Photo credit: Kevin Haydon (OCR), 2022

²⁶ The Teanaway was designated by the legislature as a community forest in 2013 following the State's purchase of the land.

Groundwater Storage

Aquifer Storage and Recovery (ASR) projects provide municipalities and water purveyors with a low-cost water storage alternative to traditional surface water storage reservoirs. A typical surface water storage reservoir requires large areas of land and extensive infrastructure. ASR projects capture excess water during times of high system flows and inject it into an aquifer where it is held until needed for augmenting instream flows and/or for meeting out-of-stream demands (Figure 5). To replenish an aquifer without injection, water can be released over an aquifer's recharge area to infiltrate into the groundwater. This process is referred to as shallow aquifer recharge and can benefit both aquatic and riparian habitats by allowing for seasonal recovery of cooler groundwater into adjacent streams and improve stream flow conditions.

The Integrated Plan Groundwater Storage Subcommittee is performing a Basin-wide groundwater storage analysis to identify groundwater storage opportunities in the upper and lower Basins. Groundwater work in the upper Basin includes KRD identifying high-priority managed aquifer recharge sites and the City of Ellensburg completing a prefeasibility ASR study. In the lower Basin, CWU continues to advance their Managed Aquifer Recharge (MAR) and hydrogeology data collection, while the Yakama Nation moves forward on their Toppenish Fan MAR projects.

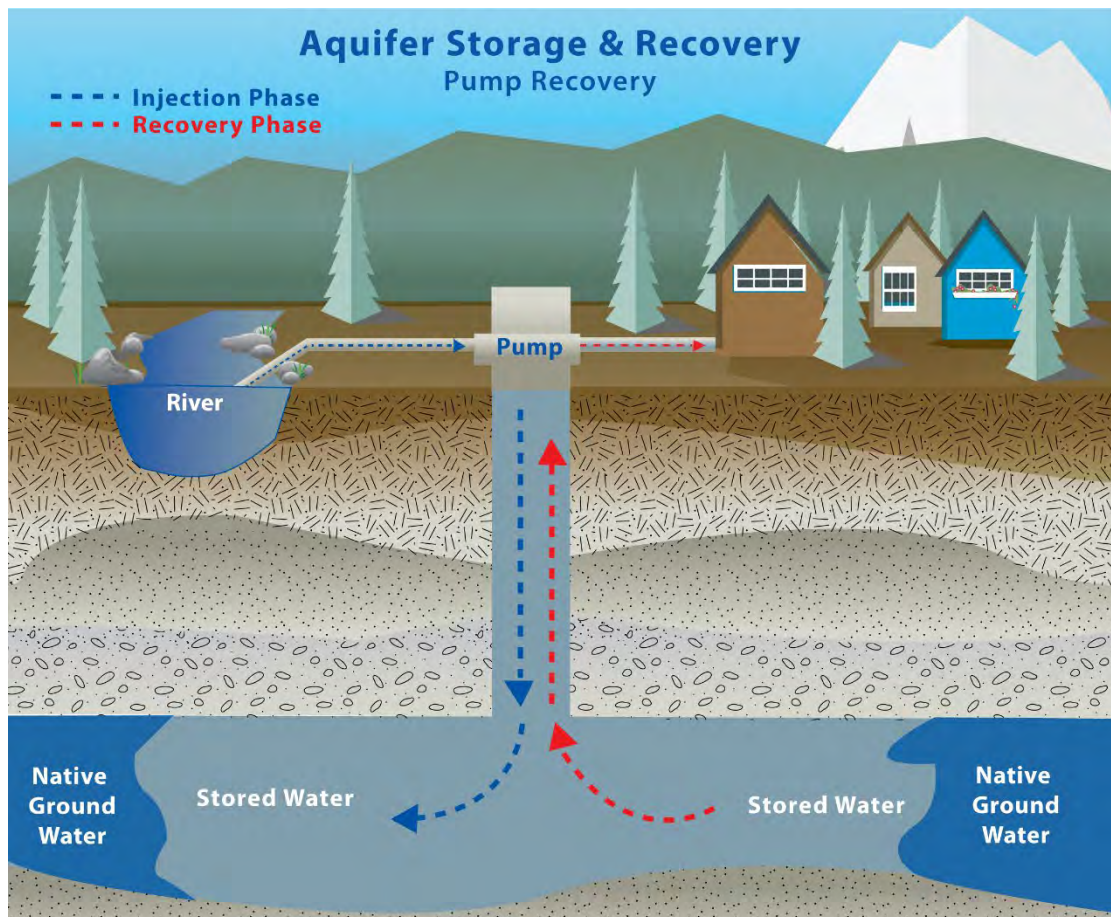


Figure 5 Aquifer Storage and Recovery Diagram

Groundwater storage and recharge

- Fewer environmental impacts than surface water reservoirs
- Lower construction costs than traditional surface storage reservoirs
- No impediments to fish passage
- Aid in the stabilization of groundwater levels
- Boost cool groundwater discharge into adjacent wetlands and streams
- Help mitigate climate change impacts and increased occurrence of drought conditions
- Storage usually available during high surface flow events

Groundwater Storage projects

Yakama Nation

The Yakama Nation has analyzed water infiltration volume data from the 2020-2021 water year for the Toppenish Recharge Fan Shallow Aquifer Recharge project. The data suggests that 2,000 ac-ft. of water was infiltrated into the Toppenish Fan aquifer. The Yakama Nation is building on this and is in the process of drafting a summary of their programmatic MAR Plan. They are currently seeking federal funding for additional ASR and MAR projects. Federal funding opportunities are discussed further in the Integrated Plan Project Funding Chapter, starting on page 36.

Central Washington University

CWU continues to advance groundwater storage in the Basin with a study titled *Strategies for Groundwater Storage in Diverse Settings of the Yakima Basin: Headwater Tributaries and Lower Basin Irrigation Districts*. In 2020, CWU completed a geochemical assessment of potential groundwater storage locations in the Yakima Basin. Results from this study provide a better understanding of how shallow and deep groundwaters interact in the upper Basin and has identified two potential MAR sites in Roslyn and Badger Pocket (Kittitas County).

In 2021, CWU began further quantifying groundwater storage benefits of large-wood placement on Indian Creek and floodplain storage potential at the Teanaway River. Groundwater level monitoring is currently underway at Indian Creek near Teanaway Valley Family Farm. CWU's next step in this analysis will be to determine native groundwater quantities versus Yakima River water infiltrating into the groundwater using isotopes. Expected start date is between 2024-25.

In 2022, CWU expanded the floodplain storage study at Teanaway Valley Family Farm. A groundwater model will be developed for the site to quantify the water balance and seasonal return flow benefits. A key component is evapotranspiration (ET) changes resulting from floodplain restoration. CWU will conduct a study to evaluate ET changes at Teanaway Valley Family Farm and Taneum Creek sites.

In the lower Basin, CWU conducted a geochemical and hydrogeologic study in the Badger-Coulee area in the Kennewick Irrigation District (KID) service area (Benton County). Results of this study are expected to be released by the end of January 2024. CWU will also evaluate potential MAR sites in the Rattlesnake Ridge area. The study will investigate hydrogeologic

conditions and potential recharge methods. This is an initial step to identify MAR opportunities in the basalt aquifers near Konnawac Pass (Yakima County).

Kittitas Reclamation District (KRD)

KRD has identified four top-ranked sites suitable for MAR projects (from highest to lowest priority: Taneum Creek, Naneum Creek, Big Creek, and Little Creek). KRD received additional funding in 2022 to conduct a MAR pilot test at the Taneum Creek site and expand monitoring efforts at high-priority MAR locations, with results anticipated in late 2023.

KRD will conduct an initial investigation of a basalt ASR site near Reecer Creek. This area was identified as a geological structural zone, which may be suitable for groundwater storage. KRD has also received funding for the development of a Central Data Repository and GIS Clearinghouse of Integrated Plan groundwater data. The project will develop a centralized information system accessible to Integrated Plan participants, the public and consultants to support Integrated Plan groundwater storage and data collection efforts in the Basin.

