



Fish Passage Center

Weekly Report #09 - 21

July 31, 2009

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Summary of Events:

Water Supply:

Precipitation throughout the Columbia Basin has varied between 11% and 119% of average at individual sub-basins over July. Precipitation above The Dalles has been 88% of average over July. Over the entire water year, precipitation has generally been near average.

Table 1. Summary of July Precipitation and cumulative October through July precipitation with respect to average (1971-2000), at select locations within the Columbia and Snake River Basins.

Location	Water Year 2009 July 1-27		Water Year 2009 October 1, 2008 to July 1-27, 2009	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	1.61	104	19.75	89
Sneke River Above Ice Harbor	0.51	64	18.05	114
Columbia Above The Dalles	0.95	88	20.56	99
Kootenai	1.91	116	19.54	86
Clark Fork	1.23	119	15.57	102
Flathead	1.61	116	17.98	89
Pend Oreille/ Spokane	1.33	111	26.46	93
Central Washington	0.17	54	6.96	84
Sneke River Plain	0.36	68	12.01	119
Salmon/Boise/ Payette	0.33	48	17.37	95
Clearwater	0.95	75	29.67	106
SW Washington Cascades/Cowlitz	0.13	11	58.98	88
Willamette Valley	0.34	48	48.21	85

Table 2 displays the June Final and July Final runoff volume forecasts for multiple reservoirs. The most notable differences between the June Final and July Final forecasts came at Libby Dam and Lower Granite Dam. At Libby, the July Final forecast decreased 11% relative to the June Final Forecast. At Lower Granite Dam, the July Final forecast increased 7% relative to the June Final Forecast, it appears most of the increase at Lower Granite was due to an increase in water supply above Brownlee Dam (increased 14%). The Water Supply Forecast at The Dalles between January and July is 89300 Kaf (83% of average).

Table 2. June Final and July Final Runoff Volume Forecasts for various reservoirs within the Columbia and Snake River Basins.

Location	June Final		July Final	
	% Average (1971- 2000)	Probable Runoff Volume (Kaf)	Average (1971- 2000)	Probable Runoff Volume (Kaf)
The Dalles (Jan-July)	86	92000	83	89300
Grand Coulee (Jan-July)	85	53700	79	49600
Libby Res. Inflow, MT (Apr-Aug)	80	5000 5062*	69	4330
Hungry Horse Res. Inflow, MT (Jan-July)	93	2060	91	2020
Lower Granite Res. Inflow (Apr- July)	102	21900	109	23500
Brownlee Res. Inflow (Apr-July)	76	4780	90	5710
Dworshak Res. Inflow (Apr-July)	98	2590 2597*	97	2570

*Denotes COE Forecast

The Spring Biological Opinion flow period began on April 3rd in the lower Snake River (Lower Granite) and ended on June 20th, 2009. The spring flow objective at Lower Granite this year was 100 Kcfs, average flow at Lower Granite over the spring period was 110.3 Kcfs. The summer flow period began on 6-21-09; the summer flow objective is 52.5 Kcfs in 2009 at Lower Granite. Flows at Lower Granite have average 60.6 Kcfs at Lower Granite over the first portion of the summer period and 39.7 Kcfs last week.

The spring flow objective period began on April 10th at Priest Rapids and McNary and ended on June 30th, 2009. The flow objectives this spring were 228 Kcfs at McNary and 135 Kcfs at Priest Rapids. Flows at Priest Rapids averaged 140.8 Kcfs over the spring season and flows at McNary averaged 268.1 Kcfs over the spring. The summer flow period began on July 1 at McNary and the objective is 200 Kcfs. Flows at McNary Dam have averaged 166.1 Kcfs over the first portion of the summer period and 152.9 Kcfs last week.

Grand Coulee Reservoir is at 1285.7 feet (7-30-09) and drafted 2.1 feet over the last week. Outflows at Grand Coulee have ranged between 81.7 and 116.7 Kcfs over the last week. The Grand Coulee summer draft will be 1278 feet this year by August 31st, 2009.

The Libby Reservoir is currently at elevation 2441.2 feet (7-30-09) and has refilled 1.3 feet last week. Outflows at Libby are currently 7 Kcfs (minimum bull trout flow) and will remain at this level through August.

Hungry Horse is currently at an elevation of 3559.2 ft (7-30-09) and has drafted 0.4 feet last week. Outflows at Hungry Horse have been 2.4 Kcfs last week.

Dworshak is currently at an elevation of 1573.1 feet (7-30-09) and has drafted 7.9 feet last week. The salmon managers submitted SOR 2009-4 to the Action Agencies on July 28th, 2009. This SOR asked for outflow temperatures to be immediately decreased to 40°F while still maintaining 12 Kcfs outflows and to increase outflows to 14 Kcfs if temperatures exceeded the 68°F temperature criteria at the Lower Granite Dam tailrace for a period of three consecutive hours. The 68°F temperature criterion was exceeded on July 29, 2009 and outflows at Dworshak were increased to approximately 14 Kcfs.

The Brownlee Reservoir was at an elevation of 2061.6 feet on July 30th, 2009, drafting 2.9 feet last week. Outflows at Brownlee Dam have been 13.2 to 17.0 Kcfs over the last week.

Spill:

The 2009 planned summer spill program at the lower Snake River Projects began at 0001 hours on June 20, 2009. The following table shows the planned operations for 2009.

Project	Day/Night Spill
Lower Granite	18Kcfs/18Kcfs
Little Goose	30%/30%
Lower Monumental	17Kcfs/17Kcfs
Ice Harbor	45Kcfs/Gas Cap

Lower Granite, Little Goose and Lower Monumental dams met the court order over the past week. Ice Harbor Dam has met the court ordered levels of 45 Kcfs daytime spill and gas cap nighttime spill, except when daytime spill is below 45 Kcfs due to low flows and powerhouse minimum flows. Ice Harbor Dam has a minimum spill of 15.2 Kcfs.

The following table shows the planned operations for summer spill levels in the lower Columbia River for 2009.

Project	Day/Night Spill
McNary	50%/50%* (beginning June 20)
John Day	30%/30%
The Dalles	40%/40%
Bonneville	75 Kcfs/gas cap

McNary Dam spill has met the Court Order over the past week. At John Day Dam the testing of 30% versus 40% ended and the project is spilling an instantaneous 30%. The Dalles Dam met the court ordered 40% level over the past week. At Bonneville Dam the nighttime spill to the gas cap was initially lowered to 70 Kcfs in response to the TDG gage at Camas/Washougal. With the recent hot weather, TDG readings at the Camas/Washougal gage are greater than observed at the tailrace monitor below the project. Due to this discrepancy, the COE adopted a minimum spill level of 75 Kcfs, since below 75 Kcfs juvenile survival via spillway passage decreases based on historical data.

With the exception of one day (7/28) when the Bonneville forebay TDG averaged 115.2%, all exceedences of the 115% occurred at the Camas/

Washougal gage. The total dissolved gas levels were due to the hot weather, and there is no requirement to manage spill to this gage.

Gas bubble trauma (GBT) monitoring occurred at Little Goose and Lower Monumental dams in the Snake River, at Rock Island Dam in the Mid Columbia and at McNary and Bonneville dams in the lower Columbia. One fish was observed with minor signs of GBT at Little Goose Dam on July 28th, otherwise no other fish were detected with signs of GBT.

Smolt Monitoring:

Subyearling Chinook smolt collection and passage numbers remained high at McNary Dam and Bonneville Dam, while at Snake River projects numbers of subyearlings were lower but steady. Collection of Spring migrants continued to decline at all SMP sites in the Snake River and Lower Columbia this past week.

