

# Prosser Diversion: Improvements for Anadromous Fish Passage

## WaterSMART Aquatic Ecosystem Projects for Fiscal Year 2023

Funding Opportunity No. R23AS00106

Prepared By  
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# 1 TECHNICAL PROPOSAL AND EVALUATION CRITERIA

## 1.1 EXECUTIVE SUMMARY

Date: May 28, 2023  
Applicant: Yakama Nation (Category A Applicant)  
Applicant Partner: U.S. Bureau of Reclamation  
City/Counties/State: Prosser/Benton/Washington  
Reclamation Area: Yakima Project

The Yakama Nation (YN) in partnership with the Bureau of Reclamation (USBR) will model alternatives that improve passage of anadromous fish species at the Prosser Diversion on the lower Yakima River of Central Washington State by helping to address a key element identified in the Yakima Basin Integrated Plan (YBIP): fish passage at lower Yakima River diversions. Prosser Diversion supplies irrigation water through the Chandler Canal. The dam can divert more than 50% of Yakima River flow at times, creating very dangerous fish passage conditions. A large proportion of the entire Yakima basin's smolts are entrained in the canal and suffer high mortality. Removal or modification of the dam and headworks will create safer passage conditions for all anadromous species. These improvements will benefit all four populations comprising the Yakima Major Population Group of federally-threatened Middle Columbia River (MCR) Steelhead juveniles and adults; juveniles and adults from the entire Yakima populations of spring and summer run Chinook, naturally-spawning fall Chinook, Coho, and Sockeye salmon; and juvenile and adult Pacific Lamprey.

The YN is currently coordinating with USBR staff and developing conceptual alternatives for improving infrastructure, operations, fish passage, and fish harvest opportunities at the Prosser Diversion, which is owned by the federal government and operated by USBR. If awarded, aquatic ecosystem restoration study and design funding would further existing efforts to improve the Prosser Diversion for anadromous fish passage. The proposed efforts would begin upon award, expected in January 2024, and conclude in December 2026.

## 1.2 Project Location

The Prosser Diversion is located on the Yakima River, river mile 47, in the city of Prosser, Benton County, Washington. The diversion coordinates are 46.2128° N, 119.7728° W. Figure 1-1 shows the location of the Prosser Diversion.

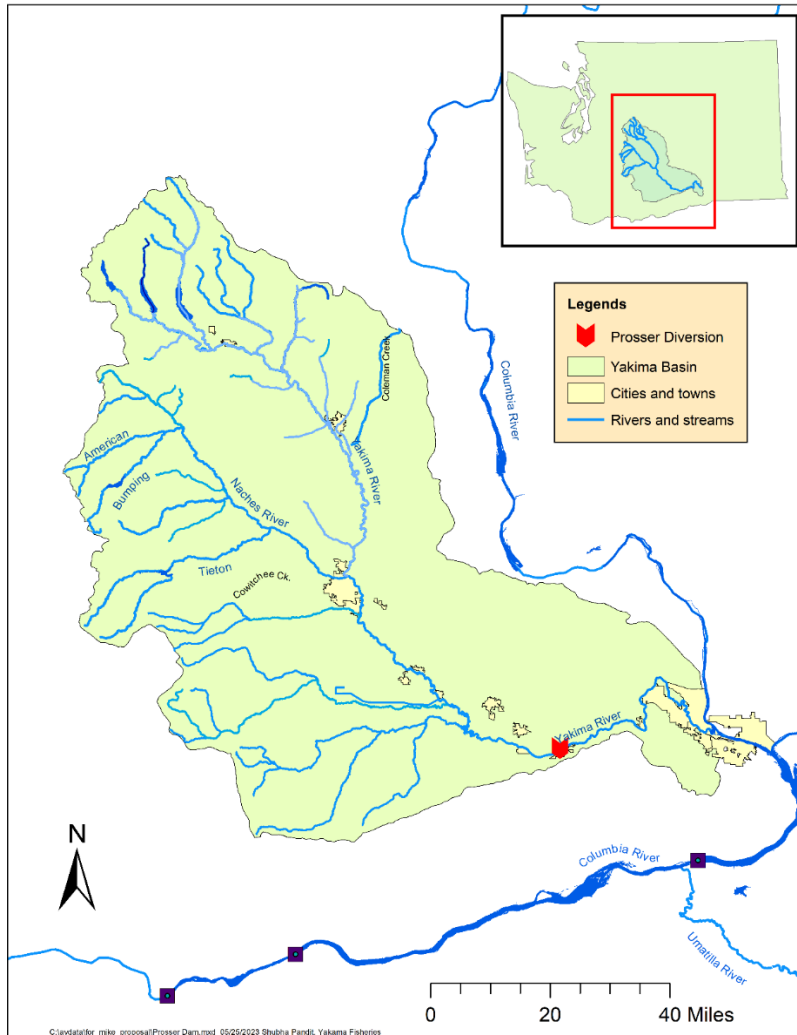


Figure 1-1. Geographic location of the Prosser Diversion.

## 1.3 PROJECT DESCRIPTION

The Prosser Diversion feeds the Chandler Canal, which serves the Kennewick Division of the USBR's Yakima Project. The Kennewick Division is a combined irrigation and power development project that includes the 12-megawatt Chandler Power Plant and Pump Station and about 20,000 irrigated acres.

Chandler Canal conveys up to 1500 cubic feet per second (cfs) for 11 miles from the Prosser diversion dam to the 12,000-kilowatt Chandler Power Plant, and supplies the Kennewick Irrigation District (KID) with both irrigation water and the "drive water" needed for hydraulic pumps to lift it to the Kennewick Canal. The maximum flow delivered to the KID Canal for irrigation purposes over the last decade was 305 cfs according to USBR records, which requires

approximately an additional 368 cfs of drive water. Power generation is subordinated to the needs of the KID and to instream flow under the Yakima River Basin Water Enhancement Project (YRBWEP) (P.L. 103-434; Title XII).

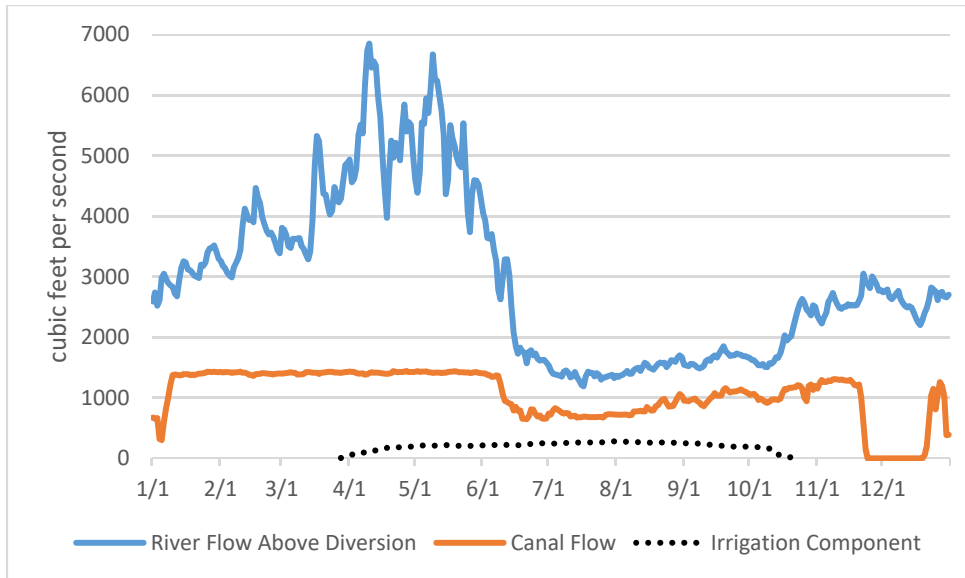


Figure 1-2. Median daily Yakima River flow and canal deliveries at the Prosser Diversion, 2013-2022.

The Prosser Diversion is located downstream from all anadromous salmonid spawning and summer rearing areas in the Yakima Basin except for a portion of the fall Chinook spawning reach. Its location and year-round operation except for a brief maintenance period in late fall make the Prosser Diversion the most suitable single location in the Yakima Basin to trap and monitor outmigrating anadromous fish that are entrained into Chandler Canal.

The Prosser Diversion also has negative effects on fish. The process of diversion, screening and return to the river delays, injures or kills a significant proportion of entrained juvenile salmonids and Lamprey. Ongoing studies by the U.S. Geological Survey (USGS) have shown significant reductions in survival of fish entrained in Chandler Canal.

The diversion has the capacity to remove most of the flow in the 11-mile reach of the Yakima River from the diversion to the hydroelectric plant, further diminishing the river’s effectiveness as a migration corridor for juvenile and adult fish. These impacts will be described in greater detail under Section A.2.1 (Species Health).

Providing safe downstream passage in the lower Yakima River is significant for improving productivity of multiple species, and is critical to the overall recovery of salmon and Steelhead in the Yakima River Basin. Overall survival estimates of outmigrating smolts between the middle and lower Yakima River to McNary Dam on the Columbia River show that, on average, 65% to 90% are killed before they reach the first of four mainstem Columbia River dams they will encounter on their way to the Pacific Ocean (Sampson et al. 2016). Other projects coordinated under YBIP are addressing some of the causes of mortality downstream from the Prosser Diversion. For example, the temperature reduction resulting from the Bateman Island Causeway removal could reduce predation in the Yakima River delta by 23% (McMichael et al. 1999), while improved passage at Prosser Diversion could eliminate up to 12% of overall

Steelhead smolt mortality (NOAA Fisheries, 2022) and 38% of fall and summer Chinook smolt mortality based on preliminary results of the USGS smolt survival study (in progress).

At the Prosser Diversion, dangerous passage conditions have been known for years to limit salmon and Steelhead production and have been identified as a priority for improvement. The ongoing survival studies have allowed resolution of the problem at a finer scale that allows consideration of potential improvement alternatives backed by quality science. The proposal includes hydraulic modeling at Prosser Diversion to inform analysis of alternative improvement options. If feasible, full removal of the dam will be explored with stakeholders. If the dam will remain with modifications to make passage safer, the facility owner (USBR) will continue to be responsible for operation and maintenance of the facility, including fish passage improvements.

Under this proposed study and design (Task A) project, the YN and its cooperators will initiate designs and operation plans intended to benefit anadromous species. Physical and 3-dimensional computational hydraulic models would build on a 2-dimensional model already funded, to test potential designs for:

- New diversion intake parallel to the riverbank to reduce fish entrainment
- Check structures in Chandler Canal to reduce turbulence and injury to entrained fish caused by headgates
- Feasibility of in-river screens to eliminate fish entrainment
- A modified dam crest to improve sediment transport and help to sweep juvenile fish past the diversion intake
- A nature-like fishway to replace a portion of the dam crest

The cooperators will also use recent research on instream flow needs for fish below the Prosser Diversion to analyze:

- The option of delivering water from Chandler Canal to the Kennewick Canal without diverting additional water from the Yakima River to drive hydraulic pumps
- Alternatives to diverting Yakima River water into Chandler Canal for hydroelectric generation

Lastly, the cooperators will evaluate ways to facilitate juvenile fish sampling and Steelhead kelt collection if fish entrainment into Chandler Canal is reduced, or alternative sampling and collection strategies if entrainment is eliminated.

#### **1.4 APPLICANT CATEGORY AND ELIGIBILITY**

Refer to UIE document

#### **1.5 PERFORMANCE MEASURES**

N/A

## **1.6 EVALUATION CRITERIA**

### **E.1.1 Evaluation Criterion A- Project Benefits**

#### **Sub Criterion A.1. General Project Benefits**

##### Critical Issues of Concern in the Watershed

The Yakima River and its tributaries (Figure 1-1), a critical part of the region's water supply and infrastructure, also provide spawning, rearing and/or foraging habitat for two resident and four anadromous salmonid species, and anadromous Pacific Lamprey. Multiple published and ongoing surveys and research projects have identified deleterious changes in floodplains, riparian corridors, stream channels, fish passage, streamflow, inputs of sediment, nutrients and pollutants, sediment transport, and invasive species (Yakima Subbasin Fish and Wildlife Planning Board 2004; Conley et al. 2009; Reiss et al. 2012).

The lower Yakima River is the migration corridor for all five of the basin's anadromous species: Chinook, threatened Steelhead, Coho, Sockeye, and Pacific Lamprey, and it provides important spawning, rearing and/or foraging habitat for most of the year as well. The lower Yakima River is diverted to supply several irrigation districts and a hydroelectric plant. The diversion structures themselves, upstream storage of natural flow peaks for downstream irrigation water withdrawal, agricultural runoff and modification of riparian and floodplain habitat have degraded the lower river's ability to perform these functions and maintain healthy fish populations.

##### **Juvenile entrainment and survival**

Water diversions for power generation and irrigated agriculture, including the Prosser Diversion, entrain fish including downstream-migrating juvenile salmon, Steelhead and Lamprey into irrigation canals. While properly designed and maintained screens and bypasses effectively remove entrained fish from canals, the process of diversion, screening and return to the river delays, injures or kills a significant proportion of entrained juvenile salmonids and Lamprey. This impact is compounded by each diversion in the path of juvenile fish migrating to the Columbia River, and the benefits of restoring fish populations and their habitat upstream are diminished in proportion to these downstream losses. In addition to injury in canals and bypasses, water temperature affects survival of later outmigrants in the lower Yakima River above and below the Prosser Diversion regardless of their passage route. These impacts will be described in greater detail under Section A.2.1 (Species Health).

##### **Predation**

Outmigrating salmon, Steelhead and Lamprey are consumed by a variety of native and introduced birds and fish. Non-native smallmouth bass, in particular, move freely through the lower Yakima River where high temperature and low flow are conducive to a high level of activity and feeding. Smallmouth can also be entrained in Chandler Canal (approximately 500 juvenile smallmouth and an uncounted number of adults entered the fish bypass in 2022), and have feeding opportunity both within the canal and in the Yakima River. Northern white pelicans increasingly congregate in the Yakima River at the outlet of the Chandler Canal bypass to feed on juvenile fish as they exit the bypass.

## **Adult passage**

Adult salmon and Steelhead are able to pass the Prosser Diversion via three fish ladders built into the diversion spillway. The ladders were constructed in 1988 and designed to pass adult salmon and Steelhead but are less effective for less powerful swimmers such as juvenile salmonids, adult Bull Trout or Pacific Lamprey.

Summer conditions present the most serious obstacle to upstream migration. High temperature and low flow combine to prevent successful passage of adult summer Chinook, Steelhead and Sockeye salmon for long periods during the summer in the Yakima River downstream from the Prosser Diversion.

