



Fish Passage Center

Weekly Report #98 - 6

April 24, 1998

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SUMMARY OF EVENTS:

Water Supply: Precipitation for the October through April period varied from 76% at Flathead to 118% at Klamath basin and Harney/Malheur basin. Most of the precipitation in the basin continues to fall in the 80% to 100% range. The precipitation distribution for April 1 through 21 shows high variation, with the highest precipitation in Harney/Malheur basin at 154% and lowest at Kootenai with 47%. Klamath basin, Hood/Lower Deshutes, and Owyhee/Malheur basin were sites with high precipitation, in the range of 134%-152%. Precipitation in the Columbia above Coulee was 71% of average, the Columbia above The Dalles was 89% of average and the Snake River above Ice Harbor was 117% of average.

The new April Midmonth Runoff Volume Forecast has been issued. There is no significant change compared to the April Final Runoff Volume Forecast for the major sites. In general, runoff volume forecast decreased by 1% in the upper Columbia basin at Libby and increased by 1% in the Snake River basin at Dworshak and Brownlee. The summary of results is shown in the following table.

Location	Period	March 98 Final		April 98 Final		April 98 Midmonth	
		MAF	%	MAF	%	MAF	%
Libby	Apr-Sep	5.37	79	5.52	82	5.51	81
Hungry Horse	Apr-Sep	1.62	74	1.62	74	1.61	74
Grand Coulee	Jan-Jul	54.8	87	55.6	88	5.56	88
The Dalles	Jan-Jul	91.7	87	90.8	86	90.8	86
Lower Granite	Jan-Jul	26.4	89	25.0	84	25.1	84
Dworshak	Apr-Jul	2.0	74	1.75	65	1.78	66
Brownlee	Apr-Jul	5.25	91	4.78	82	4.85	84

System Storage and Streamflow: The system was overdrafted earlier in the season for flood control purposes and for maintenance work. Most of the major reservoirs were below the BiOp required flood control elevation on April 20 and continue to refill. Consequently, current flows in the system are low and spring/summer flow targets at Lower Granite and McNary are jeopardized. The Fisheries Agencies submitted in a timely manner System Operational Requests to the Federal Operating Agencies during the winter season to alleviate this situation. Most of the requests were rejected. A summary of actual elevations and required flood control elevations at the end of April is shown in the following table.

Reservoir	Actual Elev. [ft] 4/22/98	Max. Reservoir Pool [ft]	End of April Flood Control Elev. [ft]
Libby	2393.11	2459.0	NA
Hungry Horse	2430.89	3560.0	3526.7
Grand Coulee	1271.50	1290.0	1281.2
Brownlee	2069.5	2077.0	2073.5
Dworshak	1559.41	1600.0	1595.4*

*required flood control elevation for April 15.

Libby continues at a minimum outflow of 4 kcfs to the end of April.

Hungry Horse continues to have a minimum outflow of about 200 cfs, controlling the flow of 3.5 kcfs at Columbia Falls. It continues to refill to the end of April flood control elevation.

Grand Coulee was drafted with outflows in the range of 54 to 98.3 kcfs during the last week in order to support higher flows at McNary. Projected operations for the coming week are to refill the reservoir to 1274 ft by May 3.

Brownlee continues to pass inflow in the range of 29 to 32 kcfs.

Dworshak increased releases to full powerhouse capacity of 9.9 kcfs on April 20 to support higher flows at Lower Granite. This outflow is expected to continue through April 29. If the natural inflow at Lower Granite increases to support the required flow of 90 to 95 kcfs at Lower Granite Dam, Dworshak outflow will be decreased.

Upper Snake reservoirs:

Currently the system is already at the end of April required storage level. The reservoirs will continue to pass inflow through the end of April. The April Midmonth Runoff Volume Forecast increased by 1%, compared to the April Final Runoff Volume Forecast for the Upper Snake Basin. The runoff volumes for the major sites remained in the range of 84% to 96% of average.

Jackson Lake is projected to pass an inflow of 0.6 kcfs by the end of next week. Currently the reservoir is 77% full.

Palisades continues to pass inflow to the end of next week. Currently, the outflow is 8 kcfs and the reservoir is 59% full.

American Falls continues to pass inflow of 12.1 kcfs to the end of next week.

Millner flow at the lowest point of the Upper Snake system is projected not to exceed 11 kcfs through the end of April. Current outflow is 7.96 kcfs because of the irrigation withdrawal of 3.3 kcfs at Minidoka.

The summary of average weekly flows for the run-of-the river projects during the April 10 through 22 period is shown in the following table.

Project	April 10-15	April 16-22
Priest Rapids	76.5 kcfs	85.8 kcfs
McNary	131.3 kcfs	144.3 kcfs
Lower Granite	58.4 kcfs	57.6 kcfs
Bonneville	151.8 kcfs	157.3 kcfs

Spill: Spill at Lower Granite Dam over the past week has averaged only 6.7 kcfs per day due to the conduct of the surface bypass collector studies. This limitation of spill is due to the stated need for a consistent powerhouse operation during the conduct of the test. However, the project has load factored on a daily basis. Little Goose and Lower Monumental dams have been spilling to the 120% total dissolved gas cap from 1800 hours to 0600 hours. Spill at Ice Harbor Dam has been provided on a 24-hour basis. Daytime spill is limited to 45 kcfs because of adult passage concerns. At the present flows, 100% of the flow is being spilled during nighttime hours.

Spill in the Lower Columbia River began on April 20, 1998. Spill was requested from 1800 to 0600 hours at McNary and John Day dams and for 24 hours per day at The Dalles and Bonneville dams, at amounts up to the 115/120% gas cap, consistent with a system-wide approach to passage management. The request asked that spill be limited to 75 kcfs during daytime hours at Bonneville Dam because of adult passage concerns. The request is being implemented above the minimum generation flows of 50 kcfs for McNary, The Dalles and John Day dams, and 30 kcfs at Bonneville Dam established by the operating agencies. Consequently, spill is occurring at levels lower than requested. At The Dalles Dam, research is being conducted with lower spill levels resulting in less than the 64% spill on alternate days. Spill for fish passage is occurring at all the Mid-Columbia projects.

Total Dissolved Gas Supersaturation and Gas Bubble Trauma Monitoring: Total dissolved gas levels are being managed to the gas waivers below Little Goose and Lower Monumental dams, and are well below the waivers at the other lower Snake projects. The gas levels in the lower Columbia are below the gas waivers at all sites. Limited data is available for the Mid-Columbia sites at this time, but levels at the sites monitored show dissolved gas levels below the waivers. Gas bubble trauma monitoring has occurred at all sites over the past week. A few fish are showing signs at Rock Island

Dam, but the percentage of fish showing signs remains well below the action criteria.

Smolt Monitoring: *Snake River Drainage.* Hatchery chinook numbers have dropped and wild chinook numbers increased slightly from last week's level in the traps on the lower Salmon (WTB), Imnaha (IMN), Grande Ronde (GRN) and Snake (LEW) rivers. Trap collections of hatchery and wild steelhead have remained low and relatively unchanged from last week with the exception of the wild steelhead catches in the Imnaha River trap, which jumped ten-fold (on April 22 and 23) over last week's level. Since April 21, passage indices of hatchery and wild chinook and wild steelhead at Lower Granite Dam have increased over two-fold from earlier days, while less change has occurred with hatchery steelhead. Hatchery and wild chinook passage indices at Little Goose and Lower Monumental dams have been rising quickly this week; hatchery chinook dominated the collections at these two sites this week.

