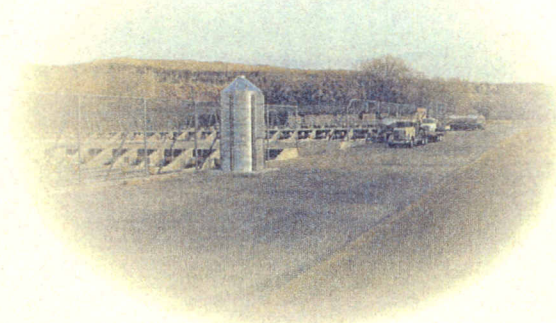
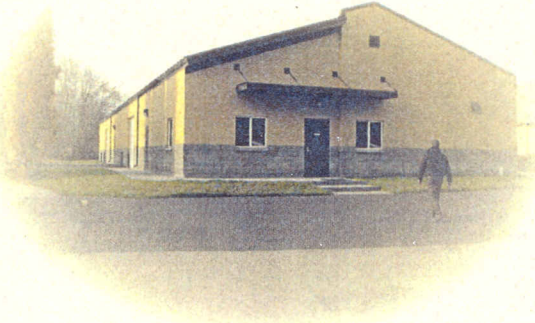


*Annual Report for Fiscal Year 2002
Lower Snake River Compensation Plan Office
Boise, Idaho*



LOWER SNAKE RIVER
COMPENSATION PLAN
Hatchery Program

**Lower Snake River Compensation Plan Office
Annual Report**

**Fiscal Year 2002
October 1, 2001 - September 30, 2002**

**U. S. Fish and Wildlife Service
1387 S. Vinnell Way, Suite 343
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INTRODUCTION

The Lower Snake River Compensation Plan (LSRCP) Office was established in 1982 by the U. S. Fish and Wildlife Service (FWS) to administer cooperator fisheries operations under the Lower Snake River Compensation Plan. The LSRCP was authorized by the Water Resource Development Act of 1976 (90 Stat. 2917) to offset fish and wildlife losses resulting from the construction and operation of Ice Harbor, Lower Monumental, Little Goose, and Lower Granite Lock and Dam projects on the lower 150 miles of the Snake River in Idaho and Washington. The plan described fish hatchery developments as well as improvements to the dams and powerplants to improve smolt passage. This Office's primary responsibility is to administer the FWS funding of LSRCP fish hatchery operations, maintenance, and evaluations.

When authorized by Congress, construction responsibility for the LSRCP was assigned to the Walla Walla District, U.S. Army Corps of Engineers (Corps), while responsibility for operation and maintenance and evaluation (OM&E) funding was to be accomplished by "one of the Federal fisheries agencies." In 1977 the Corps, National Oceanic and Atmospheric Administration (NOAA), and FWS signed an agreement stating that the FWS would budget for and administer OM&E funds for the LSRCP fish hatchery programs.

Public Law 99-662, approved November 17, 1986, modified the Water Resources Development Act of 1976 in accordance with recommendations contained in a report from the Chief of Engineers, dated March 6, 1985. The Chief's 1985 report confirmed the 1977 NOAA/FWS agreement on Page 2, Section 4.d with a directive that stated: "The U.S. Fish and Wildlife Service should be designated to fund the operation and maintenance of all fish rearing facilities." Regarding ownership of property, the 1985 Report stated in Section 5.3: "Transfer of jurisdiction over all Compensation Plan fish hatcheries, appurtenant facilities and lands to the U.S. Fish and Wildlife Service for operation, maintenance, and replacement shall occur upon completion of construction by the Corps of Engineers." The Corps has transferred fee title of LSRCP hatcheries and associated satellite facilities to the FWS as they were completed and became fully operational. Ownership of all but one LSRCP facility has been transferred to the FWS.

The Corps' estimated cost for construction of the authorized LSRCP off-project fisheries facilities (hatcheries and related satellite facilities) was approximately \$200 million; the FWS costs for annual OM&E are approximately \$16 million. All anadromous compensation and most resident fisheries compensation expenses are allocated to project power costs. As such, all expenses through Fiscal Year (FY) 2000 have been reimbursed with interest to the U.S. Treasury by the Bonneville Power Administration (BPA) from power revenues. Beginning with FY2001, the OM&E costs of the LSRCP have been reimbursed to the FWS by BPA through a direct funding Memorandum of Agreement (MOA).

The 1976 LSRCP legislation authorized what was believed to be sufficient anadromous fish hatcheries and associated satellite facilities to produce enough juvenile fish to return 18,300 fall Chinook salmon, 58,700 spring/summer Chinook salmon, and 55,100 steelhead adults to the project area (above Lower Granite Dam). The legislation also authorized sufficient resident fish

hatcheries and stream enhancement projects to produce 93,000 pounds of trout annually to replace lost resident sport fisheries in Washington and Idaho.

The original program required expansion or construction of 10 hatcheries and 11 satellite trapping and release facilities in Idaho, Oregon, and Washington (Appendix B). The Pittsburg Landing, Big Canyon, and Captain John Rapids Acclimation Facilities were authorized in 1995 by a Congressional add-on to the Corps LSRCP Program and completed in 1996, 1997, and 1998 respectively. Due to lack of sufficient FWS operations funds, BPA directly funds the Nez Perce Tribe (NPT) to operate these fall chinook release facilities. Currently, Idaho Department of Fish and Game (IDFG) operates the four Idaho hatcheries, Oregon Department of Fish and Wildlife (ODFW) operates three Oregon hatcheries, Washington Department of Fish and Wildlife (WDFW) operates one fish hatchery complex in Washington, and the FWS operates two hatcheries in Idaho.

HIGHLIGHTS FOR FY2002

LSRCP facilities continue to produce and release salmon, steelhead and resident trout as part of their mitigation responsibility. In 2002, more than 16.7 million salmon, steelhead and rainbow trout were reared and released from LSRCP facilities. As in past years, the numbers of fish produced, release sites, and sizes were adjusted in 2002 to reduce impacts on listed species.

Past releases of LSRCP-produced salmon and steelhead contributed significantly to the runs of Chinook salmon and steelhead to the Snake River basin during 2002. The steelhead count above Lower Granite Dam in 2002 was over 218,000, while the count of spring/summer Chinook salmon was over 101,000. Steelhead and spring/summer Chinook salmon returns in 2002 were both above the 10 year average. Over 21,000 fall Chinook salmon returned to the project area (above Ice Harbor Dam) in 2002. This is the highest number of fall Chinook salmon to return since the lower Snake River dams were built. Record numbers of steelhead returned to LSRCP trapping facilities throughout the basin from the Sawtooth FH on the upper Salmon River to Little Sheep Creek trap in the Imnaha River basin to the Lyons Ferry FH on the lower Snake River. Although all data are not available, it appears the LSRCP program achieved adult compensation goals back to and above the project area.

Oregon, Washington, and Idaho had fall and spring sport fisheries for steelhead and early summer sport fisheries for spring/summer Chinook salmon in 2002. The sport fishery on the South Fork of the Salmon River for summer Chinook salmon was one of the highlights of 2002. As a result of LSRCP efforts, the sport anglers harvested 6,842 salmon. IDFG estimated that 13,660 anglers fished a total of 75,946 hours during the season. Both the Shoshone-Bannock and Nez Perce Tribes conducted subsistence fisheries on the South Fork Salmon River, and the Nez Perce Tribe also operated a commercial fishery for Chinook salmon.

LSRCP facilities released nearly 6.0 million steelhead fingerlings and smolts in 2002, comparable to release numbers in 2001. More than 9.4 million spring, summer, and fall Chinook

salmon were released in 2002, a nearly 40% increase over 2001 release numbers. Many of the spring and summer Chinook were part of conservation programs permitted by NOAA under the Endangered Species Act (ESA).

Considerable LSRCP staff time in FY2002 was spent on ESA consultations and modifications of biological assessments of hatchery production and release actions on listed Snake River steelhead and spring/summer and fall Chinook, Columbia River salmonids, and bull trout. The staff also worked within a variety of forums to promote the success of the LSRCP program while assuring adherence to state and federal guidelines regarding ESA, federal laws, court orders, and other issues. Fish hatchery production, evaluation studies, and operations will continue to be adjusted where appropriate to meet ESA requirements. We will be consulting with NOAA in FY2003 on new biological opinion for 2003 and beyond.

The LSRCP Office and BPA members of our Joint Management Team completed the first year of funding management under the 5-Year FWS/BPA direct funding agreement. During this first year the LSRCP Program implemented Performance Indicator assessments for each hatchery operations and maintenance program and developed a draft Performance Indicator program for the monitoring and evaluations programs, to be implemented in 2003. The LSRCP program's targeted spending level for 2002 was \$15.4 million and the actual spending level was about \$14.9 million, about 97% of the targeted level. An issue not resolved by the team is how construction planning and funding will be handled for major maintenance and significant modifications of LSRCP facilities. As the facilities age the need for this will become greater.

FWS Regional and LSRCP staff continued to work with NOAA, state agencies, and tribal co-managers to renegotiate the *US vs Oregon* Columbia River Fish Management Plan (CRFMP). Although co-managers clearly identified agency and tribal production and harvest positions, little progress was made in reaching a long term agreement on a number of policy level issues. The existing CRFMP expired without agreement among co-managers and efforts in 2002 were once again directed toward reaching annual harvest agreements. Negotiations are scheduled to continue, with efforts focusing on developing the framework for the CRFMP and an agreement on the winter/spring fisheries. The process is very important because it will determine how the LSRCP and all other Columbia River Production Programs will be implemented for the next CRFMP period (the expired plan lasted 10 years) .

