

Annual Report

Fiscal Year 1994

Lower Snake River Compensation Plan Office

Boise, Idaho

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TABLE OF CONTENTS

	PAGE
I. INTRODUCTION	1
II. PROGRAM HIGHLIGHTS FOR FY1994	2
III. STATION AND COOPERATOR OPERATIONS	3
Clearwater Anadromous FH - Idaho	3
Magic Valley FH - Idaho	4
McCall FH - Idaho	5
Sawtooth FH - Idaho	5
Irrigon/Wallowa FH - Oregon	6
Lookingglass FH - Oregon	7
Lyons Ferry/Tucannon FH - Washington	7
Dworshak NFH Expansion	9
Hagerman NFH	9
IV. LSRCP OFFICE OPERATIONS	10
V. EVALUATION STUDIES	11
Idaho Department of Fish and Game	11
Oregon Department of Fish and Wildlife	13
Washington Department of Fish and Wildlife Salmon Study	14
Washington Department of Fish and Wildlife Trout Study	15
Tribal - Nez Perce and Umatilla	16
VI. FWS COOPERATIVE PROGRAMS	17
VII. OTHER COOPERATIVE PROGRAMS	17
VIII. CORPS CONSTRUCTION ACTIVITIES	18
IX. STAFFING	18
X. FUTURE OUTLOOK	19
XI. MEETING ATTENDED IN FY1994	20
XII. TRAINING	24
XIII. AVAILABLE REPORTS	25

LIST OF TABLES AND FIGURES

	PAGE
TABLE 1 LOWER SNAKE RIVER COMPENSATION PLAN ACTIVITIES FOR 1994	42
TABLE 2 PERTINENT DATA FOR LOWER SNAKE RIVER FISH AND WILDLIFE COMPENSATION PLAN FISH HATCHERY FACILITIES	43
TABLE 3 HATCHERY OR TRAP RACK RETURNS TO LSRCP HATCHERIES OPERATING IN 1994	44
OPERATIONS/MAINTENANCE COST DATA	46
PUBLIC RELATIONS	49
REPORT OF STATION PERSONNEL	50
FIGURE 1	45

I. INTRODUCTION

The Lower Snake River Compensation Plan Office was established with the closing of the Boise Area Office in September, 1982. The Office's primary responsibility is to administer U.S. Fish and Wildlife Service (FWS) operations and maintenance funds (O&M) for cooperator fisheries operations under the Lower Snake River Fish and Wildlife Compensation Plan (LSRCP).

The LSRCP was authorized by the Water Resources Development Act of 1976 (90 Stat. 2917) to replace fish and wildlife losses caused by 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 Washington and Idaho. The plan described fish hatchery developments as well as improvements to the dams and powerplants to improve smolt passage. Construction responsibility for the LSRCP was assigned to the Walla District, U.S. Army Corps of Engineers (Corps), while responsibility for fish hatchery O&M funding was to be accomplished by "one of the Federal fisheries agencies." The question of O&M funding was settled in 1977 with the signing of an interagency agreement by the Corps, National Marine Fisheries Service (NMFS), and FWS; it stated that the FWS would budget for and administer O&M funds for LSRCP fish hatchery programs (responsibility for administration and O&M for fish passage and wildlife programs remains with the Corps).

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 NMFS/FWS agreement on Page 2, Section 4.d with a directive which 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 is currently conveying operational responsibility for constructed fish facilities to the FWS by Memoranda of Understanding for each facility (usually 5-year agreements). Consistent with the desires of the Administration and Congress, the Corps is also transferring fee title of LSRCP hatcheries and associated satellite facilities to the FWS as they are completed and fully operational. Ownership of several hatcheries and satellites has already been transferred to the FWS.

The Corps' estimated cost for construction of the authorized LSRCP off-project fisheries facilities (hatcheries and related satellite facilities) is \$177 million; the FWS costs for annual O&M now exceeds \$11 million. All anadromous fisheries compensation and most resident fisheries compensation are allocated to project power costs and are reimbursed to the U.S. Treasury with interest by the Bonneville Power Administration (BPA) from power revenues.

The LSRCP legislation authorized what was believed to be sufficient anadromous fish hatcheries and associated trapping and holding facilities to produce enough smolts to return 18,300 fall chinook adults, 58,700 spring and summer

chinook adults, and 55,100 steelhead adults back to the project area, and 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 program required expansion or construction of 12 hatcheries and 11 satellite facilities in Idaho, Oregon, and Washington. Idaho Department of Fish and Game (IDFG) operates four hatcheries, Oregon Department of Fish and Wildlife (ODFW) operates three hatcheries, Washington Department of Fish and Wildlife (WDFW), formerly Washington Department of Wildlife (WDW) and Washington Department of Fisheries (WDF) operate three hatcheries, and FWS two hatcheries.

II. PROGRAM HIGHLIGHTS FOR FY1994

The 1993-94 steelhead run above Lower Granite Dam was 59,604, substantially less than the two previous years total of 97,000 and 121,000 respectively. Although the run was substantially lower than previous years it was comprised mostly of hatchery releases in 1990, 1991 and 1992 and the LSRCP portion comes close to meeting our adult steelhead mitigation goal of 55,100 steelhead adults back to the project area. In 1990 approximately 6.3 million steelhead were released from LSRCP hatcheries followed by releases of 6.5 million from these facilities in 1991, 1992 and 1993. In keeping with the success of the LSRCP steelhead production program Magic Valley Fish Hatchery (FH) alone released 1,919,250 steelhead smolts this year weighing 405,450 pounds.

The Clearwater FH, the last facility to be constructed under the LSRCP was completed in December 1991. This facility completed its second full year of production in FY1993 and is now in its third full year. This year Clearwater FH released approximately 2,322,269 salmon and steelhead in the Clearwater and Selway rivers and through its satellite facilities at Powell, Red River and Crooked River, more than 4 times last years production.

LSRCP facilities continue to produce and release large numbers of salmon, steelhead and resident trout as part of their mitigation responsibility. In FY1994, 13,471,540 salmon, steelhead and rainbow trout weighing over 1.8 million pounds were released from LSRCP facilities. The numbers and pounds of fish produced were higher than FY1993 but release sites and sizes were adjusted to reduce impacts on listed species.

Once again the majority of the LSRCP staff time in FY1994 was spent on Endangered Species Act (ESA) Section 7 and Section 10. Consultation and preparation of biological assessments on hatchery production and release effects on listed Snake River spring/summer and fall chinook. Fish hatchery production was and will continued to be adjusted where appropriate to meet ESA requirements.

The LSRCP video completed last year by FWS in cooperation with the National Fish and Wildlife Foundation has been widely circulated during the past year. Over 250 copies were distributed to FWS Offices and to all LSRCP Cooperators. In addition, the Service entered into a partnership with Albertson Food Stores in the northwest and the video is now available through their video departments. The video was also shown on Idaho Public Television transmitting

to Idaho and parts of Oregon and Washington. Large numbers of copies have been loaned to environmental groups and civic organizations after being advertised nationally through USA Today.

The LSRCP Offices also completed two full color brochures, one for Lyons Ferry FH and the other for Magic Valley FH. The Corps printed 50,000 copies of each brochure this year. The contracts have been awarded for preparation of the camera ready art work for the last two facilities, Lookingglass and Clearwater FHs. The Corps has agreed to print 50,000 full color brochures for each of the last two facilities.

Members of the LSRCP staff have actively participated in the region's VISIONING process as either leaders or members of several of the visioning work teams. Their efforts have resulted in the production of visioning documents, directed at various aspects of R-1 programs.

III. STATION AND COOPERATOR OPERATIONS

The Boise LSRCP Office negotiated cooperative agreements with and administered funds to four state agencies, two Indian tribes and the FWS for operation and maintenance of fish hatcheries and to conduct hatchery monitoring and evaluation studies and fish health programs. A total of \$9,126,809 was obligated to WDFW, ODFW, and IDFG or transferred to Dworshak NFH, Hagerman NFH, and Dworshak Fish Health Center (DFHC) for operation and maintenance and fish health monitoring of 12 hatcheries and 11 associated satellite facilities. An additional \$2,478,792 was obligated to the same three state cooperators, Nez Perce and Umatilla tribes, Idaho Fisheries Resource Office (IFRO), and the Columbia River Coordinators Office for hatchery monitoring and evaluation studies and Section 7 consultation work. A total of 13,471,540 salmon, steelhead and rainbow trout weighing 1,808,991 pounds were stocked from LSRCP facilities in FY1993. BPA funded a disease monitoring program at all Columbia and Snake river hatcheries until FY1991. This responsibility for all LSRCP facilities was taken over by our office in 1991 and has continued since that time. LSRCP pathologists met this year with the evaluation biologists during their semi annual meeting to discuss the status of their efforts.

Below are brief summaries of hatchery and evaluation activities in FY1994. Tables 1, 2, and 3 provide further data on funds obligated, fish stocked, production targets, construction costs, and hatchery/trap returns.

Clearwater Anadromous Fish Hatchery - Idaho

Clearwater Fish Hatchery was the last of the 12 hatcheries to be completed under the Corps' LSRCP construction program. The hatchery is operated by the IDFG and has been built across the North Fork of the Clearwater River from Dworshak NFH. It is designed to produce (with its three satellites) 1,369,500 spring chinook smolts weighing 91,300 pounds and 2,500,000 steelhead smolts weighing 350,000 pounds. The spring chinook adult return goal for the program is 11,915 salmon and the steelhead return goal is 14,000 adult returns to the Snake River basin.