### Aquatic Ecosystems Project Benefits

The Prosser Diversion has had negative impacts on fish populations since the original diversion was constructed in 1904. There were no fish screens in the canal until 1940 and no fish ladders on the diversion structure until 1948. The present ladders, screens and bypass facilities were constructed in 1988, and provide more reliable means than their predecessors to count both upstream and downstream migrants.

The Prosser Diversion has also been a valuable source of information on fish production. For nearly 40 years Prosser Diversion and the Chandler Canal fish bypass have been the center of salmon and Steelhead population monitoring for the entire Yakima River Basin. Counts of juveniles and adults are reliable indicators in real time of basin productivity. A number of fish restoration and reintroduction projects depend on counts of outmigrating juveniles and returning adults to evaluate project success and maintain funding to rebuild salmon, Steelhead and Lamprey populations. In addition, a reconditioning program for Steelhead kelts, which has significantly increased the number of Steelhead spawners in the Yakima Basin (Hatch et al. 2021), has depended entirely on kelts entrained into Chandler Canal.

These monitoring efforts were also the first to draw attention to substantial losses of outmigrating salmon and Steelhead in the lower Yakima River. New and ongoing research by the USGS with tag detection capability in canals and in the Yakima River itself is providing the most precise documentation to date of juvenile Chinook and Steelhead survival through diversion headgates, canals, bypasses, and the river reaches above and below diversions. The YN and cooperators are applying this information to develop concepts for remedying deficiencies in structures and operations at the Prosser Diversion.

Under this proposed study and design (Task A) project, the YN and its cooperators would develop designs and operation plans intended to benefit anadromous species that are negatively affected by the Prosser Diversion. Physical and 3-dimensional computational hydraulic models would build on a 2-dimensional model already funded, and test concepts intended to:

- Reduce entrainment and newly-documented mortality of juvenile fish as fish pass through the existing headgates, by redesigning headgates and placing them parallel to the riverbank, or, if feasible, eliminate entrainment by using in-river fish screens



- Improve sediment transport and help to sweep juvenile fish past the diversion intake, by modifying the diversion dam crest to pass more flow downstream and away from the headgates
- Reduce maintenance and improve upstream passage for all life stages of salmon, Steelhead and Lamprey, by constructing a nature-like fishway to replace a portion of the diversion dam

Ongoing research is also demonstrating the relationship of river flow below the Prosser Diversion to survival of outmigrating fish. We propose to incorporate this information into new analyses of:

- Increasing river flow and fish survival below the Prosser Diversion by installing electric pumps to deliver water to the Kennewick Canal, allowing “drive water” to remain in the river below the Prosser Diversion instead of being diverted to power hydraulic pumps
- Increasing river flow and fish survival below the Prosser Diversion further by reevaluating diversions for hydroelectric generation in light of its current impacts and the viability of alternative power sources

Recognizing the critical role of the Prosser Diversion in monitoring the status of Yakima Basin fish populations, we propose to develop plans and designs for:

- Maintaining juvenile monitoring of the Chandler Canal if fewer fish are entrained, by improved sampling efficiency in the Chandler Juvenile Monitoring Facility
- Investigating alternatives for estimating fish abundance that do not depend on entrainment into Chandler Canal
- Evaluating the monitoring benefits of the current system of fish ladders with the biological benefits of nature-like facility that would allow fish to move upstream uncounted
- Supplementing the weakest Steelhead populations with new facilities for collecting Steelhead kelts upstream from Prosser

#### Project Affect on Multiple River Basins

This project affects the three 8-digit HUCs (Upper Yakima, Naches, and Lower Yakima) with anadromous fish populations that must pass the Prosser Diversion in both directions. Water demand and passage conditions at the Prosser Diversion affect the storage and release of irrigation water along with fish passage flows upstream and downstream, and the success of management actions to restore declining and extirpated anadromous fish populations.

The Yakima River flows from the crest of the Cascade Mountains, near Snoqualmie Pass, to its confluence with the Columbia River near Richland, WA. Nearly 40 percent of the basin is forested, another 40 percent is rangeland, and 15 percent is cropland. The Yakima River Basin, one of the top agricultural producing regions in Washington State, covers over 6,000 square miles and is home to over 370,000 human residents, including 11,000 members of the YN. A majority of Yakama members live within the Yakama reservation, an area of 1,130,000 acres that includes a significant portion of the Yakima River Basin. The Yakamas have retained fishing rights, through treaty with the United States government, within reservation areas, 11 million acres of ceded lands, and usual and accustomed places within the Pacific Northwest.

The Yakima River hosts federally-threatened MCR Steelhead in addition to populations of spring and fall/summer run Chinook, Coho, Sockeye, and Pacific Lamprey. Migratory fish have access to the full 214 miles of the Yakima River and 1500 miles of tributaries, with passage made more challenging by the seasonal thermal fish passage block at the Yakima River delta, high predation throughout the lower river, and entrainment and high passage mortality at the Prosser Diversion. The Yakima River contains multiple federal diversion dams; Wanawish, Wapato, and Prosser, Roza and Easton. Each of these dams are equipped for fish passage, but contribute to migration challenges because they do not provide for safe passage under all conditions. Sockeye are trucked above federally-owned Cle Elum Dam, and downstream passage at the reservoir outlet is under construction. Federally-owned dams on Bumping, Rimrock, Keechelus, and Kachess Lakes represent the upstream extent of anadromous access. As a result, there is a permanent passage barrier on one of the distributaries at the Yakima River delta, seasonal passage barriers elsewhere in the Yakima watershed, and unsafe passage conditions at Federal diversion dams in the basin that kill large numbers of migrating smolts and periodically block adult salmon from migrating upriver.

Significant improvements in tributary passage have been accomplished since 1980, as displayed in Figure 1-3 below, and will continue. YBIP partners are working on multiple barriers throughout the watershed as part of a larger Yakima River fish passage strategy. Major efforts are underway to restore passage over storage dams in the upper basin that have completely blocked passage for 90-120 years. For example, a nearly \$200M project to provide passage over the Cle Elum Dam in the headwaters is nearing completion, and a similar scale project at Rimrock Dam is anticipated for construction within 10 years. Efforts to improve passage in the lower Yakima River, where fish have seasonal or unsafe passage, are also underway. These include projects to discourage smolt entrainment at Sunnyside Dam completed in 2021, operational improvements at Roza Dam to provide year-round surface passage and increase passage survival in 2022, and replacing the Roza Dam fish screens planned for 2024-5.

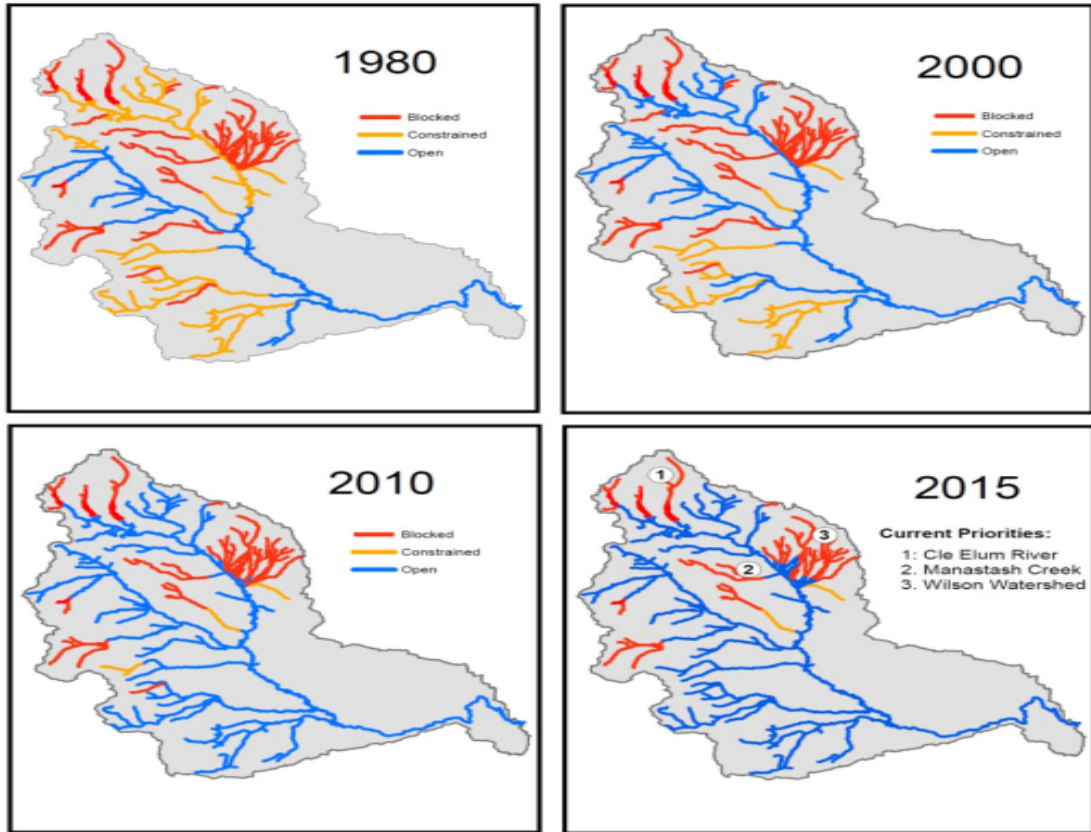


Figure 1-3. Improved fish passage in the Yakima basin since 1980 at all run-of-river dams in the river, including the Prosser Diversion.

USGS investigators and their partners tagged juvenile spring run Chinook, Steelhead, and fall-summer run Chinook smolts upstream of the lower basin and monitored their passage routes and survival as they migrated downstream to the Columbia River. The study identified the Prosser Diversion as a key location for unsafe passage conditions and the Yakima River delta as another high mortality area, both contributing to estimates of 65 – 90% mortality in the lower Yakima River. Adult Sockeye telemetry studies in 2019 and 2020 identified the Yakima River delta as a thermal barrier to summer adult salmon runs (Kock and others 2019 & 2020). Long term temperature monitoring of the delta has been in place since 2011. This baseline data provides opportunity for rigorous analysis of the impact of this barrier removal on temperature conditions in support of fish passage (Appel and others, 2011). Temperature data has shown the thermal barrier is getting rapidly worse over time. Climate change will continue to narrow the opportunities for adult fish to access the watershed, and threatens to eliminate migration opportunities for summer migrating species, such as the entire run of Sockeye and summer Chinook, and continue to truncate the migration period of other species and runs.

### Regional Benefits of Project

Modifications to headgates, bypass systems and spillways would not affect the quantity or timing of water delivered for irrigation or hydropower. Other elements of the proposed project could result in less water diverted for pumping and hydropower, and correspondingly more

remaining in the Yakima River to benefit fish populations. Irrigation water supply would not be affected.

The proposed project would not affect any conflicts related to allocation of irrigation water. The choice to add electric pumps to lift irrigation water or to further limit diversions for hydropower would be driven by the predicted biological benefits, applying newly-refined relationships of river flow and fish survival.

Regional benefits such as safety, recreation, fishing, management cost or economic opportunity will be considered during project development.

#### Aging Facilities to be Improved or Removed

Fish passage and protective facilities built more than 30 years ago do not conform to current criteria for safe passage of juvenile fish. New research has added precision to more general concerns about the biological impacts of the Prosser Diversion. An early emphasis on hydraulic modeling and plan development will bring focus to a long-term project that needs to address these concerns while involving many participants and funding sources.

#### Status of Species and Habitat that would Benefit from Project

MCR Steelhead Distinct Population Segment (DPS) includes the four naturally spawning populations of Steelhead using the Yakima River and comprising the Yakima River Major Population Group (MPG). The MCR Steelhead DPS was listed as threatened on March 25, 1999 (64 FR 14517) and its threatened status was reaffirmed on June 28, 2005 (70 FR 37160) and August 15, 2011 (76 FR 50448). All four populations comprising the Yakima River MPG—Satus Creek, Toppenish Creek, Naches River and Upper Yakima River--migrate past the Prosser Diversion to spawn upstream.

The Prosser Diversion is within the Yakima River Core Area, one of 24 core areas in eastern Washington, eastern Oregon, and portions of Idaho comprising the Mid-Columbia Recovery Unit for Bull Trout; this core area is within the Upper Mid-Columbia region, one of four regions in the recovery unit. The Mid-Columbia Recovery Unit is one of six recovery units that comprise the Coterminous United States Population of Bull Trout (*Salvelinus confluentus*), which was listed as threatened by the U.S. Fish and Wildlife Service (USFWS) on November 1, 1999 (64 FR 58910).

#### Project Achieves Recovery Plan Objectives

Improved passage through the Prosser Diversion will contribute to the recovery of Columbia River Coho and Sockeye, Mid-Columbia spring and fall/summer-run Chinook, and federally-threatened MCR Steelhead in the Yakima Basin. This action is identified as high priorities in Steelhead recovery planning, the Fishery Management Plan for Pacific Salmon Essential Fish Habitat (EFH), and additional planning efforts sponsored by or involving NOAA Fisheries, as described below:

NOAA's MCR Steelhead Recovery Plan (2009) identified improving passage conditions for outmigrating smolts at Prosser Diversion as a High Priority Strategy. The Prosser Diversion and Chandler Canal were described as a key location of impaired fish passage for MCR Steelhead in

the Yakima Management Unit Recovery Plan (YBFWRB 2009), which forms part of NOAA's larger MCR Steelhead recovery plan. The plan calls for studying smolt survival at Chandler and similar facilities to identify infrastructure modifications that will improve passage conditions. The MCR Steelhead 5-year review (NOAA 2022) identifies modifying Prosser Diversion to prevent canal entrainment as a "recommended future action over the next five years toward achieving population viability" for all four populations of Steelhead in the Yakima MPG.

Prosser Diversion and the Chandler Canal are located in and can impair access to essential fish habitat for Chinook and Coho salmon identified as part of the Pacific Salmon Fisheries Management Plan (Appendix A). Additionally, the diversion is located in and impairs passage to Spawning Area and Complex Channel and Floodplain Habitat Areas of Particular Concern (HAPCs). Removing or modifying the diversion structure to meet modern passage criteria is consistent with the Conservation Measures described in Section 4.2.2.10 of Appendix A of the Pacific Salmon FMP for EFH. (<https://www.pcouncil.org/documents/2019/08/salmon-efh-appendix-a.pdf/>)

The White House's Council on Environmental Quality recently released a draft report by NOAA that identified improving passage survival in focused tributary habitats as necessary to reach salmon recovery goals for mid-Columbia stocks (multiple species) identified by the Columbia Basin Partnership, a NOAA-led initiative. The report identified significantly increasing smolt survival in the Yakima by improving Federal diversion dams and specific habitat improvements. (NOAA 2022, p20, <https://media.fisheries.noaa.gov/2022-07/icrb-salmon-Steelhead-recovery-summary-draft-v2.5.pdf>). The Prosser Diversion is the most consequential of these Federal diversion dams in the Yakima for smolt passage (NOAA personal comm. and NOAA unpublished report).

