Idaho Fish Screening Improvements Project
Annual Report

Prepared for:

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Contract 77127 - July 1st 2017 thru June 30th 2018
Contract 79686 - July 1st 2018 thru June 30th 2019

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Abstract

These contracts provide non-capital funding to support IDFG BPA capital contract 2007-399-00 – Upper Salmon River Fish Screen and Tributary Passage. The funding provides support services such as office and shop operations, equipment rentals, and biological gear used in stream investigation and project monitoring work. Temporary personnel perform stream investigations to determine fish species presence, densities, distribution, as well as an inventory of diversion and fish passage issues. Their work ultimately leads to the identification and prioritization of future fisheries restoration projects. Three permanent staff members in the Anadromous Fish Screen Program are partially funded by this contract. Permanent personnel typically collect and provide technical data, hold stakeholder meetings, coordinate with other agencies, and prioritize projects. Prior to construction, program staff secures any required special use permits, submits applications for water rights, and works with the water users to secure permanent easements to screen site locations. Public Works projects are administered, program oversight is provided, and capital contract project implementation management is performed with funding in this contract.

Preliminary planning and feasibility meetings were held with stakeholders in several subbasins and individual watersheds culminating in project proposals for future capital contracts. Follow up meetings were concluded with individual landowners and irrigators to finalize easements and agreements. Preliminary and final designs were reviewed with pertinent parties.

In this performance period, with the support of these contracts, 5 new fish screens, 6 replacement fish screens, and one stream crossing/infrastructure project were completed. Four of these were large keystone projects with support from this contract to restore flows, fish passage, and reduce entrainment on Lemhi River-08A, Hawley Creek-02, Pratt Creek-02 and Canyon Creek-03. These were multi-agency efforts and took several years to complete.

In these contract periods, Fisheries staff conducted stream investigations on 22 prioritized anadromous tributaries or stream reaches, which included 128 individual site surveyed using 100 m transects. Annual spawning ground redd counts were conducted for Chinook salmon, steelhead, and bull trout in specific project locations. Staff installed and monitored PIT tag detectors on several fish screen bypass pipes to gather passage and entrainment data on anadromous smolts and presmolts and fluvial Bull trout to evaluate the functionality and effectiveness of those screens previously funded and installed with Bonneville Power Administration (BPA) funding. Additionally, dozens of fish screen were evaluated to document performance an adherence to fish screen criteria utilizing underwater video monitoring, flow measurement velocities, and screen seal integrity of select screen sites.

Program Staff provide technical assistance, recommendations, and support to a variety of Federal and State agency partners, local government, private property owners and irrigators on all matters of fish screens, fish passage, fish salvage, and general fisheries management in the Salmon River basin.

Topographic surveys are an integral part of planning project feasibility. IDFG Staff Engineer completed 19 surveys. During this contract period, Quadrant Consulting Inc. (QCI), Boise, Idaho surveyed three proposed project sites and Wade Surveying of Salmon, Idaho supplemented a few

needed survey points. For all projects constructed during this review period, IDFG staff engineer provided project designs and construction staking.

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List of Abbreviations

Abbreviation Keylist for Rivers, Creeks and Streams

L	Lemhi River
LBC	Lemhi, Bohannon Creek
LBTC	Lemhi, Big Timber Creek
LCC	Lemhi, Canyon Creek
LEiC	Lemhi, Eighteen Mile
LHC	Lemhi, Hayden Creek
LHaC	Lemhi, Hawley Creek
LWC	Lemhi, Wimpey Creek
P	Pahsimeroi River
PBSC	Patterson Big Springs Creek
PSC	Pahsimeroi, Sulphur Creek
S	Salmon River
SCC	Salmon, Carmen Creek
SEF	Salmon, East Fork
SGaC	Salmon, Garden Creek
SPC	Salmon, Pole Creek
STow	Salmon, Tower Creek

Generally, name abbreviations are assigned from main river to each tributary, except Little Salmon, Lemhi and Pahsimeroi omit the "S" for Salmon River. Gravity diversions are numbered sequentially starting at mouth of drainage.

Abbreviation Keylist for Agencies & Programs

BLM	Department of Interior, Bureau of Land Management
BOR	Department of Interior, Bureau of Reclamation
BPA	Department of Energy, Bonneville Power Administration
CBFWA	Columbia Basin Fish & Wildlife Authority
COE	US Army Corp of Engineers
CRFDP	Columbia River Fisheries Development Program
CSWCD	Custer Soil & Water Conservation District
ESA	Endangered Species Act
FSOC	CBFWA Fish Screen Oversight Committee
IDFG	Idaho Department of Fish & Game
IDOT	Idaho Department of Transportation
IDWR	Idaho Department of Water Resources
ISHPO	Idaho State Historical Preservation Office
LSWCD	Lemhi Soil and Water Conservation District
NEPA	National Environmental Policy Act
NMFS/NOAA	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
OSC	Office of Species Conservation
QCI	Quadrant Consulting Inc.

SNRA	Sawtooth National Recreation Area
TNC	The Nature Conservancy
TU	Trout Unlimited
USBWP	Upper Salmon Basin Watershed Project
USFWS	Department of Interior, US Fish & Wildlife Service

Introduction

This contract provides management and operational support for BPA capital construction program 2007-399-00 dedicated to the protection of anadromous fish from loss in water diversions, improvement of fish passage at irrigation diversions for juvenile and adult anadromous fish, and improving instream flow conditions where possible. Planning, surveys, and preliminary design work is completed under this contract. Final designs and project implementation is performed in a separate capital contract.

Project Location

All portions of the project are located in the Salmon River basin in the State of Idaho. Projects have been concentrated in the prioritized tributaries, typically larger tributaries to the Salmon River, and larger tributaries like the Lemhi River. Most of the mainstem river corridors have new screens and good fish passage. The smaller tributaries are typically rearing areas for juveniles and offer the greatest challenge to fisheries recovery and fish passage improvement plans. The project office is located in the Idaho Department of Fish & Game Regional Office at 99 Hwy 93 N, Salmon, Idaho 83467.

Planning/Design

Watershed Coordination - Agency Project Coordination - Work Element 191

The Screen Program is currently working on installing fish screens, reconnecting, and providing fish passage for anadromous and resident species in over 20 prioritized watersheds in five subbasins in the Upper Salmon River Basin. Many of these projects are multi-agency efforts that are focused on a holistic tributary approach to fisheries restoration. This effort involves extensive coordination with staff from multiple agencies including; the Upper Salmon Basin Watershed Project (USBWP), Custer Soil & Water Conservation District (CSWCD), Bureau of Reclamation (BOR), and National Resources Conservation Service (NRCS). In the Bonneville Power Administration's (BPA) Geographic Review and 5-Year Solicitation Process (2013-2018), the Screen Program identified over 80 new projects that would potentially be implemented with many collaborators and partners.

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Screen Program staff spent considerable time during this project period evaluating potential fish screening and passage projects throughout the current upper boundary of anadromous fish habitat in the Pahsimeroi River subbasin, particularly the upper reaches of Patterson-Big Springs Creek and the reach of the Pahsimeroi River between Hooper Lane upstream to Furey Lane. The Pahsimeroi River has a unique summer run of Chinook salmon, and there is a large cooperative inter-agency effort to improve fish habitat and improve irrigation efficiencies in the basin. Screen Program personnel worked with individuals from the Custer Soil & Water Conservation District (CSWCD), Bureau of Reclamation (BOR), National Resource Conservation Service (NRCS), The Nature Conservancy (TNC), Trout Unlimited (TU), Idaho Department of Water Resources

(IDWR), and Governor's Office of Species Conservation in planning and coordinating fish habitat and passage projects on over a dozen different ranches. These private ranch properties are very important for improving egg-to-smolt survival of Chinook salmon and steelhead and have significant potential to increase anadromous and resident fish production. This area of the Pahsimeroi River has multiple opportunities for improving fish habitat and protecting fish including, fish screens, control structures, fish passable diversion structures, irrigation and conveyance improvements and better riparian management. There is high potential in this reach of the Pahsimeroi River to consolidate ditches and improve instream habitat and fish passage. The current multi-agency planning has involved all aspects of fish passage including; flow enhancement from Furey Lane to Hooper Lane with irrigation efficiencies; the installation of 1 fish screen (P-17); 2 diversion improvements (P-17, Hooper Lane Cross-Ditch); 1 culvert replacement (Flying Joseph earthen culvert); and 1 bridge replacement (Flying Joseph).

Program Coordinator Paddy Murphy and Staff Engineer Jared Bragg had multiple meetings with The Nature Conservancy (TNC), USBWP, and Trout Unlimited (TU) to continue coordinating and planning the design process for multiple projects to improve flows and fish passage in both Pratt Creek and Wimpey Creek through a conservation easement, water conveyance projects, and fish screen and passage projects. This is a large scale project that involves three separate ranch parcels. A pivotal aspect of this project is installing four new fish screens and diversions in Pratt Creek and work on fish passage and habitat issues in Wimpey Creek. In the last year, two of the new fish screens, LPrC-01, and Mulkey-Pratt Pump Screen, were installed and TNC recently closed on the Conservation easement with the Moulton Ranch. Staff Engineer Jared Bragg and Staff Biologist Windy Schoby participated in a planning meeting for a suite of the restoration projects on Wimpey Creek. The majority of the work is related to riparian and instream habitat, but it interfaces with several diversions and screens. The Screen Program is planning on installing three new fish screens, one new fish screen at the Pratt Creek-02 diversion in 2018, and the Pratt Creek-03 diversion in 2019.

In this performance period, Program Coordinator Paddy Murphy, Staff Engineer Jared Bragg, and Staff Biologist Windy Schoby participated in multiple meetings with partners CSWCD, BLM, NRCS, IDWR, and TNC regarding the Pahsimeroi-17 (P-17) diversion, screen, and irrigation efficiency project. The project is partially on BLM so the plans needed to be prepared to initiate the BLM NEPA process. Final designs for the fish screen have been submitted and the official BLM ROW application has been submitted. This pivotal project is critical to connecting the upper and lower portions of the Pahsimeroi River and is our highest priority project for 2018.

Program Coordinator Paddy Murphy continued attending meetings with Lemhi Regional Land Trust (LRLT), The Nature Conservancy (TNC), the Governor's Office of Species Conservation (OSC) and IDFG fish biologists to further develop rankings of potential ranch properties for acquiring conservation easements in the Upper Salmon River Basin. Paddy attended a planning meeting with Lemhi Regional Land Trust regarding potential conservation easements on two ranches along the Lemhi River and one ranch along the East Fork Salmon River. We outlined the outcomes we would like to see for habitat restoration and fish benefit on the property as the LRLT works with the landowners.

Program Coordinator Paddy Murphy and Staff Biologist Windy Schoby have been

coordinating with Idaho Department of Water Resources and CSWCD on potential opportunities to benefit fisheries on Meadow and Goat creeks, tributaries to Valley Creek in the Upper Salmon Basin near Stanley. One 365 acre parcel on these creeks was recently purchased by Western Rivers Conservancy. They plan to place a combined total of 11 cfs of water rights into the IDWR water bank, remove acreage from irrigated land, and turn the property over to the Sawtooth National Recreation Area (SNRA). These previously unscreened diversions will be closed and the instream flow will significantly benefit Chinook salmon and steelhead. The adjacent property is also under new ownership and in the next few years planning efforts will focus on a holistic approach to consolidating diversions, installing fish screens, and improving habitat on both Meadow and Goat Creeks.

Staff Biologist, Windy Schoby participated in a planning meeting with the BLM, NRCS, and BOR regarding a diversion consolidation project on Big Boulder Creek, a tributary to the East Fork Salmon River. The project would consolidate two diversions to one and reduce the amount of water needed to irrigate from 6-10 cfs to 1-2 cfs. One component of this project includes a land exchange between BLM and the landowner so the process may take several years. The initial meeting was to discuss the fisheries benefit and feasibility of moving the point of diversion and fish screen. There would be a significant benefit to the local fisheries. BLM is taking the lead on the next phase of project development.

Program Coordinator Paddy Murphy continued planning efforts with the Regional Habitat Staff Biologist to coordinate projects proceeding in the Lemhi River basin. The Screen Program has been working with the IDFG Staff Biologist who is the primary lead in the negotiations in an attempt to find a solution to the shortage of water at this Bohannon Creek diversion during late summer. The current proposals are designed for spilling this water right to the Lemhi River and pumping water from the L-08A diversion. The Screen Program installed the new L-08A fish screen in the fall of 2017. Additionally, the Screen Program is improving the headgate structure, ditch culverts, and measuring weir to accommodate more flow in this ditch. The Screen Program has been planning to install another new fish screens in 2019 at the Lemhi River-10 (L-10) diversion. These would replace existing screens and compliment efforts to reconnect Bohannon Creek and habitat work along the Lemhi River.

Program Coordinator Paddy Murphy, Staff Engineer Jared Bragg, and Staff Biologist Windy Schoby had multiple planning meetings with the USBWP, BLM, LRLT, and NRCS for preliminary planning and implementation of projects to improve flows and fish passage in Big Timber Creek, a tributary to the upper Lemhi River. This complex project involves the removal of the Big Timber-02 (LBTC-02) diversion, a new high water diversion and fish screen in lower Big Timber Creek. The Screen Program portion of the project involves installing potentially two new fish screens, and two headgate control structures. This is a pivotal and complimentary project to many other projects in trying to improve flow and habitat conditions in Big Timber Creek for both anadromous and resident salmonids. Additionally, the Screen Program has had multiple meetings on the potential of improving fish passage at the Carey Act Diversion (BTC-12) which involves a new diversion and fish screen. This project involves significant coordination and cooperation with the Bureau of Land Management (BLM) to establish needed Right-of-Ways for the fish screen and the proposed pipeline. In the the future, BLM will be conducting the NEPA permitting and ESA consultations on multiple diversions in the Big Timber Creek watershed. This

project was going to start in the fall of 2018, but has been delayed due to some current applications for water rights that complicate the projects.

Program Coordinator Paddy Murphy, Staff Engineer Jared Bragg, and Staff Biologist Windy Schoby have been involved with planning the installation of a fish screen on lower Big Timber Creek, known as Big Timber Creek-01 (LBTC-01). The new screen would be part of a larger project and the goal is to remove the Big Timber -02 diversion, restore a portion of the stream, and improve flows to better reconnect lower Big Timber Creek. This project is a cooperative project with the Lemhi Regional Land Trust, Trout Unlimited, the Upper Salmon Basin Watershed Project, and NRCS. Windy participated in a site visit and the group has been involved in several follow up meetings and field surveys. The project continues to evolve as our partners negotiate with the landowners involved.

In this performance period, Program Coordinator Paddy Murphy, Staff Engineer Jared Bragg, and Staff Biologist Windy Schoby had multiple meetings with East Fork Salmon River landowner and irrigator, Junior Baker, to discuss possibilities of fish passage and fish habitat projects on his ranch. We have had discussions about potential projects for years with the ranch, but the impacts of severe high water in the spring of 2017 has potentially changed his operation and attitude about moving forward on new fish screens, ditch consolidations, off-channel habitats, floodplain restoration, and conservation easements. There is potential to change the diversions and fish screens on the Salmon East Fork -15 (SEF-15), SEF-16, SEF-17, Big Boulder Creek-01 (SEFBB-01), and SEFBB-02 diversions. This reach of the East Fork Salmon River has some of the highest redd densities for Chinook salmon in this important watershed.

Staff Engineer Jared Bragg, and Staff Biologist Windy Schoby participated in site visits to Eighteenmile Creek and Little Sawmill Creek, both tributaries to the Lemhi River to look the diversions and potential irrigation efficiencies that may be incorporated into some larger water savings and stream restoration projects. These projects are both cooperative projects with the Upper Salmon Basin Watershed Project and NRCS. The site visits were to outline data needs to look at the feasibility of installing screens on some currently unscreened diversions.

Program Coordinator Paddy Murphy, Staff Engineer Jared Bragg, and Staff Biologist Windy Schoby participated in a site visit to Morgan Creek with Amy Cassel from the Idaho Department of Water Resources. The lower end of Morgan Creek is seasonally intercepted by the Salmon River -22 (S-22) irrigation ditch from the Salmon River. The group is looking at alternatives to siphon the irrigation water under the stream and possibly relocate the fish screen associated with the Salmon River diversion. Follow up meetings were conducted with former Screen Program Coordinator, Lynn Stratton, to better understand the history of why the screen was installed in its current location. This spring, the group plans to conduct a follow up field visit to look at the Salmon River diversions, complete survey work, and identify possible alternatives.

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Screen Program staff continue to spend considerable time during this project period evaluating potential fish screening and passage projects throughout the current upper boundary of anadromous fish habitat in the Pahsimeroi River subbasin, particularly the upper reaches of

Patterson-Big Springs Creek and the reach of the Pahsimeroi River between Hooper Lane upstream to the confluence with Big Creek, above Furey Lane. The Pahsimeroi River has a unique summer run of Chinook salmon and there is a large cooperative inter-agency effort to improve fish habitat and improve irrigation efficiencies in the basin. Screen Program personnel worked with individuals from the Custer Soil & Water Conservation District (CSWCD), Bureau of Reclamation (BOR), National Resource Conservation Service (NRCS), The Nature Conservancy (TNC), Trout Unlimited (TU), Idaho Department of Water Resources (IDWR), and Governor's Office of Species Conservation in planning and coordinating fish habitat and passage projects on over a dozen different ranches. These private ranch properties are very important for improving egg-to-smolt survival of Chinook salmon and steelhead and have significant potential to increase anadromous and resident fish production. This area of the Pahsimeroi River has multiple opportunities for improving fish habitat and protecting fish including, fish screens, control structures, fish passable diversion structures, irrigation and conveyance improvements and better riparian management. There is high potential in this reach of the Pahsimeroi River to consolidate ditches and improve instream habitat and fish passage. The current multi-agency planning has involved all aspects of fish passage including; flow enhancement from Furey Lane to Hooper Lane with irrigation efficiencies; the installation of 1 fish screens (P-17) and; 1 flow enhancement/irrigation efficiency project (P-17 pipeline); 1 diversion improvements (P-17); 2 culvert replacements (Cotterman, Flying Joseph earthen culvert); and multiple fish habitat projects to increase habitat complexity, access to floodplain, and riparian enhancement.

In this performance period, Program Coordinator Paddy Murphy and Easement Specialist Mike Demick participated in multiple meetings with partners CSWCD, Bureau of Land Management (BLM), and The Nature Conservancy (TNC) regarding the Pahsimeroi-17 (P-17) diversion, screen, and irrigation efficiency project. Unfortunately, this project has been delayed because of a change in ownership and working through all the needed details with the new owners. We are working with partners in continuing to negotiate with the new owners on the final irrigation/pipeline designs and ground water pumping on some of the irrigated acreages. Hopefully we can develop options and implement designs on a few project to improve flows through a conservation easement, property acquisition (Posada fields), water conveyance projects, and fish screen and passage projects. Final designs for the fish screen have been submitted and the official BLM ROW application has been submitted by IDFG for the access to install and maintain the new fish screen. The project is partially on BLM so the plans needed to be prepared to initiate the BLM NEPA process, and get the new Right of Ways (ROW) through a review process. One complicating factor that has delayed the project is that the BLM has determined that it must go through an internal ethics committee process before granting the landowners a right-of-way across lands administered by the BLM because Karen Morgan, the landowner, is a BLM employee. This project has been a challenge, as we have been working on planning, designs, and landowner buy in for almost 4 years. However, this pivotal project is critical to connecting the upper and lower portions of the Pahsimeroi River and is currently our highest priority project. This project and the proposed irrigation efficiencies will significantly increase the amount of instream flow, especially in the summer months, by approximately 5 cfs. and will help reconnect this historically dewatered section of the Pahsimeroi River down to the Hooper Lane crossing.

Program Coordinator Paddy Murphy, Staff Biologist Windy Schoby, and Staff Engineer Jared Bragg had multiple meetings with BLM, USBWP, LSWCD, and NRCS, to continue coordinating and planning the final design and installation for multiple projects to improve flows and fish passage in both Pratt Creek and Wimpey Creek through a conservation easement, water conveyance projects, and fish screen and passage projects. This is a large scale project that involves three separate ranch parcels. A pivotal aspect of this project is installing five new fish screens and diversions in Pratt Creek and work on fish passage and habitat issues in Wimpey Creek. In the last two years, four of the new fish screens were installed with Pratt Creek-01 (LPrC-01) fish screen and Mulkey-Pratt pump screen in 2017, Pratt-Hedt fish screen installed in December 2018, and Pratt Creek-02 (LPrC-02) in April, 2019. The Screen Program is planning on installing a new rotary drum fish screens at the Pratt Creek-03 diversion in October, 2019. This is a large double bay rotary drum screen located above the ranch on lands administered by the BLM. Final designs for the fish screen have been submitted and the official BLM ROW application has been submitted by IDFG for the access to install and maintain the new fish screen. The BLM have received concurrence on all NEPA and ESA regulatory requirements.

In December and March of this review period, Program Coordinator Paddy Murphy and Staff Biologist Windy Schoby continued attending the Conservation Easement Subcommittee of the USBWP Technical Team, with partners from Governor's Office of Species Conservation (OSC), Lemhi Regional Land Trust (LRLT), The Nature Conservancy (TNC), and IDFG fish biologists to further develop rankings of potential ranch properties for acquiring conservation easements in the Upper Salmon River Basin. In these meetings, we discussed potential conservation easements on four ranches along the Lemhi River, and one ranch in the Pahsimeroi River basin. We outlined the outcomes we would like to see for habitat restoration, fish passage, and fish benefit on the property, as the partners continue to work with the landowners on potential outcomes and concerns.

Program Coordinator Paddy Murphy continued planning efforts with the Regional Habitat Staff Biologist to coordinate projects proceeding in the Lemhi River basin. The Screen Program has been working with the IDFG Staff Biologist who is the primary lead in the negotiations on specific ranches where fish habitat and floodplain connectivity projects are being planned. The Screen Program has been planning to replace the Lemhi River-10 (L-10) fish screen and diversion. This point of diversion and fish screen is currently located in a diked and very channelized reach of the Lemhi River and is part of a very large project to remove the diking and add sinuosity, habitat complexity, side channel activation, and floodplain connectivity. This is being conducted on a 2.5 mile reach of the Lemhi River and is located on the Eagle Valley Ranch which has a large donated easement in the river corridor. The new POD and fish screen will be located approximately 600 m. upstream and will require a new section of irrigation ditch and access road to be built.

Program Coordinator Paddy Murphy, Staff Engineer Jared Bragg, and Staff Biologist Windy Schoby had multiple planning meetings with the USBWP, LRLT, and NRCS for preliminary planning and implementation of projects to improve flows and fish passage in Big Timber Creek, a tributary to the upper Lemhi River. This complex project involves the removal of the Big Timber-02 (LBTC-02) diversion, which was removed in the fall of 2018, the installation of a fish screen on lower Big Timber Creek, known as Big Timber Creek-01 (LBTC-01). This project is a

cooperative project with the Lemhi Regional Land Trust. Due to some landowner concerns the potential screen site was moved off of private property to the Leadore City Park. This project was slated for installation in the fall of 2018, but due to the location change of the fish screen, it will be delayed until the fall of 2019. This is a pivotal and complimentary project to many other projects in trying to improve flow and habitat conditions in Big Timber Creek for both anadromous and resident salmonids.

Program Coordinator Paddy Murphy, Staff Engineer Jared Bragg, and Staff Biologist Windy Schoby had multiple planning meetings with the USBWP, LRLT, BLM and NRCS for preliminary planning and implementation of projects to improve flows and fish passage in Canyon Creek, a tributary to the upper Lemhi River. Currently the Canyon Creek-02 (LCanyC-02) diversion is used to feed a gravity pressurized closed system that supplements water for an inline pump out of the Lemhi River. The water elevation at the existing point of diversion is set to meet a pressure equilibrium across the entire irrigation system. The diversion is currently a non-criteria turbulent fountain screen (bubbler screen) at the head of the pipeline. For the bubbler screen to function properly, a wooden in-stream check structure is utilized during low flow, however this structure becomes a passage barrier at these low flows. IDFG staff has been working with the property owner and irrigator to relocate the point of diversion upstream to allow the installation of a criteria fish screen and head works structure. Due to the complexity of the irrigation system, multiple screen scenarios and topographic surveys have occurred. The latest conceptual design would eliminate the existing check structure, move the point of diversion upstream and allow the fish screen installation while providing the required flow and pressure for the irrigation conveyance system. Currently the property owner is installing an inline flow meter and completing a pipeline loop to aid in varying flow demand. From the flow meter measurements this summer, the fish screen can be designed for the required flow and installed in the fall of 2019.

Program Coordinator Paddy Murphy, Staff Engineer Jared Bragg, and Staff Biologist Windy Schoby participated in planning meetings and site visits to the proposed Eighteenmile Creek (Breshears) fish screen and Little Sawmill Creek-01 (LLSawC-01) fish screen, both tributaries to the Lemhi River to look at diversions and potential irrigation efficiencies that may be incorporated into some larger water savings and stream restoration projects. The site visits were to outline data needs to look at the feasibility of installing screens on these currently unscreened diversions. These projects are cooperative projects with the Upper Salmon Basin Watershed Project, NRCS, and Trout Unlimited. The Little Sawmill Creek-01 (LLSawC-01) fish screen is slated for installation in May 2019, and the Eighteenmile Creek (Breshears) fish screen for installation in the fall 2019 or spring 2020.

Program Coordinator Paddy Murphy and Staff Biologist Windy Schoby continued to participate in meetings with a subcommittee of the Upper Salmon Basin Watershed Advisory Committee which formed to assist several USFS Ranger Districts in the Upper Salmon River Basin that have been facing litigation about unscreened or unpermitted diversions that originate on federal property. The Salmon-Challis National Forest is facing litigation in regards to the 30 diversions within the 4 jeopardy opinions from NOAA that the forest has received. This issue has been long-running on the forest for 19 years, when the USFS entered into a Section 7 consultation in 2000, at which time many of the diversions had pending applications for ditch bill easements. If diversions didn't pre-date the forest or qualify for the ditch bill, they required special use permits.

The USFS was forced into consultation through litigation and reached a settlement agreement with Western Watersheds to produce ten biological opinions. The USFS is being asked to install fish screens, head gates and measuring devices before diverters can divert anymore.

