

HABITAT IMPROVEMENT PROGRAM HIP4 2025 ANNUAL MONITORING REPORT

Bonneville
POWER ADMINISTRATION



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SUMMARY

This is the **6th annual monitoring report** required under the new Habitat Improvement Program 4 Biological Opinions (HIP4) (NMFS No# WCRO-2020-00102, USFWS 01E0FWOO-19FY-0710). This report not only details the extensive activities undertaken in 2025 but also evaluates the incidental take associated with their implementation, providing comparisons to previous years.

The HIP4 represents one of the largest habitat restoration programs globally, operating across the Columbia River basin. It serves as Bonneville Power Administration's (Bonneville) primary strategy for "**offsite**" **mitigation of federal hydrosystem impacts** and a vital commitment under the Endangered Species Act (ESA) to protect listed salmonids. The HIP4 is the primary means by which this habitat enhancement work gets reviewed, refined, and then covered under Section 7(a)2 of the ESA.

The HIP has evolved through several iterations, including HIP I (2003), HIP II (2008), HIP III (2013), and the current HIP4 (2020). The transition to HIP4 was initiated to modify activity categories based on feedback from monitoring results, stakeholder requests, and to include additional activities like **estuarine herbicide applications** and **Willamette Valley prairie restoration**.

Actions funded by Bonneville are implemented through **Bonneville's Habitat Strategy**, which seeks to facilitate watershed-scale prioritization and planning efforts to identify priority work for fish habitat restoration. The HIP is one of the largest and most complex of its kind in the world and includes collaborative work with states, tribes, federal agencies, local governments and non-profit organizations to implement the most biologically beneficial actions in the highest priority areas for ESA-listed salmonids.

In 2025, juvenile take was in line with most years with two turbidity exceedances that persisted for more than two monitoring intervals. Juvenile presence within restoration sites remains highly stochastic, however in any case sponsors have demonstrated consistency in handling and moving ESA-listed fish with little to no injury or mortality.

Beyond its ecological successes, HIP4 maintains a commitment to project quality assurance by adhering to engineering technical standards and excellence. Bonneville is actively enhancing its internal capabilities to ensure high-quality project delivery through the optimization and refinement of its HIP Review Process. After over a decade of experience, this review process has evolved into a streamlined and standardized system, continually adapting based on feedback, re-evaluating past challenges, and building upon successes.

The **HIP4 Handbook**, a crucial tool, is also continuously updated to reflect the latest scientific advancements in restoration standards and practices, further shaping the quality and outcome of funded projects.



Figure 1. 2025026: Replacement of undersized culverts with this bridge over Brush Creek improved access to 3.5 miles of habitat for ESA-listed steelhead trout.



Figure 2. 2025080: Installation of bank-attached log jam on the Methow River.

HIP4 PROJECTS AUTHORIZED

During 2025 the HIP4 authorized 109 projects, of which 13 were withdrawn, leading to a total of **96 projects being implemented in 2025** (Table 1, 2, & 3). Each project had multiple activity categories (Work Elements). Work Elements are the most discrete unit of action that BPA may undertake, with a contract typically consisting of multiple work elements.

In alignment with Bonneville's contracting rules, projects are mainly reported on the contract level, occasionally multiple contracts may be lumped together if they share the same sponsor & location. **The majority (52) were low risk, 32 were medium risk, and 12 were high risk (Maps 1-6).** Each medium and high risk underwent the **HIP Review process** which included a thorough technical review by BPA Engineering Technical Services (ETS), and if high risk, Interagency review by Service Habitat Biologists.

TABLE 1: HIP4 PROJECT AUTHORIZATIONS (52 LOW RISK) 2025

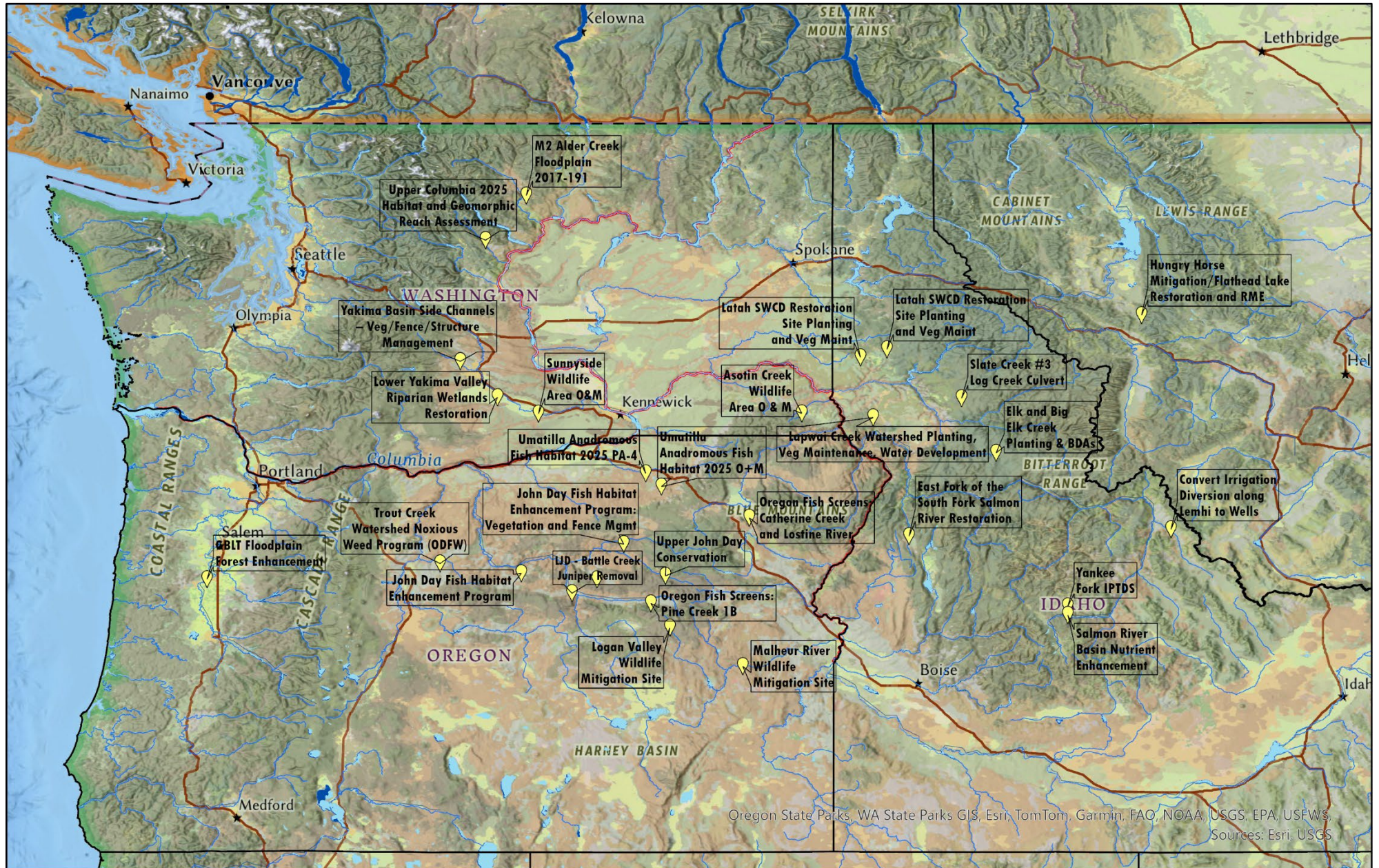
HIP NO#	PROJECT
2025001	ODFW Willamette Valley O & M
2025002	Sunnyside Wildlife Area O&M 2024-25
2025005	GBLT Floodplain Forest Enhancement
2025006	M2 Alder Creek Floodplain 2017-191
2025010	John Day Fish Habitat Enhancement Program
2025012	Upper Salmon Basin Fish Screens
2025013	Upper Salmon Basin Fish Screens O & M
2025014	Umatilla Passage O & M
2025016	Asotin Creek Wildlife Area O & M
2025017	Hungry Horse Mitigation/Flathead Lake Restoration and RME
2025018	Slate Creek #3 Log Creek Culvert
2025021	Upper Salmon Restoration Weed Treatment and Hydroseeding
2025022	Tátwin Wildlife Area (formerly Rainwater) herbicide
2025023	Latah SWCD Restoration Site Planting and Veg Maint
2025025	Southern Territories Habitat Project - Maintain Vegetation
2025027	Wenas Wildlife Mitigation
2025033	Trout Creek Watershed Noxious Weed Program (ODFW)
2025035	Oregon Fish Screens (Fields Creek)
2025036	Malheur River Wildlife Mitigation Site
2025037	Logan Valley Wildlife Mitigation Site
2025039	Upper John Day Conservation
2025040	E. Fork of the South Fork Salmon River Restoration
2025041	LJD - Battle Creek Juniper Removal
2025042	Yakima Basin Side Channels – Pott Rd Invasive Crack Willow Removal, and Fortune Habitat Protection
2025045	Yankee Fork IPTDS
2025046	Lapwai Creek Watershed Planting, Veg Maintenance, Water Development

HIP NO#	PROJECT
2025048	Oregon Fish Screens (O & M) Non-recurring
2025049	Oregon Fish Screens: Pump Screens and Screen Component Replacements
2025053	Sunnyside Wildlife Area O&M 2025
2025054	Convert Irrigation Diversion along Lemhi to Wells
2025055	Shillapoo Wildlife Area - Annual Veg Management
2025056	Oregon Fish Screens: Catherine Creek and Lostine River
2025057	Hellsgate Big Game Winter Range Vegetation Management 2025-26
2025059	Vegetation maintenance at past project sites – Walla Walla River
2025060	Lapwai Creek Watershed Weed Control
2025061	CTUIR NFJD Fisheries Habitat Weed Control
2025063	John Day Fish Habitat Enhancement Program: Vegetation and Fence Mgmt
2025064	Grande Ronde Basin Weed Treatment
2025070	Umatilla Anadromous Fish Habitat 2025 O+M
2025071	Upper Columbia 2025 Habitat and Geomorphic Reach Assessment Services
2025079	Salmon River Basin Nutrient Enhancement
2025085	Oregon Fish Screens: Pine Creek 1B
2025087	Elk and Big Elk Creek Planting & BDAs
2025090	Upper Cottonwood Creek Restoration Phase 1
2025093	Latah SWCD Restoration Site Planting and Veg Maint
2025096	Oregon Fish Screens: Badger Creek 8,9,10
2025099	Middle Fork John Day Vegetation Mgmt
2025104	Isqúulktpe Watershed Project
2025106	Hood River Fish Habitat: Baldwin Creek Herbicides
2025107	Wind River Riparian Vegetation Mgmt
2025108	Umatilla Anadromous Fish Habitat 2025 PA-4
2025109	Lower Yakima Valley Riparian Wetlands Restoration