Other groundwater projects

- The City of Ellensburg completed a pre-feasibility study in 2021 that identified an opportunity to implement ASR to benefit municipal water supply and instream flows for the Yakima River. The Groundwater Subcommittee recommended funding a full feasibility study in 2022 that will include an ASR pilot. This feasibility study is expected to be completed in 2024.
- The City of Moxee began an ASR feasibility study in 2022 and is expected to be completed in 2024, to evaluate seasonal water availability for aquifer storage, model aquifer conditions, and evaluate other regulatory requirements to advance a project. The study will assess the benefits of ASR to municipal groundwater supply and late season baseflow in the Yakima River, which may benefit Total Water Supply Available (defined in WAC 173-539A-030²⁷) and aquatic habitat in the Basin.

²⁷ <https://app.leg.wa.gov/wac/default.aspx?cite=173-539A-030>

Surface Water Storage

The Kachess Drought Relief Pumping Plant, Springwood Reservoir, and Bumping Reservoir enlargement projects could all help meet the Integrated Plan's 450,000 ac-ft. surface water storage goal. Looking ahead, other sites in the mid-lower Basin might be evaluated as potential new surface storage options.

The Kachess Drought Relief Pumping Plant

In 2021, Roza Irrigation District, in coordination with Ecology and Reclamation, continued the development of a proposed floating pumping plant (Alternative 4) design for the Tier 2 National Environmental Policy Act process. Alternative 4 was identified as the preferred alternative in the 2019 Kachess Drought Relief Pumping Plant (KDRPP) and Keechelus Reservoir-to-Kachess Reservoir Conveyance Final Environmental Impact Statement (FEIS). The design uses a floating pumping plant to provide access to 200,000 ac-ft. of water held in an inactive pool located just below the current reservoir outlet.

This pumping plant will be atop a floating platform that is tethered to the uplands to keep it positioned over the reservoir. The floating platform will allow the pumping plant to move up and down with the fluctuating water levels in the reservoir.

Once operational, the pumping plant will only be active during times of drought when irrigation districts receive less than 70% of their Reclamation water supply. Pumped water will be conveyed to the Yakima River for distribution to participating junior water right permit holders, with the option of leaving a portion of this water instream to enhance stream flows. Roza has committed to paying for a substantial portion of the cost to design, construct, operate and maintain the drought relief pumping plant.

Following the release of the KDRPP EIS in 2019, Reclamation released a Record of Decision that discussed the need for a Tier 2 EIS²⁸ to analyze the potential project impacts on critical fish habitat, domestic groundwater wells, and surrounding property values. If it is found that domestic wells could be impacted, then mitigation and adaptive management strategies will be developed. The USFWS are conducting a study on bull trout trap and haul measures utilized at Tieton, Bumping, Kachess, and Keechelus dams²⁹. Results of this study will guide the potential design of a mobile steep pass to collect bull trout at Kachess Narrows, concurrent with the implementation of KDRPP. Data analysis is ongoing.

Springwood Reservoir KRD is in the process of narrowing down potential sites for additional surface water storage in the upper Yakima River Basin. One potential site examined in the appraisal level Upper Yakima System Storage evaluation, the proposed Springwood Reservoir, would be located south of the Teanaway Community Forest and would have an estimated storage volume of between 20,000 and 68,000 ac-ft.

²⁸ Tier-2 EIS is equivalent to a supplemental EIS under the State Environmental Policy Act.

²⁹ Current study progress report can be found here: <https://tinyurl.com/USFWS-Bull-Trout-Study>

The initial geotechnical investigation at the site in 2019 was promising, and additional geotechnical investigation is planned as the proposed project moves into the feasibility phase after the Phase I Environmental Assessment is complete. The Recreation and Conservation Office received \$24 million in 2023-25 capital appropriations to purchase the Springwood Ranch property. KRDC is currently working closely with partners to investigate funding options to move forward with a feasibility study for the project. As proposed, the volume of water held in Springwood Reservoir will benefit instream flows for fish in the Yakima River.

Bumping Reservoir Enlargement

The Bumping Reservoir Enlargement Project, located approximately 40 miles northwest of Yakima, will involve construction of a new dam and fish passage facility located approximately 4,500 feet downstream from the existing dam, which was constructed over a century ago. This project is estimated to increase the storage capacity of the reservoir from 33,700 ac-ft up to 190,000 ac-ft. Site considerations for this project are ongoing.



Aerial view of the narrows, Kachess Reservoir

Photo credit Kirsten Strough (BOR), 2012

Fish Passage

Fish passage projects are vital to restoring depleted fish runs in the Basin. The goal is to provide access to crucial cold water spawning and rearing grounds for returning anadromous adult fish and restore the ability of these fish to migrate out to the ocean to begin their next stage of life. In partnership with the Yakama Nation, Ecology and Reclamation are moving forward with multiple fish passage projects on Clear Lake, Cle Elum Reservoir, and Tieton Dam.

These projects focus on providing upstream and downstream fish passage at U.S. Bureau of Reclamation dams in the Basin. With migratory adult fish finally able reach their spawning and rearing grounds and juvenile fish once again able to migrate out to the ocean, we will be one step closer to self-sustaining, harvestable fish runs to support Yakama Nation federal treaty rights.

Cle Elum Fish Passage

The Cle Elum Dam Fish Passage project will allow juvenile and adult fish to pass by the dam (Figure 6) in a range of reservoir water levels during their migration season. Facilities construction began in 2015. The intake ramps and helix fish transportation structure started taking form in spring of 2019. To date, construction of the secant vault that will hold the helix, the two lowest level intake ramps, and the downstream bypass tunnel is complete. The juvenile fish passage facility will use surface flows from the reservoir to attract juvenile fish to the intake ramps that lead to the smooth-flowing water in the helix.

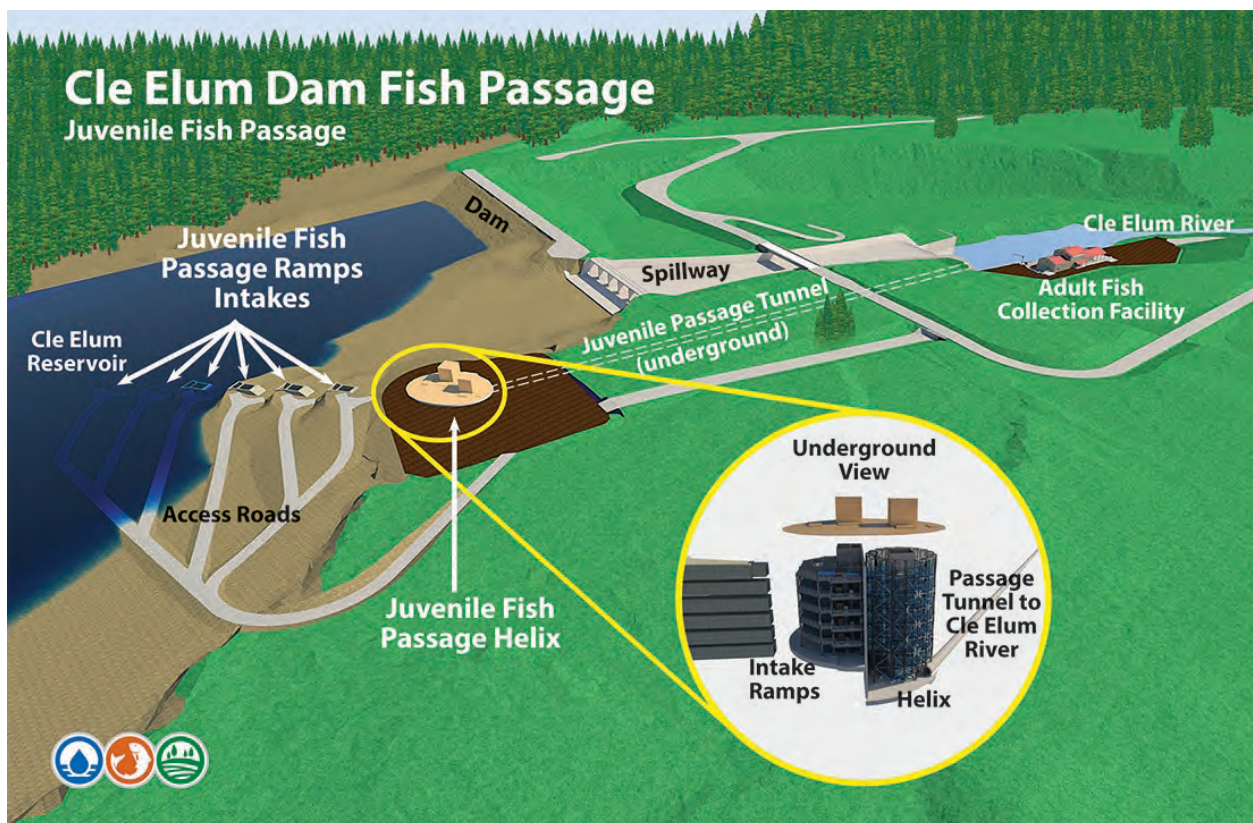


Figure 6 Cle Elum Fish Passage Diagram



Cle Elum Fish Passage intake ramp gate chamber construction work.

