



## Fish Passage Center

# Weekly Report #99 - 10

May 14, 1999

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### SUMMARY OF EVENTS:

**Water Supply:** A cool showery pattern is predicted to continue all over the basin. Major snowmelt yet has not yet commenced.

Precipitation for the period of May 1 through 11 above Coulee was 72% of normal, the Snake River above Ice Harbor was 116% of normal and the Columbia above The Dalles was 106% of normal.

The new May Final Runoff Volume Forecast reflects prevailing weather conditions, with low precipitation during spring showing decreases in the range of 3%-7% at all major sites compared to the April Final. The January-July forecast for the Columbia River above The Dalles is 124 MAF, or 117% of average and is 4% lower compared with the April Final. Dworshak reservoir runoff volume forecast for the April-July period decreased 7% compared to the April Final. The summary of the May and April Final Runoff Volume Forecasts is given in the following Table:

Location	Period	May 99 Final		April 99 Final	
		MAF	%	MAF	%
<i>Libby</i>	Apr-Sep	<b>7.16</b>	<b>106</b>	7.39	109
<i>Hungry Horse</i>	Apr-Sep	<b>2.31</b>	<b>106</b>	2.38	109
<i>Grand Coulee</i>	Jan-Jul	<b>72.4</b>	<b>114</b>	73.8	117
<i>The Dalles</i>	Jan-Jul	<b>124</b>	<b>117</b>	128.0	121
<i>Lower Granite</i>	Jan-Jul	<b>35.8</b>	<b>120</b>	36.5	123
<i>Dworshak</i>	Apr-Jul	<b>3.2</b>	<b>119</b>	3.4	126
<i>Brownlee</i>	Apr-Jul	<b>7.32</b>	<b>126</b>	7.36	127

**System Storage:** In spite of the delayed snowmelt and cold weather pattern from the beginning of March, the system was drafted aggressively for flood control. This predrafting of reservoirs earlier in the season, in combination with deteriorated runoff volume forecast and delayed snowmelt are resulting in very low flows for this period of the year in Columbia and Snake Rivers.

*Hungry Horse* is operated to Integrated Rule

Curves, defined by the State of Montana. Projected elevation on May 31 is 3510 ft. The reservoir is projected to be full by July 31, instead of June 30 as required by Biological Opinion. This could impact flows for summer migrants.

*Libby* continues to be on minimum outflow of 4 kcfs. The reservoir is projected to be at 2454.8 ft by July 31.

*Arrow* reservoir continues to be operated with a steady outflow of 20 kcfs to limit trout spawning areas during the April-May period. This operation continues to suppress inflows to Grand Coulee.

*Grand Coulee* was not drafted below 1219 ft for the purposes of improving average daily flows at Priest Rapids as requested by Fishery Agencies, because of the transportation concerns on Lake Roosevelt. BOR's objective is to achieve 1240 ft by the end of May. Current outflows are in the range of 125 kcfs-135 kcfs.

*Dworshak* reservoir continues to be operated with 14 kcfs (powerhouse capacity is 10 kcfs). This operation will improve low flows at Lower Granite, although not enough to achieve the required minimum BiOp spring flow target of 100 kcfs.

*Brownlee* reservoir was operated with outflows of about 30 kcfs during the previous week and will continue with similar outflows during the coming week. Inflows are in the range of 36 kcfs-40 kcfs, but Idaho Power Company declined to pass inflows as requested by Fishery Agencies for improvement of low flows at Lower Granite to avoid spill at Brownlee and Hells Canyon Dams. A summary of the current elevations on May 13 and the end of April elevations are given in the following Table:

Reservoir	Actual elev. As of May 13	Max Reservoir pool [ft]	End of April Elevation [ft]
<i>Libby</i>	2349.0	2459	2338.6
<i>Hungry Horse</i>	3493.6	3560	3489.6
<i>Grand Coulee</i>	1218.5	1290	1220.4
<i>Brownlee</i>	1999.08*	2077	1990.5
<i>Dworshak</i>	1452.4	1600	1453.4

\* as of May 12

Upper Snake reservoirs:

As of May 13, American Falls is at 99% of capacity, passing inflow, Palisades is at 32% of full and Jackson Lake is 63% of full. Increase in precipitation in the region has resulted in higher flows at Milner of 12.4 kcfs (as of May 13). The system is at 71% of capacity.

Boise and Payette River Basins:

Both systems are operated for flood control but are also refilling. The Boise River system (Anderson Ranch, Arrowrock and Lucky Peak) is at 57% of capacity. The Payette River system (Cascade, Deadwood) is at 58% of capacity.

**Streamflow:** Biological Opinion spring flow targets based on the April Final Runoff Volume Forecast are: at Lower Granite 100 kcfs; and at McNary 260 kcfs.

Average weekly flows at McNary and Lower Granite were again below the required BiOp spring flow targets during past week (weekly flows were below the flow target during the first three weeks of April) and it is uncertain with current reservoir operations that flows will reach required BiOp required minimum flows during the next week. The COE is failing to forecast flows with greater accuracy in its SSARR modeling runs by persistently applying a normal weather pattern instead of an apparent colder weather pattern with delayed snowmelt, which is occurring.

Daily average flows at Priest Rapids were fluctuating in the range of 146.2 kcfs to 175.9 kcfs. Although Fishery Agencies requested weekly average flows of 170 kcfs for the week ending May 16, federal regulating agencies failed to operate Grand Coulee in a way to provide required flows. The total range of daily hourly fluctuations is presented in the following table:

Date	Average Daily Flow at Priest Rapids [kcfs]	Hourly fluctuations [kcfs]
May 7	169.5	155.5-202.0
May 8	152.4	151.8-161.9
May 9	175.9	151.1-196.4
May 10	152.6	151.6-155.2
May 11	153.1	139.9-174.3
May 12	146.2	140.4-163.8
May 13	166.9	143.5-181.3

The average discharge for the major run-of river projects for April 30-May 13 period are given in the following Table:

Project	Average Discharge [kcfs]	
	April 30-May 6	May 7-May 13
<i>Priest Rapids</i>	184.8	159.5
<i>McNary</i>	296.5	257.2
<i>Lower Granite</i>	101.8	91.26
<i>Bonneville</i>	317.4	277.4

**Spill:** Outflow from Dworshak Dam continued at 14 Kcfs, with spill occurring above hydraulic capacity (approximately 3.6 Kcfs spill). The Biological Opinion spill program is presently being implemented at the lower Snake projects. Spill is being adjusted to the spill caps when conditions warrant a change.

The FERC spill program continues at the Mid Columbia projects.

Biological Opinion spill levels continue at the lower Columbia projects. Spill at McNary is primarily in excess of hydraulic capacity. Spill at The Dalles Dam alternated between 30% and 64% of instantaneous flow for research purposes.

Levels of total dissolved gas were meeting the waivers at locations measured. Monitoring for signs of gas bubble trauma (GBT) on fish collected through the Smolt Monitoring Program showed few fish with signs of GBT.

**Smolt Monitoring.** Compared to last week, this week's passage indices of hatchery and wild chinook and steelhead have decreased at Lower Granite and Little Goose dams and increased at Lower Monumental Dam. Although the peaks of the Snake River basin springtime runs are now passed at Lower Granite and Little Goose dams, the runs appear far from over as evident by increased collections of hatchery steelhead at the

traps on the Salmon and Imnaha rivers. The cumulative passage indices of hatchery chinook, hatchery steelhead, and wild steelhead at Lower Granite Dam to date are at half of the total we projected pre-season using the NMFS' pre-season population projections for 1999. The cumulative passage indices of wild chinook at Lower Granite Dam to date appear to be less than 20% away from meeting our pre-season projected total. Flows in the Snake River have dropped to levels below 90 kcfs the past several days. Passage indices of smolts in the Snake River should increase again when increased spring freshet flows occur.

By mid-week, the period of peak passage of yearling chinook and wild sockeye at Rock Island Dam in the Mid-Columbia River had passed. Hatchery and wild steelhead passage indices at Rock Island Dam have continued a fairly flat passage pattern during the past two weeks. Daily flows at Rock Island Dam this week averaged between 140 and 164 kcfs.

