U.S. Fish and Wildlife Service
Lower Snake River Compensation Plan Office

Lower Snake River Compensation Plan:
Fiscal Year 2018 Report

U.S. Fish and Wildlife Service -
Lower Snake River Compensation Plan Office
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LOWER SNAKE RIVER
COMPENSATION PLAN
Hatchery Program

On the cover: *Diane Deal, Lookingglass Hatchery manager for Oregon Department of Fish and Wildlife, holding an adult hatchery spring Chinook salmon at the Imnaha River (OR) acclimation pond and trapping site. Photo Credit – Oregon Department of Fish and Wildlife.*

Below: *Margaret Anderson, Lower Snake River Compensation Plan Office-(retired 6/1/2019), talking to 5th graders at Idaho Salmon and Steelhead Days education and outreach event. Photo credit Chris Starr – Lower Snake River Compensation Plan Office.*

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Lower Snake River Compensation Plan Office

U.S. Fish and Wildlife Service
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LOWER SNAKE RIVER COMPENSATION PLAN:
FISCAL YEAR 2018 REPORT

U.S. Fish and Wildlife Service

Summary – The Lower Snake River Compensation Plan (LSRCP) is a highly coordinated and complex federal fish mitigation program intended to address impacts on Snake River basin Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*) populations from construction and operation of the lower four federal Snake River Dams; Ice Harbor, Lower Monumental, Little Goose and Lower Granite. The program involves hatchery and acclimation facilities, complex logistics, annual coordination, evaluation and cooperation with States, Tribes, Federal and non-Federal entities to address specific adult salmon and steelhead goals in the Clearwater, Salmon, Imnaha, Grande Ronde, lower Snake, Tucannon, and Touchet River Basins. Funds for this program are provided by Bonneville Power Administration and are distributed and administered by the U.S. Fish and Wildlife Service to Federal, State and Tribally operated hatchery production and evaluations programs throughout the LSRCP project area. For fiscal year 2018, the LSRCP program distributed nearly $33.5M to achieve program goals and released 952,420 yearling fall Chinook salmon smolts, 2,275,577 sub-yearling fall Chinook salmon smolts, 10,434,203 yearling spring/summer Chinook salmon smolts, 5,467,143 yearling steelhead smolts and 92,010 pounds of rainbow trout. The LSRCP project area return goal of 18,300 Snake River fall Chinook salmon adults was achieved from 2009-2015 and averaged 20,622 between return years 2006-2017. Steelhead project area adult returns averaged 70,319 annually between run years 2003-04 and 2016-17 while achieving the LSRCP project area goal of 55,100 in 11 of the last 14 years. Spring/summer Chinook salmon adult returns to the LSRCP project area have averaged 29,115 between return years 2004-2017 and did not achieve the project area goal of 58,700 in any year during that period.

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Lower Snake River Compensation Plan - Background

Congressional Authorization and Purpose: 1945-1970's

Herrig (1990) provides a report on the early implementation of the Lower Snake River Compensation Plan (LSRCP) program and summarizes its authorization and development to that point in time. The following is a condensed summary of key dates and program information directly from Herrig (1990), U.S. Army Corps of Engineers (USACE, USACE 1976) or USACE (1983) unless otherwise noted.

The congressional authorization to the lower four Snake River dams in March 1945 (PL14, 79th Congress, first session, USACE 2014) did not contain a mitigation component. Rather, fish and wildlife mitigation for the dams developed over the next 40+ years and encompassed the start of their construction in 1955 through their completion (Ice Harbor 1961, Lower Monumental 1969, Little Goose 1970, and Lower Granite 1975). The U.S. Fish and Wildlife Service (USFWS) produced reports on the general impacts to fish and wildlife resources, including salmon and steelhead adult returns between 1959 and 1963. A summary "special report" regarding the mitigation for the four lower Snake River Dams was developed by the Corps of Engineers (USACE 1975) that documented long-term planning and reporting efforts by the USFWS, National Marine Fisheries Service, and the three States of Idaho, Oregon and Washington. The only input from tribal co-managers in development of the LSRCP mitigation was identified by another federal agency on their behalf, the Bureau of Indian Affairs, during an Environmental Impact Statement (EIS) in April 1975. The special report by the USACE was referenced within the Water Resources Development Act of 1976 (PL 94-587) which formally identified and provided the funding to the USACE ($58,400,000) for the authorization and prosecution of the LSRCP program by the Secretary of the Army. The cost for constructing a number of expensive fish hatcheries was a concern at the time by the USACE and also Bonneville Power Administration (BPA, Petersen and Reid 1995). Bonneville Power administrator Donald Hodel said at the time, "We are greatly disturbed at the magnitude of the compensation measures proposed… and the extent to which payment for such compensation is intended to be allocated to power revenues." Division Engineer Brigadier General K.T. Sawyer said, "While propagation has a role in the total mitigation plan, we disagree that it need to be the major element". The 1976 Water Resources Act passed Congress regardless of these concerns (Petersen and Reid 1995).

Development of the Mitigation

The LSRCP mitigation exists in two parts; wildlife mitigation and fisheries mitigation. The fisheries mitigation program falls under the administration of the USFWS-Lower Snake River Compensation Plan. Land acquisition for the purposes of fisheries mitigation is briefly discussed in the Wildlife Mitigation section and continues to be administered by the USACE (USACE 1983, USACE 2014). Fisheries mitigation and its development specifically addressed both in-kind and in-place replacement values.

Wildlife Mitigation

While a clear component of mitigation for construction and operation of the lower Snake River Dams, wildlife mitigation is not addressed in this LSRCP report. The USACE implemented and

continues to administer the wildlife mitigation portion of the LSRCP mitigation which encompassed wildlife development areas, off-site project lands for fishing and hunting access and/or acquisition for that purpose, and wildlife habitat development (USACE 2005) with the latter identified as incomplete as of 2014 (USACE 2014). Implementation of wildlife and habitat mitigation occurs near the impacted areas within the State of Washington with only a minor amount in Idaho.

Fisheries Mitigation - In-Kind

The LSRCP mitigation for impacts to anadromous Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*) involved several calculations and some sources of losses ranging from spawning ground inundation to dam construction and operation. Fall Chinook salmon, spring-summer Chinook salmon and steelhead were identified for mitigation focus due to their contributions at the time to commercial, sport and tribal fisheries in the mainstem Columbia River, Snake River, and their tributaries but also in ocean fisheries (fall Chinook salmon only, USACE 1975). While present in the Snake Basin, mitigation for losses of sockeye and coho salmon were not considered by State or Federal agencies as they, "occur in less numbers in the Snake River System" (NMFS and USFWS 1972). At the time, the overall mitigation requested was viewed as in-kind by helping "to approach yields of salmon and steelhead that could have been maintained on a sustained yield basis in the late 1940's and early 1950's and could still be maintained if these projects had not been constructed" (Fish Commission of Oregon 1973).

The first step in addressing LSRCP mitigation was to estimate pre-project run sizes. A "reasonable" approximation was developed using the maximum passage of steelhead, spring and fall Chinook returns from 1954-1967 at McNary Dam and multiplying them by the maximum proportion of returns that were also estimated to pass Ice Harbor Dam (completed in 1961) during the period from 1962-1967 (USACE 1975). These returns and maximum passage values were viewed as conservative estimates as returns per spawner in the 1950's were observed to be half that of previous years, and Ice Harbor conversion values in 1969 and 1970 of spring-summer Chinook salmon exceeded 60 percent (NMFS and USFWS 1972).

The State and Federal fisheries agencies estimated 48% cumulative loss due to juvenile passage through the four dams across all three species considered for mitigation (NMFS and USFWS 1972). Considerable attention by the fisheries agencies was paid to nitrogen supersaturation, which caused significant mortality at the time (Mighetto and Ebel 1994), but ultimately was considered correctable by future dam improvements and operations (USACE 1975). This 48% loss rate was applied to the pre-project return for each species to identify the annual compensation goals of each species to the project area; 18,300 fall Chinook salmon, 58,700 spring-summer Chinook salmon and 55,100 steelhead (Table 1). Other specific losses related to inundation were identified, including spawning habitat for 5,000 fall Chinook salmon adults through inundation, as well as significant loss of angler days for the steelhead trout fisheries in the free-flowing 140 miles of rivers and streams, and resident species angling opportunities. This latter impact was planned to be addressed by acquiring and providing permanent public fishing areas (see Wildlife Mitigation section) and stocking 93,000 pounds of catchable trout (233,000 fish at 2.5 per pound) in the State of Washington where most inundation impacts occurred. Through discussions between the USACE and Washington, this goal was later

reduced to 86,000 pounds after instream habitat improvements in the form of structures were placed in southeast Washington tributaries (Herrig 1990).

Table 1. Computation of Lower Snake River Compensation Measures from USACE (1975) and modified from Herrig (1990) to include trout. Year, or years, of maximum counts at McNary Dam 1954-67 are provided in parentheses. Trout mitigation was specific to the State of Washington for lost fishing opportunity due to inundation from the projects. A higher percent passage (68%) for fall Chinook salmon was observed during the passage period but was discounted by the fisheries agencies (Herrig 1990).

	Fall Chinook Salmon (1958)	Spring-Summer Chinook Salmon (1957)	Steelhead Trout (1962-63)	Trout
McNary Dam Count	97,500	222,100	172,600	
Ice Harbor Dam Maximum Percent Passage (1962-67)	33.5%	55%	66.5%	
Estimated Snake River Pre-Project Run	32,663	122,200	114,800	
Lower Snake River Compensation Goals	18,300	58,700	55,100	86,000 pounds into local waters (WA-79,800, ID-6,200).

Fisheries Mitigation - In-Place

The effort to distribute the fish mitigation requested was completed by a sub-committee of the Columbia Basin Fisheries Technical Committee in 1974 (WDFW 1974). Table 2 identifies broad locations for steelhead, spring-summer Chinook salmon and fall Chinook salmon that approximated where distribution and production of the requested mitigation could occur. These calculations were used for siting and development of initial releases to achieve the "in-place" fish mitigation for the LSRCP. Trout mitigation was specifically defined to address the loss of river fishing effort and locations from inundation in Washington tributaries to (USACE 1975). Table 3 further allocates the requested mitigation by State.

The LSRCP project area is defined as the area upstream of Ice Harbor Dam extending to Lower Granite Dam and is inclusive of the Walla Walla Basin, a Columbia River Basin tributary in SE Washington adjacent to the Snake River basin. Early in the LSRCP implementation process, Washington selected the Walla Walla basin for portions of its summer steelhead mitigation program due to the paucity of suitable anadromous fish streams in SE Washington (Herrig 1990). Trout mitigation occurs predominantly within the State of Washington waters except for 6,200 pounds raised for Idaho waters. Measurement of the project area goals for the LSRCP program differs by species and rearing location (Appendix A).

Table 2. Distribution of salmon and steelhead requiring hatchery compensation by the Columbia Basin Fisheries Technical Committee's Lower Snake Hatchery Subcommittee in 1974 (WDFW 1974). Values were derived by multiplying 48% loss rate to estimated run escapements developed within the U.S. Army USACE Special Report (USACE 1975) except for fall Chinook salmon. Rounding errors with the LSRCP goals were acknowledged by the subcommittee.

Area	Fall Chinook salmon	Spring-Summer Chinook salmon	Steelhead
Snake River			
Below Lewiston	5,000		
Lewiston to China Gardens	3,580		2,208
China Gardens to Pleasant Valley	1,689		
Pleasant Valley to Hells Canyon	4,459		
Hells Canyon Dam	3,648	1,200	2,736
Fish Facilities			
Tucannon River		1,152	1,632
Clearwater River	68	288	20,736
Asotin Creek			816
Grande Ronde River		5,856	7,632
Salmon River		46,656	16,896
Imnaha River	68	3,216	1,920
Small Tributaries		288	528
Totals	**18,512**	**58,656**	**55,104**

Table 3. Allocation of compensation (adults) by State as suggested by Columbia Basin Fisheries Technical Committee (reproduced from WDFW 1974). This allocation was not to be used as a specific indicator of release sites.

	Washington			Oregon		Idaho	
Area or Basin	Spring Chinook salmon	Fall Chinook salmon	Steelhead	Spring Chinook salmon	Steelhead	Spring-Summer Chinook	Steelhead
Snake River							
Below Lewiston		5,000					
Lewiston – Hells Canyon		9,728	2,208				
Hells Canyon Dam		3,648			1,368	1,200	1,368
Tucannon River	1,152		1,632				
Clearwater River		68				288	20,736
Asotin Creek			816				
Grande Ronde River				5,856	7,632		
Salmon River						46,656	16,896
Imnaha River		68		3,216	1,920		
Small Tributaries					264	288	264
Totals	**1,152**	**18,512**	**4,656**	**9,072**	**11,184**	**48,432**	**39,264**

Besides the in-place delivery of the mitigation, the Columbia Basin Fisheries Technical Committee's Lower Snake Hatchery Subcommittee developed hatchery objectives to achieve the goals (WDFW 1974). This included estimates of brood needs based on fecundity, egg-to-smolt survivals, numbers of smolts, fish per pound at juvenile release, and smolt-to-adult return[1]. Smolt-to-adult return (SAR) rates used were 0.20% for fall Chinook salmon, 0.87% for spring-summer Chinook salmon and 0.50% for steelhead. These estimated survival rates were specifically used by the committee to size each proposed program to achieve their specific compensation measure for the adult returns (WDFW 1974). The fall Chinook SAR rate was based on survivals to lower Columbia River hatcheries but the spring-summer and steelhead SAR rates were based on returns to Idaho (Mighetto and Ebel 1994). The committee viewed the rates as valid and could improve into the future with improved river conditions through active transport of smolts or improved hydrosystem management actions. The USACE, through their efforts to locate suitable hatchery sites and water needs, used these survival metrics to also initially size the hatchery programs. This occurred through construction, acquisition and initial operations of the hatchery complexes (see Hatchery Development and Initial Operations).

Providing harvest downstream of the project area (predominantly through sport and commercial fisheries) was acknowledged and identified as an objective in the historical documentation of the program (NMFS and USFWS 1972) although exact estimates of the Snake River Basin production in those fisheries was not possible at the time. Harvest outside of the project area (commercial and sport) was estimated on a catch to escapement ratio of 2:1 for steelhead (110,200:55,100) and 4:1 for spring-summer (234,000:58,700) and fall Chinook (73,200:18,300; USACE 1975) but these are not clearly defined goals for the program such as the project area goals. These have been referred to as LSRCP coastwide harvest objectives even though harvest occurs predominantly in freshwater (mainstem Columbia River and tributaries), except for a percentage of Snake River fall Chinook salmon consistently harvested in ocean fisheries.

Hatchery Development and Initial Operations: 1980's and early 1990's

Finding suitable hatchery sites and water supplies proved to hamper implementation and drastically increased costs of the LSRCP program. By 1980, the Walla Walla District of the Corps of Engineers had completed only one hatchery (McCall Hatchery in Idaho) and found locations for only three others (Lyons Ferry Hatchery in Washington and Lookingglass Hatchery in Oregon, Petersen and Reid 1995). After another report by the USACE (1983), a modification of the Water Resources Development Act occurred (Public Law 99-662 in 1986) and provided an additional $177,000,000. Public Law 99-662 predominantly also implemented changes in LSRCP land acquisition and wildlife mitigation in southeast Washington. Administration of the LSRCP fisheries program by the USFWS, including transferring ownership of a number of facilities constructed up to that point, occurred shortly thereafter. Specific operations and maintenance (O&M) funding for the USFWS administration of the program was also identified

[1] Smolt-to-adult return should not be confused with smolt to adult survival or smolt to adult recovery. In LSRCP historical documentation, smolt-to-adult return was used to identify the return of adults to the LSRCP project area and not a measurement of overall survival of adults from a release (including downstream or ocean fisheries). In this report, smolt-to-adult survival, (SAS), is used to understand overall adult production, including project area returns and any harvest or other reported adult returns from a hatchery program. The term smolt-to-adult recovery may be used interchangeably with SAS in some LSRCP cooperator reporting or reflects returns to a terminal point, such as a hatchery or combined with a terminal fishery.

in federal budgets at the time. By the early 1990's there were nine hatchery complexes completed and operational for the Lower Snake River Compensation Plan (Herrig 1990, Petersen and Reed 1995). Further development of the fisheries mitigation program infrastructure occurred with development of the Fall Chinook Acclimation Project (FCAP) acclimation sites in the mid-1990's (Rocklage 2004). Table 4 identifies all current LSRCP hatcheries and acclimation sites and Figures 1-3 identify their locations and LSRCP project area.