Photo credit: Ryan Roberts (BOR), October 2022

From the helix, fish enter into the bypass tunnel at the base of the dam that takes them straight to the Cle Elum River and on their way out to the ocean.

Construction of the adult collection facility will start in July 2024. This facility will capture migrating adult fish, that are returning from the ocean, before they reach the dam and funnel them to a truck that will haul and deposit them above the dam into upstream tributaries so they can reach their spawning and rearing grounds. This project will reopen 30 miles of upstream habitat for salmon, steelhead, and other fish in Cle Elum River and its tributaries. Even with delays caused by the COVID-19 pandemic, the Cle Elum Fish Passage project is on schedule for completion in 2026.

Until the fish passage facilities are complete and operating, the Yakama Nation will continue to capture fish from the Yakima and Columbia rivers for transfer to the streams that feed the Cle Elum Reservoir. In 2020, a record number of 15,000 reintroduced sockeye salmon were trapped and hauled to the Cle Elum Reservoir to spawn. With such a large number of sockeye returning to the Basin under the old trap and haul model, this state-of-the-art facility is a tremendous opportunity to restore fish runs for native fish.

Clear Creek Dam

The Clear Creek Dam Fish Passage design is at 90% and consists of a traditional pool-and-weir, or fish ladder, style fish passage design. There is a steel bulkhead at the upstream end of the structure to draw up cool water from deeper in the reservoir. This will maintain suitable water temperatures for migrating bull trout. The fish ladder design was completed in 2021 and environmental compliance and permitting will be completed by the end of 2024.

In the meantime, U.S. Fish and Wildlife Service, Reclamation and WDFW will continue bull trout capture efforts below Clear Creek Dam and haul the fish to the North Fork Tieton River spawning and rearing grounds (upstream of the Clear Creek Dam). Captured fish are reared in facilities until they are large enough to release back into the North Fork Tieton River to spawn. Since 2016, 104 captured young bull trout have been raised to adult size and released into the North Fork Tieton River.

Box Canyon Creek

Ecology continues to provide input to Reclamation, WDFW, Roza, and other fish passage restoration experts on the Box Canyon Creek Fish Passage Enhancement Project. This project will enhance spawning habitat in the upper Yakima River Basin by improving channel roughness and placing large wood debris in strategic locations in Box Canyon Creek. It will also provide a portion of the mitigation required under KDRPP (page 28). The designs for this project are currently 60% complete.

Tieton Dam

Bull trout rescue efforts are continuing at Tieton Dam, located at the Rimrock Reservoir. Juvenile bull trout finding themselves in shallow pools as the water levels recede are retrieved and reared in a captive facility. Once the fish reach a length of at least 150mm, they are released back into the Tieton River to finish their journey to the ocean.

The South Fork Bridge Replacement project will better accommodate fish passage at the Tieton Dam by increasing access to and from the reservoir during a wider range of water levels.

Design efforts by Yakima County on a replacement bridge are ongoing. Fish biologists and engineers continue to evaluate a variety of fish passage structure types for this facility, factoring in topography, flows, land ownership, reservoir depths and fish utilization.



Aerial view of Tieton Dam

Photo credit: Dave Walsh (BOR), 2012

Structural & Operational Changes

Projects under the Structural and Operational Changes element of the Integrated Plan improve efficiency and flexibility of water delivery systems by upgrading existing facilities and removing fish passage barriers. These efforts will create more reliable water supplies to meet instream flow needs and out-of-stream demands.



Cle Elum Pool Raise

By extending the Cle Elum Dam radial gates by three feet in 2017, the Cle Elum Pool Raise project increases the

storage capacity of the Cle Elum Reservoir by 14,600 ac-ft. Once shoreline stabilization work is complete, the additional 14,600 ac-ft. of water can be stored and will be released for augmenting instream flows in the Cle Elum and Yakima rivers and improving fish habitat.

Shoreline stabilization work at a Cle Elum River Campground near the northern-most portion of Cle Elum Reservoir

Photo credit: Kirsten Strough (BOR), June 2018.

The Cle Elum Pool Raise project met several milestones over the past two years, commencing shoreline stabilization along Salmon La Sac Road and contracting out shoreline protection work for Sandelin Lane. Additionally, shoreline protection construction at Wish Poosh Campground and Boat Launch was completed in May 2022. The designs for shoreline stabilization design for the Morgan Creek and Night Sky sites are currently 60% complete. Design work is ongoing and is expected to continue through 2024. The remaining six shoreline stabilization design and construction work areas will be implemented as funds become available.

Lower Yakima River Smolt Survival study

Dams, predators, low river flows, poor water quality, and other environmental conditions can decrease the number of smolts making it to the ocean to start the next phase of their life cycle. The Lower Yakima River Smolt Survival Study examines factors affecting smolt survival in the Yakima River mainstem from the City of Yakima (mid-basin) to where it meets the Columbia River near the Tri-Cities.

Data analysis, modeling, and reporting on the results of the Lower Yakima River Smolt Survival Study are expected to continue through 2024. Each year during the study approximately 1,000 juvenile salmon and steelhead are tagged and released into the Yakima River to monitor behavior, survival, smolt predation, and water temperature as the fish migrate out to the ocean. The data collected provides the Yakama Nation and USGS with the information they need to develop projects that will effectively reduce smolt mortality.

Recent data indicates that early spring is the best time for smolt survival because water temperatures are still low. Survival rates were lowest in June, which is when river flows tend to decline, water temperatures increase, and predators are abundant. Smolt survival dropped significantly when fish were inadvertently diverted into canal head gates. Preliminary data showed that approximately 25% of juvenile salmon and steelhead were dying on their way down the Yakima River due to an irrigation diversion head gate (Sunnyside Canal) that was accessible to the fish.

Sunnyside Dam Smolt Passage Improvement

In partnership with Reclamation, Ecology, the Washington State Recreation and Conservation Office³⁰, the Sunnyside Division Board of Control and Sunnyside Valley Irrigation District (SVID) installed a fish guidance boom at Sunnyside Dam in 2021. This boom keeps smolt from entering the diversion head gate and guide them down the river. Data analysis on smolt survival after the boom placement is ongoing. Smolt survival dropped significantly when fish were inadvertently diverted into canal head gates. Efforts to identify other factors affecting why fish are not surviving the passage through canal head gates are currently underway.

Following the boom project, the Sunnyside Division Board of Control finished a sluice gate modification at Sunnyside Dam in 2021. This gate provides fish low-flow passage at the dam, reducing smolt mortality due to high-energy flows. Both structures were monitored for effectiveness through 2022. Final data analysis from the Lower Yakima River Smolt Survival Study will guide future projects aimed at improving smolt survivability.



Sunnyside Dam sluice gate modification.

Photo Credit: Sunnyside Valley Irrigation District (OCR), 2022

³⁰ Moreno, E. (2021, March 15). Sunnyside Valley Irrigation District's new Boom Fish Guidance System. Hydro Leader. <https://hydroleadermagazine.com/sunnyside-valley-irrigation-districts-new-boom-fish-guidance-system/>

Chandler Pumping Plant Electrification

Reclamation extended its existing Memorandum of Agreement with Kennewick Irrigation District (KID) through 2022, allowing Reclamation to continue supporting updated design drawings and operational diversion plans for the Chandler Electrical Pumping Plant. Electrification of the pumping plant will end KID's current reliance on water diverted from the Yakima River to power hydraulic turbines it uses to supply water to its patrons.