The Clearwater FH is located on land (17.5 acres) purchased by the Corps in 1989. Construction of Clearwater FH began in August 1989 and was completed by the end of 1991. The water supply line was tested in November 1991, and steelhead eggs from Dworshak NFH and rainbow trout for resident fisheries program were supplied to Clearwater in 1992 for the first rearing cycle.

The Clearwater FH receives its entire water supply from Dworshak Reservoir via two pipes. The primary (and largest) line takes water from just below the reservoir's surface while a secondary (smaller) line receives cold water from an intake deep below the water surface. A distribution tank near the hatchery allows mixing of the water from the two lines to select proper temperatures for various uses at Clearwater FH and also provides a water supply line to Dworshak NFH.

Three satellite ~~fish~~-facilities are associated with the hatchery: Red River, which was completed in November 1986; Powell, completed in the summer of 1989 and Crooked River, completed in the spring of 1990. Red River, Crooked River and Powell are now being operated as rearing, release, and trapping facilities using excess fish from either Sawtooth FH or, more recently, Dworshak NFH.

Red River trapped 31 adult spring chinook this year, only approximately 22% of the 138 adults collected last year. Fifteen of these adults were released to spawn naturally. A total of 85 adults were trapped at Powell; and all adults captured were spawned. Crooked River was operational for the fifth year of trapping; a total of 25 adults and one jack were trapped and 12 fish were released to spawn naturally. The Crooked River return was only 6% of the 395 adults and 8 jacks trapped last year. The Clearwater FH is now holding a total of approximately 1,300,000 BY1993 and 1994 salmon and steelhead fingerlings for 1995 production and release from the hatchery and satellite facilities. In addition approximately 323,504 spring chinook eggs were on hand at the end of FY1994.

A total of 277,738 BY1992 and 311,690 BY1993 chinook smolts were released in the spring and fall from the Powell pond in April and October 1993, 273,766 BY1992 and 415,535 BY1993 spring chinook smolts were released from Crooked River pond, and 320,755 BY1993 smolts were released from Red River. In addition 651,375 "B" strain steelhead were released directly into the North Fork of the Clearwater and ~~BY1993~~ and 71,566 BY1993 steelhead were released into the Selway.

Magic Valley Fish Hatchery - Idaho

Magic Valley FH is located on the Snake River near Filer, Idaho, and is operated by IDFG. It was completed in August 1987 and is designed to produce 2,000,000 steelhead smolts weighing 291,500 pounds annually. The return goal for Magic Valley FH is 11,660 adults back to the Snake River basin.

The hatchery was constructed on a commercial hatchery site that was purchased by the Corps in March 1981. Steelhead have been produced for the Magic Valley program since 1982. Until 1985, fish were produced onsite in a commercial facility; however, with the start of construction, fish production was transferred to unused raceways at Hagerman NFH (approximately 255,000

steelhead smolts were reared at Hagerman in 1986 for the Magic Valley program). Sawtooth FH and the East Fork Salmon River satellite serve as the juvenile release and adult trapping sites for the hatchery program. Magic Valley FH completed its seventh rearing season this year, and released approximately 1,919,250 steelhead smolts in March and April 1994, weighing 405,450 pounds. The releases were distributed between the East Fork of the Salmon, Slate Creek, Hazard Creek, Pahsimeroi River, Warm Springs Creek and the Little Salmon River.

McCall Fish Hatchery - Idaho

Operated by IDFG, McCall FH was completed in 1981 and is located along the North Fork Payette River near McCall, Idaho. The program's adult trapping facility and the smolt release site are located on the South Fork of the Salmon River near Warm Lake (salmon do not have access to the Payette River system). 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. McCall FH also has a concurrent federally-approved trout production program which is funded entirely by the IDFG.

The hatchery has achieved considerable success with its summer chinook program, trapping 2,690 adults in 1986, 2,705 in 1987, and 2,393 in 1988. Typical of the lower chinook runs throughout the basin, McCall's returns decreased in 1989 and 1990 when 939 (444 adults and 495 jacks) and 969 fish (941 adults and 28 jacks) were trapped. In 1991, 1,212 fish (391 adults and 821 jacks), 2,848 (2,645 adults, 203 jacks) in 1992, and 2,703 fish (2,675 adults, 28 jacks) in 1993 were trapped. This year 447 adults and 70 jacks were trapped. This year's egg take 689,203 will not be sufficient to produce the desired smolts for release in 1995. Because of ESA considerations 205 adults were released to spawn naturally in 1994. The numbers of summer chinook returns had been increasing each year except this year and coastwide returns were substantially lower in 1994. In 1994 a total of only 795 summer chinook were counted over Lower Granite Dam which is only 15% of the 10 year average.

The McCall FH staff released 1,060,163, BY1992 summer chinook salmon smolts weighing 40,665 pounds in the South Fork Salmon River in March 1994; and 96,162 BY1993 fry weighing 893 lbs which is above the hatchery's release target of 1,000,000 smolts. The fish were in good health throughout the rearing cycle and mortalities were low.

Sawtooth Fish Hatchery - Idaho

Sawtooth FH, located on the upper Salmon River near Stanley, was completed in January 1985 and is operated by IDFG. In addition to its primary mission of rearing 2,235,000 spring chinook salmon smolts weighing 149,000 pounds and trapping steelhead ("A" strain) for Hagerman NFH and Magic Valley FH, the staff operates a major satellite facility on the East Fork of the Salmon River. The satellite traps adult spring chinook for Sawtooth FH and steelhead ("B" strain) for Hagerman and Magic Valley and also serves as a direct stream

release site. The program's goal for returns back to the Snake River basin is 19,455 adults.

The adult steelhead returns to Sawtooth FH in 1994 was about 20% of last years 1,598. Typical of coastwide low returns, only 338 steelhead returned to the Sawtooth trap. Returns for the years 1988, 1989, 1990, 1991 and 1992 were 994, 974, 1,056, 261 and 156 respectively. The East Fork satellite facility trapped only 73 steelhead, compared to 176 in 1993, 156 in 1992, 119 in 1991, and 454 in 1990.

Spring chinook trapping and spawning began in June and ended in September with a total of 96 chinook trapped this year compared to 587 trapped in 1993 in 1992 and 566 trapped in 1991. The East Fork trapped 15 spring chinook this year compared to 90 spring chinook in 1993, 65 in 1992, and 62 in 1991. Numbers of chinook trapped at both sites were the lowest on record since trapping began and typical of the low numbers that returned basinwide. The hatchery staff released 83 chinook above the weir as part of ESA Section 10 conditions for operation. All 15 East Fork Salmon River fish were also released. All fish were released in April this year. The releases included 72,300 smolts into head waters of the Salmon River. An additional 141,530 were released into the Salmon River at the hatchery weir. A total of 12,368 smolts were released into the East Fork of the Salmon River ten miles above the weir. In all a total of 226,200 BY1992 chinook were stocked from Sawtooth FH in 1994.

In addition to the LSRCP program, the State cooperates with the Shoshone-Bannock Tribe, BPA, NMFS, and other agencies in a FWS-approved sockeye salmon restoration project at Sawtooth FH. The project is funded by BPA and is an effort to recover the endangered sockeye run. This year a catchable trout holding and distribution program was instituted to stock local waters; that project was funded entirely by IDFG.

Irrigon/Wallowa Hatcheries - Oregon

Irrigon FH located on the Columbia River near Umatilla, Oregon; is operated by the ODFW and was completed in October 1985. Collector wells designed for 25,000 gallons per minute (gpm) supply water for the entire program of 1,677,000 steelhead smolts weighing 279,600 pounds. Irrigon FH's return goal is 11,200 adults back to the Snake River basin.

An expansion of ODFW's Wallowa State Hatchery was completed in May 1985; it serves as a final rearing, acclimation, and release site for about 600,000 steelhead smolts from Irrigon FH and has facilities for steelhead trapping and spawning. In 1994 a total of 599 steelhead returned to the Wallowa FH compared to 1,353 in 1993, 2,644 in 1992 and 576 in 1991.

Two other advanced rearing and trapping sites, which are satellites of the Irrigon FH, were operational in 1992. Big Canyon satellite is located at the mouth of Big Canyon Creek on the Wallowa River. It was completed in April 1987 and is capable of holding and releasing 225,000 smolts. Two hundred and sixteen adult steelhead returned to Big Canyon satellite in 1989, 336 adults

in 1990, 428 in 1991, adults in 1992, and 370 in 1993. Big Canyon trapped 443 adult steelhead this year.

The Little Sheep Creek satellite station in the Imnaha basin is used as an advanced rearing pond and release site for 250,000 steelhead smolts reared at Irrigon FH. The satellite was completed and became operational in August 1987. In 1987, 1988, and 1989, 730, 286, and 322 steelhead returned to the trap respectively. In 1990, returns were high and 959 steelhead were trapped. The run declined in 1991 and 1992 with only 395 and 789 steelhead trapped. In 1993, 1,794, approximately twice the number trapped in 1992, returned to Little Sheep Creek and only 194 adults were trapped this year.

Releases for 1994 of Irrigon-reared fish totaled 1,475,631 steelhead. This included releases from Irrigon's satellites Big Canyon, Little Sheep Creek, Wallowa and Imnaha as well as various direct stream releases throughout the Grande Ronde basin and Snake River.