At Lower Granite Dam subyearling Chinook predominated with coho numbers having dropped off rapidly over the past week. Average daily passage index for subyearling Chinook was at 1,000 per day this week compared to 1,200 per day last week.

At Rock Island dam the daily passage indices for subyearling Chinook predominated in the sample, with indices averaging over 120 per day this week compared to 180 per day last week.

In the lower Columbia River subyearling Chinook smolt numbers declined rapidly this past week at McNary Dam. Subyearling Chinook passage indices dropped from nearly 80,000 per day last week to about 20,000 per day this week. At Bonneville Dam subyearling Chinook indices were down a little from last week; the index average just over 17,000 per day this week compared to over 20,000 per day last week.

Hatchery Release:

Snake River Zone: The Snake River Zone encompasses the Snake River and its tributaries from its confluence with the Columbia River to Hells Canyon Dam. There were no releases of juvenile salmonids scheduled for this week. Furthermore, no releases of juvenile salmonids are scheduled to begin over the next two weeks.

Mid-Columbia Zone: The Mid-Columbia Zone encompasses the area of the Columbia River and its tributaries from McNary Dam to Chief Joseph Dam. There were no scheduled releases of juvenile salmonids to this zone this week. There are no releases of juvenile salmonids to this zone over the next two weeks.

Lower Columbia Zone: The Lower Columbia Zone is defined as the Columbia River and its tributaries from Bonneville Dam to McNary Dam. No releases of juvenile salmonids were scheduled for this zone over the past week. Furthermore, there are no releases scheduled for this zone over the next two weeks.

Adult Passage:

Daily adult summer Chinook passage numbers at Bonneville Dam ranged between 251 and 348 adult summer Chinook in the last week. The 2009 summer Chinook count of 81,690 is about 1.05 times greater than the 2008 count and 1.07 times greater than the 10 year average. The summer Chinook jack count of 37,293 is about 3.23 times greater than the 2008 of 11,560 and about 3.76 times greater than the 10 year average of 9927. The adult summer Chinook count at The Dalles Dam was 79,648, about 97.5% of the Bonneville passage to date. A total of 47,082 adult summer Chinook have passed Priest Rapids Dam.

The 2009 Priest Rapids Dam adult summer Chinook count was about 1.33 times greater than the 2008 count and 1.01 times greater than the 10 year average. The 2009 Priest Rapids summer Chinook jack count of 1974 was 1.70 times greater than the 2008 count and 1.18 times greater than the 10 year average. The adult summer Chinook count at Lower Granite Dam in the Snake River of 14,057 was 63.8% of the 2008 count and 1.29 times greater than the 10 year average. The Lower Granite summer Chinook jack count of 15,868 was 3.18 times greater than the 2008 count and 5.91 times greater than the 10 year average.

The Bonneville Dam 2009 steelhead count of 125,370 is about 93.9% of the 2008 count and 1.21 times greater than the 10 year average. In the Snake River, this year's Lower Granite steelhead count of 15,035 is 1.28 times greater than the 2008 count of 11,782 and 1.38 times greater than the 10 year average of 10,912. The 2009 wild steelhead count as of July 30th was 4581. At Rock Island Dam, as of July 29th, 1,365 adult steelhead have been counted and at Rocky Reach Dam, 1235 adult steelhead have been counted so far this season. At Willamette Falls Dam, the 2009 count for steelhead was 16781, as of July 25th. This year's steelhead count is only about 92.1% of the 2008 count of 18,221 at Willamette Falls Dam for the same date range.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 31 and 59 last week.

The 2009 adult sockeye count at Bonneville Dam of 177,700 is about 83.2% of the 2008 count of 213,533 and about 2.26 times greater than the 10 year average of 78,482. In the upper Columbia River at Priest Rapids Dam, the 2009 adult sockeye count of 152,568 was about 77.8% of the 2008 count and 2.06 times greater than the 10 year average. Two of the major spawning sites for sockeye in the upper Columbia River zone are Lake Wenatchee and Lake Osoyoos (Okanogan basin). In the Snake River at Lower Granite Dam the 2009 adult sockeye count of 1,177 was about 1.39 times greater than the 2008 count of 849 and 9.34 times greater than the 10 year average count of 126.

As of July 30th at Bonneville Dam, the adult Shad count was 1,373,086 which was about 64.1% of the 2008 count of 2140795 and only about 44.1% of the 10 year average count of 3,115,258.

The daily fish counts have not been posted this week on the Corp of Engineers website due to computer problems. The COE is working on fixing the problems. FPC staff called project count stations and requested fish count data. The counts for BON, TDA, JDA, LGS, LMN and LGR have been updated with the data we have received over the phone from the COE fish counters. The data for this week are preliminary data.

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
07/17/2009	101.5	0.1	95.6	0.0	99.3	7.6	103.5	9.0	105.0	22.7	114.7	20.2	114.0	20.9
07/18/2009	80.3	0.2	76.1	0.0	79.5	7.4	81.9	7.1	85.8	18.8	91.0	19.6	87.9	23.3
07/19/2009	69.0	0.2	70.7	0.0	75.3	7.8	79.1	7.1	78.7	16.6	86.1	19.4	82.7	21.8
07/20/2009	101.2	0.2	104.3	0.0	108.2	7.7	103.3	8.6	101.3	21.5	97.5	19.4	89.0	22.9
07/21/2009	100.6	0.2	102.9	0.0	104.0	7.8	103.4	8.8	104.9	20.4	111.2	19.8	107.4	22.9
07/22/2009	82.6	0.2	80.5	0.0	84.3	6.6	86.2	7.4	89.1	18.4	99.5	19.5	98.6	22.9
07/23/2009	76.8	0.1	81.5	0.0	84.6	7.0	82.4	6.8	82.9	18.0	83.0	19.7	76.7	24.6
07/24/2009	82.7	0.2	86.2	0.0	88.4	7.3	87.4	7.3	88.6	19.1	98.6	19.6	96.1	22.8
07/25/2009	81.7	0.1	79.5	0.0	82.5	6.4	81.8	7.1	83.4	18.1	87.8	19.5	81.8	22.6
07/26/2009	91.9	0.2	91.4	0.0	93.8	7.5	90.0	6.3	90.5	15.7	94.3	19.8	91.4	22.9
07/27/2009	109.9	0.2	112.4	0.0	116.9	8.8	115.0	9.0	115.4	22.5	117.9	20.1	112.4	22.9
07/28/2009	116.7	0.2	114.6	0.0	117.7	8.4	116.2	9.1	117.7	22.2	125.4	24.0	118.9	22.7
07/29/2009	98.1	0.1	101.7	0.0	107.2	7.7	111.4	9.6	112.7	23.3	121.1	22.4	117.9	22.4
07/30/2009	109.7	0.1	109.5	0.0	111.2	8.3	110.8	9.5	109.4	23.3	108.9	19.7	101.8	23.2

