

# Annual Report for

# Dworshak National Fish Hatchery

**Ahsahka, Idaho  
Fiscal Year 2003**

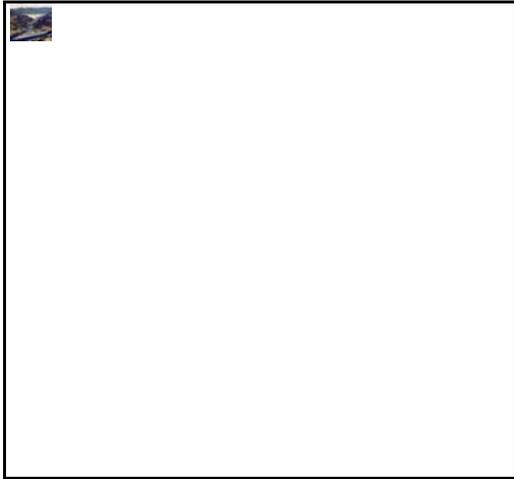
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April 16, 2004  
Date

Complex Manager

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**Introduction 1**



**Dworshak National Fish Hatchery at the confluence of the North Fork and main stem of the Clearwater River, below Dworshak Dam.**

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Dworshak National Fish Hatchery (DNFH) is located in North Central Idaho down river from Dworshak Dam, at the confluence of the North Fork and the main stem of the Clearwater River. Dworshak Dam was constructed by the Corps of Engineers (COE) between 1966–70. Operation of the hatchery by the Fish and Wildlife Service (FWS) was authorized by a 1969 COE Memorandum of Understanding. The hatchery has since served primarily as a mitigation hatchery for steelhead trout (*Oncorhynchus mykiss*), a unique run of the North Fork “B” strain threatened by the construction of Dworshak Dam. The FWS has endeavored, over the past 30 years, to meet the “mitigation goal” of providing 20,000 adult steelhead to the Clearwater River and maintain the unique genetics of the stock.

In June 1982, under the Lower Snake River Compensation Plan (LSRCP), DNFH was expanded from its primary function as a steelhead mitigation facility to include spring Chinook (*Oncorhynchus tshawytscha*) trapping, spawning and rearing. The new facilities were designed to rear 70,000 pounds of spring chinook to 20 fish per pound (fpp) for a total of 1.4 million smolts. Smolt numbers have since been reduced to 1.05 million because of reduced densities and rearing to a large size. The adult return goal for DNFH is 9,135 spring chinook (calculated using the 15 fpp smolt size, total rearing capacity, and 0.87 percent adult return rate guideline).

DNFH consists of a mechanical, electrical, water reuse and reconditioning system employing filtration, biological nitrification, pollution control and monitoring facilities, alarm system, water chillers, heaters, and numerous pumps. Initial construction at DNFH included 84 Burrow’s ponds, 64 nursery tanks, and 9 adult holding ponds. Twenty-five Burrow’s ponds (System I) were operated on a heated recycle water flow, for rearing steelhead smolts to the initial target size of 180 mm in only one year. In 1973, System II (25 ponds) and System III (34 ponds) were converted from single-pass, 2-year rearing cycle, to water reuse and heating for accelerated production growth. This second phase construction, with added mechanical systems (biological filters, electric grid, sand filters, U.V. lamps, chillers, and boilers), increased production capacity and allowed all three water systems to be environmentally controlled. In the late 1980's, the target size for steelhead smolts was changed to 200 mm, based on data developed by FWS.

During the mid-1970's, with DNFH not meeting either production or mitigation goals, major operational changes were made. Review and studies of the reuse systems, water temperature regime, water quality, and fish culture techniques were done by hatchery staff and university scientists. Corrective measures followed which removed the computerized pneumatic feed system, eliminated the ultraviolet treatment of water reuse, redesigned the water flows to maximize single-pass use and a return to a more hands-on basic fish culture. Selecting cooler water temperatures from Dworshak Reservoir during the summer, adding minerals (sodium chloride and potassium chloride) to a soft water supply, removing supersaturated nitrogen gas, along with other designed mechanical changes and more involvement of hatchery staff in monitoring fish culture, all contributed positively towards improving the hatchery’s program.

Further construction in the early 1980's added 18,000 square feet of nursery building, doubling the number of inside rearing tanks to 128. A new concept of biological filtration, known as a fluidized sand filter, replaced the oyster shell media in System I. This filtration system has proven to be unworkable, and the ability to operate reuse in System I is no longer available. We are presently working with COE to rehabilitate this system. Also in the 1980's, an additional thirty 8'x80' raceways were constructed under the LSRCP to provide production facilities for spring Chinook salmon. Additionally in the 1980's, 5 of the 9 adult holding ponds were

converted to raceways for needed rainbow trout mitigation for Dworshak Reservoir.

The uniqueness of DNFH's water systems provides several options for egg incubation and rearing. Three temperature options are available for egg development through the incubators. Different temperature regimes are also available to the nursery tanks. The outside steelhead ponds are furnished single-pass river water from May into November, when desired temperatures can be obtained through selector gates at Dworshak Dam. A pump station on the North Fork Clearwater River, one mile down river from the Dam, is capable of providing 92,500 gpm of water. In Systems II and III, water reuse and heating is used during the colder months of November through March, enabling the hatchery to get the desired fish growth. During reuse, 10-percent new water enters the system to make up for loss. Temperatures in each of the three outside steelhead rearing systems can be controlled independently when reuse and heated water are available.

Beginning in 1992, the hatchery was supplied with an additional 6400 gpm of gravity flow Dworshak Reservoir water directly by pipeline. This "clean" water, furnishing egg incubators and nursery rearing, has afforded disease protection from Infectious Hematopoietic Necrosis (IHN) virus in the early production stages. During 1998, a water line was completed between Mechanical Building I and the main water line from the large boilers in Mechanical Building II. This line now enables us to heat all the nursery reservoir water for better steelhead production.

A Dworshak National Fish Hatchery Rehab Plan was prepared in 1990-91 by the COE. This rehab plan detailed major upgrades and needs of the then 20 year old hatchery. The hatchery continues to work with the COE on line items identified in the rehab plan. We are trying to accomplish some of the rehabilitation project items through O&M funding. Larger items will need to be funded directly by the COE. This year, the COE started the contract process to repair the System I reuse and bring the reservoir water lines into Mechanical Building I. This work is expected to be done in the fall of 2003.

Future projects we are asking the COE to undertake include converting Burrow's ponds (BP's) to raceways, structural work on the Main Hatchery Building and replacing the Nursery Building roof.

Kooskia National Fish Hatchery (KNFH), 35 miles upriver from Dworshak on the Clearwater River, has operated as a Complex with Dworshak since 1978. Kooskia hatchery is operated to mitigate for water development in the Columbia River. The administrative headquarters for the Dworshak-Kooskia Complex is located at the Dworshak hatchery. The Idaho Fishery Resource Office (IFRO) is also included in the Dworshak Complex. The Idaho Fish Health Center (IFHC) is a separate entity functioning on DNFH grounds.

DNFH has the capacity to produce 2.3 million steelhead smolts at 6 fpp (200 mm in length); 1.05 million yearling Chinook salmon smolts at 18 to 20 fpp (140 to 145 mm in length); and 200,000 sub-catchable rainbow trout for stocking Dworshak Reservoir. The hatchery's annual production capacity exceeds 550,000 pounds. Mitigation goals to the Clearwater River are 20,000 returning adult steelhead and 9,135 adult spring Chinook. Steelhead goals are being satisfied in some years but were not in 2003. Spring Chinook adult returns before 2000 were well below mitigation, but for the past three years have been near or over mitigation goals. Estimated adult returns for 2003 were 8,064, about 1000 short of the 9,135 goal for Dworshak.

Rainbow mitigation for Dworshak Reservoir is in an interim phase, with fish exchange with Idaho Fish and Game ( IDFG) and use of production at Hagerman NFH. The IDFG now stock catchable size, sterile rainbow in reduced numbers because of fish health and species interaction concerns with native cutthroat trout, while the FWS produce replacement fish to stock other Idaho managed waters.

This report covers the period of hatchery activities from October 1, 2002, to September 30, 2003.

## **FY 2003 Highlights**

### **Fish Culture Operations**

#### **Dworshak Hatchery Production Summary FY2003**

##### ***Brood Year 2002 Steelhead***

There were 2.02 million steelhead smolts released from Dworshak in April, 2003. The steelhead at release averaged 204 mm in total length, meeting the 200 mm target size. Under the Settlement Agreement with the Nez Perce Tribe, there were approximately 100,000 smolts released without an adipose fin clip to designate them as a hatchery fish. Except for an initial IHN outbreak, fish health and condition was good throughout the rearing cycle as water temperature was kept about 2EF lower in the reuse systems than normal (52EF rather than 54EF). The reuse systems affected growth in about 2/3 of the steelhead on station. The smolts were outplanted to the South Fork of the Clearwater River the week of April 14, 2003, and direct-released from Dworshak the following week of April. There were 366,842 pounds of steelhead produced with BY02 SST.

##### ***Brood Year 2003 Steelhead***

There were 5,244 adult steelhead returned to Dworshak NFH in the fall of 2002 and spring of 2003. A total of 2.7 million eyed eggs went into Dworshak's production program. Dworshak provided 1.5 million eyed eggs for the Clearwater Hatchery. Also, 1.9 million green eggs were taken for Magic Valley Hatchery and another 18,000 green eggs for Potlatch Pulp & Paper school projects. The production program at Dworshak completed another early rearing phase in the hatchery's nursery without any problems with the IHN virus, largely due to a program that relied entirely on the water supply from Dworshak Reservoir rather than the North Fork of the Clearwater River. At the end of FY2003 there were 2.13 million BY03 SST on station.

There will be 200,000 BY03 SST (~10% of Dworshak SST production) released for the Nez Perce Tribe which will have no external mark designating it as a hatchery fish. These fish will be counted in the Dworshak SST production program.

##### ***Brood Year 2001 Chinook Salmon***

Dworshak NFH released 1.03 million BY01 spring Chinook salmon weighing 48,249 pounds. These fish were released on March 19-20, 2003.

##### ***Brood Year 2002 Chinook Salmon***

At the beginning of FY2003, all BY02 SCS eggs were incubating at Dworshak. During October, 2002, there were 1.15 million eyed-eggs of Dworshak stock and 770,000 eyed-eggs of Kooskia stock shipped to Kooskia for final incubation and early rearing. Included in the Kooskia numbers are 105,000 ISS eggs. During March and April, 2003, there were 1.2 million Dworshak stock SCS returned to Dworshak. At the end of FY2003, there were 1.08 million BY02 SCS on station, averaging 95 fpp and 83 mm (3.3 inches) total length.

##### ***Brood Year 2003 Chinook Salmon***

Adult returns of BY03 SCS produced 3,422 Chinook adults to Dworshak. Kooskia trapped 965 adult fish, 70 of which were passed over the weir as Idaho Supplementation Study fish (ISS), and 854 transferred to Dworshak for spawning. There were approximately 600,000 Dworshak eyed eggs and 860,000 Kooskia eyed eggs transferred from Dworshak to Kooskia. No ISS eggs were taken this year. Approximately 600,000 Dworshak eyed eggs remain at Dworshak for hatching.

### ***Brood Year 2001 Coho Salmon***

The coho salmon (COS) at Dworshak are being reared in a cooperative program with the Nez Perce Tribe (NPT). There were 296,000 BY01 produced at Dworshak. These fish were transferred to Kooskia during March and April, 2003 and released in May.

### ***Brood Year 2002 Coho Salmon***

Adult coho were trapped at Dworshak and various tributaries on the Clearwater River. Personnel from the NPT conducted the spawning at Dworshak with assistance from Dworshak staff. The eggs were incubated at Dworshak. There were 18 females spawned from the Clearwater Basin. On January 9, 2003, there were 350,000 coho eggs from Eagle Creek NFH shipped to Dworshak. At the end of FY2003, there were approximately 360,000 BY02 coho on station at Dworshak. The Service has currently given office space at Dworshak for a NPT biologist to oversee the COS program

### **Rainbow Trout - Open House**

#### ***Brood Year 2002***

Dworshak raised approximately 11,000 BY02 RBT. There were 7,000 stocked into a fishing pond at Dworshak for Open House in June, 2003 and about 3,800 shipped to Kooskia for their Open House. There were 638 children 12 years and under registered to fish at the Open House for Dworshak and about 450 for Open House at Kooskia NFH. Fish not caught and kept at Open House were stocked into ponds for public fishing and into tribal waters.

#### ***Brood Year 2003***

At the end of FY2003, there were 8,000 BY03 RBT in BP49 and 4,000 in each of two C-bank raceways. These fish are for Open House 2004 at Dworshak and Kooskia NFH.

