

YBIP Project Activity Update

November 2021

Purpose: Update on ongoing technical planning studies and project implementation activities for the Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan)

Fish Passage Element

The juvenile fish passage facility will use an innovative helix design to transport juvenile fish downstream. It will allow fish to leave the reservoir as the water surface fluctuates over the top 63 feet in elevation. This will provide downstream passage from April 1 through the beginning of June in most years. The upstream adult fish passage facility will be a trap-and-haul facility where fish are trapped at the base of the spillway, loaded into a truck, and then hauled for release into Cle Elum Reservoir or to upstream tributaries.

Construction Update: The access road and spillway bridge and the secant pile and vault contracts are complete. Construction for the tunnel contract was completed in March 2021. Reclamation anticipates close-out of the contract in 2022. The last downstream section of the tunnel will be constructed as part of the Adult Collection Facility (ACF). We expect to award the ACF contract in 2022 and it will be the last construction contract needed to complete the Cle Elum Dam Fish Passage project.

The Intake, Gate, and Helix (IGH) contractor mobilized in April 2019. Construction of Intake #6, the lowest elevation intake, was completed in December 2019. Construction of Intake #5 began last winter and will be completed this winter along with Intake #4. Intake #3 will be partially constructed this winter. Trenching and shoring work needed to construct the conduits or tunnels that connect the intakes to the secant vault was completed in 2019. The contractor re-mobilized on-site in July 2020 and prepared the trench to place precast concrete boxes. The first box, one of 194 boxes, was placed in September 2020. These boxes form the conduits or tunnels that will connect the reservoir intakes to the secant vault. Conduit levels 6, 5, 4, 3 and 2, were placed and sealed in concrete by the end of 2020. The final conduit boxes will be placed following the penetration of the secant vault at each level. The contractor remobilized on August 2, 2021 as the reservoir receded below 2,200 feet. The contractor has tunneled through the last 40 feet to the secant piles, sawed through and removed the cut pile sections, and has placed the final conduits at level six. The contractor will repeat this work for level 5 before shutting down construction operations this winter. The contractor has also continued working inside the Secant completing the helix/gate chamber separation wall and the access structure walls. The access structure will house an elevator and stair system. Subcontractors continue fabricating and constructing structural steel, gates, and helical flume sections. Some of these components are being delivered and installed this fall for example the crest gates for intake #6 and #5.

Videos: <https://vimeo.com/508632343> (winter 2021) & <https://vimeo.com/579619438> (summer 2021)

Sockeye Study Update: In 2018, Reclamation and the Yakama Nation worked with the U.S. Geological Survey to conduct an adult sockeye tracking test to understand their migration between Roza and Cle Elum dams. The study found that 20 of the 20 tagged fish migrated successfully to the base of Cle Elum Dam. In 2019, these same partners, along with Washington Department of Fish and Wildlife (WDFW), began a sockeye tracking study in the lower Yakima River. The study reach runs from the mouth of the Yakima River up to the Roza Dam and is evaluating potential passage issues at diversion dams, possible



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false attraction, microclimate use, and Columbia River Stranding. We expect to conduct this study over three years depending on the study findings.

Results from the first year of the study (2019) found very low migration success rates for tagged Sockeye primarily due to high river temperatures. The 2020 Summer sockeye study began at the end of June by tagging fish captured at Prosser Dam and in the Columbia River near Bateman Island. USGS completed gathering tracking data in September 2020. Preliminary findings continue to show that high river temperatures limit access upstream for much of the summer, Sockeye migration can be slowed down at diversion dams, and false attraction and predation may also be impacting upstream migration. The final report for 2020's study is complete: [Evaluation of factors affecting migration success of adult sockeye salmon \(*Oncorhynchus nerka*\) in the Yakima River, Washington, 2020 \(usgs.gov\)](https://www.usgs.gov/media/publication/evaluation-factors-affecting-migration-success-adult-sockeye-salmon-oncorhynchus-nerka-yakima-river-washington-2020). The study for 2021 was postponed due to extreme air and river temperatures in the lower Yakima River. Reclamation, Ecology, Yakama Nation, and our partners plan to resume this study next year.

Box Canyon Creek Fish Passage

WDFW, with input from Reclamation, Ecology, and other passage restoration experts, has completed a conceptual design for the Box Canyon Creek Fish Passage Enhancement Project. Reclamation has contracted with HDR to prepare a 60% design. The project partners have met to establish performance goals for 60% design. A site-visit with project partners and stakeholders was held October 1, 2020. Additional survey work was needed for the 60% design. Reclamation completed this survey May 1, 2021 with the assistance of USFWS. HDR recently completed the 60% design and cost estimate which was recently reviewed by Yakima Basin Storage Dam Fish Passage technical team.

