

# HABITAT IMPROVEMENT PROGRAM

## HIP4

### 2020 ANNUAL MONITORING REPORT

Bonneville  
POWER ADMINISTRATION



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## SUMMARY

This is first 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 summarizes activities completed in calendar year 2020 and summarizes reports on the incidental take resulting from those activities and compares them with previous years.

Annually, BPA and partners (sponsors) implement substantial habitat enhancement work in the Columbia River basin to improve tributary habitat as “offsite” mitigation for the impacts the federal hydrosystem and to help meet the Agencies’ obligations under the Endangered Species Act (ESA) by fulfilling commitments begun under the 2008 NMFS Federal Columbia River Power System BiOp (as supplemented in 2010 and 2014) (2008 BiOp) and ongoing commitments under the 2020 NMFS Columbia River System BiOp (2020 CRS BiOp). The 2008 BiOp called for identifying tributary habitat restoration projects and the 2020 CRS BiOp largely continues the tributary habitat restoration program.

Actions funded by Bonneville (BPA) are implemented through BPAs Habitat Strategy, which seeks to facilitate watershed-scale prioritization and planning efforts to identify priority work for fish habitat restoration. The program 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. The HIP is the primary means by which this habitat enhancement work gets reviewed, refined, and then covered under the ESA.

BPA has been successful in meeting incidental take criteria. The nature the restoration work often requires extensive swathes of exposed earth coming into contact with water. As a result, turbidity does not go within background levels within 2 hours. The number of BPA funded projects, scope and complexity remained consistent with previous years activities with the exception of herbicides. In addition to a diverse portfolio of projects, project quality assurance and quality control remain a priority. BPA continues to improve internal capacity to deliver high quality projects through optimizing and refining the HIP Review Process. After nearly 5 years of experience, the HIP Review process has become streamlined and standardized based upon receiving feedback, re-evaluating failures, and capitalizing upon successes.

Engineering Technical Services (ETS) continues to provide a thorough and detailed technical review of all medium and high risk projects. BPA EC leads are well trained in performing a separate functional review. NMFS habitat biologists continue to provide comments to high risk and medium risk projects. Through these multi layered detailed project reviews, BPA can now exercise a higher level of discretionary authority on the type and quality of projects that it funds and shape their outcome. The HIP4 Handbook continues to be refined and has been used as a tool to provide much needed clarifications, guidance and strives to reflect the current state of science on restoration standards and practice.

## HIP4 PROJECTS AUTHORIZED

During 2020, the HIP4 BOs authorized 89 projects (Table 1, 2, & 3) (FIGURE 1&2) each with 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 and a project consisting of multiple contracts over time.

In alignment with Bonneville’s contracting rules, projects are mainly reported on the contract level, occasional multiple contracts may be lumped together if they share the same sponsor & location. Figures 1 &2 are overlain with USFWS field office and NMFS branch jurisdictions. A majority were low risk (56), 24 were medium risk, and 8 were high risk. 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 the Service Habitat Biologists.

**TABLE 1: HIP4 PROJECT AUTHORIZATIONS (56 LOW RISK) 2020**

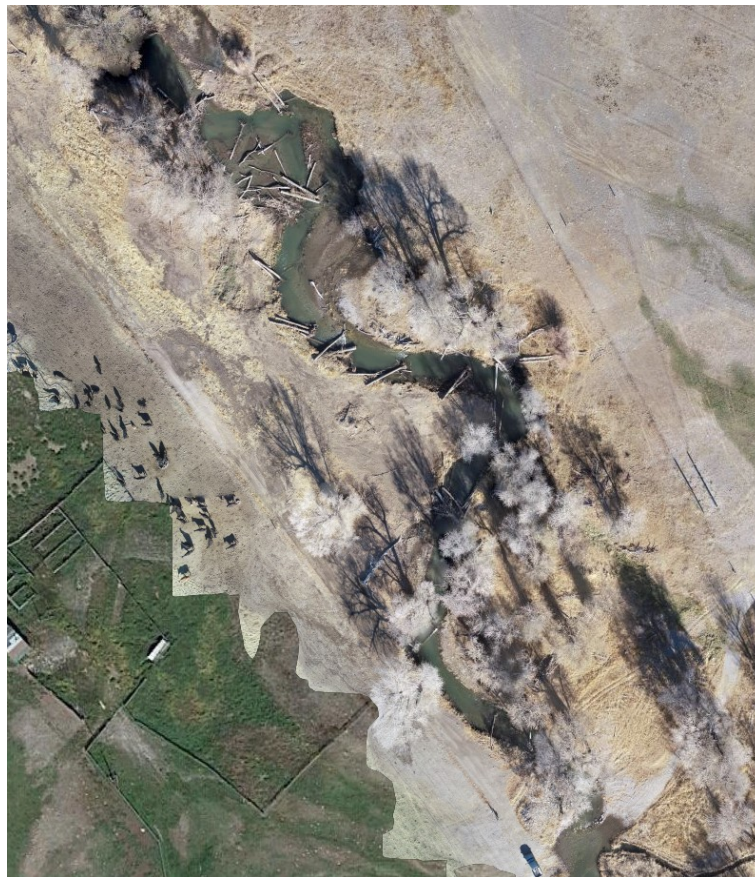
HIP4 NO#	Project Title	Habitat Branch	Field Office
2020001	Asotin Creek Wildlife Mitigation O & M 2020	N Snake	Spokane
2020002	Hungry Horse Mitigation Habitat Restoration and RM&E	NA	Helena
2020004	Asotin County Watershed Habitat Enhancement and Restoration I	S Snake	Spokane
2020005	Protect Shillapoo Wildlife Area	WA_LCR	NA
2020009	ODFW Fish Screens - Low Risk Projects I	CRB	La Grande
2020010	Bohannon Wellard Irrigation Project	S Snake	Chubbock
2020012	Lower Red River Meadow Planting	N Snake	Spokane
2020013	Snag Boat Bend Floodplain Reforestation	Willamette	Portland
2020014	NE Oregon Precious Lands Wildlife Area	S Snake	La Grande
2020018	ODFW Fish Screens - O & M	CRB	Portland
2020019	Upper John Day Conservation Lands Program	CRB	La Grande
2020022	Willamette Valley Wildlife Area - Sorenson	Willamette	Portland
2020023	Trout Creek Vegetation Improvement and Noxious Weed Program	CRB	Bend
2020025	Willamette Valley Wildlife Area - Gail Achterman Wildlife Area	Willamette	NA
2020027	Columbia Stock Ranch - Fence, Plantings & Maintenance	WA_LCR	Portland
2020028	Red Mill Stage 1	S Snake	La Grande
2020031	Willamette Valley Wildlife Area -- Flight's End	NA	Portland
2020036	Upper Salmon Fish Screen Operations and Maintenance	S Snake	Chubbock
2020037	Stowers - East Fork Potlatch Restoration	N Snake	NA
2020038	ODFW Fish Screens - O & M	CRB	Portland
2020039	Dammerman Meadow Restoration	N Snake	NA
2020044	Yakima Basin Side Channels - 2020 Veg Mgmt & Wood Replenishment	CRB	Wenatchee
2020045	Vegetation Planting and Structure Repair at Nora Creek	N Snake	NA
2020047	Fox Creek Hansen Adaptive Mgmt	CRB	NA
2020049	Hellsgate Big Game Winter Range	CRB	Wenatchee
2020051	Lemhi River Restoration Project Site Weed Treatments	S Snake	Chubbock
2020052	Pahsimeroi River Habitat	S Snake	Chubbock

HIP4 NO#	Project Title	Habitat Branch	Field Office
2020057	Champion Creek 1A Fish Screen and Diversion Construction	S Snake	Chubbock
2020058	Upper Tee Meadow Restoration Project	N Snake	NA
2020059	L-15, L-16/17 & L-58 Fish Screen	S Snake	Chubbock
2020063	Trout Creek O & M	CRB	NA
2020064	John Day Fish Habitat Enhancement Program: Fencing	CRB	LaGrande
2020068	City of Salem Minto Brown Park Veg MGMT	Willamette	Portland
2020075	Tualatin River National Wildlife Refuge	WA & LCR	Portland
2020076	Reynold's Creek Irrigation Efficiency	CRB	NA
2020078	Wenas Wildlife Area O&M	CRB	Wenatchee
2020079	Restoring Anadromous Fish Habitat in Lapwai Creek Watershed	N Snake	NA
2020081	Lolo/Selway Weed Treatment	N Snake	Boise
2020085	Riparian Plant Maintenance	CRB	NA
2020086	Bear Creek Juniper Treatment	CRB	NA
2020087	Oregon Fish Screens - Low Risk Projects II	CRB	La Grande
2020088	Pine Creek Conservation Area	CRB	Bend
2020090	Post Assisted Log Structure Projects	S Snake	Spokane
2020096	Hungry Horse Mitigation/Flathead Lake Restoration RME	NA	Helena
2020097	Lemhi Big Springs 05 Fish Screen Replacement	S Snake	Chubbock
2020098	Albeni Falls Wildlife Mitigation	NA	Spokane
2020099	Oregon Fish Screens - Low Risk Projects III	CRB	La Grande
2020100	East Fork of South Fork Salmon River Passage Restoration Project	N Snake	Boise
2020105	Yakima Basin Side Channels - Jungle and Indian Creek	CRB	Wenatchee
2020106	Malhuer River Wildlife Restoration Project	NA	La Grande
2020107	Logan Valley Wildlife Restoration Project	NA	La Grande
2020109	Umatilla Passage O & M	CRB	La Grande
2020110	Lapwai Creek Watershed Restoration	N Snake	NA
2020112	Iquultpe Watershed Project	CRB	NA
2020113	North Fork 7A Fish Screen Replacement	S Snake	Chubbock
2020114	Grande Ronde Umatilla Fish Habitat Improvement	S Snake	La Grande
2020115	Rainwater Wildlife Area	CRB	Spokane

**TABLE 2: HIP4 PROJECT AUTHORIZATIONS (24 MEDIUM RISK) 2020**

HIP4 NO#	Project Title	Habitat Branch	Field Office
2020006	John Day Tidal Restoration Project	WA_LCR	NA
2020007	West Sand Island Habitat Restoration - Phase II	WA_LCR	Portland
2020011	Lampson Side Channels Project	CRB	La Grande
2020015	Lower Garden Creek Culvert Removal	S Snake	Chubbock
2020021	Little Trout Creek Habitat Improvement Project	CRB	Bend
2020033	Elochoman 3 Restoration - Weed Treatment and Building Demolition	WA/LCR	Portland
2020034	Elochoman 2 Restoration - Weed Treatment Planting Earthwork	WA/LCR	Portland
2020035	Columbia Stock Ranch - Weed Treatment	WA/LCR	Portland
2020041	Bowers Rock Floodplain Connection	Willamette	NA
2020042	Cooke Creek Fish Screening and Passage Project	CRB	Wenatchee
2020043	Piscoe Creek Culvert Replacement Project	CRB	NA