### **Rainbow Trout - Dworshak Reservoir Stocking**

Due to disease concerns about stocking RBT from Dworshak NFH into Dworshak Reservoir, the following fish exchange is planned: Hagerman NFH will raise approximately 145,000 10" Arlee and Shasta rainbows to be stocked in September and October into several locations including; L. Camas, Oxbow, Hells Canyon, Lucky Peak, and C.J. Strike reservoirs.

IDFG's Nampa Hatchery will raise approximately 130,000 10-12" sterile rainbows for stocking into Dworshak Reservoir in March, April and May, 2004.

## Steelhead

### Summer Steelhead Trout Brood Year 2002

At the beginning of October 2002, all of the summer steelhead (SST) from Brood Year 2002 (BY02) were outside in BP's, totaling 2.09 million fish. Overall mortality from October 1, 2002 through final release on April 24, 2003 was about 3.5 percent. The final release number was 2.0 million SST smolts with an average total length of 204 mm (Table 1).

Table 1. Fish inventory summary for BY02 SST on October 1, 2002 and final release summary in April, 2003.

Location	October 1, 2002				Oct- Apr 24 % Loss	Final Release April 14-24, 2003			
	Number 1	Lgth in	Lgth mm	Wt Lbs		Number	Lgth in.	Lgth mm	Wt Lbs
Syst I	587,124	5.80	147	39,527	1.8	576,384	8.05	205	105,316
Syst II	655,336	5.03	128	29,272	4.9	623,191	8.15	207	118,253
Syst III	848,242	4.20	107	22,173	3.6	817,612	7.94	202	143,273
Tot/Ave	<b>2,090,702</b>	4.91	125	90,972	3.5	<b>2,017,187</b>	8.04	<b>204</b>	366,842

Source: DNFH - Final Release Summary, May 2003.  
Monthly Inventory Summary (MIS), October 1, 2002.  
Production Narrative, May, 2003.

BY02 SST were reared entirely in BPs. Table 2 illustrates the survival rates of various stages of development for BY02 SST along with a five-year comparison. FY1991 was the first year that a direct water-line from Dworshak Dam to the incubators and nursery was available, helping reduce health problems in the early rearing stages of SST.

Loading of SST from the middle and later egg Takes in Systems II and III was similar to FY2002, with System II being stocked with Takes 6-9 (partial) and System III receiving Takes 9 (partial)-14.

Table 2. Survival summary from green eggs to released smolts, BY98 through BY02 SST reared at Dworshak NFH.

Brood Year	% Surviving from previous stage				Cumulative % Survival		
	Green to Eyed Egg*	Tanked Fry	Ponded Finger lings	Smolt Release	Green Egg to Smolt**	Eyed Egg to Smolt	Tanked Fry to Smolt
1998	87.5	90.0	96.6	89.5	49.1	77.7	86.4
1999	91.9	94.9	93.2	94.3	50.3	83.0	87.9
2000 <sup>1</sup>	90.7	90.0	91.3	96.8	61.1	80.7	84.6
2001	87.6	91.2	92.8	97.0	58.0	82.0	90.0
2002	92.5	93.4	90.6	83.2	56.1	77.8	83.2
<b>5yr Ave</b>	<b>90.0</b>	<b>91.9</b>	<b>92.9</b>	<b>92.1</b>	<b>54.9</b>	<b>80.2</b>	<b>86.4</b>
2003 YTD	91.3	94.2	92.9				

Note: Data are only for SST reared entirely at Dworshak NFH.

<sup>1</sup>Due to malfunction with egg picker, numbers are estimated.

\* % Survival Green to eyed = Enum eyed eggs / Enum eyed eggs + enum dead eggs. i.e. survival after culling bad trays, females.

\*\* Green eggs to smolt = Total green eggs (including those from females culled during enum) - Magic Valley grn eggs - Clearwater Hatchery eggs. (This calculation method beginning in 1997).

Source: DNFH- Egg Enumeration and Disposition Summary- EgEnumST03.wk4

Nursery Loss-nulo03st.wpd

Spawning/Egg Take Plan, BY03 SST

Reuse and heated water were turned on December 9, 2002, for Systems II and December 10 for System III. Temperature was maintained at approximately 51EF until December 14, when one of the new boilers failed. Temperature dropped to 44EF until the boilers were repaired and turned back on December 20. Temperature then averaged 51.5 °F until the end of the month. There was no outbreak of *Ichthyophthirius multifiliis* (ICH) this winter, probably due to prophylactic formalin treatments. On March 18, 2003, reuse in System II was turned off. On March 24, 2003, reuse in System III was turned off. See details of the water reuse strategy under each specific system below.

Some SST in all Systems received coded wire tags (CWT's) and left ventral (LV) clips. Within these study groups, some fish also received freeze brands (FB's). The various marks and brands are used for studies concerning system contribution of these fish to later adult returns, offsite release contribution, broodstock evaluations, and early-run predictions at Lower Granite Dam. Fish which received PIT tags will be monitored for residual studies and fish passage center studies.

There were a total of 94K BY02 SST from System III which received a CWT but no AD-clip to designate them as hatchery fish. These are the fourth group of SST which were released from Dworshak since 1984 without an external mark designating a hatchery fish. This is being done under the Harvest Settlement Agreement between the USFWS and the Columbia River Tribes.

A total of 244,937 BY02 SST received CWT's, 42,205 received FB's and 1,500 received PIT tags. See the marking/tagging tables under each System for details.

### *System I*

For BY02 SST, System I's production included 24 BP's. This System had 587,124 SST in it at the start of the fiscal year and 576,384 at release in April, 2003 (Table 3).

Table 3. System I BP production, BY02 SST, FY2003.

Month	Year	1st of Month			Growth during previous month		% Mortality for Month	Ave Temp °F for Month
		Number	fpp	L (mm)	in	mm		
October	02	587,124	14.9	147	0.71	18	0.90	49.5
November	02	583,453	10.4	165	0.74	19	0.14	49.1
December	02	582,631	8.2	179	0.5	14	0.14	45.1
January <sup>1</sup>	03	579,947	7.1	188	0.34	9	0.20	42.8
February	03	578,773	6.5	194	0.23	6	0.15	41.6
March	03	577,891	6.1	198	0.16	4	0.16	41.6
April	03	576,958	5.6	203	0.22	6	0.10	41.9
<b>Release Tot/Ave</b>		<b>576,384</b>	<b>5.47</b>	<b>205</b>			1.80	44.5

<sup>1</sup>Total fish reflect adjustments for CWT inventory numbers

Source: DNFH - MIS, Sept 2002-May 2003

Final Release summary, BY02 SST

Production Narratives Sept-May, 2002-2003

Daily Water Temperature Records, Oct-April, 2002-2003

Adipose fins were clipped on BY02 SST in System I from June 4 until July 17, 2002. Other marking of BY02 SST in System I is summarized in Table 4.

Table 4. Marking and tagging of BY02 SST, System I, FY2003.

Rel from BP #	Date	Number CWT	Number Freeze Brands	Number PIT tags	Fin Clips	Study	Release Site
BP 15	12/03/02	22,126	10,502		AD LV	Early Return Progeny/System I Contribution Fish Passage Cntr	Dworshak
	3/15/03			250			
BP 41	12/04/02	22,446	10,508		AD LV	System I Contribution Fish Passage Cntr	Dworshak
	3/15/03			250			

Total		44,572	21,010	500			
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Source: DNFH- MIS System I, January 2003,  
 IFRO- Branding, Tagging.DBF  
 IFRO- MRKLPN02.wk4  
 IDFG- Fish Marking Summary 2002

During the 10 months of outside rearing of fish in System I, SST were occasionally treated with formalin for small outbreaks of parasites. Mortality for fish in System I from October 1, 2002, until final release in April of 2003 was approximately 1.8 percent. Details of the formalin treatments are in the chemical treatment log at Dworshak.

On April 14-17, 2003, there were 196,806 SST outplanted from System I. The Corps of Engineers (COE) assisted in outplanting the SST to Clear Creek and the South Fork of the Clearwater River at River Mile 8.7, Red House hole.

Direct release of 379,578 SST from System I took place on April 22 into the mainstem of the Clearwater River. The total release from System I was 576,384 BY02 SST (Final Release Summary, BY02 SST).

***System II***

For BY02 SST, System II's production included 25 BP's. This System had 655,336 SST in it at the start of the fiscal year and 623,191 at release in April, 2003 (Table 5).

Table 5. System II production, BY02 SST, FY2003.

Month	Year	1st of Month			Growth during previous month		% Mortality for month	Ave Temp °F for Month
		Number	fpp	L (mm)	in	mm		
October	02	655,336	22.4	128	0.91	23	4.20	49.5
November <sup>1</sup>	02	635,012	16.2	143	0.58	15	0.41	49.1
December	02	624,930	12.5	155	0.50	13	0.08	48.9*
January	03	624,435	10.3	166	0.42	11	0.08	51.8*

February	03	623,942	8.0	181	0.57	15	0.04	52.5*
March	03	623,707	6.5	193	0.50	13	0.05	48.1*
April	03	623,384	5.45	205	0.46	12	0.03	41.0
<b>Release Tot/Ave</b>		<b>623,191</b>	<b>5.27</b>	<b>207</b>			4.89	48.7

\* System under heated reuse water for part or all of month.

<sup>1</sup> Total fish reflect adjustments for CWT inventory numbers

Source: DNFH - MIS, Sept 2002-May 2003

Final Release summary, BY02 SST

Production Narratives Sept-May, 2002-2003

Daily Water Temperature Records, Oct-April, 2002-2003

Adipose fin clipping was done on BY02 SST in System II from July 18 through August 13, 2002. Other marking of BY02 SST in System II is summarized in Table 6.

Table 6. Marking and tagging of BY02 SST, System II, FY2003.

Rel from BP #	Date	Number CWT	Number Freeze Brands	Number PIT tags	Fin Clips	Study	Release Site
BP 18	11/27/02 3/15/03	21,186	5,278	250	AD LV	System II Contribution Fish Passage Cntr	Dworshak
BP 42	11/26/02 3/15/03	22,414	5,277	250	AD LV	System II Contribution Fish Passage Cntr	Dworshak
Total		43,600	10,555	500			

Source: DNFH- MIS System II, December 2002, January 2003

IFRO- Branding, Tagging.DBF; IFRO- MRKLPN02.wk4; IDFG- Fish Marking Summary 2002

System II converted to reuse on December 9, 2002. Temperature maintained at 51EF until December 14, when one of the boilers failed. Temperature dropped to 44EF until the boilers were repaired and turned back on December 20. Temperature then averaged 51.5EF for the remainder of the month. Reuse and heated water remained on until March 18, 2003. Monthly temperature for System II is displayed in Table 5. Disease and mortality remained low during the winter rearing cycle as prophylactic formalin treatments took place from December through February to help control ICH.

Mortality was approximately 4.9 percent from October 1, 2002, until release in April, 2003.

On April 16-17 there were 283,303 SST outplanted from System II. The COE assisted in outplanting the SST to Clear Creek and the South Fork of the Clearwater River at River Mile 8.7, Red House hole.

Direct release of 339,888 SST from System II took place on April 21 into the mainstem of the Clearwater River. The total release from System II was 623,191 BY02 SST (Final Release Summary, BY02 SST).

**System III**

System III has 34 BP's. This System had 848,242 SST at the start of the fiscal year and 817,612 at release in April, 2003 (Table 7).

Table 7. System III production, BY02 SST, FY2003.

Month	Year	1st of Month			Growth during previous month		% Mortality for month	Ave Temp °F for month
		Number	fpp	L (mm)	in	mm		
October	02	848,242	38.3	107	0.79	20	1.34	49.5
November <sup>1</sup>	02	836,869	22.5	128	0.82	21	1.54	49.1
December	02	823,812	16.8	141	0.51	13	0.34	48.7*
January	03	821,006	12.9	154	0.51	13	0.22	51.6*
February	03	819,204	9.7	169	0.60	15	0.07	51.8*
March	03	818,609	7.4	185	0.63	16	0.08	49.3*
April	03	817,970	5.8	201	0.64	16	0.04	41.8
<b>Release Tot/Ave</b>		<b>817,612</b>	<b>5.7</b>	<b>202</b>			3.61	48.8

\* System under reuse part or all of month.

<sup>1</sup> Total fish reflect adjustments for CWT inventory numbers

Source: DNFH - MIS, Sept 2002-May 2003

Final Release summary, BY02 SST

Production Narratives Sept-May, 2002-2003

Daily Water Temperature Records, Oct-April, 2002-2003

Adipose fin clipping was done on BY02 SST in System III from August 13 until August 29, 2002. Other marking of BY02 SST in System III is summarized in Table 8.