Lookingglass Fish Hatchery - Oregon

This hatchery is located on Lookingglass Creek north of Elgin, Oregon, and was completed in November 1982. The hatchery is operated by the ODFW and is designed to produce 1.4 million spring chinook smolts weighing 69,600 pounds. Two satellites, Big Canyon Creek (discussed above) and a renovation of Oregon's Imnaha trapping site, which was completed in 1989, are part of the hatchery program. The Snake River basin return goal for the Lookingglass FH program is 9,070 adults.

Adult spring chinook trapping was well below last year with only 163 fish collected at the Imnaha trap (156 adults and 7 jacks) and 370 adults and 7 jacks returning to the Lookingglass trap. This represented approximately 13% of 1993 from the Imnaha and 37% from Lookingglass. No chinook were trapped at Big Canyon Creek facility in 1994. The Lookingglass and Imnaha stock returns were also less than 1992 returns. In 1992 a total of 844 chinook were trapped at Imnaha and 806 at Lookingglass. BY1992 and BY1993 spring chinook releases from Lookingglass FH totaled 1,571,020. Fish were released into the Imnaha, Big Sheep, Lookingglass, Grande Ronde and the Snake River.

Lyons Ferry/Tucannon Fish Hatchery Complex - Washington

Located at the confluence of the Palouse and Snake rivers, the Lyons Ferry facility is two hatcheries in one. Phase I, completed in November 1983, was formally operated by WDW. It is designed to produce 1,169,500 steelhead trout smolts weighing 116,400 pounds and 45,000 pounds of rainbow trout. Its adult return goal to the basin is 4,656.

Phase II of Lyons Ferry facility, completed in November 1984, formally operated by WDF. It is designed to produce 9,162,000 fall chinook smolts weighing 101,800 pounds, and 132,000 spring chinook smolts weighing 8,800 pounds. Lyons Ferry FH's adult salmon return goals are 18,300 fall chinook and 1,148 spring chinook to the basin. This year Washington combined both agencies under a single Washington Department of Fish and Wildlife during a reorganization of the agency.

A renovation of Tucannon State Fish Hatchery was completed in November 1984 to rear an additional 41,000 pounds of rainbow trout for WDW and to serve as an adult trapping and smolt release site for WDF's Tucannon River spring chinook program. The remaining 7,000 pounds of rainbow trout production stipulated in the compensation plan (the total requirement is 93,000 pounds) is to come from stream enhancement structures funded by the Corps. These structures were constructed by WDW in the early 1980's. The WDW personnel operate the Tucannon FH in cooperation with WDF as a satellite of Lyons Ferry Phases I and II.

The hatcheries along with the Phase I (steelhead) satellite facilities at Cottonwood Creek, Dayton Pond, and Curl Lake were completed from 1983 to 1986. Some problems that existed, were addressed this year. The two fall chinook adult holding ponds were found to be unmanageable and were rehabilitated by the Corps in 1993. Both ponds were divided into two units by construction of a dividing wall down the center of each pond. This now provides much more versatility for handling and sorting adults. Additional office space at the Lyons Ferry Steelhead facility was constructed in 1992 by adding 400 square feet onto the administration building. This work was done by the WDW personnel. The road to the Marmes pump site, which was originally constructed with large cobbles was smoothed and graded by hatchery personnel.

Gull use of the large steelhead rearing ponds had increased greatly in recent years. The severity of the depredation problem was determined to be high and the only feasible solution was installation of a bird deterrent system. A wire system was installed last year and has nearly eliminated the bird predation problem.

In 1991, Corps installed a new floating type weir on the Tucannon River at the hatchery site which was an improvement over previous weirs. The new Mitsubishi designed and manufactured weir is a tremendous improvement over past designs and works much better.

Spring chinook returns to the Tucannon trap and weir totaled 73 adults and 0 jacks in 1994, down from the previous year of 448 adults and 0 jacks. The returns included 33 adults of hatchery origin and 40 adults of natural origin. There are currently about 139,000 BY1993 Tucannon River fish on hand for release in 1995. A total of 48,000 Tucannon River spring chinook were proposed for release in the spring in the upper Tucannon River in 1995.

This year adult fall chinook were trapped at the Lyons Ferry FH and at Lower Granite and transported to Lyons Ferry FH for holding and spawning. A total of 972 adult fall chinook voluntarily entered the hatchery compared to a total of 1,332 last year. An additional 327 adults were captured at Lower Granite Dam. A total of 2.1 million eggs were collected from 1,044 fish (adults and jacks) spawned in FY1994. A considerable effort was necessary during spawning to ensure that only Snake River fall chinook adults were used for broodstock. All coded wire tags were read before spawning to ensure that the Snake River genetic stock is maintained. Strays from programs outside the basin were inadvertently used prior to 1990. The new concerted effort to spawn only Snake River stocks with each other is of particular importance because the fall chinook are listed as endangered under the ESA.

Because of the potential for large numbers of stray steelhead that return to the Lyons Ferry ladder in the fall (when it remains open for fall chinook returns) all trapped steelhead are checked for Lyons Ferry brands. In FY1994, 4,009 steelhead returned to the hatchery. There are currently over 567,000 BY1994 Lyons Ferry stock and over 297,000 Wallowa stock steelhead on hand for release in 1995.

Releases from Lyons Ferry FH were below the goals for fall/spring chinook and steelhead. The fall chinook release totaled 602,924 smolts (all at Lyons Ferry FH). A total of 83,409 spring chinook were released into the Tucannon River as smolts and a total of 57,316 (BY1993) presmolts were released at 23 sites in the upper Tucannon River in October 1993.

About 932,243 steelhead smolts weighing 224,156 lbs were released from Lyons Ferry FH, hauled to the three satellite ponds, or trucked directly to streams. Tucannon FH released 10,179 natural origin BY1993 (Tucannon River stock) steelhead smolts into the Tucannon River. Lyons Ferry and Tucannon FH's combined, reared and released 408,106 catchable (8 to 9 inch) and sublegal rainbow trout for Washington lakes and streams and the Idaho Program weighing 110,515 pounds.

Dworshak National Fish Hatchery Expansion - Idaho

Dworshak NFH is located at the confluence of the North Fork and Clearwater rivers. An expansion of the existing Dworshak NFH steelhead facility for LSRCF spring chinook production was completed by the Corps in November 1982. The FWS facility is designed to produce 1,400,000 spring chinook smolts weighing 70,000 pounds. The adult return goal for Dworshak is 9,135 spring chinook to the Snake River basin. Starting in 1986 twelve raceways formerly used to rear resident trout were converted to rearing spring chinook. This increased Dworshak's chinook rearing potential by about 20,000 pounds, for a total of 90,000 pounds. This additional rearing effort will now be shifted to the Clearwater FH in FY1992.

Spring chinook runs in the Clearwater River in 1994 totaled 305 (301 adults, 4 jacks) returning to the Dworshak/Kooskia Complex compared to 815 adults in 1993, 3,675 in 1992, 632 fish in 1991, but still down substantially from the 3,183 trapped in 1990. The Dworshak Program currently has over 1.3 million BY1993 spring chinook on hand for the Program. This includes BY1992 Rapid River stock.

In April 1994, Dworshak NFH personnel released approximately 1,278,273 BY1992 chinook smolts into the North Fork and main stem Clearwater River directly from the NFH. Dworshak also provided 24,414 spring chinook smolt weighing 1,431 pounds to the NMFS for fish passage experiments.

Hagerman National Fish Hatchery - Idaho

Hagerman NFH, located on a 59°F spring water supply from the Snake River aquifer east of Hagerman, Idaho, was expanded by the Corps 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 LSRCP. The expansion was completed in April 1984 and the hatchery, is operated by the FWS. Hagerman NFH has a goal of returning 13,600 adult steelhead to the Snake River basin.

Hagerman NFH received a total of 2,019,173 BY1993 steelhead "A" eggs from Sawtooth and Pahsimeroi FH's this year. No Dworshak or East Fork "B" eggs were received this year. Overall survival from egg to smolt was 92%.

In April 1993 Hagerman NFH released nearly 1.5 million BY1993 steelhead smolts weighing 329,538 pounds into various streams in the Salmon River basin. Fish health for the entire history of steelhead production for BY1993 was excellent.

IV. LSRCP OFFICE OPERATIONS

A total of \$12,679,955 was obligated for LSRCP programs in FY1994 (\$934,955 from carry-over monies). This total included \$2,425,692 for cooperator monitoring and evaluation studies and ESA requirements, \$390,000 for Boise LSRCP Office management and coordination, \$103,000 for Youth Conservation Corps (YCC) (salaries and benefits), \$634,454 for the Regional Office, \$69,000 for marking hatchery releases for endangered species, and \$9,057,809 for hatchery operations and maintenance. Ten cooperative agreements were signed for FY1994 to distribute \$10,233,501 in evaluation and operation and maintenance funding to non-federal entities.

In FY1994 the LSRCP program continued to sponsor a YCC program at a cost of \$103,000. The program was conducted on 17 state and federal LSRCP hatcheries and evaluation study projects and included 52 YCC student enrollees and team leaders. Once again the program was well received by the cooperating agencies, it not only accomplished necessary station work but also provided and environmental awareness experience and job training for local youths.