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

Date	Dworshak		Hells Canyon		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
07/17/2009	9.6	0.0	13.9	20.2	47.4	18.7	47.5	14.2	45.4	17.0	47.3	37.1
07/18/2009	11.1	1.5	13.4	20.8	48.4	18.8	47.2	14.3	44.1	17.5	43.7	33.5
07/19/2009	12.1	2.4	12.7	17.1	51.0	18.7	48.6	14.7	46.8	17.2	50.3	40.1
07/20/2009	11.9	2.5	13.2	19.6	45.9	18.8	45.2	13.6	43.8	20.5	43.9	33.4
07/21/2009	12.0	2.4	12.1	16.2	44.7	18.7	44.5	13.3	42.7	16.9	44.8	34.5
07/22/2009	12.0	2.4	11.9	15.7	43.6	18.7	42.0	12.5	40.2	17.4	40.4	30.1
07/23/2009	12.0	2.3	12.7	14.6	39.9	18.7	38.5	11.5	37.0	17.2	38.5	28.3
07/24/2009	12.0	2.4	11.4	13.5	41.3	18.7	40.5	12.2	39.6	17.4	40.6	30.4
07/25/2009	12.0	2.3	11.6	14.0	36.6	18.6	34.2	10.1	32.1	17.0	33.8	24.0
07/26/2009	12.0	2.3	11.9	14.5	40.8	18.7	41.4	12.3	40.9	17.5	40.3	30.5
07/27/2009	11.9	2.2	11.6	13.7	38.3	18.7	36.3	10.8	35.2	17.2	36.5	26.6
07/28/2009	11.6	2.1	13.2	17.5	40.4	18.6	39.6	11.8	37.0	17.5	37.9	27.6
07/29/2009	12.9	3.2	11.9	15.9	40.1	18.5	38.5	11.4	38.8	16.8	40.2	29.7
07/30/2009	13.7	3.9	---	---	40.1	18.7	39.5	11.8	37.3	17.4	38.4	28.4

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

Date	McNary		John Day		The Dalles		Bonneville			
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	PH1	PH2
07/17/2009	167.2	83.5	155.6	62.3	154.6	62.0	170.3	97.0	0.0	61.2
07/18/2009	149.4	72.6	137.8	45.1	132.1	52.7	147.7	95.8	0.0	39.8
07/19/2009	149.9	75.1	147.1	44.1	140.5	56.4	147.5	94.9	0.0	40.4
07/20/2009	151.0	73.7	144.8	43.5	142.0	56.8	156.5	92.0	0.0	52.4
07/21/2009	152.4	76.3	139.9	41.9	137.9	55.1	147.5	82.1	0.0	53.2
07/22/2009	145.5	83.2	132.2	39.3	129.5	51.5	135.0	79.4	0.0	43.6
07/23/2009	130.4	74.8	113.7	34.0	106.8	42.8	122.8	78.7	0.0	32.0
07/24/2009	139.1	69.9	131.0	39.3	124.9	50.2	134.0	81.6	0.0	40.4
07/25/2009	138.8	68.2	131.2	39.3	127.7	51.1	154.2	84.5	0.0	57.6
07/26/2009	131.1	63.7	115.8	34.7	114.4	45.8	134.9	83.3	0.0	39.5
07/27/2009	149.7	72.8	150.2	44.8	143.2	57.2	147.2	79.5	0.0	55.6
07/28/2009	173.7	84.6	166.5	50.0	161.1	64.5	165.2	73.8	0.0	79.4
07/29/2009	179.7	88.0	167.5	50.3	157.2	62.7	164.8	72.3	0.1	80.3
07/30/2009	158.0	78.3	145.9	43.7	141.3	56.4	166.9	74.5	0.0	80.3

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

Site	Date	Species	Number of Fish	Number w GBT signs	Number w Fin Signs	% Fin GBT	% Severe Fin GBT	Number of Fish with Fin GBT Listed by Highest Rank			
								Rank 1	Rank 2	Rank 3	Rank 4
Little Goose Dam											
	07/20/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/28/09	Chinook + Steelhead	80	1	1	1.25%	0.00%	1	0	0	0
Lower Monumental Dam											
	07/22/09	Chinook + Steelhead	35	0	0	0.00%	0.00%	0	0	0	0
	07/29/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
McNary Dam											
	07/20/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/23/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/27/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
Bonneville Dam											
	07/22/09	Chinook + Steelhead	82	0	0	0.00%	0.00%	0	0	0	0
	07/25/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/28/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
Rock Island Dam											
	07/21/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/23/09	Chinook + Steelhead	97	0	0	0.00%	0.00%	0	0	0	0
	07/28/09	Chinook + Steelhead	52	0	0	0.00%	0.00%	0	0	0	0

Hatchery Releases Last Two Weeks

Hatchery Release Summary									
From: 7/17/2009 to 07/30/09									
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
National Marine Fisheries Service National Marine Fisheries	Lyons Ferry Hatchery	CH0	FA	2009	117,362	06-29-09	07-20-09	Big Canyon (Clearwater River)	Clearwater River M F
Service Total					117,362				
Grand Total					117,362				

Hatchery Releases Next Two Weeks

Hatchery Release Summary
From: 7/31/2009 to 8/13/2009

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
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CH = Chinook, ST = Steelhead, CO = Coho, SO = Sockeye, CT = Cutthroat Trout, CM = Chum

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

Total Dissolved Gas Saturation Data at Upper Columbia River Sites

Date	<u>Hungry H. Dnst</u>			<u>Boundary</u>			<u>Grand Coulee</u>			<u>Grand C. Tlwr</u>			<u>Chief 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>	#					
	Avg	Avg		High	hr		Avg	Avg		High	hr		Avg	Avg		High	hr	Avg	Avg	High
7/17	104.6	105.0	105.3	24	107.1	107.6	108.0	21	110.3	111.5	112.1	24	110.2	111.4	113.7	21	110.7	111.2	111.5	24
7/18	105.0	105.6	105.9	24	107.7	108.1	108.7	20	110.5	112.0	112.6	24	110.6	111.6	114.3	20	110.9	111.3	111.5	24
7/19	105.4	105.7	106.1	24	107.3	107.7	108.3	23	110.7	111.0	111.4	24	109.1	110.4	112.1	23	110.6	111.0	111.3	24
7/20	105.1	105.6	106.0	24	106.7	107.3	108.0	20	110.4	110.6	110.9	24	110.2	110.9	113.8	20	110.5	110.8	111.0	24
7/21	105.3	105.9	106.4	24	107.3	107.8	108.6	18	110.7	111.3	111.8	24	110.2	110.8	112.8	18	111.3	111.9	112.1	24
7/22	105.6	106.0	106.4	24	107.7	108.4	109.0	21	111.1	111.4	111.6	24	110.3	111.4	112.3	21	112.6	113.2	113.6	24
7/23	105.7	106.2	106.5	24	107.6	107.8	108.0	19	110.7	110.9	111.2	24	109.7	110.4	112.2	19	111.7	112.0	112.4	24
7/24	105.6	105.9	106.4	24	107.9	109.1	111.7	23	109.8	109.9	110.3	24	108.9	109.9	112.1	23	110.4	110.7	111.2	24
7/25	105.4	105.9	106.4	24	106.3	106.5	106.7	21	109.4	109.6	110.0	24	109.6	110.4	112.9	21	110.1	110.3	110.6	24
7/26	105.0	105.3	105.8	24	106.9	107.4	108.0	21	108.5	108.9	109.1	24	108.9	109.8	112.1	21	110.3	110.7	111.1	24
7/27	105.0	105.4	105.9	24	108.1	109.0	110.7	24	108.0	108.5	108.9	24	108.7	110.1	112.0	24	110.8	111.4	111.8	24
7/28	105.3	105.8	106.3	24	108.0	108.5	109.0	21	108.6	109.0	109.4	24	108.4	109.1	109.8	21	111.4	112.0	112.7	24
7/29	104.8	105.0	105.4	24	108.0	108.5	109.0	23	108.9	109.2	109.7	24	108.5	109.4	110.0	23	110.3	110.8	111.6	24
7/30	104.8	105.4	105.7	24	108.4	109.0	109.7	22	108.9	109.1	109.3	24	108.7	109.9	110.6	22	109.9	110.6	111.1	24