The IDFG Screen Program has been serving as technical advisors for both the Salmon-Challis National Forests and Sawtooth National Recreation Area and in helping address the screening issues. We are urging that the USFS and the litigants accept a more holistic approach to addressing water diversion in certain drainages. Often screening in the headwaters of a watershed while having unscreened diversions or over-appropriated irrigation withdrawals, and therefore dewatered stream channels in the lower portion of the drainage, makes little biological impact. We have been encouraging the parties to look at potential off-sets that may have a higher biological value than installing screens on some of the small headwater diversions. In other instances, we are helping provide screens and looking at adding some of the priority screens to our future work plans. On the Salmon- Challis National Forest, we are building screens for the USFS diversion for their livestock and pastures on Garden Creek and on Little Squaw Creek in the Frank Church Wilderness. We are also looking at the feasibility of screening diversions on Owl Creek, Lake Creek, and Loon Creek. On the Sawtooth National Recreation Area, we surveyed and completed a preliminary design on an unscreened diversion on Champion Creek, and potentially installing a few small fish screens on West Pass Creek, a tributary to the East Fork Salmon River. We are currently planning on installing a fish screen on Little Squaw Creek in 2019, and evaluating the potential for fish screens in multiple watersheds.

Meetings – Identify and Select Projects

Produce Plan- Conduct Meetings for Restoration Planning

– Work Element 174 and Work Element 191

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Easement Specialist Larry Weeks routinely fields dozens of calls a month from irrigators concerning new fish screen construction and access, fish screen operation, flow agreements, and maintenance needs. Larry is the main point of contact with landowners when we need to perform non-routine maintenance on screens and access road and will call ahead to ensure that we can bring large equipment and field crews to screen locations without interrupting landowners. While we have access agreements that ensure our ability to maintain infrastructure, we continually communicate with landowners as common courtesy. Furthermore, Larry follows up with landowners after they have reported an issue to ensure that we have remedied the problem. Larry retired in this performance period, and we are actively working to fill this position in the next performance period.

In the absence of an Easement Specialist, multiple Screen Program staff fielded dozens of calls a month from irrigators concerning new fish screen construction and access, fish screen operation, flow agreements, and maintenance needs. In this performance period, our new Easement

Specialist Mike Demick was hired and is beginning to learn the spatial scope of our fish screen inventory and all the associated landowners and irrigators.

Screen Program Personnel attended the 2017 Northwest Fish Screen and Passage Workshop, September 25th -29th in Astoria, OR. Over 80 participants from state, Federal, and private entities from Washington, Oregon, Idaho, and Montana traveled to the region to share and learn about the status, challenges, innovations and future of fish screening and fish passage. Program Coordinator Paddy Murphy gave a presentation on the "State of the State" for Idaho's Fish Screen Program and another presentation on Fish Entrainment Studies in Idaho. Staff Engineer Jared Bragg and Construction Foreman Todd Duke gave a presentation focused on the successes and challenges of some new closed drum fish screen designs.

Staff Biologist Windy Schoby and Program Coordinator Paddy Murphy attended the monthly Upper Salmon Basin Watershed Technical Team Meeting held in Salmon, Idaho throughout the year. New Fish Biologist, Demitra Blythe, also began attending the meetings. In addition, staff attended multiple special Upper Salmon Basin Watershed Technical Team Subcommittee meetings to update the status of project planning and implementation. In this review period, Windy transitioned to the USBWP Technical Team Chairman position this summer and has started attending the project's Advisory Committee meetings. Paddy represents IDFG as a member of the USBWP Advisory Committee and attended meetings in October, December, March, and May.

Program Coordinator Paddy Murphy had multiple meetings with Idaho Representatives on the Northwest Power and Conservation Council and BPA representatives, specifically Contracting Officer Eric Leitzinger, for continuing to develop and prioritize the Idaho Fish Screen Inventory as part of a long-term O&M strategic plan to protect the Program investments made for the benefit of fish and wildlife. The intent of this strategic plan is to guide the development of an agreement of understanding for the long term funding of these fish passage programs.

Staff Biologist Windy Schoby participated in an USBWP Technical Team tour of the operation of Lower Granite Dam by the Army Corps of Engineers in May. The group was given an in-depth tour of the fish passage and marking facilities as well as the power generation operation.

Program Coordinator Paddy Murphy attended quarterly teleconference meetings of the CBFWA supported Fish Screen Oversight Committee. Topics discussed were BPA's Fish Screen Asset Management and Strategic Planning Template for the Northwest Power and Conservation Council and Bonneville Power Administration. This is part of BPA's Operation and Maintenance Strategic Plan for capital assets such as fish screens, hatcheries, and lands. This is part of larger effort to understand the existing fish screen inventory and assets that were funded by BPA throughout the Columbia Basin. Additional coordination and planning was discussed Fish Screen and Passage Workshop in Astoria, OR, Sept. 2017. Additional topics included the draft of the updated NOAA Fish Screening and Passage Criteria, which should be available in late spring 2018.

Program Coordinator Paddy Murphy gave a presentation on the Anadromous Fish Screen Program to the IDFG Commissioners, Director, Deputy Directors, and Bureau Chiefs at the May

Commission Meeting in Salmon, ID. Screen Program Staff provided a tour of the Screen Shop to the IDFG Commission which was followed by a field tour to better explain how the Screen Program works in the basin.

Program Coordinator Paddy Murphy and Staff Biologist Windy Schoby attended multiple Pahsimeroi Work Group subcommittee meetings to discuss and coordinate projects in the Pahsimeroi subbasin. As the chair of this subcommittee, Windy coordinated a Pahsimeroi Work Group multiple meetings with participants and partners including OSC, CSWCD, BOR, TU, TNC, and IDWR. Planning centered on the Pahsimeroi-17 (P-17) diversion, screen, and irrigation efficiency project and the Furey Lane to Hooper Lane reach of the Pahsimeroi River. The P-17 project is partially on BLM, and they are finalizing the BLM NEPA process. Final designs for the fish screen have been submitted and the official BLM ROW application has been submitted. This pivotal project is critical to connecting the upper and lower portions of the Pahsimeroi River and is our highest priority project for 2018.

Staff Biologist Windy Schoby attended Upper Salmon Working Group meetings in Stanley and Challis, ID with many partners from the USBWP's Technical Team, including the SNRA, NOAA, USBWP, OSC, TU, TNC, BoR, CSWCD, and NRCS. Discussions are centered on planning and prioritizing more fisheries enhancement projects, similar to the Pole Creek Reconnection Project. These focus areas included tributaries to Valley Creek; including Elk Creek, Meadow Creek, Goat Creek, and Iron Creek. IDFG will continue to be a large player in planning and implementing projects. Windy participated in a field tour of Elk Creek with this work group. The goal of the tour was to understand limiting factors on Elk Creek and look at the Elk Creek-01 diversion. The diversion needs a permit renewal and the SNRA needs to consult on the water use. The group may help determine what the target goals for flow and fish passage should be at the location. IDFG will continue to be a large player in planning and implementing projects in the Upper Salmon. The group also worked on comments regarding the Integrated Rehabilitation Assessment (IRA) project and assessment reaches on the mainstem Salmon River. The group also had extensive discussions on some limiting factors and habitat projects in the East Fork Salmon River.

Staff Engineer Jared Bragg, Program Coordinator Paddy Murphy, and Staff Biologist Windy Schoby met with the USBWP and LSWCD to discuss plans to move a point of diversion and install a fish screen on Eighteenmile Creek in the upper Lemhi River subbasin. This is a difficult site to install a fish screen due to the location, slope, and entrance into a pipeline. The proposed design will be a small modular closed drum fish. The project will reconnect and restore a portion of the stream and improve riparian habitat.

Staff Biologist Windy Schoby led BPA Contracting Officer, Cecilia Brown, and Environmental Coordinator Lead, Elizabeth Bowers, on a field tour of capital projects proposed for 2017 and 2018. The group visited the proposed projects; Bayhorse Bridge, Pahsimeroi P-17 diversion, S-23A fish screen, and the Carmen Creek-03 Access Bridge.

Staff Biologist Windy Schoby met with irrigator Dave Mascovich, irrigator on the Valley Creek-04 fish screen to discuss operational concerns he is having with the screen. The paddlewheel does not turn when he is taking all of his water. We committed to following up with a survey from the

engineer and possible installation of solar power to turn the drums.

Program Coordinator Paddy Murphy and Staff Biologist Windy Schoby continued to participate in meetings with a sub-committee of the Upper Salmon Basin Watershed Advisory Committee which formed to assist the Salmon-Challis National Forest in regards to the 30 diversions within the 4 jeopardy opinions from NOAA that the forest has received. This issue has been long-running on the forest for 17 years, when the USFS entered into a Section 7 consultation in 2000, at which time many of the diversions had pending applications for ditch bill easements. If diversions didn't pre-date the forest or qualify for the ditch bill, they required special use permits. The USFS was forced into consultation through litigation and reached a settlement agreement with Western Watersheds to produce ten biological opinions. The USFS is being asked to install fish screens, head gates and measuring devices before diverters can divert anymore.

Program Coordinator Paddy Murphy and Screen Program staff met multiple times onsite with landowner and irrigator, Junior Baker, to discuss multiple projects on the ranch and evaluate the impacts of the 2017 high water event. We continued talking about the possibility of a diversion consolidation for the SEF-17 and the SEF-15 diversions. The SEF-15 diversion is in a bad location which causes many problems with the fish screen. Moving it upstream and consolidating it with the SEF-17 would be a great solution to this continual problem. A few years ago, Junior opened up an older diversion on the east side of the river, upstream of SEF-16, which had not been recently used and is currently unscreened. This unscreened diversion is a priority to either screen or consolidate with another diversion. Junior has been reconsidering the possibility of a conservation easement on his land and agreed to meet with IDFG and Kristen Troy, Lemhi Land Trust, to discuss some options. Working in this reach of the East Fork Salmon River would have great benefits to anadromous fish.

Program Coordinator Paddy Murphy, Environmental Staff Biologist Jeff Richards, IDFG, met with Cindy Yenter, IDWR, and landowner Stan Downton to review a water right application and understand the water use at the end of the PBSC-03 ditch. This is a large ditch that carries water over ten miles in the Pahsimeroi River watershed, and does not appear to reconnect to the Pahsimeroi River on the Dowton Ranch.

Staff Engineer Jared Bragg and Program Coordinator Paddy Murphy participated in a site visit and meeting with NOAA fisheries and the landowners of the Diamond D Ranch on Loon Creek. The landowners were cited for fish entrainment and dewatering issues several years ago. We have worked with the landowners to mitigate the impacts by consolidating the diversions and installing one fish screen, however, their larger diversion that runs a hydropower plant has still not been addressed. Staff provided technical assistance to the discussion regarding feasibility of different screen types and complications with trying to maintain screens during winter months.

Staff Biologist Windy Schoby and Program Coordinator Paddy Murphy worked with NOAA and the landowner on the POD Screen, L-62A, to work instream and shut down irrigation on the Beyeler Pump Station so we could make repairs to the screen. An additional bay was installed to help the irrigator get his full water right at the location and leave more water instream on his alternative water source. Completion of this project helps better reconnect Canyon Creek.

Program Coordinator Paddy Murphy, Staff Biologist Mike Demick attended the annual IDFG Anadromous Meeting held in Boise on January 29th thru 31st. Discussions and presentations at the statewide anadromous meeting included ongoing research, status of anadromous runs and projections for this year.

Staff Biologist Mike Demick attended the Idaho Chapter American Fisheries Society Annual Meeting conference titled "Fisheries Scientists Must Write" in Idaho Falls from February 28th to March 2nd. Program Coordinator Paddy Murphy, Staff Biologist Windy Schoby, and Program Biologist Mike Biggs were co-authors on a presentation given by IDFG Program Coordinator Tim Copeland titled; "Assessment of Habitat Restoration Effects on the Pahsimeroi River Chinook Salmon Population".

Program Coordinator Paddy Murphy had multiple meeting with The Nature Conservancy and CSWCD to develop options and implement designs on a few project to improve flows through a conservation easement, property acquisition, water conveyance projects, and fish screen and passage projects. This is a large scale project that involves two separate ranch parcels, Robins and Posada, upstream of Furey Lane on the Pahsimeroi River. A new development was that the Robins property recently sold to a buyer who may not be interested in some of the potential easement options but is still interested in the fish passage and irrigation improvements. That will improve flow conditions in the Furey Lane reach of the Pahsimeroi River.

Staff Biologist Windy Schoby attended multiple meetings of the Lemhi Working Group, which is a technical subcommittee of the Upper Salmon Basin Watershed Project, to help prioritize, plan, and allocate BPA and NMFS administered Pacific Coast Salmon Recovery Funds (PCSRF) funding for anadromous fish recovery. Projects were discussed in Big Timber Creek, Bohannon Creek, Eighteenmile Creek, and Big Springs Creek.

Staff Biologist Windy Schoby organized and facilitated a follow up meeting with the BLM regarding the Big Timber Carey Act Dam on Big Timber Creek, a tributary to the upper Lemhi River. Along with Staff Engineer, Jared Bragg, she outlined five possible alternatives to moving diversions, installing fish screens, and removing the dam. The group worked through the process of what type of mitigation may be needed for the cultural resource of the dam under each scenario. Moving forward, BLM will be deciding if the dam is eligible for the National Historic Register and if they want to proceed with applying for that status. This summer, the BLM archaeologist will do follow up field work to record other irrigation infrastructure associated with the dam. IDFG committed to meeting with irrigators to discuss diversion consolidation and screening alternatives.

In December, Staff Biologist Windy Schoby, had several meetings about an ongoing IDFG water rights protest and potential habitat projects on the Flying Joesph Ranch in the middle reach of the Pahsimeroi River. The Flying Joseph Ranch has been working on a large transfer of water rights throughout the ranch to address adjudication concerns and protests. Windy has been engaged in trying to understand what they will be proposing, working towards clearing up an outstanding water right protest related to winter time diversion of water into a recreational fish pond, and looking at potential restoration outcomes for screening and fish passage. Windy had a conference call with Ann Vonde from the ID Attorney General's office and Roxanne Brown, the water rights consultant for the ranch to understand the proposal. In December, Windy and Regional Supervisor

Tom Curet met with the same group and the attorney representing the ranch in person to further discuss information needs and concerns. Windy has been coordinating with IDFG engineering and aquaculture staff to identify a suite of information needed from the ranch to better calculate a reasonable amount of flow needed to maintain their recreational fish pond.

Program Coordinator Paddy Murphy, Environmental Staff Biologist, Jeff Richards, IDFG, met with Cindy Yenter, IDWR, and landowner Bob Piva, to review a water right application that was protested by IDFG for 7 cfs. of waste water from the end of the Piva Ditch (S-28). The primary concern that was discussed was that this new waste water right was going to be used to irrigate property that has many wetlands and spring channels throughout the historically flood irrigated pasture. This would result in the pivots crossing multiple fish-bearing streams and spring channels in multiple locations. IDFG reiterated that we would like to be partners at looking at options for installing fish screens, removing culvert barriers, and restoring some degraded reaches on the ranch.

Staff Engineer Jared Bragg and Easement Specialist Mike Demick participated in a meeting with BLM, USBMWP and Trout Unlimited regarding the possible installation of a fish screen for the upper diversion on Perreau Creek. The irrigator is renewing the Special Use Permit with BLM and wanted to discuss the fish screening options. IDFG committed to completing a topographic survey and a conceptual layout of the potential screen site.

Staff Engineer Jared Bragg attended the annual Custer County Utility Coalition Correlation meeting in Challis, Idaho in March 2018.

Program Coordinator Paddy Murphy, Staff Biologist Windy Schoby, and Easement Specialist Mike Demick Fisheries met with the Department Fisheries Bureau on April, 9th in Salmon, Idaho for the annual Fisheries Workplan Meeting. The meeting was to discuss and coordinate all fisheries related work for the 2018 field season. This annual meeting is one of the few opportunities that the Anadromous Fish Screen Program gets to meet directly with the Fisheries Bureau personnel to discuss accomplishments and challenges of the Program and make sure contractual obligations are being addressed. The anadromous fish screen crew gave power point presentations of fishery survey results, projects completed in 2017 and suggestions of where we will be working in 2018.

The Screen Program held an annual meeting for Screen Tenders on May 17th, 2018 for mandatory orientation and training for new and returning employees. At this meeting, staff conducted and held the annual safety, orientation, and sexual harassment training for the employees. Some of this training is mandatory and held every year to follow state policies. Additionally, training presentations were given to our screen tenders about fish identification, safe driving, and being a good witness for IDFG violations. A new fish ID course was given with a follow up quiz using "Plickers" technology. All seasonal fish screen tenders were in attendance as well as most classified year round employees.

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During this reporting period, Easement Specialist Mike Demick fielded dozens of calls each month from landowners/irrigators concerning maintenance and access needs, shut-off/ramp-down schedules, as well construction and access plans for new fish screens planned for 2019. Our Easement Specialist is the main point of contact with landowners when we need to perform non-routine maintenance on screens and access road and will call ahead to ensure that we can bring large equipment and field crews to screen locations without interrupting landowners. While we have access agreements that ensure our ability to maintain infrastructure, we continually communicate with landowners as common courtesy. All staff passed along fish screen shutdown information last fall to the appropriate screen staff for completing a winterizing schedule and in case fisheries salvage efforts were needed.

Program Coordinator Paddy Murphy and Staff Biologist Windy Schoby attended multiple Pahsimeroi Work Group subcommittee meetings in October and December to discuss and coordinate projects in the Pahsimeroi subbasin. As the chair of this subcommittee, Windy coordinated a Pahsimeroi Work Group multiple meetings with participants and partners including OSC, CSWCD, BOR, TU, TNC, and IDWR. Discussions centered on the delay of the installation of the Pahsimeroi-17 (P-17) diversion, screen, and irrigation efficiency project and the Furey Lane to Hooper Lane reach of the Pahsimeroi River. The September meeting included a field tour of fish passage improvements at the Pahsimeroi Hatchery, the active stream restoration near Furey Lane on the Pahsimeroi River, and the fish passage and flow improvement projects on the Mulvaney Ditch on Patterson Big Springs Creek. The spring tour of 2019 included a site visit to the large restoration project on the Idaho Department of Lands property just upstream of Furey Lane.

Staff Engineer Jared Bragg, Program Coordinator Paddy Murphy, and Staff Biologist Windy Schoby met with the USBWP and LSWCD to discuss plans to move a point of diversion and install a fish screen on Canyon Creek-02 in the upper Lemhi River subbasin. The current POD location is a difficult site to provide fish passage and remove a turbulent fountain screen that enters the pipeline on Federal property. The new proposal will move the POD upstream onto private property and install a small modular closed drum fish. The project will reconnect and restore a portion of the stream and improve riparian habitat.

In late July, Staff Biologist Windy Schoby, Program Coordinator Paddy Murphy, Program Biologist Demitra Blythe, and Easement Specialist Mike Demick led BPA Contract Officer, Cecilia Brown, and Environmental Compliance Lead, Elisabeth Bowers, on a tour of past, present and future projects. The first day of the tour focused on locations in the Lemhi River subbasin on the Pratt Creek, Sandy Creek, Bohannon Creek and the Lemhi River to discuss the continued tributary fish passage and reconnection efforts, and how the multi-agency efforts and project phases are completed. The second day we looked at some screen replacement projects that are addressing aging infrastructure issues at L-61, L-60, and L3AO. We also visited an instream restoration project being completed by the Lemhi Regional Land Trust that we provide fish salvage effort for during dewatering, and looked at the outcome of flow improvement, screening, and beaver dam analogs on Hawley Creek, below the new Hawley Creek-02 fish screen.

Staff Biologist Windy Schoby and Easement Specialist Mike Demick attended Lemhi County Soil and Water Conservation District annual field tour. The tour visited project locations on Hawley

Creek and Eighteenmile Creek to look at stream reconnections, fish screens, beaver analog structures, and riparian restoration projects. Windy and Mike represented the Anadromous Fish Screen Program to answer questions about the fish screens and fisheries benefits of these projects. Member of the conservation district board as well as members of the general public attended the tour.

Program Coordinator Paddy Murphy and Staff Biologist Windy Schoby attended The Upper Salmon Basin Technical Team campout and tour in August. The tour was focused on discussing a new habitat prioritization called the "Integrated Rehabilitation Assessment (IRA)" and is being sponsored by the Bureau of Reclamation and the Governor's Office of Species Conservation. This tool was developed to help guide and design fish restoration projects. IDFG has participated in several reviews and versions of the document/tool and this field tour focused on visiting potential sites near Decker Flat on the upper Salmon River, Dowton and Furey Lane areas of the Pahsimeroi River, and multiple locations in the Lemhi Rivers It is yet to be determined how the tool will be used to prioritize future projects.

Program Coordinator Paddy Murphy and Staff Engineer Jared Bragg had multiple meetings with OSC, CSWCD, and R. J. Williams, landowner and representative of the Diamond D Ranch on Loon Creek. The landowners were cited for fish entrainment and dewatering issues several years ago. Staff provided technical assistance to the discussion regarding feasibility of different screen types and complications with trying to maintain a fish screens during winter months on the larger diversion that runs a hydropower plant for the ranch. The ranch is seeking funding through Pacific Coast Salmon Recovery Funds to install a new fish screen, point of diversion, ditch, penstock turbine, and pipeline. This system would replace a very antiquated hydrosystem and reduce water diversion from 19 cfs. to 10.5 cfs. The Anadromous Fish Screen Program will design the fish screen, headgate, and ditch to the pond and supervise installation of the public works contract that will be administered by the CSWCD.

Staff Engineer Jared Bragg, Staff Engineer Windy Schoby, and Easement Specialist Mike Demick met with Michael Humphreys and Ranch Manager, Jim Humphreys, to discuss options for an unscreened diversion located on the Sawtooth National Recreation Area (SNRA) above their ranch. After engineering surveys are completed this fall, will approach the SNRA to discuss screening options and potential to move stream back to historic channel and move current stream diversion upstream. The three other diversions on Champion Creek were screened in the early 2000's but the diversion in question was not. The unscreened diversion is located between SChC-02/05 and SChS-03/04. The location is topographically challenging to make a screen work. The diversion is located on Federal property on the SNRA and likely a partial fish barrier and would also need to be addressed. We committed to completing a topographic survey at the diversion location so we could look at alternatives for providing fish passage and a fish screen design.

Staff Engineer Jared Bragg, Construction Foreman Dan Jones, Easement Specialist Mike Demick, and Staff Biologist Windy Schoby met with Amy Cassel, IDWR representative at the Knapp Creek-02 diversion in the Middle Fork drainage. We have a screen at the diversion, but the water will likely be going into the water bank, the land sold, and a portion of the land will be transferred to the USFS. We looked at the feasibility of removing the screen and site reclamation and discussed permitting needs. The removal of this screen and diversion has been put on hold until the land

transfer is completed. The group also looked at Knapp Creek-01 diversion and screen and met with the landowners and IDWR at this location. The landowners are considering putting 5 of their 6.0 cfs water right temporarily into the water bank. The screen would then be significantly oversized to operate at these low flows. We also discussed removing the old wooden diversion that is a partial fish barrier. The landowners were very receptive to modifying the diversion and installing a more controllable headgate. We committed to looking at the topographical survey data to identify feasibility of modifying the diversion.

Staff Engineer Jared Bragg, Construction Foreman Dan Jones, Easement Specialist Mike Demick, and Staff Biologist Windy Schoby met with Amy Cassel, IDWR representative at Goat Creek-06/07 fish screen. The screen was built for approximately 18 cfs, but 8 cfs has been put into the water bank. We discussed ways to possibly modify the screen to properly function with the reduced water right. Finally, the group visited Meadow Creek to look at the feasibility of installing screens in the drainage. There were concerns that the wet boggy ground may be difficult to access to install and maintain screens, but after one year of changed irrigation practices upstream the soils have firmed up. The group concluded that we could work towards screening the diversions if the landowner was willing.

Program Coordinator Paddy Murphy and Staff Engineer Jared Bragg worked with the Merrill Beyeler, landowner and irrigator on the POD Screen, L-62A, to discuss options about the mossing issues at the screen and pump cavitation. An additional 1 cfs. bay was installed in 2017 to help the irrigator get his full water right at the location, however flow was becoming limited by clogging of the screens of the pump intake in the wet well, not the actual fish screen. We changed out the fish screen drums from profile bar to 3/32" perforated plate, which seems to have helped with the long strings of algae making it through the profile bar, and convinced the irrigator to take off the secondary screens on the pump intakes. Preliminary indications in the later summer algae season suggest that his has helped remedy the problem, and the pumps have run much better after the modifications.

Staff Biologist Windy Schoby and Staff Engineer Jared Bragg participated in a site visit on Eighteenmile Mile Creek on the Breshears property to discuss potential irrigation improvements and screen locations. This project is cooperative with the Upper Salmon Basin Watershed Project and NRCS.

In May, Easement Specialist Mike Demick worked with Screen Tender Supervisor Kevin Vanderwood to determine the agreed access route to Warm Springs Creek-01 (SWSC-01), a remote screen located on private land in the Warm Springs Creek drainage near Stanley. We provide troubleshooting and assistance to the ranch manager that maintains the screen.

In May, Easement Specialist Mike Demick and Staff Engineer Jared Bragg met with Dick Finlayson, private landowner with a small screen on Alder Creek, a tributary to Morgan Creek. Last fall, screen shop utility craftsmen repaired his screen's perforated plate, with the agreement that he will install and continue to maintain screen.

In June, Easement Specialist Mike Demick met with Joseph Sampino, a Challis Creek landowner with questions about pumping out of Challis Creek to irrigate his property. Discussed screening options and what the screening requirements would involve as well as his responsibilities.

In June, Easement Specialist Mike Demick and Environmental Staff Biologist Jeff Richards attended a water right protest pre-hearing concerning Tom and Carol Yerden's application for Fourth of July Creek. Toured property with Staff Engineer Jared Bragg and Yerden's and agreed to a tentative plan to provide them with a pump screen.

In July, Easemet Specialist Mike Demick met with Merrill Beyeler in Leadore to complete and receive signed Flow Agreement and Headgate Agreement for Eighteenmile Creek-01 (LEM-01) fish screen. Discussed plans on the installation of an enclosure fence, access gate, and placement of rocks around sediment basin.

In August, Easement Specialist Mike Demick and Staff Engineer Jared Bragg met with Robert Daniels and two other neighboring Indian Creek landowners who requested assistance and advice pertaining to screening their irrigation ditch that begins on U.S. Forest Service land.

In September, Easement Specialist Mike Demick met with Bob Minor, a Lemhi River landowner concerning the inactive L-18 screen located on his property. Due to recent changes to irrigation practices and issues with the instream diversion and condition of headgate, Mr. Minor requested advice on what needed to be done to receive water. Mike explained Screen Program policies concerning headgate maintenance and responsibilities of landowners. Mike additionally provided recommendations to conduct instream work during certain periods of year.