The proposal aligns with three of the six guiding principles of the National Saltwater Recreational Angler Policy. The proposal will increase survival of outmigrating Chinook and Coho salmon smolts, which support popular saltwater recreational fisheries in WA, OR, and AK. The proposal supports Principle 1 (Support ecosystem conservation and enhancement) by restoring natural habitats with actions to allow these species to more safely pass manmade passage barriers. The proposal supports Principle 3 (Coordinate with state and federal management agencies), as demonstrated in the partnerships to improve survival at the passage barriers. The partnership for Bateman Island includes U.S. Army Corps of Engineers (USACE), WA Dept. of Fish and Wildlife (WDFW), and WA Dept. of Ecology (WDOE). Partners at Prosser include USBR, WDFW and WDOE. Proposed work at both sites is informed by fisheries research conducted by USGS, and NOAA Fisheries West Coast Region staff are providing biological and engineering support. The proposal supports Principle 4 (Advance innovative solutions to evolving science, management, and environmental challenges). The proposal is built upon cutting edge fishery scientific investigations conducted by USGS, YN, and partners that used acoustic tracking of multiple stocks to identify natural and operational factors that affect smolt and adult passage through the Yakima. The proposal will also support the YN's operation of the fish monitoring facility at Prosser, which supports a pioneering conservation hatchery for Chinook salmon in the basin that has increased productivity while minimizing genetic and domestication risks.

Bull Trout residing in the Yakima River Core Area are addressed in the Bull Trout recovery plan for the coterminous United States, which was completed in 2015. For the Yakima River Core Area, an action plan was completed in 2012 and updated in 2017. A Bull Trout 10-year Plan was completed by the Fish Habitat Subcommittee of the YBIP Workgroup in 2022.

#### Project Benefits Designated Critical Habitat

Critical habitat for MCR Steelhead has been designated in the Upper and Lower Yakima River migration corridor. Critical habitat includes the stream channels to the lateral extent defined by the ordinary high water mark (33 CFR 319.11). Many factors, both human-caused and natural, have contributed to the decline of the functional condition of the constituent elements of designated critical habitat. Steelhead habitat has been altered through activities such as urban development, logging, grazing, power generation, and agriculture, including irrigation diversions.

The Yakima River Critical Habitat Unit (CHU) supports adfluvial, fluvial, and resident life history forms of Bull Trout. This CHU includes the mainstem Yakima River and tributaries from its confluence with the Columbia River upstream to its headwaters at the crest of the Cascade Range. The Yakima River CHU is located on the eastern slopes of the Cascade Range in south-central Washington and encompasses the entire Yakima River basin located between the Klickitat and Wenatchee Basins.

The Prosser Diversion is within critical habitat that serves as a migration corridor for threatened Steelhead and Bull Trout, and their upstream and downstream movements are affected by the performance of its fish ladders and its water diversion and bypass system. Juvenile and adult Steelhead belonging to all four Yakima Basin populations would benefit from reducing juvenile entrainment rate and mortality of entrained juveniles, and from improving upstream passage of both juvenile and adult Steelhead past the Prosser Diversion. Threatened Bull Trout that may forage, migrate and overwinter in the Yakima River would benefit from a nature-like fishway that reduces their dependence on fish ladders designed for adult salmon and Steelhead.

#### Project Benefits Non-Listed ESA Species

Each native fish species is significant to the YN's identity and culture. The YN has taken the lead in enhancing native populations of spring Chinook, fall Chinook and Pacific Lamprey, none of which are listed under the ESA, but all of which have experienced steep population declines (Table 1-1). The YN has also successfully reintroduced summer Chinook, Coho and Sockeye salmon, which had been extirpated from the Yakima Basin. Spring, summer and fall Chinook, Coho and Sockeye all migrate as juveniles and adults past the Prosser Diversion.

### **Sub Criterion A.2. Quantification of Specific Project Benefits**

#### Species Status and Health

Returns of anadromous fish to the Yakima Basin have declined precipitously from historic levels. Table 1-1 summarizes the decline in anadromous fish abundance from the most commonly cited historic estimates (Northwest Power Planning Council 1989) to the 2013-2022 average counts at the Prosser Diversion on the University of Washington's Data Access in Real Time (DART) website (<https://www.cbr.washington.edu/dart>).

Table 1-1. Historic and present returns of anadromous fish species to the Yakima River Basin.

	Historic Estimate	Average Count at the Prosser Diversion, 2013-2022	Percentage of Historic Estimate
Chinook	400,000 <sup>1</sup>	13,476 <sup>3</sup>	3.4%
Steelhead	80,000 <sup>1</sup>	3,589	4.5%
Coho	110,000 <sup>1</sup>	5,175 <sup>3</sup>	4.7%
Sockeye	200,000 <sup>1</sup>	4,134	2.1%
Pacific Lamprey	75,000 <sup>2</sup>	305 <sup>2</sup>	0.4%

<sup>1</sup>NW Power Planning Council 1989

<sup>2</sup>R. Lampman, YN, personal comm.

<sup>3</sup>includes jacks

Chinook salmon returning to the Yakima Basin are comprised of spring, summer and fall runs. Based on redd surveys, spring Chinook spawn earliest at the highest elevations in large streams in the upper Yakima and Naches watershed. Reintroduced summer Chinook spawn upstream from the Prosser Diversion, in the lower Naches River and in the Yakima River above and below the Naches River confluence. Fall Chinook spawn the latest, in the Yakima River mainly downstream from the Wapato and Sunnyside diversions and upstream from the Prosser Diversion. Fall Chinook spawning habitat below the Prosser Diversion has been severely degraded by water stargrass infestations.

All four threatened MCR Steelhead populations belonging to the Yakima MPG spawn upstream from Prosser Diversion, mainly in the Satus Creek, Toppenish Creek, Naches River upper Yakima River watersheds, and for several miles downstream of their confluence. Reintroduced Coho salmon spawn in the Naches and upper Yakima watersheds. After passing the Prosser Diversion, returning Sockeye salmon are trapped at Roza Dam 81 miles upstream and transported to their site of reintroduction above Lake Cle Elum in the upper Yakima watershed (an irrigation storage reservoir with no adult passage) to spawn in tributaries to the lake and along the lakeshore.

Although Yakima Basin Steelhead enter the Columbia River in early summer, lethal summer temperatures in the lower Yakima River downstream from the Prosser Diversion usually prevent entry to the Yakima River until the weather cools in September. Steelhead overwinter in the Yakima River before spawning the following spring, but fall-spawning Chinook and Sockeye have a shorter time window between migration and spawning. Unless a significant summer rain event cools the lower Yakima River, Sockeye, especially, may be in poor spawning condition by the time they are finally able to ascend the Yakima River.

Pacific Lamprey migrate upstream in the Yakima basin mainly from March through May. Juvenile Lamprey counts at the Prosser Diversion indicate that outmigration occurs over the

entire January-July sampling period. The Cle Elum Hatchery site has been selected for larval Lamprey outplanting in the Upper Yakima Basin, along with off-channel sites in the Thorp-Ellensburg area and lower Wenas Creek, while adult translocation is focused on tributaries of the lower Yakima River.

Adult Pacific Lamprey migration is hampered by diversion dams (Johnsen et al. 2013; Grote et al. 2014, 2016). Translocation of adult Pacific Lamprey has resulted in an increasing proportion of Pacific Lamprey among the juvenile Lamprey salvaged from sediment deposits in the Wapato and Sunnyside canals upstream from Prosser (Beals and Lampman, 2015).

Fish ladders at Yakima River diversions are not usually serious obstacles to adult salmon and Steelhead. Passage delays were observed at the four major Yakima River diversions in a 1990-1992 radiotelemetry study of adult Steelhead, with median delays ranging from 0.4 days at Sunnyside Diversion to 5.9 days at the Prosser Diversion and 6.9 days at the Wapato Diversion. Over the same time period, passage delays of adult spring Chinook ranging from about 0.2 days at the Wapato and Sunnyside diversions to 1.0 day at the Prosser Diversion and 1.1 days at Roza Dam. As noted in a 2015 Yakima River Steelhead biological assessment by the USBR, low winter temperatures and the normal overwintering behavior of adult Steelhead likely increased the Steelhead delays.

Nevertheless, debris and mechanical failures can affect the performance of fish ladders at all Yakima River diversions, and river flow exceeding 7,000 cubic feet per second at Prosser can necessitate ladder closure to prevent clogging with debris and to avoid damage to fish counting windows. A 7-day shutoff of Prosser ladders during high river flow in May, 2011 was immediately followed by the highest one-day count of adult spring Chinook in that decade, indicating that the Prosser diversion is a barrier at all flows without operating ladders.

### **Juvenile entrainment and survival**

The YBIP (<https://yakimabasinintegratedplan.org/>), building on earlier restoration efforts by the YN and others, has coordinated a multitude of projects that address factors limiting anadromous fish populations within the basin such as habitat, streamflow, and fish passage. Major limiting factors that remain include diversions that entrain juvenile salmon from the Yakima River into irrigation canals. All irrigation diversions in the Yakima River have screening and bypass systems that return juvenile fish to the river. Despite these measures, ongoing studies of juvenile salmon and Steelhead migrating past several large irrigation diversions continue to document not only entrainment, but significant mortality of entrained fish, which must pass through diversion headgates and canals, past screens and through bypass flumes, weirs and discharge pipes back to the river.

Juveniles of all five anadromous species native to the Yakima River Basin pass the Prosser Diversion on their journey to the Pacific Ocean. Over the past three decades, the Yakima Basin upstream from the Prosser Diversion has been the focus of massive efforts to restore habitat and passage, supplement native populations and reintroduce extirpated species.

As detailed above, all three runs of Chinook, all four local populations of threatened Steelhead, all of the Yakima Basin's reintroduced Sockeye, all returns of Yakima Basin Coho, and nearly all of the Yakima Basin Pacific Lamprey population spawn upstream from the Prosser Diversion.



Juveniles migrating to the ocean from these upstream spawning and rearing areas must pass the Prosser Diversion, and the diversion operates and entrains fish all year except during a November maintenance shutdown (Figure 1-4).

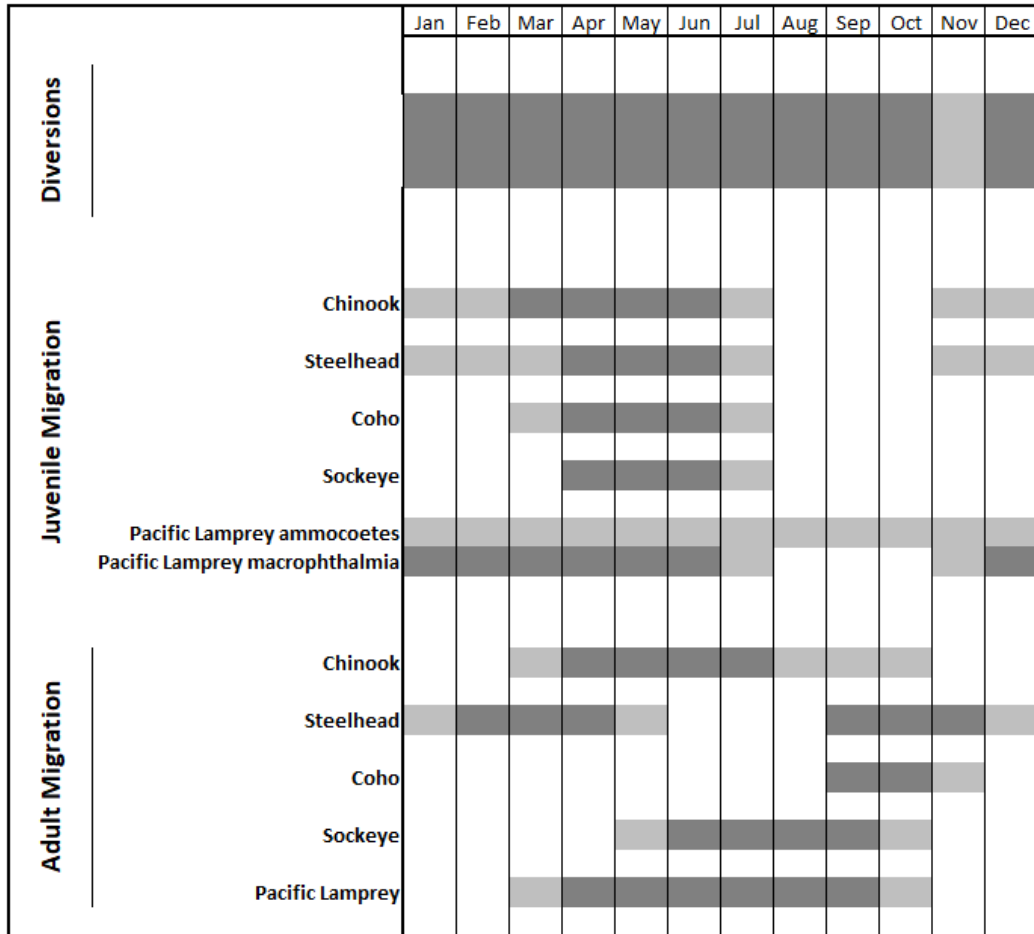


Figure 1-4. Timing of irrigation diversions and migration of juvenile and adult salmon, Steelhead and Pacific Lamprey past the Prosser Diversion. Heavier shading shows when most of the outmigration takes place.

The ongoing USGS study is detailing the impact of the Prosser Diversion, along with three other diversions, on juvenile Chinook and Steelhead, including the relationship of entrainment probability to the percentage of Yakima River flow diverted into Chandler Canal, and the survival rate of entrained fish (Figure 1-5).

