



Fish Passage Center

Weekly Report #99 - 7

April 23, 1999

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SUMMARY OF EVENTS:

Water Supply: Warmer weather conditions are expected to result in a slight increase in snowmelt for the next few days. Precipitation during the April 1-20 period was below normal for almost the entire basin. Precipitation above Coulee was 47% of normal. The cumulative precipitation for the October-April period continued to decrease compared with the previous period of October-March. The total precipitation for the Columbia River above The Dalles is 109% and for the Snake River above Ice Harbor is 105%.

The new April Midmonth Runoff Volume Forecast decreased in the range of 3%-7% for all major sites compared to April final. The January-July forecast for the Columbia River above The Dalles is 123 MAF, or 116% of average, a 5% decrease compared with the April Final. The summary of the April Runoff Volume Forecasts is given in the following Table.

Location	Period	April 99 Midmonth		April 99 Final	
		MAF	%	MAF	%
Libby	Apr-Sep	7.11	105	7.39	109
Hungry Horse	Apr-Sep	2.25	103	2.38	109
Grand Coulee	Jan-Jul	71.9	114	73.8	117
The Dalles	Jan-Jul	123.0	116	128.0	121
Lower Granite	Jan-Jul	35.2	118	36.5	123
Dworshak	Apr-Jul	3.25	120	3.4	126
Brownlee	Apr-Jul	6.99	121	7.36	127

System Storage: The system continues to be operated for flood control with special operations for maintenance purposes. The federal regulators are obligation to meet April 20, Biological Opinion reservoir elevation requirements, to provide spring target flows and to assure reservoir refill by June 30. Failure to meet the required elevation results in shifting summer refill volume into the spring season. This reduces spring flows. All major reservoirs with exception of Dworshak are below the April 20 required elevation.

Hungry Horse continues to be drafted below the end of April flood control elevation for maintenance work. The reservoir continues to be managed with outflow in the range of 200-330 cfs during weekend and 3.2 kcfs-3.6 kcfs during working days. Failure to be on April 20 required flood control elevation resulted in shifted volume of 240 KAF.

Libby continues to be on minimum outflow of 4 kcfs. The COE decided at the beginning of March to operate Libby at minimum outflow in order to refill the reservoir to an end of April elevation that will enable the refill of the pool by June 30, while meeting requirements for sturgeon spawning flows. The failure to refill the reservoir by April 20 to elevation required by its refill curve resulted in shifting of 135 KAF from spring volume into summer operations.

Arrow reservoir continued outflow of 20 kcfs to limit trout spawning areas during the April-May period. This operation and low precipitation continue to cause reduced inflows to Grand Coulee.

Grand Coulee drafted from 1231 ft on April 16 to 1226.1 ft on April 22, resulted in unsteady outflow operational regime during past week in the range of 82.1 kcfs- 122.3 kcfs. The reservoir failed to meet the April 20 BiOp required elevation because of draft rate limitations and the April 30 flood control target. This failure resulted in shifted volume of 200 KAF.

Dworshak reservoir is experiencing higher inflows because of the local snowmelt and reservoir elevation increased because COE was trying at the beginning of the period to avoid spilling in it's operations. Currently the reservoir is operated with 14 kcfs (powerhouse capacity is 10 kcfs).

Brownlee reservoir continues to be drafted to the end of April flood control elevation

with outflows in the range of 40 kcfs-55 kcfs. Outflows at Hells Canyon Dam are in the range of 40 kcfs-56 kcfs, requiring continuation of the spilling. A summary of the current elevations on April 20 and April 22 with BiOp required elevations on April 20 and of April flood control elevations are given in the following Table:

Reservoir	Actual elev. As of April 20 and 22 [ft]	Max Reservoir pool [ft]	April 20 BiOp required/End of April Flood Control Elev. [ft]	
Libby	2326.5/2328.7	2459	2332.9	2339.8
Hungry Horse	3484.2/3484.7	3560	3497.8	3491.0
Grand Coulee	1228.5/1226.1	1290	1228.2	1220.2
Brownlee	1991.0/1991.1*	2077	1992.8	1976.0
Dworshak	1448.9/1449.6	1600	1445.0	1445.0

* as of April 21

Upper Snake reservoirs:

Currently all reservoirs continue to be operated for flood control. As of April 22, BOR continues to operate American Falls to 92%-93% of full, passing inflow, to insignificantly draft Palisades (compared with last week draft) as required for flood control to 29% of full (from 30% of full on April 8). Decrease in precipitation in the region resulted in lower flows at Milner of 8.5 kcfs (as of April 22), compared with flows in the range of 12 kcfs-14 kcfs in previous week. The system continues to be at 67% of capacity.

Boise and Payette River Basins:

The reservoirs continue to be operated for flood control. Boise River system (Anderson Ranch, Arrowrock and Lucky Peak) is at 42% of capacity. Payette River system (Cascade, Deadwood) is at 49% of capacity.

Streamflow: spring flow target based on the April Final Runoff Volume Forecast is: at Lower Granite is 100 kcfs; and at McNary, 260 kcfs. Currently, flow targets at both projects were not met during the past three weeks.

Flows at Priest Rapids were increasing from 96.7 kcfs to 170 kcfs during the April 16-22 period. Average daily flows were increasing during the past week, but hourly fluctuations exceeded the agencies and tribe's recommendations during the entire week. The total range of daily hourly fluctuations is presented in the following table:

Date	Average Daily Flow at Priest Rapids [kcfs]	Hourly fluctuations [kcfs]
April 16	96.7	84.2-119.2
April 17	99.6	73.6-121.5
April 18	125.8	91.6-131.1
April 19	131.7	98.6-138.1
April 20	128.8	102.3-142.9
April 21	130.2	99.7-177.7
April 22	170.4	157.7-182.9

As of April 20, flows at Lower Granite increased over 100 kcfs resulting from increased outflows from Dworshak. McNary flows also increased on April 20 from 205 kcfs on April 19 to 267 kcfs. The average discharge for the major run-of-river projects for April 9-22 period are given in the following Table:

Project	Average Discharge [kcfs]	
	April 9-15	April 16-22
<i>Priest Rapids</i>	120.5	126.2
<i>McNary</i>	205.0	226.6
<i>Lower Granite</i>	77.3	103.6
<i>Bonneville</i>	223.3	239.2

Spill: Outflow from Dworshak Dam increased to 14 Kcfs on April 21 in response to increasing inflow to the project. Spill at this project is presently occurring above hydraulic capacity (approximately 3.6 Kcfs spill). Spill continues at the Hells Canyon complex due to high inflows to Brownlee and the need to achieve its end of April flood control elevation. The Biological Opinion spill program is presently being implemented at the lower Snake projects. The FERC spill program was initiated at the Mid Columbia projects this past week.

Biological Opinion spill levels were initiated at midnight on April 20, 199 at the lower Columbia projects. Spill at The Dalles Dam will alternate between 30% and 64% of instantaneous flow for research purposes.

Levels of total dissolved gas were meeting the waivers at locations measured with the exception of the Lower Monumental Dam forebay. The COE is checking the monitor to assure it is properly functioning. The COE decreased spill levels at Little Goose Dam (from 50 to 36 Kcfs) in order to decrease the forebay total dissolved gas level at Lower Monumental. Spill at Ice Harbor Dam is not

achieving the 120% TDG waiver. However, the COE has not increased the spill volume at the project because they believe the TDG monitor is producing low readings. The low sensor readings may be caused by the navigation lock cell changes made last year. Transects are being conducted below the project to ascertain whether the tailrace monitor is representative of the total dissolved gas conditions below the project. Monitoring for signs of gas bubble trauma (GBT) on fish collected through the Smolt Monitoring Program showed few fish with signs of GBT.

Smolt Monitoring. In the Snake River basin, the latter half of this week saw large increases in passage indices of hatchery and wild yearling chinook and steelhead at each of the Snake River dams. Within the last three days of this week, the jump in the average daily passage index at Lower Granite Dam was nearly three-fold for wild chinook and nearly ten-fold for wild steelhead. Increased numbers of fall chinook from the acclimation ponds in the Snake and Clearwater rivers and spring/summer chinook from Rapid River, McCall, Dworshak, and Clearwater hatcheries have been passing Lower Granite Dam since April 19 contributing to the large increase in the passage indices.

In the Columbia River basin, the last two days of this week (since April 21) saw a large jump in yearling chinook (hatchery/wild combined) and wild sockeye at Rock Island Dam. Continued increases in passage indices of yearling chinook, hatchery and wild steelhead and sockeye have occurred throughout this week at McNary Dam. At John Day and Bonneville dams, the largest increases in passage indices occurred for coho and wild steelhead during the last two days of this week. By the end of this week, wild steelhead had increased rapidly at both lower Columbia and Snake River dams.

Adult Fish Passage - With few exceptions, adult fish passage facilities at COE and PUD projects were operating at or near full criteria through the week. One North Shore Entrance Gate at Lower Granite Dam is temporarily out of service; the project is having parts and materials fabricated to complete repair on that gate. They hope to complete the work by late next week.