In September, Easement Specialist Mike Demick met with Breann Green from Lemhi Land Trust to discuss details and background of Big Timber Creek -01 (LBTC-01), a high flow fish screen that will be located on Leadore City Park property. Mike attended Leadore City Council meeting and presented construction plans/timeline, BMP's for job site, preferred access route to site, and to determine appropriate areas for equipment storage and fill material. Mike obtained signed Temporary Construction Agreement and Easement Agreement for the project.

In September, Easement Specialist Mike Demick met with Leadore landowner, Karl Tyler to explain L-61 installation changes and revised construction timeline. Tyler understood that these changes were not ideal, but agreed to having the screen installed this fall with headgate and connecting ditch work to be completed mid/late July 2019. Mike collected the signed Temporary Construction Easement, Headgate and Flow agreements for both L-61 and LBTC-01.

In September, Easement Specialist Mike Demick and Staff Engineer Jared Bragg met with Merrill Beyeler about possibilities of using extra fill material from construction of LBTC-01 for needed fill at L-61. They also discussed safety/liability concerning the current trash rack at L-63 siphon and possible removal of an old headgate on his property that boarders Leadore City Park.

Easement Specialist Mike Demick contacted Idaho Department of Water Resources (IDWR) staff in Idaho Falls, Twin Falls, Boise, and met with Cindy Yenter of the Salmon IDWR office to review

requirements, proper completion, and status of water right applications submitted for fish screen bypass water rights.

In September, Easement Specialist Mike Demick met with Dan French, Lemhi River-03A water user, who was having difficulty getting water down his ditch to the fish screen. It was determined that silt build-up in the screen was not the issue, but both his instream diversion and ditch needed work/cleaned.

Easement Specialist Mike Demick attended a Salmon-Challis National Forest Forest Planning meeting in September to learn next steps of plan development and updates on the Wild and Scenic Rivers and Wilderness planning processes. Mike also attended a Salmon/Challis Forest Collaborative meeting to discuss sections of the draft assessment, need for change assessment, and to discuss how the Forest Service can best manage public lands with multiple uses in mind.

Program Coordinator Paddy Murphy had multiple meetings with Idaho Representatives on the Northwest Power and Conservation Council and BPA to develop the Idaho Fish Screen Inventory as part of a long-term O&M strategic plan to protect the Program investments made for the benefit fish and wildlife.

Program Coordinator Paddy Murphy attended an Upper Lemhi Working Group, which is a technical subcommittee of the Upper Salmon Basin Watershed Project, to help prioritize and allocate BPA Accord funding, to review and to plan projects in the mainstem Lemhi River, Big Timber Creek, Eighteenmile Creek, Canyon Creek, and Big Springs Creek.

Program Coordinator Paddy Murphy had multiple meeting with The Nature Conservancy and CSWCD to develop options and implement designs on a few project to improve flows through a conservation easement, property acquisition, water conveyance projects, and fish screen and passage projects. This is a large scale project that involves two separate ranch parcels, Robins and Posada, upstream of Furey Lane on the Pahsimeroi River.

Staff Biologist Windy Schoby, Program Coordinator Paddy Murphy, and Program Biologist Demitra Blythe regularly attended the monthly Upper Salmon Basin Watershed Program's Technical Team Meetings. Staff, also attended several Tech Team Subcommittee Meetings during this period. Windy is currently serving as the USBWP Technical Team Chairman and attended Advisory Committee meetings in December and February, March, and June. As the Tech Team Chairman, Windy helped coordinate and host a Permitting Workshop. Additionally, Windy aided in organizing speakers and trainings for the Tech Team and invited guest speakers to inform tech team members on a variety of resource issues including: IDFG Fish Manager Greg Schoby, to discuss the History of Steelhead Fishing in the Upper Salmon River, IDFG Furbearer Coordinator, Cory Mosby, to discuss the Ecology, History, and Management of Beaver in Idaho, and Windy gave a presentation on the Use of Drones for Chinook Salmon Redd Surveys. Paddy represents IDFG as a member of the USBWP Advisory Committee and regularly attended the meetings.

Program Coordinator Paddy Murphy, Staff Biologist Windy Schoby, Easement Specialist Mike Demick, Program Biologist Demitra Blythe, and Construction Foreman Dan Jones attended the annual IDFG Anadromous Meeting held in Boise on January 29th thru 30th. Discussions and

presentations at the statewide anadromous meeting included ongoing research, and the status and projections of anadromous fish runs for the upcoming year. Paddy gave a presentation about IDFG Screen Program highlights including the P-17 Reconnection Project. Demitra attended mandatory Biologist Training held in Boise on January 31th through February 1st.

Fisheries Staff met with the Department Fisheries Bureau on March 18th and 19th in Salmon, Idaho for the annual Fisheries Workplan Meeting. The meeting was to discuss and coordinate all fisheries related work for the 2019 field season. This annual meeting is one of the few opportunities that the Anadromous Fish Screen Program gets to meet directly with the Fisheries Bureau personnel to discuss accomplishments and challenges of the Program and make sure contractual obligations are being addressed. The Anadromous Fish Screen Program gave power point presentations of fishery survey results, projects completed in 2018, and suggestions of where we will be working in 2019. Program Coordinator Paddy Murphy gave presentations about the IDFG Anadromous Fish Screen, Passage, and Habitat Program accomplishments and highlights. Staff Biologist Windy Schoby gave a presentation on the structure and role of the fish program within the Screen Program. Program Biologist Demitra Blythe gave a presentation about IDFG Screen Program highlights including the bull trout entrainment study on Fourth of July Creek located near Stanley, ID on the Sawtooth National Recreation Area, along with current and proposed fish entrainment analysis.

Program Coordinator Paddy Murphy attended quarterly teleconference meetings of the CBFWA supported Fish Screen Oversight Committee (FSOC). Paddy is the current chairman of FSOC. Topics discussed were BPA's Fish Screen Asset Management and Strategic Planning Template for the Northwest Power and Conservation Council and Bonneville Power Administration. This is part of BPA's Operation and Maintenance Strategic Plan for capital assets such as fish screens, hatcheries, and lands and a larger effort to understand the existing fish screen inventory and assets that were funded by BPA throughout the Columbia Basin. Additional topics included planning of the upcoming FSOC sponsored Northwest Fish Screen and Passage Workshop that is being sponsored by the Washington Department of Fish and Wildlife and will be held in Walla Walla, Washington from September 16th -19th, 2019.

Program Coordinator Paddy Murphy had multiple meetings with BPA representatives, specifically Contracting Officer Eric Leitzinger, for continuing to develop and prioritize the Idaho Fish Screen Inventory as part of a long-term O&M strategic plan to protect the Program investments made for the benefit of fish and wildlife. The intent of this strategic plan is to guide the development of an agreement of understanding for the long term funding of these fish passage programs.

In early November, Easement Specialist Mike Demick met with Karl Tyler, a large landowner with several screens on his Lemhi River property near Leadore, ID. Mr. Tyler was concerned and frustrated over the stockpiling of used and removed fence material that piled in his cattle feed lot. Knowing our Construction Crew would not do this, Mike contacted the ranch manager and it was determined that the ranch manager had allowed a contractor of a recent fencing project to temporarily store the material there and did not communicate this with Mr.Tyler.

In January and February, Program Coordinator Paddy Murphy, Easement Specialist Mike Demick, Staff Biologist Windy Schoby, and IDFG Staff Biologist Jeff Diluccia met twice with

the Eagle Valley Ranch, a large Bohannon Creek landowner and their ranch managers to discuss the impacts of their request to consolidate and transfer all of their water from the Bohannon Creek-04 (LBC-04) diversion upstream to the point of diversion for the Bohannon Creek-06 (LBC-06) diversion. The discussions centered around the current fish screen capacity at the LBC-06 diversion. Concerns with moving the LBC-04 diversion upstream to the LBC-06 is that 1) a new and larger fish screen would need to be installed 2) there is uncertainty if the transfer would compromise streamflow between the LBC-06 and LBC-04 diversions and 3) the diversion structure that would be needed at the LBC-06 diversion may create a barrier to fish passage. The group is continuing to work through alternatives and NOAA may require a BA to address the project.

In March, Program Coordinator Paddy Murphy and Easement Specialist Mike Demick met with partners, Karma Bragg of the Custer Soil and Water Conservation District and Todd Koch, District Supervisor of the Bureau of Land Management to discuss the status and progress of the Pahsimeroi-17 (P-17) irrigation efficiency project, which includes a new fish screen, diversion, headgate, and pipeline. This project has been delayed because the BLM has determined that it must go through an internal ethics committee process before granting the landowners a right-of-way across lands administered by the BLM because Karen Morgan, the landowner is a BLM employee. For multiple years, planning has centered on the Pahsimeroi-17 (P-17) diversion, screen, and irrigation efficiency project and the Furey Lane to Hooper Lane reach of the Pahsimeroi River. The P-17 project is partially on BLM, and they are finalizing the BLM NEPA process. Final designs for the fish screen have been submitted and the official BLM ROW application has been submitted. This pivotal project is critical to connecting the upper and lower portions of the Pahsimeroi River and is our highest priority project for 2018.

In March, Easement Specialist Mike Demick and Construction Supervisor Todd Duke met with a new property owner concerning our easement access to Lemhi River -24 and -15 (L-24 & L-25) fish screens. The new owner was intending on moving his property boundary fence, which would have impacted our ability to access and maintain the screens with heavy equipment. After discussing our concerns and needs, the landowner agreed to not move his fence, but will erect two posts to visually mark his property boundary.

In March, Easement Specialist Mike Demick attended the annual Pahsimeroi Irrigator Meeting (Idaho Water District #73) at the May Grange Hall, in May, ID. Mike got to introduce himself and discuss his job responsibilities and took this opportunity to meet several local landowners/irrigators and discussed the progress of current and future fish passage and habitat enhancement projects of interest.

In March, Easement Specialist Mike Demick made contact with out-of-state landowner, Jim Humphreys to discuss preliminary screen design for an unscreened diversion located on Champion Creek on the Sawtooth National Recreation Area (SNRA) above his ranch. This diversion is located between the Champion Creek-02/05 (SChC-02/05) and Champion Creek 03/04 (SChc-03/04) Mike will schedule a spring meeting with Humphreys and the SNRA to discuss screening options, permitting, and the potential to move stream back to historic channel and move current stream diversion upstream.

Program Biologist Demitra Blythe and Staff Biologist Windy Schoby attended the annual Idaho Chapter American Fisheries Society conference titled "Science-based Regulations and Angler Ethics: Are Tools Missing from the Toolbox?" in Boise, ID from March 6th- 8th.

Staff Biologist Windy Schoby, Staff Engineer Jared Bragg, and Program Coordinator Paddy Murphy met with IDWR and CSWCD regarding the Morgan Creek intercept issues by the Salmon River-22 irrigation ditch on the lower end of Morgan Creek. IDWR brought information to the table regarding the lack of management of the headgate and diversion on the Salmon River that may be exacerbating the poor stream flows in lower Morgan Creek. The group determined that there were some follow up questions that needed to be posed to the irrigators and a follow up visit this spring.

Staff Biologist Windy Schoby and Program Biologist Demitra Blythe participated in a meeting discussing and prioritizing the IDWR stream gauge network in the basin. The meeting was led by IDWR who needs to make a few cuts to their monitoring network. The group found efficiencies by identifying a few sites that could be eliminated, but also highlighted the need to add some additional gauges. These gauges are critical for assessing and monitoring stream habitat potential and fish passage.

Program Coordinator Paddy Murphy, Easement Specialist Mike Demick, and Staff Biologist Windy Schoby and other partners met with Carey Myler with the USFWS regarding installing fish screens on the Salmon-Challis National Forest and the USFWS Partners for Fish and Wildlife Program. Carey described the program and reached out to potential applicants and partners. For the Screen Program, discussions centered around the possible installation of a fish screens on Perreau Creek, Lake Creek, Squaw Creek, Little Squaw Creek, and Owl Creek.

In February, Staff Biologist Windy Schoby attended the Cattlemen's Winter School in Salmon, Idaho on their "Agency Night" to represent the Screen Program. IDFG Staff Biologist Jeff Diluccia gave an in-depth presentation on the limiting factors for Chinook salmon in the Lemhi River.

Program Coordinator Paddy Murphy continued to participate in meetings with a sub-committee of the Upper Salmon Basin Watershed Advisory Committee which formed to assist the Salmon-Challis National Forest in regards to the 30 diversions within the 4 jeopardy opinions from NOAA that the forest has received. This issue has been long-running on the forest for 19 years, when the USFS entered into a Section 7 consultation in 2000, at which time many of the diversions had pending applications for ditch bill easements. If diversions didn't pre-date the forest or qualify for the ditch bill, they required special use permits. The USFS was forced into consultation through litigation and reached a settlement agreement with Western Watersheds to produce ten biological opinions. The USFS is being asked to install fish screens, head gates and measuring devices before diverters can divert anymore.

Staff Engineer Jared Bragg, Program Coordinator Paddy Murphy, and Staff Biologist Windy Schoby met with the USBWP and LSWCD to discuss implementation and dewatering plans to move and install a point of diversion and install a fish screen on Eighteenmile Creek-Breshears in the upper Lemhi River subbasin. This is a difficult site to install a fish screen due to the location, slope, and entrance into a pipeline. The proposed design will be a small modular closed

drum fish. The project will reconnect and restore a portion of the stream and improve riparian habitat.

Staff Biologist Windy Schoby and Program Biologist Demitra Blythe attended the Upper Salmon Basin Watershed Program's Technical Team's Upper Salmon Subcommittee Planning Meeting held December and April in Stanley, ID. The group, including the SNRA, NOAA, USBWP, OSC, TU, TNC, BoR, CSWCD, and NRCS is gathering information on fish distribution and attempting to see if the Intergrated Rehabiliation Assessment will be useful in guiding future projects. IDFG will continue to be a large player in planning and implementing projects. The group worked on comments regarding the Integrated Rehabilitation Assessment (IRA) project and assessment reaches on the mainstem Salmon River.

Staff Engineer Jared Bragg and Easement Specialist Mike Demick participated in a meeting with BLM, USBMWP and Trout Unlimited regarding the possible installation of a fish screen for the upper diversion on Perreau Creek. The irrigator is renewing the Special Use Permit with BLM and wanted to discuss the fish screening options. IDFG committed to completing a topographic survey and a conceptual layout of the potential screen site.

Construction/ Implementation

Contracting

All capital construction projects are funded by Project 2007-399-00 which is supported by this Project 1994-015-00

Lemhi River-08A (L-08A) Fish Screen Project

The Lemhi River-08A (L-08A) fish screen installation involved replacing an older fish screen on a screened irrigation diversion. The existing fish screen was a 45° rotary drum screen installed in the early 1990's and had a volumetric flow rate of 33.38 cfs. Several water conservation projects within Bohannon Creek and Wimpey Creek drainages required increasing the screen capacity to meet the increased water right transfers into the L-08A diversion. These projects are administered through IDFG and will help with perennial stream flow within these watersheds. Options for increasing the screen capacity to the required 51.77 cfs were investigated but due to the screen's age and location adjacent to the Lemhi River, it was decided to replace the screen with a larger screen in a different location. Also, because the screen was a 45° screen, the sweeping velocity does meet current criteria but and this minimal velocity has a tendency for sediment build up in front of the screens.

From the engineer's estimate it was determined that the project's construction cost would be more than $100,000 so IDFG followed Idaho procurement and public works laws and proceeded with a formal bidding process. The formal bidding process was adhered to and the bidding process took place during March. From this process IDFG executed a contract with Wellard Construction for the completion of the project. The following shows the bidding information.

Lemhi River L-08A Fish Screen Replacement						
IDFG Project No.	Project	Initial Cost		Total Cost	Start Date	End Date
2017-124	L-08A	$91,635.00		$117,489	07/21/2017	10/19/2017

The Screen Program was reimbursed by BPA $25,854 for all the materials and appurtenances for fabrication of four fish screen drum, paddlewheels, catwalks, and handrails. This total cost does not include personnel time for fabrication and construction costs for the metal works provided to the IDFG through NMFS Mitchell Act funding.

Hawley Creek (LHawC-02) and Canyon Creek (LCC-03) Fish Screen Installations

The Hawley Creek (LHawC-02) and Canyon Creek (LCC-03) fish screen installations involved constructing two fish screens at three unscreened irrigation diversions (LHawC-02 is a consolidation). The project involved installing headworks structures, fish screens, secondary debris screening and connecting gravity pressurized irrigation systems. The purpose of the proposed actions was the restoration of the historical corridors between the Lemhi River and quality habitat on the land upstream of stream confluences and to benefit Endangered Species Act (ESA) listed Snake River spring/summer Chinook salmon, Snake River steelhead and Columbia River bull trout as well as resident redband/rainbow trout. These projects will have the following effects:

1. Increased water quantity and perennial flow in Hawley Creek and Canyon Creek below the LHawC-01, LHawC-02, and LCC-03 diversions.
2. Eliminating entrainment and mortality of fish in the irrigation ditches and a LHawC-02 bubbler.
3. Reducing the potential for fish stranding and mortality caused by rapid flow fluctuations that typically occur during irrigation operations.
4. Improve water quality.
5. Restore wetland, riparian, and aquatic habitat quantity, quality, and complexity.

The Canyon Creek and Hawley Creek Habitat Restoration Project is a partnership project between the BLM Salmon Field Office (SFO), the Idaho Governor's Office of Species Conservation and - Upper Salmon Basin Watershed Program (OSC-USBWP), the Natural Resources Conservation Service (NRCS), Lemhi Soil and Water Conservation District (LSWCD), Idaho Department of Fish and Game (IDFG), McFarland Livestock Company (MLC), and Leadore Land Partners (LLP).

The Hawley Creek -02 diversion site is approximately 8 linear miles upstream of the Hawley Creek/Eighteen Mile Creeks confluence with the Lemhi River. Both LHawC-01 and LHawC-02 were open channel ditches with diversions and head gate structures that typically diverted water year round, and at typical flows, became a passage issue for juvenile fish. The LHawC-02 project installed a new headworks structure and fish screen and replaced the open irrigation conveyance

system with a closed pipe line and consolidated the diversions. IDFG portion of the work included installing an instream rock diversions structure, an instream rock grade control structure, a headworks structure, a rotary drum fish screen, a secondary debris screen, irrigation isolation valves and connection for the pipeline.

The Canyon Creek -03 site is approximately 3 linear miles upstream of the Canyon Creek and Lemhi River confluence. The existing LCC-03 diversion is currently an unscreened open ditch with a wooden checkup structure to divert water. This check structure can be a complete passage barrier during certain stream flows and diversion flow rates. The LLC-03 project installed a new headworks structure and fish screen, and replaced the open irrigation conveyance system with a closed pipe line and consolidated the diversions. IDFG portion of the work included installing an instream rock diversions structure, an instream rock grade control structure, a headworks structure, a closed drum fish screen, irrigation isolation valve and connection for the pipeline.

From the engineer's estimate, it was determined that the project's construction cost would be less, than $100,000, however to encourage bidding fairness IDFG followed Idaho procurement and public works laws and proceeded with a formal bidding process. The formal bidding process was adhered to and the bidding process took place during March. From this process, IDFG executed a contract with H&N Construction for the completion of the project. The following shows the bidding information.

Hawley Creek-02 (LHawC-02) and Canyon Creek (LCC-03) Fish Screens						
IDFG Project No.	Project	Initial Cost		Total Cost	Start Date	End Date
2017-106	Hawley-Canyon	$84,760.00		$114,206	03/20/17	05/01/17

For the Hawley Creek-02 fish screen, the Screen Program was reimbursed by BPA $8,955 for all the materials and appurtenances for fabrication of fish screen drum, paddlewheel, trash screen, and catwalks. This total cost does not include personnel time for fabrication and construction costs for the metal works provided to the IDFG through NMFS Mitchell Act funding.

For the Canyon Creek-03 fish screen, the Screen Program was reimbursed by BPA $20,491 for all the materials and appurtenances for fabrication of fish screen drum, housing, and paddlewheel for this closed drum design. This total cost does not include personnel time for fabrication and construction costs for the metal works provided to the IDFG through NMFS Mitchell Act funding.

Lemhi River-60 (L-60) and Lemhi River-62 (L-62) Fish Screen Replacements

The Lemhi River-60 (L-60) and Lemhi River-62 (L-62) fish screen installations involved replacing two fish screens at two screened irrigation diversions. The existing fish screens were 45° rotary drums screens that were installed in the early 1990's. The concrete housing for L-62 was poured in the winter and likely lacked air entrainment which appears to be causing the concrete to break apart and fail. Due to the concrete failure, the screens and seals are not functioning properly, creating an operation and maintenance issue. Also, because both screens are 45° screens, the sweeping velocity does meet current criteria and this minimal velocity has a tendency for sediment build up in front of the screens.

From the engineer's estimate, it was determined that the project's construction cost would be less than $100,000, however to encourage bidding fairness IDFG followed Idaho procurement and public works laws and proceeded with a formal bidding process. The formal bidding process was adhered to and the bidding process took place during March. From this process, IDFG executed a contract with H&N Construction for the completion of the project. The following shows the bidding information.

Lemhi River L-60 and L-62 Fish Screen Replacement						
IDFG Project No.	Project	Initial Cost		Total Cost	Start Date	End Date
2017-127	L-60 & L-62	$68,000		$68,000.00	08/28/2017	10/19/2017

For both the L-60 and L-62 fish screen replacements, this total cost does not include operating and materials for the fabrication of these screens or personnel time for fabrication and construction costs for the metal works. The funding for all the materials and appurtenances for fabrication of fish screen drums, paddlewheels, and metal works for these rotary drum designs was provided to the IDFG through NMFS Mitchell Act funding.

Salmon River-23A (S-23A) Fish Screen Project

The Screen Program hired Getty Construction of Challis to install the Salmon River-23A (S-23A) fish screen and fish bypass. IDFG Utility Craftsman fabricated a steel modular rotary drum fish screen during September 2017. The screen was fabricated in two sections due to a weight restriction on an existing access bridge to the site. Due to equipment needs and timing associated with the weight restriction, the contractor was hired and IDFG provide a Utility Craftsmen for technical assistance and verification the project was installed to construction plans and specifications. The existing wooden fish screen was removed and the new fish screen was installed in the ditch, downstream to increase the submergence on the drum. By moving the fish screen structure, this would allow the existing head gate at the point of diversion to provide the water and limit the need for the contactor to install temporary in stream check structures. The contractor also installed approximately 280 feet on fish screen bypass pipe along a new alignment. Getty Construction's total cost to install the fish screen was $3,500.

The Screen Program was reimbursed by BPA $17,275.73 for all the materials and appurtenances for fabrication this modular screen including two rotary drums, paddlewheel, catwalks, and handrails. This total cost does not include personnel time for fabrication and construction costs for the metal works provided to the IDFG through NMFS Mitchell Act funding.

Carmen Creek-03 (SCC-03) Bridge Replacement Project

Carmen Creek is a tributary of the Salmon River, and in the fall of 2016, the IDFG Anadromous Fish Screen Program installed a concrete rotary drum fish screen at the Carmen Creek-03 (SCC-03) diversion. The access road to operate and maintain the fish screen crossed Carmen Creek utilizing an old wood sub-structure bridge. Historically the property owner and irrigator used the bridge during spring runoff and then used a ford during low water flows or when using a heavier vehicle. For long term operation and maintenance of the new fish screen and to eliminate the ford

crossing, IDFG removed the old bridge and installed a steel girder bridge supported on perched concrete abutments. IDFG purchased the steel I-beam girders and wood decking and due to the busy fall construction schedule a public works contract was prepared for installing the abutments and setting the girders.

From the engineer's estimate, it was determined the project's construction cost would be less than $100,000 and therefore according to Idaho procurement and public works laws would not require a formal bidding process. Three qualified contracts were given a bid package with all three submitting responsive bids. The lowest responsible bid was submitted by Dahle Construction of $26,800 and IDFG executed a contract to proceed with the construction. The contract portion of the project started in January 15, 2018 and was completed by January 26th. After Dahles completed the substructure IDFG staff installed the wood deck and completed the final site cleanup. The project was completed by March 26, 2018.

Lemhi River-61 (L-61) Fish Screen Project

The Lemhi River-61 (L-61) fish screen involved installing a replacement screen on a Lemhi River irrigation diversion (L-61). The existing L-61 fish screen is 45° rotary drums screen that was installed in the early 1990's. The elevation of the fish screen floor is low in relationship to the existing headgate and a downstream culvert. This has caused water to pond up around the screen and does not allow the older screen to function efficiently. The new design includes raising the screen floor, and in the summer of 2019, we plan to install a new head gate, straighten the ditch and lower the culvert at the stream crossing. Also because the current screen is an older 45° screen design, the sweeping velocity is minimal and has a tendency for sediment build up in front of the screens.

From the engineer's estimate it was determined that the project's construction cost would be more than $100,000 so IDFG followed Idaho procurement and public works laws and proceeded with a formal bidding process. The formal bidding process was adhered to and the bidding process took place during September. From this process IDFG executed a contract with Down to Earth Excavation for the completion of the project. The following shows the bidding information. The project started construction October 8th, 2018 and was completed on December 11, 2018. The initial cost in this bid included the Big Timber Creek-01 fish screen which ultimately was pulled out of the contract, as the work was never completed due to weather concerns.

Lemhi River-61 (L-61)						
IDFG Project No.	Project	Initial Cost		Total Cost	Start Date	End Date
2018-148	L-61	$116,250.00		$83,343	10/08/2018	12/11/2018

The Screen Program was reimbursed by BPA $11,632.30 for all the materials and appurtenances for fabrication of two fish screen drum, paddlewheels, catwalks, and handrails. This total cost does not include personnel time for fabrication and construction costs for the metal works provided to the IDFG through NMFS Mitchell Act funding.

Pratt Creek - Hedt (LPrC-Hedt) Fish Screen Project

After reviewing blueprints with other team members, Construction Foreman Daniel Jones supervised the fabrication and installation of the Pratt Creek-Hedt fish screen, which is a small, passive pump screen design. Fabrication was completed in late November and installed in December 2018. Project installed a small passive point-of-diversion pump screen on the Pratt Creek-Hedt diversion. This project is part of a larger multi-agency project that is actively seeking to reconnect Pratt Creek to the Lemhi River. The Screen Program was reimbursed by BPA $1,398.65 for all the materials and appurtenances for fabrication of the passive screen, flex tube, and headwall structure. This total cost does not include personnel time for fabrication and construction costs for the metal works provided to the IDFG through NMFS Mitchell Act funding.