Mitigation, ESA-Listings, Co-management and Program Reviews: 1990's to Present

In the 1990s and early 2000s, the continued decline and ESA-listings of a number of stocks of salmon and steelhead, including many Snake Basin populations (Table 5), necessitated the immediate prioritization of conservation and recovery objectives for Federal, State and Tribal fisheries agencies. Subsequently, a number of programs in the LSRCP portfolio changed from harvest-oriented programs to conservation or supplementation programs because of the locally depressed stocks being reared or cultured. The listing of other species unintentionally impacted by the hatchery programs (both aquatic and terrestrial) resulted in the need to consult with both the NMFS and the FWS to address ESA-listed species. Table 5 includes species for which formal consultations (and the subsequent development of Biological Opinions) were initiated.

Focusing mitigation production for harvest, while also protecting and recovering ESA-listed species, developed during this period and became sometimes competing but predominantly collaborating legal mandates for the program that have persisted to the present day execution of the LSRCP. More focused program integration with natural populations has led to several LSRCP hatchery programs that were complemented by BPA funding to achieve additional natural population monitoring objectives or simply expansion of the LSRCP monitoring or evaluation in some cases.

A notable example that illustrates the LSRCP program shift during this period and the complementary BPA funding to complete hatchery programs was development of the Fall Chinook Acclimation Program in the 1990s and early 2000s. National Marine Fisheries Service initiated a status review of Snake River fall Chinook salmon in April 1990 because the stock had plummeted in abundance and distribution (McLeod 2006). Coordinated efforts to rebuild the fall Chinook stock and returns to the Snake Basin were undertaken by the fisheries co-managers (States and Tribes) and Federal agencies before and after the listing of Snake River fall Chinook salmon in 1992 (McLeod 2006, Becky Johnson – Nez Perce Tribe Production Division Director, personal communication January 17th, 2019). Agreements were reached between the Parties of the *U.S. v. Oregon* court case to replace the natural production losses from adult trapping at Lower Granite Dam for LSRCP mitigation with juvenile releases (McLeod 2006). The U.S. Congress identified funding for construction of acclimation facilities upstream of Lower Granite Dam during deliberations over the FY95 budget (Senator Mark Hatfield 1994). These final rearing and acclimation facilities for juvenile fall Chinook salmon releases in the Snake River were selected by the Nez Perce Tribe along with other Tribal, State and Federal agencies. Two acclimation facilities were located on the Snake River, at Captain John Rapids and Pittsburg Landing, and one acclimation site was located on the lower Clearwater River (Big Canyon). The sites were selected because of their proximity to the remaining spawning habitat for the Snake River fall Chinook and because of good road access to implement annual acclimation of

Table 4. Major fish production facilities and their satellites of the Lower Snake River Compensation Plan Program. Satellite facilities are often juvenile acclimation and/or adult trapping sites. Species focus of the facility or satellite for the LSRCP program are provided. Operators and staffing agencies (and co-managing partners) of the facilities are Oregon Department of Fish and Wildlife (ODFW), Washington Department of Fish and Wildlife (WDFW), Idaho Department of Fish and Game (IDFG), U.S. Fish and Wildlife Service (USFWS), Confederated Tribes of the Umatilla Indian Reservation (CTUIR), Shoshone-Bannock Tribes (SBT), and Nez Perce Tribe (NPT).

Major Facility	Affiliated Satellites (by production or operator)	Steelhead	Spring-Summer Chinook	Fall Chinook	Trout	Major Snake River Basin or Area Addressed	Operators and Staffing
Tucannon Fish Hatchery		✓	✓		✓	Tucannon River – SE Washington	WDFW
	Curl Lake	✓	✓			Tucannon River – SE Washington	WDFW
	Cottonwood	✓				Grande Ronde River – SE Washington	WDFW
	Dayton Pond	✓	✓			Walla Walla Basin - SE Washington	WDFW
Lyons Ferry Hatchery		✓	✓	✓	✓	Snake River – SE Washington	WDFW
	Captain Johns			✓		Snake River Basin	NPT
	Big Canyon (ID)			✓		Clearwater River Basin	NPT
	Pittsburg Landing			✓		Snake River Basin	NPT
Irrigon Fish Hatchery		✓		✓		Grande Ronde River Basin - Oregon	ODFW
Wallowa Fish Hatchery		✓				Grande Ronde River Basin - Oregon	ODFW
	Little Sheep	✓				Imnaha River Basin - Oregon	ODFW
	Big Canyon (OR)	✓				Grand Ronde River Basin - Oregon	ODFW
Lookingglass Fish Hatchery			✓			Grande Ronde River Basin - Oregon	ODFW/CTUIR/ NPT
	Imnaha		✓			Imnaha River Basin - Oregon	ODFW/NPT
Clearwater Fish Hatchery		✓	✓			Clearwater River Basin - Idaho	IDFG
	Upper Crooked River					Clearwater River Basin - Idaho	IDFG
	Lower Crooked River					Clearwater River Basin - Idaho	IDFG
	Powell		✓			Clearwater River Basin - Idaho	IDFG
	Red River		✓			Clearwater River Basin - Idaho	IDFG
McCall Fish Hatchery			✓			Salmon River Basin – Idaho	IDFG/NPT
	South Fork Salmon River		✓			Salmon River Basin – Idaho	IDFG/NPT
Sawtooth Fish Hatchery		✓	✓			Salmon River Basin – Idaho	IDFG/SBT
	East Fork Salmon River	✓				Salmon River Basin – Idaho	IDFG
Magic Valley Fish Hatchery		✓				Salmon River Basin – Idaho	IDFG
Hagerman National Fish Hatchery		✓				Salmon River Basin – Idaho	IDFG
Dworshak National Fish Hatchery			✓			Clearwater River Basin - Idaho	NPT/USFWS

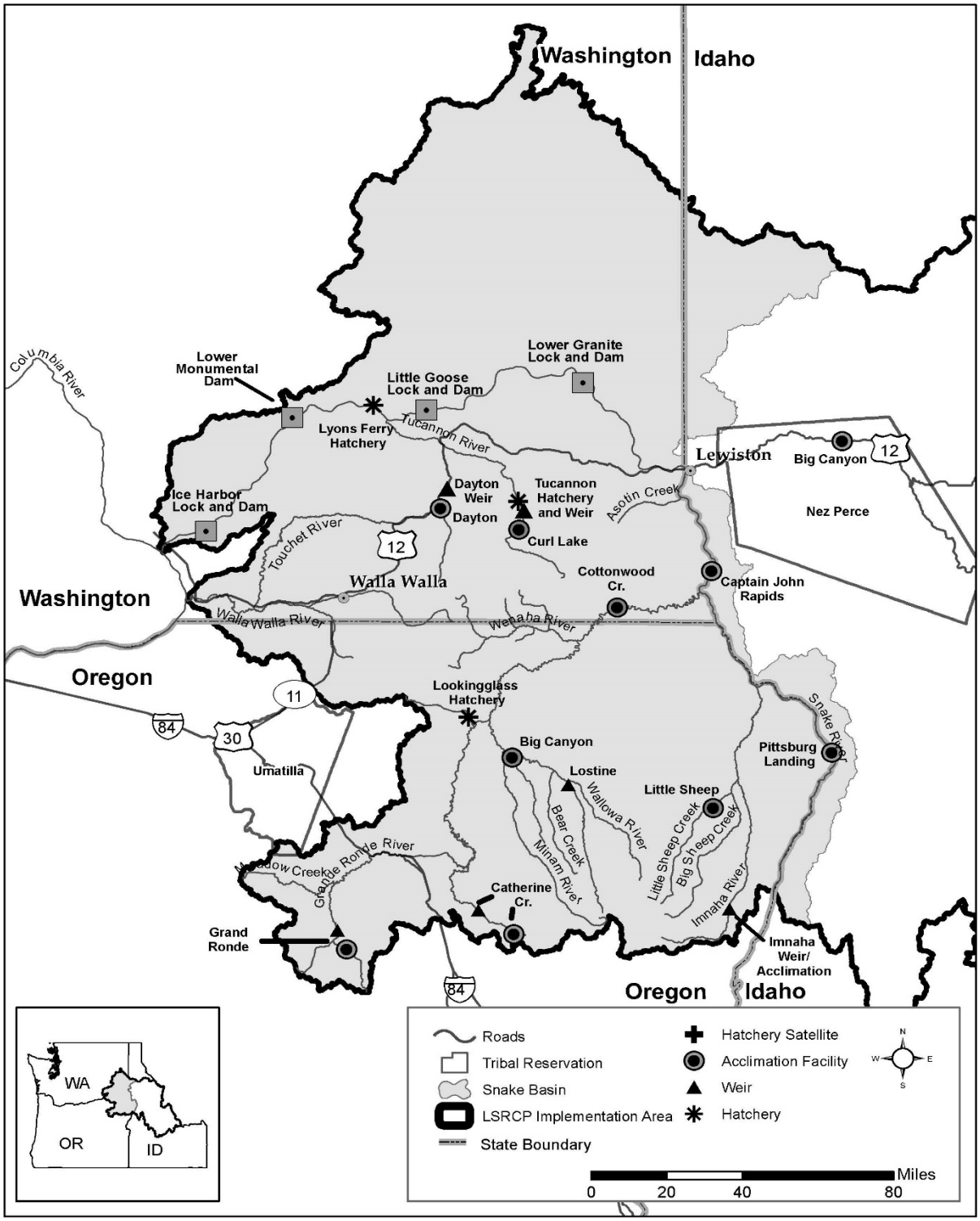

Figure 1. Map of the lower Snake River Basin including points of interest within the project area of the Lower Snake River Compensation Plan in southeast Washington and northeast Oregon. Not all points of interest are owned or operated within the Lower Snake River Compensation Plan Program.

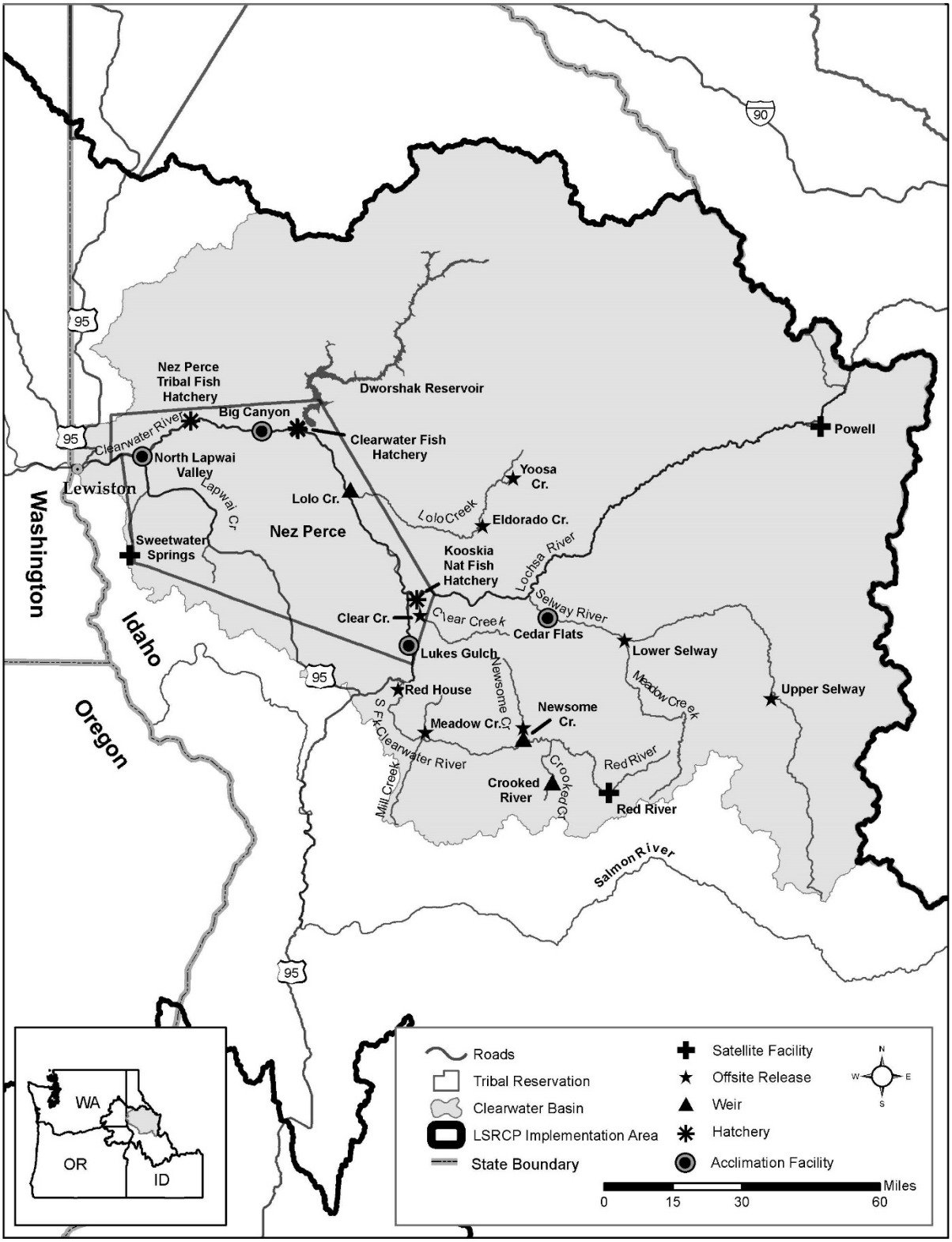

Figure 2. Map of the Clearwater River Basin including points of interest within the project area of the Lower Snake River Compensation Plan in Idaho. Not all points of interest are owned or operated within the Lower Snake River Compensation Plan Program.

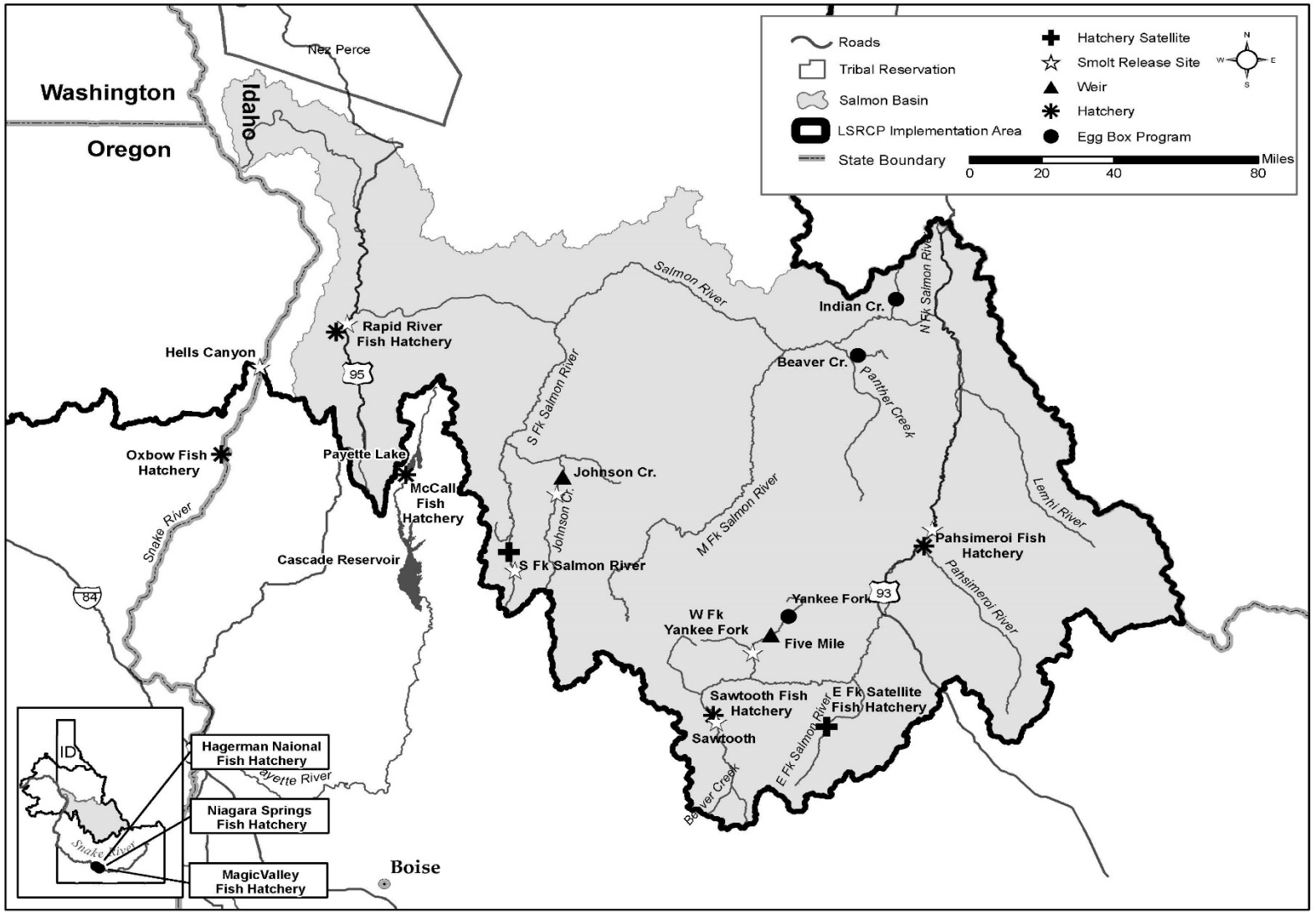

Figure 3. Map of the Salmon River Basin including points of interest within the project area of the Lower Snake River Compensation Plan in Idaho. Not all points of interest are owned or operated within the Lower Snake River Compensation Plan Program.

