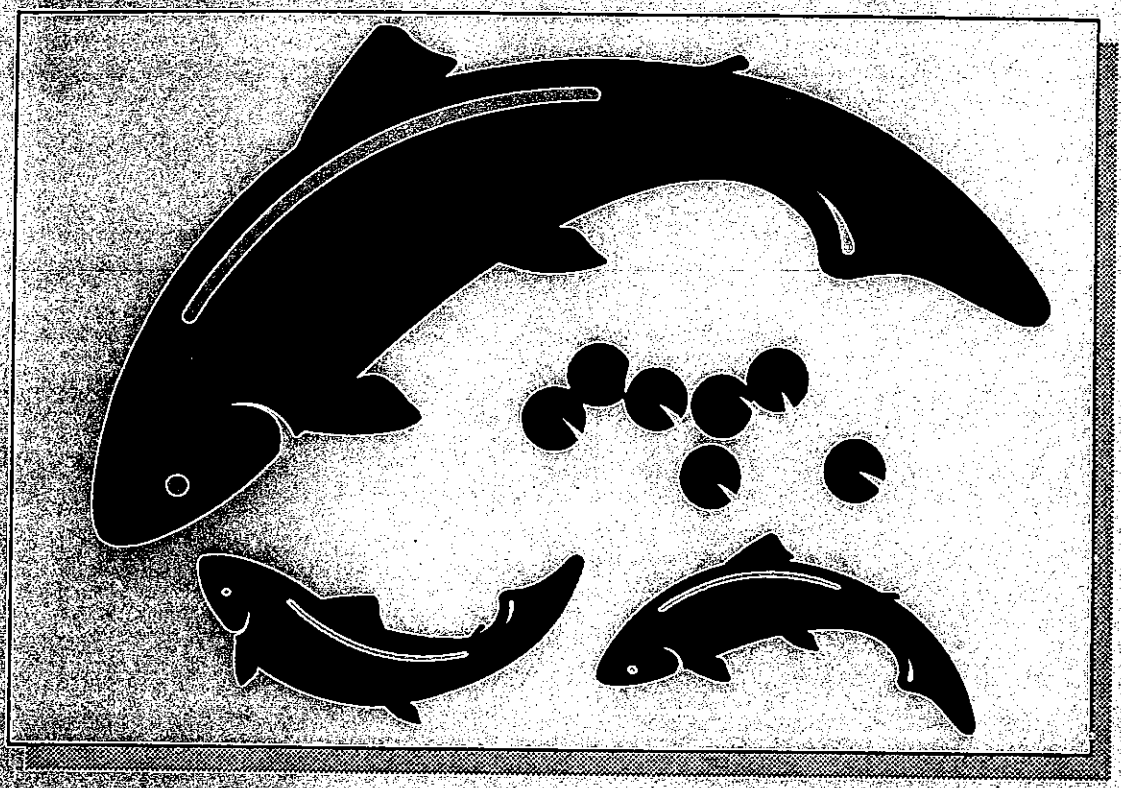
WASHINGTON DEPARTMENT
of
FISH AND WILDLIFE



April 1995

LYONS FERRY AND TUCANNON HATCHERIES
1993-94 ANNUAL REPORT
HATCHERIES PROGRAM

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LYONS FERRY TROUT HATCHERY ANNUAL REPORT
OCTOBER 1, 1993 TO SEPTEMBER 30, 1994

WASHINGTON DEPARTMENT OF FISH & WILDLIFE
HATCHERIES PROGRAM
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SUBMITTED TO:

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
LOWER SNAKE RIVER COMPENSATION PLAN OFFICE
4696 OVERLAND ROAD, ROOM 560
BOISE, IDAHO 83705

CONTRACT NUMBER: 14-16-001-91502 (94-01)

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ACKNOWLEDGEMENTS

We would like to thank Mark Schuck, Art Viola, Johnny Johnston and Michael Keller of Washington Department of Fish and Wildlife, Lyons Ferry Evaluation and Steve Roberts, Pathologist, for their able assistance with the sorting and spawning of steelhead adults at Cottonwood Creek and Lyons Ferry.

A special word of thanks to Orville Bramer, Truck Driver, for his dedication and hard work in the transportation of rainbow legals and steelhead smolts to the acclimation ponds, lakes, rivers and streams throughout the region.

We would like to thank Paul Seidel, Ray Duff, Mark Schuck and Art Viola for reviewing the draft manuscript.

We also would like to express a special appreciation to William Hubbard and staff of the Tucannon Hatchery for their cooperation and hard work at making our program a success, and to the staff of the LSRCP Office in Boise for their continued firm support and the funding of this operation.

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INTRODUCTION

Lyons Ferry Trout Hatchery is operated as a part of the Lower Snake River Compensation Plan and has been in operation since 1983. Mitigation goals are; 931,000 summer steelhead with a weight of 116,400 pounds; 100,000 catchable (>8") and 200,000 fry/fingerling rainbow trout with a weight of 40,000 pounds. Two satellite facilities, Cottonwood and Dayton ponds, located on the Grande Ronde and Touchet rivers respectively, are used to acclimate steelhead smolts for a period of two months prior to release. The Tucannon Hatchery and Curl Lake Pond are also satellites of Lyons Ferry Trout Hatchery with mitigation goals of 153,000 rainbow weighing 46,000 pounds and 120,000 summer steelhead with a weight of 8,000 pounds respectively, in addition to the mitigation goals of Lyons Ferry Trout Hatchery.