Columbia River Drainage. Wild Wenatchee sockeye continued to dominate the collections at Rock Island Dam until the last day of this week when the collection of yearling chinook edged higher. Since April 22, passage indices of yearling chinook have risen nearly 20-fold from earlier days. The largest increase in passage indices at McNary Dam this week occurred for yearling chinook and hatchery steelhead. In the collections at John Day Dam, wild steelhead presence has increased the most, although yearling chinook continue to be most prevalent. The recent Spring Creek Hatchery release of subyearling tule fall chinook has dominated the collections at Bonneville Dam since April 21. But yearling chinook, coho, and wild steelhead saw a large increase in their respective passage index on April 23 at Bonneville Dam.

Adult Fish Passage: At Bonneville Dam, the cumulative count of adult spring chinook totaled 17,932 through April 23, and this total was less than half the 1997 count or the 10-year average through the same date. During the week, counts ranged between 775 and 1,921, with the average being 1,285 per day. Approximately 53% of the adult chinook counted at Bonneville Dam have passed The Dalles Dam. Based on a limited sample at Bonneville Dam, CRITFC reported that about 62% of the chinook they sampled at the Washington ladder were 5-year old fish and 38 to 39% were 4-year old fish. About 34% of the fish sampled had marine mammal scratches. Also, 44% of the fish were adipose clipped.

The count of adult chinook at McNary Dam was 2,855 with turnoff into the Snake River of 1,227 (Ice Harbor count) and about 116 counted at Priest Rapids Dam. Wells Dam will begin counting adult fish on May 1. Spring chinook will be trapped at the east and west fish ladders this season for adult broodstock for the Methow River. The chinook at the Lower Granite sampling site appeared to be fairly large; a few of the chinook have been measured at more than 100 cm. Also, there were 4 adult PIT tagged fish captured at the trap that were marked as part of the transportation study. Three were 5-year old fish and one was a 4-year old fish.

There has been no change at the WA shore fishway at Bonneville Dam regarding their fish turbine. One of the two turbines is operating with the second fish turbine projected to be back in service by May 22. All other adult fish passage facilities on the Snake and Columbia River appear to be working satisfactorily with no reported outages during the week.

Hatchery Releases: Final releases of yearling spring and summer chinook were completed in the Snake River basin for the 1998 migration year. Also, the yearling fall chinook released at Lyons Ferry Hatchery and Snake River and Clearwater acclimation sites are in-river and migrating through the river. The major activity at the hatcheries in Idaho, northeastern Oregon, and

southeast Washington will be release of steelhead during the next three weeks. Several million juvenile steelhead remain to be planted in the Snake River basin.

Mid-Columbia River hatcheries continued to release yearling spring and summer chinook and steelhead into the Okanogan, Methow, Entiat, Wenatchee, and main Columbia rivers during the week. The next week will also have large numbers of fish released from hatcheries. Subyearling chinook are normally released in late May, June and early July.

Yearling spring chinook were released into the Wind, Little White Salmon, Hood, and Deschutes rivers during the week. Only a small number of spring chinook remain to be released in the McNary to Bonneville Dam stretch of river. Summer and winter steelhead are being released into several of the mainstem tributaries during the week, with most of the steelhead projected for release by the end of the month. Coho continue to be volitionally released from Klickitat Hatchery and most of the other coho are already planted for the 1998 migration. The second release of "tule" fall chinook was completed during the week, with the final release scheduled for May 18.

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
04/10/98	70.8	0.0	72.4	0.0	75.8	0.0	73.9	0.0	74.3	0.0	78.3	4.3	79.2	0.0
04/11/98	44.7	0.0	48.8	0.0	51.4	0.0	55.8	0.0	56.3	0.0	62.8	0.0	69.9	0.0
04/12/98	38.4	0.0	37.9	0.0	41.9	0.0	45.7	0.0	45.8	0.0	53.0	0.0	70.1	0.0
04/13/98	63.8	0.0	70.9	0.0	76.4	0.0	77.5	0.0	77.6	0.0	78.5	0.0	70.2	0.0
04/14/98	80.6	0.0	71.2	0.0	74.2	0.0	79.5	0.0	79.8	0.0	71.1	0.0	73.5	0.0
04/15/98	54.1	0.0	61.5	0.0	68.2	0.9	70.9	7.8	73.5	11.6	87.0	0.0	95.9	0.0
04/16/98	54.3	0.0	53.0	0.0	54.9	4.6	55.6	9.9	55.1	18.0	67.2	3.8	73.9	0.0
04/17/98	61.3	0.0	63.4	0.0	68.5	6.4	69.1	6.6	69.5	20.4	68.5	14.2	69.7	7.2
04/18/98	58.1	0.0	57.3	0.0	63.7	6.0	72.3	10.7	72.1	19.9	84.5	16.8	94.2	55.1
04/19/98	28.2	0.0	29.1	0.0	48.5	4.2	45.8	9.6	46.4	19.3	62.1	14.0	88.1	52.8
04/20/98	96.3	0.0	95.9	0.0	84.1	6.2	81.2	9.5	81.7	20.9	75.0	14.9	75.1	45.3
04/21/98	91.2	0.0	101.0	0.0	102.5	8.4	102.1	9.3	102.4	20.3	91.2	18.8	98.6	59.0
04/22/98	98.3	0.0	98.0	0.0	104.8	8.1	108.5	14.2	108.5	26.9	91.3	18.6	101.0	61.5
04/23/98	80.3	0.0	77.9	0.0	86.0	7.6	98.4	16.8	99.5	30.1	108.3	22.2	134.2	78.4

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

Date	Dworshak		Brownlee		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
04/10/98	1.3	0.0	---	---	60.2	28.2	56.0	23.0	58.5	19.6	63.4	55.0
04/11/98	1.3	0.0	---	---	60.7	25.1	59.5	22.9	61.9	18.5	66.6	52.8
04/12/98	1.3	0.0	---	---	58.4	25.1	54.8	20.8	55.6	17.8	59.9	46.3
04/13/98	1.3	0.0	---	---	58.4	15.5	54.5	23.1	57.5	19.2	63.0	53.0
04/14/98	1.3	0.0	---	---	55.5	5.7	57.6	23.1	58.2	19.1	61.7	51.5
04/15/98	1.3	0.0	---	---	57.3	5.9	55.6	19.7	59.0	18.6	62.6	53.0
04/16/98	1.3	0.0	---	---	55.8	6.0	55.6	22.0	56.9	19.7	62.1	50.6
04/17/98	1.3	0.0	---	---	55.4	6.0	56.7	22.6	58.6	18.1	58.6	46.9
04/18/98	1.3	0.0	---	---	53.5	6.0	54.2	18.1	55.7	19.1	58.2	50.5
04/19/98	1.3	0.0	---	---	52.8	6.0	51.5	17.0	53.3	15.5	58.0	45.7
04/20/98	9.6	0.0	---	---	58.2	6.0	58.1	19.6	60.3	19.0	63.9	51.0
04/21/98	9.9	0.0	---	---	64.7	9.5	65.9	22.6	69.8	18.2	75.8	57.8
04/22/98	9.9	0.0	---	---	62.5	6.7	61.7	23.1	62.3	19.7	64.8	53.4
04/23/98	9.9	0.0	---	---	71.4	6.5	69.1	22.9	70.3	18.0	76.4	59.5

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		
04/10/98	130.8	0.0	125.8	0.0	134.3	0.0	148.1	0.0	66.5	72.4
04/11/98	136.0	0.0	156.7	0.0	155.7	0.0	152.3	0.0	66.3	76.9
04/12/98	128.9	0.0	128.4	0.0	128.2	0.0	148.7	0.0	64.8	74.8
04/13/98	133.6	0.0	148.3	0.0	151.8	0.0	152.7	0.0	68.2	75.1
04/14/98	125.6	0.0	138.8	0.0	142.0	0.0	150.8	0.0	65.6	76.0
04/15/98	132.9	0.0	141.9	0.0	140.0	0.0	158.7	0.0	67.8	81.7
04/16/98	144.7	0.0	148.3	0.0	148.8	0.0	141.7	0.0	65.5	67.0
04/17/98	137.9	0.0	160.1	0.0	166.4	0.0	162.1	0.0	63.8	89.1
04/18/98	129.3	0.0	136.9	0.0	138.2	0.0	160.9	0.0	64.8	86.9
04/19/98	141.8	0.0	147.6	0.2	146.2	0.0	138.3	0.3	64.1	64.7
04/20/98	145.6	49.5	155.1	43.3	153.1	89.8	174.2	88.0	51.7	25.2
04/21/98	155.7	50.6	162.9	51.4	157.4	54.5	162.3	91.6	58.3	3.2
04/22/98	155.0	58.4	155.0	47.2	144.1	77.7	161.8	92.2	53.9	6.5
04/23/98	202.8	74.7	196.3	66.0	186.6	68.5	95.1	89.3	61.0	35.6

These data were obtained from the Corps of Engineers through their CAFE reports #96 and #71.