In the lower Columbia River, this week has seen McNary Dam's yearling chinook passage indices reach their highest levels for the season (94,000-107,000 fish). To date, the cumulative passage index of yearling chinook at McNary Dam has surpassed the 1998 total. The cumulative passage indices of wild and hatchery steelhead at McNary Dam to date are about half of the 1998 total, but are in close agreement with the 1998 cumulative on this date. By the end of this week, wild sockeye was the dominant fish collected at McNary Dam. Throughout this week the daily passage index of wild sockeye increased at McNary Dam, reaching a peak on May 13 with approximately 146,500 fish. Although passage indices of yearling chinook, coho, and hatchery steelhead increased this week over last week's levels at John Day Dam, the most dramatic change was the large increase in passage indices of wild sockeye (nearing 38,000 fish by week's end). Likewise, wild sockeye passage indices increased rapidly at Bonneville Dam this week. All other salmonids species showed either no change or a more moderate increase in passage indices at Bonneville Dam during the course of this week. Daily flows at Bonneville Dam had started the week

around 300 kcfs and by week's end had dropped to slightly above 250 kcfs.

**Adult Fish Passage:** At Bonneville Dam, daily passage counts of adult spring chinook ranged from a low of 674 on May 13, to a high of 1,123 on May 8 for the week of May 7 to May 13. The season count has eclipsed the 30,000 mark and was 32,031 through May 13, approaching the 1998 count of 32,904 but remaining well below the 10-year average count (59,437). Adult chinook counts should continue to decline through the remainder of the month. Of the chinook past Bonneville, 12,329 have been counted at The Dalles Dam, 8429 at John Day Dam, and 4,560 at McNary Dam. One item of interest is the reduced number of fish counted at The Dalles Dam to date. Only 38.5% of the spring chinook past Bonneville Dam have moved upstream past The Dalles. This compares to the 10-year average of 55% and the 1998 percentage of about 66% of the Bonneville count moving upstream.

Through May 13, a total of 1,611 adult spring chinook were counted at the lower Snake River dam (Ice Harbor) with 352 adult spring chinook counted at Lower Granite Dam. In the Mid-Columbia River, 1,372 adult spring chinook have been counted at Priest Rapids Dam. Fish counts received from Rock Island Dam are through 5/8 so it is unknown what percentage of the Priest Rapids count have continued up past Rock Island. At Wells Dam, all spring chinook will be captured at trapping facilities located on West and East bank fish ladders. Steelhead will be released back into the ladder to continue upstream while the chinook will be taken to hatcheries for holding until spawning. The spring chinook trapping is tentatively slated to continue through the first week of July. As points of interest, about 360 adult chinook have been counted at Prosser Dam (Yakama R) through May 9 (information from Yakama Tribe) At 3-Mile Dam in the Umatilla River, about 520 adult spring chinook have been tallied through May 11 (information from Umatilla Tribe). At Lower Granite Dam, most adult chinook sampled to date were in good condition with few abrasions or lesions on the head area of the fish. Although they have seen numerous scrapes (30.9% on the fish from marine mammal

attacks, open wounds (flesh) have been reported on 6.6%. (information from NMFS).

The number of jack chinook salmon passing Bonneville Dam was 4,831; these compare to only 397 jacks in 1998 and 1,703 for the 10-year average. Daily counts of jack spring chinook were above 400 per day for the last 5-days of the reporting period. Overall, this should lead to optimism that potentially, adult spring chinook returns will be increased during the upcoming two years.

At Bonneville Dam, the daily passage of steelhead was about 20 fish per day for the past week, with the cumulative count for the season at 1,540. Of this total, 16% or 249 were "wild" origin steelhead. At Lower Granite Dam, steelhead passage since March 1 totaled 3,028, about 70% and 54% of the respective 1998 and 10-year average (spring passage only). Of the total, 533 were recorded as being "wild" steelhead (about 17% of the run). The 1999 spring migration of steelhead is virtually complete for the season. New steelhead passing Bonneville at this time of year are normally destined for Bonneville tributary streams (Skamania stock).

**Hatchery Releases:** During the past two weeks, approximately 12 million anadromous salmon were released from hatcheries, acclimation ponds, or were directly planted into streams. For the upcoming two weeks, about 3.7 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. Most yearling spring, summer, and fall chinook and coho have been released from the hatcheries in each River Reach. Large numbers of steelhead were released through the past two weeks and are nearly completed for the year. Subyearling bright fall chinook will be released from late May through late June. The final release of Tule fall chinook was completed this past week from Spring Creek NFH.

**Lower Columbia River (above Bonneville Dam to McNary Dam)** – Release of yearling spring chinook from hatcheries and acclimation ponds are

completed for the 1999 migration year. Also, steelhead releases were completed in the Umatilla, Hood, and Deschutes, White Salmon and Klickitat rivers. The third release of subyearling fall chinook (about 3.0 million) from Spring Creek NFH occurred on May 13, 1999. The coho releases have been completed for the year as well. Subyearling spring chinook were released into the Klickitat River this past week.

**Mid-Columbia River** – Release of yearling spring chinook were completed by the end of April in the Wenatchee, Methow, Entiat River basins as well as from Ringold Springs (main Columbia R). Two new facilities in the upper Yakama basin released spring chinook this season on a volitional release basis. Steelhead were released into the Wenatchee, Methow, Okanogan, and Entiat rivers this past week and continue through mid-May to late May. Steelhead were released from Ringold Hatchery from mid to late March. Coho will be released from various acclimation sites and ponds in the Mid-Columbia, with the Wenatchee River receiving coho this season. Most of the tribal releases of coho in the Yakima River basin were released this next week with additional scheduled in two weeks. Sockeye (Osoyoos stock) were released on April 7 from the Cassimer Bar facility; the Lake Wenatchee stock sockeye were released from net pens into Lake Wenatchee in the fall (1998). About 197,000 were released for the 1999 migration season.

**Snake River** – Releases of yearling spring, summer fall chinook and coho from State, Federal or Tribal hatcheries have been completed for the 1999 migration season. Both volitional and direct stream releases were used at the hatcheries. Several million steelhead were released from hatcheries and acclimation ponds during the past two weeks with only a small number of steelhead remaining to be released during the next two weeks. Subyearling fall chinook will be released in June from Big Canyon (Clearwater drainage), CPT John (Snake R) and from Lyons Ferry H (direct plant). Sockeye (Red Fish Lake stock) were released during the past two weeks.

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

Date	Grand Coulee		Chief Joseph		Wells		Rocky Reach		Rock Island		Wanapum		Priest Rapids	
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
04/30/99	163.0	0.0	164.2	0.0	172.7	10.4	178.4	27.9	184.0	41.0	183.0	36.6	197.5	158.8
05/01/99	145.9	0.0	154.2	0.0	168.2	10.4	167.3	28.3	177.4	40.9	168.1	33.8	181.5	144.8
05/02/99	152.6	0.0	157.1	0.0	167.3	10.4	171.6	26.5	176.6	41.1	169.3	33.9	181.2	144.6
05/03/99	161.6	0.0	163.9	0.0	176.7	10.4	175.2	22.5	184.1	41.0	174.4	34.9	187.4	147.9
05/04/99	146.3	0.0	153.8	0.0	170.0	10.4	174.5	27.3	177.3	41.0	178.7	35.7	196.1	145.4
05/05/99	140.0	0.0	147.6	0.0	157.4	10.0	161.1	27.4	166.3	41.0	165.1	33.8	182.2	137.6
05/06/99	153.0	0.0	151.6	0.0	161.0	10.0	162.8	26.9	165.7	41.1	155.6	31.6	167.4	126.2
05/07/99	130.2	0.0	139.4	0.0	150.1	10.0	152.6	25.1	159.6	40.9	151.1	30.6	169.5	127.2
05/08/99	138.8	0.0	132.4	0.0	141.6	9.3	138.8	24.4	140.5	40.8	140.2	28.8	152.4	114.8
05/09/99	126.5	0.0	128.5	0.0	141.5	9.7	147.9	23.9	153.1	40.9	158.1	32.1	175.9	131.7
05/10/99	127.8	0.0	136.4	0.0	148.3	9.9	154.9	20.1	149.7	41.0	144.8	29.2	152.6	114.9
05/11/99	127.7	0.0	127.2	0.0	137.6	9.8	138.0	22.7	142.3	41.0	138.7	28.3	153.1	115.1
05/12/99	134.0	0.0	137.9	0.0	148.3	10.4	150.7	23.1	150.0	41.1	134.5	27.0	146.2	109.5
05/13/99	140.8	0.0	142.6	0.0	158.6	11.8	161.3	21.2	163.5	40.2	154.6	30.9	166.9	126.0