Pratt Creek-02 (LPrC-02) Fish Screen Project

Pratt Creek-02 (LPrC-02) fish screen installation involved the construction and installation of a new head works structure and fish screen on a previously unscreened diversion. Pratt Creek is a tributary to the Lemhi River, with the project site at the upper end of Pratt Creek. The point of diversion was moved approximately 150 upstream. Due to the installation of an irrigation conveyance pipe below the fish screen, additional elevation was requested by the landowner. The head gate structure was a low profile slide gate with a sluice chute to reduce sedimentation entering conveyance system. The fish screen was a steel modular rotary drum screen with a 10" fish bypass pipe. The head gate and fish screen were fabricated by IDFG and installed by a local contractor.

From the engineer's estimate, it was determined that the project's construction cost would be less than $100,000 so IDFG followed Idaho procurement and public works laws and proceeded with a semi-formal bidding process. The formal bidding process was adhered to and the bidding process took place during November. From this process, IDFG executed a contract with H&N Construction for the completion of the project. The contractor attempted to install the screen in 2018 but winter weather conditions limited access thus not allowing installation until spring of 2019. The following shows the bidding information. The project started construction April 1st, 2019 and was completed on April 15th, 2019.

Pratt Creek-02 (LPrC-02) Fish Screen						
IDFG Project No.	Project	Initial Cost		Total Cost	Start Date	End Date
2018-155	Pratt Creek-02 (LPrC-02)	$13,719.54		$27,318.29	4/01/2019	04/15/2019

The Screen Program was reimbursed by BPA $13,599.35 for all the materials and appurtenances for fabrication of the modular fish screen, drum, paddlewheels, catwalks, and headgate control structure. This total cost does not include personnel time for fabrication and construction costs for the metal works provided to the IDFG through NMFS Mitchell Act funding.

Eighteenmile Creek-01 (LEM-01) Fish Screen Project

The Eighteenmile Creek-01 fish screen project involved installing a steel modular closed drum fish screen, head gate, instream check structure and overflow/fish bypass piping. The project was installed and operational prior to irrigation startup for spring 2018. IDFG fabricated the head gate and fish screen structure during January 2018. The location for the new head gate installation was in area that was oversaturated and tough to access. IDFG had the opportunity to use a local contractor who was completing a multi-agency stream restoration project adjacent to the site. Because the contractor was mobilized to the site and had the appropriate equipment, IDFG requested a quote for the head gate installation and the installation of approximately 160 feet of pipe. The Contractor installed the structures during March 2018 for a cost of $14,050

The Screen Program was reimbursed by BPA $32,221 for all the materials and appurtenances for fabrication of the modular fish screen, drum, paddlewheels, solar power catwalks, and headgate control structure. This total cost does not include personnel time for fabrication and construction costs for the metal works provided to the IDFG through NMFS Mitchell Act funding.

Lemhi River -08A (L-08A) Fish Screen – Phase II Ditch Restructuring

In the summer of 2017, the IDFG Anadromous Fish Screen Program installed a new concrete rotary fish screen at the Lemhi River- 08A (L-08A) diversion. To meet new water right transfer flows associated with another project, the screen capacity was increased and the screen was constructed during irrigation. Due to irrigation conflicts and improvements required to the irrigation conveyance system, the screen was not operated or connected until after irrigation season. The Lemhi River -08A public works project involved all modifications required to accommodate the increased flow and connection to the new screen. This project included installing new headworks structure, lateral head gates, culverts, removal of the existing screen, new fish bypass pipe, and installing new water measuring device.

From the engineer's estimate, it was determined that the project's construction cost would be less than $100,000. However to encourage bidding fairness, IDFG followed Idaho procurement and public works laws and proceeded with a semi-formal bidding process. The semi-formal bidding process was adhered to and the bidding process took place during January. From this process IDFG executed a contract with Bird Excavation for the completion of the project. Cost of the project was $27,100 and construction started March 6th, 2018 and ended April 13th, 2018.

Lemhi River- 03AO (L-03AO) Fish Screen Project

The Lemhi River-03AO (L-03AO) fish screen installation involved replacing a fish screen on a screened irrigation diversion. The existing fish screen was a 45° rotary drum screen installed in the early 1990's and had a volumetric flowrate of 15.3 cfs. The new fish screen design is a 22.5° degree rotary drum screen and has a design flow capacity of 7.65 cfs. Also because the screen was

a 45° screen the sweeping velocity does meet current criteria but this minimal velocity has a tendency for sediment build up in front of the screens.

From the engineer's estimate it was determined that the project's construction cost would be less than $100,000 but due to location IDFG followed Idaho procurement and public works laws and proceeded with a formal bidding process. The formal bidding process was adhered to and the bidding process took place during July. From this process IDFG executed a contract with Wellard Construction for the completion of the project. The following shows the bidding information.

Lemhi River L3AO Fish Screen Replacement						
IDFG Project No.	Project	Initial Cost		Total Cost	Start Date	End Date
2018-130	L-03AO	$58,493.00		$66,118.00	08/20/2018	10/05/2018

The Screen Program was reimbursed by BPA $7,625.14 for all the materials and appurtenances for fabrication of the metal works, drum, paddlewheels, catwalks, and headgate control structure. This total cost does not include personnel time for fabrication and construction costs for the metal works provided to the IDFG through NMFS Mitchell Act funding.

Elliot Model 1870F Boom Truck

In late May 2019, the IDFG Anadromous Fish Screen Program received our new boom truck from Legacy Equipment. The Elliot Model 1870F Boom Truck – 2020 Freightliner M2 106 280 h.p. Cummins B 6.7 Diesel was delivered to our compound and Legacy Equipment provided training to the shop crew and supervisors. This essential piece of equipment was bid out for $184,251 and was funded by both Bonneville Power Administration ($140,000) and Mitchell Act funding ($44,251).

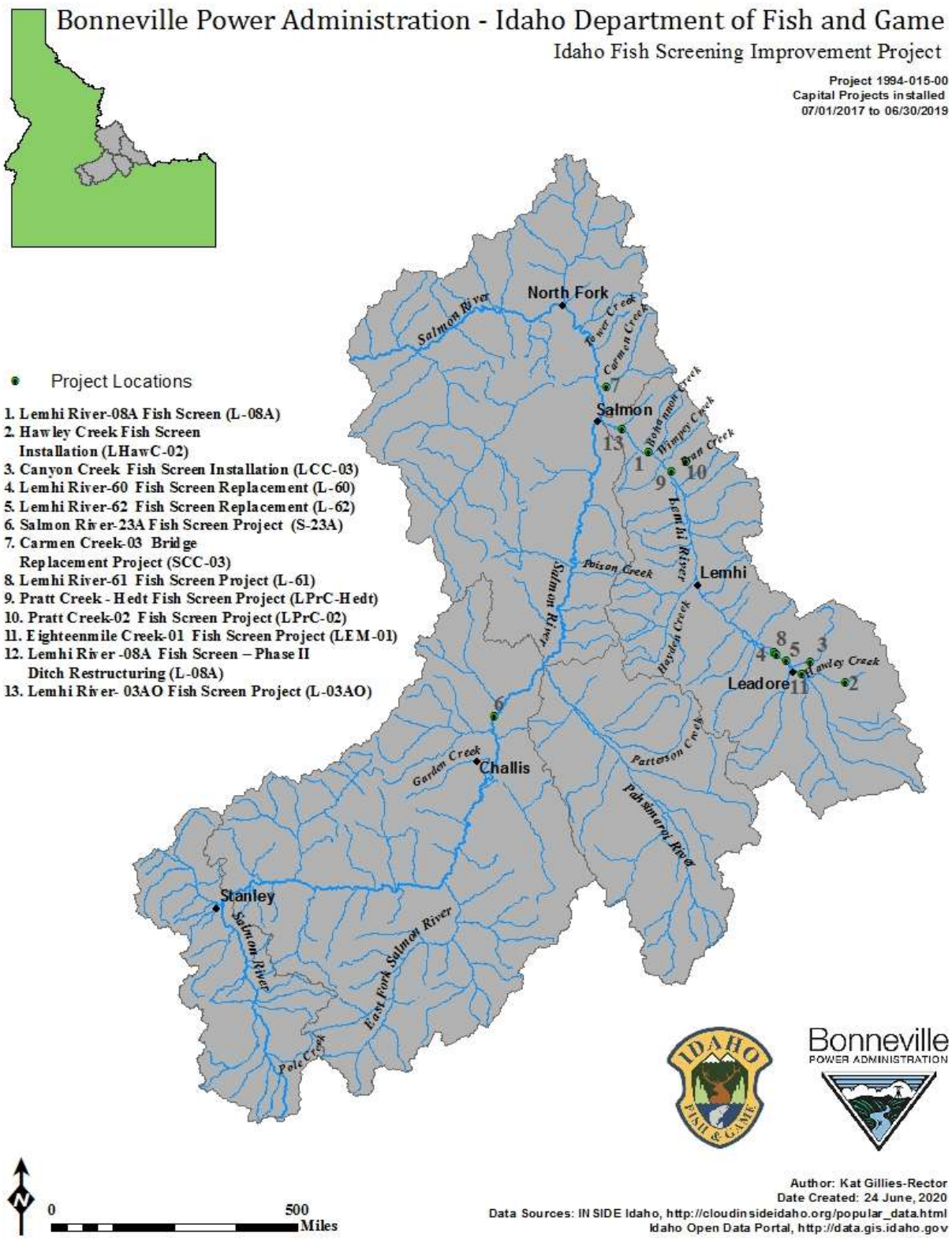

Figure 1. Locations of Capital Projects installed from July 1, 2017-June 30, 2019.

Lemhi River- 08A Fish Screen			
ID Public Works Contract #	Contractor	Cost	Year Completed
2017-124	Wellard Construction	$117,489	2017

Purpose: The goal of this project was to replace the existing fish screen that would accommodate 34.0 cfs. of irrigation water with a larger screen that would accommodate 52.0 cfs. of irrigation water. The enlargement helped accommodate several water conservation projects within Wimpey and Bohannon Creeks that involved transferring water rights from these tributaries to the Lemhi River. The completion of this project helps replace aging infrastructure and ensures a tributary reconnection of Bohannon Creek.

Species benefitted: Chinook salmon, steelhead, bull trout, and westslope. cutthroat trout

Photo 1. The Lemhi River-08A (L-08A) fish screen was replaced with a new and larger screen that was installed in fall of 2017.

Hawley Creek -02 Fish Screen			
ID Public Works Contract #	Contractor	Cost	Year Completed
2017-106	H&N Construction	$84,760	2017

Purpose: The goal of this project was to install a fish screen on a previously unscreened diversion in Hawley Creek. The new screen was built to accommodate 7.0 cfs of flow into a pipeline. The installation of the screen was part of a larger cooperative project that worked with irrigators to install pipelines and pivots to conserve water in Hawley and Canyon Creek. The culmination of the projects will assist in the reconnection of these tributaries of the Lemhi River.

Species benefitted: Chinook salmon, steelhead, bull trout, westslope. cutthroat trout

Photo 2. New NMFS criteria fish screen installed at the Hawley Creek-02 (LHaw-02) diversion in 2017.

Canyon Creek -03 Fish Screen			
ID Public Works Contract #	Contractor	Cost	Year Completed
2017-106	H&N Construction	$84,760	2017

Purpose: The goal of this project was to install a fish screen on a previously unscreened diversion in Canyon Creek. The new point of diversion screen was built to accommodate 4.0 cfs of flow into a pipeline. The installation of the screen was part of a larger cooperative project that worked with irrigators to install pipelines and pivots to conserve water in Canyon Creek and Hawley Creek. The culmination of the projects will assist in the reconnection of these tributaries to the Lemhi River.

Species benefitted: Chinook salmon, steelhead, bull trout, westslope. cutthroat trout

Photo 3. New NMFS criteria closed drum fish screen installed at the Canyon Creek (LCC-03) diversion in 2017.

Lemhi River –60 and -62 (L-60 and L-62) Fish Screen Projects						
IDFG Project No.	Project	Initial Cost		Total Cost	Start Date	End Date
2017-127	L-60 & L-62	$68,000		$68,000.00	08/28/2017	10/19/2017

Purpose: The goal of this project was to replace two older fish screens with new screens. The existing fish screens were 45° rotary drums screens that were installed in the early 1990's. Both screens are 45° screens and although the sweeping velocity met current criteria, this minimal velocity had a tendency for sediment build up in front of the screens. Also, the concrete was starting to crack and failure creating additional operation and maintenance issues. The screens were designed for flow rates of 8.0 cfs at L-60, and 15.0 cfs at L-62.

The replacement of these screens was an important step toward replacing aging infrastructure in a critical location.

Species benefitted: Chinook salmon, steelhead, bull trout, westslope. cutthroat trout

Photo 4. An old fish screen was replaced with a new screen at the Lemhi River-60 (L-60) in fall of 2017.

Photo 5. An old fish screen was replaced with a new screen at Lemhi River-62 (L-62) in the fall of 2017.

Salmon River- 23A (S-23A) Fish Screen Project			
ID Public Works Contract #	Contractor	Cost	Year Completed
NA	Getty Excavating	$20,776	2017

Purpose: The goal of this project was to replace an older non-criteria screen with a NMFS criteria fish screen. The new double bay rotary drum screen is designed to screen 8.0 cfs and is paddle wheel driven. The double bay modular screen was the first in its kind that has been designed and fabricated by the Screen program. The bridge that accesses this location is not rated to hold loaded concrete trucks so a lighter weight modular that could be hauled across in pieces was built to make the installation feasible.

Species benefitted: Chinook salmon, steelhead, bull trout, westslope. cutthroat trout

Photo 6. New NMFS criteria fish screen installed at the Salmon River-23A (S-23A) diversion in 2017.

Carmen Creek-03 Bridge Access			
ID Public Works Contract #	Contractor	Cost	Year Completed
NA	Dahle Construction	$26,800	2018

Purpose: The access road to operate and maintain the SCC-03 fish screen crossed Carmen Creek utilizing an old wood sub-structure bridge. Historically the property owner and irrigator used the bridge during spring runoff and then used a ford during low water flows or when using a heavier vehicle. For long term operation and maintenance of the new fish screen and to eliminate the ford crossing, IDFG removed the old bridge and installed a steel girder bridge supported on perched concrete abutments.

Species benefitted: Chinook salmon, steelhead, bull trout, westslope. cutthroat trout

Photo 7. The old Carmen Creek -03 (SCC-03) access bridge was replaced with a new bridge in January 2018.

Photo 8. The old Carmen Creek -03 (SCC-03) access bridge was replaced with a new bridge in January 2018.

Lemhi River-61 (L-61) Fish Screen Project			
ID Public Works Contract #	Contractor	Cost	Year Completed
2018-148	Down to Earth Excavating	$83,343	2018

Purpose: The goal of this project was to replace an older non-criteria screen with a NMFS criteria fish screen. The new double bay rotary drum screen is designed to screen 12.24 cfs and is paddle wheel driven. Additional work will be done to make the fish screen operate properly. The point of diversion will be moved upstream, and a new headgate installed and small check structure diversion will be installed. Below the screen, the ditch will be regraded and a culvert lowered to help move water away from the fish screen and improve operation. The instream work will be delayed to 2019 to accommodate the instream work window. The culvert replacement is currently delayed awaiting cultural review for Section 106.

Species benefitted: Chinook salmon, steelhead, bull trout, westslope. cutthroat trout

Photo 9. A new NMFS Criteria fish screen is replacing a fish screen that was not functioning properly due to age and poor drainage. The concrete was poured and screen fabricated in 2018, but the screen will not be completed until the headgate and ditch works are installed in summer of 2019.

Pratt Creek - Hedt Fish Screen			
ID Public Works Contract #	Contractor	Cost	Year Completed
NA	IDFG	$1,398.65	2018

Purpose: Project proposes to install a small passive point-of-diversion pump screen on the Pratt Creek-Hedt (LPrC-Hedt) diversion. This project is part of a larger multi-agency project that is actively seeking to reconnect Pratt Creek to the Lemhi River

Species benefitted: Chinook salmon, steelhead, bull trout, westslope. cutthroat trout

Photo 10. Pratt-Hedt passive fish screen was installed in December 2018. The screen and hose will need to be seasonally removed by the irrigator.

Pratt Creek-02 (LPrC-02) Fish Screen			
ID Public Works Contract #	Contractor	Cost	Year Completed
2018-155	H&N Construction	$27,318	2019

Purpose: The purpose and need of this project is to install a fish screen, log weir structure and a headgate at the Pratt Creek-02 diversion. A recent water transfer, #81518, consolidated six diversions into this one diversion. Water is diverted from Pratt Creek into a gravity fed pipeline, however the diversion is currently unscreened. This project will install a fish screen and the necessary headgate.

Species benefitted: Chinook salmon, steelhead, bull trout, westslope. cutthroat trout

Photo 11. Pratt Creek-02 (LPrC-02) fish screen was installed in spring of 2019.

Eighteenmile Creek -01 Fish Screen			
ID Public Works Contract #	Contractor	Cost	Year Completed
NA	Boyd Foster Construction	$46,271	2018

Purpose: The goal of this project was to install a fish screen on a previously unscreened diversion in Eighteenmile Creek. The new screen was built to accommodate 3.16 cfs of flow into a pipeline. The installation of the screen was part of a larger cooperative project that worked with irrigators to install pipelines, restore a stream channel, and to conserve water in Eighteenmile creek. The culmination of the projects will assist in the reconnection of tributaries of the Lemhi River and improve water quality and water temperature concerns in the Upper Lemhi River.

Species benefitted: Chinook salmon, steelhead, bull trout, Westslope. cutthroat trout

Photo 12. New NMFS criteria fish screen installed at the Eighteenmile Creek-01 (LEM-01) diversion in 2018.

Lemhi River- 08A Fish Screen – Phase II Ditch Restructuring			
ID Public Works Contract #	Contractor	Cost	Year Completed
NA	Bird Excavation	$27,100	2018

Purpose: This was the second phase to complete the fish screen enlargement project. The goal of this project was to replace the existing fish screen that would accommodate 34.0 cfs of irrigation water with a larger screen that would accommodate 52.0 cfs of irrigation water. The enlargement helped accommodate several water conservation projects within Wimpey and Bohannon creeks that involved transferring water rights from the tributaries to the Lemhi River. The completion of this project helps replace aging infrastructure and ensures a tributary reconnection of Bohannon Creek. The fish screen was installed in fall of 2017 and the headgate and ditch enlargement was completed in March of 2018.

Species benefitted: Chinook salmon, steelhead, bull trout, westslope. cutthroat trout

Photo 13. The metal works of the L-08A fish screen was installed in spring of 2018.

Photo 14. A second headgate was installed to accommodate the additional 18 CFS of water needed to complete the flow projects.

Photo 15. The L-08A ditch was enlarged to accommodate the additional water.

Lemhi River-03AO Fish Screen			
ID Public Works Contract #	Contractor	Cost	Year Completed
2018-130	Wellard Construction	$66,118	2018

Purpose: The goal of this project was to replace an older non-criteria screen with a NMFS criteria fish screen. The new double bay rotary drum screen is designed to screen 8.8 cfs and is paddle wheel driven. This screen was one of our highest priority screens to replace.

Species benefitted: Chinook salmon, steelhead, bull trout, westslope cutthroat trout

Photo 16. New NMFS Criteria fish screen installed at L-03AO is replacing a fish screen that was not functioning properly due to age and poor drainage.

In 2019, the Screen Program acquired a new boom truck to replace one that was damaged in 2017. The equipment is essential to the operation and maintenance of our program and is used on a regular basis to set and pull screen components amongst many other tasks.

Photo 17. The Screen Program replaced a boom truck this year. The truck is used on a frequent basis to pull and set screens amongst other chores.

Stream Investigations and Habitat Assessments

Produce Inventory or Assessment – Work Element 115

Stream Investigations

Idaho Department of Fish and Game's (IDFG) Anadromous Fish Screen Program based in Salmon, Idaho, conducts fisheries surveys in prioritized tributary streams utilizing electrofishing/snorkeling methodologies to document the distribution, occurrence, and abundance of salmonids throughout priority watersheds. These initial watershed inventories provide baseline data for monitoring and evaluation assessments of future fisheries improvement projects. The objective of the surveys is to document the presence of fish species and life histories in the watershed for pre- and post-monitoring of conservation actions. Conservation measures may include improving fish passage, identifying fish screening opportunities, diversion consolidation, eliminating diversions, decreasing irrigation conveyance losses, and producing water-savings for increasing in-stream flow. Spawning ground surveys are conducted for spawning adult Chinook salmon, adult steelhead, and fluvial bull trout throughout several watersheds that have been screened and those currently being investigated for possible future fish screening projects.

Contract 77127 - July 1st 2017 thru June 30th 2018

The Screen Program fishery crew conducted 65 fish, habitat, and flow surveys within priority fish and habitat restoration monitoring drainages in 2017. Sampling was delayed for several weeks this year, due to the extended duration and intensity of high water throughout the upper Salmon River basin. Fishery crews completed survey sites located in the Pahsimeroi River subbasin including 14 survey sites on Patterson Big Springs Creek, three sites on Patterson Little Springs Creek, and seven sites on the mainstem Pahsimeroi River. A total of 14 survey sites were sampled in the Haynes Creek watershed, a tributary to the Lemhi River and two survey sites in the Hat Creek watershed, a tributary to the mainstem Salmon River. Additionally, annual monitoring sites where conducted at seven sites on Pole Creek, a tributary to the mainstem Salmon River, as well as five sites on the Salmon River.

Some highlights from the 2017 field sampling season included surveying Meadow, Goat, and Iron Creeks which are tributaries to Valley Creek near Stanley, ID. Survey sites completed in the upper Salmon River basin included one site on Iron Creek, five sites on Meadow Creek, and seven sites on Goat Creek. Lower reaches of these tributaries had not been surveyed due to limited access to privately owned lands. A total of 67 juvenile Chinook salmon were documented at Iron Creek snorkel site Iron-00b, yielding a density estimate of 18.4 fish/100 m^2. Juvenile Chinook salmon were present at 6 of the 7 survey sites on Goat Creek. Densities of Chinook salmon ranged from 0.6 fish/100 m^2 at site Goat-00e to 78.5 fish/100 m^2 at site Goat-00b. No juvenile Chinook salmon were present at the uppermost Goat Creek site. All other results from the 2017 fisheries surveys are still being evaluated at this time.

Staff Biologist Windy Schoby and Fishery Technician Heidi Messner conducted redd count surveys to document Chinook salmon spawning distribution, timing, and abundance in response to recent flow improvement projects, elimination of passage barriers at diversion structures, and

screening of irrigation ditches in priority tributaries. Redd count surveys were done in Patterson Big Springs Creek in the Pahsimeroi River subbasin on September 20. Fishery crews counted 22 Chinook salmon redds from Hooper Lane to fish screen PBSC-03 in Patterson Big Springs Creek in 2017.

Program Biologist Mike Biggs conducted the annual spawning ground surveys to document fluvial bull trout spawning distribution and abundance in Fourth of July Creek near Stanley, Idaho. This redd count was conducted for bull trout spawning in early September, and has been conducted annually since 2003. Results of this survey indicate a significant increase in the spawning population since conservation measures, including fish screening, were implemented in the watershed in the early 2000's. Single-pass spawning ground redd counts found a total of 39 fluvial bull trout redds on September 7, 2017. Results from this year's redd count was slightly lower than the previous 5-year average of 42 redds from 2012-2016.

To better understand bull trout migratory and spawning behavior and assess the effectiveness of fish screens in the upper Salmon River basin, we will monitor the fluvial and resident bull trout population on Fourth of July Creek. Overall, we have three main objectives of our monitoring study: first, we will estimate fluvial abundance and migration timing. Secondly, we will quantify entrainment rates and assess movement patterns of PIT-tagged bull trout along Fourth of July Creek, and third, we will use the data collected to estimate the relationship between the probability of entrainment associated with the proportion of stream-flow diverted. Overall, we hope our results will contribute to a better understanding of fluvial bull trout populations, and illustrate the benefits of fish screen passage for both anadromous and fluvial/resident fish species.

In 2017, we captured and tagged a total of 163 bull trout over the duration of the picket weir operation. For the 2018 sampling year, we tagged a total of 220 Bull Trout, bringing the total number of fish tagged from Fourth of July Creek to 354. In addition, the 2018 Fourth of July Creek bypass PIT-Tag detection systems detected approximately 31 of the 163 PIT-tagged Bull Trout from the 2017 sampling season (Figure 4). All of these 31 fish were entrained in either the S4JC-01 and/or S4JC-03 diversions during their 2018 spawning season. We did not observe any tagged fish pass through S4JC-02, most likely due to the fact that the S4JC-02 diverts only a small proportion of the Fourth of July Creek stream flow. In addition, 25 of those 31 fish we captured at the weir, giving us a weir efficiency of 81% and is mostly explainable. For example, we had handheld PIT-tag reader issues, substantial leaf litter build up toward the end of the operation, we may have pulled the weir before the rest of the bull trout moved out, and there could also be high post-spawn mortality. Regardless, those 25 fish were bypassed at S4JC-03, S4JC-01, or both, and therefore we observed 100% entrainment of bull trout at these diversions. These fish were also entrained during the irrigational low streamflow season, likely contributing to their being diverted into S4JC-03 and -01 (Figure 3(a) and (b)). The mean magnitude of these stream flows during the period of weir operation and bypass monitoring, approximately August 1 to October 1, 2018, was 7.68 $ft^3\ s^{-1}$. Given that among all three diversions a total of 32.9 $ft^3\ s^{-1}$ (total maximum diversion rate summed for all diversions: S4JC-01, -2 and -03) can be diverted from Fourth of July Creek in an irrigation season, a discharge of 7.68 $ft^3\ s^{-1}$ could be considered relatively low flow conditions. These estimates are preliminary, but illustrate the benefits of using fish screens in irrigation diversions, as we observed some bull trout entrained multiple times within the Fourth of July Creek diversions.