Clear Creek Dam Fish Passage

Reclamation and Ecology completed an appraisal level design for fish passage in September 2018. The design consists of a traditional pool-and-weir-style fishway with a steel bulkhead at the upstream end that will draw cool water from deeper in the reservoir. Situated along the left abutment of the dam, fish would enter the fishway in the stilling basin and exit in the reservoir pool. The bulkhead will be deep enough to maintain suitable water temperature in the fishway for Bull Trout.

Reclamation is coordinating with Ecology, U.S. Fish and Wildlife Service (USFWS), Yakama Nation, WDFW, USFS, NMFS, and others to complete the final ladder design. The partners met with basin biologists to define the range of species targeted for passage and provide input for designers regarding ladder geometry. Reclamation conducted geotechnical investigations in October 2020 and completed 30% designs on November 2, 2020. Comments from the Yakima Storage Dams Fish Passage Core Team were reviewed on January 21, 2021 and have been sent to the technical workgroup for review and comment. A Value Engineering Study was completed the week of February 8, 2021. The 60% design was completed in June 2021. Ninety percent design is anticipated in December 2021. Final design is anticipated in April 2022.

Until passage improvements are accomplished, USFWS, Reclamation, and WDFW will continue capturing Bull Trout from below Clear Creek Dam and transporting genetically identified North Fork Tieton River fish around the dam so they can reach spawning habitat in the North Fork Tieton River. Fish capture and transport has been conducted 2016 through 2021. To date, 107 adult Bull Trout have been transported above the dam.

Structural and Operational Changes Element

Cle Elum Pool Raise

The purpose of the Cle Elum Pool Raise Project is to increase the Cle Elum reservoir's capacity for improved aquatic resources for fish habitat, rearing, and migration in the Cle Elum and upper Yakima River, thereby fulfilling the intent of the congressional authorization, Title XII of Public Law 103-434.

Completed: Radial Gate construction was completed in April 2017. Reclamation completed modifications to three saddle dikes as of 2018. The USFS Cle Elum River Campground recreation area was completed in November 2017. The USFS Speelyi Day Use Area recreation area was completed in May 2019. Shoreline protection along Salmon La Sac Road was completed in 2021.

Construction Update: Reclamation and Ecology are currently implementing shoreline protection actions for private and public lands and facilities. Construction of shoreline protection at Wish Poosh Campground & Boat Launch began in April 2021 and will be completed by the end of May 2022. The Sandelin Lane shoreline protection area contract was awarded in July 2021. Remaining shoreline protection will be implemented as funding becomes available. Landowners and the public will be updated periodically on the project via mail and website postings during project implementation. Reclamation and Ecology continue working with landowners along the shoreline to acquire easements as appropriate for the project and released a video to inform our partners and public on the project. Video: <https://youtu.be/9G3-CqBMQsE>.

In addition, Reclamation sends out a quarterly update post card to landowners to continue outreach among the landowners around Cle Elum Reservoir.

Chandler Pumping Plant Electrification

Kennewick Irrigation District (KID) continues to evaluate an electrical pumping plant at Chandler. As of May 2021, Reclamation continues to work with KID. KID is preparing updated design drawings and operational diversion plans for review of Chandler Electrical Pumping Plant by Reclamation. Reclamation has extended an existing Memorandum of Agreement through 2022 with KID for this work. Reclamation and KID have regular meetings to address KID water supply issues. Reclamation is part of the Lower River Leadership team along with Ecology, Yakama Nation, and KID to discuss a multitude of options to meet lower river flow needs for KID. An electrical pumping plant may still be considered by KID, however, recently KID has been reviewing other options which may include an onsite storage reservoir.

Lower Yakima River Smolt Survival Study

The survival of juvenile salmon (smolts) migrating to the ocean can influence the abundance of returning adults and the availability of fish for harvest years later. Smolt survival is affected by passage at dams, predators, and environmental conditions such as river flow and water quality. Factors affecting smolt survival are being identified by the Lower Yakima River Smolt Survival Study with the goal of developing recommendations for improvement projects. The study area includes the mainstem Yakima River from the City of Yakima to the Columbia River confluence. Project funding comes from Yakama Nation (YN), Reclamation, irrigation districts, Ecology, and the US Geological Survey (USGS), with YN and USGS leading the field work and data analysis. During each year of the study (2018–2022) about 1,000 juvenile salmon and steelhead are collected, tagged, and released in the Yakima River to monitor their behavior and survival as they migrated downstream. Monitoring stations are set up at major diversion dams and key river reaches. Data on predator populations such as pelicans and bass, river flows, and water temperatures are also being collected so they can be related to fish survival.