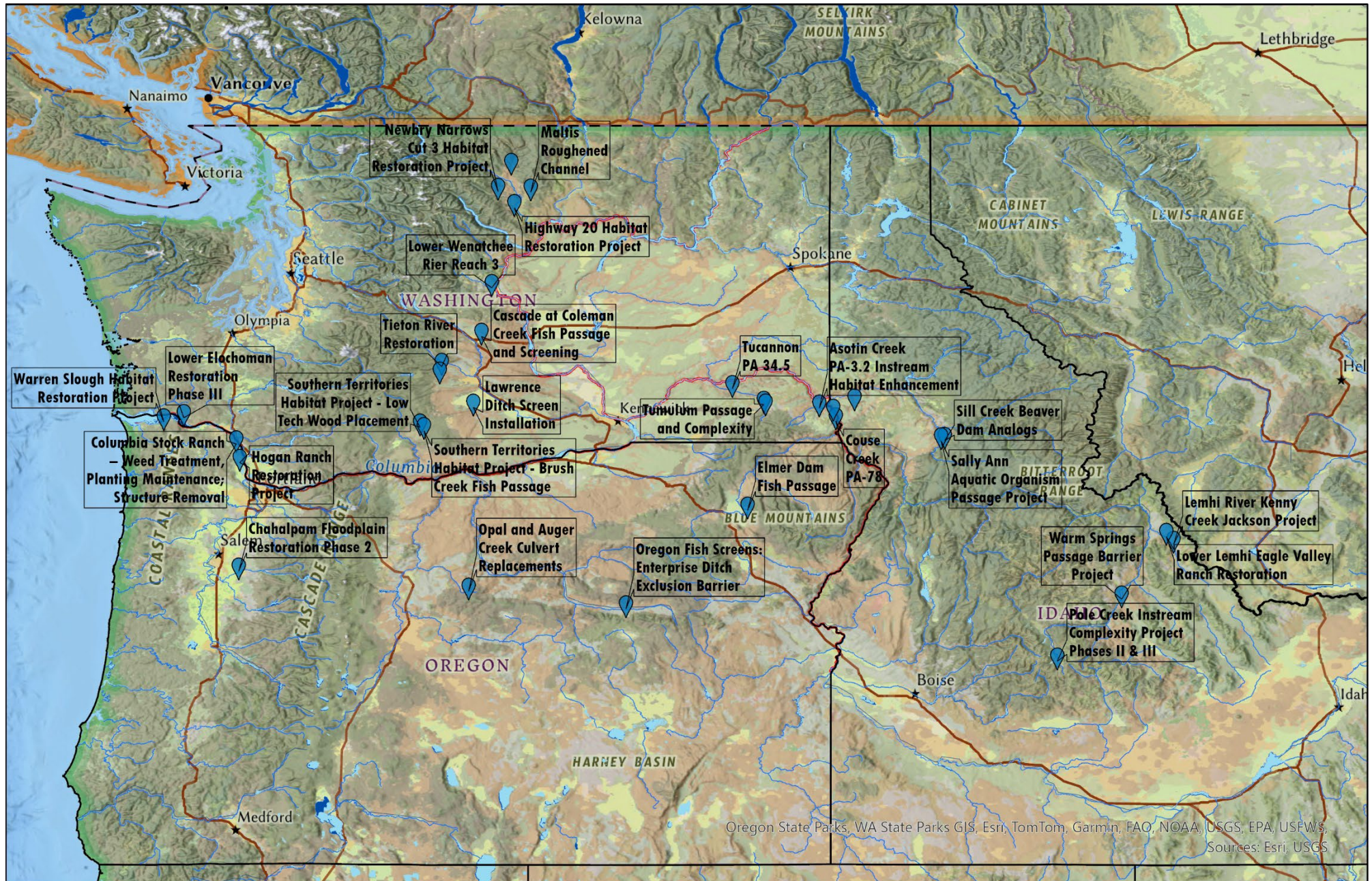
TABLE 2: HIP4 PROJECT AUTHORIZATIONS (32 MEDIUM RISK) 2025

HIP_NO#	PROJECT
2025003	Cascade at Coleman Creek Fish Passage and Screening
2025004	Tieton River Restoration
2025008	Asotin Creek PA-3.2 Instream Habitat Enhancement
2025011	Lemhi River Kenny Creek Jackson Project
2025019	Sill Creek Beaver Dam Analogs
2025020	Sally Ann Aquatic Organism Passage Project
2025024	Southern Territories Habitat Project - Low Tech Wood Placement
2025026	Southern Territories Habitat Project - Brush Creek Fish Passage
2025029	Columbia Stock Ranch – Weed Treatment, Planting Maintenance; Structure Removal
2025030	Warren Slough Habitat Restoration Project
2025038	Chahalpam Floodplain Restoration Phase 2
2025044	Lower Elochoman Restoration Phase III
2025047	Lawrence Ditch Screen Installation
2025050	Warm Springs Passage Barrier Project
2025051	Pole Creek Instream Complexity Project Phases II & III
2025062	Couse Creek PA-78
2025066	Newbry Narrows Cut 3 Habitat Restoration Project
2025067	Opal and Auger Creek Culvert Replacements
2025069	Hogan Ranch Restoration Project
2025074	South Fork Cowiche Creek RM 9.5, Phase 1, Reach 3
2025076	Elmer Dam Fish Passage
2025077	Maltis Roughened Channel
2025080	Highway 20 Habitat Restoration Project
2025081	Tucannon PA 34.5
2025082	Lower Lemhi Eagle Valley Ranch Restoration
2025083	Oregon Fish Screens: Enterprise Ditch Exclusion Barrier
2025084	Lower Wenatchee Rier Reach 3
2025089	Methow Side Channels Adaptive Management
2025092	Lapwai Creek PALS modifications
2025098	Tenmile Creek PA 65-67 and Couse Creek PA-79
2025102	Tumulum Passage and Complexity
2025103	Cummings Creek Phase II

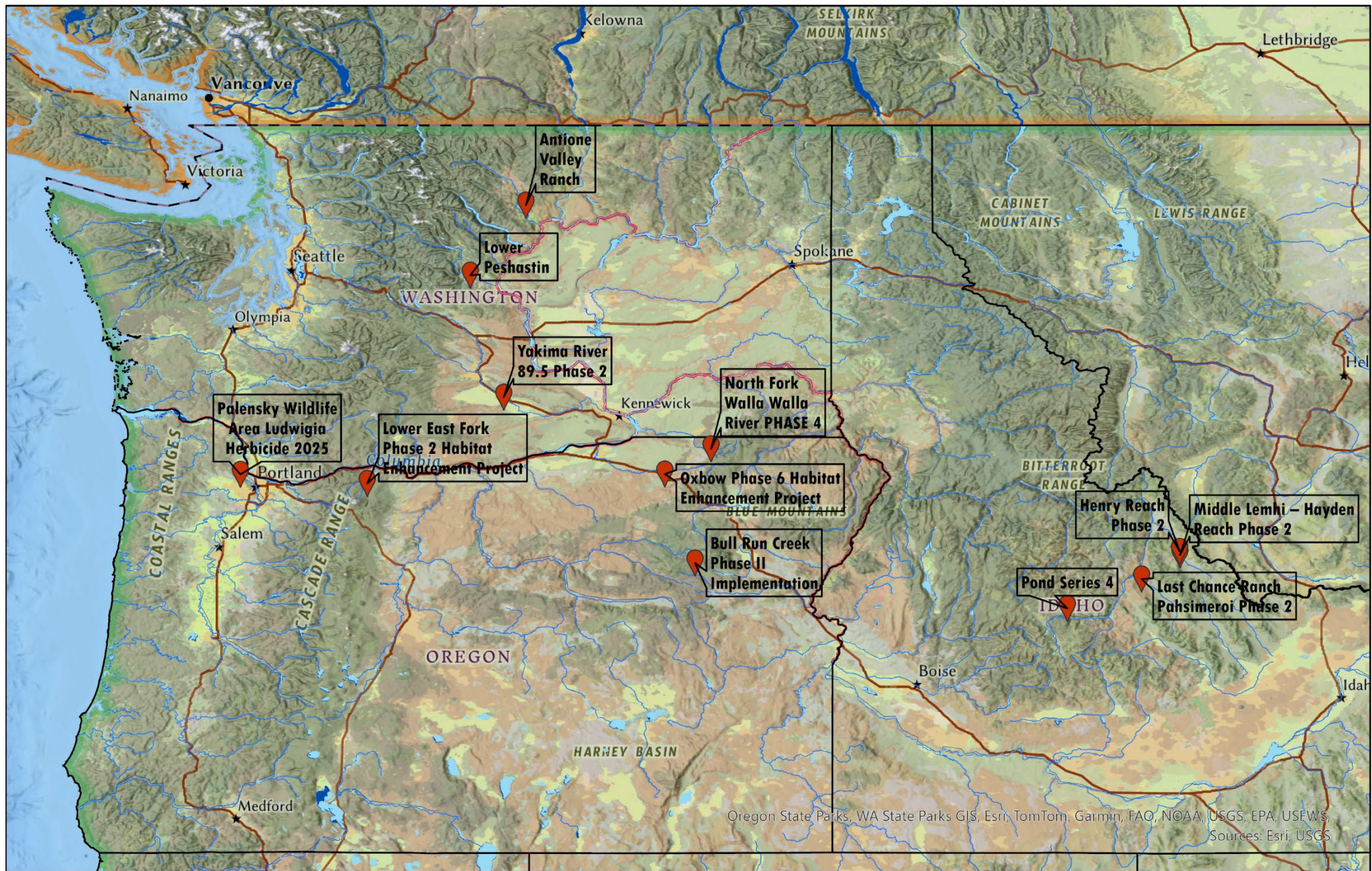
MAP 1: 2025 LOW RISK PROJECT LOCATIONS



MAP 2: 2025 MED RISK PROJECT LOCATIONS



MAP 3: 2025 HIGH RISK PROJECT LOCATIONS



HIGH-RISK PROJECT SHOWCASE:

The following projects represent **Bonneville’s most significant achievements in salmon restoration during 2025 (MAP 3)**. These are complex undertakings, often continuing from prior years, demanding extensive collaboration, funding, design, and meticulous planning. As high-risk projects, they underwent rigorous interagency review by both the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). While Bonneville provides funding and technical expertise, the **project sponsors** are instrumental **in fostering and maintaining vital landowner relationships and negotiations**.

TABLE 3: HIGH RISK PROJECTS (12)

HIP_NO#	PROJECT
2025031	Middle Lemhi – Hayden Reach Phase 2
2025034	Last Chance Ranch Pahsimeroi Phase 2
2025052	Lower Peshastin Creek Restoration
2025058	Henry Reach Phase 2
2025068	Lower East Fork Phase 2 Habitat Enhancement Project
2025073	Oxbow Phase 6 Habitat Enhancement Project
2025075	Pond Series 4
2025078	Bull Run Creek Phase II Implementation
2025088	Palensky Wildlife Area Ludwigia Herbicide Treatment 2025
2025095	Antoine Valley Ranch
2025097	Yakima River 89.5 Phase 2
2025100	North Fork Walla Walla River RM 5.2-6.5 Floodplain Restoration

TABLE 4: Middle Lemhi – Hayden Reach Phase 2

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES	FISH CAPTURE
2025031	Idaho Department of Fish and Game	Lemhi River Lemhi County, Idaho	• Headcut and Grade Stabilization • Improve Secondary Channel and Wetland Habitats • Protect Streambanks Using Bioengineering Methods • Install Habitat-Forming Natural Material Instream Structures • Riparian Vegetation Planting • Channel Reconstruction	N/A

Description:

This project is the second of three phases of the Mid-Lemhi Hayden Reach project just upstream of the Middle Lemhi River’s confluence with Hayden Creek. The primary goal of the overall project is to enhance and increase the natural channel function and geomorphic processes that improve habitat suitability for rearing summer steelhead, spring Chinook salmon, and other native salmonids and wildlife. Phase 2 involved reconfiguring the channel network that was excavated as part of Phase 1, which remains disconnected from the mainstem Lemhi River. All Phase 2 work completed in 2025 was done outside of the active channel (i.e., no in-water work). Work involved new channel construction, wood structure installation, and floodplain grading, followed by willow stake installation and hydroseeding, which was completed in Fall 2025. The culvert and permanent bridge installations and the connection of the newly excavated channels to the Lemhi River, which were initially planned for 2025, will be deferred to Summer 2026.

Primary project features:

- Reconfigure the channel network previously excavated as part of Phase 1
- Construct strategic engineered riffles and gravel bars
- Install wood structures and bank treatments
- Floodplain excavation
- Bridge relocation and culvert installation
- Native plantings

Lessons Learned:

During Phase 2 implementation, it was discovered that the access bridge’s load rating was lower than the contractor had anticipated. As a result, the contractor was required to make approximately four times as many trips as expected to transport materials to and from the project site. This caused unforeseen delays and prevented full completion of the work within the 2025 in-water work window.



Figure 3. 2025031: Excavators working together to complete structures on the river left bank of the main channel.



Figure 4. 2025031: Engineers checking finished grade of installed structures.

TABLE 5: Last Chance Ranch Pahsimeroi Phase 2

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES	FISH CAPTURE
2025034	Idaho Department of Fish and Game	Pahsimeroi River Custer and Lemhi Counties, Idaho	• Headcut and Grade Stabilization • Low Flow Consolidation • Improve Secondary Channel and Wetland Habitats • Protect Streambanks Using Bioengineering Methods • Install Habitat-Forming Natural Material Instream Structures • Riparian Vegetation Planting • Channel Reconstruction • Install Habitat-Forming Materials	625 Captured - 501 Steelhead - 124 Chinook 2 Mortalities - 2 Chinook

Description:

Phase 2 of the Pahsimeroi project at the Last Chance Ranch involves restoration of approximately 0.7 miles of the Pahsimeroi River just downstream of Phase 1 elements that were constructed in 2023/2024. The Phase 2 project intent is to establish a diversity of instream and off-channel habitat features and includes creation of side channels and reintroduction of flows into a braided channel network that will benefit ESA-listed Chinook salmon and steelhead.

The primary action of the project is to establishment a mainstem plug consisting of woody debris, rock material, and a backwater alcove on the downstream end. The plug will function together with upstream riffles to force flow into an old channel scar, creating additional length of channel and edge habitat. Other actions included the installation of large and small wood structures for instream and floodplain habitat; creation of pools and island complexes in strategic locations; construction of engineered riffles to slow water velocities and raise water surface elevations in order to increase floodplain and side channel connectivity; grading back steep banks on outside meander bends at several locations; and heavily planting a variety of native riparian plants. The project also establishes multiple inlets into the main channel alignments to provide opportunities for rearing juvenile fish to funnel into diverse high-quality habitat. Work was completed during the 2025 in-water work window.

