LOWER SNAKE RIVER

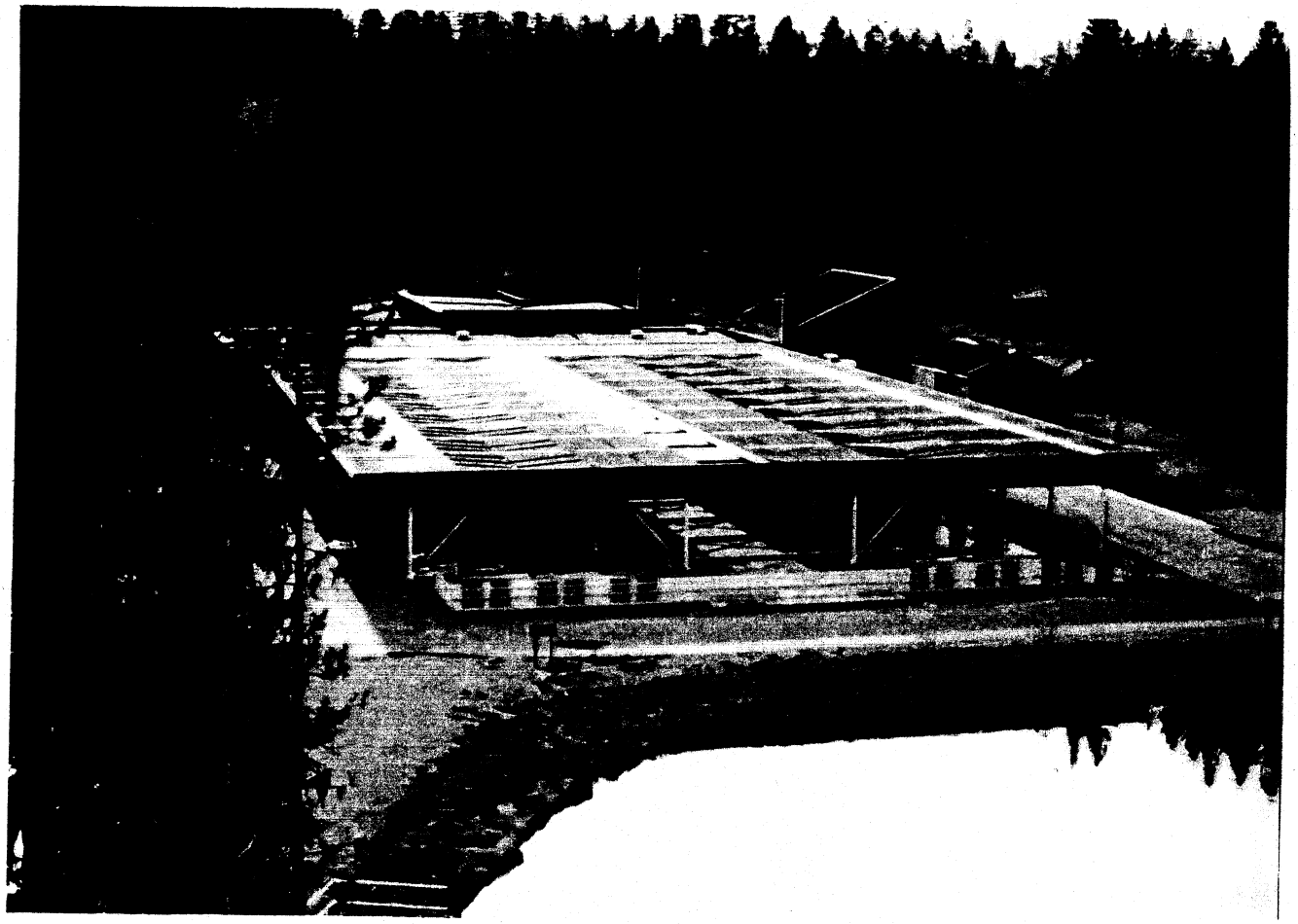
COMPENSATION PLAN PROGRAM

ANNUAL REPORT

FISCAL YEAR 1988

Boise, Idaho

October 1, 1987 - September 30, 1988



Cover Photo - McCall Fish Hatchery, the first facility operated under the LSRCP, began operation in November 1979 after being reconstructed by the Walla Walla District Army Corps of Engineers. Prior to 1979 this facility, which was owned and operated by the Idaho Department of Fish and Game, produced rainbow and cutthroat trout and served as a catchable size rainbow trout redistribution center for the McCall area. After reconstruction this fish hatchery, in addition to production of rainbow and cutthroat trout, became the only facility under the Lower Snake River Compensation Plan to raise summer chinook. Production of chinook salmon remains as the facility's primary responsibility under the LSRCP Program.

This cover photo is the first in a series of photos that will appear in future annual reports which will feature LSRCP fish hatcheries and satellite facilities.

Submitted By: Edouard J. Crateau

Title: LSRCP Coordinator

Date: April 15, 1989

LSRCP Office staff from left to right are Ed Crateau, Coordinator and Project Leader; lower center, Tammy Froscher, Secretary and YCC Coordinator; Lori Arden, Cooperative Agreement Assistant, and Dan Herrig, Evaluation Studies Coordinator.

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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 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 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 of the Chief of Engineers, dated March 6, 1985. The Chief's report confirmed the 1977 NMFS/FWS agreement on Page 2, Section 4.d, "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 report noted 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 proposes to transfer fee title of LSRCP hatcheries and satellite fish facilities to the FWS as they are completed and fully operational.

The Corps' estimated cost for construction of the authorized LSRCP off-project fisheries facilities (hatcheries and related satellite facilities) is $177 million; the FWS cost estimate for annual O&M is $9.5 million. All anadromous fisheries compensation and most resident fisheries compensation are allocated to project power costs and are reimbursed to the U.S. Treasury from Bonneville Power Administration (BPA) 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 requires expansion or construction of twelve hatcheries and eleven satellite facilities in Idaho, Oregon, and Washington. Idaho Department of Fish and Game (IDFG) will operate four hatcheries (including Clearwater Fish Hatchery after completion), Oregon Department Fish and Wildlife (ODFW) operates three hatcheries, Washington Department of Wildlife (WDW) two hatcheries, Washington Department of Fisheries (WDF) one hatchery, and FWS two hatcheries.

II. PROGRAM HIGHLIGHTS FOR FY 1988

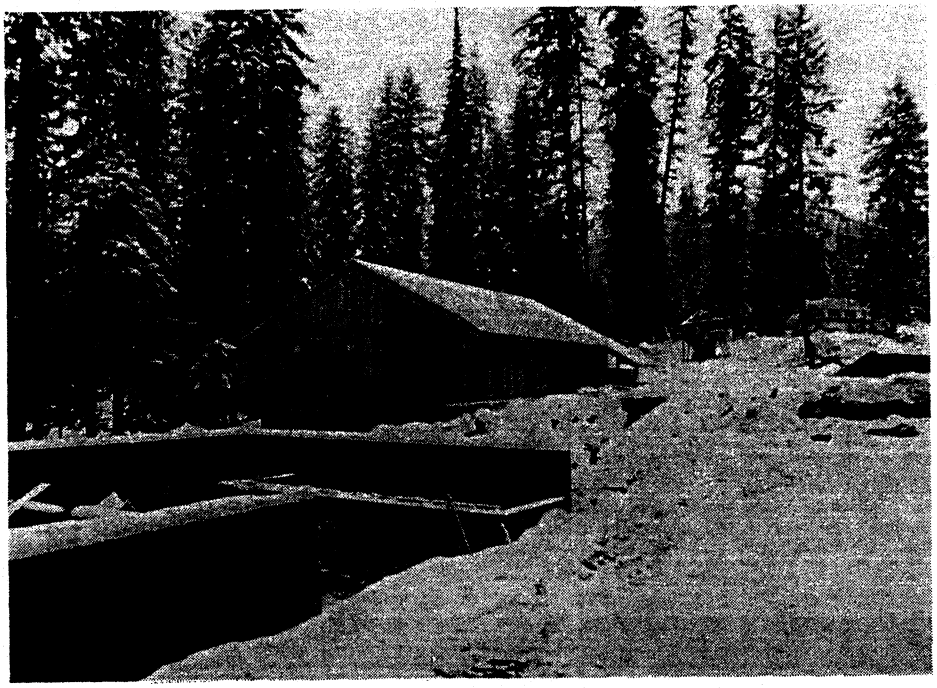
Several events including personnel changes, facility construction and completion, and evaluation study results occurred this year which warrant special emphasis.

Ken Higgs, Lower Snake River Compensation Plan Coordinator, who had been one of the principal guiding forces in the development of the LSRCP since its inception in 1976 retired December 31, 1987. Much of the success of the program is owed to Ken because of his unique abilities and foresight. Ken worked closely with the Corps during hatchery and satellite site selections and construction and with the States and Tribes in establishing and developing O&M and evaluation budgets. Ken's dedication, knowledge of the program and planning, and budgeting abilities were a tremendous asset to the Service and will be missed.