HIP4 NO#	Project Title	Habitat Branch	Field Office
2020053	North Fork Touchet (Warren)	CRB	Spokane
2020054	Luckiamute!	Willamette	NA
2020055	Duck Creek Habitat Improvement	S Snake	Chubbock
2020061	Indian Creek Section 16 & Taneum Cedar Meadow Floodplain	CRB	Wenatchee
2020065	Pahsimeroi River Habitat - Lower Page	S Snake	Chubbock
2020067	Oregon Fish Screens - ODFW Med Risk Projects	CRB	La Grande
2020069	Eightmile Creek Large Wood Restoration	S Snake	Spokane
2020073	Tucannon PA28.1 PHASE 1	N Snake	Spokane
2020077	North Fork Teanaway Large Wood Trapping	CRB	Wenatchee
2020080	Tucannon River Large Wood Placement	N Snake	Spokane
2020089	Cottonwood Creek Barrier Removal	S Snake	Spokane
2020101	Coleman Creek Fish Passage, Screening & Habitat Restoration	CRB	Wenatchee
2020103	Vinegar to Vincent Fish Habitat Improvement Project Phase 1	CRB	NA



2020065 (Lower Page) Project Reach



**2020103 (Vincent to Vinegar) Before**



**2020103 (Vincent to Vinegar) After**



FIGURE 1: 2020 MED-LOW RISK HIP4 PROJECT LOCATIONS (NMFS)

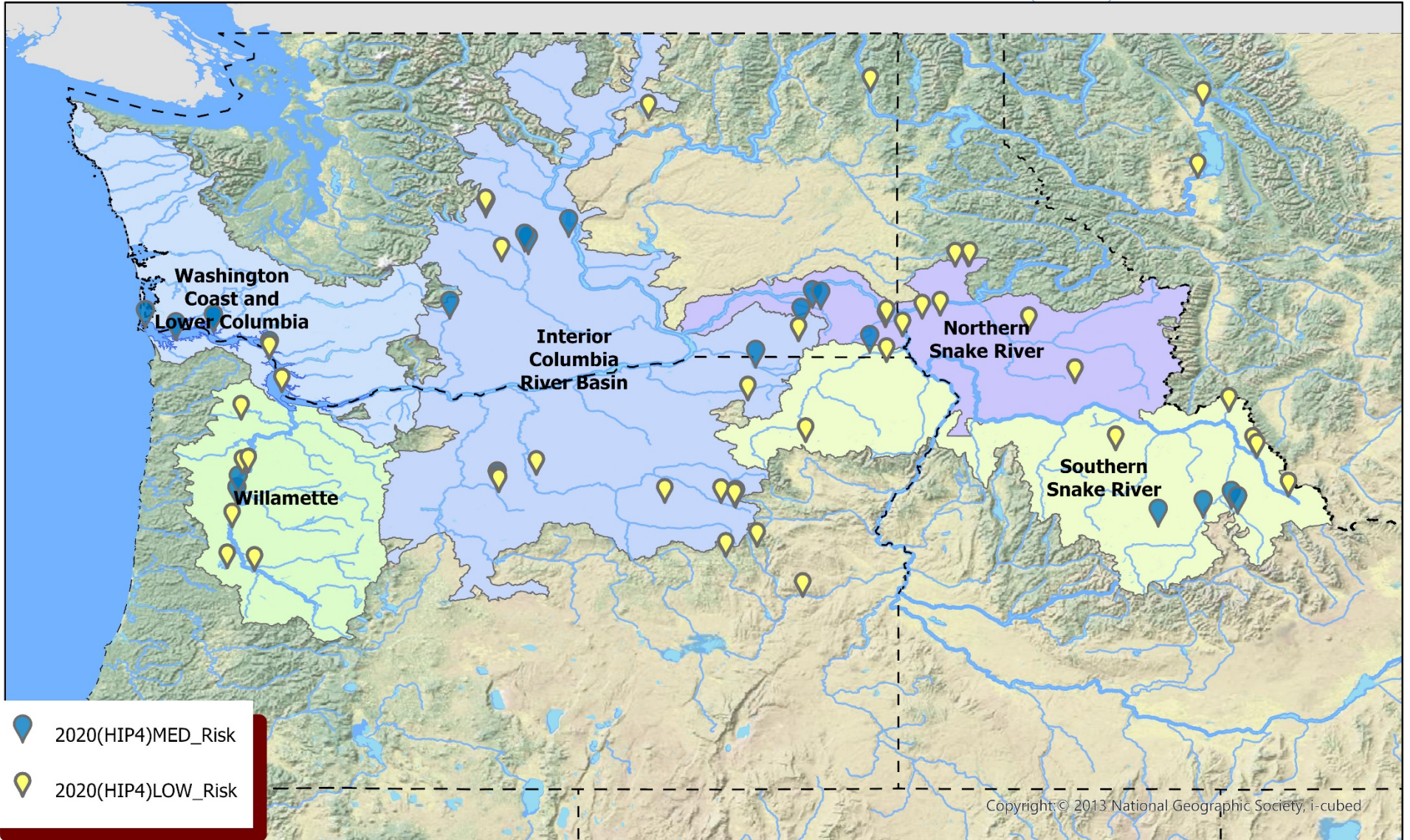
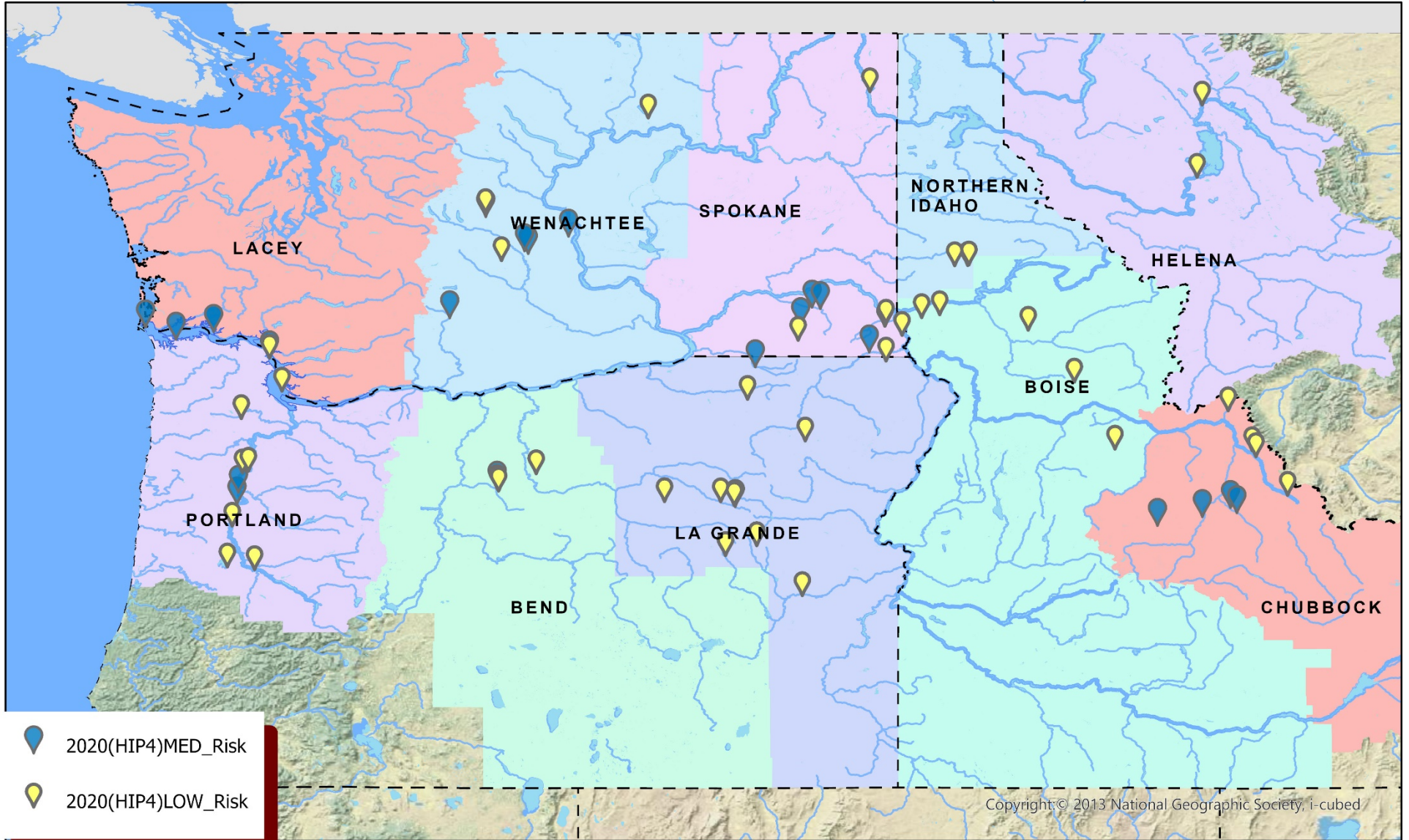


FIGURE 2: 2020 MED-LOW HIP4 PROJECT LOCATIONS (USFWS)





**2020011 (Lampson Side Channel) Before**



**2020011 (Lampson Side Channel) After**



**202011 (Lampson Side Channel) Before**



**202011 (Lampson Side Channel) After**

## HIGH RISK PROJECT SHOWCASE:

These projects are BPA’s most significant achievements towards salmon restoration in 2020 (Table 3). Most of them are a continuation of previous years contracts that were designed and approved in previous years. These are complex projects that require extensive collaboration, funding, design and planning. Locations of this projects are shown in Figure (3 & 4). All of these projects were considered high risk and involved both USFWS and NMFS interagency review and final approval. While BPA was the funding entity and provided extensive technical assistance, the project sponsors were essential in creating and maintaining landowner relationships and negotiations.