EXECUTIVE SUMMARY

Fiscal Year 1993/94 production of steelhead was 1,014,411 fish weighing 217,608 pounds. Rainbow trout production included 114,853 catchable size and 298,150 fry/fingerling size fish with weights of 53,565 pounds and 10,873 pounds respectively.

Adult steelhead returns were lower than previous years. A total of 2,911 adults were trapped in the months of July, August, September and October. On November 22 and 23, 1993, we sorted through the adults and returned 23 hatchery females and 18 hatchery males, 5 wild females and 3 wild males to the Snake River to spawn naturally. On December 6, 1993, we sorted adults and retained 610 females and 547 males for spawning and returned to the Snake River 1,467 females and 161 males to spawn naturally (Table 1).

A total of 1,352,296 green eggs were taken with 1,096,997 eggs reaching the eyed stage. A total of 880,304 eyed eggs were retained for rearing.

Adult steelhead returning to Cottonwood Creek were trapped in the months of March and April (Table 3). Of the 644,886 green eggs taken, 446,029 eggs reached the eyed stage. A total of 366,115 eyed eggs were retained for rearing.

All numbers in this report were derived using standard hatchery methods and techniques for measurement (Piper et al. 1982).

LYONS FERRY SUMMER STEELHEAD

1993 BROOD YEAR

At the beginning of the fiscal year, 614,786 fingerling (17.2/lb) weighing 35,799 pounds were on hand. Between January 10 and 12, we transferred steelhead fingerlings from rearing lake 1 for marking (coded wire tags, freeze brands and left ventral fin clip). Six groups of fish were marked (Table 5). By February 23, 1994, 120,120 unmarked fingerling (5.2/lb avg) weighing 23,100 pounds had been transferred to the Dayton Acclimation Pond. By March 28, 1994, 60,405 marked fingerling (6.0/lb avg) weighing 10,012 pounds and 100,038 unmarked fingerling (5.3/lb avg) weighing 18,875 pounds had been transferred to the Curl Lake Acclimation Pond. Between April 18 and 28, 1994, a total of 450,478 juvenile steelhead (3.5/lb - 4.5/lb) weighing 117,317 pounds were released into Asotin Creek, the Snake, Touchet, Tucannon and Walla Walla rivers (Table 7).

1994 BROOD YEAR

Operation of the adult fish ladder began on July 8, 1993, and terminated on November 15, 1993. A total of 2,911 adult steelhead were captured (Table 1). Peak returns occurred between August 9 and August 23, 1993.

Spawning occurred over a period of five weeks; commencing on January 24, 1994, and ending on February 22, 1994, with a total of 1,352,296 green eggs taken from 253 females (Table 2). Some males were used in the spawning process more than one time (Table 2). The actual number of different males used is unknown. We discarded 149,362 eggs (11.05%) from 31 females as the females were overripe and the eggs were of poor quality. Initial pickoff of all eggs was 105,937 (7.83%) and egg shocking loss was 216,693 (24.62%). Shoft-shell disease appeared to be the problem which contributed to the high egg losses. We retained 880,304 eyed eggs for rearing to smolt size. Hatching of the eggs was completed on March 20, 1994, resulting in 845,316 fry. Egg loss from eyed stage to sack-fry was 34,988 (3.97%). By June 6, 1994, 630,928 fry (133/lb - 177/lb) weighing 3,889 pounds had been transferred to raceways.

Adipose fin clip marking began on August 8, 1994 and was completed August 16, 1994, with 285,960 fingerling (50.0/lb) weighing 5,719 pounds transferred to production lake 1 and 282,910 fingerling (39.2/lb) weighing 7,217 pounds transferred to production lake 2. On September 30, 1994, 568,070 fingerling (20.0/lb) weighing 28,404 pounds were on hand.

Table 1. Adult Returns to Lyons Ferry Hatchery and Adults Shipped

LYONS FERRY SUMMER STEELHEAD

Date of first return	7-08-93
Date of last return	11-15-93
Number of females returning	2,153
Number of males returning	758
Dates of peak returns	8-09-93 to 8-23-93
Number of females and males released to spawn naturally	1,966
Mortality of all adult returns	854
Number of adults shipped	- 0 -

Table 2. Spawning Records for 1994 Lyons Ferry Stock Summer Steelhead

Dates Spawned	Number of Eggs Taken	Number Females	Number Males
1-24-94	497,713	96	192
2-01-94	253,133	48	97
2-08-94	218,631	41	85
2-15-94	183,276	33	66
2-22-94	199,543	35	73

Total number of females spawned	253
Total number of males spawned	513
Total number of green eggs	1,352,296
Total number of eyed eggs	1,096,997
Number of eggs discarded	255,299
Number of eggs retained for rearing	880,304
Number of eggs shipped	-0-