Table 8. Marking and tagging of BY02 SST, System III, FY2003.

Rel from BP #	Date	CWT	Freeze Brands	PIT Tags	Fin Clips	Study/Comments	Release Site
BP 61	11/06/02	26,152			0	Tribal Settlement Fish	Dworshak
BP 63	11/07/02	24,792			0	Tribal Settlement Fish	Dworshak
BP 65	11/07/02	19,657			0	Tribal Settlement Fish	Dworshak
BP 67	11/08/02	23,361			0	Tribal Settlement Fish	Dworshak
BP 69	11/20/02	22,621			AD LV	Off-site Release Evaluation	Clear Creek
BP 71	11/21/02	22,067	5,324		AD LV	System III Contribution Fish Passage Cntr	Dworshak
	3/15/03			250			
BP 72	11/22/02	19,096	5,316		AD LV	System III Contribution Fish Passage Cntr	Dworshak
	3/15/03			250			
	<b>Total</b>	<b>157,746</b>	<b>10,640</b>	<b>500</b>			

Source: DNFH- MIS System II, December 2002, January 2003,

There were a total of 94K BY02 SST in BP's 61, 63, 65, and 67 which received a CWT but no AD clip to designate them as hatchery fish. These are the fourth generation of SST to be released from Dworshak since 1984 without an external mark specifying a hatchery fish. This is being done as a cooperative agreement between the USFWS and the Columbia River Tribes.

Cumulative mortality in System III was approximately 3.6 percent from October 1, 2002 until release in April, 2003.

System III converted to reuse on December 10, 2002. Temperature maintained at 51EF until December 14, when one of the boilers failed. Temperature dropped to 44EF until the boilers were repaired and turned back on December 20. Temperature then averaged 51.5 °F for the remainder of the month. Reuse and heated water remained on until March 24, 2003. Monthly temperature for System III is displayed in Table 7. Disease and mortality remained low during the winter rearing cycle as prophylactic formalin treatments took place from December through February to help control ICH.

On April 14-16, there were 326,159 SST outplanted from System III. The Corps of Engineers (COE) assisted in outplanting the SST to Clear Creek and the South Fork of the Clearwater River at River Mile 8.7, Red House hole.

Direct release of 491,453 SST from System III took place on April 23-24 into the mainstem of the Clearwater River. The total release from System III was 817,612 BY02 SST (Final Release Summary, BY02 SST).

***Distribution Summary***

Release of BY02 SST began April 14 and ended April 24, 2003. Final release numbers are illustrated in Table 9.

Table 9. Fish distribution summary by site, BY02 SST, April 14 to April 24, 2003.

Site	Number	Weight	fpp	Length	
				in	mm
<b>Outplants 4/14-4/17</b>					
Clearwater R. - Red House Hole	682,889	122,138	5.59	7.99	203
Clear Creek	123,379	21,149	5.83	7.88	200
Subtotal	806,268	143,287	5.63	7.98	203
<b>Direct Release 4/21-4/24</b>					
Main Stem of the Clearwater River	1,210,919	223,555	5.42	8.08	205
<b>Totals/Averages</b>	<b>2,017,187</b>	<b>366,842</b>	<b>5.50</b>	<b>8.04</b>	<b>204</b>

Source: Final Release Summary, BY02SST

## Brood Year 2003

### *Adult Collection*

Adult summer steelhead (SST) for Brood Year 2003 (BY03) were collected in the late fall of 2002 and again in the winter and spring of 2003 to represent the entire run. The ladder was first opened on October 2, 2002, until October 18 for collection of early-return SST. The ladder was also opened October 22 and October 29. During this 18 day period there were 501 early-run steelhead collected. The ladder was also opened intermittently during the fall for collection of coho salmon for the NPT. From the ladder being opened at this time, there were 18 coho females trapped and spawned at Dworshak. There were also 1,069 SST trapped during this process and



anesthetized with carbon dioxide. They were then loaded onto NPT trucks and transported to Lewiston, Idaho, for release in the Clearwater River. The ladder was closed for the final time during the fall on November 20, 2003. The fish ladder was opened intermittently from February 21, 2003, throughout the winter and spring for collection of adult SST. This was due in part because the Nez Perce Tribe could not provide trucks to outplant excess adult SST this year. Therefore all BY03 adult SST entering Dworshak were killed with the exception of 529 which were outplanted by the FWS for mark/recapture data used to estimate total run size. With the intermittent ladder operation, there were 5,244 adult BY03 SST which were captured at Dworshak. An estimated 15-20K would have returned if the ladder had remained open the entire season. There were also 10 wild SST which were released back into the mainstem of the Clearwater River the day they were examined. The final spawning day was May 6, 2003.

Figure 1 illustrates the numbers of returning SST adults since 1989, the first year that opening the ladder in the fall became the standard operating procedure for Dworshak NFH.

### **Figure 1. Dworshak adult SST returns 1989-2003**

\* Ladder only opened part of season

Source: DNFH - Spawning Report SST BY03  
Spawning/Egg Take Plan SST BY03, ST03EgTk.wk4  
IFRO - SST Rack Returns, Sth03ent.wk4

There were 101 fish of the 501 early returns which died before spawning began. Formalin treatments were started on October 29, 2002, and appeared to control fungus.

### ***Spawning numbers/ratio***

There were 1,968 SST spawned over the BY03 season, 850 males and 1,118 females. Because females have always outnumbered males in returns to Dworshak, the goal of a 1:1 male:female spawning ratio is difficult to achieve. While the male:female return ratio was 1:1.9 for BY2003 SST, the spawning ratio was reduced to 1:1.3. There were 131 jacks spawned during the season, 90 for Dworshak, 18 for Clearwater Fish Hatchery (CWH), and 23 for Magic Valley State Fish Hatchery (MVH).

### ***Idaho Fish Health Center Disease Sampling***

Three jacks and 27 early-return adult male SST were injected with LHRH<sub>a</sub> on January 21, 2003. This was to induce gamete maturation in males the first two days of spawning in February. There were 14 of these males spawned during Take 1 on February 4, and eight males spawned during Take 2 on February 11. All of these males were ripe when spawned. Eight of the injected males died before spawning.

Approximately 3.2 percent (8 out of 254) of the females sampled for MVH (Takes 7-9) tested positive for Infectious Hematopoietic Necrosis Virus (IHNV). Testing was done by personnel from the Idaho Fish Health Center (IFHC). Disease testing on eggs for CWH was done by the IDFG Eagle Creek Laboratory. Approximately 9.5 percent (25 out of 264) of the females from Takes 5-7 for CWH tested positive for IHN. All eggs taken for either MVH or CWH which tested positive for IHN were discarded. There were 14.7 percent (23 out of 156) of both males and females sampled for Dworshak which tested positive for IHN. Dworshak does not cull eggs which may test positive for IHNV in its production program.

### ***Spawning Summary***

There were a total of 14 egg Takes for SST spawning this season, beginning on February 4, 2003, and ending on May 7. There were 1,118 females and 850 males spawned and the average fecundity of SST enumerated at DNFH was 7,162 eggs/female. Early-returning adults (October) were spawned in Takes 1-3 and part of Take 4, and later returning adults (February-May) were spawned from Takes 4-14.

### ***Egg Disposition***

In previous years, Dworshak incubated, shocked and enumerated the SST eggs going to CWH. However, due to the large number of eggs requested by IDFG for CWH, Dworshak now incubates the eggs until eye-up, at which time personnel from CWH shock and transport the eggs for enumeration at the CWH facility. Therefore, the number of eyed eggs shipped from Dworshak to CWH is estimated based on the fecundity and percent survival of Dworshak program eggs from the same Take.

There were an estimated 1.5 million eyed eggs shipped to CWH from egg Takes 5-6. Due to the high survival of these eggs reported by CWH personnel, an excess of an estimated 210,000 eyed eggs from Take 7 were culled before shipping.

There were an estimated 1.9 million green eggs shipped from Dworshak to CWH for MVH from Takes 7-9. These eggs were shipped the same day spawning took place. Dworshak also provided 18,000 green eggs for IDFG and Potlatch Pulp & Paper Mill school outreach program. These eggs were taken from Take 7 and shipped with MVH eggs.

After shipping eggs for CWH, MVH, and Potlatch, Dworshak put an estimated 2.7 million eyed eggs into either hatching jars or incubator trays for its production.

***University Research***

Dworshak provided opportunities for four university researcher projects during BY03 SST spawning. Three researchers from the University of Idaho and one from Washington State University conducted data collection on Dworshak steelhead. A summary of their research is in the BY03 Steelhead Spawning Report.

***Nez Perce Tribe Research***

The Nez Perce Tribe (NPT) was funded in 1999 by the Bonneville Power Administration (BPA) to coordinate gene banking of male gametes from the Endangered Species Act listed steelhead in the Snake River Basin. Although Dworshak SST are part of the Endangered Species ESU, they are not considered essential for recovery. Dworshak stock are unique and represent the genetic stock of North Fork of the Clearwater basin. Dworshak provided milt and eggs from BY03 SST for cryopreservation by the NPT. A summary of their collection is in the BY03 Steelhead Spawning Report.

***Adult Disposition***

***Nez Perce Tribe***

On March 26, 2003, Dworshak provided 100 live adults (4 males, 6 jacks and 90 females) to the NPT for transportation to the NPT hatchery on the lower Clearwater River. These fish were to be used to instruct NPT members on traditional harvest methods.

***Coeur d’Alene Tribe***

Dworshak provided the Coeur d’Alene (CDA) Tribe from northern Idaho with adult SST carcasses from spawning operations. There were 190 carcasses (185 males and 5 females) picked up by the tribe in March. The tribe uses these fish primarily for senior citizens, with secondary usage being dinners, funerals, general membership distribution, etc. Jeff Jordan coordinated the operation for the CDA Tribe.

There were 529 hatchery adults outplanted from Dworshak to Gibbs Eddy and Flying J boat ramp during the return run of BY03 SST. Of these, there were 50 returned. This outplanting was done by staff from the Dworshak Fisheries Complex. The fish were marked and recaptures were used to help estimate the total number of SST which would have returned to Dworshak if the ladder had been opened the entire season. There were also 10 wild fish which were caught in the trap this year, one of them a jack. These fish were returned to the river the same day they were examined.

Usable fish carcasses from spawning and culling activities were provided to a processor to be packaged for human consumption under a program with the Federal Bureau of Prisons. Complete adult disposition is illustrated in Table 1.

Table 1. Adult disposition of BY03 SST from Dworshak.

<b>DESTINATION</b>	<b>NUMBER</b>	<b>COMMENTS</b>
Bear/Eagle Program	278	WSU captive bear/raptor rehab program

Food Bank/ Fed Bureau of Prisons	4,022	Latham Processing, Orofino, Idaho
Gibbs Eddy, Flying J Boat Ramp- Clearwater R.	529	50 Returned to Dworshak
Research	1	School programs, Univ research
Tribe	290	NPT, CDA
Landfill	124	Carcasses deteriorated beyond use
<b>Total</b>	<b>5,244</b>	

Source: DNFH-Spawning Activity Report BY03 SST

- Final Spawning and Run Summary, BY03 SST.

IFRO- Dworshak Fish Removal File DFRST03.DB3+

### ***Nursery and Early Rearing***

The first three egg Takes were from early-return adults. Eggs were put into hatching jars in the nursery at an average rate of 18,000 eggs/tank. A new tanking strategy was used this year so that no Takes had to be double loaded at a density of 36,000/tank and subsequently split. This method reduced the amount of handling on the fish and will be repeated for BY04 SST. When approximately 70 percent of the fry had hatched, the remaining fry were poured into the tank. Due to lack of nursery space, Takes 12-14 were hatched in Heath trays (4-6,000 per tray). These were moved as fry from the incubation trays into tanks vacated once Take 1- 4 were transferred outside. Dead eggs and fry were picked and enumerated from each tank and tray. There was a 94 percent survival from the eyed-egg stage to feeding fry for BY03 SST.

This year the fry from the nursery averaged 80 fish per pound (fpp) when moved out of the nursery into BP's. Fish which will not receive a coded-wire-tag (CWT) were transferred from the nursery directly to the adipose fin (AD) clipping trailer. From the trailer, fish were then distributed to the appropriate BP. Steelhead which will receive a CWT went directly from the nursery to a BP and will be tagged later in November, 2003. Idaho Department of Fish & Game (IDFG) provided the trailer and AD clipping crew.

A total of 2.38 million BY03 SST were moved from the nursery to the BP's beginning with Take 1 on May 30, 2003, and ending with Take 14 on August 28.