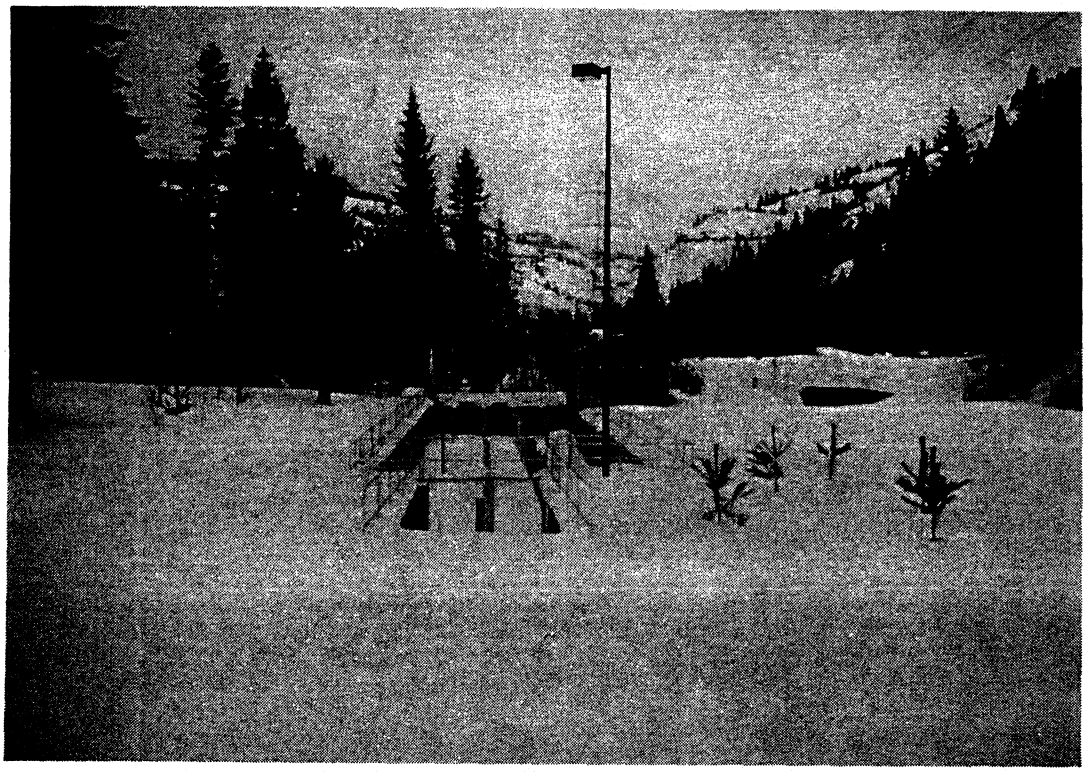
Ed Crateau replaced Ken on February 1, 1988. Ed has been with the FWS nearly 26 years serving in fish hatcheries in New Hampshire and in fishery management positions in Alaska, Florida and California working in salmon, steelhead, striped bass and sturgeon restoration programs. Ed also attended the Service's Spearfish fish cultural training program in South Dakota for approximately 8 months. Ed looks forward to the challenges and responsibilities of one of the Service's largest fish restoration projects in the country.

Lori Arden, formerly an accounting technician at the U.S. FWS Finance Center in Lakewood, Colorado, was selected to fill the LSRCP Office's Cooperative Agreement Assistant position vacated by Yvonne Phillips. Yvonne helped establish the LSRCP Office with Ken when the Area Office closed in 1981. She developed rapidly from student aid to become a valuable employee. Lori arrived in Boise on March 29, 1988 to assume her new duties. Lori assists in developing cooperative agreements and reviews and processes payment documents submitted by all cooperators.

Construction of two satellite facilities, Imnaha on the Imnaha River in Oregon and Powell on the Lochsa River in Idaho, began this year. Both facilities will be completed by the summer of 1989. The Imnaha facility will be used to trap, hold and spawn adult spring chinook and acclimate smolts prior to release for the Lookingglass FH; while the Powell satellite station will serve the same purpose for both steelhead and spring chinook for the Clearwater FH which is scheduled for completion in 1991.



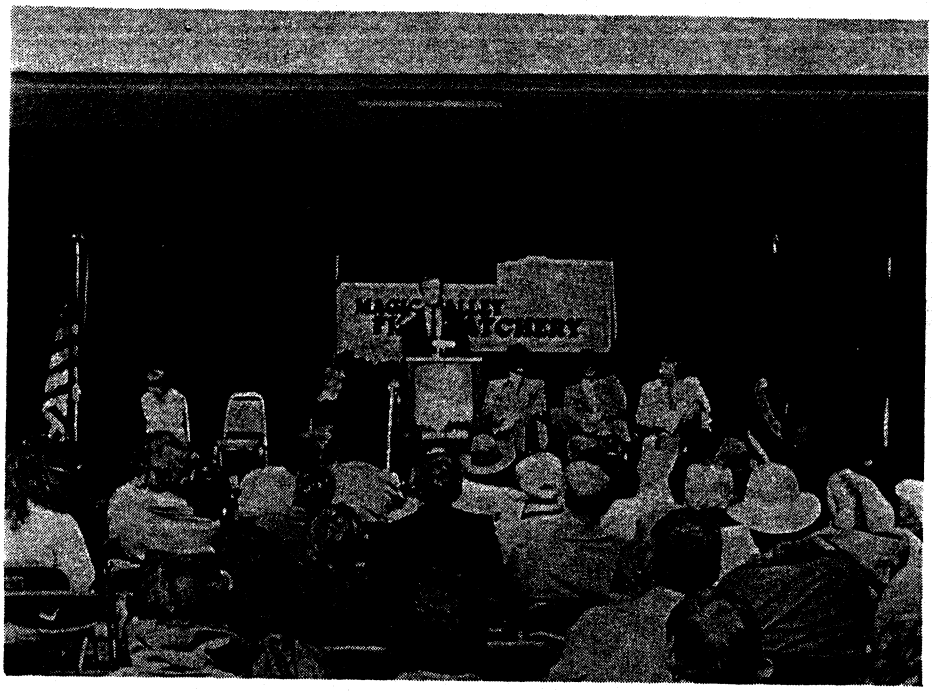
Powell Satellite Facility under construction with cabin/shop and adult holding ponds.



Construction of the Imnaha Satellite facility on the Imnaha River in Oregon got well under way in FY88. This facility, being constructed by the Walla Walla District Army Corps of Engineers in support of the Lookingglass FH, will be completed in 1989.

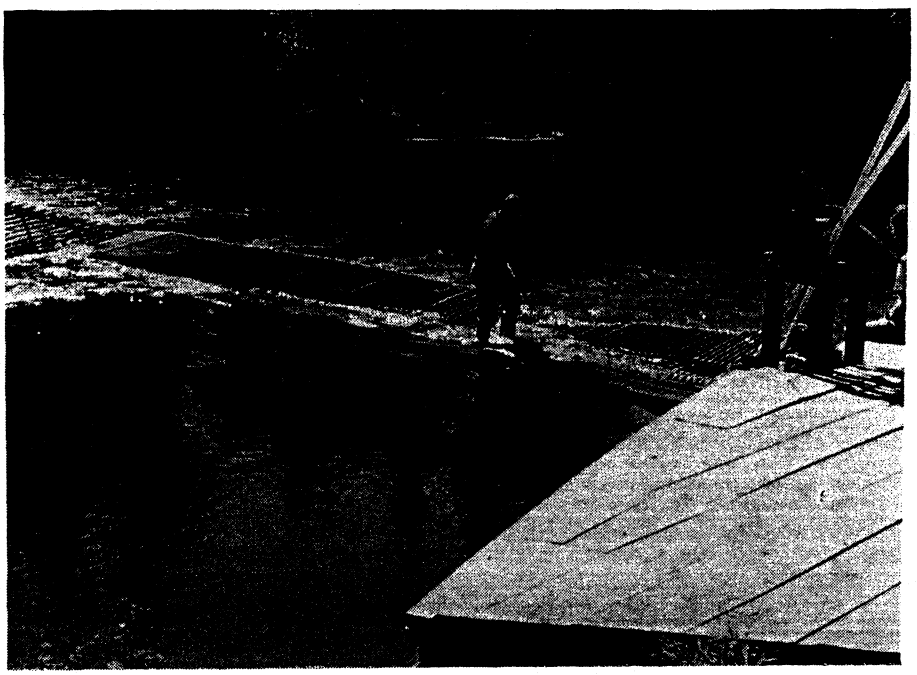
Design of the Clearwater FH and review of plans got well under way in 1988. Several design reviews were held and schedules were discussed. The timetable for all phases of the Clearwater FH have been established. The final design review is scheduled for May 1989, construction bid advertisement is set for June 1989, and bid award is set for August 1989. Construction is to begin approximately 30 days after bid award with completion scheduled for November 1991.

LSRCP station personnel along with Bill Shake and John Miller from the FWS Regional Office in Portland and Dave Bruhn, Hagerman NFH manager, attended the Magic Valley FH, Idaho dedication April 9, 1988. Approximately 125 people, including representatives from various federal and state agencies and private contractors involved in the construction of the hatchery, attended the dedication ceremonies. In the first year of operation Magic Valley FH raised approximately 2,100,000 steelhead smolts at approximately 4.6 fish/lb for a total of over 450,000 pounds.

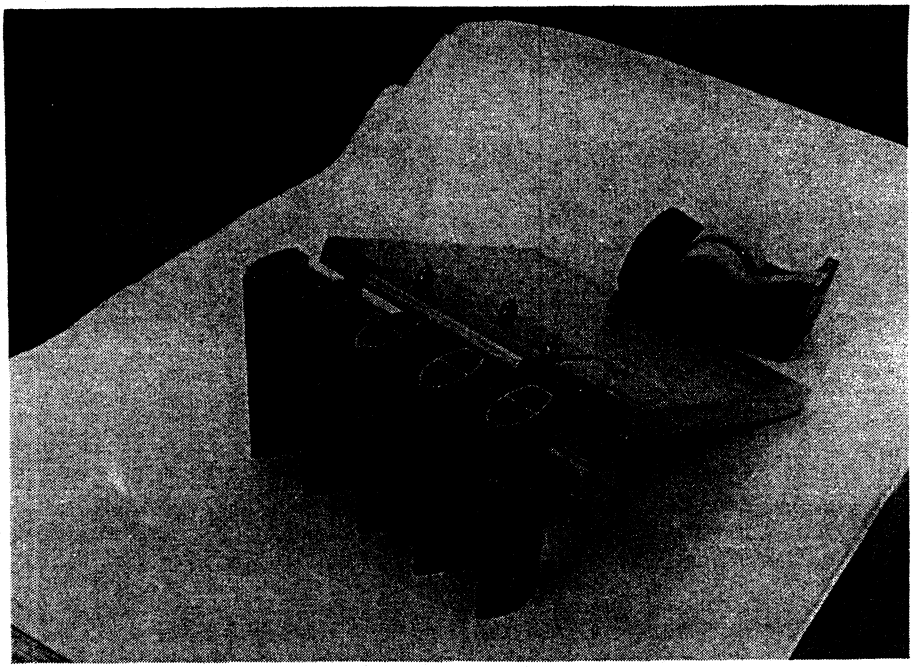


Formal dedication ceremonies for Magic Valley FH, the latest addition to LSRCP program facility, were held this year. Idaho Congressman Richard H. Stallings is shown addressing the large crowd who participated in the ceremonies. Bill Shake, FWS ARD Fisheries, who addressed the guests on behalf of the Service, is also shown on the platform as the last individual from left to right.