The 30 minute LSRCP video "To Restore a Legacy - the Struggle for the Snake River's Salmon and Steelhead Trout" which was completed last year has received a great deal of attention throughout the Country. The video, produced by award winning cinematographer Stefan Dobert and narrated by movie and TV personality Robert Wagner, received excellent reviews. Copies of the video are now in every Albertson's food store video department in the Northwest and it has been shown many times on public television across the Country. All of our cooperators have copies and are showing it throughout their respective areas. We've sent copies to all Northwest congressmen, private conservation groups, the Governors of Washington, Oregon and Idaho and the Director of the FWS and Secretary of Interior. It has been advertised in National magazines and USA Today and we have received over 100 requests for copies from conservation groups, National companies and Universities and individuals throughout the Country. The LSRCP office has shown the video to large professional organizations on several occasions. Over 250 copies have been distributed to date.

The LSRCP office also completed the Magic Valley and Lyons Ferry brochures and the Corps, Walla Walla District in Cooperation with our office printed 50,000

full color copies of each brochure. Contracts for the last two brochures Clearwater and Lookingglass fish hatcheries have been awarded and we expect that the Corps will have copies printed in FY1995. These brochures have also received wide recognition and are made available to the general public and a wide ranging audience throughout the Northwest.

V. EVALUATION STUDIES

In 1994 all five operating agencies and two Indian Tribes had fully operational evaluation studies underway. By the end of the fiscal year, a total of \$2,332,592 had been obligated for studies being carried out by the IDFG, ODFW, WDFW, FWS Idaho Fishery Resource Office (IFRO), and the Nez Perce and Umatilla Tribes. Below is an overview of the FY1994 evaluation program followed by a synopsis of state and tribal evaluation programs. The IFRO evaluation program is discussed in the next section, **FWS Cooperative Programs**. Results of LSRCP-funded evaluation studies are available in our cooperator's annual reports; a listing of reports is found in Section XIII of this document.

Evaluation Study Committee (ESC) meetings were initiated in 1985 and continued through 1994. The eight-member ESC consists of the LSRCP evaluation studies coordinator and a single representative from each operating agency and cooperating Indian Tribe. The ESC meetings often include additional staff members from each agency/tribe and occasionally visiting experts. Only one fully-attended ESC meeting was held in FY1994 although there were several partial committee meetings to discuss specific topics, such as ESA, and study proposals. The annual meeting was primarily an update all members on ongoing LSRCP-funded studies.

The cooperating LSRCP evaluation biologists dedicated a large amount of effort in 1994 to assist the LSRCP office in meeting ESA responsibilities. They worked with our office in writing our 1994-1998 LSRCP Programmatic Biological Assessment and developed applications and modifications for scientific and enhancement permits under Section 10 of the ESA. Most LSRCP (direct take) scientific and enhancement programs were issued five-year permits in 1994.

In spite of our efforts to complete a five-year assessment, NMFS issued a biological opinion only on our proposed actions for the 1994 releases and broodstock collections. By August 1, 1994, we and our cooperators had completed an assessment for the next five-year period (from 1995-1999). We will continue to work with NMFS to assess our activities for 1995 and beyond and to help them develop a recovery plan.

IDFG's Evaluation Program

IDFG conducted their investigations under a single study in 1994, the **LSRCP Fish Hatchery Evaluations-Idaho**, which combines three projects--*Hatchery Evaluations*, *Hatchery-Wild Composition of the Idaho Steelhead Harvest*, and *Coded-Wire Tag Analyses*. Idaho's first LSRCP studies were initiated in 1982 and are being conducted to 1) ensure that accurate and adequate monitoring of hatchery practices occurs so the most cost effective mode of operation for

each hatchery is implemented, and 2) assess the LSRCP contribution to fisheries and escapement. The *Hatchery Evaluations* studies include monitoring and evaluation of hatchery rearing; size, time, and location of releases; and adult returns. These types of studies are long-term because constant monitoring is required to identify problems before they result in catastrophic fish losses and to determine which hatchery rearing and release practices will result in the best adult returns.

Several evaluation studies initiated in previous years to address specific hatchery problems and needs were continued in 1994. Production groups of salmon from all LSRCP programs were PIT-tagged to determine migration timing and interrogation rates at Snake and Columbia River dams. IDFG continued to collect scales from known chinook hatchery adults (i.e. those tagged as juveniles) and wild fish and provide them to ODFW biologists who are developing scale pattern models which may eventually be used to identify hatchery fish for broodstock and other management purposes. Survival determinations of high, medium, and low density chinook rearing conditions continued as adults returned from 1991 and 1992 releases. To assess effects of handling and CWTing, BY1988 through BY1990 summer chinook in one pond at McCall FH were marked with TM-100 for comparison to ad-clipped/CWTed fish in the adjacent pond. The study continued this year as adults returned and bone samples were taken and analyzed for T-100 marks.

IDFG evaluations and hatchery personnel continued natural rearing experimentation of chinook at Sawtooth and Clearwater FH's initiated in 1993. They will rely on CWT's and PIT's of BY1992-BY1994 releases to assess effects of various raceway alterations and other rearing conditions on juvenile and adult survival. IDFG continued a time of release study of South Fork Salmon River summer chinook salmon (reared at McCall FH) in 1994 to help identify the optimum time of release into the South Fork.

Steelhead size at release experiments designed to identify the optimum size with the greatest survival and lowest residualism continued as adults returned from 1991 and 1992 releases into the Salmon River (reared at Hagerman NFH). Steelhead acclimation studies were continued at Sawtooth FH (with Hagerman-reared fish); acclimated (21 days) and control groups were CWT and PIT tagged to determine juvenile interrogation and adult survival rates.

In late 1984 Idaho began an angler survey to assess the LSRCP contribution to Idaho's steelhead fishery, estimate the total escapement of LSRCP fish, recover information on marked fish, and obtain data for managing the fishery while protecting wild stocks. This survey is the major means of recovering adult steelhead tagged as fingerlings under other evaluation studies. These efforts were funded through 1994 and will be continued annually (at some level) until compensation goals have been met, and periodically thereafter.

The process of reading tags and analyzing marks was first funded in 1992 as part of the evaluation study, whereas actual marking costs remain a part of each hatchery's budget. In 1994 several thousand tags (many recovered under the Harvest Study described above) from several state and tribal LSRCP programs were removed from fish and decoded at IDFG's Lewiston lab.

ODFW's Evaluation Study Program

ODFW conducts nearly all of their evaluations under one study, *An Evaluation of the LSRCP Program in Oregon*. The ODFW began a few evaluations under this study in 1983 but full-scale studies did not begin until FY1984. Their evaluation program currently encompasses monitoring and evaluating hatchery practices; implementing size, time, and location of release studies; marking activities (CWTing, branding); assisting with disease monitoring efforts; determining the LSRCP contribution to Oregon's steelhead fishery (while recovering tagged fish); and determining the success of maintaining the genetic integrity of native wild stocks potentially effected by the LSRCP program. In addition to being the evaluation studies coordinator, the principal LSRCP investigator in Oregon also coordinates the broodstock selection, egg-taking programs, and outplanting program for all of Oregon's LSRCP program, currently the only anadromous hatchery program in NE Oregon.

ODFW conducted a fourth year of acclimated versus direct stream releases of steelhead at Little Sheep and Big Canyon Creeks. Similar studies at Wallowa FH were completed with the release of smolts in 1991. Adult returns from releases at all three locations are being compiled and assessed as the studies continue. Size at release studies of steelhead released from Wallowa FH are in the final stages of data collection. The last juveniles were released for those experiments in 1991.

Chinook acclimation versus direct stream release studies, initiated at Imnaha facility with BY1990 progeny releases, continued with releases of BY1992 juveniles in 1994. Data from the first adult returns of BY1990 releases were collected and will be analyzed. Spring chinook size at release (25 vs 15 fpp) experiments initiated with BY1988 continued in 1994 with smolt releases into the Imnaha River. The last size experiment releases from Lookingglass FH (Rapid R. stock) occurred in 1992. Outmigration timing and survival and adult return rates of past releases are currently being compiled and evaluated for both Imnaha and Rapid River stocks. A density experiment using Rapid River stock chinook reared at 50 percent of normal densities was continued with BY1992 juveniles at Lookingglass FH.

In 1990 a study was initiated to develop a discriminate function model based on scale growth patterns to allow identification of hatchery and wild-origin adult salmon at Lower Granite Dam and points above (e.g. hatchery racks, spawning grounds). This effort was continued in FY1994 and incorporated Idaho's scale collection effort (as noted above).

Two new evaluation projects were initiated by ODFW in 1992 and continued in 1994. The first was to develop a Snake River chinook life-cycle model to evaluate combinations of downstream migration, upstream migration, harvest, and production management measures with respect to rebuilding depressed runs. The study will take about three years to complete and will provide a means to analyze various recovery proposals for listed Snake River stocks.

ODFW's continued with its third year of study to identify the characteristics and interactions of residual steelhead with natural chinook in N.E. Oregon.

ODFW's 1994 objectives were to 1) monitor the relative abundance of juvenile residual steelhead, 2) continue to evaluate predation by hatchery-reared steelhead on juvenile spring chinook, 3) describe characteristics of steelhead which residualize, and 4) develop a strategy to implement new steelhead management plans.

WDFW's Salmon Evaluation Study Program

The WDF field evaluation program was initiated in 1985 when a principal investigator was hired and stationed in Dayton, Washington. Their 1994 studies combine fall and spring chinook under one multiple-objective study including 1) monitoring and evaluation of hatchery practices, juvenile outputs, adult returns, and contribution to fisheries; 2) time, size, and location of release studies; and 3) evaluation of impacts of hatchery releases on wild chinook stocks. 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.