At Bonneville Dam, daily passage counts of adult spring chinook ranged from 453 to 978 through the week ending April 22. The season total was 8,665 and remained well below the 1998 (16,807) and 10-year average count (29,189). Of the chinook past Bonneville, 32,018 [23% of the Bonneville total] have been reported at The Dalles Dam, 823 at John Day Dam, and 171 at McNary Dam. Through April 22, only 27 adult chinook have been counted at the lower Snake River dam (Ice Harbor) with no adult spring chinook counted at Lower Granite Dam to date; however, two PIT tagged adult spring chinook have been captured at the adult trap located above the counting station. In the Mid-Columbia River, 3 adult spring chinook have been counted at Priest Rapids and Rock Island dams with two counted at Rocky Reach Dam.

At Bonneville Dam, the daily passage of steelhead was about 30 per day for the past week, with the cumulative count for the season at 992. Of this total, 17% or 167 were "wild" origin steelhead. At Lower Granite Dam, steelhead passage since March 1 totaled 2,881, about 71% and 56% of the respective 1998 and 10-year average. Of the total, 443 were recorded as being "wild" steelhead (about 15.4% of the run).

Hatchery Releases: The Hatchery Release tables show the number of fish released from Columbia River basin hatcheries during the past two weeks and for the upcoming two weeks. During the past two weeks, approximately 28.5 million anadromous salmon were released from hatcheries, acclimation ponds, or were directly planted into streams. For the upcoming two weeks, about 5.9 million salmon are scheduled for release from basin hatcheries into the rivers and tributaries above Bonneville Dam. More than 79

million juvenile salmon of hatchery origin were scheduled for release into streams above Bonneville Dam for the 1999 Migration Year. Most yearling spring, summer, and fall chinook have been released from the hatcheries in each River Reach. Steelhead and coho have been planted through the past two weeks and releases will continue through mid to late May. Upriver bright fall chinook are normally released from mid to late May through late June.

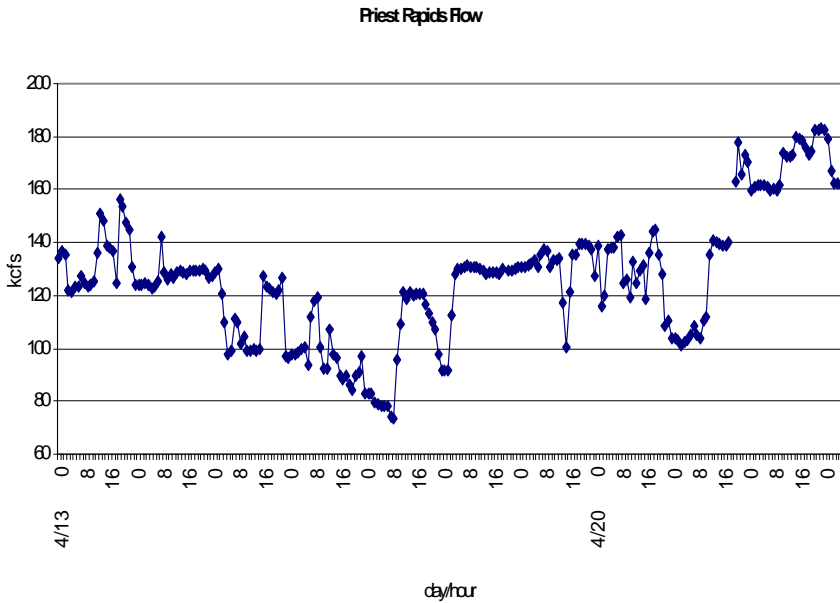
Lower Columbia River (above Bonneville Dam to McNary Dam) – Release of yearling spring chinook from Klickitat Hatchery, Umatilla River acclimation ponds, and from Warm Springs NFH have been made to date. Carson, Little White Salmon, Round Butte, and other acclimation facilities released fish during this week. Approximately 3 million coho salmon were released in the Umatilla and Klickitat rivers during the past two weeks, with the volitional release from Klickitat Hatchery ongoing. Another 2.1 million coho from Willard Hatchery were released as scheduled into the Little White Salmon River. The second release of subyearling fall chinook (about 3.6 million) from Spring Creek NFH was completed this week. Steelhead releases were started or have been completed in the Umatilla, Hood, Deschutes rivers with releases scheduled for other streams.

Mid-Columbia River - Yearling spring chinook have been released into the Columbia River from Ringold Hatchery. Other sites or river systems where chinook were released include the Entiat and Yakama rivers. Yearling spring chinook were released in the Wenatchee and Methow River basins this week and will continue through the end of the month. Steelhead are being released into the Wenatchee, Methow, Okanogan, and Entiat rivers next week and through mid-May. Many of these steelhead are listed under the ESA this year. Steelhead were released from Ringold Hatchery from mid to late March. Coho will be released from various acclimation sites and ponds in the Mid-Columbia, with the Wenatchee River slated to receive coho this season. Most of the tribal releases of coho in the Yakima River basin are

scheduled for May. Sockeye (Osoyoos stock) were released on April 7 from the Cassimer Bar facility; the Lake Wenatchee stock sockeye were released from net pens into Lake Wenatchee in the fall (1998). About 197,000 were released for the 1999 migration season.

Snake River – Yearling spring and summer chinook from State, Federal or Tribal hatcheries have been released in the Clearwater, Salmon, Grande Ronde, Imnaha, Pahsimeroi and Tucannon, River basins as well as at Hells Canyon on the Snake River from mid-March through this week. Both volitional and direct stream releases have been used from the hatcheries. Most spring and summer chinook releases are completed for the 1999 migration season. Large numbers of steelhead were released from hatcheries and acclimation ponds during the week or are scheduled for release during the next two weeks. Yearling fall chinook have been released into the Snake River from Lyons Ferry Hatchery and into the Clearwater and Snake Rivers from acclimation ponds located in the Snake and Clearwater rivers.

Mid Columbia Fall Chinook: Last week a significant decrease in the daily average flows at Priest Rapids Dam occurred at the end of the week into the weekend. Daily average flows were 134.4 Kcfs on April 13 and decreased to 97.3 on Friday and 99.2 on Saturday. A third crew was added by Washington Department of Fish and Wildlife to survey the Hanford Reach area for stranded fall chinook on a daily basis. The purpose of this crew is to identify emergency situations due to stranding and to coordinate immediate efforts to increase flows. A situation occurred on Friday night where flows decreased to the low 70s for several hours and significant numbers of fish were stranded, incurring considerable mortality. It became apparent that the present restrictions on project operations were not sufficient to prevent these major stranding scenarios. Several conference calls with Grant County PUD lead to new restrictions to be implemented over the upcoming week that will try to decrease the impact of project operations on fall chinook stranding.



Daily Average Flow and Spill (in kcfs) at Mid-Columbia Projects

Date	Grand Coulee		Chief Joseph		Wells		Rocky Reach		Rock Island		Wanapum		Priest Rapids	
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
04/09/99	102.3	0.0	96.0	0.0	111.1	6.3	118.3	0.0	118.5	0.0	129.7	0.0	135.0	0.0
04/10/99	108.6	0.0	110.9	0.0	106.2	6.3	110.9	0.0	107.4	0.0	99.7	0.0	105.3	0.0
04/11/99	104.2	0.0	116.0	0.0	106.4	6.8	109.2	0.0	110.1	0.0	111.5	0.0	113.0	0.0
04/12/99	108.6	0.0	111.9	0.0	125.2	9.3	130.8	0.0	128.1	0.0	126.0	0.0	117.8	0.0
04/13/99	105.1	0.0	109.5	0.0	115.6	11.3	119.6	0.0	119.1	0.0	127.5	0.0	134.0	0.0
04/14/99	102.6	0.0	106.1	0.0	108.2	11.3	111.9	0.0	112.2	0.0	116.8	0.0	127.5	0.0
04/15/99	104.1	0.0	100.9	0.0	95.6	11.0	91.2	0.0	94.5	0.0	114.7	0.0	111.1	0.0
04/16/99	106.8	0.0	112.9	0.0	115.5	11.6	115.0	0.0	114.9	0.0	95.2	0.0	96.7	0.0
04/17/99	110.7	0.0	113.3	0.0	119.3	11.6	115.9	0.0	118.7	0.0	99.9	0.0	99.6	0.0
04/18/99	100.1	0.0	102.0	0.0	113.0	11.1	117.3	0.0	121.5	0.0	125.4	0.0	125.8	0.0
04/19/99	112.6	0.0	115.5	0.0	120.4	12.2	119.7	0.0	125.5	0.0	127.3	0.0	131.7	0.0
04/20/99	104.2	0.0	97.8	0.0	104.6	11.6	106.4	4.2	112.7	17.3	118.9	0.0	128.8	0.0
04/21/99	145.4	0.0	150.1	0.0	153.5	13.1	151.1	21.1	153.5	41.0	136.6	7.7	130.2	1.6
04/22/99	149.8	0.0	151.6	0.0	164.6	13.2	161.6	23.8	164.6	40.9	161.9	32.4	170.4	29.7