Table 5. Endangered species listings that are directly or indirectly affected, by the delivery of the Lower Snake River Compensation Plan. Status, critical habitat designations, protective regulations and recovery planning are provided.

Species	Listing Status (original and updated where available)	Critical Habitat (original and updated where available)	Protective Regulations	Recovery Planning
Listed Species Directly Impacted by LSRCP Programs (Biological Opinions have been Developed)				
Snake River Fall Chinook Salmon (*Oncorhynchus tshawytscha*) -- Threatened	57 FR 14653, April 22, 1992 79 FR 20802, April 14, 2014	58 FR 68543, December 28, 1993	70 FR 37160, June 28, 2005	November, 2017
Snake River spring/summer Chinook Salmon (*Oncorhynchus tshawytscha*) -- Threatened	57 FR 14653, April 22, 1992 79 FR 20802, April 14, 2014	58 FR 68543, December 28, 1993 65 FR 57399, October 25, 1999	70 FR 37160, June 28, 2005	November, 2017
Snake River Basin Steelhead (*Oncorhynchus mykiss*) -- Threatened	62 FR 43937, August 18, 1997 79 FR 20802, April 14, 2014	70 FR 52630, September 2, 2005	70 FR 37160, June 28, 2005	November, 2017
Listed Species Indirectly Impacted by LSRCP Programs (Biological Opinions have been Developed)				
Snake River Sockeye Salmon (*Oncorhynchus nerka*) -- Endangered	56 FR 58619, November 20, 1991 79 FR 20802, April 14, 2014	58 FR 6854, December 28, 1993 70 FR 52769, September 2, 2005		June 8, 2015
Middle Columbia River Steelhead (*Oncorhynchus mykiss*) -- Threatened	57 FR 14517, March 25, 1999 79 FR 20802, April 14, 2014	70 FR 52630, September 2, 2005	70 FR 47160, June 28, 2005	November 30, 2009
Bull Trout (*Salvelinus confluentus*) -- Threatened	63 FR 31647, June 10, 1998 64 FR 58910, November 1, 1999	70 FR 56212, September 26, 2005 75 FR 63898, October 18, 2010		September 29, 2015
Bliss Rapids Snail (*Taylorconcha serpenticola*) -- Threatened	57 FR 59244, December 14, 1992	none		December 1995

juveniles (Becky Johnson – Nez Perce Tribe Production Division Director, personal communication January 17th, 2019). The LSRCP was to fund the operations and maintenance of facilities constructed under LSRCP, however, in 1997 the decision was changed by the LSRCP Program Lead at the time due to limited funding (internal USFWS-LSRCP memorandum from Ed Crateu, USFWS). Bonneville Power Administration then assumed funding for operations, monitoring and evaluation for the Fall Chinook Acclimation Project (FCAP) facilities at the request of the Nez Perce Tribe while the LSRCP program funded the early rearing and fish marking that occurred at WDFW's Lyons Ferry Hatchery. Maintenance needs of the program, and the facilities ownership, fell to the LSRCP program.

Recent ESA-Permitting and Compliance

As a Federal agency, the Fish and Wildlife Service must use its authorities in furtherance of the purposes of the Endangered Species Act of 1973 by carrying out programs for the conservation of endangered and threatened species (sec. 7(a)(1)), as well as consulting on actions that "may affect" listed species to ensure those actions do not jeopardize their continued existence, or destroy or adversely modify any designated critical habitat (sec. 7(a)(2)).

To address the LSRCP's three legal obligations (mitigation, ESA compliance, Tribal Trust), ESA consultation was required at multiple levels. For its mitigation programs, the LSRCP was required to consult on all the programs it funded. Initiated in the early 2000s with the development of Hatchery and Genetic Management Plans (HGMPs) for the various LSRCP programs, ESA compliance was finally completed in early 2018 for a majority of the programs. This completion date was integrally linked to the consultation requirements associated with renewing the Management Agreement for all programs associated with the U.S. v. Oregon court case. Appendix B identifies the various individual or batched Biological Opinions that were developed for LSRCP production programs by both NMFS and the FWS. These Biological Opinions were batched and bundled in various ways by the regulatory agencies, including by species, by geographic area, or some combination. Appendix B also identifies the NMFS and the FWS Biological Opinions for the U.S. v. Oregon Management Agreement, which includes hatchery/production programs throughout the Columbia River Basin, including those funded by the LSRCP. In addition, Appendix B notes NMFS Section 10(a)(1)(A) permits issued for a subset of LSRCP production programs. Individual releases, regardless of their inclusion in the U.S. v. Oregon Management Agreement, and a cross-reference to the specific Biological Opinion under which the release was addressed for ESA compliance purposes, can be found in the Juvenile Production Program section of this report.

Tribal Trust and Co-management

Tribal co-management and involvement of tribal agencies in implementation and execution of the LSRCP program has evolved, along with the LSRCP program as a whole, and as court rulings and legal mandates have been instituted. Fisheries in the Columbia River are managed subject to provisions of the *U.S. v. Oregon* court case which reinforced the Columbia River Treaty Tribes' reserved right to take fish "at all usual and accustomed places" and "in common with the citizens of the United States [or citizens of the territory]". The *U.S. v. Oregon* case is the outgrowth of the consolidation of two cases filed in 1968 around the time that the Lower Snake River Dams were being completed and the mitigation was being discussed among State and Federal fisheries agencies (*Sohappy v. Smith*, No. 68-409 (D. Or.), and *United States v. Oregon*, No. 68-513 (D. Or.)). These cases also established the 50/50 harvest sharing between the citizens of the United States and Columbia River Treaty Tribes (Confederated Tribes of the Warm Springs Reservation of Oregon, the Confederated Tribes of the Umatilla Indian Reservation, the Nez Perce Tribe, and the Confederated Tribes and Bands of the Yakama Nation). The Parties to *U.S. v. Oregon* are the states of Washington, Oregon, and Idaho, the United States, the Shoshone-Bannock Tribes, the Confederated Tribes of the Warm Springs of Oregon, the Confederated Tribes of the Umatilla Indian Reservation, the Nez Perce Tribe, and the Confederated Tribes and Bands of the Yakama Nation. Under the umbrella of LSRCP program administration, the LSRCP office coordinates directly on co-management and program execution with the Nez Perce Tribe, the Confederated Tribes of the Umatilla Indian Reservation and the Shoshone-Bannock Tribes. The LSRCP funds about 53 individual anadromous fish releases totaling nearly 19 million smolts. Of these releases, 40 (about 75%) are part of the current U.S. v. Oregon 2018-2027 Management Agreement.

Tribal coordination and co-management of the LSRCP's production programs has become integral to understanding the needs, desires, and rights of the Tribes, and ensures the LSRCP meets its obligations under *U.S. v. Oregon* and its unique Federal Tribal Trust responsibilities. Coupled with the ESA-listings previously mentioned, the focus on co-management has effectively transitioned the LSRCP to identify needs of natural populations and the expansion of

harvest opportunities for multiple co-managers. On-the-ground coordination and the joint development of Annual Operating Plans (or AOPs) by Snake River basin co-managers and cooperators to the LSRCP provide the most obvious mechanism for coordination to ensure current LSRCP responsibilities and program direction are addressed.

Program Reviews and Symposia

The LSRCP has completed a number of both internal and external reviews of the program in its recent history and further reviews are expected in the near future. The LSRCP conducted internal reviews or workshops in 1990 (USFWS-LSRCP 1991) and again in 1998 (USFWS-LSRCP 1998) when the program was still in early implementation and navigating many of the ESA-listings for salmon and steelhead populations. The USFWS Hatchery Review Team completed reviews of Idaho (USFWS 2011a), Oregon (USFWS 2011b) and Washington (USFWS 2011c) LSRCP programs and provided a number of specific issues and hatchery reform recommendations for consideration to the LSRCP and co-managers. Additionally, the Hatchery Scientific Review Group (HSRG) completed reviews and recommendations of LSRCP programs as part of the larger Columbia River basin effort on hatchery reform (HSRG 2009).

With the move towards direct funding of the LSRCP program by BPA in 2002 (DOI 2001), the LSRCP would be reviewed by a BPA-funded Independent Scientific Review Panel (ISRP) on par with other BPA-funded programs and projects. The first ISRP review occurred in 2002 (Williams 2002) and three more, symposium-styled reviews followed in 2011 for the Spring Chinook program (ISRP 2011), 2013 for the steelhead program (ISRP 2013) and in 2014 for the Fall Chinook program (ISRP 2014a). A summary report encapsulating the reviews, reporting objectives and performance metrics of the program was also developed by the ISRP (ISRP 2014b). The LSRCP program also recently coordinated the Snake River Fall Chinook symposium (USFWS 2017), a condition of the Section 10 permits issued by NOAA-Fisheries to WDFW and Nez Perce Tribe (Permit #16607 and #16615) that conveyed technical information and adaptive management decisions associated with both the hatchery and natural populations.

Funding

Bonneville Power Administration pays mitigation costs directly to the USFWS commensurate with the benefits to power generation of the lower four Snake River dams. Benefits of the dams for other purposes, such as flood control, irrigation, and transportation of goods are identified by Congress through appropriations to the USACE (Marshall 2010, 2012). In the past, the LSRCP relied on annual Congressional appropriations (via Department of the Treasury) and reimbursement, at the end of the fiscal year, from the BPA (Department of Interior 2001). The USFWS and BPA currently work under a direct funding agreement (reimbursable funding from the BPA to the LSRCP) that allows for continuous operations and is more business oriented to meet short and long term mitigation responsibilities (Marshall 2010, 2012), terms of which are captured in a Memorandum of Agreement (MOA) originally signed in 2001. Despite recent lapses in Congressional Appropriations for the Department of Interior and the USFWS (i.e., government shutdowns), core LSRCP program operations remain functional and USFWS-LSRCP staff are not furloughed because of this direct reimbursable funding mechanism with BPA. The direct funding arrangement was initially implemented for FY2002. An exception to the USFWS policy of pass-through overhead additionally reduces administration costs from 6.0% to 4.5% and has been in place since the beginning of the USFWS administration of the

LSRCP program. The current practice regarding unspent funding at the end of any fiscal year (October 1- September 30th) from either the LSRCP program or its cooperators, is that funds are returned to BPA and cannot be advanced to the next fiscal year. However, ongoing discussions between the LSRCP and BPA seek to clarify this practice relative to language in the original MOA and its subsequent extensions.

Rate Case and Funding Delivery

Since initiation of the direct funding agreements with BPA in 2001 (DOI 2001), the LSRCP's budgets have been set over various time frames. The original MOA identified budgets across a 5-year period, the budget cycle ending in FY18 covered a 2-year period, and the next series of budgets (FY19-21) have been developed for a 3-year period. The LSRCP Program is funded from revenues BPA receives from the sale of power. BPA determines its expenses (inclusive of their Fish and Wildlife Program) through rate proceedings and an Integrated Program Review, ultimately setting future rates for their customers to recoup costs associated with their expenses. BPA partners with direct funding agreements can participate in public forums associated with the rate case proceedings for future rate periods; the LSRCP has provided budget-related information for consideration by BPA in the past through these forums.

LSRCP budgets are determined for the term of the MOA, are associated with BPA's rate periods, consist of an overall budget with separate annual budgets (Operations/Maintenance, Monitoring/Evaluation), and are intended to reflect true costs for operating LSRCP mitigation programs. Once budgets are developed and documented in the MOA, BPA obligates the funds to the LSRCP at the beginning of a fiscal year, and transfers funds on a monthly reimbursable basis based on the submittal of a report of expenditures provided by the USFWS.

Cooperative Agreements

Table 6 identifies the eleven current cooperative agreements that the LSRCP administers from year to year in performance of the program. Budgets within the cooperative agreement are often separated by operations and maintenance (O&M) or monitoring and evaluation (M&E, Table 7). Movement of funds within a category require LSRCP Office budget modification approval while movement of funds across categories (from M&E to O&M) require USFWS Regional Office approval. These modifications allow for accurate budget tracking by the LSRCP and improve overall administration of the program.

Each fiscal year, individual statements of work (SOWs) and budgets are developed by cooperators and reviewed by the LSRCP Office. An annual performance report for each agreement and finalized budget expenditure are required within 3 months of the end of the fiscal year and often coincide with the end of the calendar year. Additional reporting specific to monitoring and evaluation of LSRCP goals, program coordination through meetings, cooperation in development of AOPs and other miscellaneous annual deliverables are also part of the current LSRCP cooperative agreements.

Table 6. Cooperative agreements administered by the Lower Snake River Compensation Plan Office for execution of the program as of 2018. Individual partners or agency, number of budgets and their categories are provided. Budget categories are Operations and Maintenance, Monitoring and Evaluation, and Information and Education.

Cooperative Agreement Agency or Partner	Number of Budgets	Budget Categories
Idaho Department of Fish and Game	14	Operations and Maintenance (10) – Clearwater Fish Hatchery Complex, Magic Valley Fish Hatchery, Hagerman National Fish Hatchery, Sawtooth Fish Hatchery, McCall Fish Hatchery, Fish Health Program, Hatchery Administration, Fish Marking, Fish Transport. Monitoring and Evaluation (4) – Evaluation, Harvest Monitoring, Data Management, Coded Wire Tag Lab
Washington Department of Fish and Wildlife	5	Operations and Maintenance (4) – Lyons Ferry Fish Hatchery, Tucannon Fish Hatchery, Administration, Fish Health Monitoring and Evaluation (1) – Snake River Lab
Oregon Department of Fish and Wildlife	8	Operations and Maintenance (6) – Irrigon Fish Hatchery, Lookingglass Fish Hatchery, Wallowa Fish Hatchery, Fish Health, Fish Administration, Fish Marking Monitoring and Evaluation (2) – Evaluation, Harvest Monitoring
Nez Perce Tribe	4	Operations and Maintenance (2) – Operations and Maintenance, Fall Chinook Acclimation Program Monitoring and Evaluation (2) – Monitoring and Evaluation, Harvest Monitoring
Confederated Tribes of the Umatilla Indian Reservation	2	Operations and Maintenance (1) Monitoring and Evaluation (1)
Shoshone Bannock Tribes	2	Operations and Maintenance (1) Monitoring and Evaluation (1)
Pacific States Marine Fisheries Commission – Fish Inventory System (FINS)	1	Monitoring and Evaluation (1)
Pacific States Marine Fisheries Commission – Idaho Department of Fish and Game Hatchery Evaluation	1	Monitoring and Evaluation (1)
Idaho Salmon and Steelhead Days	1	Information and Education (1)

Table 7. Dispersal of funding among Lower Snake River Compensation Plan partners or agencies for execution of the program in FY2018. Additional funding categories within monitoring and evaluation and operations and maintenance are provided.