New fish weirs and traps are being designed for Tucannon FH and the Powell satellite facility. These floating weirs are being designed after a Japanese prototype and models constructed by the Alaska Department of Fish and Game and used in south central Alaska and the Alaska peninsula. These weirs are self



Floating weirs similar to the one above used on the Little Susitin River in Alaska are being designed and installed on the Lochsa River at the Powell Satellite facility in Idaho and the Tucannon FH in Washington.



This cross section of a Japanese designed floating weir shows the construction of the individual floatation rods and the resistance board. This new concept in fish weirs will be used in the future to assist hatcheries and evaluation programs in collecting adults and measuring the success of the LSRCP Program.

cleaning, will withstand high flows and small rubble and debris movement, and will allow passage of boats both up and downstream without removing a panel. These new easily installed weirs should improve adult trapping operations tremendously. The floating weirs will be installed in 1989.

Ed Crateau, LSRCP Coordinator and Bill Hutchinson IDFG designed a six page, full color public information brochure for Sawtooth FH. Ed and Bill also collaborated with Joe McMichael, Walla Walla District Corps office, in preparation of the brochure. The Corps will print 100,000 copies of the brochure to be available to the public in the spring of 1989.

This year marked the first year of full compensation level spring chinook releases from Tucannon FH. WDF released 153,725 smolts in April from the adult holding (final rearing) pond. The releases were entirely of progeny from the wild, Tucannon River native stock.

Some LSRCP hatcheries experienced record adult returns in 1988. Sawtooth FH trapped 1,485 spring chinook about 150 more than 1987, and the East Fork trapped 548, about twice last year's total. Returns to Lookingglass FH and the Imnaha satellite were slightly greater than last year's record high. Lyons Ferry's first major adult return to their Snake River ladder yielded 1,632 adults and 598 jacks. Generally, steelhead returns in 1988 were lower than those recorded for 1987.

Oregon and Washington evaluation personnel radio tagged and traced movements of about 70 steelhead passing Lower Granite Dam in October, November, and December 1987. Most of the adults had been released as smolts from sites above Lower Granite (the uppermost dam) but some had been released from Lyons Ferry FH or the Tucannon River, both below Little Goose Dam. Observations of tagged fish indicated most steelhead from upriver releases were overwintering in a heavily fished area of the Snake River. Many fish from downriver releases overwintered in the mainstem reservoir pools and attempted (usually unsuccessfully) to move downstream past the dams as spawning time drew near. Some stock changes may be considered for Grande Ronde River compensation programs of both WDW and ODFW to increase the number of fish that migrate into that river in the fall. There is a potential for an excellent fall fishery in the Grande Ronde River.

Survival of steelhead to Lower Granite Dam from Lyons Ferry releases into the Grande Ronde River has been very encouraging. Return rates for most tag groups over several years have been from 0.9 to 1.5 percent, well above the 0.5 percent projected for steelhead when the plan was developed. About half of these are two-ocean fish which average about 28 inches in length.

WDW's CWT data also showed a substantial number of Lyons Ferry-reared steelhead are harvested in Lower Columbia River fisheries. In some instances, over 50 percent of the Lyons Ferry returns to the Columbia Basin were harvested before reaching the Snake River. Sampling the Lower Columbia River fisheries is crucial to monitoring the effects of the LSRCP program.

ODFW marking studies to determine the best time and size of release have yielded some early results. The passage index at Lower Granite Dam, which is

a relative measure of outmigration performance, for chinook salmon released at Lookingglass FH in the spring 1986 was 13 times greater than the index for fish released in the fall 1985. The passage index for Wallowa stock steelhead released at 3.7 per pound was 2.3 times greater than the index for steelhead released at the same time and location at 4.7 per pound. ODFW's studies will continue for a few more years; preliminary results are provided in their annual report.

III. STATION AND COOPERATOR OPERATIONS

The Boise LSRCP Office negotiated cooperative agreements with and administered funds to 4 state agencies, 2 Indian Tribes and the FWS for operation and maintenance of fish hatcheries and to conduct hatchery effectiveness evaluation studies and fish health programs. A total of $5,164,388 was contracted to Washington Department of Fisheries, Washington Department of Wildlife, Oregon Department of Fish and Wildlife, and Idaho Department of Fish and Game and transferred to Dworshak NFH, Hagerman NFH, and Dworshak Fish Health Center for operation and maintenance and fish health monitoring of 11 hatcheries and 8 associated satellite facilities. An additional $936,090 was contracted to the same 4 state cooperators, Nez Perce and Umatilla Tribes, Dworshak FAO, and Idaho Cooperative Fish and Wildlife Research Unit for hatchery effectiveness and evaluation studies. A total of 19,770,478 salmon, steelhead and rainbow trout weighing 1,938,856 pounds were stocked from LSRCP facilities in FY1988. Below are brief summaries of hatchery operation and maintenance activities in FY1988. Tables 1 through 4 provide further data on funds obligated, fish stocked, adult returns, and mitigation goals. Evaluation studies are summarized in Section V of this report.

Clearwater Anadromous Fish Hatchery - Idaho

Clearwater Fish Hatchery (FH) will be the last of the 12 hatcheries to be built as part of the LSRCP. The hatchery will be operated by the IDFG and is scheduled to be built across the North Fork of the Clearwater River from Dworshak National Fish Hatchery. It is designed to produce 1,369,500 spring chinook smolts weighing 91,300 pounds and 2,500,000 steelhead smolts weighing 350,000 pounds.

To date, the Corps has purchased all the land (17.5 acres) needed for the hatchery site. The design of the hatchery (including water supply features) is well underway and construction is scheduled to begin in the fall of 1989. The water supply design has undergone preliminary design and review and must receive approval from the North Pacific Division. Assuming all goes well, a 90 percent design review will occur in the late fall of this year. A contract to construct could be awarded by November 1989, and construction should be completed early in 1991.

As proposed, the Clearwater FH will receive its entire water supply from Dworshak Reservoir via 2 pipes. The primary (and largest) line will take water from just below the reservoir's surface while a secondary (smaller) line will receive cold water from an intake deep below the water surface. A distribution tank near the hatchery will allow mixing of the 2 lines to select

proper temperatures for various uses at Clearwater FH and provide a water supply line to Dworshak NFH (assuming a partial water supply for that facility is approved).

The City of Orofino has a preliminary permit to study construction of a hydro-electric power plant off the secondary (or smaller) line using water they have requested for municipal use. The City's plans can proceed independently of the hatchery design.

Three satellite fish facilities are associated with the hatchery: Red River, which was completed in November 1986; Powell, scheduled for completion in May 1989; and Crooked River, scheduled for completion in 1990. Red River is now being operated as a rearing, release, and trapping facility using excess fish from either Sawtooth FH or Dworshak NFH. Powell and Crooked River will begin operation in a similar fashion even though Clearwater FH will not be on line when they are completed. Red River trapped 394 spring chinook this year and 352,000 eggs were collected from 80 females. All eggs were shipped to Kooskia NFH for incubation.

Magic Valley Fish Hatchery - Idaho

Located on the Snake River near Buhl, Idaho, the hatchery was completed in August 1987 at a cost of about $10,800,000 and is operated by IDFG. It is designed to produce 2,000,000 steelhead smolts weighing 291,500 pounds annually.

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 the commercial facilities; 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 (both completed) serve as the juvenile release and adult trapping sites for the hatchery program. Magic Valley completed its first rearing season this year, and released nearly 2,100,000 steelhead smolts in April 1988, weighing 454,200 lbs.

McCall Fish Hatchery - Idaho

The hatchery and related facilities were completed in 1981 at a cost of $5,453,000. Operated by IDFG, it is located along the North Fork Payette River near McCall, Idaho, with adult trapping facilities on the South Fork of the Salmon River (salmon do not have access to the Payette River system). McCall is designed to produce 1,000,000 summer chinook smolts weighing 61,300 pounds annually.

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. In 1988, the hatchery took over 2.77 million green eggs which should be more than enough for the hatchery program in FY1989.

The hatchery planted 1,060,400 BY1986 summer chinook salmon smolts weighting 56,600 lbs in the South Fork Salmon River in March 1988; this slightly exceeded the hatchery's goal of 1,000,000 smolts. No unusual fish mortalities or serious fish health or other problems occurred this past year. McCall hatchery also has a concurrent federally-approved trout production program which is funded entirely by the Idaho Department of Fish and Game.

Sawtooth Fish Hatchery - Idaho

Sawtooth Hatchery is operated by IDFG and is located on the upper Salmon River near Stanley, and was completed in January 1985 at a cost of $9,322,000. In addition to 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 is a stream release site.

The adult steelhead return to Sawtooth FH in 1988 was 974, less than half of the previous year's steelhead return of 2,187. The East Fork Satellite station trapped 204 steelhead, nearly equal to the 224 in 1987. Spring chinook trapping and spawning ended in September with a total of 1,485 chinook trapped; 552 of these were released to spawn naturally. The East Fork trapped 548 spring chinook adults and released 202 adults to spawn naturally. Sawtooth trapped approximately 150 more adults this year than the previous year and the East Fork more than twice the number this year compared to 1987.

All BY1986 spring chinook were released in March 1988. Releases included 1,604,900 smolts into the Salmon River at the hatchery; 249,200 smolts into the East Fork; and 725,300 smolts into the Yankee Fork River. Brood year 1986 fall fingerling plants (in October 1987) totaled 100,600 at Sawtooth FH.

In addition to the LSRCP program, the State conducts a FWS-approved sockeye salmon restoration project at the Federally-owned hatchery. That project is funded by the National Marine Fisheries Service.

Irrigon/Wallowa Hatcheries - Oregon

Irrigon Fish Hatchery is located on the Columbia River near Umatilla, Oregon; operated by the ODFW, the hatchery was completed in October 1985 at a cost of $8,117,000. Collector wells supply water for the entire program of 1,677,000 steelhead smolts (weighing 279,600 pounds). An expansion of ODFW's Wallowa Hatchery was completed in May 1985 at a cost of $2,206,000. It serves as a final rearing, acclimation, and release site for about 600,000 steelhead smolts from Irrigon, and has facilities for steelhead trapping and spawning.