Ecology, Yakama Nation and KID will continue discussing options for meeting both instream needs and out-of-stream demands in the lower stretches of the Yakima River.

Market Driven Reallocation

Water markets provide water right holders a way to buy, sell, or lease water from one another on either a temporary or permanent basis. This provides a wide range of benefits to the farms, families, and fish in the Basin. There is a financial incentive for water right holders to improve their irrigation systems to become more efficient in exchange for water they conserve to be offered for sale in a market where others can acquire the water through mitigation credits. This conserved water supply provides communities with water reliability opportunities to meet future demands and irrigators with a more drought resilient supply. Conserved water may also be converted from low-value uses to high-value uses during times of drought or low system flows. It is estimated that 30,000 to 60,000 ac-ft. of water could be traded in a Yakima River Basin water market.

KRD and Trout Unlimited released the Yakima Basin Water Market Strategy in September 2022³¹. This document provides a strategy to improve upon existing water market activities in the Yakima Basin including the development of a smart market that will streamline and automate key steps in the buying and selling of water rights.

³¹ <https://yakimabasinwatermarketing.org/>

Integrated Plan Project Funding

Project costs are estimates based on information currently available. These estimates are subject to change as project feasibility, design and actual costs are further refined.

Cost estimates

Full buildout project cost estimates

The current cost estimate for the full buildout of the Integrated Plan is \$4.1 billion (Table 2, next page). It is important to note that this cost estimate is provided in 2012 dollars, and has not been revisited or updated since the Integrated Plan's Programmatic Environmental Impact Statement (PEIS) issued in 2012. Reclamation, Ecology and our partners are in early conversations about what steps could be taken to update these cost estimates in the next development phase. Accordingly, the actual cost of completing the Integrated Plan projects will likely be considerably higher, due to cost escalation and the impact of inflation. Costs will be updated as the components of the Integrated Plan progress, funding is identified, and designs are finalized. Nonetheless, project cost escalation will be an ongoing challenge to the implementation of the Integrated Plan. The 35+ year Integrated Plan is broken into three funding and implementation phases as seen below.

Funding and implementation phases

- Initial Development Phase (IDP) – 16+ years, began in 2013
 - \$1.21 billion, or 30% of total costs.
 - Requires the smallest portion of funding as many of the projects are being developed, designed, and permitted during this phase
- Middle Development Phase (MDP) – 10 years
 - \$1.49 billion, or 36% of total costs.
 - Construction will begin on several largescale capital construction projects during this phase
- Final Development Phase (FDP) – 10 years
 - \$1.41 billion, or 34% of total costs.
 - Projects wrap up construction and begin operation and maintenance during this phase

Table 2 Estimated Costs for the full buildout of the Integrated Plan³² (in 2012 dollars)

Integrated Plan Element	Initial Development Phase (2013-2029)	Middle Development Phase	Final Development Phase	Full Development Costs (3 Decades)
Habitat/watershed protection and enhancement	\$476,300,000	\$2,100,000	\$2,100,000	\$480,500,000
Fish passage (6 projects)	\$256,600,000	\$173,400,000	\$100,000,000	\$530,000,000
Surface water storage	\$248,700,000	**\$985,925,000	**\$981,925,000	\$2,216,550,000
Groundwater storage - regional and municipal	\$10,400,000	\$56,400,000	\$56,400,000	\$123,200,000
Structural and operational changes	\$80,800,000	***\$122,650,000	***\$122,650,000	\$326,100,000
Enhanced water conservation	\$130,600,000	\$149,450,000	\$149,450,000	\$429,500,000
Market driven reallocation	\$4,100,000	\$0	\$0	\$4,100,000
Integrated plan update costs		\$1,500,000	\$1,500,000	\$3,000,000
Other	\$2,900,000			\$2,900,000
Total	\$1,210,400,000	\$1,491,425,000	\$1,414,025,000	\$4,115,850,000

* Keechelus to Kachess Pipeline was classified as Operational Modifications in the IDP Costs. The Kachess Reservoir Drought Relief Pumping Plant project is included as Surface Water Storage.

** Average costs of the next two surface water storage projects that are recommended under the Integrated Plan along with the additional cost of producing an updated water needs analysis and Columbia River availability analysis. The cost of subsequent storage projects described in the Integrated Plan have been averaged and divided equally between the MDP and FDP because final decisions regarding whether to proceed with those projects and project sequencing have not been made. MDP costs also include estimates for providing updated water needs and Columbia River water availability analyses.

*** This includes costs of Wapatox Canal Conveyance, KRD Main Canal, South Branch Modifications and Roza subordination. Estimated costs for the Wapatox Canal Conveyance, KRD Main Canal and South Branch Modification, and Roza Subordination projects have been totaled and divided equally between the MDP and FDP because decisions regarding project sequencing have not been made.

³² This table is developed and maintained by OCR.

Initial Development Phase costs and funding

The IDP is in progress. It extends from July 2013 – June 2029 (this phase started when the State Legislation passed in 2013 and goes 10 years beyond when the Federal Legislation passed in 2019). Anticipated³³ funding to-date (2013-2025) is approximately \$1,210.4 million, with state funding being fully appropriated at \$369.5 million (Table 3) and federal/other funding anticipated at \$840.9.

The estimated cost to implement the IDP is approximately \$1.21 billion, with state projected contribution at 30.6% (\$369.5 million) (Table 4, next page).

Initial Development Phase projected funding for each of the plan’s seven elements (Table 3):

- Habitat/Watershed Protection and Enhancement – \$476.3 million (39.5%)
- Reservoir Fish Passage – \$256.6 million (21.25%)
- Structural and Operational Changes – \$80.8 million (6.7%)
- Surface Water Storage – \$248.7 million (20.6%)
- Groundwater Storage – \$10.4 million (0.9%)
- Enhanced Water Conservation – \$130.6 million (10.8%)
- Market Driven Reallocation and Integrated Plan updates – 4.1 million (0.3%)

Table 3 Anticipated funding (\$ in millions) to-date (2013-2025) by source

Integrated Plan Element	Federal Funding	State Funding	Total
Habitat	319.0	157.3	476.3
Fish Passage	175.1	81.5	256.6
Structural & Operational	19.5	61.3	80.8
Surface Storage	221.6	27.1	248.7
Groundwater Storage	3.0	7.4	10.4
Water Conservation	101.5	29.1	130.6
Market Driven Water Reallocation	1.2	2.9	4.1
Other	0	2.9	2.9
Total	840.9	369.5	1,210.4

³³ Federal budget for Integrated Plan is anticipated in the fall of 2024.

Table 4 Initial Development Phase Estimated Costs

\$ in Millions (blank cells denote "0" funding or request)					Appropriated State Funding						Federal & Other Sources of Funding	
Integrated Plan Elements	Projects	Projected Funding Requests from all Sources 2013-2025	Anticipated Federal & Other Share 2013-2025	Appropriated State Share 2013-2025	2013-2015	2015-2017	2017-2019	2019-2021	2021-2023	2023-2025	Appropriated 2014-2022	Anticipated 2023-2024 ^a
Habitat	Teanaway Forest Acquisition	99.3		99.3	99.3							
	Teanaway Forest Planning & Operations (non-Ecology)	7.6		7.6	1	0.5	1.5	2.3	1.1	1.2		
	Kittitas County impacts offset for Teanaway Forest	10	5	5	5							5
	Other State Land Acquisitions	14	8.2	5.8	5.8						8.2	0
	NRCS RCPP - Yakama Nation Projects	22.6	22.6	0							11.6	11
	NRCS EQIP	20.5	20.5	0							9.3	11.2
	NMFS Pacific Coastal Salmon Recover Fund	20.4	20.4	0							10.8	9.6
	USACOE levee reconfig., setback & removal	13.2	13.2	0							6.4	6.8
	BPA NPCC Fish and Wildlife Program	173.3	173.3	0							173.3	0
	Tributary/Mainstem/Delta Habitat Restoration Projects	46.9	17.4	29.5	2.4	2.5	5.4	4.3	4.9	10	8	9.4
	Bull Trout Enhancement	19.6	9.8	9.8		1.7	1.7	1.7	1.7	3		9.8
	Federal, Tribal, Local Habitat Actions & Land Acquisitions	28.9	28.6	0.3		0.3					28.6	0
	Habitat funding subtotal	476.3	319	157.3								
Fish Passage	Cle Elum Dam	219.5	148.1	71.4	8.8	9	9	20.1	21.5	3	108.1	40
	Tieton Dam	25.9	22	3.9	0.6	0.5		0.8		2	0.3	21.7
	Clear Lake Dam passage	9.4	3.2	6.2			1.5	1	0.7	3	1.8	1.4
	Box Canyon Creek	TBD	TBD	0								TBD
	USFWS National Fish Passage Program funds	1.8	1.8	0							1.8	0
		Fish passage funding subtotal	256.6	175.1	81.5							