	Monitoring & Evaluation		Operations and Maintenance				
Partner or Agency	**Harvest Monitoring**	**Monitoring & Evaluation**	**Administration**	**Fish Health**	**Fish Marking**	**Operations & Maintenance**	**Partner or Agency Total**
FWS – Abernathy Fish Technology Center						$129,206	$129,206
FWS - Columbia River FWCO		$130,106			$49,804		$179,910
FWS - Idaho FWCO		$221,150					$221,150
Confederated Tribes of the Umatilla Indian Reservation		$212,132			$2,156	$62,289	$276,577
Pacific States Marine Fisheries Commission - IDFG Hatchery Evaluation		$340,460					$340,460
Pacific States Marine Fisheries Commission - FINS						$593,633	$593,633
Shoshone Bannock Tribes		$297,423			$4,620	$330,232	$632,275
FWS - Regional Office			$690,667				$690,667
Dworshak NFH				$61,685		$760,637	$822,322
Hagerman NFH*				$71,411	$62,900	$1,231,712	$1,366,023
FWS - Washington D.C.			$1,441,852				$1,441,852
Nez Perce Tribe	$148,711	$741,539			$16,324	$880,147	$1,786,721
FWS - Lower Snake River Compensation Plan Office			$948,532			$875,549	$1,824,081
Washington Department of Fish and Wildlife		$968,289	$166,436	$106,561	$601,540	$4,356,804	$6,199,629
Oregon Department of Fish and Wildlife	$76,682	$936,996		$333,543	$319,990	$5,711,861	$7,379,073
Idaho Department of Fish and Game (IDFG)	$494,054	$372,066	$559,098	$477,880	$1,166,142	$6,530,182	$9,599,422
Total	**$719,446**	**$4,220,160**	**$3,806,584**	**$1,051,081**	**$2,223,476**	**$21,462,252**	**$33,483,000**
Categorical Total		**$4,939,607**				**$28,543,393**	

* Hagerman NFH program operation transitioned to Idaho Department of Fish and Game in fiscal year 2019

Coordination, Outreach and Partnerships

Annual Operation Plans

As part of execution of the LSRCP program, Annual Operating Plans (AOPs) and coordination meetings are executed each year for NE Oregon (separately for salmon and steelhead), SE Washington (combined) and the Clearwater (combined) and Salmon (combined) River Basins of Idaho. Development of the AOPs documents for LSRCP facilities serve as basin planning, coordination, logistics and reference tools for the co-managers, funding and permitting agencies. The AOPs and Standard Operating Procedure (SOPs, for Idaho/Oregon programs) identify the expected implementation of a number of hatchery operation and research/monitoring activities for the coming year and communicate and coordinate their execution in a transparent, open manner. For facility operators and program co-managers it is a cooperative agreement requirement to participate in their respective AOP meetings and provide follow up information and assistance as requested or needed for their timely completion. A finalized electronic version of the AOP is available to all cooperating agencies, either through the LSRCP website or emailed to participating agencies, and serves as the authoritative version of the document throughout any particular brood or calendar year. Changes or deviations from the AOP may be warranted within a calendar or operational year based on unforeseen or unanticipated circumstances (e.g., lower than expected returns, loss of production, infrastructure issues as examples). Agencies work to communicate with the appropriate AOP parties through the weekly Snake Basin coordination calls or by email so they can address issues or changes and work towards resolution in a transparent manner. Past and current AOPs can be found on the LSRCP website at https://www.fws.gov/lsnakecomplan/Reports/AOPreports.html.

Annual Meeting

Each calendar year the LSRCP Program holds an annual meeting, often alternating between locations to accommodate travel and attendance by the LSRCP cooperators and other agencies. The annual meetings have evolved over time to encompass broad, relevant dissemination of LSRCP program facilities, programs, operations and evaluation information. Coordination on specific items or issues current to the LSRCP Program operations or execution is also a major objective for the annual meeting. Past meeting agendas, presentations and summaries are located on the LSRCP website at https://www.fws.gov/lsnakecomplan/Meetings.html.

Outreach

Idaho Salmon and Steelhead Days (ISSD) is a three-day event held every September. LSRCP partners with IDFG, the Morrison Knudsen (MK) Nature Center, tribal, federal and local agencies along with community volunteers to teach 5th grade students about Idaho's anadromous fishes. Students from the local area are invited to attend and work thru six educational stations providing hands-on outdoor learning. Students learn about fish biology, history, ecology, and the cultural significance of Idaho Salmon and Steelhead.

Partnerships and Contributions to Other Agencies' Programs

While completing the LSRCP program, a number of LSRCP facilities or staff of cooperating agencies perform actions, or partially execute other agency fish mitigation, enhancement or data collection objectives. These partnerships and contributions are completed with direct communication and cooperation with LSRCP cooperators, usually through the AOP process and with parallel funding agreements or in-kind agreements. When and where applicable, LSRCP engages in discussions with these same agencies when changes in funding or staffing

arrangements that are essential to completion of both agency's fish mitigation and enhancement goals. Table 8 is an attempt to identify the fish mitigation, enhancement or data collection programs that currently occur at LSRCP facilities or with LSRCP funded staff that do not directly address the LSRCP program goals or objectives for steelhead, spring-summer or fall Chinook salmon.

Table 8. Partnership programs with LSRCP that use or contract LSRCP facilities or assets for other agency fish mitigation or enhancement programs. Programs are conducted annually.

Program/Project	LSRCP Cooperator	Purpose/Characteristics	Funding Agency	LSRCP Connection	Program Size/Scope
Johnson Creek Artificial Propagation Enhancement Project	NPT	Summer Chinook salmon supplementation in in South Fork Salmon Salmon River	BPA	Use of McCall Hatchery for program incubation and rearing.	150,000 Smolts
Nez Perce Tribal Hatchery Spring Chinook Salmon	NPT	Natural spring Chinook salmon Enhancement in Clearwater Basin	BPA	Early rearing of Nez Perce Tribal Hatchery on-station release at Dworshak National Fish Hatchery	200,000 Parr
Snake River Sockeye Artificial Propagation	IDFG	Snake River Sockeye Enhancement and Recovery	BPA	Acclimation of program releases.	1.0 M but evaluations may identify variable release levels.
Lostine River Coho Program	NPT	Coho Salmon in NE Oregon	NOAA-Fisheries-Mitchell Act	Wallowa Hatchery – Spawning/Incubation (not yet implemented)	500,000 eggs
Oregon Catchable Trout	ODFW	Provide catchable trout for eastern Oregon waters	ODFW	Irrigon Fish Hatchery	142,000 Catchables
Idaho Catchable and High Mountain Lakes Stocking	IDFG	Angling opportunity in Idaho (rainbow trout, cutthroat, arctic grayling, golden trout)	IDFG	Use of Sawtooth, Clearwater and McCall Hatchery	300,000 Catchables 130,000 fry
Steelhead Kelt Reconditioning in Clearwater Basin	NPT/Columbia River Intertribal Fish Commission	Recondition B-steelhead kelts in Clearwater Basin	BPA	Based on cost share percentages or allocations between the COE and USFWS-LSRCP for Dworshak NFH collective assets.	Up to 150 adults.
Clearwater Coho Salmon	NPT	Reintroduction of coho salmon into the Clearwater Basin	NOAA-Fisheries, Mitchell Act	Based on cost share percentages or allocations between the COE and USFWS-LSRCP for Dworshak NFH collective assets.	400,000 smolts
FINS (Fish Inventory System) Database	All	Database project for storing hatchery production, fisheries management and evaluation data within the Snake River Basin and for USFWS – Pacific Region National Fish Hatcheries	BPA	LSRCP cooperators enter associated data from BPA programs and projects into FINS for storage, retrieval and internal dissemination.	Multiple programs and projects across agencies.
Idaho Power Company Fall Chinook Salmon	IPC	Produce mitigation associated with IPC mainstem Snake River projects	IPC	Use of LSRCP facilities for execution of program – spawning and incubation at Lyons Ferry Hatchery and rearing through Irrigon Fish Hatchery	1.0 M Subyearling fall Chinook salmon

Program Implementation and Performance

Project Area Goals and Program Objectives

The 2018 LSRCP program has the following summary performance targets and relative criteria for achieving the project area escapement goals of 18,300 fall Chinook salmon, 58,700 spring-summer Chinook salmon and 55,100 steelhead (Tables 9-11). Additionally, there is a discrete, annual mitigation goal of 86,000 pounds of trout predominantly stocked within the State of Washington waters. Establishment of this performance criteria occurred during the last ISRP review of the program for spring Chinook salmon, steelhead and fall Chinook salmon (ISRP 2014b). Performance targets and criteria will change in future versions of the LSRCP report based on changes to release strategies, past program performance and changes to implementation to address in-place, in-kind goals.

Table 9. Fall Chinook salmon project area goal for the Lower Snake River Compensation Plan Program and associated targets for smolt-to-adult recovery (SAR), coastwide harvest, total adults produced (includes jacks), and smolt-to-adult survival (SAS). The SAR of 0.20% for fall Chinook salmon is currently unchanged from the historical estimate used to size the program to reach the 18,300 adult goal (WDFW 1974).

Basin/Area	Fall Chinook Salmon	Project Area Goal	SAR (%)	Coastwide Harvest Objective (4:1)	Total Adults Produced	SAS (%)
Lyons Ferry/FCAP (Snake River)	Snake River Fall	18,300	0.20	73,200	91,500	0.80

Table 10. Spring-Summer Chinook salmon project area goal distributed by basin or area for the Lower Snake River Compensation Plan Program. Associated targets for smolt-to-adult recovery (SAR), coastwide harvest, total adults produced (includes jacks) and smolt-to-adult survival (SAS) are provided. Lochsa River summer Chinook salmon and Touchet River distribution of program area goals will be determined in 2020. The historical SAR of 0.87% for spring-summer Chinook salmon used to size the LSRCP program is currently unchanged in the upper Salmon, Clearwater, and Tucannon river basins (WDFW 1974).

Basin/Area	**Spring-Summer Chinook**	**Distribution of Project Area Goal**	**SAR (%)**	**Coastwide Harvest Objective (4:1)**	**Total Adults Produced**	**SAS (%)**
Salmon (Idaho, Sawtooth Hatchery)	Summer	19,445	0.87	77,780	97,225	4.35
Salmon (Idaho, McCall Fish Hatchery)	Summer	8,000	0.80	32,000	40,000	4.00
Clearwater (Idaho, Clearwater Hatchery)	Spring	11,900	0.87	47,600	59,500	4.35
Lochsa River (Idaho, Clearwater Hatchery)	Summer	TBD				
Clearwater (Idaho, Dworshak)	Spring	9,135	0.87	36,540	45,675	4.35
SE Washington - Tucannon	Spring	1,152	0.87	2,608	3260	4.35
SW Washington - Touchet	Spring	TBD				
Imnaha River (Oregon)	Summer	3,210	0.65	12,840	16,050	3.25
Grande Ronde (Oregon, upper basin)	Spring	1,617	0.65	6,468	8,085	3.25
Catherine Creek (Oregon)	Spring	970	0.65	3,880	4,850	3.25
Lookingglass (Oregon)	Spring	1,617	0.65	6,468	8,085	3.25
Lostine (Oregon)	Spring	1,654	0.65	6,616	8,270	3.25
Totals		**58,700**		**234,800**	**293,500**	

Table 11. Steelhead project area goal distributed by basin or area for the Lower Snake River Compensation Plan Program. Associated targets for smolt-to-adult recovery (SAR), coastwide harvest, total adults produced (includes jacks) and smolt-to-adult survival (SAS) are also provided. Distribution of the adult goal for B-Steelhead in the Salmon Basin will be determined in 2020. The historical SAR of 0.50% used to size the LSRCP program to achieve 55,100 steelhead (WDFW 1974) has changed over time. The Clearwater Basin SAR reflects a higher rate of survival due to limited rearing space for LSRCP steelhead (Warren 2018).

Basin/Area	Steelhead Type	Distribution of the Project Area Goal	SAR (%)	Coastwide Harvest Objectives (2:1)	Total Adults Produced	SAS (%)
Clearwater (Idaho)	B-Steelhead	14,000	1.66	28,000	42,000	4.98
Salmon (Idaho, Hagerman NFH Production)	A-Steelhead	13,600	0.94	27,200	40,800	2.82
Salmon (Idaho, Magic Valley Production)	A-Steelhead	11,660	0.73	23,320	34,980	2.19
	B-Steelhead	TBD				
Grande Ronde (Oregon)	A-Steelhead	9,184	0.68	18,368	27,552	2.04
Imnaha (Oregon)	A-Steelhead	2,000	0.61	4,000	6,000	1.83
SE Washington	A-Steelhead	4,656	0.79	9,312	13,968	2.37
Totals		55,100		110,200	165,300	

Juvenile Production Programs

Fall Chinook Salmon

Table 12 identifies production releases from the LSRCP program for fall Chinook salmon in 2018. Both yearling (BY2016) and subyearling (BY2017) releases were achieved in 2018 with 952,420 and 2,275,577 fall Chinook salmon released, respectively. Marking and tagging program efforts were implemented as planned for fall Chinook salmon.

Release year 2018 will be the last year of yearling fall Chinook releases upstream of Lower Granite Dam. Production changes related to the new 2018-2027 U.S. v. Oregon Management Agreement and consultation of the Snake River fall Chinook salmon program with NOAA-Fisheries will have only sub-yearling releases occurring upstream of Lower Granite Dam starting in 2019. Additional marking and tagging changes will also be implemented.

Spring-Summer Chinook Salmon

A total of 10,434,203 spring-summer Chinook salmon smolts were released with an additional 422,713 parr and an estimated 313,000 eggs cultured and released in 2018 achieving the release target for the LSRCP program (Table 13). Marking and tagging programs were implemented as planned and production issues were minor overall for the LSRCP program.

The Lolo Creek release of 180,000 smolts did not occur as production was shifted to meet Clear Creek production releases (Kooskia NFH), a higher priority program for brood stock collection and within the 2009-2017 *U.S. v. Oregon* Agreement. Discussions by the Clearwater Basin co-managers and parties to the Clearwater Basin AOP occurred within the rearing year to move the production. The Selway River Parr release was slightly larger than expected due to a number of fish culture factors related to brood stock collections and higher in-hatchery survival.

The Touchet River spring Chinook program was initiated in brood year 2018 with the transfer of eggs from Little White Salmon NFH. The program was initiated to help meet the SE

Table 12. Releases of fall Chinook salmon (both yearling and sub-yearling) from the Lower Snake River Compensation Plan during fiscal year 2018. Specific attributes of each release are provided. Aggregate PIT tags represent the total number of tags from a combination of funding sources, not only the Lower Snake River Compensation Plan. Release year 2018 will be the conclusion of yearling fall Chinook salmon releases above Lower Granite Dam. The ESA consultation column reflects both NOAA-Fisheries and U.S. Fish and Wildlife coverage for each release and corresponds to Appendix B in the document.

