



## Fish Passage Center

# Weekly Report #99 - 26

September 3, 1999

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### SUMMARY OF EVENTS:

**Water Supply:** Water supply and runoff data are unchanged from August 25, 1999. Unseasonably cool weather occurred in the basin during the past week with maximum temperature departures about 10 degree below normal.

**System Storage:** The summer migration season defined by the Biological Opinion ended on August 31. Higher than normal precipitation in the Upper Columbia resulted in reduced drafting of the reservoirs for the summer flow augmentation and higher reservoir elevations at the end of the season than required by Biological Opinion. Federal regulators managed the system during the summer season to meet the minimum summer flow targets at McNary and Lower Granite. The fishery agencies requested that the remaining flow augmentation volumes from the reservoirs be used to refill Grand Coulee reservoir to improve conditions for late fall chinook juvenile migration and for fall chinook spawners in the area of Ives, Hamilton and Pierce islands, below Bonneville Dam. The agencies have requested operation of Grand Coulee and upstream reservoirs for spawning of chinook and chum below Bonneville and to provide for Kokanee collection in Lake Roosevelt. Drafting for flow augmentation as the Biological Opinion reservoir draft limits dictate for the Snake River Basin was not sufficient for maintaining summer flows at minimum required flow targets during the summer on a weekly basis.

- *Hungry Horse* is projected to continue drafting an average of 4.5 kcfs in the coming week. The reservoir was drafted to an elevation of 3554.39 ft at the end of August, instead of an elevation of 3540 ft as required by the Biological Opinion. Current outflows for August 27 through Septem-

ber 2 were in the range of 3.7 kcfs to 4.7 kcfs. BOR is planning to operate the reservoir to IRC defined by State of Montana, to an elevation of 3545 ft by the end of September.

- *Libby* is projected to continue drafting at a rate of 14 kcfs in the coming week. The reservoir was drafted to an elevation of 2455.63 ft by the end of August, instead of an elevation of 2440 ft as required by the Biological Opinion. Current outflows for August 27 through September 2 were decreasing from 18.9 kcfs to 14.7 kcfs.
- *Arrow* reservoir will continue discharges in the range of 52 to 70 kcfs during next week. The average discharge is expected to be about 66 kcfs during next week.
- *Grand Coulee* is projected to be operated for power requirements and Kokanee spawning during coming week. Current outflows are fluctuating from 114.6 kcfs on September 1 to 155 kcfs on August 26. The reservoir was drafted to an elevation of 1286.4 ft by the end of August, instead of 1280 as required at the Biological Opinion.
- *Dworshak* reservoir is still drafting for flow augmentation. The outflow was decreased to 7.8 kcfs on August 30 and it will continue at the same rate through September 5. After that date the outflow is projected to further decrease to 3 kcfs and continue at such rate until an elevation of 1520 ft is reached.
- *Brownlee* will continue to pass inflow in the range of 12.4 kcfs to 13.7 kcfs in the coming week. It is expected that the reservoir will start gradual drafting after the first week of September toward an end of September elevation of about 2037 ft.

A summary of the current elevations on September 2 is given in the following Table:

Reservoir	Actual elev. As of September 2	Max Reservoir pool [ft]
<i>Libby</i>	2455.34	2459
<i>Hungry Horse*</i>	3554.05	3560
<i>Grand Coulee</i>	1286.9	1290
<i>Brownlee*</i>	2045.1	2077
<i>Dworshak</i>	1524.59	1600

\*as of September 1

Upper Snake reservoirs:

Flow augmentation to increase flow at Lower Granite began at the Upper Snake on July 1. BOR delivered its portion of the augmentation water by the end of August. BOR is currently delivering its portion of their irrigation surplus water at a rate of 1.5 kcfs at Milner. This operation will continue through the second week of September. By the first or second week of October, IPCo agreed to deliver its portion of water from American Falls at rate of 1.2 kcfs (not to exceed the hydraulic capacity of the Lower Salmon Falls). The total volume that IPCo will deliver in this period is 45 KAF. This water will be used for power generation at downstream plants, while if released later in the season it would have to be spilled as excess flood control water. Flows will increase to the range of 5 to 6 kcfs for flood control releases during October through January.

The system is currently at 73% of capacity (as of August 31). The major draft for flow augmentation continues to be from American Falls reservoir, currently at 53% of full capacity. Two other major reservoirs in the system, Palisades and Jackson Lake, are at 83% of full capacity and 89% of full capacity. Flows at Milner continue to be in the range of 1.5 kcfs to 1.7 kcfs.

Boise and Payette River Basins:

The Boise River system (Anderson Ranch, Arrowrock and Lucky Peak) is at 70% of capacity as of August 26. The daily average outflow from the Boise River system decreased to 1.2 kcfs. Flow augmentation from this system has finished.

The outflow from the system is expected to increase later during September to the range of 1.3 to 1.4 kcfs as the irrigation demands decrease. Currently the system is at 66% of capacity, as of September 2.

The Payette River system (Cascade and Deadwood) is at 76% of capacity as of September 2. The flow augmentation program is finished. The daily average outflow from the Payette river system decreased to 1 kcfs. The outflow from the system is expected to decrease to 700 cfs through the middle of September, and then to increase to 1 kcfs through the end of September as irrigation demands decrease.

**Streamflow:** The Biological Opinion summer flow targets are: 53.96 kcfs at Lower Granite and 200 kcfs at McNary. Due to the favorable meteorological conditions flow at McNary was maintained at summer flow target levels without full augmentation from the Upper Columbia reservoirs. The summer flow average at McNary was 241.6 kcfs. At the same time, meteorological conditions were not favorable for improving the low base flows in the Snake River during August. Flows at Lower Granite were substantially less than the minimum required by the Biological Opinion for migrating fall chinook during August. Overall, the summer flow target was met on the seasonal basis, but not on a weekly basis, with the summer average of 56 kcfs. The fishery agencies asked federal operating agencies for the gradual decrease in the flows after August 31.

Flows at Lower Granite fluctuated from 33.9 kcfs to 28.9 kcfs during the week of August 26 through September 2. It is anticipated that the flows will be in the range of 28 to 29 kcfs during next week. McNary daily average flows were fluctuating during the past week from 215.7 kcfs on August 27 to 167.3 kcfs on August 29.