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

Date	Dworshak		Brownlee		Hells Canyon		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
04/30/99	10.9	0.6	34.1	35.3	100.2	33.5	97.2	20.5	102.1	16.6	104.3	65.7		
05/01/99	14.0	3.7	32.4	33.3	98.7	34.5	95.4	19.3	97.4	17.6	100.1	66.2		
05/02/99	14.1	3.7	32.2	32.3	102.2	34.4	101.2	17.5	106.0	16.9	108.4	72.6		
05/03/99	14.0	3.7	34.3	35.1	103.8	34.5	99.5	17.2	102.3	15.6	106.9	69.5		
05/04/99	10.1	0.0	37.6	39.7	109.1	34.2	106.5	18.5	113.7	15.7	116.4	71.3		
05/05/99	7.9	0.0	35.9	39.5	100.7	34.2	94.5	20.3	98.1	15.3	103.4	71.4		
05/06/99	8.0	0.0	35.6	35.4	98.2	34.6	94.5	21.1	102.1	19.4	105.4	72.1		
05/07/99	11.7	2.3	31.6	32.5	92.0	34.5	88.3	20.8	88.8	18.3	93.7	64.7		
05/08/99	14.0	3.7	31.0	32.6	95.7	34.5	92.9	19.8	97.9	18.1	101.7	73.2		
05/09/99	14.0	3.7	37.2	35.1	93.4	34.7	89.3	20.0	92.0	17.6	94.4	70.0		
05/10/99	14.0	3.7	41.5	31.8	95.8	33.5	93.0	20.7	95.9	19.0	99.6	70.8		
05/11/99	14.0	3.7	42.3	30.6	88.4	33.6	84.7	21.1	89.8	17.6	93.7	65.9		
05/12/99	14.0	3.7	36.4	30.7	87.0	35.3	82.4	22.3	86.2	18.6	90.1	64.7		
05/13/99	14.0	3.7	---	---	86.5	35.3	81.5	22.1	83.7	17.9	87.6	57.3		

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

Date	McNary		John Day		The Dalles		Bonneville		PH1	PH2
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill		
04/30/99	309.8	143.0	314.6	89.8	314.4	196.0	330.8	110.2	85.4	126.1
05/01/99	282.5	129.1	306.4	111.2	302.1	111.0	309.1	96.2	82.2	121.5
05/02/99	298.9	140.9	313.1	111.0	307.8	92.0	307.5	94.0	82.8	121.5
05/03/99	304.6	138.9	307.0	105.1	298.9	90.0	322.3	97.5	82.4	133.2
05/04/99	298.9	134.8	323.2	98.1	313.1	178.0	324.6	97.2	82.9	135.3
05/05/99	294.7	135.3	315.1	104.6	314.0	192.0	315.0	95.1	82.4	128.3
05/06/99	286.2	122.6	282.5	68.3	287.2	174.4	312.4	97.5	80.0	125.7
05/07/99	270.2	104.0	286.6	102.8	279.4	102.0	300.0	96.7	80.2	113.9
05/08/99	263.1	110.8	266.4	102.3	261.1	79.0	276.6	96.4	76.0	95.0
05/09/99	254.4	108.2	262.6	101.1	252.9	76.0	270.2	97.1	76.7	87.2
05/10/99	283.5	128.7	315.4	83.9	312.1	175.0	304.1	96.7	79.5	118.8
05/11/99	245.6	112.2	258.5	54.5	260.0	167.0	284.7	93.7	75.8	106.0
05/12/99	244.2	115.2	235.5	54.9	237.5	150.0	254.6	94.2	73.1	78.1
05/13/99	239.2	106.7	247.4	94.3	232.8	82.0	251.8	94.2	75.7	72.7

## Total Dissolved Gas Saturation (%) - Average of 12 Highest Hours, 24 h Average and 24 h High<sup>2</sup>

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

Date	<u>Can. Boundary</u>			<u>Grand Coulee</u>				<u>Tlwtr G. Coulee</u>				<u>Chief Joseph</u>				<u>Tlwtr C. Joseph</u>				
	<u>24 h</u>		<u>12 h</u>	#	<u>24 h</u>		<u>12 h</u>	#	<u>24 h</u>		<u>12 h</u>	#	<u>24 h</u>		<u>12 h</u>	#	<u>24 h</u>		<u>12 h</u>	#
	<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	
4/30	---	---	---	0	109	109	110	23	106	107	107	23	106	106	107	2	108	109	110	23
5/1	---	---	---	0	109	110	111	24	107	108	108	24	---	---	---	0	109	110	111	23
5/2	---	---	---	0	109	109	110	24	107	108	108	24	---	---	---	0	109	110	111	23
5/3	---	---	---	0	109	110	111	24	107	108	108	24	---	---	---	0	109	110	111	23
5/4	118	118	118	24	108	108	109	24	106	106	107	24	106	107	107	23	109	109	109	7
5/5	117	118	119	24	107	107	108	24	104	105	105	24	105	105	105	23	---	---	---	0
5/6	118	118	119	24	108	109	109	24	106	106	107	24	106	106	107	23	---	---	---	0
5/7	116	117	118	24	108	108	108	24	105	106	106	24	105	106	106	24	107	108	108	24
5/8	114	115	116	24	108	108	109	24	106	106	106	24	105	106	106	24	107	108	108	24
5/9	114	115	116	24	108	108	109	24	106	106	107	24	106	106	106	23	107	108	109	23
5/10	115	115	116	24	109	109	110	24	106	107	107	24	106	106	107	23	107	108	109	23
5/11	114	116	116	24	110	110	111	24	107	108	108	24	107	107	108	23	108	109	110	23
5/12	115	115	116	24	111	111	112	24	108	109	109	24	108	108	109	23	110	110	111	23
5/13	113	113	114	24	111	111	112	24	108	109	109	24	108	109	109	23	110	111	111	23

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

Date	<u>Wells</u>			<u>Rocky Reach</u>				<u>Tlwtr Rocky R.</u>				<u>Rock Island</u>				<u>Tlwtr Rock Isl</u>				
	<u>24 h</u>		<u>12 h</u>	#	<u>24 h</u>		<u>12 h</u>	#	<u>24 h</u>		<u>12 h</u>	#	<u>24 h</u>		<u>12 h</u>	#	<u>24 h</u>		<u>12 h</u>	#
	<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	
4/30	107	107	107	23	109	109	110	22	110	111	112	20	110	111	111	22	118	119	120	20
5/1	108	108	108	24	110	110	110	20	111	111	112	20	111	111	111	22	119	119	119	22
5/2	107	108	108	24	110	110	110	22	111	111	111	22	111	111	112	23	119	119	119	22
5/3	108	108	108	13	110	110	111	20	110	111	111	20	110	111	111	21	118	118	119	18
5/4	107	107	108	15	107	108	109	22	109	110	111	18	108	109	109	19	117	117	118	19
5/5	105	105	106	11	106	106	106	23	108	108	109	22	107	108	109	24	117	117	118	24
5/6	---	---	---	0	107	108	108	24	109	109	111	19	108	109	110	21	118	118	118	18
5/7	106	106	106	13	107	107	108	23	108	109	110	20	107	108	109	22	117	117	118	21
5/8	106	106	107	23	107	107	107	21	108	108	109	21	107	108	108	22	117	118	119	22
5/9	106	107	107	24	107	107	107	22	108	108	109	20	107	107	108	22	116	117	117	20
5/10	106	106	107	10	107	107	108	23	108	108	109	22	107	107	107	23	116	117	118	22
5/11	---	---	---	0	108	108	109	20	109	109	110	19	107	107	109	18	117	117	118	17
5/12	---	---	---	0	108	108	108	21	110	110	111	19	108	109	109	23	117	117	118	22
5/13	---	---	---	0	108	108	109	22	109	110	110	21	108	108	109	22	116	117	118	21