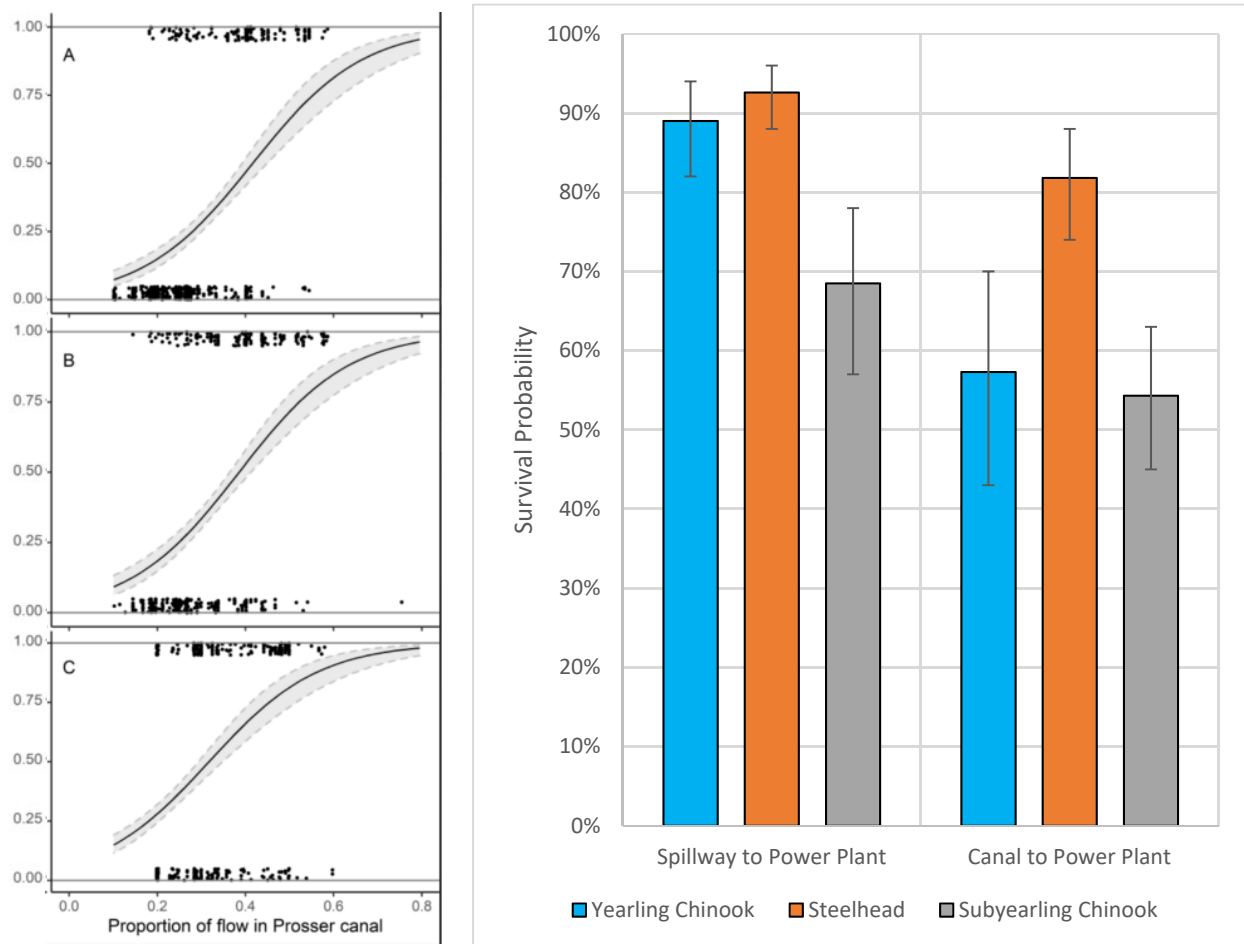


Figure 1-5. Entrainment and survival probabilities with 95% confidence intervals for juvenile Chinook and Steelhead passing the Prosser Diversion, 2018-2021 (preliminary USGS data).

Studies by the USGS have identified two locations within the Prosser Diversion, screening and bypass system where juvenile fish are killed. Multiple sets of 4-point releases and subsequent detections of tagged Chinook showed that yearling Chinook mortality was greatest at the headgates, while subyearling mortality was greatest within the bypass to the Yakima River, with the least mortality of both groups in the canal between those locations (T. Kock, USGS, personal comm.).

Eighty-eight percent of yearling Chinook remaining in the Yakima River survived from above the Prosser Diversion to the Chandler Power Plant 11 miles downstream, while the survival probability of entrained and bypassed yearlings was only 57% over the same distance. For subyearlings the percentages were 69% and 54%, and Steelhead survivals were 93% and 82% (Figure 1-5). While entrained and bypassed fish suffered the most mortality, mortality of smolts remaining in-river, especially the later-migrating subyearling Chinook, was also significant.

An achievable goal for juvenile fish protection at the Prosser Diversion is to increase survival of all downstream migrants passing the diversion to the level currently observed for fish remaining in the river as shown in Figure 1-5, i.e. an improvement of 11 to 32 percentage points based on current data. This goal will be refined, and juvenile Steelhead survival requirements are likely for all of the major Yakima River diversions as agency consultations continue.

Another concern is the poor in-river survival over the 11 miles from the diversion to the power plant, especially for subyearling Chinook. It has not yet been determined how much of this mortality occurs as fish pass over the Prosser spillway, and how much is due to river conditions over the next 11 river miles.

### **Adult passage and harvest**

The Prosser Diversion dam is a permanent structure that is made passable to adult salmon and Steelhead by three concrete fishways that require considerable maintenance to perform over the annual range of flows. A nature-like fishway that partly replaces the present spillway would provide a nearly maintenance-free passage route for a portion of the more than 30,000 adult and jack Chinook, Steelhead, Coho, Sockeye and Pacific Lamprey that migrate past the diversion, based on average annual counts. A nature-like fishway also can be designed to improve upstream passage of juvenile salmonids, adult Bull Trout and Pacific Lamprey, which the existing ladders were not designed to accommodate. Maintenance and passage issues contributed to the recent decision to replace a concrete diversion dam with a roughened channel on the Naches River upstream from the Prosser Diversion. The YN and resource agencies will evaluate these issues as they pertain to the Prosser Diversion.

### **Habitat health**

The lower Yakima River is in a semi-arid basin, and relies on snowmelt in the upper watershed to help migratory fish pass through the lower river. This spring freshet has been dramatically reduced in size by river regulation, and typically peaks in April and May in the lower Yakima River, with low flows and high water temperatures occurring from June through August. Most juvenile and adult salmon, Steelhead and Pacific Lamprey migrate through the lower Yakima River from March through October, which coincides with irrigation withdrawals. At the peak of the irrigation season, the lower river mainstem is wide and shallow with daytime temperatures exceeding 23°C. These degraded conditions are favorable for invasive piscivorous fish, which further impact juvenile salmonids and Lamprey that migrate through the lower Yakima River corridor.

The negative impacts of the Prosser Diversion on downstream migrants have been quantified in the USGS studies discussed above. Impacts include not only entrainment, but reduced flow downstream from the diversion, with as much as 1500 cfs diverted to generate hydropower, drive hydraulic pumps, and supply an irrigation district. Power water and drive water return to the river 11 miles downstream, but fish losses are significant between the diversion and the power plant, as described above.

The USGS has studied the impact of river flow and water temperature as individual variables on the survival of juvenile Chinook and Steelhead, and preliminary results are shown in the three figures below. As river flow in this depleted reach declines toward 1,000 cfs (the flow to which

power generation is currently subordinated from April through June), Steelhead survival probability drops significantly. Yearling Chinook survival at 1,000 cfs is about 10 percentage points lower than Steelhead survival, and subyearling Chinook survival declines to about 10%. Entrained fish survive less well, as demonstrated in Figure 1-5 above, although the steepness of the flow-survival curve for late-migrating subyearling Chinook visually masks the additional negative effect of entrainment that was depicted in the above figure.

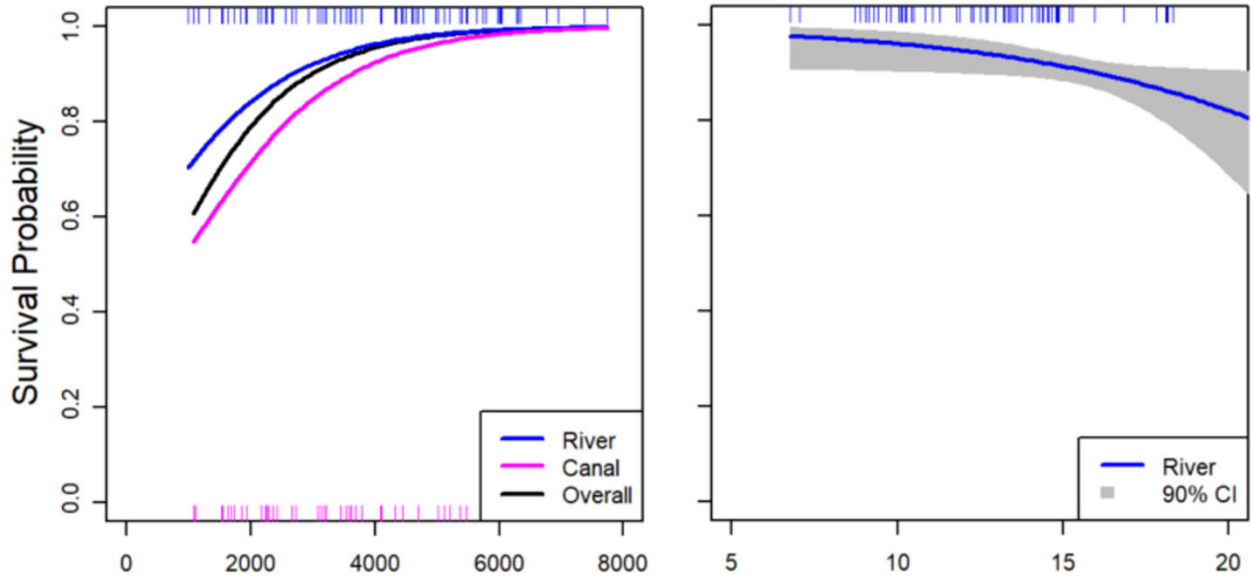


Figure 1-6. Survival probability of yearling Chinook in the 11 miles from the Prosser Diversion to the Chandler Power Plant versus flow in cfs (left) and water temperature in °C (right). Adapted from preliminary USGS data.

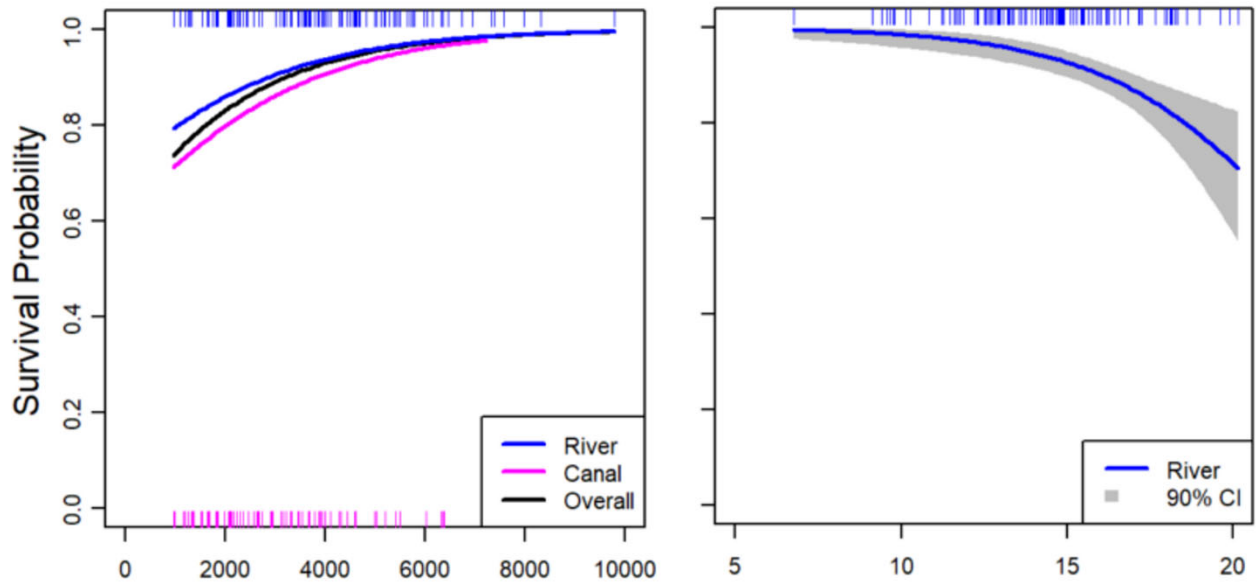


Figure 1-7. Survival probability of juvenile Steelhead in the 11 miles from the Prosser Diversion to the Chandler Power Plant versus flow in cfs (left) and water temperature in °C (right). Adapted from preliminary USGS data.

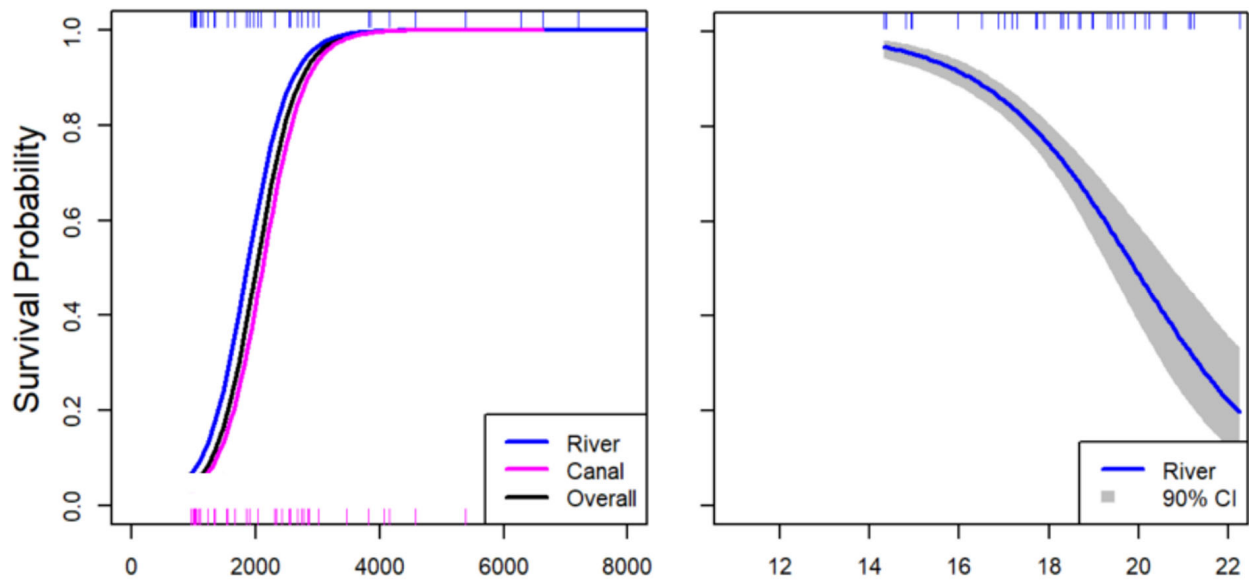


Figure 1-8. Survival probability of subyearling Chinook in the 11 miles from the Prosser Diversion to the Chandler Power Plant versus flow in cfs (left) and water temperature in °C (right). Adapted from preliminary USGS data.