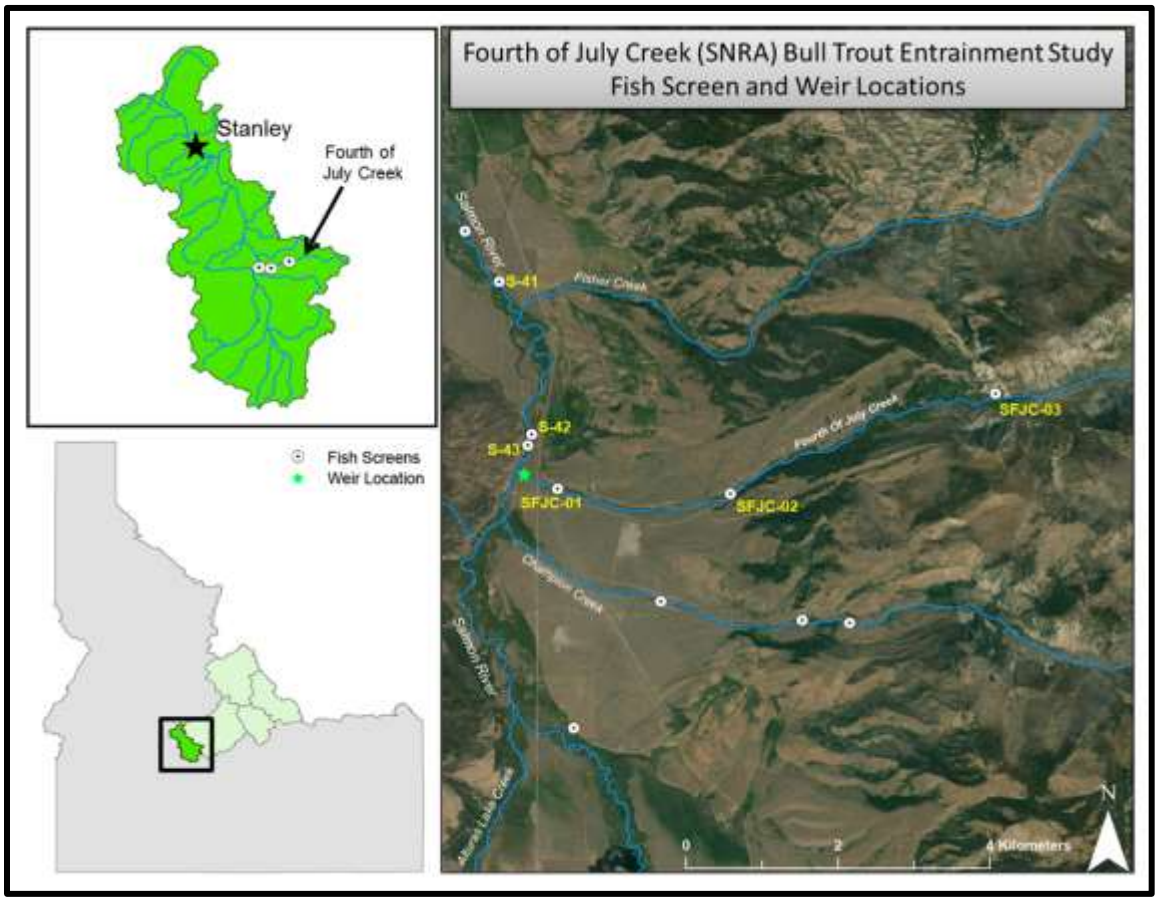

Figure 2. Map depicting the locations of diversions, fish screens, and the temporary picket weir installation on Fourth of July Creek.

Table 1. Duration and framework of bull trout entrainment study on Fourth of July Creek, near Stanley, Idaho.

Activity	**Proposed Duration**
Marking fish using picket weir	2017 to 2020
Installation of bypass reader arrays • *Specific dates of operation*	2017 to 2022 -Beginning of July to beginning of October
Installation of instream pass-by arrays • *Specific range of operation*	End of July 2019 -All year-round – Operate until 2022 (at minimum)

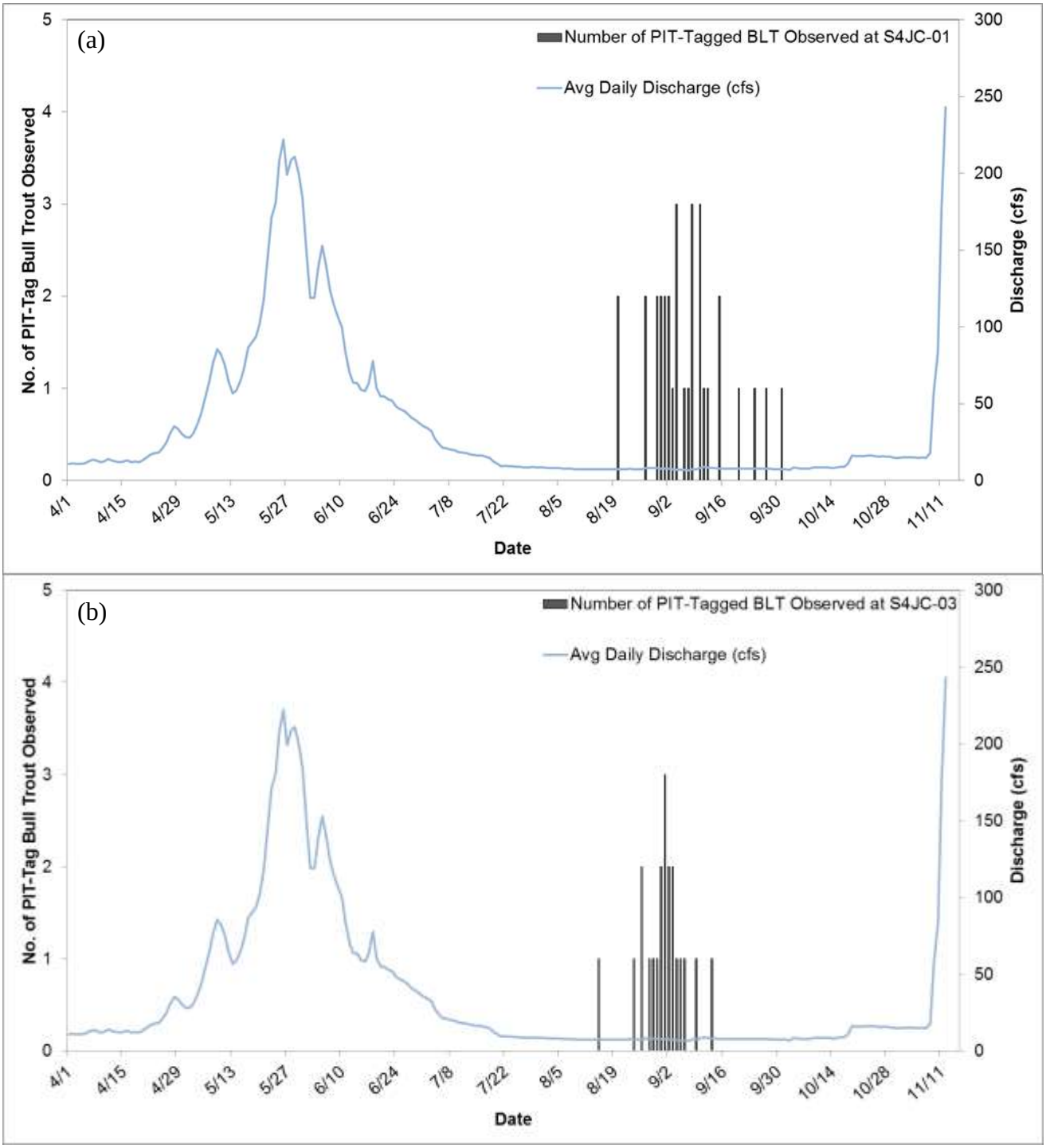

Figure 3. Summary hydrographs of the mean daily discharge (cfs) and the number of PIT-tagged Bull Trout observed at diversions (a) S4JC-01 and (b) S4JC-03 in 2018.

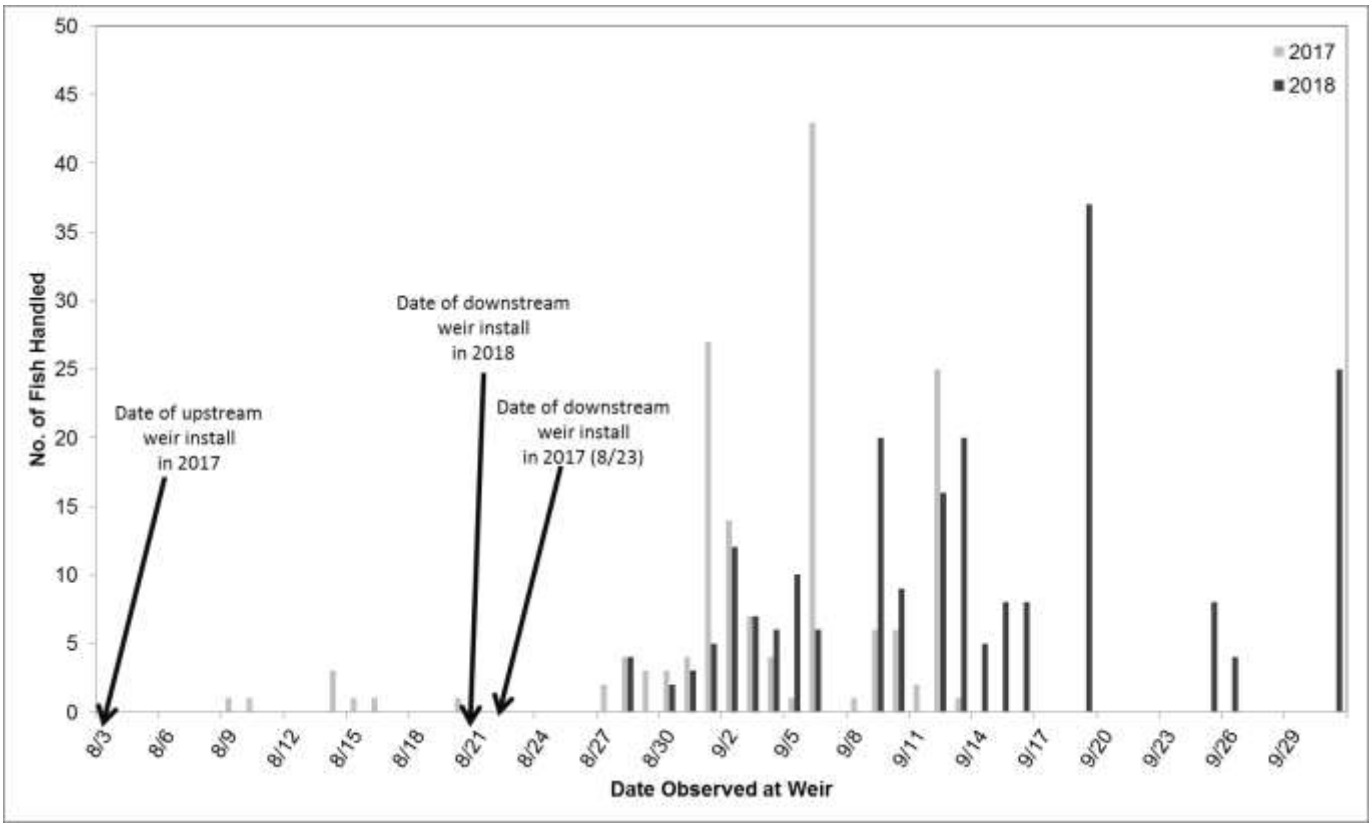

Figure 4. Dates we captured outmigrating fluvial Bull Trout at the picket weir in 2017 and 2018.

Contract 79686 - July 1st 2018 thru June 30th 2019

The Screen Program fishery crew conducted 63 fish, habitat, and flow surveys within priority fish and habitat restoration monitoring drainages in 2018. Fishery crews completed survey sites located in the Pahsimeroi River subbasin including 14 survey sites on Patterson Big Springs Creek, three sites on Patterson Little Springs Creek, seven sites on the mainstem Pahsimeroi River, six sites on Sulphur Creek, two sites on Duck Creek, and two sites on Mayrick Creek. On tributaries to the main Salmon River, a total of five survey sites were sampled in the Alder Creek watershed. Survey sites completed in the Upper Salmon River Basin include one site on Iron Creek, five sites on Meadow Creek, seven sites on Goat Creek, all tributaries to Valley Creek. Additionally, annual monitoring sites where conducted at seven sites on Pole Creek, a tributary to the mainstem Salmon River, as well as five sites on the Salmon River.

Some highlights from the 2018 field sampling season included observing Chinook salmon parr, bull trout, and mountain whitefish in Pole Creek above the Pole Creek-01 diversion. These species had not been previously documented in surveys upstream of this location. Another highlight was having to reschedule sampling in the Pahsimeroi River above Furey Lane because flows were too high to effectively electrofish. This was notable because in many of the past surveys, this reach of the river was completely dry. Flow improvement projects at P-16 diversion and other water right administration has resulted in perennial flow in the Pahsimeroi River. A total of 36 juvenile Chinook salmon were documented at Iron Creek snorkel site Iron-00b, yielding a density estimate

of 10.4 fish/100 m^2. Juvenile Chinook salmon were present at 3 of the 7 survey sites on Goat Creek. Densities of Chinook salmon ranged from 0.5 fish/100 m^2 at site Goat-00d to 2.0 fish/100 m^2 at site Goat-00a. No juvenile Chinook salmon were present at the uppermost Goat Creek site. Juvenile Chinook salmon were present at 4 of the 5 Meadow Creek survey sites, and densities of Chinook salmon ranged from 0.58 fish/100 m^2 at Meadow-03 to 15.3 fish/100 m^2 at Meadow-00. Goat and Meadow Creek are being evaluated for future fish screening and habitat projects after a landownership change and some instream flow improvements.

Staff Biologist Windy Schoby, Fishery Technician Heidi Messner, and Fishery Technician Bradford Warland conducted redd count surveys to document Chinook salmon spawning distribution, and abundance in response to recent flow improvement projects, elimination of passage barriers at diversion structures, and screening of irrigation ditches in priority tributaries. Redd count surveys were done in Patterson Big Springs Creek in the Pahsimeroi River subbasin on September 18. Fishery crews counted 11 Chinook salmon redds from Hooper Lane to fish screen PBSC-03 in Patterson Big Springs Creek in 2018.

Program Biologist Demitra Blythe, Staff Biologist Windy Schoby, Program Coordinator Paddy Murphy, and Fishery Technicians Heidi Messner and Bradford Warland conducted the annual spawning ground surveys to document fluvial bull trout spawning distribution and abundance in Fourth of July Creek near Stanley, Idaho. This redd count was conducted for bull trout spawning in early September, and has been conducted annually since 2003. Results of this survey indicate a significant increase in the spawning population since conservation measures, including fish screening, were implemented in the watershed in the early 2000's. Single-pass spawning ground redd counts found a total of 58 fluvial bull trout redds on September 11, 2018. Results from this year's redd count was slightly higher than the previous 5-year average of 42 redds from 2012-2016. Heidi, Demitra and Brad installed a bull trout weir on Fourth of July Creek in Stanley, ID on August 21, 2018. The summary of this work was reported above in the 2017 contract section.

Evaluations

The fisheries staff for the Anadromous Fish Screen Program conduct a variety of monitoring activities to document the efficacy of fish screens and to ensure efficient fish passage through both fish screen and stream systems. These activities monitor current fish screen and diversion design and help identify the need for future modifications to screens and instream passage.

Program fisheries staff annually install and operate four Biomark manufactured, Destron-Fearing FS2001 FR/ISO PIT-tag reading stations to monitor fish passage through bypass pipes on fish screens L-03, L-06, L-30, and S-32 for the irrigation season from April to October every year (Figure 1.). These Passive Integrated Transponder (PIT) tag readers are installed on three Lemhi River fish screen bypass pipes and on one Salmon River fish screen bypass pipe at the beginning of the irrigation season each year. The readers detect and record when PIT tagged downstream migrating fish have been bypassed back into the river after entrainment into an irrigation canal that has a fish screen installed on it. Bypass monitoring sites are visited once every week to check the sites interrogation status, download data, and make any adjustments or repairs. PIT tag detection efficiencies are calculated for each site by running a series of stick test tags through the system. Efficiency estimates are used to adjust and calculate the number of fish being detected using

expansion estimates. Our objectives in monitoring fish entrainment is to 1) document fish passage and utilization of individual fish screen bypasses by steelhead, sockeye, bull trout, and Chinook salmon; 2) document the correlation between the rate of entrainment and river flows where flows are significantly reduced due to irrigation withdrawals.

Staff Biologist Paddy Murphy and Program Biologist Chuck Warren spent considerable time working with researchers from the NOAA Fisheries Science Center working on a joint peer-reviewed journal article on modeling entrainment of downstream migrating Chinook salmon smolts in the Lemhi River. This paper utilizes data collected by this program since 2003, which document the number of PIT tagged juvenile Chinook salmon that were detected as being returned to the river through monitored fish screen bypass pipes. In this performance period, the paper, titled *Quantifying Cumulative Entrainment Effects for Chinook Salmon in a Heavily Irrigated Watershed*, was published in the Transactions of the American Fisheries Society. Volume 141, Issue 5, 2012, by authors; Annika W. Walters, Damon M. Holzer, James R. Faulkner, Charles D. Warren, Patrick D. Murphy, and Michelle M. McClure.

Lemhi River Chinook salmon smolts encounter 41–71 water diversions during their out-migration. In this modeling study, we used PIT tag data to model the entrainment rate of Chinook salmon smolts as a function of the proportion of water removed by an irrigation diversion. Under median-streamflow conditions in May with unscreened diversions, the estimated cumulative effect of the diversions was a loss of 71.1% of out-migrating smolts due to entrainment. This is a large potential source of mortality, but screening is an effective mitigation strategy, as estimated mortality was reduced to 1.9% when all diversions were screened. We found that on the average, a single irrigation diversion entrained only 6% of out-migrating smolts. The cumulative effect of water diversion on smolt out-migration was substantial, with screening reducing mortality by 50-90%.

The Lemhi River -03 (L-03) diversion is located in the lower Lemhi River at river kilometer (RKM) 5.5. Fish species bypassed at the L-03 fish screen include Chinook salmon, rainbow/steelhead trout, bull trout, and cutthroat trout. Since 2010, an average of 10.7% of all out-migrating juvenile Chinook salmon smolts PIT tagged at the Lemhi Weir rotary screw trap were bypassed at the L-03 diversion.

The L-06 diversion is located 6.2 RKM upstream of the L-03 diversion in the lower Lemhi River. Fish species bypassed at the L-06 fish screen include Chinook salmon, rainbow/steelhead trout, bull trout, and cutthroat trout. Over the past five years, an average of 3.7% of all out-migrating juvenile Chinook salmon smolts PIT tagged at the Lemhi Weir rotary screw trap were bypassed at the L-06 diversion.

The uppermost diversion on the Lemhi River being monitored for entrainment is the L-30 diversion located at RKM 36.2. On average since 2010, 5.4% of out-migrating juvenile Chinook salmon smolts PIT tagged at the Lemhi Weir rotary screw trap were bypassed at the L-03 diversion.

On average, 15.0% of the Lemhi River Weir PIT tagged juvenile Chinook salmon smolts are bypassed at one of these three Lemhi River diversions each year. In some low water years, this percentage can be as high as 30% of the fish being entrained in at least one of these diversions. Fish are often bypassed at several diversions in the Lemhi River, 11% of the juvenile Chinook

salmon smolts bypassed at L-30 are also detected at L-06 or L-03 each year. Since 2010, 28% of the juvenile Chinook salmon smolts detected at L-06 were also detected at L-03. Entrainment rates are unknown for the other 60 diversions on the mainstem Lemhi River, but likely represent a similar range of entrainment for juvenile Chinook salmon.

The Salmon River -32 (S-32) diversion on the Salmon River is located at RKM 520.1. The size of this diversion, typically operating between 170-180 cfs during the irrigation season, provides an opportunity to assess fish entrainment rates at a large diversion on the mainstem Salmon River. Fish species bypassed at S-32 include Chinook salmon, sockeye salmon, rainbow/steelhead trout, bull trout, and cutthroat trout. Juvenile sockeye salmon are the most abundance fish species bypassed at S-32 with an estimated 11,774 juvenile sockeye salmon being bypassed over the past 5 years. An estimated 4,152 rainbow/steelhead trout were also bypassed at S-32 since 2010.

In 2015, all four existing FS2001 FR/ISO PIT-tag reading stations were replaced with four new Biomark IS1001 PIT-tag reading detection systems. A Biomark HPR 601 PIT-tag reader was purchased and is currently deployed at the large S-28 diversion, located on the Salmon River just upstream of Challis, Idaho. The new monitoring equipment will improve PIT-tag detection efficiencies at all monitoring sites and ensure quality entrainment data for the next several years.

Program staff recently visited all fish screen sites in the Upper Salmon River, East Fork Salmon River, and the Pahsimeroi River to compile a fish screen inventory database of screens and components to help prioritize a replacement schedule for fish screens and components currently being maintained by the program. This database includes information such as drum material, number of drums, screen angle, screen seals, bypass configuration, gear boxes, chains, sprockets, and waypoints.

The Anadromous Fish Screen Program currently operates and maintains 275 active fish screens throughout the upper Salmon River Basin (Figure 2.) In addition to Screen Tenders visiting these screens on a daily basis, the Screen Program has a screen monitoring program to ensure that fish screens perform in the field as designed and continue to meet current NMFS Juvenile Fish Screen Criteria. Several key criteria include; safe passage of fish through the screen, minimal delay, specific approach and sweeping velocities, verification of screen integrity to ensure that fish are not passed through, around or over drums to eliminate permanent entrainment in irrigation ditches; and assurance that fish are passively diverted to the bypass to return back to the river. A centralized board, listing every fish screen, is maintained in the central office and updated on a regular basis. In this way, no screen is ignored or allowed to continue operation in any inferior manner.

To achieve program goals, monitoring crews are provided with state of the art measuring devices that allow them to measure velocities and investigate submerged drums and bypass systems. A Sontek Acoustic Doppler Velocimeter is used to measure velocities at each location along the drum. The approach velocity, the flow perpendicular to the drum, is not to exceed .04 feet per second (FPS). The sweeping velocity, the flow parallel to the drum towards the bypass mechanism, is always to exceed the approach velocity. Maintaining these velocities ensures that fish do not become impinged on the screen surface and either injured or entrained into the irrigation canal and that they are actively moved towards the bypass system. The integrity of the drums is determined mainly by the use of underwater cameras that are capable of revealing flaws in the side

or bottom seals of the drum structures while the screen is in active operation. Drums and seals are also examined in the dry before irrigation is underway. Monitoring crews also address issues with inadequate submergence, or the water level in the fish screen in relationship to the height of the drum. Submergence is maintained through active use of control gates that keep the water at 65% to 85% of the drum height. This submergence level prevents fish from being carried over the drums and thus entrained, and allows the self-cleaning drums sufficient ability to carry leaves and other debris over the drums and provides the appropriate amount of exposed screen to maintain the appropriate water velocities.

Finally, the monitoring program ensures that the bypass systems are clear of obstructions and functioning properly and that an adequate plunge pool is available to safely return fish to the stream. Crews use a specialized "pipe pig" style camera to verify that obstacles do not exist within the bypass pipe. This monitoring has been recognized as vital after recognizing that blockages within the bypass pipe are often not obvious. Rootwads, cracked pipes, and debris jams that would have impeded safe fish passage have been identified using the camera. The equipment available to monitor has greatly improved over the years and the emphasis on and frequency of its use has become greater in recent years.

Fisheries staff conduct this monitoring to examine screens as needed and on a rotating basis. Over the past several years, the monitoring crew have completed examination of all screens throughout the mainstem Upper Salmon River Basin, the East and North Forks of the Salmon River and the Pahsimeroi and Lemhi Rivers, as well as several tributaries. Current monitoring efforts continue to be performed at fish screen sites designated as critical or known to host repetitive problems, at newly installed screens, and at randomly selected sites.

Contract 77127 - July 1st 2017 thru June 30th 2018

In April, Fishery Biologist Mike Biggs and Fishery Technician Heidi Messner installed, operated, and maintained the six Biomark manufactured IS1001 PIT-tag detection systems to monitor fish passage through bypass pipes on fish screens in 2017. The readers detect and record when PIT tagged downstream migrating fish have been bypassed back into the river after entrainment into an irrigation canal that has a fish screen installed on it. The PIT tag detection systems were installed and operated at fish screens S-32 and S-28 on the mainstem Salmon River and at L-03 and L-30 on the lower Lemhi River during the reporting period. Three PIT tag detection systems were installed and operated from mid-June until late September on Fourth of July Creek at fish screens S4JC-01, S4JC-02, and S4JC-03. Fisheries Staff periodically monitored, adjusted, and downloaded data at PIT tag readers during the irrigation season. Staff painted all the PIT tag enclosure boxes for better concealment on the landscape. All PIT tag detection systems were removed for several days or weeks due to high water events and were re-installed when conditions allowed in 2017. The fish entrainment data collected in 2017 was compiled and analysis began in winter of 2018. Since 2015, the four FS2001 FR/ISO PIT-tag reading stations were replaced with four new PIT tag detection systems using the Biomark IS1001 reader. These new detection systems have significantly improved PIT tag detectability and have demonstrated better performance and reliability to date.

Fisheries staff conducted underwater video monitoring, flow measurement velocities,

and screen seal integrity of select screen sites in April through September, 2017. Screens were monitored after they were reset in spring and/or prior to active irrigation. They were examined in the dry and photographed for documentation. Fisheries staff used an underwater video camera (Amazing Machinery; Model 3288 Series) to monitor and check seal integrity at multiple fish screens. This system increases efficiency of these surveys helps assess bypass pipes and screen seal integrity of fish screens. Fish screens monitored for compliance with NMFS operating criteria, included all the Valley Creek fish screens; SVC-01, SVC-02/03, SVC-04, and SVC-05/06. Each of these screens was examined for velocity, uniformity of flow, and examined by submersible camera during active irrigation. The camera was also used for investigating seal integrity and pipe joints on the L-61B fish screen and the bypass pipe on the L-06 fish screen. Additionally, Screen Program fisheries personnel surveyed bypass pipes and ditches and, with irrigator cooperation, initiated changes to irrigation practice and screen management at L-03A. This accomplished the goal of safely bypassing fish from the screen back to the Lemhi River.

Fishery Biologist Mike Biggs and Fishery Technician Heidi Messner spent time in this performance period training and utilizing the new SonTek ADV (acoustic doppler velocimeter) and developing a protocol for field streamflow discharge measurements. Heidi took multiple flow measurements on the lower Lemhi River, near L-10 fish screen, and in the S-23A diversion ditch prior to the installation of the new fish screen.