**TABLE 3: HIGH RISK PROJECTS**

HIP4 NO#	SPONSOR	PROJECT	DESCRIPTION
2020017	Trout Unlimited	Yankee Fork Bonanza Floodplain Reconnection Project	Continuation of removal of dredge tailings, construction of new channel, additions of floodplain wood and follow up vegetation plantings.
2020032	CTUIR, BOR, USFS	Longley Meadows Fish Habitat Improvement Project	Phase 1: Continuation from BirdTrack Springs in Grande Ronde River. levee removal, channel creation, 200 wood structures and bank treatments.
2020046	Methow Salmon Recovery Foundation	M2 Barkley Bear Habitat Improvement Project	Large scale habitat restoration project, moving diversion location downstream 3.5 miles and construction of habitat features throughout the Lower Methow River.
2020070	CTUIR	Granite Creek	Placer mining affected reach. Stream channel remanders, side channel development, floodplain grading, 14 constructed riffles, 0.6 miles of developed side channel, >190 LWD features.
2020071	IDFG	Middle Lemhi River Henry Reach	Realignment of the mainstem Lemhi river to increase sinuosity and reduce slope and energy within the channel by extending 0.5 miles it out into an adjacent pasture.
2020074	BPA, BOR, USFWS	Stiegerwald Floodplain Restoration Project	Largest project attempted on LCR, more than \$25 million. 7 year preparation. Removing 2.25 miles of levee, floodplain reconnection, herbicides.
2020092	CTUIR	Umatilla Anadromous Fish – Bonifer Floodplain Restoration	Phase4, Continuation from 2017, 1 mile of Meacham Creek, channel reconstruction, BDAs and floodplain reshaping.
2020094	Lemhi Regional Land Trust	Lemhi River Big Spring Confluence III & L58 Fish Screens	Phase III Construction on Phase II includes 0.54 miles of the Lemhi River and 1.27 miles of Big Springs. Creation of side channels, islands, and inset floodplain areas to increase margin habitat and riparian areas.



**2020044 (Yakima Basin) Wood Placements Winter**



**2020044 (Yakima Basin) Wood Placements Summer**

**Table 4: Yankee Fork Bonanza Floodplain Restoration High Risk Project**

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES
2020017	Trout Unlimited	Salmon River	<ul style="list-style-type: none"> <li>• Improve 2ndary Channel and Wetland Habitats</li> <li>• Install habitat forming structures</li> <li>• Riparian Vegetation Planting</li> <li>• Channel Reconstruction</li> </ul>
Fish Capture	968 captured 48 killed 95 (Bull Trout)		

**Description:**

Fish habitat in the Yankee Fork of the Salmon River near Bonanza Idaho has been drastically altered from mining activities and dredging in the 1940s. These activities obliterated the Yankee Fork stream channel and eliminated or substantially reduced the floodplain. The new channel that formed is trapped between the dredge tailings and the valley hillside, where it is unable to reestablish a natural meander pattern or interact with the floodplain.

During 2018, Phase I of this project consisted of the removal of dredge tailings to form a floodplain. 2019 Phase II of this project consisted of the construction of new meandering channel segments within that flood-plain. Phase III, which was completed this year in 2020 included bypassing water from the current channel into a series of bypasses and portions of the newly created channel segments, connecting the channel segments with the existing main channel, and introducing water into the newly created channel.

**Primary project features:**

- Replacement of 3,150 feet of plain-bed channel with 3,850 feet of functional channel containing riffles, runs, and six large pools.
- Addition of large and small wood habitat structures was added to the channel throughout its length.
- Three landslide jams were created to help the river move naturally within its floodplain.
- Creation of over 5,835 feet of side-channels, complete with pools, riffles, wood habitat.
- Creation of 12 relict beaver dams.
- The increase of 21.4 acres of Floodplain throughout the project area.



**Bonanza City Floodplain Restoration. Before any work (Top Left), end of phase 1 (Top Right). End of phase 2, middle left, during phase III bottom left, artist rendering after 10 years (Bottom right).**



**Table 5: Longley Meadows High Risk Project**

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES
2020032	CTUIR, BOR, USFS	Grande Ronde River	<ul style="list-style-type: none"> <li>• Improve 2ndary Channel and Wetland Habitats</li> <li>• Set Back or Removal of Berms, Dikes, Levees</li> <li>• Bioengineered Streambanks</li> <li>• Install habitat forming structures</li> <li>• Riparian Vegetation Planting</li> <li>• Channel Reconstruction</li> <li>• Herbicides</li> <li>• Road Decommissioning</li> <li>• Fencing for Livestock Control</li> </ul>
Fish Capture	33 captured 1killed		

**Description:**

Year 1 of The Longley Meadows Project along a 1.5 mile reach of the Grande Ronde River. The project includes construction of habitat features designed to provide and improve rearing habitat for target species. The first year of the project involved bypassing flow, isolation, and dewatering to construct large wood structures and to grade portions of the active main channel.

**Primary project features:**

- Construction of riffles that mimic natural features.
- Construction of gravel bar and channel bank features.
- Placement and compaction of native fill material.
- Construction of a network of side channels and connections to existing off-channel features including swales, remnant channel scars, and low areas to create side channels and ponds.
- The construction of meander jams, channel-spanning jams, apex jams and small wood placement.
- The construction of beaver dams, channel margin jams, and deflector jams.
- Placement of individual large wood habitat pieces (e.g., sweepers, floodplain roughness);
- Bioengineered bank treatments; and creation and enhancement of alcoves and oxbows.



**2020032 (Longley Meadows) Temporary Bridge Placement**



**2020032 (Longley Meadows) Cofferdam and Silt Fence**

**Table 6: M2 Barkley Bear High Risk Project**

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES
2020046	Methow Salmon Recovery Foundation	Lower Middle Methow River	<ul style="list-style-type: none"> <li>• Improve 2ndary Channel and Wetland Habitats</li> <li>• Set Back or Removal of Berms, Dikes, Levees</li> <li>• Bioengineered Streambanks</li> <li>• Install habitat forming structures</li> <li>• Riparian Vegetation Planting</li> <li>• Channel Reconstruction</li> </ul>
Fish Capture	30 captured 3 killed		

**Description:**

The M2 Barkley Bear Project removed rip-rap bank armoring and a concrete head gate at the Barkley Canal point of diversion. The project also includes construction of habitat features designed to provide and improve rearing habitat for target species. This project will be constructed using heavy equipment including tracked excavators, dump trucks, and loaders. Riparian re-vegetation and monitoring efforts will be conducted using a mixture of light construction equipment and hand tools.

**Primary project features:**

- Construction of a new inlet channel paired with an apex logjam to increase the sustainability of the existing and reconnected side channels
- Removal of the concrete and steel Barkley headgate and conversion of the existing intake canal to a side channel feature to increase floodplain connectivity–
- The building of 4 engineered logjams to increase channel complexity in the existing island side channel.
- Construction of multiple small log structures to promote channel development and add help define the island flow path.
- Restoration of a perennial connection between Bear Creek and the Methow River by removing the fish screen and associated infrastructure, filling a portion of the Barkley Canal, and constructing a new outlet channel.
- The building of an engineered logjam in the main stem Methow to increase instream complexity near the outlet of Bear Creek.
- Planting of approximately 3 acres of previously cleared areas with native riparian trees and shrubs to restore a functional riparian forest buffer.
- Removal of 650 feet +/- of riprap on the left bank of the Methow River to increase floodplain connectivity.



**2020046 (M2 Barkley Bear) Driving Piles for Engineered Log Jam**



**2020046 (M2 Barkley Bear) Constructing Side Channel Engineered Log Jam**



**2020046 (M2 Barkley Bear) Constructing Side Channel Engineered Log Jam**



**2020046 (M2 Barkley Bear) Newly Constructed Side Channel sediment control**

**Table 7: North Fork John Day River Granite Creek High Risk Project**

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES
2020070	CTUIR	North Fork John Day River: Granite Creek	<ul style="list-style-type: none"> <li>• Improve 2ndary Channel and Wetland Habitats</li> <li>• Bioengineered Streambanks</li> <li>• Install habitat forming structures</li> <li>• Riparian Vegetation Planting</li> <li>• Channel Reconstruction</li> <li>• Herbicides</li> <li>• Fisheries Surveys</li> </ul>
Fish Capture	778 captured 12 killed		

**Description:**

Past placer mining restricted Granite Creek to a narrow corridor and largely removed any potential for distributing stream energy across historic floodplain areas. These changes will distribute high flow energy across the floodplain thereby increasing the presence and durability of habitats used by ESA-listed species. At this time, a little less than half the design had been completed. The project was winterized with appropriate BMP’s to allow for snowmelt and spring runoff. Remaining channel developments, large wood placements, and plantings will occur in 2022.

**Primary project features:**

- Creation of 2 of 3 meander bends and existing channel filled.
- Extensive floodplain grading, and LWD/rock feature development.
- Creation of 14 constructed riffles.
- Development of 0.6 miles side channel.
- Placement of >190 LWD features to increase instream and floodplain complexity and habitat frequency.
- Development of 3.1 miles of riparian fencing to restrict cattle access to sensitive stream channel, floodplain, and wetland habitats along Starveout Creek.



**20200070 (Granite Creek) Post Phase 1 Construction**



**20200070 (Granite Creek) Post Phase 1 Construction downstream**

**Table 8: Middle Lemhi River Henry Reach High Risk Project**

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES
2020071	IDFG	Middle Lemhi River	<ul style="list-style-type: none"> <li>• Consolidate or Replace Irrigation Diversions</li> <li>• Installation of Fords</li> <li>• Improve 2ndary Channel and Wetland Habitats</li> <li>• Install habitat forming structures</li> <li>• Riparian Vegetation Planting</li> <li>• Channel Reconstruction</li> <li>• Herbicides</li> </ul>
Fish Capture	NA		

**Description:**

The goal of the Middle Lemhi River Henry Reach project is to expand approximately 0.50 miles of the Lemhi River into more of a natural floodplain while restoring natural river processes and function. The property is well suited to meeting the project goals and objectives. The landowner is allowing development of the entire river bottom portion of his property, with the exception of his house located near Highway 28. The surface water and bank elevations are very conducive to developing a floodplain in a cost efficient manner. A highly functional riparian zone currently exists that is being incorporated into the project, and there are multiple springs that are being developed for summer fish rearing and overwintering.

**Project objectives include:**

- Construction of multiple side channels to provide additional complex lateral habitat.
- Realignment of the mainstem river to add 1000 ft of wetted channel to increase sinuosity and reduce slope and energy within the channel by extending it out into an adjacent pasture.
- Relocation of the L36/37 diversion.
- Placement of bleeder log jams to manage flow into channels, and provide floodplain inundation will be constructed in side channels.
- Bank jam constructions to provide roughness for fish, and promote scour and deposition to increase channel complexity.
- Construction of several alcoves.
- Construction of riffle grade control structures to raise surface water height so that lateral channels and floodplain habitats will be more effectively inundated with flow.



