Fish Passage Center

Weekly Report #99 - 14

June 11, 1999

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SUMMARY OF EVENTS:

Water Supply: Temperature departures of 9 to 16 degrees Fahrenheit below normal during last week resulted in yet another recession of the snowmelt. It is forecasted that warming temperatures during next week will lead to minor rises in flows across basins where snowpack is still prevalent.

Precipitation above Grand Coulee was 107% of normal, the Snake River above Ice Harbor was 254% of normal and the Columbia above The Dalles was 151% of normal for the period of June 1-8. The subbasins with the highest precipitation were Upper Snake with 354%, Owyhee/Malheur with 236% of normal and Clearwater with 213%. The lowest precipitation was at Central Washington with 21% and Upper Deschutes/Crooked with 27%.

The new June 99 Final Runoff Volume Forecast was issued. Changes are in the range of -3% to +4% compared to the May Final. The January-July forecast for the Columbia River above The Dalles is 123 MAF, or 116% of average and is 1% lower than in the May Final. The runoff volume forecast for Brownlee reservoir increased 4% and for Dworshak it decreased 3% compared to the May Final. The summary of the May Final and June Final Runoff Volume Forecasts is given in the following Table:

Location	Period	May 99 Final		June 99 Final	
		MAF	%	MAF	%
Libby	Apr-Sep	7.16	106	**7.17**	**106**
Hungry Horse	Apr-Sep	2.31	106	**2.24**	**103**
Grand Coulee	Jan-Jul	72.4	114	**72.2**	**114**
The Dalles	Jan-Jul	124	117	**123.0**	**116**
LowerGranite	Jan-Jul	35.8	120	**35.7**	**120**
Dworshak	Apr-Jul	3.2	119	**3.13**	**116**
Brownlee	Apr-Jul	7.32	126	**7.51**	**130**

System Storage: The major system reservoirs continue refilling toward the end of June Biological Opinion required full pool elevations.

- *Hungry Horse* is operated to the Integrated Rule Curves defined by the State of Montana. The reservoir is projected to be full by July 11, instead of June 30 as required by Biological Opinion. This operation will decrease flows during first two weeks of July at McNary. The actual daily average outflows continue to be in the range of 1.8-3.6 kcfs during working days and 200 cfs during weekends. The reservoir is currently operated to prevent floods below Columbia Falls.
- *Libby* continues to refill with a minimum daily average outflow of 4 kcfs. The Sturgeon pulse is expected to commence on Monday, June 14. The daily average outflows will gradually increase to 12 kcfs on June 14, 22 kcfs on June 15, and keep at 25 kcfs on June 16-17. The reservoir is projected to be 5 ft from full by the end of July, impacting summer flows at McNary.
- *Arrow* reservoir is holding its daily average outflow to 22-24 kcfs. There is a requested daily average outflow of 30 kcfs below Arrow for protecting trout redds. Because of the higher Kootenai River inflows below Arrow Dam, the trout redds have been protected due to the upstream backwater effect of the Kootenai River. The reservoir is operated under US-Canada Treaty Agreement.
- *Grand Coulee* reservoir continues refilling toward an end of June full pool elevation. Daily average inflows were in the range of 191 kcfs-224.8 kcfs during the week of June 4-10. Daily average outflows were in the range of 140.6-176.2 kcfs during the same period, providing daily minimum average outflows at Priest Rapids of 150 kcfs during last week.
- *Dworshak* reservoir continues to refill with minimum daily average outflows of 1.3 kcfs-

1.4 kcfs since May 20. The latest projection of the SSARR shows the reservoir will not refill at all in 1999. The highest projected elevation is 1584 ft at the end of the second week of July before summer flow augmentation begins. Deep drafting of the reservoir for flood control during March resulted in a failure of the reservoir to refill by June 30 or July 31, impacting flows at Lower Granite during the July through August period. Projected flows at Lower Granite during the whole month of August and the last two weeks of July will be lower than BiOp required minimum flow target of 53.96 kcfs in spite flow augmentation from Dworshak reservoir.

- *Brownlee* reservoir was in refill during June 4-10 period. Daily average inflows increased significantly during the last week because of the snowmelt and increased precipitation at Mid and Upper Snake basins. Daily average outflows at Hells Canyon Dam were in the range of 31-39 kcfs during last week. The reservoir is projected to be full by June 30.

A summary of the current elevations on June 10 is given in the following Table:

Reservoir	Actual elev. As of June 10	Max Reservoir pool [ft]
Libby	2406.22	2459
Hungry Horse	3527.53	3560
Grand Coulee	1255.80	1290
Brownlee	2057.70*	2077
Dworshak	1535.50	1600

**as of June 9*

Upper Snake reservoirs:

As of June 10, American Falls is full, Palisades is at 61% of full and Jackson Lake is 83% of full capacity. All major reservoirs have been refilled because of intense precipitation in the region and decreased irrigation withdrawals, which resulted in higher flows at Minidoka of 23.3 kcfs. The resulting daily average flows downstream of Milner are 16.7 kcfs. The system is at 85% of capacity.

Boise and Payette River Basins:

Both systems are operated for flood control, but are also refilling because of high precipitation in the basin. The Boise River system (Anderson Ranch, Arrowrock and Lucky Peak) is at 90% of capacity. The daily average outflow from Boise River system is 2.8 kcfs (as of June 10).

The Payette River system (Cascade, Deadwood) is at 90% of capacity. The daily average outflow from Payette river system is 8.2 kcfs (as of June 10).

Streamflow:

Biological Opinion spring flow targets based on the May Final Runoff Volume Forecast are: 100 kcfs at Lower Granite, and 260 kcfs at McNary. Daily average flows at Lower Granite were gradually decreasing (to 118.3 kcfs), after peaking (174.3 kcfs) on June 2, during the past week. It is expected that daily average flows will increase to 145 kcfs on June 12 during the coming week due to increased precipitation in the Upper and Mid Snake basin. McNary daily average flows were fluctuating during the past week, from 323 kcfs on June 10 to 369.4 kcfs on June 5. Daily average flows at Priest Rapids were fluctuating in the range of 193.8 kcfs to 220.2 kcfs in the period of June 4-10. The total range of daily and hourly fluctuations is presented in the following Table:

Date	Average Daily Flow at Priest Rapids [kcfs]	Hourly fluctuations [kcfs]
June 4	208.2	160.5-238.7
June 5	220.2	189.2-261.3
June 6	191.3	179.1-200.9
June 7	207.1	196.4-231.4
June 8	202.9	161.8-229.4
June 9	217.9	194.7-251.9
June 10	193.8	164.3-220.3

The average daily discharge for the major run-of river projects for May 28-June 10 period are given in the following Table:

Project	Average Discharge [kcfs]	
	May 28-June 3	June 4-10
Priest Rapids	175.0	205.9
McNary	345.1	345.9
Lower Granite	167.0	139.3
Bonneville	367.2	365.5

Spill: Outflow from Dworshak Dam continued at project minimum with no spill. The Biological Opinion spill program continues to be implemented at the lower Snake projects. The flows have receded somewhat in the Snake and, consequently, spill volumes have decreased.

The FERC spill program continues at the Mid Columbia projects.