Screen Program fisheries personnel surveyed bypass ditches at SEF-16 to assure adequate return flow to the East Fork Salmon River and examined bypass return flows at L-3A0 and PBSC-07/08. This accomplished the goal of verifying safe bypassing of fish from the screen back to the river.

Fisheries staff installed weirs on head gates at the Hayden Creek-09 (LHC-09) and LHC-11 diversions in July to prevent in-ditch spawning by Chinook salmon.

Fisheries staff continued to compile and update a fish screen inventory database to help prioritize a replacement schedule for fish screens and components currently being maintained by this program. This database includes information such as drum material, number of drums, screen angle, screen seals, bypass configuration, gear boxes, chains, sprockets, and waypoints.

Contract 79686 - July 1st 2018 thru June 30th 2019

In spring of 2018 and 2019, Fishery Technician Heidi Messner installed, operated, and maintained five Biomark manufactured IS1001 PIT-tag detection systems to monitor fish passage through bypass pipes on fish screens during the irrigation season. The readers detect and record when PIT tagged downstream migrating fish have been bypassed back into the river after entrainment into an irrigation canal that has a fish screen installed on it. The PIT tag detection systems were installed and operated at fish screens S-28 and S-32 on the mainstem Salmon River and at L-03, L-08A, and L-30 on the lower Lemhi River during the reporting period. On July 12th 2018, Heidi moved three of the IS1001 PIT-tag readers to the three fish screens located on Fourth of July Creek (S4JC-01, -02, and -03) to monitor fluvial bull trout migration during spawning on Fourth of July Creek. The PIT-tag readers were removed off of Fourth of July Creek once the weir was removed on October 2, 2018 and the readers were re-installed on three of the Lemhi River screens (L-08A, L-09, and L-30). Fisheries staff periodically monitored, adjusted, and downloaded data at PIT tag

readers during the irrigation season. Screen Program Biologist Demitra Blythe came back from maternity leave in August and began assisting Heidi and learning about the Biomark bypass PIT-tag detection systems on fish screens L-03, L-08A, L-30, S-28, and S-32. All of the readers were removed at the end of the irrigation season in November, and were deployed prior to the start of the 2019 irrigation season.

Preliminary analysis of the raw data shows that in 2017, we observed a total of 357 PIT-tagged fish detected being bypassed back to the river at the L-03 fish screen, located in the lower Lemhi River. In 2018, a total of 149 fish were detected by the L-03 PIT-tag reader. We observed juvenile Chinook salmon as the most abundant PIT-tagged fish detected at the L-03 bypass PIT-tag reader in 2017 and 2018, with a total of 278 juvenile Chinook salmon bypassed in 2017, and 67 juvenile Chinook bypassed in 2018 (Figures 7 and 9). Other fish species detected at the L-03 reader in 2017 and 2018 included: bull trout (7 detected in 2017, 6 in 2018), Westslope. cutthroat trout (22 in 2017, 26 in 2018), and steelhead/rainbow trout (50 in 2017, 48 in 2018, see Figures 8 and 10). All other fish entrainment PIT tag detections summaries at fish screens S-28, S-32, L-08A, L-09, and L-30 are still being evaluated. Demitra will use the data to estimate entrainment rates for anadromous and resident fishes, and model what proportion of the population of these fishes would be lost without adequate fish passage.

Fisheries staff conducted underwater video monitoring, flow measurement velocities, and screen seal integrity of select screen sites in April through September, 2018. Screens were monitored after they were reset in spring and/or prior to active irrigation. They were examined in the dry and photographed for documentation. Fisheries staff used an underwater video camera (Amazing Machinery; Model 3288 Series) to monitor and check seal integrity at multiple fish screens. This system increases efficiency of these surveys helps assess bypass pipes and screen seal integrity of fish screens. The camera was used for investigating seal integrity and bypass pipe joints on the new Pratt Creek-01 (LPRC-01) and Canyon Creek-03 (LCanyC-03) fish screens L-61B and the bypass pipe on the L-07 fish screen. Additionally, Screen Program fisheries personnel surveyed bypass pipes and ditches and, with irrigator cooperation, initiated changes to irrigation practice and screen management at L-03AO. This accomplished the goal of safely bypassing fish from the screen back to the Lemhi River.

Fishery Biologist Demitra Blythe and Fishery Technician Heidi Messner spent time in this performance period training and utilizing the new SonTek ADV (acoustic doppler velocimeter) and developing a protocol for field streamflow discharge measurements. They took flow measurements on L-09 fish screen, and on Fourth of July Creek in Stanley, ID above S4JC-01, S4JC-02, and S4JC-03 screens. As in previous years, fisheries staff installed weirs on head gates at the Hayden Creek-09 (LHC-09) and LHC-11 diversions in July to prevent in-ditch spawning by Chinook salmon.

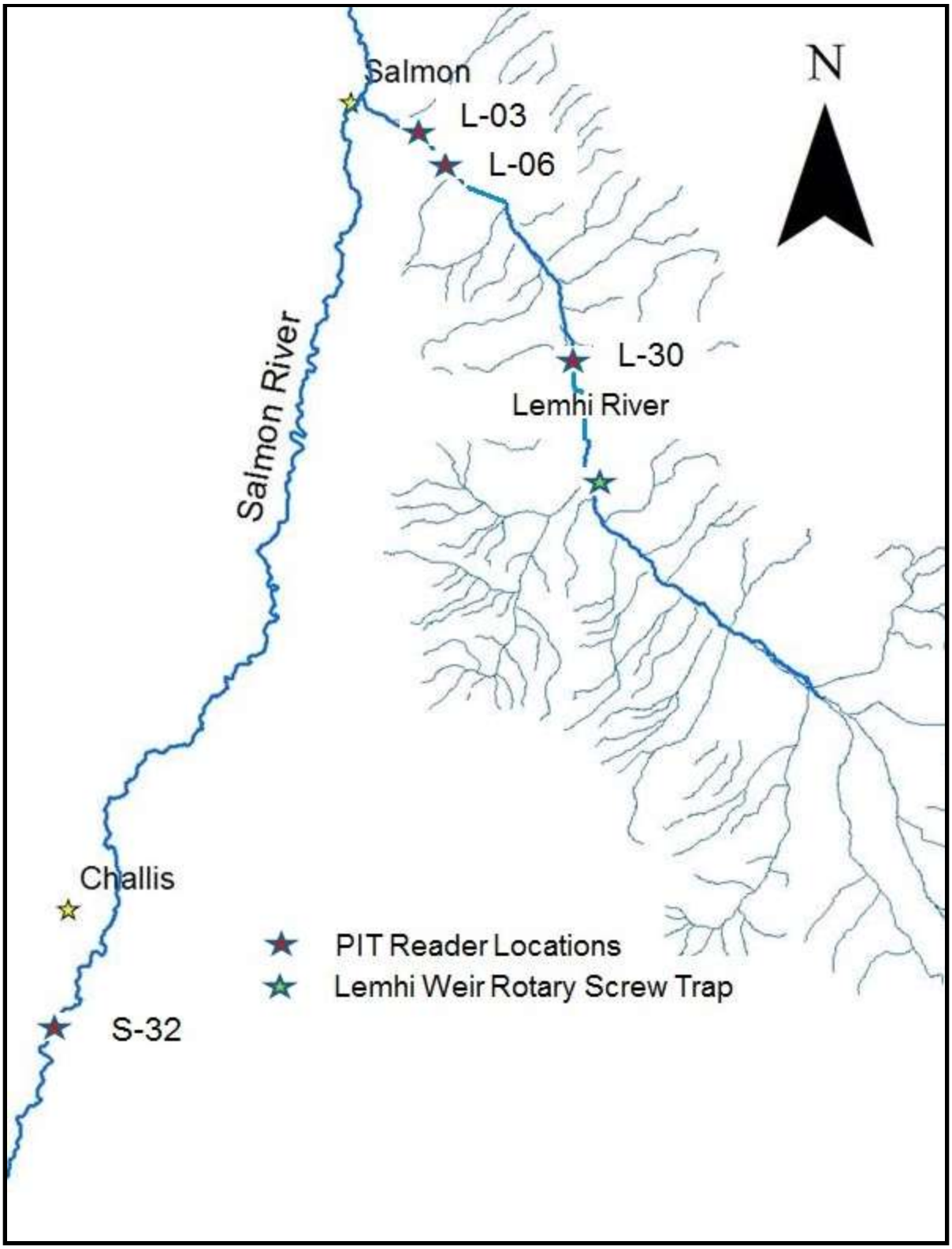

Figure 5. Locations of four irrigation diversions with PIT tag detection systems and the Lemhi Weir rotary screw trap in the upper Salmon River Basin.

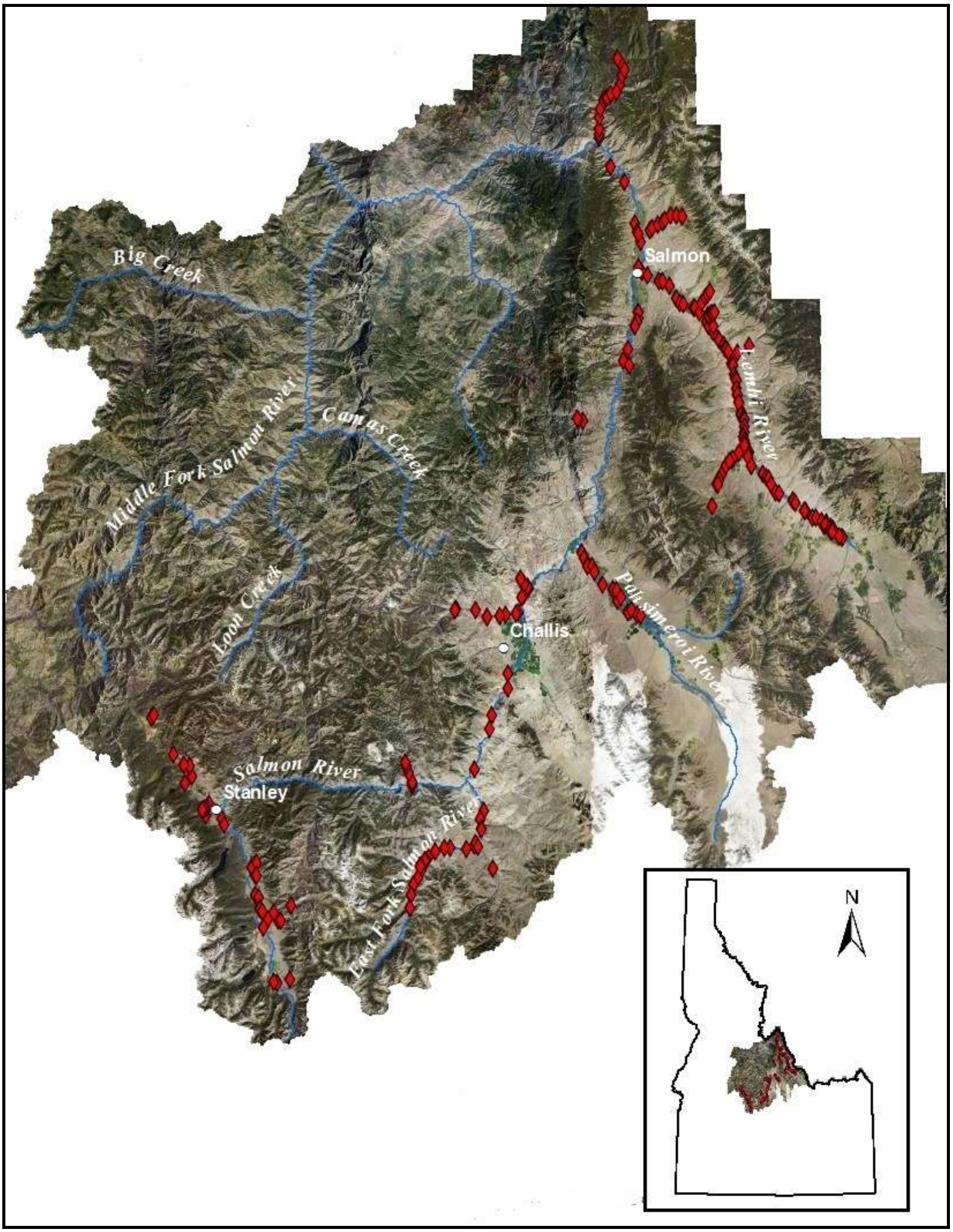

Figure 6. Locations of 270 fish screens in the Upper Salmon River Basin

Photo 18. Solar and battery power installed to power the new PIT tag detection systems purchased in 2015.

Photo 19. Biomark manufactured IS1001 PIT-tag detection systems were purchased in 2015 and are installed annually.

Photo 20. Biomark manufactured IS1001 PIT-tag detection systems were purchased in 2015 and are installed annually at the S-32 Diversion.

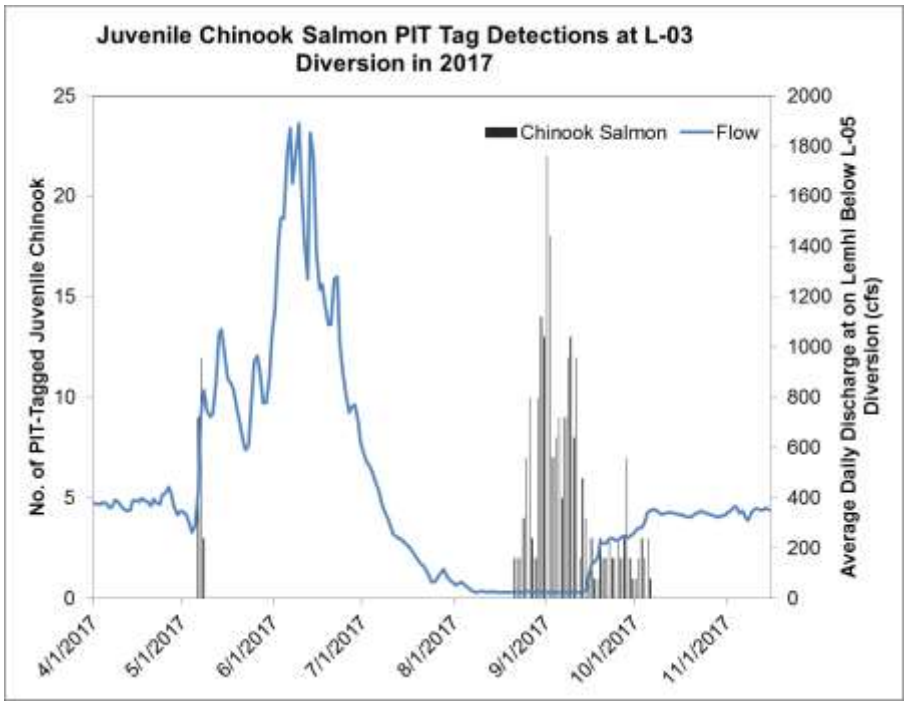

Figure 7. Summary of PIT tagged juvenile Chinook salmon detections as being returned to the river through the L-03 fish screen bypass pipe in 2017.

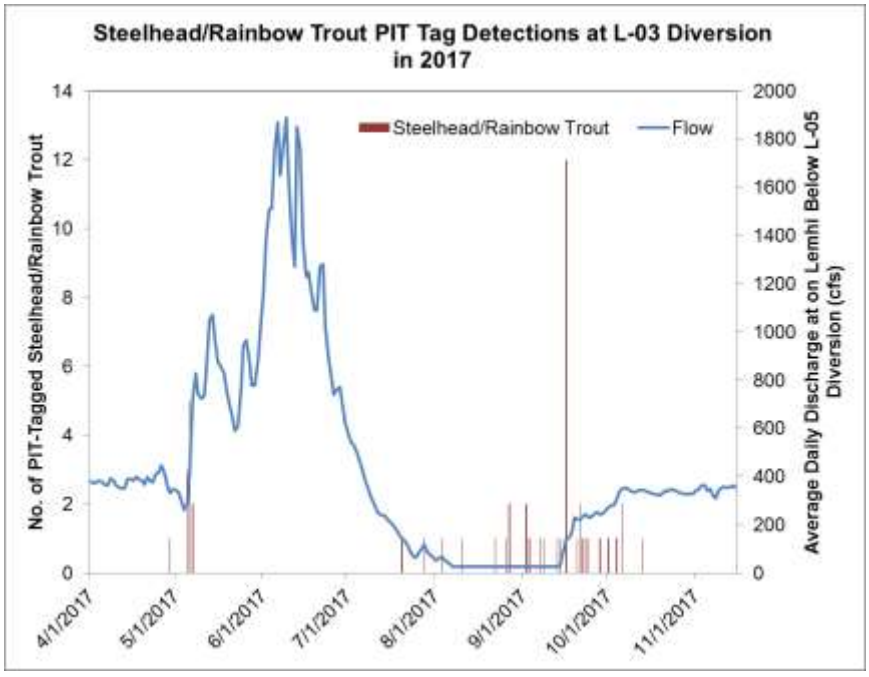

Figure 8. Summary of PIT tagged steelhead/rainbow trout detections as being returned to the river through the monitored L-03 fish screen bypass pipe in 2017.

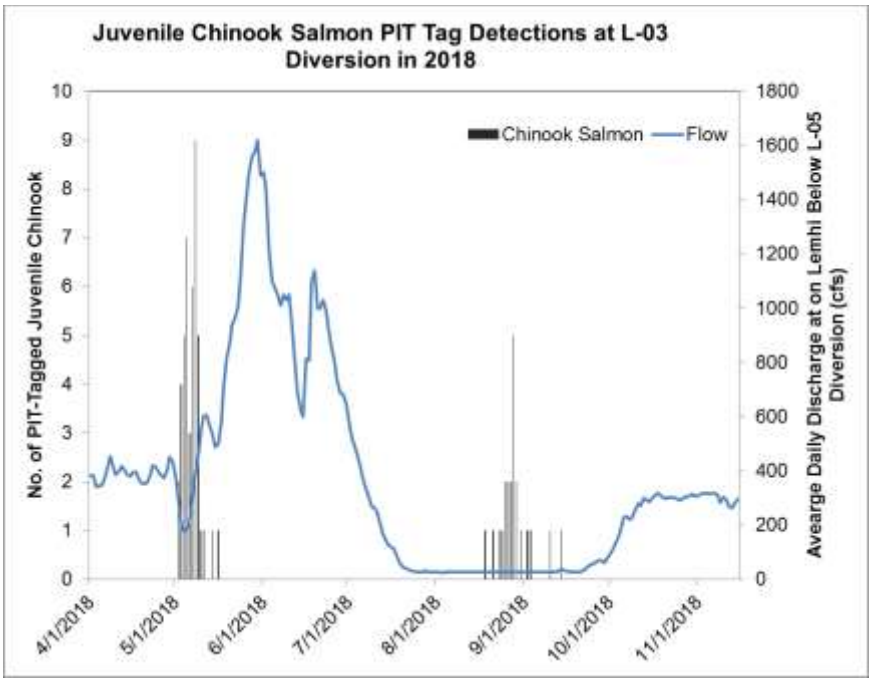

Figure 9. Summary of PIT tagged juvenile Chinook salmon detections as being returned to the river through the L-03 fish screen bypass pipe in 2018.

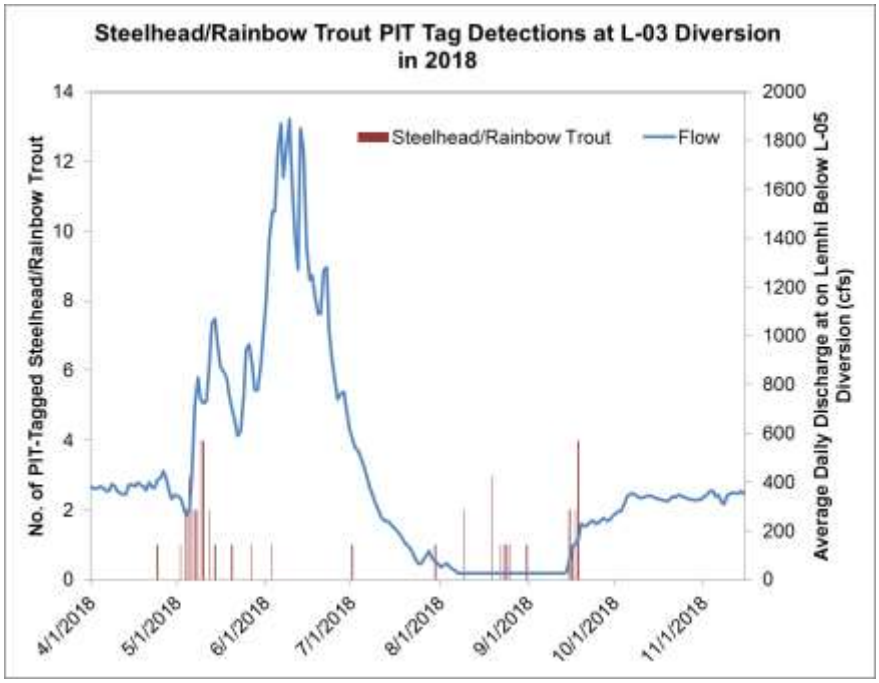

Figure 10. Summary of PIT tagged steelhead/rainbow trout detections as being returned to the river through the monitored L-03 fish screen bypass pipe in 2018.

Fish Salvage

The Anadromous Fish Screen Program reduces mortality of ESA listed Chinook salmon, steelhead, and bull trout through two primary salvage programs, the irrigation ditch salvages and the habitat restoration project salvages. Fish may become entrained in the area between the head gate of a diversion and the interface with the fish screen when irrigators temporarily cease irrigating to cut hay or when they turn off for the season. Our staff has worked with irrigators to minimize the number of fish trapped between the head gate and screen by having irrigators gradually ramp down the flows to encourage fish to migrate out through the bypass pipe on their own. However, some fish remain in the interface between the head gate and screen and our crews remove the stranded fish using electrofishing or netting techniques and return them safely to the river.

The Screen Program also provides support for salvage efforts associated with dewatering stream reaches for habitat restoration projects throughout the Upper Salmon Basin. We coordinate with our partners through the USBWP Tech Team to accommodate work windows and construction timeframes to safely remove fish from dewatered reaches. These projects range from small bypass channels at culvert to bridge replacement projects to long stream reaches for more complex river restoration projects. These projects often require that our staff conduct a site visit to the project reach with the project manager prior to dewatering to plan out salvage needs. Close coordination between our staff and project managers is essential to scheduling the timing of salvage needs due to the nature and complexity of projects. Larger salvage efforts have required over a dozen staff members and volunteers to complete successfully. The recent increase in salvages is a result of more complex habitat restoration projects that require multiple salvages over separate phases of the project.

Contract 77127 - July 1st 2017 thru June 30th 2018

Screen Program fisheries crew completed fish rescue/salvage operations during seasonal fish screen shutdowns, project salvages, and emergency situations. In July, Program Biologist Mike Biggs and Fishery Technician Heidi Messner conducted emergency fish salvage at the Blue Mountain Pond ditch in Challis and rescued juvenile Chinook salmon fish trapped below several Valley Creek fish screens due to over topping and flooding events in 2017. In the summer and fall of 2017, Fishery Biologist Mike Biggs and Fishery Technician Heidi Messner completed fish rescue/salvage operations during seasonal fish screen shutdowns along with various project salvages for other agencies at ninety-four sites from October 1st, 2017 through January, 2018. Fish screen and project salvages yielded a total of 3,036 steelhead/rainbow trout, 1,443 juvenile Chinook salmon, and 15 bull trout that were all rescued and released to their respective streams.

Other work involving the fisheries staff includes conducting numerous fish salvage operations within stream segments that are temporarily affected by construction activities. The activities are generally partner projects that are BPA or PCSRF funded and designed to modify existing structures to provide fish passage to upstream and downstream migrating fish or improve habitat conditions in prioritized river reaches. A fish salvage operation for one of these typically requires coordinating the dewatering of a section of stream within the project reach and electrofishing and collection of fish for relocating outside the affected reach. Screen Program fisheries personnel completed fish salvage operations for partner and IDFG projects on five large salvages during the reporting

period, including the Pahsimeroi River, upper Lemhi River, Pratt Creek, and Sandy Creek. Fish salvage operations were completed during the construction phase at two new fish screen sites LHawC-02 on Hawley Creek and at LCC-03 on Canyon Creek. The linear distance salvaged in 2017 was likely 400% greater than any previous year. This style of larger habitat restoration projects are likely to continue and potentially increase over the next several years.

Contract 79686 - July 1st 2018 thru June 30th 2019

In the fall of 2018, a majority of the irrigation diversions were shut down within the Lemhi River sub-basin in October and November, with some ditches requiring the salvage of fish caught between the head gate and fish screen. In most instances irrigators ramped down flows through the head gate, allowing fish to exit out the ditch through the fish screen bypass, reducing the need for salvage. Irrigators did a good job this year following suggested protocol for ramping down flows.

In the fall of 2018, the Screen Program fisheries crew completed fish rescue/salvage operations during seasonal fish screen shutdowns and regulation shutdowns on 31 sites during the reporting period. The majority of the salvages occurred in October and November during irrigation shutdowns. Fish screen salvages from October 1st - March 31st yielded a total of 460 juvenile Chinook salmon and 445 steelhead/rainbow trout that were rescued and released to their respective streams.

Screen Program fisheries personnel have completed fish salvage operations for partner and IDFG projects on 13 sites during the reporting period on the following streams: Indian Springs; Sawmill Gulch; Little Sawmill Creek; Pratt Creek; Cow Springs; Patterson Big Springs; a large salvage on the Lemhi River upstream of the Big Springs/Lemhi confluence; Big Springs Creek; and Rattlesnake Creek. Fish salvage operations were completed during the construction phase at the new fish screen site L-08A on the Lemhi River, along with general screen ditch clean up at S-05/06/07 on the Salmon River, L-07 and L-30 on the Lemhi River. Program Biologist Demitra Blythe and Fishery Technician Heidi Messner completed fish salvages at both the upper and lower Pahsimeroi Hatchery facilities.

Technical Review/Recommendations for Fisheries Projects

Provide Technical Review and Recommendations – Work Element 122

Contract 77127 - July 1st 2017 thru June 30th 2018

Sustained high water during the spring 2017 runoff resulted in flooding and near flooding conditions across the basin. Many landowners called with private property damage concerns related to irrigation, streambank erosion, or road flooding. We provided technical assistance and direction to permitting agencies, took aerial photos of flooded areas, and conducted site visits during and after flooding. Several habitat, irrigation, or fish passage projects may result from these site visits.