**Table 9: Stiegerwald Floodplain Restoration High Risk Project**

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES
2020074	BPA, BOR, USFWS	Lower Columbia River (Gibbons Creek)	<ul style="list-style-type: none"> <li>• Dams, water control or legacy structure removal</li> <li>• Headcut and Grade Stabilization</li> <li>• Bridge and Culvert removal or replacement</li> <li>• Set back of berms, dikes, levees</li> <li>• Bioengineered Streambanks</li> <li>• Install habitat forming structures</li> <li>• Riparian Vegetation Planting</li> <li>• Channel Reconstruction</li> <li>• Herbicides</li> </ul>
Fish Capture	378 captured 10 killed		

**Description:**

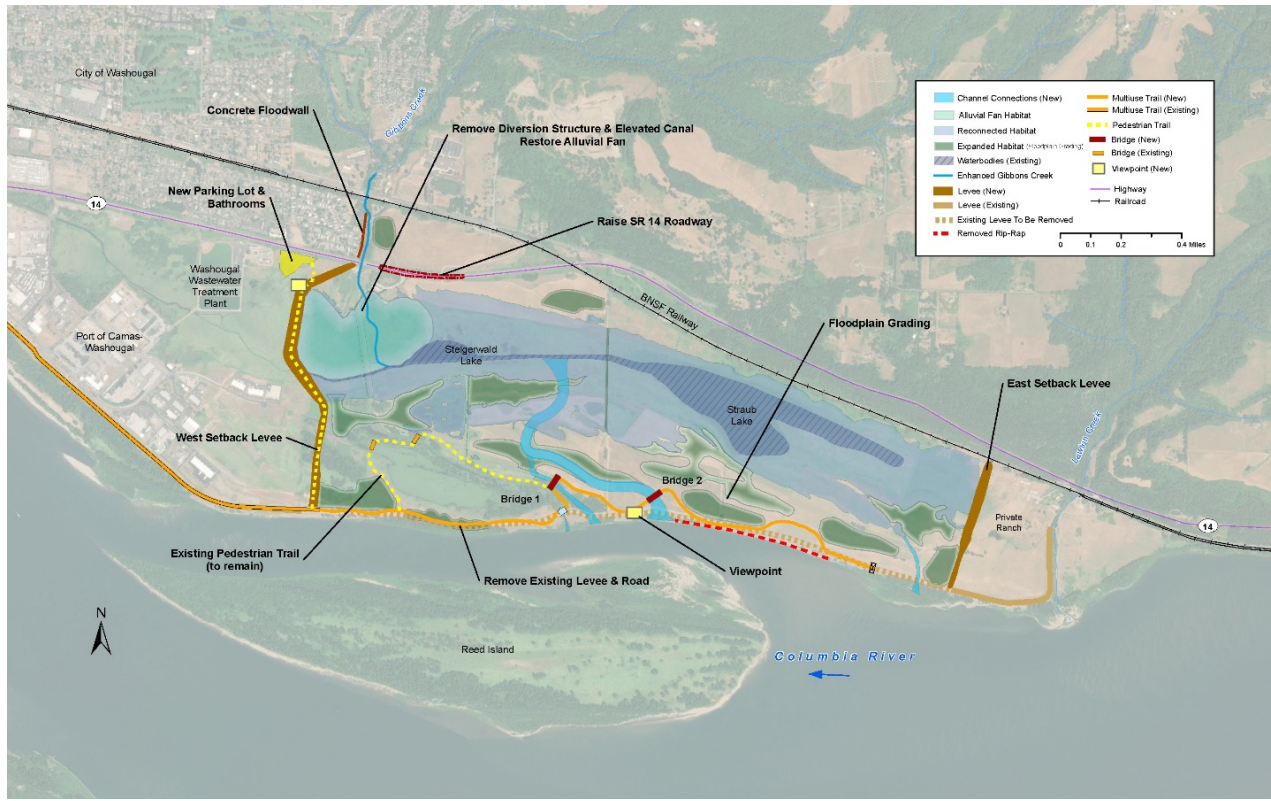
A multi-year, \$25 million dollar restoration project, that took seven years of planning. It involves the restoration of the approximately 1,000 acre project site will be achieved by removing 2.2 miles of existing Columbia River levee and constructing channels between the Refuge and the river, as well as restoring Gibbons Creek and its alluvial fan. New setback levees will be constructed at the east and west extents of the project to maintain flood protection for the Port and other adjacent properties and infrastructure. The project proposes to reforest 199.5 acres of the floodplain to restore the site as close as practical to its historic condition.

**Project objectives included:**

- Removed a 20,000 CY embankment to reconnect Gibbons Creek to adjacent floodplain and excavated and seeded expanded habitat areas.
- Construction of setback levee, a 290,000 CY embankment.
- Installed 14 instream wood habitat structures constructed from 72 individual logs.
- Planted approximately 6,400 bare root plants and 2000 live stakes along Gibbons Creek.
- Realigned approximately 800 linear ft of Gibbons Creek.
- Physically removed 0.25 acres bamboo and approximately 1.4 acres English Ivy.

**Link to Press Release:**

<https://www.columbian.com/news/2020/may/30/habitat-restoration-project-set-at-steigerwald-lake-national-wildlife-refuge/>



2020074 (Stiegerwald) Site Plan



2020074 (Stiegerwald) Aerial View South of Gibbons Creek before realignment and excavation



**2020074 (Stiegerwald) Aerial View South of Gibbons Creek after realignment and excavation**



**2020074 (Stiegerwald) Aerial View South of Gibbons Creek after realignment and excavation**

**Table 10: Umatilla Anadromous Fish Habitat High Risk Project**

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES
2020092	CTUIR	Meacham Creek & Big Springs Creek	<ul style="list-style-type: none"> <li>• Bridge and Culvert Maintenance</li> <li>• Improve 2ndary Channel and Wetland Habitats</li> <li>• Set back of berms, dikes, levees</li> <li>• Bioengineered Streambanks</li> <li>• Install habitat forming structures</li> <li>• Riparian Vegetation Planting</li> <li>• Channel Reconstruction</li> <li>• Herbicides</li> </ul>
Fish Capture	26 (Captured)		

**Description:**

This restoration project is in Phase 4, a continuation from 2017. The completed instream habitat restoration included 1.27 miles of Big Springs Creek and 1 linear mile of Meacham Creek. Previous phases involved the placement of large woody debris (LWD), constructed riffle features and boulder placements. It also included improving complexity by creation of pools or fish spawning habitat by addition of gravel, reconnection of historical channels, excavation of new channels. Channel modifications are intended to create habitats (pools, riffles, glides and runs) while retaining characteristic features and forms over time.

**Project objectives included:**

- The removal, breaching, lowering, and/or relocation/set -back of artificial levees or dikes adjacent to streams and estuaries for the purpose of floodplain, riparian habitat improvements.
- Installation of 39 log jams, 18 individual logs and about 50 boulders throughout the reach.
- Reconnection of historical channels.
- Removal of and reinstallation of diversion.
- Fence installation for livestock control.
- 1.82 miles of additional riparian streambank creation.
- Creation of 8 acres of floodplain.
- Maintenance of planted or pre-existing vegetation through physical, chemical, mechanical, and/or biological activities such as scalping, installing mats or mulch, mowing, irrigating, fertilizing.



**2020092 (Umatilla Anadromous Fish) Log Jam Installation**

**Table 11: Lemhi River Big Springs Confluence Phase III High Risk Project**

HIP4 NO#	SPONSOR	LOCATION	HIP CATEGORIES
2020094	Lemhi Regional Land Trust	Lemhi River	<ul style="list-style-type: none"> <li>• Bioengineered Streambanks</li> <li>• Install habitat forming structures</li> <li>• Riparian Vegetation Planting</li> <li>• Channel Reconstruction</li> <li>• Fencing for livestock control</li> </ul>
Fish Capture	31 Captured		

**Description:**

This is Phase III of a restoration project that involves 0.91 miles of the Lemhi River on the confluence of the Lemhi River and Big Springs Creek. Many sections of the Lemhi River are lacking riparian habitat, are over-straightened, and over widened. Project goals were to improve bank, channel, and riparian conditions to address shade and habitat in areas where existing channel geometry and riparian vegetation was impaired, through bank stabilization, channel fill to create meanders and narrow banks, and island creation to promote in-stream habitat creation in subsequent phases. Construction on Phase I began in summer 2018, phase II in 2019 and phase III was completed in 2020.

**Project objectives included:**

- Creation of scour pools created by scour and approximately 20 LWD structures placed instream, with 500 yards of SWD slash and racking material.
- 1.82 miles of streambank riparian treatments.
- Creation of 8 acres of floodplain.
- Riparian treatments included 2.54 miles of streambank.
- Removal of and reinstallation of L58 diversion.
- Fence installation for livestock control.