In 1988 a total of 2,076 steelhead returned to the Wallowa FH which was approximately 54 percent of the record return of 3,873 in 1987. Of these about 230 females and 74 males were outplanted.

Two other acclimation, advanced rearing, and trapping sites to be operated with Irrigon FH were completed in 1987. Big Canyon satellite is located at

the mouth of Big Canyon Creek on the Grande Ronde River. It was completed in April 1987 at a cost of $1.8 million and is capable of holding and releasing 225,000 smolts. Eighty-five adults returned to Big Canyon in 1988. Seventy-nine were passed above the facility to spawn naturally.

The Little Sheep Creek satellite station in the Imnaha basin is used as an advanced rearing pond and release site for 250,000 smolts. The satellite was completed and became operational in August 1987 at a cost of $1.78 million; the site has been used for trapping and releasing for several years. In 1987, 730 steelhead returned to the trap, of which 408 were passed above the weir. In 1988, 286 summer steelhead were trapped and 60 were passed above the weir to spawn naturally.

Releases for 1988 of Irrigon-reared fish included 496,726 Wallowa stock steelhead from Wallowa FH, 248,114 Imnaha stock steelhead from the Little Sheep Creek site, 224,990 Wallowa stock from the Big Canyon site, and 1,016,680 at various stream sites.

Lookingglass Fish Hatchery - Oregon

This hatchery is located on Lookingglass Creek north of Elgin, Oregon, and was completed in November 1982 at a cost of $6,324,000. 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 scheduled for completion this year, are a part of the hatchery program.

Adult spring chinook trapping went very well this past year with a total of 393 fish collected at the Imnaha trap (375 adults and 18 jacks) and 2,550 adults and 118 jacks returning to the Lookingglass trap. At Lookingglass, 292 females were spawned for an egg take of 1,314,000; 92 females were spawned at Imnaha for a take of 511,000 eggs.

Brood year 1986 spring chinook releases from Lookingglass FH totaled 1,192,794. These releases included 487,000 Rapid River stock into Lookingglass Creek, 82,445 presmolt Lookingglass stock into Lookingglass Creek, 151,959 Lookingglass stock into Catherine Creek, 186,290 Lookingglass stock into the Big Canyon Creek acclimation ponds, and 199,500 Imnaha stock into the Imnaha River. In addition approximately 85,600 BY1987 spring chinook were released as an experimental group into Lookingglass Creek at 22 fish/lb.

Some rearing problems are being experienced at Lookingglass FH which may require some additional raceway space, additional warm (well) water for inside rearing, and more water to the raceways. The Corps, FWS LSRCP Office Coordinator, and ODFW personnel are currently working out the details for hatchery modifications.

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 was completed in November 1983 and is being operated by WDW. It is designed to produce 1,169,500 steelhead trout

is being 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.

Phase II of Lyons Ferry was completed in November 1984 and is being 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.

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 lbs.) is to come from stream enhancement structures funded by the Corps, and constructed by WDW. The WDW personnel operate the Tucannon FH in cooperation with WDF as a satellite of Lyons Ferry Phases I and II.

Constructed at a cost of $20,503,000, the hatcheries along with the Phase I (steelhead) satellite facilities at Cottonwood Creek, Dayton Pond, and Curl Lake are complete. Some problems still exist, however, which need to be addressed. For example, suspended manganese in the water supply system at Lyons Ferry, particularly in the Phase II raceways, appears to be a problem for juvenile fall chinook. The manganese may be irritating the gills and causing gill hyperplasia and fusion. Pond losses in early spring under light loading densities have been over 8 percent in some raceways. The WDF conducted tests with various loading densities this year to determine the cause of the losses and help define the potential impact of the problem. The results of these tests are not available at this time. Straying of Lyons Ferry steelhead adults also continues to be a major problem for WDW's steelhead program.

The temporary weir on the Tucannon River at the Tucannon FH failed in May 1987 when high flows caused the streambed to scour beneath the rack. Concern over continued problems during high flows has caused the WDF and WDW to request the Corps to construct a more permanent facility. Discussions occurred in 1988 to select a new site for installation of a more permanent weir. The Corps is now designing a floating type weir which should be installed in the spring of 1990. This new weir should be able to handle the spring flows.

Spring chinook returns to the Tucannon trap and weir totaled 273 in 1988. One hundred forty-two adults and 4 jacks were passed upstream to spawn naturally. Approximately 40 adults remained below the weir.

As in past years, adult fall chinook were trapped by University of Idaho personnel at Ice Harbor Dam and transported to Lyons Ferry Hatchery for holding and spawning. A total of 1,613 adult fall chinook and 47 jacks were collected at the dam. The first major adult returns to the hatchery ladder occurred in FY1988, the numbers totaled 1,632 adults and 598 jacks. The record returns to the dam and trap resulted in a total egg take of 6.0 million.

Because of the large numbers of stray steelhead that return to the Lyons Ferry ladder in the fall (when it remains open for fall chinook returns) and spring,

all steelhead are checked for Lyons Ferry brands and a portion of the total returns (including branded fish) are selected for spawning. In FY1988, 156 female steelhead were spawned for a take of 1.25 million eggs.

Releases from Lyons Ferry were below the goals for fall chinook and at the goal for spring chinook and near the goal for steelhead. The FY1988 spring chinook release into the Tucannon River was 153,725 yearlings. The fall chinook releases totaled 4,981,287; 407,840 BY1986 yearlings and 4,573,447 zero-age BY1987 fingerlings (ranging from 48 to 105 per pound). Some fall chinook were released directly from the facility while others were loaded onto barges and released below Ice Harbor Dam.

About 970,341 smolts and 54,814 presmolt steelhead were released from Lyons Ferry, hauled to the 3 satellite ponds, or trucked directly to streams. Lyons Ferry and Tucannon FH's combined to rear and release about 267,452 catchable (8 to 9 inch) rainbow trout for Washington lakes and streams.

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 facilities for LSRCP spring chinook production was completed by the Corps in November 1982 at a cost of $1,539,000. The facility is designed to produce 1,600,000 spring chinook smolts weighing 90,000 pounds and is operated by the FWS.

Spring chinook runs into the Clearwater River are showing an increase due to hatchery production, 1,972 adults returned to the Dworshak NFH ladder in FY1988. The hatchery egg take of 4.9 million green eggs was sufficient for Dworshak's program. Only a small percentage of the adults were diagnosed as IHN positive.

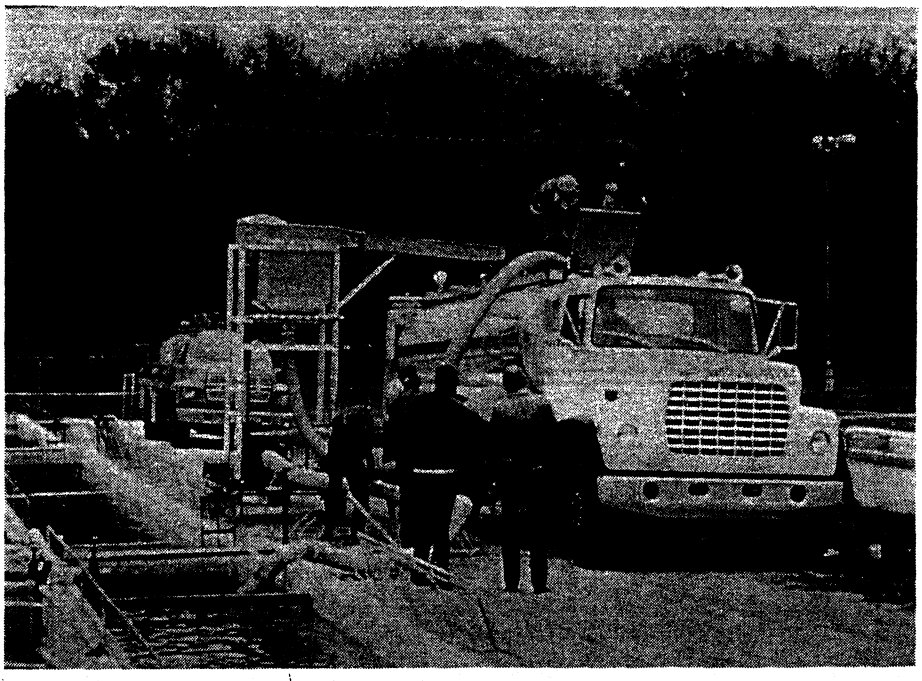
Incidence of Bacterial Kidney Disease (BKD) found in BY1986 spring chinook was evident again this year through most of the production cycle, but mortality was minimal. Improved diets and maintaining target smolts sizes at 18 to 20 per pound appears to have lessened the disease problem. Dworshak NFH personnel released 1.5 million BY1986 chinook smolts into the North Fork Clearwater River and to the Powell satellite site. Approximately 192,000 fingerlings were outplanted as part of a hatchery supplementation program. An additional 223,067 zero-age spring chinook were released into the Clearwater River at the hatchery as part of an experimental zero-age program.

Hagerman National Fish Hatchery - Idaho

Hagerman NFH, located on a 59 F spring water supply east of Hagerman, Idaho, was expanded by the Corps to rear 2,400,000 steelhead smolts weighing 340,000 pounds, while retaining the capacity to produce 100,000 pounds of fish for FWS production commitments other than LSRCP. The $6,980,000 expansion was completed in April 1984, and is operated by the FWS.

Hagerman NFH received BY1988 steelhead "A" eggs from Sawtooth FH totaling 1.2 million and 1,172,000 BY1988 "B" eggs from Dworshak NFH.

Hagerman NFH hauled over 1.5 million BY1987 steelhead smolts to various release sites in the Salmon River basin. Hagerman also had a fall plant of 344,000, BY1987 "A" steelhead fingerlings in the Snake River Hell's Canyon. Fish health for the entire history of steelhead production for 1988 was excellent.



Loading steelhead at Hagerman NFH. Approximately 500 separate loads of fish were distributed from all LSRCP facilities in FY 1988.