### Total Dissolved Gas Saturation at Mid Columbia 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>24 h</u>		<u>12 h</u>	#	<u>24 h</u>		<u>12 h</u>	#	<u>24 h</u>		<u>12 h</u>	#	<u>24 h</u>		<u>12 h</u>	#
	<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	
4/30	114	115	116	24	119	119	121	24	116	118	118	24	122	122	123	24	103	105	109	24
5/1	---	---	---	0	120	121	123	24	117	117	118	24	122	122	122	24	109	110	110	24
5/2	---	---	---	0	119	119	121	24	117	117	118	24	122	122	122	24	110	110	110	24
5/3	113	113	114	12	119	119	120	24	115	116	116	24	122	122	122	24	110	110	110	10
5/4	111	111	112	24	116	117	118	24	114	115	116	24	121	121	121	24	103	103	105	24
5/5	109	109	110	24	115	116	116	24	113	113	115	24	121	121	122	24	101	102	102	24
5/6	111	113	115	24	118	118	119	24	111	113	114	24	121	121	122	24	102	103	104	24
5/7	111	111	112	24	117	118	120	24	114	115	115	24	120	121	121	24	103	104	105	24
5/8	110	111	111	24	116	117	119	24	113	114	115	24	120	120	120	24	104	105	106	23
5/9	111	111	112	24	116	117	119	24	113	113	114	24	120	120	121	24	108	109	109	24
5/10	111	112	112	24	117	118	119	24	115	116	117	24	118	120	120	24	108	109	109	24
5/11	112	113	114	24	118	119	120	24	116	116	117	24	120	121	122	24	109	109	109	24
5/12	111	112	112	24	118	118	121	24	114	115	117	24	119	120	120	24	109	109	109	24
5/13	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	109	109	109	24

## Total Dissolved Gas Saturation (%) - Average of 12 Highest Hours, 24 h Average and 24 h High<sup>2</sup>

### 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>Tlwr L. Granite</u>			
	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	
4/30	103	104	106	24	106	107	108	23	103	104	105	23	105	106	107	24	113	119	122	23
5/1	104	105	105	24	105	105	106	24	103	104	104	24	105	106	106	24	113	120	121	24
5/2	104	105	105	24	105	105	106	24	103	104	105	24	106	107	107	24	114	120	121	24
5/3	105	105	105	10	104	105	105	24	103	103	103	10	106	106	106	9	117	117	122	9
5/4	101	102	104	23	104	105	105	24	101	101	102	24	103	104	104	24	113	119	121	24
5/5	102	102	103	23	106	107	107	24	102	103	104	24	102	102	103	24	112	119	120	24
5/6	103	104	105	24	107	108	109	24	103	105	106	24	103	105	106	24	112	118	119	24
5/7	---	---	---	0	105	105	106	24	102	103	104	24	104	105	105	24	112	117	119	24
5/8	---	---	---	0	104	105	106	24	103	104	104	24	105	105	105	24	112	117	118	24
5/9	104	105	106	24	104	104	105	24	103	104	105	24	104	104	104	24	112	117	118	24
5/10	104	105	106	23	105	106	107	24	103	105	106	24	104	105	106	24	112	117	119	24
5/11	105	106	107	24	105	106	107	24	104	106	107	24	105	105	106	24	111	116	118	24
5/12	105	106	107	23	105	105	106	24	104	105	107	24	106	106	107	24	112	117	118	24
5/13	104	105	105	24	104	105	105	24	103	104	104	24	105	106	106	24	112	117	118	24

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

Date	<u>Little Goose</u>				<u>Tlwr L. Goose</u>				<u>L. Monumental</u>				<u>Tlwr L. Monum</u>				<u>Ice Harbor</u>			
	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	
4/30	114	115	116	17	116	118	119	23	115	116	117	24	116	118	119	23	114	115	117	24
5/1	---	---	---	0	115	117	119	24	117	118	119	24	117	119	120	24	116	116	116	24
5/2	---	---	---	0	114	116	117	24	115	116	116	24	115	117	118	24	114	114	115	24
5/3	112	112	112	3	115	115	117	10	113	113	114	9	116	116	118	9	114	114	114	13
5/4	109	109	111	13	112	116	117	24	110	111	112	24	114	117	120	24	110	111	112	24
5/5	107	108	111	16	112	117	117	24	109	110	111	24	113	115	119	24	109	110	111	24
5/6	---	---	---	0	113	117	118	24	112	115	118	24	117	119	120	24	112	113	116	24
5/7	109	109	110	8	114	117	118	24	111	113	114	22	115	117	119	24	112	112	113	24
5/8	109	111	111	24	113	117	117	24	110	112	112	22	115	118	120	24	112	112	112	24
5/9	109	111	112	24	114	117	117	24	112	112	114	6	116	119	119	24	112	113	114	24
5/10	112	114	115	24	115	118	118	24	112	112	116	7	116	119	120	24	114	115	117	24
5/11	114	115	116	24	116	118	119	24	115	116	117	17	117	118	120	24	115	116	117	24
5/12	114	115	116	24	117	119	120	24	115	116	117	24	117	119	120	24	115	115	116	24
5/13	111	112	113	24	115	119	119	24	114	115	116	24	116	118	120	24	114	114	115	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>Tlwr McNary</u>			
	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#	<u>24 h</u>		<u>12 h</u>		#
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	
4/30	114	115	116	23	---	---	---	0	116	118	121	23	116	118	119	24	121	121	121	24
5/1	112	114	116	24	---	---	---	0	116	116	116	24	117	117	118	24	121	121	121	24
5/2	113	114	116	24	---	---	---	0	115	115	115	24	114	114	115	24	121	121	121	24
5/3	115	115	117	13	---	---	---	0	113	113	114	9	112	112	113	9	121	121	121	9
5/4	113	114	116	24	---	---	---	0	109	109	110	24	108	109	110	24	120	120	121	24
5/5	117	119	121	21	---	---	---	0	109	110	112	24	108	110	111	24	120	120	120	24
5/6	117	120	121	24	---	---	---	0	110	112	113	24	112	114	115	24	119	120	120	24
5/7	115	117	120	24	---	---	---	0	111	111	112	24	111	112	113	24	117	119	120	24
5/8	117	119	120	24	---	---	---	0	111	111	111	24	111	111	111	24	118	119	119	24
5/9	116	119	120	24	---	---	---	0	110	111	112	23	110	110	111	24	117	119	119	24
5/10	117	119	121	23	---	---	---	0	112	114	116	24	112	114	115	24	119	120	120	24
5/11	116	118	121	24	---	---	---	0	113	114	116	22	114	114	115	24	118	119	119	24
5/12	116	118	121	24	---	---	---	0	113	113	114	24	114	114	115	20	118	119	119	24
5/13	115	117	121	24	---	---	---	0	112	112	113	24	111	112	113	24	117	118	119	24

## Total Dissolved Gas Saturation (%) - Average of 12 Highest Hours, 24 h Average and 24 h High<sup>2</sup>

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

Date	<u>John Day</u>			<u>Tlwtr John Day</u>			<u>The Dalles</u>			<u>Dnstr T. Dalles</u>			<u>Bonneville</u>							
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>					
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>AVG</u>	<u>High</u>	<u>hr</u>				
4/30	111	111	112	23	118	120	122	24	111	112	113	23	119	120	120	24	117	117	118	23
5/1	113	113	114	22	120	121	121	24	112	112	113	23	117	118	120	24	116	116	117	23
5/2	114	114	114	23	121	121	121	24	114	115	116	23	117	118	119	24	115	115	115	23
5/3	113	113	114	23	120	121	121	24	113	114	114	23	117	118	119	24	114	114	115	23
5/4	109	110	111	20	119	120	120	20	110	111	111	21	117	118	119	21	112	112	113	23
5/5	108	110	112	23	121	122	123	24	110	111	112	23	118	119	120	24	114	116	117	23
5/6	109	110	111	23	116	121	123	23	112	113	114	23	119	119	120	24	117	117	118	23
5/7	107	107	107	23	121	122	123	23	109	111	112	24	115	116	118	24	114	114	115	23
5/8	108	108	109	23	121	122	122	23	111	112	113	23	115	115	116	23	113	114	115	23
5/9	109	109	109	22	121	121	122	22	110	111	112	23	114	115	115	24	111	111	111	21
5/10	109	110	111	23	119	122	124	23	111	113	114	23	118	120	120	24	112	113	114	23
5/11	109	109	109	23	114	119	120	24	111	112	113	23	119	119	120	24	116	117	118	23
5/12	109	109	109	23	114	118	120	24	109	110	112	23	117	118	119	24	115	116	117	23
5/13	109	109	110	19	120	120	121	24	109	110	111	23	114	116	117	24	112	112	113	21

