

Annual Report for Dworshak National Fish Hatchery

**Ahsahka, Idaho
Fiscal Year 2004**



A handwritten signature in black ink, appearing to read "W. J. 2. 14".

Acting Complex Manager

February 24, 2005

Date

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Introduction



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

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. Operations of the hatchery was authorized by a 1969 COE Memorandum of Understanding with the United States Fish & Wildlife Service (USFWS). 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 USFWS 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. In FY03-04 (Fiscal Year), the COE replaced and upgraded System I biofilters with a new plastic bead media filtration system. This system was operated successfully for a short period (3 months) in 2004. Also in the 1980's, an additional thirty 8'x80' raceways were constructed under the LSRCF 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 Virus* (IHNV) 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. Some of the rehabilitation project items will be accomplished with Operations & Maintenance (O&M) funding. Larger items will be funded directly by the COE.

Future projects requested from the COE 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 mitigates 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 2.1 million steelhead smolts at 6 fpp (200 mm in length) and 1.05 million yearling Chinook salmon smolts at 18 to 20 fpp (140 to 145 mm in length). The hatchery's annual production capacity exceeds 500,000 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 1,000 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 National Fish Hatchery (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, 2003, to September 30, 2004.

Dworshak Hatchery Production Summary FY2004

Brood Year 2003 Steelhead

There were 1.76 million steelhead smolts released from Dworshak in April, 2004. The steelhead at release averaged 207 mm in total length, meeting the 200 mm target size. Under the Harvest Settlement Agreement with the Columbia River Tribes, there were approximately 140,000 smolts released without an adipose fin clip to designate them as a hatchery fish. There was an initial IHNV outbreak probably due to no bird netting over the fish the first four months of rearing. Afterward, 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). After major construction, water reuse was working in System I for the first time since 1985. Reuse and heated water is now available in all three outside rearing systems. The smolts were outplanted to the South Fork of the Clearwater River the week of April 12, 2004, and direct-released from Dworshak the following week of April. There were 322,186 pounds of steelhead produced with Brood Year 03(BY) Summer Steelhead (SST).

Brood Year 2004 Steelhead

There were 3,676 adult steelhead returned to Dworshak NFH in the fall of 2003 and spring of 2004. A total of 2.8 million eyed eggs went into Dworshak's production program. Dworshak provided 1.25 million eyed eggs for the Clearwater Hatchery. Also, 1.8 million green eggs were taken for Magic Valley Hatchery (MVH) and another 18,000 green eggs for Potlatch Pulp & Paper school projects. Early returning adults were spawned 1 week earlier this year, resulting with a 30 percent increase in eyed egg survival. The timing for spawning the mid and late returning adults remained the same, maintaining the entire spectrum of the run. At the end of FY2004 there were 2.23 million BY04 SST on station.

There will be 200,000 BY04 SST released in 2005 for the Nez Perce Tribe (NPT) 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 2002 Chinook Salmon

Dworshak NFH released 1.08 million BY02 spring Chinook salmon weighing 53,391 pounds. These fish were released on March 31-April 1, 2004.

Brood Year 2003 Chinook Salmon

At the beginning of FY2004, all BY03 SCS eggs were incubating at Dworshak. During October and November, 2003, there were 600,000 eyed-eggs of Dworshak stock and 857,000 eyed-eggs of Kooskia stock shipped to Kooskia for final incubation and early rearing. There were also 600,000 eyed eggs of Dworshak stock which remained at Dworshak for incubation using a newly installed chiller. During March and April, 2004, there were 590,000 Dworshak stock SCS returned to Dworshak from Kooskia. At the end of FY2004, there were 1.08 million BY03 SCS on station, averaging 68 fpp and 93 mm (3.7 inches) total length.

Brood Year 2004 Chinook Salmon

Adult returns of BY04 SCS produced 2,356 Chinook adults to Dworshak. Kooskia trapped 718 adult fish, 123 of which were passed over the weir as Idaho Supplemental Study (ISS) fish, and 587 transferred to Dworshak for spawning. There were approximately 596,000 Dworshak eyed eggs and 774,000 Kooskia eyed eggs transferred from Dworshak to Kooskia for incubation.

Brood Year 2002 Coho Salmon

The COS at Dworshak are being reared in a cooperative program with the NPT. There were 357,000 BY02 produced at Dworshak. These fish were transferred to Kooskia during April, 2004.

Brood Year 2003 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 103 females spawned from the Clearwater Basin. On December 17, 2003, there were 180,000 coho eggs from Eagle Creek NFH shipped to Dworshak. At the end of FY2004, there were approximately 295,000 BY03 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 (RBT) - Open House

Brood Year 2003

Dworshak raised approximately 12,000 BY03 RBT. There were 8,000 stocked into a fishing pond at Dworshak for Open House in June, 2004 and about 4,000 shipped to Kooskia for their Open House. There were 670 participants at the Open House for Dworshak. The remaining RBT were then stocked into ponds for tribal and public fishing.

Brood Year 2004

On February 3, 2004, Dworshak received eyed Shasta RBT eggs from Ennis, Montana. At the end of FY2004, there were 8,000 RBT in Burrow's ponds (BP's) 49 and 3,900 in each of two C-bank raceways. These fish are for Open House, 2005 at Dworshak.

Fish Culture Operations

Summer Steelhead Brood Year 2003

At the beginning of October 2003, all of the SST from BY03 were outside in BP's. Overall mortality from October 1, 2003, through final release on April 24, 2004, was about 12.1 percent. During the summer of 2003, there was no bird netting over the SST ponds, allowing for extensive bird predation and disease transfer between ponds. From the coded-wire-tag (CWT) inventory in November and December of 2003, the amount of mortality from bird predation during the summer of 2003 was estimated at eight percent. The final release number was 1.76 million SST smolts with an average total length of 207 mm (Table 1).

Table 1. Fish inventory summary for BY03 SST on October 1, 2003, and final release summary in April, 2004.

Location	October 1, 2003				Oct 1 - Apr 22 % Loss	Final Release April 12-22, 2004			
	Number ¹	Lgth in	Lgth mm	Wt Lbs ¹		Number	Lgth in.	Lgth mm	Wt Lbs
Syst I	555,423	5.5	140	32,354	5.1	526,857	8.2	208	101,480
Syst II	545,881	4.6	116	18,097	17.7	449,231	8.2	209	87,133
Syst III	908,200	3.8	95	16,790	13.1	789,299	8.0	204	143,573
Tot/Ave	2,009,504 4	4.6	116	67,241	12.1	1,765,387	8.2	207	332,186

¹ There was an additional 8% loss over summer to bird predation due to no bird netting over ponds

Source: DNFH - Final Release Summary, May 2004.

Monthly Inventory Summary (MIS), October 1, 2003.

Production Narrative, May, 2004.

BY03 SST were reared entirely in BP's. Table 2 illustrates the survival rates of various stages of development for BY03 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 FY2003, with System II being stocked with Takes 6-9 (partial) and System III receiving Takes 9 (partial)-14. This was due to construction of an aluminum release channel in System III in the summer of 2000. This ponding strategy worked better for the marking crew than in previous years and was repeated in FY2001 - FY2004.

Table 2. Survival summary from green eggs to released smolts, BY99 through BY03 SST reared at Dworshak NFH.

Brood Year	% Surviving from previous stage				Cumulative % Survival		
	(Green to)Eyed Egg ¹	Tanked Fry	Ponded Finger lings	Smolt Release	Green Egg to Smolt ²	Eyed Egg to Smolt	Tanked Fry to Smolt
1999	91.9	94.9	93.2	94.3	50.3	83.0	87.9
2000*	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	91.8	56.1	77.8	83.2
2003	91.3	94.2	92.9	75.5	55.3	66.0	70.1
5yr Ave	90.8	92.7	92.2	91.1	56.1	77.9	83.2
2004 YTD	93.2	89.1	91.7				

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

*Due to malfunction with egg picker, numbers are estimated.

1 % Survival Green to eyed = Enum eyed eggs /Enum eyed eggs + enum dead eggs. i.e. survival after culling bad trays, females.

2 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- EgEnumST04.wk4

Nursery Loss-nulo04st.wpd

Spawning/Egg Take Plan, BY04 SST

After a major construction project, reuse and heated water for System I was started for the first time since 1985. Reuse and the boilers for heated water were turned on December 2, 2003, for Systems II and December 10 for System III and January 20, 2004, for System I. Reuse and the boilers were turned off in System II on December 29, due to mortalities of heavy *Ichthyophthirius multifiliis* (ICH) infestation. Formalin treatments were administered as the System was flushed with river water for 16 days. Reuse and the boilers were turned back on in System II on January 15, 2004. On March 3, 2004, heated water and reuse in System I and II were turned off. On March 26, 2004, heated water was turned off in System III. On April 2 reuse was turned off in System III.

Some SST in all Systems received (CWT's) and left ventral (LV) clips. There were no freeze brands placed on the SST this year because enough data is available from branding in past years to assess the needed information. The various marks 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 emigration and fish passage center studies. A total of 132,627 BY03 SST received CWT's and 1,498 received PIT tags. See the marking/tagging tables under each System for details.

There were approximately 140,000 BY03 SST which were unmarked and untagged released from Dworshak. This represents about 8 percent of the BY03 SST released at Dworshak. These are the fifth group of SST released from Dworshak since 1984 without an external mark identifying a hatchery fish. This is being done under the Harvest Settlement Agreement between the USFWS/NOAA/states and the Columbia River Tribes.

System I

For BY03 SST, System I production included 24 BP's. This System had 555,423 SST in it at the start of the fiscal year and 526,857 at release in April, 2004 (Table 3).

Table 3. System I BP production, BY03 SST, FY2004.

Month	Year	1st of Month			Growth during previous month		% Mortality for Month	Ave Temp EF for Month
		Number	fpp	L (mm)	in	mm		
October ¹	03	555,423	17.0	140	0.69	18	1.87	47.3
November ¹	03	544,130	13.7	151	0.41	10	1.73	49.6
December	03	534,703	10.2	166	0.6	16	0.51	45.4
January	04	531,974	8.8	174	0.32	8	0.54	43.7*
February	04	529,115	8.1	180	0.20	5	0.23	49.6
March	04	527,881	6.4	195	0.59	15	0.13	52.2
April	04	527,201	5.4	205	0.43	11	0.07	42.6
Release Tot/Ave		526,857	5.19	208			5.08	47.2

* System under heated reuse water for part or all of month - see note below

¹ Differs from Oct/Nov MIS- total numbers and % mortality reflect adj for CWT inventory numbers from November - 10% loss due to bird predation

Source: DNFH - MIS, Sept 2003-May 2004

Final Release summary, BY03 SST

Production Narratives Sept-May, 2003-2004

Daily Water Temperature Records, Oct-April, 2003-2004

After many months of construction, System I reuse and heated water was started on January 20, 2004. This was the first time System I was on reuse since 1985. Reuse remained on in this system until March 3, 2004.