IV. LSRCP OFFICE OPERATIONS

A total of $6,588,004 was obligated for LSRCP programs in FY1988. This total included $936,810 for LSRCP Evaluation Studies, $220,806 for Boise Office Management and Coordination, $66,000 for Youth Conservation Corps (YCC) (salaries and benefits), $200,000 for the Regional Office ($100,00 from carry-over monies), and the balance for hatchery operations and maintenance. Fourteen cooperative agreements were drafted and finalized during this fiscal year to distribute the evaluation and operation and maintenance funding.

The LSRCP YCC Program was the largest in the Region in 1988. The LSRCP office had 41 enrollees at 11 facilities. A total of approximately $66,000 was actually spent on the program for salaries and supplies.

V. EVALUATION STUDIES

In 1988 all operating agencies and 2 Indian tribes had fully operational evaluation studies underway. By the end of the fiscal year, a total of $936,810 had been obligated for 11 studies being conducted by the IDFG, ODFW,

WDW, WDF, FWS, and the Nez Perce and Umatilla Tribes. Below is an overview of the evaluation program in FY1988 followed by a synopsis of each Cooperator's evaluation program.

A pattern for regular Evaluation Study Committee (ESC) meetings was established in 1985 and continued in 1988. Although the ESC consists of a single representative from each operating agency and cooperating Indian Tribe, ESC meetings often include additional staff members from each agency and occasionally visitors. Three ESC meetings were conducted in FY1988 along with several partial committee meetings to discuss specific topics. In addition to these meetings, the LSRCP Office held combined operations/evaluations budget meetings in 1988, with some agencies to help insure that operation and maintenance and evaluation studies budgets were well coordinated and contained no budget duplications. Efforts were also made to arrange 3-party meetings which included LSRCP Office, operating agency, and Indian Tribe personnel to make certain that all parties were informed of the other's plans.

Few major equipment purchases were made by coordinators during FY1988. Most operating agencies had acquired all microcomputer hardware in 1986 and 1987 and have hard disks and sufficient software. Although software and computer brands vary, all computers are IBM compatible and we will eventually require that data report formats be similar to allow easy comparison of data among agency programs. Interchange of data (Dbase III files, primarily) has been occurring and will continue. Equipment expenses in 1988 by cooperators included wet suits, a graphics plotter, and miscellaneous office furniture.

IDFG's Evaluation Study Program

Because of the large production program in Idaho and large geographic area encompassed by the LSRCP, IDFG has chosen to divide their study program into several statements of work and budgets. The Hatchery Evaluation Study was initiated in 1982 and is being conducted to ensure that accurate and adequate monitoring of hatchery practices occurs so the best, most cost effective mode of operation for each hatchery is implemented. The major tasks include monitoring and evaluation of hatchery loading and size, time, and location of release studies. These studies are long-term because constant monitoring is required to identify problems before they result in catastrophic fish losses and to determine what hatchery rearing and release practices resulted in the best adult returns.

In late 1984 Idaho began an angler survey to assess the LSRCP contribution to Idaho's steelhead fishery, to estimate the escapement of LSRCP fish, to recover information on marked fish, and to 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. The study, called Hatchery-Wild Composition of the Idaho Steelhead Harvest, was funded through 1988 and will be continued annually until compensation goals have been met, and periodically thereafter.

As in 1987 the process of reading tags and analyzing marks was funded in 1988 as a separate evaluation study while the actual tagging costs remained a part of each hatchery's budget. The study, entitled Coded Wire Tag Analyses, will

be an ongoing effort even though it may be combined with the overall hatchery evaluation study in 1989. In 1988 about 10,000 tags (many recovered under the Harvest Study described above) were removed from fish and read at IDFG's Lewiston lab.

ODFW's Evaluation Study Program

In contrast to IDFG's program, ODFW conducts nearly all of their evaluation under one "umbrella" 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 really begin until FY1984. Their evaluation program encompasses monitoring and evaluation of hatchery practices; size, time, and location of release studies; marking activities associated with any studies (CWT, branding); some disease monitoring efforts; and creel census studies to determine LSRCP contribution to Oregon's steelhead fishery and to recover tagged fish. In addition, the principal investigator for this study coordinates the broodstock selection, egg-taking procedures, and outplanting program for Oregon's LSRCP program, currently the only anadromous hatchery program in NE Oregon. Recent ODFW studies have documented a very low return of Wallowa stock steelhead to the hatchery and fishery. Investigators have not been able to determine where the fish are going once they pass Lower Granite Dam. To help answer this question, radio tags were implanted in Wallowa stock fish at Lower Granite (identified by their unique brands) to allow tracking the fish during the winter of 1987 and 1988.

Two short-term studies were initiated by ODFW in 1984 and continued through 1988: Evaluation of the Benefits Provided by Presmolt Releases in the Grande Ronde and Evaluation of Benefits Provided by Reprogramming Spring Chinook Smolts from Lower Columbia Hatcheries. Both are short term (about 4-year) studies involving CWTing, tag recovery, and analyses of returns. The presmolt study will help determine the efficacy of releasing fry and presmolts in the summer and fall. In fall 1987 about 82,500 fingerlings were tagged and released. The reprogramming study will help determine the efficiency of bolstering the LSRCP program by releasing Carson stock smolts in the Grande Ronde and Imnaha River systems. Because of the availability of Upper Snake River stocks, no Carson stocks were released in 1987 or 1988. All activities with this project in 1988 were related to CWT recovery and analysis.

WDF's Evaluation Study Program

The Department of Fisheries field evaluation program was initiated in 1985 when a principal investigator was hired and stationed at Lyons Ferry FH. As a result, their Lyons Ferry FH Evaluation-Salmon program had its first full year of activities in 1986. The program has continued in much the same fashion in 1988. Washington Department of Fisheries' evaluation program is similar to Oregon's in that all major evaluations are being conducted under one multiple-objective study including monitoring and evaluation of hatchery practices, juvenile outputs, adult returns, and contribution to fisheries; time, size, and location of release studies; and impacts of hatchery releases on wild chinook stocks. Because the hatchery program is being built entirely with native fall and spring chinook stocks, special attention is being paid to quantifying and monitoring genetic variables in each population.

A smolt trap, first constructed and operated on the Tucannon River (jointly with WDW) in 1986 to monitor the numbers and timing of outmigrating spring chinook and steelhead, was moved upriver to improve its operation in 1987. Trap operation was continued in FY1988. The major activity conducted in 1988 was a yearling versus zero and onstation versus barged release study. The study's results should help determine the most efficient time, size, and mode of release scheme for Lyons Ferry fall chinook.

WDW's Evaluation Study Program

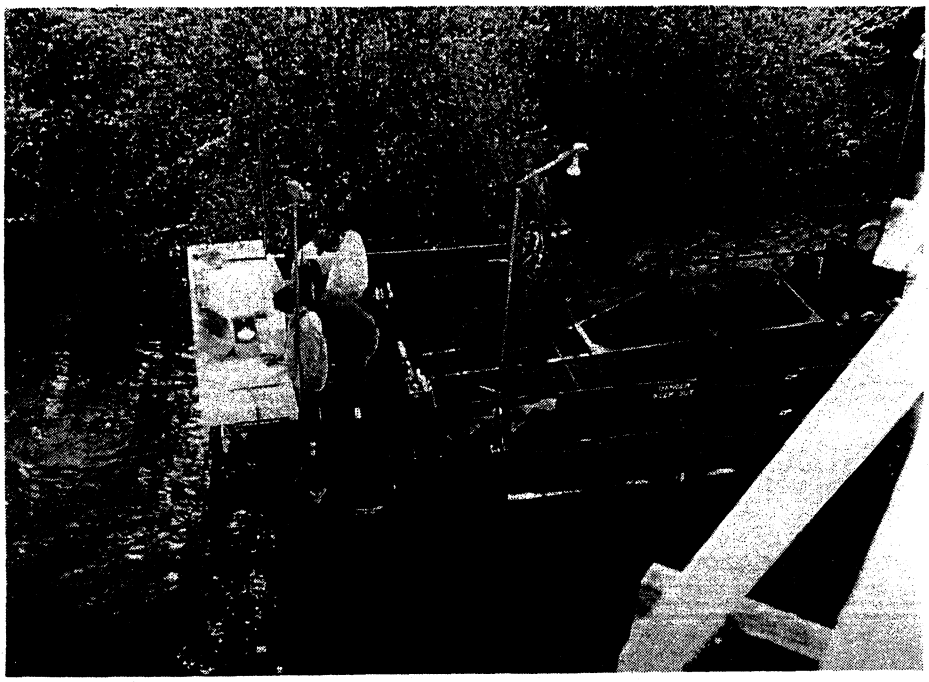
Much like ODFW and WDF, the bulk of the Department of Wildlife's evaluation program has been and will continue to be conducted under one study, Lyons Ferry FH Evaluation Study - Steelhead. This longterm program includes objectives for evaluating both the steelhead and resident trout hatchery programs, with the steelhead objectives having the highest priority and requiring the most funding (over 90 percent of the total).

Because the steelhead and trout programs have been underway at Lyons Ferry since 1983, the hatchery evaluations and related field studies are also well underway. Major concerns which have surfaced as a result of recent evaluations have been the poor brood stock returns to the Lyons Ferry ladder, large numbers of residuals below satellite release facilities, and low returns to the Tucannon River. Studies were initiated in 1986 and continued in 1988 to determine what is needed to improve homing of adult fish back to the ladder and to release sites. Surveys to determine contribution of WDW-reared, LSRCP steelhead to Washington fisheries have shown large portions of the Tucannon-released fish are returning above Lower Granite Dam--well above their release site. Washington Department of Wildlife collaborated with ODFW in conducting the radio tagging study mentioned above to determine where the Tucannon River released adults are wintering. In a related study, steelhead presmolts outplanted to the 3 conditioning ponds were sampled before outplanting, midway through the conditioning period, and at release to determine the process and degree of smoltification.