Biological Opinion spill levels continue at the lower Columbia projects. Spill continues at levels above hydraulic capacity at McNary, John Day and Bonneville dams. The spill at The Dalles continues at research levels.

The receding flows in the Snake River have resulted in decreasing levels of total dissolved gas. Levels are at, or near, the TDGS waiver levels of 115% in the forebay and 120% in the tailrace. Total dissolved gas levels remain well above the waiver limits in the McNary tailrace, but closer to the waiver at the other projects. Spill tests have been conducted at Chief Joseph Dam over the past week explaining the high tailrace measurements of TDGS. Monitoring for signs of gas bubble trauma (GBT) on fish collected through the Smolt Monitoring Program showed decreasing numbers of fish with signs of GBT over the past week. The Lower River projects will begin sampling subyearling chinook for signs of GBT as numbers of yearling chinook and steelhead begin to decrease at these projects. The Snake River projects will continue GBT sampling as long as it is possible to collect sufficient numbers of

Smolt Monitoring. Passage indices of spring migrants steadily decreased this week throughout the basin. Of the spring migrants, hatchery steelhead were the most numerous at the Snake River dams with passage indices not yet dropping below 3,500 fish per day. Yearling chinook, coho, sockeye, and wild steelhead passage indices at Snake River dams were well below that level during most of this week. For spring migrants in the mid-Columbia River, coho were the most numerous in the Rock Island Dam collections with passage indices not yet dropping below 500 fish per day. Yearling chinook, wild steelhead, and hatchery steelhead passage indices at Rock Island Dam remained below 250 fish per day and those of total sockeye dropped below 30 fish per day the last four days of this week. For spring migrants in the lower Columbia River, coho were also the most numerous in the McNary Dam collections followed by fairly equal presence of yearling chinook and hatchery steelhead. McNary Dam's fish collection/bypass facility was placed in the primary bypass to allow mid-season inspection and maintenance the last two days of this week, resulting in no smolt passage indices for those days. The last two days of this week saw a large drop in passage indices at John Day Dam for all spring migrants. During this time, coho remained the most numerous fish in the John Day Dam collections, followed by a fairly equal presence of yearling chinook and hatchery steelhead. For spring migrants collected at Bonneville Dam this week, coho were the most numerous, followed by hatchery steelhead, yearling chinook, wild steelhead, wild sockeye, and hatchery sockeye.

As the spring migration is now winding down, the summer migration of subyearling fall chinook in the Snake River drainage and subyearling fall chinook in the lower Columbia River drainage is well underway. For both the Snake and Columbia River drainage this year, we will be reporting only a "combined" subyearling chinook passage index because most hatchery subyearling chinook released in 1999 are not adipose clipped to distinguish them from their wild fish counterparts. Over 600,000 unclipped hatchery subyearling fall chinook were released in the Clearwater and Snake rivers between June 1 and 5, and the first of these fish were beginning to arrive at Lower Granite Dam on June 8. By June 9 the number of subyearling chinook in the collection at Lower Granite Dam had exceed the total of all spring migrants present.

In the mid-Columbia River, relatively few subyearling chinook were being collected at Rock Island Dam this week. This will change once the hatchery releases of subyearling summer/fall chinook are made in the upcoming weeks.

Passage indices of subyearling chinook have been steadily rising in the lower Columbia River this week. For the five days of sampling this

week at McNary Dam, subyearling chinook numbers have been greater in the collection than the total of all spring migrants present. Subyearling chinook have also been the most numerous fish in the collections at John Day and Bonneville dams during the last two days of this week.

Adult Fish Passage: Summer chinook counts began June 1 at Bonneville Dam. Through June 10, the project counted 2,365 adult summer chinook past the project, with daily counts ranging between 172-283. The summer chinook count is greater than the 1998 count but less than the 10-year average. Passage of summer chinook at Bonneville was fairly level through the week, but will likely increase during the next few weeks as more Columbia River summer chinook begin the migration. As noted in last week's report, the early segment of the summer run is generally comprised of upper Snake River summer chinook. The Dalles, John Day, and McNary began counting summer chinook during the week with respective totals of 1,004, 699, and 195.

The final adult spring chinook count at The Dalles Dam was 17,563, at John Day Dam was 14,670, and at McNary Dam 9,258. These totals were less than the 1998 passage counts or the 10-year averages for these projects. Through June 10, a total of 5,167 adult spring chinook were counted at the lower Snake River dam (Ice Harbor) with 2,427 adult spring chinook counted at Lower Granite Dam. In the Mid-Columbia River, 4,037 adult spring chinook have been counted at Priest Rapids Dam, with 3,031 passing Rock Island Dam and 1,236 continuing past Rocky Reach Dam through June 8.

As points of interest, 1778 adult and 254 jack spring chinook (Wild origin) have been counted at Prosser Dam in the Yakama River through June 3. This information was provided by Joel Hubble of the Yakama Tribe.

At Lower Granite Dam, most adult chinook sampled through the week were reported in good condition with less than 2.0% (5 of 357) displaying either an abrasion or lesion on the head area. This information was provided by NMFS.

Adult sockeye counts are increasing at Bonneville and upstream projects. The count at Bonneville was 122 through June 10 and was greater than the1998 count but only 1/3 the 10-yr average.

Hatchery Releases: During the past two weeks, approximately 9.5 million anadromous salmon were released from hatcheries, acclimation ponds, or were directly planted into streams. For the upcoming two weeks, about 13.3 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 will be released into streams above Bonneville Dam for the 1999 Migration Year. Basically, all spring migrants, i.e., yearling spring, summer, and fall chinook, coho and steelhead have been released from the hatcheries in each River Reach. Releases of subyearling bright fall chinook will be made during the next two weeks with mid-June to late-June being the peak time for releasing these fish. Subyearling summer chinook will be released in the Mid-Columbia in June.

Lower Columbia River (above Bonneville Dam to McNary Dam) –Subyearling fall chinook will be released during this month in the Klickitat (2.3 million on 6/2, & 6/3 with 1.9 million scheduled for late June), Little White Salmon (2.1 million on 6/24), and Umatilla (1.7 million completed June 3) rivers.

Mid-Columbia River - Approximately 2 million subyearling fall chinook were released volitionally from the Prosser Acclimation Ponds located in the Yakama River by the Yakama Tribe. About 6.5 million subyearling chinook will be released during the upcoming two weeks from Priest Rapids Hatchery with summer chinook from Wells and Turtle Rock hatcheries scheduled for release during the upcoming two weeks.

Snake River – Approximately 670,000 subyearling fall chinook were released in June from Big Canyon (Clearwater drainage) and CPT John (Snake River) acclimation facilities, with another 200,000 scheduled for release into the Snake River from Lyons Ferry Hatchery on June 15.