The LSRCP staff once again played a leadership role in planning and implementing the **IDAHO SALMON AND STEELHEAD DAYS**. The event occurred in September 2002 and consisted of three student days and one evening of activities. About 3,500 4th grade students along with hundreds of teachers and parents from Southwest Idaho attended and learned about the biology of Idaho's anadromous fish. An evening barbecue with entertainment and education activities was once again part of the venue in 2002; more than 850 people (mostly adults) enjoyed grilled pen-reared salmon.

An LSRCP cooperator's meeting was convened in March. The three day event brought fish managers, hatchery managers, and evaluations personnel together to discuss a variety of issues intended to improve communication within the LSRCP program. A follow-up meeting of

evaluations personnel occurred in June to begin setting the stage for improving cooperation among LSRCP cooperating agencies and tribes, increasing efficiency of LSRCP programs, and updating LSRCP evaluation study guidelines.

The LSRCP Office developed an informational brochure describing the LSRCP program. The brochure was delivered to all LSRCP facilities for distribution. Personnel continued to upgrade the LSRCP WEB page in 2002.

A great deal of time and efforts were put forth by LSRCP staff and hatchery personnel in addressing concerns identified in recent USFWS safety and environmental reviews. Many of the issues dealt with fire and life safety issues.

FY2002 LSRCP PROGRAM FUNDING SUMMARY

A total of \$16,014,733 was obligated in FY2002 to fund the operations of the Lower Snake River Compensation Plan. LSRCP cooperators include three states and three tribes. Several projects managed by the Service were also funded through the LSRCP Office. A total of \$11,184,302 was obligated for fish hatchery operations, maintenance and fish health activities, \$3,251,941 for monitoring and evaluation activities, and \$1,578,490 for LSRCP management activities, Service Regional Office and general administrative costs. See Appendix A for detailed funding summary.

FISH HATCHERY OPERATIONS AND MAINTENANCE

A total of \$11,184,302 was obligated to WDFW, ODFW and IDFG or transferred to Service facilities (Dworshak NFH, Hagerman NFH, or Idaho Fish Health Center) for operation, maintenance and fish health monitoring of 11 hatcheries and 10 associated satellite facilities. This amount is 70% of our total obligation. Below are brief summaries of hatchery operation and maintenance activities in FY2002.

CLEARWATER RIVER BASIN

The following is a description of each facility in the Clearwater River Basin and the propagation programs by species.

Clearwater Fish Hatchery

The Clearwater Fish Hatchery (FH) is operated by the IDFG and is located on the North Fork of the Clearwater River, 1.5 miles down stream from Dworshak Dam and 504 miles upstream from the mouth of the Columbia River. The facility became operational early in 1992. The LSRCP adult return goals for this program are 11,915 spring Chinook salmon and 14,000 steelhead to

the Snake River basin. The facility was designed to produce and release, 1.7 million Chinook salmon smolts (15.0 f/lb) and 1.75 million steelhead smolts (5.0 f/lb)

The Clearwater FH receives its water supply from Dworshak Reservoir via two pipelines. The primary (larger) pipeline draws water from just below the reservoir's surface while a secondary (smaller) pipeline draws water from a deepwater intake. A distribution tank near the hatchery allows mixing of water from the two pipelines so as to maintain desired water temperatures for various uses at the Clearwater FH. A water supply line to the Dworshak National Fish Hatchery (NFH) is also maintained from this water source.

Three satellite facilities are associated with the operation of the Clearwater FH. The Red River satellite facility, completed in November of 1986, is located on the Red River, 15 miles east of Elk City and 618 miles from the mouth of the Columbia River. The Crooked River satellite facility, completed in the spring of 1990, is located on the Crooked River and is 604 miles from the mouth of the Columbia River. The adult trapping facilities for this satellite are located one-half mile upstream of the mouth of the Crooked River, a tributary to the South Fork of the Clearwater River. The juvenile rearing ponds for the Crooked River satellite facility are located 10 miles upstream of the river's mouth. The Crooked River facility is 20 miles downstream of Red River. Due to the straying of Chinook between the two drainages, the Red River and Crooked River stocks of spring Chinook salmon were combined in 1997 to make the South Fork of the Clearwater River stock of spring Chinook salmon,. The Powell satellite facility, completed in the summer of 1989, is located 122 miles east of the Clearwater FH at the headwaters of the Lochsa River on Walton Creek. The Powell satellite facility is 624 miles from the mouth of the Columbia River.

Dworshak National Fish Hatchery

Dworshak NFH is located at the confluence of the North Fork Clearwater and Clearwater rivers, 504 miles from the mouth of the Columbia River. The facility is operated by the U.S. Fish and Wildlife Service as a complex in conjunction with the operation of the Kooskia NFH. The primary purpose for the Dworshak NFH is the production of steelhead, however a facility expansion occurred in 1982 to accommodate an LSRCP spring Chinook salmon production program. This portion of the facility is designed to produce 1.4 million spring Chinook salmon smolts weighing 70,000 pounds. The adult return goal for Dworshak is 9,135 spring Chinook to the Snake River basin.

Spring Chinook Salmon Programs

Of the 623 spring Chinook salmon trapped at the Red River facility in 2002, 284 were released to spawn naturally (Table 1). Hatchery fish comprised nearly 84% of all the Chinook salmon trapped at the Red River facility in 2002. A total of 1,336 spring Chinook salmon were trapped at the Crooked River facility in 2002, as compared to 2,013 trapped in 2001. Hatchery fish made up over 87% of the Chinook salmon trapped at the Crooked River facility. Three hundred and eighty-nine adult Chinook salmon were released above the weir on Crooked River for spawning.

The adult salmon trap at the Powell facility on Walton Creek was operated on an intermittent basis for part of the 2002 trapping season. A total of 1,394 (1,344 hatchery and 50 wild) Chinook salmon were trapped at Powell. A total of 410 adults were returned to the river from this facility in 2002. Spawning operations at all Clearwater FH satellite facilities resulted in sufficient eggs to meet all smolt production goals from this brood year of spring Chinook salmon. Eggs were also provided to the Nez Perce Tribe for fish production programs.

Table 1. Adult Chinook salmon and steelhead trapped and released at LSRCP facilities in 2002.

SPECIES	TRAP SITE	HATCHERY FISH TRAPPED	WILD FISH TRAPPED	TOTAL FISH TRAPPED	TOTAL FISH RELEASED
Sp. Chinook	Red River Satellite	523	100	623	284
Sp. Chinook	Crooked River Satellite	1,166	170	1,336	389
Sp. Chinook	Powell Satellite	1,344	50	1,394	410
Sp. Chinook	Sawtooth FH	923	863	1,786	1340
Sp. Chinook	Dworshak NFH	2,157	0	2,157	1061
Sp. Chinook	Lookingglass FH	40	22	62	62
Sp. Chinook	Imnaha River Satellite	932	268	1,200	1088
Sp. Chinook	Tucannon River Trap - Hatchery	612	168	780	671
Su. Chinook	South Fork Salmon River Satellite	7,322	1,281	8,603	1795
Fall Chinook	Lyons Ferry FH (BY01)	2,080	0	2,080	51
Steelhead	Sawtooth FH	7,009	95	7,104	1895
Steelhead	Squaw Creek Trap	157	8	165	8
Steelhead	East Fork Salmon River Satellite	11	27	38	17
Steelhead	Wallowa FH	2,952	7	2,961	0
Steelhead	Big Canyon Satellite	2,737	209	2,946	209
Steelhead	Little Sheep Creek Satellite	3,260	204	3,464	193
Steelhead	Lyons Ferry FH	7,596	8	7,604	4634
Steelhead	Cottonwood Creek Satellite	1,712	0	1,712	1181
Steelhead	Touchet River Trap (Dayton)	10	173	183	143
Steelhead	Tucannon River Trap - Hatchery	28	177	205	177
Steelhead	Lower Tucannon River Trap	131	74	205	168

The Clearwater FH released over 1.6 million brood year (BY) 2000 spring Chinook salmon smolts in FY2002, either from direct releases or via acclimation facilities. Over 750,000 (BY2000) pre-smolts were released in the fall of 2001. Over 1.2 million (BY01) pre-smolts were released by the Clearwater FH in the fall of 2002 (Table 2). The Clearwater FH had over 1.5 million spring Chinook salmon (BY2001) on hand at the end of FY2002.

A total of 2,157 spring Chinook salmon returned to the trap at Dworshak NFH in 2002 (Table 1). The trap was opened and closed several times during the season to properly manage the large run of returning adults and provide maximum sport and tribal fisheries. In comparison, a total of 4,018 adult spring Chinook salmon returned to the trap in 2001. Of those adults returning in 2002, 1,061 adults were stocked throughout the Clearwater River basin in cooperation with the Nez Perce Tribal Fisheries Department (Table 2).

Table 2. Chinook salmon, steelhead, and rainbow trout released from LSRCP facilities in 2002.