The weekly average discharges for the major run-of-river projects for August 20 through August 31 are given in the following Table:

Project	Average Discharge [kofs]	
	August 20-26	August 27-31
<i>Priest Rapids</i>	15.0	154.6
<i>McNary</i>	197.5	188.3
<i>Lower Granite</i>	34.2	29.9
<i>Bonneville</i>	198.0	192.2

**Spill:** The Biological Opinion summer spill program at Ice Harbor, John Day, The Dalles and Bonneville dams ended at midnight on August 31, 1999. Spill continues at McNary Dam due to flows in excess of hydraulic capacity.

The FERC summer fish spill program at the Mid-Columbia projects has also ended.

The waivers for total dissolved gas levels ended on August 31, 1999. With spill terminated it is expected that TDGS will decrease below the water quality standards. No fish with signs of GBT were sampled through the SMP during this past week. The 1999 sampling for GBT has ended.

**Smolt Monitoring.** In the Snake River, subyearling chinook passage indices at Lower Granite and Little Goose dams dropped 8% and 19%, respectively, this week from last week's average. Sampling is still suspended at Lower Monumental Dam due to the high incidence of Columnaris (a bacterial fish disease). At that site the fish are routed directly from the sample tank to the mini-tanker for daily transport to below Bonneville Dam. High incidence of Columnaris was also showing up at Little Goose Dam this week, but sampling continues in order to separate salmonids from the resident fish that predominate in the collections now.

In the mid-Columbia River, sampling ended at Rock Island Dam this week, and subyearling chinook passage indices during the final five days of monitoring were 80% lower than last week. In the lower Columbia River, this week's subyearling chinook passage indices at McNary, John Day, and Bonneville dams decreased 18%, 47%, and 32%, respectively, this week from last week's average.

**Adult Fish Passage:** At Bonneville Dam, numbers of adult fall chinook increased through the week to a peak day of nearly 10,000 on August 30 and then dropped back to 5,700 by the end of the reporting week, September 2. The cumulative count was 71,094, and this total exceeds the 1998 and 10-year average. Numbers of "tule" fall chinook have been increasing during the week with the expected peak of the "tule" chinook run next week. Approximate breakout of "bright" fall chinook and "tule" fall chinook was 59,000 and 12,000, respectively past Bonneville Dam (based on WDFW visual sampling at the dam). At The Dalles Dam, the daily counts of fall chinook ranged between 1,700 and 3,700 with the cumulative total now 33,134. These upriver bright fall chinook have been steadily moving upstream with 14,346 counted at McNary Dam and more than 7,000 counted at Priest Rapids Dam. The turnoff into the Snake River is encouraging with the daily counts close to 140 adult chinook per day for the final 3 days of the reporting week. The cumulative adult fall chinook count at Ice Harbor Dam was 1,043, and that total is about two to three times greater than the 1998 or 10-year average.

Sockeye passage at upstream projects is about ended for the season. Based on the sockeye counts [through August 31] at Rock Island and Rocky Reach dams, it appears that about 78% have continued past Rocky Reach Dam and are destined for Lake Osoyoos (Okanogan R basin). About 22% of the sockeye should be migrating up into the Wenatchee River and Wenatchee Lake basin.

At Lower Granite Dam, the sockeye count remained at 23 with these sockeye mainly comprised of adipose clipped fish (22 of 23) that were approximately 14-18 inches in length. The seventh sockeye arrived at the Sawtooth Weir this week and the hatchery indicated that this last fish might be a female. The first six were assumed to be males. All returning sockeye have been hatchery reared fish.

At Bonneville Dam, steelhead passing the project are considered to be B-Run steelhead based on a calendar date beginning August 26. Generally there is a large overlap of A-Run steelhead in the early part of the run with the larger B-

Run fish numbers increasing in September. The daily counts reduced from 2,900 on 8/27 to 1,700 on 9/2; the cumulative count at Bonneville Dam was 158,610, well above the 1998 count of 106,000 and slightly above the 10-year average count of 156,000. The count of wild steelhead is now 48,626. The percentage of hatchery steelhead in the run has been increasing during the past few weeks with the hatchery percentage now comprising about 80% of the steelhead run.

The steelhead count at Ice Harbor totaled 23,848 with the daily counts ranging between 600 to 1,500 for the reporting week. The Snake River count at Ice Harbor remained greater than double the 1998 total and still exceeds the 10-year average. The steelhead count at Priest Rapids Dam was 3,695 through August 30; however, the high daily count rose to 207 on August 30. The 1999 count was greater than the 1998 count and just over the 10-year average count this week.

Passage of coho salmon at Bonneville Dam increased through the week with daily counts ranging between 38 and 319. The season total was 1,374 through September 2. The early returns at Bonneville are greater than the 1998 and 10-year average for coho salmon.

**Hatchery Releases:** No releases were scheduled for the next two weeks. Numbers of juvenile hatchery fish released either in 1999 or late summer or fall 1998 that were expected to migrate in 1999 can be found in the FPC Web Page under 1999 Hatchery Release Schedule.

**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
08/20/99	141.8	0.1	147.0	0.0	144.4	17.0	154.7	0.0	156.3	20.5	163.5	28.9	167.4	66.7
08/21/99	128.6	0.1	125.2	0.0	128.9	11.6	130.6	0.0	132.6	20.3	130.3	22.7	128.6	51.8
08/22/99	132.6	0.1	128.6	0.0	129.3	12.5	134.1	0.0	133.1	20.4	137.4	23.4	138.4	55.6
08/23/99	146.6	0.1	152.8	0.0	154.8	26.3	156.6	0.0	156.6	16.4	161.3	27.9	160.5	64.5
08/24/99	154.4	0.1	152.1	0.0	153.3	23.4	152.5	3.4	152.1	9.9	160.5	34.2	160.1	64.8
08/25/99	160.9	0.1	160.7	0.0	161.6	18.3	169.5	0.5	170.0	9.9	165.8	33.4	163.7	65.2
08/26/99	155.0	0.1	156.5	0.0	153.5	15.8	157.5	0.0	153.9	9.9	160.5	32.8	159.1	64.8
08/27/99	151.1	0.1	158.5	0.0	156.4	12.7	163.6	0.0	162.6	5.4	172.0	35.4	171.9	68.6
08/28/99	141.2	0.1	133.4	0.0	132.7	0.0	143.6	0.0	144.6	0.0	152.7	31.2	154.5	63.0
08/29/99	127.5	0.1	133.1	0.0	125.9	0.0	132.0	0.0	132.5	0.0	140.0	27.7	140.0	56.4
08/30/99	153.2	0.1	154.2	0.0	151.6	3.7	151.3	0.0	150.8	0.0	142.3	8.7	138.9	56.4
08/31/99	132.6	0.1	140.6	0.0	147.7	0.0	159.3	2.8	159.9	0.0	161.6	1.9	167.6	17.9
09/01/99	114.6	0.1	118.2	0.0	121.7	0.0	126.1	0.0	127.2	0.0	139.4	1.4	143.7	1.7
09/02/99	133.4	0.1	130.1	0.0	125.9	0.0	123.1	0.0	121.0	0.0	118.0	1.4	121.7	1.8