Adipose fins were clipped on BY03 SST in System I from May 30, 2003, until July 23, 2003. Other marking of BY03 SST in System I is summarized in Table 4.

Table 4. Marking and tagging of BY03 SST, System I, FY2004.

Released fromBP #	Date	Number CWT	Number Freeze Brands	Number PIT tags	Fin Clips	Study	Release Site
BP 1	11/17/03 2/09/04	22,167	0	250	AD LV	Early Return Progeny Smolt Monitoring @ Fish Passage Ctr	Dworshak
BP 31	11/21/03 2/09/04	22,133	0	251	AD LV	System I Contribution Smolt Monitoring @ Fish Passage Ctr	Dworshak
Total		44,300	0	501			

Source: DNFH- MIS System I, December 2003
 IFRO- Branding, Tagging.DBF
 IFRO- MRKLPN04.wk4

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, 2003, until final release in April, 2004, was approximately 5.1 percent. Details of the formalin treatments are in the chemical treatment log at Dworshak.

On April 12-14, 2004, there were 130,753 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 396,104 SST from System I took place on April 20 into the mainstem of the Clearwater River. The total release from System I was 526,857 BY03 SST (Final Release Summary, BY03 SST).

System II

For BY03 SST, System II production included 25 BP's. This System had 545,881 SST in it at the start of the fiscal year and 449,231 at release in April, 2004 (Table 5).

Table 5. System II production, BY03 SST, FY2004.

Month	Year	1st of Month			Growth during previous month		% Mortality for month	Ave Temp °F for Month
		Number	fpp	L (mm)	in	mm		
October ¹	03	545,881	30.2	116	0.55	14	5.28	47.3
November ¹	03	514,103	20.3	132	0.64	16	2.27	49.1
December	03	498,4268 57	14.4	148	0.64	16	1.8594	51.1*
January	04	489,204	11.1	161	0.52	13	5.67	46.7*
February	04	461,467	9.1	173	0.45	11	0.48	53.3*
March	04	459,264	6.2	196	0.92	23	0.48	42.6*
April	04	457,061	5.42	205	0.35	9	1.71	42.6
Release Tot/Ave		449,231	5.15	209			17.756	47.5

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

¹ Differs from Oct/Nov MIS- total numbers and % mortality reflect adj for CWT inventory numbers from November - 10% loss due to bird predation Source.

DNFH - MIS, Sept 2003-May 2004

Final Release summary, BY03 SST

Production Narratives Sept-May, 2003-2004

Daily Water Temperature Records, Oct-April, 2003-2004

Adipose fin clipping was done on BY03 SST in System II from July 24 through August 12, 2003. Other marking of BY03 SST in System II is summarized in Table 6.

Table 6. Marking and tagging of BY03 SST, System II, FY2004.

Rel from BP #	Date	Number CWT	Number Freeze Brands	Number PIT tags	Fin Clips	Study	Release Site
BP 2	11/19/03	21,759	0		AD LV	System II Contribution Smolt Monitoring @ Fish Passage Ctr	Dworshak
	2/09/04			248			
BP 30	11/24/03	21,904	0		AD LV	System II Contribution Smolt Monitoring @ Fish Passage Ctr	Dworshak
	2/09/04			250			
Total		43,663	0	498			

Source: DNFH- MIS System II, December 2003, January 2004

IFRO- Branding, Tagging.DBF;

IFRO- MRKLPN04.wk4;

System II converted to reuse on December 2, 2003. Reuse and the boilers were turned off in System II on December 29 due to mortalities from a heavy *Ichthyophthirius multifiliis* (ICH), infestation. Formalin was administered as the System was flushed with river water for 16 days. Reuse and the boilers were turned back on in System II on January 15, 2004. Reuse and heated water remained on until March 3, 2004. Monthly temperature for System II is displayed in Table 5.

Mortality was approximately 17.8 percent from October 1, 2003, until release in April, 2004.

Based on inventory numbers from the Nez Perce Tribe (NPT) when the fish were being loaded into transport tanks, there were a total of 9,540 BY03 SST from System II stocked into American River. These were fish raised and released from System III which received no adipose fin clips to designate them as hatchery fish. This is the fifth consecutive year of un-clipped releases since the Service began identifying all hatchery SST with an adipose clip in 1984. This is being done under the Harvest Settlement agreement with the Columbia River Tribes.

On April 14-19, and 26, there were 120,723 SST outplanted from System II (this includes the 9,540 Tribal fish). 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 328,508 SST from System II took place on April 19 into the mainstem of the Clearwater River. The total release from System II was 449,231 BY03 SST (Final Release Summary, BY03 SST).

System III

System III has 34 BP's. This System had 908,200 SST at the start of the fiscal year and 789,299 at release in April, 2004 (Table 7).

Table 7. System III production, BY03 SST, FY2004.

Month	Year	1st of Month			Growth during previous month		% Mortality for month	Ave Temp °F for mth
		Number	fpp	L (mm)	in	mm		
October ¹	03	908,200	54.14	95	0.48	12	5.86	47.3
November ¹	03	855,003	34.0	111	0.634	16	2.33	49.5
December ¹	03	835,119	22.3	128	0.66	17	0.71	49.8*
January	04	829,190	13.3	152	0.95	24	0.89	51.8*
February	04	821,779	10.6	164	0.47	12	0.63	51.7*
March	04	816,571	7.9	181	0.67	17	0.14	52.2*
April	04	815,398	5.7	202	0.82	21	2.50	42.8
Release² Tot/Ave		789,299	5.4	205			13.06	49.3

* System under reuse part or all of month.

¹ Differs from Oct/Nov/Dec MIS- total numbers and % mortality reflect adj for CWT inventory numbers from December - 5% loss due to bird predation

²SST from ponds 57, 61, 65, 69, 71, and 74 release numbers along with mortality for April based on NPT inventory at release

Source: DNFH - MIS, Sept 2003-May 2004

Final Release summary, BY03 SST

Production Narratives Sept-May, 2003-2004

Daily Water Temperature Records, Oct-April, 2003-2004

Adipose fin clipping was done on BY03 SST in System III from August 12 until August 28, 2003. Other marking of BY03 SST in System III is summarized in Table 8.

Table 8. Marking and tagging of BY03 SST, System III, FY2004.

Rel from BP #	Date	CWT	Freeze Brands	PIT Tags	Fin Clips	Study/Comments	Release Site
BP 67	12/03/03	22,272	0		AD LV	System III Contribution Smolt Monitoring @ Fish Passage Ctr	Dworshak
	2/09/04			249			
BP 72	12/03/03	22,452	0		AD LV	System III Contribution Smolt Monitoring @ Fish Passage Ctr	Dworshak
	2/09/04			250			
	Total	44,724	0	499			

Source: DNFH- MIS System II, December 2003, January 2004,

IFRO- Branding, Tagging.DBF; IFRO- MRKLPN03.wk4

IDFG- Fish Marking Summary 2003

Based on inventory numbers from the NPT when the fish were being loaded into transport tanks, there were a total of 130,160 BY03 SST from System III stocked into Newsome Creek and

American River. These were fish raised and released from System III and were not adipose fin clipped to designate them as hatchery fish. This is the fifth consecutive year of un-clipped releases since the Service began identifying all hatchery steelhead with an adipose clip in 1984. This is being done under the Harvest Settlement agreement with the Columbia River Tribes.

Based on the inventory numbers from the NPT, the cumulative mortality in System III was approximately 13.1 percent from October 1, 2003, until release in April, 2004.

System III converted to reuse on December 10, 2003. The boilers remained on in this System until March 26, 2004. Reuse was turned off April 2. 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 12-26, there were 311,856 SST outplanted from System III (this includes the 130,160 unmarked Tribal fish from System III – there were also 9,540 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 477,443 SST from System III took place on April 21-22 into the mainstem of the Clearwater River. The total release from System III was 789,299 BY03 SST (Final Release Summary, BY03 SST).

Distribution Summary

Release of BY03 SST began April 12 and ended April 26, 2004. Final release numbers are illustrated in Table 9.

Table 9. Fish distribution summary by site, BY03 SST, April 12 to April 26, 2004.

Site	Number	Weight	fpp	Length	
				in	mm
Outplants 4/12-4/26					
Clearwater R. - Red House Hole	213,900	42,032	5.09	8.25	210
Clear Creek	209,732	40,104	5.23	8.17	208
Newsome Ck Unmarked SST	65,080	9,735	6.69	7.53	191
American River Unmarked SST	74,620	9,643	7.74	7.17	182
Subtotal	563,332	101,514	5.55	8.01	204
Direct Release 4/21-4/24					
Main Stem of the Clearwater River	1,202,055	230,672	5.21	8.18	208
Totals/Averages	1,765,387	332,186	5.31	8.13	207

Source: Final Release Summary, BY03SST

Brood Year 2004

Adult Collection

Adult summer steelhead (SST) for BY04 were collected in the fall of 2003 and in the winter and spring of 2004 to represent the entire run. The ladder was first opened on September 26, 2003, until November 6 for collection of early-return SST. During this 41-day period there were 523 early-run steelhead collected for spawning in the spring of 2004. 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 51 coho females trapped at Dworshak. There were also 712 BY04 SST trapped during this process and anesthetized with carbon dioxide. They were then loaded onto NPT trucks and transported to Hog Island near Lewiston, Idaho, for release in the Clearwater River. The ladder was closed for the final time on November 28, 2003. The fish ladder was opened intermittently from February 19, 2004, throughout the winter and spring for collection of adult SST. This staggered ladder operation throughout the spring limited the number of SST entering the hatchery. It was closed for the final time on May 3, 2004 for collection of BY04 SST. With the intermittent ladder operation, there were 3,767 adult SST captured at Dworshak, including 619 jacks. The final spawning day was May 4, 2004. There were also 10 wild SST which were released back into the mainstem of the Clearwater River the day they were examined.

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.