Daily Average Flow and Spill (in kcfs) at Snake Basin Projects

Date	Dworshak		Brownlee Canyon		Hells Granite		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
04/09/99	8.0	0.0	38.6	42.7	75.0	31.7	70.5	24.4	74.2	19.3	78.8	60.6		
04/10/99	5.5	0.0	40.0	45.3	76.4	33.2	72.1	24.7	76.9	19.1	82.1	59.4		
04/11/99	4.7	0.0	39.8	43.7	72.8	33.6	68.7	24.5	71.7	18.7	76.4	56.5		
04/12/99	5.4	0.0	39.6	49.8	75.3	34.3	73.1	28.0	72.0	18.8	76.0	51.7		
04/13/99	7.1	0.0	38.4	44.9	79.6	35.2	77.3	25.1	82.0	19.1	82.7	62.7		
04/14/99	7.4	0.0	38.4	45.2	81.7	35.2	78.6	24.8	81.7	18.6	86.0	62.3		
04/15/99	8.3	0.0	37.3	45.3	80.2	35.3	76.6	26.1	81.6	19.3	86.9	63.7		
04/16/99	7.8	0.0	40.7	42.7	83.2	35.1	79.2	24.7	83.0	17.6	88.0	63.7		
04/17/99	8.4	0.0	41.4	42.8	85.2	35.4	81.6	24.4	85.7	19.1	88.8	62.6		
04/18/99	10.2	0.0	42.5	43.1	91.0	35.2	85.3	24.5	88.5	17.6	92.4	62.8		
04/19/99	10.3	0.0	45.4	50.9	98.3	33.8	95.7	23.7	101.2	17.6	104.5	65.1		
04/20/99	10.3	0.0	48.2	49.7	118.7	33.4	113.6	23.6	121.2	20.9	126.5	67.9		
04/21/99	12.8	2.4	50.6	50.2	126.3	32.6	123.0	32.8	130.1	19.7	130.8	71.5		
04/22/99	14.0	3.6	---	---	122.4	32.5	117.9	19.1	124.7	13.1	127.1	72.2		

Daily Average Flow and Spill (in kcfs) at Lower Columbia Projects

Date	McNary		John Day		The Dalles		Bonneville		PH1	PH2
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill		
04/09/99	208.0	30.2	219.7	0.0	222.1	0.0	234.3	0.0	84.7	140.4
04/10/99	188.5	9.6	187.7	0.0	191.6	0.0	229.8	0.0	84.6	136.0
04/11/99	184.3	27.9	202.3	0.0	197.5	0.0	204.3	0.0	81.4	113.7
04/12/99	194.0	51.4	197.1	19.3	200.3	0.0	199.5	0.0	83.7	107.0
04/13/99	208.4	53.5	215.2	40.3	217.1	18.0	203.9	0.2	79.9	114.7
04/14/99	240.9	83.0	240.7	68.1	240.1	38.0	255.9	41.2	74.3	131.2
04/15/99	211.2	51.1	223.4	61.3	220.5	36.0	235.6	49.9	68.4	108.1
04/16/99	195.5	51.1	197.8	33.4	195.2	59.0	209.0	49.8	68.4	81.6
04/17/99	182.1	51.1	179.1	33.7	178.6	49.0	186.3	50.0	73.8	53.3
04/18/99	207.1	51.1	216.2	39.6	208.3	63.0	228.7	49.7	79.5	90.3
04/19/99	205.0	51.3	221.2	38.1	219.3	65.0	224.6	50.2	76.3	88.9
04/20/99	267.1	114.2	259.9	55.0	249.4	73.0	251.7	85.3	76.4	80.8
04/21/99	255.4	119.1	275.5	55.0	278.7	96.0	283.8	88.2	31.6	154.8
04/22/99	274.3	116.0	287.0	55.3	291.1	176.0	290.6	92.6	71.2	117.5

Total Dissolved Gas Saturation (%) - Average of 12 Highest Hours, 24 h Average and 24 h High²

Total Dissolved Gas Saturation Data at Upper Columbia Sites

Date	<u>Can. Boundary</u>			<u>Grand Coulee</u>				<u>Tlwr G. Coulee</u>				<u>Chief Joseph</u>				<u>Wells</u>			<u>Rocky Reach</u>					
	24 h		#	24 h		#	24 h		#	24 h		#	24 h		#	24 h		#	24 h		#			
	Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High	
4/9	103	103	105	24	105	105	105	24	103	103	104	24	---	---	---	0	103	103	103	16	104	105	105	23
4/10	102	103	103	24	105	105	105	24	102	103	103	24	---	---	---	0	---	---	---	0	104	104	105	23
4/11	102	103	104	24	105	106	107	24	103	103	104	24	---	---	---	0	---	---	---	0	105	105	105	23
4/12	103	104	109	24	105	106	106	24	103	103	104	24	---	---	---	0	104	104	104	13	103	105	106	23
4/13	103	104	108	24	103	104	104	24	102	102	102	24	---	---	---	0	103	103	103	17	101	101	101	21
4/14	102	103	103	24	103	103	103	24	101	101	102	24	---	---	---	0	---	---	---	0	101	102	102	23
4/15	104	105	105	24	104	105	105	24	102	102	103	24	---	---	---	0	105	105	106	11	103	103	104	23
4/16	104	105	106	24	106	107	108	24	103	104	104	24	---	---	---	0	104	105	105	20	105	105	107	23
4/17	104	105	109	24	108	108	108	24	104	104	105	24	---	---	---	0	105	105	106	23	106	107	107	22
4/18	104	105	106	24	108	108	109	24	104	104	104	24	---	---	---	0	105	105	105	24	107	107	107	23
4/19	108	112	114	24	108	108	109	24	104	104	105	24	---	---	---	0	105	105	105	20	104	106	108	23
4/20	108	111	113	24	107	108	109	24	105	105	106	24	---	---	---	0	105	105	105	19	103	104	105	21
4/21	108	111	111	24	108	108	108	24	105	105	106	20	---	---	---	0	105	105	105	21	103	103	103	11
4/22	110	110	111	24	107	108	109	24	105	105	106	24	---	---	---	0	104	105	105	22	106	107	108	15

Total Dissolved Gas Saturation Data at Mid Columbia Sites

Date	<u>Tlwr. Rocky R.</u>			<u>Rock Island</u>				<u>Tlwr. Rock Island</u>				<u>Wanapum</u>				<u>Tlwr Wanapum</u>			<u>Priest Rapids</u>					
	24 h		#	24 h		#	24 h		#	24 h		#	24 h		#	24 h		#	24 h		#			
	Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High	
4/9	---	---	---	0	102	103	103	23	103	104	104	21	---	---	---	0	---	---	---	0	---	---	---	0
4/10	---	---	---	0	102	102	102	23	103	103	103	21	---	---	---	0	---	---	---	0	---	---	---	0
4/11	---	---	---	0	103	103	104	22	104	104	105	21	---	---	---	0	---	---	---	0	---	---	---	0
4/12	---	---	---	0	103	104	104	21	105	105	105	20	---	---	---	0	---	---	---	0	---	---	---	0
4/13	---	---	---	0	103	103	104	21	104	104	105	20	---	---	---	0	---	---	---	0	---	---	---	0
4/14	---	---	---	0	102	102	103	23	104	104	105	22	---	---	---	0	---	---	---	0	---	---	---	0
4/15	106	106	106	16	103	104	104	23	105	106	107	22	---	---	---	0	---	---	---	0	---	---	---	0
4/16	107	107	108	22	105	106	107	23	107	108	109	23	---	---	---	0	---	---	---	0	---	---	---	0
4/17	108	108	109	21	107	107	107	23	108	108	109	22	---	---	---	0	---	---	---	0	---	---	---	0
4/18	108	108	108	23	107	107	108	23	108	108	109	23	---	---	---	0	---	---	---	0	---	---	---	0
4/19	108	108	108	21	106	106	107	23	108	108	108	23	---	---	---	0	---	---	---	0	---	---	---	0
4/20	108	108	109	20	106	106	106	22	112	116	119	22	---	---	---	0	---	---	---	0	---	---	---	0
4/21	110	110	111	12	108	109	109	23	118	119	120	23	---	---	---	0	---	---	---	0	---	---	---	0
4/22	111	111	111	8	107	107	108	24	117	118	119	24	---	---	---	0	---	---	---	0	---	---	---	0