LSRCP Facility	Run-Life Stage	Stock	Release Site or Location	Release Target	Release Number	Average size (fish/lb)	Ad-Clipped	Ad-Clipped and CWT	CWT Only (Ad-Present)	No mark or CWT	Aggregate PIT Tags	ESA Consultation
Lyons Ferry	Fall-Yearling	Snake River	Snake River, Lyons Ferry FH	450,000	472,511	10.4		237,716	234,795		30,000	H2i
Lyons Ferry	Fall-Yearling	Snake River	Snake River, Pittsburg Landing	150,000	159,902	12.0		79,538	78,841			H2i
Lyons Ferry	Fall-Yearling	Snake River	Snake River, Captain Johns	150,000	160,046	13.1		79,014	81,032			H2i
Lyons Ferry	Fall-Yearling	Snake River	Clearwater River, Big Canyon (ID)	150,000	159,961	13.0		78,894	81,067			H2i
			Total Yearling	**900,000**	**952,420**	**11.4**		**475,162**	**475,735**			
Lyons Ferry	Fall-Sub	Snake River	Snake River, Lyons Ferry FH	200,000	199,788	65.0		199,788			20,000	H2i
Lyons Ferry	Fall-Sub	Snake River	Snake River, Pittsburg Landing	400,000	413,268	85.0		101,055	101,072	211,141	26,000	H2i
Lyons Ferry	Fall-Sub	Snake River	Snake River, Captain Johns	500,000	521,725	80.0		100,992	101,393	319,340	26,000	H2i
Lyons Ferry	Fall-Sub	Snake River	Snake River, Captain Johns (2nd group)	200,000	201,644	49.0		201,644			2,000	H2i
Lyons Ferry	Fall-Sub	Snake River	Clearwater River, Big Canyon (ID)	500,000	521,331	74.0		101,020	100,852	319,459	17,100	H2i
Irrigon	Fall-Sub	Snake River	Grande Ronde River	400,000	417,821	46.7		209,071		208,750	3,000	H2i
			Total Sub-Yearling	**2,200,000**	**2,275,577**	**65.8**		**913,570**	**303,317**	**1,058,690**		

Table 13. Releases of spring-summer Chinook salmon (yearling, parr or eggs) from the Lower Snake River Compensation Plan during fiscal year 2018. Specific attributes of each release are provided. Aggregate PIT tags represent the total number of tags from a combination of funding sources, not only the Lower Snake River Compensation Plan. The ESA consultation column reflects both NOAA-Fisheries and U.S. Fish and Wildlife specific coverage for each release and corresponds to Appendix B in the document. .

LSRCP Facility	Run-Life Stage	Stock	Release Site or Location	Release Target	Release Number	Average size (fish/lb)	Ad-Clipped	Ad-Clipped and CWT	CWT Only	No mark or CWT	Aggregate PIT Tags	ESA Consult.
McCall	Summer-Yearling	SFSR	South Fork Salmon River, Knox Bridge	1,000,000	1,122,103	20.1	847,643	118,567	130,822		50,751	C3
Sawtooth	Summer-Yearling	Sawtooth	Salmon River, Sawtooth Weir	1,700,000	2,103,183	21.6	1,815,047	119,835	168,301		19,702	F3
Sawtooth	Summer-Yearling	Sawtooth	Yankee Fork, Salmon River	300,000	272,798	18.6	154,200	118,598			2,434	F3
Clearwater	Spring-Yearling	North Fork	North Fork Clearwater River	709,000	544,153	16.1	147,997	396,156			17,069	D4
Clearwater	Spring-Yearling	Clear Cr/Powell	Kooskia Hatchery, Clear Ck.	720,000	818,037	16.3	698,224	119,813			8,689	D4
Clearwater	Summer-Yearling	Powell	Lower Selway River	400,000	451,416	16.2	186,576	119,605	145,235		17,072	D4
Clearwater	Spring-Yearling	SF Clearwater	SF Clearwater River, Red River	1,280,000	1,276,194	16.4	1,156,393	119,801			17,077	D4
Clearwater	Summer-Yearling	Powell/SFSR	Powell Satellite, Lochsa River	640,000	673,181	16.0	217,442	119,210	119,758	216,771	25,415	D4
Dworshak	Spring-Yearling	Lolo Creek	Lolo Creek	180,000	-	-	-	-	-	-	-	D4
Dworshak	Spring-Yearling	North Fork	North Fork Clearwater River	1,650,000	1,645,125	19.8	1,519,998	125,127			41,974	D4
Lookingglass	Spring-Yearling	Catherine Ck.	Catherine Creek	150,000	122,444	27.7		122,444			21,060	A1viii
Lookingglass	Spring-Yearling	Lostine	Lostine River	250,000	246,020	26.6	101,300	144,720			5,788	A1x
Lookingglass	Spring-Yearling	Up Grande Ronde	Grande Ronde River	250,000	221,863	26.8		112,292	109,571		4,965	A1vii
Lookingglass	Spring-Yearling	Lookingglass	Lookingglass Creek	250,000	234,969	24.6	78,438	156,531			4,654	A1ix
Lookingglass	Summer-Yearling	Imnaha	Imnaha River (Direct)	210,000	217,680	24.6	85,506	129,174			8,894	A1v
Lookingglass	Summer-Yearling	Imnaha	Imnaha River (Acclimated)	280,000	276,006	25.5	141,211	134,855			11,706	A1v
Lyons Ferry	Spring-Yearling	Tucannon	Tucannon River	225,000	209,031	13.4			209,031		15,000	A1iii
Lyons Ferry	Spring-Yearling	Walla Walla/Carson	Touchet River	-	-	-	-	-	-	-	-	G5
			Total	**10,194,000**	**10,434,203**	**19.2**	**7,149,975**	**2,156,728**	**882,718**	**216,771**	**272,250**	
Dworshak	Spring - Parr	North Fork (DWOR)	Selway River	300,000	422,713	81.0				422,713		D4
McCall	Summer - Eggs	SFSR	SFSR, Curtis & Cabin Creek - Egg Box	300,000	313,000	-				313,000		C3
			Total	**600,000**	**735,713**					**735,713**		

Washington goal of 1,152 spring Chinook and provide harvest within the defined LSRCP project area for Washington. Initial release of this program will occur in spring 2020. The Sawtooth on-station release was higher than expected due to above average in-hatchery survival of the 2017 brood year as was the McCall Hatchery release at Knox Bridge. Coordination by IDFG staff with NOAA-Fisheries occurred regarding these release changes.

Steelhead

The LSRCP steelhead program released a total of 5,467,143 smolts in 2018, meeting 99% of the aggregate release target (Table 14). Marking and tagging programs were implemented as planned and production issues were minor overall for the LSRCP program. In Idaho, due to the low number of B-steelhead into the upper Salmon River and difficulty in trapping those returns, the Magic Valley release in the Little Salmon River was met with A-steelhead returns (Pahsimeroi Stock). Additionally, the Yankee Fork program was under the 620,000 B-steelhead release target due to limited stock from the Upper Salmon River and limited availability of Dworshak B-steelhead returns to fill the program. The Little Sheep Creek program release was at 117% of the release target and represented higher in-hatchery survival and fecundity values than was planned; in addition, culling of brood year 2016 steelhead for trout mitigation in Oregon waters was not implemented for the release. Discussions with NOAA-Fisheries, co-managers and the LSRCP program occurred pre-release.

Trout

The LSRCP mitigation goal for trout of 86,000 pounds was met in 2018 with the planned rearing and stocking of 87,460 pounds from the Lyons Ferry Hatchery Complex (Table 15). Additional trout mitigation occurred in Washington, Idaho, and Oregon waters from steelhead production culls released in non-anadromous waters from LSRCP facilities (4,550 pounds). Steelhead egg program culls, surplus production or identified residuals that have been outplanted as trout prior to 2018 are provided in Appendix C for this variable facet of the LSRCP trout mitigation program.

Table 14. Releases of steelhead (yearlings) from the Lower Snake River Compensation Plan during fiscal year 2018. Specific attributes of each release are provided. Type refers to either A-steelhead or B-steelhead designation of hatchery program stock. Aggregate PIT tags represent the total number of tags from a combination of funding sources, not only the Lower Snake River Compensation Plan. The ESA consultation column reflects both NOAA-Fisheries and U.S. Fish and Wildlife specific coverage for each release and corresponds to Appendix B in the document.

LSRCP Facility	Type	Stock	Release Site or Location	Release Target	Release Number	Average size (fish/lb)	Ad-Clipped	Ad-Clipped and CWT	CWT Only (Ad-Present)	No mark or CWT	Aggregate PIT Tags	ESA Consultation
Magic Valley	A	Pahsimeroi	Little Salmon R, Stinky Springs	186,000	407,820	4.4	407,820				2,192	E3
Magic Valley	B	Dworshak	Little Salmon R, Stinky Springs	217,000			Low Dworshak Returns, Pahsimeroi stock used					E3
Magic Valley	B	Upper Salmon	Little Salmon R, Stinky Springs				Low Upper Salmon Returns, Pahsimeroi stock used					E3
Magic Valley	B	Dworshak	Pahsimeroi River, Below Weir	93,000	93,690	4.5			92,219	1,471	4,166	E3
Magic Valley	B	Upper Salmon	Pahsimeroi River, Below Weir	155,000	156,340	4.5			152,550	3,790	7,167	E3
Magic Valley	B	Dworshak	Yankee Fork, 3rd Bridge	620,000	268,880	4.3	268,880				8,458	E3
Magic Valley	B	Upper Salmon	Yankee Fork, 3rd Bridge		6,330	4.2	6,330					E3
Magic Valley	B	Dworshak	Yankee Fork, Acclimation Ponds		27,720	4.6			27,522	198		E3
Magic Valley	B	Upper Salmon	Yankee Fork, Acclimation Ponds		189,620	4.6			186,293	3,327	6,943	E3
Magic Valley	A	Sawtooth	Sawtooth Weir	279,000	281,540	4.6	281,540				5,665	E3
Hagerman	A	Sawtooth	Salmon River, Sawtooth Weir	1,410,000	1,385,612	4.1	1,227,506	158,106			21,466	E3
Hagerman	A	East Fork Natural	East Fork Salmon River	60,000	56,497	3.6			53,856	2,641	8,594	E3
Hagerman	A	Sawtooth (PRAS)	Salmon River, Sawtooth Weir	90,000	87,469	4.1	2,375	85,094			8,689	E3
Clearwater	B	South Fork Clearwater	SF Clearwater River, Meadow Ck	501,000	540,830	4.8	308,062		227,576	5,192	10,763	E4
Clearwater	B	South Fork Clearwater	SF Clearwater River, Red House	219,000	233,792	4.7	233,792				4,691	E4
Clearwater	B	South Fork Clearwater	SF Clearwater R., Newsome Ck	123,000	131,430	4.7			127,173	4,257	2,590	E4
Irrigon	A	Imnaha	Little Sheep Ck.	215,000	252,060	4.8	224,736	27,324			15,000	B1vi
Irrigon	A	Wallowa	Wallowa River, Big Canyon (OR)	320,000	336,966	4.6	257,078	79,888			6,680	B1
Irrigon[†]	A	Wallowa	Wallowa R., Wallowa Acclimation	480,000	463,472	5.0	302,922	160,550			16,075	B1
Lyons Ferry	A	Wallowa	Touchet R., Dayton Acclimation	100,000	101,000	4.6	79,484	21,516			2,998	B1
Lyons Ferry	A	Wallowa	Snake River, Lyons Ferry Hatchery	60,000	65,159	4.3	65,159				4,989	B1
Lyons Ferry	A	Touchet Endemic	Touchet R., Dayton Acclimation	50,000	52,131	5.0			52,131		9,987	G5
Lyons Ferry	A	Tucannon-Mitigation	Tucannon River (lower)	100,000	63,692	4.8	37,072	26,620			7,481	B1iv
Lyons Ferry	A	Tucannon-Conserv.	Tucannon River, Curl Lake	50,000	52,531	4.6			52,531		7,488	B1iv
Lyons Ferry[‡]	A	Wallowa	Grande Ronde R., Cottonwood Pond	225,000	212,562	5.2	192,562	20,000			9,998	B1
			Total	**5,553,000**	**5,467,143**	**4.5**	**3,895,318**	**579,098**	**971,851**	**20,876**	**166,080**	

[†] Includes 40,470 Wallowa stock steelhead reared at Lyons Ferry hatchery for an ongoing study.
[‡] Includes 42,773 Wallowa stock steelhead reared at Irrigon Hatchery for an ongoing study.

Table 15. Releases of rainbow trout (*Oncorhynchus mykiss*) from the Lower Snake River Compensation Plan during fiscal year 2018. Specific attributes of each release are provided. Type refers to either designated rainbow trout stock (RBT), A-steelhead surplus culled beyond program needs, or expected residual steelhead released for trout harvest. The ESA consultation column reflects both NOAA-Fisheries and U.S. Fish and Wildlife specific coverage for each release and corresponds to Appendix B in the document.

LSRCP Facility	Type	Stock	Release Site or Location	Release Target	Release Number	Average size (fish/lb)	Total Pounds	ESA Consultation
Lyons Ferry	RBT	Spokane - Jumbo	Washington Waters	1,000	1,358	0.7	2,027	1
Lyons Ferry	RBT	Spokane - Catch.	Washington Waters	197,500	219,548	2.8	78,380	1
Lyons Ferry	RBT	Spokane - Jumbo	Idaho Waters	1,650	1,653	1.0	1,653	1
Lyons Ferry	RBT	Spokane - Catch.	Idaho Waters	16,000	16,200	3.0	5,400	1
			Total	**216,150**	**238,759**	**2.6**	**87,460**	
Lyons Ferry	A	Wallowa	Washington Waters	-	125,125	85.0	1,472	B1
Magic Valley	A	Sawtooth/Pahsimeroi	Idaho Waters	-	146,070	76.9	1,900	E3
Irrigon	A	Imnaha	Oregon Waters	-	42,578	99.9	426	B1vi
Irrigon	A	Wallowa	Oregon Waters	-	75,186	100.0	752	B1
			Total		**388,959**	**85.5**	**4,550**	

Adult Return Goals and Objectives

Performance of juvenile releases into adult returns for the LSRCP program goals and objectives are reported annually to the LSRCP program by the evaluation staff for the hatchery programs. Currently, the three States of Washington, Oregon and Idaho provide a summary annual reporting file towards achievement of the LSRCP goals and objectives. Various tags and methods are used to determine achievement towards the goals and objectives of the LSRCP program (Table 16) but, in general, estimates of co-manager harvest (both project area and coastwide), escapement to the project area and tributaries, and recovery of any strays (both, within and outside of the Snake River basin) are developed independently and combined across all the LSRCP hatchery program operators. Specific tagging is used to generate individual or combined estimates for both project area goals and coastwide harvest estimates and differ by LSRCP cooperator and species (Table 16). Depending on cooperator, individual project area harvest monitoring may also be used in combination of PBT and coded wire tag (CWT) and adult recoveries to help determine LSRCP performance. Parental-based tagging (PBT) sampling occurs at Lower Granite Dam and in some harvest monitoring both downstream and within the Snake Basin. Passive integrated transponders or PIT tags are commonly used in LSRCP releases for a number of purposes. Harvest reporting within the LSRCP program area is part of the annual summarization for programs as well but is not always used to estimate LSRCP achievement of goals and objectives for the program across all cooperators. Annual reports outlining hatchery evaluation activities by individual cooperators towards monitoring of the LSRCP goals and objectives can be found on the LSRCP reports website (https://www.fws.gov/lsnakecomplan/reports.html).

Table 16. Specific tagging currently used by the States of Washington, Oregon and Idaho to determine and report the Lower Snake River Compensation Plan (LSRCP) goals for the project area (PA) and for coastwide harvest objectives (CW). Use of passive integrated transponders (PIT), coded wire tags (CWT) and parental based tagging (PBT) are identified by evaluation program.

	Spring-Summer Chinook Salmon			Steelhead			Fall Chinook Salmon		
Evaluation Program	PBT Estimation	PIT Tag Detections	CWT/Adult Recoveries	PBT	PIT Tags	CWT/Adult Recoveries	PBT	PIT Tags	CWT/Adult Recoveries
Washington			CW-PA		CW-PA	CW-PA	PA	PA	CW-PA
Oregon			CW-PA			CW-PA			
Idaho	PA		CW	CW-PA					

For this report, individual estimates of LSRCP program performance are combined regardless of methods or tagging across years and cooperators for a single point estimate. In some cases, individual estimates by species and program have error estimates; additional information on programs can be found within individual LSRCP cooperator reports posted on the LSRCP website (https://www.fws.gov/lsnakecomplan/reports.html). Point estimates in this report may change in future reports based on ongoing discussions with the LSRCP program or changes in analysis and methods employed in the future.

Fall Chinook Salmon

Project area adult returns for Snake River Fall Chinook salmon have been consistent since 2006 with the program averaging a project area return of over 20,622 (Figure 4, Table 17). The LSRCP project area return goals of 18,300 adults was achieved from 2009-2015, and nearly so in 2016 (99% of goal). The highest single adult return estimate was reported in the 2009 return

Figure 4. Lower Snake River Compensation Plan project area returns of Snake River Fall Chinook salmon from 2006-2017. Run years 2016 and 2017 are incomplete and will change with future reporting.