Preliminary results over three years (2018-2020) indicated smolt survival was highest in early spring and lowest in June when the Yakima River warmed, flows declined, and predator abundance was high.

In response to the study findings, the Sunnyside Division Board of Control (SBDOC) initiated a project to install a (1) fish and debris guidance boom and (2) sluice gate modification at Sunnyside Dam. The project is intended to reduce the numbers of fish diverted into Sunnyside canal without affecting irrigation. The guidance boom was manufactured by Pacific Netting Products and installed by SVID in March 2021. The floating guidance boom was made from HDPE pipe and marine-grade hardware which suspends a 4-foot deep stainless-steel fish screen below the water surface. Data collected in 2021 showed that fewer fish were diverted into the Sunnyside Canal with the guidance boom in place, thus reducing smolt mortality associated with the diversion. Sluice gate improvements installed in October 2021 should further reduce smolt mortality. Survival at the facility will again be monitored in 2022.

Surface Water Storage Element

Kachess Drought Relief Pumping Plant (KDRPP)

The KDRPP is proposed to access 200,000 (out of 585,000) acre-feet of inactive storage in the Kachess Reservoir that is below the current outlet works for use in severe drought.

On April 26, 2019, Reclamation signed the *Record of Decision* (ROD), which does not approve implementation of any alternatives but carries forward Alternative 4 - KDRPP Floating Pumping Plant (FPP) for further analysis. Consistent with this decision, the remaining alternatives in the FEIS, including the Kachess to Keechelus Conveyance, are unlikely to be carried forward. Reclamation and Ecology will use a phased approach for further site-specific analysis in a Tier 2 NEPA process to narrow the range of feasible alternatives for KDRPP.

The Project Proponent, the Roza Irrigation District, in coordination with Reclamation and Ecology, is currently developing a new Proposed Action and clarifying the FPP alternative for the KDRPP Tier 2 NEPA process. This final and complete Proposed Action and Reclamation's subsequent Notice of Intent (NOI) for the Tier 2 EIS are currently projected for 2022. Roza and possibly other pro-ratable waters users (KRD, Wapato Irrigation Project (WIP) and KID) would fund, design, construct, and operate the KDRPP.

Wymer Reservoir

Consideration of site requirements is ongoing.

Bumping Reservoir Enlargement Project

Consideration of site requirements is ongoing.

Groundwater Storage Element

Groundwater Storage – Basin-wide Analysis

The Groundwater Storage Subcommittee is progressing forward with identifying groundwater storage opportunities in the basin. In the upper basin, KRD continues work on high-priority managed aquifer recharge (MAR) sites and City of Ellensburg completed an ASR pre-feasibility study. In the lower basin, the Yakama Nation is advancing MAR projects on the Toppenish Fan and CWU is studying the hydrogeology of the Badger-Coulee area.

The Groundwater Storage Subcommittee discussed projects for the 2021-2023 biennium and made funding recommendations in August/September. Projects recommended for funding are:

- City of Moxee ASR Feasibility Study,
- CWU Evaluation of MAR in Basalts of the Rattle Snake Ridge Area,
- CWU Evapotranspiration and Floodplain Aquifer Storage Capacity Study,
- City of Ellensburg ASR Feasibility Study,
- KRD Taneum Creek MAR Pilot Testing,
- KRD Continue and Expand On-going Monitoring Efforts at High Priority MAR Sites,
- KRD Basalt ASR Assessment, and
- KRD Central Data Repository/GIS Clearinghouse.

Aquifer Storage and Recovery (ASR)

The City of Yakima is planning full build-out for its permitted ASR program and intends to drill two ASR devoted wells: the first well is estimated for 2022-2023, and the second is estimated for 2025-2026.

Habitat Protection and Enhancement Element

Targeted Watershed Protection and Enhancement

The Watershed Lands Conservation Subcommittee finalized its new 10-year lands plan (the Phase 2 Plan). The plan describes the Subcommittee's focus elements – acquisitions, designations, and forest health and management - for continued implementation of the Targeted Watershed Protection and Enhancement component of the Habitat Element of the Integrated Plan.

Subgroups of the Lands Subcommittee are working on first steps on the acquisitions and designations elements of the Phase 2 Plan.