**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
08/20/99	12.6	2.3	13.3	12.1	37.8	0.0	38.0	0.0	39.6	0.0	41.6	34.1		
08/21/99	12.6	2.2	12.4	12.5	37.1	0.0	38.1	0.0	38.2	0.0	42.5	35.1		
08/22/99	12.6	2.2	12.1	15.0	32.0	0.0	32.6	0.0	34.4	0.0	36.4	29.2		
08/23/99	10.0	0.1	13.4	15.3	31.7	0.0	33.1	0.0	33.4	0.0	36.3	29.0		
08/24/99	10.0	0.0	13.0	10.6	35.2	0.0	34.2	0.0	36.2	0.0	37.7	30.9		
08/25/99	10.0	0.0	13.8	11.2	31.5	0.0	30.4	0.0	33.5	0.0	36.6	29.3		
08/26/99	10.1	0.0	12.8	13.6	33.9	0.0	33.5	0.0	34.1	0.0	37.0	29.3		
08/27/99	10.1	0.0	12.7	14.5	31.8	0.0	32.2	0.0	32.2	0.0	34.1	26.9		
08/28/99	10.0	0.0	12.4	9.5	32.2	0.0	33.2	0.0	34.9	0.0	38.6	31.0		
08/29/99	10.0	0.0	12.6	11.8	29.2	0.0	29.3	0.0	29.9	0.0	30.2	22.2		
08/30/99	7.8	0.0	12.8	11.9	28.6	0.0	28.0	0.0	29.4	0.0	31.3	24.3		
08/31/99	7.8	0.0	12.8	11.7	27.6	0.0	27.7	0.0	27.9	0.0	28.0	20.9		
09/01/99	7.8	0.0	13.7	12.7	28.8	0.0	29.0	0.0	32.0	0.0	31.1	0.3		
09/02/99	7.8	0.0	---	---	27.7	0.0	26.5	0.0	25.3	0.0	20.6	0.0		

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

Date	McNary		John Day		The Dalles		Bonneville			
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	PH1	PH2
08/20/99	231.3	75.5	220.9	64.7	214.7	137.8	210.1	89.6	61.6	49.7
08/21/99	195.8	27.0	195.7	56.8	196.3	124.5	224.6	88.9	72.7	53.6
08/22/99	164.6	0.0	169.8	49.2	168.5	107.1	183.4	91.1	40.2	42.9
08/23/99	194.6	30.3	199.1	58.5	192.9	118.7	191.1	89.4	52.5	39.9
08/24/99	195.8	36.2	184.8	55.8	179.2	115.2	194.4	89.7	49.7	45.8
08/25/99	197.0	38.4	191.6	59.2	182.0	116.4	191.0	90.2	54.6	37.0
08/26/99	203.6	38.3	190.3	57.4	190.8	120.6	191.2	90.6	55.2	36.2
08/27/99	215.7	45.0	215.7	62.9	214.3	136.4	231.0	90.3	80.8	50.7
08/28/99	215.4	45.0	214.0	65.7	205.5	130.8	202.7	89.0	65.5	39.0
08/29/99	167.3	7.4	157.5	50.2	159.1	102.3	185.8	89.1	52.7	34.8
08/30/99	157.2	19.5	176.5	56.0	168.4	107.9	161.8	89.1	53.9	9.7
08/31/99	185.9	51.3	185.6	57.1	184.3	116.7	179.9	90.1	60.6	20.0
09/01/99	182.7	47.4	180.9	1.3	181.3	0.0	192.5	1.0	89.0	93.4
09/02/99	168.7	31.6	164.5	0.9	159.8	0.0	173.1	0.0	73.7	90.2

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

### Total Dissolved Gas Saturation Data at Upper Columbia River Sites

Date	<u>Can. Boundary</u>			<u>Grand Coulee</u>			<u>Tlwr G. Coulee</u>			<u>Chief Joseph</u>			<u>Tlwr C. Joseph</u>							
	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#				
	<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>						
8/20	115	115	116	23	115	116	116	23	112	112	113	23	113	113	113	24	112	112	114	24
8/21	114	115	115	24	115	115	116	23	112	112	113	24	112	113	113	24	111	112	113	24
8/22	111	112	113	24	114	114	115	24	112	112	113	24	112	112	112	23	111	112	112	23
8/23	112	113	115	24	115	115	116	24	112	113	113	24	112	113	113	23	112	112	113	21
8/24	113	113	114	24	115	116	116	24	113	113	114	24	113	113	114	23	113	113	114	22
8/25	113	114	114	24	115	116	117	24	113	113	113	24	112	113	113	23	112	113	114	23
8/26	113	113	114	24	116	117	117	24	113	113	113	24	112	112	112	23	111	112	113	23
8/27	113	114	114	24	116	117	117	24	112	113	113	24	113	113	114	24	112	112	114	22
8/28	114	114	114	24	116	117	117	24	113	113	113	24	114	114	114	24	113	114	115	20
8/29	114	114	114	24	117	117	117	24	113	113	115	20	113	114	114	23	113	113	114	22
8/30	113	114	115	24	116	117	117	24	113	113	114	24	113	113	113	23	112	113	114	23
8/31	112	112	113	24	115	115	116	24	112	112	113	24	111	111	112	23	111	111	112	22
9/1	112	113	113	24	114	115	115	24	111	112	112	24	111	111	112	23	111	111	112	23
9/2	112	113	113	24	114	115	115	24	110	111	111	24	111	111	112	23	112	112	113	23