The bird netting is being replaced and was removed from over the SST ponds during the spring of 2003. Consequently, the number of birds dining at the hatchery increased steadily over the summer. Although the brushes and nets from ponds of fish which have tested positive for disease have been isolated, the birds freely travel from one pond to the next. As disease levels increased, mortality also increased in each System.

### ***Feed***

All steelhead in the nursery were fed Moore-Clark feed for the third straight year with good results. Starter feed size #3 was omitted from the regime again this year, as it clogged the nursery tank screens. There appeared to be no detrimental effects by skipping this feed size.

### ***Projected Release***

Historical losses indicate a projected release number between 1.9 and 2.05 million SST in the Spring of 2004. Table 4 illustrates the steelhead on station at the end of FY2003 and projected release numbers.

Table 4. BY03 SST on station and projected release summary, (9/30/2003).

System	As of September 30, 2003				Projected to release - April/May 2004		
	Number	Weight (lbs)	fpp	L (mm)	Proj % Loss to Release	Proj Release Number	Proj Size at Release (mm)*
Sys I	603,721	35,167	17.2	140	6	567,498	193
Sys II	593,349	19,671	30.2	116	6	557,748	199
Sys III	930,928	17,210	54.1	95	7	865,763	178
Total/ Average	<b>2,127,998</b>	72,048	36.9	114	<b>6.4</b>	<b>1,991,009</b>	<b>188</b>

\*Projected length based on Systems II & III going on reuse end of November through March 1.

Source: DNFH - MIS data, October 1, 2003

DNFH - Production Narrative, September, 2003

### ***System I***

System I received 674,720 BY03 SST during the summer of 2003. Steelhead in System I were moved out of the nursery beginning with Take 1 on May 30, 2003, and ending with Take 5 on July 24. Except for two ponds of SST which will receive coded-wire-tags (CWT's) in the fall of 2003, fish were moved from the nursery to the IDFG marking trailer. All fish were hand-clipped this year without using the automatic marking trailer.

Fish in seven BPs had been confirmed positive for IHNV by the end of FY2003, with several more suspect IHN.

### ***System II***

System II received 688,213 SST during July and August, 2003. Fish in System II were moved out of the nursery beginning with Take 6 on July 24 and ending with Take 9 on August 12. Steelhead from Takes 7-9 were loaded from the nursery into a transport tank and moved directly to the AD- clipping trailer. From the trailer, fish were marked and stocked at final densities to the outside BPs. Steelhead in BP's 2 and 30 will be coded-wired-tagged and AD-clipped in November, 2003. Steelhead in BP32 will receive no AD-clip to designate them as a hatchery fish and no CWT before release. These unmarked fish are part of the Harvest Settlement Agreement with the Columbia Basin Tribes.

Steelhead in three BP's were confirmed IHN positive in System II by the end of FY2003, with 19 ponds suspect IHN. During September, fish in six BP's were treated with florfenicol for cold-water disease.

### ***System III***

System III received 1,019,326 SST from Takes 9 through 14 beginning with Take 9 on August 12 and ending with Take 14 on August 28. These fish were loaded directly from the nursery to the marking trailer and then stocked at final rearing densities into System III BP's. Fish in BP's 71, and 74 will be coded-wire-tagged and AD clipped in November, 2003.

Fish in BP's 57, 61, 63, 65, 68, 71, and 74 (approximately 175,000 fish) will receive no AD-clip to designate them as hatchery fish and no CWT before release. This is the fourth time since 1984 that Dworshak will release hatchery fish without an AD-clip. This is through a cooperative agreement with the Nez Perce Tribe.

Steelhead in three BP's were confirmed IHN positive in System III by the end of FY2003, with several others suspect IHN.

### Spring Chinook Salmon

#### Brood Year 2001

On October 1, 2002, there were 1,038,713 BY01 spring Chinook salmon (SCS) on station at Dworshak. All of these fish were progeny of females which tested low for bacterial kidney disease (BKD).

In March, 2003, there were 54,680 BY01 SCS which received PIT tags. This study is for a survival comparison of barging vs. trucking of smolts in the Columbia Basin.

Dworshak continued to work with outside researchers. On March 17, 2003, staff from Jim Congleton (University of Idaho professor) sampled 60 BY01 SCS for indices of fish conditioning; body lipid levels, blood glucose concentrations, cholesterol, triglycerides, total protein and activities of various enzymes involved in metabolism. These parameters are used to help determine the effects of fish condition concerning migration through the Snake and Columbia River hydropower system. Fish will also be examined at Lower Granite and John Day dams.

Release dates of the BY01 SCS were the evenings of March 19-20, 2003. There were 1,033,982 BY01 SCS released from Dworshak into the North Fork of the Clearwater River (Table 1). The release was performed late in the day to assist the smolts with predator avoidance.

Table 1. BY01 SCS in System I Raceways, 9/30/02, and release data, 03/19-20/03.

September 30, 2002				% Loss 9/30/02 to 3/20/03	Release March 19-20, 2003			
Number	Weight lbs	fpp	Length mm		Number	Weight lbs	fpp	Length mm
1,038,713	13,431	77.3	89	0.46	1,033,982	48,249	21.4	137

Source: DNFH- MIS, Oct 1, 2002  
Production Narrative, March, 2003

BY01 SCS had an enumerated survival of green egg to eyed egg of 95.5 percent. All Dworshak and Kooskia SCS eggs were shipped to Kooskia in the fall as enumerated eyed eggs to take advantage of the colder incubation water at Kooskia. Fry were then shipped back to Dworshak in the spring and placed directly into outside rearing ponds. Survival from eyed-egg to smolt was 88.8 percent for BY01 SCS of Dworshak stock.

Current research from the Idaho Fish Health Center indicates little or no increased survival of smolts when treated with erythromycin prior to release. Unlike previous years, there was no Investigational New Animal Drug (INAD) investigation study for using erythromycin against bacterial kidney disease done with the BY97- BY01 SCS.

### Brood Year 2002

There were 2,157 adult BY02 SCS which returned to Dworshak and 1,037 returned to Kooskia, for a total of 3,194 to the Dworshak Complex. Adults spawned and eggs produced from BY02 SCS are represented in Table 1.

Table 1. Dworshak and Kooskia adult spawners and both green & eyed egg numbers, BY02 SCS.

Location Adult Return	Males Spwnd	Females Spwnd	Females Culled BKD	Dead Egg Trays Culled	# Eggs/ Female	Total Eggs Enumerated	# Eyed Eggs Enumerated	% Survl Enum Eye-up
Dworshak	303	425	124	5	3,996	1,182,945	1,151,759	97.4
Kooskia	239	309	109	3	4,078	798,666	769,162	96.8
Total/ Average	542	734	233	8	4,031	1,981,611	1,920,921	97.1

Source: DNFH - Final BY02 SCS Enumeration and % Survival of Eggs. SC02EGEN.wk4  
BY02 SCS Spawning Report

For large-scale incubation, the water temperature in the incubation stacks at Dworshak can usually be reduced to approximately 42-45<sup>0</sup>F. The incubation temperature at Kooskia can be maintained at approximately 38<sup>0</sup>F. As was done with BY99-01 SCS, all BY02 SCS eggs were shipped to Kooskia for incubation after eye-up and enumeration at Dworshak. This effectively delayed hatching approximately three months and assists in reaching the desired 20 fish per pound (fpp) size at release in the spring of the year 2004. However, in August of 2002, the chiller for Dworshak's incubation room failed, causing the first 2-3 egg Takes to develop approximately 5 weeks earlier than normal.

Kidneys were sampled for bacterial kidney disease (BKD) from all females spawned by personnel from the Idaho Fish Health Center (IFHC). The IFHC also took ovarian fluid from all females spawned for viral inspection. As with BY01 SCS at Dworshak, a different test was used for BKD detection in FY2002. No longer was a base-line test done to compare all samples to a give Enzyme Link Immuno Sorbent Assay (ELISA) reading. This year fish were tested relative to all others within the test group only. Within the group, individual fish were sorted relative to each other, from low to high. Out of the 425 females spawned for Dworshak, there were 124 which

were culled for “high” ELISA readings. Of the 309 females spawned for Kooskia, 109 were similarly culled.

After eye-up and enumeration, there were 1,151,759 BY02 SCS eyed eggs of Dworshak stock shipped to Kooskia during October, 2002. There were a total of 769,162 eyed eggs from Kooskia stock also shipped to Kooskia during this time.

Fry from egg Takes 1-2 were transferred from Kooskia to Dworshak’s nursery on March 10, 2003. Fry from Takes 3-4 were transferred from Kooskia directly to outside raceways (RWs) at Dworshak on March 21. Fry from egg Take 5 were transferred to RWs on March 28. On April 3, 4 and 9, fry from the Dworshak nursery were transferred to outside RWs. There were a total of 1.2 million SCS fry of Dworshak stock transferred from Kooskia during the spring of 2003. The USFWS fish marking trailer from the Columbia River Fisheries Program office began coded-wire-tagging the BY02 SCS on August 6 and ended on August 21, 2003. The tagging is being done for contribution research. Personnel from the marking trailer also clipped adipose (AD) fins on all BY02 SCS and split fish into several raceways during the tagging operation.

By the end of FY2003, there were 1,083,389 BY02 SCS at Dworshak. Table 2 illustrates the size and number of BY02 SCS on station at the end of the fiscal year and projected release numbers.

Table 2. BY02 SCS at the end of the FY and projected release from Dworshak, April 2004.

September 30, 2003					Projected Release - April 2004			
Stock	Number	Wt(lb)	fpp	L mm	Proj % loss to Release	Proj Release Number	Proj Size at Release fpp	Proj Size at Release (mm)
Dworshak	1,083,389	11,418	94.9	104.0	2	1,061,721	20	145

Source: DNFH - MIS, October 2003  
DNFH - Production Narrative, September 2003.

### Brood Year 2003

Fish traps at both Dworshak and Kooskia were operated to collect BY03 SCS. The fish ladder at Dworshak was opened on May 28, 2003, and closed June 14. During that time there were 709 adult SCS collected. The ladder was reopened and closed multiple times during the summer to help control the number of SCS entering the hatchery. There were 2,003 adults outplanted from Dworshak by the NPT. The ladder was closed on August 7, as Dworshak had collected adequate broodstock for its program. The ladder was reopened August 26 to collect broodstock for Idaho Fish and Game (IDFG). The ladder was closed the final time on September 22, 2003.

There were 3,422 BY03 SCS returned to Dworshak and 965 SCS returned to Kooskia by the end of the spawning season (Table 1). Of those returning to Kooskia, 854 were transferred to Dworshak for spawning and 70 were passed above the weir at Clear Creek.

Table 1. Adult returns, BY03 SCS. (09/30/03)

Age	Number/Dworshak	Number/Kooskia*	Total
-----	-----------------	-----------------	-------

I-Ocean	580	97	677
II-Ocean	478	71	549
III-Ocean	2,364	797	3,161
Unknown	0	0	0
Total	3,422	965	4,387

Figure 1 displays the SCS returns to the Dworshak Complex since  
D NFH - Spawning Activity Report BY2003 SCS  
1986.\*70 of these fish were passed over weir into Clear Creek - ISS fish

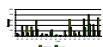
**Figure 1. SCS returns to Dworshak/Kooskia 1986-2003**

Source: IFRO - SCS rack returns

Adult returns for BY03 SCS were enough to meet the production requirements for Dworshak and Kooskia. A sport fishery and tribal harvest took place along the Clearwater River in the spring and summer of 2003. The sport harvest on the Clearwater River near Dworshak NFH is estimated by the Idaho Fish & Game (IDFG) to have taken 1,191 fish. The Tribal harvest near the Dworshak fish ladder as reported to the IFRO by the Nez Perce Tribe was 1,445 SCS.

**Adult Holding**

Dworshak stock was kept in holding pond (HP) 2 and 9, Kooskia stock was held in HP3. Kooskia transported 854 adults to Dworshak as spawning stock. Kooskia stock received an opercule punch in order to distinguish between the two stocks. Formalin treatments were administered to the adults in order to retard fungus infection. Incoming females were also injected with erythromycin at a dosage of 20 mg/kg body weight as a preventative against vertical transmission of BKD.



**Adult Mortality**

There were 168 adult SCS of Dworshak stock and 204 of Kooskia stock which died before spawning began on August 19 (prespawning mortalities). Table 2 depicts the mortality for BY03 SCS held at Dworshak.