As has been true for the last several years, major efforts were taken in 1994 by evaluation and hatchery staffs to identify the origin of fall chinook broodstock captured at Ice Harbor and Lower Granite Dams and returning to the Lyons Ferry ladder. WDF is trying to ensure that future broodstocks contain no non-endemic fish as has happened in some past years. All Lyons Ferry FH fall chinook releases are being marked so Lyons Ferry origin adults can be identified in future returns.

All BY1994 Tucannon River spring chinook returning to the weir were collected and spawned in the hatchery and used to conduct a controlled mating study. WDF is attempting to determine if there are measurable genetic or survival differences between progeny of hatchery x hatchery and natural x natural single pair matings. As in previous years, these crosses will be compared through the hatchery rearing period and uniquely marked to determine adult return rates.

A major activity initiated in 1989 and completed in 1993 involved radio tagging and tracking wild and hatchery adult spring chinook above the Tucannon FH weir to determine movement; spawning time; and location, survival, and spawning success. Radio tracking efforts in 1994 were limited to tracking (in the Tucannon River) fish tagged at John Day Dam as part of a University of Idaho study.

A study was initiated in 1993 to evaluate the effectiveness of outplanting spring chinook adults and presmolts to increase spawner density in the upper Tucannon River. As stated above, all adults were collected at the Tucannon River weir and retained for hatchery spawning and rearing; therefore, none were outplanted. Juvenile "scatter plant" releases occurred in October 1993 after some delays associated with the Section 10 permit process. Juvenile and adult survival of fall subyearling releases will be compared to spring yearling releases.

Other studies initiated in previous years and continued in 1994 included documenting juvenile rearing and releases, determining smolt outmigration timing and relative survival from Tucannon and Lyons Ferry FH's, determining the extent and cause of prespawning mortalities of adult spring chinook, estimating production and migration timing of naturally-produced Tucannon R. spring chinook, collecting spring and fall chinook stock profile data (meristic, morphometric, electrophoretic monitoring), and evaluating success of cryopreserving spring and fall chinook milt.

WDFW's Trout Evaluation Study Program

WDW's evaluation program is conducted under one study, **Lyons Ferry FH Evaluation Study - Steelhead**. This long term program includes objectives for evaluating both the steelhead and resident trout hatchery programs, with the steelhead objectives having the highest priority and requiring the most funding (over 90 percent of the total). An additional objective initiated in 1991 and continued in 1994 is similar to IDFG's 1992 residualism studies and ODFW's ongoing efforts to investigate interactions of hatchery-reared steelhead and resident trout and natural chinook.

The hatchery evaluations and related field studies at Lyons Ferry and Tucannon FH's have been underway since 1983, when the steelhead and trout production programs were initiated. Major concerns which have surfaced as a result of evaluations have been the large numbers of residuals below some satellite release facilities, lower than expected returns to the Tucannon River (from Curl Lake releases), and poor fall/early winter returns to the Cottonwood pond area (Grande Ronde R.). In addition, surveys since 1986 showed large portions of the Lyons Ferry FH and Curl Lake-released fish are returning above Lower Granite Dam, well above their release sites. A WDW/ODFW radio tagging study conducted several years ago confirmed that many Lyons Ferry and Tucannon River adult returns are wintering above Lower Granite; and, although some drop back to the dam, most fail to return to their release area.

In an effort to directly reduce residualism in 1993, WDW tested a method which could actually reduce the number of fish planted in Curl Lake that residualize in the river. This was done by preventing the remaining juveniles from leaving Curl Lake during the volitional release when 80% of the fish remaining in the pond were males and a high percent were precocious. In past years all fish were forced into the river when volitional movement had ceased. The same approach was used in 1994. Although results varied between years, preliminary indications are that this type of pond management can reduce numbers of residual steelhead in the Tucannon River.

Development of endemic wild broodstocks may also result in improved homing behavior of hatchery-reared fish. WDFW captured wild broodstock on the Tucannon River in 1992 and 1993 for rearing, release, and comparison to existing hatchery broods during migration (with PIT tags) and at adult return. No adults were collected in 1994. Although a similar program was delayed for Touchet River in 1992, the logistics of trapping and handling fish were tested there in 1993 and again in 1994.

Other studies initiated in previous years and continued in 1994 included enumerating naturally- and hatchery-produced steelhead adults at the Tucannon weir; estimating percent residualism of hatchery steelhead in the Tucannon River; estimating adult returns to fisheries, Lower Granite Dam, Lyons Ferry FH, and to tributary spawning areas; and estimating juvenile population densities in index streams effected by LSRCP programs.

Tribal Evaluation Study Programs

In 1986 the LSRCP office initiated funding for tribal involvement in the LSRCP program. Because the Tribes do not operate any LSRCP propagation facilities and because their primary concerns are for the compensation of tribal fisheries and natural production, their projects are oriented toward evaluating the implementation and success of the program rather than solving fish culture problems.

Nez Perce Tribe

The Nez Perce Tribe (NPT) initiated their Nez Perce Tribe LSRCP Evaluation Study in 1986 and continued it in 1994 to develop tribal stocking and outplanting priorities, monitor tribal harvest, evaluate effects of hatchery plants on native production, and assist IDFG, ODFW, and FWS in their evaluation studies. The NPT's major initiative in 1991 was to develop a long-term plan for monitoring natural production in the Imnaha River. The plan was closely coordinated with ODFW and the CTUIR, completed in late FY1991, initially funded for field studies in 1992, and funded for continuing studies in 1994.

The Tribe's major field activities in 1994 involved the long term Imnaha River study. NPT continued to use two rotary screw traps in the Imnaha River to capture and PIT tag juvenile chinook. The Imnaha River study objective in 1994 was to determine the timing of migration, travel time and survival (or interrogation rate) of natural vs hatchery-rearing chinook and steelhead in the Imnaha River and Snake River to Lower Granite Dam.

Other studies initiated in previous years and continued in 1994 included coordinating planning, evaluation studies, and management recommendations; monitoring tribal chinook harvest of LSRCP stocks; conducting chinook salmon spawning ground surveys in selected streams; collecting and preserving male chinook gametes in Snake River tributaries; and monitoring the abundance of juvenile chinook and steelhead in stocked and unstocked streams in Idaho and Oregon.

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 (they were subcontractors of the Nez Perce in 1986). The CTUIR biologist assigned to the LSRCP program is supervised by the LSRCP ODFW research coordinator because of the close coordination required for their joint studies in Oregon. In 1991 CTUIR initiated a program to evaluate the success of reestablishing a

naturally reproducing population of spring chinook in Lookingglass Creek. A study plan was drafted in FY1992 and continued to undergo review and revision in 1993. The field program was initiated in 1992 with the release of Lookingglass FH/Rapid River stock above the weir and the monitoring of their movements and spawning effort. Funding was provided in 1994 to assess: 1) reproductive success of adults released to spawn naturally, 2) survival of naturally-produced migrants to adult, 3) long term performance of Rapid River stock for reintroduction, and 4) ecological interactions between naturally-produced chinook and their environment.

VI. FWS COOPERATIVE PROGRAMS

The LSRCP program funded a variety of studies with other FWS stations. Most can be categorized as evaluation studies and were funded to investigate and solve specific hatchery production problems or assist with ESA-related activities.

The IFRO was funded by the LSRCP program in FY1994 to conduct hatchery monitoring and evaluation studies at Dworshak and Hagerman NFH's. IFRO's program was similar to those conducted by the state agencies; and they, in fact, closely coordinate all work with IDFG. Their study, **Evaluation and Technical Coordination for FWS LSRCP Hatchery Programs**, is a long-term effort designed to: 1) define and solve cultural and management problems affecting LSRCP success (adult returns), 2) provide intra- and interagency coordination, 3) determine fishery contribution and escapements of Dworshak and Hagerman NFH's LSRCP programs, and 4) aid the NFH's with the development and maintenance of a database system for hatchery management.

The IFRO initiated a study in 1990 to determine optimum rearing densities for spring chinook at Dworshak NFH and continued with release of BY1990 smolts in 1992. This study parallels IDFG's Sawtooth FH density study (discussed above under IDFG). Due to insufficient returns in BY1991, no experimental density releases occurred in 1993. A pilot study was initiated in 1992 to determine the optimum time of release of Dworshak/Kooskia chinook production. The study continued in 1993 and 1994 when smolts were CWTed and PIT-tagged and released from early April to early May (at one-week intervals) from Dworshak NFH. Emigration has been monitored and adult returns will be assessed through 1997.

LSRCP funds were provided to the Dworshak Fish Health Center for diagnostic activities at Dworshak and Hagerman NFH's and for health monitoring coordination between State and Federally-operated LSRCP hatcheries. FY1994 monies were also obligated to FWS's Office of the Columbia River Coordinator for their assistance to the LSRCP office on regional issues.

VII. OTHER COOPERATIVE PROGRAMS

IDFG, the Shoshone-Bannock Tribe, BPA, NMFS, and others are attempting to restore sockeye salmon runs to Redfish Lake. To assist in the restoration effort, facilities at Sawtooth FH are being made available for the sockeye

salmon propagation program which is funded by BPA. IDFG and the LSRCP Office also entered into an informal agreement which allowed the Sawtooth FH to act as a distribution point for catchable trout stocking in surrounding waters.

ODFW utilized several raceways at Irrigon FH to hold fall chinook salmon smolts scheduled for release in eastern Oregon and to serve as a catchable trout distribution point under the state's catchable trout program.