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

	Grand Coulee		Chief Joseph		Wells		Rocky Reach		Rock Island		Wanapum		Priest Rapids	
Date	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
05/28/99	121.8	0.0	132.9	0.0	149.8	12.6	152.4	0.0	164.6	32.8	161.3	24.5	171.2	128.7
05/29/99	99.8	0.0	103.6	0.0	140.8	13.0	149.7	0.0	162.9	35.8	165.5	24.9	179.4	134.3
05/30/99	115.7	0.0	123.1	0.0	142.5	12.1	144.1	0.0	153.7	35.8	148.2	22.4	156.5	118.1
05/31/99	132.8	0.0	122.8	0.0	146.3	12.5	149.2	0.0	161.9	35.9	148.3	22.6	162.1	122.0
06/01/99	143.6	0.0	149.7	0.0	167.7	12.6	164.2	1.3	173.1	35.9	165.9	24.8	176.4	132.3
06/02/99	135.1	0.0	142.7	0.0	172.2	13.8	173.2	1.0	189.0	35.8	178.8	26.9	189.0	141.9
06/03/99	165.2	0.0	152.7	0.0	170.3	15.5	171.6	3.8	179.0	35.8	173.8	27.9	190.4	143.3
06/04/99	176.2	0.0	179.0	1.4	203.9	38.6	202.0	44.0	207.4	38.6	200.1	61.2	208.2	165.1
06/05/99	140.6	0.0	143.4	0.0	176.8	30.4	187.5	22.6	200.5	40.2	195.3	62.4	220.2	168.9
06/06/99	159.3	0.0	160.0	17.7	180.4	14.0	180.7	7.6	189.4	40.9	181.3	46.4	191.3	142.7
06/07/99	151.3	0.0	157.9	16.2	186.6	33.4	189.3	20.5	197.4	40.7	190.6	38.8	207.1	156.9
06/08/99	145.9	0.0	151.0	0.0	188.1	39.2	185.4	14.8	192.8	40.6	188.5	38.7	202.9	153.9
06/09/99	165.6	0.0	158.8	17.3	186.3	36.3	190.5	22.8	199.6	40.4	198.0	42.6	217.9	165.3
06/10/99	170.2	0.0	170.4	23.6	191.6	28.8	187.6	19.6	190.3	18.9	183.8	38.2	193.8	146.1

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

	Dworshak		Brownle	Hells Canyor	Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
Date	Flow	Spill	Inflow	Outflov	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
05/28/99	1.5	0.0	43.7	14.8	161.4	58.8	153.9	39.5	150.7	35.8	162.1	91.1
05/29/99	1.5	0.0	39.6	30.3	157.8	57.9	149.8	37.5	156.9	35.1	160.0	82.0
05/30/99	1.5	0.0	41.6	41.3	172.1	71.6	164.1	49.9	172.5	49.8	174.3	92.2
05/31/99	1.4	0.0	40.9	47.0	172.7	68.7	162.8	47.1	172.7	50.8	175.7	95.6
06/01/99	1.4	0.0	43.9	45.9	169.2	65.6	160.4	43.7	168.5	45.3	171.2	89.2
06/02/99	1.5	0.0	40.0	38.1	174.3	70.4	165.5	46.3	176.6	53.2	178.6	102.2
06/03/99	1.4	0.0	42.9	26.6	161.7	60.3	155.5	42.0	164.4	43.2	168.6	94.3
06/04/99	1.4	0.0	44.5	31.1	152.5	59.0	148.1	39.3	154.0	37.6	156.2	95.9
06/05/99	1.3	0.0	46.4	31.1	151.7	56.4	143.1	37.1	149.2	37.5	153.8	84.3
06/06/99	1.3	0.0	47.5	31.1	146.5	51.0	139.1	29.5	145.1	28.6	148.6	75.3
06/07/99	1.3	0.0	49.3	39.5	138.3	44.5	131.5	21.9	138.1	18.6	141.3	70.3
06/08/99	1.4	0.0	46.1	39.8	137.7	59.5	132.5	24.7	139.0	20.8	142.4	70.2
06/09/99	1.4	0.0	44.6	36.4	129.8	42.8	125.1	33.5	129.7	24.9	131.4	74.0
06/10/99	1.4	0.0	---	---	118.3	36.7	113.9	20.2	120.8	15.2	124.8	68.0

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

	McNary		John Day		The Dalles		Bonneville			
Date	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	PH1	PH2
05/28/99	352.8	183.2	381.8	112.2	376.1	190.0	384.3	156.1	84.4	134.7
05/29/99	333.7	167.2	369.2	102.5	362.1	210.0	371.3	143.1	85.1	133.9
05/30/99	328.6	175.0	368.0	99.0	364.7	206.0	362.2	132.3	86.1	134.6
05/31/99	344.4	189.6	348.8	102.7	333.6	118.0	352.3	123.8	85.8	133.5
06/01/99	336.4	169.0	353.9	119.0	346.2	104.0	355.6	131.7	84.3	130.4
06/02/99	360.7	193.4	376.9	112.5	355.5	108.0	365.6	138.9	85.4	132.1
06/03/99	359.3	191.0	376.9	116.8	365.0	197.0	378.8	155.8	82.3	131.5
06/04/99	351.2	181.0	379.0	119.6	379.3	210.0	382.6	154.9	84.2	134.3
06/05/99	369.4	200.7	371.1	117.6	365.5	203.0	372.1	146.6	83.5	132.8
06/06/99	349.8	179.9	391.3	116.1	373.9	210.0	382.4	154.3	84.7	134.2
06/07/99	338.9	169.8	344.4	83.8	342.4	121.5	352.4	131.0	81.5	130.8
06/08/99	332.9	169.3	352.8	87.5	337.9	102.9	363.8	140.2	80.7	133.7
06/09/99	355.8	190.1	361.8	102.1	365.6	189.1	351.0	128.5	81.7	131.6
06/10/99	323.0	153.1	352.2	88.2	338.8	209.0	354.4	130.7	80.8	133.7

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

	Can. Boundary				Grand Coulee				Tlwtr G. Coulee				Chief Joseph				Tlwtr C. Joseph				Wells			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
5/28	---	---	---	0	113	114	114	24	110	111	111	24	111	112	112	23	113	114	114	23	---	---	---	0
5/29	---	---	---	0	112	112	113	24	110	110	111	24	111	112	112	23	112	113	113	23	---	---	---	0
5/30	---	---	---	0	111	112	112	22	109	110	110	20	111	111	112	23	111	112	113	23	---	---	---	0
5/31	---	---	---	0	112	113	113	24	110	111	111	24	111	112	112	23	113	113	114	23	---	---	---	0
6/1	---	---	---	0	112	113	113	24	110	111	111	24	111	112	112	23	112	113	114	23	---	---	---	0
6/2	---	---	---	0	112	112	112	24	110	110	110	24	110	110	110	23	111	112	112	23	---	---	---	0
6/3	123	123	124	7	112	113	113	24	110	111	111	24	111	111	111	23	111	111	112	23	---	---	---	0
6/4	122	122	123	24	112	113	113	24	111	111	112	24	111	111	111	23	111	112	112	23	---	---	---	0
6/5	123	123	123	24	113	113	114	24	111	112	112	20	110	111	111	23	112	112	112	23	---	---	---	0
6/6	122	123	123	24	113	113	113	24	110	111	111	24	109	110	110	23	117	124	138	23	---	---	---	0
6/7	122	123	124	24	112	113	113	24	111	111	111	24	110	110	110	23	117	123	135	23	---	---	---	0
6/8	122	122	123	24	113	113	114	24	111	111	112	24	110	110	111	23	111	111	112	23	110	110	111	9
6/9	121	121	122	24	113	114	114	24	111	112	112	20	110	110	111	23	118	124	135	23	---	---	---	0
6/10	122	122	123	24	116	118	---	24	112	112	113	24	111	111	112	23	121	129	137	23	111	111	114	11

note: Monitor for Canadian Boundry was malfunctioning prior to June 3.