**2020094 (Lemhi River Big Springs Confluence) During**



**2020094 (Lemhi River Big Springs Confluence) After**

FIGURE 3: 2020 HIGH RISK PROJECT LOCATIONS (NMFS)

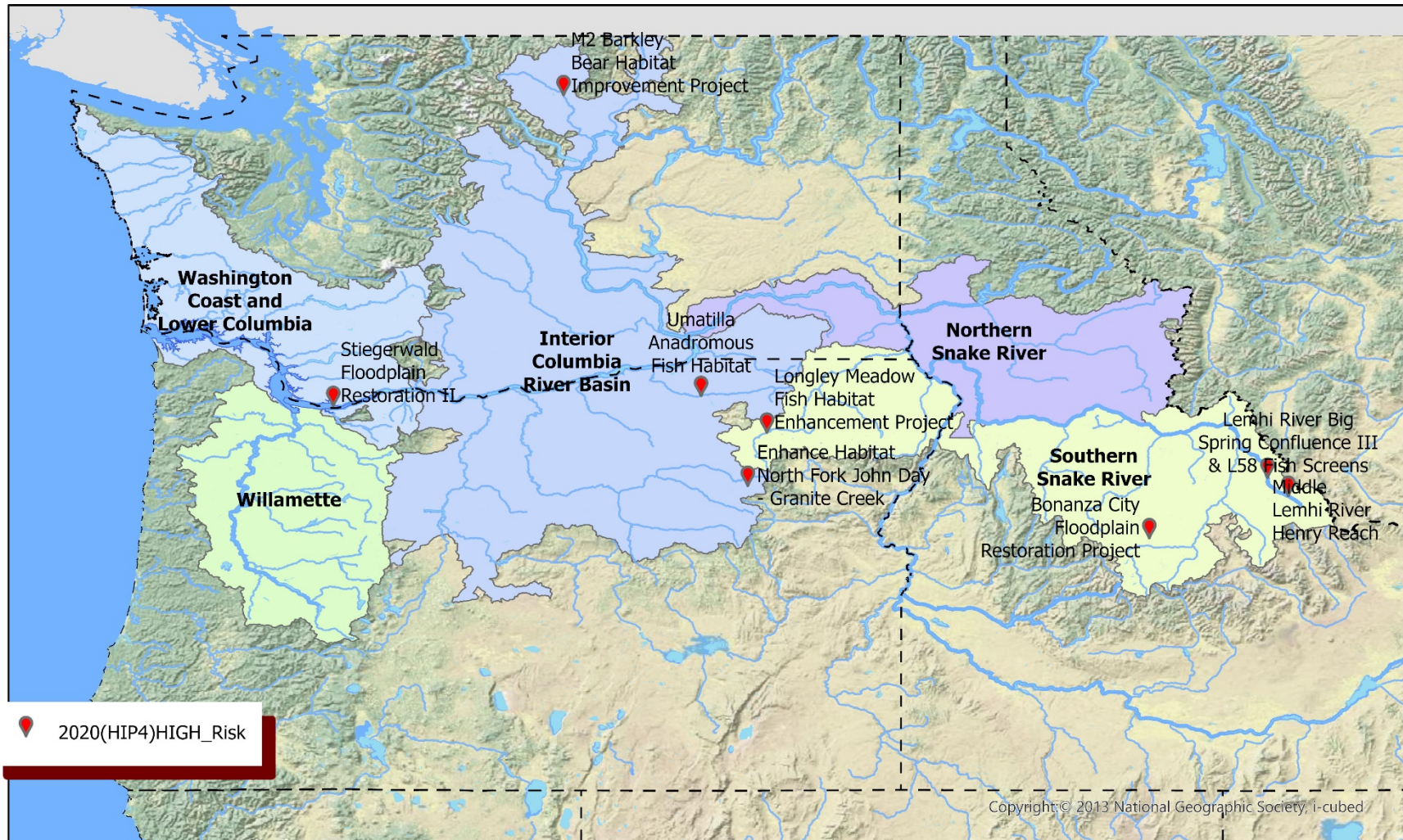
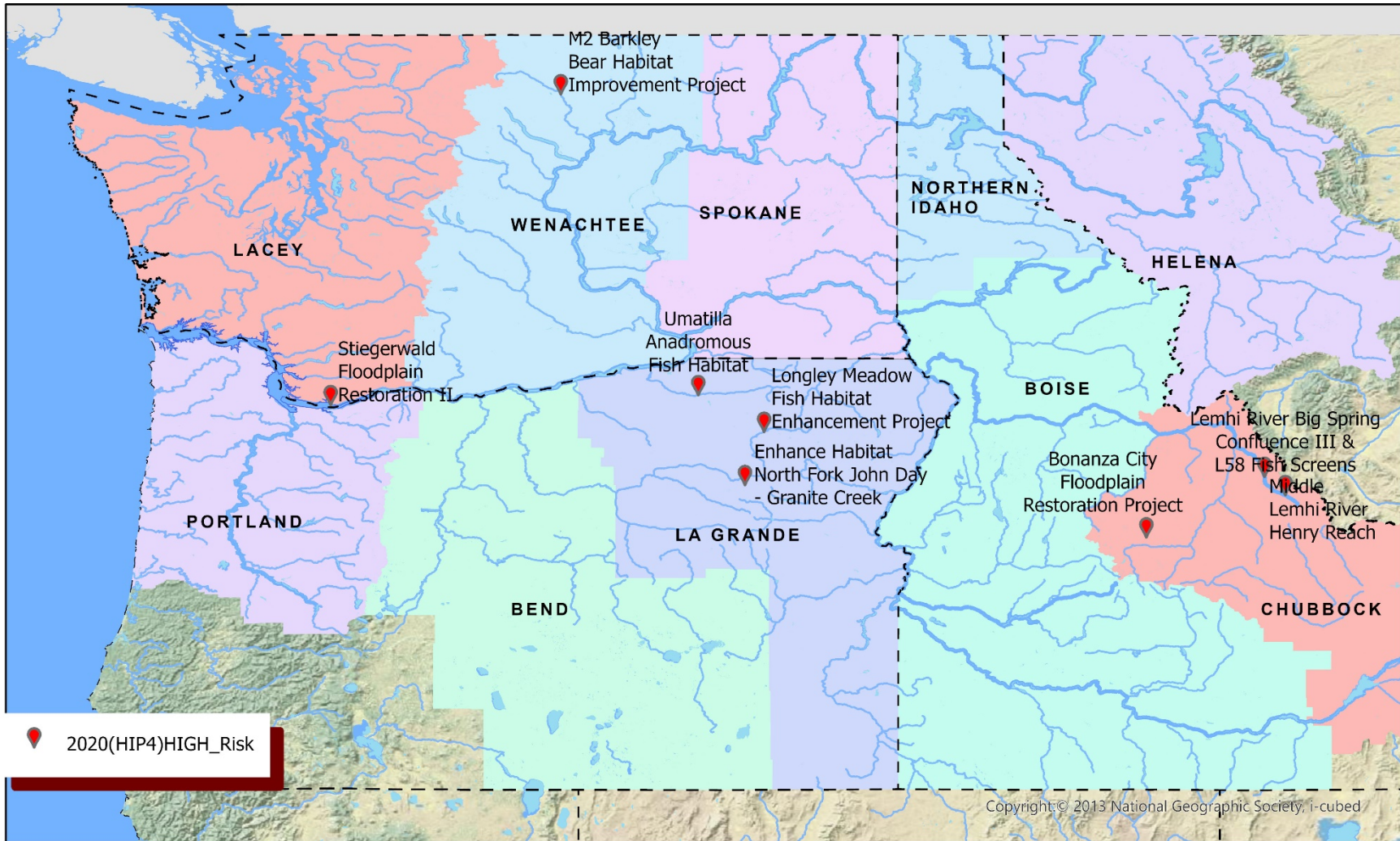




FIGURE 4: 2020 HIGH RISK PROJECT LOCATIONS (USFWS)





**2020069 (Eightmile Creek) Reach A Before**



**2020069 (Eightmile Creek) Reach A After**



**2020069 (Eightmile Creek) Reach B Before**



**2020069 (Eightmile Creek) Reach B After**

## ACTIVITY CATEGORIES

Within each individual project there are a variable amount of activity categories. BPA generally lumps each set of activity categories by contract which typically share location, project and project sponsor, with the exception of herbicides, fish screens, surveys, and O&M activities which could have multiple locations lumped by program. The activity categories in orange are new and are a recent development of HIP4. The activity categories in red represent deviations from the mean, in these cases significant increases.

**TABLE 12: ACTIVITY CATEGORY SUMMARY**

Category	Subcategory	6-year Average	2020 Totals
<b>1. Fish Passage Restoration</b>			
	a. Dams, Water Control or Legacy Structure Removal.	4	5
	b. Consolidate, or Replace Existing Irrigation Diversions.	3	5
	c. Headcut and Grade Stabilization.	7	6
	d. Low Flow Consolidation.	0	0
	e. Providing Fish Passage at an Existing Facility.	4	3
	f. Bridge and Culvert Removal or Replacement.	8	10
	g. Bridge and Culvert Maintenance.	1	2
	h. Installation of Fords.	1	4
<b>2. River, Stream, Floodplain, and Wetland Restoration.</b>			
	a. Improve Secondary Channel and Wetland Habitats.	15	25
	b. Set-back or Removal of Existing, Berms, Dikes, and Levees.	8	15
	c. Protect Streambanks Using Bioengineering Methods.	9	12
	d. Install Habitat-Forming Instream Structures (Large Small Wood, Boulders	24	30
	e. Riparian Vegetation Planting.	37	49
	f. Channel Reconstruction.	6	12
	g. Sediment and Gravel	NA	4
<b>3. Invasive and Non-Native Plant Control.</b>			
	a. Manage Vegetation using Physical Controls.	31	40
	b. Manage Vegetation using Herbicides (Riverine)	36	40
	c. Manage Vegetation using Herbicides (Estuary)	NA	5
	d. Manage Vegetation using Herbicides (Willamette)	NA	0
	e. Juniper Burning	NA	1
	f. Prescribed Burning	NA	2
<b>4. Piling Removal.</b>			
	Pile Removal	1	0
<b>5. Road and Trail Erosion Control, Maintenance, and Decommissioning.</b>			
	a. Maintain Roads.	4	10
	b. Decommission Roads.	2	1
<b>6. In-channel Nutrient Enhancement.</b>			
	Nutrient Enhancement.	0	1

<b>7. Irrigation and Water Delivery/Management Actions.</b>			
	a. Convert Delivery System to Drip or Sprinkler Irrigation.	2	2
	b. Convert Water Conveyance from Open Ditch to Pipeline or Line Leaking	2	4
	c. Convert from Instream Diversions to Groundwater Wells for Primary Water	0	0
	d. Install or Replace Return Flow Cooling Systems.	0	1
	e. Install Irrigation Water Siphon Beneath Waterway.	1	1
	f. Livestock Watering Facilities.	4	2
	g. Install New or Upgrade/Maintain Existing Fish Screens.	753*	1059
<b>8. Fisheries, Hydrologic, and Geomorphologic Surveys.</b>			
	Surveys	20	6
<b>9. Special Actions (for Terrestrial Species).</b>			
	a. Install/develop Wildlife Structures.	1	4
	b. Fencing construction for Livestock Control	9	15
	c. Plant Vegetation.	10	12
	d. Tree Removal for LW Projects.	3	23
	e. Willamette Valley Prairie Restoration	NA	7



2020069 (Eightmile Creek) Nutrient Enhancement



**2020037 (Stowers East Fork Potlatch Restoration) Catcher's Mitt**



**2020061 (Indian Creek Wood Placement)**



**2020065 (Lower Page) Channel Spanning BDAs**



**2020065 (Lower Page) Log Structures**

## INCIDENTAL TAKE REPORTING

In the HIP4 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 (6000 juveniles in the Interior Recovery Domain, 1500 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). In 2020

**TABLE 13: INCIDENTAL TAKE DUE TO FISH HANDLING (NMFS)**

Pacific Salmon and Steelhead		
	Capture	Mortality
<b>2014</b>	3593	8
<b>2015</b>	3541	59
<b>2016</b>	2435	130
<b>2017</b>	2446	78
<b>2018</b>	3282	189
<b>2019</b>	1174	33
<b>2020</b>	<b>3504</b>	<b>84</b>

**TABLE 14: INCIDENTAL TAKE DUE TO FISH HANDLING (USFWS)**

Bull Trout		
	Capture	Mortality
<b>2014</b>	14	0
<b>2015</b>	29	0
<b>2016</b>	5	0
<b>2017</b>	0	0
<b>2018</b>	4	0
<b>2019</b>	0	0
<b>2020</b>	<b>95</b>	<b>0</b>

Note: All Bull Trout captured was from one project, Yankee Fork Bonanza Floodplain Restoration (Table 4).