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

Site	Date and Species	Number of Fish	Number w GBT signs	Number w Fin Signs	% Fin GBT	% Severe Fin GBT	Number of Fish with Fin GBT Listed by Highest Rank				Fish with L. Line GBT	
							Rank 1	Rank 2	Rank 3	Rank 4	Num Fish	Avg. Rank
Lower Granite Dam												
	04/15/98 Yearling Chinook	100	2	0	0.00%	0.00%	0	0	0	0	2	1
	04/15/98 Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/17/98 Yearling Chinook	100	2	1	1.00%	0.00%	1	0	0	0	1	1
	04/17/98 Steelhead	92	3	0	0.00%	0.00%	0	0	0	0	3	1
	04/20/98 Yearling Chinook	100	2	1	1.00%	0.00%	1	0	0	0	1	1
	04/20/98 Steelhead	98	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/22/98 Yearling Chinook	100	4	0	0.00%	0.00%	0	0	0	0	4	1
	04/22/98 Steelhead	100	2	0	0.00%	0.00%	0	0	0	0	2	1
Little Goose Dam												
	04/14/98 Yearling Chinook	56	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/14/98 Steelhead	77	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/16/98 Yearling Chinook	100	1	1	1.00%	0.00%	1	0	0	0	0	0
	04/16/98 Steelhead	100	2	2	2.00%	0.00%	2	0	0	0	0	0
	04/18/98 Yearling Chinook	100	1	1	1.00%	0.00%	1	0	0	0	0	0
	04/18/98 Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/21/98 Yearling Chinook	100	1	1	1.00%	0.00%	1	0	0	0	0	0
	04/21/98 Steelhead	49	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/23/98 Yearling Chinook	99	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/23/98 Steelhead	23	0	0	0.00%	0.00%	0	0	0	0	0	0
Lower Monumental Dam												
	04/15/98 Yearling Chinook	100	5	0	0.00%	0.00%	0	0	0	0	5	1
	04/15/98 Steelhead	55	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/17/98 Yearling Chinook	96	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/17/98 Steelhead	86	2	2	2.32%	0.00%	2	0	0	0	0	0
	04/20/98 Yearling Chinook	100	3	2	2.00%	0.00%	2	0	0	0	1	1
	04/20/98 Steelhead	100	1	1	1.00%	0.00%	1	0	0	0	0	0
	04/22/98 Yearling Chinook	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/22/98 Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
Ice Harbor Dam												
	04/14/98 Steelhead	1	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/17/98 Yearling Chinook	2	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/17/98 Steelhead	1	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/21/98 Yearling Chinook	17	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/21/98 Steelhead	13	0	0	0.00%	0.00%	0	0	0	0	0	0

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

Site	Species and Date	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
McNary Dam												
	04/14/98 Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/14/98 Steelhead	10	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/16/98 Yearling Chinook	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/16/98 Steelhead	15	1	1	6.66%	0.00%	1	0	0	0	0	0
	04/18/98 Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/18/98 Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/21/98 Yearling Chinook	100	2	0	0.00%	0.00%	0	0	0	0	2	1
	04/21/98 Steelhead	100	1	0	0.00%	0.00%	0	0	0	0	1	2
	04/23/98 Yearling Chinook	96	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/23/98 Steelhead	93	2	0	0.00%	0.00%	0	0	0	0	2	1
John Day Dam												
	04/14/98 Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/15/98 Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/16/98 Steelhead	85	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/17/98 Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/18/98 Steelhead	5	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/19/98 Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/21/98 Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/22/98 Steelhead	44	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/23/98 Yearling Chinook	100	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/24/98 Steelhead	100	0	0	0.00%	0.00%	0	0	0	0	0	0
Bonneville Dam												
	04/16/98 Yearling Chinook	92	5	5	5.43%	0.00%	3	2	0	0	0	0
	04/17/98 Steelhead	50	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/18/98 Yearling Chinook	100	4	2	2.00%	0.00%	2	0	0	0	2	1
	04/20/98 Steelhead	47	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/21/98 Yearling Chinook	90	1	0	0.00%	0.00%	0	0	0	0	1	1
	04/22/98 Steelhead	11	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/23/98 Yearling Chinook	100	2	0	0.00%	0.00%	0	0	0	0	2	1
Rock Island Dam												
	04/15/98 Yearling Chinook	24	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/15/98 Steelhead	6	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/17/98 Yearling Chinook	11	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/17/98 Steelhead	8	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/20/98 Yearling Chinook	16	0	0	0.00%	0.00%	0	0	0	0	0	0
	04/20/98 Steelhead	17	1	1	5.88%	0.00%	1	0	0	0	0	0
	04/22/98 Yearling Chinook	100	5	5	5.00%	0.00%	5	0	0	0	0	0
	04/22/98 Steelhead	27	1	1	3.70%	0.00%	1	0	0	0	0	0

**Hatchery Release Summary
Schedule for Last Two Weeks
From 4/10/98 to 4/23/98**

Hatchery	Species	FPC LotID	Number Released	Release Dates		Release Site	River Name
				Begin	End		
IDFG							
Clearwater	SU Steelhead	98084	207,900	04/20/98	04/20/98	Clear Cr	Clearwater River, Main Fk
Magic Valley	SU Steelhead	98118	52,800	04/13/98	04/13/98	Squaw Cr Acclim Pd	Salmon River
	SU Steelhead	98008	286,470	04/13/98	04/15/98	Little Salmon R	Salmon River
	SU Steelhead	98112	144,000	04/15/98	04/16/98	Mcnabb/Salmon R	Salmon River
	SU Steelhead	98113	150,000	04/16/98	04/17/98	Bruno/Salmon	Salmon River
	SU Steelhead	98111	120,000	04/20/98	04/21/98	Lemhi R	Salmon River
	SU Steelhead	98114	292,000	04/21/98	04/23/98	N Fk Salmon R	Salmon River
McCall	SU Chinook	98010	24,900	04/01/98	04/15/98	S Fk Salmon R	Salmon River
Niagara Springs	SU Steelhead	98119	830,000	04/12/98	05/02/98	Pahsimeroi H	Pahsimeroi River
Pahsimeroi	SU Chinook	98011	65,100	04/15/98	04/25/98	Pahsimeroi H	Pahsimeroi River
Rapid River	SP Chinook	98007	896,250	03/16/98	04/10/98	Rapid River H	Little Salmon River
Sawtooth	SP Chinook	98012	43,200	04/10/98	04/22/98	Sawtooth H	Salmon River
	Agency Total:		3,112,620				
Nez Perce Tribe							
Lyons Ferry	FA Chinook	98043	76,571	04/01/98	04/15/98	Clearwater R	Clearwater River, Main Fk
	FA Chinook	98042	147,585	04/01/98	04/15/98	Pittsburg Landing	Snake River
	FA Chinook	98044	135,710	04/01/98	04/15/98	Cpt John Accl Pd	Snake River
	Agency Total:		359,866				
ODFW							
Big Canyon	SU Steelhead	98103	97,500	04/01/98	04/15/98	Big Canyon H	Grande Ronde River
Cascade	Coho	98054	1,000,000	04/01/98	04/10/98	Umatilla R	Umatilla River
Li Sheep	SU Steelhead	98109	82,000	04/23/98	04/23/98	L Sheep Acclim Pd	Imnaha River
Lookingglass	SP Chinook	98097	293,000	04/06/98	04/10/98	Lookingglass H	Grande Ronde River
Round Butte	SP Chinook	98130	50,000	04/13/98	04/14/98	Bel. Pelton Dam	Deschutes River
	SP Chinook	98128	280,000	04/20/98	04/23/98	Bel. Pelton Dam	Deschutes River
	Agency Total:		1,802,500				
Umatilla Tribe							
Bonifer	SU Steelhead	98051	50,000	04/10/98	04/20/98	Bonifer H	Umatilla River
Minthorn	SU Steelhead	98053	50,000	04/10/98	04/20/98	Minthorn Acclim Pd	Umatilla River
Thornhollow	SP Chinook	98050	100,000	04/10/98	04/20/98	Thornhollow Acclim Pd	Umatilla River
	FA Chinook	98046	225,000	04/10/98	04/20/98	Thornhollow Acclim Pd	Umatilla River
	Agency Total:		425,000				