Table 2. Mortality of adult BY03 SCS held at Dworshak

Mortality	Dworshak		Kooskia	
	Number	Percent of total run at Dworshak	Number	Percent of run transferred to Dworshak
Prespawning	168	4.9	204	23.9
During Spawning	93	2.7	67	7.8
<b>Total</b>	<b>261</b>	<b>7.6</b>	<b>271</b>	<b>31.7</b>

Source: Spawning Activity Report, BY03 SCS  
IFRO-SCent.wk4

### **Adult Disposition**

There were 1,628 adults and 375 jacks of BY03 SCS returning to Dworshak which were excess to spawning needs and were outplanted. There were also 46 Kooskia stock SCS from the 854 fish that were transferred from Kooskia to Dworshak which were excess to spawning needs and also outplanted from Dworshak. Dworshak and NPT personnel sorted and loaded NPT transport trucks to the Selway McGruder corridor. The outplanting was for supplementation purposes. Table 3 illustrates details of the outplants.

Table 3. Adult BY03 SCS outplants from Dworshak NFH.

Date 2003	Site	Adults	Jacks	Total Number
07/08	Selway-McGruder	341	58	399
07/10	Selway-McGruder	305	96	401
07/24	Selway-McGruder	346 (incl 18 Kooskia)	54	400
08/12	Selway-McGruder	337	66	403
08/14	Selway-McGruder	299 (incl 28 Kooskia)	101	400
<b>Total</b>		<b>1,628</b>	<b>375</b>	<b>2,003*</b>

\* 1,957 were Dworshak stock outplants, 46 of these fish were Kooskia stock

Source: DNFH- BY03 SCS Spawning Activity Reports  
IFRO- AdultOutplantBY03SCS.wk4

Table 4. Dworshak stock SCS BY03 adult disposition.

<b>Location</b>	<b>Number</b>	<b>Comments</b>
Outplant	1,957	See Table 3
Outside Research	0	NMFS, Univ of Idaho
Washington State Univ	125	Captive Bear & Eagle Rehab
Landfill	1340	Carcasses deteriorated
<b>Total</b>	<b>3,422</b>	

Source: BY03 SCS Spawning Activity Report

### ***Adult Spawning Numbers/Ratio***

The BY03 Dworshak/Kooskia SCS spawning season began August 19, 2003 and ended on September 9 for Kooskia stock and September 15 for Dworshak stock. Spawning was extended until September 24 for Idaho Fish and Game to collect eggs for their program. Fish from each HP were sorted and spawned once/week along with new fish coming up the ladder into HP9.

There were 328 males (including 20 jacks) and 363 females (1:1.1 ratio) of Dworshak stock spawned for the Dworshak program. There were also 199 males (including 16 jacks) and 257 females ( 1:1.29 ratio) of Kooskia stock spawned for the Kooskia program. The fecundity rate averaged 4,959 eggs/female for Dworshak stock and 5,029 eggs/female for Kooskia stock (4,988 ave). This was approximately 20 percent higher than past years averages, a result of more females which returned in 2003 were larger five-year olds rather than the usual majority of four-year old fish.

### ***Spawning Procedures***

The spawning procedure was similar to past years; adults were crowded from the holding ponds into a crowding channel, moved into a channel basket, and placed into an anesthetic bin (150 mg Tricaine methanesulfonate MS-222). Pro-Polyaqua was added (250 ml per bin) to reduce stress and susceptibility to infection. Oxygen was provided at a rate of 1.5 L/minute. Spinal columns of ripe females were severed using a pneumatic knife. The females were then placed on a table for 3-15 minutes for blood drainage. The ventral side was then cut open using a spawning knife and eggs were collected in disinfected colanders. After ovarian fluid was drained, the eggs were poured into a clean bucket. Milt from ripe males was stripped into styrofoam cups and a one-percent saline solution was added to assist in milt motility. The milt solution was poured onto the eggs and swirled for more complete fertilization. After sufficient time had elapsed for fertilization to take place (one to two minutes), the eggs were rinsed of sperm, blood, and other organic matter.

After fertilization, eggs were placed in Heath incubator trays at approximately 4,988 eggs per tray (1 female). In the tray was a 75 mg/l iodophor solution buffered with sodium bicarbonate. Eggs were maintained in this solution for approximately 30 minutes as a precaution against disease transmission. After sufficient time had elapsed for disinfection, the egg trays were then pushed into the incubator. Water flow rate was approximately 5 gallons/minute/tray. Eggs in A/B bank were incubated with chilled water and temperature averaged 39<sup>0</sup>F before enumeration. Eggs in C/D bank were incubated with no chiller on this same intake line and temperature averaged 42EF during incubation.

The number of adult spawners, females culled for testing high or medium BKD, and eyed-egg

survival are illustrated in Table 5.

Table 5. Dworshak and Kooskia adult spawners and % eye-up, BY03 SCS.

Location of Broodstock Return	Males spwnd *	Fmls spwnd	Fmls Culled BKD	No eggs /female	Total number of eggs enumerated	Percent Enum Eye-up	No eyed eggs
Dworshak	328	363	50	4,959	1,264,462	95.9	1,212,043
Kooskia	199	257	73	5,029	915,310	93.8	856,702
Total/ Average	527	620	123	4,988	2,179,772	95.0	2,068,745

\* Male numbers include 20 jacks for Dworshak stock and 16 jacks for Kooskia stock  
 Source: DNFH - Spawning Activity Report BY03 SCS  
 DNFH - BY03 SCS Spawning Report

**Idaho Fish Health Center (IFHC)**

On July 30-31, 2003, personnel from IFHC injected all Dworshak and Kooskia stock females on station with erythromycin. This was done to help prevent vertical disease transmission to the egg. Females which entered the hatchery the following week were also injected on August 7. There were 13 green females injected with LHRH on September 16 to induce spawning. All of these fish were ripe the following week.

Kidneys were sampled for bacterial kidney disease (BKD) from all females spawned. A different test was used for BKD detection the past three years at Dworshak than was used prior. No longer was a base-line test done to compare all samples to a given ELISA reading. As with BY01 and BY02, SCS, fish were tested relative to all others within the test group only. Within the group, individual fish were sorted relative to each other, from low to high. The results of the ELISA testing for adult females were 13.8 percent (50 out of 363) medium-very high BKD for Dworshak stock and 28.4 percent (73 out of 257) for Kooskia stock. Eggs from females which tested medium and above were culled for both stocks.

**University Research**

Dworshak continued to coordinate with researchers from the University of Idaho (U of I). Rolf Ingermann is studying the relationship between fertility and oxygen consumption of the unfertilized egg. He is also studying the contribution of sperm to the buffering capacity of the semen. Dworshak provided a total of 339 ml milt from 14 Kooskia SCS males. Dworshak also provided a total of 18,800 eggs from 7 Kooskia SCS females and one Dworshak SCS female. All samples were from excess spawning requirements at Dworshak.

Dworshak also provided Gary Thorgaard from Washington State University with a total of 24 ml milt from 12 SCS males and a total of 24,000 eggs from six SCS females. These samples are for research on the effect of fluctuating water temperature on sex inversion in SCS. All samples taken were from excess spawning requirements at Dworshak.

**Idaho Supplementation Study (ISS)**

For the first time since 1996 there were no ISS fish spawned at Dworshak as the study has

progressed to the monitoring and evaluation stages of research.

### ***Idaho Fish and Game Department***

At the end of August, 2003, personnel from Idaho Department of Fish and Game (IDFG) contacted Dworshak about a shortfall of SCS eggs for the state and requested assistance in trapping broodstock. The ladder, which was first opened May 28 and closed August 7 for Dworshak broodstock collection, was reopened August 26 for IDFG. There were a total of 177 females spawned for IDFG, 86 of which were incubated at Dworshak due to lack of space at Clearwater Hatchery. The ladder was closed for BY03 SCS the final time on September 22.

### ***Spawning Summary***

BY03 SCS adult return numbers were adequate to fulfil Dworshak's and Kooskia's production goals. Projected release of BY03 smolts in the year 2005 is approximately 1.05 million smolts of Dworshak stock.

There were 2,003 adult BY03 SCS of Dworshak stock outplanted for supplementation purposes by the NPT.

## **Coho Salmon Brood Year 2001**

Coho salmon (COS) are being reared in raceways in C-bank in a cooperative program with the Nez Perce Tribe (NPT).

There were approximately 300K BY01 coho salmon (COS) on station at the beginning of the FY2003. During April, 2003, approximately 300,000 BY01 COS from Dworshak were transferred to Kooskia, and later released in May with help by the NPT.

## **Brood Year 2002**

BY02 COS were trapped at Dworshak hatchery, Clear Creek, Potlatch, Lolo, Eldorado and Lapwai creeks in the Clearwater Basin. Personnel from the NPT conducted the spawning at Dworshak with assistance from Dworshak staff. The eggs were incubated at Dworshak.

Spawning of BY02 COS began on October 23, 2002, and ended November 26. There were a total of 18 female COS spawned, producing an estimated 48,000 eggs. There were 350,000 eyed coho eggs transferred from Eagle Creek NFH to Dworshak on January 9, 2003. NPT Coho Program goals at Dworshak call for 320,000 eggs to produce 280,000 smolts.

Coho were transferred from the egg trays to Dworshak's nursery during February and March, 2003. There were approximately 360,000 BY03 COS on station at Dworshak at the end of the fiscal year. The Service has currently given office space at Dworshak for a NPT biologist to oversee the COS program.

## **Rainbow Trout Brood Year 2002**

There were 12,236 BY02 RBT in BP 49 at the beginning of FY2003. On June 2, 2003, there were approximately 7,000 BY02 RBT moved to the hatchery settling pond for the annual Open

House held on June 13. Approximately 1,400 were caught by the 638 kids 12 years of age and under who took part in the activities.

On February 2, 2003, there were 3,000 RBT transferred to Kooskia for their annual Open House. Table 1 illustrates outplanting of BY02 RBT from the Open House fishing pond at Dworshak.

Table 5. Fish Distribution Summary BY02 RBT (06/30/2002).

Date 2003	Number	Fish/lb	Weight	Harvest/Release Site	Comments
2/02	3,001	2.00	1,500	Kooskia NFH	Open House
6/13	1,400	0.85	1,647	Dworshak NFH	Open House
6/16	804	0.85	946	Kooskia NFH	Open House
6/23	1,275	0.85	1,500	Worley Pond	Cour d'Alene Tribe
6/24	1,262	0.85	1,489	Mud Springs Lake	Nez Perce Tribe
6/24	1,415	0.85	1,670	Talmak Lake	Nez Perce Tribe
Total/Ave	9,157	1.05	8,751		

Source: DNFH - RBT MIS, June 2003; Production Narrative, February, June 2003.  
 DNFH - Fish and Egg Fiscal Year 2003 Distribution Summary  
 IFRO - Rainbow Trout Planting, Dworshak and Kooskia. RBTPLN03.wk4

### Brood Year 2003

On January 28, 2003, Dworshak received approximately 21,000 Shasta strain RBT eyed eggs from Ennis NFH. For ease of record keeping at Dworshak, these RBT will be recorded as BY03. These fish will be used for Open House in June, 2004. Approximately two out of three years Dworshak loses an estimated 2000-4000 of the RBT fry soon after hatching. Disease results from examination by personnel from Idaho Fish Health have been inconclusive. Dworshak NFH uses water from Dworshak Reservoir for incubation and early rearing. From a fish culture standpoint, water hardness (CaCO<sub>3</sub>) differences between Dworshak Reservoir and Ennis NFH are substantial. The hardness of water at Ennis NFH is about 160 ppm CaCO<sub>3</sub> while water from Dworshak Reservoir averages about 10 ppm. It is widely accepted that mineral deficiencies in rearing water can cause high mortality in fish, particularly in newly hatched fry. Besides possible negative physiological effects, low CaCO<sub>3</sub> levels in water can cause pH to fluctuate greatly because water loses its ability to buffer changes in acidity. This pH fluctuation can be detrimental to fish at any life stage. Low buffering levels in water can also cause fry/fish to be more sensitive to toxic pollutants (Piper, R. G. et al.).

Limestone, calcium salt-blocks, and oyster shells were placed in a series of incubation trays. After reservoir water flowed through the trays at a rate of approximately 5 gpm, the effectiveness of raising water hardness was measured using a HACH kit. Only a trace of additional hardness

was noted using the calcium salt-block, which raised the recorded CaCo3 level only 1-2 ppm.

Once the RBT eggs arrived on January 28, approximately 1/4 of them were placed in an incubation tray below trays with the calcium salt block. The other 3/4 of the RBT eggs were placed in a incubation trays using only Dworshak Reservoir water for rearing. Mortalities were recorded throughout the incubation and early rearing cycle, and no significant difference was seen with any of the eggs/fry in either stack.