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

Date	<u>Warrendale</u>			<u>Skamania</u>			<u>Camas\Wash.</u>					
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>			
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>
4/30	120	121	121	23	119	120	121	23	119	120	120	24
5/1	118	119	121	19	117	118	120	23	117	118	119	24
5/2	118	119	125	23	116	117	119	23	116	116	117	24
5/3	117	119	119	22	115	116	118	23	115	115	116	24
5/4	116	117	118	22	113	114	116	23	113	113	114	24
5/5	117	118	119	23	115	117	119	23	114	116	117	24
5/6	119	119	120	23	117	118	119	23	115	116	117	24
5/7	117	118	119	24	114	115	117	24	114	115	116	24
5/8	116	117	118	24	114	115	116	24	115	117	119	24
5/9	114	115	116	23	113	113	115	23	114	116	117	24
5/10	115	116	117	22	114	115	116	23	114	115	117	24
5/11	118	118	119	23	116	117	118	23	114	115	116	24
5/12	117	118	120	23	115	116	118	23	116	117	118	24
5/13	115	116	117	23	114	115	117	23	114	116	117	24



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

Site	Date	Species	Number of Fish	Number w GBT signs	Number w Fin Signs	% Fin GBT	% Severe Fin GBT	Number of Fish with Fin GBT Listed by Highest Rank				Fish with L. Line GBT	
								Rank 1	Rank 2	Rank 3	Rank 4	Num Fish	Avg. Rank
<b>Lower Granite Dam</b>													
	05/10/99	Yearling Chinook		100	2	1	1.00%	0	0.00%		1	0	0
	05/10/99	Steelhead		100	0	0	0.00%	0	0.00%		0	0	0
<b>Little Goose Dam</b>													
	05/05/99	Yearling Chinook		100	2	0	0.00%	0	0.00%		0	0	0
	05/05/99	Steelhead		100	0	0	0.00%	0	0.00%		0	0	0
<b>Lower Monumental Dam</b>													
	05/10/99	Yearling Chinook		100	1	1	1.00%	0	0.00%		1	0	0
	05/10/99	Steelhead		100	3	1	1.00%	0	0.00%		1	0	0
<b>Ice Harbor Dam</b>													
	05/04/99	Yearling Chinook		100	5	0	0.00%	0	0.00%		0	0	0
	05/04/99	Steelhead		65	1	0	0.00%	0	0.00%		0	0	0
	05/07/99	Yearling Chinook		100	1	0	0.00%	0	0.00%		0	0	0
	05/07/99	Steelhead		78	2	0	0.00%	0	0.00%		0	0	0
	05/11/99	Yearling Chinook		100	3	0	0.00%	0	0.00%		0	0	0
	05/11/99	Steelhead		72	0	0	0.00%	0	0.00%		0	0	0
<b>McNary Dam</b>													
	05/06/99	Yearling Chinook		100	5	0	0.00%	0	0.00%		0	0	0
	05/06/99	Steelhead		73	2	0	0.00%	0	0.00%		0	0	0
	05/10/99	Yearling Chinook		100	2	0	0.00%	0	0.00%		0	0	0
	05/10/99	Steelhead		92	1	0	0.00%	0	0.00%		0	0	0
	05/13/99	Yearling Chinook		100	3	0	0.00%	0	0.00%		0	0	0
	05/13/99	Steelhead		54	0	0	0.00%	0	0.00%		0	0	0
<b>Bonneville Dam</b>													
	05/06/99	Yearling Chinook		100	0	0	0.00%	0	0.00%		0	0	0
	05/06/99	Steelhead		100	1	1	1.00%	0	0.00%		0	1	0
	05/10/99	Yearling Chinook		100	0	0	0.00%	0	0.00%		0	0	0
	05/10/99	Steelhead		100	0	0	0.00%	0	0.00%		0	0	0
	05/13/99	Yearling Chinook		100	0	0	0.00%	0	0.00%		0	0	0
	05/13/99	Steelhead		100	1	0	0.00%	0	0.00%		0	0	0
<b>Rock Island Dam</b>													
	05/06/99	Yearling Chinook		100	4	2	2.00%	0	0.00%		2	0	0
	05/06/99	Steelhead		100	2	0	0.00%	0	0.00%		0	0	0
	05/10/99	Yearling Chinook		100	1	1	1.00%	0	0.00%		1	0	0
	05/10/99	Steelhead		100	1	0	0.00%	0	0.00%		0	0	0
	05/13/99	Yearling Chinook		100	3	3	3.00%	0	0.00%		3	0	0
	05/13/99	Steelhead		100	1	0	0.00%	0	0.00%		0	0	0

Hatchery Release Summary  
For the Last Two Weeks  
From 4/30/99 to 5/13/99

Hatchery	Species...	Migration	Year	Number ...Release Dates...			Release Site	River Name
				Released	Begin	..End		
<b>IDFG</b>								
<b>Magic Valley</b>	SU	Steelhead	1999	312,000	4/27/99	5/5/99	Squaw Cr Acclim Pd	Salmon River
	SU	Steelhead	1999	100,095	4/27/99	5/15/99	Squaw Cr Acclim Pd	Salmon River
	SU	Steelhead	1999	109,145	4/28/99	5/3/99	Salmon R	Salmon River
	SU	Steelhead	1999	268,925	4/29/99	5/5/99	E Fk Salmon R	Salmon River
	SU	Steelhead	1999	12,800	5/6/99	5/6/99	Little Salmon R	Salmon River
<b>Niagara Springs</b>	SU	Steelhead	1999	171,920	4/28/99	5/1/99	Little Salmon R	Salmon River
<b>Sawtooth</b>		Sockeye	1999	5,000	5/1/99	5/1/99	Redfish Lake Cr	Salmon River
		Sockeye	1999	5,000	5/1/99	5/15/99	Sawtooth H	Salmon River
<b>Agency Total:</b>				<b>984,885</b>				
<b>Nez Perce Tribe</b>								
<b>Dworshak</b>		Coho	1999	220,000	4/26/99	4/30/99	Clear Cr	Clearwater Rvr M F
<b>Agency Total:</b>				<b>220,000</b>				
<b>ODFW</b>								
<b>Irrigon</b>	SU	Steelhead	1999	900	5/5/99	5/7/99	Deer Cr	Grande Ronde River
<b>Li Sheep</b>	SU	Steelhead	1999	120,000	5/11/99	5/11/99	L Sheep Acclim Pd	Imnaha River
<b>Wallowa</b>	SU	Steelhead	1999	106,750	5/11/99	5/11/99	Wallowa Acclim Pd	Grande Ronde River
	SU	Steelhead	1999	106,750	5/12/99	5/26/99	Wallowa Acclim Pd	Grande Ronde River
<b>Agency Total:</b>				<b>334,400</b>				
<b>Umatilla Tribe</b>								
<b>Bonifer</b>	SU	Steelhead	1999	40,000	4/15/99	5/4/99	Bonifer Acclim Pd	Umatilla River
<b>Agency Total:</b>				<b>40,000</b>				
<b>USFWS</b>								
<b>Dworshak</b>	SU	Steelhead	1999	1,248,133	4/26/99	4/30/99	Dworshak H	Clearwater Rvr M F
<b>Hagerman</b>	SU	Steelhead	1999	419,036	4/14/99	5/10/99	Little Salmon R	Salmon River
<b>Spring Creek</b>	FA	Chinook	1999	3,180,000	5/13/99	5/13/99	Spring Creek H	Columbia River
<b>Winthrop</b>	SU	Steelhead	1999	113,000	4/14/99	5/15/99	Winthrop H	Methow River
<b>Agency Total:</b>				<b>4,960,169</b>				