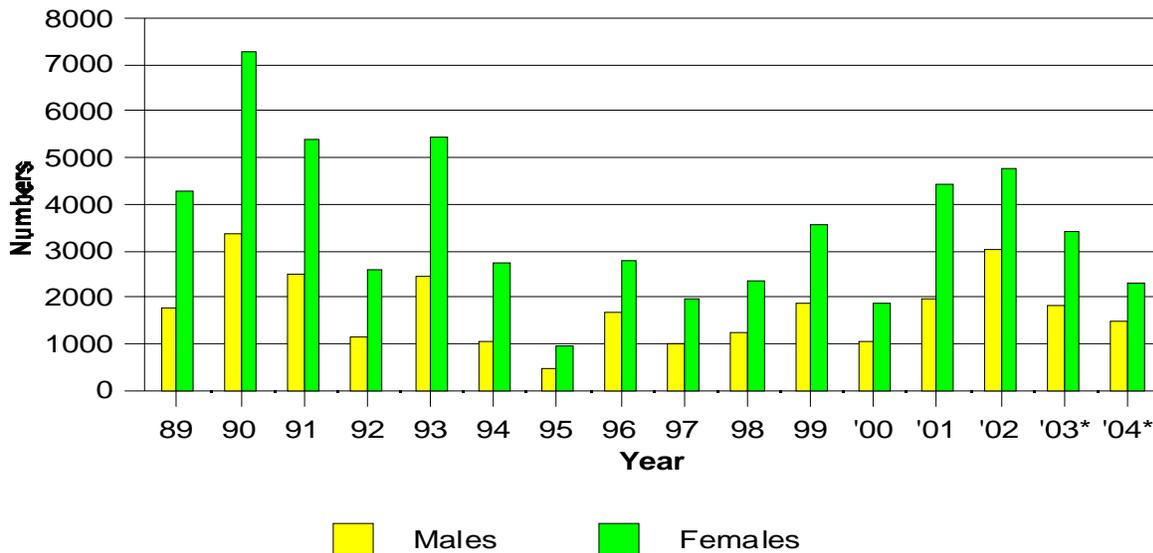


Figure 1. Dworshak adult SST returns 1989-2004

* Ladder only opened part of season

Source: DNFH - Spawning Report SST BY04

Spawning/Egg Take Plan SST BY04, ST04EgTk.wk4

Of the 523 early return steelhead, 57 died before spawning began. Formalin treatments were started on October 29, 2003, and appeared to control fungus.

Spawning numbers/ratio

There were 1,955 SST spawned over the BY04 season, 897 males and 1,058 females. Females have always outnumbered males in returns to Dworshak so the goal of a 1:1 male:female spawning ratio is difficult to achieve. While the male:female return ratio was 1:1.5 for BY04 SST, the spawning ratio was reduced to 1:1.2. There were 271 jacks spawned during the season, 172 for Dworshak, 55 for Clearwater State Fish Hatchery (CWH), and 44 for MVH.

Idaho Fish Health Center Disease Sampling

On January 20, 2004, there were 56 adult males and five jacks from the early-returned BY04 SST injected with luteinizing hormone-releasing hormone analogue (LHRH). This was done to induce gamete maturation for spawning the following two weeks. Twenty-one of these injected males spawned during Take 1 and 18 spawned during Take 2. Nine of the injected males were green killed at the end of Take 2 and the remaining 13 injected males were mortalities before being used. This year a liquid LHRH was injected rather than the time-release capsules that were injected in years past. All carcasses from injected males were disposed of in the landfill.

Approximately 3.8 percent (9 out of 239) of the females sampled for MVH (Takes 7-9,12) tested positive for 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 3.5 percent (7 out of 201) of the females from Takes 4-5 for CWH tested positive for IHN. All eggs taken for either MVH or CWH which tested positive for IHNV were discarded. There were 45.8 percent (44 out of 96) of both males and females sampled for Dworshak which tested positive for IHNV. Dworshak does not cull eggs which may test positive for IHNV in its production program.

Spawning Summary

A total of 13 egg Takes were spawned this season, beginning on January 27, 2004, and ending on May 4, 2004. There were 1,058 females and 897 males spawned and the average fecundity of SST enumerated at DNFH was 7,174 eggs/female. Early-returning adults (October) were spawned in Takes 1-2, and later returning adults (February-May) were spawned from Takes 3-13.

Egg Disposition

As was done for BY03 SST, Dworshak incubated the CWH eggs until eye-up, at which time personnel from CWH shocked and transported the eggs for enumeration at the CWH facility.

There were approximately 1.25 million eggs shipped to CWH from Takes 5-6. After enumeration, personnel from CWH stated there were 1.16 million eyed eggs available for their program, exceeding the 960,000 eyed egg target.

There were an estimated 1.8 million green eggs shipped from Dworshak to CWH for MVH from Takes 7-8-9 and 12. These eggs were shipped to CWH the same day spawning took place. Dworshak also provided 18,000 green eggs for Idaho Fish & Game (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 2.8 million eyed eggs into either hatching jars or incubator trays for its production.

University Research

Dworshak provided opportunities for two university research projects during BY04 SST spawning, one from the University of Idaho and one from Washington State University. A summary of their research is in the BY04 Steelhead Spawning Report.

AquatTechnics Inc Research

Dworshak provided fish for Ralph Elston of Aquatechnics Inc to sample for research concerning headburn on adult SST returning to Dworshak. Mr. Elston sampled fish on November 12, 2003 and again on February 24, 2004. He took lesion scrapes from six males and 5 females along with blood samples from 11 males and six females.

Adult Disposition

Nez Perce Tribe

On March 23, 2004, Dworshak provided 120 live adults (2 males, 14 jacks and 104 females) to the NPT for transportation to Lapwai 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 221 carcasses (163 males and 58 females) picked up by the tribe in March. The tribe agreed to use 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 1,073 hatchery adults outplanted from Dworshak during the return run of BY04 SST. None returned to the hatchery. This outplanting was done by staff from Dworshak and the NPT. There were also 10 wild fish which were caught in the trap this year. 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 either a Food Bank program or a cooperative program

with the Federal Bureau of Prisons. Complete adult disposition is illustrated in Table 1.

Table 1. Adult disposition of BY04 SST from Dworshak.

DESTINATION	NUMBER	COMMENTS
Bear/Eagle Program	0	WSU captive bear/rapture rehab program
Food Bank/Fed Bureau of Prisons	2,076	Latham Processing, Orofino, Idaho
Outplanted	1,073	None returned to Dworshak
Research	12	School programs, Univ research
Tribe	221	Coeur d'Alene
Landfill	385	Carcasses deteriorated beyond use
Total	3,767	

Source: DNFH-Spawning Activity Report BY2004 SST, Final for BY04 SST
Spawning and Run Summary, BY2004 SST

Nursery and Early Rearing

The first two egg-Takes were from early-return adults. Eggs were put into hatching jars in the nursery at an average rate of 18,500 eggs/tank. All eggs/fry were loaded at final rearing densities in the nursery so that no Takes needed to be subsequently split. This method reduced the amount of handling on the fish and will be repeated for BY05 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 11-13 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- 2 were transferred outside. Dead eggs and fry were picked and enumerated from each tank and tray. There was a 93 percent survival from the eyed-egg stage to feeding fry for BY04 SST.

This year the fry from the nursery averaged 79 fish per pound (fpp) when moved out of the nursery into BP's. Fish receiving a 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 receiving a CWT went directly from the nursery to a BP and will be tagged later in October, 2004. IDFG provided the trailer and AD clipping crew.

A total of 2.28 million BY04 SST were moved from the nursery to the BP's beginning with Take 1 on May 26, 2004, and ending with Take 13 on August 24.

The bird netting installed at the beginning of FY2004 encloses the entire outside rearing ponds for SST at Dworshak. Thus far mortality and disease for BY04 SST are both far below that of last year when no bird netting was present.

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 regimen 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 2.1 and 2.2 million SST in the Spring of 2005. Table 4 illustrates the steelhead on station at the end of FY2004 and projected release numbers.

Table 4. BY04 SST on station and projected release summary, (9/30/2004).

System	As of September 30, 2004				Projected to release - April 2005		
	Number	Weight (lbs)	fpp	L (mm)	Proj % Loss to Release	Proj Release Number	Proj Size at Release (mm)*
Sys I	686,383	55,297	12.4	156	6	645,200	207
Sys II	659,053	30,123	21.9	129	8	606,329	207
Sys III	888,496	20,824	42.7	103	9	808,531	196
Total/ Average	2,233,932	106,244	27.2	127	7.8	2,060,060	203

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

Source: DNFH - MIS data, October 1, 2004

DNFH - Production Narrative, September, 2004

System I

System I received 700,706 BY04 SST during the summer of 2004. Steelhead in System I were moved out of the nursery beginning with Take 1 on May 26, 2004, and ending with Take 5 on June 30. Except for two ponds of SST which will receive CWT's in the fall of 2004, 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 six BP's had been confirmed positive IHN by the end of FY2004, with SST in only one pond displaying elevated mortality by the end of the fiscal year.

System II

System II received 679,309 SST during July and August, 2004. Fish in System II were moved out of the nursery beginning with Take 5 on July 6 and ending with Take 8 on August 6. Steelhead from Takes 5-8 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 BP's. Steelhead in BP's 2 and 42 will be CWT'd and AD clipped in October, 2004.

Steelhead in three BP's were confirmed IHN positive in System II by the end of FY2004, with fish in several other ponds suspect IHN.

System III

System III received 902,827 SST from Takes 9 through 13 beginning with Take 9 on August 6 and ending with Take 13 on August 24. 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 72 will be CWT'd and AD clipped in November, 2004.

Fish in BP's 63, 64, 65, 66, 67, 68, 69 and 70 (approximately 210,000 fish) will receive no AD clip to designate them as hatchery fish and no CWT before release. This is the sixth year of unclipped SST releases since Dworshak began identifying all hatchery SST with an AD clip in 1984. This is through a US v OR agreement with all the parties involved.

Steelhead in three BP's were confirmed IHNV positive in System III by the end of FY2004, with several others suspect IHNV.

Spring Chinook Salmon Brood Year 2002

On October 1, 2003, there were 1,083,389 BY02 spring Chinook salmon (SCS) on station at Dworshak. All of these fish were from females with low Bacterial Kidney Disease (BKD) status.

In February of 2004, there were 51,744 BY02 SCS which received PIT tags. This study is for a survival comparison of barging vs. trucking of smolts in the Columbia Basin.

Release dates of the BY02 SCS were March 31 and April 1, 2004. There were 1,078,923 BY02 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. BY02 SCS in System I Raceways, 9/30/03, and release data, 03/31-04/01, 2004.

September 30, 2003				% Loss 9/30/03 to 4/01/04	Release March 31-April 1, 2004			
Number	Weight lbs	fpp	Length mm		Number	Weight lbs	fpp	Length mm
1,083,389	11,418	94.9	83	0.41	1,078,923	53,391	20.2	139

Source: DNFH- MIS, Oct 1, 2003
Production Narrative, March, 2004
Final Release Summary, BY02 SCS

BY02 SCS had an enumerated survival of green egg to eyed egg of 96.9 percent. Enumerated eyed eggs of both Dworshak and Kooskia stock SCS were shipped to Kooskia in the fall as to take advantage of the colder incubation water at Kooskia. Dworshak fry were then shipped back to Dworshak in the spring and placed directly into outside rearing ponds. Survival from eyed-egg to smolt was 93.7 percent for BY02 SCS of Dworshak stock.

Brood Year 2003

There were 3,422 adult BY03 SCS which returned to Dworshak and 965 returned to Kooskia, for a total of 4,387 to the Dworshak Complex. Adults spawned and eggs produced from BY03 SCS are represented in Table 1.