Structural & Operational	Keechelus to Kachess Conveyance Project	5.7	1	4.7	0.5	4.2		0	0	0	1	0
Modifications	Cle Elum Dam/Pool Raise	28.9	13.4	15.5	2.8	1	3	3.3	2.4	3	8	5.4
	Roza Power Subordination ^b	0.2	0	0.2	0.2							
	Chandler Power Subordination ^b	TBD	TBD	0								0
	Misc. Structural projects, Nelson Dam, Lower River, YTID, KRD	13.5	2.6	10.9					1.9	9	2.6	0
	Upper Yakima System Storage	32.5	2.5	30				2		28	0.8	1.7
	Total structure & operational modification funding	80.8	19.5	61.3								
Surface Storage	Kachess Drought Relief Pumping Plant (KDRPP) ^c	236.2	218.6	17.6	12.6	4.3	0.7				6.5	212.1
	Wymer Dam and Reservoir	10	2.5	7.5	0.5		3	3.5	0.5		0.4	2.1
	Bumping Reservoir Enlargement	1	0.5	0.5	0.5							0.5
	Misc. future surface water supply storage options	1.5	0	1.5					0.5	1		
	Total surface storage funding	248.7	221.6	27.1								
Groundwater Storage	Regional Storage Options	10	2.8	7.2	0.2	0.5	1.1	0.6	1.8	3	0.7	2.1
	Municipal ASR Projects	0.4	0.2	0.2	0.2							0.2
	Total groundwater storage	10.4	3	7.4								
Water Conservation	Agricultural Conservation Projects	107.4	79.2	28.2	2.4	4.8	5	4.5	4.8	6.7	79.2	0
	Municipal/Domestic Conservation Programs	1.5	0.6	0.9	0.1	0.2	0.1	0.1	0.1	0.3	0.1	0.5
	BIA WIP improvements	21.7	21.7	0							19.7	2
	Total water conservation funding	130.6	101.5	29.1								
Market Driven Water Reallocation	General support for markets and banking	4.1	1.2	2.9	0.4	0.5	0.6	0.1	0.3	1	0.2	1
	Total market driven reallocation funding	4.1	1.2	2.9								
Ecology staffing & program administration				2.9					0.9	2		
	Total	2.9	0	2.9								
Total		1,210.4	840.9	369.5	143.3	30	32.6	44.3	43.1	76.2	487.4	353.5
Percentage Share		100%	69.60%	30.6%	11.90%	2.50%	2.70%	3.70%	3.60%	6.30%	40.40%	29.30%

Table 4 footnotes:

RCW 90.38.120 - Legislative Intent - Cost to implement integrated plan states: (1)(a) It is the intent of the legislature for the state to pay its fair share of the cost to implement the integrated plan. At least one-half of the total costs to finance the implementation of the integrated plan must be funded through federal, private, and other non-state sources, including a significant contribution of funding from local project beneficiaries. This section applies to the total costs of the integrated plan and not to individual projects within the plan.

RCW 90.38.120 - Legislative Intent - Cost to implement integrated plan states: (1)(b) The state's continuing support for the integrated plan shall be formally reevaluated independently by the governor and the legislature if, after December 31, 2021, and periodically thereafter, the actual funding provided through non-state sources is less than one-half of all costs and if funding from local project beneficiaries does not comprise a significant portion of the non-state sources.

The projects and specific costs are subject to change or modification as new information becomes available over the course of the 30-year implementation schedule of the Yakima Integrated Plan. The State and non-state cost share is yet to be defined. This estimate is guided by the projected state support provided over the next three biennia. If non-state funding was increased during this time, the required state funding might need to be increased to conform to RCW 90.38 and in conformance with agreed upon cost-share methodology. The estimates provided in this projection illustrates a possible state and non-state cost share approach and may not be consistent with other published cost estimates for the overall Integrated Plan.

Costs do not include inflation. They are listed in dollars from the most recent study available (typically 2012 to 2015 dollars) and are subject to change as new information becomes available through additional feasibility and design studies and/or changes by the Yakima Integrated Plan Workgroup.

The specific amount dedicated to each project in federal FY 23 and FY 24 is yet to be determined for the federal and other sources of funding.

Funding for power subordination costs and KRD canal modification costs are listed as TBD due to insufficient information to reasonably cost-out. Inclusion of costs for these three items will increase the total state and non-state share of overall funding.

Includes funds spent by Roza ID on Kachess Emergency Floating Pumping Plant - cost assumes floating plant alternative. Construction costs may move into the middle development phase cost estimates.

Other State Land Acquisitions include Tieton Cattle Co./North Fork Cowiche Creek; and Heart of the Cascades/Manastash Block.

Federal, Tribal, Local Habitat Actions & Land Acquisitions funded by LWCF in 2014 and 2015. Includes acquisitions in Naches watershed; Cabin Creek, Log/Thetis Creek. Some of these went beyond "primary" Integrated Plan goals.

Funding strategy

The Integrated Plan’s adaptive management style and phased approach is vital to stabilizing funding. Current and past funding sources include existing agreements with state, federal, and tribal agencies, local utility and irrigation districts, local governments, environmental groups, and landowners. Securing state and local funds allows the Integrated Plan to access additional federal grant opportunities as many of them require state/local match monies.

The total appropriated funding provided for project implementation to-date is approximately \$857 million between the State³⁴ (\$369.5m), federal³⁵ and other investments (\$487.4m). See Table 4 (page 39) for more details. This translates to \$3.25 billion dollars that remain to implement the Integrated Plan going forward.

The detailed funding strategy for this \$3.25 billion is a bit unknown at this moment in time. For instance, the KDRPP project requires state and federal government-provided funds for early action items (planning, permitting, environmental review), while the high-dollar construction costs will be borne by future water users benefitting from this project. However, a future new storage reservoir may have a larger state/federal contribution towards construction if the beneficiary includes instream flows for fish. Funding strategies for projects still out on a longer-term horizon become more complex to discuss as beneficiaries of these future projects are not fully defined.

State funding opportunities

State capital budget funding

State funding for Integrated Plan projects usually come in the form of bond-funded appropriations from the state capital budget. Various Purpose General Obligation (GO) Bonds that are authorized by the legislature and appropriated in the State’s biennial capital budget are a form of debt-backed by the full faith, credit, and taxing power of the State and are typically issued with a 25-year maturity. State funding, whether appropriated through the capital budget or operating budget, can be leveraged with federal funds and can serve as a match to federal funds.

Boards

Grant programs managed by a variety of state agencies are another funding option for Integrated Plan projects. The Washington State Recreation and Conservation Office (RCO) manages the Recreation and Conservation Funding Board (RCFB) and the Salmon Recovery Funding Board (SRFB) funding programs. Funds through these programs can go towards a wide range of projects from creating outdoor recreation opportunities, protecting wildlife, habitat, and farmland, to the construction of parks, trails, ball fields, boating facilities, and more.

³⁴ State funding from 2013 to 2025

³⁵ Federal funding from 2013 to 2024

Funding board grant programs

- Aquatic Lands Enhancement Account
- Land and Water Conservation Fund
- Washington Wildlife and Recreation Program

Other grant programs

Other grant opportunities are provided through the Centennial Clean Water Program (appropriated in the capital budget) and by local project proponents and community stakeholders (Floodplains by Design). The Centennial Clean Water Program grant funds can go towards projects related to improving water quality, such as improving water quality infrastructure and addressing nonpoint source pollution. Similarly, Floodplains by Design utilizes collaborative partnerships that are built from the ground up by local project proponents and community stakeholders to develop integrated floodplain restoration projects to reduce flooding risks while also protecting and restoring aquatic and upland habitats.