Because the lower Yakima warms in summer as its flow declines, the effects of water temperature and flow are strongly correlated. Less flow results in slower velocity, a smaller thermal mass, more susceptibility to rapid warming from the atmosphere, and greater concentrations of outmigrants to attract predators. Despite the return of power water and drive water from Chandler Canal to the Yakima River at the Chandler Power Plant, negative effects are compounded downstream as the river continues to warm and predators take an additional toll.

Although there is little evidence that the fish ladders at the Prosser Diversion are deficient for adult salmon and Steelhead passage, they were not designed to facilitate upstream passage of juvenile salmonids, adult Bull Trout or Pacific Lamprey. Below the Prosser Diversion, high water temperatures in summer block the upstream migration of summer Chinook, Steelhead and Sockeye from the cooler Columbia River into the warmer Yakima River.

#### Project Design Informs Approach for Addressing Species and Habitat Issues

The YN, resource agencies at the state and federal levels, irrigation districts and other stakeholders have contributed to the concepts described in this proposal. All of these entities will continue to cooperate in setting priorities for species and habitat health related to the Prosser Diversion. The impact of this and other diversions on survival of downstream migrants has deservedly received the greatest attention, and numerical survival goals will be refined in a collaborative process as the study phase proceeds toward design.

Investigations by teams with members belonging to YN Fisheries, USBR and USGS are using several different methods (e.g. sensor fish, cameras to identify the presence of piscivorous fish in the canal, electrofishing general abundance surveys, water quality monitoring, etc.) to refine our understanding of the mechanisms for juvenile salmonid mortality around the Prosser Diversion. This information is being used by a working group composed of the KID, USBR, YN,

WDOE, WDFW and NOAA Fisheries to inform the development of alternatives to improve fish passage at the Prosser Diversion.

Eliminating the negative effects of entrainment into Chandler Canal would increase survival of entrained juvenile fish by 11 percentage points (Steelhead) to 32 percentage points (yearling Chinook) according to current comparisons of survival for canal and river migration routes. Low flow in the bypass reach below the Prosser Diversion creates substantial habitat for smallmouth bass, a significant predator of juvenile salmonids on the lower Yakima River, and also promotes heating of the river through lowered stream velocities (increased travel time) and exposure of basalt bedrock. Increasing river flow from 1,000 cfs to 2,000 cfs through reduced diversions could increase juvenile survival rates from 7 percentage points (Steelhead) to 70 percentage points (subyearling Chinook) just in the 11-mile reach of the Yakima River between the Prosser Diversion and the Chandler Power Plant, according to current USGS flow-survival models.

### Watershed Status

The lower Yakima River provides winter and spring rearing habitat for juvenile salmon and Steelhead preparing for migration to the Pacific Ocean. Warmer temperature, lower gradient and greater water depth combine to reduce energy expenditure and provide more feeding opportunity for these species. However, as the spring season progresses, a large proportion of high-elevation snowmelt is trapped in reservoirs and irrigation demands increase. As a result, flow declines and water temperature rises. Runoff from irrigated croplands raises river temperatures further and adds excess nutrients and other pollutants.

Adult summer Chinook, Steelhead and Sockeye arrive at the mouth of the Yakima River when water temperatures are approaching their summer peaks. Unless there is a midsummer break in the weather, upstream migration may be precluded until fall, forcing these fish to expend energy reserves needed for spawning as they hold in the Columbia River near the Yakima or stray—temporarily or permanently—to cooler tributaries of the upper Columbia.

### Project Design Informs Approach for Addressing Watershed Issues

Because nearly all migratory salmonids and Pacific Lamprey in the Yakima Basin must pass the Prosser Diversion to reach the ocean, the diversion has an outsized effect on smolt survival throughout the Basin. Reducing or eliminating the effects of entrainment and river flow reduction would increase the productivity of all Yakima Basin anadromous species in proportion to survival improvements realized at this single location. Recognizing its basinwide implications, since 2009 (Sampson et al., 2012), the YN and natural resource agencies have worked to understand the specific sources of mortality associated with the Prosser Diversion. A working group consisting of Kennewick Irrigation District, USBR, YN, WDOE, WDFW and NOAA convened in 2021 to begin discussions about how the diversion could be improved (including the scenario of removal) to address identified and theorized fish passage issues. Through this process the YN contracted Wakish PLLC to construct a complete history of Prosser Diversion, assist with evaluating the importance of the Chandler Fish Facility to fishery recovery efforts within the basin, and then finally assist the working group in identifying a list of potential alternatives at Prosser Diversion. The USBR has also assigned funds to the project to allow their Value Planning Team and Technical Service Center staff to assist in developing alternatives.

Wakish is also analyzing how to adapt basin research and species recovery efforts that currently depend on the Chandler Juvenile Monitoring Facility to scenarios where fewer fish are entrained and available for sampling at this strategic location.

Activities to be funded through this proposal will be conducted and incorporated into the alternatives analysis phase of the project. An RFP will go out on 2/15/2023 to contract the development of a hydraulic model and analysis of several scenarios, including dam removal, that provide safe fish passage for Prosser Diversion. Data collection for the hydraulic model will occur in the year 1 award period beginning in the summer and ending with a bathymetric lidar flight sometime during the fall months 10/1-11/15/2023. Bathymetric lidar flights will be coordinated with the Washington State Department of Natural Resources if possible. Development and calibration of the model will begin during year 2 (12/1/2023). Once calibrated the hydraulic model will be used to assess the impacts of the various alternatives. These findings will be incorporated into the alternatives analysis, completed at the end of the year 2 award period (11/31/2024). During year 2 the selected local community group will create curriculum that can be presented to local schools and community events about Prosser Diversion, with some outreach occurring during 8/1-11/30/2023. During year 3 outreach activities will be increased to help discuss with the public the findings of the alternatives analysis.

### Water Supply Status

Figure 1-9 shows the regulated flow pattern of the Yakima River below the Wapato and Sunnyside diversions in the 1990s (dotted line) along with modeled unregulated flow (dashed line), which removes the storage reservoirs and major irrigation diversions to approximate natural mid-to-late summer flow, but ignores the damping effects on winter flow of the natural lakes that preceded the reservoirs. The 1908-1915 period (solid line) best depicts historical spring and early summer peak flows because it preceded large-scale storage. However, irrigation diversions were already reducing summer flow during the 1908-1915 period to levels generally below the current regulated summer flow<sup>1</sup>, which is still well below unregulated flow as shown in Figure 1-9.

These data clearly show that storing spring peak flows in reservoirs followed by withdrawal of both stored and natural flows has truncated the migration season that salmon and Steelhead evolved to utilize. In mid-July, when high temperatures typically reach lethal levels near the mouth of the Yakima, river flow is less than half of its pre-development level. Under the present flow regime the later-migrating stocks of juvenile salmon and Steelhead are subjected to greater mortality as river conditions deteriorate and as more are drawn into canals. Native and invasive predators adapted to low flow and warm temperatures move upstream to consume increasing numbers of the survivors.

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<sup>1</sup> Instream flow targets were implemented under the 1994 Yakima Basin Water Enhancement Project (Title XII of Public Law 103-434).

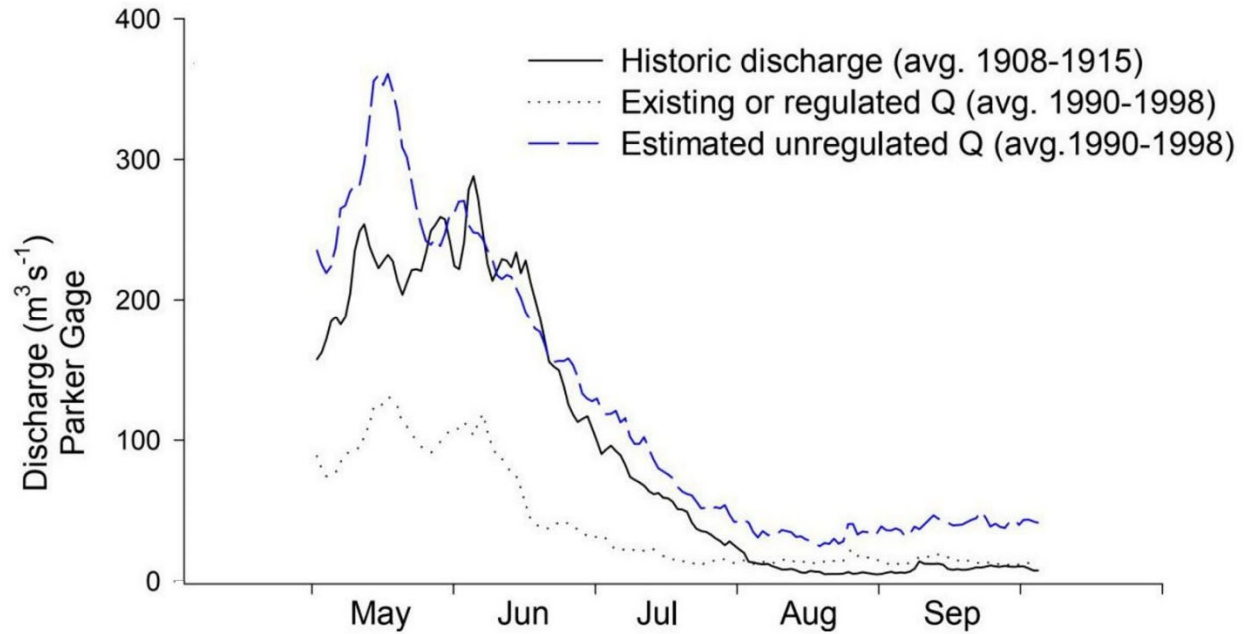


Figure 1-9. Comparison of existing, regulated discharge below the Sunnyside Diversion with two approximations of pre-development discharge (From Stanford et al. 2002).

### Project Design Informs Approach for Addressing Water Supply Issues

One of the two major impacts addressed by this project is mortality due to low river flow below the Prosser Diversion. As described above, river flows currently experienced by juvenile fish below the Prosser Diversion lower their survival, and increasing river flow increases survival. With an established flow-survival relationship, the benefits of increasing flow through changes in power generation and in how irrigation water is delivered can be quantified, and can result in better-informed decisions on major changes in these facilities and practices.

### Additional Project Benefits

The Prosser Diversion lies atop a natural feature, Prosser Falls, which helped sustain multiple generations of Yakama fishers, and played an important role in Euroamerican settlement of the area. The diversion by its very nature raises the bed elevation of the Yakima River and impedes flood passage and sediment continuity in addition to the fish passage issues already discussed. Maintaining the diversion, canal and fish passage facilities is an ongoing responsibility of the USBR, and the large-scale improvements needed for fish passage alone are not possible at the current level of maintenance effort.

### Project Design Informs Approach for Addressing Project Issues

This project has the potential for several different sustainability metrics to increase depending on which alternative is ultimately selected. The project will examine the most sustainable passage project, which is dam removal, and will examine other alternatives in the event that dam removal is infeasible. If dam removal ultimately becomes the preferred alternative, then it would be expected that the project would not incur any future maintenance costs related to the dam site. This would also provide benefits in flood risk reduction to the surrounding community. The removal of the dam would also uncover the now mostly inundated Prosser



Falls. This would likely bring increased tourism to the town of Prosser, could feasibly increase nearby property values due to the scenic nature of the falls, and help restore lost treaty fishing areas and culturally significant sites for the YN. If other alternatives are ultimately selected that improve fish passage at the dam but leave the dam in place, it is likely that these improvements would reduce the overall maintenance currently incurred by the dam. Maintenance for the dam is currently paid for by the USBR, with the Chandler Diversion supported by contributions from the USBR and served irrigation districts. Some alternatives that do not involve dam removal will likely include measures that increase the passage of sediment past the dam. This could help reduce bed elevation upstream of the dam, thus reducing flood risk. The Prosser Diversion and the surrounding floodplain are owned by USBR, and a letter of support for this proposal is provided in the supplemental materials.

#### ***E.1.1.1 Evaluation Criterion B- Prior Restoration Planning and Stakeholder Involvement and Support***

##### ***Sub-Criterion B1: Task A: Study and Design Stakeholder Involvement and Support and Restoration Planning***

The Prosser Diversion was the subject of numerous studies that culminated in the design and construction of new fish passage and protective facilities in 1988, and fish passage facility improvements have been made since then as operational problems have arisen. Recent technological advances and multi-agency cooperation have made it possible to tag and track juvenile fish through the entire diversion and bypass system and within the Yakima River to assess the effect of the diversion as a whole along with its components on the survival of juvenile salmon and Steelhead. Tests with “sensor fish” have helped to pinpoint locations in the diversion and bypass where injuries are most likely occurring. The preliminary results of this work have elicited broad stakeholder support for funding and developing concepts and designs to reduce impacts of the Prosser Diversion on juvenile fish.

##### Scope of Planning Effort

The Kennewick Division of the USBR’s Yakima Project is a combined irrigation and power development project that includes the Prosser Diversion, a 12-megawatt Chandler power plant and pump station. The KID serves over 20,000 acres of land within a 55,000-acre boundary.

Besides irrigation and hydropower diversions, the Yakima Project also operates six storage dams in the upper Yakima Basin, and two power plants. In total, these storage, diversion and hydroelectric facilities, along with agricultural development made possible by the Yakima Project, have drastically changed the Yakima River and have played a role in the decline of native fish populations.

The geographic scope of this proposal is the Prosser Diversion dam, the upstream portion of the Chandler Canal, and the screens and bypass structures associated with the diversion and canal, all within the area depicted in Figure 1-1 Figure 1-10. This proposal fits within a broader context of restoration. Ongoing efforts to lessen the environmental effects of water storage and

withdrawal are guided under YBIP by a diverse set of stakeholders representing multiple private, local, tribal, state, federal, and environmental interests in the Yakima Basin. The YRBWEP Workgroup provides policy and project development consultation on the implementation of the YBIP.