Primary project features:

- One channel plug
- Over 600 feet of new channel and approximately 375 feet of side channel
- 75 log structures
- 11 islands
- 5 riffles
- 14 willow baffles
- Riparian plantings

Lessons Learned:

The erosion control measures implemented during construction resulted in limited problems with erosion or turbidity. Turbidity was monitored every four hours per HIP protocol, with changes between background and compliance point turbidity noted on two occasions. The first was during rewatering of the new channel on August 12th, when compliance point turbidity reached 20 NTU and no in-water construction continued for the day. The second was on August 18th during riffle construction, when turbidity briefly spiked as high as 28 NTU but quickly returned to background levels and was within allowable thresholds by the next monitoring period.



Figure 5. 2025034: New side channel connecting the Pahsimeroi River to a spring channel on the Last Chance Ranch.



Figure 6. 2025034: Channel plug and newly excavated channel on the main Pahsimeroi River, with view of downstream riffle in the new channel.

TABLE 6: Lower Peshastin Creek Restoration

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES	FISH CAPTURE
2025052	Cascade Fisheries	Peshastin Creek Chelan County, Washington	• Improve Secondary Channel and Wetland Habitats • Install Habitat-Forming Natural Material Instream Structures • Riparian Vegetation Planting • Install Habitat-Forming Materials	48 Captured - All Steelhead 0 Mortalities

Description:

Lower Peshastin Creek is an important migratory corridor that links the Wenatchee River to the cooler waters of the upper Peshastin watershed and its tributaries, which are important spawning and early rearing areas for ESA-listed Chinook salmon, steelhead, and bull trout. Additionally,

steelhead have been documented spawning in lower Peshastin Creek. This project addresses a need to restore stream processes that improve habitat conditions during high and low flows for the benefit of ESA-listed fish.

The project area includes the lower 0.3 miles of Peshastin Creek, and the project involved channel and floodplain earthwork over about 3.8 acres to reconnect an isolated meander bend, resulting in a 2x increase in channel length (1,100 linear feet of new low-flow channel and creation of 1,000 linear feet of secondary channel). Some minor bank grading was performed in the existing channel to establish additional channel edge complexity. Salvaged streambed material was placed to raise the current bed to a higher elevation to maintain split flows and an elevated water table. The project also involved 3 acres of riparian restoration that included planting willow and cottonwood trees along the banks, and planting other species including wild cherry, wild rose, hawthorn, dogwood, and mock orange in floodplain areas farther from the creek.

Primary project features:

- Channel and floodplain earthwork over 3.8 acres to reconnect an isolated meander bend
- 1,100 linear feet of new low-flow channel
- 1,000 linear feet of secondary channel
- Channel fill to maintain split flows
- Bank grading for channel edge complexity
- 3 acres of native riparian plantings

Lessons Learned:

Turbidity and erosion control measures were very effective on this project, with the diversion and coffer dam functioning exceptionally well for the duration of work below the ordinary high water level of the creek. There were only two occasions when turbidity was observed to be above background at the downstream compliance point. These were when the primary channel was re-watered and during the removal of the coffer dams, and in both instances the turbidity was short-lived.

The biggest challenge with implementation was coordination between the earthwork contractor and the log supply contractor, with log trucks showing up to deliver logs after hours multiple times. The next project will have more explicit specifications on delivery times and days to avoid similar problems.

The project went out to bid early (Fall 2024), well ahead of the start of construction. This resulted in a lot of competition among bidders and a good price for the project.

Tall willows were used in the plantings, and an excavator was used to install them mid-summer. Using heavy machinery helped ensure that the summer low water table was reached. Willow survival turned out to be very high.



Figure 7. 2025052: Construction of engineered log jam on Peshastin Creek.



Figure 8. 2025052: Staged rewatering of primary channel.



Figure 9. 2025052. Floodplain plant installation.

TABLE 7: Henry Reach Phase 2

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES	FISH CAPTURE
2025058	Idaho Department of Fish and Game	Lemhi River Lemhi County, Idaho	• Improve Secondary Channel and Wetland Habitats • Install Habitat-Forming Natural Material Instream Structures • Riparian Vegetation Planting • Channel Reconstruction • Manage Vegetation Using Herbicides (Riverine)	19 Captured - 15 Steelhead - 4 Chinook 0 Mortalities

Description:

This Phase 2 effort follows a successful Phase 1 of the Henry Reach project that was completed in 2021 to improve habitat diversity and floodplain interaction on the Lemhi River under a range of flow conditions, benefitting ESA-listed fish including Chinook salmon and steelhead. Phase 1 utilized multiple habitat treatments that included increasing river sinuosity, installing large woody debris in the main river channel, constructing multiple lateral side channels, and raising water levels using several engineered riffles.

Phase 2 was completed in 2025 and augmented Phase 1 by constructing several side channel complexes while further improving instream structure and floodplain interaction. Specifically, the Phase 2 project goal was to spatially expand the current floodplain while further improving channel complexity and hydraulic diversity including multiple juvenile salmonid rearing ponds.

Habitat treatments included beaver dam complexes to increase off-channel habitat, large wood debris to increase instream habitat complexity, and raising of water surfaces at key locations to further increase floodplain interaction. Riparian zone plantings of willow and cottonwood were installed, and wetland, transitional, and upland areas were seeded.

Primary project features:

- Instream riffle
- Large wood enhancement
- Beaver dam analogues and floodplain roughness
- Pool creation
- Riparian willow and cottonwood plantings

Lessons Learned:

Construction actions during Phase 2 implementation produced increased turbidity and required frequent oversight by the project team. Turbidity was monitored closely throughout implementation, and all realistic remediations were done to reduce turbidity. Most commonly, Idaho Department of Fish and Game (IDFG) staff coordinated with the implementation contractor to stop construction activities off and on throughout many of the work days, as needed to allow turbidity to return to an acceptable level before resuming.



Figure 10. 2025058: Installation of in-water construction isolation measures (cofferdam and turbidity control) to support Phase 2 construction in the Lemhi River.



Figure 11. 2025058: Aerial view showing most of Phase 2 completed and inundated, providing additional habitat for juvenile fish.

TABLE 8: Lower East Fork Phase 2 Habitat Enhancement

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES	FISH CAPTURE
2025068	Hood River Watershed Group and Confederated Tribes of the Warm Springs Reservation of Oregon	Lower East Fork Hood River Hood River County, Oregon	• Improve Secondary Channel and Wetland Habitats • Install Habitat-Forming Natural Material Instream Structures • Riparian Vegetation Planting • Channel Reconstruction	37 Captured - All Steelhead 0 Mortalities

Description:

The Hood River Watershed Group and the Confederated Tribes of the Warm Springs Reservation of Oregon partnered to implement an instream habitat restoration project on Lower East Fork Hood River. The goal of the project is to improve juvenile rearing and adult holding and spawning habitat for ESA-listed Chinook salmon, coho salmon, and steelhead, as well as resident cutthroat trout and rainbow trout. The project enhances and reconnects approximately 1.7 miles of instream and off-channel habitat on the East Fork Hood River.

Phase 2 project work completed in 2025 included installations of several types of large wood structures to provide in-stream and side channel habitat complexity, increase floodplain connectivity, promote split flow conditions, and promote natural processes. Side channel and floodplain reconnection was accomplished through selective grading, in addition to the large wood placement. Inlets to historic main channel and side channel alignments were excavated to provide floodplain inundation more frequently and improve floodplain habitat.

Selective wood re-arrangement and grading were conducted where a debris jam had severely reduced flows through a former main alignment. Two inlets were reconnected to the mainstem at the upstream end to increase hydraulic connectivity. Alluvial and vegetative fill was placed at an existing avulsion pathway, and a large wood structure was installed at the upstream end of the pathway to improve stability at this location. Additionally, 30 pools were excavated with the construction of the large wood apex structures, bank habitat structures, and margin habitat structures. All areas disturbed by project grading were reseeded with native upland and riparian seed mixes, 500 willow stakes were installed along the newly excavated side channel, and native shrubs and trees were planted.

Primary project features:

- Installation of large wood structures that included 11 apex structures, 2 bar roughness structures, 9 channel-spanning post-assisted log structures (PALS), 10 bank habitat structures, and 9 margin habitat structures
- Excavation of 30 pools in conjunction with large wood structure installation
- Side channel and floodplain reconnection, with excavation of inlets to historic main and side channel alignments and fill placed at an existing avulsion pathway
- Revegetation of riparian and upland areas with native trees and shrubs

Lessons Learned:

The design and implementation team needed to make the decision during construction to find an alternative to the alluvial debris structure that was included in the main channel design.

Construction had been underway for approximately one month prior to this decision point, and the concerns with constructing the alluvial debris structure as designed had to do with hitting bedrock at depths far shallower than the minimum factor of safety; the inability to generate enough fill material for sufficient ballast to accommodate for insufficient excavation/burial depth; and construction feasibility in the middle of the mainstem, with rising flows, the need to cross active flows, and potential turbidity impacts.

The design team developed a contingency plan based on potential excavation depths, and the contractor dug a test pit where the main posts would be excavated into the ground for the alluvial structure. The excavator hit a maximum depth of 2.5 feet before hitting refusal, which did not meet the factor of safety requirements for the alluvial structure. As a result, the design team decided to install another apex structure in the same general location but on the bank of the river; this adjusted location allowed for additional depth due to the bank height, the gradient at the bank, and the fill generated.



Figure 12. 2025068: Construction of bank habitat structure in dry Kulongoski Channel.



Figure 13. 2025068: Construction of channel-spanning PALS in dry river left Mills Channel.

TABLE 9: Oxbow Phase 6 Habitat Enhancement

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES	FISH CAPTURE
2025073	Confederated Tribes of the Warm Springs Reservation of Oregon	Middle Fork John Day River Grant County, Oregon	• Improve Secondary Channel and Wetland Habitats • Install Habitat-Forming Natural Material Instream Structures • Riparian Vegetation Planting • Install Habitat-Forming Materials	976 Captured - 479 Juvenile O. mykiss - 39 Adult Chinook - 458 Juvenile Chinook 35 Mortalities - 16 Juvenile O. mykiss - 19 Juvenile Chinook

Description:

The Oxbow Phase 6 project was designed to continue enhancing habitat features associated with the previously completed Oxbow Tailings project on the Oxbow Conservation Area property owned by the Confederated Tribes of the Warm Springs Reservation of Oregon. Phases 1-5 worked to rehabilitate the area by leveling mine tailings, constructing a sinuous channel form, and installing habitat features for Chinook salmon and ESA-listed steelhead in the Middle Fork John Day River. Phase 6 completed adaptive management activities to further increase habitat complexity, rearing access to off-channel habitat and floodplain, and raise the water table while grading the floodplain to facilitate riparian plant growth, which had been a challenge due to groundwater access and soil composition.

The Phase 6 project included floodplain grading, strategic bank scalloping, floodplain roughness features (willow baffles, single LWD placement, and flood fencing), and riffle crest manipulation to encourage floodplain reconnection, groundwater recharge, and fine sediment deposition. Instream LWD was also installed as single structures and in apex jams to create complexity alongside gravel placement, vegetated islands, and point bars. Side channel and high-flow swale construction were performed to increase the off-channel rearing habitat and refuge for fish during a larger range of flows. Together, these actions are intended to increase instream and off-channel habitat complexity, decrease the floodplain depth to groundwater, and facilitate riparian vegetation growth to provide channel shading from solar inputs, future organic matter recruitment, bank stability, and nutrient cycling. These actions improve habitat conditions for ESA-listed and non-listed fish in the Middle Fork John Day River and help to sustain Tribal access to culturally significant biota.

Primary project features:

- Three islands
- 13 apex log structures
- 50 single-log habitat structures
- 41 cover log structures
- 355 cubic yards of riffle material placed
- 435 cubic yards of gravel augmentation
- Floodplain grading including 3 side channels and 7 swales

- 3,500 linear feet of willow baffles, 1,035 feet of flood fence, and 64 floodplain roughness features
- Native plantings

Lessons Learned:

The contractor provided a structure sign-off log that proved to be an invaluable resource for ensuring all instream features were installed as designed or documenting field-fit changes. A good practice for future projects would be to create similar contracting officer sign-off logs, and when possible, include language in the contract to ensure their use.