Table 1. Dworshak and Kooskia adult spawners and both green & eyed egg numbers, BY03 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	328	363	50	4	4,959	1,264,462	1,212,043	95.9
Kooskia	199	257	73	2	5,029	915,310	856,702	94.0
Total/ Average	527	620	123	6	4,988	2,179,772	2,068,745	94.9

Source: DNFH - Final BY03 SCS Enumeration and % Survival of Eggs. SC03EGEN.wk4
BY03 SCS Spawning Report

For large-scale incubation, the water temperature in the incubation stacks at Dworshak can usually be reduced to approximately 40-45⁰F. The incubation temperature at Kooskia can be maintained at approximately 38⁰F over the winter. As was done with BY99-02 SCS, all BY03 Kooskia stock SCS eggs were shipped to Kooskia for incubation after eye-up and enumeration at Dworshak. Instead of sending all of Dworshak's eggs to Kooskia this year, approximately ½ of Dworshak stock SCS went to Kooskia this fall and ½ remained at Dworshak for incubation using the newly installed chiller. This chilling delays hatching approximately three months from non-chilled water at Dworshak and assists in reaching the desired 20 fish per pound (fpp) size at release in the spring of the year 2005.

Kidneys were sampled for BKD by personnel from the IFHC from all females spawned. The IFHC also took ovarian fluid from all females spawned for viral inspection. As with BY02 SCS at Dworshak, a different test was used for BKD detection in FY2003. No longer was a base-line test done to compare all samples to a given 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 363 females spawned for Dworshak, there were 50 which were culled for "medium or high" ELISA readings. Of the 257 females spawned for Kooskia, 73 were similarly culled.

After eye-up and enumeration, there were 607,000 BY03 SCS eyed eggs of Dworshak stock shipped to Kooskia during October/November 2003 and 604,000 eyed eggs remained at Dworshak. There were a total of 857,000 eyed eggs from Kooskia stock also shipped to Kooskia during this time.

Fry of Dworshak stock were transferred from Kooskia to Dworshak between April 16-22. Fry of Dworshak stock were moved from Dworshak incubators to outside raceways April 15-21. There were a total of 1.15 million BY03 SCS fry stocked into outside raceways at Dworshak.

The USFWS fish marking trailer from the Columbia River Fisheries Program office began CWT'ing the BY03 SCS on August 3 and ended on August 14, 2004. The tag is being done for contribution research. Personnel from the marking trailer also clipped adipose (AD) fins on all

BY03 SCS and split fish into several raceways during the tagging operation. By the end of FY04, there were 1,076,219 BY03 SCS at Dworshak.

Table 2 illustrates the size and number of BY03 SCS on station at the end of the fiscal year and projected release numbers.

Table 2. BY03 SCS at the end of the FY and projected release from Dworshak, April 2005.

September 30, 2004					Projected Release - April 2005			
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	1,076,219	15,790	68	93	2	1,054,695	20	145

Source: DNFH - MIS, October 2004
DNFH - Production Narrative, September 2004.

Brood Year 2004

Fish traps at both Dworshak and Kooskia were operated to collect BY04 SCS. The fish ladder at Dworshak was opened on May 27, 2004, and closed June 4. The ladder was then reopened and closed multiple times during the summer to help control the number of SCS entering the hatchery. There were 1,008 adults outplanted from Dworshak by the NPT. The ladder was closed the final time for BY04 SCS collection on September 7.

There were 2,356 BY04 SCS returned to Dworshak and 718 SCS returned to Kooskia by the end of the spawning season (Table 1). Of those returning to Kooskia, 587 were transferred to Dworshak for spawning and 123 were passed above the weir at Clear Creek as ISS fish.

Table 1. Adult returns, BY04 SCS. (09/30/04)

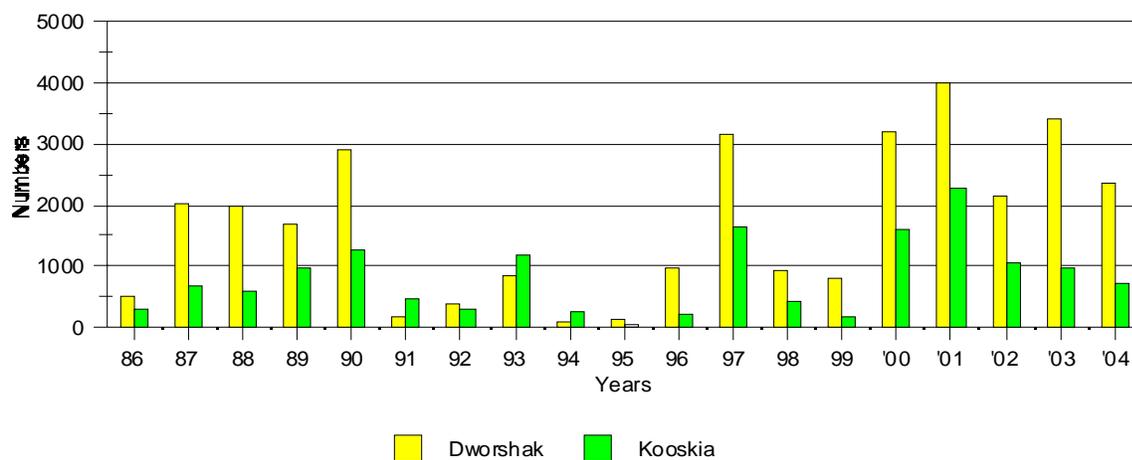
Age	Number/Dworshak	Number/Kooskia*	Total
I-Ocean	142	15	157
II-Ocean	2,077	682	2,759
III-Ocean	137	21	158
Unknown	0	0	0
Total	2,356	718	3,074

*123 of these fish were passed over weir into Clear Creek - ISS fish
Source: IFRO - Dworshak/Kooskia Complex SCS News-2004 Edition
D NFH - Spawning Activity Report BY2004 SCS

Figure 1 displays the SCS returns to the Dworshak Complex since 1986.

Figure 1. SCS returns to Dworshak/Kooskia 1986-2004

Source: IFRO - SCS rack returns



Adult returns for BY04 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 2004.

Adult Holding

Dworshak stock was kept in holding pond (HP) 2 and 9, Kooskia stock was held in HP3. Kooskia transported 587 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 36 adult SCS of Dworshak stock and 51 of Kooskia stock which died before spawning began on August 17 (prespawning mortalities). Table 2 depicts the mortality for BY04 SCS held at Dworshak.

Table 2. Mortality of adult BY04 SCS held at Dworshak.

Mortality	Dworshak		Kooskia	
	Number	Percent of total run at Dworshak	Number	Percent of run transferred to Dworshak
Prespawning	36	1.5	51	8.7
During Spawning	304	12.9	5	0.9
Total	340	14.4	56	9.6

Source: Spawning Activity Report, BY04 SCS
IFRO-SCent.wk4

Adult Disposition

There were 909 adults and 70 jacks of BY04 SCS returning to Dworshak which were excess to spawning needs and were outplanted. There were also 29 Kooskia stock SCS outplanted from the 587 fish transferred from Kooskia to Dworshak that were excess to spawning needs. Dworshak and NPT personnel sorted and loaded NPT transport trucks with these 1,008 fish to be stocked in the lower Selway River. This outplanting was for supplementation purposes. Table 3 illustrates details of the outplants.

Table 3. Adult BY04 SCS outplants from Dworshak NFH.

Date 2004	Site	Adults	Jacks	Total Number
08/26	Lower Selway	371	29	400
09/03	Lower Selway	261	21	282
09/16	Lower Selway	306 (incl 29 Kooskia)	20	326
Total		938	70	1,008*

* 979 were Dworshak stock outplants, 29 of these fish were Kooskia stock
Source: DNFH- BY04 SCS Spawning Activity Reports; IFRO- AdultOutplantBY04SCS.wk4

Table 4 illustrates BY04 SCS adult disposition from Dworshak.

Table 4. Dworshak stock SCS BY04 adult disposition.

Location	Number	Comments
Outplant	979	See Table 3
Outside Research	0	NMFS, Univ of Idaho
Washington State Univ	0	Captive Bear & Eagle Rehab
Landfill	1377	Carcasses deteriorated
Total	2,356	

Source: BY04 SCS Spawning Activity Report
Adult Spawning Numbers/Ratio

The BY04 Dworshak/Kooskia SCS spawning season began August 17, 2004 and ended on August 31 for Dworshak stock and September 7 for Kooskia stock. Fish from each HP were sorted and spawned once/week along with new fish coming up the ladder into HP9.

There were 376 males (including 17 jacks) and 437 females (1:1.2 ratio) of Dworshak stock spawned during the season. There were 206 males (including 10 jacks) and 260 females (1:1.2 ratio) of Kooskia stock spawned during the season. The fecundity rate averaged 3,813 eggs/female for Dworshak stock and 3,638 eggs/female for Kooskia stock (3,745 ave).

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 3,745 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 five gallons/minute/tray. Eggs in A/B bank were incubated with chilled water and temperature averaged 39⁰F 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, eggs produced, and survival of BY04 SCS are illustrated in Table 6.

Table 6. Dworshak and Kooskia adult spawners and both green & eyed eggs, BY04 SCS.

Location of Broodstock Return	Males spawned	Females spawned	Females Culled BKD	No eggs /female	Total number of eggs enumerated	Percent Enum Eye-up	No eyed eggs
Dworshak	376	437	49	3,813	1,376,360	88.8	1,221,685
Kooskia	206	260	19	3,638	829,480	93.3	774,195
Total/ Average	582	697	68	3,745	2,205,840	90.5	1,995,880

Source: DNFH - Spawning Activity Report BY04 SCS
DNFH - BY04 SCS Spawning Report

Idaho Fish Health Center (IFHC)

On July 27 and August 2, 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. Normally these injections are done on consecutive days at the end of July, but injections were delayed due to a crowder malfunction.

During spawning, the IFHC took ovarian fluid for viral inspection from 152 of Dworshak stock and 151 of Kooskia stock females. They also took spleen samples from 61 Dworshak males and 60 Kooskia males for viral inspection (see IFHC Broodstock Assessment report for results). Kidneys were also sampled for BKD from all females spawned. For the first time since the year 2000, Dworshak used an ELISA test for BKD which employed a base-line test to compare all samples to a given ELISA reading. No longer were fish tested relative to all others within the test group only. The results of the testing for adult females were 3.0 percent (13 out of 437) greater than 0.199 ELISA for Dworshak stock and 4.6 percent (12 out of 260) for Kooskia stock. Eggs from females which were in the upper range of ELISA were culled for both stocks.

University Research

Dworshak continued to coordinate with researchers from the University of Idaho. Rolf Ingermann, Professor of Zoology from the University of Idaho, is studying intracellular pH regulation in SCS gametes along with studying the buffering capacity of the semen. Dworshak provided a total of six ml milt from six Kooskia males. All samples were from excess spawning requirements at Dworshak.

James Nagler, Associate Professor of Zoology at the University of Idaho, collected 200 eyed eggs from four different females (800 total) of BY04 SCS. This research is related to gonad development in the embryo. All samples will be from excess production requirements at Dworshak.