HATCHERY	SPECIES	BROOD YEAR	LIFE STAGE	NUMBER RELEASED
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Clearwater	Sp. Chinook	2000	Smolt	1,633,170
Clearwater	Sp. Chinook	2000	Pre-smolt	754,140
Clearwater	Sp. Chinook	2001	Pre-smolt	1,233,044
Sawtooth	Sp. Chinook	2000	Smolt	385,671
Dworshak	Sp. Chinook	1999	Smolt	1,000,561
Lookingglass	Sp. Chinook	2000	Smolt	744,539
Lookingglass	Sp. Chinook	2001	Pre-smolt	55,340
Tucannon	Sp. Chinook	2000	Smolt	105,154
Tucannon	Sp. Chinook	2001	Pre-smolt	41,635
Spring Chinook Salmon Total				5,953,254
McCall	Su. Chinook	2000	Smolt	1,064,250
McCall	Su. Chinook	2001	Pre-smolt	61,800
Summer Chinook Salmon Total				1,126,050
Lyons Ferry	Fall Chinook	2000	Yearling	432,507
Lyons Ferry (NPT Acclimation)	Fall Chinook	2000	Yearling	479,358
Lyons Ferry	Fall Chinook	2001	Sub-yearling	248,214
Lyons Ferry (NPT Acclimation)	Fall Chinook	2001	Sub-yearling	2,398,079
Fall Chinook Salmon Total				3,558,158
Clearwater	Steelhead	2001	Smolt	560,563
Magic Valley	Steelhead	2001	Smolt	1,899,530
Hagerman NFH	Steelhead	2001	Smolt	1,319,229
Irrigon	Steelhead	2001	Smolt	1,102,319
Lyons Ferry	Steelhead	2001	Smolt	709,904
Lyons Ferry	Steelhead	2001	Parr	24,948
Steelhead Total				5,616,493
Tucannon	Rainbow Trout	2000	Catchable	133,288
Tucannon	Rainbow Trout	2001	Fingerling	69,491
Lyons Ferry	Rainbow Trout	2000	Catchable	75,668
Lyons Ferry	Rainbow Trout	2001	Fingerling	21,808
Lyons Ferry (for IDFG)	Rainbow Trout	2001	Fingerling	202,297
Rainbow Trout Total				502,552
GRAND TOTAL ALL FISH				16,756,507

Hatchery personnel spawned sufficient numbers of female spring Chinook salmon in 2002 to meet smolt production targets. Early rearing of salmon for the Dworshak program is conducted at the Kooskia NFH to take advantage of cooler rearing temperatures and ensure the target size at stocking is not exceeded. Dworshak NFH had over 1.0 million (BY2001) spring on hand at the end of FY2002 for a spring of 2003 release.

Steelhead Programs

Trapping operations at the Crooked River and Red River facilities captured seven and zero steelhead, respectively, during the spring of 2002. The Clearwater FH received over 1.1 million eyed eggs (BY2001) from the Dworshak NFH for rearing to full term smolts. Over 1.5 million steelhead eggs (green) from the Dworshak NFH were incubated at the Clearwater FH in 2002.

These eggs were destined for the Magic Valley FH and Hagerman NFH. A total of 560,563 (BY2001) steelhead smolts were released from the Clearwater FH in 2002. Over 870,000 BY2002 steelhead were on hand at the end of FY2002 for spring of 2003 releases.

BY2001 South Fork Clearwater River stock steelhead reared at the Hagerman NFH were released into the American River (94,232) and into Newsome Creek (85,722) during the spring of 2002.

SALMON RIVER BASIN

The following is a description of each facility in the Salmon River Basin and the propagation programs by species.

McCall Fish Hatchery

The McCall FH, operated by the IDFG, is located along the North Fork of the Payette River in the city of McCall, Idaho. McCall FH is designed to produce 1,000,000 summer Chinook smolts weighing 61,300 pounds. McCall FH is the only LSRCP summer Chinook facility and its adult return goal is 8,000 adults to the Snake River basin. The program operates a satellite facility on the South Fork of the Salmon River (SFSR) for trapping and spawning adult Chinook salmon. The smolt release site is located on the South Fork of the Salmon River upstream from the weir.

Due to ongoing supplementation studies and the desire to maintain the ability to allow sport fisheries, the IDFG and LSRCP manages three South Fork of the Salmon River populations of summer Chinook salmon. The population designated as “reserve” is developed by spawning hatchery fish with other hatchery fish. These fish are not currently listed under the Endangered Species Act (ESA); therefore sport fishing seasons can be opened for these fish (uniquely marked with an adipose fin clip) when large numbers of adults are expected to return to the basin. The population designated as “supplementation” can result from several different mating combinations, all which include an unmarked fish either as a parent or as a grandparent. These fish are listed under ESA and are marked only with a ventral fin clip (the adipose fin remains in tack). The population designated as “wild” is also listed and has no marks or tags. The majority of all wild and supplementation fish are passed above the weir to spawn naturally, with only a small portion of each population retained for ongoing supplementation research. None of the reserve fish are intentionally passed above the weir.

In addition to LSRCP program activities, the staff of the McCall FH is cooperating with the NPT on the Johnson Creek artificial propagation project (BPA funded). Not only does this include rearing summer Chinook salmon smolts for release into Johnson Creek, but also assisting with spawning of adults from Johnson Creek, held at the South Fork Salmon River Satellite.

Sawtooth Fish Hatchery

The Sawtooth FH, is located on the upper Salmon River near Stanley, Idaho and is operated by IDFG. Its primary mission is to rear 2,235,000 spring Chinook salmon smolts weighing

149,000 pounds and trap steelhead ("A" strain) to collect eggs for Hagerman NFH and Magic Valley FH. A satellite facility located on the East Fork of the Salmon River is associated with the Sawtooth FH, although its use has been limited in recent years. The satellite was designed to trap adult spring Chinook for Sawtooth FH and steelhead ("B" strain) for Hagerman and Magic Valley and to serve as a direct stream release site. The goal for the Sawtooth FH program is to return 19,455 adult Chinook salmon to the Snake River basin.

Magic Valley Fish Hatchery

Magic Valley FH is located on the Snake River near Filer, Idaho and operated by IDFG. The hatchery was constructed on a commercial hatchery site that was purchased by the Corps in 1981. Steelhead were produced at the site from 1982 until 1986 when construction of the current facility began. The current facility became operational in 1987.

The Magic Valley FH was designed to produce 2,000,000 steelhead smolts weighing 291,500 pounds annually. The LSRCF adult return goal for the facility is 11,660 adults back to the Snake River basin. A combination of stocks (Sawtooth, Pahsimeroi, Dworshak-B, and East Fork-B) comprise the steelhead reared at the Magic Valley FH.

Hagerman National Fish Hatchery

The Hagerman NFH is located about 30 miles west of Twin Falls, Idaho, just outside the town of Hagerman in the Snake River valley, and is operated by the Service. The water supply for the facility consists of approximately 30,000 gallons per minute of 59^oF water from a series of springs from the Snake River aquifer. The current facility is designed to rear 1,400,000 steelhead smolts weighing 340,000 lbs. Hagerman NFH also retained the capacity to produce 100,000 lbs. of fish for FWS production commitments for programs other than LSRCF. Hagerman NFH has a goal of returning 13,600 adult steelhead to the Snake River basin.

Summer Chinook Salmon Program

A total of 8,603 adult summer Chinook salmon were trapped at the SFSR facility in 2002. Trapping efforts resulted in the capture of 10,922 adults in 2001, the record for the facility. Trap tenders estimated seeing 400 to 600 adult salmon in the pool below the weir on several occasions. Of the total trapped in 2002, 7,322 were considered hatchery fish (85.1%) and 1,795 fish were released above the weir for natural spawning (wild and supplementation fish). Spawning operations at the facility produced over 1.8 million green eggs for the South Fork Salmon River production program.

The Sawtooth FH received 150 supplementation population adults for holding and spawning to provide eggs for the Shoshone Bannock Tribe's egg box program. Tribes and community groups received 1,614 reserve population adult Chinook salmon for consumptive uses.

Due to the large numbers of returning reserve population (non-listed) adults in 2002, a sport fishing season for Chinook salmon was authorized for the South Fork Salmon River. Data

compiled at the mandatory check station indicated that 6,842 salmon were harvested during the 29 day season. It was estimated that 13,660 anglers fished a total of 75,946 hours during the season.

In the spring of 2002, a total of 1,064,250 summer Chinook salmon smolts (BY2000) were released in the South Fork Salmon River from Knox Bridge (Table 4, Appendix A). Also 61,800 listed summer Chinook salmon parr (BY2001) were stocked into the Stolle Pond for acclimation and subsequently a fall release as part of ongoing supplementation research. The McCall FH had over 1.0 million summer Chinook salmon (BY2001) on hand at the end of FY2002 for release in spring 2003.

Spring Chinook Salmon Program

The Sawtooth FH trap was put into operation for spring Chinook salmon on May 24, and was operated until September 14, 2001. The East Fork Satellite trap was not operated for Chinook salmon in 2001.

The first spring Chinook salmon was trapped at the Sawtooth FH trap on May 28, 2002. A total of 1,786 salmon were trapped in 2002, as compared to 2,013 in 2001. Nine hundred and Twenty-three salmon trapped were not marked and considered wild fish. A total of 1,340 salmon were released above the weir to spawn naturally. The spawning of 197 females resulted in the collection of 1,037,558 green eggs at the Sawtooth FH in 2002.

A total of 385,671 BY2000 spring Chinook salmon smolts were released in the spring of 2002 from the Sawtooth FH, a significant increase over the 57,134 smolts released in 2001. At the end of FY2001, the Sawtooth FH had over 1.1 million spring Chinook salmon (BY2001) on hand for release in 2003.

Steelhead Programs

Trapping of adult steelhead began on March 20, 2002 at the Sawtooth FH. Efforts resulted in a record collection of 7,104 steelhead, which was considerably more than the 3,055 trapped in 2001. The number of unmarked steelhead trapped was 95. A total of 1,895 steelhead were released at various locations within the basin either for natural spawning or to enhance the fishery. A total of 542 females were spawned, resulting in 2,858,525 green eggs which were incubated to the eyed stage at the Sawtooth FH. Eyed steelhead eggs were delivered to the Magic Valley FH and Hagerman NFH for LSRCP steelhead production programs.

The East Fork Satellite trap was operated in the spring of 2002. A total of 38 "B" run steelhead were trapped (11 marked and 27 unmarked). Seventeen of the unmarked fish were released above the weir for spawning. Spawning activities at the East Fork site yielded 48,205 green eggs. A weir and trap located at the outlet of the Squaw Creek acclimation/release pond was monitored for adult steelhead. Thirty-three "B" run and 132 "A" run steelhead were collected.