### Total Dissolved Gas Saturation Data at Mid Columbia River Sites

Date	<u>Wells</u>			<u>Rocky Reach</u>			<u>Tlwr Rocky R.</u>			<u>Rock Island</u>			<u>Tlwr Rock Isl</u>							
	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#				
	<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>						
8/20	---	---	---	0	113	113	114	24	114	115	115	23	109	110	111	24	117	117	120	9
8/21	---	---	---	0	112	113	114	24	112	113	114	23	109	109	110	24	---	---	---	0
8/22	---	---	---	0	111	111	112	24	111	111	111	12	108	109	109	24	---	---	---	0
8/23	---	---	---	0	111	111	112	24	111	111	112	22	108	108	108	24	114	114	114	14
8/24	---	---	---	0	112	113	114	24	113	114	116	23	108	108	109	24	114	114	115	24
8/25	---	---	---	0	113	114	114	24	114	115	117	23	109	110	110	24	116	117	117	24
8/26	---	---	---	0	111	112	113	23	111	112	113	22	109	109	110	23	114	115	115	23
8/27	---	---	---	0	111	111	112	23	111	111	112	22	108	108	108	24	112	113	114	24
8/28	---	---	---	0	111	111	112	24	112	113	114	23	108	108	109	24	111	113	114	24
8/29	---	---	---	0	111	111	112	24	112	112	113	22	108	109	109	23	111	112	112	23
8/30	---	---	---	0	108	109	110	23	110	110	111	22	107	108	108	24	109	109	110	24
8/31	---	---	---	0	105	105	107	24	109	109	110	23	105	105	105	24	108	108	109	24
9/1	---	---	---	0	103	104	105	24	108	108	108	23	105	105	105	24	107	107	108	24
9/2	---	---	---	0	104	105	106	24	108	108	108	23	104	104	105	24	106	106	107	9

### Total Dissolved Gas Saturation at Mid Columbia River Sites, and Dworshak

Date	<u>Wanapum</u>			<u>Dwns Wanapum</u>			<u>Priest Rapids</u>			<u>Dwns P Rapids</u>			<u>Dworshak</u>							
	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#				
	<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>			<u>Avg</u>	<u>Avg</u>						
8/20	112	113	114	24	113	114	115	24	113	114	114	24	117	118	119	24	106	106	107	24
8/21	110	110	112	24	112	113	115	24	111	112	113	24	114	115	117	24	105	106	107	24
8/22	111	113	115	24	111	112	114	24	110	111	112	24	114	115	116	24	105	105	105	24
8/23	113	116	117	24	114	115	116	24	114	114	115	24	117	118	119	24	102	103	105	24
8/24	113	114	114	24	115	116	120	24	115	115	116	24	118	118	119	24	102	102	103	24
8/25	111	111	112	24	113	114	115	24	114	115	116	24	117	118	119	24	102	102	103	23
8/26	112	113	114	24	113	114	117	24	113	113	114	24	117	118	119	24	102	102	102	24
8/27	114	115	116	24	115	116	117	24	114	115	116	24	118	119	120	24	---	---	---	0
8/28	114	115	117	24	115	115	117	24	116	117	119	24	119	119	119	24	---	---	---	0
8/29	110	111	112	24	113	113	114	24	113	114	116	24	116	117	117	24	102	102	103	24
8/30	107	107	108	24	107	109	111	24	108	109	110	24	113	113	114	24	102	102	103	23
8/31	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	101	102	102	24
9/1	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	102	102	103	24
9/2	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	102	102	103	24

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

### Total Dissolved Gas Saturation Data at Clearwater and Snake River Sites

Date	<u>Clearwater</u>			<u>Anatone</u>			<u>Snake-Lewiston</u>			<u>Lower Granite</u>			<u>Tlwtr L. Granite</u>							
	<u>24 h</u>	<u>12 h</u>	High	#	<u>24 h</u>	<u>12 h</u>	High	#	<u>24 h</u>	<u>12 h</u>	High	#	<u>24 h</u>	<u>12 h</u>	High	#	<u>24 h</u>	<u>12 h</u>	High	#
	Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg		
8/20	106	106	107	24	103	104	106	23	104	106	107	24	---	---	---	0	---	---	---	0
8/21	105	106	107	24	103	104	105	24	104	105	107	24	105	106	108	24	102	103	103	24
8/22	105	106	107	24	108	111	113	24	104	105	107	24	---	---	---	0	---	---	---	0
8/23	103	104	105	24	112	114	115	24	103	105	106	24	110	112	115	23	104	104	105	24
8/24	103	104	105	24	114	115	115	24	103	105	106	24	109	110	112	18	104	104	105	24
8/25	103	104	105	23	113	114	115	24	103	105	106	23	109	110	111	24	102	103	103	24
8/26	102	102	102	10	114	114	115	10	101	101	103	10	106	107	107	22	102	103	103	22
8/27	---	---	---	0	---	---	---	0	---	---	---	0	110	112	115	24	103	104	104	24
8/28	---	---	---	0	---	---	---	0	---	---	---	0	110	111	112	24	103	103	104	24
8/29	---	---	---	0	---	---	---	0	---	---	---	0	108	109	112	18	103	103	103	22
8/30	103	104	105	23	111	111	112	24	102	102	104	24	103	103	105	24	101	101	102	24
8/31	102	103	104	24	111	112	113	24	101	102	104	24	102	102	104	19	100	101	101	23
9/1	102	103	105	24	112	113	114	24	102	103	104	24	103	104	105	24	101	101	102	24
9/2	102	103	104	24	112	113	114	17	101	102	104	16	102	103	103	23	101	101	102	24

### Total Dissolved Gas Saturation Data at Lower Snake River Sites

Date	<u>Little Goose</u>			<u>Tlwtr L. Goose</u>			<u>L. Monumental</u>			<u>Tlwtr L. Monum</u>			<u>Ice Harbor</u>							
	<u>24 h</u>	<u>12 h</u>	High	#	<u>24 h</u>	<u>12 h</u>	High	#	<u>24 h</u>	<u>12 h</u>	High	#	<u>24 h</u>	<u>12 h</u>	High	#	<u>24 h</u>	<u>12 h</u>	High	#
	Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg		
8/20	104	105	106	24	102	103	103	24	103	104	105	24	101	102	102	24	102	102	103	23
8/21	102	102	104	24	101	102	102	24	102	103	104	24	100	101	101	24	100	101	102	24
8/22	103	105	107	24	102	102	103	24	103	104	106	24	100	101	102	24	101	101	102	24
8/23	106	107	108	24	104	105	113	24	104	105	106	24	101	102	103	24	101	102	103	24
8/24	105	107	110	24	102	103	104	24	103	103	105	10	101	102	102	23	101	102	102	24
8/25	101	101	102	24	101	101	101	24	107	107	110	9	100	101	102	24	101	102	102	24
8/26	104	105	109	24	102	102	103	24	105	105	105	24	101	103	104	24	102	103	103	24
8/27	106	107	108	24	103	103	103	24	106	106	106	23	102	103	104	23	102	102	103	24
8/28	105	106	108	24	102	103	103	24	106	106	106	24	101	102	103	24	102	103	104	24
8/29	104	107	108	24	102	103	103	24	105	105	106	24	101	101	102	24	102	102	104	24
8/30	100	100	101	24	100	100	101	24	105	105	105	24	100	100	100	24	101	102	103	24
8/31	98	99	100	24	99	99	100	24	104	104	104	3	99	99	99	3	100	101	101	24
9/1	100	102	104	24	99	100	100	24	---	---	---	0	---	---	---	0	100	101	102	24
9/2	99	100	101	24	99	100	100	24	104	104	104	24	104	106	109	24	100	100	101	24