Spawning Summary

BY04 SCS adult return numbers were adequate to fulfill Dworshak's and Kooskia's production goals. Projected release of BY04 smolts in the year 2006 is approximately 1.05 million smolts of Dworshak stock.

There were 1,008 adult BY04 SCS of Dworshak stock outplanted for supplementation purposes by the NPT.

Coho Salmon Brood Year 2002

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

There were approximately 358,000 BY02 COS on station at the beginning of the FY2004. During April, 2004, approximately 357,000 BY02 COS from Dworshak were transferred to Kooskia by the NPT with help from Dworshak staff.

Brood Year 2003

BY03 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 BY03 COS began on October 28, 2003, and ended December 10. There were a total of 103 female COS spawned, producing an estimated 280,000 eggs. There were 180,000 eyed coho eggs transferred from Eagle Creek NFH to Dworshak on December 17, 2003. 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, 2004. There were approximately 305,000 BY03 COS on station at Dworshak at the end of FY2004. The Service has currently given office space at Dworshak for a NPT biologist to oversee the COS program.

Rainbow Trout Brood Year 2003

There were a total of 15,939 BY03 RBT divided into BP 49 and raceways (RW's) 9 and 10 in C-bank at the beginning of FY2004. On June 1, 2004, there were approximately 8,000 BY03 RBT moved to the hatchery settling pond for the annual Open House held on June 11. Approximately 1,350 were caught by the 670 kids, 12 and under who took part in the activities.

On May 26, 2004, there were 4,000 RBT transferred to Kooskia for their annual Open House. Table 1 illustrates outplanting of BY03 RBT from the Open House fishing pond at Dworshak.

Table 1. Fish Distribution Summary BY03 RBT (06/30/2004).

Date 2004	Number	Wt(lb)	fpp	L in	L mm	Location
5/26	4,000	3,675	1.09	13.2	335	Kooskia NFH
6/11	1,340	1,786	0.75	14.9	379	Dworshak Open House
6/22	1,135	1,514	0.75	14.9	379	Worley Pond CDA Tribe
6/22	1,866	2,488	0.75	14.9	379	Mud Springs Nez Perce Tribe
6/22	1,830	2,441	0.75	14.9	379	Talmac Lake Nez Perce Tribe
6/23	769	1,025	0.75	14.9	379	Agency Pond CDA Tribe
6/23	307	409	0.75	14.9	379	Mud Springs Nez Perce Tribe
6/24	449	599	0.75	14.9	379	Campbell Pond Public Water
Total	11,696	13,937				

Source: DNFH - RBT MIS, June 2004; Production Narrative, February, June 2004.

Brood Year 2004

Rainbow Trout from BY04 to be used for Open House Fishing Day 2005: On February 3, 2004, Dworshak received Shasta strain RBT eyed eggs from Ennis NFH. For ease of record keeping at Dworshak, these RBT will be recorded as BY04. At the end of FY04 there were approximately 16,000 BY04 RBT in raceways C9-10 and BP 49.

Administration

Meetings

October 2003

- Complex Manager Mill attended two Aquatic Technical meetings and two Policy Advisory Committee meetings on the Clearwater Subbasin Plan. The contractor, Ecovista, is finalizing the second draft of the Clearwater Plan for submission to the Northwest Power and Conservation Council.
- Complex Manager Miller attended a Clearwater Management Council meeting.
- A contractor from Spokane (DIX's) started work on System I reuse completion.
- Dave Owsley was the guest speaker at Orofino Junior High eighth grade history class discussing the new age limit for hunting.
- Dave Owsley attended the annual Uniform Committee meeting in Las Vegas, NV.
- Dave Owsley assisted Brian Miller, COE and John Junius on biofilter testing in System I.
- Complex Manager Miller, Howard Burge, Thomas Trock, Bob Semple, Craig Eaton, Ralph Roseberg, Ray Jones, and Susan Sawyer attended the Hatchery Managers Meeting in Pasco, WA.
- Dave Owsley participated in a conference call with LSRCP and ODFW on the upgrade for the Looking Glass Hatchery.

November 2003

- Dave Owsley assisted COE contractor DIX's from Spokane, WA, on System I bio-filter modifications.
- Dave Owsley assisted Orin Thomas, COE, with excess property from DNFH.
- Dworshak Fall Coordination Meeting held. Lee Hillwig from Regional Office attended and spent an extra day visiting the facility and Project Leaders.

December 2003

- Complex Manager Miller along with Dworshak Assistant Hatchery Manager Semple, FRO biologists Roseberg and Jones and Dworshak biologist Trock attended the Northwest Fish Culture Conference in Portland, OR.
- Dave Owsley traveled to NCTC to meet with Cathy Johnson and update the water treatment course.
- Dave Owsley participated in a Uniform Committee conference call.
- Annual hatchery Christmas party potluck held in the main office conference room.

January 2004

- Supervisor's meeting held discussing various hatchery topics. Attending from Dworshak Complex: Miller, Owsley, Clifford, Semple, Sawyer, Praest, Vargas, and Burge. Also attending from Kooskia NFH: Eaton and Idaho FHC: Clemens.
- Conference call on ABC implementation attended by Miller, Semple, Praest and Burge.
- Dave Owsley assisted IDFG at the Clearwater Hatchery with their, "Confined Space," program.

February 2004

- Dave Owsley and Penny Hasenoehrl completed the annual COE property survey.
- Dave Owsley participated in a conference call regarding the Clearwater Hatchery domestic water supply problems. Participants included the IDFG, Clearwater Hatchery and Boise office, LSRCP office, USFWS-RO-engineering and safety.
- Dave Owsley participated in a Uniform Committee conference call.
- Complex Manager Miller and FRO biologists Brostrom and Connor attended the AFS chapter meeting in Moscow, ID. Reports on fall Chinook and habitat work for ESA salmon were a few of the topics covered.
- Charlie Smith (retired USFWS) visited the hatchery and toured the new System I biofilters/reuse system.
- The Dworshak Spring Coordination meeting was reformatted into an Annual Operating Plan (AOP) meeting with all hatchery management agencies and Nez Perce Tribe putting in proposed plans on fish productions, releases and hatchery programs. The meeting went very smoothly and will be held every spring. A Fall Coordination meeting will verify and review the AOP.
- Dave Owsley met with Brian Miller, COE - Walla Walla District, on the operation of the new System I biofilter/reuse system.
- Complex Manager Miller, Hatchery Manager Semple, FRO Project Leader Burge and FRO biologist Jones attended the Lower Snake Compensation Plan Monitoring and Evaluation meeting in Boise.
- Dave Owsley instructed the Isolation/Quarantine class in Lacey, WA, sponsored by the Olympia FHC.
- Annual "Drinking Water Workshop" conducted in the Dworshak Conference Room by Gail Westhoff from DEQ. Maintenance worker Weeks attended.

March 2004

- Complex Manager Miller attended a Clearwater Policy Advisory Committee meeting.
- Joan Sperber and Diane Praest participated in a weekly teleconference call for all warrant officers on Interior Department Electronic Acquisition System (IDEAS).
- Dave Owsley conducted a Hunter Education class at the Orofino Junior High School. Forty-six students completed the class.
- Terry Weeks, Maintenance Worker, attended Water & Waste Water class in Boise.
- Internet service was shut down and disconnected by DOI orders for tribal trust issues.
- Supervisor's meeting to discuss ongoing plans for Dworshak and Kooskia NFH, FHC and IFRO. In attendance were Bill Miller, Dave Owsley, Hubert Sims, Diane Praest, Liz Steiner, Craig Eaton, Bob Semple, Howard Burge and John Vargas.
- Jeff Milton, Alaska Fish & Game, toured the facility and discussed reuse systems.
- Complex Manager Miller attended a Clearwater Geographic Response Team meeting in Lewiston. Purpose of the meeting was to plan and initiate the development of a Geographic Response Plan (GRP) for the U.S. Highway 12 corridor from Lewiston to Montana state line. A GRP will help the response to fuel, chemical or hazardous spills in the river. Attendance was requested by Susan Burch of the Boise ES office.
- Dave Owsley traveled to Leavenworth NFH to meet with the staff on the design of their new pipeline/water supply.

- Lee Hillwig visited the station, reviewed the budgets, wages, FON's and personnel issues.

April 2004

- Dave Owsley participated in several NCTC conference calls regarding the class he will be teaching in May.
- Joan Sperber and Diane Praest participated in IDEAS conference calls.
- Supervisor's meeting was held in DNFH Conference Room.
- Dave Owsley participated in a Uniform Committee conference call.
- Joan Sperber attended a Combined Federal Campaign meeting in Lewiston, ID.
- Complex Manager Miller, Owsley, Semple, Faler and Bowen attended IDEAS training in Spokane, WA.
- Complex Manager Miller attended a Clearwater Management Council meeting.
- Complex Manager Miller attended the forum on community at Orofino High School. The forum was on working together in the community with the Tribe and local governments.
- Dave Hurson and a group of COE employees from Walla Walla, WA and Portland, OR toured the facility, reviewing the recent hatchery upgrades – System I reuse, bird enclosure, etc.
- All-staff meeting introduced new employees, reviewed complex activities, viewed the FWS film on "Science and Service."
- Dr. John Colt, NMFS, Seattle, WA toured with Dave Owsley.

May 2004

- Assisted the COE, Walla Walla, WA, with annual bridge inspection.
- Dr. Brian D'Aoust toured the hatchery, and gave a presentation on nitrogen gas meters/measurement to staff.
- Dan Diggs and Lee Hillwig from RO, and Tim Roth from Vancouver FRO, Dan Herrig and Joe Krakker from LSRCP visited to discuss US v Oregon issues and Snake River Water Adjudication Settlement agreement.
- Dave Hurson, COE, Walla Walla, visited with staff from COE and Portland, OR. Manager Miller gave the group a quick tour of the facilities highlighting recent upgrades and additional rehab needed.
- Dan Diggs, Lee Hillwig and Complex Manager Miller met with complex staff.
- Rick Nelson, Region 5 Fish Biologist at FHC in LaCross, WI toured the hatchery. Rick started at Dworshak FHC under Joe Lientz.
- Dave Owsley taught a, "Water Treatment Processes for Aquatic Systems" class at NCTC.
- Complex Manager Miller attended a Clearwater Management Council meeting.

June 2004

- Dave Owsley met with Rocky McCleary from Leavenworth NFH on the water supply line replacement at Leavenworth NFH.
- Complex Manager Miller, FRO PL Burge and Biologist Jones attended the LSRCP meeting Boise.
- Supervisor's meeting held.
- Complex Manager Miller attended a Clearwater Management Council meeting.
- A pre-construction meeting was held with Dave Owsley, Ben Greene, Hubert Sims, COE, Clearwater Power and John's Electric on the replacement of transformers in Substation 1 at the main pump house.