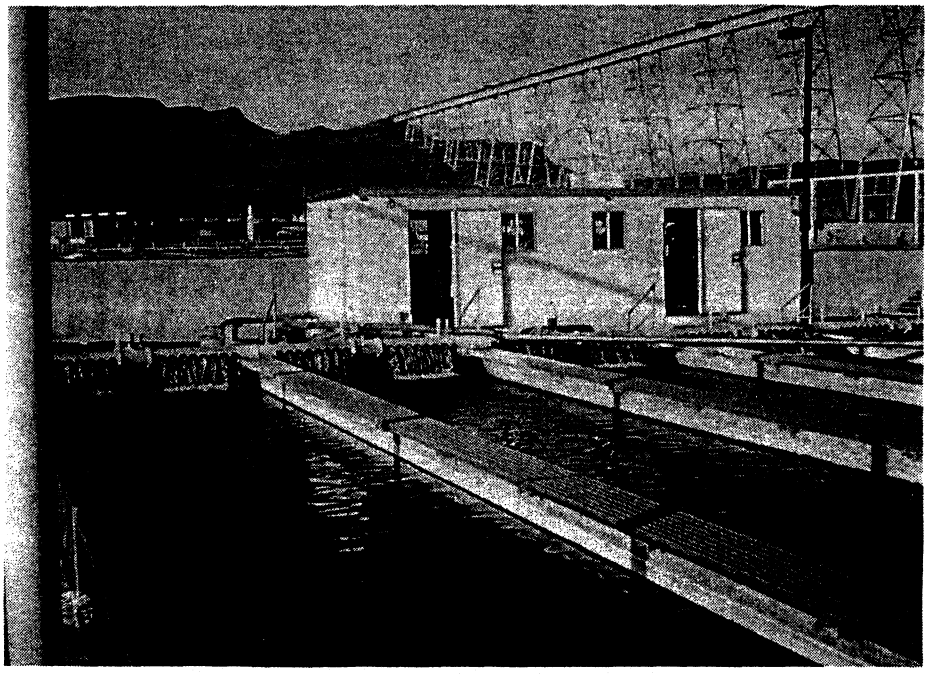
In lieu of 7,000 pounds of hatchery capacity for resident trout, WDW was funded by the Corps to build instream improvement structures for natural fish propagation. In FY1984 and ending in FY1985 the LSRCP Office and the Corps jointly funded an evaluation of the status of the structures and of their success in compensating for resident trout losses. This type of evaluation will be conducted periodically (every 4 to 6 years) until sufficient data are available to ensure that the 7,000 pound compensation goal for natural trout production has been met. No instream habitat improvement evaluation studies were funded in 1988.

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 facilities and because their primary concerns are for the compensation of tribal fisheries, their projects are oriented toward evaluating the implementation and success of the program rather than solving fish culture problems.



Washington Department of Fisheries Evaluation Studies personnel collecting data to determine smolt quality and emigration rate of juvenile samon on their Tucannon River floating scoop trap near Dayton, Washington.



The LSRCP has constructed two mobile fish marking trailers used in Washington and Oregon. The trailer in this photo was being used to tag salmon at Lyons Ferry FH.

The Nez Perce Tribe was funded to conduct 2 studies in FY1987 which were extended into FY1988. The first study, entitled A Review, Development and Comparison of Anadromous Salmonid Production Plans for the Salmon River Subbasin Under the Lower Snake River Compensation Program, was funded to assess the LSRCP program in the Salmon River basin, to compare it to the tribes concerns and plans, and resolve differences.

The tribe's second study is similar and is being conducted 1) to develop a tribal plan for implementing the LSRCP in the Grande Ronde and Imnaha River basins in Oregon, 2) to compare the tribal plan with the LSRCP efforts in the basin, 3) to identify where conflicts occur between the plans, and 4) to recommend ways to resolve the conflicting approaches.

The Confederated Tribes of the Umatilla Indian Reservations (CTUIR) became direct cooperators in the LSRCP Program for the first time in FY1987. (They were subcontractors for the Nez Perce in 1986.) The CTUIR were funded for one study in FY1988 with the objectives to 1) finalize their analysis of how the LSRCP program addresses tribal needs in the Grande Ronde, Imnaha, and Tucannon River basins; 2) assist the State agencies (ODFW and WDF) with their ongoing LSRCP evaluation studies; and 3) develop a five-year plan for 1988-1992 tribal involvement in LSRCP studies.

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.

The Dworshak Fisheries Assistance Office (DFAO) was funded by the LSRCP program in FY1988 to conduct hatchery monitoring and evaluation studies at Dworshak (spring chinook) and Hagerman NFH's. Dworshak Fisheries Assistance Office's program was similar to those conducted by the state agencies. Their study, Evaluation and Technical Coordinator for FWS LSRCP Hatchery Programs, is a long-term effort designed 1) to aid NFH's with the development of a data base system for hatchery management, 2) to define and solve cultural and management problems affecting LSRCP success, 3) to provide interagency coordination, and 4) to determine fishery contribution and escapements of Dworshak and Hagerman NFH LSRCP programs. The LSRCP funds were also 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.

Two LSRCP-funded studies were conducted by the Idaho Cooperative Fisheries Unit during 1988. An Evaluation of Hatchery Practices and Methods to Control Bacterial Kidney Disease (BKD) in Hatchery Stocks of Snake River Chinook Salmon was initiated in 1982 with FY1982 funds and was completed in 1988. No 1988 funding was used for this study. Cooperative Unit personnel were provided FY1987 monies to fund a program for trapping fall chinook salmon at Ice Harbor Dam for the WDF Lyons Ferry program. The fall chinook trapping program may be conducted by WDF sometime in the future now that Lyons Ferry is fully operational.

VII. OTHER COOPERATIVE PROGRAMS

The State of Idaho is attempting to restore sockeye salmon runs to Redfish Lake. To assist in the restoration effort, facilities at Sawtooth are being made available for the IDFG sockeye salmon program which is funded by the National Marine Fisheries Service.

The State of Oregon utilized several raceways at Irrigon FH to hold fall chinook salmon smolts scheduled for release in eastern Oregon.

Wallowa hatchery shipped 500,000 eyed steelhead eggs to Lyons Ferry Hatchery in Washington as part of ODFW's cooperative LSRCP effort with WDW in the Grand Ronde Basin.

Cooperative agreements are in place with all State agencies except Washington Department of Fisheries 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 Corps always seeks our advice, particularly on items which would affect operation and maintenance of a new facility.

Construction was nearly completed on the Imnaha satellite facility in 1988. It will be finished in early FY1989 and be ready for operation next spring. The release and trapping facility will operate as part of the Lookingglass FH program for spring chinook propagation.

Construction was completed at Little Sheep Creek, a satellite facility of Irrigon Fish Hatchery, in August 1987; a cleanup contract extended into FY1988. The release and trapping facility is being operated as part of the Irrigon/Wallowa program for steelhead propagation.

As noted above in the operations section, Clearwater Fish Hatchery design is currently underway and construction is scheduled to begin in August 1989. The water supply facilities are in preliminary design and could begin construction by November 1989. Design and/or construction activities have continued on 2 of the hatchery's 3 satellite facilities. Construction was completed on the Red River satellite in November 1986. A Design Memorandum for the Powell Satellite was issued in June 1987 and construction of this facility was initiated in late FY1988. The Crooked River Satellite is still in the design stage.

Magic Valley FH, Idaho, was completed in August 1987 and received fish for rearing and release in spring 1988. Some revegetative work at the spring collection facility was done in FY1988. A dedication of the facility occurred in spring 1988.

Site selection report was completed for the Eagle Disease Diagnostic Laboratory, Idaho, in FY1987. Design was underway in FY1988 and the facility is scheduled for construction start in April 1989.

Pertinent data relating to hatchery design and construction schedules are included in Table 3; approximate facility locations are identified on the LSRCP facility map (Figure 1).

IX. STAFFING

A total of 3.41 permanent FTE staff years were utilized during FY 1988. No temporary employees and one student aide was employed (.25 FTE) in addition to full time permanent personnel.

Cassie Fowler, a Boise State University business student who was hired to aid the LSRCP staff in budgetary matters resigned December 19, 1987 to move to Kansas.

Ken Higgs, LSRCP Coordinator retired December 30, 1987 and was replaced by Ed Crateau who entered duty on February 2, 1988. Lori Arden filled the vacancy left by the previous Cooperative Agreement Assistant and reported for duty March 29, 1988.

In FY 1988 the LSRCP continued to sponsor a YCC program at a cost of $66,000. The program was administered by 11 state and federal LSRCP hatcheries and evaluation study projects and included 41 YCC student enrollees and crew leaders. Because of the experience gained from past years involvement in the YCC program everything went smoothly. The program is well received by the operating agencies because it not only accomplished needed station work, but also provides environmental awareness and training to local youths.

Employees as of September 30, 1988:

Edouard J. Crateau, LSRCP Coordinator, GS-13
Daniel M. Herrig, Evaluation Studies Coordinator, GS-12
Lori R. Arden, Cooperative Agreement Assistant, GS-6
Tammy A. Froscher, Secretary/typist, GS-5

X. FUTURE OUTLOOK

The Lower Snake River Compensation Plan Program, although still in its infancy, is well underway with only one hatchery, Clearwater, not yet constructed. The Corps is planning to begin construction in the fall of 1989 with a completion date expected in early 1991. All satellite facilities serving to support full hatchery production by providing broodstock trapping and holding capabilities and smolt acclimation and release ponds should be completed in 1990. The Imnaha River, Oregon satellite and Powell, Idaho facilities should be completed and fully operational in 1989. The Crooked River, Idaho site which will round out the full complement of support satellites is scheduled for completion sometime in 1990.

The U.S. Army Corp of Engineers has done an excellent job in constructing and equipping LSRCP hatcheries and satellites and where problems have been experienced the Corp has been willing to make the necessary repairs and changes in an attempt to help them reach their full capability. For example, the Irrigon FH located in northeast Oregon was designed around a well water supply system of 2,500 gpm at full production. Since operation of this facility began in 1987 the water supply has diminished to approximately 2,100 gpm and when the hatchery is at full capacity the entire 2,500 gpm is needed. The Corps has agreed to rectify the marginal situation by drilling another well to supply an additional 5,000 gpm.

The Corps is also planning to alleviate production problems at Lookingglass FH, Oregon with some modifications of the present facility. Lastly, discussions are now underway regarding water quality problems at Wallowa FH in Oregon and what can be done to improve the supply.

Hatchery effectiveness 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. Funding for this phase of the LSRCP program has fallen behind the needs over the last few years as more facilities have come on line and funding levels have remained static. We anticipate an improvement in FY1990 funding levels which should provide sufficient money to continue an adequate hatchery evaluation program.