The eight unmarked steelhead collected were released above the weir. Spawning of fish collected at this site yielded 98,302 green eggs.

In the spring of 2002, Magic Valley FH received approximately 2.4 million eyed eggs for BY2002 production. The proportion of stocks reared along with location of release sites is determined primarily through co-management efforts. At the end of FY2002 the Magic Valley FH had over 2.0 million BY2002 steelhead on hand for release as smolts in the spring of 2003.

In spring 2002, 1,899,530 BY2001 steelhead were hauled from the Magic Valley FH for release at various locations throughout the Salmon River basin. All smolts, except 143,363 destined for the Lemhi River and 3,800 destined for the East Fork of the Salmon River supplementation efforts, received an adipose fin clip.

In spring 2001, Hagerman NFH received a total of 1,377,858 BY2001 steelhead eggs, composed of Sawtooth (958,941), Clearwater (202,020), and Pahsimeroi (216,897) stocks. At the end of FY2001, Hagerman NFH had 925,795 BY2001 Sawtooth stock, 201,632 BY2001 Clearwater stock, and 220,079 Pahsimeroi stock on hand for spring of 2002 release.

During the spring of 2002, Hagerman NFH hauled 1,139,275 BY2001 steelhead smolts for release at several sites within the Salmon River basin, including the Little Salmon River, the upper Salmon River, and the Yankee Fork of the Salmon River. Of these, 218,124 were Pahsimeroi stock and 921,151 were Sawtooth stock.

In addition to LSRCF programs, our cooperators also work closely with a variety of entities on several projects. For example, Sawtooth FH personnel collect approximately 380,000 steelhead eggs for a stream side incubation program operated by the Shoshone-Bannock Tribe. Summer Chinook salmon from the SFSR satellite are also held and spawned at the Sawtooth FH for this program. Over 535,000 steelhead eggs from the Pahsimeroi FH (IDFG) were incubated at the Sawtooth FH to take advantage of cooler incubation temperatures. Summer Chinook eggs (653,898) from the Pahsimeroi FH were transferred to the Sawtooth FH for incubation and early rearing, to take advantage of pathogen free water. In return, Pahsimeroi FH personnel trap and spawn steelhead for LSRCF programs. The Sawtooth staff also assists the sockeye salmon recovery project with trap monitoring, adult holding, egg incubation, rearing, and stocking and help with IDFG's catchable rainbow trout redistribution and mountain lake stocking. Johnson Creek summer Chinook adults were held for spawning at the SFSR trap and juveniles are reared in the outflow channel of McCall FH.

GRANDE RONDE AND IMNAHA RIVER BASINS

The following is a description of each facility in the Grande Ronde and Imnaha River basins and the propagation programs by species.

Lookingglass Fish Hatchery

The Lookingglass FH, operated by the Oregon Department of Fish and Wildlife (ODFW), is located on Lookingglass Creek north of Elgin, Oregon. Although the facility was designed to produce 1.4 million spring Chinook salmon smolts weighing 69,600 pounds, recent agreements among co-managing entities have reduced the desired fish rearing densities that consequently limits the current production capacity. The Imnaha River Satellite facility located on the Imnaha River near Gumboot Creek is operated by the hatchery staff. The adult return goal for the Lookingglass FH program is 9,070 adult spring Chinook salmon.

Irrigon Fish Hatchery/Wallowa Fish Hatchery

The Irrigon FH, operated by the ODFW, is located on the Columbia River near Umatilla, Oregon. Collector wells designed for 25,000 gallons per minute (gpm) supply water for the program which is targeted to rear 1,677,000 steelhead smolts weighing 279,600 pounds. Irrigon FH's return goal is 11,200 adults back to the Snake River basin.

Irrigon FH operates in conjunction with three other facilities. The Wallowa FH located in Enterprise, Oregon along the Wallowa River, serves as a steelhead trapping, spawning and acclimation facility for steelhead reared at Irrigon. Hatchery personnel from the Wallowa FH also manage trapping, spawning, and acclimation operations at the Big Canyon Satellite facility, located at the confluence of Deer Creek and the Wallowa River, and the Little Sheep Creek Satellite facility in the Imnaha River drainage. The Wallowa facility can acclimate up to 600,000 steelhead smolts, while the Big Canyon and Little Sheep Creek acclimation facilities can accommodate up to approximately 250,000 smolts each.

Spring Chinook Programs

A total of 1,200 adult spring Chinook salmon were trapped in 2002 at the Imnaha River trap, compared to 3,503 adults trapped in 2001 (Table 1). Of the fish trapped in 2002, 268 were unmarked and 932 were of hatchery origin. A total of 1,088 adult spring Chinook salmon were released for natural spawning. Due to the number of hatchery fish returning to the Imnaha River, a sport fishing season was opened for Chinook salmon in 2002. Fish designated for broodstock were transported to the Lookingglass FH and held until spawned. Ninety-seven Imnaha River females were spawned resulting in approximately 391,000 green eggs. A total of 303,737 (BY2000) Imnaha stock spring Chinook salmon smolts were released in the spring of 2002 into the Imnaha River.

All BY2002 Chinook salmon eggs collected at the Lookingglass FH are shipped to other LSRCP-funded facilities (Irrigon and Oxbow) for incubation and hatching. This is due to the lack of chilled well water at the Lookingglass FH. All fry are returned to the Lookingglass FH for rearing. At the end of FY2002, the Lookingglass FH had over 879,000 Chinook salmon (BY2001) on hand for release in the spring of 2003.

Conventional and captive brood stock programs are maintained for endemic Chinook salmon stocks for the upper Grande Ronde River, Catherine Creek, and the Lostine River. Although these are NW Power Act Fish and Wildlife Program (FWP) projects, propagation of smolts for these programs occurs at LSRCP facilities. For example, the juveniles produced from all three programs are incorporated into LSRCP smolt production targets. Fish trapped for the

conventional brood stock program in 2002 were transported from each site to Lookingglass FH for spawning. Spawning efforts produced approximately 112,000 Lostine stock eggs, 100,000 Grande Ronde River stock, and 80,000 Catherine Creek stock eggs.

Smolts produced for these stocks were transported from the Lookingglass FH to acclimation sites within their respective basins and resulted in stocking of 180,343 Chinook salmon in Catherine Creek, 151,444 salmon into the upper Grande Ronde River, and 109,015 salmon into the Lostine River. All of these smolts (BY2000) were a result of the captive brood stock program except 31,464 smolts into the Lostine River which were the result of the conventional brood stock program.

This year marked the 8th year for collecting approximately 500 parr from each of the Lostine River, Catherine Creek, and the upper Grande Ronde River for the captive broodstock program. The program was initiated as an effort to conserve and maintain several Chinook populations for ultimate use in recovery of listed stocks under ESA and to enable the LSRCP to return to their compensation responsibilities in the future. Parr are initially reared at the Lookingglass FH, and then transferred to either the Manchester facility (salt water) in Washington or Bonneville FH (freshwater) in Oregon for rearing. When fish are expected to mature, they are transferred to Lookingglass FH maturation and spawning. As described above, the progeny of these broodstocks are raised for subsequent release as smolts back into their rivers of origin.

Steelhead Program

In 2002 a total of 2,961 steelhead were trapped at the Wallowa FH, compared to 1,262 trapped in 2001 (Table 1). Over 1.3 million eggs were collected from 243 females. A total of 2,946 steelhead returned to the Big Canyon Satellite facility in 2002, an increase of 2,084 over the 2001 total. No eggs were collected there and a total of 209 unmarked steelhead were released above the Big Canyon weir into Deer Creek. A total of 3,464 adult steelhead returned to the Little Sheep Creek trap in 2001, compared to 1,354 in 2001 (Table 1). Of these, 193 were released for spawning. Over 514,000 eggs were collected from 105 females. Eggs from both spawning operations were incubated at the Wallowa FH until the eyed stage, and then shipped to the Irrigon FH for hatching and rearing.

In 2002, the Irrigon FH delivered BY2001 steelhead smolts to the three acclimation facilities in Northeast Oregon. Releases from these facilities are as follows: Wallowa FH - 560,633, Big Canyon Satellite - 271,285, and Little Sheep Creek Satellite - 195,575. Big Sheep Creek received a direct release of 73,819 steelhead smolts. Over 1.1 million steelhead (BY2002) for the LSRCP program were on hand at the Irrigon FH at the end of FY2002.

SNAKE, WALLA WALLA, TUCANNON, TOUCHET, AND GRANDE RONDE RIVERS

The following is a description of each facility in the Snake, Walla Walla, Tucannon, Touchet, and Grande Ronde Rivers basins and the propagation programs by species.

Lyons Ferry Fish Complex - Lyons Ferry and Tucannon Fish Hatcheries

Programs at the Lyons Ferry FH and the Tucannon FH work in conjunction to form the basis for the Lyons Ferry Fish complex managed by the Washington Department of Fish and Wildlife (WDFW). The Lyons Ferry FH, the largest LSRCP facility, is located at the confluence of the Palouse and Snake Rivers in Southeast Washington. The facility, originally operated as two independent facilities, was designed to produce 1,169,500 (116,400 lbs.) steelhead smolts, 9,162,000 (101,800 lbs.) fall Chinook salmon smolts, 132,000 (8,800 lbs.) spring Chinook salmon smolts, and 45,000 pounds of trout for resident fishery programs. Adult return goals, to the basin, for this program include 4,656 steelhead, 18,300 fall Chinook salmon, and 1,148 spring Chinook salmon. Staff from the complex oversee operations of steelhead acclimation facilities on the Touchet River, near Dayton, Washington, and on Cottonwood Creek in the Grande Ronde River basin. The Cottonwood facility also serves as an adult steelhead trapping site for egg collections.