#### Rainbow Trout for Outplanting:

Dworshak's current RBT program commitment is to provide fish for stocking into Dworshak Reservoir. Kooskia raised RBT for this program in 1991, 92, 93, and 95. The 1995 RBT from Kooskia were never stocked into Dworshak Reservoir. Rainbow trout reared at Dworshak (river water) have not been stocked into the reservoir since 1984. There are several concerns with the stocking of these fish into Dworshak Reservoir, including disease introduction into Dworshak's and Clearwater Fish Hatchery's water supply, RBT crossbreeding with cutthroat in the North Fork, low catch rate by fishermen, etc. Therefore, the following agreement has been made with the state of Idaho.

Hagerman NFH will raise approximately 145,000 10" Arlee and Shasta rainbows to be stocked in September and October into several locations including; L. Camas, Oxbow, Hells Canyon, Lucky Peak, and C.J. Strike reservoirs.

IDFG's Nampa hatchery will raise approximately 130,000 10-12" sterile rainbows for stocking into Dworshak Reservoir in March, April and May, 2004.

## Administration

### Meetings

#### *October 2002*

- Mari Jilbert, R.O. Engineering, visited Dworshak and Kooskia hatcheries on October 1-2. Mari will assist us in designing and laying out landscaping at the two hatcheries and in designing a boat ramp/parking area at Kooskia NFH.
- Zack Basnett, OSHA, made a random visit to one of the work contractors at Dworshak NFH. Shannon Electric was visited to see if safety standards were being met.
- Assistant Complex Manager Owsley and Maintenance Worker Weeks attended the National Rural Water Association meeting in Spokane, Washington.
- Complex Manager Miller attended a Clearwater Sub-basin PAC meeting, October 8.
- Complex Manager Miller attended the Nez Perce Tribal Hatchery dedication, October 9.
- COE visitors from the Walla Walla office and the dam came to Dworshak NFH for a tour. Dutch Myer, Gena Swarts from Walla Walla, and Paul Pence from the Dworshak project were given a short tour by Complex Manager Miller.
- On October 15, the A-bank water supply line in the nursery building blew up and caused considerable damage.
- Assistant Complex Manager Owsley assisted Carl Berniese, COE, Walla Walla, on the examination of the destroyed A-bank nursery supply line.
- Assistant Complex Manager Owsley attended the annual Uniform Coordinator's meeting in Albuquerque, New Mexico, October 20-25.
- Complex Manager Miller attended a Clearwater Management Council meeting. Staff from the COE came to the council meeting and discussed Dworshak Dam/Reservoir operations.

#### *November 2002*

- Complex had a retirement lunch for Doug Burum, Idaho FRO.
- On November 7 there was a Supervisor's Meeting.
- Assistant Complex Manager Owsley, Maintenance Supervisor Clifford met with COE, Walla Walla, on System I bio-filter testing schedule.
- The Dworshak Fall Coordination meeting was held on November 25. Agencies and organizations represented included FWS, IDFG, Nez Perce Tribe, NMFS and COE.
- Cookies and punch were served at a staff meeting to wish Kelly Gardner well with her new job at Dworshak Dam starting December 1.

#### *December 2002*

- Dworshak Complex Annual Christmas Party was held December 14.
- Assistant Complex Manager Owsley and Maintenance Supervisor Dave Clifford met with Walla Walla, Corps of Engineers staff and Grover, Inc. representatives on the completion and testing of the new System I biofilters.

### ***January 2003***

- Complex Manager Bill Miller attended a Clearwater Management Council meeting on Jan. 8.
- Manager Bill Miller was part of the Clearwater Sub-basin Planning Technical Management Team that met with Idaho Congressional Staffs to explain the Clearwater Plan. Dave Owsley met with Ike Fackenthall from Ahsahka Water and Sewer District about hooking the Tribal Church up to the hatchery sewer system.
- Mari Jilbert from Regional Office EPIC was on station to review landscaping options for Dworshak NFH including new Lewis & Clark kiosk. Dave Owsley, Biller Miller and Susan Sawyer participated in this meeting.
- Dan Forge, COE and roofing contractor finalized the roofing contract at DNFH.
- Complex Manager Bill Miller, Assistant Hatchery Manager Bob Semple, Assistant Hatchery Manager for Kooskia, Craig Eaton and Project Leader Howard Burge traveled to Washington D.C. to participate in the National Fisheries Leadership Conference.
- Dave Owsley assisted Gina Schwetz from Public Affairs, COE, Walla Walla on a site visit.
- Dave Owsley, Dave Clifford, Ben Greene, Hubert Sims, Rick King, Terry Weeks and Ray Rosales attended a Triangle Pump Training session at DNFH.
- Dave Owsley, Dave Clifford, Ben Greene, Hubert Sims, Rick King, Terry Weeks and Ray Rosales received training from U.S. Filter representatives on operation and maintenance of the new equipment in System I Clarifiers.
- Dave Owsley and Dave Clifford met with Russ Mehrens of Schlinder Elevators about placing a platform elevator in the main building.
- Dave Owsley and Dave Clifford assisted COE staff and Grover Inc. on testing flows and pumps in the new System I bio-filters.
- Dave Owsley attended COR (Contracting Officers Representatives) refresher training in Portland.

### ***February 2003***

- Complex staff of Miller, Burge, Eaton, Semple and Jones attended a Lower Snake River Compensation Plan meeting in Boise the week of February 10th.
- February 10-14 System I Bioreactor testing all week with Brian Miller, COE, Walla Walla and John Junius, A-1 Aquaculturist from Louisiana.
- Dave Owsley completed the USFWS Property Survey.
- Dave Owsley participated in a conference call with RO Engineering, KNFH staff and Sverdrup Engineers on the Kooskia weir. Also on the 13<sup>th</sup>, Dave Owsley gave Doug Frei, Chief of Engineering, COE, Walla Walla, a tour and update on the new construction in Mechanical Building II and System I.
- Feb. 13-14 Jeff Dailey installed/upgraded the Dworshak Hatchery alarm system.
- Feb. 18-21 System I Bioreactor testing all week with Brian Miller and John Junius.
- Feb 21 an all staff meeting was held. Howard Burge and Bill Miller briefed the staff on the Regional Fisheries Strategic Vision Step-Down Plan. Copies of the plan were provided to the various divisions with a request for input.
- Feb. 25 Dave Owsley met with Dr. John Hochheimer of Tetra Tech, Inc. and Lisa McGuire, USEPA on the NPDES permit for DNFH and a tour of the facility.
- Feb. 27 Open House Meeting held.

### ***March 2003***

- Dave Owsley attended a Hunter Education workshop in Lewiston.
- Bob House, a private consultant visited here on 3/3/03 to fill out the APRE forms for Dworshak NFH that the Power Planning Council wants done on all hatcheries.
- Complex Manager Miller traveled to Kooskia with Bob House and along with Craig Eaton filled out the APRE forms for Kooskia NFH.
- Dave Owsley, assisted by Dave Clifford, completed the Corps of Engineers annual property inventory.
- Dave Owsley conducted a Hunter Education class in Orofino. The two week course was the largest ever with 78 students.
- Complex Manager Miller accompanied Chuck Dunn and Dan Herrig to a meeting with Idaho Salmon and Steelhead Association executive, Steve Bruce. Discussion was on the Fisheries Strategic Plan and feedback from Steve.
- Dave Owsley assisted Carla Fromm and Dave Terpening from EPA on the annual compliance inspection.
- Dworshak Spring Coordination Meeting was held; State, federal and tribal representatives discussed fish production and fish management issues for the coming year.
- Complex Manager Miller, Hatchery Manager Semple and FRO Project Leader Burge attended an Aquatic Resource Center meeting in Portland chaired by Chuck Dunn.
- Dave Owsley and Terry Weeks attended ground and surface water sessions put on by Idaho DEQ. Both sessions (morning and afternoon) were conducted at the hatchery conference room with over 30 attendees.
- Complex Manager Miller met with Dave Johnson of the Nez Perce Tribe at Lapwai and discussed the Fisheries Strategic Plan. Dave will provide comments to our draft plan.

#### ***April 2003***

- Complex Manager Miller attended a Clearwater Sub-basin Policy Advisory Committee (PAC) meeting in Lewiston.
- Dave Owsley met with Harold “Butch” Harty, Hatchery Supervisor of the Nez Perce Tribal Hatchery at Cherry Lane. Dave did a site visit and discussed recommendations for the river supply water problems. A letter of recommendations was sent to Dave Johnson, Manager Tribal Fisheries Program.
- Dave Owsley spent the week with Brian Miller, COE, Walla Walla and John Junius, A-1 Aquaculture, Louisiana on testing the new bead filters for System I.
- Complex Manager Miller and FRO Project Leader Burge attended a FWS meeting on unmarked steelhead issues in Boise.
- Complex Manager Miller attended a Clearwater Management Council (CMC) meeting.
- Complex Manager Miller met with Sam McNeill on developing a boat ramp/parking area at Kooskia. IDFG, CMC and Idaho County have agreed to help sponsor the project. Plans and grants are being developed.

#### ***May 2003***

- Joan Sperber attended a Combined Federal Campaign meeting in Lewiston.
- Dave Owsley and Hugh Sims conducted a Bow Hunter Education class at Orofino High School.
- Dave Owsley and Rick King assisted the Clearwater Hatchery crew with the annual valve exercise for the reservoir supply system.

- Complex Manager Miller met with Dave Johnson, Nez Perce Tribe on unmarked steelhead and other tribal/FWS issues.
- Going-away potluck for Connie Grant in main conference room.
- Complex Manager Miller attended a Clearwater Management Council meeting. Also attended a meeting on Fishery Management in Dworshak Reservoir.
- Dave Owsley, Region 1 Uniform Coordinator, attended the Wage Grade meeting in Reno, NV and presented an update on the uniform program.
- John Vargas, Rick Allain, Rick King, Hubert Sims, Wayne Hamilton and Kenny Simpson attended the Wage Grade meeting in Reno, NV.
- Dave Owsley, Dave Clifford and Chris Shockman from the Clearwater Hatchery interviewed 18 high school students for the summer youth program. Six were selected for DNFH and three for the Clearwater Hatchery. The students start work June 9 and work 8 weeks.

### ***June 2003***

- Dave Owsley assisted Brian Miller, COE, Walla Walla with System I biofilter testing.
- Complex Manager Miller attended a Clearwater Management Council meeting.
- Dave Owsley met with Corps of Engineers from Walla Walla on System I and bird exclosure projects.

### ***July 2003***

- Complex Manager Bill Miller participated in dedication of Looking Glass Memorial at Kooskia National Fish Hatchery.
- Dave Owsley met with COE staff and Bob Haskens, Grover, Inc. on punch list for System I.
- Complex Manager Miller met with Kooskia staff on admin issues and proposed boat ramp project.
- Dave Owsley traveled to Looking Glass Hatchery to assist Oregon Department Fish & Wildlife on a water treatment system for the hatchery.
- Clearwater River Youth Program (6 enrollees from Dworshak and 3 enrollees from Clearwater Hatchery) traveled to Crooked River, Idaho Fish and Game satellite station, for work detail.
- Complex Manager Miller attended a Technical Recovery Team (TRT) meeting in Lewiston and represented the Clearwater Policy Advisory Committee on Sub-basin Planning.
- Bill Miller attended a Clearwater Policy Advisory Committee meeting in Lewiston.
- Dave Owsley traveled to Olympia and met with Ray Brunson and Greg Kindschsi, USFWS on an Isolation Quarantine class. Site visits included Quinalt NFH, Quilcene NFH, Makah NFH, Leavenworth NFH, Entiat NFH, Rocky Reach fish passage and the Cle-Elum, Yakima Tribal hatchery.
- Dave Owsley met with Bob Haskens, Grover, Inc. on System I reuse clean up.
- Dave Owsley assisted COE staff Greg Havo, Dave Opbrock and Jason Williams on System I biofilter modifications.

### ***August 2003***

- Conference call with Regional Office Budget regarding End of Year Procedures - attending: Joan, Dave O & Diane.
- Complex Manager Miller attended a Clearwater Policy Advisory Committee meeting in Lewiston.

- Wideband Technologies on station to install/upgrade software to the hatchery alarm system.

### ***September 2003***

- Dave Owsley and Bill Miller traveled to Walla Walla, Washington meeting with Dave Hurson and Brian Miller - Corps of Engineers.
- Dave Owsley was Lead Instructor for a Hunter Education course in Orofino with 40 students.