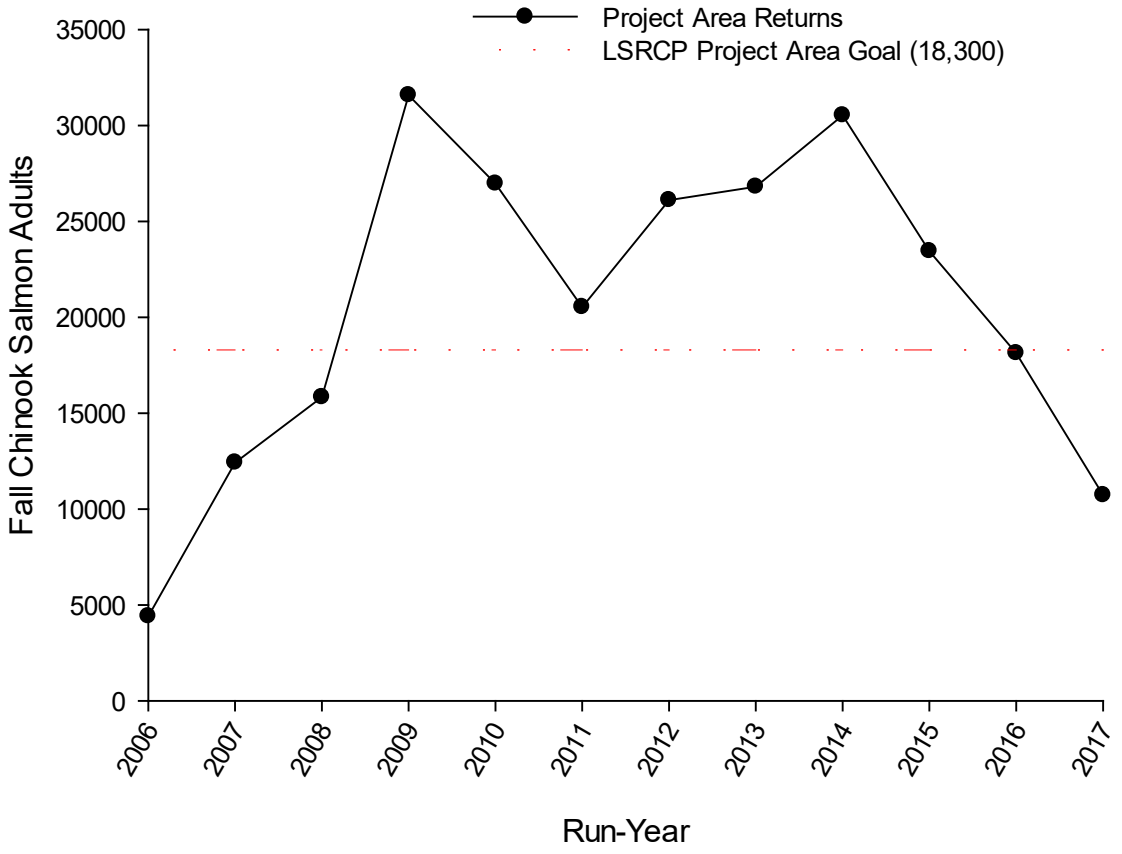

Table 17. Total project area returns, including returns by specific release site, of Snake River Fall Chinook salmon produced by the Lower Snake River Compensation Plan Program since run year 2006. The in-place, in-kind goal for the project area is 18,300. Shading represents run years where the project area goal was met. Return year reporting and analysis that is incomplete is noted (*).

Run Year	Lyons Ferry Hatchery (Washington)	Fall Chinook Acclimation Project (FCAP)	Total LSRCP Project Area Returns (18,300)
2006	172	4,237	4,409
2007	6,070	6,350	12,420
2008	6,024	9,809	15,833
2009	16,407	15,173	31,580
2010	10,036	16,931	26,967
2011	8,453	12,073	20,526
2012	8,671	17,437	26,108
2013	11,792	15,015	26,807
2014	8,812	21,710	30,521
2015	8,268	15,173	23,441
2016*	5,885	12,241	18,126
2017*	3,858	6,863	10,721
Total	**94,448**	**153,012**	**247,459**
Mean (n=12)	**7,871**	**12,751**	**20,622**

year with 31,580 Snake River fall Chinook salmon project area returns. There are no individual LSRCP hatchery program return objectives for the Lyons Ferry Hatchery program and the FCAP releases therefore, the LSRCP goal is measured in aggregate for these programs. Harvest of LSRCP produced Snake River Fall Chinook salmon adults was variable but lower than the harvest objectives for the program over the 2006-2017 return years analyzed. Combined, the FCAP and Lyons Ferry programs averaged 8,463 in coastwide harvest annually with the highest amounts occurring between 2009-2014 (Table 18). Snake River basin harvest was very low over the years analyzed, and likely is a result of limited fisheries, adipose present adult returns limiting selective sport harvest, and escapement to spawning grounds.

Overall, smolt to adult survival of LSRCP program releases has averaged 1.22% for Lyons Ferry Hatchery and 0.77% for FCAP releases (Table 19) when both yearling and subyearling releases were combined across the brood years analyzed for this report. The highest individual survivals were measured in the 2006 brood year for Lyons Ferry production at 3.84% and during 2010 for the FCAP production at 1.41%. Average total adult returns for the LSRCP Snake River fall Chinook program was 29,776 (Table 19) with a similar amount between Lyons Ferry Hatchery and FCAP adults - 14,281 for the Lyons Ferry Hatchery and 15,495 for FCAP production.

Table 18. Run year harvest of Snake River Fall Chinook salmon from the Lower Snake River Compensation Plan (LSRCP) from 2006-2017. Program summaries are broken out by Snake River basin and coastwide contributions. Run years that are incomplete are noted with an asterisk (*).

	Lyons Ferry Hatchery (Washington)		Fall Chinook Acclimation Project (FCAP)	
Run Year	Coastwide Harvest	Snake River Basin	Coastwide Harvest	Snake River Basin
2006	6	-	309	-
2007	1,400	-	649	-
2008	3,513	13	1,471	-
2009	7,254	330	1,496	116
2010	9,927	283	3,589	232
2011	8,263	621	2,536	274
2012	6,840	682	3,489	262
2013	7,658	1,572	4,603	945
2014	9,833	457	5,316	411
2015	6,441	334	4,033	318
2016*	5,980	281	2,620	86
2017*	4,331	493	-	-
Total	**71,444**	**5,065**	**30,110**	**2,644**
Mean (n=12)	**5,954**	**422**	**2,509**	**220**

Table 19. Brood year juvenile releases, adult returns and smolt to adult survivals (SAS) for the Lower Snake River Compensation Plan Snake River Fall Chinook salmon programs. Survivals represent overall survival and include harvest and any recoveries, including strays, both within and outside of the LSRCP project area.

	Lyons Ferry Hatchery (Washington)			Fall Chinook Acclimation Project-FCAP			Total LSRCP
Brood Year	Juvenile Releases	Adult Returns	Survival (SAS%)	Juvenile Releases	Adult Returns	Survival (SAS%)	Adults Produced
2004	1,051,134	9,266	0.88%	1,843,494	7,462	0.40%	16,728
2005	1,597,904	13,684	0.86%	1,869,407	11,210	0.60%	24,894
2006	659,451	25,343	3.84%	1,873,982	14,015	0.75%	39,358
2007	1,189,556	21,828	1.83%	1,882,396	25,860	1.37%	47,688
2008	1,502,741	14,142	0.94%	1,877,584	13,269	0.71%	27,411
2009	1,256,059	20,160	1.60%	1,928,394	22,360	1.16%	42,520
2010	1,291,928	26,233	2.03%	1,928,780	27,284	1.41%	53,517
2011	1,273,700	15,991	1.26%	2,717,705	29,745	1.09%	45,736
2012	1,320,715	12,599	0.95%	1,893,064	14,450	0.76%	27,049
2013*	1,066,271	6,965	0.65%	2,093,154	10,172	0.49%	17,137
2014*	1,162,637	4,752	0.41%	2,174,205	9,979	0.46%	14,732
2015*	661,018	405	0.06%	1,915,878	137	0.01%	542
Mean (n=12)	**1,169,426**	**14,281**	**1.22%**	**1,999,837**	**15,495**	**0.77%**	**29,776**

Spring-Summer Chinook Salmon

Project area adult returns for spring-summer Chinook salmon have been highly variable for the LSRCP program since 2004 (Figure 5, Table 20). The LSRCP program has averaged 29,115 adults annually towards the mitigation goal approximately 50% of the LSRCP goal, in recent years. The highest estimates towards achieving the LSRCP goal of 58,700 adults occurred during 2009-2011, and the 2015 return years where at least 70% of the goal was achieved. For programs in Oregon the distributed adult return of 9,072 adult was met in 2009-2011 and 2014 run years. Consolidated LSRCP spring-summer Chinook returns in Idaho and Washington have not been met in the return years analyzed for this report.

Figure 5. Lower Snake River Compensation Plan project area returns of spring/summer Chinook salmon from 2004-2017. Run-year 2017 is incomplete and will change with future reporting.

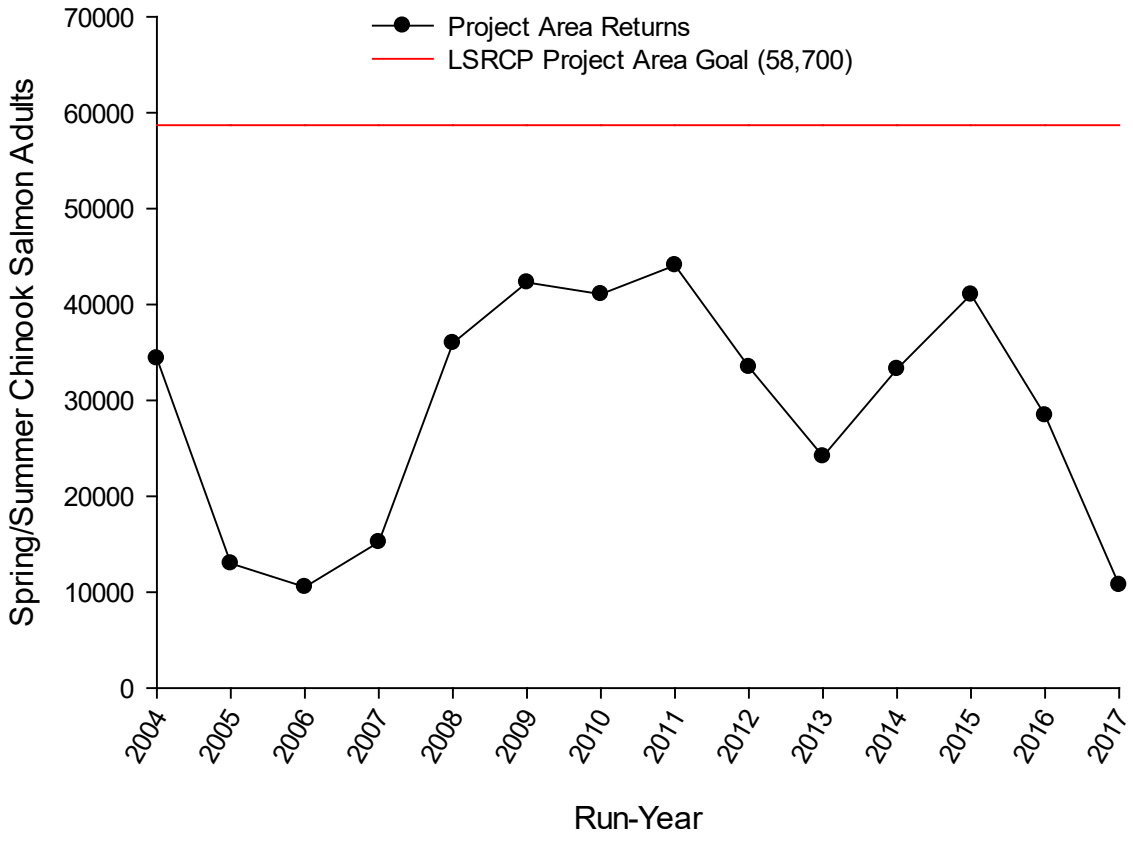

Table 20. Project area returns of spring-summer Chinook salmon for the Lower Snake River Compensation Plan Program for run years 2004-2017. Individual in-place, in kind goals are provided by State and overall for the project area (in parentheses). Shading represents where allocated LSRCP program goals were met. Return year reporting that is incomplete is noted with an asterisk (*) and will change in future reporting.

Run-Year	Idaho (48,432)	Oregon (9,072)	Washington (1,152)	Project Area (58,700)
2004	29,453	4,851	72	34,376
2005	10,046	2,869	78	12,993
2006	8,285	2,145	92	10,522
2007	12,294	2,852	72	15,218
2008	28,079	7,401	487	35,966
2009	29,836	11,571	891	42,298
2010	26,506	13,431	1,123	41,061
2011	28,897	14,781	383	44,061
2012	25,769	7,341	370	33,480
2013	17,938	5,872	350	24,160
2014	23,405	9,587	287	33,279
2015	32,471	7,735	828	41,034
2016	23,669	4,319	447	28,435
2017*	8,322	2,035	374	10,731
Total	**304,971**	**96,790**	**5,854**	**407,614**
Mean (n=14)	**21,784**	**6,914**	**418**	**29,115**

Harvest of spring-summer chinook from the LSRCP (Table 21) has averaged over 16,000 adults annually since the 2004 run year. Approximately 82% of the harvested spring-summer Chinook salmon are provided by the LSRCP programs located in Idaho. For complete reporting years, Snake River basin harvest was larger in all years except 2015 where harvest was slightly larger in coastwide fisheries downstream of the project area.

Smolt to adult survival of spring-summer Chinook salmon releases are the highest for the Imnaha River basin releases (at Lookingglass Hatchery) and the South Fork Salmon River basin program at McCall hatchery over the years analyzed for this report (Table 22). Individual basin or facility releases are different across the LSRCP spring-summer Chinook program, likely based on a number of factors, but appear to fluctuate by brood year, suggesting outmigration and ocean condition influences play a role in overall survival. Parr and fry releases have occurred within the spring-summer Chinook program in the last 20 years but assessment of these and their contribution to adult returns can be difficult. Estimates of parr release survival, when measured, is predominantly lower than smolt releases in the same release areas (Table 23). Use of parental based tagging (PBT) provide the best measure of fry or parr programs moving forward as traditional marking or tagging used for hatchery assessment can be difficult to apply or limited based on fish culture and release timelines.

Table 21 Run year harvest of spring-summer Chinook salmon from the Lower Snake River Compensation Plan (LSRCP) program for facilities in Idaho, Oregon and Washington from 2004-2017. Program summaries are broken out by Snake Basin, including the LSRCP project area, and coastwide contributions (downstream or outside of the Snake Basin). Run years that are incomplete are noted (*).

	Idaho		Oregon		Washington		LSRCP Total	
Run Year	Snake River Basin	Coastwide	Snake River Basin	Coastwide	Snake River Basin	Coastwide	Snake River Basin	Coastwide
2004	12,114	3,758	590	707	-	1	12,704	4,466
2005	3,304	1,002	132	295	-	6	3,436	1,303
2006	1,996	1,442	194	440	-	-	2,190	1,882
2007	2,141	1,779	138	413	-	1	2,279	2,193
2008	9,468	7,941	744	692	-	27	10,212	8,660
2009	10,764	4,263	1,648	1,227	1	2	12,413	5,492
2010	11,691	7,696	2,289	3,831	-	55	13,980	11,582
2011	12,699	9,087	3,743	4,592	-	6	16,442	13,685
2012	10,212	3,903	1,971	1,780	-	9	12,183	5,692
2013	4,903	2,230	1,054	728	1	6	5,958	2,964
2014	8,595	7,164	1,739	2,574	1	1	10,335	9,739
2015	13,930	12,638	1,982	4,258	-	24	15,912	16,920
2016	10,459	4,498	797	1,168	-	9	11,256	5,675
2017*	1,182	1,676	199	271	-	5	1,381	1,952
Grand Total	**113,458**	**69,078**	**17,219**	**22,976**	**3**	**152**	**130,681**	**92,205**
Mean (n=14)	**8,104**	**4,934**	**1,230**	**1,641**	**0**	**11**	**9,334**	**6,586**

Table 22. Smolt to adult survivals (SAS) for the Lower Snake River Compensation Plan spring-summer Chinook salmon program by major basin or facility. Survivals represent overall survival and include harvest and recoveries, including strays, both within and outside of the LSRCP project area.