The project team printed maps of hydraulic modeling results to inform the locations of field-fit floodplain roughness features. This was a helpful resource for targeting potential high-velocity areas for floodplain roughness feature placement. Ensuring that the velocity model is prepared and available to the project team prior to on-site work would support determining ideal floodplain structure placement for future projects.

For fish salvage, fish health upon release was a concern. Having a dedicated husbandry team at the release point with holding stations for extended recovery for struggling fish could greatly reduce mortality rates. Adult Chinook salvage required more effort than anticipated (39 adult Chinook salvaged), even with a dedicated ODFW team focusing only on adult salmon. While the team was successful and no adult mortality occurred, the effort required multiple days of salvage efforts beyond what was planned. In future projects, developing a plan to effectively relocate as many adult fish as possible prior to main salvage events could result in more effective salvage.



Figure 14. 2025073: Before (left) and after (right) photos of Alcove 5 on the Middle Fork John Day River.



Figure 15. 2025073: Before (left) and after (right) photos of the Middle Fork John Day River below Pyramid Rock.



Figure 16. 2025073: Pre-project photo of Middle Fork John Day River at Oxbow Conservation Area.



Figure 17. 2025073: Post-project photo of Middle Fork John Day River at Oxbow Conservation Area.

TABLE 10: Pond Series 4

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES	FISH CAPTURE
2025075	Trout Unlimited	Yankee Fork River Custer County, Idaho	• Dams, Water Control or Legacy Structure Removal • Bridge and Culvert Removal or Replacement • Improve Secondary Channel and Wetland Habitats • Install Habitat-Forming Natural Material Instream Structures • Riparian Vegetation Planting • Channel Reconstruction	9 Captured - 8 Steelhead - 1 Bull Trout 0 Mortalities

Description:

Located in the lower Yankee Fork drainage near Sunbeam Dam, this project aims to establish perennial flow from the Yankee Fork River into and out of relic dredge ponds, known as Pond Series 4, that were created by dredge mining activity in the 1940s and 1950s. The project also seeks to improve overall habitat conditions in Pond Series 4 by installing wood habitat structures in the mainstem Yankee Fork and reactivating relic channel segments that were previously constructed as part of the West Fork Confluence project and which were disconnected as a result

of channel avulsions after a 2017 high flow event. The central goal of the project is to increase the survival and productivity of early life stages of Chinook salmon and steelhead.

In-water construction completed in 2025 included reactivating a meander at the upper end of the project, which involved diverting the water, building a bleeder jam at the head of the straight channel, building a raised riffle in the straight channel, and constructing a raised riffle at the bottom of the meander. A mainstem riffle between the two meanders was also built. Habitat logs were added to Pond Series 4, check structures were removed, and connecting channels above previous check structures were lowered to facilitate movement of water from the Yankee Fork to the Pond Series. All disturbed areas were seeded and planted in fall, to give seeds and woody vegetation the best chance for survival.

Primary project features:

- Excavation of primary channel and creation of secondary channels
- Channel fill/plugs with native alluvium, soil, and wood
- Large wood habitat structures
- Constructed riffles
- Seeding and planting with native species

Lessons Learned:

Two problems were encountered that resulted in some work elements having to be delayed to 2026 construction. The project was planning to use a specific area of mine tailings as the source of material for riffle construction. However, cultural resources reporting materials for those mine tailings were not submitted early enough in the schedule to complete the required consultations under Section 106 of the National Historic Preservation Act (NHPA), meaning those mine tailings were unavailable for use in the project in 2025. An alternate source of riffle material was identified, but that source area ultimately proved to have insufficient large material, resulting in the planned work on the lower meander and downstream riffle not being completed.

Additionally, the replacement culvert was built to the wrong specifications. The culvert was rebuilt in 2025, but it was not completed in time for installation during the 2025 in-water work window. Culvert and riffle installation is planned for completion in 2026.



Figure 18. 2025075: Upper meander on the Yankee Fork River before construction.



Figure 19. 2025075: Upper meander after construction.



Figure 20. 2025075: Constructing the bleeder jam at the upper meander.



Figure 21. 2025075: Setting the temporary work bridge to access the upper meander area.

TABLE 11: Bull Run Creek Phase 2 Implementation

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES	FISH CAPTURE
2025078	Confederated Tribes of the Umatilla Indian Reservation	Bull Run Creek Grant County, Oregon	• Improve Secondary Channel and Wetland Habitats • Setback or Removal of Existing Berms, Dikes, and Levees • Install Habitat-Forming Natural Material Instream Structures • Riparian Vegetation Planting • Channel Reconstruction • Install Habitat-Forming Materials	121 Captured - 106 O. mykiss - 15 Chinook Salmon 1 Mortality - O. mykiss

Description:

The Bull Run Creek project was listed as a priority action in the Bull Run Creek Action Plan, with development beginning in 2017 by the Wallowa-Whitman National Forest (WWNF), North Fork John Day Watershed Council, and Confederated Tribes of the Umatilla Indian Reservation. The project addresses habitat simplification and lack of floodplain connectivity stemming from historic dredge mining and left-in-place tailings along two miles of Bull Run Creek on WWNF land. Bull Run Creek is a headwater stream in the upper North Fork John Day River basin that provides spawning and rearing habitat for ESA-listed steelhead and bull trout.

The final design for the overall project outlined a phased approach, with Phase 1 completed in 2023. Phase 1 work included mine tailing removal, creation of an inset floodplain, new channel development, large wood structure placements, and installation of native plants. Phase 2 furthers

those efforts, and Phase 2 work completed in 2025 included channel fill and new channel activation, riffle construction, spawning gravel augmentation, in-channel wood placements, floodplain debris and control structure development, off-channel pool and swale development, tailings excavation, alluvial fan and berm recontouring, channel connection development, and native plantings. Similar work is proposed in 2026 to complete Phase 2.

Spring Chinook salmon, summer steelhead trout, bull trout, and Pacific lamprey spawning and rearing opportunities are expected to increase over time because of the project. Freshwater mussels will also benefit from improved habitat conditions once the site has fully recovered.

Primary project features:

- 980 linear feet of new channel activated, and 480 cubic yards of old channel filled
- 200 feet of channel connection developed
- 16 riffles constructed and 175 cubic yards of spawning gravel augmented
- 81 large wood structures placed in the channel
- 5,600 cubic yards of mine tailings removal
- 95 floodplain debris structures developed
- 775 cubic yards of material used for floodplain-spanning control structures
- 7 off-channel pools and 3 swales excavated
- 235 cubic yards of alluvial fan and berm features recontoured
- 5,400 native plants installed

Lessons Learned:

Turbidity was monitored daily during in-water work and was generally within acceptable limits except for two days in August when levels exceeded HIP standards. The causes of the turbidity were found to be inadequately staged equipment (notably larger pumps) and the isolation bag line being too close to the immediate work area, which resulted in a surge of dirty water during construction activities. Work was halted to address the problem, which was attributed to a 4-inch pump that discharged water from below the immediate work area into an adjacent meadow. As the meadow became saturated, water began to slowly leach through the dirty tailings and re-enter Bull Creek farther downstream of the work area.

To address the problem, two additional silt fences were installed and two 6-inch pumps capable of pumping all flows were added. All discharge was directed into a tailings depression well away from the creek with the goal of preventing re-entry. A bypass channel was excavated and lined with Visqueen but remained disconnected from Bull Run Creek until EcoBlocks were placed in the channel well upstream of the work area. Flows were metered into the new channel at roughly 30% and 60% levels before fully activating the new channel once turbidity levels dropped. Once these measures were in place, no further turbidity exceedances were experienced during the remainder of in-water work.

The importance of constructing a proper bypass channel away from the work area and choosing a discharge location with no chance of site re-entry cannot be overstated. Moving forward, more consideration will also be given to proper equipment staging and strategies for more efficient pumping.



Figure 22. 2025078: Contractor excavating floodplain pools (left) and developing debris control structures (right).



Figure 23. 2025078: CTUIR staff tagging mussels of different age classes.

TABLE 12: Palensky Wildlife Area Ludwigia Herbicide Treatment 2025

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES	FISH CAPTURE
2025088	Oregon Department of Fish and Wildlife	Horseshoe Lake Multnomah County, Oregon	• Manage Ludwigia using herbicides	N/A

Description:

The J.R. Palensky Wildlife Area is located along the southern shoreline of Multnomah Channel downstream from its confluence with the Willamette River. In the summer of 2021, invasive creeping water primrose (*ludwigia*) was first detected in Horseshoe Lake on the wildlife area. Beginning in June 2022, ODFW began treatments for *ludwigia* on Horseshoe Lake. At the time, nearly 10 acres of the roughly 40-acre lake had been colonized by *ludwigia*. Following aquatic

glyphosate applications from 2022 through 2024, the expansion of the infestation has been greatly slowed. Prior to 2025 treatments, roughly 12 acres host *ludwigia* mats.

In 2025, ODFW continued treatments to attempt to fully remove the remaining patches of *ludwigia* in the lake and slow further colonization of other areas in the waterbody. Two rounds of aquatic herbicide application (aquatic glyphosate) were conducted in 2025, the first in early July before the plants flowered and the second in late fall.

Primary project features:

- Herbicide treatment of *ludwigia*

Lessons Learned:

None noted.

TABLE 13: Antoine Valley Ranch

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES	FISH CAPTURE
2025095	Confederated Tribes of the Colville Reservation	Antoine Creek Okanogan County, Washington	• Bridge and Culvert Removal or Replacement • Installation of Fords • Improve Secondary Channel and Wetland Habitats • Install Habitat-Forming Natural Material Instream Structures • Riparian Vegetation Planting • Install New or Upgrade Existing Fish Screens	1,500 Captured - O. mykiss 0 Mortalities

Description:

This restoration project has been in the works since approximately 2010 when the Confederated Tribes of the Colville Reservation (CTCR) began efforts to purchase the Antoine Valley Ranch. In late 2020, Western Rivers Conservancy (WRC) and CTCR purchased the ranch using a Washington Streamflow Restoration grant and outside funding. WRC held the second half of the purchase until September 2023 when CTCR successfully secured a second Washington Streamflow Restoration grant. The total acquisition consisted of 2,524 acres of land and included the control and operations of Fancher Dam, 435-acre foot storage reservoir, as well as 1,351 acre-feet/year of water conservation.

The project aims to improve fish habitat for rearing ESA-listed Threatened summer steelhead trout and native non-listed fish species in Antoine Creek, a tributary of the Okanogan River, by adding wood, filling an unnaturally incised channel, and restoring the stream channel to its historic alignment. The project promotes floodplain reconnection, the creation of wetlands, and water storage in a broad floodplain. The addition of large and small wood improves fish habitat, promotes continued channel aggradation, and increases lateral connectivity between the stream

and floodplain. Floodplains in better connection with streams further increase habitat diversity for aquatic and riparian species and increase surface and ground water retention.

Construction of out-of-water work elements began April 1, 2025, with the demolition of barns and fencing and removal of various other debris. A temporary bridge was installed to allow equipment access for new channel construction in the dry. New channel construction and wood placement was completed in April and May 2025, with excavated material stored for use as channel fill. In-water work elements were constructed in September and October 2025, following isolation of in-water work areas (cofferdams and bypass pipe) and fish salvage. All O. mykiss captured during fish salvage were transferred for release downstream of the project area while Eastern brook trout were humanely euthanized. Channel fill was placed and compacted in lifts, and the undersized Whiskey Cache Road culvert was replaced with a bottomless arch culvert. Disturbed areas were seeded the first week of November. Future work planned for the restoration project includes installing additional cottonwood and willow stakes in riparian areas as well as some potted upland plants.

Primary project features:

- Excavation of floodplain and placement of excavated material in the channel
- Grading a new channel and floodplain to re-route Antoine Creek
- Demolition and removal of existing infrastructure in the channel and floodplain
- Placement of log jams/large wood in the channel
- Placement of individual logs and wood structures on the floodplain
- Revegetation of disturbed areas

Lessons Learned:

The rewatering of channel construction areas was done slowly to minimize turbidity, starting with re-introducing only 1/3 of streamflow and slowly increasing from there, but turbidity spikes still occurred as segments of the channel were rewatered. Turbidity pulses lasted for about 3-5 hours as flows were re-introduced to stream sections dewatered for the culvert replacement and channel fill below. Turbidity pulses cleared within about 6 hours of initial flow re-introduction to other river segments, although there were multiple periods over the following week when turbidity was elevated for about 6-8 hours while different stretches of floodplain rewatered and dewatered themselves.



Figure 24. 2025095: Pre-project overview of incised Antoine Creek channel, minimal floodplain, and lack of woody vegetation around the creek in the upper end of the project.



Figure 25. 2025095: Pre-project view of the Whiskey Cache Rd. culvert that was replaced as part of the project.