### 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 lineal feet of riparian and shallow-water habitat; therefore, the extent of take for construction-related disturbance of streambank and channel areas in 45,000 linear stream feet (8.5 miles) per year partitioned between recovery domains.

USFWS anticipates no more than 4 active Marbled Murrelet nests will be disturbed/displaced per year (2 in Oregon, 2 in WA). 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. No SHL habitats have been reported disturbed this year.

**TABLE 14: INCIDENTAL TAKE DUE TO HABITAT RELATED EFFECTS**

	Average	2020
<b>IWW</b>	43	56
<b>Total</b>	95	96

	2013	2014	2015	2016	2017	2018	2019	Average
<b>IWW</b>	35	45	41	40	43	43	52	43
<b>Total</b>	86	96	86	95	92	113	99	95

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

The extent of take will be 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 take is exceeded when activities continue to result in visible suspended sediment beyond two consecutive monitoring intervals.

In 2020 there were **1 reported instances** where turbidity was elevated above background for two or more monitoring intervals. Each instance involved water coming into contact with newly exposed earth during low flow events.

**TABLE 15: TURBIDITY EXCEEDENCE (2020094)**

HIP4 NO#	PROJECT
2020094	Lemhi River Big Spring Confluence Phase III
<b>EXPLANATION</b>	When newly created channels were watered, and coffer dams removed.. Small plume was released that exceeded background levels. Within 4 hours, two of the turbidity plumes dissipated and water clarity returned to background levels and no further measurements were taken. One plume took longer to clear, but all work was stopped immediately once turbidity exceeded the background levels until the water cleared. This plume was when

the larger channel was watered up. Before the large channel was rewatered, at least 24 hours of washing the channel and pumping out turbid water was completed before rewatering with live water. The large channel took less than 12 hours to clear up.

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

Therefore, 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 16: 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	<b>929</b>	<b>4612</b>



**2020042 (Cooke Creek) Riparian Planting**

## NON COMPLIANCE

Non-compliance events are from one non-authorized use of Hexazinone in an upland area and the lack of reporting data from one sponsor (2020071, IDFG). We attribute this to the fact that BPA’s restoration partners (project sponsors) are typically the same year after year, and have been thoroughly trained in the use of the HIP, are familiarized with the HIP4 Handbook and aided by the in-depth technical reviews provided by BPA Engineering Technical Services.

**TABLE 9: REPORTED NONCOMPLIANCE EVENTS**

2013	2014	2015	2016	2017	2018	2019	2020
NA	6	2	1	0	0	0	2

## 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 and are managed under contract by various entities. There has been an increased interest in using herbicides not covered under the HIP4 due to herbicide resistant weeds (upland use of Vista) and expanded applications within the estuary.



**2020007 (CREST) Gorse Scotch Broom Invasives**

FIGURE 5: HERBICIDE APPLICATION (NMFS)

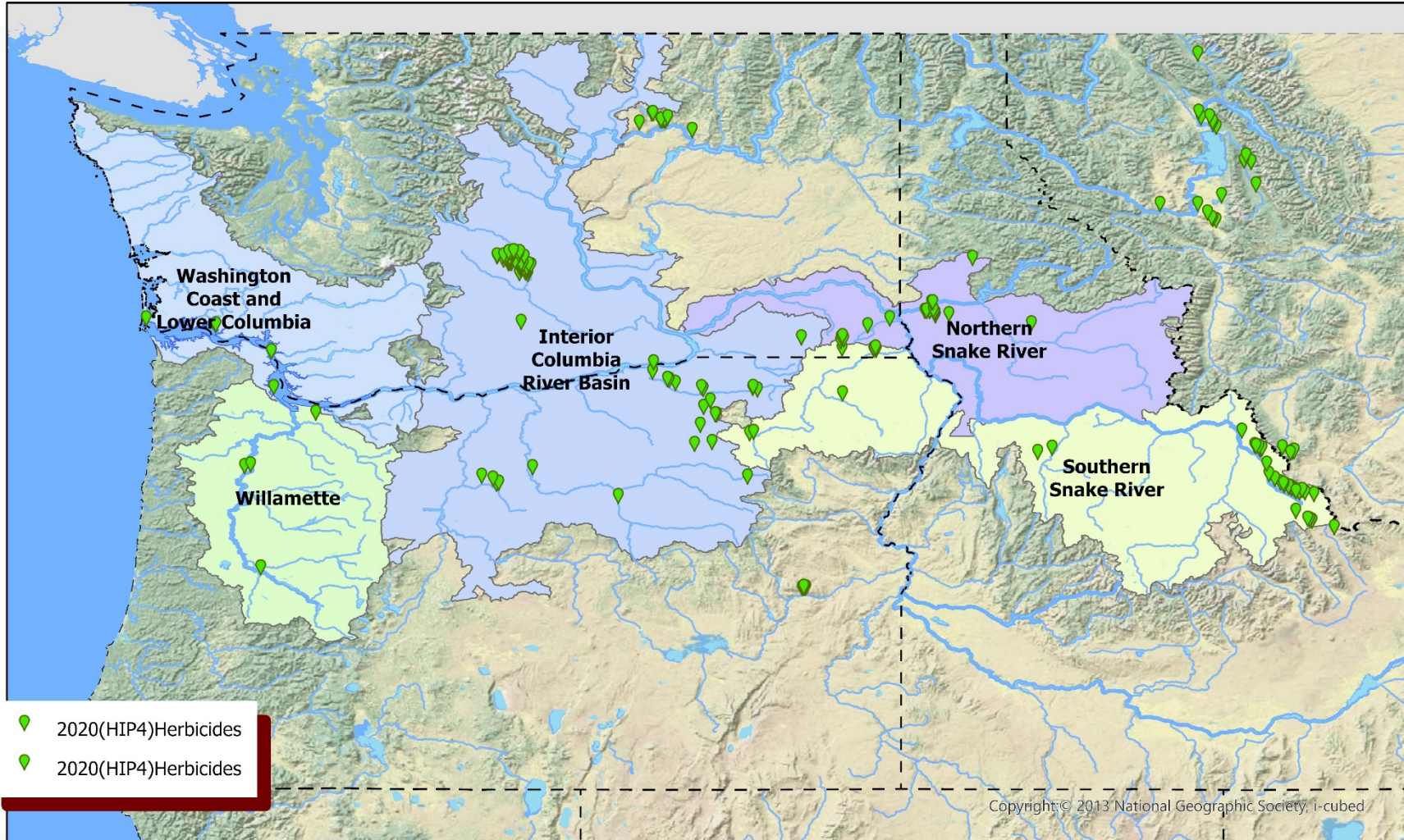
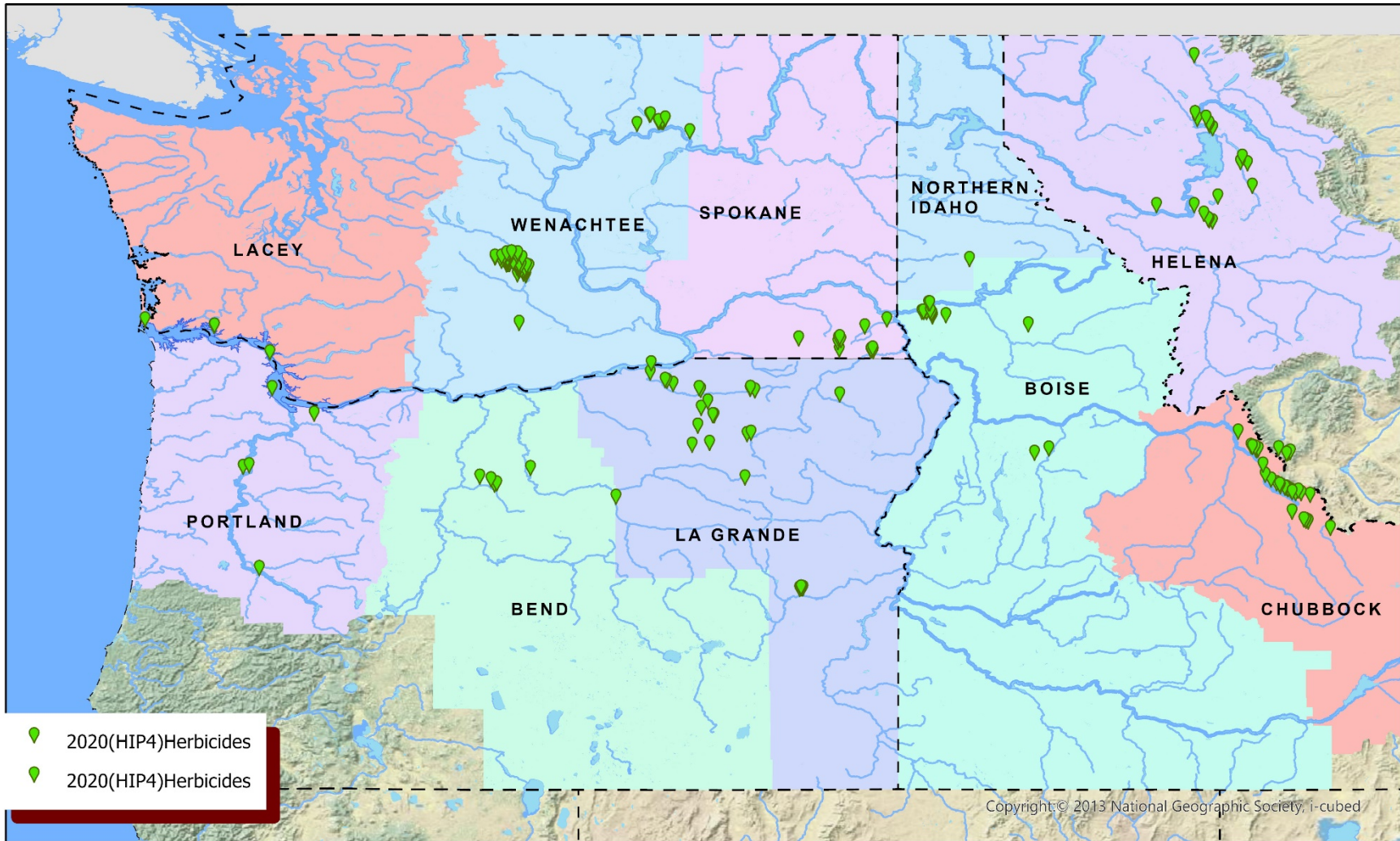


FIGURE 6: HERBICIDE APPLICATION (USFWS)



## RIVERINE HERBICIDE APPLICATIONS

The analysis 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.