Cooperative agreements are in place with all State agencies for the temporary loan of equipment and vehicles between programs.

VIII. CORPS CONSTRUCTION ACTIVITIES

The Corps of Engineers has statutory responsibility to design and construct all LSRCP facilities. The LSRCP Office does not get deeply involved in this process although we do review designs and the Corps always seeks our advice, particularly on items which would affect operation and maintenance of a new facility.

The Corps has completed clean-up contracts on most of the remaining LSRCP facilities with the exception of Clearwater FH. This year remaining items at Wallowa FH, Big Canyon, Little Sheep Creek, Powell, Red River and Crooked River satellites were completed and the Corps is in the process of initiating transfer of these facilities to the Service. In addition transfer documents for Magic Valley and Eagle Lab have been sent to the Secretary of Interior's Office for signature and acceptance of transfer, but it has been determined that the Service must complete a pre-acquisition contaminants survey before the transfer can be completed. Fencing at the Imnaha satellite facility remains to be completed before this facility is accepted by the Service.

Nearly all facilities with the exception of Irrigon and Clearwater fish hatcheries will have been transferred to the Service by FY1996. Water supply problems at Irrigon will be rectified in FY1995 and additional clean-up contracts for Clearwater FH will be identified and hopefully completed this coming fiscal year.

Pertinent data relating to hatchery design and construction schedules and costs are included in Table 2. Approximate facility locations are identified on the LSRCP facility map (Figure 1).

IX. STAFFING

A total of 5.0 permanent full time (FTE) staff years are now being utilized for operation of the LSRCP Office.

LSRCP Boise Office employees as of September 30, 1994

Edouard J. Crateau, LSRCP Coordinator, GM-13
Daniel M. Herrig, Evaluation Study Coordinator, GS-12
Joseph J. Krakker, Fishery Biologist, GS-11
Virginia Neunaber, Cooperative Agreement Assistant, GS-7
Tammy A. Froscher, Secretary, GS-6

I. FUTURE OUTLOOK

Although still in its infancy, the Lower Snake River Compensation Plan Program is well underway with the last hatchery, Clearwater, just completed. The Corps' contractor Morgan and Oswood, began construction of Clearwater FH the in spring of 1990 with completion in late 1991. All satellite facilities serving to support full hatchery production, by providing broodstock trapping and holding capabilities and smolt acclimation and release ponds, have been completed.

The Corps has in most cases done an excellent job in constructing and equipping LSRCP hatcheries and satellites facilities and, where problems have been experienced, the Corps has been willing to make the necessary repairs and changes in an attempt to help them reach their full capability. With the exception of the new facilities, the Corps advertised clean-up contracts on 11 facilities in FY1991, 1992, and 1993 and major changes and repairs were competed this year.

The adult steelhead return goals to the Snake River basin set in the original LSRCP were met in 1993 when approximately 121,000 steelhead returned to the mitigation area above Lower Granite Dam and were close to being met in 1994 with a total of nearly 60,000 steelhead counted at Lower Granite Dam. Some difficulty is being experienced however in poor returns in some steelhead programs. Also, getting steelhead to return back at the right time and to the right place still remains as a problem.

As evident by the listing of naturally-produced fall and spring/summer chinook last year, we are experiencing difficulties in achieving programmed rates of return for hatchery chinook salmon. Changes are being made in rearing and release strategies which we hope will improve this situation, and research, to solve outmigration and disease problems that we hope will further improve our performance, is underway. In fact, most LSRCP chinook facilities are now operating under Section 10 enhancement and/or research permits under the ESA. These efforts to save listed stocks will also help to increase hatchery adult return rates.

Hatchery monitoring and evaluation programs are being improved, redesigned, and refined each year to assist hatcheries in providing the best rate of return of released hatchery smolts. We substantially increased funding for this phase of the LSRCP program in FY1993 and continued funding will be needed for an adequate hatchery evaluation program which ensures protection and enhancement of naturally reproducing populations.

The LSRCP is a relatively new program with the average age of hatcheries at only 9 to 10 years and satellite facilities about 8 years. This translates to about two full chinook life cycles and a little over two for steelhead.

We are optimistic about the future of the LSRCP Program and the general trends indicate increases in the return rates of steelhead which may exceed model predictions. The chinook salmon return rates and adult returns to the basin are currently below the level used to design the LSRCP facilities. Improved adult chinook return rates are expected with changes in production release strategies, increased disease treatment and prevention, and improvements in smolt emigration.

XI. MEETINGS ATTENDED IN FY1994

10/6/93 Alf's and Associates, Lyons Ferry and Magic Valley brochures, LSRCP Office, Ed

10/6/93 IDFG staff, new house at Sawtooth FH, IDFG Headquarters, Ed

10/8/93 ODFW, NPT, CTUIR, Lookingglass FH Rapid River stock plans for BY1992-1993, La Grande, OR, Ed, Dan, Joe

10/13/93 J. Normandeau, Allyn Meuleman, BPA District Office staff, General Coordination, LSRCP Office, Boise, ID, Ed, Dan

10/14/93 T. Rogers, new residence at Sawtooth and Cooperative Agreement, at IDFG Headquarters, Ed

10/21/93 IDFG staff, Cooperative Use Agreement for Sawtooth FH house, IDFG Headquarters, Ed

10/22/93 J. Chapman, review of Sawtooth programs and hatchery visit, Sawtooth FH, Ed

10/25/93 Bill Lewis, Dale Haneyfield, Chuck Dunn, Idaho Aquaculture Ass., Don Canbell, Senator Craig's Rep. Louis Eiler, Hagerman Lab, Hagerman, ID, Ed

11/3/93 ODFW, NPT, CTUIR, Lookingglass FH production program, Myrtle Beach, ID, Ed

11/3/93 CTUIR, NPT, ODFW, Lookingglass FH Rapid River stock management BY1993 and beyond, Myrtle, ID, Dan, Joe

11/8/93 Huffaker, Hutchinson, Sawtooth Production Program, IDFG Headquarters, Ed

11/3-5/93 LSRCP Evaluation Study Committee Members and staff, status of ongoing LSRCP Evaluation Studies, Myrtle Beach, ID, Dan, Joe

11/16/93 David Hull, COE Walla Walla, hatchery brochures and hatchery clean-up contracts, Ed

11/15-17/93 Representatives of the RO and other fisheries offices in Region, develop fisheries steward proposals and budgets for 1994 funding, RO Portland, OR, Dan

11/93 All Columbia River FAO and RO staff, all Columbia River issues and ESA, RO Portland, OR, Ed, Joe

11/18/93 Dworshak NFH Coordination Meeting, Dworshak NFH, Dworshak staff, IDFG, Tribes, Ed

11/22/93 Tom Rogers, Cooperative Agreement and 1994 budget, IDFG Headquarters, Ed

11/30/93 CBFWA, comprehensive environmental analysis hatchery operations, Portland, OR, Ed

12/2/93 IDFG, U of I, Idaho Aquaculture Ass., RO Staff, NBS, future use and plan preparation for Hagerman Lab, LSRCP Office, Ed

12/8/93 Peter Hassemer, Idaho LSRCP Evaluation Studies Project Leader, Idaho 1994 Evaluation Studies, Boise, Dan

12/14/93 COE, IDFG, cleanup contracts for all Idaho FH's and satellites, IDFG Headquarters, Ed

12/15/93 Hagerman Hatchery Evaluation Team, formation of the Hagerman HET, talked about ESA issues, Hagerman NFH, Joe

12/16/93 ODFW Research and Management, Lookingglass FH management, La Grande, OR, Dan

12/7-9/93 44th Northwest Fish Culture conference, Spokane, WA, Ed, Joe

1/3/94 Ed Bowles, IDFG, discussion of reserve population concept, LSRCP Office, Ed, Dan, Joe

1/4-6/94 ODFW, CTUIR, NPT, future of Lookingglass FH/LSRCP Grande Ronde River program, La Grande, OR, Dan, Joe

1/12-13/94 NMFS, ODFW, IDFG, WDW, WDF, CTUIR, NPT, FWS, Section 7 consultation for 1994-1998 program, NMFS Portland, OR, Ed, Dan, Joe

1/11/94 RO staff, Columbia River Coord. Office, Lookingglass FH operations - Grande Ronde and Imnaha programs, RO Portland, OR, Ed, Dan

1/20/94 1994 Annual Meeting, IDFG Headquarters, AFS Offices, Dan

1/27/94 Bill Hutchinson, Tom Rogers, LSRCP budgets, Sawtooth production, ESA issues, Ed

1/27-28/94 ODFW, NPT, CTUIR, ODFW - LSRCP AOP 1994, La Grande, OR, Joe

2/2/94 Impacts of federal hatchery programs on Columbia basin naturally produced salmon, Boise Convention Center, CBFWA-CEA, Pre-scoping meeting, Joe

2/18/94 Bill Horton, AFS Meeting preparation, IDFG Headquarters, Dan

2/15-16/94 USFS, BLM, NMFS, SCS, BIA, COE EIP, BPA, FHA, BOR, FERC, USFWS, Interagency Section 7 consultation workshop for Federal Land Management, Ed, Joe

2/15-16/94 ESA Section 7, Boise Convention Center, NMFS and various Federal Land Management agencies, Ed