	Idaho				Oregon		Washington
Brood Year	Clearwater - Clearwater	Clearwater- Dworshak	Salmon - McCall	Salmon - Sawtooth	Imnaha	Grande Ronde	Tucannon
2000	0.38%	0.91%	1.39%	0.42%	0.84%	0.67%	0.13%
2001	0.09%	0.21%	0.60%	0.16%	0.73%	0.33%	0.07%
2002	0.15%	0.34%	0.42%	0.11%	0.45%	0.20%	0.09%
2003	0.19%	0.20%	0.37%	0.16%	0.36%	0.16%	0.10%
2004	0.56%	0.51%	0.98%	0.42%	0.89%	0.59%	0.15%
2005	0.39%	0.48%	1.10%	0.69%	0.84%	0.79%	0.27%
2006	0.61%	1.18%	2.15%	0.68%	3.18%	2.16%	0.68%
2007	0.35%	0.62%	0.83%	0.23%	1.80%	1.36%	0.16%
2008	0.43%	1.25%	0.91%	0.63%	1.63%	1.17%	0.22%
2009	0.10%	0.37%	0.41%	0.13%	0.62%	0.34%	0.13%
2010	0.42%	0.75%	0.86%	0.38%	0.65%	0.92%	0.06%
2011	0.47%	1.21%	1.43%	0.40%	1.82%	0.95%	0.25%
2012	0.27%	0.35%	0.65%	0.31%	0.72%	0.39%	0.16%
2013	0.19%	0.09%	0.19%	0.16%	0.12%	0.25%	0.12%
Mean (n=14)	**0.33%**	**0.58%**	**0.88%**	**0.34%**	**1.10%**	**0.80%**	**0.19%**

Table 23. Parr to adult survivals (PAS) for the Lower Snake River Compensation Plan spring-summer Chinook salmon where adult survival was evaluated. Individual hatchery and singular, or multiple, release sites are identified.

Hatchery (Release Site)	Life Stage	Brood Year	Number Released	Adult Return	PAS (%)
Clearwater (Multiple sites in Clearwater Basin)	Parr	2000	1,426,971	125	0.009%
	Parr	2001	1,646,135	12	0.001%
	Parr	2002	883,094	25	0.003%
	Parr	2009	313,351	8	0.003%
		Sub-total	**4,269,551**	**170**	**0.004%**
Dworshak (Upper Selway)	Parr	2010	300,000	89	0.030%
	Parr	2011	340,020	397	0.117%
	Parr	2012	285,433	7	0.002%
	Parr	2013	384,051	-	-
	Parr	2014	349,714	5	0.001%
		Sub-total	**1,659,218**	**497**	**0.030%**
Lookingglass (Lookingglass Creek)	Parr	2000	51,864	80	0.154%
	Parr	2001	17,880	65	0.366%
		Sub-total	**69,744**	**145**	**0.208%**
McCall (Stolle Meadows)	Parr	2000	46,981	111	0.236%
	Parr	2001	61,800	42	0.068%
	Parr	2002	80,340	13	0.016%
		Sub-total	**189,121**	**166**	**0.088%**
Tucannon (Tucannon River)	Parr	2001	41,635	1	0.002%
		Sub-total	**41,635**	**1**	**0.002%**
Grand Total			**6,229,269**	**979**	**0.016%**

Steelhead

Adult returns to the LSRCP project area are provided for run years 2003-04 through 2016-17 for this report (Figure 6, Table 24). Returns for 2017-2018 are incomplete and will change in future reports based on additional reporting information. The LSRCP has met the project area return goal of 55,100 steelhead in 11 of the last 14 years. Returns in 3 of the last 5 years, including incomplete returns in 2016-2017 did not meet the LSRCP steelhead goal. Returns to the project area in 2013-2014 and 2015-2016 achieved over 85% of the LSRCP project area goal. Individually for the last 14 run years, the goals for project area returns were met for Idaho, Oregon and Washington in 9, 11 and 14 years, respectively.

Figure 6. Lower Snake River Compensation Plan project area returns of steelhead from run-years 2003-04 through 2016-17. Run-year 2016-17 is incomplete and will change with future reporting.

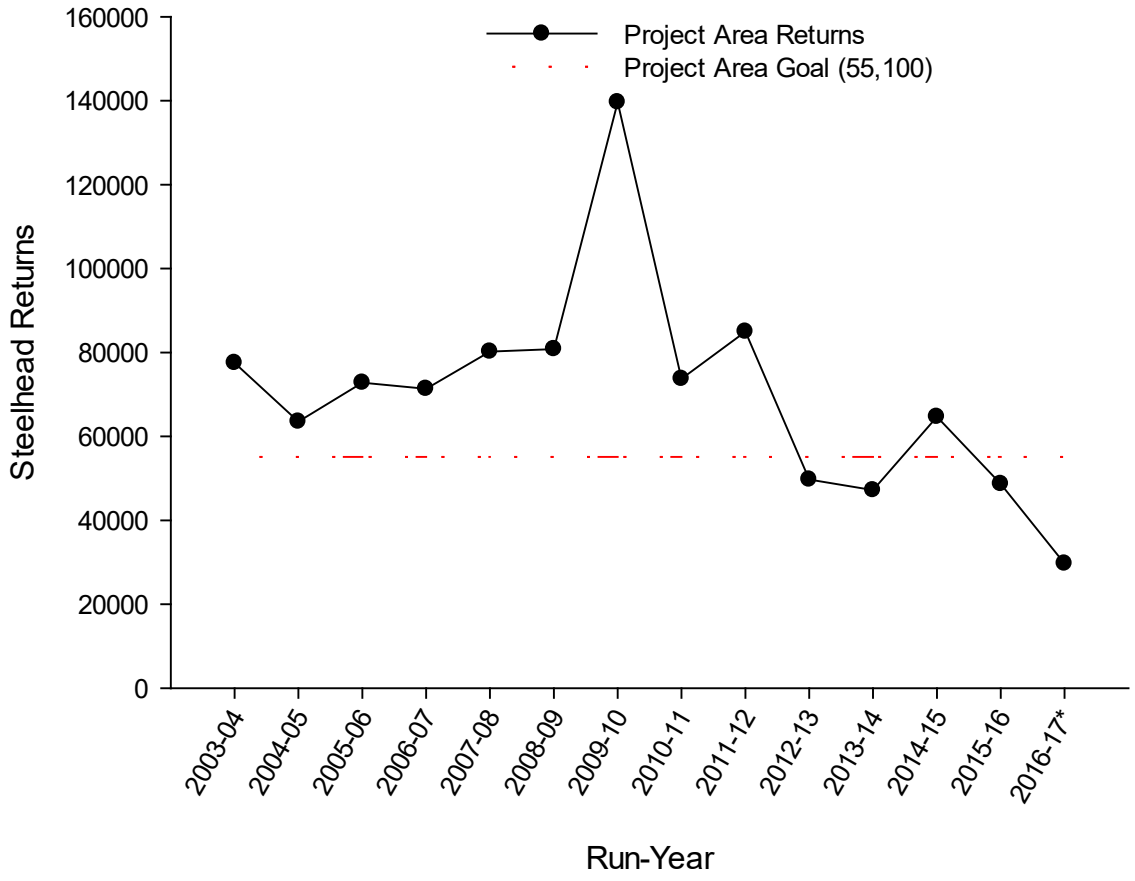

Table 24. Project area returns of steelhead for the Lower Snake River Compensation Plan Program since run year 2003-2004. Individual in-place, in kind goals are provided by State and overall for the project area (in parentheses). Shading represents where project area goals for a geographic area or the overall LSRCP program were met. Return year reporting and analysis that is incomplete is noted (*) and will change in future reporting.

Run Year	Idaho (39,264)	Oregon (11,184)	Washington (4,656)	Project Area (55,100)
2003-04	52,030	16,324	9,162	77,516
2004-05	36,183	15,561	11,776	63,520
2005-06	44,495	19,609	8,701	72,805
2006-07	52,332	11,354	7,633	71,319
2007-08	50,183	16,320	13,706	80,209
2008-09	51,929	14,370	14,490	80,789
2009-10	84,347	33,051	22,244	139,642
2010-11	44,019	17,397	12,318	73,734
2011-12	57,993	12,699	14,249	84,941
2012-13	35,154	8,366	6,200	49,720
2013-14	29,414	11,215	6,579	47,208
2014-15	40,187	13,233	11,255	64,675
2015-16	33,587	6,856	8,229	48,672
2016-17*	23,437	2	6,267	29,706
Total	635,290	196,357	152,309	983,956
Mean (n=14)	45,378	14,026	10,879	70,283

Harvest of steelhead in the Snake River basin and coastwide varied considerably in recent years with the highest harvest in the 2009-2010 run year while coastwide harvest estimates were highest in the 2014-2015 run year (Table 25). Coastwide harvest occurs for steelhead but not at the level identified to meet LSRCP objective of 110,000 annually. The LSRCP program mean annual harvest is over 40,000 adults for project area harvest and 8,700 adults coastwide. Future work to compare coastwide harvest estimates using different methods and analyses comparing PBT, PIT tags, CWT recovery and expansion will be part of individual agency annual steelhead program reports and future versions of this report.

Brood year smolt-to-adult-survival (SAS) rates for steelhead programs within the LSRCP program have been generally below program targets for the Idaho programs but near or above for the programs in Oregon and Washington basins (Table 26). The 2007 brood year had some of the highest survival rates observed for the LSRCP program over the years analyzed for this report.

Table 25. Run year harvest of steelhead from the Lower Snake River Compensation Plan (LSRCP) program facilities in Idaho, Oregon and Washington from 2003-2017. Summaries are broken out by Snake Basin, including the LSRCP project area, and coastwide contributions (downstream of Snake Basin). Incomplete years are noted (*).

	Idaho		Oregon		Washington		LSRCP Total	
Run Year	Snake River Basin	Coastwide	Snake River Basin	Coastwide	Snake River Basin	Coastwide	Snake River Basin	Coastwide
2003-04	27,816	1,351	8,274	1,216	6,057	762	42,147	3,329
2004-05	20,410	1,357	9,408	778	8,712	913	38,529	3,047
2005-06	24,684	2,812	11,596	2,395	5,020	1,914	41,300	7,121
2006-07	30,110	3,532	5,799	3,155	4,906	581	40,816	7,268
2007-08	26,591	7,462	10,476	2,362	6,992	1,936	44,059	11,760
2008-09	29,874	6,864	7,563	1,344	5,480	1,439	42,917	9,646
2009-10	55,689	5,743	21,786	4,406	14,162	1,904	91,636	12,054
2010-11	22,870	5,508	9,524	2,658	5,744	1,896	38,138	10,062
2011-12	31,090	8,390	8,106	2,384	6,323	3,224	45,518	13,998
2012-13	23,044	6,313	5,481	1,784	9,895	1,939	38,420	10,036
2013-14	16,506	5,738	7,015	2,341	5,934	1,453	29,455	9,532
2014-15	15,550	9,642	8,818	3,278	5,896	2,149	30,264	15,070
2015-16	14,966	5,659	4,397	1,220	7,348	1,998	26,711	8,877
2016-17*	9,927	-	-	-	2,485	1,231	12,412	1,231
Grand Total	**349,126**	**70,370**	**118,243**	**29,321**	**94,954**	**23,340**	**562,323**	**123,031**
Mean (n=14)	**24,938**	**5,026**	**8,446**	**2,094**	**6,782**	**1,667**	**40,166**	**8,788**

Table 26. Smolt to adult survivals (SAS) for the Lower Snake River Compensation Plan steelhead program by major basin or facility. Survivals represent overall survival and include harvest and recoveries, including strays, both within and outside of the LSRCP project area. Brood years that are incomplete are noted with an asterisk (*).

	Idaho			Oregon		Washington
Brood Year	Clearwater	Salmon-Hagerman/Sawtooth	Salmon-Magic Valley	Imnaha	Grande Ronde	SE Washington
2000	1.71%	1.09%	1.53%	1.01%	0.82%	1.59%
2001	1.37%	1.20%	1.15%	1.73%	2.03%	1.60%
2002	1.25%	1.28%	0.92%	1.47%	1.84%	1.83%
2003	1.71%	0.71%	0.89%	1.26%	1.78%	1.63%
2004	1.75%	1.63%	1.01%	1.00%	1.36%	1.32%
2005	2.55%	1.60%	1.31%	1.68%	2.03%	3.06%
2006	1.36%	1.55%	1.16%	1.18%	1.41%	3.05%
2007	2.40%	2.90%	2.57%	3.25%	4.38%	5.39 %
2008	1.88%	0.92%	1.17%	1.48%	1.76%	2.53%
2009	1.61%	1.67%	1.14%	1.64%	2.14%	3.03%
2010	0.58%	1.32%	0.65%	0.92%	0.56%	1.04%
2011	1.47%	1.48%	1.11%	2.34%	1.68%	2.08%
2012	0.56%	1.57%	0.71%	2.19%	1.36%	2.40%
2013*	1.41%	1.54%	0.82%	-	-	1.96%
2014*	0.12%	0.11%	0.10%	-	-	0.61%
2015*	0.13%	0.58%	0.28%	-	-	1.57%
Mean (n=13/16)	**1.37%**	**1.32%**	**1.03%**	**1.63%**	**1.78%**	**2.16%**

Maintenance Program

The maintenance program for Real Property at LSRCP facilities, in FY2018, included a wide variety of projects. Several projects that were initiated in previous fiscal years were completed, while new projects were initiated. Many pieces of Personal Property were also upgraded in FY2018. Highlights of the LSRCP Maintenance program for FY2018 are:

Real Property Projects Completed At LSRCP Facilities:

- Clearwater Hatchery – Install Automatic Entrance (Security) Gate
- Lyons Ferry Hatchery– Replace Existing Asphalt (Final Design)
- Clearwater Hatchery– Upgrade Hatchery Building Lighting
- Dayton Pond Satellite – River Channel Restoration To Intake (Phase 1 Design)
- Hagerman Hatchery – Complete Fish Tanker Storage Building And Maintenance Shop
- Irrigon Hatchery – Complete Installation Of New Domestic Water System
- Lookingglass Hatchery – Hatchery Roof Replacement And Seismic Improvements
- Sawtooth Hatchery – Construct Dormers On Spawning Building
- Lyons Ferry Hatchery - Completion Of Additional Rearing Space Feasibility Study
- Lookingglass Hatchery – NOAA Compliance For Intake/Fish Ladder (Phase 2 Design)
- Curl Lake Satellite, Little Sheep Creek Satellite, Powell Satellite, Cottonwood Creek Satellite, Imnaha Satellite, South Fork Salmon River Satellite – NOAA Compliance Upgrades For Intakes (Final Design)

Real Property Projects Awarded For LSRCP Facilities:

- Irrigon Hatchery – Header Pipe Replacement (Final Design)
- Capt. Johns Rapids Satellite – Replace Pond Liner
- Lyons Ferry Hatchery – Additional Rearing Space (Final Design)
- Lyons Ferry Hatchery – Marmes Site Generator Replacement (Final Design)

Personal Property Replacement At LSRCP Facilities:

- Wallowa Hatchery – Utility Vehicle (UTV)
- Wallowa Hatchery -Pick-up Truck
- Lookingglass Hatchery – Dump Trailer
- Lookingglass Hatchery - Pick-up Truck
- IDFG Fish Marking Program – Expedition (Program Vehicle)
- Clearwater Hatchery – Fish Planting Truck and Fish Hauling Tank
- Clearwater Hatchery - Pick-up Truck
- LSRCP – Passenger Hybrid Car
- Shoshone-Bannock Tribe – Utility Vehicle (UTV)
- Shoshone-Bannock Tribe – Dump Trailer
- Sawtooth Hatchery – Front End Loader
- ODFW Monitoring & Evaluation – Pick-up Truck
- Lyons Ferry Hatchery – Fish Planting Truck
- Lyons Ferry Hatchery - Dumpbed Truck

Outreach – Idaho Salmon And Steelhead Days

In 2018, the ISSD completed its 22nd year by hosting 2,188 students from 34 Boise, ID area schools. In addition, over 330 teachers and adult chaperons also benefitted from this event. The 2018 learning stations were:

- Gyotaku – teaches the ancient Japanese art of fish printing using fish from local waters such as kokanee salmon
- Kids in the Creek - Wading into the Boise River to collect and identify insects and other biota that make up the web of life

- Salmon Maze - Salmon life history – freshwater rearing and outmigration, ocean entry and migration/maturity, and subsequent return to their home waters as spawning adults
- Salmon History – The Nez Perce Tribe discusses the importance and relationship of salmon and steelhead to the Tribe
- Salmon Ecology - Discussion on the importance of salmon to their aquatic and terrestrial environments.
- Living River - Teaching students about river dynamics and restoration

Program Changes Identified During 2018

Transfer of Hagerman NFH

Through a Memorandum of Understanding (MOU) signed September 28, 2018, Hagerman National Fish Hatchery (HNFH) operations were transferred from the USFWS to Idaho Department of Fish and Game; ownership and funding continue to be the responsibility of the USFWS-LSRCP. HNFH will continue to implement actions in support of LSRCP mitigation obligations as reflected in the 2018-2027 U.S. v Oregon Management Agreement. HNFH will also continue to produce rainbow trout with funding from the U.S. Army Corps of Engineers as part of their mitigation program for construction and operation of the Dworshak Project. The USFWS continues to review the functionality of the Partial Re-use Aquaculture System, or PRAS, and the associated evaluation implemented in 2014. Under existing USFWS water rights, the IDFG will manage the spring water supply for the facility and continue coordinating with senior water rights holders associated with the Brailsford Ditch, Bickel Ditch, and Oster Lakes. The IDFG will continue to manage the facility in support of listed Bliss Rapids snail that occur in numerous spring habitats, and perform land management activities commensurate with USFWS responsibilities. Fish production training opportunities for Shoshone-Bannock Tribal staff will be made available by IDFG as part of the operations transfer.