The addition of herbicide treatment in the Estuary and the Willamette is expected to increase the amounts of annual herbicide applied in the upcoming years.

**TABLE 16: PROJECTS WITH HERBICIDE USAGE**

HIP4 NO#	PROJECT	RIPARIAN	UPLAND
2020001	Asotin Creek Wildlife Mitigation O & M 2020	0	300
2020002	Hungry Horse Mitigation Habitat Restoration and RM&E	4.2	15.15
2020005	Protect Shillapoo Wildlife Area	0.2	199.45
2020007	West Sand Island Habitat Restoration - Phase II	7	0
2020013	Snag Boat Bend Floodplain Reforestation	167.12	0
2020014	NE Oregon Precious Lands Wildlife Area	3	280
2020019	Upper John Day Conservation Lands Program	3.8	25.2
2020022	Willamette Valley Wildlife Area - Sorenson	30.45	129.8
2020023	Trout Creek Vegetation Improvement and Noxious Weed Program	0.4	63.1
2020025	Willamette Valley Wildlife Area - Gail Achterman Wildlife Area	0	0
2020026	Willamette Valley Wildlife Area - Palensky Wildlife Area	0	0
2020031	Willamette Valley Wildlife Area -- Flight's End	0	0
2020033	Elochoman 3 Restoration - Weed Treatment and Building Demolition	34	56
2020034	Elochoman 2 Restoration - Weed Treatment Planting Earthwork	46	42
2020035	Columbia Stock Ranch - Weed Treatment	42	69
2020039	Dammerman Meadow Restoration	0	10
2020044	Yakima Basin Side Channels - 2020 Veg Mgmt & Wood Replenishment	2	116
2020049	Hellsgate Big Game Winter Range	0	342.19
2020051	Lemhi River Restoration Project Site Weed Treatments	94.14	461.89
2020052	Pahsimeroi River Habitat	138.4	114.2
2020063	Trout Creek O & M	23.75	36.95
2020064	John Day Fish Habitat Enhancement Program: Fencing	8	0
2020068	City of Salem Minto Brown Park Veg MGMT	12.89	35.7
2020070	Enhance Habitat North Fork John Day - Granite Creek	3.25	0
2020074	Stiegerwald Floodplain Restoration II	121	12
2020075	Tualatin River National Wildlife Refuge	0	800
2020078	Wenas Wildlife Area O&M	28.85	184.45

2020079	<b>Restoring Anadromous Fish Habitat in Lapwai Creek Watershed</b>	<b>9.26</b>	<b>0</b>
2020081	<b>Lolo/Selway Weed Treatment</b>	<b>15.8</b>	<b>8.9</b>
2020088	<b>Pine Creek Conservation Area</b>	<b>0</b>	<b>12</b>
2020092	<b>Umatilla Anadromous Fish Habitat</b>	<b>4</b>	<b>24</b>
2020096	<b>Hungry Horse Mitigation/Flathead Lake Restoration RME</b>	<b>23</b>	<b>221</b>
2020098	<b>Albeni Falls Wildlife Mitigation</b>	<b>0</b>	<b>697</b>
2020100	<b>East Fork of South Fork Salmon River Passage Restoration Project</b>	<b>15.11</b>	<b>40.3</b>
2020106	<b>Malhuer River Wildlife Restoration Project</b>	<b>0</b>	<b>193.55</b>
2020109	<b>Umatilla Passage O &amp; M</b>	<b>5</b>	<b>5</b>
2020110	<b>Lapwai Creek Watershed Restoration</b>	<b>8</b>	<b>2</b>
2020112	<b>Iquulktpé Watershed Project</b>	<b>0.4</b>	<b>16.37</b>
2020114	<b>Grande Ronde Umatilla Fish Habitat Improvement</b>	<b>56.93</b>	<b>25.12</b>
2020115	<b>Rainwater Wildlife Area</b>	<b>21</b>	<b>74</b>



**2020077 (NF Teanaway) Wood Trapping Structures**

## ESTUARINE HERBICIDE APPLICATIONS

2020 is the first official year 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 with respect to 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 up with the sponsors CREST and Columbia Land Trust. Additional information was provided via site visits and several herbicide application memo (HAM)s were drafted. The HAM 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 four projects were evaluated:

### 1. West Sand Island Habitat Restoration Phase II (HIP No# 2020007)

CREST's proposal for Treatment of yellow flag iris on a 85 acre management area that will be using a combination of mechanical, manual, and herbicide methods. The project seeks to establish tidal connectivity between 104 acres of interior wetlands with Baker Bay and the mainstem Columbia River by excavating tidal connections through the berm and into the interior of the island.

### 2. Columbia Stock Ranch – Weed Treatment (HIP No# 2020035)

Project activities for 2020 included weed control, planting, native plant maintenance, future planting site preparation, fence removal, and fence installation. These actions are all paramount to project success in terms of managing the property in order to recover ecological integrity and function to support Columbian white-tailed deer (*Odocoileus virginianus leucurus*) (CWTD), as well as broader ecosystem function. The site contains two treatment areas consisting of a high marsh area and an upland area.

Target species include Himalayan blackberry (*Rubus bifrons*), Canada thistle (*Cirsium arvense*), reed canarygrass (*Phalaris arundinacea*), tansy ragwort (*Jacobaea vulgaris*) and other priority species.

### 3. Elochoman 3 Restoration – Weed Treatment (HIP No# 2020033)

Weed control work in 2020 will target re-sprouting blackberry, priority broadleaf species (knotweed), and begin site prep for planting in 2022. The vegetation control work is paramount to project success in terms of recovering ecological integrity and function supporting Columbian white-tailed deer (*Odocoileus virginianus leucurus*) (CWTD), salmonids, and broader ecosystem function.



Target species include Himalayan blackberry (*Rubus bifrons*), reed canarygrass (*Phalaris arundinacea*), and knotweed species (*Fallopia* spp.). Control of these species will be completed with backpack sprayers and/or vehicle-mounted boom or wand sprayers using approved methods and herbicides as outlined in the HIP.

#### 4. Elochoman 2 Restoration - Weed Treatment (HIP No# 2020034)

Similar to project 20200035, weed control work in 2020 will target re-sprouting blackberry, priority broadleaf species (knotweed), and begin site prep for planting in 2022. The vegetation control work is paramount to project success in terms of recovering ecological integrity and function supporting Columbian white-tailed deer (*Odocoileus virginianus leucurus*) (CWTD), salmonids, and broader ecosystem function.

Target species include Himalayan blackberry (*Rubus bifrons*), reed canarygrass (*Phalaris arundinacea*), and knotweed species (*Fallopia* spp.). Control of these species will be completed with backpack sprayers and/or vehicle-mounted boom or wand sprayers using approved methods and herbicides as outlined in the HIP and the 2019 technical memorandum.



2020006 (John Day Tidal Restoration)Before



**2020006(John Day Tidal Restoration)During**



**2020006(John Day Tidal Restoration)During**



**2020006(John Day Tidal Restoration) After**



**2020006(John Day Tidal Restoration) After**

## 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 of these 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 2022 and beyond.

**TABLE 17: HIP REVIEW WORKLOAD**

	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20
Medium Risk	4	14	24	24	23	37	26	64
High Risk	2	6	2	3	5	14	6	25



**2020044 (Yakima Basin) Wood Placement**

## FISH SCREENS

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

BPA collected PNFs and PCFs with the following number of actions (Table 13) for both ODFW and IDFG fish screen programs. These included activities performed by ODFW & IDFG screen tenders such as the following: debris and sediment removal, check screen seals, inspect screens for damage, inspect gear boxes and drive lines, inspect solar units, inspect fish bypass, inspect fishways, and other O&M actions. These activities were easily isolated from the water with no impacts to the stream.

**TABLE 18: FISH SCREENS**

HIP4 NO#	Project Title	No# of Actions
2020009	<b>ODFW Fish Screens - Low Risk Projects I</b>	<b>3</b>
2020018	<b>ODFW Fish Screens - O &amp; M</b>	<b>764</b>
2020038	<b>ODFW Fish Screens - O &amp; M</b>	<b>5</b>
2020067	<b>Oregon Fish Screens - ODFW Med Risk Projects</b>	<b>2</b>
2020087	<b>Oregon Fish Screens - Low Risk Projects II</b>	<b>9</b>
2020099	<b>Oregon Fish Screens - Low Risk Projects III</b>	<b>9</b>
2020036	<b>Upper Salmon Fish Screen Operations and Maintenance</b>	<b>267</b>

2020 was the third full year that the HIP4 was used to cover all 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 7: 2020 HIP4 FISH SCREEN O&M LOCATIONS (NMFS)