WALLOWA SUMMER STEELHEAD

1993 BROOD YEAR

October 1, 1993, 421,345 fingerling (29.3/lb avg) weighing 14,374 pounds were on hand. On Novmeber 3, 1993, 80,982 fingerling (33.0/lb) weighing 2,454 pounds were stocked into Sprague Lake in Adams County. Between February 12 and February 17, 1994, 275,600 fingerling (6.8/lb avg) weighing 40,550 pounds were transferred to Cottonwood Acclimation Pond. On April 26 and 27, 1994, 49,508 juvenile steelhead (4.1/lb) weighing 12,075 pounds were released into Oregon's Wildcat Creek (Table 6). By April 30, 1994, 273,000 juvenile steelhead (4.8/lb avg) weighing 56,875 pounds were volitionally released into the Grande Ronde River from the acclimation pond (Table 6). Mortality throughout the rearing cycle was 17,855 fish (4.24%).

1994 BROOD YEAR

Operation of Cottonwood Creek adult trap began on March 5, 1994. Trapping was terminated on April 17, 1994. A total of 308 adult steelhead were captured. Peak returns occurred between March 30 and April 6, 1994 (Table 3).

Spawning occurred on three days, April 4, 11 and 18, 1994, resulting in 644,886 green eggs (Table 4). Some males were used in the spawning process more than one time (Table 4). The actual number of different males used is unknown. De-ionized water was used in the water hardening process in an attempt to control the IHN virus. However, virology tests disclosed the absence of any IHN virus in the adults. A total of 366,115 eyed eggs were retained for rearing. Hatching of the eggs was completed on May 12, 1994, resulting in 314,193 sack fry (14.2 percent loss from eyed egg to sack-fry). On April 8, 1994, we received 277,000 eyed eggs from Enterprise Hatchery. Hatching of the eggs was completed on April 15, 1994, resulting in 267,627 fry (3.38 percent loss from eyed eggs to sack- fry). By August 3, 1994, 318,022 fry (140/lb - 291/lb) weighing 1,631 pounds were transferred to raceways. Adipose fin clipping commenced on August 18, 1994 and was completed on August 23, with 298,710 fingerling (168/lb) weighing 1,778 pounds transferred to production lake 3. On September 30, 1994, 298,310 fingerling (60.0/lb) weighing 4,972 pounds were on hand.

Table 4. Spawning Records for 1994 Wallowa Stock Summer Steelhead

Dates Spawned	Number of Eggs Taken	Number Females	Number Males
4-04-94	194,768	38	44
4-11-94	242,417	40	80
4-18-94	207,701	40	80

Total number of females spawned 118
Total number of males spawned 204
Total number of green eggs 644,886
Total number of eyed eggs 446,029
Number of eggs retained for rearing 366,115
Number of eggs discarded ..... - 0 -

Table 3. Adult Returns to Cottonwood Creek Acclimation Pond

Date of first return 3-05-94
Date of last return 4-17-94
Number of females returning 212
Number of males returning 96
Dates of peak returns ..... 3-30-94 to 4-06-94
Number of females and males released to spawn naturally ..... -0-
Mortality of all adult returns 308
Number of adults shipped ..... -0-

Table 5. Marked Groups of Steelhead for 1994 Release

Number of Fish	Brand	Tag Code	Fin Clip
Curl Lake			
20,150	RA-7U-1	63-54/7	AD/LV
20,125	RA-7U-3	63-54/9	AD/LV
20,130	LA-7U-1	63-54/8	AD/LV
Walla Walla River			
20,096	RA-IT-3	63-53/14	AD/LV
20,017	LA-IT-1	63-53/13	AD/LV
20,171	RA-IT-1	63-53/12	AD/LV
Tucannon River at Tucannon Hatchery - "Wild" Tucannon Summer Steelhead			
9,843		63-48/57	LV

SPOKANE STOCK RAINBOW TROUT

1992 BROOD YEAR

On October 1, 1993, 167,174 fingerling (8.2/lb avg) weighing 20,325 pounds were on hand. On October 19 and 22, 1993, a total of 57,400 fingerling (10.5/lb) with a right ventral fin clip weighing 5,467 pounds were transferred to Idaho Fish & Game for stocking into the Clearwater and Salmon Rivers. By March 29 1994, 114,853 catchable size fish (2.0/lb - 2.4/lb) weighing 53,565 pounds had been stocked into area lakes (Table 8). A 5,441 fish overrun was realized at that time.

1993 BROOD YEAR

On December 28, 1993 we received 388,800 eyed eggs from Spokane Trout Hatchery. Hatching of the eggs was completed on January 8, 1994, resulting in 378,582 fry (2,501/lb) with a weight of 151 pounds. Egg loss was 10,218 (2.63%). By March 25, 1994, 361,549 fry (229/lb avg) weighing 1,579 pounds were transferred to raceways. Between May 24 and 26, 1994, 168,024 fingerling were adipose fin clipped as requested by Idaho Fish & Game. On June 1, 1994, 166,269 fingerling (49.0/lb avg) weighing 3,393 pounds were transferred to Idaho Fish & Game for stocking into Manns, Spring Valley and Waha lakes and Soldiers Meadows and Winchester Reservoirs (Table 8). On June 13 and 14, 1994, 75,481 fingerling (37/lb) weighing 2,013 pounds were stocked into Sprague Lake in Adams County (Table 8). On August 17, 1994, we received 60,690 fingerling (51/lb) weighing 1,190 pounds from Tucannon Trout Hatchery. On August 24, 1994, 61,120 fingerling were marked with a right ventral fin clip as requested by Idaho Fish & Game. A 430 fish overrun was realized at the time.