Mainstem Floodplain and Tributaries Fish Habitat Enhancement Program

The Habitat Subcommittee has developed its 2021-2023 biennial budget proposal for Ecology under the Habitat Element. The Subcommittee will continuously monitor implementation status of the projects.

The Subcommittee has focused the next biennial budget formulation on lower river priority actions related to high juvenile salmon and steelhead mortality as well as lower river temperature barriers to adult salmon migration. Lower river projects funded include ongoing support for Bateman Island Causeway Removal and Thermal Refuge and Aquifer Recharge studies, as well as several habitat restoration projects on the Yakama Nation reservation in the Wapato Reach and Toppenish Creek. The Subcommittee recognizes the criticality of resolving lower river passage issues if upper-watershed habitat protection and enhancement projects are to be successful in the long-term.

The Subcommittee allocated funds to the South Fork Tieton Bridge restoration project, which will be cost shared with the bull trout working group and Reclamation. Several restoration and stewardship projects were funding in the upper Yakima River watersheds as well.

The Subcommittee reviewed and approved the funding proposal from the bull trout working group. This project list included matching funds for the South Fork Tieton Bridge replacement project. It continues providing funds for ongoing projects including Gold Creek and Kachess Habitat restoration, Yakama

Nation Bull Trout restoration and monitoring, the bull trout task force, bull trout working group, and the WDFW bull trout senior biologist.

The Subcommittee is closely monitoring the SBDOC fish boom and sluice gate project. The project is a key milestone for lower river habitat enhancements, and the Habitat Subcommittee is interested in how implementation of the project will affect smolt outmigration season in 2021. The Habitat Subcommittee will use the data gathered from the study in 2021 to further refine its lower river strategy.

The Subcommittee is updating its 10-year strategic plan throughout the fall and winter of 2021. Subcommittee members are discussing proposed capital plans from project sponsors for priority reaches to determine funding strategies that stretch across several biennia.

The Subcommittee has reviewed the projects proposed for the Integrated Plan as part of the adaptive management process and will provide feedback to the Executive Committee.

Enhanced Water Conservation Element

Upon passage of the Dingell Act in March 2019, the Reclamation, Ecology, Yakama Nation and YRBWEP Workgroup Partners have a goal to conserve 85,000 acre-feet of water by 2029. The overall conservation savings goal upon full Integrated Plan implementation is 170,000 acre-feet. Reclamation and Ecology are conducting an inventory of water conservation accomplishments associated with the Integrated Plan. Projects that count towards this goal must adhere to three parameters:

- Begin in 2013 or later
- Be an agricultural or municipal improvement project resulting in conserved water, and
- Not be part of the Title XII, Section 1203 Basin Conservation Plan

To date, there have been 104 conservation projects implemented. Approximately \$89 million invested has resulted in approximately 50,000 acre-feet conserved (\$1,800 per acre-foot). A technical memorandum explaining the history, accounting, and future framework planning for the Enhanced Water Conservation element projects was released to the Water Use Subcommittee in April 2021. Within this memorandum, Reclamation and Ecology have developed a project prioritization proposal for achieving the remaining portion of the initial development phase goal.

Market Reallocation Element

The Kittitas Reclamation District (KRD) and Trout Unlimited (TU) continued water market research and development as part of the Market Reallocation element of YBIP. Ongoing research in the last quarter focused on evaluating changes to water supply, data preprocessing for smart market modeling, and instream flow analysis. Additionally, the project team developed a scope of work and preliminary structure for a Water Transfer Working Group transfers database to capture past market activity. Outreach continued with COVID-19 restrictions in place and a revised outreach approach was developed.

More information about the project can be found at <https://www.yakimabasinwatermarketing.org/>

Proposed Projects for Consideration

During implementation of the Integrated Plan, an adaptive approach is being used periodically to assess progress towards meeting the identified instream flow objectives, the 70 percent proratable supply goal for irrigation, and goals for other out-of-stream needs. The need for additional water supply

enhancements would depend on the effectiveness of projects that are implemented as part of the Integrated Plan, how the Yakima basin economy develops over time, and the timing of and manner in which climate changes affect water supply availability. From time-to-time, new projects may be identified (and proposed) for consideration under the Integrated Plan. Reclamation, Ecology, Yakama Nation, and the Executive Committee have developed a formalized process to consider new projects. Projects proposed for evaluation and those currently being evaluated are listed here:

- Tieton River Restoration, including proposed North Fork Cowlitz Creek Reservoir, and
- Upper Yakima System Storage

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Project website: <http://www.usbr.gov/pn/programs/yrbwep/index.html>