Total Dissolved Gas Saturation at Mid Columbia, Clearwater and Snake Sites

Date	<u>Dwnstr P Rapids</u>			<u>Dworshak</u>				<u>Clearwater</u>				<u>Snake-Lewiston</u>				<u>Lower Granite</u>			<u>Tlwr L. Granite</u>					
	24 h		#	24 h		#	24 h		#	24 h		#	24 h		#	24 h		#	24 h		#			
	Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High		Avg	Avg High	
4/9	---	---	---	0	98	98	99	19	100	100	101	24	101	102	103	24	104	104	105	24	111	116	117	24
4/10	---	---	---	0	98	98	99	10	99	99	99	9	102	103	105	24	104	104	105	24	111	117	118	24
4/11	---	---	---	0	---	---	---	0	---	---	---	0	102	104	106	24	104	105	106	24	111	117	118	24
4/12	---	---	---	0	103	106	110	24	102	103	105	24	101	103	103	24	104	104	105	24	112	118	119	24
4/13	---	---	---	0	100	100	101	24	101	101	102	24	102	103	105	24	104	104	104	24	112	118	120	24
4/14	---	---	---	0	98	99	99	24	100	101	102	24	101	103	105	24	104	104	105	24	112	118	119	24
4/15	---	---	---	0	99	100	100	24	101	102	102	24	102	104	105	24	105	107	108	24	112	117	119	24
4/16	---	---	---	0	102	103	103	24	---	---	---	0	102	105	106	24	107	109	110	24	112	118	119	24
4/17	---	---	---	0	102	103	103	24	---	---	---	0	103	104	106	24	109	110	111	24	113	118	119	24
4/18	---	---	---	0	102	102	102	24	102	102	102	24	102	103	105	24	107	108	109	24	113	118	120	24
4/19	---	---	---	0	101	101	102	24	101	102	102	24	101	102	103	24	106	106	107	24	112	118	119	24
4/20	---	---	---	0	101	102	102	24	101	101	102	24	101	102	102	24	105	105	106	24	113	118	119	24
4/21	---	---	---	0	106	109	109	24	103	104	105	24	102	103	104	24	105	105	105	24	112	118	118	24
4/22	---	---	---	0	108	109	109	24	104	104	105	23	103	104	105	23	104	105	105	24	112	117	118	24

Total Dissolved Gas Saturation (%) - Average of 12 Highest Hours, 24 h Average and 24 h High²

Total Dissolved Gas Saturation Data at Snake Sites

Date	<u>Little Goose</u>			<u>Tlwr L. Goose</u>			<u>Lower Mon.</u>			<u>Tlwr L. Mon</u>			<u>Ice Harbor</u>			<u>Tlwr Ice Harbor</u>								
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>						
	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr				
4/9	110	111	113	24	115	120	120	24	117	117	117	3	116	116	116	3	112	112	113	24	112	113	115	24
4/10	109	110	111	24	115	120	120	24	---	---	---	0	---	---	---	0	112	113	113	24	112	113	115	24
4/11	109	109	111	24	115	120	120	24	114	115	117	24	115	116	116	24	113	115	116	24	111	112	113	24
4/12	109	112	113	24	115	120	120	24	115	117	119	24	116	117	117	24	113	114	115	24	112	113	113	24
4/13	109	110	112	24	114	119	120	24	113	115	117	24	115	116	118	24	113	113	114	10	111	113	114	24
4/14	109	110	112	24	114	119	119	24	113	115	118	24	114	116	118	24	112	113	115	24	112	114	114	24
4/15	111	112	113	24	115	119	120	24	114	116	119	23	115	117	118	23	115	116	117	24	112	113	115	24
4/16	114	116	119	24	117	120	120	24	117	120	125	24	116	117	118	24	116	117	118	24	112	113	114	24
4/17	115	117	118	24	117	120	120	24	119	121	123	24	118	118	119	24	118	119	121	24	112	112	113	24
4/18	115	116	118	24	118	120	120	24	118	120	121	24	118	119	119	24	118	118	119	24	112	112	113	24
4/19	114	115	116	23	117	120	123	24	117	119	119	24	119	119	119	24	117	117	118	24	111	113	115	24
4/20	113	115	115	24	116	119	120	24	117	118	120	24	117	118	119	24	116	117	117	24	115	117	118	24
4/21	112	113	115	24	116	118	119	24	115	117	118	24	117	119	119	24	116	116	116	24	116	117	118	24
4/22	110	113	116	24	113	116	117	24	115	117	118	24	117	118	119	24	115	116	116	24	116	118	119	24

Total Dissolved Gas Saturation Data at Lower Columbia Sites

Date	<u>McNary-Oregon</u>			<u>McNary-Wash.</u>			<u>Tlwr McNary</u>			<u>John Day</u>			<u>Tlwr John Day</u>			<u>The Dalles</u>								
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>						
	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr				
4/9	106	106	106	12	104	104	105	24	109	111	112	24	104	104	104	23	103	104	104	24	103	103	103	23
4/10	106	106	106	10	105	105	106	24	107	108	109	24	105	106	107	23	104	105	105	24	103	103	103	23
4/11	106	107	108	24	105	106	107	24	109	109	111	24	106	107	108	23	105	105	105	24	104	104	105	23
4/12	105	105	106	24	106	106	107	24	111	112	112	24	105	106	108	23	108	112	119	24	104	104	105	23
4/13	106	107	108	24	105	106	106	24	111	112	113	24	104	104	104	22	111	118	120	23	105	106	108	23
4/14	106	107	108	24	105	106	107	24	114	115	116	24	103	103	104	23	119	119	120	5	106	108	110	23
4/15	106	108	109	24	107	108	109	24	111	112	112	24	104	104	105	23	114	117	120	15	109	110	110	23
4/16	109	111	111	24	109	110	111	24	112	112	113	24	106	108	109	24	112	117	119	24	109	110	111	24
4/17	111	112	116	18	110	111	113	20	112	112	113	20	107	107	108	24	112	117	119	24	108	109	110	24
4/18	---	---	---	0	---	---	---	0	---	---	---	0	107	108	108	23	114	119	120	24	108	110	110	23
4/19	111	111	114	24	110	110	111	24	112	113	113	24	109	109	110	23	114	118	120	24	109	110	110	23
4/20	110	110	111	24	109	109	109	24	118	119	120	24	109	109	109	23	115	121	122	24	109	111	113	23
4/21	109	110	112	24	108	109	109	24	118	119	120	24	108	108	108	23	114	120	120	24	109	110	111	23
4/22	109	109	110	24	109	109	110	24	118	119	119	24	106	106	107	23	113	120	120	24	107	109	110	23

Total Dissolved Gas Saturation Data at Lower Columbia Sites

Date	<u>Dnstr T. Dalles</u>			<u>Bonneville</u>			<u>Warrendale</u>			<u>Skamania</u>			<u>CamasWash.</u>			<u>Wauna Mill</u>								
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>						
	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr				
4/9	102	103	103	24	102	103	103	23	103	103	104	23	103	103	103	23	103	103	104	24	---	---	---	0
4/10	103	103	104	24	103	103	104	23	103	103	104	23	103	103	103	23	102	103	103	24	---	---	---	0
4/11	104	104	105	24	103	103	104	23	103	103	104	23	103	104	104	23	109	113	135	20	---	---	---	0
4/12	104	104	105	24	104	104	104	23	103	103	104	23	103	104	104	19	105	106	122	18	---	---	---	0
4/13	105	107	112	24	103	103	103	23	103	103	103	23	103	104	104	23	103	104	105	24	---	---	---	0
4/14	109	111	114	24	103	103	104	23	107	108	109	23	105	106	107	23	103	104	106	22	---	---	---	0
4/15	112	113	114	24	108	109	109	23	111	113	113	23	110	111	112	23	106	107	108	24	---	---	---	0
4/16	114	115	115	24	110	111	111	24	113	114	115	24	112	114	115	24	108	109	110	24	---	---	---	0
4/17	112	114	115	24	112	114	114	24	114	115	116	24	115	117	117	24	112	114	115	24	---	---	---	0
4/18	113	114	114	24	111	112	113	23	115	115	115	23	114	114	116	23	114	114	115	24	---	---	---	0
4/19	113	114	114	24	110	110	111	23	113	114	114	23	112	113	114	23	112	113	113	24	---	---	---	0
4/20	114	115	116	24	110	110	111	23	113	114	115	23	113	114	115	23	112	113	115	24	---	---	---	0
4/21	114	115	115	24	111	111	111	23	114	115	116	23	113	113	114	23	113	114	115	24	---	---	---	0
4/22	116	117	117	24	111	111	112	23	114	115	117	23	113	114	115	23	113	114	116	23	---	---	---	0

Gas Bubble Trauma Monitoring Results from Representative Sites on the Snake River and Columbia River