By September 30, 1994, 165,363 fingerling (9.9/lb) with a weight of 16,662 pounds were on hand. Mortality to date was 32,589 fish (7.4%).

OPERATION AND MAINTENANCE

Engineering Projects

The U.S. Army Corps of Engineers (C.O.E.) completed and forwarded to us the operation and maintenance manuals for Cottonwood and Dayton Acclimation Ponds. The replacement of worn and faded interpretative (for self-guided tour), safety and traffic control signs should be completed by late summer of 1995.

Burdine Enterprises of Waitsburg, WA. completed laying, spreading and compacting gravel to the Marmes and pit area access roads.

Meyer Pump Company of Pasco, WA. was awarded the contract to repair pump number five at the Marmes Pumping Site on September 14, 1993. Due to excessive wear, new pump impellers had to be forged which delayed completion of pump repairs. Repairs were completed on January 3, 1994, at a cost of $26,228.82.

Tectum Corporation of Spokane, WA. began repairs to the adult pond outlet end walls on June 1, 1994. Concrete walls were poured and "Waterman" valves installed to replace wooden stop-logs. The project was completed on June 30, 1994 at a cost of $28,702.50.

On June 1, 1994, WDFW Hatchery Maintenance Crew pulled pump number four at the Marmes Pumping Site for inspection and repairs. Repairs and installation of the pump were completed by August 23, 1994.

Pavement Maintenance Corporation of Spokane, WA. was awarded the contract to "Seal-coat" all asphalt areas of the hatchery complex. Work began in September and continued through November. Due to inclement weather, completion of this contract will be in the spring of 1995.

Columbia Communications of Pasco, WA. repaired the "Zetron" unit which is part of the telemetry alarm system during November.

Maintenance and Construction Projects

A wide variety of projects involved the hatchery crew during the year to repair and/or replace damaged and faulty equipment thus enhancing hatchery operations.

We cleaned, prepped and painted six batteries of troughs and four intermediate tanks in the incubation room. We installed vinyl curtains to isolate each battery of troughs and each tank in incubation room. We replaced four raceway intake valves and repaired the additional 34 valves. We replaced and installed automatic shutoff valves on all air lines to raceway feeders. New stop-logs were cut and installed at the smolt release structure. We constructed new live boxes, tank screens and raceway crowders. Hatchery crews and YCC workers from Lyons Ferry Trout and Salmon Hatcheries combined forces to clean, prep and paint trim of Visitor's Center building. We cleaned, patched and painted all walls in residence #1. Hatchery crew and YCC workers applied "Cold-Patch" to large cracks and holes prior to application of the "seal-coat" by the contractor. We replaced entrance way lights at Marmes, Utility and Distribution buildings. New contactors were installed in the electrical panel for the heaters at the adult holding building. Repairs were made to the irrigation system at the Utililty building and the Visitor's Center lawn. We constructed entrance way decks and skirting for new "Park" model trailers used at Cottonwood and Dayton Acclimation Ponds. In May, our fish transportation tankers were taken to Boise, Idaho for the removal of old, faded decals and application of new decals.

All hazardous materials were marked with "Personal Protection" labels and we wrote and updated Confined Space Prodecures, Hatchery Operations and Safety Hazardous Communication plans for Lyons Ferry Trout Hatchery.

EQUIPMENT PURCHASES

Equipment purchases for the fiscal year include; "Park" model trailers for Cottonwood and Dayton Acclimation Ponds, electronic fish counters for enumeration of smolt out migration at acclimation ponds, a 1995 Ford 250 Supercab pickup and a "Jet" 486 computer with software (Borland Office for Windows, Microsoft for Windows, MS-DOS - V6.22).

N.P.D.E.S. PERMITS

Expenditures relative to the National Pollutant Discharge Elimination System (N.P.D.E.S.) Permits for Lyons Ferry Hatchery, Cottonwood and Dayton Acclimation Ponds amounted to $3,071.75.

PERSONNEL

Harald von Fischer-Benzon and Floyd W. Schriner were employed as temporary Assistant Managers during the months of February, March and April 1994, to operate the Cottonwood and Dayton Acclimation Ponds. These individuals did an outstanding job.

Harold Harty attended the Pacific Northwest Fish Culture Conference held in Spokane, WA. December 7 - 9, 1993. In January 1994, Gary Griffen and Harold Harty attended required pesticide application training classes to keep their applicators license current. Harold Harty attended Investigational New Animal Drug training associated with the use of chemicals and drugs used in hatchery operations in September. Over the course of the year the hatchery crew received training on Basic First Aid, CPR, proper fork-lift operation and prodedures for the use of fall protection equipment used at the Marmes Pump Site.