The Tucannon FH is located on the upper Tucannon River. The primary production goal for this facility is the production of 41,000 pounds of trout for resident fishery programs. Spring Chinook salmon trapping also occurs at Tucannon FH. Staff manages the Curl Lake spring Chinook salmon acclimation facility a few miles upstream of the FH on the Tucannon River.

Spring Chinook Salmon Program

Spring Chinook salmon returns to the Tucannon River trap totaled 780 in 2002, compared to 681 in 2001 (Table 1). Of the fish trapped, 168 were unmarked and 612 were of hatchery origin. A total of 671 fish were passed above the weir to spawn. Forty-nine females were spawned, producing over 169,000 eggs. The captive brood stock program, sponsored by FWP) for Tucannon River spring Chinook produced over 176,000 eggs from spawning 121 females. A total of 105,154 (BY2000) Tucannon River spring Chinook salmon smolts were released from the Curl Lake acclimation facility in 2002. Also, 41,635 (BY2001) pre-smolt Chinook salmon were released into the Tucannon River in 2002. At the end of FY2002, over 2,400 Tucannon River spring Chinook salmon from various brood years remained at the Lyons Ferry FH as part of the captive broodstock program. In addition, over 442,000 Tucannon River spring Chinook salmon (BY2001) were on hand at Lyons Ferry Fish Complex facilities for release in spring 2003.

Fall Chinook Salmon Program

A total of 2,080 fall Chinook salmon were trapped at the Lyons Ferry FH in 2001, compared to 2,186 trapped in 2000. The trap was opened and closed throughout the season due to a large return of fall Chinook. A trapping operation at the Lower Granite Dam also provided fish for the Lyons Ferry fall Chinook salmon spawning operation. During the spawning process, the origin of the fish must be verified to determine the appropriate use for the gametes from an individual fish. Only eggs from Snake River origin fish are used for LSRCP programs. The concerted

effort to spawn only Snake River stock fall Chinook salmon with each other is of particular importance because the natural spawning population is listed as threatened under the ESA. Spawning of 1,338 Snake River origin fall Chinook salmon produced 4,418,700 eggs.

A total of 432,507 (BY2000) fall Chinook salmon yearlings were released into the Snake River at the Lyons Ferry FH. In addition, 248,214 (BY2001) sub-yearlings were released at the same location.

In a cooperative venture between WDFW, NPT and FWS, yearling and sub-yearling fall Chinook salmon are transferred to the three acclimation sites within the basin operated by NPT and funded under the FWP. A total of 319,886 (BY2000) yearlings were released into the Snake River from the Captain John's Rapids and Pittsburg Landing acclimation facilities in 2002, while 159,472 (BY2000) yearlings were released into the Clearwater River from the Big Canyon acclimation facility. A total of 1,397,190 (BY2001) sub-yearlings were released from acclimation facilities into the Snake River and 1,000,889 (BY2001) sub-yearlings were released into the Clearwater River. At the end of FY2002, over 1.1 million fall Chinook (BY2001) were on hand at the Lyons Ferry FH.

Steelhead Programs

A total of 7,604 steelhead were trapped at the Lyons Ferry FH in 2002, and 4,634 were released back into the Snake River for the fishery (Table 1). A total of 2,928 steelhead returned to this trap in 2001. Spawning of 192 females produced 941,223 eggs in 2002. Releases of Lyons Ferry steelhead stock smolts (BY2001) are as follows: A) 62,612 to Snake River at Lyons Ferry, B) 125,391 to Touchet River via the Dayton acclimation pond, C) 135,203 to Tucannon River, and D) 99,859 to Walla Walla River (Table 4). Approximately 431,000 (BY2002) Lyons Ferry steelhead were on hand at the end of FY2002.

Trapping operations at the Cottonwood facility produced 1,712 adult steelhead, of which 1,181 were released upstream of the weir into Cottonwood Creek (Table 1, Table 2). There were 774 steelhead trapped in 2001 at this site. Spawning of 82 females yielded over 422,000 steelhead eggs at the Cottonwood facility. A total of 182,722 BY2001 smolts were acclimated and released at this site (Table 4). Over 243,000 BY2002 Wallowa stock steelhead were on hand at the end of FY2002.

A trapping operation on the Touchet River, near Dayton, Washington yielded 173 unmarked and 10 marked adult steelhead (Table 1). Fourteen females were spawned, producing 70,843 eggs. A total of 45,501 (BY2001) smolts from this listed stock were released into the Touchet River in 2002. Approximately 32,000 Touchet River stock steelhead (BY2002) were on hand at the end of FY2002.

A trapping operation on the lower Tucannon River yielded 74 unmarked and 131 marked adult steelhead, of which 168 were released back into the river for the fishery. Trapping efforts at the Tucannon FH (considered the upper river trap) yielded 205 fish (177 unmarked and 28 marked). The 177 unmarked fish were released above the weir. Thirteen Tucannon River stock fish were spawned and produced over 74,000 eggs. A total of 58,616 (BY2001) listed smolts were

released into the Tucannon River in 2002. Over 50,000 Tucannon River stock steelhead (BY2002) were on hand at the end of FY2002.

Rainbow Trout Programs

The Lyons Ferry Fish Complex manages the LSRCP resident trout production program. During 2002, the Lyons Ferry Complex stocked 208,956 (BY2000) rainbow trout weighing 69,637 pounds into local fishing ponds and inland lakes in Southeast Washington. In addition, 91,299 (BY2001) rainbow trout weighing 834 pounds were also stocked into these waters. The Lyons Ferry Fish Complex also produced and transferred 202,297 (BY2001) rainbow trout weighing 2,604 pounds to the Idaho Fish and Game Department for stocking into lakes and rivers. At the end of FY2002 over 121,000 rainbow trout were on hand at the Tucannon FH, and over 106,000 rainbow trout were being reared at the Lyons Ferry FH.

MONITORING AND EVALUATIONS

The LSRCP obligated \$3,121,941 for monitoring and evaluation (M&E) studies and PIT tag costs related to its program in FY2002. Entities receiving funding included IDFG, ODFW, WDFW, FWS Idaho Fishery Resource Office, the Nez Perce Tribe (NPT), the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), and the Shoshone-Bannock Tribe (SBT). The LSRCP Office staff met with representatives from each cooperating entity in a variety of settings to discuss issues dealing with specific items to budgets to proposal modifications. An evaluation coordinators meeting was held in June at Clearwater FH. Below is a brief summary of the FY2002 M&E programs for each of the cooperating entities. Individual M&E program reports can be obtained from the LSRCP office.

Idaho Department of Fish and Game

The goal of the IDFG LSRCP monitoring and evaluation (M&E) program is to identify hatchery rearing and release strategies that will allow the LSRCP program to meet its compensation requirements, along with monitoring the effects of LSRCP programs on wild salmonid populations. IDFG M&E efforts are divided among *Hatchery Evaluation Studies* (HES), a *Harvest Monitoring Program* (HMP), and a *Coded Wire Tag Analysis Project* (CWT). IDFG's LSRCP M&E program requires a close cooperative effort among staff dedicated to HES, HMP, and CWT projects.

HES studies concentrate on determining relationships between hatchery practices and adult returns. The studies conducted by the HES staff include monitoring and evaluation of hatchery rearing; comparison and analysis of size, time, and location of releases; and documentation and analysis of adult returns. By necessity, these studies are long-term monitoring and trend studies.

Several HES projects initiated in previous years to address specific hatchery concerns and needs were continued in FY2002. These include assessing migration characteristics of hatchery-reared fish; documentation and analysis of straying of hatchery Chinook salmon; nature's rearing

studies; time and size of release studies, analysis of steelhead acclimation, and comparison of spawn timing.

HES staff assisted with and provided technical guidance on a variety of other projects in FY2002. They assisted with tagging operations, tissue sample collection for genetics studies, fish transfers, weir installations, and creel station operations. The HES team also provided information to develop and facilitate annual marking and tagging plans for steelhead and Chinook salmon. The HES staff maintains historic run spreadsheets, reviews hatchery run reports, coordinates CWT and mark databases, responds to numerous data requests from outside entities, participates in the North West Power Planning Council (NWPPC) sub-basin planning process, and develops LSRCP funding proposals.

The HMP staff conducted creel surveys on the Clearwater, Snake and Salmon rivers to document the LSRCP contribution to fisheries in Idaho. Information gathered from creel efforts included recovery of CWT's; age, sex, and length information; and information concerning hatchery/wild ratios in the fishery. The HMP staff spent a great deal of time compiling and analyzing data, completing reports, determining run projections, and responding to data requests.

IDFG maintains a lab for reading and analyzing coded wire tags. LSRCP funds a portion of this effort to document LSRCP adult returns and their contribution to fisheries. Actual marking costs for fish reared at LSRCP facilities in Idaho are included in individual hatchery budgets.

HES, HMP and CWT staff devoted a considerable amount of time to coordinating research and management activities for the LSRCP program. Staff attended coordination meetings for the Sawtooth, Clearwater, and McCall FH's and Dworshak and Hagerman NFH's. Information on brood year management, run information, projected adult returns, weir management plans, fish marking plans, fish health, sport fisheries, research and future needs are developed at these meetings. The staff also participated in hatchery evaluation team meetings, IDFG anadromous meetings, and technical oversight meetings for other projects (e.g. captive brood). Finally, additional time was spent training new personnel as IDFG experienced a substantial turnover in the LSRCP-oriented staff.

Oregon Department of Fish and Wildlife

ODFW's evaluation program includes: 1) monitoring and evaluating hatchery practices; 2) investigating size, time, and location of release of hatchery-reared juveniles; 3) marking activities (CWTing, branding); 4) assisting with disease monitoring efforts; 5) determining the LSRCP contribution to Oregon's steelhead fishery; 6) determining the effects on natural spawning populations; and 7) determining the success of maintaining the genetic integrity of native wild stocks potentially effected by the LSRCP program.