The Salmon Challis Nation Forest is undergoing a Forest Plan Revision Process. Screen Program personnel had preliminary meetings with the Forest Plan Revision Team to discuss the planning process and how IDFG can be involved with the plan. Our first task was to develop a set of ideas of what was working well for fisheries and aquatic resources with the current plan and what could be improved upon including land management practices, public outreach, and habitat restoration. The planning process will take 2.5 -4 years.

Staff Biologist Windy Schoby met with IDWR, NRCS and a landowner on Iron Creek to discuss options for the landowner to keep future flooding on the creek from coming in contact with manure piles before returning to the river. The landowner made the recommended changes. The group also gave him technical assistance about the permitting required to complete any repairs to the stream banks of the Salmon River.

Staff Biologist Windy Schoby and Program Biologist Mike Biggs have been working with IDWR and the CSWCD on project development on Meadow Creek, Goat Creek and Iron Creeks near Stanley. We provided fish data on the systems to help develop the rationale for a water transaction to keep more instream flow in both Meadow Creek, and Goat Creek. Furthermore, we completed an in-depth fish survey in 2017 and 2018 and completed a site visit with partners to look at possible fish screen and fish passage projects.

Staff Biologist Windy Schoby participated in a small working group to develop a logo/ sign to distinguish fish recovery projects in the Upper Salmon Basin. The group narrowed the sign to two choices and let the USBWP Tech Team and Advisory Committee vote on the options. The final sign was chosen and will be available for landowners to voluntarily place on their mailbox or fence to highlight participation. The goal is to bring a public greater awareness of the breadth of fish restoration projects in the basin.

Staff Biologist Windy Schoby and Program Biologist Mike Biggs attended two planning meetings regarding implementing a 72 hour flushing flow in the Lemhi River. Most of the conservation easements that have been put in place in the last five years have included an agreement to turn off all of the diversions for a 72 hour period. The goals of the 72 hour flow event differ by drainage. We are working with a team to determine how to best implement these agreements for channel forming flows, fish passage into and out of drainages. Our coordination with this project is essential because in the process of turning down diversions, fish may become stranded between the headgate and the fish screens. We are planning to work with the irrigators to avoid impacts to fish during these critical timeframes.

On many occasions IDFG Anadromous Fish Screen Program assisted Jeff Richards, IDFG's Environmental Staff Biologist, with history and opinions for applications for new water rights and transfers. This included, Easement Specialist Larry Weeks, helping assist Stan Potts, irrigator on Colson Creek, to discuss troubleshooting his diversion, headgate, and fish screen.

Screen Program Fisheries Staff reviewed a research proposal from Quantitative Consultants, INC (QCI) and OSC to study winter survival of juvenile Chinook salmon and steelhead in the Lower Lemhi and Main Salmon River.

Screen Program personnel manned the Lemhi County Fair Booth where they answered questions from the public about fish and game, and discuss how the Anadromous Fish Screen and Habitat Program benefits the local ranches and the local economy.

In November, the construction crew used the boom truck to assist Regional Fisheries staff in safely lifting out and transporting three rotary screw traps back to the IDFG compound. In the late winter, the construction crew made extensive repairs to two of the anadromous screw traps that are used in the Lemhi River basin. The construction crew helped the Lemhi Monitoring crew deploy all three traps in March with the boom truck.

Staff Biologist Windy Schoby provided fish, habitat, and stream flow data to Custer Soil and Water Conservation District to assist in project planning, permitting and reporting on Pole Creek, Garden Creek, and Patterson Big Springs Creeks.

Screen Program Fisheries Staff provided fisheries data to IDWR Water Transactions Program for their annual monitoring reports in prioritized watersheds.

Staff Biologist Windy Schoby and Program Coordinator Paddy Murphy provided comments to BPA regarding proposed changes to the HIP III programmatic in the new version HIP IV. Most comments were directed at design and installation of fish screens, turbidity monitoring, and work windows and work area isolation.

In March, Staff Engineer Jared Bragg was asked to review and score the applications for a Staff Engineer position in Boise. This request was made from IDFG Engineering Bureau.

The Construction Crew removed several screens at the upper and lower Pahsimeroi Fish Hatcheries to aid hired contractors in the removal of several hundred yards of silt from both sites, and then repaired and replaced the screens upon completion.

Staff Engineer Jared Bragg worked with Upper Salmon Basin Watershed Program and Lemhi County Road and Bridge to design a prefabricated steel bridge over Rattlesnake Creek. The project included removing a failed culvert with a pre-fabricated bridge for a private drive over Rattlesnake Creek. Final plans included structure design, dewatering plans, traffic control plans, stream and roadway regrading plans, erosion and sediment control structures, utility coordination and detail for construction. Lemhi County Road and Bridge will be installing the bridge and IDFG will continue to provide technical support. Construction is expected to be completed by December 1, 2018.

Easement Specialist Mike Demick assisted IDFG Environmental Staff Biologist Jeff Richards with history and opinions for IDWR applications for new water rights and transfers including: protest letter and pre-hearing conference concerning new water right application for Fourth of July Creek (Yerden Living Trust); protest letter and pre-hearing conference concerning dam construction in Owl Creek and Owl Creek Hot Springs (BC&M Inc.); transfer of water rights Bohannon Creek (Betty Stokes), new water right applications on Salmon River (Rachelle Ahrens); Jessy Creek waste water rights (Lois Blackadar); Freeman Creek (Lucy Littlejohn), and Moose Creek (Sam & Treva Wing).

In May, Easement Specialist Mike Demick attended a BLM/FS coordination meeting with Program Coordinator Paddy Murphy, Regional Supervisor Tom Curet and Wildlife Biologist Jessie Shallow to discuss goals and plans for future cooperative projects with these Federal agencies, including irrigation/fish passage projects, habitat restoration and backcountry airstrips improvements.

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In September, Easement Specialist Mike Demick assisted Amy Cassel at Idaho Dept. of Water Resources (IDWR) who requested diversion rates associated with screens on Morgan Creek, Knapp Creek, and Salmon River ditches (Santee and Rainbow ditches). IDWR is looking at determining long-term water conservation projects in these watersheds, with these ditches part the solutions.

Several U.S.F.S Ranger Districts in the Upper Salmon have been facing litigation about unscreened or unpermitted diversions that originate on Federal property. The IDFG Screen Program has been serving as technical advisors for both the Sawtooth and Salmon-Challis National Forests in helping address the issues. We are urging that the USFS and the litigants accept a more holistic approach to addressing water diversion in certain watersheds. Often screening in the headwaters of drainage while having unscreened diversions or over appropriated and therefore dewatered stream channels in the lower portion of the drainage makes little biological impact. We have been encouraging the parties to look at potential off-sets that may have a higher biological value than screening some of the small headwater diversions. In other instances, we are helping provide screens and looking at adding some of the priority screens to our future work plans. On the Salmon-Challis National Forest, we are building screens for the USFS diversion for their livestock and pastures on Garden Creek and on Little Squaw Creek in the Frank Church Wilderness. We are also looking at the feasibility of screening diversions on Owl Creek, Squaw Creek, and Loon Creek, On the Sawtooth National Recreation Area, we are looking at potentially screening points of diversion on Champion Creek, Fisher Creek, and Meadow Creek.

Staff Biologist Windy Schoby and Easement Specialist Mike Demick attended a field tour on Morse Creek, a disconnected tributary to the Pahsimeroi River to look at an unscreened diversion and ditch system. The tour was organized by BLM after fish were found to be entrained in the ditch system that originates on BLM Federal Land. The group looked at the options for fish salvage, screening, and water savings.

Staff Biologist Windy Schoby participated in the Challis Elementary School 5th Grade Natural Resource Day. She spoke to 30 students and their parents about the importance of clean water and good fish habitat in the Pahsimeroi Basin. There was an invertebrate discovery station with microscopes and bug keys as well.

Screen Program personnel manned the Lemhi County Fair Booth where they answered questions from the public about fish and game, and discuss how the Anadromous Fish Screen and Habitat Program benefits the local ranches and the local economy.

In November, Easement Specialist Mike Demick assisted Amy Cassel of the Idaho Department of Water Resources (IDWR) who requested diversion rates associated with fish screens on Morgan Creek and just upstream of the confluence along the main Salmon River (S-22). IDWR is looking at determining long-term water conservation/water transaction projects in the Morgan Creek watershed.

In February, Easement Specialist Mike Demick assisted the Idaho Governor's Office of Species Conservation (OSC) with their request for information on all Lemhi River irrigation ditch capacities and any associated tributaries. Mike provided information on the flow agreements with each individual fish screen in the Lemhi River subbasin, which was historically based on ditch capacity and includes any supplemental high water rights. This information was being used to estimate high water rights during specific time periods, generally in May before high water, and how these diverted flows may be affecting the main Salmon River gage downstream near Shoup, ID. There is a minimum streamflow at this gage which was a term and condition in the Snake River Basin Adjudication settlement.

The Flying Joseph Ranch in the Pahsimeroi River subbasin applied for a large transfer of water rights. For over seven years, Staff Biologist Windy Schoby and Regional Supervisor Tom Curet have been engaged in trying to understand what they will be proposing, working towards clearing up an outstanding IDFG water right protest related to winter time diversion of water into a recreational fish pond, and looking at potential restoration outcomes for fish screening and fish passage. Regional Supervisor Tom Curet, met with representatives from the ranch to understand the proposals. Windy and Tom had a follow up conference call with Ann Vonde from the ID Attorney General's office and Roxanne Brown, the water rights consultant for the ranch to come up with alternatives. Habitat restoration outcomes seem improbable at this time, but the water rights will likely be properly administered. The ranch finally came up with a settlement that included dropping the application for 20 cfs. of water throughout the winter and will instead apply for a water right off the springs that are already entering the pond. IDFG determined that this was a positive enough outcome that original protest would be dropped.

Easement Specialist Mike Demick assisted IDFG Environmental Staff Biologist Jeff Richards with history and opinions for drafting protest letters for IDWR applications concerning new water right application on Big Timber Creek (Jerry Foster; Kurt and Janet Bird); Big Eightmile Creek (Jordan and Susan Whittaker); and Joe's Gulch and Upper Salmon River (Adrian McConeghy).

Last November, the Construction Crew assisted the Region 7 IDFG Fisheries Program in safely lifting out and transporting four anadromous screw traps from multiple river locations in the Region, including; two in the Lemhi River basin, one in Nork Fork Salmon River, and one in the Pahsimeroi River. This requires a boom truck, equipment trailers and flatbed trucks for transport back to our compound. In the late winter, the construction crew made extensive repairs to these four anadromous screw traps then re-deploys them back to their respectful locations in March with the boom truck.

Program Coordinator Paddy Murphy and Staff Biologist Windy Schoby reviewed all of the fall 2018 Pacific Coast Salmon Recovery Funds proposals to assist the IDFG Headquarters staff and

board member to better prioritize proposals based on priority, technical merit, and biological benefit.

Staff Biologist Windy Davis and Program Biologist Demitra Blythe provided IDWR Columbia Basin Water Transaction Program with fisheries survey data for streams where they have active water transactions in the Upper Salmon River for their annual monitoring reports in prioritized watersheds.. Our program surveyed Pole Creek, Meadow Creek, and Goat Creeks in 2018 that will help aid in their monitoring program.

Staff Biologist Windy Schoby wrote a letter of support for the Lemhi County Road and Bridge Department's grant application for assistance with consolidating two bridges across the Lemhi River and replacing them with one new bridge near Viola Lane.

Staff Biologist Windy Schoby provided Karma Bragg with the Custer Soil and Water Conservation District technical assistance on a project proposal and ranking for a riparian fencing project along Stanley Creek, a tributary to Valley Creek near Stanley, ID.

Staff Engineer Jared Bragg assisted the USBWP and the Lemhi County Road and Bridge Department work through some preliminary design and permitting concerns on the upper Rattlesnake Creek Culvert to Bridge Project.

Staff Biologist Windy Schoby participated in a site visit to Sharkey Creek, a tributary to Agency Creek in the Lemhi River subbasin to discuss the potential for screening a small diversion on lands administered by the BLM. Under the current irrigation practices it may be challenging to screen the diversion, but the landowner was applying for an NRCS Environmental Quality Incentives Program (EQIP) grant that would help install a gravity fed irrigation pipe. If the irrigation improvements occur it may be feasible to screen the small water right (< 1.0 cfs). This project is cooperative with the BLM and NRCS.

Topographic Surveys

Produce Design and/or Specifications – Work Element 175

Contract 77127 - July 1st 2017 thru June 30th 2018

In this review period, additional topographic surveying for fish screen designs was performed by the Program Engineer Jared Bragg. Surveys included a diversion from Loon Creek at the Diamond D Ranch, Pratt Creek-02 (LPrC-02) fish screen and headgate, Eighteenmile Creek -01 fish screen, replacement fish screen for the Salmon River-23A (S-23A) diversion, Carmen Creek-03 bridge replacement, Eighteenmile Creek – Breshear's fish screen, Little Sawmill Creek-01 fish screen project, East Fork Salmon River-15 (SEF-15) fish screen, East Fork Salmon River-17 (SEF-17) fish screen, Big Timber Creek-01 (LBT-01) fish screen, Rattlesnake Creek culvert replacement (lower crossing), and additional survey work to complete the L-08A diversion head gate improvements.

For all construction projects installed in this review period, Program Engineer Jared Bragg also completed all construction staking. These include Canyon Creek-02 fish screen, Lemhi River-08A (L-08A) fish screen, Lemhi River-60 (L-60) fish screen, Lemhi River-62 (L-62) fish screen, Carmen Creek-03 bridge replacement, Salmon River -23A (S-23A) fish screen installation, and Eighteenmile Creek-01 (LEMC-01) fish screen installation. This staking allows the contractor and staff to install the fish screen or bridge precisely where it was designed to be placed. It also can provide details regarding site preservation and minimizing disturbance.

Contract engineering firm Quadrant Consulting, INC (QCI) of Boise performed topographic surveys at numerous sites in the Salmon River basin for the purpose of fish screen design and screen placement. Sites surveyed included Bear Creek-01 (SChaCBC-01) a tributary to Challis Creek, Big Creek-01 (PBC-01) a tributary to the Pahsimeroi River, and Big Timber Creek-12 (LBTC-12) a tributary to the Lemhi River.

Designs

Final designs were completed and a formal public works bid package (IDFG 2017-124) was completed for the installation of a fish screen and bypass for the Lemhi River-08A (L-08A) diversion. Plans included structure design, dewatering plans, quantity take offs, erosion and sediment control structures and construction details. Because of the estimated construction cost, the project was placed in the formal bidding process and advertised in local papers for construction. From this process IDFG executed a contract with Wellard Construction for the completion of the project for $91,635. The starting date for construction was July 10th, 2017.

Final designs were completed and a formal public works bid package (IDFG 2017-127) was completed for the installation of two new fish screens for the Lemhi River-60 (L-60) and Lemhi River-62 (L-62) diversions. Plans included structure design, dewatering plans erosion and sediment control structures and construction details. Because of the estimated construction cost, the project was placed in the semi-formal bidding process and advertised in local papers for construction. From this process, IDFG executed a contract with H&N Construction for the completion of the project for $68,000. The starting date for construction was August 28th, 2017.

A final design was completed for the fish screen replacement located at Salmon River-23A (S-23A) diversion. The fish screen was an older design that did not meet current NMFS criteria. Additionally, due to screen location and elevation the water user struggled to maintain adequate drum submersion within their water rights. Because of this, the irrigator would construct a wing dam in the Salmon River raising the water surface elevation at the screen. A new fish screen was designed and fabricated by IDFG personal and placed further downstream minimizing the need to raise the water surface elevations at the screen. Also the bridge across the Salmon River that accessed the screen has a load capacity that didn't allow for any large structure, so the crew constructed a steel modular fish screen in sections allowing us to bring sections across the bridge, and then reconnected at the site location. Also because the fish screen was relocated a new fish bypass pipe was installed. The Screen Program hired Getty Construction of Challis to install the Salmon River-23A (S-23A) fish screen and fish bypass. Getty Construction's total cost to install the fish screen was $3,500.

Two bridge replacements were designed and completed in this performance period, the Carmen Creek 03 (SCC-03) fish screen access bridge and the Lemhi River- 45C/D (L-45C/D) fish screen access bridge. Both existing bridges was structurally deficient within their substructures and required replacement for dependable and safe access to fish screen sites. The Carmen Creek-03 bridge is located on private property and required the landowner permission for replacement. From the engineer's estimate it was determined the project's construction cost would be less than $100,000 and therefore according to Idaho procurement and public works laws would not require a formal bidding process. Three qualified contracts were given a bid package with all three submitting responsive bids. The lowest responsible bid was submitted by Dahle Construction of $26,800 and IDFG executed a contract to proceed with the construction.

A final design was completed for the Pahsimeroi River-17 (P-17) fish screen. The design included moving the point of diversion upstream on the Pahsimeroi River approximately 300 feet, allowing the removal of a potential partial juvenile fish barrier (existing diversion) and installation of a new NMFS criteria screen. The fish screen and diversion will be installed on lands administered by the Bureau of Land Management, thus a right of way was obtained. Final plans included steel modular fish screen fabrication plans, stream dewatering plans, head gate fabrication plan, rock grade control structure, stream regrading plans, fish and water overflow bypass plan and profiles, and erosion control plans and general detail sheets.

Additionally, final designs were competed for two semi-formal public works bid packages. Final designs were completed for Eighteenmile Creek-01 (LEM-01) fish screen and Squaw Pond. Final plans include all details for construction, including; structure design, dewatering plans, stream regrading plans, erosion and sediment control structures, bypass pipe plan, and profile.

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In this review period, additional topographic surveying for fish screen designs was performed by the Program Engineer Jared Bragg. Surveys included a new POD diversion and fish screen for Pratt Creek-02 (LPrC-02), a fish screen for Lemhi River L-03AO (L-03AO) and a fish screen and new headgate for Lemhi River-61 (L-61) fish screen sites, Champion Creek-01A (SChC-01A), Lemhi River-61B (L-61B Tyler Pump), Little Sawmill Creek-01 (LLSmC-01) and the Pratt Creek-Julianna Hedt fish screen sites. The deliverable of the Meadow Creek-01 diversion location was not accomplished because there is a new landowner and the holistic plan for diversions and screening has not been put together yet. After a few years of ownership the landowner will likely be ready to move forward with a plan.

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For all construction projects installed in this review period, Program Engineer Jared Bragg also completed all construction staking. These include the Lower Rattlesnake Bridge, L-61, and L-03AO fish screen. This staking allows the contractor and staff to install the fish screen, bridge or improvements precisely where it was designed to be placed. It also can provide details regarding site preservation and minimizing disturbance

IDFG completed a preliminary design for the Pratt Creek-02 fish screen. After installation of a pipeline, NRCS requested the fish screen and point of diversion be moved upstream to increase the head in the irrigation pipeline. Due to timing and dense vegetation at the potential new

locations, IDFG hired Wade Surveying, INC of Salmon to expand the existing topographic survey of the site. Wade Surveying provided IDFG with a list of the points which was inserted in the AutoCAD drawings and from this additional surveying staff, was able to revise the construction plans to meet NRCS's request.

Designs

Final designs were completed and a formal public works bid package (IDFG 2018-130) was completed for the installation of a fish screen and bypass for the Lemhi River-03AO (L-03AO) diversion. Plans included structure design, dewatering plans, quantity take offs, erosion and sediment control structures and construction details. Because of the estimated construction cost, the project was placed in the formal bidding process and advertised in local newspapers for construction. The starting date for construction was August 20th, 2018. From this process IDFG executed a contract with Wellard Construction for the completion of the project for $58,493.

Final designs were completed and a formal public works bid package (IDFG 2018-131) was completed for the installation of two new fish screens for the Lemhi River-61 (L-61) and Big Timber Creek-01 (LBTC-01) diversions. Plans included structure design, dewatering plans erosion and sediment control structures and construction details. Because of the estimated construction cost, the project was placed in the semi-formal bidding process and advertised in local newspapers for construction. The starting date for construction was October 8th, 2018.

Final designs were completed for three additional fish screens located at Pratt Creek -02 (LPrC-02), Pratt Creek Hedt screen, and Garden Creek Forest Service screen. Final plans included structure design, dewatering plans, stream regrading plans, erosion and sediment control structures, bypass pipe plan and profile, details for construction. All screens involved the design of a headworks structure, steel modular closed drum fish screen or small pump type screen, open channel design, and localized BMPs. From these designs, IDFG staff fabricated the head gate structures, screens, and other hydraulic structures. IDFG plans installing these screens during low flow in late fall.

One bridge replacement was designed in this performance period. The Anadromous Fish Screen Program worked with Upper Salmon Basin Watershed Program and Lemhi County Road and Bridge Department to design a prefabricated steel bridge over Rattlesnake Creek. The project included removing a failed culvert with a pre-fabricated bridge for a county road over Rattlesnake Creek. Final plans included structure design, dewatering plans, traffic control plans, stream and roadway regrading plans, erosion and sediment control structures, utility coordination and detail for construction. Lemhi County Road and Bridge will be installing the bridge, with permitting completed by the USBWP, and IDFG will continue to provide technical support. Construction is expected to be completed by December1, 2018.

Final designs were completed for eight projects and two formal public works bid packages were finalized/completed (IDFG 2018-155 and 2018-148). Final plans were completed for the Lower Rattlesnake Culvert Replacement, Upper Rattlesnake Culvert Replacement, Little Sawmill Creek-01 (LLSmC-01) fish screen, Lemhi River-61B (L-61B) Tyler Pump Screen) fish screen addition,

Eighteenmile Creek -Breshears fish screen, Pratt Creek-02 (LPrC-02) fish screen and Lemhi River-61 (L-61) fish screen stream improvements. Final plans include structural design, dewatering plans, stream regrading plans, erosion and sediment control structures, bypass pipe plan and profile, details for construction, etc.

A final design was completed for the Lemhi River-61 (L-61) fish screen installation project (IDFG 2018-155) and was initiated through a formal bidding process during September 2018. From this process IDFG executed a contract with Down to Earth Excavation for the completion of the project for $83,343. The project started construction October 8th, 2018 and was completed on December 11, 2018. The initial cost in this bid included the Big Timber Creek-01 fish screen which ultimately was pulled out of the contract, as the work was never completed due to weather concerns.

In the fall of 2018, the Anadromous Fish Screen Program planned to install a fish screen, head works structure and revise the current ditch/stream interface for the Lemhi River-61 (L-61) fish screen site. After initial construction plans were completed, there was some concern with how to install the headgate and grade control structure in the ditch. From field visits, it appears the original point of diversion from the Lemhi River was constructed for irrigation use only. Over time, little maintenance took place at the diversion and the ditch appears to have flowed throughout the year. Eventually the ranch installed a metal head gate down the ditch approximately 1500 feet just below the confluence of the ditch and an irrigation overflow/ spring. Over time, this ditch and spring have taken the characteristics of a stream side channel which complicated installation but provided more opportunities for improving fish habitat. Because of this, IDFG only installed the fish screen during the fall of 2018. In addition, we decided to treat this section as a stream side channel, instead of a ditch, thus the installation/dewatering plans required more attention to construction practices and future stream restoration work. In the spring of 2019 IDFG revised the plans for these considerations.

In this performance period, a final design was completed for the Pratt Creek-02 (LPrC-02) fish screen installation which involved installation of headworks structure, a modular rotary drum fish screen and 150 ft of irrigation conveyance pipe. Due to the low estimated construction cost, the project was placed in the semi-formal bidding process and IDFG obtained bids from three qualified contractors. From this process, IDFG executed a contract with H&N Construction for the completion of the project for $27,318. The Notice to Proceed for construction of the IDFG Project 2018-155 (LPrC-02) was December 15, 2018 and due to incremental weather was not completed until March 2019.

In partnership with the Lemhi County Road and Bridge Department and Upper Salmon Basin Watershed Program, the IDFG provided engineering design and technical assistance for the upper and lower Rattlesnake Creek Culvert Replacement projects. The lower Rattlesnake Creek culvert replacement was constructed by Lemhi County Road and Bridge Department during October 2018. Final designs, specifications, construction staking, construction oversight, and as-built drawings were completed by the Screen Program Staff Engineer. The project was completed by November 2018. IDFG provided topographic surveying and preliminary design for the upper Rattlesnake culvert replacement. The project is currently in the permit phase and plans for construction are fall of 2019. IDFG has committed to providing final plans, specifications, construction staking

and construction oversite during installation.

Final designs were completed for the fish screens located at Little Sawmill Creek-01 (LLSmC-01) and Lemhi River-61B (L61B). Both sites required additional topographic surveys, and from this final designs were completed. These designs included head works structure, steel modular closed drum fish screen, irrigation pipe design and BMP's. From these designs IDFG staff fabricated the head gate structure and screens with the intent of installing these screens in spring 2019.

Produce Environmental Compliance Documentation

Complete Environmental Compliance – Work Element 165

Permitting

In this performance period, all actions requiring permitting from all regulatory agencies were completed. This included all permitting for twelve capital projects installed. Although the majority of the projects were covered by programmatic consultations by Mitchell Act and BPA, the effects of the actions of some projects were not exempt because of the significant instream work involved. This required additional Biological Opinions from NMFS and USFWS, and clearance from COE Section 404, and the IDWR Stream Protection Act. All 30 projects were given cultural clearance through the Idaho State Historic Preservation Office (ISHPO) Section 106 requirements.

All Mitchell Act fish screen installations are covered by the most recent ESA Section 7 Informal Consultation with a Biological Assessment (BA) dated January 14, 2000 followed by concurrence by NMFS dated January 31, 2000, with later concurrence by U. S. Fish & Wildlife Service (USFWS) dated May 18, 2000. The Biological Evaluation covers all screen installations, operations, and maintenance for screens located in ditches or at the point of diversion. Also included are the installation of headgates, spillways, and control structures. What is not covered in the programmatic Mitchell Act fish screen BA is extensive in-stream work. There is no ending date on the consultation. Both agencies' conclusions in accordance with 50 CFR 402.14 (b) (1) state "may affect but not likely to adversely affect".

Through this performance period all capital projects and public works contracts were funded through BPA Project #2007-399-00, with Project 1994-015-00 and Mitchell Act funding personnel and operating costs in support of these capital investments. Most recently all the capital projects with instream work need approval and clearance through BPA's Habitat Improvement Program III Programmatic, Army Corps of Engineers Section 404 of Clean Water Act, IDWR Stream Protection Act, and ISHPO Section 106 Concurrence. Depending on the project, the Screen Program may or may not have been the lead agency in securing all permitting for the projects, especially projects located on Federal lands. All projects in this performance period received clearance from all regulatory agencies before project implementation.