Jeff Wendt accepted a promotion to the Fish Culturist II position at Bogachiel Rearing Ponds on October 14, 1993. Jeanie Robanske moved into residence #1 on December 18, 1993. Interviews for the vacated Fish Culturist I position were completed on December 1, 1993. Steve Rodgers was selected to fill the vacated position and began his new duties on December 16, 1993.

The merger of the former Departments of Fisheries and Wildlife into the Department of Fish and Wildlife has been foremost in everyones mind and the topic of discussion. Hatchery staff has attended meetings, tele-conferences and served on committees on issues related to merger.

Christopher Dills, Robin Howard Jr. and Joann Laib were selected to fill our allotted Youth Conservation Corps positions.

Table 6. Food Fed and Weight Gain for all Fish Species at Lyons Ferry Hatchery

SUMMER STEELHEAD

Species	Brood Year	Pounds Food Fed	Gain	Conversion
Lyons Ferry	1993	115,071	110,405	1.04:1
Lyons Ferry	1994	28,743	28,404	1.01:1
Wallowa	1993	58,983	57,030	1.03:1
Wallowa	1994	6,366	4,972	1.28:1
Tucannon "WILD"	1993	45	-0-	-0-
TOTAL (ALL STEELHEAD 93-94)		**209,208**	**200,811**	**1.04:1**

RAINBOW TROUT

Spokane	1992	37,618	36,414	1.03:1
Spokane	1993	19,969	20,878	0.96:1
TOTAL (ALL RAINBOW 92-93)		**57,587**	**57,292**	**1.01:1**
TOTAL ALL SPECIES		**266,795**	**258,103**	**1.03:1**

1993/94 STOCKING DATA FOR LYONS FERRY TROUT HATCHERY

Table 7. JUVENILE SUMMER STEELHEAD

Location	Brood Year	Number of Trips	Number of Fish	Weight of Fish
LYONS FERRY				
Asotin Creek	1993	2	30,460	8,600
Curl Lk (Transferred)	1993	10	160,443	28,887
Dayton Pond	1993	5	119,624	31,480
Mill Creek	1993	1	21,450	5,500
Snake River	1993	10	119,039	31,087
Walla Walla River	1993	8	159,905	40,650
SUB TOTAL		**36**	**610,921**	**146,204**
WALLOWA				
Cottonwood Pond	1993	12	273,000	56,875
Wildcat Creek	1993	2	49,508	12,075
SUB TOTAL		**14**	**322,508**	**68,950**
WALLOWA SUB SMOLTS				
Sprague Lake	1993	1	80,982	2,454
SUB TOTAL		**15**	**403,490**	**71,404**
TOTAL (BROOD YEAR 1993)		**51**	**1,014,411**	**217,608**

Table 8. RAINBOW TROUT

CATCHABLES

Location	Brood Year	Number of Trips	Number of Fish	Weight of Fish
SPOKANE RAINBOW				
Beaver Lake	1992	2	2,500	1,250
Bennington Lake	1992	2	18,000	9,000
Big Four	1992	1	2,000	1,000
Blue Lake	1992	2	4,800	2,000
Dalton Pond	1992	2	16,320	7,200
Dayton Juvenile Pond	1992	1	1,500	625
Deer Lake	1992	2	5,000	2,500
Golf Course	1992	2	7,480	3,400
Marmes Pond	1992	1	504	210
Orchard Pond	1992	1	544	302
Pampa Pond	1992	1	4,200	2,100
Quarry Pond	1992	2	16,000	7,200
Rainbow Lake	1992	4	8,332	4,166
Riparia Pond	1992	1	1,008	420
Silcott Pond	1992	2	5,800	2,700
Spring Lake	1992	3	7,805	3,252
Watson Lake	1992	4	6,780	3,540
West Evans	1992	2	6,280	2,700
SUB TOTAL		**35**	**114,853**	**53,565**
SPOKANE RAINBOW (FRY/FINGERLING)				
Idaho F & G (transfer)	1992	1	57,400	5,467
Idaho F & G (transfer)	1993	2	166,269	3,393
Sprague Lake	1993	2	74,481	2,013
SUB TOTAL		**5**	**298,150**	**10,873**
TOTAL (BROOD YEAR 1992-1993)		**40**	**413,003**	**64,483**

Reference

Piper, R., I. McElwain, L. Orme, J. McCraren, L. Fowler, J. Leonard, 1982. Fish Hatchery Management. United States Department of the Interior, Fish and Wildlife Service Washington D.C.

ANNUAL REPORT - TUCANNON HATCHERY

OCTOBER 1, 1993 THROUGH SEPTEMBER 30, 1994

CONTRACT NUMBER: 14-16-0001-91503

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TUCANNON FISH HATCHERY
POMEROY, WASHINGTON

SUBMITTED TO:

UNITED STATES DEPARTMENT OF THE INTERIOR
UNITED STATES FISH AND WILDLIFE SERVICE
LOWER SNAKE RIVER COMPENSATION PLAN
4696 OVERLAND ROAD, ROOM 560
BOISE, IDAHO 83705

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ACKNOWLEDGEMENTS

We would like to thank Mark Schuck, Art Viola and Michael Keller of Washington Department of Fish and Wildlife, Lyons Ferry Steelhead Evaluation, and Steve Roberts Washington Department of Fish and Wildlife Pathologist, for their able assistance in the operation of this facility. Without their expertise and cooperation this facility would not have been the success that has it been this past year.