Total Dissolved Gas Saturation Data at Mid Columbia River Sites

Date	<u>Chief J. Dnst</u>			<u>Wells</u>			<u>Wells Dwnstrm</u>			<u>Rocky Reach</u>			<u>Rocky R. Tlwr</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>	#					
	Avg	Avg		High	hr		Avg	Avg		High	hr		Avg	Avg		High	hr	Avg	Avg	High
7/17	110.3	110.7	110.9	24	112.2	112.8	113.1	24	114.0	114.8	115.2	24	112.7	113.4	114.0	24	111.3	112.3	113.4	24
7/18	110.9	111.5	111.9	24	111.5	112.0	112.4	24	113.8	114.7	115.4	24	113.8	114.3	114.7	24	111.0	112.0	113.0	24
7/19	110.5	111.0	111.7	24	111.0	111.6	112.3	24	113.5	114.5	115.3	24	113.2	113.8	114.4	24	110.4	111.1	111.9	24
7/20	109.9	110.2	110.4	24	110.9	111.7	112.0	24	113.0	113.9	114.3	24	112.1	112.6	112.8	24	111.0	112.8	113.9	24
7/21	111.0	111.7	112.2	24	111.6	113.0	113.2	24	114.1	115.2	115.5	24	112.6	113.3	113.4	24	111.8	113.3	114.1	24
7/22	112.5	113.0	113.4	24	111.4	112.6	113.3	24	114.0	115.0	115.5	24	111.3	113.9	115.0	24	110.8	111.6	112.2	24
7/23	111.0	111.8	112.7	24	111.9	113.0	113.7	24	114.5	115.1	116.0	24	113.5	113.7	113.9	24	110.6	112.0	113.9	24
7/24	109.5	110.0	110.3	24	111.8	112.1	112.3	24	113.2	113.7	114.1	24	112.4	112.6	113.0	24	110.3	111.1	112.4	24
7/25	109.3	110.0	110.5	24	110.6	111.0	111.9	24	111.9	112.6	113.1	24	112.3	112.5	112.8	24	109.9	110.9	112.3	24
7/26	109.4	110.0	110.9	24	110.9	111.8	112.6	24	112.2	113.2	113.6	24	112.0	112.4	112.8	24	110.0	111.3	112.3	24
7/27	110.1	110.6	111.1	24	111.8	112.9	113.8	24	113.3	114.5	115.3	24	111.6	112.0	112.3	24	111.1	112.3	113.2	24
7/28	110.9	111.7	113.2	24	112.6	113.6	114.2	24	114.3	115.2	116.1	24	112.5	113.0	113.2	24	112.3	113.6	114.5	24
7/29	110.0	110.9	112.5	24	112.8	113.6	114.1	24	114.3	114.9	115.5	24	112.7	113.1	113.8	24	112.2	113.2	114.0	24
7/30	109.5	109.8	110.2	24	112.0	112.4	112.8	24	113.9	114.3	114.6	24	112.9	113.2	113.5	24	112.1	113.5	114.2	24

Total Dissolved Gas Saturation at Mid Columbia River Sites

Date	<u>Rock Island</u>			<u>Rock I. Tlwr</u>			<u>Wanapum</u>			<u>Wanapum Tlwr</u>			<u>Priest Rapids</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>	#					
	Avg	Avg		High	hr		Avg	Avg		High	hr		Avg	Avg		High	hr	Avg	Avg	High
7/17	111.9	112.7	113.2	24	115.9	116.4	118.3	24	114.3	115.2	115.6	24	114.8	115.0	115.6	24	113.8	114.5	114.9	24
7/18	112.6	113.1	113.4	24	116.4	116.8	117.7	24	113.5	114.0	114.8	24	115.2	115.9	116.6	24	112.8	113.1	113.5	24
7/19	112.2	112.6	112.8	24	116.7	117.6	118.7	24	111.1	111.8	112.7	24	113.8	114.5	116.3	24	110.6	111.5	112.2	24
7/20	111.7	112.4	112.8	24	116.1	116.9	118.6	24	112.0	113.6	114.8	24	113.9	114.4	116.5	24	111.3	112.2	113.1	24
7/21	112.1	113.1	113.8	24	116.0	116.8	117.5	24	113.8	114.7	115.0	24	114.8	115.2	116.0	24	113.9	114.5	115.4	24
7/22	112.9	113.6	114.0	24	113.2	117.1	117.3	24	113.7	114.2	115.0	24	114.8	115.2	116.2	24	113.8	114.1	114.3	24
7/23	112.2	112.6	113.4	24	116.6	117.4	118.4	24	111.1	112.0	113.4	24	114.6	115.5	116.2	24	111.7	112.7	113.4	24
7/24	111.6	112.1	112.3	24	115.9	116.5	117.4	24	110.0	110.8	112.4	24	113.3	113.7	113.9	24	109.8	110.3	110.5	24
7/25	111.8	112.1	112.5	24	116.0	116.7	118.5	24	113.0	113.9	115.0	24	114.7	115.3	115.9	24	111.7	112.3	113.0	24
7/26	112.1	112.5	112.8	24	116.3	117.6	120.5	24	111.9	111.9	112.1	2	114.2	114.2	114.2	2	112.2	112.2	112.2	2
7/27	112.3	112.9	113.5	24	116.1	116.8	117.7	24	---	---	---	0	---	---	---	0	---	---	---	0
7/28	112.9	113.6	114.2	24	116.5	117.1	117.5	24	---	---	---	0	---	---	---	0	---	---	---	0
7/29	113.0	113.7	114.2	24	116.5	117.1	117.4	24	---	---	---	0	---	---	---	0	---	---	---	0
7/30	113.4	114.0	114.7	24	117.2	117.7	118.7	24	---	---	---	0	---	---	---	0	---	---	---	0

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

Total Dissolved Gas Saturation Data at Lower Columbia and Snake River Sites

Date	<u>Priest R. Dnst</u>				<u>Pasco</u>				<u>Dworshak</u>				<u>Clwrtr-Peck</u>				<u>Anatone</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>	
7/17	114.3	114.7	115.0	24	110.0	110.8	111.1	24	100.2	100.5	100.8	24	102.2	103.3	104.1	24	102.4	103.3	104.1	24
7/18	113.2	114.1	114.5	24	110.6	111.4	112.0	24	103.4	106.2	106.4	24	104.0	106.3	107.6	24	102.7	103.6	104.5	24
7/19	112.3	112.9	113.1	24	109.1	109.7	110.3	24	105.4	105.8	106.1	24	105.4	106.4	107.4	24	102.3	103.2	104.0	24
7/20	112.3	113.0	113.5	24	108.7	109.7	110.0	24	104.9	105.5	112.3	24	105.3	106.2	107.5	19	102.3	103.5	104.3	24
7/21	114.6	114.9	115.2	24	109.0	109.9	110.2	24	99.1	103.3	104.0	24	104.4	105.5	106.4	24	102.7	103.8	104.9	24
7/22	114.4	114.7	115.0	24	110.3	111.2	111.6	24	103.9	104.9	105.2	24	104.9	106.3	107.5	23	102.5	103.8	104.8	24
7/23	112.3	112.8	113.1	24	109.9	110.6	111.3	24	104.5	104.7	105.1	24	105.2	105.9	107.1	20	102.3	103.4	104.5	24
7/24	111.7	112.1	112.3	24	107.9	108.4	108.9	24	104.6	105.0	105.2	24	105.4	106.7	107.6	24	102.1	103.3	104.4	24
7/25	112.6	113.0	113.3	24	107.8	108.4	108.7	24	140.9	177.7	980.2	24	105.3	106.5	107.5	24	102.1	103.4	104.4	24
7/26	112.1	112.1	112.2	2	108.5	109.6	110.2	24	104.0	104.2	104.6	24	104.8	105.8	106.8	24	101.7	102.7	103.7	24
7/27	---	---	---	0	109.4	110.6	111.2	24	103.7	103.9	104.3	24	104.8	106.0	107.0	24	102.3	103.7	104.9	24
7/28	---	---	---	0	110.9	111.9	112.4	24	104.3	104.9	109.1	24	105.3	106.8	108.5	24	102.6	103.9	105.1	24
7/29	---	---	---	0	110.5	111.1	111.4	24	107.2	109.9	110.5	24	107.0	109.5	111.1	24	102.5	103.7	104.7	24
7/30	---	---	---	0	110.5	111.1	111.5	24	109.4	109.5	109.7	24	108.6	109.7	110.5	24	102.4	103.7	104.9	24