## **Training**

- Supervisory Admin Support Assistant Praest attended a, " *Manager & Supervisor Seminar,* " in Spokane, Washington, October 7.
- On October 16, Assistant Complex Manager Owsley, Maintenance Supervisor Clifford, Maintenance Electrician Greene and Maintenance Mechanic Sims received training on the operation and maintenance of the four new electric boilers in Mechanical Building II.
- Supervisory Admin Support Assistant Praest and Assistant Hatchery Manager Eaton (Kooskia NFH) attended a one-day course on, " *Dealing Effectively with Unacceptable Employee Behavior,* " October 22.
- Office Automation Clerk, Kelly Gardner attended training in Spokane, WA 11/20-22, " *Business Writing & Grammar Skills* " and " *Self-Discipline & Emotional Control.* "
- Diane Praest attended, " *Introduction to Supervision,* " training in Phoenix, AZ, Dec. 9-13.
- I/E Staff (Grant & Sawyer) attended a week long Outreach Program Overview and Planning course at the RO in Portland in March.
- Administrative Support Assistant Praest attended, " *The Ultimate Supervisor,* " training in Spokane, WA, in March.
- Administrative Support Assistant, Diane Praest, attended Simplified Acquisition training in Portland, OR, in April.
- Joan Sperber and Diane Praest attended Administrative Training and IDEAS training in Portland, OR, in May.
- Diane Praest attended training, " *Management Skills,* " in Lewiston, ID, during June.
- Joan Sperber, Dave Owsley and Dave Clifford attended training, " *Acquisition of Commercial Items,* " in Seattle, WA, in July.

## **Safety & Wellness**

### ***October 2002***

Staff safety meeting was held October 8. Dale King, inspector for the Clearwater County Health Department gave a presentation on home food safety.

### ***November 2002***

Safety committee members did a walk-through of the hatchery self-guided tour route with I/E Assistant Grant to determine options for route revisions.

### ***December 2002***

First Aid Training was provided by the U.S. Forest Service employee Tam White on December 16.

### ***January 2003***

AED (Automatic Electronic Defibrillator) training and CPR refresher course was held January 28. Those attending were: Wayne Hamilton, John Vargas, Thomas Trock, Richard Allain, Bill Miller, Corie Samson, Laura Kessel, Randy Bowen, Robbie Kellar and Ben Wright.

**February 2003**

Safety Meeting was held with Lisa Wood of the Red Cross presenting, “Disaster Preparedness”.

**March 2003**

Safety Meeting hosted by Denny Williams of the Clearwater County Weed Control on Noxious Weeds.

**April 2003**

Safety Meeting with Mandy Barlow, Marine Officer of the Clearwater County Sheriff’s Office addressing boating safety.

**May 2003**

Safety meeting held for all employees on Forklift Operations.

**June 2003**

Hatchery safety meeting covering Visitor and Open House safety held on June 11.

**July 2003**

Hatchery safety meeting on July 16.

**August 2003**

Hatchery safety meeting on Aug. 7

**September 2003**

Complex safety meeting held on Hunter Safety Sept. 25.

**Staffing**

**DNFH Employees, FY 2003.**

<b>Name</b>	<b>Position Title</b>	<b>Period of Employment</b>	<b>Status</b>
Allain, Richard E.	Animal Caretaker	10/01/02–09/30/03	Permanent
Bennett, Chris	Summer I/E Receptionist	07/03/03–08/22/03	Temporary
Bright, Mark G.	Fishery Biologist	10/01/02–09/30/03	Permanent
Clifford, David E.	Maintenance Supervisor	10/01/02–09/30/03	Permanent
Cram, Mike	Welder	08/03/03-09/30/03	Temporary
Gardner, Kelly J.	Office Automation Clerk	10/01/02–12/01/02	Permanent
Grant, Connie	Information/Education Assistant	10/01/02–11/04/02	Part-Time/ Seasonal
“ ”	Information/Education Assistant	11/05/02-05/22/03	Permanent
Greene, Benny C.	Electronics Mechanic	10/01/02–09/30/03	Permanent

Hamilton, William W.	Animal Caretaker	10/01/02–09/30/03	Permanent
Hasenoehrl, Penny	Office Automation Clerk	04/07/03-9/30/03	Permanent
Hawn, Bryan	Laborer	08/03/03-9/30/03	Temporary
Izbicki, Adam H.	Fishery Biologist	10/01/02–09/30/03	Permanent
Kellar, Robbie D.	Animal Caretaker	12/19/02–02/08/03 02/09/03–09/30/03	Temporary Permanent
King, Rick A.	Maintenance Worker	10/01/02–09/30/03	Permanent
Miller, William H.	Complex Manager	10/01/02–09/30/03	Permanent
Minnick, Jim	Animal Caretaker	12/30/02-9/30/03	Temporary
Nicholson, Dan	Welder	06/02/03-9/30/03	Temporary
Nolan-Hacker, Mona	Office Automation Clerk	02/03/03-04/03/03	Temporary
Ochszner, Dennis J.	Animal Caretaker	10/01/02–09/30/03	Permanent
Owsley, David E.	Environmental Engineer/Assistant Complex Manager	10/01/02–09/30/03	Permanent
Praest, Diane E.	Supv Admin Support Assistant	10/01/02–09/30/03	Permanent
Rosales, Raymundo A.	Maintenance Worker	10/01/02–09/30/03	Permanent
Sawyer, Susan D.	Information/Education Specialist	10/01/02–09/30/03	Permanent
Semple, Robert A	Supv Fishery Biologist	10/01/02–09/30/03	Permanent
Sims, Hubert M.	Maintenance Mechanic	10/01/02–09/30/03	Permanent
Sperber, Joan M.	Budget Technician	10/01/02–09/30/03	Permanent
Steward, Ron	Laborer	08/03/03-09/30/03	Temporary
Stretsbery, Gerald	Laborer	10/01/02–09/30/03	Permanent
Trainor, David A.	Maintenance Worker	10/01/02–09/30/03	Permanent
Trock, Thomas J.	Fishery Biologist	10/01/02–09/30/03	Permanent
Vargas, John J.	Animal Caretaker Leader	10/01/02–09/30/03	Permanent
Walker, Cliff L.	Social Services Assistant	10/01/02–09/30/03	Permanent/ Seasonal
Weeks, Terry C.	Maintenance Worker	10/01/02–09/30/03	Permanent
Wright, Benjamin A.	Animal Caretaker	10/01/02-09/30/03	Permanent

## Personnel Actions

- Connie Grant, Information and Education Assistant became a full-time employee on 11/4/02.
- Rick Allain, Animal Caretaker was promoted to a WG-5048-4 on 11/4/02.
- Jim Minnick was hired as a temporary Animal Caretaker, WG-5048-4 on 12/30/02.
- Kelly Gardner, Office Automation Clerk, transferred to Dworshak Dam, effective

12/01/02.

- Robbie Kellar was hired as a permanent full time Fish Culturist, WG-5048-5, effective 2/9/03, after working on a temporary appointment for the previous year.
- Mona Nolan-Hacker was hired as a temporary Office Automation Clerk 2/3/03.
- Termination of Mona Nolan-Hacker, Office Automation Clerk, GS-0326 on 4/3/03.
- Penny Hasenoehrl entered on duty as permanent Office Automation Clerk, GS-0326 on 4/7/03.
- Terry Weeks received the U.S. Fish & Wildlife Service 20-yr plaque and pin.
- Connie Grant, Information/Education Assistant, submitted a letter of resignation effective 5/22/03.
- Interviews conducted for Clearwater River Youth Program summer hires. Selections were made (6 enrollees for Dworshak and 3 enrollees for Clearwater State Hatchery) for the eight-week program, EOD for all is June 9.
- Rick Allain promoted to WG-5048-5 in June.
- Daniel Nicholson, WG-3703 temporary welder hired for bird enclosure project 6/2/03.
- Prison crews started work 6/2/03 on two projects - bird enclosure and System II & III chain scraper replacement.
- Summer youth program started 6/9/03. Six students began an 8-week work program at Dworshak Complex and three students at Clearwater State Fish Hatchery.
- Clifford L. Walker, Social Services Assistant, GS-0186, entered on duty 6/9/03 as seasonal supervisor of the Clearwater River Youth Program.
- Chris Bennett was hired through the STEP student work experience program, as a summer temporary Information Receptionist, GS-0304/04 on 7/3/03.
- Clearwater River Youth Program (CRYP) officially ended with certificates presented to each enrollee (6 @ Dworshak and 3 @ Clearwater)- honored for a job well done with cake and ice cream on 8/1/03.
- Entered on Duty 8/3/03: Mike Cram, Welder, WG-3703-10; Ron Steward and Bryan Hawn as Laborers, WG-3502-5.
- Chris Bennett, GS-304-05 Information Receptionist, resigned to continue education in Ecuador on 8/20/03.
- Dennis Ochsner returned to duty on 9/10/03, WG-5048, Animal Caretaker.
- Dave Trainor, WG-4749 Maintenance Worker, returned from active military reserve duty in Iraq on 9/15/03.
- End of Fiscal Year potluck was held on 9/30/03 in Conference Room and also recognized temporary employees for their good work (Mike Cram, Ron Steward and Bryan Hawn) - Their positions end on 10/1/03.

## Facilities Maintenance

### *October 2002*

- Restrooms in the Main Hatchery building were back in use Oct. 4<sup>th</sup> following the removal of several feet of grout in the sewage plumbing and plumbing repair.
- On October 16, a gas buildup in the Nursery A-bank water lines caused a blow-out that destroyed the lines across the entire west end of the building. Plans are being made to have the lines repaired before steelhead spawning begins in February.
- The lobby floor repair and refinishing was completed October 17.
- New exterior doors were installed on the front and back of the Main Hatchery Building.

### *November 2002*

- Started fabricating the Nursery Room Coldwater lines.
- Started A-bank repairs.
- The pond cleaner stand was shortened to 12".
- Repair A-bank head box screen.
- Replaced the flange gasket and Honeywell valve #4 Mechanical II.
- Replaced gear bolt on rear spawning baskets.
- Replaced the battery on cart number 6.
- The FRO ramp and steps were completed.
- Replaced the air regulator on #4 heat exchanger.
- Installed storage rack and shelves in oil shed.
- Mechanical and routine maintenance completed on the pond cleaner.

### *December 2002*

- Started Reuse System II and III.
- Repaired impeller shaft and bearings on reuse pump.
- Repaired System II makeup overflow line.
- Repairs to A-bank were completed except for the ruptured discs.
- Painted Mechanical II floors.
- The number 1 boiler wires burned up and warranty work was completed on the boilers.
- Repairs to main pump number 3.
- Fabricated a new trailer for the welder.

### *January 2003*

- System III Reuse scraper parts received and stored.
- Mechanical Building II floor painted.
- Cut asphalt for Fire & Maintenance 4-inch line leak in visitor parking lot.
- Fabricated #2 production chemical pump weatherproof box.
- Repair carburetor on snow blower.
- Foot switch replaced on ship welder.
- Repaired System II aluminum pipe (hole) in makeup overflow.
- Fabricated aluminum table for chemical pump incubator room.
- Rebuilt rear brake cylinders (2) cart #4.
- Replaced door closer from bathroom to shower/locker room.
- Repainted crew room coffee cup rack.

- Triangle pump and US Filter training for System I sludge system.
- Oil and filter change incubator room air compressor.
- Battery change out in all 3 standby generator sets.
- System II Reuse pump #7 re-install, Idaho Machine repaired.
- System I bio-filter cleanup and pumps run System I.
- Aluminum entrance chute fabricated for IFRO tag detector.
- Nursery room 2-inch cold water line fabrication.

### ***February 2003***

- Fabricated full-flow bypass piping for System I testing.
- System I cleanup of biofilters - main sump area and chemical storage tanks; ISI from Lewiston used vacuum truck; needed Riverview Construction's backhoe to break up hardened salt.
- Rebuilt 15 aluminum stands and fabricated 15 new stands for nursery room egg jars.
- Fabricated chute and stand (aluminum) for IFRO tag detector in spawning room.
- Oil and filter change, wash, vacuum and cleanup on new Dodge Caravan.
- Mech II #1 new electric boiler repairs completed by contractor.
- Plumbed new 2" drain for header for Heath tray stacks Incubator Room.
- Finished cold water line for Nursery Room.

### ***March 2003***

- Repainted System I reuse pump house floor and piping.
- Bird netting over steelhead ponds repaired after March snow storm.
- Repaired fire and maintenance 4" line in main parking lot by reservoir supply valve pit.
- Changed oil in lab Ford pick-up.
- Cart #4 master cylinder (brake) replaced.
- Biofilter pipe supports fabricated and installed in System I (per Brian Miller, COE request).
- Fabricated 3 new pond cleaner broom heads for Nez Perce Tribe Coho Program.
- Fabricated 12 grounding lugs for new substations in Mech II for COE.
- Removed temporary piping for System I biofilter full flow testing and installed new 6-inch valve and cap.
- Pulled reuse pump #13 in System III and sent for repair at Idaho Machine in Lewiston.
- Removed A & B bank chinook waste water system pumps for repair at Idaho Machine in Lewiston.
- Repaired starter and brakes on Komatsu forklift.
- Dodge 1-ton snow plow removed.
- Nursery Room exterior door lock set replaced.
- Roof drain area resealed in the heat exchanger storage area (roof leaked).
- Main parking lot restroom floors repainted.
- Main pump #3 (Main pump house) wire repair.
- Started fabrication of System I test nozzle (per Brian Miller's COE drawings).