We would like to thank Rob Allan, Jim Dills, and the rest of the crew at the Lyons Ferry Department of Fish & Wildlife Salmon Hatchery, and Tami Black Fish Pathologist for their continued support in the operation of this facility.

We would like to thank Butch Harty, John Kerwin, Mark Schuck and Art Viola for reviewing the draft manuscript.

Finally, a special thanks to Butch Harty and his staff at the Lyons Ferry Department of Fish & Wildlife Trout Hatchery for their daily contribution, cooperation, and hard work at making our program a success, and to the staff of the Lower Snake River Compensation Plan office in Boise for their excellent support.

LIST OF TABLES

INTRODUCTION

The Tucannon Fish Hatchery is operated as a portion of the Lower Snake River Compensation Plan (LSRCP) program and has been in operation under this plan for 9 years. The hatchery was initially constructed in 1949 by the Washington State Department of Game. In 1981 it was turned over to the Army Corps of Engineers and underwent a re-design and expansion. It is a operated as a satellite facility to the Lyons Ferry Hatcheries of WDFW.

Trapping and sorting of adult spring chinook, and acclimation of spring chinook smolts are the foodfish responsibilities. A legal sized rainbow trout "put and take" program, acclimation of summer steelhead, trapping, holding, spawning and rearing of a wild Tucannon stock of summer steelhead are the gamefish responsibilities. Curl Lake acclimation pond is a satellite facility managed from this facility. Curl Lake is used for both acclimation of summer steelhead smolts, and as a public fishing lake for rainbow trout.

With the merger of the Washington Departments of Wildlife and Fisheries, these programs are now combined under the auspices of a single state agency called the Washington Department of Fish and Wildlife (WDFW).

Table #1 TUCANNON FISH HATCHERY TOTAL PRODUCTION

POUNDS OF FISH PRODUCED	63,502
POUNDS OF FOOD FED	77,212
CONVERSION	1.21
POUNDS OF FISH PLANTED OR TRANSFERRED	96,989
NUMBERS OF FISH PLANTED OR TRANSFERRED	480,789
TOTAL EGGS TAKEN	- 0 -
NUMBERS OF FISH ON HAND	195,380
POUNDS OF FISH ON HAND	19,739
ADULTS TRAPPED - Salmon	70
Steelhead	7

FISH PRODUCTION

RAINBOW TROUT (SPOKANE STOCK) 1992

At the start of the fiscal year 1992 there were 171,552 fish weighing 22,360 pounds. Beginning in April and ending in June 1993 we planted these fish in a 6 county area in lowland lakes and streams. Approximately 167,342 fish weighing 50,920 pounds were planted.

Average fish size was 3.2/per pound. Table 4 contains additional details.

RAINBOW TROUT (SPOKANE STOCK) 1993

During December 1993 we received 226,800 eyed rainbow eggs from the Spokane Hatchery. By the end of the fiscal year they numbered 195,380 fish and weighed 19,739 pounds. These fish will be used for our 1995 releases. We will be planting some of these fish in October, to bring our program in line for 1995. Table #3 contains additional details.

RAINBOW TROUT (SPOKANE STOCK) 1994 IDAHO LATE FRY PROGRAM

As a result of a LSRCP agreement with Idaho Department of Fish & Game (IDFG), WDFW provides them with 50,000 marked rainbow fry at 20 fish per pound in September/October each year. We received 87,000 eggs from the Spokane Hatchery on February 8, 1994. On August 21, 1994 we transferred 60,600 fish at 51 per pound and weighing 1,190 pounds to Lyons Ferry Trout Hatchery for marking and later transfer to IDFG. Table #2 contains additional details.

SUMMER STEELHEAD - CURL LAKE(Lyon's Ferry Stock) Brood year 1993

On February 18, 1994 three loads and again on February 28, 1994 two loads of Lyon's Ferry stock summer steelhead from Lyons Ferry Hatchery were released in to the Curl Lake Acclimation Pond. These fish numbered 160,443, weighed 28,888 pounds and averaged 5.55 fish per pound.

An experiment was conducted with the Curl Lake facility. We needed to determine if there was a mechanism to manage Curl Lake to enable us to retain juvenile steelhead that do not migrate

volitionally from the pond, while allowing those steelhead that were smolting to emigrate volitionally. We received permission on April 11, 1994 to remove the outlet screens and let the steelhead smolts volitionally migrate. Gradually the pond level was lowered until the pond was approximately half empty. This was done to stimulate the fish to migrate. The pond level was held steady for 2 weeks and then gradually lowered until nearly empty. Fish were sampled twice weekly and when fish in the pond were 80% male and still unwilling to exit the pond, the pond screens were reinstalled. This occurred on May 16th, 1994. Table #5 contains additional details.