Total Dissolved Gas Saturation Data at Snake River Sites

Date	<u>Clwrtr-Lewiston</u>				<u>Lower Granite</u>				<u>L. Granite Tlwr</u>				<u>Little Goose</u>				<u>L. Goose Tlwr</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>	
7/17	103.4	105.5	107.1	24	102.0	102.8	103.5	24	110.1	110.3	110.6	24	105.7	106.4	107.3	24	112.1	112.4	112.9	24
7/18	103.8	106.1	107.6	24	103.3	103.7	104.2	24	110.6	110.9	111.5	24	107.7	108.2	108.6	24	112.4	112.9	113.3	24
7/19	104.9	107.1	108.7	24	102.3	102.6	103.0	24	109.7	109.9	110.3	24	107.4	107.8	108.0	24	112.3	112.6	112.9	24
7/20	104.6	106.9	108.3	24	102.0	102.4	102.8	24	109.9	110.3	110.5	24	110.7	112.0	113.5	24	112.8	113.1	113.5	24
7/21	104.9	107.1	108.6	24	102.8	102.9	103.3	24	110.3	110.7	111.7	24	112.0	112.9	114.0	24	112.9	113.3	113.5	24
7/22	104.6	107.1	108.8	24	102.3	102.5	102.7	24	110.2	110.4	110.5	24	110.5	110.7	111.0	24	112.7	113.1	113.4	24
7/23	105.0	107.1	108.7	24	102.4	102.7	102.9	24	110.2	110.5	111.1	24	109.8	110.1	110.8	24	112.3	112.5	112.6	24
7/24	105.1	107.5	109.0	24	102.1	102.2	102.4	24	110.1	110.2	110.6	24	109.5	109.7	110.0	24	112.3	112.7	113.2	24
7/25	105.0	107.2	108.8	24	102.2	102.3	102.5	24	110.7	111.1	111.6	24	109.2	109.5	109.9	24	112.1	112.5	113.0	24
7/26	104.5	106.6	108.1	24	102.0	102.2	102.3	24	110.4	110.7	111.2	24	108.5	109.1	110.4	24	112.2	112.6	113.0	24
7/27	105.1	107.5	108.7	24	101.7	101.8	102.0	24	110.7	110.8	110.9	24	108.0	108.5	109.0	24	111.6	112.2	113.0	24
7/28	105.3	107.6	108.9	24	102.5	102.9	103.1	24	110.5	111.0	111.6	24	108.4	108.6	108.8	24	112.3	112.8	113.5	24
7/29	105.5	107.7	108.8	24	102.9	103.1	103.3	24	110.1	110.5	110.9	24	108.6	109.1	110.2	24	112.4	112.9	113.5	24
7/30	106.5	108.6	109.7	24	103.0	103.2	103.6	24	110.2	110.3	110.5	24	108.9	109.4	110.0	24	113.0	113.4	113.8	24

Total Dissolved Gas Saturation Data at Snake and Lower Columbia River Sites

Date	<u>Lower Mon.</u>				<u>L. Mon. Tlwr</u>				<u>Ice Harbor</u>				<u>Ice Harbor Tlwr</u>				<u>McNary-Oregon</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>	
7/17	108.7	108.9	109.7	24	115.2	115.6	115.8	24	110.4	111.1	111.5	24	113.9	114.3	114.7	24	---	---	---	0
7/18	109.6	109.8	110.0	24	115.8	116.1	116.3	24	111.7	112.0	112.2	24	113.6	114.5	115.0	24	---	---	---	0
7/19	108.9	109.3	110.4	24	115.5	115.9	116.1	24	111.9	112.5	113.2	24	113.2	114.2	115.0	24	---	---	---	0
7/20	110.3	110.6	110.7	24	115.5	115.9	116.6	24	112.9	113.1	113.5	24	113.1	113.8	114.5	24	---	---	---	0
7/21	110.8	111.0	111.1	24	115.0	115.3	115.8	24	113.1	113.3	113.7	24	112.9	113.5	113.9	24	---	---	---	0
7/22	110.9	111.4	112.5	24	115.7	116.1	116.4	24	113.1	113.3	113.8	24	114.2	114.8	115.2	24	---	---	---	0
7/23	111.7	112.0	112.4	24	115.5	115.9	116.2	24	113.3	113.5	113.8	24	113.6	114.2	114.7	24	---	---	---	0
7/24	111.5	111.7	111.9	24	116.5	117.0	117.6	24	113.5	113.7	113.9	24	113.6	114.1	114.7	24	---	---	---	0
7/25	110.4	110.9	111.5	24	116.0	116.2	116.4	24	113.0	113.2	113.6	24	113.9	114.5	115.2	24	---	---	---	0
7/26	109.4	109.6	110.0	24	116.0	116.2	116.6	24	112.4	112.6	113.0	24	113.7	114.3	114.8	24	---	---	---	0
7/27	109.8	110.6	111.1	24	115.7	116.2	117.5	24	112.2	112.7	113.1	24	113.6	114.3	114.7	24	---	---	---	0
7/28	110.6	111.3	111.9	24	115.6	116.0	116.4	24	113.6	114.0	114.5	24	112.9	113.3	113.6	24	---	---	---	0
7/29	112.3	112.6	112.9	24	115.0	115.8	116.3	24	114.2	114.5	115.0	24	113.4	114.2	114.5	24	---	---	---	0
7/30	111.4	111.7	112.2	24	115.5	116.1	116.4	24	114.3	114.6	114.8	24	114.2	114.8	115.1	24	---	---	---	0