In 1997 ODFW began monitoring natural spawning of summer steelhead in NE Oregon and assessing the relationship between anadromous and resident forms of *O. mykiss*. These efforts were expanded in 1999 to include collection of samples for genetic analyses and were continued in 2002. They are also investigating the feasibility of using otolith micro-chemistry analyses to identify maternal origin of juveniles. ODFW and their tribal co-managers hope to learn more about the characteristics and relationships of the various populations in NE Oregon and about the

fate of hatchery adults that escape to their river of release but are not caught at traps or by anglers. Findings from this and the other studies will help determine if hatchery populations can be and should be derived from local resident populations.

ODFW M&E personnel collected wild, resident *O. mykiss* adults and anadromous Willowa stock adults to conduct a breeding and life history experiment with various crosses among and between these two groups. Eggs were incubated and progeny were reared using standard steelhead production methods. After approximately one year of growth, progeny were PIT tagged and released into Deer Creek, a tributary to the Willowa River. Detection of tagged fish from various groups was conducted at Snake and Columbia River dams to determine migration rates.

ODFW personnel continued a collaborative effort with Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and NPT personnel to maintain a captive broodstock/propagation program that was initiated in 1995 with LSRCP funding. In 2002, spring Chinook salmon smolts were released into the Imnaha River and at several locations throughout the Grande Ronde River basin. Releases were a result of production from both the conventional rearing program and the captive broodstock program. Survival of the two programs will be compared.

ODFW M&E personnel are planning experiments using Imnaha stock spring Chinook to evaluate the effect of various feeding regimes on the number of jacks produced. Captive broodstock progeny are being used to evaluate the effects of parental rearing regime and BKD segregation.

Spring Chinook salmon sport fisheries were opened on the Imnaha River and on Lookingglass Creek in 2002. Steelhead sport fisheries occurred throughout Northeast Oregon in 2002. ODFW M&E personnel monitored and evaluated the fisheries.

Washington Department of Fish and Wildlife

WDFW's evaluations of fall and spring Chinook are combined under one multiple-objective study including: 1) monitoring and evaluation of hatchery practices, juvenile outputs, adult returns (including homing studies), and contribution to fisheries; 2) time, size, and location of release (including acclimation) studies; and 3) evaluation of effects of hatchery releases on naturally producing Chinook stocks (including parr density monitoring and spawning ground counts). Because the hatchery stocks are comprised entirely of endemic fall and spring Chinook stocks, special attention is being paid to quantifying and monitoring genetic variables in each population.

Fish from all release groups from the Lyons Ferry FH and the Tucannon FH were sampled prior to liberation to document growth parameters, fin clip quality, tag retention, and percent precocious males in releases. WDFW M&E personnel continued their ongoing efforts to determine out-migration timing and relative survival of salmon and steelhead released. The staff operated a trap near the mouth of the Tucannon River from March through November to estimate the number of emigrating salmon and steelhead smolts and biological data and abundance

estimates was compared to previous years.

The M&E staff coordinated the tagging and marking of spring and fall Chinook salmon and steelhead reared at the Lyons Ferry Fish Complex. Efforts included the use of PIT tags for emigration evaluations. Study groups were established to monitor and evaluate survival and return of releases in comparison with project goals.

M&E personnel monitored the fall Chinook salmon run and coordinated the return of excess fall Chinook salmon broodstock adults to the Snake River above Lower Granite Dam (LGD). M&E staff assisted with spawning efforts and the recovery of coded wire tags. The staff continued efforts to determine the origin of all spawned fall Chinook and remove known stray and unknown origin adults from the spawning process to maintain the genetic integrity of the broodstock. M&E personnel provided a detailed database of adult fall Chinook salmon that returned to Lyons Ferry FH and to LGD to regional managers, and assisted NOAA personnel with the development of a run reconstruction at LGD. The fall Chinook salmon run reconstruction is a central element to the *U.S. vs Oregon* mandated annual management agreement for the Columbia River.

A severely depressed spring Chinook salmon population in the Tucannon River was the impetus for a captive broodstock program initiated in 1997. WDFW M&E personnel assisted the hatchery staff with selection and ponding of juveniles, selection and spawning of ripe adults, and coded wire tag marking of juvenile fish. WDFW M&E personnel will continue to direct the program through 2006 with the goal of rebuilding this spring Chinook salmon population.

M&E personnel trapped adult steelhead on the Touchet and Tucannon rivers and on Menatchee Creek to assess the status of ESA listed natural populations. The staff collected adult steelhead for broodstock and assisted Lyons Ferry FH personnel with spawning efforts. The M&E staff completed the second year of a five year study on the development and success of endemic brood steelhead reared in a hatchery.

A fall Chinook salmon spawning survey was completed on the lower 12 miles of the Tucannon River. The staff documented the number of spawning redds and collected biological data and genetic samples from carcasses. Estimates for total spawning escapement were determined.

Spawning ground surveys for steelhead were conducted on index sections of the Touchet and Tucannon rivers and Asotin Creek. Spawning escapement into these survey areas was also estimated. M&E personnel completed electro fishing surveys of index sites to estimate juvenile steelhead site densities and calculate river system abundance by age class for the rivers.

M&E personnel conducted spring Chinook salmon spawning surveys of the Tucannon River and Asotin Creek. Redd construction enumerations and estimates of spawning escapement (both hatchery and wild origin) were made. Estimates of egg deposition from these tasks are coupled with juvenile abundance sampling and smolt trapping to estimate egg to smolt and smolt to adult survivals which are critical biological indices of population health and stability.

The M&E staff conducted a creel survey of steelhead sport anglers throughout Southeast

Washington to recover coded wire tags and document the level of sport harvest. Estimation of harvest of all fish with unique coded wire tag codes was made and provided to regional researchers.

The staff completed an ESA Section 10 annual report for the Tucannon River spring Chinook salmon program, along with spring and fall Chinook salmon annual reports. Staff members also attended numerous regional planning and management forums and provided data collected under the LSRCP program. WDFW M&E personnel served as regional experts on the status of salmon and steelhead populations (abundance and trends) in Southeast Washington.

Confederated Tribes of the Umatilla Indian Reservation

The Confederated Tribes of the Umatilla Indian Reservations (CTUIR) became cooperators in the LSRCP Program for the first time in FY1987. The CTUIR biologist assigned to the LSRCP program continues to be supervised by the LSRCP ODFW research coordinator because of the close coordination required for their joint studies in Oregon.

The objectives of the CTUIR's LSRCP 2002 monitoring and evaluation program were to 1) evaluate the re-introduction of spring Chinook salmon into Lookingglass Creek using naturally produced adults or captive broodstock juveniles, 2) monitor the adult returns and juvenile life history of Chinook salmon and steelhead in Lookingglass Creek, 3) monitor and evaluate the summer steelhead populations in the Grande Ronde River basin, and 4) cooperate with ODFW to maintain ongoing LSRCP evaluation activities.

Spring Chinook salmon study activities in Lookingglass Creek study during 2002 included 1) evaluate the production of naturally spawning adults, 2) determine migration parameters of pre-smolts released in 2001, 3) determine genetic diversity and life history characteristics of returning adults, 4) assess ecological interactions between spring Chinook and the environment, and 5) cooperate on the development of an endemic brood stock.

Summer steelhead activities conducted in 2002 included: 1) monitor and evaluate survival and migration parameter for summer steelhead produced in Lookingglass Creek, 2) describe adult summer steelhead populations returning to Lookingglass Creek, and 3) monitor population genetics of summer steelhead in the Grande Ronde River basin.

Nez Perce Tribe

The Nez Perce Tribe (NPT) conducted LSRCP monitoring and evaluation activities in FY2002. These activities include: 1) monitor LSRCP hatchery production performance, 2) describe natural production status and performance of anadromous salmonids in select waters, along with quantifying interactions between hatchery and natural juveniles, 3) promote genetic conservation, and 4) participate in coordination of LSRCP program, including hatchery operations and project specific permitting.

Emigration timing and survival of natural and hatchery juvenile Chinook salmon and steelhead from the Imnaha River sub-basin was monitored with emigration traps and PIT tagging during the fall of 2001 and the spring of 2002. Fall juvenile emigration trapping occurred at an upper and lower site on the Imnaha River.

Spring emigration trapping only occurred at the lower Imnaha River site. Both natural and hatchery origin fish were PIT tagged. Survival from the trap to LGD and to other mainstream dams was similar for the natural and hatchery Chinook salmon smolts. Survival estimates to the lower Imnaha River emigration trap site for hatchery produced Chinook salmon acclimated and released from the Imnaha Satellite Facility are pending. PIT tagging of steelhead was accomplished cooperatively with the Imnaha River Smolt Monitoring Program project during the spring trapping period at the lower Imnaha River site.

NPT M&E personnel conducted multiple pass spawning ground surveys throughout the Salmon River basin, including the South Fork Salmon River. Salmon carcasses were sampled for biological data along with tags and marks. Estimation of the percentage of hatchery origin and natural Chinook salmon contributing to spawning is pending.

NPT M&E personnel monitored the escapement of adult steelhead into Cow and Lightning creeks, tributaries to the Imnaha River through the use of temporary weirs.

A sample collection strategy was developed and initiated in 1999 to allow for DNA genetic analysis of stock structure of steelhead in the Imnaha and Grande Ronde river basins. NPT M&E personnel are responsible for sample collection in eight streams, and the staff share sample collection responsibility with ODFW in two other streams. Sample analysis is being conducted by NOAA with LSRCP funding.

NPT staff continued efforts in 2002 to document the reproductive success of hatchery adult Chinook salmon out-plants in Lick Creek, a tributary to the Imnaha River. Snorkeling surveys have been conducted annually in Lick Creek since 1992. Hatchery origin adults have been out-planted in three of the last ten years. Spawning redds have only been observed in Lick Creek in those years in which adults were out-planted. Juvenile Chinook salmon were observed during the following each adult out-plant year.