### Total Dissolved Gas Saturation Data at Lower Columbia River Sites

Date	<u>Twtr Ice Har.</u>			<u>Pasco</u>			<u>McNary-Oregon</u>			<u>McNary-Wash.</u>			<u>Tlwtr McNary</u>							
	<u>24 h</u>	<u>12 h</u>	High	#	<u>24 h</u>	<u>12 h</u>	High	#	<u>24 h</u>	<u>12 h</u>	High	#	<u>24 h</u>	<u>12 h</u>	High	#	<u>24 h</u>	<u>12 h</u>	High	#
	Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg		
8/20	111	112	114	24	---	---	---	0	112	113	116	20	112	113	114	21	116	116	116	21
8/21	111	113	114	24	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
8/22	109	112	114	24	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
8/23	108	112	112	24	---	---	---	0	109	110	111	24	111	113	115	24	111	112	113	24
8/24	111	113	114	24	---	---	---	0	110	111	113	22	111	111	112	22	114	114	115	22
8/25	110	112	113	24	---	---	---	0	109	109	110	23	109	110	110	23	113	114	114	23
8/26	110	113	113	24	---	---	---	0	109	110	112	24	110	111	112	24	114	114	114	24
8/27	110	112	113	24	---	---	---	0	108	109	111	24	110	112	114	24	114	114	115	24
8/28	109	112	114	24	---	---	---	0	111	113	116	24	113	114	114	24	114	114	115	24
8/29	105	108	112	24	---	---	---	0	111	112	114	24	112	113	114	24	112	112	114	24
8/30	107	111	113	24	---	---	---	0	108	109	110	24	109	110	110	24	111	112	113	24
8/31	109	111	114	24	---	---	---	0	105	105	106	14	106	106	107	14	112	112	113	14
9/1	103	104	114	24	---	---	---	0	105	105	106	24	105	105	106	24	112	113	114	24
9/2	101	101	103	24	---	---	---	0	103	104	105	24	104	105	106	24	110	111	111	24

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

### Total Dissolved Gas Saturation Data at Lower Columbia River Sites

Date	<u>John Day</u>			<u>Twtr John Day</u>			<u>The Dalles</u>			<u>Dnstr T. Dalles</u>			<u>Bonneville</u>							
	<u>24 h</u> Avg	<u>12 h</u> Avg	High	# hr	<u>24 h</u> Avg	<u>12 h</u> Avg	High	# hr	<u>24h</u> Avg	<u>12h</u> Avg	High	# hr	<u>24h</u> Avg	<u>12h</u> Avg	High	# hr				
8/20	105	105	106	24	107	110	112	24	107	110	111	24	115	116	117	24	111	112	112	24
8/21	105	105	106	24	108	109	114	23	106	108	109	24	113	115	116	24	109	110	110	24
8/22	106	107	108	23	107	109	110	24	106	108	113	23	113	114	115	24	110	111	112	23
8/23	107	108	110	23	111	114	118	24	110	113	115	23	115	115	117	24	112	112	114	21
8/24	106	106	107	23	109	111	113	24	108	110	112	23	115	116	117	24	113	113	114	21
8/25	106	106	106	23	110	112	115	23	107	109	111	23	114	115	116	24	111	112	112	23
8/26	107	108	110	23	110	112	114	24	108	111	115	22	114	115	116	20	111	112	113	22
8/27	109	110	111	24	111	113	115	23	110	113	114	23	116	117	118	23	114	115	115	24
8/28	106	106	107	24	109	112	113	23	107	109	110	24	114	116	117	24	114	114	115	23
8/29	105	105	105	23	107	108	111	23	106	107	110	21	113	114	116	24	110	111	111	21
8/30	104	104	104	23	110	113	117	24	105	108	109	23	113	114	114	24	107	107	108	22
8/31	102	103	103	23	107	110	112	24	105	108	111	23	114	115	116	24	106	106	108	22
9/1	103	104	105	23	104	104	106	24	106	109	113	23	107	111	116	24	110	111	113	23
9/2	103	103	104	23	102	103	103	24	102	103	105	23	102	103	107	24	113	114	115	23

### Total Dissolved Gas Saturation Data at Lower Columbia River Sites

Date	<u>Warrendale</u>			<u>Skamania</u>			<u>CamasWash.</u>			# hr		
	<u>24 h</u> Avg	<u>12 h</u> Avg	High	# hr	<u>24 h</u> Avg	<u>12 h</u> Avg	High	# hr	<u>24h</u> Avg		<u>12h</u> Avg	High
8/20	114	115	117	24	115	116	117	24	113	114	116	24
8/21	112	112	113	21	114	115	117	24	112	113	115	24
8/22	114	115	116	23	115	116	117	23	113	115	116	24
8/23	115	115	117	21	117	119	122	23	113	115	116	24
8/24	115	116	118	21	117	118	119	23	114	116	117	24
8/25	114	116	117	22	116	118	121	23	114	115	117	24
8/26	114	115	116	22	117	118	120	23	114	115	118	20
8/27	115	115	117	19	117	119	121	24	115	116	118	24
8/28	115	116	117	19	117	119	120	23	114	116	117	24
8/29	114	115	117	22	115	117	119	23	112	113	113	24
8/30	113	115	118	23	117	119	121	23	110	111	112	24
8/31	112	114	116	23	116	118	121	23	111	113	115	24
9/1	109	110	115	23	110	111	117	23	111	112	114	24
9/2	111	112	112	23	112	112	113	23	108	110	111	24

Note: Data derived from the Army Corps of Engineers and Grant Co. PUD.