Hatchery Release Summary
Schedule for Last Two Weeks
From 4/10/98 to 4/23/98

Hatchery	Species	FPC	Number	Release Dates		Release Site	River Name
		LotID	Released	Begin	End		
USFWS							
Carson	SP Chinook	98059	1,734,188	04/20/98	04/20/98	Carson H	Wind River
Dworshak	SU Steelhead	98061	380,000	04/20/98	04/28/98	Kooskia H	Clearwater River, Main Fk
	SU Steelhead	98060	520,000	04/20/98	04/28/98	S Fk Clearwater R	Clearwater River, Main Fk
Hagerman	SU Steelhead	98067	605,000	03/31/98	04/30/98	Sawtooth H	Salmon River
	SU Steelhead	98065	60,000	03/31/98	04/30/98	Sawtooth H	Salmon River
	SU Steelhead	98068	361,000	04/13/98	04/30/98	Little Salmon R	Salmon River
Leavenworth	SP Chinook	98069	1,700,000	04/20/98	04/20/98	Leavenworth H	Wenatchee River
L White Salmon	SP Chinook	98070	1,070,000	04/20/98	04/20/98	Little White Salmon H	Little White Salmon River
Spring Creek	SP Chinook	98057	150,000	04/16/98	04/16/98	White Salmon R	Columbia River
	FA Chinook	98074	4,200,000	04/20/98	04/20/98	Spring Creek H	Columbia River
Willard	Coho	98077	1,800,000	04/15/98	04/15/98	Little White Salmon R	Columbia River
Winthrop	SP Chinook	98078	324,851	04/14/98	04/14/98	Winthrop H	Methow River
Warm Springs	SP Chinook	98076	665,000	03/25/98	04/15/98	Warm Springs R	Deschutes River
	Agency Total:		13,570,039				
WDFW							
Chewuch	SP Chinook	98025	92,000	04/06/98	04/20/98	Chewuch R	Methow River
East Bank	SU Steelhead	98020	276,000	04/15/98	05/05/98	Wenatchee R	Wenatchee River
Klickitat	Coho	98095	1,000,000	04/20/98	06/10/98	Klickitat H	Klickitat River
Lyons Ferry	FA Chinook	98041	450,000	04/01/98	04/15/98	Lyons Ferry H	Snake River
	SU Steelhead	98033	80,000	04/15/98	04/30/98	Lyons Ferry H	Snake River
	SU Steelhead	98034	300,000	04/15/98	04/30/98	Cottonwood Accl Pd	Grande Ronde River
	SU Steelhead	98035	140,000	04/15/98	04/30/98	Dayton Acclim Pd	Wallowa River
	SU Steelhead	98036	160,000	04/15/98	04/30/98	Tucannon R	Snake River
	SU Steelhead	98037	135,000	04/15/98	04/30/98	Walla Walla R	Walla Walla River
Methow	SP Chinook	98026	77,400	04/06/98	04/20/98	Twisp R	Methow River
	SP Chinook	98024	203,000	04/06/98	04/20/98	Methow H	Methow River
	SU Chinook	98017	340,000	04/15/98	04/15/98	Carlton Accl Pd	Methow River
Ringold	SU Steelhead	98141	180,000	04/15/98	04/30/98	Ringold Springs H	Mid-Columbia River
Tucannon	SP Chinook	98039	15,000	03/12/98	04/15/98	Tucannon H	Tucannon River
	SP Chinook	98038	49,000	03/12/98	04/15/98	Curl Lake	Tucannon River
Turtle Rock	SU Chinook	98023	134,400	04/22/98	04/22/98	Turtle Rock H	Mid-Columbia River

Hatchery Release Summary
Schedule for Last Two Weeks
From 4/10/98 to 4/23/98

Hatchery	Species	FPC	Number	Release Dates		Release Site	River Name
		LotID	Released	Begin	End		
Wells	SU Steelhead	98028	50,000	04/15/98	04/15/98	Similkameen Acclim Pd	Okanogan River
	SU Chinook	98027	357,000	04/15/98	04/24/98	Wells H	Mid-Columbia River
	SU Steelhead	98029	50,000	04/23/98	05/05/98	Okanogan R	Mid-Columbia River
	SU Steelhead	98031	320,000	04/23/98	05/05/98	Methow R	Mid-Columbia River
	Agency Total:		4,408,800				
Warm Springs Tribe							
Oak Springs	SU Steelhead	98133	60,000	04/08/98	04/10/98	Hood R	Hood River
	WI Steelhead	98131	30,000	04/13/98	04/19/98	E Fk Hood R	Hood River
Round Butte	SP Chinook	98134	62,000	04/06/98	04/13/98	Hood R	Hood River
	SP Chinook	98135	62,000	04/20/98	05/02/98	Hood R	Hood River
	Agency Total:		214,000				
Yakama Tribe							
Lewis River	Coho	98143	138,000	04/15/98	04/30/98	Klickitat R	Klickitat River
	Agency Total:		138,000				
	Total Release:		24,030,825				

Hatchery Release Summary
Schedule for Next Two Weeks
From 4/24/98 to 5/7/98

Hatchery	Species	FPC LotID	Number Released	Release Dates		Release Site	River Name
				Begin	End		
IDFG							
Clearwater	SU Steelhead	98083	5,200	04/24/98	04/24/98	Red R	S Fk Clearwater River
	SU Steelhead	98085	489,625	04/27/98	04/30/98	S Fk Clearwater R	Clearwater River, Main Fk
Eagle	Sockeye	98091	82,300	04/27/98	05/15/98	Redfish Lake Cr	Salmon River
Magic Valley	SU Steelhead	98115	335,000	04/24/98	04/28/98	E Fk Salmon R	Salmon River
	SU Steelhead	98117	180,000	04/27/98	05/02/98	Slate Cr	Salmon River
	SU Steelhead	98116	122,000	04/29/98	04/30/98	E Fk Salmon R	Salmon River
Niagara Springs	SU Steelhead	98121	69,000	05/03/98	05/05/98	Little Salmon R	Salmon River
Sawtooth	SU Steelhead	98126	565,000	04/24/98	04/24/98	Sawtooth H	Salmon River
	SU Steelhead	98124	60,000	04/24/98	04/24/98	Torrey'S (Salmon R)	Salmon River
	SU Steelhead	98125	60,000	04/24/98	04/24/98	Sawtooth H	Salmon River
	SU Steelhead	98127	60,000	04/24/98	04/24/98	Sawtooth H	Salmon River
	Agency Total:		2,028,125				
ODFW							
Wallowa	SU Steelhead	98106	200,000	05/05/98	05/05/98	Wallowa Acclim Pd	Grande Ronde River
	SU Steelhead	98105	200,000	05/06/98	05/20/98	Wallowa Acclim Pd	Grande Ronde River
	Agency Total:		400,000				
USFWS							
Dworshak	SU Steelhead	98062	1,200,000	04/29/98	05/08/98	Dworshak H	Clearwater River, Main Fk
Hagerman	SU Steelhead	98066	60,000	04/24/98	04/24/98	Torrey'S (Salmon R)	Salmon River
	Agency Total:		1,260,000				
Washington							
East Bank	SU Chinook	98016	624,000	04/28/98	04/28/98	Dryden Accl Pd	Wenatchee River
	SP Chinook	98015	15,000	04/29/98	04/29/98	Chiwawa H	Wenatchee River
Turtle Rock	SU Steelhead	98019	146,300	04/27/98	05/05/98	Wenatchee R	Wenatchee River
Wells	SU Steelhead	98030	50,000	05/01/98	05/05/98	Effy Bridge	Methow River
	Agency Total:		835,300				
Warm Springs Tribe							
Oak Springs	WI Steelhead	98132	30,000	04/24/98	05/04/98	E Fk Hood R	Hood River
	Agency Total:		30,000				
	Total Release:		4,553,425				