Site	Date	Species	Number of Fish	Number w GBT signs	Number w Fin Signs	% Fin GBT	% Severe Fin GBT	Number of Fish with Fin GBT Listed by Highest Rank				Fish with L. Line GBT	
								Rank 1	Rank 2	Rank 3	Rank 4	Num Fish	Avg. Rank
Lower Granite Dam													
	04/19/99	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/19/99	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	1
Little Goose Dam													
	04/14/99	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/14/99	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/21/99	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/21/99	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
Lower Monumental Dam													
	04/19/99	Yearling Chinook	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/19/99	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
Ice Harbor Dam													
	04/13/99	Yearling Chinook	57	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/13/99	Steelhead	11	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/16/99	Yearling Chinook	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/16/99	Steelhead	35	4	2	5.71%	0.00%	2	0	0	0	2	1
	04/20/99	Yearling Chinook	100	4	0	0.00%	0.00%	0	0	0	0	4	1
	04/20/99	Steelhead	33	1	0	0.00%	0.00%	0	0	0	0	1	1
McNary Dam													
	04/15/99	Yearling Chinook	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/15/99	Steelhead	13	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/19/99	Yearling Chinook	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/19/99	Steelhead	29	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/22/99	Yearling Chinook	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/22/99	Steelhead	23	0	0	0.00%	0.00%	0	0	0	0	0	0
Bonneville Dam													
	04/15/99	Yearling Chinook	84	3	3	3.57%	0.00%	1	2	0	0	0	0
	04/15/99	Steelhead	59	1	1	1.69%	1.69%	0	0	1	0	0	0
	04/19/99	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/19/99	Steelhead	62	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/22/99	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/22/99	Steelhead	99	0	0	0.00%	0.00%	0	0	0	0	0	0
Rock Island Dam													
	04/15/99	Yearling Chinook	24	2	0	0.00%	0.00%	0	0	0	0	2	1
	04/15/99	Steelhead	8	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/19/99	Yearling Chinook	98	5	3	3.06%	0.00%	2	1	0	0	2	1
	04/19/99	Steelhead	30	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/22/99	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/22/99	Steelhead	49	0	0	0.00%	0.00%	0	0	0	0	0	0

Hatchery Release Summary For the Last Two Weeks From 4/9/99 to 4/22/99

Hatchery Name	Species	Migration	Year	Number ...Release Dates...		Release Site	River
				Released	BeginEnd		
IDFG							
Clearwater	SP	Chinook	1999	665,000	4/15/99	4/15/99 Crooked R Acclim Pd	S Fk Clearwater River
	SP	Chinook	1999	300,000	4/15/99	4/15/99 Red River Acclim Pd	S Fk Clearwater River
	SU	Steelhead	1999	5,000	4/20/99	4/20/99 S FK Red R	Clearwater Rvr M F
Magic Valley	SU	Steelhead	1999	360,200	4/10/99	4/20/99 Little Salmon R	Salmon River
	SU	Steelhead	1999	30,000	4/10/99	4/30/99 Sawtooth H	Salmon River
	SU	Steelhead	1999	343,640	4/15/99	4/20/99 Lemhi R	Salmon River
	SU	Steelhead	1999	293,930	4/20/99	4/23/99 McNabb/Salmon R	Salmon River
	SU	Steelhead	1999	119,970	4/21/99	4/23/99 Shoup Br (Salmon R)	Salmon River
Niagara Springs	SU	Steelhead	1999	150,000	4/7/99	4/9/99 Hammer Cr	Salmon River
	SU	Steelhead	1999	830,000	4/11/99	4/29/99 Pahsimeroi H	Pahsimeroi River
Pahsimeroi	SU	Chinook	1999	135,650	4/12/99	4/12/99 Pahsimeroi H	Pahsimeroi River
Powell	SP	Chinook	1999	334,800	4/14/99	4/14/99 Powell Acclim Pd	Lochsa River
Rapid River	SP	Chinook	1999	2,847,500	3/16/99	4/15/99 Rapid River H	Little Salmon River
Sawtooth	SP	Chinook	1999	118,000	4/16/99	4/16/99 Sawtooth H	Salmon River
	SP	Chinook	1999	107,000	4/16/99	4/16/99 Sawtooth H	Salmon River
				Agency Total:	6,640,690		
Nez Perce Tribe							
Clearwater	SP	Chinook	1999	39,640	4/19/99	4/19/99 S Fk Clearwater R	Clearwater Rvr M F
Lookingglass	SP	Chinook	1999	12,061	4/1/99	4/15/99 Lostine R	Grande Ronde River
Lyons Ferry	FA	Chinook	1999	150,000	3/25/99	4/12/99 Cpt John Acclim Pd	Snake River
	FA	Chinook	1999	150,000	4/12/99	4/15/99 Pittsburg Landing	Snake River
	FA	Chinook	1999	228,000	4/12/99	4/15/99 Clearwater R	Clearwater Rvr M F
				Agency Total:	579,701		

Hatchery Release Summary For the Last Two Weeks From 4/9/99 to 4/22/99

Hatchery	Species	Migration	Year	Number		...Release Dates...		Release Site	River Name
				Released	Begin.....End	Begin	End		
ODFW									
Big Canyon	SU	Steelhead	1999	120,000		4/8/99	4/21/99	Big Canyon H	Grande Ronde River
Cascade		Coho	1999	750,000		4/10/99	4/20/99	Umatilla R	Umatilla River
Imnaha	SP	Chinook	1999	96,300		3/16/99	4/15/99	Imnaha Acclim Pd	Imnaha River
	SP	Chinook	1999	89,000		3/16/99	4/15/99	Imnaha Acclim Pd	Imnaha River
Irrigon	SU	Steelhead	1999	137,500		4/1/99	4/15/99	Wallowa Acclim Pd	Grande Ronde River
	SU	Steelhead	1999	125,000		4/5/99	4/9/99	Grande Ronde R	Grande Ronde River
Li Sheep	SU	Steelhead	1999	210,000		4/13/99	4/13/99	L Sheep Acclim Pd	Imnaha River
Oak Springs	SU	Steelhead	1999	61,000		4/7/99	4/9/99	Hood R	Hood River
Round Butte	SU	Steelhead	1999	162,000		4/5/99	4/19/99	Bel. Pelton Dam	Deschutes River
	SP	Chinook	1999	310,000		4/12/99	4/15/99	Bel. Pelton Dam	Deschutes River
Wallowa	SU	Steelhead	1999	217,000		4/1/99	4/19/99	Wallowa Acclim Pd	Grande Ronde River
				Agency Total:		2,277,800			
Umatilla Tribe									
Bonifer	SU	Steelhead	1999	50,000		4/10/99	4/20/99	Bonifer Acclim Pd	Umatilla River
	SU	Steelhead	1999	50,000		4/20/99	4/30/99	Bonifer Acclim Pd	Umatilla River
Imeques	SP	Chinook	1999	275,000		4/10/99	4/20/99	Imeques Acclim Pd	Umatilla River
Minthorn	SU	Steelhead	1999	50,000		4/10/99	4/20/99	Minthorn Acclim Pd	Umatilla River
Thornhollow	FA	Chinook	1999	240,000		4/10/99	4/20/99	Thornhollow Acclim Pd	Umatilla River
				Agency Total:		665,000			

Hatchery Release Summary For the Last Two Weeks From 4/9/99 to 4/22/99

Hatchery	Species...	Migration Year	Number		...Release Dates...		Release Site	River Name
			Released	Begin.....End				
USFWS								
Carson	SP	Chinook	1999	1,421,000	4/20/99	4/20/99	Carson H	Wind River
Dworshak	SU	Steelhead	1999	600,000	4/19/99	4/23/99	S Fk Clearwater R	Clearwater Rvr M F
	SU	Steelhead	1999	200,000	4/19/99	4/23/99	Clear Cr	Clearwater Rvr M F
Hagerman	SU	Steelhead	1999	410,000	4/14/99	5/10/99	Little Salmon R	Salmon River
	SU	Steelhead	1999	230,000	4/19/99	4/23/99	Sawtooth H	Salmon River
Leavenworth	SP	Chinook	1999	1,650,000	4/19/99	4/19/99	Leavenworth H	Wenatchee River
L White Salmon	SP	Chinook	1999	1,077,000	4/20/99	4/20/99	Little White Salmon H	Little White Salmon River
Spring Creek	FA	Chinook	1999	3,600,000	4/22/99	4/22/99	Spring Creek H	Columbia River
Willard		Coho	1999	2,126,000	4/19/99	4/19/99	Little White Salmon R	Little White Salmon River
Winthrop	SU	Steelhead	1999	113,000	4/14/99	5/15/99	Winthrop H	Methow River
	SP	Chinook	1999	545,000	4/15/99	4/15/99	Winthrop H	Methow River
		Agency Total:		11,972,000				
WDFW								
Chewuch	SP	Chinook	1999	132,900	4/15/99	5/1/99	Chewuch R	Methow River
Chiwawa	SP	Chinook	1999	266,500	4/15/99	4/30/99	Chiwawa H	Wenatchee River
	SU	Steelhead	1999	187,400	4/22/99	5/7/99	Chiwawa H	Wenatchee River
East Bank	SU	Chinook	1999	442,000	4/15/99	4/30/99	Dryden Acclim Pd	Wenatchee River
Klickitat		Coho	1999	1,150,000	4/15/99	6/10/99	Klickitat H	Klickitat River
Lyons Ferry	SU	Steelhead	1999	125,000	3/25/99	4/30/99	Dayton Acclim Pd	Walla Walla River
	SU	Steelhead	1999	250,000	3/25/99	4/30/99	Cottonwood Acclim Pd	Grande Ronde River
	FA	Chinook	1999	450,000	3/25/99	4/12/99	Lyons Ferry H	Snake River
	SU	Steelhead	1999	175,000	4/15/99	4/30/99	Walla Walla R	Walla Walla River
	SU	Steelhead	1999	80,000	4/15/99	4/15/99	Lyons Ferry H	Snake River
	SU	Steelhead	1999	160,000	4/20/99	4/20/99	Tucannon R	Tucannon River
Methow	SP	Chinook	1999	334,000	4/15/99	4/25/99	Methow H	Methow River
	SP	Chinook	1999	26,850	4/15/99	4/25/99	Twisp R	Methow River
Skamania	SU	Steelhead	1999	50,000	4/15/99	4/30/99	Little White Salmon R	Little White Salmon River
	WI	Steelhead	1999	40,000	4/15/99	4/30/99	Northwestern Lake	White Salmon River
	SU	Steelhead	1999	120,000	4/15/99	4/30/99	Klickitat R	Klickitat River
	WI	Steelhead	1999	10,000	4/15/99	4/30/99	Rock Cr	Columbia River