Signing of U.S. v. Oregon 2018-2027 Management Agreement

The *U.S. v. Oregon* 2018-2027 Management Agreement (MA) was filed with U.S. District Court on February 26, 2018. The USFWS is signatory to the MA, and a portion of LSRCP programs are included and several remain outside the MA. Section 7 ESA consultations were completed by the USFWS and NOAA-Fisheries on February 23, 2018. Notable changes to LSRCP programs and species from the previous Management Agreement were:

- Spring/Summer Chinook Salmon - Consolidation of programs, increased production numbers, and stock switches in Clearwater River.
- Steelhead - Consolidation of programs, changed production numbers, and stock switches in Washington (Touchet River/Tucannon River/Cottonwood Cr.), Northeast Oregon (Big and Little Sheep Cr.), and the Clearwater River.
- Fall Chinook Salmon - Changes ultimately resulted in limiting yearling production to Lyons Ferry on-station release only while increasing the overall production levels of subyearlings.

Touchet River Spring Chinook Program

A 250,000 spring Chinook program was initiated in brood year 2018 within the Touchet River with the transfer of eggs from Little White Salmon NFH to Lyons Ferry Hatchery. Smolts will be annually reared at Lyons Ferry Hatchery and the program will transition to local stock (fish will be trapped in the Touchet River in Dayton, WA) once returns established. The program is

also within the 2018-2027 *U.S. v. Oregon* MA and was initiated to help address the SE Washington goal of 1,152 spring Chinook salmon and provide harvest within the LSRCP project area, something the ESA-listed Tucannon River spring Chinook program has not achieved. A specific adult goal for this program will be addressed in 2020 by the LSRCP and relevant co-managers. The initial release of this program will occur in spring 2020 and all production will be adipose fin clipped, with representative coded-wire tagging for Columbia Basin harvest contributions and PIT tagging for estimation of LSRCP project area returns. CWT's and PIT tags will also be used for an assessment of these fish straying into other basins, especially the Tucannon River. NOAA-Fisheries provided a Sufficiency Letter on reinitiation of ESA consultation on July 9, 2018.

Future Outlook – 2019 and Beyond

Annual Funding

A 4th extension of an MOA between the USFWS and BPA was finalized in September of 2018. The MOA identified a 3-year budget for fiscal years 2019-21 that is a decrease to the LSRCP program from the previous MOA. The annual operating budget will be reduced by $3.0 M for the period of the MOA. A drop in power sales revenue was identified as the impetus for the reduction. In addition to the reduction, LSRCP will assume funding for the operations and maintenance of the Fall Chinook Acclimation Program, or FCAP, beginning in January 2019. Funding for this program was previously provided to the Nez Perce Tribe by BPA but LSRCP will pay for the program through reallocation of existing funding. Operational costs for the FCAP, including power costs, is currently projected at $780,000 annually.

With nearly $3.8M in reduced funding for the LSRCP annually for the next three years, the funds for deferred maintenance activities for the program will be significantly reduced. This approach minimizes immediate impacts to the existing operational and monitoring budgets for the LSRCP program. For fiscal year 2019, the LSRCP identified that cooperator and partner budget submissions should show no increase in funding.

Program Performance and Implementation

Adult Returns and Brood Stock Issues

Current adult returns to the LSRCP project area appear to be declining from recent years, and from returns presented within this report, but the exact magnitude or duration of this trend is not yet summarized and reported by LSRCP partners and cooperators. For spring Chinook salmon, the Clearwater basin programs requested an emergency transfer of Carson/Little White Salmon NFH surplus brood stock (Letter dated August 12, 2018 from Dave Johnson-NPT and Lance Hebdon-IDFG to Roy Elicker-USFWS and Allyson Purcell-NOAA Fisheries) to meet programs both within and outside the *U.S. v. Oregon* Management Agreement. Steelhead programs within the LSRCP also appear to have declining adult returns.

Future Program Reporting

Prior to this report, the last LSRCP program report occurred for FY2007 (USFWS 2007). Future LSRCP program reports will be developed to coincide with known funding intervals, such as the length of the BPA rate case or the duration of the MOA between the USFWS and BPA. The next LSRCP report will cover fiscal years 2019-21 to coincide with the BPA rate case period and 3-year budget identified in the MOA. Future LSRCP program reports will also introduce multiple approaches towards measuring the LSRCP performance criteria. Marking and tagging

approaches in use by the LSRCP cooperators (parental based tagging using genetic markers, PIT tagging, coded wire tagging, general escapement estimation) allow comparison of multiple estimation techniques.

Operations and Maintenance

A five-year maintenance plan is being developed by the LSRCP Office and cooperator hatchery management and administration staff to address the existing backlog of facilities and infrastructure needs to continue implementing the program. This plan will be dynamic and change as needed with emergencies and unexpected repairs, common occurrences with the size and scope of the LSRCP program. The plan will be modeled after existing 5-year maintenance plans developed by the USFWS and implemented to meet the needs of National Fish Hatcheries throughout the Pacific Northwest.

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Appendix A: Defining the LSRCP project area and measurement of LSRCP project area goals.

The LSRCP office held two formal meetings on March 19 and May 1, 2020 attended by representatives of the Nez Perce Tribe, Idaho Fish and Game, Shoshone-Bannock Tribes, Confederated Tribes of the Umatilla Indian Reservation, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife and the U.S. Fish and Wildlife Service. The meetings involved discussion of two specific issues; a) different definitions by co-managers/partners of the LSRCP project area leading to b) different calculations of the LSRCP project area escapement and harvest benefits for steelhead and Chinook salmon.

A clearly defined and consistent approach for the LSRCP program was needed to convey program performance in this report as well as for current and future funding decisions for the program. Through discussions, the LSRCP Office and co-managers/partners identified the following measurement criteria, by location, of program performance towards the LSRCP project area goals for fall Chinook salmon, spring/summer Chinook salmon and steelhead.

LSRCP Project Area – Starts at Ice Harbor Dam extending to Lower Granite Dam and is inclusive of the Walla Walla Basin, a Columbia River Basin tributary in SE Washington adjacent to the Snake River basin.

Fall Chinook Salmon – 18,300

Measurement of LSRCP program returns is to the project area (Ice Harbor Dam).

Spring/Summer Chinook Salmon – 58,700

For programs within the State of Washington (1,152 of the 58,700 goal) measurement of LSRCP program returns is to the project area (Ice Harbor Dam) except for those in the Walla Walla Basin which are measured at McNary Dam.

For programs within the State of Idaho (48,432 of the 58,700 goal) or Oregon (9,072 of the 58,700 goal) – measurement point of the LSRCP program returns is above the project area (Lower Granite Dam).

Steelhead – 55,100

For programs within the State of Washington (4,656 of the 55,100 goal) measurement of LSRCP program returns is to the project area (Ice Harbor Dam) except for those in the Walla Walla Basin which are measured to McNary Dam.

For programs within the States of Idaho (39,264 of the 55,100 goal) or Oregon (11,184 of the 55,100 goal) – measurement of the LSRCP program returns is above the project area (Lower Granite Dam).

Harvest contributions of LSRCP program fish in the ocean (fall Chinook salmon) and within the Columbia and Snake River basins downstream of the project area will also be included in summary reporting to convey the entire benefit of the LSRCP program.

Appendix B: Lower Snake River Compensation Plan Biological Opinions and Section 10 permits. National Marine Fisheries Service (NMFS) and, B) U.S. Fish and Wildlife Service (FWS) Biological Opinions and Endangered Species Act Section 10 Permits for the LSRCP operations and releases. Cross reference letters (NMFS Opinions) and numbers (FWS Opinions) correspond to specific program releases in Tables 12-14. C) – NMFS Section 10 Permits for the LSRCP operations and releases. Cross reference roman numerals correspond to specific program releases in Tables 12-14. Biological Opinions and Section 10 permits can be found in their entirety on the LSRCP website at https://www.fws.gov/lsnakecomplan/Reports/ESA%20Compliance.html

A) NMFS Biological Opinion	Date Completed	Cross-Reference	B) FWS Biological Opinion	Date Completed	Cross-Reference
Six Lower Snake River Spring/Summer Chinook Salmon Hatchery Programs (WCR-2013-21)	06/24/2016	A	NOAA Fisheries Issuance of Section 10(a)(1)(A) Permits for the Continued Operation and Maintenance of the Northeast Oregon and Southeast Washington Spring/Summer Chinook, Steelhead, and Rainbow Trout Programs Funded Under the Lower Snake River Compensation Plan and Northwest Power Act (01EOFW00-2015-F-0154)	08/22/2016	1
Four Lower Snake River Steelhead Hatchery Programs (WCR-2017-6358)	07/11/2017	B	National Marine Fisheries Service Issuance of Two Section 10(a)(1)(A) Permits for the Continued Operation of Snake River Fall Chinook Salmon Hatchery Program (01EIFW00-2012-F-0448 and 01EIFW00-2018-TA-1558)	05/16/2017, amended 07/20/2018	2
Five Snake River Basin Spring/Summer Chinook Salmon Hatchery Programs (WCR-2017-7319)	11/27/2017	C	National Marine Fisheries Service Authorization of the Continued Operation of the Hells Canyon and Salmon River Steelhead and Spring/Summer Chinook Salmon Programs (01EIFW00-2017-F-1079)	12/08/2017	3
Five Clearwater River Basin Spring/Summer Chinook Salmon and Coho Salmon Hatchery Programs (WCR-2017-7303)	12/12/2017	D	National Marine Fisheries Service Authorization for the Continued Operation of the Clearwater Steelhead, Spring/Summer Chinook Salmon, and Coho Salmon Hatchery Programs (01EIFW00-2017-F-1143)	12/15/2017	4
Nine Snake River Steelhead Hatchery Programs and one Kelt Reconditioning Program in Idaho (WCR-2017-7286)	12/12/2017	E	Walla Walla and Touchet River Steelhead and Spring Chinook Salmon Hatchery Programs (01EWFW00-2018-F-1145-R001)	12/22/2017, amended 09/18/2018	5
Four Salmon River Basin Spring/Summer Chinook Salmon Hatchery Programs in the Upper Salmon River Basin (WCR-2017-7042)	12/26/2017	F	Implementation of the *U.S. v. Oregon* Management Agreement for Non-Treaty and Treaty Indian Fisheries in the Columbia River Basin from 2018-2027 (01FLSR00-2018-F-0001)	02/23/2018	-
Middle Columbia River Summer Steelhead and Spring Chinook Programs (WCR-2017-7615) (reinitiated WCR-2018-10511)	02/13/2018, amended 04/23/2019	G			
Snake River Fall Chinook Salmon Hatchery Programs, ESA Section 10(a)(1)(A) permits, numbers 16607 and 16615 (WCR-2018-9988)	08/13/2018	H			
Consultation on effects of the 2018-2027 U.S. v. Oregon Management Agreement (WCR-2017-7164)	02/23/2018	-			

National Marine Fisheries Service (NMFS) and, B) U.S. Fish and Wildlife Service (FWS) Biological Opinions and Endangered Species Act Section 10 Permits for the LSRCP operations and releases (continued). Cross reference letters (NMFS Opinions) and numbers (FWS Opinions) correspond to specific program releases in Tables 11-14. C) – NMFS Section 10 Permits for the LSRCP operations and releases. Cross reference roman numerals correspond to specific program releases in Tables 12-14. Biological Opinions and Section 10 permits can be found in their entirety on the LSRCP website at **https://www.fws.gov/lsnakecomplan/Reports/ESA%20Compliance.html .**

C) NFMS Section 10 Permits	Date Completed	Cross-Reference
Fall Chinook Permit 16607 – 2R (Lyons Ferry/FCAP/Idaho Power)	08/15/2018	i
Fall Chinook Permit 16615 – 2R (Nez Perce Tribal Hatchery)	08/15/2018	ii
Tucannon River Spring Chinook Permit 18024	09/22/2016	iii
Tucannon River Steelhead Permit 18025	07/25/2017	iv
Imnaha River Spring/Summer Chinook Permit 18030	09/22/2016	v
Little Sheep Cr. Steelhead Permit 18032	07/25/2017	vi
Grande Ronde River Spring/Summer Chinook Permit 18033	10/28/2016	vii
Catherine Cr. Spring/Summer Chinook Permit 18034	10/28/2016	viii
Lookingglass Cr. Spring/Summer Chinook Permit 18035	10/28/2016	ix
Lostine River Spring/Summer Chinook Permit 18036	09/22/2016	x

Appendix C: Steelhead stock culls or releases as trout mitigation by LSRCP cooperators.

Summary of steelhead stock as trout releases within the Lower Snake River Compensation Plan by agency from 2004-2018 spawn years. Releases from IDFG are from Magic Valley Fish Hatchery only. Releases from ODFW are from both Wallowa and Imnaha River stocks but not each stock is represented annually. Releases from WDFW are from Cottonwood and Lyons Ferry collections but are not represented annually. Blanks represent no spawn year release, not a lack of reporting information.

	IDFG		ODFW		WDFW		LSRCP	
Spawn Year	Number Released	Pounds	Number Released	Pounds	Number Released	Pounds	Total Number Released	Total Pounds
2004			8,470	1,791	146,481	1,465	**154,951**	**3,256**
2005	40,000	-	29,934	5,342	32,336	323	**102,270**	**5,665**
2006	281,630	2,391	39,481	14,789	130,566	1,306	**451,677**	**18,486**
2007	219,172	2,803	49,899	10,335	78,334	783	**347,405**	**13,921**
2008	52,503	931	7,190	2,024	35,350	1,010	**95,043**	**3,965**
2009	106,905	1,011			21,316	86	**128,221**	**1,097**
2010	91,197	1,357	204,130	13,474			**295,327**	**14,831**
2011	142,186	3,326	99,400	9,065			**241,586**	**12,391**
2012	27,870	630	42,498	1,925			**70,368**	**2,555**
2013	40,790	606	138,806	2,348			**179,596**	**2,954**
2014	136,900	3,330					**136,900**	**3,330**
2015			12,998	496			**12,998**	**496**
2016	126,960	2,608	59,808	1,175			**186,768**	**3,783**
2017	241,150	3,450	88,858	1,493	180,933	2,027	**510,941**	**6,970**
2018	146,070	1,900	117,764	1,178	125,125	1,472	**388,959**	**4,550**
Total	**1,653,333**	**24,344**	**899,236**	**65,434**	**750,441**	**8,472**	**3,303,010**	**98,250**

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