SUMMER STEELHEAD (Wild Tucannon Stock) Brood year 1993

At the start of the fiscal year we had 11,373 fish weighing 227 pounds. In late January these fish were sent to Lyons Ferry for tagging and marking. Two weeks later 10,261 fish were returned for acclimation on river water in the raceway. On May 13, 1994 the screens were pulled and by May 20, 1994 all the fish had migrated. These fish migrated out into the hatchery outflow and into the Tucannon River. Three hundred fifty of these fish were PIT tagged, all were coded wire tagged with left ventral fin clips. Table #6 contains additional details.

SUMMER RUN STEELHEAD (Wild Tucannon Stock) Brood year 1994

Having the Tucannon River weir and trap operational allowed us to continue to develop a wild Tucannon River summer steelhead stock. This was to be our fourth year of development. Some modifications to the weir were done, which allowed us to trap or allow free passage by simply taking out a plate. This allowed us to trap or pass on a daily or weekly basis without having to take out all the panels in the river.

From March 14 to April 21, 1994 seven fish were handled. It was determined that with these low returns plus even worse projections on the numbers in this run, to stop all trapping and allow free passage for the remaining fish. This meant that there would be no continued development of this wild brood stock. Escapement numbers would be estimated by red counts later in the year. The weir was completely removed in late September.

SPRING CHINOOK SALMON (TUCANNON STOCK) 1992 Brood Year Smolts

During the period, November 10 and 11, 1993 approximately 85,320 juvenile spring chinook weighing 2,572 pounds (35 fish per pound) were transferred from Lyons Ferry Hatchery and placed into an acclimation raceway. The water supply was a mix of river, spring and well.

It has been demonstrated that keeping the water above 40 degrees Fahrenheit keeps the fish from becoming infected with the EIBS virus. The fish were smaller then previous years but the numbers were normal. Our FLI & MDI was always kept below 70%. The screens were pulled on April 11, 1994 and the remaining fish were forced out on April 18, 1994. Approximately 70 % left voluntarily. A total of 83,409 fish weighing 5,958 pounds (14 fish per pound) were released. Table #7 has additional details.

SPRING CHINOOK SALMON (TUCANNON STOCK) 1994 Adults

The Tucannon Hatchery is used to trap hatchery and wild spring chinook from the Tucannon River for two purposes; 1) enumerate and pass upriver all fish not used for spawning purposes; and 2) Trap and ship adult spring chinook to the Lyon's Ferry Hatchery for holding and spawning. Hatching of eggs and rearing to smolt size is accomplished at the Lyons Ferry Hatchery. The 1994 Spring Chinook adult return was very low with a total of 70 adults and 0 jacks returning to the hatchery rack. Because of low returns all trapped adults were sent to Lyons Ferry Hatchery for broodstock and no fish were passed upstream. The first adult arrived on May 13, 1994, and the last adult trapped was on September 16,1994. Table #8 contains additional details.

TABLE # 2 LATE SUMMER RAINBOW FRY PROGRAM - IDAHO F&G
SPOKANE STOCK - BROOD YEAR 1993

POUNDS OF FISH GAINED	1,190
POUNDS OF FOOD FED	1,180
CONVERSION	.99
EGGS RECEIVED	87,000
NUMBERS OF FISH TRANSFERRED	60,600
POUNDS OF FISH TRANSFERRED	1,190
NUMBERS ON HAND	0
POUNDS ON HAND	0

TABLE # 3 SUB-LEGAL RAINBOW PRODUCTION RAINBOW LEGAL PROGRAM SPOKANE STOCK - BROOD YEAR 1993

POUNDS OF FISH GAINED	19,739
POUNDS OF FOOD FED	19,776
CONVERSION	1.00
EGGS RECEIVED	226,800
POUNDS OF FISH PLANTED	0
NUMBERS OF FISH PLANTED	0
POUNDS ON HAND	19,739
NUMBERS ON HAND	195,380

TABLE # 4 RAINBOW LEGAL PRODUCTION SPOKANE STOCK BROOD YEAR 1992

POUNDS OF FISH STARTED WITH	21,731
NUMBER OF FISH STARTED WITH	182,900
POUNDS OF FISH GAINED	29,189
POUNDS OF FOOD FED	37,750
CONVERSION	1.29
POUNDS OF FISH PLANTED	52,530
NUMBERS OF FISH PLANTED	171,751

TABLE # 5 SUMMER STEELHEAD PRODUCTION - CURL LAKE
LYONS FERRY STOCK - BROOD YEAR 1993

POUNDS OF FISH STARTED WITH.....28,888

NUMBERS OF FISH STARTED WITH.....160,443

POUNDS OF FISH GAINED.....11,522

POUNDS OF FOOD FED.....10,375

CONVERSION..... 0.90

SAMPLING MORTALITY..... 1,184

SIZE OF STEELHEAD AT RELEASE PER POUND..... 3.9

POUNDS OF FISH PLANTED AS RAINBOW.....5,557(4.4/LB)