Hatchery Release Summary  
For the Last Two Weeks  
From 4/30/99 to 5/13/99

Hatchery	Species...	Migration	Year	Number	...Release Dates...			Release Site	River Name
				Released	Begin	End			
<b>WDFW</b>									
<b>Chewuch</b>	SP	Chinook	1999	132,900	4/15/99	5/1/99	Chewuch R	Methow River	
<b>Chiwawa</b>	SU	Steelhead	1999	172,000	4/22/99	5/14/99	Chiwawa H	Wenatchee River	
<b>Klickitat</b>		Coho	1999	1,050,000	4/15/99	5/7/99	Klickitat H	Klickitat River	
	SP	Chinook	1999	40,600	5/11/99	5/11/99	Klickitat R	Klickitat River	
<b>Lyons Ferry</b>	SU	Steelhead	1999	125,000	3/25/99	4/30/99	Dayton Acclim Pd	Walla Walla River	
	SU	Steelhead	1999	250,000	3/25/99	4/30/99	Cottonwood Acclim Pd	Grande Ronde River	
	SU	Steelhead	1999	175,000	4/15/99	4/30/99	Walla Walla R	Walla Walla River	
<b>Skamania</b>	WI	Steelhead	1999	40,000	4/15/99	4/30/99	Northwestern Lake	White Salmon River	
	WI	Steelhead	1999	10,000	4/15/99	4/30/99	Rock Cr	Columbia River	
	SU	Steelhead	1999	50,000	4/15/99	4/30/99	Little White Salmon R	Little White Salmon River	
	SU	Steelhead	1999	120,000	4/15/99	4/30/99	Klickitat R	Klickitat River	
<b>Turtle Rock</b>	SU	Steelhead	1999	145,000	4/20/99	5/15/99	Wenatchee R	Wenatchee River	
	SU	Steelhead	1999	40,000	4/20/99	4/30/99	Entiat R	Entiat River	
	SU	Steelhead	1999	3,000	4/25/99	4/30/99	Turtle Rock H	Mid-Columbia River	
<b>Wells</b>	SU	Steelhead	1999	78,891	4/15/99	5/11/99	Okanogan R	Okanogan River	
	SU	Chinook	1999	410,000	4/15/99	5/15/99	Wells H	Mid-Columbia River	
	SU	Steelhead	1999	30,000	4/15/99	5/20/99	Wells H	Mid-Columbia River	
	SU	Steelhead	1999	216,700	4/15/99	5/20/99	Methow R	Methow River	
	SU	Steelhead	1999	105,000	4/20/99	5/15/99	Chewuch R	Methow River	
	SU	Steelhead	1999	148,000	4/20/99	5/20/99	Winthrop H	Methow River	
	SU	Steelhead	1999	78,750	4/27/99	5/11/99	Similkameen Acclim Pd	Okanogan River	
	SU	Steelhead	1999	105,000	5/1/99	5/15/99	Twisp R	Methow River	
<b>Agency Total:</b>				<b>3,525,841</b>					
<b>Warm Springs Tribe</b>									
<b>Oak Springs</b>	WI	Steelhead	1999	52,000	4/14/99	5/4/99	E Fk Hood R	Hood River	
<b>Agency Total:</b>				<b>52,000</b>					
<b>Yakima Tribe</b>									
<b>Clark Flat</b>	SP	Chinook	1999	231,220	3/18/99	6/1/99	Clark Flat Acclim Pd	Yakama River	
<b>Cle Elum Slough</b>		Coho	1999	210,000	5/10/99	5/25/99	Cle Elem Slough	Yakama River	
<b>Easton Pond</b>	SP	Chinook	1999	156,718	3/18/99	6/1/99	Easton Pd	Yakama River	
		Coho	1999	48,000	5/10/99	5/10/99	Easton Pd	Yakama River	

### Hatchery Release Summary For the Last Two Weeks From 4/30/99 to 5/13/99

Hatchery	Species...	Migration Year	Number ...Release Dates...			Release Site	River Name
			Released	Begin	End		
<b>Jack Creek Pond</b>	Coho	1999	240,000	5/10/99	5/25/99	Jack Creek Acclim Pd	Yakama River
<b>Leavenworth</b>	Coho	1999	419,000	4/28/99	5/30/99	Leavenworth H	Wenatchee River
	Coho	1999	67,500	4/28/99	5/10/99	Nason Cr	Wenatchee River
<b>Lost Creek</b>	Coho	1999	320,000	5/7/99	5/25/99	Naches R	Yakama River
<b>Stiles Pond</b>	Coho	1999	182,000	5/7/99	5/25/99	Naches R	Yakama River
		<b>Agency Total:</b>	<b>1,874,438</b>				
		<b>Total Release:</b>	<b>11,991,733</b>				

### Hatchery Release Summary For the Next Two Weeks From 5/7/99 to 5/20/99

Hatchery	Species..	Migration Year	Number ...Release Dates...			Release Site	River Name	
			Released	Begin....	End			
<b>ODFW</b>								
<b>Big Canyon</b>	SU	Steelhead	1999	100,000	5/18/99	5/18/99	Big Canyon H	Grande Ronde River
	SU	Steelhead	1999	100,000	5/19/99	6/2/99	Big Canyon H	Grande Ronde River
		<b>Agency Total:</b>		<b>200,000</b>				
<b>Umatilla Tribe</b>								
<b>Imeques</b>	FA	Chinook	1999	1,682,000	5/25/99	5/31/99	Imeques Acclim Pd	Umatilla River
		<b>Agency Total:</b>		<b>1,682,000</b>				
<b>Yakama Tribe</b>								
<b>Prosser</b>	FA	Chinook	1999	1,690,000	5/25/99	5/25/99	Prosser Acclim Pd	Yakama River
	FA	Chinook	1999	79,000	5/25/99	5/25/99	Prosser Acclim Pd	Yakama River
		<b>Agency Total:</b>		<b>1,769,000</b>				
		<b>Total Release:</b>		<b>3,651,000</b>				

## Two-Week Summary of Passage Indices

Date	Yearling Chinook							Hatchery/Wild Combined			
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/30/99	256	46	9	509	85,365	103,253	41,624	1,342	32,450	25,350	16,725
05/01/99	---	---	---	---	69,701	99,033	32,058	1,126	33,313	24,371	12,915
05/02/99	---	---	---	---	106,653	57,122	46,584	1,522	34,533	16,832	9,511
05/03/99	115	35	6	343	114,322	69,094	41,620	1,415	46,921	27,551	15,921
05/04/99	205	38	10	287	103,110	87,735	34,982	2,092	63,965	28,867	12,517
05/05/99	131	36	11	347	69,052	85,374	19,992	1,348	77,434	32,737	10,874
05/06/99	212	26	11	279	64,209	105,705	27,469	1,570	93,283	30,910	14,819
05/07/99	87	18	11	212	51,657	101,807	37,658	1,767	96,141	29,794	15,918
05/08/99	---	---	---	---	106,744	157,881	43,369	1,564	107,146	37,569	14,320
05/09/99	---	---	---	---	130,029	106,874	63,592	1,336	102,710	33,202	12,999
05/10/99	38	22	6	95	131,770	107,703	64,533	447	111,803	56,352	14,509
05/11/99	114	69	3	56	66,150	150,114	139,944	640	94,116	64,330	14,538
05/12/99	49	47	2	40	52,361	114,709	109,048	900	114,092	68,585	13,831
05/13/99	98	40	3	37	59,180	93,908	74,465	539	94,970	64,121	12,114
<b>Total:</b>	1,305	377	72	2,205	1,210,303	1,440,312	776,938	17,608	1,102,877	540,571	191,511
<b># Days:</b>	10	10	10	10	14	14	14	14	14	14	14
<b>Average:</b>	131	38	7	221	86,450	102,879	55,496	1,258	78,777	38,612	13,679

Date	Wild Yearling Chinook						
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
04/30/99	79	71	20	208	20,728	33,399	14,533
05/01/99	---	---	---	---	10,671	24,027	11,976
05/02/99	---	---	---	---	20,501	16,070	10,640
05/03/99	8	31	10	98	19,656	22,184	9,864
05/04/99	30	43	29	52	17,789	22,566	6,811
05/05/99	31	32	25	92	10,181	17,711	5,802
05/06/99	50	29	21	63	9,666	20,142	5,069
05/07/99	6	32	17	42	5,425	16,213	5,268
05/08/99	---	---	---	---	9,210	19,659	8,456
05/09/99	---	---	---	---	12,766	17,560	11,252
05/10/99	13	41	19	33	11,240	10,009	12,757
05/11/99	41	110	23	19	4,909	14,453	21,047
05/12/99	12	80	8	14	3,758	13,063	17,971
05/13/99	38	105	12	4	6,893	8,087	8,819
<b>Total:</b>	308	574	184	625	163,393	255,143	150,265
<b># Days:</b>	10	10	10	10	14	14	14
<b>Average:</b>	31	57	18	63	11,671	18,225	10,733

Date	Wild Subyearling Chinook		
	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
04/30/99	223	0	0
05/01/99	454	0	0
05/02/99	230	0	0
05/03/99	0	0	0
05/04/99	0	0	0
05/05/99	0	0	0
05/06/99	0	0	0
05/07/99	0	0	0
05/08/99	0	0	0
05/09/99	0	0	0
05/10/99	0	0	0
05/11/99	0	0	0
05/12/99	0	0	0
05/13/99	0	0	0
<b>Total:</b>	907	0	0
<b># Days:</b>	14	14	14
<b>Average:</b>	65	0	0