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

Total Dissolved Gas Saturation Data at Upper Columbia Sites

Date	Can. Boundary			Grand Coulee				Tlwr G. Coulee				Chief Joseph				Wells				Rocky Reach				
	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#			
	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr			
4/10	110	114	115	24	107	108	108	24	105	105	105	24	107	107	107	22	106	106	107	12	108	109	109	23
4/11	109	110	111	24	108	108	108	24	105	106	107	24	107	107	108	22	---	---	---	0	109	110	110	23
4/12	107	110	115	24	107	107	108	24	105	106	107	24	106	106	107	22	---	---	---	0	110	110	111	23
4/13	105	106	109	24	106	107	108	24	104	105	105	24	106	106	107	22	106	107	108	23	107	108	109	23
4/14	104	104	106	24	106	107	108	24	104	104	105	24	106	106	107	22	106	106	107	23	108	108	108	23
4/15	104	105	107	24	105	106	107	24	104	105	105	24	106	106	107	24	106	106	107	24	108	108	109	22
4/16	103	103	104	24	105	105	107	24	103	104	104	24	106	106	106	22	105	105	106	23	107	108	108	22
4/17	103	104	104	24	104	105	107	24	103	103	104	24	105	106	106	22	105	105	105	8	108	108	108	23
4/18	103	104	105	24	106	107	107	24	103	103	104	24	105	106	106	24	105	105	105	12	107	108	108	23
4/19	104	104	105	24	107	108	109	24	104	105	106	24	105	106	107	22	106	107	110	21	108	109	110	23
4/20	104	105	105	24	107	109	109	24	103	104	104	24	106	106	107	22	105	105	105	5	109	109	110	23
4/21	105	105	106	24	109	109	110	24	104	104	105	24	106	106	107	22	---	---	---	0	110	110	111	23
4/22	105	106	106	24	109	110	112	24	104	105	105	24	107	107	108	22	106	106	107	13	111	111	112	21
4/23	106	107	108	24	112	112	113	20	105	106	107	24	108	108	108	22	107	107	108	23	112	112	112	22

Total Dissolved Gas Saturation Data at Mid Columbia Sites

Date	Tlwr Rocky R.			Rock Island				Tlwr Rock Island				Wanapum				Tlwr Wanapum				Priest Rapids				
	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#			
	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr			
4/10	---	---	---	0	105	106	106	23	107	107	107	23	---	---	---	0	---	---	---	0	---	---	---	0
4/11	---	---	---	0	104	105	106	23	107	107	107	23	---	---	---	0	---	---	---	0	---	---	---	0
4/12	---	---	---	0	104	105	106	23	107	107	107	23	---	---	---	0	---	---	---	0	---	---	---	0
4/13	---	---	---	0	105	105	106	23	106	106	107	23	---	---	---	0	---	---	---	0	---	---	---	0
4/14	---	---	---	0	105	105	106	23	106	106	107	23	---	---	---	0	---	---	---	0	---	---	---	0
4/15	107	107	110	13	105	105	105	23	110	113	114	23	---	---	---	0	---	---	---	0	---	---	---	0
4/16	109	111	113	22	105	105	107	22	114	115	116	22	---	---	---	0	---	---	---	0	---	---	---	0
4/17	108	109	111	23	105	107	108	23	113	114	115	23	---	---	---	0	---	---	---	0	---	---	---	0
4/18	107	107	108	23	106	106	107	23	113	114	114	23	---	---	---	0	---	---	---	0	---	---	---	0
4/19	108	108	109	23	105	106	107	23	113	114	115	23	---	---	---	0	---	---	---	0	---	---	---	0
4/20	108	108	109	12	106	107	108	23	112	112	112	23	---	---	---	0	---	---	---	0	---	---	---	0
4/21	---	---	---	0	108	108	109	23	113	113	115	23	---	---	---	0	---	---	---	0	---	---	---	0
4/22	---	---	---	0	109	110	110	21	115	116	117	21	---	---	---	0	---	---	---	0	---	---	---	0
4/23	---	---	---	0	110	111	111	22	118	118	120	22	---	---	---	0	---	---	---	0	---	---	---	0

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

Date	Dwnstr P Rapids			Dworshak				Clearwater				Snake-Lewiston				Lower Granite				Tlwr L. Granite				
	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#			
	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr	Avg	Avg High	hr			
4/10	---	---	---	0	109	109	111	11	101	102	102	24	102	102	104	16	105	105	106	24	109	111	112	24
4/11	116	116	120	14	---	---	---	0	101	102	103	24	101	101	102	11	105	105	106	24	108	112	113	24
4/12	---	---	---	0	110	111	112	24	101	101	102	24	---	---	---	0	104	104	105	24	108	112	112	24
4/13	---	---	---	0	110	110	111	23	101	102	102	24	101	102	104	24	104	104	105	23	105	107	111	22
4/14	---	---	---	0	109	110	110	23	101	101	101	24	102	102	104	24	103	103	104	24	103	104	104	24
4/15	---	---	---	0	101	102	102	24	101	102	102	24	102	103	104	24	102	102	103	24	103	104	104	24
4/16	---	---	---	0	109	110	111	24	101	101	102	24	102	103	104	24	102	102	102	15	103	103	103	14
4/17	---	---	---	0	109	109	110	24	100	100	101	13	101	101	102	12	102	102	103	24	103	103	103	24
4/18	---	---	---	0	100	101	101	24	100	101	101	24	102	103	106	24	104	104	105	24	103	104	104	24
4/19	---	---	---	0	109	110	111	24	100	101	101	24	103	104	106	24	103	103	104	24	104	104	104	24
4/20	---	---	---	0	100	101	108	24	101	102	102	24	102	104	105	24	105	106	108	24	104	104	105	24
4/21	---	---	---	0	99	100	101	23	101	101	102	24	102	104	105	24	106	108	109	24	105	106	106	24
4/22	---	---	---	0	100	100	100	24	101	101	102	24	102	103	104	24	107	108	108	24	106	107	107	23
4/23	---	---	---	0	99	99	100	13	101	101	102	24	102	103	104	24	106	106	107	3	107	107	108	15

¹ Data provided by the Corps of Engineers.

² Dissolved gas readings and averages have been rounded to the nearest integer.