We are extremely optimistic about the future of the LSRCP Program and the general trends indicate increases in the return rates of steelhead which exceed model predictions. The chinook salmon return rates to the basin are currently below the level used to design the LSRCP facilities. Improved adult return rates are expected as a result of changes in production and release strategies and improvements in smolt emigration.

XI. MEETINGS AND TOURS IN FY 1988

10/23/87	Meeting on Powell Satellite Facility design with COE, IDFG in Boise (Ken Higgs, Dan Herrig)
10/27/87	Visit to Sawtooth FH (Ken Higgs)
10/30/87	LSRCP Office inspection visit by John Miller (LSRCP Staff)
11/3-5/87	Evaluation Study Committee meeting at Billy Creek (Dan Herrig)
11/12/87	Safety Film (Tammy)
11/13/87	Hagerman NFH Coordination Meeting (Dan Herrig)
11/16-18/87	Dworshak NFH Coordination Meeting, Powell Satellite EA review (at Dworshak), and budget meeting at Lyons Ferry FH with WDW and WDF, (Ken Higgs, Dan Herrig, Ed Crateau)

11/23/87	Meeting with BPA personnel to audit budget estimates in Boise (Ken Higgs, Dan Herrig, Cassie Fowler)
11/30-12/3/87	Fisheries Resources Project Leader's meeting and NW Fish Culture Conference in Tacoma, WA (Ken Higgs, Dan Herrig)
12/10-11/87	Property inventory at Magic Valley FH with COE (Pat Streamer, Tammy Froscher)
1/21/88	Meet with ODFW in Portland on FY88 budget (Dan Herrig)
2/3/88	Meeting with IDFG's Steve Huffaker, Jerry McGehee on Clearwater FH in Boise (Ed Crateau, Dan Herrig)
2/18/88	Hagerman NFH Coordination Meeting (Ed Crateau, Dan Herrig)
2/22-24/88	Visit Irrigon FH and attend Pacific NW Fish Health Protection Committee Meeting in Kennewick, WA (Ed Crateau, Dan Herrig)
2/26/88	Visit from Robert Vega (Regional (Office) to update computer software (LSRCP Staff)
3/3-4/88	Attend portions of Idaho Chapter AFS Meetings in Boise (Dan Herrig)
3/7-8/88	ODFW LSRCP Program Coordination meeting in LaGrande, OR (Ed Crateau, Dan Herrig)
3/11/88	Meeting with IDFG on hatchery water rights adjudication in the Snake River (Ed Crateau, Dan Herrig)
3/17/88	Dworshak Coordination Meeting (Ed Crateau, Dan Herrig)
3/28-29/88	Met with COE in Walla Walla regarding Clearwater FH and the Tucannon River weir design (Dan Herrig, Ed Crateau)
3/30-4/7/88	National Fisheries Information Workgroup meeting in Minneapolis (Ed Crateau)
4/6/88	LSRCP Evaluation Studies Coordinator's meeting in Lewiston (Dan Herrig)
4/19/88	Meeting in Boise with Dave Alf and IDFG, Bill Hutchinson, to discuss brochure development (Ed Crateau, Dan Herrig)
4/26-27/88	Met with RO personnel, discussed water rights adjudication with Corps personnel at their North Pacific Division Office, and attended a Supplementation Technical Work Group meeting in Portland (Ed Crateau, Dan Herrig)

5/4/88	Attended a Hatchery Effectiveness Technical Work Group meeting in Portland (Dan Herrig)
5/9-10/88	Toured Lower Granite Dam fish passage facilities with LSRCP hatchery personnel (Ed Crateau, Dan Herrig)
6/6/88	Met to discuss budget questions with RO personnel and ODFW in Portland (Ed Crateau)
6/8/88	Attended a meeting on fish marking plans with IDFG personnel in Boise (Dan Herrig)
6/9/88	Met with IDFG hatchery and evaluation personnel regarding FY 1989 budgets (Dan Herrig, Ed Crateau)
6/13-17/88	Fisheries Project Leaders Meeting in Reno (Ed Crateau, Dan Herrig)
6/22/88	Attended meeting of the Columbia Basin Fish and Wildlife Authority at IDFG State Office in Boise (Ed Crateau, Dan Herrig)
7/8/88	Eagle Lab inventory (Ed Crateau, Lori Arden)
7/11/88	Property inventory at Hagerman NFH and Magic Valley FH (Ed Crateau, Tammy Froscher, Lori Arden)
7/12/88	Property inventory at East Fork Satellite (Ed Crateau, Tammy Froscher, Lori Arden)
7/13/88	Property inventory at Sawtooth FH (Ed Crateau, Tammy Froscher, Lori Arden)
7/13/88	Met with Dave Alfs, COE, and IDFG on Sawtooth FH brochure at LSRCP Office (Ed Crateau)
7/15/88	Property inventory at McCall FH (Ed Crateau, Tammy Froscher)
7/19/88	Property inventory of M. Schuck in Dayton, Washington and B. Bugert at Lyons Ferry FH (Ed Crateau, Dan Herrig, Tammy Froscher)
7/20/88	Property inventory at Tucannon FH (Ed Crateau, Tammy Froscher)
7/20-21/88	LSRCP evaluation studies field work with B. Bugert of WDF (Dan Herrig)
7/21/88	Property inventory at Lyons Ferry WDW and WDF FH's (Ed Crateau, Tammy Froscher)

7/21/88	Property inventory at Lyons Ferry WDW and WDF FH's (Ed Crateau, Tammy Froscher)
7/26/88	Property inventories at Irrigon and Lookingglass Hatcheries (Ed Crateau, Tammy Froscher)
7/27/88	Property inventories at Wallowa FH, Little Sheep Creek, Big Canyon, Imnaha satellite facilities (Ed Crateau, Tammy Froscher)
7/28/88	Property inventory at ODFW Regional Office in LaGrande (Ed Crateau, Tammy Froscher)
8/3/88	Property inventory at South Fork Satellite Facility (Tammy Froscher, Lori Arden)
8/11-12/88	Evaluation Study Coordinators Committee Meeting in Boise (Dan Herrig)
8/11-23/88	Tour of floating weirs in Alaska (Ed Crateau)
8/15/88	Attend spawning ground redd count workshop in Stanley (Dan Herrig)
8/17/88	Attended BPA proposal development workshop in Boise (Dan Herrig)
8/26/88	Met with IDFG hatchery personnel in Boise (Ed Crateau)
8/30/88	Meeting on Irrigon FH water supply at Irrigon FH (Ed Crateau)
9/1/88	Hagerman NFH Coordination Meeting (Ed Crateau, Dan Herrig)
9/8/88	Met with BPA personnel to discuss FY 88 expenses (Ed Crateau, Dan Herrig, Lori Arden)
9/22/88	Attended NW Power Planning Council meeting and met with Umatilla Tribal biologists in Boise (Dan Herrig)

XII. TRAINING

Tammy Froscher, Property Utilization and Disposal, General Services Administration, June 2, 1988, Portland, OR

Lori Arden, Regional Office Orientation, September 26 through 30th, 1988, Portland, OR

Edouard J. Crateau, Introduction to Fish Health, Leetown Fisheries Academy, August 1 through 5th, 1988, Mount Hood Community College

XIII. AVAILABLE REPORTS

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Lientz, J., C. Hesson, and E. Steiner. 1988. Annual Report FY 1988, Dworshak Fish Health Center. U.S. Fish and Wildlife Service, Ahsahka, Idaho. 10 pp.

Olson, W. 1982. Annual Report, FY 1981, Dworshak National Fish Hatchery. U.S. Fish and Wildlife Service, Ahsahka, Idaho. 47 pp.

Olson, W. 1983. Annual Report, FY 1982, Dworshak National Fish Hatchery. U.S. Fish and Wildlife Service, Ahsahka, Idaho. 47 pp.

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Table 1. LOWER SNAKE RIVER COMPENSATION PLAN ACTIVITIES FOR 1988

INSTALLATION/PROGRAM	FUNDING LEVELS	SPECIES[a]	TYPE	NUMBER OF FISH STOCKED[b]	POUNDS OF FISH STOCKED[b]
STATE OF IDAHO					
McCall SFH	$391,644	SuCS			
South Fork Satellite			Smolts	1,060,400	56,600
Sawtooth FH	$685,252	SpCS	Smolts	2,330,200	114,788
			Fingerlings	100,600	4,374
East Fork Satellite		SpCS	Smolts	249,200	10,276
Magic Valley FH/LSRCP Mgt.	$560,084	STT	Smolts	2,100,000	454,200
Clearwater Anadromous	$168,700	SpCS[c]	Smolts	200,100	8,933
			Fingerlings	233,100	5,589
STATE OF OREGON					
Lookingglass FH	$366,696	SpCS	Smolts	724,559[d]	41,770
			Fingerlings	82,445	3,616
Imnaha Satellite			Smolts	199,500	20,747
Big Canyon			Smolts	186,290	10,175
Irrigon FH	$916,792	STT	Smolts	1,016,680[e]	203,336
Wallowa FH	-	STT	Smolts	496,726	99,345
Little Sheep Satellite	-	STT	Smolts	248,114	49,622
Big Canyon Satellite	-	STT	Smolts	224,990	44,998
STATE OF WASHINGTON					
Lyons Ferry FH (Dept. of Fish)	$360,809	SpCS	Smolts	153,725[f]	15,773
		FCS	Smolts	407,840[g]	50,980
			Smolts	4,573,447	61,780
Lyons Ferry FH (Dept. of Wildlife)	$770,135	STT	Smolts	970,341[h]	168,737
			Fingerlings	54,814[e]	944
		RBT	Catchables	107,005[e]	35,668
Tucannon FH Satellite	$263,276	RBT	Catchables	160,447[e]	53,262
FISH & WILDLIFE SERVICE					
Hagerman NFH	$558,000	STT	Smolts	1,550,031[i]	332,325
		STT	Fingerlings	344,000[e]	12,995
Dworshak NFH	$195,000	SpCS	Smolts	1,525,347	69,692
			Fingerlings	415,067[j]	7,459
Dworshak FHC	$ 28,000				
YCC Program	$ 66,000				
Regional Office	$200,000				
LSRCP Management/Coord.	$220,806				
Evaluation Studies	$936,090				
Total Obligated	$6,587,284				
		FCS	Yearlings	407,840	50,980
			Zero-age	4,573,447	61,780
		SuCS	Smolts	1,060,400	56,600
		SpCS	Smolts	5,624,431	293,026
			Fingerlings	831,212	21,038
		STT	Smolts	6,606,882	1,352,563
			Fingerlings	398,814	13,939
		RBT	Catchables	267,452	88,930

[a] RBT-Rainbow Trout/FCS-Fall Chinook Salmon/SpCS-Spring Chinook Salmon/SuCS-Summer Chinook Salmon/STT-Steelhead Trou
[b] Releases are from facilities listed unless otherwise noted.
[c] Fish were produced at Dworshak NFH and released at the Red River and Lochsa satellite locations.
[d] Includes zero-age spring release of 141,080 chinook at 29 per lb.
[e] Hauled offsite for release.
[f] Released at Tucannon FH.
[g] Yearling smolts.
[h] Released from hatchery, three satellite locations, and into streams.
[i] Released at Sawtooth FH, East Fork, and other Salmon River sites.
[j] Includes experimental 0-age spring smolt release.