The YBIP identifies seven elements needed to achieve a balanced and comprehensive approach to water resource management and ecosystem restoration in the Yakima River Basin: Reservoir Fish Passage, Structural and Operational Changes, Surface Water Storage, Groundwater Storage, Habitat/Watershed Protection, Enhanced Water Conservation, and Market Reallocation. This fish passage improvement project fits into YBIP as a component of the Structural and Operational Changes element.



*Figure 1-10. General site overview, Prosser Diversion.*

### Collaborative Plan Development

Beginning with the decade-long effort to have the original Chandler Canal screens approved, funded and constructed in 1940 (Tuck, 1995), juvenile fish passage and protection at the Prosser Diversion has involved multiple entities. Passage of P.L. 96-162 in 1979 launched the Yakima River Basin Water Enhancement Project, and P.L. 96-501, the Northwest Power Act, in 1980. The Power Act provided funds for off-site mitigation of Columbia River hydropower impacts, which were used to design and construct new fish ladders and fish screens in two phases at diversions throughout the Yakima River Basin, including the Prosser Diversion during Phase I in 1998. The YN and agencies of the federal and state governments also focused on other irrigation impacts such as instream flow, water loss in delivery systems, and water quality impacts of return flow.

Since the 1980s the YN has been releasing tagged smolts in the Chandler Canal to facilitate smolt passage estimates. These experiments have demonstrated that smolt mortality was occurring in the canal/bypass system. Watson (2011) confirmed these results in an analysis

concluding that juvenile Chinook survival through the Chandler bypass ranged from 64% to 83% depending on age group and the month of release. (Subyearlings and later migrants of both age groups fared worse.)

Concerns about canal and bypass mortality prompted the USBR to fund a study by USGS beginning in 2018 with the collaboration of YBIP participants, the YN and federal and state resource agencies. Preliminary results of this study were described in previous sections of this proposal, and confirmed existing concerns in more detail. The study results are the principal scientific basis for this proposal. Initial concepts for reducing or eliminating smolt mortality at the Prosser Diversion require more analysis, beginning with modeling the most promising concepts.

Success in replacing concrete diversion dams and fish ladders with nature-like channels, most recently at the Nelson Diversion on the Naches River upstream from Prosser, have prompted broad interest in developing this low-maintenance and passage-friendly concept at other locations, including Prosser, as partial or full replacements for concrete dams.

#### Project Furthers Previous and Existing Planning Efforts

This proposal builds on the issues raised, the resulting research, and the concepts proposed in the multi-agency planning process coordinated under the YBIP. Rigorous evaluation of these concepts is the first step in improving fish passage and survival in the lower Yakima River.

#### Stakeholder Involvement

YBIP members who represent a wide swath of basin stakeholders, including the irrigation district served by Prosser Diversion and the owner of the dam (KID and USBR respectively), have provided a letter of support for this project through the YBIP Implementation Committee. YBIP is the basin's inclusive long term watershed scale planning group, and their support indicates the importance of this proposal to Yakima River Basin stakeholders. The YBIP letter of support can be found in the supplemental materials.

#### Stakeholder Engagement

Stakeholders will be engaged throughout the entirety of the project to find the best solution for improving fish passage at the Prosser diversion. Various meetings have been occurring for improving fish passage at Lower River infrastructures. Meetings and work are currently funded by the YBIP and YN. This proposal will provide funding for stakeholder engagement throughout the hydraulic modeling, analysis, and preferred alternative selection. The USBR's value planning process will be employed to vet alternatives and provide stakeholder engagement.

#### Funding Commitments

The YN, USBR, and WDOE have contributed to the funding with plans to continue future funding in the form of cost share.

### Stakeholder Participation

Stakeholders will be engaged throughout the entirety of the project to find the best solution for improving fish passage at the Prosser Diversion. This proposal will provide funding to ensure stakeholder engagement throughout the hydraulic modeling, analysis, and preferred alternative selection. The USBR's value planning services have been offered to the project, and will be employed to vet alternatives and provide stakeholder engagement in that process. The environmental assessment process under the NEPA also includes provisions for outreach and engagement with stakeholders and the public.

YBIP is the basin's inclusive long term watershed-scale planning group, and their letter of support indicates the importance of this proposal to Yakima River Basin stakeholders and their consensus on moving forward. Given USBR's responsibility for fish protection addressed by this proposal, opposition to the overall project has not been encountered and is not expected. However, thorough discussion of individual alternatives will be encouraged, as an early high level of engagement will streamline regulatory approval for solutions that emerge from the process.

### Inclusive Planning and Engagement

The YN currently partners with YBIP to engage volunteers in restoration. This proposal will build on these existing efforts by contracting with local community groups to provide similar engagement activities such as further stewardship efforts, educational site tours, and community outreach. The YN will also continue to provide updates to the stakeholders and public through the NEPA process.

YBIP has also previously supported community outreach for the Lower Yakima River projects through their website (<https://yakimabasinintegratedplan.org/>), public meetings regarding YBIP progress, and newsletters.

## **E.1.2 Evaluation Criterion C— Project Implementation and Readiness to Proceed**

### ***Sub-Criterion C1: Task A: Study and Design Project Implementation***

The implementation plan for the proposed study, design project, and estimated project schedule are provided in table 1-2. The table also shows the stages and duration of the proposed study and design work, including major tasks, milestones, and dates. Information concerning YN budget for project management and administration of grant funds is provided in the budget narrative.

Table 1-2. Aquatic Ecosystem Restoration Projects Task A: Estimated Timeline and Budget

Task	Action	Begin Date	Completion Date	Budget
1	Present Best Available Science & Obtain Agency/Program Level Support for Biologically-Based Objectives for Improved Fish Passage (Pre-ESA Consultation, 1 workshop, 1 meeting)	Jan 2024	Mar 2024	\$100,000
2	Value Planning Analysis of Intermediate-Term Considerations for 3 separate components ( Include: 1. new headworks, dam crest gates near both banks, nature-like fishway to replace left & center ladders, 2. electrification & 3. power generation analysis. All with the intent of achieving biologically-based objectives)	Mar 2024	Jul 2024	\$225,000
3	Complete 30% Design Package (Include: new headworks, dam crest gates near both banks, nature-like fishway to replace left and center ladders, draft basis of design reports, draft specifications)	Jul 2024	Sep 2024	\$80,000
4	Prepare & Present Results of Intermediate-Term Considerations to Stakeholders (1 technical presentation, 1 public presentation)	Sep 2024	Oct 2024	\$40,000
5	Develop Criteria & Select Preferred Combination of Conceptual Design Alternatives w/Stakeholders (2 technical workshops, 1 follow-up meeting)	Nov 2024	Apr 2025	\$80,000
6	Develop Physical Model for Project (flow, velocity, stage, sediment & debris continuity, stream morphology)	Jul 2025	Oct 2025	\$750,000
7	Develop Physical Model for Headworks and Nearby Dam Crest Gate & Provide Recommendations Concerning the Need for 3D Computational Model (Satisfy diversion right, enhance hydraulic cues to reduce entrainment, reduce mortality at headworks)	Nov 2025	Feb 2026	\$750,000
8	Prepare & Present Physical Modeling Results to Stakeholders (1 technical presentation, 1 public presentation)	Mar 2026	May 2026	\$40,000
9	Obtain Agency/Program Level Support for Combination of Design Alternatives to Carry Forward for 60% Design	Jun 2026	Aug 2026	\$40,000
10	Complete 60% Design Package (Include: new headworks, dam crest gates near both banks, nature-like fishway to replace left and center ladders, draft basis of design reports, draft specifications)	Sep 2026	Dec 2026	\$260,000

### **E.1.3 Evaluation Criterion D—Presidential and Department of the Interior Priorities**

Rising levels of greenhouse gases in Earth’s atmosphere are expected to continue increasing air temperatures locally and globally for the foreseeable future. While annual precipitation in the Pacific Northwest may not change greatly, the east slopes of the Cascade Mountains, including the Yakima River Basin, will see less snow and more rain, resulting in more frequent winter floods, earlier and more rapid spring runoff, and lower and warmer stream flow in summer. Measurable declines in the Washington Cascade snowpack and earlier peak flows in Washington streams have already occurred (Climate Impacts Group 2020). Salmonids in snow-fed watersheds are especially vulnerable to future climate change (Yan et al. 2021). Mantua et al. (2010) observed that with the projected loss of all snowmelt-dominated basins in Washington State by the 2080s, and a rain-dominated regime for the Yakima, winter flooding and summer low flow will become the norm.

Climate change will reduce Yakima River flow during the principal outmigration period for juvenile salmon and Steelhead, and a greater proportion of that flow will be diverted for irrigation and power production under established water rights. Modeling and redesign of the diversion intake, spillway, headgates and bypass system is expected to reduce the proportion of juvenile salmonids entrained into the canal at a given diversion rate, and to reduce injury and mortality of entrained fish. Additional instream flow below the diversion will reduce predation success by reducing prey density.

Every improvement in outmigration survival of Chinook, Steelhead, Coho, Sockeye and Pacific Lamprey through the Chandler Canal and bypass increases the number of recruits per spawner (productivity) for these populations in direct proportion to the survival increase. Higher productivity means greater resilience to the negative effects of climate change.

Survival of juveniles and adults migrating through the lower Yakima River is another critical component of population resiliency. The first step in addressing this issue is to evaluate non-irrigation water withdrawals into Chandler Canal, which exceed irrigation consumptive use in all seasons. Improving fish survival through better flow management is made more urgent in the face of climate change.

Reducing delay and energy expenditure of upstream migrants is especially important to the success of native Steelhead and reintroduced summer Chinook and Sockeye in the Yakima Basin. These populations attempt to ascend the Yakima River during the hottest time of the year when flow below the Prosser Diversion is lowest. A nature-like fishway at the Prosser Diversion has the potential to speed upstream migration and increase the likelihood of successful spawning by all species in a warming environment.

#### **Project Long-Term Resilience to Drought**

Flow increases in the 11-mile reach between the Prosser Diversion and the Chandler Power Plant improve biological resilience to drought and other manifestations of climate change, as described above.

## Project Reduction in Greenhouse Gases

Not applicable to this proposal.

## Project Impacts on Disadvantaged or Underserved Communities

Although the specifics as to what changes will ultimately result from the Prosser Diversion improvement project will not be known until the alternatives analysis is concluded, there is a high likelihood of significant benefits be accrued by YN members. These benefits can be measured in the future by assessing the number of tribal fishing sites, the number of days members can access their fishing sites and important cultural areas without interference from dam operations (spill from the canal, amongst other operational issues can limit access at times), and any changes in the quantity of fish harvested relative to total adult passage numbers pre and post implementation. The hydraulic model funded by this proposal would be able to assess the level of benefit that each potential alternative would have on reducing flood risk, and flood return intervals. If the alternative ultimately selected by the working group is dam removal, the removal of the dam will eliminate the significant safety hazard for area recreationalists of drowning in the hydraulics beneath the dam spill crest. Potential alternatives may also involve increased public access to the river, which would give nearby underserved communities (see section 2.4) greater access to recreational, and natural resources. Changes in use of the river by underserved communities pre and post implementation could be assessed by local community groups. Ultimately the potential improvements to Prosser Diversion, will have a significant impact on anadromous fish production in the basin and provide benefits to Columbia River populations as well. This will provide the YN, as well as other indigenous groups (e.g. Confederated Tribes of the Umatilla, and Confederated Tribes of the Colville Reservation) with greater access to treaty trust resources.

## Location of Disadvantaged or Underserved Communities

The Prosser Diversion sits atop Prosser Falls, a fishing site for Yakama tribal members and their ancestors since time immemorial. Yakama tribal members continue to exercise their Treaty-reserved fishing rights at this location. The Prosser Diversion is also an important hub for the YN's efforts to monitor and enhance anadromous fish populations, including the Prosser Hatchery, which receives water from the Chandler Canal bypass, and the Chandler Juvenile Monitoring Facility. The YN is a Federally Recognized Tribe that is considered disadvantaged.

## Project Benefits to Disadvantaged or Underserved Communities

The project, as part of a comprehensive restoration effort, would ultimately improve the opportunity for tribal members to exercise treaty-reserved fishing rights by providing more fish for ceremonial and subsistence use.

**Tribal Benefits:** The Department of the Interior is committed to strengthening tribal sovereignty and the fulfillment of Federal Tribal trust responsibilities. The President's memorandum, Tribal Consultation and Strengthening Nation-to Nation Relationships, asserts the importance of honoring the Federal government's commitments to Tribal Nations.

The YN itself is an underserved community and a federally recognized tribe. The greater area surrounding the Yakama delta and Prosser Diversion is part of an extremely diverse Traditional Cultural Landscape associated with the YN. The Yakama delta has several important cultural sites located in the vicinity, including one located on Bateman Island that has been looted, disturbed, and damaged. Prosser Diversion is located in an ancestral area known as top-tut, which is vital to the continued survival of Yakama culture and traditional practice. The current configuration and operation of Prosser Diversion impedes access to the culturally significant site and interferes with YN member's treaty right to fish, which, in turn obstructs Yakama's ability to provide for their members and to practice their religious and cultural traditions. Removal of the Bateman Island Causeway, and eventual improvement or removal of Prosser Diversion will also improve overall access to tribal treaty resources by increasing anadromous fish populations within the Yakima and Middle to Upper Columbia River Basins. Implementation of this proposal will provide benefits to both locally underserved communities and YN members.