Federal funding opportunities

Bipartisan Infrastructure Law (BIL)

There are generally three main areas where some federal funding may be available for Integrated Plan projects: appropriating funds from the federal budget through Reclamation, applying for federal grants, or exploring other federal financing opportunities. In 2021, the passage of the Public Law 117-58, also known as the Bipartisan Infrastructure Law or the Infrastructure Investment and Jobs Act (IIJA), created new federal grant opportunities (Table 5) that could help fund Integrated Plan projects. Integrated Plan partners are aggressively pursuing multiple federal grant opportunities as they become available.

Table 5 IJIA (federal) Funding Opportunities

Agency	Funding Program	Element(s)
	Storage Projects Program	
	Aquatic Ecosystem Restoration Program	Habitat/Watershed Protection and Enhancement
	WaterSMART Environmental Water Resources Projects Program	Enhanced Water Conservation, Habitat/Watershed Protection and Enhancement
Fish and Wildlife Service	Recovery Challenge Fund	Habitat/Watershed Protection and Enhancement
U.S. Department of Transportation	2022 Nationally Significant Federal Lands and Tribal Projects Program	Habitat/Watershed Protection and Enhancement, Fish Passage
	National Culvert Removal, Replacement and Restoration Grant Program	Fish Passage
Environmental Protection Agency	Columbia River Basin Program	Habitat/Watershed Protection and Enhancement

Infrastructure Investment and Jobs Act

Plauché & Carr LLP, contracted by Integrated Plan partner Benton County, has compiled the following Infrastructure Investment and Jobs Act section of this report.

Plauché & Carr LLP is tasked with establishing a multi-pronged strategy to support the Integrated Plan Implementation Committee and Integrated Plan partners by identifying, positioning for, and helping to secure funding for Integrated Plan projects through the IIJA and related opportunities. Specific Federal funding opportunities for Integrated Plan projects (2022-2023) are laid out in Table 6 (next page).

Plauché & Carr LLP also provides support by coordinating and informing Integrated Plan partners on the best approach to pursue IIJA funding, tracking funding opportunities and pursuits, supporting proposals that address key funding requirements, supporting communications and outreach on opportunities, and reporting progress at Integrated Plan meetings. Integrated Plan partners pursued multiple federal grant opportunities as they became available. These efforts paid off and in 2023, \$8,323,677 was awarded for water conservation, floodplain restoration, and habitat restoration projects. Funding opportunities like IIJA are instrumental in maintaining the momentum of moving multiple Integrated Plan projects forward.



Aerial View of farms in the Yakima River Basin

Photo credit: Bureau of Reclamation, 2021

Table 6 Federal funding opportunities for Integrated Plan projects (2022-2023)

Funding Opportunity	Integrated Plan Project	Sponsor	Integrated Plan Element	Status
America the Beautiful Challenge 2022, National Fish and Wildlife Foundation	Middle and West Fork Teanaway Project, Phase 1	Yakama Nation	Habitat Protection and Enhancement	Denied
	Kachess River Restoration Project	Washington Department of Fish and Wildlife		Denied
	Satus Creek Riverscape Assessment and Project Design	Yakama Nation		Denied
	South Fork Tieton River Passage and Bridge Project	Yakima County		Denied
NOAA's Restoring Fish Passage through Barrier Removal Notice of Funding Opportunity under the IJJA, Department of Commerce	Bateman Island Causeway Removal and Prosser Dam Assessment	Yakama Nation	Habitat Protection and Enhancement	Awarded (Dec. 2022) Up to \$3,626,635 over 3 years
	Nelson Dam Removal	City of Yakima		Denied
Tribal Priority Fish Passage through Barrier Removal under the IJJA, Department of Commerce	Bateman Island Causeway Removal	Yakama Nation	Habitat Protection and Enhancement	Denied
	Bateman Island Causeway Removal and Prosser Dam Assessment			Denied
	Toppenish Creek and Lower Tributary Passage Assessment Proposal			Awarded (Dec. 2022) Up to \$1,232,068 over 3 years
FY2022 NOAA's Transformational Habitat Restoration and Coastal Resilience Grants Under the IJJA, Department of Commerce	Bateman Island Causeway Removal	Yakama Nation	Habitat Protection and Enhancement	Denied
	Middle and West Fork Teanaway Project, Phase 1			Denied
	Gap to Gap	Yakima County		Denied

Funding challenges

The Integrated Plan’s funding needs will change over time due to impacts such as design changes, supply chain interruption, material and labor shortages, unexpected delays, extreme weather, and other unforeseen events.

Inflation is another serious funding challenge that project managers must navigate. From 2012 to 2023, inflation, as evidenced by the Consumer Price Index, increased 27% nationally and 35% in parts of Washington State, as shown in Figure 7. As the Integrated Plan’s cost estimates are based on 2012 dollars, it can be expected that the actual delivery cost of the full buildout will be considerably higher than the \$4.1 billion cost estimate.

Increases in project costs lead to cost overruns, which can add years to project timelines and increase the overall cost of implementing the Integrated Plan as more funding must be secured to see the project to completion.

The Integrated Plan’s adaptive management style allows for long-term large-scale capital construction projects to secure funding in phases for the life of a project. The ability to adjust when and where funds are used, including shifting funds from one biennium to another or from one project to another, is a vital component to the Integrated Plan’s success. As a result of this flexibility, one project can move forward while other projects are working through unanticipated delays and funding shortfalls.

The Integrated Plan carefully evaluates both short-term and long-term funding needs. By identifying costs in each project phase, project managers can ensure that funds are available as needed throughout the life of the project. Projects that provide water for instream benefits can qualify for state and federal grants, whereas projects providing out-of-stream benefits to customers can include cost recovery fees that help to recover money required to build out the project.

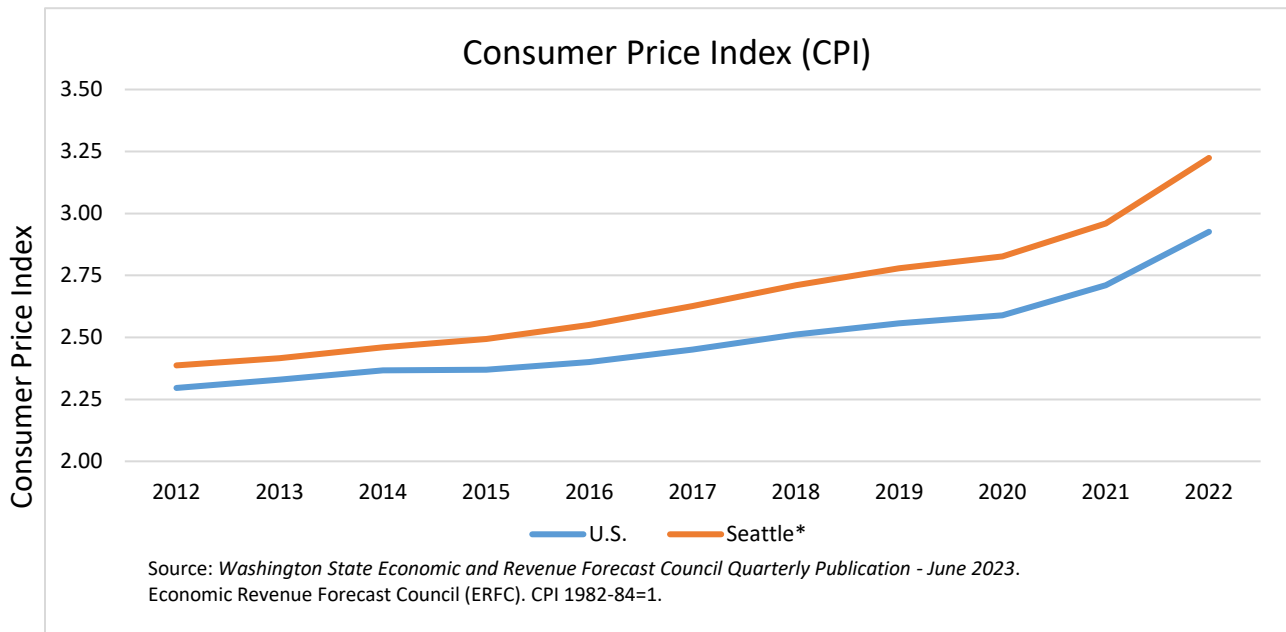


Figure 7 Consumer Price Index comparison of Seattle and average U.S.