July 2004

- Dave Owsley traveled to the Powell satellite facility with Jerry McGeehee to evaluate the domestic water system.
- Dave Owsley assisted Jeremy Fleming, R.O. Engineering, Jeremy Answell, private contractor and V.A. Sridhar, Denver Engineering with an Environmental Compliance inspection. They also assisted in implementing an Environmental Management System (EMS). Both Dworshak and Kooskia facilities were visited and a summary report was provided making suggestions for improving environmental compliance and improvement in 'greening' and recycling.
- Joe Yoimo, retired FWS employee, visited the hatchery for background information on public interest articles he is writing about FWS fishery programs.
- Mike Kionka, private contractor, visited and discussed new radios for the hatchery.
- Complex Manager Miller, FRO PL Burge, and RO supervisor Hillwig met with the Nez Perce Tribe fishery staff at Lapwai along with their consultant and attorney concerning the Snake River Basin Adjudication plan of tribal management at KNFH and co-management of DNFH. Additional meetings scheduled for August.

August 2004

- Dave Owsley participated in a conference call regarding the LSRCP satellite facility domestic drinking water systems.
- Conference call regarding year-end procedures attended by Sperber and Praest.
- Dave Owsley participated in a conference call for Leavenworth National Fish Hatchery (NFH) water system design.
- Dave Owsley attended a drinking water meeting at DNFH regarding a community drinking water system.

September 2004

- Howard Burge participated in several on and off-station Snake River Basin Adjudication (SRBA) conference calls and meetings with USFWS and Nez Perce Tribe (NPT) staff.
- Dave Owsley and Ray Rosales assisted Tony Baker from Hughes Supply, Inc. with a leak detection program for the hatchery domestic water supply system.
- Dave Owsley gave a tour for COE personnel including a one-star general (retired) who was the Walla Walla District Commander 1970-1973.
- Dave Owsley assisted COE employees Del Gehrke and Bob Miller on the clean up of the Grover (System I) contract.
- Dave Owsley met with COE employees Chuck Palmer, et al, and engineers from Anderson & Perry Associates on the design of a new domestic drinking water system for the hatchery.
- The new Xerox DC426 copy machine arrived; the old one went to KNFH.
- Dave Owsley conducted a Hunter Education class at Orofino Junior High School for 36 students.
- Dave Owsley participated in a Uniform Committee conference call.
- Dave Owsley completed the Environmental Compliance inspection report for the complex.
- Joan Sperber attended a Combined Federal Campaign (CFC) meeting at United Way in

- Lewiston, ID.
- Howard Burge attended a meeting in Portland, OR, at the regional office on setting fisheries priorities in the Columbia Basin.
- Howard Burge attended the National Oceanic Atmospheric Administration (NOAA) Fisheries public meeting on their hatchery listing policy.

Training

- Penny Hasenoehrl and Rob Kellar attended, “New Employee Orientation” in Portland, OR, October, 2003.
- Joan Sperber and Diane Praest attended, “*IDEAS*,” training in Portland, OR in Nov., 2003.
- Diane Praest, Admin. Support Assistant, attended *DataMart* training in Portland, OR in March, 2004.
- Joan Sperber attended Admin. Training in Portland, OR, in April, 2004.
- Diane Praest attended, “*Budget Tracking System*,” training in Reno, NV, in May, 2004.
- OAC, Penny Hasenoehrl attended, “*Business Grammar for Busy Professionals*,” seminar in Lewiston, ID, on May 24, 2004.
- Diane Praest attended, “*Reimbursable Training*,” in Portland, OR, May 25-26, 2004.
- Penny Hasenoehrl attended training, “*How to Design Newsletters, Brochures, Ads, Catalogs and More*,” in Spokane, WA, September 1-2, 2004.

Safety & Wellness

October 2003

Staff safety meeting held with Dr. Paul Smith speaking on, “*Things You Should Be Doing Now to Avoid Surgery Later.*”

November 2003

Complex practice fire drill conducted.

December 2003

Oxarc presented a hands-on fire extinguishers demonstration.

January 2004

Twelve Dworshak employees attended First Aid/CPR training taught by Tam White from Clearwater National Forest Service: Bill Miller, Dave Owsley, Joan Sperber, Penny Hasenoehrl, Rick King, Ray Rosales, Dave Trainor, Thomas Trock, Dennis Ochsner, Adam Izbicki, Rob Kellar and Mark Bright; and Corie Samson from the Idaho FHC.

February 2004

Oxarc held a Respiratory Mask Fit Test for Complex employees.

March 2004

Automatic Defibrillator Training held in the Conference Room with the following employees completing the course: Corie Samson, Jody Brostrom, Jill Olson, Dennis Ochsner, Aaron Garcia, Mark Bright, Adam Izbicki, Rob Kellar, Wayne Hamilton and Dave Owsley.

April 2004

Hal Joseph, PA and Certified Diabetes Instructor at Clearwater Valley Hospital performed free glucose tests and gave a 45-minute informative talk on diabetes.

May 2004

Maria Ward, Orofino Job Service, presented a talk on Child Labor Laws to the staff.

June 2004

A complex safety meeting with guest speaker Mike Gladhart, Clearwater County Sheriff Dept. presenting “*Boat Safety.*”

July 2004

A complex safety meeting with guest speaker Zach Ward, Clearwater County Sheriff Dept. presenting “*Alcohol Awareness.*”

August 2004

Practice fire drill for Complex staff. The Safety Committee met immediately afterwards to critique procedures and protocol.

All-staff monthly Safety Meeting at Clearwater Power Shop, adjacent to the hatchery, on electrical safety, including a demonstration by Clearwater Power Co. with their traveling trailer system.

September 2004

Complex safety meeting held on Hunter Safety.

Staffing

DNFH Employees, FY 2004.

Name	Position Title	Period of Employment	Status
Allain, Richard E.	Animal Caretaker	10/01/03–09/30/04	Permanent
Bright, Mark G.	Fishery Biologist	10/01/03-09/30/04	Permanent
Greene, Benny C	Electronics Mechanic	10/01/03-/9/30/04	Permanent
Hamilton, William W.	Animal Caretaker	10/01/03-09/30/04	Permanent
Hasenoehrl, Penny	Office Automation Clerk	10/01/03-09/30/04	Permanent
Izbicki, Adam H.	Fishery Biologist	10/01/03-09/30/04	Permanent
Johnson, Megan	Information/Education Asst.	04/18/04-09/30/04	Permanent
Kellar, Robbie D.	Animal Caretaker	10/01/03-09/30/04	Permanent
King, Rick A	Maintenance Worker	10/01/03-09/30/04	Permanent

Miller, William H.	Complex Manager	10/01/03–09/03/04	Permanent
Minnick, Jim	Animal Caretaker	10/01/03-9/30/04	Temporary
Nicholson, Dan	Welder	10/01/03-11/29/03	Temporary
Ochsner, Dennis J	Animal Caretaker	10/01/03–09/30/04	Permanent
Owsley, David E	Environmental Engineer/ Assistant Complex Manager	10/01/03-09/30/04	Permanent
Praest, Diane E	Supv. Admin Support Assistant	10/01/03–09/30/04	Permanent
Rosales, Raymundo A	Maintenance Worker	10/01/03–09/30/04	Permanent
Sawyer, Susan D	Information/Education Specialist	10/01/03-09/30/04	Permanent
Semple, Robert A	Supv. Fishery Biologist	10/01/03-09/30/04	Permanent
Sims, Hubert M	Maintenance Mechanic	10/01/03-09/30/04	Permanent
Sperber, Joan	Budget Technician	10/01/03–09/30/04	Permanent
Stretsbery, Gerald	Laborer	10/01/03–09/30/04	Permanent
Trainor, David A	Maintenance Worker	10/01/03–09/30/04	Permanent
Trock, Thomas J.	Fishery Biologist	10/01/03–09/30/04	Permanent
Vargas, John J	Animal Caretaker Leader	10/01/03–09/30/04	Permanent
Weeks, Terry C.	Maintenance Worker	10/01/03–09/30/04	Permanent
Wright, Benjamin A	Animal Caretaker	10/01/03–09/30/04	Permanent

Personnel Actions

- Performance Evaluations completed for office staff in November.
- Daniel W. Nicholson, Welder, WG-3703, end of appointment 11/29/03.
- Megan Johnson I & E Assistant, GS-1001-5 entered on duty 4/18/04.
- Complex staff Dave Owsley, Dave Trainor and Adam Izbicki along with Chris Shockman and Pat Moore from the Clearwater Hatchery interviewed 17 students for the summer youth program. Six students were hired for Dworshak and three for Clearwater State Hatchery.
- Maintenance Supervisor position readvertised in July.
- Susan Sawyer was awarded a 20-year Service pin and certificate in August.
- BBQ was held 8/27/04 for retiring Complex Manager, Bill Miller.
- Bill Miller, Complex Manager, retired from USFWS on 9/3/04.
- Howard Burge, detailed to Acting Complex Manager 9/19/04.

Facilities Maintenance

October 2003

- Removed System I reuse pumps (3) for repair (Idaho Machine & Strom Electric).
- Installed 'I' beams and grating on corner of Nursery Room discharge valve pit for salt truck access to System I mineral pits.
- Replaced #12 System III reuse pump (Idaho Machine repaired).
- Oil change on 305 portable welder.
- Repaired left rear brake cylinder on garden cart.
- Left headlight replaced and clutch check out on I & E Blazer.
- Oil change Ranger 8 portable gas welder.
- Oil change Manlift (AM250).
- Left rear axle gasket replaced on #4 electric cart.
- Propane regulator replaced on Komatsu forklift.
- Replaced discharge piping system (20" pipe) for System II reuse channel pump system.
- Removed and checked attraction pump (motor re-bearing - Strom Electric). Reinstalled pump and motor – drained HP9 and found split in discharge box causing low flow to false weir – temporary repair.
- Installed 5 electric operators for inlet flow to System II & III filter beds (motors-pedestals-stems).
- System I reuse nozzles modified per Brian Miller's (COE engineer) calculations.
- Shop area cleanup scrap iron.
- Fabricated 6 stainless brackets for level probes – System I reuse – fabricate extension for (1) short probe.
- Started Mechanical I boiler for office building heat.
- Cut System I's nozzles and extended for final testing of System I.
- Asphalt cut and conduit laid for Electrical Shop computer.
- Call-back computer program changes.
- Bird net project continued.
- Electrical conduits and circuits run for gate operators System II & III.
- Grounds maintenance debris removal and winterized sprinkler systems.
- Domestic water system upgrade planning.
- Manholes pumped of rainwater.
- Traveling water screen timer-resets caused flow changes with excessive debris discharge in North Fork – Clearwater River.

November 2003

- Oil change for FHC Lab Ford pick-up, Explorer and Caravan with winter tire change.
- Reset shop band saw and clean-up after completion of bird netting project.
- Snow plow installed on Dodge 4 x 4.
- Blade and chains put on J.D. Tractor.
- System II & III clutch system modified for scraper drive.
- Installed new gear box on scraper #4 System III.