Total Dissolved Gas Saturation Data at Mid Columbia River Sites

	Rocky Reach				Tlwtr. Rocky R.				Rock Island				Tlwtr Rock Is.				Wanapum				Dnstrm Wanapum			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
5/28	111	111	112	24	112	112	112	22	109	109	110	24	117	118	118	23	114	114	116	24	116	117	117	24
5/29	111	111	111	24	111	112	112	24	109	109	110	24	118	118	119	23	112	113	114	24	115	115	116	24
5/30	109	110	111	24	111	112	112	24	108	109	110	24	118	118	119	24	111	112	112	24	115	115	115	24
5/31	110	111	112	24	112	112	112	24	109	110	110	23	118	119	119	23	111	111	111	24	114	114	115	24
6/1	110	110	111	24	111	112	112	24	110	110	110	24	118	119	120	24	111	111	111	24	114	114	115	24
6/2	110	110	111	24	111	111	113	24	108	109	110	24	116	116	116	23	111	111	112	24	114	114	115	24
6/3	110	110	111	24	111	112	115	24	109	110	110	24	117	117	117	24	111	111	112	24	114	115	117	24
6/4	110	110	111	24	113	114	121	24	110	111	112	24	118	119	119	22	110	111	111	24	118	120	123	24
6/5	111	111	114	24	114	116	119	24	112	113	114	24	120	121	123	24	111	111	111	24	119	120	121	24
6/6	113	115	116	24	114	118	119	24	110	111	112	24	119	121	122	23	111	112	113	24	117	118	118	24
6/7	109	109	110	23	111	112	118	22	108	109	110	23	117	117	118	22	113	114	115	24	117	118	120	24
6/8	112	114	116	22	114	116	120	22	109	110	110	22	118	119	121	22	113	113	114	24	117	118	120	24
6/9	113	113	114	22	116	117	120	22	111	112	113	24	121	121	122	24	112	113	114	24	116	117	117	24
6/10	114	115	116	24	116	118	121	23	113	115	117	24	119	120	121	22	---	---	---	0	---	---	---	0

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

	Priest Rapids				Dwnstr P. Rapids				Dworshak				Clearwater				Anatone				Snake-Lewiston			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
5/28	114	115	115	24	118	119	119	24	106	107	108	24	104	105	106	24	109	110	110	24	104	104	105	24
5/29	112	113	114	24	119	119	119	24	106	107	108	24	104	105	106	24	109	110	111	24	103	104	105	24
5/30	112	113	113	24	119	119	119	24	106	107	108	24	104	105	105	24	110	110	111	24	103	103	104	24
5/31	111	111	112	24	119	119	119	24	107	108	109	24	104	104	104	24	111	112	112	24	103	103	103	24
6/1	110	110	111	24	119	120	120	24	109	111	112	24	104	105	106	24	110	111	111	24	103	104	105	24
6/2	109	110	111	24	119	120	120	24	105	105	105	24	103	103	104	24	109	109	109	24	101	102	103	24
6/3	112	113	114	24	120	120	120	24	105	105	106	15	103	103	103	15	109	109	110	24	100	101	101	24
6/4	112	114	116	24	121	121	122	24	---	---	---	0	---	---	---	0	109	110	110	24	102	103	104	24
6/5	113	115	116	24	121	122	123	24	---	---	---	0	---	---	---	0	109	109	110	24	101	102	102	24
6/6	112	113	114	24	120	120	120	24	---	---	---	0	---	---	---	0	108	109	109	24	101	101	102	24
6/7	114	115	115	24	120	121	121	24	109	111	112	24	104	105	105	24	108	109	109	24	101	102	103	24
6/8	115	115	116	24	121	121	121	24	108	109	111	24	102	102	103	18	108	108	109	24	101	102	102	24
6/9	114	114	116	24	121	122	122	24	107	108	109	24	---	---	---	0	109	109	110	24	102	103	104	24
6/10	---	---	---	0	---	---	---	0	109	110	111	24	---	---	---	0	108	109	110	24	103	104	105	24

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

Total Dissolved Gas Saturation Data at Snake River Sites

	Lower Granite				Tlwtr L. Granite				Little Goose				Tlwtr L. Goose				Lower Mon.				Tlwtr L. Mon			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
5/28	109	110	111	24	120	121	122	24	124	124	125	24	120	120	122	21	125	126	127	24	123	126	129	24
5/29	109	109	109	24	120	122	122	24	120	121	123	24	118	119	120	15	122	122	122	24	122	124	127	24
5/30	108	108	110	24	123	125	125	24	117	117	118	24	120	122	123	24	120	120	121	24	125	127	131	24
5/31	108	109	109	24	122	123	124	24	119	120	121	24	121	121	123	15	121	123	124	24	126	129	131	24
6/1	109	109	109	24	122	122	123	24	118	119	120	24	---	---	---	0	120	121	122	24	125	126	128	24
6/2	108	108	109	24	122	123	124	24	117	117	117	24	---	---	---	0	119	119	120	24	126	127	128	24
6/3	107	108	109	24	121	122	122	24	119	120	121	24	119	120	120	23	120	120	121	24	125	126	127	24
6/4	107	108	108	24	121	122	122	24	119	120	120	24	119	119	120	15	119	120	120	24	124	124	126	24
6/5	108	108	108	24	120	122	123	24	117	118	118	24	118	118	119	16	118	119	120	24	123	125	127	24
6/6	106	107	107	24	117	121	122	24	115	115	116	24	117	117	118	3	116	116	117	24	120	122	123	24
6/7	107	107	109	24	117	121	121	24	115	116	117	24	115	116	117	16	116	117	117	24	118	121	123	24
6/8	106	106	107	14	119	120	125	14	114	116	117	24	115	116	117	15	116	117	117	24	118	120	121	24
6/9	---	---	---	0	---	---	---	0	114	116	118	24	118	118	121	14	115	116	116	24	119	122	124	24
6/10	106	106	107	10	115	115	121	10	120	121	121	24	118	118	119	13	118	119	120	24	119	120	121	24