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

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

Date	<u>McNary-Wash</u>			<u>McNary Tlwr</u>			<u>John Day</u>			<u>John Day Tlwr</u>			<u>The Dalles</u>							
	<u>24 h</u>	<u>12 h</u>		<u>24 h</u>	<u>12 h</u>		<u>24h</u>	<u>12h</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>	<u>Avg</u>	<u>AVG</u>	<u>High</u>	<u>hr</u>
7/17	109.4	110.1	110.6	24	114.7	115.6	116.9	24	104.0	104.3	104.6	24	117.2	117.5	117.7	24	111.1	111.8	112.4	24
7/18	110.1	110.7	111.4	24	114.9	116.0	117.6	24	103.3	103.5	104.1	24	115.1	115.7	117.2	24	110.4	110.8	110.9	24
7/19	110.0	110.4	111.0	24	115.8	117.0	117.5	24	103.0	103.5	103.8	24	114.6	115.0	115.6	24	106.5	107.4	108.7	24
7/20	110.7	111.2	111.8	24	114.2	114.7	115.2	24	104.5	105.5	106.6	24	115.1	115.5	115.7	24	106.5	107.3	107.7	24
7/21	110.7	111.3	112.4	24	114.8	115.4	116.4	24	107.2	107.4	107.9	24	115.0	115.5	115.8	24	108.9	109.5	110.1	24
7/22	110.6	111.1	112.2	24	115.1	115.8	117.2	24	107.4	107.7	108.0	24	114.7	114.9	115.2	24	108.1	108.5	108.8	24
7/23	109.0	109.4	109.9	24	115.0	116.0	116.3	24	106.4	106.6	107.2	24	114.3	114.6	114.9	24	105.5	106.0	106.5	24
7/24	108.1	108.5	109.0	24	114.8	115.9	116.7	24	105.7	106.1	106.4	24	114.9	115.5	115.8	24	104.6	105.5	106.2	24
7/25	108.0	108.4	109.0	24	116.3	117.0	117.2	24	106.1	106.2	106.4	24	115.1	115.3	115.5	24	108.6	109.6	110.1	24
7/26	107.4	108.0	109.4	24	115.8	116.8	117.3	24	106.0	106.7	107.2	24	114.7	114.9	115.1	24	108.4	108.8	109.0	24
7/27	109.1	109.5	111.1	24	114.9	115.9	116.6	24	108.2	109.1	110.2	24	115.3	116.0	116.3	24	109.2	110.3	110.8	24
7/28	109.5	110.1	110.6	24	113.8	114.4	114.8	24	109.9	110.1	110.6	24	115.9	116.5	116.8	24	110.9	111.1	111.2	24
7/29	111.2	112.0	113.1	24	114.5	115.4	116.6	24	110.5	112.0	112.8	24	116.1	117.4	118.0	24	110.9	111.3	111.6	24
7/30	111.5	112.7	113.8	24	115.3	116.3	117.1	24	110.4	110.7	111.5	24	115.4	116.0	116.6	24	110.8	111.3	111.5	24

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

Date	<u>The Dalles Dnst</u>				<u>Bonneville</u>				<u>Warrendale</u>				<u>Camas\Washougal</u>				<u>Cascade Island</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>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>
7/17	115.3	115.5	115.7	24	110.7	111.9	112.3	24	---	---	---	0	115.7	117.2	118.9	24	115.8	117.0	119.8	24
7/18	114.7	115.1	115.5	24	111.3	111.7	111.8	24	---	---	---	0	114.5	116.0	117.5	24	115.4	116.5	118.6	24
7/19	112.7	113.0	113.3	24	108.3	108.5	109.3	24	---	---	---	0	113.5	115.8	117.3	24	115.3	116.3	118.3	24
7/20	112.6	113.3	113.9	24	108.0	108.7	109.2	24	---	---	---	0	115.2	117.2	118.7	24	115.3	116.1	117.7	24
7/21	113.3	114.1	114.6	24	110.6	111.5	111.9	24	---	---	---	0	114.9	117.0	118.7	24	115.0	115.5	117.1	24
7/22	113.2	113.7	114.2	24	108.9	109.4	110.6	24	---	---	---	0	114.0	115.2	115.9	24	114.1	114.6	116.7	24
7/23	111.9	112.2	112.3	24	105.7	106.2	107.4	24	---	---	---	0	111.8	112.8	114.0	24	113.5	113.9	116.5	24
7/24	111.9	112.4	112.7	24	104.6	105.1	105.3	24	---	---	---	0	114.3	116.1	117.1	24	114.2	115.2	117.2	24
7/25	113.1	113.9	114.4	24	105.4	106.3	106.9	24	---	---	---	0	115.0	116.5	118.0	24	114.9	115.8	117.5	24
7/26	113.3	113.8	114.1	24	107.9	108.9	109.2	24	---	---	---	0	113.6	115.8	117.2	24	114.6	115.4	117.2	24
7/27	113.1	114.0	114.4	24	109.8	111.2	112.4	24	---	---	---	0	116.8	119.0	120.3	24	114.4	115.1	116.7	24
7/28	114.4	115.1	115.7	24	113.9	115.2	115.8	24	---	---	---	0	116.9	118.4	119.2	24	114.5	114.6	114.7	24
7/29	115.1	116.1	116.9	24	114.1	114.4	114.9	24	---	---	---	0	115.0	115.6	117.7	24	114.6	114.7	114.9	24
7/30	115.3	115.6	116.2	24	113.0	113.2	113.7	24	---	---	---	0	115.1	116.6	117.7	24	114.7	114.8	115.0	24

Two-Week Summary of Passage Indices

COMBINED YEARLING CHINOOK											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
07/17/2009	---	---	---	---	0	0	7	0	101	0	0
07/18/2009	---	---	---	---	0	0	13	0	0	239	0
07/19/2009	---	---	---	---	0	0	6	0	205	0	0
07/20/2009	---	---	---	---	0	0	8	0	0	47	0
07/21/2009	---	---	---	---	9	1	0	0	0	0	0
07/22/2009 *	---	---	---	---	0	0	9	1	102	---	0
07/23/2009 *	---	---	---	---	0	0	21	0	0	---	0
07/24/2009 *	---	---	---	---	---	0	15	0	0	24	0
07/25/2009 *	---	---	---	---	0	3	8	0	0	---	0
07/26/2009 *	---	---	---	---	0	0	12	1	0	---	0
07/27/2009 *	---	---	---	---	0	0	23	0	0	---	0
07/28/2009 *	---	---	---	---	0	0	23	0	0	0	---
07/29/2009 *	---	---	---	---	0	0	0	0	0	---	0
07/30/2009 *	---	---	---	---	0	0	5	0	0	---	---
07/31/2009	---	---	---	---	---	---	---	---	---	---	---
Total:	0	0	0	0	9	4	150	2	408	310	0
# Days:	0	0	0	0	13	14	14	14	14	7	12
Average:	0	0	0	0	1	0	11	0	29	44	0
YTD	37,667	44,693	20,207	29,713	3,081,413	2,432,948	449,005	9,223	2,251,654	1,032,228	1,717,083

COMBINED SUBYEARLING CHINOOK											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
07/17/2009	---	---	---	---	2,102	2,770	874	194	163,333	45,860	25,523
07/18/2009	---	---	---	---	1,271	1,831	1,446	211	131,877	47,790	33,243
07/19/2009	---	---	---	---	1,093	1,805	1,070	167	63,213	19,519	14,194
07/20/2009	---	---	---	---	954	1,464	726	178	45,156	21,595	14,098
07/21/2009	---	---	---	---	1,138	1,649	588	238	70,875	25,878	13,256
07/22/2009 *	---	---	---	---	1,014	1,869	523	145	58,036	---	29,149
07/23/2009 *	---	---	---	---	781	1,670	844	127	18,115	---	14,306
07/24/2009 *	---	---	---	---	---	874	942	73	7,613	2,095	6,711
07/25/2009 *	---	---	---	---	521	479	560	119	21,872	---	9,140
07/26/2009 *	---	---	---	---	742	418	632	132	14,418	---	21,418
07/27/2009 *	---	---	---	---	1,174	525	1,756	113	14,695	---	15,253
07/28/2009 *	---	---	---	---	1,477	976	1,041	98	14,405	4,625	---
07/29/2009 *	---	---	---	---	1,478	1,056	1,546	145	17,548	---	15,820
07/30/2009 *	---	---	---	---	1,095	1,745	436	131	28,315	---	---
07/31/2009	---	---	---	---	---	---	---	---	---	---	---
Total:	0	0	0	0	14,840	19,131	12,984	2,071	669,471	167,362	212,111
# Days:	0	0	0	0	13	14	14	14	14	7	12
Average:	0	0	0	0	1,142	1,367	927	148	47,819	23,909	17,676
YTD	0	18	15	545	987,967	1,168,758	428,717	7,140	3,462,626	1,496,577	4,229,507