### ***April 2003***

- System I biofilter testing and modifications.
- Modified new electric carts of side pieces (knee knocker).
- Fabricated bracket for Conference Room TV system.
- Repaired portal Burrows pond ladder.
- Removed all pumps and packed columns from Nursery Room reuse system and covered pump

sump holes with stainless plate.

- Cart #11 charger box rebuilt.
- Removed Feed Building forklift electric motor. Strom Electric cleaned and put motor back in.
- Welded test nozzle for System I Reuse System.
- Adult steelhead hauled to Lewiston for IFRO catch and recapture.
- Oil change in new Komatsu forklift.
- Install A & B bank sludge pumps (2) that Idaho Machine had rebuilt.
- Assisted Nez Perce Tribe in pumping C bank coho into transportation trucks.
- Started Burrows pond bird netting replacement by dismantling old netting.
- Installed System I low/high alarm sump probe.
- System II & III filter beds were cleaned up.

### ***May, 2003***

- System I testing of biofilters with Corps of Engineer people.
- Scheduled power outage. Problems with main pumphouse generator, rescheduled to later in month.
- Replaced tires on new Komatsu forklift.
- Power steering pump, tailpipe and muffler on I & E blazer.
- Tailgate step put on lab new pick-up.
- Lab GMC checked out for battery drain problem.
- Removed and reinstalled fish trap barriers for clean-up of Pond 9.
- Replaced hose reel in Spawning Room.
- Cannon plug repaired on #1 general main pump house.
- Hauled fish- rainbow up and chinook back to Kooskia.
- Repaired vehicle compound gate lock system.
- Change out of batteries Scooter's old cart to lab three wheeler.
- Fabricated rack for boom truck to haul steel for bird net structure.
- Moved bird net steel from vehicle storage to assembly area by System II east end.
- Replaced hydraulic hose on old Komatsu forklift.
- Tore down all bird net materials from System I, II & III net and wire prep for new construction.
- Install new elevator and did work trim and clean-up.
- System II & III filter bed cleanup.
- Clarifier clean up prep for Open House.
- Started on annual shut down maintenance on Mech I Boilers 1 & 2.

### ***June 2003***

- System II & III filter bed overhaul prison crew helping.
- Took scrap material to COE bone yard.
- Installed side steps on IFH Center's Ford pick-up.
- Fabricated parts for testing System I.
- Fabricated new throttle handle for boom truck speed control.
- Replaced air control valve for fishway door on Pond 9.
- Changed pipe plugs on Chinook raceway cleaning pump system.
- Hauled picnic tables from COE Visitor Center for Open House and returned.
- Installed frame for back pack shocker in Lab Ford pick-up.
- Reinstalled #13 System III reuse pump after overhaul.

- #4 gear box for System II reuse torn down for repair or replacement.
- Replaced battery on pond scrubber.
- Burrows pond bird net project started with welder and prison crew.
- Hauled RBT to Worley, ID for Coeur d'Alene Tribe.
- Youth Program Projects - Open House help - yellow fish painted - bridge rail painted - all signs resealed - weeding projects.
- Adjusted gate dogs on System II filter bed.
- Mech I boilers 1 & 2 annual electrical maintenance.
- All HVAC units serviced semi annual.
- Perfection Weed Control sprayed grounds.
- Sun spraying, painted all striping for parking lots and traffic lines.

### ***July 2003***

- #1 gear box realigned System III with filter bed scraper unit.
- Lab GMC radio removed.
- Bird net construction continues.
- Welded safety brackets Systems I testing.
- Fabricated sluice gate bracket for System II filter bed gate #8.
- Adjusted diverter valve for gate in Spawning Room.
- New forklift propane tank bled off (liquid).
- Fabricated fish head cutter and length measurer for FRO.
- System II & III filter bed construction change out of scrapers-chains-sprockets.
- Telephone relocate for receptionist desk.
- Repair brakes on Komatsu forklift.
- Lengthened by 12" System I reuse (testing) nozzle for COE.
- Cart #11 left front tire replacement.
- John Deere mower drive belt replacement and blade sharpened.
- Pond scrubber brush replacement.
- #12 reuse pump System III pulled for repair at Idaho Machine.
- System II & III sluice gate stems removed for proper measurements for Waterman Industries.
- Hydraulic selector valve replaced on boom truck and lubricated boom.
- Oil change and filter with lubrication of manlift.
- Air drier Mech I gasket repaired.
- Komatsu forklift water pump replaced.
- Biofilter System I roadway on North Fork side gravel placed and graded.
- Call back vehicle S-10 alternator replaced.
- Re-crated stems for electric operators for return to Waterman Industries.
- Production cart (3 wheeler) battery cable replaced.
- Youth Program projects: Parking lot cleaned, weeded hatchery; vehicles cleaned and waxed; handicap fishing access by Clearwater Sub station weeded and cleaned up - Production duties.

### ***August 2003***

- Bird net structure fabrication was continued during the month.
- System II & III filter bed - change filters, chain and rivet sprockets to plastics.
- System I punch list nozzle change - repair.
- Incubator chiller low temp modification construction.
- I & E Blazer filter/oil change; oil changes and filter distribution truck L900 clutch adjustment; oil change and filter on Grand Caravan; oil change and filter on Dodge 1 ton.

- Oil change on new Arc Welder.
- Sent L9000 to Western States Equipment for block heater replacement and front end alignment.
- System I valve pit cover repair.
- Removed and replaced coupling for hydraulic pump pond scrubber.
- Replaced oil rings on JD tractor hydraulic line disconnect.
- Replaced blade (cutter) on spawning table.
- Replaced coil on AMZ50 man lift.
- Removed System II channel pump piping (20").
- Repaired broken throttle spring on Komatsu forklift.
- Installed Weldolet for flow meter on new incubator low temp chiller and fabricated mounting bracket.
- Replaced electric cord and gear head on 4" grinder.
- Replaced lawn mower belt and paint set.
- Removed System III reuse pumps for repair.
- Repair air line for spawning room head cutter.
- Removed fence around Substation 3 for salt truck access to System I chemical pits.
- Replaced 8" valve on System I reuse system by pass line.

### ***September 2003***

- Bird net structure fabrication.
- System II & III filter beds - change out of filters, chains, sprockets.
- Custodial maintenance - parking lot restrooms - Main building - FRO buildings - Shop office and restroom.
- Incubator chiller system (low temp) completed, checked.
- Call back computer upgrade - new voice mod installed.
- Install grating and I beam structure on Nursery Room valve pit for salt truck access to pits.
- Oil change on 305 welder (Arc).
- Left rear brake cylinder repair on lawn maintenance cart.
- Left headlight replaced - clutch looked at on I & E Blazer.
- Replaced #12 reuse pump.

## Outreach and Visitor Activities

### Statistics

#### Dworshak NFH Visitor Use Statistics, FY2003

Program Type	# of Contacts	% Change From FY2002
<b>On-site</b> Hatchery Visitors (Register and self-guided tour)	<b>8087 *</b>	<b>3%</b>
Guided Tours	<b>73 □</b>	( - 25%)
Tour Visitors	<b>1355 *</b>	(- 23%)
Open House (children 12 & under)	<b>638 *</b>	(- 15%)
Open House (other visitors)	<b>1550 *</b>	(- 6%)
<b>Total On-Site Contacts (all * )</b>	<b>11630</b>	(- 3%)
<b>Off-site</b> Programs/Displays/Events	<b>172 □</b>	<b>300%</b>
<b>Total Off-Site Contacts (* *)</b>	<b>12,888 * *</b>	(- 12%)
<b>Total FY2002 Programs ( total □)</b>	<b>245</b>	<b>61%</b>
<b>Total FY2002 Contacts (* + * *)</b>	<b>24,518</b>	- 12%

#### *Table Summary*

Overall hatchery visitation increased for the fourth consecutive year in FY2003, but only slightly (3%) compared to last year FY2002. Again, this was due in part to increased contractor/ construction traffic on site for another 6 months, mild winter weather, above average chinook returns with a sport fishing season, fish viewing opportunities.

Since the I/E Assistant position was vacant from mid-May to mid-July, many regular onsite program offerings were limited or cancelled altogether. This would account for the drop in onsite contacts, guided tours and tour visitor categories.

Although fewer guided tours were given, there was only a slight decrease in the number of visitors taking tours.

Outreach and offsite programs continued to be the strongest component of the I/E section, with a 300% increase in actual programs given or events staffed. New events were the 6<sup>th</sup> Grade Rendezvous for 1000+ students at the Nez Perce Co Fairgrounds, with a historic theme focusing on Lewis/Clark. Many associated meetings and travel were also centered on FWS participation in the upcoming L/C bicentennial celebrations in ID.

School programs and hatchery in classrooms projects were again popular, with 4 incubation units having excellent egg to fry release of 85% average.

Cultural history interpretation continued with the costumed presentation of, *“After the Journey: Through a Mother’s Eyes,”* Lucy Marks program sponsored by the Regional Office to Monticello, VA, for the Lewis/Clark Bicentennial kickoff event, and the Corps of Discovery II traveling exhibit. Other presentations were given to local organizations and schools before the I/E Assistant resigned in May. The program will remain an active part of the hatchery outreach program once the vacant position is filled.

Travel and training for the Information/Education staff included:

- Outreach Planning and Development: An Overview, Portland Regional Office, sponsored by NCTC, March.
- Annual fisheries outreach meeting in October, Hood River, OR.
- Salmon and Steelhead Days in September, Boise.
- Annual Friends of Northwest Hatcheries, Inc. meeting in Leavenworth, WA, August.

## Cooperative Programs

Dworshak Fisheries Complex personnel (Dworshak National Fish Hatchery, Kooskia National Fish Hatchery, and Idaho Fishery Resource Office) worked closely with the following agencies and groups to accomplish various activities throughout the year:

## **Federal Agencies**

- Federal Emergency Management Administration (FEMA)
- National Marine Fisheries Service (NMFS)
- National Park Service (NPS)
  - Nez Perce National Historical Park
- National Weather Service
- United States Department of Agriculture (USDA)
  - Clearwater National Forest
  - Clearwater County Extension Office
  - Nez Perce County Extension Office
  - Natural Resource Conservation Service (NRCS)
- United States Army Corps of Engineers (COE), Walla Walla District
  - Dworshak Dam and Reservoir Project
- United States Fish & Wildlife Service (USFWS)
  - Hagerman National Fish Hatchery
  - Lower Snake River Compensation Plan Office
- United States Geological Survey (USGS)
  - Biological Services Division
  - Seattle Research Center
  - Columbia River Research Laboratory

## **State Of Idaho**

- Idaho Department of Employment
  - Job Service - Orofino
- Idaho Department of Fish & Game (IDFG)
  - Boise Headquarters Office
  - Lewiston Office
  - Salmon Office
  - Clearwater State Hatchery
- Idaho Department of Lands
- Idaho Environmental Education Association
- Idaho Parks and Recreation Department
  - Dworshak State Park
- Idaho State Historical Preservation Office (SHPO)
- Lewis-Clark State College
- University of Idaho (U of I)
  - Cooperative Fishery Research Unit (CFRU)
  - School of Forestry, Wildlife and Range Sciences
  - Aquaculture Research Center

## **State of Washington**

- Washington State University (WSU)
  - Bear and Eagle Research Unit
  - Columbia Basin Environmental Education Capacity Building Initiative (CBI)

**Tribal Entities**

- Coeur d'Alene Tribe
- Nez Perce Tribal Fisheries
- Kootenai Tribal Fisheries

**Public Utilities**

- Bonneville Power Administration (BPA)
- Clearwater Power Company (CPC)
- Idaho Power

**Local Government**

- Clearwater County Sheriff's Office (CCSO)
- Clearwater County Soil Conservation District
- Joint School District #171
- Latah Soil Conservation District
- Nez Perce Soil Conservation District
- Orofino Chamber of Commerce

**Special Interest Groups**

- Friends of Northwest Hatcheries, Inc.
- Idaho Community Foundation  
Northern Region Grant Program
- Idaho Food Commodity Program
- Kiwanis Club
- Orofino Lewis/Clark Bicentennial Committee
- Pulp and Paperworkers Resource Council (PPRC)
- Retired Senior Volunteer Program (RSVP)
- Rotary Club

**Other**

- Lewis-Clark Recyclers
- Latham's Meats
- NADL/Simmons Recycling