**Total Dissolved Gas Saturation (%) - Average of
12 Highest Hours, 24 h Average and 24 h High¹**

Total Dissolved Gas Saturation Data at Snake Sites

Date	Little Goose			Tlwr L. Goose				Lower Mon.				Tlwr L. Mon				Ice Harbor				Tlwr Ice Harbor				
	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#			
4/10	109	111	111	24	---	---	---	0	115	117	119	19	121	121	122	7	110	111	111	21	---	---	---	0
4/11	113	114	114	24	117	120	121	24	114	116	118	20	119	120	121	21	113	114	114	21	---	---	---	0
4/12	113	113	113	24	116	119	120	24	112	113	114	23	117	119	121	24	114	114	114	24	---	---	---	0
4/13	112	112	112	23	116	120	122	23	113	114	115	22	118	120	121	23	114	114	114	23	114	115	116	22
4/14	110	111	111	24	115	120	123	24	112	113	115	24	118	120	121	24	113	113	114	24	115	115	117	24
4/15	108	109	109	24	113	118	119	23	113	114	116	24	118	120	121	24	113	113	115	24	114	115	116	24
4/16	108	109	109	24	114	119	120	24	112	113	114	22	118	120	121	24	112	113	113	24	114	115	116	24
4/17	105	105	107	24	113	119	120	24	111	111	112	23	117	120	122	24	112	113	113	24	114	115	115	24
4/18	103	104	104	24	110	116	118	24	112	113	114	23	117	120	121	24	114	114	116	24	114	115	116	24
4/19	102	103	103	24	110	116	119	24	112	113	114	24	117	119	121	24	114	115	115	24	114	115	116	24
4/20	104	105	109	24	111	118	120	24	111	112	115	24	117	120	121	24	114	115	117	24	114	115	116	24
4/21	107	109	113	24	112	119	120	24	110	112	113	24	117	120	122	24	115	115	116	19	115	115	115	19
4/22	107	108	110	24	114	120	120	24	111	112	113	23	118	121	122	24	116	117	117	24	115	116	117	24
4/23	107	108	110	24	120	120	120	2	114	115	116	22	119	120	122	16	117	118	122	21	115	116	117	21

Total Dissolved Gas Saturation Data at Lower Columbia Sites

Date	McNary-Oregon			McNary-Wash.				Tlwr McNary				John Day				Tlwr John Day				The Dalles				
	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#			
4/10	108	110	112	24	108	108	109	24	107	108	108	24	104	104	105	22	103	103	104	24	104	104	105	22
4/11	107	108	108	24	108	108	108	24	108	108	109	24	104	104	105	22	103	104	104	24	104	104	104	22
4/12	108	110	111	24	107	107	107	24	107	107	108	24	103	104	104	22	103	103	103	24	103	103	103	22
4/13	108	109	110	23	107	108	108	22	107	107	107	22	103	103	104	22	102	103	103	24	103	103	103	22
4/14	108	108	110	23	107	107	108	23	106	106	106	23	103	103	103	22	102	102	102	24	102	102	102	22
4/15	105	106	108	24	107	107	108	24	105	106	106	24	102	102	102	24	101	102	102	24	102	102	102	24
4/16	105	106	107	23	106	106	107	24	105	105	106	24	101	102	102	22	101	101	101	24	101	101	102	22
4/17	108	109	112	24	107	108	112	24	106	106	107	24	102	102	104	22	100	101	101	23	101	101	102	22
4/18	108	109	110	24	109	110	112	24	106	107	107	24	103	104	105	24	101	101	101	24	102	102	102	24
4/19	108	110	113	24	107	107	109	24	106	107	107	24	102	102	102	22	101	102	109	24	102	102	102	22
4/20	109	111	112	24	110	112	114	24	112	116	118	24	104	104	106	22	109	114	116	24	102	103	103	22
4/21	110	113	116	24	110	111	114	24	112	116	120	24	104	104	106	22	112	112	117	8	107	108	113	22
4/22	111	113	114	24	114	116	118	24	116	119	120	24	107	107	109	22	111	113	119	15	110	113	115	22
4/23	114	114	119	16	115	116	116	17	116	117	120	17	107	107	108	22	112	119	120	24	111	113	116	22

Total Dissolved Gas Saturation Data at Lower Columbia Sites

Date	Dnstr T. Dalles			Bonneville				Warrendale				Skamania				CamasWash.				Wauna Mill				
	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#	24 h	12 h	#			
4/10	104	104	105	23	104	105	105	22	104	105	105	22	104	104	105	22	104	104	105	23	104	104	105	23
4/11	104	104	104	23	105	105	105	22	105	105	105	22	104	104	105	22	104	104	105	23	104	104	105	23
4/12	103	103	104	23	104	104	104	22	104	104	105	22	103	104	104	22	104	104	105	23	103	103	104	23
4/13	102	102	103	23	103	103	104	22	104	104	104	22	103	103	103	22	103	103	104	23	103	103	103	23
4/14	102	102	102	22	102	102	103	22	103	103	104	22	102	103	103	22	103	104	104	23	103	103	103	23
4/15	101	102	102	24	103	103	104	24	102	102	103	24	102	103	103	24	102	102	103	24	103	103	103	24
4/16	101	101	102	23	103	103	103	22	102	102	103	22	103	103	103	22	102	103	104	23	103	103	103	23
4/17	101	102	102	23	103	103	104	22	103	103	104	22	103	103	104	22	103	105	106	23	103	103	104	23
4/18	102	102	103	24	104	104	104	24	103	103	104	24	103	103	104	24	103	104	105	24	103	103	104	24
4/19	101	102	102	23	104	104	105	22	103	103	104	22	103	104	104	22	104	105	106	23	103	104	104	23
4/20	111	113	114	23	105	105	105	22	110	112	114	22	113	116	120	22	107	110	114	23	104	105	105	23
4/21	112	113	115	23	105	106	106	22	111	113	115	22	118	119	121	22	113	117	119	23	104	105	106	23
4/22	116	116	117	23	113	116	117	22	115	116	117	22	120	121	122	22	116	118	120	23	106	107	107	23
4/23	114	117	119	23	114	115	116	22	116	118	120	22	118	121	123	22	115	116	117	23	107	107	107	23

¹ Data provided by the Corps of Engineers.

² Dissolved gas readings and averages have been rounded to the nearest integer.

Two-Week Summary of Passage Indices

Yearling Chinook

Date	Hatchery							Hatchery/Wild Combined			
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/10/98	134	2,886	1,135	4	4,735	88	554	20	9,429	1,149	---
04/11/98	---	2,638	---	---	5,052	111	907	15	4,762	3,986	---
04/12/98	---	2,980	---	---	5,762	246	398	11	4,833	1,374	---
04/13/98	479	1,426	46	17	7,239	242	817	16	4,312	4,194	---
04/14/98	228	1,390	33	46	7,237	428	696	39	2,655	5,140	993
04/15/98	294	733	15	42	18,800	529	949	24	6,432	3,662	653
04/16/98	370	327	4	76	12,767	952	1,438	20	6,781	4,176	882
04/17/98	361	160	8	336	12,516	1,385	1,560	24	6,901	5,448	585
04/18/98	---	---	---	---	13,712	1,975	2,841	50	6,630	4,673	983
04/19/98	---	---	---	---	23,354	3,213	4,617	17	10,840	6,460	918
04/20/98	172	112	2	32	21,108	2,976	3,184	28	15,442	5,294	1,084
04/21/98	30	101	3	49	47,408	3,185	6,176	23	12,759	5,010	2,904
04/22/98	207	187	9	71	56,524	7,375	9,184	328	15,410	2,900	7,588
04/23/98	195	125	5	58	52,978	8,711	14,161	500	9,451	3,998	10,788
Total:	2,470	13,065	1,260	731	289,192	31,416	47,482	1,115	116,637	57,464	27,378
# Days:	10	12	10	10	14	14	14	14	14	14	10
Average:	247	1,089	126	73	20,657	2,244	3,392	80	8,331	4,105	2,738