Two-Week Summary of Passage Indices

COMBINED COHO											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
07/17/2009	---	---	---	---	66	46	0	3	202	0	0
07/18/2009	---	---	---	---	50	46	13	1	0	239	0
07/19/2009	---	---	---	---	49	55	6	0	205	0	0
07/20/2009	---	---	---	---	24	20	23	3	0	0	0
07/21/2009	---	---	---	---	9	20	13	0	102	0	0
07/22/2009 *	---	---	---	---	18	40	7	0	102	---	53
07/23/2009 *	---	---	---	---	35	43	29	3	67	---	0
07/24/2009 *	---	---	---	---	---	37	23	3	45	0	0
07/25/2009 *	---	---	---	---	8	11	31	0	21	---	0
07/26/2009 *	---	---	---	---	20	7	12	1	30	---	0
07/27/2009 *	---	---	---	---	23	7	12	0	30	---	0
07/28/2009 *	---	---	---	---	16	24	35	3	0	0	---
07/29/2009 *	---	---	---	---	34	26	28	3	20	---	192
07/30/2009 *	---	---	---	---	45	60	11	0	0	---	---
07/31/2009	---	---	---	---	---	---	---	---	---	---	---
Total:	0	0	0	0	397	442	243	20	824	239	245
# Days:	0	0	0	0	13	14	14	14	14	7	12
Average:	0	0	0	0	31	32	17	1	59	34	20
YTD	0	0	0	332	91,476	80,691	18,726	37,582	126,948	240,392	503,259

COMBINED STEELHEAD											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
07/17/2009	---	---	---	---	0	40	7	0	0	0	0
07/18/2009	---	---	---	---	8	11	7	0	0	0	0
07/19/2009	---	---	---	---	16	26	6	0	0	0	0
07/20/2009	---	---	---	---	8	9	0	0	102	0	0
07/21/2009	---	---	---	---	17	16	0	0	0	0	0
07/22/2009 *	---	---	---	---	18	14	2	0	0	---	0
07/23/2009 *	---	---	---	---	9	17	14	0	22	---	0
07/24/2009 *	---	---	---	---	---	3	0	0	0	0	0
07/25/2009 *	---	---	---	---	0	9	0	0	10	---	0
07/26/2009 *	---	---	---	---	0	0	0	0	0	---	0
07/27/2009 *	---	---	---	---	4	1	6	0	10	---	0
07/28/2009 *	---	---	---	---	0	4	0	0	0	0	---
07/29/2009 *	---	---	---	---	0	9	0	0	0	---	0
07/30/2009 *	---	---	---	---	7	6	5	0	20	---	---
07/31/2009	---	---	---	---	---	---	---	---	---	---	---
Total:	0	0	0	0	87	165	47	0	164	0	0
# Days:	0	0	0	0	13	14	14	14	14	7	12
Average:	0	0	0	0	7	12	3	0	12	0	0
YTD	1,833	24,360	9,611	8,297	4,510,882	3,563,488	727,829	17,606	803,715	940,630	676,975

Two-Week Summary of Passage Indices

Date	COMBINED SOCKEYE										
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
07/17/2009	---	---	---	---	33	0	0	4	0	0	0
07/18/2009	---	---	---	---	8	0	0	7	0	0	0
07/19/2009	---	---	---	---	16	6	0	15	102	0	0
07/20/2009	---	---	---	---	8	0	0	7	0	0	0
07/21/2009	---	---	---	---	9	3	0	5	51	0	0
07/22/2009	*	---	---	---	9	3	0	4	51	---	0
07/23/2009	*	---	---	---	9	7	0	10	43	---	0
07/24/2009	*	---	---	---	---	0	0	7	0	0	0
07/25/2009	*	---	---	---	0	0	0	12	0	---	0
07/26/2009	*	---	---	---	0	4	0	17	0	---	0
07/27/2009	*	---	---	---	0	3	6	8	10	---	0
07/28/2009	*	---	---	---	0	3	0	8	0	0	---
07/29/2009	*	---	---	---	0	0	0	7	0	---	0
07/30/2009	*	---	---	---	0	1	0	9	141	---	---
07/31/2009	*	---	---	---	---	---	---	---	---	---	---
Total:	0	0	0	0	92	30	6	120	398	0	0
# Days:	0	0	0	0	13	14	14	14	14	7	12
Average:	0	0	0	0	7	2	0	9	28	0	0
YTD	170	0	0	177	46,492	46,350	21,680	4,861	190,372	111,931	74,913

* See sampling comments <http://www.fpc.org/currentDaily/smpcomments.htm>

Smolt indices, clipped & unclipped 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 sampled powerhouse. 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-hr period that spans two calendar days. In this report, the date shown corresponds with the sample end date.

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)}
- RIS (Index) = Rock Island Dam Second Powerhouse Bypass Trap : Passage Index Counts
Passage Index = Collection Counts / {Powerhouse 2 Flow / (Powerhouse 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)}
- BO2 (Index) = Bonneville Dam Second Powerhouse Bypass Collection System : Passage Index Counts
Passage Index = Collection Counts / {Powerhouse 2 Flow / (Powerhouse 1 & 2 Flow + Spill)}

JDA and BO2 data collected for the FPC by Pacific States Marine Fisheries Commission.
 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.

Two Week Transportation Summary

Source: Fish Passage Center

Updated:

7/31/09 9:57 AM

		07/17/09	TO	07/31/09			
		Species					
Site	Data	CH0	CH1	CO	ST	SO	Grand Total
LGR	Sum of NumberCollected	8,354	5	226	51	55	8,691
	Sum of NumberBarged	9,635	4	249	59	59	10,006
	Sum of NumberBypassed	2	0	0	0	0	2
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	33	0	2	0	0	35
	Sum of FacilityMorts	47	1	2	2	1	53
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	80	1	4	2	1	88
LGS	Sum of NumberCollected	13,336	3	309	115	21	13,784
	Sum of NumberBarged	14,733	3	330	164	22	15,252
	Sum of NumberBypassed	0	0	0	0	0	0
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	116	0	10	0	4	130
	Sum of FacilityMorts	153	0	0	1	3	157
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	269	0	10	1	7	287
LMN	Sum of NumberCollected	7,181	82	131	27	3	7,424
	Sum of NumberBarged	7,610	78	127	22	2	7,839
	Sum of NumberBypassed	133	1	0	1	0	135
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	16	0	0	0	0	16
	Sum of FacilityMorts	36	0	2	1	1	40
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	52	0	2	1	1	56
MCN	Sum of NumberCollected	327,267	200	395	78	191	328,131
	Sum of NumberBarged	295,193	193	373	70	172	296,001
	Sum of NumberBypassed	5,855	0	22	7	14	5,898
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	335	0	0	0	0	335
	Sum of FacilityMorts	25,647	7	0	1	4	25,659
	Sum of ResearchMorts	236	0	0	0	0	236
	Sum of TotalProjectMorts	26,218	7	0	1	4	26,230
Total Sum of NumberCollected		356,138	290	1,061	271	270	358,030
Total Sum of NumberBarged		327,171	278	1,079	315	255	329,098
Total Sum of NumberBypassed		5,990	1	22	8	14	6,035
Total Sum of Numbertrucked		0	0	0	0	0	0
Total Sum of SampleMorts		500	0	12	0	4	516
Total Sum of FacilityMorts		25,883	8	4	5	9	25,909
Total Sum of ResearchMorts		236	0	0	0	0	236
Total Sum of TotalProjectMorts		26,619	8	16	5	13	26,661