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

	Ice Harbor				Tlwtr Ice Harbor				Pasco				McNary-Oregon				McNary-Wash				Tlwtr McNary			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
5/28	125	126	127	24	122	123	124	24	---	---	---	0	121	124	126	24	119	121	122	24	125	126	126	24
5/29	123	124	124	24	121	123	124	24	---	---	---	0	119	121	123	24	118	119	120	24	124	124	125	24
5/30	120	120	121	24	122	123	124	24	---	---	---	0	118	119	120	24	116	117	119	24	124	124	124	24
5/31	120	121	121	24	122	124	126	24	---	---	---	0	116	117	118	24	115	116	117	24	125	126	127	23
6/1	120	120	121	24	122	123	123	24	---	---	---	0	114	115	116	24	112	112	114	24	123	124	124	24
6/2	118	119	119	24	123	124	125	24	---	---	---	0	113	113	114	23	110	111	112	24	125	125	125	23
6/3	120	120	121	24	122	123	123	24	---	---	---	0	115	116	119	19	113	114	115	24	125	125	125	24
6/4	119	120	120	24	122	122	124	24	---	---	---	0	116	117	118	24	114	114	115	24	125	125	125	24
6/5	118	118	119	24	120	122	123	24	---	---	---	0	114	115	116	24	112	113	114	24	125	127	130	24
6/6	116	116	116	24	119	121	122	24	---	---	---	0	111	112	112	24	110	110	111	24	123	124	124	24
6/7	115	116	116	24	118	121	122	24	---	---	---	0	112	113	115	24	111	112	113	24	123	124	124	24
6/8	115	116	116	24	118	120	121	24	---	---	---	0	113	114	115	24	112	112	112	24	123	123	124	23
6/9	115	115	115	24	118	119	120	24	---	---	---	0	114	115	118	17	113	114	115	23	124	125	125	23
6/10	116	116	117	24	117	119	120	24	---	---	---	0	114	116	117	20	114	115	116	20	123	124	125	20

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

	John Day				Tlwtr John Day				The Dalles				Dnstr T. Dalles				Bonneville				Warrendale			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
5/28	112	113	114	23	122	123	123	24	111	112	112	23	117	118	118	24	114	115	116	23	120	120	121	23
5/29	116	116	117	23	123	123	124	24	112	113	114	23	118	119	120	24	114	114	114	23	118	119	119	23
5/30	118	118	118	22	122	123	123	23	113	114	115	23	119	120	121	24	114	115	116	23	118	119	119	23
5/31	117	118	118	22	121	122	122	24	113	113	114	23	118	119	121	24	115	115	116	23	119	119	119	23
6/1	114	115	116	21	121	122	123	24	112	112	113	23	115	116	118	24	113	114	115	23	118	119	119	23
6/2	111	111	112	20	122	122	123	24	111	111	112	23	115	116	116	24	113	113	114	23	119	119	120	23
6/3	109	109	110	22	121	121	121	24	110	110	111	23	118	118	119	24	112	112	113	23	119	119	120	23
6/4	109	109	110	16	121	121	121	24	108	109	109	23	117	118	119	24	111	111	112	23	117	118	118	23
6/5	113	113	125	8	121	121	122	24	110	111	111	23	118	118	119	24	113	113	114	23	118	118	120	23
6/6	109	110	111	23	121	121	121	24	110	110	111	23	118	118	119	24	115	115	116	23	120	120	121	23
6/7	108	109	109	22	119	121	122	24	110	110	111	23	115	116	118	24	116	116	116	23	120	121	121	23
6/8	109	109	111	18	120	121	122	21	108	109	109	23	113	114	115	24	113	114	116	23	119	120	121	23
6/9	110	111	112	23	122	123	126	23	109	110	111	19	117	120	122	24	112	112	113	23	117	118	118	23
6/10	112	112	112	23	121	123	124	24	110	111	112	23	120	120	121	24	115	116	117	23	120	121	121	23

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

	Skamainia				Camas\Wash.			
	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr
5/28	117	118	119	23	118	118	119	24
5/29	115	116	116	23	117	117	118	24
5/30	115	116	117	23	116	117	117	24
5/31	116	116	117	23	117	117	118	24
6/1	115	116	116	23	116	116	117	24
6/2	114	114	114	23	116	117	118	24
6/3	114	115	115	22	116	117	118	24
6/4	113	114	114	23	115	116	116	24
6/5	114	115	115	23	115	116	116	24
6/6	116	117	117	23	117	117	118	24
6/7	116	117	117	23	118	119	119	24
6/8	115	116	117	23	117	118	118	20
6/9	113	114	114	23	---	---	---	0
6/10	116	119	120	23	117	118	119	20

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: Rank 1	Rank 2	Rank 3	Rank 4	Fish with L. Line GBT: Num Fish	Avg. Rank
Lower Granite Dam													
	06/07/99	Yearling Chinook	46	1	1	2.17%	0.00%	0	1	0	0	0	0.0
	06/07/99	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	1.0
Little Goose Dam													
	06/02/99	Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/02/99	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	1.0
	06/09/99	Yearling Chinook	82	1	0	0.00%	0.00%	0	0	0	0	1	1.0
	06/09/99	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	1.0
Lower Monumental Dam													
	06/07/99	Yearling Chinook	22	1	1	4.54%	0.00%	0	1	0	0	0	0.0
	06/07/99	Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	2.0
Ice Harbor Dam													
	06/01/99	Yearling Chinook	56	1	1	1.78%	0.00%	0	1	0	0	0	0.0
	06/01/99	Steelhead	100	7	2	2.00%	0.00%	0	2	0	0	5	1.0
	06/04/99	Yearling Chinook	20	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/04/99	Steelhead	73	2	0	0.00%	0.00%	0	0	0	0	2	1.0
	06/08/99	Yearling Chinook	23	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/08/99	Steelhead	27	0	0	0.00%	0.00%	0	0	0	0	0	0.0
McNary Dam													
	06/03/99	Yearling Chinook	100	4	1	1.00%	0.00%	0	1	0	0	3	1.0
	06/03/99	Steelhead	87	5	2	2.29%	0.00%	0	2	0	0	4	1.0
	06/07/99	Sub-Year Chinook	100	1	0	0.00%	0.00%	0	0	0	0	1	1.0
	06/07/99	Steelhead	27	1	0	0.00%	0.00%	0	0	0	0	1	1.0
	06/10/99	Sub-Year Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
Bonneville Dam													
	06/03/99	Yearling Chinook	92	2	0	0.00%	0.00%	0	0	0	0	2	1.5
	06/03/99	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/07/99	Yearling Chinook	54	2	1	1.85%	0.00%	0	0	1	0	1	1.0
	06/07/99	Steelhead	68	1	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/10/99	Sub-Year Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0
	06/10/99	Steelhead	31	0	0	0.00%	0.00%	0	0	0	0	0	0.0
Rock Island Dam													
	06/03/99	Yearling Chinook	100	7	7	7.00%	0.00%	0	5	2	0	1	1.0
	06/03/99	Steelhead	86	4	0	0.00%	0.00%	0	0	0	0	4	1.0
	06/07/99	Yearling Chinook	100	2	2	2.00%	0.00%	0	1	1	0	0	0.0
	06/07/99	Steelhead	100	3	0	0.00%	0.00%	0	0	0	0	3	1.0
	06/10/99	Yearling Chinook	44	2	2	4.54%	0.00%	0	2	0	0	0	0.0
	06/10/99	Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0.0