Wild Yearling Chinook

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
04/10/98	23	3	0	2	3,118	93	5
04/11/98	---	18	---	---	3,067	86	35
04/12/98	---	24	---	---	2,521	145	25
04/13/98	16	72	1	1	2,657	144	45
04/14/98	7	104	1	2	2,278	262	63
04/15/98	6	110	1	6	6,863	340	65
04/16/98	12	94	0	5	4,932	599	63
04/17/98	17	57	0	19	4,973	876	131
04/18/98	---	---	---	---	4,259	953	170
04/19/98	---	---	---	---	4,976	1,307	457
04/20/98	90	67	0	2	3,781	1,084	562
04/21/98	25	112	1	5	9,104	1,194	1,459
04/22/98	27	199	2	10	9,274	3,078	1,938
04/23/98	19	106	7	10	9,591	2,821	2,454
Total:	242	966	13	62	71,394	12,982	7,472
# Days:	10	12	10	10	14	14	14
Average:	24	81	1	6	5,100	927	534

Wild Subyearling Chinook

	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)
04/10/98	38	0	0
04/11/98	0	0	0
04/12/98	0	0	17
04/13/98	0	0	0
04/14/98	22	0	0
04/15/98	0	0	0
04/16/98	0	0	0
04/17/98	0	0	0
04/18/98	0	0	0
04/19/98	0	0	0
04/20/98	0	0	0
04/21/98	0	0	0
04/22/98	0	0	0
04/23/98	0	0	0
Total:	60	0	17
# Days:	14	14	14
Average:	4	0	1

Smolt Monitoring Program (SMP) site definitions: Juvenile salmonids are sampled for the SMP at 11 dams or traps. Passage values are reported here as either collection or index counts. Collection counts are expanded, if necessary, for sub-sampling effort. Index counts are further expanded to account for non-sampled flow volume. ODFW operates the Grande Ronde trap (GRN), and reports on data collected at Little Goose Dam (LGS). IDFG operates the Salmon River trap (LEW). The Nex Perce Tribe operates a trap on the Imnaha River (IMN). WDFW reports data from the collection facilities at Lower Granite Dam (LGR); Lower Monumental Dam (LMN); Rock Island Dam PH2 (RIS) and McNary Dam (MCN). NMFS samples at John Day Dam (JDA), and provides an index value based on 8 hour sampling at Bonneville PH1 (BON).

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)
04/10/98	0	0	0	0	0	0	0	110	20	9	---
04/11/98	---	0	---	---	0	0	0	131	20	48	---
04/12/98	---	0	---	---	0	0	0	106	30	0	---
04/13/98	0	0	0	0	0	0	0	177	50	48	---
04/14/98	0	0	0	0	0	0	0	139	54	48	61
04/15/98	0	0	0	0	0	0	0	94	30	348	61
04/16/98	0	0	0	0	0	0	0	162	50	8	32
04/17/98	0	0	0	0	0	0	0	96	30	24	48
04/18/98	---	---	---	---	0	0	0	23	20	152	74
04/19/98	---	---	---	---	0	0	0	59	0	0	48
04/20/98	0	0	0	0	0	0	0	10	0	0	52
04/21/98	0	0	0	0	0	0	0	20	75	0	38,897
04/22/98	0	0	0	0	0	0	0	50	92	0	53,537
04/23/98	0	0	0	0	0	0	0	29	0	0	31,908
Total:	0	0	0	0	0	0	0	1,206	471	685	124,718
# Days:	10	12	10	10	14	14	14	14	14	14	10
Average:	0	0	0	0	0	0	0	86	34	49	12,472

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)
04/10/98	0	0	0	0	38	0	0	0	120	0	---
04/11/98	---	0	---	---	39	0	0	0	110	4	---
04/12/98	---	0	---	---	0	0	0	0	120	2	---
04/13/98	0	0	0	0	33	0	0	0	160	6	---
04/14/98	0	0	0	0	0	0	0	0	96	2	112
04/15/98	0	0	0	0	0	0	0	0	210	4	176
04/16/98	0	0	0	0	56	0	9	0	180	12	324
04/17/98	0	0	0	0	0	0	0	0	210	0	153
04/18/98	---	---	---	---	0	0	0	0	70	0	533
04/19/98	---	---	---	---	0	0	0	0	120	10	363
04/20/98	0	0	0	0	0	0	0	0	238	11	421
04/21/98	0	0	0	0	0	0	0	0	675	43	557
04/22/98	0	0	0	0	117	0	0	0	370	29	651
04/23/98	0	0	0	0	113	0	0	0	150	30	2,103
Total:	0	0	0	0	396	0	9	0	2,829	153	5,393
# Days:	10	12	10	10	14	14	14	14	14	14	10
Average:	0	0	0	0	28	0	1	0	202	11	539

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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)
04/10/98	0	0	12	53	6,852	285	59	0	73	1	---
04/11/98	---	0	---	---	6,007	416	114	0	10	14	---
04/12/98	---	0	---	---	5,500	601	178	0	31	9	---
04/13/98	0	1	6	74	21,452	1,088	261	0	20	18	---
04/14/98	0	0	10	154	6,238	1,845	181	0	48	7	155
04/15/98	0	0	5	172	12,362	1,359	260	0	111	3	247
04/16/98	17	0	7	83	12,111	2,148	375	1	120	0	178
04/17/98	68	0	5	126	15,310	2,781	567	2	338	12	201
04/18/98	---	---	---	---	19,088	1,857	1,358	0	2,880	0	103
04/19/98	---	---	---	---	11,705	1,965	2,404	0	11,612	40	153
04/20/98	34	0	3	60	14,279	1,906	3,282	0	20,215	45	230
04/21/98	37	1	1	72	25,107	1,914	3,697	3	11,710	199	184
04/22/98	82	5	1	70	20,309	1,785	4,419	3	8,794	59	510
04/23/98	88	14	11	110	14,418	1,559	4,697	22	3,630	483	366
Total:	326	21	61	974	190,738	21,509	21,852	31	59,592	890	2,327
# Days:	10	12	10	10	14	14	14	14	14	14	10
Average:	33	2	6	97	13,624	1,536	1,561	2	4,257	64	233

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)
04/10/98	0	6	0	1	1,540	227	87	6	582	126	---
04/11/98	---	15	---	---	857	153	247	1	340	518	---
04/12/98	---	11	---	---	1,375	194	76	6	420	173	---
04/13/98	3	17	0	0	3,155	250	149	2	611	534	---
04/14/98	1	55	0	8	1,357	210	99	9	276	583	155
04/15/98	1	31	0	8	1,744	271	129	7	691	497	176
04/16/98	3	45	0	7	1,290	316	71	11	740	568	146
04/17/98	4	21	1	12	1,956	410	131	11	597	1,038	297
04/18/98	---	---	---	---	2,605	293	152	14	660	1,428	243
04/19/98	---	---	---	---	1,527	319	398	22	908	2,120	322
04/20/98	5	78	0	9	1,862	305	118	25	835	1,731	370
04/21/98	0	99	0	8	4,397	398	227	24	525	752	336
04/22/98	3	338	0	3	3,522	181	501	38	696	1,036	651
04/23/98	7	454	5	11	4,184	245	491	42	120	1,086	1,158
Total:	27	1,170	6	67	31,371	3,772	2,876	218	8,001	12,190	3,854
# Days:	10	12	10	10	14	14	14	14	14	14	10
Average:	3	98	1	7	2,241	269	205	16	572	871	385