For the 2023-2025 biennium, Ecology received \$49 million in state funding (see Table 4 for detailed funding allocation), which is approximately \$7 million more than the previous biennium's appropriation. In addition, the Recreation and Conservation Office received \$26 million for land acquisition in the Basin. State budget requests will continue to grow as more complex water storage and fish passage construction projects take shape. For example, KRD's proposed Springwood surface water storage project is expected to cost over \$1 billion to construct and will likely take several biennia to complete the feasibility and design alone.

Securing long-term funding

Looking ahead, we anticipate our state biennial funding requests to increase up to, and even exceed, \$100 million within the next 10 years. This will be potentially due to expensive, large, and complex projects coming online over this period. Other considerations in OCR's biennial requests may include the rising costs of construction materials, equipment, and labor. Funding will go towards seeing in-progress projects to completion, maintaining completed projects, and implementing new projects.

As a variety of federal funding is successfully secured, we anticipate the number of projects to likewise increase. Ecology's OCR has gone from managing 30 projects in eastern Washington to managing 110 (and growing) projects today³⁶. To maintain the quality of its work serving Integrated Plan partners and stakeholders, Ecology will need to bring on more staff to OCR's project management and finance management teams to keep pace with implementation and properly oversee these projects in accordance with public funding requirements.

³⁶ This includes both Ecology and Integrated Plan projects.

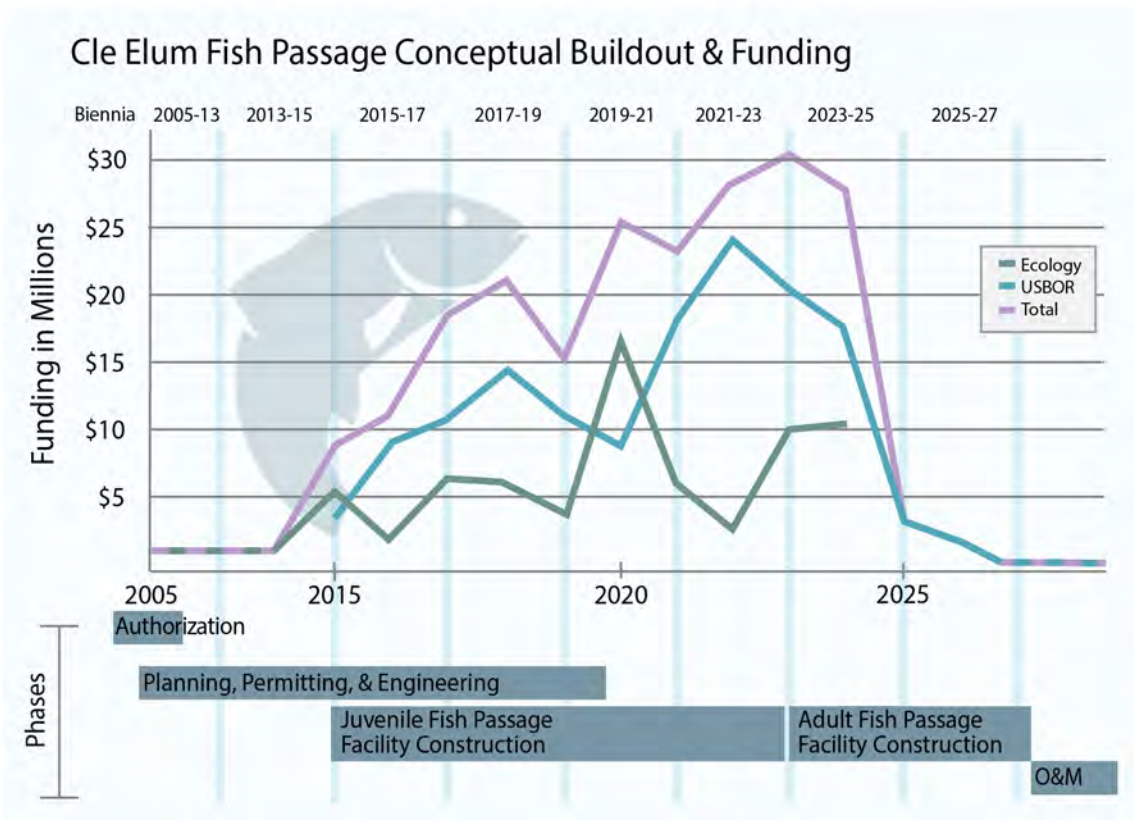


Figure 8 Conceptual buildout cost and funding sources for the Cle Elum Fish Passage project.

Adaptive management in action

When planning project budgets, Integrated Plan project costs must be broken down by element, by project and sometimes even by phase in order to fit into the state’s biennial budget cycle.

The Cle Elum Fish Passage project is one example of how this can be accomplished (Figure 8). The project phases span the years from 2005 to 2030. During the planning, permitting, and engineering phases, costs are low -- under \$5 million annually. Costs then rise during the construction phases up to nearly \$25 to \$30 million annually from 2020 through 2024. Expenses topped out during the 2021-2023 biennium and are expected to fall under \$5 million per biennium once construction is complete and the project transitions to its final phase of operation and maintenance.

Meeting our legislative mandates

Since the adoption of the Integrated Plan by the State Legislature in 2013 (codified in chapter 90.38 RCW), the Department of Ecology, Bureau of Reclamation, Yakama Nation and other Yakima Basin Integrated Plan partners have been engaged in aggressively pursuing water supply solutions as a key element of the Integrated Plan. After December 1, 2021, additional requirements under RCW 90.38 have included reporting on the evaluation of state support and a statement of progress in achieving water supply facility permit and funding milestone.

RCW 90.38.120(1)(b) – Cost to implement the integrated plan.

(1)(b) The State’s continuing support for the integrated plan shall be formally reevaluated independently by the governor and the legislature if, after December 1, 2021, and periodically thereafter, the actual funding provided through nonstate sources is less than one-half of all costs and if funding from local project beneficiaries does not comprise a significant portion of the nonstate sources.

The State financial contributions of approximately \$369.4 million is less than the federal and non-State Integrated Plan partners contributions of approximately \$840.9 million. Therefore, no independent review by the governor or Legislature is currently warranted.

RCW 90.38.100(2) – Report to the legislature and governor.

“The status report required in this section for the December 1, 2021, must include a statement of progress in achieving the water supply facility permit and funding milestone, as defined in RCW 90.38.010. If, after a good faith effort to achieve the water supply facility permit and funding milestone, it appears that the milestone cannot or may not be met, the department, in consultation with the United States bureau of reclamation, the Yakama Nation, Yakima river basin local governments, and key basin stakeholders, shall provide a detailed description of the impediments to achieving the milestone, describe the strategy for resolving the identified impediments, and, if necessary, recommend modifications to the milestone.”

During the Integrated Plan’s initial development phase, two key water supply projects were identified to achieve the first water supply milestone of 214,000 ac-ft. by January of 2025³⁷. The Kachess Drought Relief Pumping Plant is projected to provide approximately 200,000 ac-ft., and the Cle Elum Pool Raise project will provide approximately 14,600 ac-ft. of water supply. In addition, Ecology was working with Washington Department of Fish and Wildlife, and the Forterra group to pursue a land acquisition of a portion of the Eaton Ranch in Kittitas County for the Wymer Reservoir site. Since this acquisition fell through additional storage projects are being contemplated in the Integrated Plan as well. The following section describes the status of each of these projects.

³⁷ RCW 90.38.130 (3)

Wymer Reservoir

In May of 2022, after many years of collaboration and discussion with the Eaton Family and their legal counsel, detailed property evaluations and subsequent negotiations, proved unsuccessful in acquiring the property for the reservoir site at this time. The parties have agreed to pause negotiations given unknown information about the future configuration of the proposed Wymer Reservoir, the impact of those unknowns on the parties' ability to consummate a purchase and sale agreement, and the Eaton Family's wishes to pursue other uses of their property. All parties agree that they are willing to reenter discussions about a potential transaction in the future should circumstances change for the Eaton Family and increased clarity regarding the reservoir configuration.