Hatchery Release Summary

For the Last Two Weeks

From 4/9/99 to 4/22/99

Hatchery	Species	Migration	Year	Number ...Release Dates...		Release Site	River Name
				Released	Begin.....End		
Tucannon	SP	Chinook	1999	25,000	3/9/99	4/20/99 Curl Lake	Tucannon River
Turtle Rock	SU	Steelhead	1999	40,000	4/20/99	4/30/99 Entiat R	Entiat River
	SU	Steelhead	1999	145,000	4/20/99	4/30/99 Wenatchee R	Wenatchee River
	SU	Chinook	1999	203,000	4/20/99	4/30/99 Turtle Rock H	Mid-Columbia River
Wells	SU	Chinook	1999	589,900	4/5/99	4/26/99 Similkameen Acclim Pd	Okanogan River
	SU	Chinook	1999	410,000	4/12/99	4/19/99 Wells H	Mid-Columbia River
	SU	Steelhead	1999	236,000	4/15/99	5/5/99 Wells H	Mid-Columbia River
	SU	Steelhead	1999	250,000	4/15/99	5/5/99 Methow R	Methow River
	SU	Steelhead	1999	50,000	4/15/99	4/30/99 Okanogan R	Okanogan River
	SU	Steelhead	1999	100,000	4/20/99	5/20/99 Winthrop H	Methow River
	SU	Steelhead	1999	118,500	4/20/99	4/30/99 Chewuch R	Methow River
	Agency Total:				6,167,050		
Warm Spgs Tribe							
Oak Springs	WI	Steelhead	1999	52,000	4/14/99	5/4/99 E Fk Hood R	Hood River
Round Butte	SP	Chinook	1999	30,000	4/5/99	4/15/99 Hood R	Hood River
	SP	Chinook	1999	55,000	4/8/99	4/21/99 W Fk Hood R	Hood River
	SP	Chinook	1999	40,000	4/8/99	4/21/99 W Fk Hood R	Hood River
Agency Total:				177,000			
Yakima Tribe							
Leavenworth		Coho	1999	67,500	4/10/99	4/10/99 Nason Cr	Wenatchee River
Agency Total:				67,500			
Total Release:				28,546,741			

Hatchery Release Summary For the Next Two Weeks From 4/23/99 to 5/06/99

Hatchery	Species	Migration	Year	Number Released	Begin.....End	Release Site	River Name
IDFG							
Clearwater	SU	Steelhead	1999	422,000	4/28/99	4/30/99 S Fk Clearwater R	Clearwater Rvr M F
	SU	Steelhead	1999	170,000	4/28/99	4/28/99 Clear Cr	Clearwater Rvr M F
Magic Valley	SU	Steelhead	1999	96,000	4/26/99	4/27/99 Salmon R	Salmon River
	SU	Steelhead	1999	301,000	4/27/99	5/3/99 E Fk Salmon R	Salmon River
	SU	Steelhead	1999	101,200	4/27/99	5/15/99 Squaw Cr Acclim Pd	Salmon River
	SU	Steelhead	1999	312,000	4/27/99	5/5/99 Squaw Cr Acclim Pd	Salmon River
Niagara Springs	SU	Steelhead	1999	150,000	4/30/99	5/3/99 Little Salmon R	Salmon River
Sawtooth	SU	Steelhead	1999	480,000	4/23/99	4/23/99 Sawtooth H	Salmon River
		Sockeye	1999	5,000	5/1/99	5/15/99 Sawtooth H	Salmon River
		Sockeye	1999	5,000	5/1/99	5/1/99 Redfish Lake Cr	Salmon River
				Agency Total:	2,042,200		
Nez Perce Tribe							
Dworshak		Coho	1999	220,000	4/26/99	4/30/99 Clear Cr	Clearwater Rvr M F
				Agency Total:	220,000		
ODFW							
Irrigon	SU	Steelhead	1999	900	5/5/99	5/7/99 Deer Cr	Grande Ronde River
				Agency Total:	900		
USFWS							
Dworshak	SU	Steelhead	1999	1,300,000	4/26/99	4/30/99 Dworshak H	Clearwater Rvr M F
				Agency Total:	1,300,000		
WDFW							
Turtle Rock	SU	Steelhead	1999	3,000	4/25/99	4/30/99 Turtle Rock H	Mid-Columbia River
Wells	SU	Steelhead	1999	78,000	4/27/99	5/15/99 Similkameen Acclim Pd	Okanogan River
	SU	Steelhead	1999	118,500	5/1/99	5/10/99 Twisp R	Methow River
				Agency Total:	199,500		
Yakima Tribe							
Leavenworth		Coho	1999	419,000	5/1/99	5/1/99 Leavenworth H	Wenatchee River
Prosser	FA	Chinook	1999	1,690,000	4/25/99	5/25/99 Prosser Acclim Pd	Yakama River
				Agency Total:	2,109,000		
				Total Release:	5,871,600		

Two-Week Summary of Passage Indices

Yearling Chinook

Date	Hatchery							Hatchery/Wild Combined			
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/09/99	527	236	17	57	803	675	3,246	95	21,470	5,649	638
04/10/99	---	509	---	---	1,013	919	2,637	117	13,319	4,267	636
04/11/99	---	714	---	---	357	685	6,999	103	13,958	4,600	709
04/12/99	137	166	16	127	1,081	873	4,589	66	14,418	4,770	665
04/13/99	427	1,001	16	86	1,418	1,023	3,510	79	19,354	5,339	907
04/14/99	352	315	19	128	2,853	1,351	5,893	108	16,314	8,885	1,235
04/15/99	598	555	28	147	3,792	2,084	14,513	34	20,803	14,820	1,178
04/16/99	392	267	35	200	5,384	2,719	10,683	27	25,742	22,874	1,180
04/17/99	---	538	---	---	4,350	3,529	9,885	29	21,810	24,619	2,438
04/18/99	---	2,610	---	---	4,425	4,861	11,142	94	37,526	25,340	3,004
04/19/99	1,496	440	61	626	19,321	12,020	12,331	108	54,034	24,564	3,726
04/20/99	2,650	21	63	1,199	40,172	17,118	12,510	108	38,339	25,316	3,555
04/21/99	619	45	27	1,548	65,865	29,428	13,296	660	29,300	25,075	36,776
04/22/99	397	93	21	1,590	86,850	38,007	19,632	816	44,505	56,859	18,292
Total:	7,595	7,510	303	5,708	237,684	115,292	130,866	2,444	370,892	252,977	74,939
# Days:	10	14	10	10	14	14	14	14	14	14	14
Average:	760	536	30	571	16,977	8,235	9,348	175	26,492	18,070	5,353

Wild Yearling Chinook

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
04/09/99	61	69	21	48	2,676	542	160
04/10/99	---	215	---	---	2,638	2,648	579
04/11/99	---	162	---	---	2,290	4,559	929
04/12/99	104	87	18	72	3,022	4,774	1,324
04/13/99	172	57	16	51	2,615	6,736	2,643
04/14/99	130	97	47	57	3,825	7,007	4,032
04/15/99	258	191	51	25	5,402	10,047	2,986
04/16/99	245	221	31	53	4,091	11,563	4,234
04/17/99	---	377	---	---	3,324	8,540	6,488
04/18/99	---	392	---	---	3,006	9,748	6,497
04/19/99	287	201	77	531	7,008	17,262	4,459
04/20/99	366	16	87	460	16,209	22,597	7,732
04/21/99	112	19	50	522	16,261	29,714	7,666
04/22/99	128	38	71	580	14,676	30,058	9,215
Total:	1,863	2,142	469	2,399	87,043	165,795	58,944
# Days:	10	14	10	10	14	14	14
Average:	186	153	47	240	6,217	11,843	4,210

Wild Subyearling Chinook

	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
04/09/99	0	0	0
04/10/99	0	0	0
04/11/99	0	0	0
04/12/99	0	0	0
04/13/99	0	0	0
04/14/99	0	0	0
04/15/99	0	0	0
04/16/99	0	0	0
04/17/99	0	0	0
04/18/99	0	0	0
04/19/99	33	0	0
04/20/99	146	0	0
04/21/99	0	0	0
04/22/99	0	0	0
Total:	179	0	0
# Days:	14	14	14
Average:	13	0	0

The data presented in the following passage index section is preliminary and has been derived from various sources. For verification and/or origin of data, contact the operators of the Fish Passage Data System at (503) 230-4099.