Figure 26. 2025095: Post-project overview of a newly created 215-foot-wide floodplain with buried logs, slash piles, BDAs and surface roughness features to reduce stream power and channel incision.



Figure 27. 2025095: Installation of 60-foot-long, 32-foot-span bottomless culvert to replace the undersized culvert at Whiskey Cache Rd.



Figure 28. 2025095: Floodplain reconnection upstream of Whiskey Cache Rd culvert.

TABLE 14: Yakima River 89.5 Phase 2

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES	FISH CAPTURE
2025097	Yakama Nation	Yakima River Yakima County, Washington	• Installation of Fords • Install Habitat-Forming Natural Material Instream Structures • Channel Reconstruction	0 Captured 0 Mortalities

Description:

The goal of this project is to increase and improve off-channel anadromous fish habitat along the lower Yakima River near the town of Toppenish. A secondary goal is to improve wetland and riparian wildlife habitat. The project accomplishes these goals by connecting a 5.5-mile-long side channel and wetland complex to more frequent flow in the fall, winter, and spring.

Construction began in September 2025 and included excavating three side channel inlets to allow hydrologic connection between the Yakima River and the side channel at lower flows than currently. Selective excavation of side channel plugs was completed to allow for flow conveyance, and two engineered log structures were installed to enhance water movement into one of the side channel inlets. Additionally, three rocked channel crossings (fords) were installed in reconnected channels to allow for maintenance and restoration activities in the surrounding Yakima Nation Wildlife Area. Areas disturbed by construction were revegetated with native riparian grasses, shrubs, and trees, and planting was completed in November 2025.

Primary project features:

- Excavation of 1.5 miles of channel to reconnect 5.5 miles of side channel and wetland complex, increasing flow connection by more than 200 days per year
- Installation of two engineered log jams at side channel inlet
- Installation of three rocked channel crossings (fords) in reconnected channels
- Planting of more than 22,400 native riparian shrubs and trees

Lessons Learned:

The area of potential effect (APE) used for initial cultural resources investigations and consultations was later determined to be too narrowly drawn (too close to limits of disturbance) and had to be modified to enable more flexible access through wetter areas. This problem cost the project two weeks of time. In the future, more expansive APEs will be considered to avoid this problem, recognizing that larger APEs may also require a larger cultural survey effort.



Figure 29. 2025097: Upper portion of project area post-project. Yellow areas indicate newly excavated channels. Red arrow notes an existing side channel.



Figure 30. 2025097: Newly installed ELJ at downstream end of project.



Figure 31. 2025097: ELJ footer log installation within isolated work area.

TABLE 15: North Fork Walla Walla River RM 5.2-6.5 Floodplain Restoration

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES	FISH CAPTURE
2025100	Walla Walla Basin Watershed Council	North Fork Walla Walla River Umatilla County, Oregon	• Headcut and Grade Stabilization • Improve Secondary Channel and Wetland Habitats • Set-back or Removal of Existing Berms, Dikes, and Levees • Protect Streambanks Using Bioengineering Methods • Install Habitat-Forming Natural Material Instream Structures • Riparian Vegetation Planting • Channel Reconstruction • Install Habitat Forming Materials • Fencing Construction for Livestock Control • Plant Vegetation	N/A

Description:

The Walla Walla watershed is home to ESA-listed steelhead trout and bull trout, and to re-introduced spring Chinook salmon. Factors limiting the success of these populations include fish passage barriers, lack of instream habitat complexity, inadequate riparian and floodplain

function, and water quality impairment. The North Fork Walla Walla River (NFWWR) RM 5.2-6.5 project is the fourth phase of a larger overall project intended to improve floodplain function and riverine habitat conditions in the NFWWR to benefit ESA-listed fish.

Historic floods in 2020, coupled with emergency flood response actions, resulted in a leveed, single-flume channel along the NFWWR and expansive areas of erosion in the riparian and floodplain areas. The initial phase of the overall project was completed in 2022 and involved reconnecting 15 springs to the mainstem NFWWR that had become isolated from the river. Improvements to juvenile salmonid habitats through accessibility to quality off-channel habitat resulted from those reconnection effects. Phase 2 was effectively implemented in 2023 and involved restoring RM 3.6 – 4.3 of the NFWWR, and Phase 3 was implemented on RM 4.3 – 5.2 in 2024.

The majority of the RM 5.2 – 6.5 project (Phase 4) is planned for 2026 in-water work window, with elements including habitat wood structures (large wood structures and apex jams) and boulder placements; side channel inlet excavation; alcove enhancement and reconnection; floodplain roughness features; and vegetation plantings. Project construction activities completed in 2026 will be reported in the 2026 HIP Annual Report.

Activities completed in fall 2025 included the planting of 1,000 trees. Additionally, 13 grazing reduction enclosures were built around 500 of the cottonwood and willow plantings, and 500 more trees were interwoven into engineered log jams to transform them into living structures over time.

Primary project features:

- 1,000 native trees planted
- 13 grazing enclosures constructed

Lessons Learned:

None noted.



Figure 32. 2025100: Grazing enclosures constructed in 2025.

ACTIVITY CATEGORIES

The projects undertaken by BPA and its partners encompass a diverse portfolio of activities, grouped into several main categories:

- **Fish Passage Restoration:** This includes removing dams, water control or legacy structures, consolidating or replacing irrigation diversions, stabilizing grades, providing fish passage at existing facilities, and removing or replacing bridges and culverts.
- **River, Stream, Floodplain, and Wetland Restoration:** Activities here focus on improving secondary channel and wetland habitats, setting back or removing existing berms, dikes, and levees, protecting streambanks using bioengineering methods, installing habitat-forming instream structures (like large wood and boulders), riparian vegetation planting, channel reconstruction, and adding sediment and gravel.
- **Invasive and Non-Native Plant Control:** This involves managing vegetation through physical controls and various herbicide applications (riverine, estuarine, and Willamette Valley), as well as juniper and prescribed burning. Herbicide use is the most widely used project activity category under HIP4, often for managing wildlife mitigation areas.
- **Road and Trail Erosion Control, Maintenance, and Decommissioning:** This category includes maintaining existing roads and trails, and decommissioning others.
- **Irrigation and Water Delivery/Management Actions:** This involves converting delivery systems, changing water conveyance methods, installing or replacing fish screens, and other related actions in support of State run fish screen programs.
- **Fisheries, Hydrologic, and Geomorphologic Surveys:** These are conducted to gather data.
- **Special Actions (for Terrestrial Species):** This includes installing/developing wildlife structures, constructing fencing for livestock control, planting vegetation, and tree removal for large wood projects.

TABLE 16: ACTIVITY CATEGORY SUMMARY

Category	Subcategory	3-year Average (22-24)	2025 Totals
1. Fish Passage Restoration			
	a. Dams, Water Control or Legacy Structure Removal.	6	3
	b. Consolidate, or Replace Existing Irrigation Diversions.	6	2
	c. Headcut and Grade Stabilization.	8	4
	d. Low Flow Consolidation.	0	1
	e. Providing Fish Passage at an Existing Facility.	4	5
	f. Bridge and Culvert Removal or Replacement.	7	11

	g. Bridge and Culvert Maintenance.	1		1
	h. Installation of Fords.	2		4
2. Floodplain Restoration				
	a. Improve Secondary Channel and Wetland Habitats	22		23
	b. Set-back or Removal of Existing, Berms, Dikes, and Levees	8		4
	c. Protect Streambanks Using Bioengineering Methods	9		8
	d. Install Habitat-Forming Instream Structures (Large Small Wood, Boulders	37		30
	e. Riparian Vegetation Planting	47		44
	f. Channel Reconstruction	11		13
	g. Sediment and Gravel.	6		6
3. Vegetation Management				
	a. Manage Vegetation using Physical Controls.	28		36
	b. Manage Vegetation using Herbicides (Riverine)	26		37
	c. Manage Vegetation using Herbicides (Estuary)	4		3
	d. Manage Vegetation using Herbicides (Willamette)	1		0
	e. Juniper Removal	1		2
	f. Prescribed Burning	4		8
4. Pile Removal				
	Pile Removal	1		0
5. Road Decommissioning				
	a. Maintain Roads	6		7
	b. Decommission Roads	2		1
6. Nutrient Enhancement				
	Nutrient Enhancement.	1		0
7. Water Management				
	a. Convert Delivery System to Drip or Sprinkler Irrigation.	0		0
	b. Convert Water Conveyance from Open Ditch to Pipeline or Line Leaking	1		0
	c. Convert from Instream Diversions to Groundwater Wells for Primary Water	1		1
	d. Install or Replace Return Flow Cooling Systems	1		0
	e. Install Irrigation Water Siphon Beneath Waterway	0		1
	f. Livestock Watering Facilities	1		2
	g. Install New or Upgrade/Maintain Existing Fish Screens	1593		1884
8. Surveys				
	Surveys	5		6
9. Wildlife Management				
	a. Install/develop Wildlife Structures	3		2
	b. Fencing construction for Livestock Control	13		7
	c. Plant Vegetation	17		19
	d. Tree Removal for LW Projects	5		0
	e. Willamette Valley Prairie Restoration	7		7

INCIDENTAL TAKE REPORTING

The NMFS and USFWS HIP4 BOs defined four categories of incidental take based on the likelihood of adverse effects to ESA-listed species.

1. Capture of juvenile and adult fish during in-water work area isolation.

NMFS anticipates the capture of 7,500 juveniles (6,000 juveniles in the Interior Recovery Domain, 1,500 juveniles from the Willamette/Lower Columbia Recovery Domain), and the capture of up to 4 adults (3 from the Interior Columbia Recovery Domain and one from the Willamette/Lower Columbia Recovery Domain) of the salmon and steelhead species considered in this consultation.

USFWS anticipates no more than 350 bull trout will be captured in a single year, and no more than 5 percent of the total number captured will be killed (up to 18 in a single year).

TABLE 17: INCIDENTAL TAKE DUE TO FISH HANDLING (NMFS)

Pacific Salmon and Steelhead		
	Capture	Mortality
2014	3593	8
2015	3541	59
2016	2435	130
2017	2446	78
2018	3282	189
2019	1174	33
2020	3504	84
2021	6640	329
2022	7452	92
2023	4285	65
2024	2435	78
2025	2117	40

FIGURE 33: FISH CAPTURE

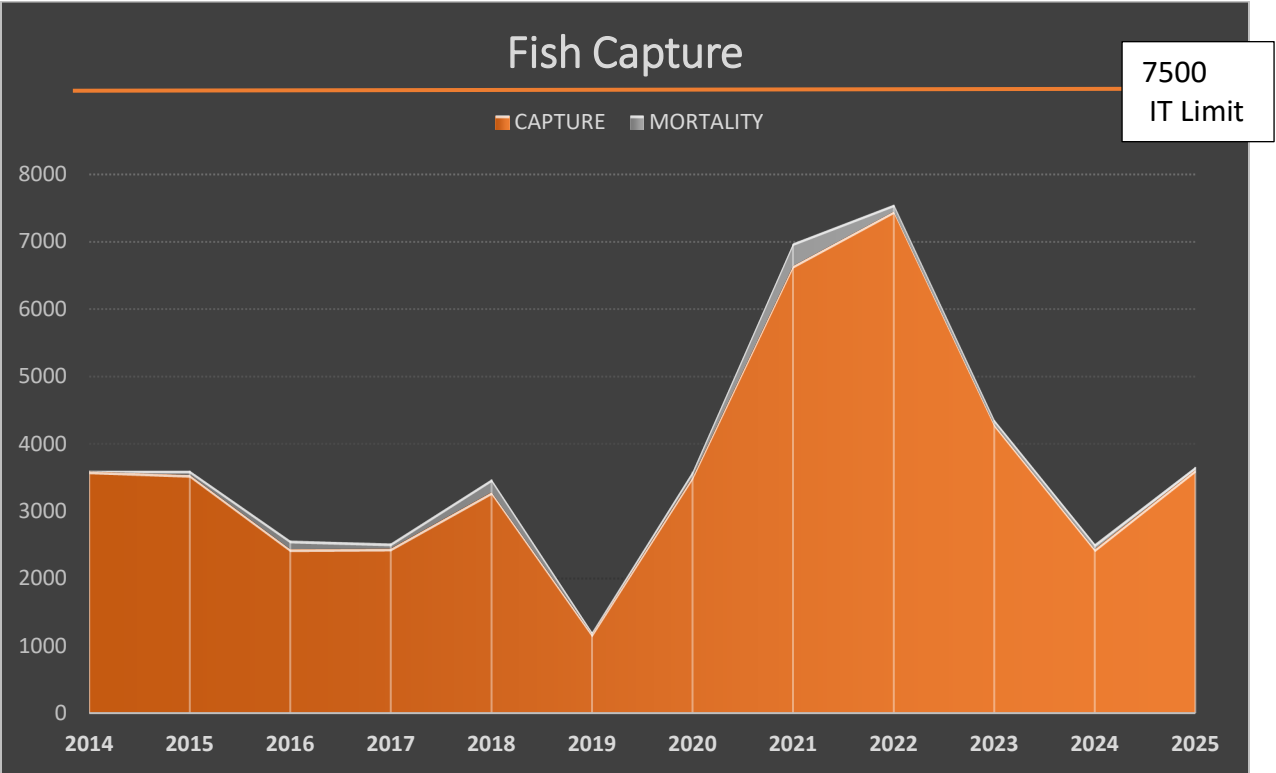


TABLE 18: INCIDENTAL TAKE DUE TO FISH HANDLING (USFWS)

Bull Trout		
	Capture	Mortality
2015	29	0
2016	5	0
2017	0	0
2018	4	0
2019	0	0
2020	95	0
2021	11	5
2022	7	0
2023	8	0
2024	9	0
2025	2	0

2. Harm due to habitat-related effects.

NMFS anticipates a maximum of 150 projects to be implemented each year. USFWS anticipates no more than 90 of these projects requiring near or in-water work (IWW). NMFS estimates that

each action may modify up to 300 linear feet of riparian and shallow-water habitat; therefore, the extent of take for construction-related disturbance of streambank and channel areas is 45,000 linear stream feet (8.5 miles) per year partitioned between recovery domains.