- Oil changes on all System II & III scraper gear boxes.
- Gear boxes on four beds adjusted and chain-tightener positions adjusted.
- System I Pump #3 leveled.
- Oil change on call back S-10.
- Holding Pond 2 cylinder problem on SS gate opened, removed and repaired (Idaho Machine).
- Removed old ozone sump overflow drain pipe.
- Job site cleanup around System I.
- Finished Bird Net project.
- Finished electrical gate operators System II & III reuse.

December 2003

- System II SST on reuse, started boilers Mech II.
- Switched pond cleaner brushes (direction of curl) for testing.
- Fabricated two broom handles for SST pond cleaning and one pond plate head.
- Replaced pond cleaner brushes and adjusted flow control valves.
- Put lifting devices on walkway section for removal and cleaning by pond cleaner.
- Fabricated new walkway sections on BP-63-65-77 after formalin barrels weakened and bent angle iron supports.
- Two aluminum SST pond stand pipe handles repaired.
- Replaced propane switch on manlift.
- Cut up leftover 3x3 red metal 40' sections to 20' and stored.
- Repaired clutch on System III reuse filter bed #7.
- Light bulbs replaced around Mech II heat exchanger system.
- Mercury vapor lights changed in Mech I.
- Packing adjusted on reuse pumps and makeup pumps.
- Oil change old Komatsu forklift.
- All Gen set exercised.
- Snow removal around Complex.
- Computer installed in Electric Shop.
- Modifications to upstairs cabinets to accommodate new computer server.
- Quality Heating performed fall maintenance service 12/22/03 on hatchery air/heat units.

January 2004

- Snow removal - Complex wide.
- Removed ozone compressors and piping.
- Bolt replaced on John Deere tractor frame.
- Removed large battery from adult holding pond crowder for winter storage.
- Mech II cleanup.
- System I heat exchanger and pipe routing.
- Pond scrubber (SST) brushes replaced.
- Air leak on shop Clean Burn waste oil furnace repaired.
- System I reuse started 1/20/04. This system was just redone over the last couple of years and had not been used for about 20 years. It seems to be functioning o.k.
- Mech I new air compressor system installed, piping included.
- Cart #10 tie rod end nut replaced.

- Repaired loose wire on Stop button; replaced missing screw to circuit board on AMZ 50 (Manlift).
- Oil and lube new Komatsu forklift.
- Cart #6 tire replaced.
- Cart #11 battery replacement.
- #4 exhaust fan belt replaced in Mech II.
- Repaired two valves for System I sludge draw off.
- Took delivery of two new Ford Ranger pick-ups in Lewiston.

February 2004

- Outfitted one of the new Ranger pick-ups for shop use.
- Replaced emergency brake cables and seals, transmission filter and oil on Komatsu forklift.
- Major power outage on Feb. 9, cause unknown. One small boiler in Mechanical Building I was damaged. It was repaired and back in service on Feb. 11.
- Fabricated tool for valves System I.
- Receptacle wiring (new) in Lab building.
- Relocated cabinets for Lab remodeling.
- Calibrated controllers for Mech II boilers.
- Emergency repair #1 boiler in Mech I (due to power spike).
- Emergency repair to Pond 9 concrete support for bridge steel on pond crowder.
- Helped Skip Walsch A & B bank tagging set-up and tear down.

March 2004

- Performed infra-red scan of all electrical equipment and load centers.
- Power transfer and cross tie to free up Sub #1 for inspection and/or repair.
- Re-routed and added circuits for addition in Chemical Room Lab.
- Installed circuits, disconnects, etc. for Mitsubishi split A/C system in Lab.
- Adjusted voltage and transferred system for return to commercial power in Mech I.
- Service and repair of Norlake cooler; removed compressor.
- Repair of the Chinook sump – level control.
- Phone Room – add circuit and office servers.
- Filter beds: service scraper conveyor motor and starter.
- Assisted Clearwater Power with inspection of Sub #2 boiler feed and transformer.
- Switched System I and II from reuse to raw water.
- Switched Nursery B-bank heat from Mech I to Mech II.
- Repaired water leak outside Shop rest room.
- Built and installed guards for Freon lines in freezer and coal rooms in Feed Building.
- Removed and replaced seat on old forklift.
- Repaired plugs for plating in System II & III.
- Installed racks, tool box, license plates on new shop trucks.
- Replaced rear brakes, contacts in speed control and lubed #8 cart.
- Cut and hauled scrap iron to COE Boneyard.
- Cut and removed broken asphalt around Complex.
- Put System I and II on reuse water for power outage.

- Power outage on 3/18/04 at the request of Clearwater Power Company to Substation 1 which provides power to our water supply pumps. Overheating of a transformer was checked by Clearwater Power to determine problems. To shut down power, a number of water adjustments and power load adjustments were made. We went from operating on 6 main pumps to 4 main pumps. The power outage lasted about half a day and went fairly smoothly.
- Repaired cabinet top after installation of new dishwasher in Lab.
- Installed water line in House #2 for icemaker in refrigerator.
- Shampooed carpets in office and conference room.
- Cleaned overpass, trimmed brush and raked up leaves.
- Replaced right front tire on John Deere tractor.
- Replaced bearings and belts on John Deere lawnmower.
- Removed snow equipment.
- Removed wood shelving and installed new shelves and file cabinets in the Lamp Room.
- Cleaned outside windows in Main Building.
- Hauled fish to Kooskia Fish Hatchery.
- Checked and repaired fish pumps.

April 2004

- Maintenance personnel assisted in loading NPT Coho to be hauled to KNFH.
- Built a surgical trough from aluminum for the Fishery Resource Office (FRO).
- Rebuilt speed control for #3 cart.
- Opened louvers in main pump house for cooling of pumps.
- #1, #2, #3 generators were tested for output power by Cummins Northwest of Spokane. All three generators tested very well.
- Summer tires installed on old Caravan.
- Installed fish tank on garden truck for fish transport between KNFH & DNFH.
- Replaced cracked heater fan blade at the west end of main pump house.
- Replaced burned out lights on railroad overpass.
- Changed angle for #1 egg picker in Incubator Room.
- Cleaned and resealed major incubator room roof leak on wall of Main building above elevator.
- Installed cross braces in broom racks for all 178 Nursery Room fish tanks.
- Pumped steelhead from System I, II and III into COE trucks. Steelhead were hauled and released at Clear Creek on the Clearwater River and at Red House on the South Fork of the Clearwater River.
- Replaced inlet water seals to toilet in men's restroom in Main building.
- Replaced discharge pipe on Magic Valley fish pumps.
- Sealed System I reuse pumps #2 and #3 bases to floor with silicone and mortar.
- Built 12 new adjustable aluminum hooks for Nursery Room tank packed columns.
- Replaced showerhead in House #4.
- Stripped, cleaned, and re-waxed floor in Main Bldg.
- Replaced drive belts on building cooling fan in main pump house.
- Built and installed four new broom racks for tanks in Incubator Room.
- Replaced radiator fan drive belts on #1, 2 and 3 generators.
- Pumped eight loads of non-clipped steelhead into Nez Perce Tribe fish trucks to be

transported to Newsome Creek and American River.

- Replaced leaking inlet valve with new valve and spacer on Pond B-17.
- Removed and repaired pedestal seat lights in garden areas in front of Main Building.
- Removed old and welded new brushes to pond scrubber
- Built and installed a new cover for the end of the drain channel by the fish ladder.
- Installed new shelves in Lamp Room.
- Installed compressor and filters in Nursery Room cooler.
- Installed conduit runs and feeders to new compressors in Mech I.
- Took System III off reuse and locked out all affected alarms, closed green breaker in #1 Generator Room and closed dip switch in power monitor for off-reuse time.
- Adjusted brake on pond crowder.
- Got RFQ's ready for Air Frame Breaker Maintenance in May.
- Repaired motor feed to sludge scraper #3 in System II filter bed.
- Calibrated transducer for #3 heat exchange in Mech II.
- Built two 480-volt cords for pond cleaning pumps.
- Assisted with removal of walkway floral lighting and repair of same.
- Hatchery staff (Owsley, Sims, King, Trainor and Vargas) assisted the Idaho Fish & Game (IDFG) and Clearwater Hatchery in the annual reservoir supply pipeline valve exercise.

May, 2004

- Replaced broken metal tabs for right boat guide on FRO weld Craft boat trailer.
- Replaced left front and rear tires on #10 & #11 carts.
- Repaired broken clutch on filter bed #8 in System III.
- Repaired right front tire on old forklift.
- Replaced brushes on pond cleaner.
- Changed oil and filter in Grand Caravan.
- Removed, repaired, and replaced magnets on Essic concrete mixer.
- Drove fish truck from KNFH to DNFH.
- Built and installed fisherman access gate in visitor parking lot.
- Replaced broken corner on Pond 9 with rebar and concrete.
- Removed, straightened, and replaced valve stem for HP3 drain valve.
- Painted door & installed vent in Lamp room.
- Removed fish counter from ladder, welded all the cracked seams in water lift. Reinforced all other seams and replaced in ladder.
- Installed pit tag detector in fish counter tube.
- Repaired connecting joints in A & B planting tube that runs along the fish ladder.
- Replaced water inlet valves and pipe for deep sink in the basement of House #4.
- Hauled Open House rainbow trout from DNFH to KNFH.
- Cleaned settling pond on hatchery point and filled with clean water for Open House.
- Replaced drive motor on Pond Crowder.
- Disconnected and removed Fish Counter/Photocel panel.

June 2004

- Hauled 44 adult Chinook from KNFH to DNFH.
- Replaced the guillotine blade on spawning table.
- Replaced two fluorescent bulbs in hallway.
- Replaced ballast in kitchen in House #3.
- Loaded and hauled rainbow trout for the tribe to Winchester Lake, Mud Lake, Colville Reservation at Worley, and to Campbells Pond, all in ID
- Hauled 135 chinook adults from KNFH to DNFH.
- Exchanged 600 amp and 800 amp circuit breakers in Mechanical I building.
- Cleaned and weeded flower beds in front of FHC and constructed a small pathway.
- Removed trees and shrubs in main parking lot in preparation for landscaping.
- Hauled 66 chinook adults from KNFH to DNFH.
- Installed sprinklers on Open House rainbow trout fishing pond; hauled rainbow trout from the holding pond (HP) raceway and System I to the Open House fish pond.
- Replaced lug studs and lug nuts on right front wheel of old Komatsu forklift.
- Used the boom truck to assist Quality Heating with main building air conditioning repairs
- Washed down complex parking lots, housing unit and all paved areas with fire hoses with assistance of ICIO prison crew.
- Repainted yellow fish on asphalt for self-guided tours.
- Changed oil, lube and oil filter on FHC's Ford pick-up.
- Swept and mopped main pump house.
- Replaced battery in I & E Blazer.
- Set up booths, tables, cabanas, etc. for Open House and dismantled afterwards.
- Removed and replaced flat tire on right rear #6 cart.
- Repaired carts #8 & 11.
- Installed side tool boxes on Shop truck.
- Replaced two ruptured discs in water lines for A & B bank in Nursery Room.
- Performed follow-up on breaker maintenance, ordered trip-unit, etc.
- Repaired hand blow-dryer in visitor parking lot restroom.
- Assisted HVAC contractor with Mitsubishi heat pump change-out.
- Performed pumpdown of filter bed, pulled flights and chain out of filter bed.
- Installed PIT tag detector at Pond #9 ; cleaned, adjusted photo-cells on adult fish counter.
- Power outage in Mechanical I on 6/26, swapped circuit breaker.
- Repaired lighting in System I pipe chase.
- Assisted with System II & III water-up for disinfection.
- Inspected, tested and ran #3 pump and checked loads on HSQ-1 feeders.