NPT personnel have been banking adult male Chinook salmon and steelhead gametes with the intent to establish a germ plasm repository for Snake River populations as an insurance policy against extirpation. LSRCP support of this FWP-funded effort is focused on preserving genetic material from LSRCP production facilities and natural production areas.

Coordination of NPT involvement in the LSRCP program with other LSRCP cooperators was accomplished through planning, process, and technical meetings, along with on the ground assistance during 2002. NPT personnel participated in 2002 Annual Operations Planning in Washington and Oregon, along with attending Dworshak NFH coordination meetings. ESA Section 10 permit requirements for listed salmonids were completed by and submitted through the Columbia River Inter-Tribal Fish Commission.

Shoshone-Bannock Tribe

The Shoshone-Bannock Tribe (SBT) received LSRCP funding for the first time in 2002. Their initial efforts included full participation in all LSRCP coordination efforts (work groups, meetings, etc.) and development of a study design for determining contribution of salmon and steelhead in-stream and streamside egg incubators. Their study design will be peer reviewed by the LSRCP evaluation study coordinators using revised evaluation study guidelines. We expect the SBT to become fully engaged in LSRCP O&M and M&E efforts in 2003.

U.S. Fish and Wildlife Service - Idaho Fisheries Resources Office

The U.S. Fish and Wildlife Service's Idaho Fisheries Resources Office (IFRO) was funded by the LSRCP program in FY2002 to conduct hatchery monitoring and evaluation studies at the Dworshak and Hagerman NFH's. The IFRO's M&E program is similar to those conducted by the state agencies and tribes and is closely coordinated with IDFG and the NPT. The majority of their efforts focus on evaluating the progress being made at the Dworshak and Hagerman NFH's in meeting their LSRCP goals. Hatchery Evaluation Teams (HET) have been established for both federal hatcheries to develop and oversee research efforts. The M&E staff from the IFRO also facilitates inter- and intra-agency coordination and cooperation with FWS LSRCP hatchery production and evaluation programs in Idaho.

The Hagerman NFH HET continued a study to evaluate the use of Beta Glucans as a feed additive for summer steelhead to enhance the non-specific immune response system. Previous to efforts at Hagerman NFH, Beta Glucans had not been used as an immunostimulant on fish smaller than 100 fish per pound. Final results are pending.

The staff continued to work as cooperators on the Salmon Supplementation Studies in Idaho Rivers (ISS), participating with monitoring tributaries in the Clearwater basin. The staff also participated as cooperators at a number of state and regional meetings and forums.

FISH AND WILDLIFE SERVICE COOPERATIVE PROGRAMS

The LSRCP Office obligated \$130,000 to two other FWS programs which helped the LSRCP Program accomplish its FY2002 mission. The FWS's Columbia River Fisheries Program Office provided their assistance to the LSRCP Office on regional issues, particularly with regard to those relating to the CRFMP renegotiations and regional biological opinions. The Abernathy Salmon Technology Center assists the LSRCP Program on regional planning, hatchery evaluations, and genetic conservation issues.

OTHER COOPERATIVE PROGRAMS

The LSRCP Office works closely with all our cooperators to ensure that our programs

compliment and sometimes supplement other anadromous fish programs they might be involved in. For example, the SBT, NPT, CTUIR, ODFW, WDFW, and IDFG have BPA-funded Fish and Wildlife Program projects which must be closely integrated with LSRCP programs because of joint use of facilities (rearing space), people, and equipment. These include the captive brood and rearing programs in Oregon and Idaho, the Grande Ronde endemic stock programs in Oregon, the Umatilla Hatchery, the NPT's Johnson Creek Program, IDFG's supplementation (ISS) studies, and the Redfish Lake sockeye salmon propagation program. The complexity of integrating these types of programs is becoming more and more difficult.

The LSRCP Office also works cooperatively with the states to implement a number of resident trout programs at no cost to the LSRCP program. ODFW utilizes several raceways at Irrigon FH to temporarily hold catchable rainbow trout for release in eastern Oregon. IDFG uses the Sawtooth, McCall, and Clearwater FH's to act as distribution points for catchable trout stocking in surrounding waters. The McCall FH and the Clearwater FH also rear resident trout for part of their life cycle. Lastly, cooperative agreements are in place with all State agencies for the temporary loan of equipment and vehicles between programs.

The LSRCP Office funded NOAA Seattle genetics lab to analyze steelhead tissue samples collected by LSRCP cooperators in Oregon and Washington in 1999, 2000, and 2001. The results will help cooperators and other regional bodies (e.g. NOAA technical recovery teams) characterize steelhead populations in the Grande Ronde and Imnaha Basin. Additional samples from Idaho's streams will be added to the effort. A report of findings is due in June 2003.

CORPS CONSTRUCTION ACTIVITIES

The U.S. Army Corps of Engineers (Corps), Walla Walla District, has transferred all LSRCP facilities but the Captain John Rapids fall Chinook acclimation pond to the Service. The Corps collected information in 2002 to address pumping and sediment problems at Captain John's. When these problems have been addressed to the satisfaction of the Service, that facility will be transferred to the FWS. Oregon's underground storage tanks were replaced by the Service in FY2002; after which the Corps removed the old tanks and cleaned the sites. All underground storage tanks have now been removed from LSRCP facilities.

FUTURE OUTLOOK

The LSRCP Office will initiate Section 7 consultations with the NOAA Fisheries in FY2003. The biological opinion, which we expect will cover LSRCP actions over the next several years, will likely include a number of Reasonable and Prudent Alternatives (RPA) and Conservation Measures for addressing impacts of steelhead programs. The RPA's will likely require investigating significant changes such as phasing out non-endemic stock programs while converting to locally derived, listed stocks. Because of the recent court ruling on the listing and use of hatchery fish that are part of an ESU, NOAA will be revising their artificial propagation policy and develop rules on the use of hatchery-reared fish for conservation and recovery. We are not certain how these actions will affect our consultation efforts but they may delay issuance of a new opinion.

The 2000 Federal Columbia River Power System Biological Opinion described measures that are

to be implemented by the action agencies (BR, COE, BPA) to offset adverse impacts of the hydroelectric facilities. Among those listed is a measure to investigate “reforms” of existing hatcheries (Action Item 169). The purpose of these reforms would be to greatly reduce or eliminate adverse impacts of hatcheries on listed species, and, where possible, to positively affect listed fish. The action agencies would fund and be given “credit” for “offsite mitigation” resulting from these efforts. Action Item 169 stated that reform HGMP’s for all Columbia basin hatchery programs should to be completed and approved by NOAA by the 3-year check-in (end of FY2003). At this time, we are not certain how the LSRCP Program will be involved in their effort. Our first priority will be to address any RPA’s associated with our Biological Opinion.

Most LSRCP Chinook facilities are now operating and, are likely to continue operating, under Section 10 enhancement and/or research permits under the ESA. Although 2003 returns of hatchery-reared Chinook are expected to be lower than the excellent returns in 2001 and 2002, we anticipate good returns with sport and tribal fishing opportunities.

In the near term, the LSRCP will continue to maintain non-listed Chinook salmon, steelhead, and rainbow trout programs for compensation of losses associated with the construction and operation of the four Lower Snake River dams, while ensuring that they do not jeopardize the listed stocks. As noted above, a new biological opinion from NOAA may lead to significant changes in some programs.

Eight years ago the LSRCP funded cooperators to initiate three captive spring Chinook rearing programs in Idaho and three Chinook broodstock programs in Oregon as conservation measures to assist in conservation and recovery. Several more traditional endemic stock Chinook and steelhead programs were initiated during the same time period, and a captive brood spring Chinook program in Washington was initiated in 2000. Aspects of these programs continue to be funded by the BPA through the NWPPC’s Fish and Wildlife Program. The LSRCP Office has and will continue to participate in the technical teams to address ongoing captive broodstock issues. Eggs from captive-reared adults and adults trapped at endemic program weirs have been and will continue to be incorporated into LSRCP juvenile production programs.

LSRCP-funded monitoring and evaluation programs are being improved, redesigned, and refined each year to assist hatcheries in providing the best rearing conditions and rates of return of hatchery-reared juveniles and to improve our efforts to help conserve listed species. The 1985 LSRCP Evaluation Study Guidelines will be revised in 2003 and used to direct future monitoring and evaluation efforts. We will continue to spend about 20 percent of our budget on hatchery evaluation programs.

The LSRCP Office and BPA staff completed a five-year 2002 through 2006 direct funding agreement. As part of that agreement we worked with LSRCP cooperators to develop Performance Indicator plans for hatchery operations and monitoring and evaluation programs. FY2003 will be the second year application for the O&M plan and the first for the M&E plan.

The LSRCP Office and its cooperators will continue to work with Columbia River basin co-managers to renegotiate the CRFMP and with the NWPPC, Columbia Basin Fish and Wildlife Authority and BPA to develop Subbasin Plans and strategies. Although many current programs

and perhaps some new programs will emphasize conservation of populations, the LSRCP will continue to provide compensate for losses associated with construction and operation of the Lower Snake River dams whenever and wherever possible.

We are optimistic that normal or above precipitation and good ocean conditions will result in return rates of hatchery-reared steelhead and Chinook that meet LSRCP production model predictions. The excellent returns in the last few years indicate what might be expected under those conditions. In the mean time we will continue to do what we can to improve production release strategies, disease treatment and prevention, and smolt quality. Captive broodstock efforts, if successful, will help develop critical culture expertise needed in the immediate future for conservation of the most imperiled Snake River populations. If society decides to implement measures that significantly increase system productivity of listed populations, these conservation efforts will help speed salmon and steelhead recovery and should eventually result in widespread fishery opportunities for tribal, sport and commercial fishers.