Table 19 is a compilation of sponsor-input data into our CBFISH contracting database for 3 separate work elements: miles of dike removed, miles of stream with improved channel form, and miles of stream with improved complexity. These self-reported metrics may vary in accuracy or interpretation due to inconsistent methodologies and a lack of standardized reporting protocols across projects. They also may be outside of the zone of anadromy in some areas. However, they may represent the best estimate of the miles of stream modification under the HIP Program, and a sum total 100 miles of stream modification appears to be more representative of the Program.

TABLE 19: MILES OF STREAM MODIFIED BY YEAR

YEAR	Miles of Dike Removed or Modified	Miles of Stream with Improved Channel Form	Miles of Stream with Improved Complexity	Total
2016	3.09	26.74	52.71	82.54
2017	2.54	19.97	47.2	69.71
2018	2.8	19.95	64.03	86.78
2019	0.82	18.41	83.38	102.61
2020	6.3	14.11	39.4	59.81
2021	3.59	18.19	69.43	91.21
2022	5.1	14.09	66.6	85.79
2023	1.21	16.94	66.33	84.48
2024	2.2	11.01	53.28	66.49
2025	0.5	9.43	35.38	45.31

USFWS anticipates no more than 4 active Marbled Murrelet (MAMU) nests will be disturbed/displaced per year (2 in Oregon, 2 in WA). Project activities have occurred in areas near managed MAMU habitat. This occurred in the Willamette Valley Wildlife Management Areas (Herbert Farm and Coyote Creek). There have been no project activities near MAMU nests outside of the managed areas. **No MAMU nests have been reported disturbed this year.**

USFWS anticipates no more than 1,100 acres of potential Streak Horned Lark (SHL) habitat may be treated in a single year. Project activities have occurred in areas near managed SHL habitat. This occurred in the Willamette Valley Wildlife Management Areas (Herbert Farm and Coyote Creek).

TABLE 20: INCIDENTAL TAKE DUE TO HABITAT RELATED EFFECTS (# PROJECTS)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
IWW	41	40	43	43	52	56	57	47	42	39	45
Total	86	95	92	113	99	96	112	83	80	89	96

3. Harm due to construction-related disturbance (Turbidity).

Take is exceeded if the turbidity plume generated by construction activities is visible above background levels, about a 10 percent increase in natural stream turbidity, downstream from the project area source to be measured/observed every four hours, and these conditions persist beyond two consecutive monitoring intervals.

Two projects reported turbidity elevated for more than two monitoring intervals in 2025: HIP No. 2025078 (Bull Run Creek Phase II) and 2025095 (Antoine Valley Ranch). The turbidity exceedances for those projects are described in the High-Risk Project Showcase section of this report. In general, for most projects, turbidity exceedances occur during the introduction of water to newly constructed channels; however, staged rewatering plans, pumps, and other sediment control BMPs are generally effective for minimizing the extent and duration of turbidity pulses.

4. Application of herbicides to control invasive and non-native plant species

The best available indicator for the extent of take due to the proposed invasive plant control is the annual limitation on the extent of treated riparian acres. To limit the potential negative effects from herbicide use while still allowing use of herbicides in this restoration program, NMFS limits BPA's take to 1,500 riparian acres of treatment each year.

TABLE 20: ACRES TREATED WITH HERBICIDE

	RIPARIAN	UPLAND
2013	409	2482
2014	449	8282
2015	715	7399
2016	836	8940
2017	831	5561
2018	533	2127
2019	1020	2976
2020	929	4612
2021	1336	4356
2022	991	3433
2023	908	2714
2024	1075	3142
2025	664	4549

Figure 34: UPLAND APPLICATION of HERBICIDES over TIME

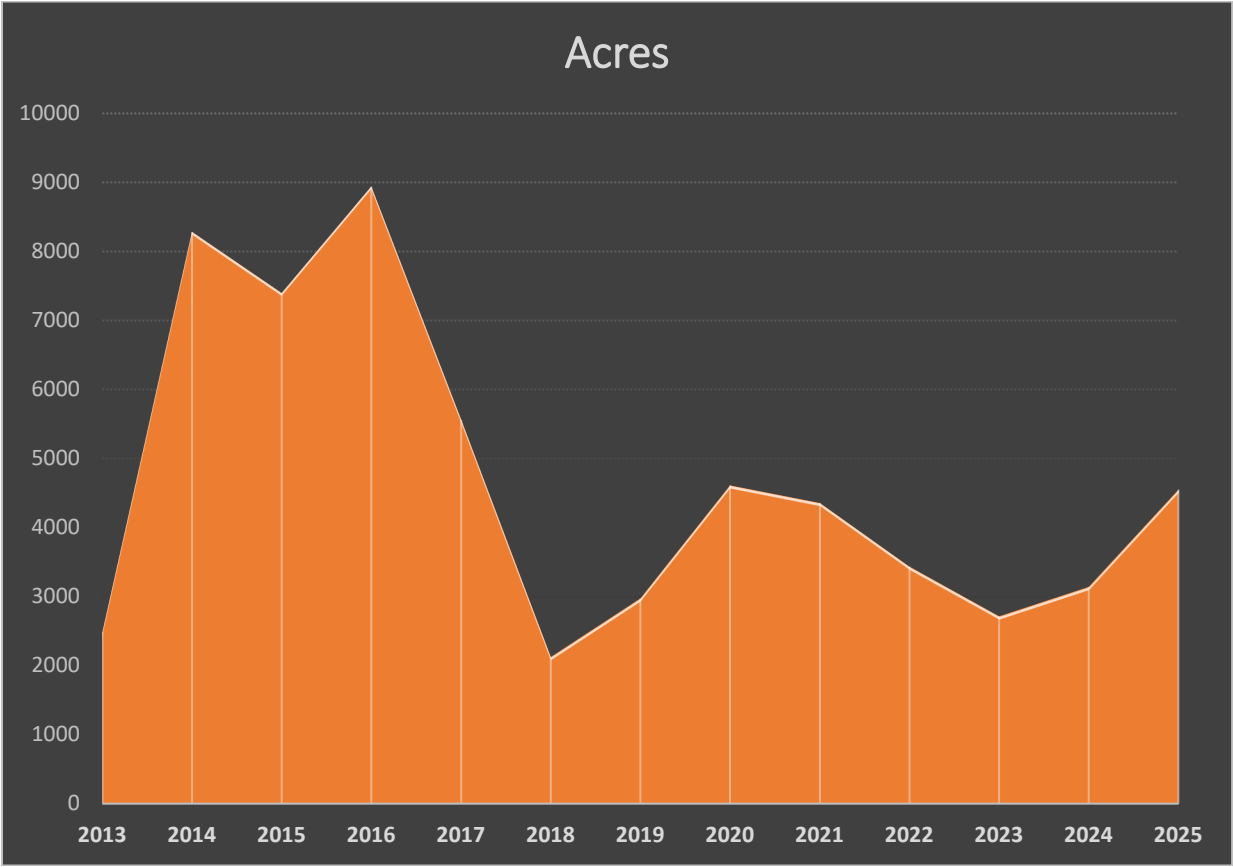
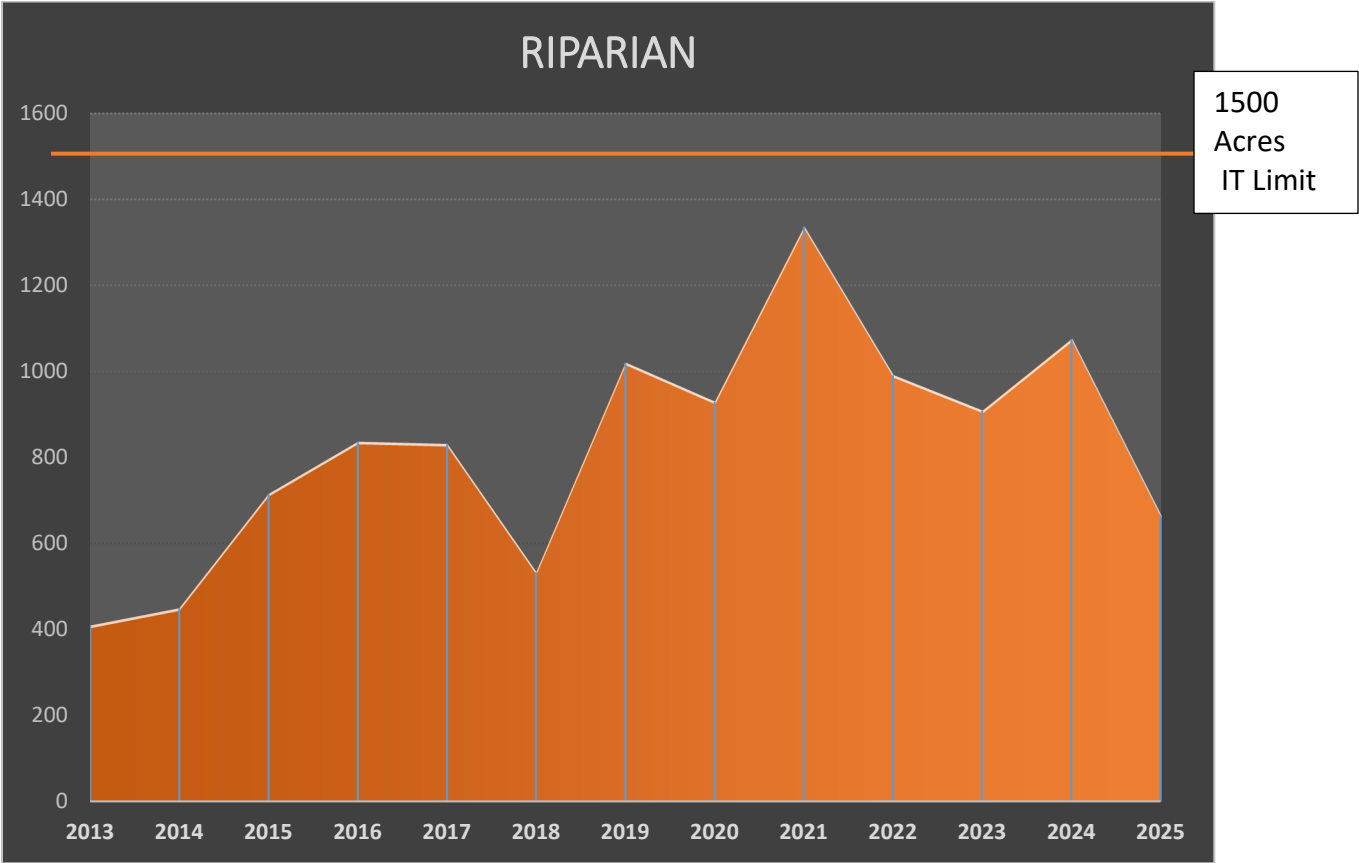


Figure 15: RIPARIAN APPLICATION of HERBICIDES over TIME



NON-COMPLIANCE

TABLE 21: REPORTED NONCOMPLIANCE EVENTS

2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
6	2	1	0	0	0	2	0	1	2	0	2

Wenas Creek Purdin Ditch Fish Passage (HIP# 2024086)

In 2025, a project proposed by the North Yakima Conservation District, in partnership with the Yakima Tributary Access and Habitat Program, removed a fish passage barrier, screened a surface water diversion used to supply irrigation water, and installed a roughened channel fishway.