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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)
04/10/98	0	0	0	0	0	0	0	0	10	0	---
04/11/98	---	0	---	---	0	0	0	0	0	0	---
04/12/98	---	0	---	---	0	0	0	0	0	0	---
04/13/98	0	0	0	0	0	0	0	1	20	0	---
04/14/98	0	0	0	0	0	0	0	2	0	0	0
04/15/98	0	0	0	0	0	0	0	2	0	0	0
04/16/98	0	0	0	0	0	0	0	0	10	0	0
04/17/98	0	0	0	0	0	0	0	0	0	0	0
04/18/98	---	---	---	---	0	0	0	1	0	0	0
04/19/98	---	---	---	---	0	0	0	0	0	0	0
04/20/98	0	0	0	0	0	0	0	0	0	0	0
04/21/98	0	0	0	0	0	0	0	0	0	0	0
04/22/98	0	0	0	0	0	0	0	3	0	0	0
04/23/98	0	0	0	0	0	0	0	3	0	0	0
Total:	0	0	0	0	0	0	0	12	40	0	0
# Days:	10	12	10	10	14	14	14	14	14	14	10
Average:	0	0	0	0	0	0	0	1	3	0	0

Wild Sockeye

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO1 (INDEX)
04/10/98	0	0	0	0	0	0	0	0	0	0	---
04/11/98	---	0	---	---	0	0	0	3	10	0	---
04/12/98	---	0	---	---	0	6	0	8	10	1	---
04/13/98	0	0	0	0	0	0	0	62	10	0	---
04/14/98	0	0	0	0	0	0	0	327	6	0	0
04/15/98	0	0	0	0	0	0	0	367	36	2	0
04/16/98	0	0	0	0	0	0	0	234	30	0	0
04/17/98	0	0	0	0	0	0	0	109	60	0	10
04/18/98	---	---	---	---	0	0	0	143	50	1	0
04/19/98	---	---	---	---	0	0	0	209	45	0	0
04/20/98	0	0	0	0	0	0	14	292	119	0	0
04/21/98	0	0	0	0	0	0	0	262	150	0	0
04/22/98	0	0	0	0	0	0	0	459	46	15	0
04/23/98	0	0	0	0	0	0	0	467	120	0	0
Total:	0	0	0	0	0	6	14	2,942	692	19	10
# Days:	10	12	10	10	14	14	14	14	14	14	10
Average:	0	0	0	0	0	0	1	210	49	1	1

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Cumulative Adult Passage at Mainstem Dams Through April 23, 1998

	Spring Chinook						Summer Chinook						Fall Chinook					
	1998		1997		10-Yr Avg.		1998		1997		10-Yr Avg.		1998		1997		10-Yr Avg.	
	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	17,932	40	53,754	88	35,642	288												
TDA	9,442	37	21,253	9	16,161	90												
JDA	5,358	16	8,970	3	8,399	83												
MCN	2,855	4	3,278	1	5,006	50												
IHR	1,227	2	512	0	1,601	7												
LMN	564	0	137	0	1,058	10												
LGS	381	1	53	0	na	na												
LWG	153	0	18	0	311	2												
PRD	118	0	5	0	324	1												
RIS	11	0	2	0	68	0												
RRH	4	0	0	0	7	0												
WEL																		

	Coho						Sockeye			Steelhead		
	1998		1997		10-Yr Avg.		1998	1997	10-Yr Avg.	1998	1997	10-Yr Avg.
	Adult	Jack	Adult	Jack	Adult	Jack						
BON	0	0	0	0	0	0	0	0	1,176	2540	2,405	
TDA	0	0	0	0	0	0	0	0	563	575	1,381	
JDA	0	0	0	0	0	0	0	0	5,102	1887	2,290	
MCN	0	0	0	0	0	0	0	0	1,209	1038	2,219	
IHR	0	0	0	0	0	0	0	0	1,608	1032	2,640	
LMN	0	0	0	0	0	0	0	0	1,396	913	2,312	
LGS	0	0	0	0	na	na	0	0	na	1,813	1078	na
LWG	0	0	0	0	0	0	0	0	3,924	3,328	5,056	
PRD	0	0	0	0	0	0	0	0	5	2	16	
RIS	0	0	0	0	0	0	0	0	11	12	32	
RRH	0	0	0	0	0	0	0	0	44	575	21	
WEL												

Historic counts (pre-1996) were obtained from CRITFC and compiled by the FPC.
 1996, 1997, and 1998 counts were obtained from the Corps of Engineers.
 1998 totals at LMN, LGS, RIS, and RRH are based on video counts accumulated through April 22.
 Adult count records at LGS have been maintained since 1993.

Transportation Summary Report

Two-Week Transportation Summary from 4/10/98 to 4/23/98

	Yearling		Subyearling	Steelhead	Coho	Sockeye	Total
	Chinook	Chinook					
LOWER GRANITE DAM							
Collected	307,720	40	182,343	310	0	0	490,413
Bypassed	34,112	0	2,318	0	0	0	36,430
Trucked	0	0	0	0	0	0	0
Barged	271,903	40	179,834	308	0	0	452,085
Total Transported	271,903	40	179,834	308	0	0	452,085
LITTLE GOOSE DAM							
Collected	28,339	0	15,550	0	4	0	43,893
Bypassed	0	0	0	0	0	0	0
Trucked	0	0	0	0	0	0	0
Barged	28,165	0	15,530	0	0	0	43,695
Total Transported	28,165	0	15,530	0	0	0	43,695
LOWER MONUMENTAL DAM							
Collected	38,288	12	17,196	6	10	0	55,512
Bypassed	610	0	436	0	0	0	1,046
Trucked	0	0	0	0	0	0	0
Barged	37,490	12	16,753	6	10	0	54,271
Total Transported	37,490	12	16,753	6	10	0	54,271
M McNARY DAM							
Collected	104,478	414	56,781	2,436	647	0	164,756
Bypassed	104,288	413	56,765	2,435	646	0	164,547
Trucked	0	0	0	0	0	0	0
Barged	0	0	0	0	0	0	0
Total Transported	0	0	0	0	0	0	0
PROJECT TOTALS							
Collected	478,825	466	271,870	2,752	661	0	754,574
Bypassed	139,010	413	59,519	2,435	646	0	202,023
Trucked	0	0	0	0	0	0	0
Barged	337,558	52	212,117	314	10	0	550,051
Total Transported	337,558	52	212,117	314	10	0	550,051

Cumulative Transportation Summary through 4/23/98

	Yearling		Subyearling	Steelhead	Coho	Sockeye	Total
	Chinook	Chinook					
LOWER GRANITE DAM							
Collected	359,961	120	254,246	484	10	0	614,821
Bypassed	48,813	33	15,986	14	0	0	64,846
Trucked	29,484	46	45,304	119	10	0	74,963
Barged	279,777	40	192,631	328	0	0	472,776
Total Transported	309,261	86	237,935	447	10	0	547,739
LITTLE GOOSE DAM							
Collected	29,088	0	17,148	5	14	0	46,255
Bypassed	0	0	0	0	0	0	0
Trucked	568	0	1,097	5	0	0	1,670
Barged	28,322	0	16,023	0	10	0	44,355
Total Transported	28,890	0	17,120	5	10	0	46,025
LOWER MONUMENTAL DAM							
Collected	40,699	22	18,261	16	10	0	59,008
Bypassed	2,196	10	721	10	0	0	2,937
Trucked	797	0	780	0	0	0	1,577
Barged	37,490	12	16,753	6	10	0	54,271
Total Transported	38,287	12	17,533	6	10	0	55,848
M McNARY DAM							
Collected	201,609	1,674	58,866	2,894	703	0	265,746
Bypassed	201,349	1,666	58,850	2,893	702	0	265,460
Trucked	0	0	0	0	0	0	0
Barged	0	0	0	0	0	0	0
Total Transported	0	0	0	0	0	0	0
PROJECT TOTALS							
Collected	631,357	1,816	348,521	3,399	737	0	985,830
Bypassed	252,358	1,709	75,557	2,917	702	0	333,243
Trucked	30,849	46	47,181	124	10	0	78,210
Barged	345,589	52	225,407	334	20	0	571,402
Total Transported	376,438	98	272,588	458	30	0	649,612