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Table 2. LOWER SNAKE RIVER COMPENSATION PLAN EVALUATION STUDIES

Cooperator/Study	1988 Funds	Species Studies
Idaho Dept. of Fish and Game		
Hatchery Evaluations	$ 44,506	Chinook, Steelhead
Hatchery-Wild Study	160,789	Steelhead
Coded-wire Tag Analysis	44,422	Chinook, Steelhead
Subtotal	$249,717	
Oregon Dept. of Fish and Wildlife		
Hatchery Evaluation	$229,418	Chinook, Steelhead
Pre-smolt Release (tagging)	6,262	Chinook
Reprogramming Smolts (tagging)	5,882	Chinook
Subtotal	$241,562	
Washington Dept. of Fisheries		
Lyons Ferry Evaluation	$141,572	Chinook
Washington Dept. of Wildlife		
Lyons Ferry Evaluation	$145,239	Steelhead, resident trout
Nez Perce Tribe		
LSRCP Production Plan Evaluations	$ 43,500	Chinook, Steelhead
Umatilla Confederated Tribes		
LSRCP Evaluation Project	$ 23,500	Chinook, Steelhead
Dworshak Fisheries Assistance Office (FWS)		
Hatchery Coordination	$ 69,000	Chinook, Steelhead
Idaho Coop. Fish and Wildlife Res. Unit (FWS)		
BKD Study	0[a]	Chinook
Fall Chinook Trapping	$ 22,000	Chinook
TOTAL	$936,090	

[a] Studies conducted in 1988 with funds appropriated in previous years.

Table 3. Pertinent Data for Lower Snake River Fish and Wildlife Compensation Plan Fish Hatchery Faciliti

Hatchery (Operator)[a]	Fish Type	Pounds	Construction Cost ($1,000)	Satellite Facilities	Date of Completion
Lookingglass (ODFW)	Spring Chinook	69,600	6,324		Nov. 82
			1,805	Big Canyon Creek	Apr. 87
			818	Imnaha	Jul. 89
Irrigon/Wallowa (ODFW)	Steelhead	279,600	8,117		Oct. 85
			2,206	(Wallowa)[b]	May 85
			1,780	Little Sheep Creek	Aug. 87
			1,809	(Big Canyon Creek)	
Lyons Ferry:			20,503[c]		
Phase I (WDW)	Steelhead	116,400			Nov. 83
	Trout	45,000			
			540	Cottonwood	Feb. 85
			828	Dayton Pond	Oct. 86
	Trout	41,000	2,775	Tucannon Hatchery	Nov. 84
			143	Curl Lake	Feb. 85
Phase II (WDF)	Fall Chinook	101,800			Nov. 84
	Spring Chinook	8,800			
Sawtooth (IDFG)	Spring Chinook	149,000	9,322		Jan. 85
			1,386	East Fork Salmon R.	Nov. 83
Dworshak (FWS)	Spring Chinook	70,000	1,539		Nov. 82
Clearwater (IDFG)	Steelhead	350,000	20,500		Dec. 91
	Spring Chinook	91,300			
			759	Red River	Nov. 86
			2,177	Crooked River	May 90
			1,239	Powell	May 89
Magic Valley (IDFG)	Steelhead	291,500	10,753		Aug. 87
				(Sawtooth)	
				(East Fork)	
Hagerman (FWS)	Steelhead	340,000	6,980		Apr. 84
				(Sawtooth)	
				(East Fork)	
McCall (IDFG)	Summer Chinook	61,300	4,615		Sep. 81
			838	South Fork Salmon R.	Jul. 80
Eagle Lab (IDFG)	Disease diagnostic		1,300		Apr. 89

[a] 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

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Table 4. Adult return goals and hatchery or trap rack returns of LSRCP hatcheries operating in 1988 (total return estimates to the Snake River basin are not available).

Species/Hatchery	Adult Return Goals to Snake River	Hatchery/Trap Rack Returns[1]
Summer Chinook		
McCall FH/South Fork	8,000	2,393
Spring Chinook		
Sawtooth FH/East Fork	19,232	2,033
Lookingglass FH/Imnaha	9,072	3,033
Dworshak NFH	9,000	1,972
Lyons Ferry/Tucannon	1,152	273
Fall Chinook		
Lyons Ferry FH[2]	18,300	3,890
Steelhead Trout		
Irrigon/Wallowa FH[3]	11,184	2,447
Lyons Ferry FH	4,656	[4]
Hagerman NFH/Magic Valley FH[5]	13,600	1,178

1 Chinook returns include jacks
2 Includes ladder returns plus Ice Harbor trapping results.
3 Includes returns to Wallowa, Big Canyon, Little Sheep traps.
4 Ladder is only open for short period, many captures are strays.
5 Includes returns to East Fork, Sawtooth FH racks.

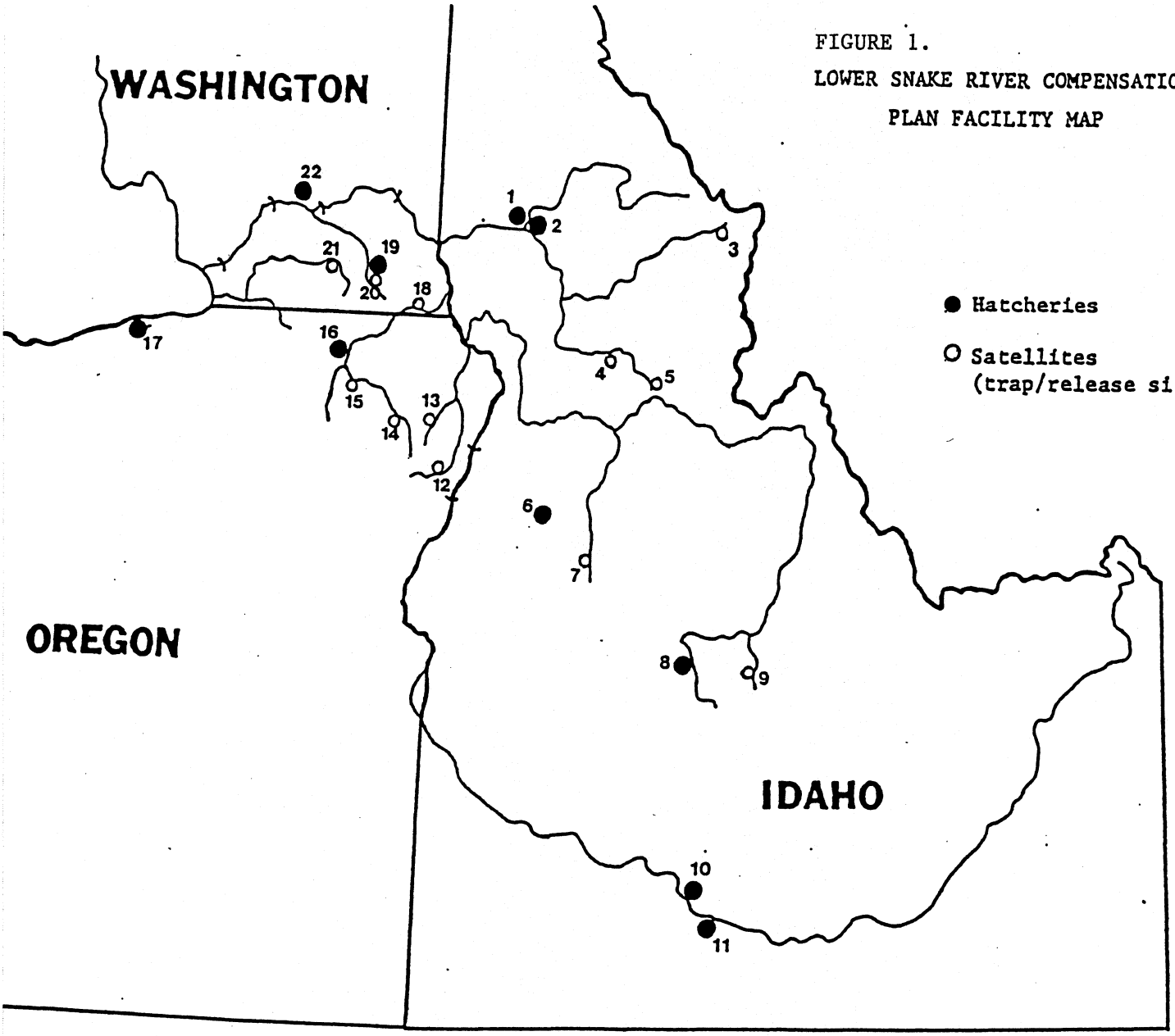

FIGURE 1.
LOWER SNAKE RIVER COMPENSATION
PLAN FACILITY MAP

OPERATING AGENCIES

Idaho Department of Fish & Game

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

U.S. Fish and Wildlife Service

2. Dworshak NFH Expansion
10. Hagerman NFH

Oregon Department of Fish & Game

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

Washington Department of Fish

22. Lyons Ferry FH - Salmon

Washington Department of Game

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