Hatchery Release Summary

For the Last Two Weeks

From 5/28/99 to 6/10/99

Hatchery	Species	...Migration Year	Number Released	...Release Dates... Begin	..End	Release Site	River Name
			Nez Perce Tribe				
Lyons Ferry	FA Chinook	1999	300,000	6/3/99	6/3/99	Big Canyon (Clearwater R)	Clearwater Rvr M F
	FA Chinook	1999	300,000	6/8/99	6/15/99	Cpt John Acclim Pd	Snake River
		Agency Total:	**600,000**				
			ODFW				
Big Canyon	SU Steelhead	1999	100,000	5/19/99	6/2/99	Big Canyon H	Grande Ronde River
		Agency Total:	**100,000**				
			Umatilla Tribe				
Imeques	FA Chinook	1999	1,682,000	6/2/99	6/3/99	Imeques Acclim Pd	Umatilla River
		Agency Total:	**1,682,000**				
			WDFW				
Klickitat	FA Chinook	1999	4,300,000	6/2/99	6/30/99	Klickitat H	Klickitat River
Wells	SU Steelhead	1999	216,700	4/15/99	5/31/99	Methow R	Methow River
	SU Steelhead	1999	105,000	4/20/99	5/31/99	Chewuch R	Methow River
	SU Steelhead	1999	148,000	4/20/99	6/5/99	Winthrop H	Methow River
	SU Steelhead	1999	105,000	5/1/99	5/31/99	Twisp R	Methow River
		Agency Total:	**4,874,700**				
			Yakima Tribe				
Clark Flat	SP Chinook	1999	231,220	3/18/99	6/1/99	Clark Flat Acclim Pd	Yakama River
Easton Pond	SP Chinook	1999	156,718	3/18/99	6/1/99	Easton Pd	Yakama River
Leavenworth	Coho	1999	419,000	4/28/99	5/30/99	Leavenworth H	Wenatchee River
Prosser	FA Chinook	1999	1,690,000	5/24/99	6/4/99	Prosser Acclim Pd	Yakama River
	FA Chinook	1999	79,000	5/25/99	6/4/99	Prosser Acclim Pd	Yakama River
		Agency Total:	**2,575,938**				
		Total Release:	**9,832,638**				

Hatchery Release Summary

For the Next Two Weeks

From 6/4/99 to 6/17/99

Hatchery	Species	...Migration Year	Number Released	...Release Dates... Begin	End	Release Site	River Name
			USFWS				
L White Salmon	FA Chinook	1999	2,100,000	6/24/99	6/24/99	Little White Salmon H	Little White Salmon River
		Agency Total:	**2,100,000**				
			WDFW				
Lyons Ferry	FA Chinook	1999	200,000	6/15/99	6/15/99	Lyons Ferry H	Snake River
Priest Rapids	FA Chinook	1999	6,544,000	6/14/99	6/23/99	Priest Rapids H	Mid-Columbia River
Ringold	FA Chinook	1999	3,500,000	6/23/99	6/30/99	Ringold Springs H	Mid-Columbia River
Turtle Rock	SU Chinook	1999	300,000	6/16/99	6/20/99	Turtle Rock H	Mid-Columbia River
	SU Chinook	1999	305,000	6/22/99	6/26/99	Turtle Rock H	Mid-Columbia River
Wells	SU Chinook	1999	390,000	6/14/99	6/30/99	Wells H	Mid-Columbia River
		Agency Total:	**11,239,000**				
		Total Release:	**13,339,000**				

Two-Week Summary of Passage Indices

Yearling Chinook

	Hatchery							Hatchery/Wild Combined			
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
05/28/99	---	---	0	---	9,834	27,789	34,623	362	32,873	27,119	13,070
05/29/99	---	---	---	---	3,939	21,403	15,059	328	68,898	26,723	15,743
05/30/99	---	---	---	---	3,200	13,580	12,275	405	80,639	27,470	10,168
05/31/99	---	---	0	---	2,814	11,057	7,807	322	38,904	21,719	15,875
06/01/99	---	---	0	---	1,613	6,066	3,625	306	22,612	18,798	7,705
06/02/99	---	2	0	---	2,225	5,261	1,837	291	11,321	15,767	4,820
06/03/99	---	1	0	---	1,911	3,110	2,375	196	8,757	22,308	4,356
06/04/99	---	---	---	---	1,844	5,910	266	215	9,000	13,847	4,878
06/05/99	---	1	---	---	2,091	2,418	557	233	9,221	25,520	3,520
06/06/99	---	---	---	---	2,084	2,358	1,125	125	6,267	31,834	2,159
06/07/99	---	1	---	---	2,194	1,396	1,310	186	8,778	17,072	2,780
06/08/99	---	0	---	---	3,354	1,458	649	106	7,221	21,571	2,549
06/09/99	---	0	---	---	1,285	1,525	645	130	---	3,349	1,004
06/10/99	---	0	---	---	522	1,259	1,027	78	---	4,409	958
Total:	0	5	0	0	38,910	104,590	83,180	3,283	304,491	277,506	89,585
# Days:	0	7	5	0	14	14	14	14	12	14	14
Average:	0	1	0	0	2,779	7,471	5,941	235	25,374	19,822	6,399

Wild Yearling Chinook

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
05/28/99	---	---	8	---	12,163	11,481	8,387
05/29/99	---	---	---	---	5,357	13,404	8,605
05/30/99	---	---	---	---	5,200	11,381	5,433
05/31/99	---	---	4	---	4,520	11,765	4,071
06/01/99	---	---	8	---	2,607	4,453	3,491
06/02/99	---	10	4	---	4,532	6,834	3,533
06/03/99	---	6	2	---	4,238	2,683	2,375
06/04/99	---	---	---	---	2,645	8,169	1,596
06/05/99	---	5	---	---	3,110	4,015	1,670
06/06/99	---	---	---	---	3,142	1,965	2,250
06/07/99	---	19	---	---	5,839	2,373	1,244
06/08/99	---	16	---	---	8,112	3,526	788
06/09/99	---	17	---	---	2,809	2,463	834
06/10/99	---	8	---	---	1,690	2,372	1,952
Total:	0	81	26	0	65,964	86,884	46,229
# Days:	0	7	5	0	14	14	14
Average:	0	12	5	0	4,712	6,206	3,302

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)
05/28/99	---	---	0	---	0	0	0	110	18,744	1,068	622
05/29/99	---	---	---	---	0	0	0	106	19,331	3,296	1,447
05/30/99	---	---	---	---	0	0	0	109	26,508	6,439	1,722
05/31/99	---	---	0	---	0	0	0	91	25,815	6,388	2,439
06/01/99	---	---	0	---	83	0	134	46	30,646	4,303	2,404
06/02/99	---	0	0	---	0	0	0	75	30,081	5,814	3,819
06/03/99	---	0	0	---	499	0	140	79	71,820	9,110	2,156
06/04/99	---	---	---	---	0	24	0	72	90,024	6,922	5,499
06/05/99	---	0	---	---	28	68	40	79	54,496	15,180	8,910
06/06/99	---	---	---	---	128	0	26	80	50,381	26,065	11,324
06/07/99	---	0	---	---	0	0	95	32	65,285	28,388	11,415
06/08/99	---	0	---	---	12,797	0	0	62	84,000	50,932	25,881
06/09/99	---	0	---	---	22,766	32	0	31	---	13,815	18,136
06/10/99	---	0	---	---	17,553	269	34	30	---	29,860	19,282
Total:	0	0	0	0	53,854	393	469	1,002	567,131	207,580	115,056
# Days:	0	7	5	0	14	14	14	14	12	14	14
Average:	0	0	0	0	3,847	28	34	72	47,261	14,827	8,218