Figure 36. 2024086: Before (top) and after (bottom) photos of the diversion

During a recent post-construction inspection of the Wenas Creek Purdin Ditch Fish Passage Project (HIP# 2024086) construction deficiencies were identified within the newly installed grade-control roughened channel. The channel was built using oversized and angular rock without adequate well-graded fine sediment, and subsequent high winter flows scoured away any remaining unbound material (Figure 37). Under HIP4 Activity-Specific Conservation Measures for Category 1c (Headcut and Grade Stabilization), roughened riffles must be built with engineered stream simulation bed material that is pressure-washed into place until interstitial voids are filled and surface flow is secured with minimal percolation losses. Because this sealing process was not achieved, the channel matrix remains highly porous, causing streamflow during low-flow periods to plunge entirely subsurface rather than remaining consolidated within the surface channel.



Figure 37. 2024086: Purdin Ditch roughened channel in 2026.

It is of BPA's opinion that this loss of surface flow presents immediate biological and Endangered Species Act (ESA) compliance liabilities. Field surveys have confirmed the presence of ESA-listed Middle Columbia River (MCR) juvenile steelhead in the immediate reach. With surface connectivity severed across the roughened channel, migrating fish potentially face physical passage barriers, thermal stress, and stranding in desiccating pools.

To resolve this issue BPA is attempting to direct YTAHP to hold the original design-build contractor accountable under standard construction warranty clauses. Immediate next steps involve coordinating with BPA Engineering Technical Services (ETS) and program leadership to define the technical remedy—specifically re-grading the channel invert with properly sized rounded alluvium and pressure-washing well-graded fines to form an impermeable seal along with a low flow channel. If warranty enforcement does not work out, BPA is prepared to fund a new channel re-grade in the upcoming field season.

HERBICIDE USE

Herbicide use continues to be the most widely used project activity category under the HIP4. This is due to the numerous wildlife mitigation areas that BPA purchases, which are managed under contract by various entities.

RIVERINE HERBICIDE APPLICATIONS

The analyses in the BOs affirm that application of chemical herbicides will result in short-term degradation of water quality which will cause injury to fish in the form of sublethal adverse physiological effects. Up to 1,500 total riparian acres may be treated in a calendar year under this programmatic consultation. There are no limits to upland acreage.

Invasive and Non-Native Plant Control: Managing vegetation in fluvial and estuarine systems to improve ecological function. This involves:

Physical Control: Manual methods (hand pulling, grubbing, mulching, shading) and mechanical methods (mowing, tilling, disking, plowing).

Herbicide Use (Riverine and Estuarine Systems): Chemical treatments for invasive plants, including specific guidelines for application in high marsh, low marsh, and tidal flat/aquatic bed areas within estuaries. Herbicide use is the most widely used project activity category under HIP4, often for managing wildlife mitigation areas.

TABLE 22: PROJECTS WITH HERBICIDE USAGE

HIP4 NO#	PROJECT	RIPARIAN	UPLAND
2025001	ODFW Willamette Valley O & M 2024/2025	129.9	729.6
2025002	Sunnyside Wildlife Area O&M	0	57
2025005	GBLT Floodplain Forest Enhancement	20	0
2025006	M2 Alder Creek Floodplain 2017-191	12	0
2025010	John Day Fish Habitat Enhancement Program	2	2
2025014	Umatilla Passage O&M	5	5
2025016	Asotin Creek Wildlife Area O&M	0	535
2025017	Hungry Horse Mitigation/Flathead Lake Restoration and RME	25	116
2025021	Upper Salmon Restoration Weed Treatment and Hydroseeding	161.4	199.1
2025022	Tátwin Wildlife Area (formerly Rainwater) Herbicide	0	22
2025027	Wenas Wildlife Mitigation	4.37	448.1
2025029	Columbia Stock Ranch Weed Treatment	0	20

2025033	Trout Creek Watershed Noxious Weed Program (ODFW)	5.5	23.5
2025036	Malheur River Wildlife Mitigation Site	0	205
2025039	Upper John Day Conservation	18	292.4
2025040	E. Fork of the South Fork Salmon River Restoration	38.1	158.3
2025042	Yakima Basin Side Channels – 2025 Maintain Vegetation	0	4
2025044	Lower Elochoman Restoration Phase III	85	0
2025046	Lapwai Creek Watershed Planting, Veg Maintenance, Water Development	10	0
2025053	Sunnyside Wildlife Area O&M 2025	0	102
2025055	Shillapoo Wildlife Area – Annual Veg Management	0.5	134.5
2025057	Hellsgate Big Game Winter Range Vegetation Management 2025-26	25.59	434.1
2025059	Vegetation maintenance at past project sites – Walla Walla River	0	5.5
2025060	Lapwai Creek Watershed Weed Control	35	65
2025061	CTUIR Fisheries Habitat Weed Control	0.5	0
2025063	John Day Fish Habitat Enhancement Program: Vegetation and Fence Mgmt	14	3
2025070	Umatilla Anadromous Fish Habitat 2025 O+M	15.7	825.8
2025088	Palensky Wildlife Area Ludwigia Herbicide 2025	15.45	0
2025099	Middle Fork John Day Vegetation Mgmt	40.25	107.8
2025104	Isquuulktpe Watershed Project	1.4	0
2025105	Hood River Fish Habitat: Baldwin Creek Herbicides	5	0
2025107	Wind River Riparian Vegetation Mgmt	6.64	14.6
2025109	Lower Yakima Valley Riparian Wetlands Restoration	0	244.7

ESTUARINE HERBICIDE APPLICATIONS

2025 is the sixth official year of estuarine herbicide application. This process began in the spring of 2019, through technical assistance from Dr. Scott Hecht and Dr. Nancy Munn of NMFS to explore options for herbicide application within the Estuary using proposed HIP4 conservation measures and methodologies as a baseline action and then refining the treatment with respect to the various estuarine zones (high marsh, low marsh and tidal flat/aquatic bed). Specific guidance was developed based on the type of herbicide applied, method of application, rate of application, frequency of treatment, timing of treatments, and the location and acreage of treatment area.

During the exchange, information needs were relayed to evaluate the action and direct communication was opened with the sponsors CREST and Columbia Land Trust. Additional information was provided via site visits, and several herbicide application memos (HAM)s were drafted. The HAMs contained aerial site maps showing proposed activities and a Light Detection and Ranging (LIDAR) or another type of topographic map depicting site elevations.

This process is still being refined and will likely undergo changes in the future depending on workload and lessons learned.

The following three projects were implemented in 2025:

1. Columbia Stock Ranch – Weed Treatment (HIP No. 2025029)

Project activities for 2025 included the fourth year of native plant maintenance and weed control in a high marsh area at the Columbia Stock Ranch site near Deer Island, Oregon. Chemical applications of aquatic glyphosate were applied on two occasions at a rate of 8.0 to 11.2 ounces per acre and with use of Hi-Light® and Hasten® as adjuvants. Herbicide applications targeted reed canarygrass, Himalayan blackberry, and other noxious weeds to assist with plant survival in a 20-acre planting area. These actions are important to project success in terms of managing the property to recover ecological integrity and function to support Columbian white-tailed deer (*Odocoileus virginianus leucurus*) (CWTD), as well as support broader ecosystem function.

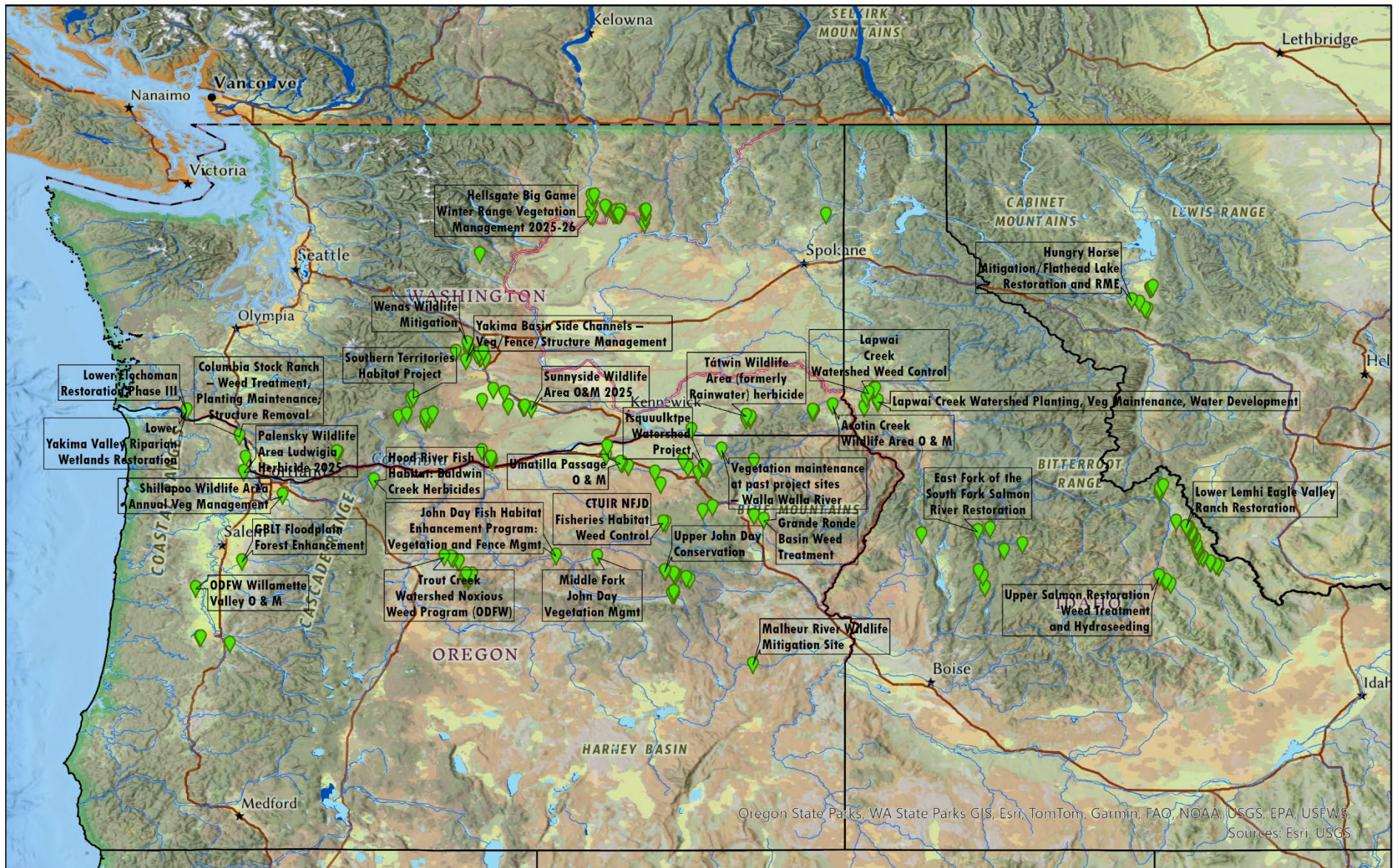
2. Lower Elochoman Phase III (HIP No. 2025044)

The Lower Elochoman Phase III Restoration Project site is located near Cathlamet in Wahkiakum County, Washington. Project activities for 2025 included plant maintenance and invasive weed management in 85 acres of high marsh buffer areas and upland areas, consistent with the approach approved and taken in 2023 and 2024. Chemical weed management targeted reed canarygrass, Japanese knotweed, Canada thistle, Armenian blackberry, and other weeds. An aquatic formulation of glyphosate was the primary herbicide used, with imazapyr applied in limited quantities at the margins of the high marsh areas to control Japanese knotweed, for which glyphosate is ineffective. The adjuvant Hasten® was used in the applications.

3. Palensky Wildlife Area Ludwigia Herbicide Treatment (HIP No. 2025088)

The fourth annual application of aquatic herbicide was applied in 2025 to control invasive creeping water primrose (*ludwigia*) at the J.R. Palensky Wildlife Area along Multnomah Channel in Multnomah County, Oregon. Specifically, ODFW applied aquatic glyphosate (Roundup Aquatic) with the adjuvant Agri-Dex® in Horseshoe Pond, which discharges to Multnomah Channel. ODFW has been treating this area since 2022, at which time nearly 10 acres of the 40-acre lake had been colonized by ludwigia. The expansion of the infestation has been slowed following the aquatic glyphosate applications in 2022-2024, but ludwigia has not been eliminated from the site. Two rounds of application were completed in 2025 in an attempt to fully remove the remaining patches of ludwigia and slow further colonization of other areas in the waterbody.