2/22/94 IDFG personnel, Idaho Chapter AFS Meeting, IDFG Headquarters, Dan

2/23/94 IDFG, IAA, FWS, Hagerman NFH Coordination Meeting, Hagerman NFH, Ed

2/23-25/94 Idaho Chapter AFS Annual Meeting, McCall, ID, Ed, Dan, Joe

3/3/94 RO Personnel, NMFS, ODFW, NPT, CTUIR, CRITFC, 1994-1998 Section 7 Consultation, Ed, Dan

3/11/94 Columbia River Coordination meeting, Portland, OR, Ed

3/24/94 US vs. Oregon Policy Committee of PAC, Lookingglass FH Rapid River Program, Portland, OR, Ed

3/31/94 Leavenworth NFH Complex Coordination Meeting, Impacts of ESA on LSRCP Hatchery, Wenatchee, WA, Ed

4/8-9/94 Public Model Watershed Panel discussions, Salmon, ID, Dan

4/13/94 Idaho Outdoor Association (25 people), LSRCP Program and Columbia and Snake River salmon, steelhead issues and causes for decline, ESA Recovery, Ed

4/14/94 Fisheries Academy, Module II, Instructor for Hatchery Evaluations Module, Leetown, W. Virginia, Joe

4/14/94 COE, ODFW, Bovay Engineering, Walla Walla, Irrigon FH water supply problems, ED

4/18/94 Joel Sartore, National Geographic Photographer, photo opportunities at LSRCP facilities for articles on Endangered Species they are doing, Ed

4/26-27/94 NMFS, FWS, Maine/Mass. Fish and Game, Atlantic Salmon Listing, Gloucester, MASS., Ed

5/6/94 Diggs, Miller, Sheldrake, Section 7 1995 process, LSRCF Office, Ed

5/16-18/94 WDFW, ODFW, general-meeting new people, view new construction, talk about programs at Lyons Ferry WDW, and Lookingglass FH, Ed

5/19/94 COE, hatchery cleanup, future brochures, pickup at Lyons Ferry and Magic Valley, Walla Walla, WA, Ed

5/25/94 ODFW Research staff, ODFW evaluation studies 1994-1995, LaGrande, OR, Dan

5/26/94 NPT and ODFW research staff, NPT Imnaha River studies, Wallowa FH, Dan

5/27/94 NMFS and Dan Diggs, Section 7 consultation on run releases and Imnaha and South Fork Salmon River and other general topics, Portland, OR, Ed

5/27/94 WSU, U of I professors, WDFW, NPT, Cryopreservation, WSU Science Hall, Pullman, WA, Dan

6/6/94 Sho-Ban Tribe, 1994 Section 7 consultation process, Fort Hall, ID, Ed, Dan, Joe

6/6/94 COE, Irrigon FH water supply problems, Walla Walla, WA, Ed

6/7/94 ODFW, 1995-1999 Biological Assessment and Section 7 process, Portland, OR, Ed

6/8/94 WDFW and FWS, 1995-1999 Biological Assessment and Section 7 process, Olympia, WA, Ed

6/8/94 Vision Management Team Members, regular management team meeting, Portland, OR, Dan

6/9/94 Umatilla and Nez Perce tribes and FWS, 1995-1999 Biological Assessment and Section 7 process, Pendleton, OR, Ed

7/11/94 ODFW, Tribes, CTUIR and Nez Perce Tribe, captive or endemic broodstock developments, Enterprise, OR, Ed, Dan, Joe

7/15/94 Columbia River tribes and agencies, cryopreservation of steelhead and salmon stocks at risk, Portland, OR, Dan

7/15/94 FWS, Columbia River Coordination meeting, Portland, OR, Ed

7/21/94 CTUIR, NPT, SBT, IDFG, ODFW, WDFW, review of draft 1995-99 LSRCP BA, Boise, ID, Joe, Dan, Ed

8/2/94 Sampsel Consulting Service, CBFWA, NMFS, IDFG, SBT, Public, Scoping Meeting for Programmatic EIS for impacts of artificial production on Columbia River fish, Boise, ID, Joe

8/8-9/94 IDFG Biologist, Salmon field studies, Upper Salmon River, Dan

8/10/94 IDFG Evaluation personnel, 1995 Evaluation studies, IDFG State Office, Boise, ID, Dan

8/12/94 IDFG personnel 1995/96 budgets and O&M evaluations, IDFG State Office, Ed, Dan

8/22/94 Bill Hutchinson, Clearwater brochures, LSRCP Office, Boise, ID, Ed

8/29/94 R.O. FWS staff, Columbia River Coordination Office, Lower Columbia River FRO, ESA conflict briefing, Portland, OR, Ed

8/30/94 Mike Delarm, R-2, Rob Jones, NMFS Section 7 consultation, Portland, OR, Ed

8/31/94 Dr. Carl Schreck, Ken Currens, establishing a work order with OSU for genetics assistance, OSU, Corvallis, OR, Ed

9/12-13/94 Saratoga NFH staff, spawn lake trout, Saratoga, Wyoming, Ed

9/21/94 FWS, Fisheries and ES, Ecosystem coordination, Portland, OR, Ed

9/23/94 NMFS, Ted Meyer, Russ Strock, ESA Issues, Boise, ID, Ed

9/28/94 IDFG, Idaho Aquiculture Assoc., Dworshak FAO, Sho-Ban Tribe, Hagerman Coordination Meeting, Hagerman, ID, Ed

XII. TRAINING

Joe Krakker

CISPUS Communication Workshop, Randle, WA 2/28-3/4/94

Mid-Career Pre-Retirement Planning, Portland, OR 5/23-25/94

Tammy Froscher

Essential English and Writing Skills, BSU, Boise, ID 4/13-6/8/94

Automated Data Processing Procurement Training, Ashland, OR 5/12-13/94

Mid-Career Pre-Retirement Planning, Portland, OR 5/23-25/94

Ginny

Lotus 2.4 (DOS) Level II, Boise, ID 8/31/94

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Table 1. LOWER SNAKE RIVER COMPENSATION PLAN ACTIVITIES FOR FY 1994.

INSTALLATION/PROGRAM	FUNDING LEVELS	SPECIES	TYPE	FISH RELEASED	
				NUMBERS	POUNDS
STATE OF IDAHO					
McCall FH	\$474,160	SuCS			
South Fork Satellite			Smolts	1,060,163	40,665
Sawtooth FH	\$773,400	SpCS	Smolts	213,830	8,854
East Fork Satellite		SpCS	Smolts	12,368	565
Magic Valley FH	\$528,280	STT	Smolts	1,919,250	405,450
Clearwater FH	\$1,081,940	STT	Smolts	722,941	77,228
Satellite Facilities		SpCS	Smolts	1,599,484	73,281
Fish Marking	\$427,400				
IDFG Evaluations	\$575,315				
IDFG ESA Coordinator	\$53,100				
Eagle Lab	\$312,100				
STATE OF OREGON					
Lookingglass FH	\$926,414	SpCS	Fingerling	174,127	1,772
		SpCS	Smolts	849,273	44,819
Imnaha Satellite		SpCS	Fingerling	108,920	1,111
		SpCS	Smolts	438,700	23,215
Irrigon/Wallowa FH, Little Sheep & Big Canyon Satellite	\$1,092,739	STT	Smolts	1,475,631	330,013
ODFW Evaluations	\$491,244				
ODFW Pathology Lab	\$133,900				
STATE OF WASHINGTON					
Lyons Ferry FH (WDF)	\$725,324	SpCS	Smolts	83,409	5,957
		SpCS	Fingerlings	57,316	1,592
		FCS	Smolts	602,924	54,874
WDF Evaluations	\$405,660				
Lyons Ferry FH (WDW)	\$1,248,278	STT	Smolts	923,243	224,156
		RBT	Catchables	114,853	53,565
		RBT	Fingerlings	131,881	7,480
WDW Evaluations	\$219,432				
Tucannon FH Satellite	\$261,874	RBT	Catchables	161,372	49,470
TRIBAL EVALUATIONS					
CTUIR	\$196,089				
Nez Perce	\$306,852				
FISH AND WILDLIFE SERVICE					
Hagerman NFH	\$660,000	STT	Smolts	1,519,168	329,538
Dworshak NFH	\$338,000	SpCS	Smolts	1,302,687	75,386
Dworshak FHC	\$74,000				
Columbia River Coord.	\$40,000				
Idaho FRO Evaluations	\$138,000				
Dworshak SpCS Tagging (ESA)	\$69,000				
YCC Program	\$103,000				
Regional Office	\$634,454				
LSRCP Management/Coord.	\$390,000				
TOTAL OBLIGATED	\$12,679,955				
		SPECIES SUMMARY:			
		FCS	Smolts	602,924	54,874
		SuCS	Smolts	1,060,163	40,665
		SpCS	Smolts	4,499,751	232,077
		SpCS	Fingerlings	340,363	4,475
		STT	Smolts	6,560,233	1,366,385
		RBT	Catchables	276,225	103,035
		RBT	Fingerlings	131,881	7,480
		TOTALS		13,471,540	1,808,991

RBT - rainbow trout/FCS - fall chinook salmon/SpCS - spring chinook salmon/SuCS - summer chinook salmon

STT - steelhead trout.

Table 2. Pertinent Data for Lower Snake River Fish and Wildlife Compensation Plan Fish Hatchery Facilities.