NUMBERS OF FISH PLANTED AS RAINBOW.....23,898

POUNDS OF FISH RELEASED AS STEELHEAD.....31,480

NUMBERS OF FISH RELEASED AS STEELHEAD.....135,359

TABLE # 6 SUMMER STEELHEAD PRODUCTION
WILD TUCANNON STOCK - BROOD YEAR 1993

POUNDS OF FISH STARTED WITH..... 227

NUMBERS OF FISH STARTED WITH..... 11,373

POUNDS OF FISH GAINED..... 1,658

POUNDS OF FOOD FED..... 1,850

CONVERSION..... 1.12

POUNDS OF FISH.....1,885(5.4/LB)

NUMBERS OF FISH PLANTED..... 10,179

TABLE # 7 SPRING CHINOOK SALMON PRODUCTION - WILD TUCANNON STOCK BROOD YEAR 1992 ACCLIMATED AT TUCANNON HATCHERY

POUNDS OF FISH STARTED WITH	2,572
NUMBERS OF FISH STARTED WITH	85,320
POUNDS OF FISH GAINED	3,386
POUNDS OF FOOD FED	6,281
CONVERSION	1.85
POUNDS OF FISH PLANTED	5,958
NUMBERS OF FISH PLANTED	83,409

TABLE # 8 SPRING CHINOOK SALMON PRODUCTION - WILD TUCANNON STOCK - BROOD YEAR 1994

ADULTS PASSED UPSTREAM	0
ADULTS TRAPPED AND SHIPPED - WILD	35
ADULTS TRAPPED AND SHIPPED - HATCHERY	35

HATCHERY OPERATIONS AND MAINTENANCE:

Because of the Endangered Species Act and the presence of listed Spring Chinook Salmon in the Tucannon River, we addressed our water intake screens on this project. The redesign engineering, construction and installation of our main intake for Rainbow Lake was completed this year.

Rainbow Lake provides all the raw river water to run the hatchery and is also the largest diversion on the Tucannon River.

Total cost to the hatchery was $10,000, with matching funds from N.M.F.S. We replaced the last electric transformer that was undersized and purchased a new heat pump. We sealed all the cracks in our asphalt caused from the below zero weather, plus all asphalt areas were given a seal coat. We worked with the Army Corps of Engineers in the process of replacing worn and faded interpretative (for self-guided tours) signs plus safety and traffic control signs. Operations and maintenance manuals for Curl Lake are almost completed by CH2M Hill in Boise, Idaho.

We were inspected and audited by Washington Department of Ecology (DOE) for N.P.D.E.S. permit for the first time in 18 years. We were found to be in compliance, and after many visits earned some credibility. Worked with S.C.S., DOE, U.S. Fish & Wildlife Service, State Cattlemans Association and WDFW on the Tucannon Model River Study.

EQUIPMENT PURCHASES

A diesel fish planting truck was ordered during the fiscal year.

There were many small purchases to increase efficiency and help in overall operation of this facility.

PERSONNEL

Amanda Hutchens, Jeromy Jording, Kim Lyonnais, were selected to fill our Youth Conservation Corps positions. No changes took place with the hatchery crew. Both crew members took tests for future promotional openings. The Hatchery Manager attended the Northwest Fish Culture Conference in Spokane.

N.P.D.E.S. PERMITS

We were issued a new permit to replace the existing hatchery permit that the facility has been operating on since 1976. This new permit also included a separate permit for Curl Lake. New operations manuals were written for these new requirements.

TABLE # 10 FISH STOCKED FROM THE TUCANNON FISH HATCHERY 1993 - 1994

LOCATION	Brood Year	Number of # Fish	Weight of Fish
SUMMER STEELHEAD			
Tucannon River - Curl Lake	93	135,359	31,480
Tucannon River - Hatchery	93	10,179	1,885
Curl Lake -	93	23,898	5,557
SPRING CHINOOK SALMON			
Tucannon River - Hatchery	92	83,409	5,958
RAINBOW TROUT - STREAMS			
Alkali Creek	92	504	140
Alpowa Creek	92	1,020	300
Asotin Creek	92	3,900	1,200
Coppei Creek	92	1,513	445
Deadman Creek	92	1,020	300
Dry Creek	92	1,513	445
Mill Creek	92	7,102	2,260
Pataha Creek	92	4,023	1,210
Touchet River	92	4,864	1,520
Tucannon River	92	6,652	2,095
Union Flat Creek	92	1,512	420
RAINBOW TROUT - LAKES			
Bakers Pond	92	990	300
Beaver Lake	92	318	106
Blue Lake	92	9,238	2,880
Casey Pond	92	1,428	420
College Place Pond	92	2,025	605
Dam Pond	92	2,996	890
Dayton Jv. Pond	92	1,040	325
Deer Lake	92	13,642	4,160
Evans Pond West	92	1,860	600
Fishook Pond	92	7,038	2,040
Garfield Pond	92	2,010	670
Gilcrest Pond	92	2,094	640
Golf Coarse Pond	92	3,570	1,050
Headgate Pond	92	1,950	600
Jefferson Park Pond	92	2,025	605
Mill Creek Resv. Bennington	92	24,313	7,435
Orchard Pond	92	1,020	300
Rainbow Lake	92	24,862	7,580
Rock Lake	92	7,140	2,040
Sprague Lake	92	7,800	2,600
Spring Lake	92	6,130	1,925
Watson Lake	92	14,639	4,504
GRAND TOTAL		422,063	97,490