#### Direct Project Benefits to Tribe

The greater area surrounding the Lower Yakima River is part of an extremely diverse Traditional Cultural Landscape associated with the YN. These locations have many associated legendary and monumental sites which are told through the oral history and way of teaching in ichishkinsinwit (the language that belongs to the land). Archaeological sites including burials/cemeteries, fishing sites, villages, and ceremonial sites, and many other resource types are interconnected and associated elements of the area. The YN retains the traditional responsibility, as a people, to respect the laws of this land understood as Nami-taman-wit (The Creator's Law). In this way, Yakamas have a responsibility to the resources that sustain our lives. Without these resources we would not live every day, and we know every breath that we take is as a deeply spiritual gift. If we understand this and do not take the steps necessary to protect our resources, we will bring harm to ourselves, others, and future generations yet unborn. The Yakamas have identified a series of harmful activities. In addition the diversion has altered the riverine environment which has disrupted aquatic life that once thrived and supported our fisheries not only adjacent to the causeway but along the Yakama and Columbia Rivers more broadly. Therefore, due to these cultural resource management, fish passage, and First Food preservation needs, the Yakamas have prioritized the removal of the causeway (pers. comm. Yakama Cultural Resources, 2022). Multiple indigenous communities of the area (e.g. Yakama, Umatilla and Nez Perce tribes) have depended on salmon as their primary First Food, with the Columbia and Yakima Rivers as primary sources for salmon production and harvest. The Yakima Delta causeway removal presents an opportunity for a multiple First Foods management approach to negotiate the re-establishment of traditional practices and harvesting opportunities (Quempts, et. al., 2018) at the Yakima River delta and upriver in both the Yakima and Columbia Rivers. This approach incorporates traditional knowledge of salmon production, run timing, and habitat conditions that would also contribute vital knowledge about the site's potential for rehabilitation if barrier removal occurs. Traditional knowledge would also help to contextualize climate change projections and resource impacts through data sharing agreements that would preserve ecological and traditional knowledge about species,



harvesting locations, and traditional uses when working with nonindigenous partners (Climate and Traditional Knowledges Workgroup 2014). For nearly 50 years the YN has exercised its sovereignty as a leader of fish and wildlife restoration in the Yakima River Basin. This project would build on the YN's efforts to restore and benefit from natural resources that are integral to their existence as a people.

#### Project Supports Reclamation's Tribal Trust Responsibilities

In its 2014 Indian Policy Manual, Reclamation pledges to "... actively seek partnerships with Indian tribes to ensure that tribes have the opportunity to participate fully in the Reclamation Program as tribes develop, manage, and protect their water and related resources." Beginning with this study and design project, improving the Prosser Diversion cooperatively with the YN helps fulfill this commitment.



2015 South Ely Street  
Kennewick, WA 99337  
Customer Service 509-586-9111  
Business 509-586-6012  
FAX 509-586-7663  
[www.kid.org](http://www.kid.org)

May 16, 2023

To: U.S. Bureau of Reclamation Aquatic Ecosystem Restoration Projects Program FY23 (R23AS00106)  
Reviewers

**Re: Request for Letter of Support for Prosser Dam and Chandler Canal Improvements  
Study and Design Proposal**

Dear Review Committee,

We are writing to express our strong support for the Yakama Nation's application under the U.S. Bureau of Reclamation Aquatic Ecosystem Restoration Projects Program for the Prosser Dam and Chandler Canal Improvements Study and Design Proposal in the Lower Yakima River. The Kennewick Irrigation District has been exploring solutions to improve fish passage and river conditions on the lower Yakima River for several decades. KID has been and will continue to be involved in all aspects of the project to improve Prosser Dam and the Chandler Canal and believes this current effort will bring dramatic improvements to fish survival while maintaining water deliveries.

Prosser Dam and Chandler Canal pose significant challenges to fish passage and survival. Prosser Dam supplies irrigation water from the Yakima River through the Chandler Canal. The dam is a barrier to both returning adults and out-migrating juvenile fish and can divert up to half of the Yakima River's flow, resulting in dangerous fish passage conditions. During low flow conditions, juvenile fish that pass through the dam infrastructure are thought to have only around 40% survival. Other issues with the dam include configuration of fish ladders, design of the diversion headworks, abundance of aquatic vegetation both above and below the dam, and more.

Addressing fish passage and survival at Prosser Dam and Chandler Canal is a high priority for fishery health in the Yakima River Basin. Fish passage in the Lower Yakima River is a limiting factor to anadromous fish production in the entire Basin. The Yakama Nation's proposal pursues study and design of improvement or replacement alternatives to Prosser Dam and Chandler Canal that would increase fish survival. These improvements will build on major salmon and steelhead recovery efforts in the region, providing widespread benefits to fish throughout the Yakima River Basin and downstream through the Columbia River Basin and into the Pacific Ocean.

KID is pleased to continue working with the Yakama Nation on finding alternatives to improve fish passage at this critical structure while maintaining our capability to receive our water supply.

Thank you for your consideration of the Yakama Nation's proposal.

Sincerely,

  
Gene Huffman  
Board President



State of Washington  
**DEPARTMENT OF FISH AND WILDLIFE**  
South Central Region 3 • 1701 South 24<sup>th</sup> Avenue, Yakima, WA 98902-5720  
Telephone: (509) 575-2740 • Fax: (509) 575-2474

May 31, 2023

To: U.S. Bureau of Reclamation Aquatic Ecosystem Restoration Projects Program FY23  
(R23AS00106) Reviewers

Topic: WDFW Letter of Support for Prosser and Wapato Diversions Improvements for  
Anadromous Passage Study and Design Proposal

Dear Review Committee,

I'm writing to express Washington Department of Fish and Wildlife's strong support for the Yakama Nation's application under the U.S. Bureau of Reclamation's Aquatic Ecosystem Restoration Projects Program. The proposal addresses the Prosser and Wapato Diversions Improvements for Anadromous Passage Study and Design Proposal in the Lower Yakima River.

Prosser and Wapato Diversion canals pose significant challenges to fish passage and survival. The two diversions create barriers and cause mortalities to both returning adults and out-migrating juvenile fish. The diversions divert up to half of the Yakima River's flow, resulting in dangerous fish passage conditions. During frequent annual low flow conditions, juvenile fish that pass through the diversions infrastructure can result in upwards of 40% juvenile survival loss. Other issues with the diversions include poor functioning fish ladders, design problems of the diversion headworks, and abundance of aquatic vegetation above and below the dam.

Addressing fish passage and survival at the Prosser and Wapato Diversions is a high priority for fish recovery in the Yakima River Basin. Fish passage in the Lower Yakima River is a limiting factor to anadromous fish production in the entire Basin. Significant resources are being invested in the upper watershed including fish passage at storage dams and habitat protection and restoration. The challenges associated with these lower river diversions must be addressed to prevent compromising the improvements being made further upstream.

The Yakama Nation's proposal pursues study and design of improvement or replacement alternatives to Prosser and Wapato Diversions that would increase fish survival. These improvements will build on major salmon and steelhead recovery efforts in the region, providing widespread benefits to fish throughout the Yakima River Basin and downstream through the Columbia River Basin and into the Pacific Ocean.

Page 2

Thank you for your consideration of the Yakama Nation's proposal.

Sincerely,

A handwritten signature in blue ink, appearing to read "Mike Livingston". The signature is fluid and cursive, with a prominent loop at the end.

Mike Livingston  
South-Central Washington Regional Director  
509-424-1757



# *This River Runs Forever* Yakima Basin Integrated Plan

May 22, 2023

Urban Eberhart  
*Kittitas Reclamation District*

Commissioner Cory Wright  
*Kittitas County*

Commissioner Amanda McKinney  
*Yakima County*

Brandon Parsons  
*American Rivers*

Lisa Pelly  
*Trout Unlimited*

Scott Revell  
*Roza Irrigation District*

Mike Livingston  
*Washington Department of Fish  
and Wildlife*

Tom Tebb  
*Washington State Department of  
Ecology*

To: U.S. Bureau of Reclamation Aquatic Ecosystem Restoration Projects  
Program FY23 (R23AS00106) Reviewers

## **Re: Support for Prosser Dam and Chandler Canal Improvements Study and Design Proposal**

Dear Review Committee,

As members of the Yakima Basin Integrated Plan (Integrated Plan), we are writing to express support for the Yakama Nation's application under the U.S. Bureau of Reclamation Aquatic Ecosystem Restoration Projects Program for the *Prosser Dam and Chandler Canal Improvements Study and Design Proposal in the Lower Yakima River*.

This project is a critical component of the Habitat Protection and Enhancement and Fish Passage elements of the Integrated Plan. The Integrated Plan is a unique integrated water resource management effort supported by a coalition of 23 members, including conservation groups, agricultural interests, irrigators, and local, state, and federal agencies. The U.S. Bureau of Reclamation, Washington State Department of Ecology, and the Yakama Nation are leading plan implementation through partnership with these and other organizations. Federal legislation authorizing the Integrated Plan lays out an ambitious fishery goal:

To protect, mitigate, and enhance fish and wildlife and the recovery and maintenance of self-sustaining harvestable populations of fish and other aquatic life, both anadromous and resident species, throughout their historic distribution range in the Yakima Basin.

To meet this goal, the Integrated Plan developed a Salmon and Steelhead 10-Year Restoration Strategy to accelerate actions to improve safe fish passage and to restore river flow and habitat. This strategy prioritizes a suite of actions aimed at the Lower Yakima River, where current fish passage conditions are a critical limiting factor to the entire Integrated Plan salmon and steelhead restoration effort. Addressing fish passage and survival at the Prosser Dam and Chandler Canal, owned by the U.S. Bureau of Reclamation, is of the highest and most urgent priorities among these actions.

Prosser Dam and Chandler Canal pose significant challenges to salmon and steelhead in the Lower Yakima River. Prosser Dam supplies irrigation water from the Yakima River through the Chandler Canal. The dam is a barrier to

*“Restoring the natural health and economy in the Yakima Basin.”*

both returning adults and out-migrating juvenile fish and poses significant challenges to fish passage in low flow conditions. During low flow conditions, juvenile fish that pass through the dam infrastructure are thought to have only around 40% survival. Other issues with the dam include configuration of fish ladders, design of the diversion headworks, abundance of aquatic vegetation both above and below the dam, and more.

The Yakama Nation's proposal pursues study and design of improvement or replacement alternatives to Prosser Dam and Chandler Canal that would increase fish survival. The proposal is a critical step in improving conditions for fish in the Lower Yakima River. These improvements will build on major salmon and steelhead recovery efforts in the region, providing widespread benefits to fish throughout the Yakima River Basin and downstream through the Columbia River Basin and into the Pacific Ocean.

Thank you for your consideration of the Yakama Nation's proposal.

Sincerely,



Urban Eberhart  
Kittitas Reclamation District

Cory Wright  
Kittitas County



Amanda McKinney  
Yakima County



Brandon Parsons  
American Rivers



Lisa Pelly  
Trout Unlimited



Scott Revell  
Roza Irrigation District



Mike Livingston  
WDFW



Tom Tebb  
WA State Dept. of Ecology

*“Restoring the natural health and economy in the Yakima Basin.”*



Confederated Tribes and Bands  
of the Yakama Nation

Established by the  
Treaty of June 9, 1855

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November 1, 2021

Talmuch Oxford  
Columbia-Cascades Area Office  
1910 Marsh Road  
Yakima, WA 98901-2058

Dear Talmuch Oxford,

I am writing to authorize an expenditure from the groundwater mitigation fund held by Reclamation. The terms of the settlement agreements that created the fund require that the Yakama Nation authorize, in writing, any use of funds in the account.

The Yakama Nation authorizes disbursement of the remainder of the funds to the Yakama Nation for the scoping of the fish survival improvement options at Prosser Dam and Chandler irrigation diversion. This funding will be utilized to establish a scoping effort to fulfill the following actions at the site:

1. Examine and describe the current Prosser Dam and Chandler irrigation structure and water use
2. Analyze fish impacts as they relate to individual structures at the site. (i.e. canal head gates, bypass return pipe)
3. Identify knowledge gaps and assist in implementing research or studies to assist in bridging gaps
4. Initial development site strategies for improvement of smolt survival
5. Development of theoretical smolt survival changes versus site strategies employed

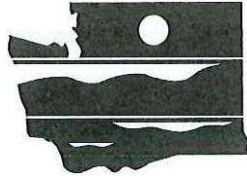
This effort is envisioned as a multi-year effort, with funding from multiple sources. This initial disbursement will fund the preliminary scoping effort of the first two years.

Please consider this letter the required authorization to disburse funds to the Yakama Nation. Please feel free to contact Phil Rigdon or Michael Porter with any additional questions.

Thank you,

George Selam, Chairman  
Roads Irrigation and Land Committee  
Yakama Tribal Council





DEPARTMENT OF  
**ECOLOGY**  
State of Washington

**IAA No. C2300147**  
**(Reclamation No: R23MR13722)**

**INTERAGENCY AGREEMENT**

**(IAA) BETWEEN**

**THE STATE OF WASHINGTON, DEPARTMENT OF  
ECOLOGY**

**AND**

**THE UNITED STATES DEPARTMENT OF THE INTERIOR,  
BUREAU OF RECLAMATION**

**COLUMBIA-PACIFIC NORTHWEST REGION  
COLUMBIA-CASCADES AREA OFFICE**

**THIS INTERAGENCY AGREEMENT** ("Agreement" or "IAA") (for the purposes of Reclamation this is a Contributed Funds Act Agreement per authorization stated below) is made and entered into by and between the State of Washington, Department of Ecology, hereinafter referred to as "ECOLOGY," and the United States Department of the Interior, Bureau of Reclamation hereinafter referred to as "CONTRACTOR" and "RECLAMATION," pursuant to the authority granted to ECOLOGY by Chapter 39.34 RCW and granted to RECLAMATION pursuant to the Reclamation Act of June 17, 1902 (43 U.S.C. §§ 371 et seq), and acts amendatory thereof or supplementary thereto, and the Contributed Funds Act of March 4, 1921 (43 U.S.C. § 395).

**THE PURPOSE OF THIS AGREEMENT** is to provide ECOLOGY funding to RECLAMATION to conduct project planning and design work for the Prosser/Chandler Fish Passage Phase One project. This project has been identified as a high priority project for the Yakima Basin Integrated Plan (YBIP) to provide for Endangered Species Act (ESA) compliance for listed steelhead and to help meet YBIP goals of restoring native fish to healthy and harvestable populations in the Yakima Basin. Reclamation and Ecology have agreed to cost share project planning and design work while YBIP project partners submit proposals to the Bipartisan Infrastructure Law (BIL) and other federal grant programs to help fund planning, design, and future construction costs.

**WHEREAS**, RCW 90.90 Columbia River Basin Water Supply provides ECOLOGY with authority to implement projects that support development of new water supplies in the Columbia River basin.

**WHEREAS**, RCW 90.90.005 declares that the Legislature finds that a key priority of water resource management in the Columbia River basin is the development of new water supplies that includes storage and conservation in order to meet the economic and community



development needs of people and the instream flow needs of fish, and, directs ECOLOGY to aggressively pursue the development of water supplies to benefit both instream and out-of-stream uses.

**WHEREAS**, RCW 90.90.070, 90.90.080, and 90.90.090 provide authority to ECOLOGY to fund projects as directed by appropriations contained in an enacted Operating or Capital Budget bill.

**WHEREAS**, this Agreement continues the cooperative relationship between ECOLOGY and RECLAMATION to work collaboratively to improve existing facilities to restore fish population and to improve water supply certainty, which is a component of the YBIP, Structural and Operational Changes element.