Smolt indices, wild & hatchery or combined, are presented in the following order: yearling chinook (chinook 1's), subyearling chinook (chinook 0's), steelhead, coho, and sockeye. Two classes of fish counts are shown in these tables: collection counts, which account for sample rates but are not adjusted for flow; and passage indices, which are collection counts divided by the proportion of water passing through the sampling system. Collection counts may be constrained due to sampling effort or river flow. Passage indices are not population estimates, but are used to adjust collection counts for daily fluctuations in the site's or project's operations. The classes of counts presented in the report are defined below for each site. Most samples occur over a 24 hour period that spans two calendar days. In this report, the date shown corresponds with the sample end date.

Two-Week Summary of Passage Indices

Date	Hatchery Subyearling Chinook							Combined Subyearling Chinook			
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/09/99	0	0	0	0	0	0	0	100	1,065	0	21
04/10/99	---	0	---	---	0	0	0	42	1,582	51	21
04/11/99	---	0	---	---	0	0	0	43	1,021	80	10
04/12/99	0	0	0	0	0	0	0	37	1,429	11	27
04/13/99	0	0	0	0	0	0	0	29	2,351	30	10
04/14/99	0	0	0	0	0	0	0	103	2,254	28	27
04/15/99	0	0	0	0	0	0	0	115	2,289	86	53
04/16/99	0	0	0	0	0	0	0	178	3,982	60	47
04/17/99	---	0	---	---	0	0	0	318	3,199	0	58
04/18/99	---	0	---	---	0	0	0	112	2,075	74	55
04/19/99	0	0	0	0	0	0	0	66	2,830	121	68
04/20/99	0	0	0	0	0	0	0	32	1,792	150	38
04/21/99	0	0	0	0	0	0	0	70	2,956	38	1,078
04/22/99	0	0	0	0	0	0	0	26	787	414	7,080
Total:	0	0	0	0	0	0	0	1,271	29,612	1,143	8,593
# Days:	10	14	10	10	14	14	14	14	14	14	14
Average:	0	0	0	0	0	0	0	91	2,115	82	614

Date	All Coho										
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/09/99	0	0	0	0	18	0	0	1	0	52	617
04/10/99	---	0	---	---	17	8	0	1	34	92	1,658
04/11/99	---	0	---	---	0	0	0	2	22	250	1,122
04/12/99	0	0	0	0	0	0	0	0	26	111	902
04/13/99	0	0	0	0	0	0	21	4	0	182	673
04/14/99	0	0	0	0	0	0	0	0	56	304	956
04/15/99	0	0	0	0	0	0	0	0	0	221	1,192
04/16/99	0	0	0	0	0	0	0	0	0	229	1,274
04/17/99	---	0	---	---	0	0	0	5	0	62	864
04/18/99	---	0	---	---	0	0	0	3	0	233	961
04/19/99	0	0	0	0	0	0	0	2	0	131	960
04/20/99	0	0	0	2	0	0	36	0	0	323	1,270
04/21/99	0	0	0	2	0	0	0	4	0	1,231	7,578
04/22/99	0	0	0	0	201	0	0	6	0	2,344	1,565
Total:	0	0	0	4	236	8	57	28	138	5,765	21,592
# Days:	10	14	10	10	14	14	14	14	14	14	14
Average:	0	0	0	0	17	1	4	2	10	412	1,542

Definitions for Smolt Index Counts

WTB (Collection) = Salmon River Trap at Whitebird : Collection Counts IMN (Collection) = Imnaha River Trap : Collection Counts
 GRN (Collection) = Grande Ronde River Trap : Collection Counts LEW (Collection) = Snake River Trap at Lewiston : Collection Counts
 LGR (Index) = Lower Granite Dam Bypass Collection System : Passage Index Counts : Passage Index = (Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill) })
 LGS (Index) = Little Goose Bypass Collection System : Passage Index Counts : Passage Index = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill) }
 LMN (Index) = Lower Monumental Dam Bypass Collection System : Passage Index Counts : Passage Index = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill) }

Two-Week Summary of Passage Indices

Hatchery Steelhead

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/09/99	0	0	19	24	4,336	1,351	264	1	541	2,337	691
04/10/99	---	0	---	---	10,480	1,619	434	0	894	2,606	459
04/11/99	---	0	---	---	5,056	2,275	598	1	586	2,060	451
04/12/99	0	1	53	86	7,650	3,365	871	2	663	1,919	756
04/13/99	0	0	33	32	7,332	5,264	1,198	1	436	1,377	936
04/14/99	0	14	16	22	15,888	4,948	1,667	0	817	1,056	584
04/15/99	26	453	20	18	14,024	4,520	1,939	0	792	1,393	636
04/16/99	57	557	26	11	15,348	5,180	2,280	1	1,082	1,192	514
04/17/99	---	838	---	---	9,831	8,940	1,673	10	1,080	629	557
04/18/99	---	175	---	---	6,958	8,686	4,975	2	2,034	1,251	519
04/19/99	89	309	142	63	12,804	10,822	5,210	10	3,032	927	373
04/20/99	47	53	381	233	17,979	12,610	8,097	4	2,501	3,879	609
04/21/99	14	64	713	277	44,685	19,976	8,744	15	2,061	2,546	2,711
04/22/99	47	123	570	185	65,138	19,243	10,817	25	2,697	2,870	956
Total:	280	2,587	1,973	951	237,509	108,799	48,767	72	19,216	26,042	10,752
# Days:	10	14	10	10	14	14	14	14	14	14	14
Average:	28	185	197	95	16,965	7,771	3,483	5	1,373	1,860	768

Wild Steelhead

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/09/99	0	2	1	0	517	581	192	8	200	221	128
04/10/99	---	2	---	---	1,205	941	322	7	378	394	146
04/11/99	---	2	---	---	566	834	202	5	195	390	67
04/12/99	0	4	0	4	524	405	303	2	255	322	109
04/13/99	0	3	2	3	640	798	165	4	764	379	117
04/14/99	0	3	2	3	1,266	597	213	15	366	374	133
04/15/99	2	6	3	0	823	811	236	12	264	77	146
04/16/99	3	8	5	3	769	815	456	3	513	313	164
04/17/99	---	17	---	---	601	662	329	10	499	197	278
04/18/99	---	59	---	---	709	533	508	22	415	540	508
04/19/99	7	78	82	34	1,375	908	222	40	876	745	327
04/20/99	13	12	192	41	4,471	1,122	365	57	790	3,854	635
04/21/99	5	25	126	36	11,479	2,605	898	67	896	6,090	2,225
04/22/99	20	29	63	40	12,264	5,100	1,946	67	1,742	7,111	1,636
Total:	50	250	476	164	37,209	16,712	6,357	319	8,153	21,007	6,619
# Days:	10	14	10	10	14	14	14	14	14	14	14
Average:	5	18	48	16	2,658	1,194	454	23	582	1,501	473

Definitions for Smolt Index Counts.

RIS (Index) = Rock Island Dam Second Powerhouse Bypass Trap : Passage Index Counts : Passage Index = Collection Counts / {Powerhouse 2 Flow / (Powerhouses 1 & 2 Flow + Spill) }

MCN (Index)= McNary Dam Bypass Collection System : Passage Index Counts : Passage Index = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill) }

JDA (Index) = John Day Dam Bypass Collection System : Passage Index Counts : Passage Index = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill) }

BO1 (Index)= Bonneville Dam First Powerhouse Bypass Trap : Passage Index Counts : Passage Index = Collection Counts / {Powerhouse 1 Flow / (Powerhouses 1 & 2 +Flow + Spill)}

Two-Week Summary of Passage Indi-

Hatchery Sockeye											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/09/99	0	0	0	0	0	0	0	4	0	0	0
04/10/99	---	0	---	---	0	0	0	1	0	0	0
04/11/99	---	0	---	---	0	0	0	1	0	0	0
04/12/99	0	0	0	0	0	0	0	5	0	0	0
04/13/99	0	0	0	0	0	0	0	0	0	5	0
04/14/99	0	0	0	0	0	0	0	5	0	0	0
04/15/99	0	0	0	0	0	0	0	5	0	0	0
04/16/99	0	0	0	0	0	0	0	7	0	0	0
04/17/99	---	0	---	---	0	0	0	7	42	0	0
04/18/99	---	0	---	---	0	0	0	10	83	61	11
04/19/99	0	0	0	0	0	0	0	10	0	0	0
04/20/99	0	0	0	0	0	0	0	5	112	0	25
04/21/99	0	0	0	0	0	0	0	23	179	0	0
04/22/99	0	0	0	0	0	0	0	14	56	0	0
Total:	0	0	0	0	0	0	0	97	472	66	36
# Days:	10	14	10	10	14	14	14	14	14	14	14
Average:	0	0	0	0	0	0	0	7	34	5	3