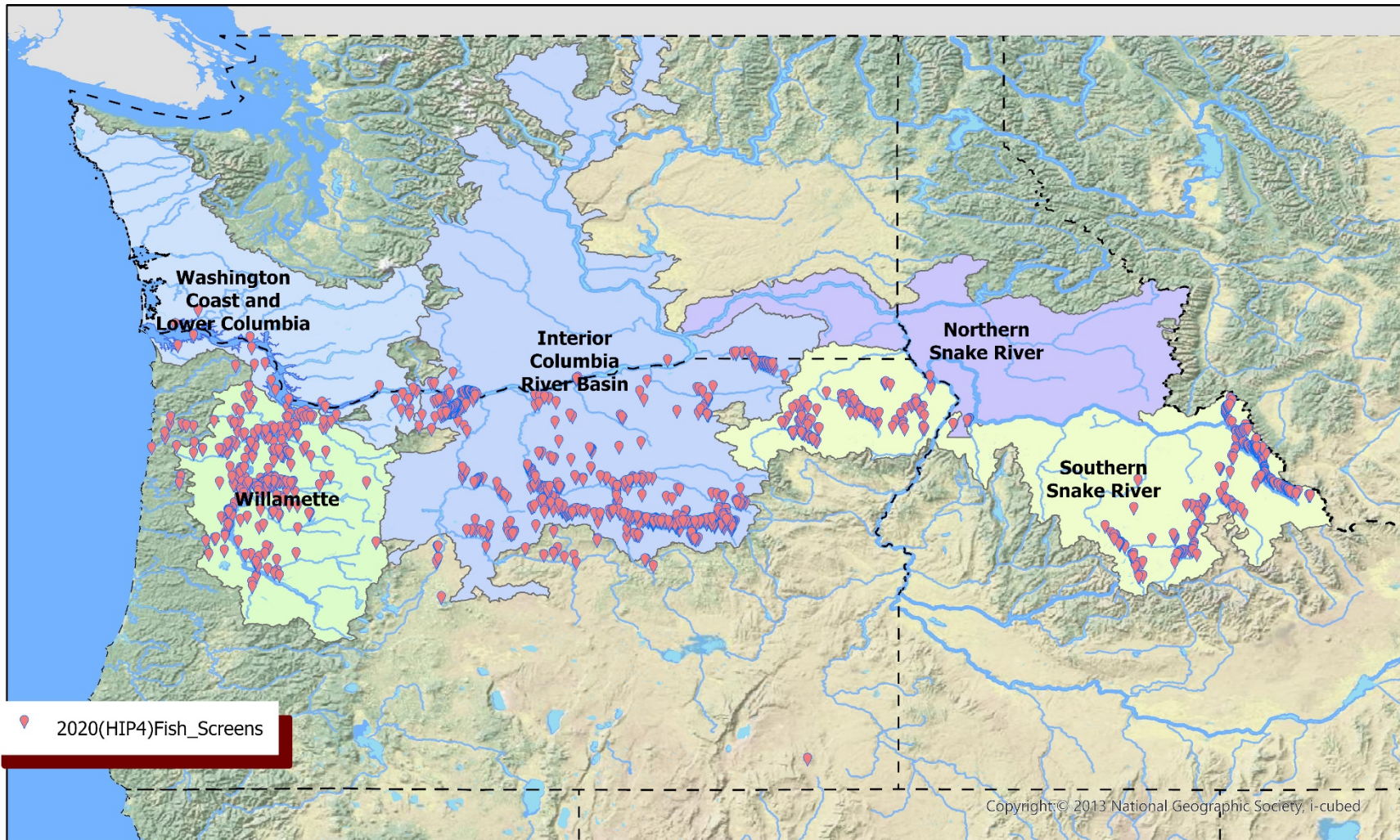
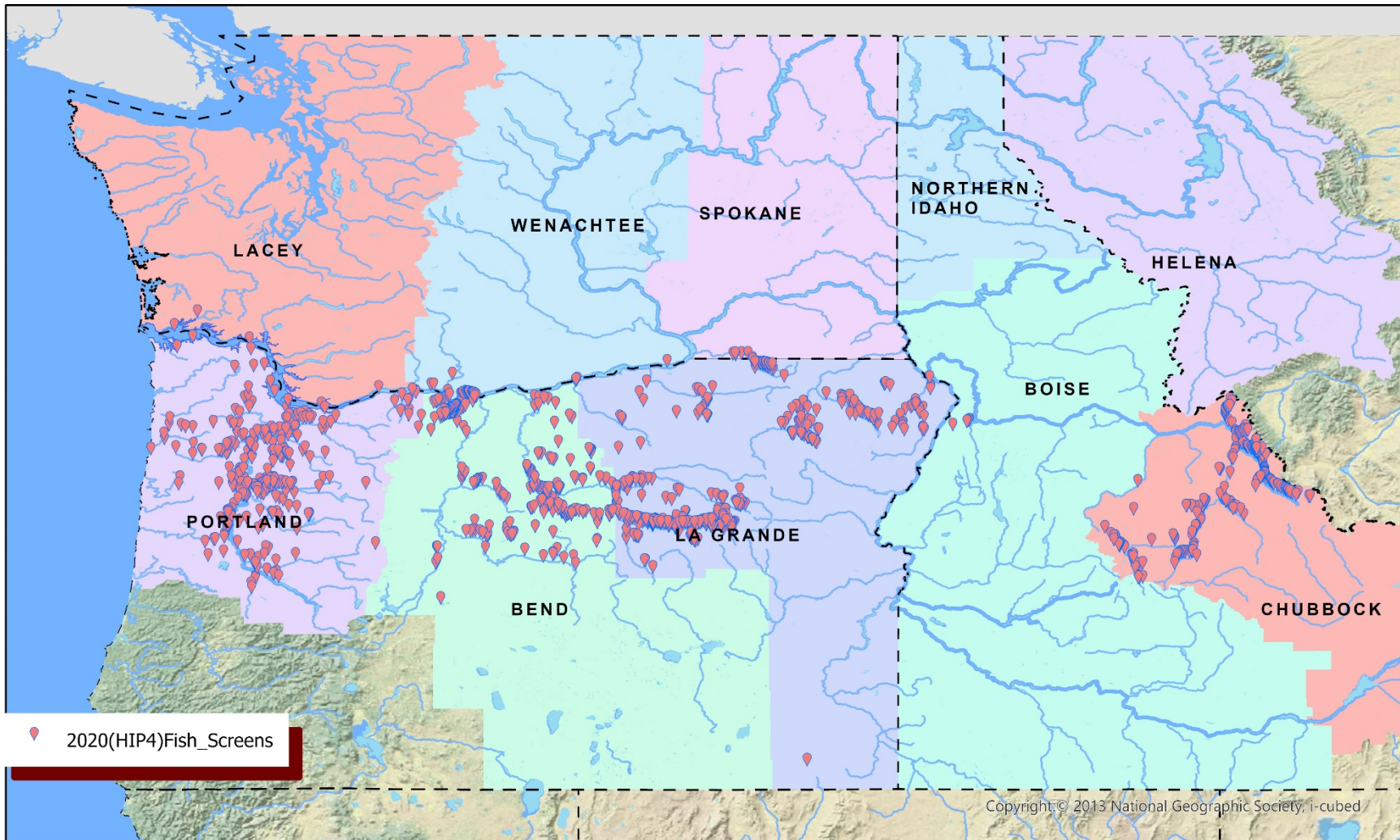


FIGURE 8: 2020 HIP4 FISH SCREEN O&M LOCATIONS (USFWS)





**2020009 (ODFW Fish Screens)**



**2020059 (IDFG Fish Screen)**





2020038 (ODFW Fish Screens)



2020059 (IDFG Fish Screens)

## WILLAMETTE VALLEY WILDLIFE MITIGATION

Category 9e is a new activity category exclusively for the ODFW Willamette Wildlife Mitigation Program (WWMP). Operations, maintenance, and restoration activities on nine wildlife management areas (WMAs) is conducted by ODFW in the Willamette Valley. Previously these projects were covered by PROJECTS, however since BPA is the primary funding agency, ESA coverage was transferred over to the HIP. Since the program was already negotiated under PROJECTS, all conservation measures remained intact to ensure consistency and efficiency.

A summary of BPA-funded activities with the potential to impact listed species is below (2021-2022 contract period). Two of the nine WMAs (South Coyote II and III) are not listed because none of the actions planned to occur at those locations could affect listed species or their habitats.

**TABLE 19: WILLAMETTE VALLEY ACTIONS**

WMA	Listed Species Present	HIP Activity Categories
Coyote Creek South (CCS)	Streaked horned lark	Riparian vegetation planting Physical removal Herbicide application (riverine)
Coyote Creek Northeast (CCNE)	Streaked horned lark	Physical removal Herbicide application (riverine)
Flight’s End (FE)	Columbian white-tailed deer Steelhead Chinook salmon Coho salmon Chum salmon	Riparian vegetation planting Physical removal Herbicide application (riverine) Maintain roads
Gail Achterman Wildlife Area (GAWA)	Steelhead Chinook salmon	Add LWD into floodplain Physical removal Herbicide application (riverine)
Herbert Farm and Natural Area (HFNA)	Streaked horned lark Kincaid’s lupine Nelson’s checker-mallow Steelhead Chinook salmon	Riparian vegetation planting Physical removal Herbicide application (riverine)
Palensky Wildlife Area (PWA)	Columbian white-tailed deer Steelhead Chinook salmon Coho salmon Chum salmon	Physical removal Herbicide application (riverine) Maintain roads
Sorenson Meadows (SOR)	Steelhead Chinook salmon	Physical removal Herbicide application (riverine) Prescribed burning

### Description of Activities

**Vegetation Management:** Vegetation removal will consist of a combination of hand and mechanical removal, to include disking, mowing, digging or cutting invasive species, clipping/removal of seed heads, and using mechanized hand tools such as weed whackers and

chainsaws; herbicide application via spraying and spot-treatment; and spot flaming via handheld torch used to burn invasive weeds to the taproot. Target species include reed canarygrass, Himalayan blackberry, ash saplings, English ivy, and Japanese knotweed. Bulbs and native seeds such as rushes and sedges will be planted to enhance diversity in the meadow and understory.

**Road Maintenance:** Roads and trails will be maintained for management access. This includes removal of downed trees and filling of potholes in order to provide staff access to conduct restoration activities. Signs will be replaced as needed.

**GAWA Large Wood Placement Project:** GAWA has been identified as a significant forested floodplain property on the mainstem of the Willamette River. During high water flows, the downstream end of the island floods from backwater, while the upper end has water entering from the main Willamette River channel, flowing through secondary channels and across the island at higher but still moderate velocities. ODFW proposes felling trees in approximately 10 locations within lateral channels on GAWA to improve lateral channel flow on the easternmost portion of the island. Fifty-foot buffers at each location allow flexibility when choosing the exact location or tree to cut within the radius.

**FIGURE 9: 2020 HIP4 WILLAMETTE VALLEY ACTIONS**





**2020101 (Coleman Creek) Work Area Isolation**



**2020055 (Duck Creek) Coir Logs**



**2020055 (Duck Creek) Brush Mattress**



**2020055 (Duck Creek) Willow Bank Island and Root Wad**



**2020090 (Couse Creek) Post Assisted Log Structures**



**2020077 (NF Teanaway) Loose Wood Placement**