**WHEREAS**, RCW 90.38 Yakima River Basin Water Rights provides authority to implement projects that support development of new water supplies in the Yakima River basin.

**WHEREAS**, RCW Chapter 39.34 and granted to RECLAMATION pursuant to the Reclamation Act of June 1, 1902 (43 U.S.C. §§ 371 et seq), and acts amendatory thereof or supplementary thereto, and the Contributed Funds Act of March, 1921 (43 U.S.C. §§ 395) that allows each Party to enter into this agreement.

THEREFORE, IT IS MUTUALLY AGREED THAT:

**1) SCOPE OF WORK**

RECLAMATION shall furnish the necessary personnel, equipment, material and/or service(s) and otherwise do all things necessary for or incidental to the performance of the work set forth below until such a time as the funding under this Agreement is expended for appropriate activities listed in the Appendix A, Statement of Work and Budget. At such a time, RECLAMATION and ECOLOGY will discuss additional funding to continue tasks in Appendix A, Statement of Work and Budget (SOW), attached hereto and incorporated herein.

**2) PERIOD OF PERFORMANCE**

The period of performance of this Agreement shall commence on **June 30, 2023**, and be completed by **December 31, 2026**, unless terminated sooner as provided herein. Amendments extending the period of performance, if any, shall be effective upon mutual written agreement of the Parties via an Agreement amendment.

**3) COSTS**

Contributions for the work provided in accordance with this Agreement have been established under the terms of RCW § 39.34.130.

The source of funds for this Agreement is Yakima Policy “Water, Jobs, and Fish” Bill (2SSB 5367). Both Parties agree to comply with all applicable rules and regulations associated with these funds.

Ecology’s source of funds for this Agreement is the *State Building Construction Fund*.

The Parties have estimated that the total funds ECOLOGY will transfer to RECLAMATION to accomplish work identified herein will not exceed **Five Hundred and Five Thousand dollars \$505,000.00** including any indirect charges. ECOLOGY shall make advance payment for performance of the agreed upon work, not to exceed the amount specified unless the Parties mutually agree to a greater amount as confirmed by an amendment to this Agreement that occurs prior to the commencement of any work. Compensation for RECLAMATION's services shall be based on the terms and tasks set forth in Appendix A,

Statement of Work and Budget, which is attached hereto and is hereby incorporated herein.

**4) BILLING AND PAYMENT PROCEDURE**

Payment requests shall be submitted on state form, Invoice Voucher A19-1A ECOLOGY will advance payment to RECLAMATION for approved work by warrant or electronic account transfer within thirty (30) days of receipt of a request-for-advance of funds invoice. Upon expiration of the Statement of Work and Budget, Appendix A, any claim for payment not already made or surplus funds shall be submitted to ECOLOGY within thirty (30) days after the expiration date or the end of the fiscal year, whichever is earlier.

See Appendix A, section titled Reclamation Requested Payment schedule.

Send or email invoices to:

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The Contributed Funds Act, 43 U.S.C. § 395, provides RECLAMATION with authority to perform certain work and accept non-Federal contributed funds for that work, but it also must comply with 31 U.S.C. § 1341, the "Anti-Deficiency Act" (Act). That Act prohibits agencies from expending public funds in excess of legislative appropriations. Therefore, when RECLAMATION performs work for other entities the Anti-Deficiency Act mandates advance payment to cover costs prior to commencement of work.

Pursuant to the above requirements, ECOLOGY agrees to provide payment in advance of RECLAMATION's performance of tasks describe under this Agreement. The amount to be advanced to RECLAMATION to cover costs associated with the tasks outlined in this Agreement is **\$505,000.00**.

ECOLOGY shall remit all payments to RECLAMATION's lockbox at:

Bureau of Reclamation  
PN Region: Pacific Northwest  
PO Box 301501  
Los Angeles CA 90030-1501

In addition, ECOLOGY shall notify RECLAMATION prior to depositing each payment by sending an electronic notification via email to: Dawn Birdwell at: [dbirdwell@usbr.gov](mailto:dbirdwell@usbr.gov)

Payment will be issued through Washington State's Office of Financial Management's Statewide Payee Desk. To receive payment RECLAMATION must register as a statewide vendor by submitting a statewide vendor registration form and an IRS W-9 form at website, <https://ofm.wa.gov/it-systems/statewide-vendorpayee-services>. If RECLAMATION has questions about the vendor registration process, please contact Statewide Payee Help Desk at (360) 407-8180 or email [PayeeRegistration@ofm.wa.gov](mailto:PayeeRegistration@ofm.wa.gov).

**5) ALTERATIONS AND AMENDMENTS**

This Agreement may be amended, modified, or supplemented only by mutual agreement of the Parties. Such amendments shall not be binding unless they are in writing and signed by personnel authorized to bind each of the Parties.

**6) ASSIGNMENT**

The work to be provided under this Agreement, and any claim arising thereunder, is not assignable or delegable by either Party in whole or in part, without the express prior written consent of the other Party, which consent shall not be unreasonably withheld.

**7) ASSURANCES**

Parties to this Agreement agree that their activities pursuant to this agreement will be in accordance with all the applicable current Federal, state, and local laws, rules, and regulations.

**8) CONFORMANCE**

If any provision of this Agreement is found to violate any Federal or state statute, the Parties agree to promptly engage in good faith negotiations to amend the Agreement to conform to that Federal or state statute in accordance with paragraph 13 of this Agreement.

**9) DISPUTES**

Parties to this Agreement shall employ every effort to resolve a dispute themselves without resorting to litigation, giving preference to the order of precedence set forth in paragraph 13 of this Agreement. In the event that a dispute arises under this Agreement that cannot be resolved among the Parties, either Party shall provide written notice of that issue to the other Party. The Parties will then meet within ten (10) days of the written notice in an effort to resolve the issue. If resolution is not achieved, the Parties will agree upon a single third-party who will act as a mediator. The Parties shall choose the

third-party mediator no later than ten (10) days from such date of determination that resolution has not been achieved. The Parties will each designate an official with delegated authority to approve a resolution of the issue, and that official will be present at, and participate in, the mediation. Mediated settlements will be reduced to writing, and each Party will share equally in the cost of the third-party mediator. If resolution through non-binding mediation is still not achieved, then the Parties may use other legal remedies available to resolve the dispute.

**10) FUNDING AVAILABILITY**

ECOLOGY's ability to make payments is contingent on availability of funding. In the event funding from state, Federal, or other sources is withdrawn, reduced, or limited in any way after the effective date and prior to completion or expiration date of this Agreement, ECOLOGY, at its sole discretion, may elect to terminate the Agreement, in whole or part, for convenience or to renegotiate the Agreement subject to new funding limitations and conditions. ECOLOGY may also elect to suspend performance of the Agreement until ECOLOGY determines the funding insufficiency is resolved. ECOLOGY may exercise any of these options with no notification restrictions, although ECOLOGY will make a reasonable attempt to provide notice.

In the event of termination or suspension, ECOLOGY will reimburse eligible costs incurred by RECLAMATION through the effective date of termination or suspension. Reimbursed costs must be agreed to by ECOLOGY and RECLAMATION. In no event shall ECOLOGY's reimbursement exceed ECOLOGY's total responsibility under the agreement and any amendments.

### **11) GOVERNING LAW AND VENUE**

This Agreement shall be interpreted by and construed under any applicable Federal law and any applicable law of the State of Washington. In case of a conflict between Federal and Washington State law, Federal law controls. To the extent permissible under the Federal Rules of Civil Procedure and other applicable Federal authority, venue for adjudication of any dispute under this Agreement shall be in an appropriate Federal court.

### **12) INDEPENDENT CAPACITY**

The employees or agents of each Party who are engaged in the performance of this Agreement shall continue to be employees or agents of that Party and shall not be considered for any purpose to be employees or agents of the other Party.

### **13) ORDER OF PRECEDENCE**

In the event of an inconsistency in the terms of this Agreement, or between its terms and any applicable statute or rule, the inconsistency shall be resolved by giving precedence in the following order:

- a. Applicable Federal and state of Washington statutes, regulations, and rules.
- b. Mutually agreed upon written amendments to this Agreement.
- c. This Agreement, number C2300147/R23MR13722
- d. Appendix A, *Statement of Work and Budget*.
- e. Any other provisions or term of this Agreement, including materials incorporated by reference or otherwise incorporated.

### **14) RECORDS MAINTENANCE**

The Parties to this Agreement shall each maintain books, records, documents, and other evidence that sufficiently and properly reflect all direct and indirect costs expended by either Party in the performance of the service(s) described herein. These materials shall be subject to inspection, review, or audit by personnel of both Parties, other personnel duly authorized by either Party, the Office of the State Auditor, and Federal officials so authorized by law. All books, records, documents, and other materials relevant to this Agreement must be retained for six (6) years after expiration of this Agreement. The Office of the State Auditor, Federal auditors, and any persons duly authorized by the Parties shall have full access and the right to examine any of these materials during this period. Each Party will utilize reasonable security procedures and protections for all materials related to this Agreement. All materials are subject to state and Federal public disclosure laws.

### **15) RESPONSIBILITIES OF THE PARTIES**

Each Party to this Agreement is responsible for claims and/or damages to persons and/or property resulting from any act or omissions on the part of itself, its employees, its officers, and its agents according to applicable State or Federal law. Neither Party will be considered the agent of the other Party to this Agreement.

### **16) RIGHTS IN DATA**

Unless otherwise provided in an amendment to this Agreement, any data shall be co-owned by ECOLOGY and RECLAMATION, to the extent consistent with applicable Federal law. Data shall include, but not be limited to, reports, documents, pamphlets, advertisements, books, magazines, surveys, studies, computer programs, films, tapes, and/or sound reproductions. Co-ownership includes the right to copyright, patent, register, and the ability to transfer these rights with the written permission of the other Party to this Agreement.

**17) SEVERABILITY**

If any provision of this Agreement or any provision of any document incorporated by reference shall be held invalid, such invalidity shall not affect the other provisions of this Agreement which can be given effect without the invalid provision, if such remainder conforms to the requirements of applicable law and the fundamental purpose of this Agreement. If this test is met, the invalid provisions of this Agreement are declared to be severable and the remainder of the Agreement will be declared legally valid subject to paragraphs 8 and 13.

**18) SUBCONTRACTORS**

RECLAMATION agrees to take complete responsibility for all actions of any Subcontractor used under this Agreement for the performance. When federal funding is involved, there will be additional contractor and subcontractor requirements and reporting.

Prior to performance, RECLAMATION must identify to ECOLOGY all subcontractors who will be performing services under this Agreement, including their name, the nature of services to be performed, address, telephone, WA State Department of Revenue Registration Tax number (UBI), Federal Tax Identification Number (TIN), and anticipated dollar value of each subcontract.

**19) SUSPENSION FOR CONVENIENCE**

ECOLOGY may suspend this Agreement or any portion thereof for a temporary period by providing written notice to the CONTRACTOR a minimum of seven (7) calendar days before the suspension date.

CONTRACTOR shall resume performance on the first business day following the suspension period unless another day is specified in writing by ECOLOGY prior to the expiration of the suspension period.

**20) TERMINATION FOR CAUSE**

If for any cause, either Party does not fulfill in a timely and proper manner its obligations under this Agreement, or if either Party violates any of these terms and conditions, the aggrieved Party will give the other Party written notice of such failure or violation. The responsible Party will be given the opportunity to correct the violation or failure within fifteen (15) business days. If failure or violation is not corrected, this Agreement may be terminated immediately by written notice of the aggrieved Party to the other.

**21) TERMINATION FOR CONVENIENCE**

Either Party may terminate this Agreement without cause upon thirty (30) calendar days prior written notification to the other Party. If this Agreement is so terminated, the Parties shall be liable only for performance rendered or costs incurred in accordance with the terms of this Agreement prior to the effective date of termination.

**22) WAIVER**

A failure by either Party to exercise its rights under this Agreement shall not preclude that Party from subsequent exercise of such rights and shall not constitute a waiver of any other rights under this Agreement unless stated to be such in a written amendment to this Agreement signed by an authorized representative of the Parties.

**23) CONTINGENT ON APPROPRIATIONS or ALLOTMENT OF FUNDS**

No provision of this Agreement shall be interpreted to constitute a commitment or requirement obligating the United States to pay funds in violation of the Anti-Deficiency Act (31 U.S.C. §1341) and nothing herein shall be construed to obligate RECLAMATION to expend or involve the United States in any contract or other obligations for the future payment of money.

**24) OFFICIALS NOT TO BENEFIT**

No member of or delegate to Congress, or resident Commissioner, shall be admitted to any share or to be part of this agreement or to receive any benefit that may arise out of it other than as a water user or landowner in the same manner as other water users or landowners.

**25) AGREEMENT MANAGEMENT**

The representative for each of the Parties shall be responsible for and shall be the contact person for all communications, notifications, and billings questions regarding the performance of this Agreement. The Parties agree that if there is a change in representatives that they will promptly notify the other Party in writing of such change, such changes do not need an amendment.

<p>The ECOLOGY Representative is:</p> <p>Name: Kevin Haydon</p> <p>Address: 1250 W. Alder St. Union Gap, WA 98903-0009</p> <p>Phone: 509-823-6947</p> <p>Email: kevin.haydon@ecy.wa.gov</p>	<p>The RECLAMATION Representative is:</p> <p>Name: Gwendolyn Christensen</p> <p>Address: Columbia-Cascades Area Office 1917 Marsh Road Yakima, WA 98901-2058</p> <p>Phone: 509-573-8050</p> <p>Email: gchristensen@usbr.gov</p>
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**26) ALL WRITINGS CONTAINED HEREIN**

This Agreement contains all the terms and conditions agreed upon by the Parties. No other understandings, oral or otherwise, regarding the subject matter of this Agreement shall be deemed to exist or to bind any of the Parties hereto.

The signatories to this Agreement represent that they have the authority to bind their respective organizations to this Agreement.

IN WITNESS WHEREOF, the Parties below, having read this Agreement in its entirety, including all attachments, do agree in each and every particular as indicated by their signatures below.

**State of Washington  
Department of Ecology**

**U.S. Department of the Interior  
Bureau of Reclamation**

By:

By:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Heather R. Bartlett  
Deputy Director

**WYLIE DUKE** Digitally signed by  
WYLIE DUKE  
Date: 2023.05.09  
16:29:37 -07'00' **5/9/2023**

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

W. Chris Duke  
Columbia-Cascades Area Manager