MAP 7: HERBICIDE APPLICATION



HIP REVIEW PROCESS (Engineering Technical Services)

Through the HIP Review process, BPA has been conducting thorough technical reviews of all medium and high-risk projects. These technical reviews are conducted by a licensed PE and sometimes involve several iterations of back-and-forth review junctures between the project sponsors. Functional review is done by BPA staff (EC Lead) who review the project for adherence to HIP4 criteria and coordinate information sharing and collaboration amongst project partners. Both reviews together constitute the HIP Review Process.

Project sponsors and other federal partners are actively engaged in the HIP Review process and are submitting projects early. BPA is receiving and reviewing projects that are to be implemented in 2027 and beyond.

TABLE 23: HIP REVIEW WORKLOAD

	CY16	CY17	CY18	CY19	CY20	CY21	CY22	CY23	CY24	CY25	CY26
Medium Risk	24	23	37	26	64	43	31	32	50	32	35
High Risk	3	5	14	6	25	11	10	11	29	12	13

FISH SCREENS

BPA funds several state fish screen programs for O&M actions within the John Day, Grande Ronde, Imnaha, Walla Walla, Umatilla, Deschutes, Willamette, and Hood river subbasins in Oregon, as well as in the Upper Salmon and Little Salmon River Basins in Idaho.

BPA collected PNFs and PCFs for a number of actions for both ODFW and IDFG fish screen programs. These included activities performed by ODFW & IDFG screen tenders such as the following:

- Replacement of gearboxes, gear motors, and bearings.
- Replacement of solar batteries and timers and installation of circuit breakers.
- Replacement of side and bottom seals.
- Repairs to paddlewheels.
- Removal of debris and sediment from structures.
- Debris and sediment piles removed or leveled.
- Installation of new weir boards.
- Repair pump screens as necessary
- Replacement of dam boards on fish passage structures.
- Replacement of system components within the current concrete structure including screens (screen cradle, stainless steel perforated plate, shaft, bearings, seals), gantries, walkways, handrails, trash racks, paddlewheels, drivelines, and gearboxes.

The above routine O&M activities are typically low-risk actions that are easily isolated from the water with no impact on streams.

BPA also funds fish new fish screen installations and full screen structure replacements. Depending on complexity and risk, these projects may undergo more extensive design review as part of the HIP review process, including review from BPA and NMFS engineering staff. The following projects constructed in 2025 included NMFS engineering review: HIP No. 2025047 (Lawrence Ditch Screen Installation); HIP No. 2025056 (Oregon Fish Screens: Catherine Creek and Lostine River), and HIP No. 2025083 (Oregon Fish Screens: Enterprise Ditch Exclusion Barrier).

Table 24 lists all fish screen construction and O&M projects implemented in 2025.

TABLE 24: FISH SCREEN PROJECTS

HIP4 NO#	Project Title	No# of Actions
2025003	Cascade at Coleman Creek Fish Passage and Screening	1
2025012	Upper Salmon Basin Fish Screens	1
2025013	Upper Salmon Basin Fish Screens O&M	281
2025014	Umatilla Passage O&M	5
2025035	Oregon Fish Screens: Fields Creek	9
2025047	Lawrence Ditch Screen Installation	1
2025048	Oregon Fish Screens O&M (Non-Recurring)	1,562

2025049	Oregon Fish Screens: Pump Screens and Screen Component Replacements	22
2025056	Oregon Fish Screens: Catherine Creek and Lostine River	2
2025083	Oregon Fish Screens: Enterprise Ditch Exclusion Barrier	1
2025085	Oregon Fish Screens: Pine Creek 1B	1

2025 was the eighth full year that HIP4 was used to cover actions associated with State Fish Screen Programs. BPA worked closely with State Fish Screen Programs to explore how they track the O&M actions throughout the basin. Initially, it was difficult to predict what specific actions were being taken and the potential impacts to listed species as a result; however, BPA established reporting requirements that included a list of typical actions taken, a list of specific action locations where maintenance was anticipated to occur, and a field form for specific actions that caused reportable impacts (turbidity exceedances and take of listed species).



Figure 38. 2025096: ODFW prefabricated fish screen at Badger Creek site.

MAP 8: 2025 HIP4 FISH SCREEN PROJECT LOCATIONS

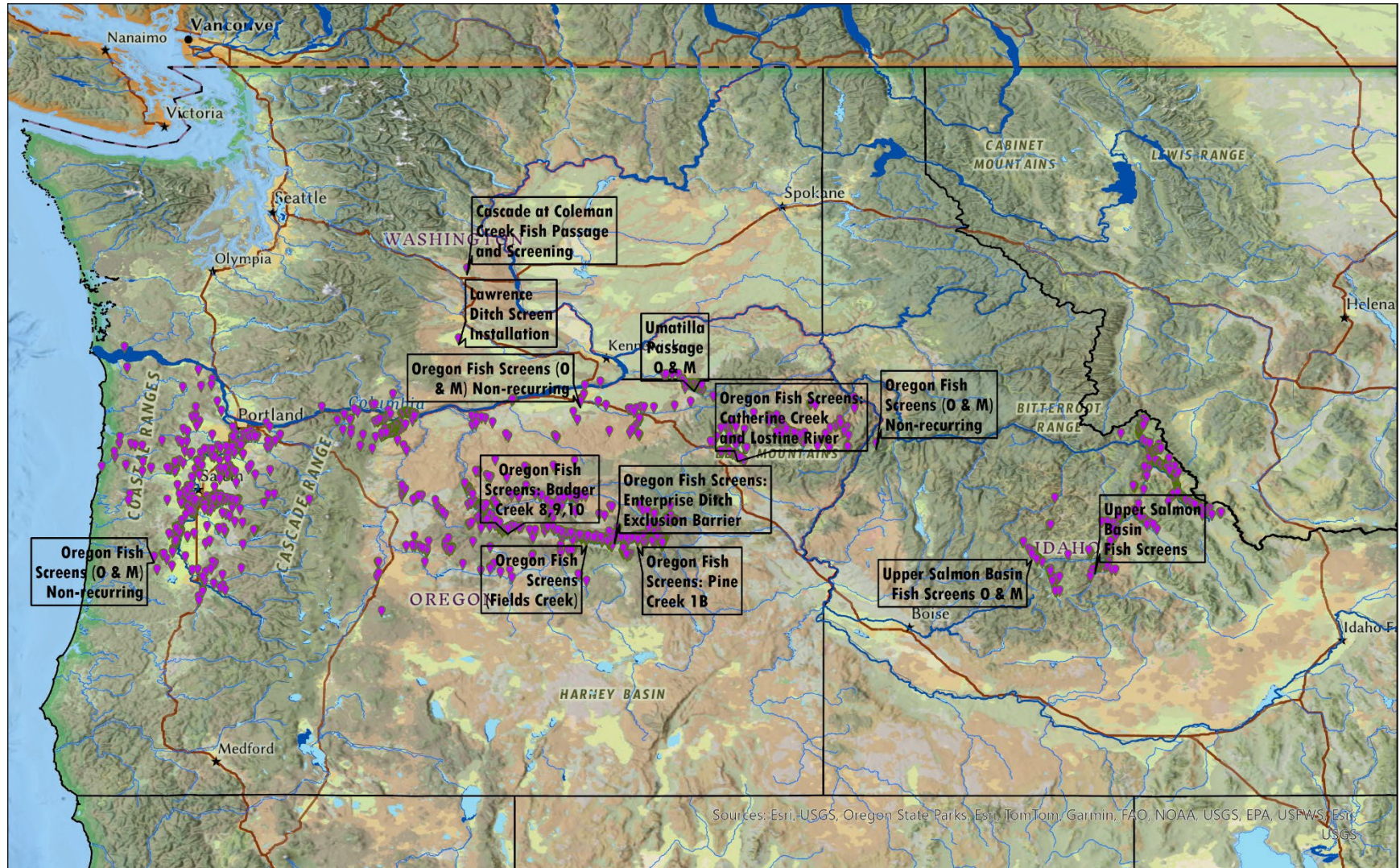




Figure 39. 2025012: Concrete for new IDFG fish screen in upper Salmon River basin.



Figure 40. 2025012: IDFG steel modular fish screen.

WILLAMETTE VALLEY WILDLIFE MITIGATION

Category 9e is a new activity category under the HIP 4, exclusively for the ODFW Willamette Wildlife Mitigation Program (WWMP). Operations, maintenance, and restoration activities on nine wildlife management areas (WMAs) are conducted by ODFW in the Willamette Valley. Most actions taken under this contract are for routine management and operations of the wildlife areas. The following 2025 project was covered under this activity category: **HIP No. 2025001 – ODFW Willamette Valley O&M.**

Previously these projects were covered by the programmatic biological opinion issued to USFWS, known as the Programmatic Restoration Opinion for Joint Ecosystem Conservation by the Services (PROJECTS), for restoration actions. However, since BPA is the primary funding agency, ESA coverage was transferred to the HIP. Since the program was already negotiated under PROJECTS, all conservation measures remained intact to ensure consistency and efficiency.

TABLE 25: WILLAMETTE VALLEY ACTIONS 2025

WMA	ESA-Listed Species USFWS	ESA-listed Species NMFS	HIP Activity Categories
Coyote Creek South (CCS)	Streaked horned lark Fender's blue butterfly Taylor's checkerspot Kincaid's lupine Willamette daisy	NA	Remove Vegetation Using Physical Controls (3a) Remove Vegetation Using Herbicides (3b) Prescribed Burning (3f) Plant Vegetation (9c)
Coyote Creek Northeast (CCNE)	Streaked horned lark Fender's blue butterfly Taylor's checkerspot butterfly Kincaid's lupine Willamette daisy	NA	Remove Vegetation Using Physical Controls (3a) Remove Vegetation Using Herbicides (3b) Plant Vegetation (9c)
Flight's End (FE)	Columbian white-tailed deer Yellow-billed cuckoo Bull trout Nelson's checker-mallow	Steelhead Chinook Coho salmon	Remove Vegetation Using Physical Controls (3a) Remove Vegetation Using Herbicides (3b) Plant Vegetation (9c)
Gail Achterman Wildlife Area (GAWA)	Northern spotted owl Yellow-billed cuckoo	Steelhead Chinook Coho salmon	Remove Vegetation Using Physical Controls (3a) Remove Vegetation Using Herbicides (3b) Plant Vegetation (9c)
Herbert Farm and Natural	Marbled murrelet Streaked horned lark Yellow-billed cuckoo Fender's blue butterfly	Steelhead Chinook Coho salmon	Remove Vegetation Using Physical Controls (3a) Remove Vegetation Using Herbicides (3b)

Area (HFNA)	Taylor's checkspot butterfly Kincaid's lupine Nelson's checkermallow Willamette daisy		Prescribed Burning (3f) Plant Vegetation (9c)
Palensky Wildlife Area (PWA)	Columbian white-tailed deer Streaked horned lark Yellow-billed cuckoo Bull trout Nelson's checker-mallow	Steelhead Chinook Coho salmon	Remove Vegetation Using Physical Controls (3a) Remove Vegetation Using Herbicides (3b) Plant Vegetation (9c)
Sorenson Meadows (SOR)	Northern spotted owl Streaked horned lark Taylor's checkerspot butterfly Nelson's checker-mallow	Steelhead Chinook salmon	Remove Vegetation Using Physical Controls (3a) Remove Vegetation Using Herbicides (3b) Plant Vegetation (9c)

Description of 2025 Activities

Vegetation Management Using Physical Controls (3a): Vegetation removal would be conducted on all WMAs using various mechanical and manual control methods like mowing, weed whacking, hand pulling, and cutting. Vegetation removal would be focused on controlling the growth of noxious and invasive weed species, particularly reed canarygrass, Himalayan blackberry, English ivy, and knotweed.

Vegetation Management Using Herbicides (3b): Vegetation removal would also be conducted on all WMAs using herbicides. Herbicides would be applied by either boom spraying or spot spraying with handheld wands and backpacks as appropriate.

Prescribed Burning (3f): Annual prescribed burning programs at HFNA and CCS would be continued. These are ongoing, phased programs to conduct controlled burns in order to clear noxious and invasive weed species and mimic natural prairie wildfire cycles. All burns would be conducted outside of bird nesting season and comport with local regulations.

Plant Vegetation (9c): ODFW would plant native vegetation in all areas treated for invasive and noxious weeds. This planting would be both seeding using hand or broadcast seeders and hand or mechanical planting of nursery-grown plants, as appropriate for each location. All planting sites would be monitored for regrowth of invasive species, as well as survival rates of new plantings, which would be fertilized, watered, and mulch as needed.

MAP 10: 2025 HIP4 WILLAMETTE VALLEY ACTIONS