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

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

## Two-Week Summary of Passage Indices

Date	Hatchery Subyearling Chinook							Combined Subyearling Chinook			
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/30/99	0	0	0	0	0	0	0	2	1,251	163	942
05/01/99	---	---	---	---	0	0	0	2	1,071	161	219
05/02/99	---	---	---	---	0	0	0	0	1,092	497	144
05/03/99	0	0	0	0	0	0	0	0	2,243	78	532
05/04/99	0	0	0	0	0	0	0	10	1,664	89	304
05/05/99	0	0	0	0	0	0	0	5	969	65	148
05/06/99	0	0	0	0	0	0	0	4	2,418	98	379
05/07/99	0	0	0	0	0	0	0	2	4,375	330	290
05/08/99	---	---	---	---	0	0	0	5	2,149	565	106
05/09/99	---	---	---	---	0	0	0	3	1,067	754	136
05/10/99	0	0	0	0	0	0	0	8	2,629	254	148
05/11/99	0	0	0	0	0	0	0	5	2,275	426	291
05/12/99	0	0	0	0	0	0	0	3	754	196	0
05/13/99	0	0	0	0	0	0	0	9	1,966	36	320
<b>Total:</b>	0	0	0	0	0	0	0	58	25,923	3,712	3,959
<b># Days:</b>	10	10	10	10	14	14	14	14	14	14	14
<b>Average:</b>	0	0	0	0	0	0	0	4	1,852	265	283

Date	All Coho										
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/30/99	0	0	0	3	0	751	179	65	227	3,767	5,839
05/01/99	---	---	---	---	454	191	184	72	113	6,357	4,925
05/02/99	---	---	---	---	461	921	179	119	115	3,875	2,378
05/03/99	0	0	0	5	226	1,464	84	33	93	4,076	5,662
05/04/99	0	0	0	4	444	1,082	47	112	741	6,093	4,984
05/05/99	0	0	0	5	443	746	29	85	836	10,774	5,159
05/06/99	0	0	0	5	230	1,145	52	103	558	7,703	11,181
05/07/99	0	0	0	1	0	599	126	170	1,050	3,912	7,687
05/08/99	---	---	---	---	472	384	107	247	826	8,346	6,755
05/09/99	---	---	---	---	709	2,297	112	190	889	6,119	4,526
05/10/99	0	0	0	2	0	1,944	96	286	1,318	11,234	3,451
05/11/99	0	0	0	2	233	1,940	517	354	948	9,057	6,470
05/12/99	0	0	0	5	501	1,672	441	438	1,131	9,221	6,110
05/13/99	0	0	0	1	673	1,235	654	851	786	6,276	5,897
<b>Total:</b>	0	0	0	33	4,846	16,371	2,807	3,125	9,631	96,810	81,024
<b># Days:</b>	10	10	10	10	14	14	14	14	14	14	14
<b>Average:</b>	0	0	0	3	346	1,169	201	223	688	6,915	5,787

**Definitions for Smolt Index Counts**

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

## Two-Week Summary of Passage Indices

### Hatchery Steelhead

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/30/99	238	48	63	156	131,725	72,331	20,992	143	4,844	5,617	3,277
05/01/99	---	---	---	---	135,088	84,772	23,214	178	4,960	6,685	2,007
05/02/99	---	---	---	---	206,395	57,286	27,539	324	5,333	6,980	1,765
05/03/99	33	33	62	176	159,283	172,007	32,256	162	6,168	7,331	3,268
05/04/99	53	49	73	138	143,304	204,998	36,821	417	9,857	10,881	2,359
05/05/99	83	55	51	146	430,469	194,574	87,587	235	17,449	7,709	1,113
05/06/99	187	26	63	120	97,580	88,531	38,954	288	14,144	7,323	4,434
05/07/99	151	35	29	197	84,208	88,073	53,549	225	13,739	7,405	5,656
05/08/99	---	---	---	---	101,549	166,875	46,769	298	12,733	9,053	5,594
05/09/99	---	---	---	---	122,936	83,466	65,795	368	17,611	7,086	4,560
05/10/99	176	79	51	139	69,353	64,184	96,989	177	29,980	9,350	5,047
05/11/99	226	361	25	110	49,816	89,846	128,312	424	16,279	17,176	6,179
05/12/99	120	228	21	95	47,851	43,685	124,389	272	22,630	9,076	7,117
05/13/99	226	343	18	139	60,693	39,463	52,889	349	7,670	18,876	5,961
<b>Total:</b>	1,493	1,257	456	1,416	1,840,250	1,450,091	836,055	3,860	183,397	130,548	58,337
<b># Days:</b>	10	10	10	10	14	14	14	14	14	14	14
<b>Average:</b>	149	126	46	142	131,446	103,578	59,718	276	13,100	9,325	4,167

### Wild Steelhead

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/30/99	24	39	15	29	9,584	8,837	3,050	292	2,177	5,796	3,014
05/01/99	---	---	---	---	10,217	9,360	2,579	286	1,690	8,757	1,751
05/02/99	---	---	---	---	16,125	6,817	3,755	358	2,523	7,801	1,945
05/03/99	3	42	19	23	9,489	13,910	3,101	190	2,245	6,851	2,622
05/04/99	1	62	38	15	6,450	14,064	3,469	332	2,141	6,410	1,712
05/05/99	3	27	18	21	10,845	8,937	4,842	246	4,708	6,338	1,113
05/06/99	13	54	15	6	4,373	4,014	1,726	339	4,095	4,595	3,487
05/07/99	5	76	19	19	3,774	3,987	2,035	313	2,665	4,691	3,118
05/08/99	---	---	---	---	6,612	8,258	1,965	281	2,149	5,800	3,378
05/09/99	---	---	---	---	7,329	6,510	3,987	209	3,202	5,731	2,382
05/10/99	7	66	16	18	5,500	7,198	5,818	139	3,683	7,368	2,004
05/11/99	8	261	10	8	4,683	8,538	9,655	258	2,671	5,650	3,416
05/12/99	8	245	12	14	5,011	3,973	7,334	218	2,640	6,949	3,156
05/13/99	12	398	20	18	6,389	3,922	2,969	229	788	5,971	2,948
<b>Total:</b>	84	1,270	182	171	106,381	108,325	56,285	3,690	37,377	88,708	36,046
<b># Days:</b>	10	10	10	10	14	14	14	14	14	14	14
<b>Average:</b>	8	127	18	17	7,599	7,738	4,020	264	2,670	6,336	2,575

#### 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)
04/30/99	0	0	0	0	0	0	0	23	57	6	0
05/01/99	---	---	---	---	0	0	0	31	113	33	109
05/02/99	---	---	---	---	0	0	0	56	344	3	0
05/03/99	0	0	0	0	0	0	0	28	187	252	0
05/04/99	0	0	0	0	0	0	0	28	277	52	38
05/05/99	1	0	0	0	0	0	0	35	692	39	37
05/06/99	0	0	0	1	0	0	0	48	930	55	0
05/07/99	0	0	0	1	0	0	0	19	355	63	145
05/08/99	---	---	---	---	0	0	0	15	995	67	0
05/09/99	---	---	---	---	0	0	0	121	539	20	102
05/10/99	1	0	0	0	0	0	0	5	1,315	188	74
05/11/99	11	0	0	1	0	0	0	2	758	254	73
05/12/99	2	0	0	6	0	0	0	3	189	107	336
05/13/99	4	0	0	6	0	0	0	0	594	423	192
<b>Total:</b>	19	0	0	15	0	0	0	414	7,345	1,562	1,106
<b># Days:</b>	10	10	10	10	14	14	14	14	14	14	14
<b>Average:</b>	2	0	0	2	0	0	0	30	525	112	79

Wild Sockeye											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/30/99	0	0	0	0	446	589	0	532	4,607	600	38
05/01/99	---	---	---	---	227	218	184	412	5,409	1,064	255
05/02/99	---	---	---	---	461	390	89	403	8,660	1,324	288
05/03/99	0	0	0	0	0	560	192	979	20,373	1,276	152
05/04/99	0	0	0	0	222	375	79	1,884	26,712	2,833	685
05/05/99	0	0	0	0	221	196	58	1,466	31,437	3,246	631
05/06/99	0	0	0	0	0	582	101	1,700	36,091	7,492	872
05/07/99	0	0	0	0	236	214	55	1,733	47,085	6,526	1,124
05/08/99	---	---	---	---	0	207	80	1,599	76,378	12,072	2,428
05/09/99	---	---	---	---	236	588	117	448	59,069	13,136	2,995
05/10/99	0	0	0	0	0	210	236	183	78,924	33,283	4,008
05/11/99	0	0	0	0	0	221	45	235	90,092	35,447	4,798
05/12/99	0	0	0	0	251	219	402	264	85,807	33,612	6,647
05/13/99	0	0	0	0	168	222	88	296	146,489	37,735	8,461
<b>Total:</b>	0	0	0	0	2,468	4,791	1,726	12,134	717,133	189,646	33,382
<b># Days:</b>	10	10	10	10	14	14	14	14	14	14	14
<b>Average:</b>	0	0	0	0	176	342	123	867	51,224	13,546	2,384