YTD Transportation Summary

Source: Fish Passage Center

Updated:

7/31/09 9:57 AM

TO: 07/31/09

		Species					
Site	Data	CH0	CH1	CO	SO	ST	Grand Total
LGR	Sum of NumberCollected	698,016	2,352,637	65,519	33,446	3,430,181	6,579,799
	Sum of NumberBarged	677,599	1,500,926	63,422	26,169	1,841,949	4,110,065
	Sum of NumberBypassed	15,858	847,954	1,951	7,068	1,587,772	2,460,603
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	233	118	4	22	33	410
	Sum of FacilityMorts	4,042	2,734	129	192	409	7,506
	Sum of ResearchMorts	19	1,035	0	0	19	1,073
	Sum of TotalProjectMorts	4,294	3,887	133	214	461	8,989
LGS	Sum of NumberCollected	842,486	1,720,160	59,058	33,642	2,517,653	5,172,999
	Sum of NumberBarged	825,642	966,563	56,177	27,761	1,057,236	2,933,379
	Sum of NumberBypassed	9,300	751,922	2,825	5,826	1,460,070	2,229,943
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	322	49	13	8	20	412
	Sum of FacilityMorts	5,998	1,622	3	47	323	7,993
	Sum of ResearchMorts	12	4	0	0	0	16
	Sum of TotalProjectMorts	6,332	1,675	16	55	343	8,421
LMN	Sum of NumberCollected	323,144	321,096	13,870	16,042	518,660	1,192,812
	Sum of NumberBarged	316,359	312,064	13,845	15,864	506,284	1,164,416
	Sum of NumberBypassed	5,805	8,790	9	114	12,089	26,807
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	79	15	1	3	9	107
	Sum of FacilityMorts	558	237	8	7	258	1,068
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	637	252	9	10	267	1,175
MCN	Sum of NumberCollected	1,737,390	1,303,732	69,796	106,130	467,730	3,684,778
	Sum of NumberBarged	349,135	193	373	215	70	349,986
	Sum of NumberBypassed	1,353,699	1,301,926	69,357	105,852	467,487	3,298,321
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	662	149	1	2	14	828
	Sum of FacilityMorts	33,375	1,439	65	59	156	35,094
	Sum of ResearchMorts	518	25	0	1	3	547
	Sum of TotalProjectMorts	34,555	1,613	66	62	173	36,469
Total Sum of NumberCollected		3,601,036	5,697,625	208,243	189,260	6,934,224	16,630,388
Total Sum of NumberBarged		2,168,735	2,779,746	133,817	70,009	3,405,539	8,557,846
Total Sum of NumberBypassed		1,384,662	2,910,592	74,142	118,860	3,527,418	8,015,674
Total Sum of NumberTrucked		0	0	0	0	0	0
Total Sum of SampleMorts		1,296	331	19	35	76	1,757
Total Sum of FacilityMorts		43,973	6,032	205	305	1,146	51,661
Total Sum of ResearchMorts		549	1,064	0	1	22	1,636
Total Sum of TotalProjectMorts		45,818	7,427	224	341	1,244	55,054

Cumulative Adult Passage at Mainstem Dams Through: 07/30

DAM	EndDate	Spring Chinook						Summer Chinook						Fall Chinook					
		2009		2008		10-Yr Avg.		2009		2008		10-Yr Avg.		2009		2008		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	07/30	114525	66631	125543	17554	160243	11507	81690	37293	77976	11560	76454	9927	0	0	0	0	0	0
TDA	07/30	93908	53646	95438	15801	113852	9048	79648	27765	64145	11988	65371	7645	0	0	0	0	0	0
JDA	07/30	76806	49733	81772	14925	95147	7579	64876	32401	62483	13340	60301	7725	0	0	0	0	0	0
MCN	07/23	70413	43328	68080	12133	86998	7409	54497	20018	51244	10655	53064	6192	0	0	0	0	0	0
IHR	07/22	55435	28223	53142	7757	59050	4663	22708	9210	23004	4920	12830	2501	0	0	0	0	0	0
LMN	07/30	66931	20009	54512	6885	57079	4270	23073	11490	26888	2795	13439	1851	0	0	0	0	0	0
LGS	07/30	52642	24331	50396	7805	54016	4453	19796	10934	21189	4760	10961	2475	0	0	0	0	0	0
LGR	07/30	49667	31064	50146	10946	54673	5280	14057	15868	22041	4994	10880	2686	0	0	0	0	0	0
PRD	07/28	13469	2910	12178	620	18164	621	47082	1974	35404	1161	46660	1668	0	0	0	0	0	0
RIS	07/29	12634	6003	12490	1119	14914	1069	41177	6509	33298	2317	42808	4110	0	0	0	0	0	0
RRH	07/29	6090	1086	4065	371	5734	430	30246	4238	23522	1522	29796	2672	0	0	0	0	0	0
WEL	07/29	6312	1858	2708	426	4250	321	19701	2250	15159	630	19558	912	0	0	0	0	0	0
WFA	07/25	24924	2502	13905	348	-	-	728	64	0	0	-	-	0	0	0	0	-	-

DAM	Coho						Sockeye			Steelhead				Wild 2009
	2009		2008		10-Yr Avg.		2009	2008	10-Yr Avg.	2009	2008	10-Yr Avg.		
	Adult	Jack	Adult	Jack	Adult	Jack								
BON	3	2	1	1	0	0	177700	213533	78482	125370	133384	103631	53219	
TDA	5	0	0	0	0	0	155170	177938	66299	56235	74447	48709	15529	
JDA	1	0	0	0	1	0	156972	193243	72270	49388	53323	35588	12781	
MCN	0	0	0	0	0	0	121201	146520	58175	16343	19593	16871	5631	
IHR	0	0	0	0	0	0	861	532	90	11031	9316	8389	2913	
LMN	0	0	0	0	0	0	1147	713	103	17503	16063	10590	6118	
LGS	0	0	0	0	0	0	1062	584	96	11037	8170	6484	3950	
LGR	1	0	0	0	0	0	1177	849	126	15035	11782	10912	4581	
PRD	0	0	1	-1	2	0	152568	196155	73974	1829	3563	2183	0	
RIS	0	0	0	0	1	0	162063	192853	69742	1365	2941	1629	743	
RRH	0	0	0	0	1	0	131735	160148	51158	1235	2423	1163	619	
WEL	0	0	0	0	0	0	132244	163108	50669	493	1068	513	267	
WFA	0	0	0	0	-	-	0	0	-	16781	18221	-	-	

BON and LGR have switched to video counts so the data is delayed.

*PRD is not posting wild steelhead numbers.

These numbers were collected from USACE, Grant PUD, Douglas PUD, Chelan PUD, ODFW and DART.

Wild steelhead numbers are included in the total. Wild Steelhead are defined as unclipped fish.

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.

Page last updated on: 07/31/09

BON counts from January 1, 2009 to March 14, 2009 (our traditional counts begin March 15):

Year	Chinook Adult	Chinook Jack	Steelhead	Wild Steelhead
2009	19	-1	321	109
2008	42	0	568	273