Contract 77127 - July 1st 2017 thru June 30th 2018

Program Coordinator Paddy Murphy and Staff Biologist Windy Schoby worked with BPA Environmental Compliance Staff to make sure all projects in the current BPA contracts were compliant for ESA, NEPA, CoE, and Cultural Resource compliance.

Staff Biologist Windy Davis and Staff Engineer Jared Bragg worked with Bonneville Power Administration's (BPA) environmental staff for inclusion of projects until the Habitat Improvement Program (HIP) III programmatic – consultation. The project that received coverage under this programmatic was the Carmen Creek-03 Bridge Replacement Project. Between partner agencies, use of the Mitchell Act Programmatic, and use of the HIP III Programmatic, permitting was relatively efficient.

Staff Biologist Windy Schoby organized a field site visit to look at the Carey Act Dam on Big Timber Creek and brought in a Cultural Resource Specialist from the Idaho Heritage Program (IHP) for technical assistance. The group included Fred Walters from the IHP, landowner and irrigator Kurt Bird, and several staff from the BLM. The goals of the tour were to better understand the history of the large dam on Big Timber Creek and gather information about its eligibility for the National Historic Register. We would like to look at options to install a fish screen and modify the diversion to better allow for fish passage at the location. The group will convene again this fall with the gathered information to determine the next steps.

Staff Biologist Windy Schoby worked with Bonneville Power Administration's (BPA) environmental staff to receive clearance from the Idaho State Historical Preservation Office (ISHPO) for all projects that needed cultural clearance through the Section 106 process.

Annual oversize load trip permits were obtained from the Idaho Department of Transportation (IDOT) for two heavy trucks. The trucks routinely haul oversize loads such as head gates, fish screens, culverts, heavy equipment and building materials.

Contract 79686 - July 1st 2018 thru June 30th 2019

Program Coordinator Paddy Murphy and Staff Biologist Windy Schoby worked with BPA Environmental Compliance Staff to make sure all projects in the current BPA contracts were compliant for ESA, NEPA, CoE, and Cultural Resource compliance.

Staff Biologist Windy Schoby worked with Bonneville Power Administration's (BPA) environmental staff to receive clearance from the Idaho State Historical Preservation Office (ISHPO) for all projects that needed cultural clearance through the Section 106 process.

Staff Biologist Windy Schoby worked on amending some cultural survey reports to account for additional areas that were not included in the original Area of Potential Effect (APE) for the L-61 fish screen replacement and Pratt Creek-02 fish screen installations. In the previous reporting period, the program contracted with Laurie Mauser from North Wind, Inc. to complete a cultural survey on the L-61 fish screen replacement. The Section 106 Cultural Review was completed for this project, but it was discovered that as the project developed there were changes to the original

scope of work and additional areas that were not included in the APE that would be effected by the project. Dave Larsen of Sundance Consulting was already doing other work in the area and was hired to complete a small amendment to account for additional areas that were not included in the original APE for L-61 fish screen replacement. Dave Larson with Sundance was also hired by the LSWCD to complete an amendment on the Pratt Creek-02 fish screen and diversion location. The screen location had to be moved further upstream on this project to provide adequate elevation to tie into the irrigation infrastructure designed and installed by the LSWCD. Section 106 review process is completed for the Pratt Creek-02 fish screen. We are continuing to work through the cultural clearance issues on L-61 and on the Big Timber Creek-01 screen.

Screen Program personnel worked extensively with the BLM, CSWCD, and landowners on the Biological Assessment and associated Right-of Ways for the Pahsimeroi River-17 (P-17) project. This was a very involved project with many partners and needed considerable coordination to meet all the terms and conditions of the BLM and the regulatory agencies.

Staff Biologist Windy Schoby attended a Bonneville Power Administration's (BPA) training for utilization and input of the draft Habitat Improvement Program (HIP) IV and Project Notification forms.

In July, Easement Specialist Mike Demick submitted to Idaho Department of Water Resources (IDWR) five (5) Application for Permit for the non-consumptive water rights associated with new fish screens and bypass pipes. Mike also responded by letter to IDWR's request for information on how our proposed water rights applications invokes any local public interest concerns for ESA species recovery.

In September, Easement Specialist Mike Demick completed and received (2) approved Mineral Extraction Permits (Furey Lane and Patterson pits in Pahsimeroi subbasin) from the Bureau of Land Management (BLM) for fill material utilized for Screen Program projects. As other remaining permits expire, all will be re-issued with the same expiration date and be consolidated on the same renewal schedule, simplifying recordkeeping process.

Staff Biologist Windy Schoby and Staff Enginner Jared Bragg worked to provide BPA Project Notification Forms for all of our capital projects funded by BPA in fall of 2018 and spring of 2019. In the past, we have been able to use our Mitchell Act Programmatic Consultation to install fish screens, headgates, and bypass pipes. However, BPA will no longer allow us to use the Mitchell Act because they do not feel they have enough accountability or tracking of projects installed using the programmatic. We are now permitting projects using the BPA HIP III (Habitat Improvement Programmatic), if funded by BPA. It was not determined that this was needed until August. Some of the requirements and timeframes for review under this process have made getting project permitting completed in a timely manner a challenge. Two projects were not permitted in time to complete last fall before winter conditions, those being Big Timber Creek-01 fish screen and Pratt Creek-02 fish screen. Those projects were moved to 2019 and re-permitted.

Windy completed BPA Project Completion Forms for all projects that were permitted under the HIP III in 2018.

Program Coordinator Paddy Murphy, Staff Biologist Windy Schoby, and Staff Engineer Jared Bragg have worked with partners BLM, NRCS, and the Lemhi Soil and Water Conservation District to plan and permit an irrigation efficiency and fish passage project at the Pratt Creek-03 (LPrC-03) diversion. This project will consolidate over a dozen diversions to a single point of diversion and leave a minimum of 2 cfs instream. The Screen Program will install a new diversion, headgate, and fish screen to eliminate entrainment and provide better fish passage at the site. The diversion is located on land administered by the BLM, and as the Federal land manager they took the lead on the NEPA process.

Program Coordinator Paddy Murphy submitted the 2019 Screen Tender Maintenance Contract, BPA Contract #2007-399-00 which requires documenting ESA compliance by permitting standard maintenance activities under BPA's HIP III. Staff Biologist Windy Schoby worked with BPA Environmental Coordinator (EC) lead, Elisabeth Bowers, to complete a Project Notification Form that covers these activities for this irrigation season.

Staff Biologist Windy Schoby coordinated with the staff of the USBWP to include IDFG Fish Screen projects in their 2019 contract with Lemhi County Weed Program for hydro-seeding and weed control at construction sites.

Annual oversize load trip permits were obtained from the Idaho Department of Transportation (IDOT) for two heavy trucks. The trucks routinely haul oversize loads such as head gates, fish screens, culverts, heavy equipment and building materials.

In November, Easement Specialist Mike Demick responded by letter to IDWR's request for information on how our proposed fish screen bypass water right applications invokes any local public interest concerns for ESA species recovery. Five (5) applications were filed in April 2018 for Eighteenmile Creek-01 (LEMC-01), Hawley Creek-02 and -03 (LHawC-02 and 03), Sulphur Creek-01 (PSC-01) and Bayhorse Creek-04 (SBaC-04). After permit numbers were issued from IDWR, Mike completed and filed Statement of Completion/Proof of Beneficial Use documents for each and received Proof Acknowledgment letters, completing the application process for these screens.

Easements and Agreements

The IDFG Anadromous Fish Screen Program, acting as the appropriate agency for the State of Idaho, and as per Mitchell Act funding, has obtained easement agreements for access to fish screen sites the construction, and on-going operation and maintenance of these facilities. "*Wherein such construction or improvement is to be carried on first shall have obtained without cost to the United States the necessary title to, interest therein, rights-of-way over, or licenses covering the use of such lands*". A permanent easement is required for each screen site to insure the investment of each fish screen will be protected in perpetuity. All agreements with individual landowners and water users are recorded at the Lemhi and Custer County Courthouses.

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Easement Specialist Larry Weeks retired after 22.5 years with the Department. Larry did an outstanding job of landowner relations for the Screen Program and his role was critical to the Program's success and instrumental at developing our current inventory of over 270 fish screens. After about a 6 month vacancy the position was filled by IDFG employee, Mike Demick.

Staff Biologist Windy Schoby and Staff Engineer Jared Bragg participated in a site visit with BLM and the USBWP to Pratt-02 and Pratt-03 fish screen locations. The goal was to ensure all parties were aware of the needs of the project on Pratt-03 so the ROW applications for construction and long term access across BLM could be completed. The visit to Pratt-02 was to locate the diversion and look at the feasibility of a fish screen at the site.

Easement Specialist Larry Weeks and Staff Biologist Windy Schoby completed and submitted an application for Right of Way with the BLM for the Pratt-03 Fish Screen project.

Staff Biologist Windy Schoby wrote and recorded a "Release of Easement" for a screen location on Goat Creek that is no longer needed. The location on the recorded easement was inaccurate and there was no longer a need to have an easement at the location. During the sale of the property, the new landowners requested that our easement was released.

Easement Specialist Mike Demick and Staff Engineer Jared Bragg met with Carl Ellsworth on to work on obtaining a permanent easement for access, construction, and maintenance of a new fish screen on the Eighteenmile-01 (LEM-01) diverison, a tributary to the Lemhi River. The new fish screen on Eighteenmile Creek was part of a joint project with Upper Salmon Basin Watershed Project to conserve water and improve fish passage.

In April, Easement Specialist Mike Demick completed and received approval for a BLM Right of Way renewal for the road and approach to Deer Gulch Bridge near Ellis, Idaho

In April, Easement Specialist Mike Demick received a Pump Screen Agreement from Ronald and Ruth Mahurin for their pump station on Slate Creek, a tributary of Lower Salmon River near Whitebird, ID.

In June, Easement Specialist Mike Demick received Pump Screen Agreement from Stephen L. Young for his pump station on lower Lemhi River.

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In July, Easement Specialist Mike Demick received signed Pump Screen Agreement from Tom and Carol Yerden for their pump station on a small pond in Fourth of July Creek drainage near North Fork, ID.

In July, Easement Specialist Mike Demick met with and received two access agreements for access to the Eighteenmile Creek-01 fish screen (LEMC-01); one a signed Easement Agreement from Karl Tyler through his property and an adjoining Easement Agreement from Carl Ellsworth

where the the fish screen is located. Additionally, Mike recieved signatures for a Headgate Agreement and Flow Agreement from Merrill Beyeler, irrigator for the Eighteenmile Creek-01 fish screen.

In September, Mike Demick met with and received a signed Temporary Construction Easement and Headgate Agreement from Karl Tyler for the Lemhi River -61 (L-61) fish screen replacement.

In September, Mike Demick met with and received a signed Easement Agreement and Temporary Construction Easement from Brittany Moses, Mayor of Leadore; Temporary Construction Easement from Merrill Beyeler; and a Flow Agreement and Headgate Agreement from Karl Tyler for the Big Timber Creek-01 fish screen (LBTC-01).

In September, Mike Demick met with and received signed Flow Agreement from Lamar Cockrell for Lemhi River-03AO replacement screen (L-03AO). Mike also recorded new Affidavit to Correct Legal Description (location error found in original Easement Agreement) at Lemhi County Courthouse.

In November, Mike Demick worked with Attorney General's Office staff and IDFG Headquarters contracting staff to develop uniform routing/filing process of executed easement agreements to ensure consistent record keeping. In November and January, Mike filed and recorded three (3) permanent easement agreements for fish screens at the Lemhi County Courthouse for Eighteenmile Creek-01 (LEMC-01), Big Timber Creek -01 (LBTC-01), and Pratt Creek-02 (LPC-02) fish screens.

In November, Easement Specialist Mike Demick obtained an Irrigation Pump Inspection Agreement from Frank Stickley for a pump station to use their water right on the Little Salmon River near Riggins, ID

In November, Easement Specialist Mike Demick and Staff Engineer Jared Bragg met with Phil Moulton, landowner on Pratt Creek, to discuss proposed construction plans and installation of Pratt Creek-02 (LPC-02) fish screen. Mike also received signatures for a temporary construction access agreement, a flow agreement for this fish screen, a head gate agreement, and a permanent easement agreement for this project.

In January, Easement Specialist Mike Demick obtained an Irrigation Pump Inspection Agreement from Chris Gaughan for his pump station to use his water right on Jessie Creek, a small tributary of the Salmon River in Salmon, ID.

In March, Easement Specialist Mike Demick obtained an Irrigation Pump Inspection Agreement from Sam and Treva Wing for their pump station to use their water right on Moose Creek, a tributary of Dump Creek that flows into the Salmon River below North Fork, ID.

Screens - Maintenance and Operation

During this performance period, the Screen Program prioritized the maintenance of all existing fish screens, pump intake screens, and fishways operable in accordance with established criteria and in good physical repair. Currently, the Idaho Screen Program operates and maintains 270 gravity intake fish screens and 331 pump intake fish screens throughout the State of Idaho. The Construction Crew and Screen Tender workforce assure that all minor and major repairs are completed in a timely manner to keep fish screens operating as designed to safely bypass all entrained anadromous fish. Screen tenders are hired through the duration of the irrigation season to assure that the fish screens are protecting fish during critical migration stages.

Approximately mid-March, maintenance personnel start field work preparing existing screens for the irrigation season. Screens are inspected, cleaned, lubricated, and set in position with new seals as required. All drum screens are inspected, repaired, or replaced. Bypass intake pipes will be inspected, slide gates prepared, and bypass pipe outfall areas inspected. Silt deposits are removed to restore proper, uniform, and efficient flow conditions.

As spring cleanup and repairs are completed the screens are placed into operation, depending on irrigation demand, and checked on a daily basis. Screen tenders clean, service and perform minor repairs to assure proper screen operation and check bypass flow discharge locations to assure safe fish passage. Screens are inspected for proper submergence, seals are inspected for integrity, and bypass orifices are inspected for proper operation necessary to safely pass the fish. The construction crew installs screens, catwalks, and other appurtenances on any new screens recently completed under contract to make them operational for the irrigation season. Fishways will be cleaned of rock and debris and repaired as needed to provide for safe adult fish passage.
All fishways are monitored for proper operation and maintenance needs.

During the period of high water runoff, some damage normally occurs, particularly to access roads and screen control structures. The months of June and July require extra effort to keep debris removed and prevent damage to the screening facilities from high water. Emergency repairs are completed as necessary during the high water period.

Summer months involve cleaning out silt deposits from high water, extra screen cleaning due to algae growth on the screen face, maintaining proper submergence in low water, and assuring safe passage through the screen bypass, especially at the outlet of the bypass as river flows are dropping rapidly. At this time of year, a higher proportion of instream flow is diverted, and fish may be actively rearing in the irrigation ditches.

In late fall following the irrigation season, irrigators are contacted and encouraged to ramp the ditches down prior to full head gate closure for the winter. This ramping procedure has been proven effective as a means to stimulate fish movement out of the ditch between the head gate structure and the screen/bypass facility thereby returning the fish to the parent stream. Following ditch shut down, all fish screens are winterized. Winterization includes raising the drum screens

to prevent winter ice damage, a complete inspection, and maintenance needs are noted for the winter repair schedule.

In winter, only permanent staff are employed to ready projects for implementation. Winter months are used for shop fabrication of new screens and repairing used drums and components. Engineering design and drafting will continue throughout the winter.

Erosion and Sedimentation Control

This program owns and operates one of two hydro-seeding machines in the basin. We either loan out the machine, perform machine hydro-seeding ourselves, or partner with the county under a new cooperative agreement to hydro-seed. The process involves applying mulch, seed, and a carrier to provide erosion control and ground stabilization following construction activities related to fisheries improvements. Seeds are selected for the site based on native origin, site characteristics, and available moisture. Additional hydro-seeding is sometimes required to cover areas that did not sprout or that were disturbed by livestock or other factors. A slurry mixture of wood fiber mulch plus tackifier and seed is delivered to disturbed ground by a hydro-seeder pump. Depth of the delivered product is based upon manufacturers' recommendations, seed mixture requirements, and expected runoff. In this time period, we hydro-seeded or had Lemhi County hydro-seed all of the completed construction projects in our 2017-2019 contract including sites.

Communicate and Coordinate with Participants in Habitat Projects– Salmon Region-

Outreach and Education– Work Element 99

Contract 77127 - July 1st 2017 thru June 30th 2018

IDFG Regional Fisheries Habitat Biologist Jessica Buelow attended most of the monthly technical team meetings for the Upper Salmon Basin Watershed Project. Jessica gave presentations about her proposed projects in the North Fork Salmon River (BPA # 2008-903-00 Contract # 71194) and the Pahsimeroi River Basin (BPA # 2008-603-00 Contract # 73707). In addition to the monthly Technical Team meetings, Jessica also attended the USBWP's Technical Team Pahsimeroi Subcommittee meetings, Upper Salmon Subcommittee meetings, and the Lemhi Subcommittee meetings.

Jessica held several meetings with public and private entities to discuss, identify, and plan habitat restoration projects. Public entities include: Upper Salmon Basin Watershed Project, Bureau of Land Management, Trout Unlimited, Lemhi Regional Land Trust, Shoshone Bannock Tribe, and the United States Forest Service. Many private landowners were met to discuss habitat restoration projects throughout the Upper Salmon River Basin. Jessica held meetings with seven landowners in the North Fork Salmon River Basin to discuss habitat restoration projects and how to proceed. These meetings resulted in habitat restoration projects that were developed with funding sought through PCSRF funding and match funding through Shoshone Bannock Tribe. Jessica also met with landowners on the Pahsimeroi River, Salmon River, and Dahlonega Creek.

In addition to the work mentioned above, Jessica also taught classes for Trout In The Classroom, Kids Fishing Day, and for the Challis School district. Jessica also was the mentoring committee chair for the Idaho Chapter American Fisheries Society and AV chair for the Wild Trout Symposium.

Contract 79686 - July 1st 2018 thru June 30th 2019

IDFG Regional Fisheries Habitat Biologist Jessica Buelow attended most of the monthly technical team meetings for the Upper Salmon Basin Watershed Project. Jessica gave presentations about her proposed projects in the North Fork Salmon River (BPA # 2008-903-00 Contract # 77111) and the Pahsimeroi River Basin (BPA # 2008-603-00 Contract # 79613 REL 6). In addition to the monthly Technical Team meetings, Jessica also attended the USBWP's Technical Team Pahsimeroi Subcommittee meetings, Upper Salmon Subcommittee meetings, Lemhi Subcommittee meetings, and developed and led the North Fork Salmon River Subcommittee meetings.

Jessica has held several meetings with public and private entities to discuss, identify, and plan habitat restoration projects. Public entities include: Upper Salmon Basin Watershed Project, Bureau of Land Management, Trout Unlimited, Lemhi Regional Land Trust, Shoshone Bannock Tribe, and the United States Forest Service. Many private landowners were met to discuss habitat restoration projects throughout the Upper Salmon Basin. Jessica held meetings with several landowners in the North Fork Salmon River Basin to discuss habitat restoration projects and how to proceed. These meetings have resulted in habitat restoration projects that are being developed with funding sought through PCSRF funding and match funding through Shoshone Bannock Tribe. Jessica also met with landowners on the Pahsimeroi River, and the Salmon River.

In addition to the work mentioned above, Jessica also taught classes for Trout In The Classroom, Kids Fishing Day, and for the Challis School district. Jessica also was the mentoring committee chair for the Idaho Chapter American Fisheries Society and AV chair for the Wild Trout Symposium.

Develop Preliminary Plans, Projects, and Proposals for Habitat Projects– Salmon Region

Identify and Select Projects– Work Element 114

Contract 77127 - July 1st 2017 thru June 30th 2018

In this performance period, IDFG Regional Fisheries Habitat Biologist Jessica Buelow has been identifying and developing individual sites for restoration projects throughout the Upper Salmon River Watershed. She completed three construction projects that were implemented during the summer and fall of 2017. Instream habitat restoration and riparian planting was completed in the North Fork Salmon River on the Hutton/Murphy/Black property and the Dedmon/Kozacek property. A habitat improvement and riparian planting project also occurred on the Page property

in the Pahsimeroi River. This project included adding instream habitat complexity, floodplain grading, engineered riffles, and extensive riparian planting on over 1 mile of river. Jessica has also been working with private landowners and other agencies on identifying projects in the North Fork Salmon River, Pahsimeroi River, and other areas throughout the region.

When a potential restoration project is being developed, Jessica seeks expertise from IDFG engineers in order to determine what the Best Management Practices and restoration actions are appropriate for a site. These ideas are discussed with the landowner and a conceptual design is created.

Project proposals were created for a restoration project on the IDL and O'Neal property on the Pahsimeroi River above and below Furey Lane. Jessica also prepared project proposals, NEPA, and permits for a restoration project on the Arbon/Forest service property in the North Fork Salmon River and the Barton/Ellis/Forest Service property in the North Fork Salmon River. Jessica also created project proposals for the Dolly Thomas restoration project in the North Fork Salmon River and Hughes Creek.

Jessica submitted projects for funding for a Pacific Coast Salmon Recovery Fund (PCSRF) grant. This project included the Dolly Thomas Property in the North Fork Salmon River and Hughes Creek (208-903-00 Contract # 77111 REL6). Jessica also submitted a project for the Pahsimeroi Restoration project on the IDL and O'Neal property above and below Furey Lane (2008-603-00, 76913 REL6).

Jessica reviewed several projects for potential funding and prioritized those projects based on outcome and landowner interest. Jessica submitted projects for PCSRF funding, Shoshone Bannock Tribe funding, EQIP funding, and Pahsimeroi Accord funding. Future projects being reviewed include the Dolly Thomas property on the North Fork Salmon River and Hughes Creek. Jessica is also scoping a restoration project on the IDL/O'Neal property in the Pahsimeroi River as well as a BDA project on Sulphur Creek.

As deliverables in this contract period, Jessica implemented habitat restoration projects on the Hutton/Murphy/Black Property in the North Fork Salmon River, the Dedmon/Kozacek property on the North Fork Salmon River, and a habitat improvement project on the Page property in the Pahsimeroi River. She is currently developing three restoration projects in the North Fork Salmon River and several in the Pahsimeroi River. She is seeking funding through PCSRF, SBT (match), IDFG (match), EQIP, and the Pahsimeroi Accord.

Contract 79686 - July 1st 2018 thru June 30th 2019

In this performance period, IDFG Regional Fisheries Habitat Biologist Jessica Buelow has been identifying and developing individual sites for restoration projects throughout the Upper Salmon River Watershed. She completed three construction projects that were implemented during the summer and fall of 2018. Instream habitat restoration and riparian planting was completed in the North Fork Salmon River on the Arbon/Forest service property and the Barton/Ellis/Forest Service property. A habitat improvement and riparian planting project also occurred on the IDL/O'Neal property in the Pahsimeroi River. This project included adding instream habitat complexity,

floodplain connectivity, Beaver Dam Analogs (BDA's), and extensive riparian planting on 1 mile of river. Jessica has also been working with private landowners and other agencies on identifying projects in the North Fork Salmon River, Pahsimeroi River, and other areas throughout the region.

When a potential restoration project is being developed, Jessica seeks expertise from IDFG engineers in order to determine what the Best Management Practices and restoration actions are appropriate for a site. These ideas are discussed with the landowner and a conceptual design is created.

Project proposals were created for a Beaver Dam Analog restoration project on the Parkinson property on Sulphur Creek, a tributary to the Pahsimeroi River. Jessica also prepared project proposals, and permits for a restoration project on the Dolly Thomas property in the North Fork Salmon River and Hughes Creek. Jessica also created project proposals for the Miller restoration project in the North Fork Salmon River and received funding for design on the Dingey property.

Jessica submitted projects for funding for a PCSRF grant. This project included the Miller Property in the North Fork Salmon River. Jessica submitted a project for design money on the Dingey property in the North Fork Salmon River. Jessica also submitted a project for the Beaver Dam Analogs in the Pahsimeroi River. (2008-603-00, 76913 REL6). Jessica applied for a grant from the National Fish Passage Program and received funding for a fish passage barrier culvert to bridge project on Anderson Creek, a tributary to Dahlonega Creek in the North Fork Salmon River drainage.

Jessica reviewed several projects for potential funding and prioritized those projects based on outcome and landowner interest. Jessica submitted projects for PCSRF funding, National Fish Passage Program funding, EQIP funding, and Pahsimeroi Accord funding. Future projects being reviewed include the Miller property on the North Fork Salmon, a project on the Dingey property on the North Fork Salmon River, a beaver dam analog project on the Parkinson property in Sulphur Creek, restoration projects on Big Springs Creek Ranch, which includes the Pahsimeroi River, Little Springs, Patterson/Big Springs Creek, Mayrick Creek and Duck Creek, a restoration project on the Boston Boys Ranch on the Pahsimeroi River, a restoration project on Scott Hayes property on the Pahsimeroi River and Muddy Springs, beaver dam analog projects on Big Creek Ranches, and a culvert to bridge project on Patterson Creek in the Pahsimeroi Valley.

As deliverables in this contract period, Jessica implemented habitat restoration projects on the Arbon/Forest Service Property in the North Fork Salmon River, the Barton/Ellis/Forest Service property on the North Fork Salmon River, and a habitat improvement project on the IDL/O'Neal property in the Pahsimeroi River. She is currently developing several restoration projects in the North Fork Salmon River and several in the Pahsimeroi River. She is seeking funding through PCSRF, NFPP, IDFG (match), EQIP, and the Pahsimeroi Accord (2008-603-00).

Project Coordination

This contract involves close coordination with the Columbia River Fisheries Development Program funded portion of the Idaho Anadromous Fish Screen Program. This coordination achieves greater success and faster progression towards screening prioritized diversions within anadromous waters of the State of Idaho and providing fish passage at all manmade obstructions. Fisheries improvement projects target water conservation by improving irrigation efficiency, reducing ditch conveyance losses, and improving fish passage at diversions. The relationship of these programs is documented in, and this annual report compliments, the *Idaho Anadromous Fish Screens, Passage, and Habitat Program Semi Annual Progress Report NA15NMF4360222, October 2017 and October 2018, the Idaho Anadromous Fish Screens, Passage, and Habitat Program Semi Annual Progress Report NA15NMF4360222, April 2018 and April 2019.*

Multiple agencies are working on fisheries projects within Idaho. Some are also funded by BPA, others are funded with Pacific Coast Salmon Recovery Funds administered by the Idaho Governor's Office of Species Conservation. Coordination between these projects is essential to meet project goals, and other entities/partners frequently request and/or require Screen Program technical assistance.