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)
05/28/99	---	---	0	---	13,716	11,226	8,172	1,661	14,676	9,977	16,004
05/29/99	---	---	---	---	4,096	10,435	4,694	1,165	31,045	20,710	10,637
05/30/99	---	---	---	---	2,720	11,466	5,031	1,069	20,505	18,770	8,282
05/31/99	---	---	0	---	4,520	10,286	3,266	831	13,695	21,506	11,077
06/01/99	---	---	0	---	3,061	9,966	6,176	948	12,170	15,627	10,417
06/02/99	---	0	0	---	2,307	8,022	3,533	1,159	4,031	19,444	9,014
06/03/99	---	0	0	---	1,745	6,327	3,911	1,072	7,334	24,781	7,320
06/04/99	---	---	---	---	2,244	3,993	1,064	1,105	15,272	19,378	8,337
06/05/99	---	0	---	---	1,927	3,632	954	1,300	14,114	31,240	7,519
06/06/99	---	---	---	---	2,116	2,351	997	937	8,592	18,160	5,155
06/07/99	---	0	---	---	2,142	1,614	662	821	7,717	19,256	4,591
06/08/99	---	0	---	---	2,383	1,173	696	618	14,729	16,179	6,987
06/09/99	---	0	---	---	1,941	825	872	524	---	7,535	2,636
06/10/99	---	0	---	---	771	1,213	753	535	---	7,816	2,682
Total:	0	0	0	0	45,689	82,529	40,781	13,745	163,880	250,379	110,658
# Days:	0	7	5	0	14	14	14	14	12	14	14
Average:	0	0	0	0	3,264	5,895	2,913	982	13,657	17,884	7,904

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)
05/28/99	---	---	54	---	69,872	156,248	164,942	1,930	15,325	19,120	4,090
05/29/99	---	---	---	---	40,648	95,229	83,704	1,316	96,851	17,527	3,744
05/30/99	---	---	---	---	35,039	69,644	35,417	908	63,782	39,664	3,690
05/31/99	---	---	30	---	37,947	51,139	29,374	598	47,147	47,270	5,678
06/01/99	---	---	29	---	15,104	25,531	31,284	553	30,637	35,104	6,040
06/02/99	---	73	63	---	31,556	28,881	17,663	355	16,747	40,227	9,327
06/03/99	---	61	40	---	22,936	13,555	13,410	300	7,772	40,880	12,530
06/04/99	---	---	---	---	13,947	17,363	5,852	271	7,309	29,926	6,652
06/05/99	---	29	---	---	22,158	14,594	6,480	260	8,132	24,200	3,781
06/06/99	---	---	---	---	17,251	14,418	6,059	167	3,127	35,893	3,040
06/07/99	---	156	---	---	12,823	11,945	5,027	151	2,087	18,660	2,569
06/08/99	---	150	---	---	11,450	6,845	4,174	166	2,150	15,779	3,603
06/09/99	---	247	---	---	5,885	4,502	4,495	124	---	4,814	2,008
06/10/99	---	121	---	---	3,555	5,032	5,069	32	---	3,407	1,468
Total:	0	837	216	0	340,171	514,926	412,950	7,131	301,066	372,471	68,220
# Days:	0	7	5	0	14	14	14	14	12	14	14
Average:	0	120	43	0	24,298	36,780	29,496	509	25,089	26,605	4,873

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)
05/28/99	---	---	18	---	14,233	16,729	9,032	1,184	4,560	12,976	2,667
05/29/99	---	---	---	---	8,823	12,640	5,867	914	9,895	13,688	2,383
05/30/99	---	---	---	---	7,120	11,671	3,622	517	8,910	17,400	1,558
05/31/99	---	---	9	---	5,628	6,340	4,181	307	5,839	13,415	1,400
06/01/99	---	---	9	---	3,840	7,265	3,222	262	1,962	12,683	1,109
06/02/99	---	11	12	---	5,685	4,838	2,261	195	1,395	8,442	1,565
06/03/99	---	15	2	---	4,654	1,848	1,117	183	876	11,796	1,123
06/04/99	---	---	---	---	2,244	2,438	1,729	117	1,761	8,400	1,064
06/05/99	---	13	---	---	5,422	2,810	835	123	920	9,240	608
06/06/99	---	---	---	---	2,758	1,408	614	114	1,344	9,828	837
06/07/99	---	19	---	---	2,192	1,541	668	107	208	5,955	379
06/08/99	---	16	---	---	2,059	901	371	77	409	4,194	1,230
06/09/99	---	32	---	---	1,135	856	588	105	---	1,884	251
06/10/99	---	12	---	---	547	1,166	531	108	---	802	511
Total:	0	118	50	0	66,340	72,451	34,638	4,313	38,079	130,703	16,685
# Days:	0	7	5	0	14	14	14	14	12	14	14
Average:	0	17	10	0	4,739	5,175	2,474	308	3,173	9,336	1,192

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)
05/28/99	---	---	0	---	2,070	886	430	75	460	519	178
05/29/99	---	---	---	---	2,836	2,228	196	96	2,319	275	255
05/30/99	---	---	---	---	1,760	1,663	805	94	2,695	822	164
05/31/99	---	---	0	---	1,791	1,790	445	43	2,696	639	0
06/01/99	---	---	0	---	1,075	647	806	51	1,521	1,132	62
06/02/99	---	0	0	---	1,318	855	707	61	2,015	1,769	250
06/03/99	---	0	0	---	748	353	419	29	1,204	714	180
06/04/99	---	---	---	---	160	357	399	59	650	1,531	577
06/05/99	---	0	---	---	165	414	318	64	1,227	2,860	217
06/06/99	---	---	---	---	96	268	332	51	670	1,709	132
06/07/99	---	0	---	---	280	474	142	25	938	993	126
06/08/99	---	0	---	---	99	214	93	21	401	599	264
06/09/99	---	0	---	---	210	222	209	21	---	628	126
06/10/99	---	0	---	---	124	101	171	16	---	200	0
Total:	0	0	0	0	12,732	10,472	5,472	706	16,796	14,390	2,531
# Days:	0	7	5	0	14	14	14	14	12	14	14
Average:	0	0	0	0	909	748	391	50	1,400	1,028	181

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)
05/28/99	---	---	0	---	518	242	215	105	46,143	10,556	3,645
05/29/99	---	---	---	---	315	426	196	93	13,334	11,827	4,340
05/30/99	---	---	---	---	80	424	604	100	17,407	8,906	2,296
05/31/99	---	---	0	---	256	473	148	42	12,133	6,814	2,079
06/01/99	---	---	0	---	165	223	134	20	8,475	7,700	1,479
06/02/99	---	0	0	---	0	196	0	28	4,033	5,492	1,440
06/03/99	---	0	0	---	0	193	279	11	5,695	3,806	763
06/04/99	---	---	---	---	0	183	0	0	4,658	3,913	798
06/05/99	---	0	---	---	54	211	199	5	6,289	3,740	565
06/06/99	---	---	---	---	64	142	102	4	3,241	5,982	485
06/07/99	---	0	---	---	153	197	47	4	3,860	3,176	295
06/08/99	---	0	---	---	49	34	70	0	1,905	1,997	659
06/09/99	---	0	---	---	90	37	19	2	---	1,047	251
06/10/99	---	0	---	---	75	136	34	0	---	601	128
Total:	0	0	0	0	1,819	3,117	2,047	414	127,173	75,557	19,223
# Days:	0	7	5	0	14	14	14	14	12	14	14
Average:	0	0	0	0	130	223	146	30	10,598	5,397	1,373