July 2004

- Change belts and hoses on #3 generator in main pump house.
- Built sprocket spacers for rear axel on System II sludge pond #2.
- Removed excess concrete from sludge pond #7 in System III.
- Hauled 24 adult salmon from KNFH to DNFH.
- Painted outside walls of Visitors parking lot restroom.
- Hauled 54 adult salmon from KNFH to DNFH.
- Cleaned out planters at east end of hatchery along the main stem of the river.
- Assembled new trash can for information kiosk at main parking lot.

- Replaced right front tires on cart #6 and 11.
- Replaced air filters and welded spacer on exhaust pipe in Generator #3.
- Repaired circuit for valve operators at System II & III filter beds.
- Maintenance workers Greene and Rosales replaced broken flytes (sludge scraper) in System II filter beds.
- Worked on circuit re-routing in FHC.
- Maintenance workers Weeks and Greene performed continuity checks in boiler - clearing lines, repairing parts, etc.
- Assisted Clearwater Power in cross-ties and hardwiring in preparation for upgrade in Sub #1.
- Repaired H₂O distiller in FHC.
- Assisted Clearwater Power with placement of new Sub #1 transformer.
- Set-up rented emergency generator and connected to main pump #2 and performed test run.
- Isolated Sub #1 at main pumphouse by way of cross tie from Mech I and hardwired Generator #3 to main pumps #1 & #3.
- Assisted with upgrade of Sub #1 and monitored generator power and cross-tie feed.

August 2004

- Continued grounds maintenance and met with representatives from the USDA.
- Replaced flooring at Residences #'s 1-4 involving moving water tanks and vanities. Residence #3 work still in progress.
- Completed work on boilers in Mech I.
- Assembled storage locker for boiler ports in Mech I.
- Completed System II filter bed repairs and media transfer.
- Due to damage of the pond crowder gate drive, Maintenance modified the system and assisted in its operation for Chinook spawning, until new motor is installed.
- Assembled and distributed spill containment modules.
- Installed exhaust fan and controls in formalin storage area.
- Performed a clean-out of sewer line and See-Snake from Feed Building with City of Orofino personnel assisting.
- Changed oil and filter, repaired license plate bracket and repaired power point in Lab Explorer; Lube, oil, filter change on I&E Blazer; changed oil in Pond Scrubber; Lube, oil, filter on fork lift.
- Built new mounting plate for level jack on USFWS tagging trailer.
- Replaced right front drive wheel (used on Pond Crowder).
- Repaired engine on aerator.
- Built and installed door for traveling water screen trap.
- Rebuilt broken hand rail on HP3.
- Repaired engine oil leak on Pond Scrubber.
- Built and installed platform for new hoist on Pond Crowder.
- Changed oil, oil filter and water filters and cleaned engine on Generator #3.
- Repaired broken I-bolt on back screen of rear Channel Crowder. Manufactured and installed a limit switch arm.
- Lube, oil on the John Deere Gator; Lube, oil, filter on new Komatsu fork lift.

- Assisted Clearwater Power Co. in set-up for electrical safety demo for staff.
- Repaired domestic water chlorinator.
- Installed new water heater in Residence #3.
- Repaired Chinook sump pump and control.
- Repaired air conditioning in Residence #2.
- Ran See-Snake in System I clarifiers.
- Repaired leak in roof, cleaned furnace flue, replaced and sealed flashing on Maintenance Shop.
- Met with Clearwater Power Company regarding Sub #1 for new transformer and amperages.
- Modified and installed brochure dispensers lobby door and new kiosk.
- Installed cooling fan for HP9, adult counter panel.
- Serviced reuse System I pump.
- Repaired pressure washer in Maintenance Shop.
- Burned documents for admin staff.
- Cleaned floor drains and ditches in Mech I.
- Replaced lights in Feed Building.
- Transported a BPA transformer to Clearwater Fish Hatchery.

September 2004

- Trouble-shoot and repair barrier gate in spawning room.
- Painting at Residence #3.
- Preventative maintenance and repair on generator #3.
- Lighting repair in spawning area.
- Replaced pneumatic restrictor for guillotine hold clamp on spawning table.
- Cleaning and shop maintenance.
- Installed new door and frame in Feed Bldg.
- Installed outlet for ultra cold freezer in Fish Health Center.
- Replaced timbers on overpass.
- Acting Maintenance Supervisor Greene toured hatchery with COE and consults for new domestic water system.
- Changed oil, oil filter, lube, and repaired front bucket of John Deere tractor.
- Repaired and adjusted System I clarifier overflow valves, etc.
- Built adaptor cable for BPA tag trailer and assisted with power supply problem.
- Pumped water out of manholes.
- Burned old documents.
- Replaced cold water line and cut out sheet rock for Residence #4.
- Aerated grassy areas after repairing broken depth adjustor.
- Serviced generators, changed oil, oil filters, and fuel filters on generator #1 & #2.
- Placed new trip unit on old commercial main breaker HSQ-3.
- Painted door in Feed Bldg.
- Labeled motor control center in Feed Building.
- Repaired and replaced air line for slide gate on HP3.
- Preventative maintenance on element boilers in Mech 2.
- Assisted COE employees with removal of potassium from salt sump System III.

- Performed janitorial work at the Fish Health Center.
- Installed cable system for gate hoist on pond crowder.
- Replaced bolts in battery charger hold down on cart #6.
- Repaired water leak in Nursery Room.
- Changed oil, filter and lube on manlift.
- Changed oil, oil filter and serviced the Grand Caravan.
- Repaired flat tire on old forklift.
- Repaired broken air line for the bar gate cylinder on HP2.
- Removed concrete cap from floor of channel going into spawning room.
- Annual inspection and certification on boom truck and manlift by Coast Crane Company of Spokane.
- Changed oil in #7,8,9,10,11,12,13 reuse pumps.
- Replaced packing in #12 &13 reuse pumps.
- Removed #11 reuse pump for repair.

Outreach and Visitor Activities

Statistics

Dworshak NFH Visitor Use Statistics, FY2004

Program Type	# of Contacts	% Change From FY2003
On-site Hatchery Visitors (Visitor Register and self-guided tour)	7,259 *	(-10%)
Guided Tours	74 □	+1%
Tour Visitors	1,332 *	(- 2%)
Open House (children 12 & under)	670 *	+ 5%
Open House (other visitors)	1,240 *	(- 20%)
Total On-Site Contacts (all *)	10,501	(-10%)
Off-site Programs/Displays/Events	159 □	(- 7%)
Total Off-Site Contacts	12,094 * *	(- 6%)
Total FY2004 Programs (total all □)	233	- 5%
Total FY2004 Contacts (* + * *)	22,375	- 8%

Table Summary

Hatchery visitation (as measured by visitor log and self-guided tours) decreased slightly (10%) from FY03. This decrease could have been a result of the main hatchery parking lot being closed temporarily for repaving and striping during the summer travel season, or the main hatchery access gate being locked for over a month due to increased after-hours vehicle and foot traffic during the summer Chinook fishing season.

The Information/Education (I/E) Assistant position was finally filled in mid-April, after being vacant for nearly a year. Megan Johnson, a former Peace Corps Volunteer and National Park Service seasonal, jumped right in to assist with end of Spring spawning tours and the beginning of off-site programs, including several Hatchery in the Classroom project completions. Even though the position was vacant until April, there was still a slight increase in guided tours (1%), mostly during steelhead spawning season to school groups, because of the recruitment of 3 new Hatchery Host volunteers. They provided over 100 hours of visitor services on station, with 74 tours given to 1332 people (down 2% from FY03).

Outreach and offsite programs continued to be a major component of the I/E section, with only a small decrease (-7% from FY03) in actual programs given or events staffed. Once again, I/E provided a learning station at the 6th Grade Rendezvous for 1000+ students at the Nez Perce County Fairgrounds, two 2-day 6th grade environmental programs, career fairs, public meetings,

interagency Earth Day 10th anniversary event; the 9th Idaho Salmon and Steelhead Days in Boise for 300+ 5th graders, and the Clearwater County Fair booth co-staffed with Army Corps/Dworshak Dam staff (winning a second place ribbon!). Many associated public contact and outreach team meetings, training and travel to specific events were also centered on USFWS participation in the 2005/06 Lewis & Clark Bicentennial in ID, drafting a FWS Fisheries Strategic Plan, and co-writing a Region 1 FWS Communications Plan.

Grant writing was a success again this year, with an award for \$2,500 for development of a Lewis/Clark Natural Science education trunk, and \$1,500 for an underwater camera system in the adult holding ponds connected to the lobby TV monitor. The \$18,500 grant from Idaho Governors Lewis/Clark committee made extensive progress this year, with interpretive panels and a beautiful kiosk installed at the main hatchery parking lot visitor entry. A spring 2005 dedication is planned by Friends of Northwest Hatcheries, Inc., who managed the grant. The Challenge Cost Share grant for \$10,000 was finally transferred from Hells Gate State Park to the Friends group, for management of the visitor balcony light box interpretive project.

Hatchery in The Classroom projects set a record this year, with 6 school participating, either with hatchery-supplied equipment or their own. Egg to fry release success averaged 83% - one school lost all fry soon after button-up due to lack of weekend feeding and water quality issues; the others all had post-project release activities at end of the school year with the students and hatchery staff participating. Two of the schools submitted grants for their own equipment next year.

Travel and training for the Information/Education staff included:

- Annual fisheries outreach meeting in October, Richland, WA
- Hatchery Managers Workshop and Outreach presentation, Richland, Wa – Nov.
- Fisheries Communications Plan drafting session, Pasco, WA – Jan.
- Idaho Environmental Education Association annual conference planning committee and presentation in Boise, March.
- Attend Idaho Sportsman's Show, Boise for future exhibit planning – March.
- Staff FWS display at North American Wildlife Conference, Spokane, WA – March.
- Plan annual Open House event for 670 kids/1,240 adults, Dworshak – June.
- Salmon and Steelhead Days in September, Boise.
- Annual Friends of Northwest Hatcheries, Inc. reporting, including Spawn Shop sales.

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