LSRCP OFFICE

Daniel M. Herrig, LSRCP Coordinator, Project Leader
Joseph J. Krakker, Fishery Biologist
Christopher J. Starr, Fishery Biologist
Tammy A. Froscher, Secretary
Margaret M. Anderson, Administrative Officer

AVAILABLE REPORTS

The LSRCP Office maintains a list and copies of annual hatchery O&M and M&E reports generated from all project activities. These are available from the LSRCP Office.

MEETINGS AND OTHER ACTIVITIES

The LSRCP staff continued involvement in a variety of state and regional forums which relate directly to the operations of the LSRCP program. The following is a summary of activities LSRCP staff members participated in during FY2002:

1. Northwest Power Planning Council Fish and Wildlife Program
 - Participate in Sub-Basin planning efforts.
 - Participate in Artificial Production Review and Evaluation (APRE) process.

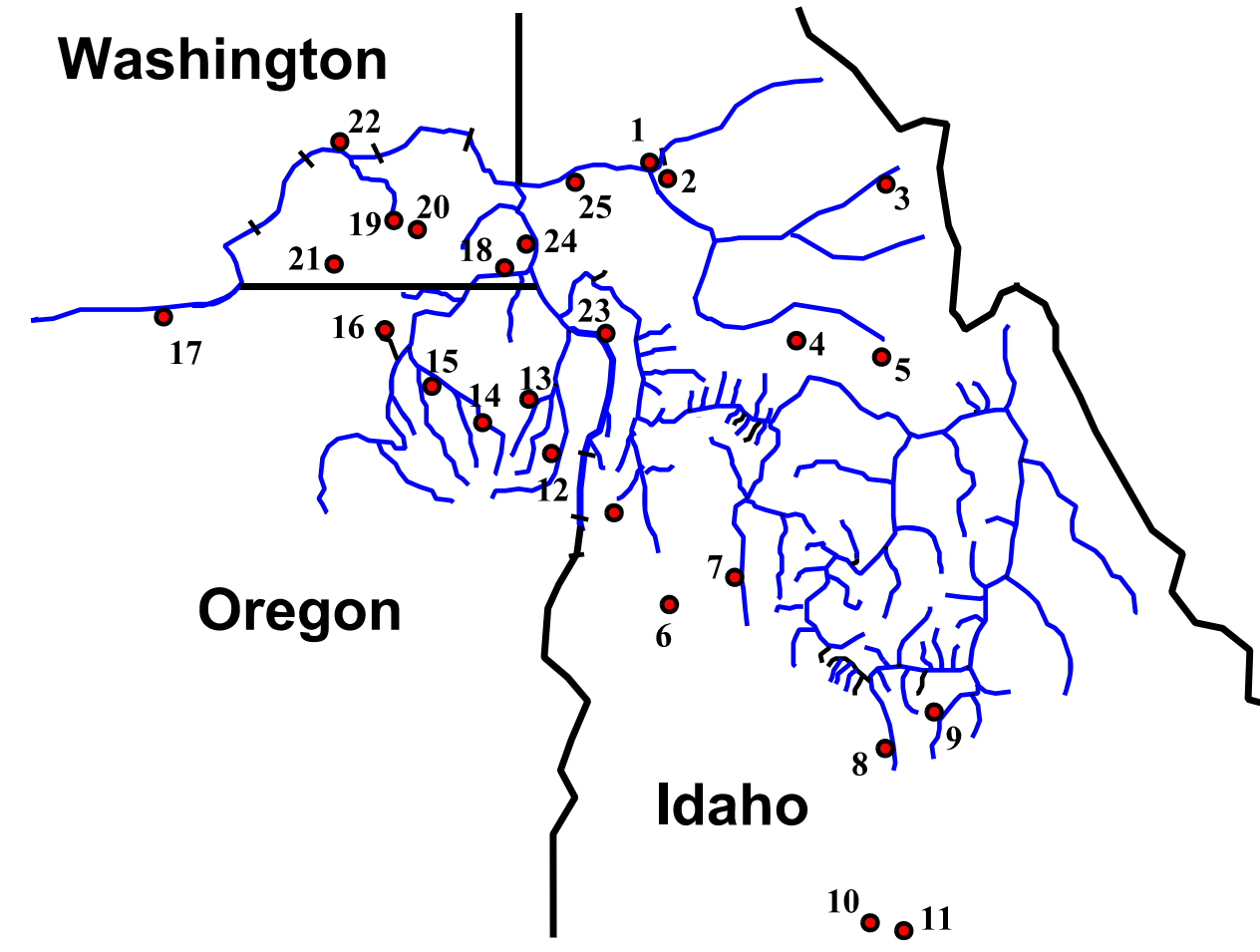
2. *US vs Oregon* Columbia River Fish Management Plan renegotiations
 - USFWS technical representative in renegotiations for development of a new Columbia River Fish Management Plan and interim fishery and production agreements.

3. Chinook Technical Oversight Committee (Captive Broodstock Programs).
4. Conservation Aquaculture Workshop.
5. Fall Chinook Planning (umbrella management plan for Snake River fall Chinook salmon).
6. Safety Net Artificial Production Program (SNAPP).
 - Participated with cooperators to develop SNAPP identified in the FCRPS bi-op.
7. Joint Management Committee (BPA direct funding agreement).
 - Implementation of Performance Indicator Plan for LSRCP hatcheries.
 - Regular coordination meetings per our direct funding agreement.
 - Development of Performance Indicator Plan for LSRCP M&E programs.
8. Salmon and Steelhead Days (Boise)
 - Assisted in the develop and implementation of this educational program for local elementary students.
9. Initiated Adopt-A-Highway program for LSRCP and ES Offices.
10. Mid-Snake River Waste Load Allocation Process.
11. Environmental Compliance and Safety Reviews for LSRCP hatcheries.
12. Northeast Oregon Hatchery planning process.
 - NEOH core planning team member
13. Johnson Creek Artificial Production Program planning process.
 - JCAPE planning team member.
14. Dworshak NFH Coordination and Hatchery Evaluation Team (HET) Meetings.
15. Hagerman NFH Coordination Meetings and Hatchery Evaluation Team (HET) Meetings.
16. Individual coordination meetings with States and Tribes.
17. Hazzard Analysis and Critical Control Points (HACCP) training for aquatic invasive species.

APPENDIX A: Lower Snake River Compensation Plan FY2002 Funding Summary

	<u>FUNDING</u>
<u>Fish Hatchery Operations and Maintenance</u>	
IDFG - McCall FH and South Fork Salmon River Satellite	\$ 466,005
IDFG - Sawtooth FH and East Fork Salmon River Satellite	\$ 732,311
IDFG - Magic Valley FH	\$ 650,007
IDFG - Clearwater FH, Red R., Crooked R. and Powell Satellites	\$1,613,760
IDFG - Fish Marking	\$ 393,616
IDFG - Eagle Fish Health Lab	\$ 401,295
ODFW - Lookingglass FH, Oxbow FH, and Imnaha Satellite	\$1,090,500
ODFW - Irrigon FH	\$1,033,550
ODFW - Wallowa FH, Little Sheep and Big Canyon Satellites	\$ 407,174
ODFW - Fish Distribution	\$ 226,271
ODFW - Fish Pathology Lab	\$ 126,117
WDFW - Lyons Ferry FH, Dayton Pond and Cottonwood Satellite	\$2,327,579
WDFW - Tucannon FH and Curl Lake Satellite	\$ 328,683
USFWS - Hagerman NFH	\$ 861,523
USFWS - Dworshak NFH	\$ 409,978
USFWS - Idaho Fish Health Center	\$ 115,933
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Subtotal	\$11,184,302
<u>Monitoring and Evaluations Programs:</u>	
Idaho Department of Fish and Game	\$ 740,256
Oregon Department of Fish and Wildlife	\$ 600,983
Washington Department of Fish and Wildlife	\$ 664,813
Confederated Tribes of the Umatilla Indian Reservation	\$ 228,437
Nez Perce Tribe	\$ 538,924
Shoshone-Bannock Tribe	\$ 51,352
U.S. Fish and Wildlife Service (IFRO)	\$ 176,126
Columbia River Coordination/Abernathy SCTC	\$ 130,000
PIT Tags	\$ 121,050
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Subtotal	\$3,251,941
<u>Management, Regional Administration, and Cooperative Programs:</u>	
LSRCP Office Management and Coordination	\$ 421,849
Regional Office Coordination	\$ 469,831
General Administrative (Indirect Costs)	\$ 686,810
<hr/>	
Subtotal	\$1,578,490
Grand Total	\$16,014,733

APPENDIX B: LOWER SNAKE RIVER COMPENSATION FACILITIES MAP



Idaho Department of Fish and Game

- 1. Clearwater Fish Hatchery (FH)
- 3. Powell Satellite Facility (SF)
- 4. Crooked River SF
- 5. Red River SF
- 6. McCall FH
- 7. South Fork Salmon River SF
- 8. Sawtooth FH
- 9. East Fork SF
- 11. Magic Valley FH

Nez Perce Tribe

- 23. Pittsburg Landing SF
- 24. Captain Johns SF
- 25. Big Canyon SF

Oregon Department of Fish and Wildlife

- 12. Imnaha SF
- 13. Little Sheep Creek SF
- 14. Wallowa FH SF
- 15. Big Canyon SF
- 16. Lookingglass FH
- 17. Irrigon FH

Washington Department of Fish and Wildlife

- 18. Cottonwood Creek SF
- 19. Tucannon FH SF
- 20. Curl Lake SF
- 21. Dayton Pond SF
- 22. Lyons Ferry FH (salmon and trout)

Fish and Wildlife Service

- 2. Dworshak NFH Expansion
- 10. Hagerman NFH