Kachess Drought Relief Pumping Plant & Keechelus Reservoir to Kachess Reservoir Conveyance

In March of 2016, Reclamation and Ecology jointly issued a Final Environmental Impact Statement (FEIS) for the proposed Kachess Drought Relief Pumping Plant (KDRPP)³⁸ and the Keechelus Reservoir-to-Kachess Reservoir Conveyance (KKC)³⁹ projects. These projects are initial water supply components of the Integrated Plan. Reclamation and Ecology identified Alternative 4- KDRPP Floating Pumping Plant as the Preferred Alternative.

As described in Alternative 4, Reclamation and Ecology have identified Roza Irrigation District as the entity responsible for the design, construction, operation, maintenance, and funding (with potential participation by other proratable entities) of Alternative 4 at Kachess Reservoir. Alternative 4 improves water supply reliability during drought years; improves the ability of water managers to respond and adapt to potential changing hydrology; and contributes to the vitality of the regional economy and riverine environment in the Yakima River Basin.

In April of 2019, Reclamation issued a Record of Decision (ROD) for the projects. The decision set forth in the Tier-1 ROD was influenced by community involvement in the NEPA and SEPA process. The phased approach was chosen after careful consideration of public comments and concerns. There were nearly 600 written public comments received on the DEIS and nearly 1,700 written public comments on the Supplemental DEIS. Responses to these comments are presented in the Tier-1 EIS, Volumes II and III. In addition, public hearings were held for scoping, and there were also public comment periods for both the Draft EIS and Supplemental Draft EIS.

³⁸ More information on KDRPP EIS can be found online at <http://www.usbr.gov/pn/programs/eis/kdrpp/index.html>

³⁹ More information on KKC EIS can be found online at <http://www.usbr.gov/pn/programs/eis/kkc/index.html>

Substantial interaction with governmental entities, tribes, individuals, water users, and cooperating agencies occurred throughout the NEPA/SEPA process. Because of the public comments and interactions, Reclamation and Ecology determined that the phased approach adopted herein is appropriate under NEPA and SEPA for further consideration and refinement of issues presented by the proposal to pump inactive storage out of Kachess Reservoir in years of severe drought.

The Tier-1 EIS allows Reclamation and Ecology to narrow the proposal to alternatives with less impacts, taking into consideration community concerns while continuing to move forward with the mandate to consider a drought relief pumping plant at Kachess Reservoir pursuant to the 2013 Integrated Plan FPEIS ROD. Reclamation and Ecology will provide additional opportunities for community involvement, including public comment, in the Tier-2 NEPA/SEPA process. Reclamation and Ecology have continued to work with Roza, Yakama Nation and other key Integrated Plan partners to further refine and develop a proposed action for KDRPP. The required Notice of Intent (NOI), required to state the Tier-2 NEPA/SEPA process, is expected to begin in 2024.

Cle Elum Pool Raise

The Cle Elum Pool Raise project will increase water storage capacity in the Cle Elum Reservoir up to an additional 14,600 ac-ft. This project is part of the Yakima Basin Integrated Plan's initial development phase. The project includes modification of the radial gates by adding an additional 3-feet of steel resulting in additional water storage capacity of the facility which was completed in 2017.

The project also includes providing shoreline protection where needed of the Cle Elum Reservoir to accommodate the additional 3-feet of storage capacity. Construction of four shoreline areas along public facilities have been completed. Construction of six additional shoreline areas along private land is in process.

When the Cle Elum Pool Raise project is completed, the additional water supply will be dedicated to enhancing instream flows for fish rearing, fish habitat, and migration. This is the first new water storage project in the Yakima River Basin⁴⁰. Reclamation and Ecology released the Cle Elum Pool Raise project Final EIS in May of 2015, and a Record of Decision was signed in June of 2015.

Current project implementation is expected to begin in 2026 and will focus on shoreline protection on public and private properties. Private property owners have had several opportunities to influence shoreline protection designs with Reclamation, which have resulted in shoreline protection schedule impacts.

⁴⁰ Sections 1205 and 1206 of the Yavapai-Prescott Indian Tribe Water Rights Settlement Act of 1994 (Public Law 103-434, Title XII).

Reaching the water supply goal

Once completed, the Cle Elum Pool Raise and KDRPP projects will provide enough water to achieve the 214,000 ac-ft. new water supply goal referenced in RCW 90.38.010(6) and RCW 90.38.130(3). However, due to the complexities and challenges associated with development of new water supplies, it is unlikely that the permitting for the two projects will be completed by the June 30, 2025 milestone referenced. Therefore, a discussion with the Integrated Plan partners, the Governor, and the State Legislature regarding the referenced milestone is warranted prior to the 2025 legislative session.

Reclamation, Ecology, Yakama Nation, and Integrated Plan work groups members, stakeholders, and other interested parties continue to pursue additional water supply projects and alternative sites for surface water storage for instream flow, agriculture, and municipal/domestic water supplies. The Integrated Plan partners remain committed to meeting the 450,000 ac-ft. water supply goal.



Start of construction, Cle Elum Fish Passage project

Photo credit: Yakama Nation, May 1, 2019

Conclusion

This report summarizes Integrated Plan milestones and advancements achieved in 2021 and 2022. During that time, the Integrated Plan made great strides in moving forward multiple projects under each of the seven elements.

Milestones met:

- Saved 58,869 ac-ft. of water per year through conservation.
- Began multiple groundwater storage studies throughout the Basin.
- Constructed the Cle Elum Fish Passage intake ramps and bypass tunnel.
- Secured funding for Wymer Dam project land acquisition.
- Started stabilizing the shoreline at the Wish Poosh Campground and Boat Launch and along Salmon La Sac Road.
- Completed the Sunnyside Dam Smolt Passage Improvement Project.
- Installed a fish guidance boom at Sunnyside Dam.
- Started Water Market Simulation Study by Kittitas Reclamation District and Trout Unlimited.

Over the next two years, we look forward to:

- Continuing conservation projects to meet the Integrated Plan's 170,000 ac-ft. (or 85,000 ac-ft. by the end of the IDP) annual water conservation goal.
- Finalizing multiple ASR feasibility studies across the basin.
- Releasing the Kachess Drought Relief Pumping Plant Tier 2 EIS.
- Finalizing construction of Cle Elum Fish Passage intakes and adult fish passage facility.
- Releasing the Watershed Lands Conservation Subcommittee Phase Two 10-year plan.
- Finalizing shoreline protection work along the eastern shoreline of Cle Elum Reservoir.
- Releasing Kittitas Reclamation District/Trout Unlimited Basin-wide water banking and market reallocation study.

Much of the Integrated Plan's success is due to Ecology's strong partnerships with federal and state agencies, the Yakama Nation, and stakeholders from across the Basin. The partners are committed to open communication with each other, which promotes the exchange of ideas and a willingness to build on lessons learned to overcome obstacles and achieve optimum results.

The ability to adapt in an ever-changing world and seizing opportunities as they arise makes the Integrated Plan an ideal model in the water management field. The Integrated Plan is a nationally recognized success, and watershed managers across the country are analyzing how they can apply our model to their water supply challenges. Our continued successes are a testament to the Integrated Plan's vision and its investment in the future of people, farms, and fish in the Yakima River Basin.

Appendix

Committees

- Executive Committee
- Implementation Committee
- Water Use Subcommittee
- Habitat Subcommittee
- Groundwater Subcommittee
- Watershed Lands Subcommittee
- Outreach Subcommittee
- Economic Subcommittee
- Executive Committee
- Implementation Committee
- Water Use Subcommittee
- Habitat Subcommittee
- Groundwater Subcommittee
- Watershed Lands Subcommittee
- Outreach Subcommittee
- Economic Subcommittee

Workgroups

- Yakima River Basin Water Enhancement Project Workgroup
- Bull Trout Working Group
- Lower River Subgroup
- Municipal Water Use Subgroup