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 May 13, 1999**

DAM	Spring Chinook						Summer Chinook						Fall Chinook					
	1999		1998		10-Yr Avg.		1999		1998		10-Yr Avg.		1999		1998		10-Yr Avg.	
	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	32,031	4,831	32,904	397	59,437	1,703	0	0	0	0	0	0	0	0	0	0	0	0
TDA	12,329	2,432	21,590	263	32,581	896	0	0	0	0	0	0	0	0	0	0	0	0
JDA	8,429	1,323	17,841	129	24,098	655	0	0	0	0	0	0	0	0	0	0	0	0
MCN	4,560	525	14,608	120	21,256	587	0	0	0	0	0	0	0	0	0	0	0	0
IHR	1,611	329	8,958	41	9,711	181	0	0	0	0	0	0	0	0	0	0	0	0
LMN	626	125	6,754	20	7,257	120	0	0	0	0	0	0	0	0	0	0	0	0
LGS	248	49	4,814	9	**	**	0	0	0	0	**	**	0	0	0	0	**	**
LWG	352	88	5,523	17	5,541	74	0	0	0	0	0	0	0	0	0	0	0	0
PRD	1,372	4	1,820	0	5,261	20	0	0	0	0	0	0	0	0	0	0	0	0
RIS	114	4	443	0	1,204	3	0	0	0	0	0	0	0	0	0	0	0	0
RRH	41	10	119	0	199	0	0	0	0	0	0	0	0	0	0	0	0	0
WEL	0	0	1	14	127	5	0	0	0	0	0	0	0	0	0	0	0	0

DAM	Coho						Sockeye			Steelhead			
	1999		1998		10-Yr Avg.		10-Yr Avg.			10-Yr Avg.			Wild
	Adult	Jack	Adult	Jack	Adult	Jack	1999	1998	Avg.	1999	1998	Avg.	1999
BON	0	0	0	0	0	0	0	0	0	1,540	1,801	3,401	249
TDA	0	0	0	0	0	0	0	0	0	319	742	1,564	90
JDA	0	0	0	0	0	0	0	0	0	2,904	4,829	2,832	805
MCN	0	1	0	1	0	0	0	0	0	343	1,353	2,342	77
IHR	0	0	0	0	0	0	0	0	0	791	1,775	2,707	286
LMN	0	0	0	0	0	0	0	0	0	592	1,539	2,377	122
LGS	0	0	0	0	**	**	0	0	**	871	1,987	**	281
LWG	0	0	0	0	0	0	0	0	0	3,028	4,317	5,611	533
PRD	0	0	0	0	0	0	3	0	0	8	11	37	0
RIS	2	0	0	0	0	0	0	0	0	14	25	66	9
RRH	6	0	0	0	0	0	0	0	0	34	80	50	6
WEL	0	0	0	0	0	0	0	0	0	1	1	15	0

\*NOTE: The data is not being received and/or not being updated in a timely fashion.

\*RIS & LGS are through 5/8, RRH is through 5/9, LMN is through 5/11 and PRD is through 5/12 (5/11 missing).

\*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, RIS, and RRH, are not reporting Wild Steelhead numbers.

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

**Transportation Summary Report  
Two-Week Transportation Summary  
from 04/30/99 to 05/13/99**

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
<b>LOWER GRANITE DAM</b>						
Collected	888,650	600	1,275,650	3,100	1,600	2,169,600
Bypassed	34,707	0	26,006	5	0	60,718
Trucked	0	0	0	0	0	0
Barged	848,856	600	1,249,498	3,091	1,554	2,103,599
<b>Total Transported</b>	<b>848,856</b>	<b>600</b>	<b>1,249,498</b>	<b>3,091</b>	<b>1,554</b>	<b>2,103,599</b>
<b>LITTLE GOOSE DAM</b>						
Collected	1,323,130	0	1,235,956	12,752	3,781	2,575,619
Bypassed	0	0	0	0	0	0
Trucked	0	0	0	0	0	0
Barged	1,316,565	0	1,235,561	12,749	3,561	2,568,436
<b>Total Transported</b>	<b>1,316,565</b>	<b>0</b>	<b>1,235,561</b>	<b>12,749</b>	<b>3,561</b>	<b>2,568,436</b>
<b>LOWER MONUMENTAL DAM</b>						
Collected	751,148	0	724,591	2,258	1,398	1,479,395
Bypassed	25,260	0	212	0	0	25,472
Trucked	0	0	0	0	0	0
Barged	725,058	0	724,154	2,262	1,395	1,452,869
<b>Total Transported</b>	<b>725,058</b>	<b>0</b>	<b>724,154</b>	<b>2,262</b>	<b>1,395</b>	<b>1,452,869</b>
<b>M McNARY DAM</b>						
Collected	604,450	14,226	121,133	5,296	394,551	1,139,656
Bypassed	603,982	14,218	121,105	5,286	394,334	1,138,925
Trucked	0	0	0	0	0	0
Barged	0	0	0	0	0	0
<b>Total Transported</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PROJECT TOTALS</b>						
Collected	3,567,378	14,826	3,357,330	23,406	401,330	7,364,270
Bypassed	663,949	14,218	147,323	5,291	394,334	1,225,115
Trucked	0	0	0	0	0	0
Barged	2,890,479	600	3,209,213	18,102	6,510	6,124,904
<b>Total Transported</b>	<b>2,890,479</b>	<b>600</b>	<b>3,209,213</b>	<b>18,102</b>	<b>6,510</b>	<b>6,124,904</b>

**Transportation Summary Report  
Cumulative Transportation Summary  
through 05/13/99**

	Yearling Chinook	Subyearling Chinook	Steelhead	Coho	Sockeye	Total
<b>LOWER GRANITE DAM</b>						
Collected	1,551,346	1,316	1,982,542	3,907	4,958	3,544,069
Bypassed	70,951	0	44,046	8	0	115,005
Trucked	29,736	126	23,030	183	1,219	54,294
Barged	1,441,500	1,190	1,915,032	3,705	3,538	3,364,965
<b>Total Transported</b>	<b>1,471,236</b>	<b>1,316</b>	<b>1,938,062</b>	<b>3,888</b>	<b>4,757</b>	<b>3,419,259</b>
<b>LITTLE GOOSE DAM</b>						
Collected	2,162,670	0	1,680,005	15,317	6,487	3,864,479
Bypassed	0	0	0	0	0	0
Trucked	1,001	0	1,128	5	120	2,254
Barged	2,151,492	0	1,678,278	15,304	5,872	3,850,946
<b>Total Transported</b>	<b>2,152,493</b>	<b>0</b>	<b>1,679,406</b>	<b>15,309</b>	<b>5,992</b>	<b>3,853,200</b>
<b>LOWER MONUMENTAL DAM</b>						
Collected	1,112,916	7	884,254	2,353	3,172	2,002,702
Bypassed	26,148	0	534	0	0	26,682
Trucked	3,464	6	899	0	28	4,397
Barged	1,080,678	0	882,336	2,357	3,073	1,968,444
<b>Total Transported</b>	<b>1,084,142</b>	<b>6</b>	<b>883,235</b>	<b>2,357</b>	<b>3,101</b>	<b>1,972,841</b>
<b>M McNARY DAM</b>						
Collected	1,115,370	52,974	220,360	5,908	403,983	1,798,595
Bypassed	1,113,931	52,927	220,312	5,898	403,764	1,796,832
Trucked	0	0	0	0	0	0
Barged	0	0	0	0	0	0
<b>Total Transported</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>PROJECT TOTALS</b>						
Collected	5,942,302	54,297	4,767,161	27,485	418,600	11,209,845
Bypassed	1,211,030	52,927	264,892	5,906	403,764	1,938,519
Trucked	34,201	132	25,057	188	1,367	60,945
Barged	4,673,670	1,190	4,475,646	21,366	12,483	9,184,355
<b>Total Transported</b>	<b>4,707,871</b>	<b>1,322</b>	<b>4,500,703</b>	<b>21,554</b>	<b>13,850</b>	<b>9,245,300</b>