## Gas Bubble Trauma Monitoring Results from Representative Sites for Steelhead and Subyearling chinook on the 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
<b>McNary Dam</b>													
	08/23/99	Subyearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	08/26/99	Subyearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	08/30/99	Subyearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
<b>Bonneville Dam</b>													
	08/23/99	Subyearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	08/26/99	Subyearling Chinook	43	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	08/30/99	Subyearling Chinook	52	0	0	0.00%	0.00%	0	0	0	0	0	0.0
<b>Rock Island Dam</b>													
	08/23/99	Subyearling Chinook	100	1	1	1.00%	0.00%	1	0	0	0	0	0.0
	08/26/99	Subyearling Chinook	54	0	0	0.00%	0.00%	0	0	0	0	0	0.0

## Two-Week Summary of Passage Indices

### Yearling Chinook

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	Hatchery			Hatchery/Wild Combined				
				LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
08/20/99	---	---	---	---	0	1	0	0	0	0	0
08/21/99	---	---	---	---	0	2	0	0	0	0	0
08/22/99	---	---	---	---	0	1	0	0	0	0	0
08/23/99	---	---	---	---	0	2	0	0	0	0	0
08/24/99	---	---	---	---	4	0	0	0	0	0	0
08/25/99	---	---	---	---	0	3	0	0	0	0	0
08/26/99	---	---	---	---	4	0	0	0	0	0	0
08/27/99	---	---	---	---	0	1	---	0	0	0	0
08/28/99	---	---	---	---	0	1	---	0	19	0	0
08/29/99	---	---	---	---	0	1	---	0	0	0	0
08/30/99	---	---	---	---	0	0	---	0	0	15	0
08/31/99	---	---	---	---	0	1	---	0	0	0	0
09/01/99	---	---	---	---	0	0	---	---	0	0	0
09/02/99	---	---	---	---	0	1	---	---	0	0	9
<b>Total:</b>	0	0	0	0	8	14	0	0	19	15	9
<b># Days:</b>	0	0	0	0	14	14	7	12	14	14	14
<b>Average:</b>	0	0	0	0	1	1	0	0	1	1	1

### Wild Yearling Chinook

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
08/20/99	---	---	---	---	0	0	0
08/21/99	---	---	---	---	0	0	0
08/22/99	---	---	---	---	0	0	0
08/23/99	---	---	---	---	0	1	0
08/24/99	---	---	---	---	0	0	0
08/25/99	---	---	---	---	0	0	0
08/26/99	---	---	---	---	0	0	0
08/27/99	---	---	---	---	0	0	---
08/28/99	---	---	---	---	0	0	---
08/29/99	---	---	---	---	0	0	---
08/30/99	---	---	---	---	0	0	---
08/31/99	---	---	---	---	0	1	---
09/01/99	---	---	---	---	0	0	---
09/02/99	---	---	---	---	0	0	---
<b>Total:</b>	0	0	0	0	0	2	0
<b># Days:</b>	0	0	0	0	14	14	7
<b>Average:</b>	0	0	0	0	0	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

### Combined Subyearling Chinook

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
08/20/99	---	---	---	---	740	688	524	290	26,388	7,190	796
08/21/99	---	---	---	---	492	385	284	289	21,390	5,990	1,125
08/22/99	---	---	---	---	536	524	368	179	16,425	4,921	797
08/23/99	---	---	---	---	556	316	256	167	8,140	6,498	1,441
08/24/99	---	---	---	---	476	335	224	105	8,794	2,931	1,088
08/25/99	---	---	---	---	316	391	104	108	8,948	1,414	866
08/26/99	---	---	---	---	572	311	105	83	13,908	2,077	580
08/27/99	---	---	---	---	692	354	---	39	19,632	4,340	944
08/28/99	---	---	---	---	488	491	---	14	16,708	3,770	697
08/29/99	---	---	---	---	416	282	---	25	18,033	1,976	375
08/30/99	---	---	---	---	456	259	---	21	8,204	1,876	589
08/31/99	---	---	---	---	380	219	---	73	6,333	1,102	946
09/01/99	---	---	---	---	592	204	---	---	7,130	1,749	659
09/02/99	---	---	---	---	370	580	---	---	9,042	1,744	338
<b>Total:</b>	0	0	0	0	7,082	5,339	1,865	1,393	189,075	47,578	11,241
<b># Days:</b>	0	0	0	0	14	14	7	12	14	14	14
<b>Average:</b>	0	0	0	0	506	381	266	116	13,505	3,398	803

### All Coho

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
08/20/99	---	---	---	---	8	0	0	0	0	0	13
08/21/99	---	---	---	---	4	4	0	0	0	0	0
08/22/99	---	---	---	---	0	2	0	0	0	0	0
08/23/99	---	---	---	---	0	4	0	0	0	0	0
08/24/99	---	---	---	---	0	4	4	0	0	0	0
08/25/99	---	---	---	---	0	5	0	0	0	0	0
08/26/99	---	---	---	---	4	5	0	0	0	0	0
08/27/99	---	---	---	---	0	2	---	0	0	8	0
08/28/99	---	---	---	---	0	3	---	0	0	0	0
08/29/99	---	---	---	---	0	1	---	0	0	0	0
08/30/99	---	---	---	---	0	5	---	0	0	0	0
08/31/99	---	---	---	---	0	3	---	0	0	0	0
09/01/99	---	---	---	---	0	4	---	---	0	0	0
09/02/99	---	---	---	---	0	3	---	---	0	0	0
<b>Total:</b>	0	0	0	0	16	45	4	0	0	8	13
<b># Days:</b>	0	0	0	0	14	14	7	12	14	14	14
<b>Average:</b>	0	0	0	0	1	3	1	0	0	1	1

#### 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)	
08/20/99	---	---	---	---	20	16	12	0	0	0	0	0
08/21/99	---	---	---	---	20	19	0	0	0	0	0	0
08/22/99	---	---	---	---	24	14	0	0	0	0	0	0
08/23/99	---	---	---	---	8	8	8	0	0	0	0	0
08/24/99	---	---	---	---	20	6	0	0	0	0	0	0
08/25/99	---	---	---	---	28	13	0	0	0	0	0	0
08/26/99	---	---	---	---	20	11	4	0	0	0	0	0
08/27/99	---	---	---	---	16	10	---	0	0	0	0	0
08/28/99	---	---	---	---	12	10	---	0	0	0	0	0
08/29/99	---	---	---	---	16	4	---	0	0	0	0	0
08/30/99	---	---	---	---	8	4	---	0	22	0	0	0
08/31/99	---	---	---	---	4	2	---	0	0	0	0	0
09/01/99	---	---	---	---	8	0	---	---	0	0	0	0
09/02/99	---	---	---	---	8	3	---	---	0	0	0	0
<b>Total:</b>	0	0	0	0	212	120	24	0	22	0	0	0
<b># Days:</b>	0	0	0	0	14	14	7	12	14	14	14	14
<b>Average:</b>	0	0	0	0	15	9	3	0	2	0	0	0

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)	
08/20/99	---	---	---	---	4	0	0	0	0	0	0	0
08/21/99	---	---	---	---	0	2	4	0	0	0	0	0
08/22/99	---	---	---	---	0	0	0	1	0	0	0	0
08/23/99	---	---	---	---	0	1	0	0	0	0	0	0
08/24/99	---	---	---	---	0	0	0	1	0	0	0	0
08/25/99	---	---	---	---	0	0	0	0	0	0	0	0
08/26/99	---	---	---	---	0	0	0	2	0	0	0	0
08/27/99	---	---	---	---	0	0	---	3	0	0	0	0
08/28/99	---	---	---	---	4	0	---	0	0	0	0	0
08/29/99	---	---	---	---	4	1	---	0	0	0	0	0
08/30/99	---	---	---	---	0	1	---	0	0	0	0	0
08/31/99	---	---	---	---	0	0	---	0	0	0	0	0
09/01/99	---	---	---	---	8	0	---	---	0	0	0	0
09/02/99	---	---	---	---	0	0	---	---	0	0	0	0
<b>Total:</b>	0	0	0	0	20	5	4	7	0	0	0	0
<b># Days:</b>	0	0	0	0	14	14	7	12	14	14	14	14
<b>Average:</b>	0	0	0	0	1	0	1	1	0	0	0	0

**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 Indices

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)	
08/20/99	---	---	---	---	0	0	0	0	0	0	0	
08/21/99	---	---	---	---	0	0	0	0	0	0	0	
08/22/99	---	---	---	---	0	0	0	0	0	0	0	
08/23/99	---	---	---	---	0	0	0	0	0	0	0	
08/24/99	---	---	---	---	0	0	0	0	0	0	0	
08/25/99	---	---	---	---	0	0	0	0	0	0	0	
08/26/99	---	---	---	---	0	0	0	0	0	0	0	
08/27/99	---	---	---	---	0	0	---	0	0	0	0	
08/28/99	---	---	---	---	0	0	---	0	0	0	0	
08/29/99	---	---	---	---	0	0	---	0	0	0	0	
08/30/99	---	---	---	---	0	0	---	0	0	0	0	
08/31/99	---	---	---	---	0	0	---	0	0	0	0	
09/01/99	---	---	---	---	0	0	---	---	0	0	0	
09/02/99	---	---	---	---	0	0	---	---	0	0	0	
<b>Total:</b>	0	0	0	0	0	0	0	0	0	0	0	
<b># Days:</b>	0	0	0	0	14	14	7	12	14	14	14	
<b>Average:</b>	0	0	0	0	0	0	0	0	0	0	0	

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)	
08/20/99	---	---	---	---	0	1	0	0	0	0	0	
08/21/99	---	---	---	---	0	0	0	0	0	0	0	
08/22/99	---	---	---	---	4	0	0	0	32	0	0	
08/23/99	---	---	---	---	4	1	0	0	20	0	0	
08/24/99	---	---	---	---	0	2	0	0	0	0	0	
08/25/99	---	---	---	---	0	1	0	0	0	0	0	
08/26/99	---	---	---	---	4	0	0	0	0	0	0	
08/27/99	---	---	---	---	4	2	---	0	19	0	0	
08/28/99	---	---	---	---	4	1	---	0	0	0	0	
08/29/99	---	---	---	---	0	1	---	0	18	0	0	
08/30/99	---	---	---	---	0	1	---	0	0	0	0	
08/31/99	---	---	---	---	0	0	---	0	0	0	0	
09/01/99	---	---	---	---	8	0	---	---	0	0	0	
09/02/99	---	---	---	---	1	0	---	---	0	0	0	
<b>Total:</b>	0	0	0	0	29	10	0	0	89	0	0	
<b># Days:</b>	0	0	0	0	14	14	7	12	14	14	14	
<b>Average:</b>	0	0	0	0	2	1	0	0	6	0	0	

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 September 2, 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
<b>BON</b>	38,669	8,691	38,342	775	66,606	2,467	26,169	4,022	21,433	2,678	20,784	2,653	71,094	4,760	62,220	4,139	62,731	4,530
<b>TDA</b>	17,563	6,180	25,225	518	39,635	1,617	21,730	3,207	15,462	1,444	17,039	1,868	33,134	3,766	22,763	1,541	28,142	2,048
<b>JDA</b>	15,409	5,089	21,820	378	31,309	1,325	22,210	2,504	16,246	1,534	15,357	1,707	21,725	1,550	12,122	764	16,231	1,201
<b>MCN</b>	9,260	3,972	19,415	337	30,860	1,525	19,275	2,343	16,226	1,408	16,460	1,733	14,346	862	6,912	604	10,383	971
<b>IHR</b>	5,351	2,657	12,434	130	16,094	620	3,902	1,311	5,473	304	4,420	406	1,043	68	414	56	380	32
<b>LMN</b>	3,924	2,726	10,598	131	15,276	682	3,372	1,344	4,290	301	4,196	434	462	53	191	29	174	15
<b>LGS</b>	3,445	2,690	10,512	118	**	**	3,273	1,583	4,298	334	**	**	225	32	106	20	**	**
<b>LWG</b>	3,296	2,507	9,854	109	13,146	573	3,259	1,584	4,355	328	4,213	426	290	69	85	15	77	6
<b>PRD</b>	4,139	761	4,124	37	9,804	151	20,897	517	13,387	601	13,946	595	7,044	115	1,818	251	2,173	221
<b>RIS</b>	3,309	915	3,187	54	7,271	160	18,588	1,524	11,689	1,165	11,682	933	2,123	233	736	229	986	236
<b>RRH</b>	1,389	233	762	54	1,670	39	10,479	1,098	6,706	326	4,603	383	1,703	1,467	532	74	572	96
<b>WEL</b>	141	199	6	24	902	41	7,335	541	3,237	733	2,825	322	171	149	108	10	94	16

DAM	Coho						Sockeye			Steelhead			
	1999		1998		10-Yr Avg.		1999	1998	10-Yr Avg.	1999	1998	10-Yr Avg.	Wild 1999
	Adult	Jack	Adult	Jack	Adult	Jack							
<b>BON</b>	1,374	214	982	60	1,299	315	17,874	13,218	44,503	158,610	105,988	155,785	48,626
<b>TDA</b>	68	10	11	4	91	46	13,713	8,822	35,467	75,136	27,120	59,214	28,592
<b>JDA</b>	17	2	25	5	55	32	14,803	9,816	36,715	59,732	28,799	37,193	19,038
<b>MCN</b>	8	1	6	0	10	5	11,780	9,389	38,687	37,241	14,557	31,473	8,983
<b>IHR</b>	0	0	0	0	0	0	8	6	7	23,848	9,009	15,943	4,551
<b>LMN</b>	0	0	0	0	0	0	11	1	7	14,530	5,957	12,460	2,618
<b>LGS</b>	0	0	0	0	**	**	16	5	**	9,631	4,137	**	2,300
<b>LWG</b>	0	0	0	0	0	0	14	2	5	11,410	6,217	10,189	2,632
<b>PRD</b>	44	4	15	0	2	0	16,333	10,751	43,375	3,695	1,707	3,607	***
<b>RIS</b>	0	0	0	0	3	0	18,115	9,309	37,780	2,762	1,237	2,884	883
<b>RRH</b>	22	0	0	0	0	0	14,034	5,649	18,728	1,782	1,064	1,855	297
<b>WEL</b>	0	0	0	0	0	0	12,182	4,445	17,520	1,079	532	1,276	159

These numbers were collected from the COE's Running Sums text files.

Wild steelhead numbers are included in the total.

**WEL is through 9/1, LMN, RIS and RRH are through 8/31, LGS and PRD are through 8/30.**

\*WEL - WDFW was trapping Spring Chinook on both fish ladders.

\*\*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.

\*\*\*PRD is not reporting Wild Steelhead numbers.

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

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.

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

**Transportation Summary Report  
Two-Week Transportation Summary  
from 08/20/99 to 09/02/99**

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
<b>LOWER GRANITE DAM</b>						
Collected	8	7,082	232	16	29	7,367
Bypassed	0	20	0	0	0	20
Trucked	6	7,421	238	24	25	7,714
Barged	0	0	0	0	0	0
<b>Total Transported</b>	<b>6</b>	<b>7,421</b>	<b>238</b>	<b>24</b>	<b>25</b>	<b>7,714</b>
<b>LITTLE GOOSE DAM</b>						
Collected	16	5,339	125	45	10	5,535
Bypassed	0	0	0	0	0	0
Trucked	13	5,382	145	46	8	5,594
Barged	0	0	0	0	0	0
<b>Total Transported</b>	<b>13</b>	<b>5,382</b>	<b>145</b>	<b>46</b>	<b>8</b>	<b>5,594</b>
<b>LOWER MONUMENTAL DAM</b>						
Collected	0	1,865	28	4	0	1,897
Bypassed	0	0	0	0	0	0
Trucked	0	2,759	36	4	0	2,799
Barged	0	0	0	0	0	0
<b>Total Transported</b>	<b>0</b>	<b>2,759</b>	<b>36</b>	<b>4</b>	<b>0</b>	<b>2,799</b>
<b>M McNARY DAM</b>						
Collected	15	149,700	20	0	80	149,815
Bypassed	0	0	0	0	0	0
Trucked	15	142,283	18	0	80	142,396
Barged	0	0	0	0	0	0
<b>Total Transported</b>	<b>15</b>	<b>142,283</b>	<b>18</b>	<b>0</b>	<b>80</b>	<b>142,396</b>
<b>PROJECT TOTALS</b>						
Collected	39	163,986	405	65	119	164,614
Bypassed	0	20	0	0	0	20
Trucked	34	157,845	437	74	113	158,503
Barged	0	0	0	0	0	0
<b>Total Transported</b>	<b>34</b>	<b>157,845</b>	<b>437</b>	<b>74</b>	<b>113</b>	<b>158,503</b>

**Transportation Summary Report  
Cumulative Transportation Summary  
through 09/02/99**

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
<b>LOWER GRANITE DAM</b>						
Collected	2,173,467	236,523	3,355,093	78,540	17,613	5,861,236
Bypassed	115,918	83	266,363	14,608	1,640	398,612
Trucked	32,278	140,042	34,576	1,423	1,520	209,839
Barged	2,011,776	94,052	3,053,028	62,315	14,012	5,235,183
<b>Total Transported</b>	<b>2,044,054</b>	<b>234,094</b>	<b>3,087,604</b>	<b>63,738</b>	<b>15,532</b>	<b>5,445,022</b>
<b>LITTLE GOOSE DAM</b>						
Collected	3,532,363	193,061	3,135,585	117,390	21,040	6,999,439
Bypassed	19,783	0	158,018	4,195	299	182,295
Trucked	8,526	110,474	4,283	1,036	606	124,925
Barged	3,481,142	77,971	2,969,994	111,937	18,954	6,659,998
<b>Total Transported</b>	<b>3,489,668</b>	<b>188,445</b>	<b>2,974,277</b>	<b>112,973</b>	<b>19,560</b>	<b>6,784,923</b>
<b>LOWER MONUMENTAL DAM</b>						
Collected	1,892,443	131,043	1,978,771	51,163	12,870	4,066,290
Bypassed	148,537	1	251,013	7,795	596	407,942
Trucked	5,482	97,084	2,234	128	214	105,142
Barged	1,736,425	33,327	1,724,869	43,237	12,032	3,549,890
<b>Total Transported</b>	<b>1,741,907</b>	<b>130,411</b>	<b>1,727,103</b>	<b>43,365</b>	<b>12,246</b>	<b>3,655,032</b>
<b>MCNARY DAM</b>						
Collected	2,104,592	4,152,449	537,674	140,758	782,884	7,718,357
Bypassed	2,098,392	801,225	532,579	137,083	781,069	4,350,348
Trucked	251	713,773	963	38	386	715,411
Barged	3,490	2,589,486	3,896	3,544	836	2,601,252
<b>Total Transported</b>	<b>3,741</b>	<b>3,303,259</b>	<b>4,859</b>	<b>3,582</b>	<b>1,222</b>	<b>3,316,663</b>
<b>PROJECT TOTALS</b>						
Collected	9,702,865	4,713,076	9,007,123	387,851	834,407	24,645,322
Bypassed	2,382,630	801,309	1,207,973	163,681	783,604	5,339,197
Trucked	46,537	1,061,373	42,056	2,625	2,726	1,155,317
Barged	7,232,833	2,794,836	7,751,787	221,033	45,834	18,046,323
<b>Total Transported</b>	<b>7,279,370</b>	<b>3,856,209</b>	<b>7,793,843</b>	<b>223,658</b>	<b>48,560</b>	<b>19,201,640</b>