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 June 10, 1999

	Spring Chinook						Summer Chinook						Fall Chinook					
	1999		1998		10-Yr Avg.		1999		1998		10-Yr Avg.		1999		1998		10-Yr Avg.	
DAM	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	38,574	8,691	38,342	775	66,606	2,467	2,365	665	3,311	250	3,627	258	0	0	0	0	0	0
TDA	17,563	6,155	25,225	518	39,635	1,617	1,004	308	1,503	83	1,864	118	0	0	0	0	0	0
JDA	14,670	4,942	21,820	378	31,309	1,325	699	217	1,398	48	1,149	65	0	0	0	0	0	0
MCN	9,258	3,961	19,415	337	30,860	1,525	195	77	546	17	541	38	0	0	0	0	0	0
IHR	5,167	2,614	12,249	125	15,893	610	0	0	0	0	0	0	0	0	0	0	0	0
LMN	3,275	2,485	9,940	111	14,220	637	0	0	0	0	0	0	0	0	0	0	0	0
LGS	2,765	2,388	9,576	92	**	**	0	0	0	0	**	**	0	0	0	0	**	**
LWG	2,427	2,027	8,491	78	11,714	495	0	0	0	0	0	0	0	0	0	0	0	0
PRD	4,037	717	3,983	33	9,544	143	0	0	0	0	0	0	0	0	0	0	0	0
RIS	3,031	725	2,893	42	6,686	130	0	0	0	0	0	0	0	0	0	0	0	0
RRH	1,236	162	670	41	1,487	28	0	0	0	0	0	0	0	0	0	0	0	0
WEL	*0	*3	1	22	733	28	0	0	0	0	0	0	0	0	0	0	0	0

	Coho						Sockeye			Steelhead			
	1999		1998		10-Yr Avg.				10-Yr			10-Yr	Wild
DAM	Adult	Jack	Adult	Jack	Adult	Jack	1999	1998	Avg.	1999	1998	Avg.	1999
BON	0	0	0	0	0	0	122	83	385	3,230	4,061	6,488	442
TDA	0	0	0	0	0	0	52	32	167	801	1,424	2,286	109
JDA	0	0	0	0	0	0	5	13	85	3,744	5,738	3,455	1004
MCN	0	1	0	0	0	0	2	4	40	665	1,839	2,847	125
IHR	0	0	0	0	0	0	0	0	0	810	1,807	2,800	305
LMN	0	0	0	0	0	0	0	0	0	595	1,583	2,460	119
LGS	0	0	0	0	**	**	0	0	**	923	2,043	**	312
LWG	0	0	0	0	0	0	0	0	0	3,037	4,343	5,664	542
PRD	0	0	0	0	0	0	7	1	60	38	25	78	0
RIS	0	0	0	0	0	0	5	4	8	11	39	121	32
RRH	0	0	0	0	0	0	7	1	3	33	93	80	26
WEL	0	0	0	0	0	0	0	0	0	7	8	33	7

NOTE: Last week's 10-Yr Avg. for LGR was corrected upward. SP Chinook 10,670 and 422 - Steelhead 5661.

LMN, RIS, RRH are through 6/8 - LWG, LGS and PRD are through 6/9.

*WEL - WDFW is trapping Spring Chinook on both fish ladders, so data not available at present.

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 is 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 05/28/99 to 06/10/99

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
LOWER GRANITE DAM						
Collected	64,558	33,880	247,628	27,704	8,866	382,636
Bypassed	13,455	0	50,412	7,971	1,522	73,360
Trucked	0	0	0	0	0	0
Barged	49,417	22,038	194,507	19,114	7,083	292,159
Total Transported	**49,417**	**22,038**	**194,507**	**19,114**	**7,083**	**292,159**
LITTLE GOOSE DAM						
Collected	138,677	292	422,709	59,734	9,918	631,330
Bypassed	0	0	0	0	0	0
Trucked	0	0	0	0	0	0
Barged	133,679	92	417,443	58,680	9,358	619,252
Total Transported	**133,679**	**92**	**417,443**	**58,680**	**9,358**	**619,252**
LOWER MONUMENTAL DAM						
Collected	94,752	400	326,055	29,960	5,590	456,757
Bypassed	122	0	208	0	0	330
Trucked	0	0	0	0	0	0
Barged	91,958	369	321,407	29,314	5,407	448,455
Total Transported	**91,958**	**369**	**321,407**	**29,314**	**5,407**	**448,455**
MCNARY DAM						
Collected	143,487	267,500	160,097	77,345	66,582	715,011
Bypassed	143,038	267,149	160,031	77,318	66,418	713,954
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	441,474	302,072	1,156,489	194,743	90,956	2,185,734
Bypassed	156,615	267,149	210,651	85,289	67,940	787,644
Trucked	0	0	0	0	0	0
Barged	275,054	22,499	933,357	107,108	21,848	1,359,866
Total Transported	**275,054**	**22,499**	**933,357**	**107,108**	**21,848**	**1,359,866**

Transportation Summary Report
Cumulative Transportation Summary
through 06/10/99

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
LOWER GRANITE DAM						
Collected	2,147,904	35,196	3,275,370	73,311	16,624	5,548,405
Bypassed	115,402	0	264,984	14,608	1,640	396,634
Trucked	29,736	126	23,030	183	1,219	54,294
Barged	1,988,030	23,228	2,983,863	57,838	13,231	5,066,190
Total Transported	**2,017,766**	**23,354**	**3,006,893**	**58,021**	**14,450**	**5,120,484**
LITTLE GOOSE DAM						
Collected	3,489,634	442	3,082,915	112,413	19,472	6,704,876
Bypassed	19,783	0	158,018	4,195	299	182,295
Trucked	1,001	0	1,128	5	120	2,254
Barged	3,443,817	242	2,916,299	107,124	17,748	6,485,230
Total Transported	**3,444,818**	**242**	**2,917,427**	**107,129**	**17,868**	**6,487,484**
LOWER MONUMENTAL DAM						
Collected	1,867,726	407	1,943,121	47,465	11,504	3,870,223
Bypassed	148,524	1	250,813	7,795	596	407,729
Trucked	4,879	6	1,133	0	88	6,106
Barged	1,709,814	369	1,685,681	39,011	10,621	3,445,496
Total Transported	**1,714,693**	**375**	**1,686,814**	**39,011**	**10,709**	**3,451,602**
MCNARY DAM						
Collected	2,091,041	340,976	526,032	121,464	778,169	3,857,682
Bypassed	2,088,663	340,574	525,858	121,418	777,601	3,854,114
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	9,596,305	377,021	8,827,438	354,653	825,769	19,981,186
Bypassed	2,372,372	340,575	1,199,673	148,016	780,136	4,840,772
Trucked	35,616	132	25,291	188	1,427	62,654
Barged	7,141,661	23,839	7,585,843	203,973	41,600	14,996,916
Total Transported	**7,177,277**	**23,971**	**7,611,134**	**204,161**	**43,027**	**15,059,570**