Wild Sockeye											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/09/99	0	0	0	0	71	18	0	0	0	0	11
04/10/99	---	0	---	---	17	73	56	2	0	3	10
04/11/99	---	0	---	---	59	62	65	2	43	30	19
04/12/99	0	0	0	0	31	98	60	0	128	33	0
04/13/99	0	0	0	0	0	484	41	4	108	10	10
04/14/99	0	0	0	0	88	67	58	0	28	28	27
04/15/99	0	0	0	0	72	0	157	0	147	124	13
04/16/99	0	0	0	0	70	95	65	5	321	24	12
04/17/99	---	0	---	---	71	45	127	4	208	160	29
04/18/99	---	0	---	---	34	115	127	10	208	331	0
04/19/99	0	0	0	0	33	74	74	6	404	145	0
04/20/99	0	0	0	0	0	136	109	83	560	51	25
04/21/99	0	0	0	0	273	257	299	154	269	158	0
04/22/99	0	0	0	0	201	216	114	154	955	251	32
Total:	0	0	0	0	1,020	1,740	1,352	424	3,379	1,348	188
# Days:	10	14	10	10	14	14	14	14	14	14	14
Average:	0	0	0	0	73	124	97	30	241	96	13

LEW and WTB data collected for the FPC by Idaho Dept. of Fish and Game.
 JDA and BO1 data collected for the FPC by National Marine Fisheries Service.
 RIS data collected for the FPC by Chelan Co. PUD/Washington Dept. of Fish and Wildlife.
 LGR, LMN, and MCN data collected for the FPC by Washington Dept. of Fish and Wildlife.
 LGS and GRN data collected for the FPC by Oregon Dept. of Fish and Wildlife. IMN data collected for the FPC by the Nez Perce Tribe.

Cumulative Adult Passage at Mainstem Dams Through April 22, 1999

DAM	Spring Chinook						Summer Chinook						Fall Chinook					
	1999		1998		10-Yr Avg.		1999		1998		10-Yr Avg.		1999		1998		10-Yr Avg.	
	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	8,665	103	16,807	35	29,189	197	0	0	0	0	0	0	0	0	0	0	0	0
TDA	2,018	23	8,119	32	11,885	56	0	0	0	0	0	0	0	0	0	0	0	0
JDA	823	6	4,451	12	5,956	44	0	0	0	0	0	0	0	0	0	0	0	0
MCN	171	3	2,516	3	3,305	37	0	0	0	0	0	0	0	0	0	0	0	0
IHR	27	0	1,114	0	1,102	5	0	0	0	0	0	0	0	0	0	0	0	0
LMN	4	0	617	0	743	7	0	0	0	0	0	0	0	0	0	0	0	0
LGS	2	0	381	1	X	X	0	0	0	0	X	X	0	0	0	0	X	X
LWG	0	0	144	0	234	0	0	0	0	0	0	0	0	0	0	0	0	0
PRD	3	0	46	0	157	1	0	0	0	0	0	0	0	0	0	0	0	0
RIS	3	0	10	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0
RRH	2	3	2	0	2	0	---	---	---	---	---	---	---	---	---	---	---	---
WEL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

DAM	Coho						Sockeye			Steelhead				
	1999		1998		10-Yr Avg.		10-Yr			10-Yr			Wild	Wild
	Adult	Jack	Adult	Jack	Adult	Jack	1999	1998	Avg.	1999	1998	Avg.	1999	1998
BON	0	0	0	0	0	0	0	0	0	992	1,195	2,063	167	252
TDA	0	0	0	0	0	0	0	0	0	194	559	1,188	62	152
JDA	0	0	0	0	0	0	0	0	0	2,080	3,805	2,236	465	979
MCN	0	0	0	0	0	0	0	0	0	177	1,108	1,924	45	352
IHR	0	0	0	0	0	0	0	0	583	583	1,561	2,333	205	428
LMN	0	0	0	0	0	0	0	0	0	468	1,395	2,029	73	392
LGS	0	0	0	0	X	X	0	0	X	720	1,813	X	224	531
LWG	0	0	0	0	0	0	0	0	0	2,881	4,068	5,171	443	656
PRD	0	0	0	0	0	0	2	0	0	1	3	9	0	0
RIS	2	0	0	0	0	0	0	0	0	9	8	19	0	0
RRH	6	0	0	0	0	0	0	0	0	12	49	17	0	0
WEL	---	---	---	---	---	---	---	---	---	---	---	---	---	---

* PRD, RIS, RRH are through 04/21/99.

*WEL is not sampling yet.

*Bonneville and Lower Granite were doing video counts only until April 1, 1999. These counts were 8 hour daytime video counts.

*Adult count records at Little Goose Dam have been maintained since 1991, visual counts were not conducted at Little Goose Dam between 1982 and 1990.

*Historic counts (pre-1996) were obtained from CRITFC and compiled by the FPC.

*Historic counts 1997 to present were obtained from the Corps of Engineers.

*NOTE: PRD, RIS, and RRH, are not reporting Wild Steelhead numbers.

*No Video counts at Lower Granite Dam on 3/1/99 and 3/2/99.

Transportation Summary Report
Two-Week Transportation Summary
from 04/09/99 to 04/22/99

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
LOWER GRANITE DAM						
Collected	223,453	120	181,763	170	660	406,166
Bypassed	7,645	0	4,967	0	0	12,612
Trucked	0	0	0	0	0	0
Barged	214,626	120	176,739	170	637	392,292
Total Transported	214,626	120	176,739	170	637	392,292
LITTLE GOOSE DAM						
Collected	205,936	0	90,507	5	1,209	297,657
Bypassed	0	0	0	0	0	0
Trucked	0	0	0	0	0	0
Barged	204,567	0	90,426	5	1,114	296,112
Total Transported	204,567	0	90,426	5	1,114	296,112
LOWER MONUMENTAL DAM						
Collected	152,067	0	45,065	45	1,080	198,257
Bypassed	459	0	210	0	0	669
Trucked	0	0	0	0	0	0
Barged	151,440	0	44,846	45	1,077	197,408
Total Transported	151,440	0	44,846	45	1,077	197,408
MCNARY DAM						
Collected	259,996	21,300	18,782	110	2,510	302,698
Bypassed	259,852	21,291	18,778	110	2,510	302,541
Trucked	0	0	0	0	0	0
Barged	0	0	0	0	0	0
Total Transported	0	0	0	0	0	0
PROJECT TOTALS						
Collected	841,452	21,420	336,117	330	5,459	1,204,778
Bypassed	267,956	21,291	23,955	110	2,510	315,822
Trucked	0	0	0	0	0	0
Barged	570,633	120	312,011	220	2,828	885,812
Total Transported	570,633	120	312,011	220	2,828	885,812

**Transportation Summary Report
Cumulative Transportation Summary
through 04/22/99**

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
LOWER GRANITE DAM						
Collected	258,346	266	210,892	357	2,008	471,869
Bypassed	8,801	0	5,813	1	0	14,615
Trucked	29,736	126	23,030	183	1,219	54,294
Barged	218,246	140	181,880	170	671	401,107
Total Transported	247,982	266	204,910	353	1,890	455,401
LITTLE GOOSE DAM						
Collected	208,038	0	93,036	11	1,357	302,442
Bypassed	0	0	0	0	0	0
Trucked	1,001	0	1,128	5	120	2,254
Barged	205,610	0	91,807	5	1,134	298,556
Total Transported	206,611	0	92,935	10	1,254	300,810
LOWER MONUMENTAL DAM						
Collected	161,468	7	46,563	45	1,199	209,282
Bypassed	510	0	218	0	0	728
Trucked	3,464	6	899	0	28	4,397
Barged	155,874	0	45,200	45	1,106	202,225
Total Transported	159,338	6	46,099	45	1,134	206,622
MCNARY DAM						
Collected	395,165	29,408	66,898	190	2,751	494,412
Bypassed	394,266	29,375	66,886	190	2,751	493,468
Trucked	0	0	0	0	0	0
Barged	0	0	0	0	0	0
Total Transported	0	0	0	0	0	0
PROJECT TOTALS						
Collected	1,023,017	29,681	417,389	603	7,315	1,478,005
Bypassed	403,577	29,375	72,917	191	2,751	508,811
Trucked	34,201	132	25,057	188	1,367	60,945
Barged	579,730	140	318,887	220	2,911	901,888
Total Transported	613,931	272	343,944	408	4,278	962,833