Hatchery (Operator)*	Fish Type	Pound	Total Cost (\$1,000)	Satellite Facilities	Date of Completion		
Lookingglass (ODFW)	Spring Chinook	69,600	\$ 8,993	Big Canyon Ck. Imnaha	Nov. 82		
			\$ 2,763		Apr. 87		
			\$ 1,525		Jul. 89		
Irrigon/Wallowa (ODFW)	Steelhead	279,600	\$15,646	(Wallowa) ^b Little Sheep Ck (Big Canyon Ck)	Oct. 85		
			\$ 3,230		May 85		
			\$ 2,545		Aug. 87		
Lyons Ferry:			\$31,831 ^c				
Phase I (WDW)	Steelhead	116,400		Cottonwood Dayton Pond Tucannon FH Curl Lake	Nov. 83		
			Trout			45,000	
	Trout	41,000	\$ 801		Feb. 85		
Phase II (WDF)	Fall Chinook	101,800	\$ 1,182		Oct. 86		
			Spring Chinook	8,800	\$ 4,235	Nov. 84	
					\$ 230	Feb. 85	
Sawtooth (IDFG)	Spring Chinook	149,000	\$13,543	E.Fk. Salmon R.	Jan. 85		
			\$ 2,067		Nov. 83		
Dworshak (FWS)	Spring Chinook	70,000	\$ 2,234		Nov. 82		
Clearwater (IDFG)	Steelhead	350,000	\$37,128	Red River Crooked River Powell	Dec. 91		
			Spring Chinook		91,300	\$ 1,651	Nov. 86
						\$ 2,054	May 90
			\$ 2,320	Aug. 89			
Magic Valley (IDFG)	Steelhead	291,500	\$19,520	(Sawtooth) (East Fork)	Aug. 87		
Hagerman (FWS)	Steelhead	340,000	\$ 9,801	(Sawtooth) (East Fork)	Apr. 84		
McCall (IDFG)	Summer Chinook	61,300	\$ 5,741	S.Fk. Salmon R.	Sep. 81		
			\$ 1,149		Jul. 80		
Eagle Lab (IDFG)	Disease Diagnostic		\$ 1,300		Apr. 89		

* ODFW - Oregon Department of Fish and Wildlife
 WDW - Washington Department of Wildlife
 WDF - Washington Department of Fisheries
 IDFG - Idaho Department of Fish and Game
 FWS - U.S. Fish and Wildlife Service

^b Parentheses used when dual-use hatchery/satellite is listed a second or third time.

^c Total cost of Lyons Ferry Phases I and II

Table 3. Hatchery or trap rack returns to LSRCP hatcheries operating in 1994.

Species/Hatchery	Hatchery/Trap Adults	Returns Jacks
Summer Chinook		
McCall FH/South Fork	447	70
Spring Chinook		
Clearwater FH ¹	141	2
Sawtooth FH	90	6
East Fork Trap	15	0
Lookingglass FH	370	7
Imnaha Trap	156	7
Big Canyon Trap	0	0
Dworshak NFH ²	302	4
Lyons Ferry/Tucannon FH	73	0
Fall Chinook		
Lyons Ferry FH ³	1,299	
Steelhead Trout		
Irrigon FH:		
Wallowa FH	599	
Little Sheep Trap	194	
Big Canyon Trap	443	
Lyons Ferry FH ⁴	4,009	
Hagerman NFH/Magic Valley FH ⁵	411	

¹ Returns to Powell, Red River and Crooked River traps only.

² Dworshak and Kooskia returns.

³ Includes ladder returns plus Lower Granite trapping (including strays).
Jack count unknown at this time.

⁴ Ladder is only open for short period, some captures are strays.

⁵ Includes returns to East Fork, Sawtooth FH racks.

WASHINGTON

LOWER SNAKE RIVER COMPENSATION PLAN FACILITY MAP

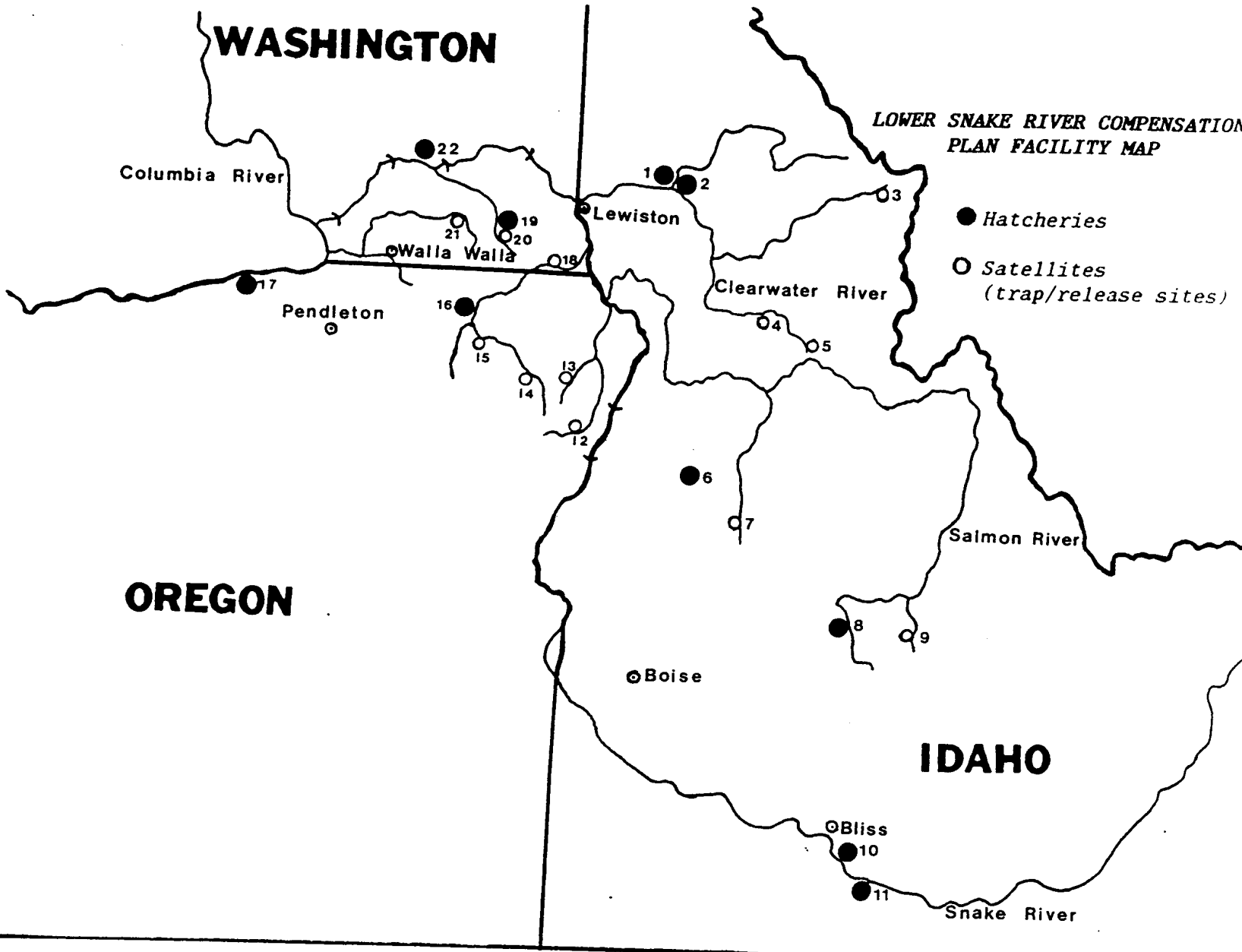
Columbia River

● Hatcheries

○ Satellites
(trap/release sites)

OREGON

IDAHO



Operating Agencies

Idaho Department of Fish & Game

Oregon Department of Fish & Wildlife

- 1. Clearwater FH
- 3. Powell
- 4. Crooked River
- 5. Red River
- 6. McCall FH
- 7. South Fork Salmon River
- 8. Sawtooth FH
- 9. East Fork Salmon River
- 11. Magic Valley FH

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

Washington Department of Fisheries

- 22. Lyons Ferry FH - Salmon

U.S. Fish and Wildlife Service

Washington Department of Wildlife

- 2. Dworshak NFH Expansion
- 10. Hagerman NFH

- 18. Cottonwood Creek
- 19. Tucannon FH
- 20. Curl Lake
- 21. Dayton Pond
- 22. Lyons Ferry FH - Steelhead

Station: 14110 - LSRCP Field Office

OPERATIONS/MAINTENANCE COST DATA

Fiscal Year: 1994

Funding Source			
Operations (Fisheries) 1	Cyclical Maintenance (Fisheries) 2	Quarters Maintenance 3	Other Funding 4
1,523			
Total Mileage:			
1,582			
C. Fuel for Vehicles/Equipment			
D. Supplies			
1. Fish Food			
2. Chemicals/Drugs			
3. Fertilizer			
4. Tags and Tagging Supplies			
5. Office Supplies/Custodial/Other Supplies (Includes Maintenance)			
29,401			
E. Travel (Includes training)			
26,424			

PUBLIC RELATIONS

Station: 14110 - LSRCP Field Office

Fiscal Year: 1994

1. Presentations:	Number of Groups	Number of People
On Site	0	0
	_____	_____
Off Site	3	Estimate over 100,000
	_____	_____

2. Number of Visitors:	
Official	1

Public	0

3. Other Public Relation Activities:

Type of Activity	
A. <u>Participation in "free fishing" day at Dworshak NFH - June 1994</u>	1200
B. <u>Presentation at Idaho Outdoor Assoc. - July 1994</u>	35
C. <u>Outreach booth at Boise State Fair - August 1994</u>	100,000 (Estimate)
_____	_____

Remarks:

