



Fish Passage Center

Weekly Report #09 - 17

July 2, 2009

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Summary of Events:

Water Supply: Precipitation throughout the Columbia Basin has varied between 37% and 337% of average at individual sub-basins over June. Precipitation above The Dalles has been 120% of average over June. Over the entire water year, precipitation has generally been near average.

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

Location	Water Year 2009 June 1-29		Water Year 2009 October 1, 2008 to June 29, 2009	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	1.61	70	18.10	89
Snake River Above Ice Harbor	3.24	229	17.24	115
Columbia Above The Dalles	2.08	120	19.41	99
Kootenai	1.51	63	17.50	84
Clark Fork	1.50	80	14.33	101
Flathead	1.62	63	16.42	88
Pend Oreille/ Spokane	1.65	78	25.18	93
Central Washington	0.32	51	6.70	84
Snake River Plain	3.12	337	11.11	116
Salmon/Boise/ Payette	2.53	178	16.69	95
Clearwater	2.24	93	28.63	107
SW Washington Cascades/Cowlitz	1.06	37	58.72	90
Willamette Valley	1.83	84	47.98	86

Table 2 displays the June Final and June Mid-month runoff volume forecasts for multiple reservoirs. The most notable differences between the June Final and June Mid-Month forecasts came at Libby Dam and Lower Granite Dam. At Libby, the June Mid-Month forecast decreased 6% relative to the June Final Forecast. At Lower Granite Dam, the June Mid-Month forecast increased 6% 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 5%). The Water Supply Forecast at The Dalles between January and July is 92000 Kaf (86% of average).

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

Location	June Final		June Mid-Month	
	% Average (1971- 2000)	Probable Runoff Volume (Kaf)	% Average (1971- 2000)	Probable Runoff Volume (Kaf)
The Dalles (Jan-July)	86	92000	86	92000
Grand Coulee (Jan-July)	85	53700	83	52300
Libby Res. Inflow, MT (Apr-Aug)	80	5000 5062*	74	4610
Hungry Horse Res. Inflow, MT (Jan-July)	93	2060	92	2050
Lower Granite Res. Inflow (Apr- July)	102	21900	108	23200
Brownlee Res. Inflow (Apr-July)	76	4780	81	5100
Dworshak Res. Inflow (Apr-July)	98	2590 2597*	99	2610

* 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 averaged 85.8 Kcfs at Lower Granite over the first portion of the summer period.

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. On July 1, flows at McNary Dam were 193.4 Kcfs.

Grand Coulee Reservoir is at 1285.4 feet (7-1-09) and held steady over the last week. Outflows at Grand Coulee have ranged between 80.5 and 144.8 Kcfs over the last week. Grand Coulee is slightly lower than expected due to an outage at the Columbia Generating Station that required some draft of Grand Coulee. Grand Coulee is expected to refill several feet over the weekend.

The Libby Reservoir is currently at elevation 2432.3 feet (7-1-09) and has refilled 2.0 feet last week. Outflows at Libby are currently 12 Kcfs.

Hungry Horse is currently at an elevation of 3557.4 ft (7-1-09) and has refilled 2.5 feet last week. Outflows at Hungry Horse have been 2.3 Kcfs last week.

Dworshak is currently at an elevation of 1600 feet (7-1-09) and has refilled 0.3 feet last week. Outflows at Dworshak were increased to 7.4 Kcfs at 0600 on July 2, 2009 for temperature regulation in the Lower Snake river. Dworshak will maintain this discharge over the weekend unless temperatures at the Lower Granite tailrace exceed 19°C on a rolling 12-hr average, if this occurs outflows at Dworshak will be increased to full powerhouse. Outflows at Dworshak will be increased on Monday morning to full powerhouse regardless of Lower Granite temperatures.

The Brownlee Reservoir was at an elevation of 2076.6 feet on July 1st, 2009, refilling 1.3 feet last week. Outflows at Brownlee Dam have been 24.4 to 28.7 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	30%/30% vs 45Kcfs/Gas Cap Study

All of the lower Snake River hydro projects met the court order over the past week.

The 2009 spring spill program began at the lower Columbia River projects ended on June 30th. The following table shows the planned operations for summer spill levels in 2009.

Project	Day/Night Spill
McNary	50%/50%* (beginning June 20)
John Day	30%/30% on pre-test days; 30%/30% vs. 40%/40% on test days
The Dalles	40%/40%
Bonneville	85 Kcfs/gas cap*(beginning June 21)

McNary Dam spill has met the Court Order over the past week. The COE implemented the summer spill of 50% beginning on June 20th, which will extend through August 31st. At John Day Dam the testing of 30% versus 40% continued. The 40% spill level was not consistently achieved since spill was limited based on the spill cap set to reduce TDG at The Dalles forebay. The Dalles Dam met the court ordered 40% level over the past week. Bonneville Dam spill levels met the summer spill test of 85 Kcfs/Gas cap. This spill will continue until July 21, when the daytime spill level will decrease to 75 Kcfs.

Total Dissolved Gas levels were generally below the waiver standards throughout the Snake and Columbia rivers as flows receded except for The Dalles forebay on the 27th of June and on July 1st. The Camas/Washougal monitor slightly exceeded the 115% on June 29th, June 30th and July 1st. 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 and at McNary and Bonneville dams in the lower Columbia. One fish was observed with minor signs of GBT in the sample at Bonneville Dam this past week.

Smolt Monitoring:

Collection of Spring migrants continued to decline at all SMP sites in the Snake River and Lower Columbia this past week. Subyearling Chinook indices also decreased in the Snake River and at McNary Dam, but increased at John Day and Bonneville dams.

At Lower Granite Dam subyearling Chinook predominated with steelhead numbers continuing to decline rapidly over the past week. Average daily passage index for subyearling Chinook was just over 8,000 per day this week, compared to an average of nearly 23,000 per day the previous week.

At Rock Island dam the daily passage indices for subyearling Chinook continue to predominate the sample. Subyearling Chinook numbers averaged just under 100 per day this week. Coho numbers continue to decrease, with a daily average of 15 fish per day this week.

In the lower Columbia River subyearling Chinook smolt numbers decreased at McNary dam but continued to rise at John Day and Bonneville dams. The daily average subyearling passage at McNary Dam decreased to about 175,500 per day, compared to just over 201,000 per day last week. At John Day Dam, the subyearling average daily index rose from about 25,500 per day last week to over 53,500 per day this week. Bonneville Dam also had an increase in subyearling numbers. Last week's daily average for subyearling Chinook was just over 66,600 per day, where as this week the daily average was about 95,250 per day.

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. Releases of subyearling fall Chinook surrogates to the Clearwater River were scheduled to begin this week. These releases are expected to total just over 117,000 subyearlings and are scheduled to run through mid-July. In addition, approximately 300,000 spring Chinook parr were scheduled for release into the Selway River on or around July 1st. These parr are unmarked and are not expected to out-migrate until spring of 2010. There were no other releases of

salmonid juveniles to this zone for this week. No other releases of juvenile salmonids to this zone 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. The volitional release of approximately 6.7 million subyearling fall Chinook from Priest Rapids Hatchery that began on or around June 15th was scheduled to end this week. About 72% of these subyearlings are unmarked. In addition, two releases totaling nearly 750,000 subyearling summer Chinook from Turtle Rock Hatchery into the Mid-Columbia River were scheduled to end this week. There were no other scheduled releases of juvenile salmonids to this zone this week. There are no releases of juvenile salmonids to this zone that are expected to begin 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:

The summer Chinook count began June 1st at Bonneville Dam. Daily passage numbers at Bonneville Dam ranged between 635 and 781 adult summer Chinook in the last week. The 2009 summer Chinook count of 61957 is about 1.05 times greater than the 2008 count and 1.19 times greater than the 10 year average. The summer Chinook jack count of 28619 is about 3.10 times greater than the 2008 of 9212 and about 4.66 times greater than the 10 year average. The adult summer Chinook count at The Dalles Dam was 56955, about 91.9% of the Bonneville passage to date. A total of 38581 adult summer Chinook have passed McNary Dam. The 2009 McNary Dam adult summer Chinook count was about 1.12 times greater than the 2008 count and 1.21 times greater than the 10 year average. The 2009 McNary summer Chinook jack count of 13821 was 1.67 times greater than the 2008 count and 3.94 times greater than the 10 year average. The adult summer Chinook count at Lower Granite Dam in the Snake River of 9861 was 65.8% of the 2008 count and 1.38 times greater than the 10 year average. The Lower Granite summer Chinook jack count of 8548 was 2.59 times greater than the 2008 count and 5.97 times greater than the 10 year average.

The Bonneville Dam 2009 steelhead count of 15291 is about 88.1% of the 2008 count and 86.6% of the 10 year average. In the Snake River, this year's Lower Granite steelhead count of 11297 is 1.43 times greater than the 2008 count of 7898 and 1.39 times greater than the 10 year average of 8125. The 2009 wild steelhead count as of July 1st was 3445. At Rock Island Dam, as of June 29th, 138 adult steelhead have been counted and at Rocky Reach Dam, 468 adult steelhead have been counted so far this season. At Willamette Falls Dam, the 2009 count for steelhead was 12619, as of June 19th. This year's steelhead count is only about 80.5% of the 2008 count of 15674 at Willamette Falls Dam for the same date range.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 6630 and 11404 last week. The 2009 adult sockeye count at Bonneville Dam of 148463 is about 76.6% of the 2008 count of 193707 and about 2.28 times greater than the 10 year average of 64918. In the upper Columbia River at Priest Rapids Dam, the 2009 adult sockeye count of 37856 was about 77.4% of the 2008 count and 1.70 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 Ice Harbor Dam, the 2009 adult sockeye count of 286 is about 1.96 times greater than the 2008 count of 146 and about 10.21 times greater than the 10 year average count of 28. The Lower Granite Dam 2009 adult sockeye count of 129 was about 2.26 times greater than the 2008 count of 57 and 10.75 times greater than the 10 year average count of 12.

As of July 1st at Bonneville Dam, the adult Shad count was 1346660 which was about 69% of the 2008 count of 1949723 and only about 44.8% of the 10 year average count of 3004264.

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
06/18/2009	138.2	0.1	139.6	0.0	152.3	9.5	150.2	13.0	157.3	30.7	164.5	27.9	155.1	21.7
06/19/2009	131.9	0.2	137.3	0.0	148.9	10.0	149.2	12.7	156.5	29.8	164.7	24.3	167.6	20.3
06/20/2009	134.5	0.2	128.9	0.0	141.3	9.4	140.5	12.6	147.7	30.8	157.1	21.0	151.4	20.8
06/21/2009	134.9	0.2	137.7	0.0	147.1	9.3	143.4	10.3	147.4	23.9	146.5	21.5	142.1	18.9
06/22/2009	155.7	0.2	160.6	0.0	169.2	14.9	161.6	34.2	164.3	30.0	169.4	29.8	158.6	28.6
06/23/2009	142.0	0.2	141.8	0.0	156.7	10.6	159.4	15.2	163.8	31.0	180.6	48.3	183.4	26.6
06/24/2009	146.8	0.3	145.8	0.0	161.2	10.0	153.7	13.6	156.1	32.0	170.4	35.7	171.2	20.3
06/25/2009	144.8	0.1	143.1	0.0	153.1	10.0	146.6	14.0	148.3	31.3	150.9	17.5	142.0	21.6
06/26/2009	136.7	0.2	139.8	0.0	149.9	9.1	146.2	12.5	147.9	28.7	152.9	27.1	151.3	28.1
06/27/2009	140.2	0.2	137.8	0.0	145.5	7.5	141.4	11.2	145.7	25.7	153.5	24.1	150.6	26.5
06/28/2009	144.1	0.2	140.9	0.0	147.4	8.6	144.8	10.0	148.2	22.9	147.6	19.7	143.2	21.9
06/29/2009	135.5	0.1	149.3	0.0	161.6	9.9	157.8	19.9	160.1	28.9	167.9	30.8	162.8	25.4
06/30/2009	82.5	0.2	73.6	0.0	98.1	7.6	108.4	12.5	115.2	23.3	142.0	21.6	141.3	22.4
07/01/2009	80.5	0.2	84.6	0.0	77.1	6.9	73.2	8.5	78.5	22.7	83.5	17.6	90.8	19.4

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

Date	Dworshak		Hells Brownlee Canyon		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
06/18/2009	7.4	0.0	24.3	24.8	101.5	20.7	96.8	29.0	100.5	23.0	101.3	30.3
06/19/2009	5.7	0.0	23.4	24.6	102.8	20.7	97.4	29.4	99.3	24.4	100.6	53.5
06/20/2009	4.3	0.0	23.2	22.7	92.8	20.7	86.4	26.0	87.7	25.8	89.3	62.0
06/21/2009	4.3	0.0	23.2	19.7	88.5	18.8	83.9	25.2	85.0	17.2	86.1	36.0
06/22/2009	6.4	0.0	25.9	32.4	89.0	18.7	83.7	25.1	83.8	17.5	85.9	25.9
06/23/2009	8.6	0.0	26.4	34.5	108.2	18.8	103.7	31.0	106.8	17.0	109.8	39.7
06/24/2009	8.0	0.0	27.1	31.1	97.8	18.8	94.9	28.7	94.6	17.5	94.0	28.2
06/25/2009	6.4	0.0	29.1	25.6	85.2	18.7	78.6	23.3	80.0	17.3	82.9	46.0
06/26/2009	4.3	0.0	32.2	28.0	85.2	18.8	82.5	24.8	81.8	17.5	85.0	56.7
06/27/2009	5.5	0.0	30.9	27.2	80.7	18.8	76.7	23.1	77.2	17.2	79.5	54.8
06/28/2009	6.4	0.0	29.8	28.9	84.1	18.7	80.0	23.8	77.8	17.5	80.3	55.0
06/29/2009	4.3	0.0	29.5	29.0	77.8	18.8	75.3	22.4	74.7	17.2	76.2	32.4
06/30/2009	4.3	0.0	27.3	29.2	75.1	18.7	70.6	21.0	71.6	17.5	74.7	22.2
07/01/2009	5.3	0.0	---	---	71.9	18.6	67.2	20.1	67.8	17.2	69.7	44.8

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
06/18/2009	256.5	102.7	246.6	70.3	241.6	96.5	248.9	99.6	43.7	93.5
06/19/2009	271.8	109.1	268.2	77.2	261.8	104.7	276.8	99.8	69.4	95.5
06/20/2009	275.8	137.9	254.9	74.7	250.6	100.2	277.0	99.8	70.7	94.4
06/21/2009	251.4	125.7	250.7	75.4	242.3	97.1	247.9	91.2	55.3	89.3
06/22/2009	239.0	119.5	225.3	67.6	221.7	88.5	233.3	94.8	40.5	85.9
06/23/2009	290.0	145.1	282.4	82.0	269.8	107.8	272.1	99.3	63.1	97.6
06/24/2009	284.0	142.2	276.4	82.0	273.1	109.2	282.5	98.8	67.1	104.5
06/25/2009	253.7	127.0	247.3	82.2	242.8	96.8	261.1	97.6	55.0	96.4
06/26/2009	229.6	114.8	218.9	85.9	213.2	85.2	232.7	97.8	38.3	84.4
06/27/2009	255.7	127.9	242.5	89.4	236.2	95.5	243.6	100.2	41.9	89.4
06/28/2009	243.5	121.6	237.1	76.7	232.0	92.3	253.2	99.8	53.7	87.5
06/29/2009	224.2	112.5	222.8	66.8	213.2	85.5	221.0	99.3	28.9	80.7
06/30/2009	245.1	123.1	219.8	77.6	210.4	84.2	215.9	99.5	28.9	75.9
07/01/2009	193.4	96.9	195.3	77.8	193.4	77.4	215.1	96.3	26.3	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											
	06/22/09	Chinook + Steelhead	78	0	0	0.00%	0.00%	0	0	0	0
	06/29/09	Chinook + Steelhead	31	0	0	0.00%	0.00%	0	0	0	0
Lower Monumental Dam											
	06/23/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/30/09	Chinook + Steelhead	51	0	0	0.00%	0.00%	0	0	0	0
McNary Dam											
	06/23/09	Chinook + Steelhead	101	0	0	0.00%	0.00%	0	0	0	0
	06/29/09	Chinook + Steelhead	101	0	0	0.00%	0.00%	0	0	0	0
Bonneville Dam											
	06/23/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/27/09	Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
	06/30/09	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0

Hatchery Releases Last Two Weeks

Hatchery Release Summary									
From:	6/18/2009		to		07/01/09				
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
National Marine Fisheries Service National Marine Fisheries Service Total	Lyons Ferry Hatchery	CH0	FA	2009	117,362	06-29-09	07-20-09	Big Canyon (Clearwater River)	Clearwater River M F
Nez Perce Tribe	Clearwater Hatchery	CH0	SP	2010	300,000	07-01-09	07-15-09	Selway River	Clearwater River M F
Nez Perce Tribe Nez Perce Tribe Total	Nez Perce Tribal Hatchery	CH0	SP	2010	305,000	06-22-09	06-26-09	Meadow Creek - CLES	S Fk Clearwater River
Washington Dept. of Fish and Wildlife	Priest Rapids Hatchery	CH0	FA	2009	6,700,000	06-15-09	06-30-09	Priest Rapids Hatchery Ringold Springs	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Ringold Springs Hatchery	CH0	FA	2009	3,450,000	06-08-09	06-23-09	Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	CH0	SU	2009	325,000	06-15-09	06-30-09	Turtle Rock Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife Washington Dept. of Fish and Wildlife Total	Turtle Rock Hatchery	CH0	SU	2009	418,000	06-15-09	06-30-09	Turtle Rock Hatchery	Mid-Columbia River
Wildlife Total					10,893,000				
Grand Total					11,615,362				

Hatchery Releases Next Two Weeks

Hatchery Release Summary									
From:	7/2/2009		to		7/15/2009				
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
National Marine Fisheries Service National Marine Fisheries Service Total	Lyons Ferry Hatchery	CH0	FA	2009	117,362	06-29-09	07-20-09	Big Canyon (Clearwater River)	Clearwater River M F
Nez Perce Tribe Nez Perce Tribe Total	Clearwater Hatchery	CH0	SP	2010	300,000	07-01-09	07-15-09	Selway River	Clearwater River M F
Grand Total					417,362				

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>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>	
	<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	
6/18	105.5	105.9	106.3	24	---	---	---	0	117.2	117.6	117.9	24	111.4	112.6	114.2	22	112.8	113.3	113.6	24
6/19	105.8	105.9	106.2	24	120.3	120.3	121.9	12	117.7	117.9	118.2	24	112.3	113.0	113.9	22	113.2	113.5	113.9	24
6/20	105.9	106.4	106.8	24	122.1	123.1	124.3	24	117.8	118.4	118.6	24	112.2	113.8	114.6	24	113.4	113.7	114.1	24
6/21	105.9	106.0	106.5	24	121.1	122.2	122.8	24	118.3	118.4	118.9	24	111.7	113.0	113.7	24	112.8	113.1	113.4	24
6/22	105.0	105.3	105.8	24	121.0	121.4	121.7	21	117.4	117.7	118.0	24	111.0	112.2	114.1	21	112.2	112.4	112.6	24
6/23	104.8	105.1	105.4	24	120.1	120.9	122.0	22	117.6	118.0	118.4	24	111.8	113.1	114.2	22	112.3	112.5	112.9	24
6/24	105.1	105.6	105.8	24	118.5	120.7	122.0	22	118.6	119.0	119.2	24	112.2	113.4	114.3	22	113.4	113.7	113.9	24
6/25	105.4	105.8	106.3	24	116.4	117.9	120.6	22	118.2	118.3	118.5	23	112.4	113.8	115.1	22	113.0	113.3	113.7	24
6/26	104.9	105.2	105.5	24	115.5	116.8	119.9	19	117.8	118.0	118.0	24	111.4	112.4	113.3	19	112.2	112.4	112.6	24
6/27	104.4	104.7	105.0	24	115.5	117.4	118.7	22	117.3	117.6	117.9	24	111.3	112.8	114.3	22	112.8	113.4	113.9	24
6/28	104.8	105.1	105.5	24	113.3	113.6	114.1	21	117.5	117.9	118.2	24	113.1	114.3	115.6	21	114.2	114.6	114.9	24
6/29	105.0	105.4	105.7	24	113.1	113.6	114.3	23	117.6	117.7	118.1	24	112.5	113.5	116.0	23	114.3	114.4	114.6	24
6/30	105.3	105.7	106.2	24	111.7	112.4	112.9	21	116.8	116.9	117.3	24	112.8	113.6	115.0	21	114.2	114.5	114.7	24
7/1	104.9	105.4	105.7	24	111.2	111.9	112.2	21	115.7	116.2	116.5	24	111.5	112.3	113.1	21	113.6	114.1	114.7	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>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>	
	<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	
6/18	112.2	112.7	113.0	24	111.7	112.5	112.7	24	113.4	114.4	114.8	24	111.6	112.1	112.5	24	112.5	113.2	113.9	24
6/19	112.6	112.9	113.1	24	112.4	112.6	112.7	24	114.0	114.3	114.7	24	112.3	112.5	112.7	24	112.2	112.7	113.6	24
6/20	112.8	113.1	113.4	24	112.9	113.5	114.0	24	114.3	115.0	115.7	24	112.3	112.6	112.8	24	112.1	113.1	113.9	24
6/21	112.2	113.0	113.7	24	111.9	112.6	113.3	24	113.6	114.2	115.0	24	111.8	111.9	112.2	24	112.3	113.1	113.7	24
6/22	111.3	111.7	112.1	24	110.8	111.0	111.4	24	113.2	113.8	114.8	24	110.7	111.0	111.5	24	112.4	114.3	117.1	24
6/23	111.3	111.5	112.1	24	111.4	111.9	112.4	24	113.5	114.1	114.6	24	111.1	111.9	112.2	24	113.2	114.0	115.7	24
6/24	112.8	113.0	113.1	24	112.9	113.1	113.6	23	114.6	115.1	115.8	23	113.2	114.0	114.5	24	114.1	114.7	115.5	24
6/25	111.8	112.1	112.5	24	111.6	112.0	112.9	24	113.2	113.7	114.3	24	112.1	112.4	112.9	24	113.3	114.1	114.7	24
6/26	111.1	111.4	112.0	24	111.9	112.2	112.6	23	113.2	113.8	114.7	23	110.7	111.0	111.2	24	112.3	113.1	113.5	24
6/27	112.2	112.6	113.8	24	111.8	112.1	112.5	24	113.2	113.9	114.5	24	111.3	112.2	112.7	24	112.1	113.3	113.8	24
6/28	113.4	113.8	114.3	24	112.5	112.5	113.2	12	113.5	113.5	114.8	12	112.1	112.6	113.0	24	112.8	113.6	114.2	24
6/29	113.3	113.4	113.6	24	114.2	114.2	114.6	9	115.7	115.7	116.5	9	112.2	112.9	113.3	24	113.1	113.8	116.4	24
6/30	113.4	114.1	114.6	24	114.4	115.1	116.0	24	115.5	116.4	116.9	24	113.3	114.0	114.5	24	112.3	113.2	115.5	24
7/1	113.1	113.8	114.1	24	113.6	114.7	115.2	23	114.4	115.4	116.1	23	114.6	115.3	116.0	24	110.8	112.0	113.1	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>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>		<u>24 h</u>	<u>12 h</u>	<u>High</u>	
	<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	
6/18	111.2	112.1	112.6	24	115.6	116.9	117.8	24	111.3	112.2	112.5	24	113.0	113.6	114.1	24	110.8	112.2	113.2	24
6/19	112.0	112.2	112.6	24	115.9	116.6	117.3	24	111.9	112.1	112.7	24	113.5	113.6	114.1	24	112.4	112.8	113.7	24
6/20	111.9	112.4	113.1	24	116.3	116.7	117.4	24	111.4	111.9	112.9	24	112.9	113.2	113.9	24	111.3	111.9	112.9	24
6/21	110.7	111.1	111.5	24	114.2	114.8	116.0	24	110.0	110.4	111.1	24	112.5	112.9	113.6	24	109.6	109.9	110.9	24
6/22	110.4	110.8	112.5	24	114.5	114.8	115.4	24	109.0	109.3	109.9	24	111.5	111.7	112.3	24	108.7	109.6	110.1	24
6/23	113.0	113.9	115.3	24	116.2	116.8	117.6	24	110.6	112.4	112.7	24	112.4	113.0	113.7	24	111.1	112.3	113.3	24
6/24	113.1	114.1	114.6	24	116.2	117.3	117.8	24	113.8	114.7	115.2	24	114.3	114.8	115.1	24	112.5	112.9	113.2	24
6/25	112.0	112.4	113.3	24	115.6	116.0	116.9	24	112.9	113.3	114.4	24	113.4	113.8	114.8	24	111.7	111.9	112.4	24
6/26	110.8	111.0	111.6	24	115.0	115.3	116.2	24	111.2	111.6	113.2	24	112.4	112.9	114.4	24	111.0	111.3	111.6	24
6/27	110.7	111.5	112.1	24	114.3	115.3	115.9	24	112.1	113.3	114.1	24	112.7	113.3	113.7	24	110.6	111.3	111.9	24
6/28	111.7	112.2	112.7	24	114.9	115.4	115.9	24	112.3	112.8	113.3	24	113.5	113.8	114.6	24	111.6	112.0	112.5	24
6/29	110.8	112.5	113.2	24	115.0	116.4	117.0	24	---	---	---	0	---	---	---	0	---	---	---	0
6/30	111.3	113.9	115.8	24	114.8	117.1	118.5	24	---	---	---	0	---	---	---	0	---	---	---	0
7/1	112.7	113.5	114.2	24	116.4	116.8	117.4	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>Clrwtr-Peck</u>			<u>Anatone</u>			#				
	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>		#			
	<u>Avg</u>	<u>Avg</u>		<u>hr</u>	<u>Avg</u>	<u>Avg</u>		<u>hr</u>	<u>Avg</u>	<u>Avg</u>		<u>hr</u>	<u>Avg</u>	<u>Avg</u>			<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>hr</u>
6/18	112.2	113.2	113.9	24	108.6	109.7	110.5	24	101.7	102.0	102.2	23	102.1	103.1	103.7	24	105.0	106.0	106.6	24
6/19	113.7	113.9	114.3	24	109.2	109.9	110.7	24	101.9	102.1	102.6	24	101.5	101.8	102.5	24	104.5	104.8	104.9	24
6/20	112.7	113.0	113.3	24	108.8	109.4	109.9	24	102.2	102.6	103.0	24	101.8	102.5	103.1	24	104.5	105.0	105.7	24
6/21	111.0	111.4	112.4	24	106.5	106.9	107.8	24	101.6	101.8	102.0	24	100.9	101.1	101.7	24	103.6	103.7	103.9	24
6/22	111.1	112.1	113.9	24	104.3	105.2	105.8	24	101.1	101.4	102.3	24	100.8	101.3	101.6	24	104.1	104.9	105.5	24
6/23	113.2	113.5	113.9	24	107.0	108.8	110.0	24	101.1	101.5	101.7	24	101.7	102.7	103.2	24	105.8	106.8	107.4	24
6/24	114.3	114.6	115.1	24	109.7	110.5	111.1	24	101.9	102.4	102.6	24	102.7	103.4	104.0	24	105.9	106.7	107.4	24
6/25	113.4	113.7	114.0	24	108.9	110.1	110.9	24	101.5	101.8	102.0	24	101.8	102.5	103.1	24	104.2	104.8	105.3	24
6/26	112.8	113.2	114.1	24	109.7	110.5	111.0	24	101.3	101.8	102.2	24	101.6	102.4	103.1	24	103.8	104.5	105.0	24
6/27	112.9	113.7	114.2	24	109.9	110.9	111.5	24	104.0	106.4	107.2	24	102.6	104.1	104.8	22	104.1	105.0	105.6	24
6/28	113.3	113.7	113.9	24	110.7	111.4	111.8	24	106.5	107.0	107.4	24	103.5	104.4	105.2	24	104.1	104.8	105.4	24
6/29	---	---	---	0	110.5	111.6	112.2	24	102.4	103.1	105.6	24	102.3	103.3	104.1	24	103.8	104.4	105.0	24
6/30	---	---	---	0	110.5	111.4	111.9	24	101.9	102.5	102.9	23	102.0	103.0	103.8	24	103.3	103.9	104.5	24
7/1	---	---	---	0	110.0	110.7	111.2	24	102.0	102.5	102.9	24	102.1	103.2	104.0	24	103.1	103.9	104.5	24

Total Dissolved Gas Saturation Data at Snake River Sites

Date	<u>Clrwtr-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>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>		#			
	<u>Avg</u>	<u>Avg</u>		<u>hr</u>	<u>Avg</u>	<u>Avg</u>		<u>hr</u>	<u>Avg</u>	<u>Avg</u>		<u>hr</u>	<u>Avg</u>	<u>Avg</u>			<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>hr</u>
6/18	102.2	103.3	104.3	22	104.5	104.7	104.8	24	109.9	110.1	110.5	24	107.6	108.0	108.4	24	113.3	113.7	114.0	24
6/19	101.2	101.6	102.2	24	104.4	104.6	104.8	24	109.8	109.9	110.3	24	107.2	107.3	107.9	24	113.3	113.6	113.8	24
6/20	101.7	102.6	103.3	22	104.2	104.5	104.7	24	109.7	110.0	110.1	24	107.4	108.0	108.5	24	113.0	113.3	113.5	24
6/21	100.5	100.8	101.1	20	103.3	103.7	104.3	24	108.8	108.9	109.1	24	106.4	106.7	107.6	24	112.3	112.7	112.8	24
6/22	100.7	101.7	102.5	23	101.9	102.1	102.5	24	108.5	108.7	109.2	24	105.0	105.2	105.4	24	111.5	112.0	112.7	24
6/23	101.9	103.4	104.4	23	102.1	102.5	102.9	24	108.0	108.2	108.6	24	105.3	105.7	106.3	24	113.6	114.4	114.8	24
6/24	102.8	104.5	105.7	24	104.0	104.5	104.8	24	108.9	109.2	109.5	24	106.6	107.4	108.4	24	113.5	114.1	114.3	24
6/25	102.3	103.5	104.6	24	104.5	104.8	104.9	24	108.7	108.8	109.1	24	106.2	106.6	107.1	24	112.2	112.6	113.1	24
6/26	102.1	103.3	104.2	22	104.1	104.3	104.7	24	108.8	109.1	109.4	24	105.8	106.1	106.3	24	112.4	113.1	113.5	24
6/27	102.3	104.0	105.0	23	103.1	103.3	103.5	24	108.4	108.7	109.0	24	105.9	106.4	107.2	24	112.2	112.9	113.1	24
6/28	103.3	105.0	106.1	24	103.2	103.4	103.6	24	108.6	108.8	109.1	24	107.4	107.6	108.4	24	113.0	113.1	113.2	24
6/29	103.0	104.5	105.5	24	103.5	103.9	104.2	24	108.6	108.8	109.1	24	108.8	109.1	109.7	24	114.0	114.5	114.8	24
6/30	102.5	104.0	105.2	23	103.6	103.8	104.0	24	108.4	108.6	109.1	24	109.3	109.5	109.7	24	113.6	114.2	114.4	24
7/1	102.5	104.2	105.3	23	103.4	103.8	104.1	24	108.6	108.9	109.2	24	109.1	109.4	109.9	24	114.4	114.6	114.9	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>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>	#	<u>24 h</u>	<u>12 h</u>	<u>High</u>		#			
	<u>Avg</u>	<u>Avg</u>		<u>hr</u>	<u>Avg</u>	<u>Avg</u>		<u>hr</u>	<u>Avg</u>	<u>Avg</u>		<u>hr</u>	<u>Avg</u>	<u>Avg</u>			<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>hr</u>
6/18	112.4	112.6	112.9	24	115.5	116.1	117.3	24	113.9	114.2	114.5	24	116.8	117.1	117.4	24	---	---	---	0
6/19	112.6	112.8	113.1	24	116.6	118.6	118.9	24	113.8	114.0	114.2	24	117.6	118.1	118.9	24	---	---	---	0
6/20	112.1	112.3	112.6	24	118.4	118.6	118.8	24	113.0	113.2	113.5	24	118.6	118.9	119.3	24	---	---	---	0
6/21	111.6	111.9	112.3	24	114.4	114.9	116.7	24	112.2	112.5	113.2	24	117.4	117.7	118.1	24	---	---	---	0
6/22	110.0	110.2	110.6	24	114.1	114.5	115.1	24	110.9	111.1	111.8	24	117.0	117.4	117.8	24	---	---	---	0
6/23	110.3	110.9	111.2	24	115.3	116.3	117.1	24	111.0	111.7	112.6	24	119.1	119.9	120.4	24	---	---	---	0
6/24	112.8	113.7	114.1	24	115.1	116.4	117.5	24	113.0	113.4	113.6	24	121.5	122.1	122.3	24	---	---	---	0
6/25	112.6	112.9	113.6	24	115.1	115.8	117.0	24	112.2	112.5	113.4	24	118.1	120.4	121.9	24	---	---	---	0
6/26	111.8	112.1	112.3	24	116.5	116.9	117.2	24	112.0	112.2	112.7	24	116.2	116.5	116.8	24	---	---	---	0
6/27	111.5	111.8	112.2	24	115.6	116.1	116.5	24	112.6	113.0	113.7	24	116.1	116.3	116.4	24	---	---	---	0
6/28	112.5	112.8	113.0	24	115.4	116.2	117.0	24	113.6	114.0	114.3	24	115.9	116.1	116.6	24	---	---	---	0
6/29	113.2	113.5	113.8	24	114.8	115.2	116.2	24	114.2	114.4	114.9	24	115.6	115.9	116.5	24	---	---	---	0
6/30	113.2	113.3	113.5	24	115.3	115.9	116.6	24	114.3	114.4	114.4	24	115.5	116.0	116.4	24	---	---	---	0
7/1	113.4	113.6	113.8	24	115.2	116.1	116.7	24	114.1	114.2	114.3	24	115.5	116.2	116.3	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>24h</u>	<u>12h</u>	#					
	Avg	Avg		High	Avg		Avg	High		Avg	Avg		High	Avg		AVG	High			
6/18	111.7	112.2	113.1	24	114.8	115.2	115.5	24	107.3	107.5	107.8	24	118.5	120.0	120.5	24	109.3	109.7	110.9	24
6/19	110.8	111.6	112.9	24	115.0	115.1	115.2	24	106.9	107.1	107.2	24	119.3	119.8	120.1	24	109.7	110.1	110.9	24
6/20	108.4	108.7	109.3	24	117.0	117.3	117.9	24	106.5	106.7	107.0	24	118.6	119.4	119.6	24	108.7	109.0	109.3	24
6/21	108.0	108.2	108.8	24	116.2	116.6	117.0	24	105.2	105.5	106.3	24	118.6	118.9	119.1	24	107.6	108.0	109.0	24
6/22	106.5	107.1	108.0	24	115.4	116.3	116.8	24	103.9	104.1	104.5	24	116.8	117.7	118.1	24	107.7	107.9	108.3	24
6/23	107.3	108.2	110.2	24	117.4	117.9	118.0	24	104.2	104.8	105.5	24	118.8	119.6	119.8	24	109.8	111.0	112.3	24
6/24	109.8	110.7	111.3	24	118.0	119.0	122.4	24	105.6	106.0	106.6	24	119.1	119.4	119.7	24	111.1	111.6	112.2	24
6/25	110.6	110.8	111.1	24	116.5	117.1	117.4	24	104.9	105.3	105.4	24	118.0	119.0	119.2	24	108.6	109.4	110.4	24
6/26	110.2	110.5	110.8	24	115.2	116.0	116.4	24	106.1	107.0	107.4	24	118.7	118.8	119.1	24	110.0	110.5	111.3	24
6/27	111.2	112.1	113.9	24	116.6	117.3	117.9	24	107.8	108.7	109.4	24	119.1	119.6	120.0	24	113.6	115.3	116.8	24
6/28	112.2	112.8	113.2	24	115.9	116.7	117.1	24	108.5	108.8	109.2	24	118.9	119.3	119.6	24	113.6	114.7	116.5	24
6/29	113.0	113.6	114.1	24	115.4	116.3	116.6	24	108.7	109.4	109.7	24	118.0	119.2	119.8	24	110.7	111.2	111.7	24
6/30	113.5	114.1	114.2	24	115.8	117.1	117.4	24	109.8	110.6	110.9	24	117.9	119.5	119.9	24	110.8	111.7	113.9	24
7/1	112.0	112.9	113.9	24	113.5	113.8	114.1	24	111.2	112.2	113.0	24	118.4	118.9	119.3	24	115.1	115.8	116.6	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>24 h</u>	<u>12 h</u>	#	<u>24h</u>	<u>12h</u>	#	<u>24h</u>	<u>12h</u>	#	<u>24h</u>	<u>12h</u>	#					
	Avg	Avg		High	Avg		Avg	High		Avg	Avg		High	Avg		AVG	High			
6/18	115.2	115.7	116.6	24	110.9	111.3	111.5	24	---	---	---	0	113.2	114.3	115.1	24	117.9	118.6	119.2	24
6/19	115.8	116.1	116.6	24	110.7	110.9	111.1	24	---	---	---	0	111.7	112.2	113.2	24	118.7	118.9	119.0	24
6/20	115.4	115.9	116.6	24	110.6	110.8	111.1	24	---	---	---	0	111.2	111.9	112.5	24	118.8	118.9	119.1	24
6/21	114.3	114.6	115.1	24	108.5	108.9	109.8	24	---	---	---	0	110.4	110.9	111.7	24	116.4	117.4	118.7	24
6/22	113.8	114.3	114.7	24	108.1	108.6	109.1	24	---	---	---	0	110.3	112.1	113.6	24	116.0	117.4	120.1	24
6/23	115.8	117.2	117.7	24	110.7	111.9	112.9	24	---	---	---	0	112.5	114.6	116.3	24	117.2	118.6	121.2	24
6/24	116.7	117.3	117.7	24	114.3	115.0	115.5	24	---	---	---	0	113.7	115.7	117.7	24	117.8	119.1	121.0	24
6/25	114.6	114.8	115.2	24	110.9	111.7	113.2	24	---	---	---	0	112.7	113.9	115.3	24	116.8	118.3	120.4	24
6/26	114.7	115.0	115.3	24	109.0	109.3	109.7	24	---	---	---	0	111.8	113.6	115.0	24	116.4	118.0	120.2	24
6/27	116.9	118.0	118.4	24	109.7	111.1	111.6	24	---	---	---	0	112.7	115.0	117.1	24	116.7	118.2	120.2	24
6/28	117.2	117.5	117.7	24	111.8	112.3	112.6	24	---	---	---	0	112.7	114.8	116.6	24	117.1	118.4	120.2	24
6/29	115.8	116.6	117.3	24	111.9	112.2	112.8	24	---	---	---	0	113.7	115.8	117.7	24	116.3	117.8	119.9	24
6/30	115.3	115.7	116.2	24	110.0	110.3	110.7	24	---	---	---	0	113.3	115.7	117.7	24	116.5	118.0	120.3	24
7/1	117.0	117.5	118.0	24	110.0	110.0	110.4	9	---	---	---	0	113.8	116.3	117.7	24	116.5	118.1	123.0	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)
06/18/2009	---	---	---	---	281	428	128	3	1,191	995	864
06/19/2009 *	---	---	---	---	564	322	53	2	---	599	379
06/20/2009	---	---	---	---	505	215	124	5	1,882	539	309
06/21/2009 *	---	---	---	---	0	143	90	3	---	879	594
06/22/2009	---	---	---	---	0	144	46	3	1,429	192	523
06/23/2009 *	---	---	---	---	310	36	49	5	---	286	345
06/24/2009	---	---	---	---	61	72	0	0	1,123	250	109
06/25/2009 *	---	---	---	---	248	0	62	2	---	476	259
06/26/2009	---	---	---	---	130	43	26	0	823	905	201
06/27/2009 *	---	---	---	---	96	36	15	5	---	473	264
06/28/2009	---	---	---	---	33	14	12	2	1,536	896	557
06/29/2009 *	---	---	---	---	0	20	26	2	---	159	365
06/30/2009 *	---	---	---	---	33	1	17	2	621	1,357	276
07/01/2009 *	---	---	---	---	0	0	25	0	---	296	543
07/02/2009	---	---	---	---	---	---	---	---	---	---	---
Total:	0	0	0	0	2,261	1,474	673	34	8,605	8,302	5,588
# Days:	0	0	0	0	14	14	14	14	7	14	14
Average:	0	0	0	0	162	105	48	2	1,229	593	399
YTD	37,667	44,616	20,207	29,713	3,081,308	2,432,882	448,501	9,214	2,248,958	1,029,923	1,716,151

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)
06/18/2009	---	---	---	---	38,830	15,510	10,932	121	86,011	17,106	22,776
06/19/2009 *	---	---	---	---	31,837	21,381	6,402	132	---	21,878	36,107
06/20/2009	---	---	---	---	39,912	30,804	7,268	159	277,251	26,911	49,699
06/21/2009 *	---	---	---	---	18,798	39,180	5,045	110	---	42,572	67,953
06/22/2009	---	---	---	---	23,337	28,879	11,990	135	129,985	50,457	54,100
06/23/2009 *	---	---	---	---	13,721	24,939	14,921	190	---	33,501	65,691
06/24/2009	---	---	---	---	10,506	15,363	8,465	70	311,561	41,412	101,763
06/25/2009 *	---	---	---	---	5,263	7,284	5,325	67	---	50,364	135,039
06/26/2009	---	---	---	---	4,827	3,274	4,831	84	146,712	83,522	111,517
06/27/2009 *	---	---	---	---	7,777	5,557	2,070	88	---	42,124	102,096
06/28/2009	---	---	---	---	12,875	19,912	1,459	56	240,939	62,545	124,062
06/29/2009 *	---	---	---	---	9,055	9,883	820	104	---	46,039	85,749
06/30/2009 *	---	---	---	---	8,669	8,049	6,732	169	138,752	38,507	78,967
07/01/2009 *	---	---	---	---	5,336	6,217	3,728	63	---	48,415	69,122
07/02/2009	---	---	---	---	---	---	---	---	---	---	---
Total:	0	0	0	0	230,743	236,232	89,988	1,548	1,331,211	605,353	1,104,641
# Days:	0	0	0	0	14	14	14	14	7	14	14
Average:	0	0	0	0	16,482	16,874	6,428	111	190,173	43,240	78,903
YTD	0	15	15	545	896,715	1,073,161	366,177	2,920	1,597,837	772,409	3,267,271

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)
06/18/2009	---	---	---	---	406	143	77	288	1,103	1,181	1,100
06/19/2009 *	---	---	---	---	251	287	26	237	---	1,558	1,136
06/20/2009	---	---	---	---	505	143	28	119	898	1,255	946
06/21/2009 *	---	---	---	---	388	681	116	117	---	1,914	485
06/22/2009	---	---	---	---	827	108	283	116	412	2,007	358
06/23/2009 *	---	---	---	---	559	537	124	44	---	669	414
06/24/2009	---	---	---	---	244	573	73	13	307	1,200	163
06/25/2009 *	---	---	---	---	248	359	223	18	---	1,334	1,347
06/26/2009	---	---	---	---	292	429	155	24	204	645	803
06/27/2009 *	---	---	---	---	771	422	33	14	---	710	908
06/28/2009	---	---	---	---	1,108	309	44	12	616	422	284
06/29/2009 *	---	---	---	---	358	514	50	8	---	477	823
06/30/2009 *	---	---	---	---	231	343	540	10	411	115	276
07/01/2009 *	---	---	---	---	268	300	268	19	---	148	361
07/02/2009	---	---	---	---	---	---	---	---	---	---	---
Total:	0	0	0	0	6,456	5,148	2,040	1,039	3,951	13,635	9,404
# Days:	0	0	0	0	14	14	14	14	7	14	14
Average:	0	0	0	0	461	368	146	74	564	974	672
YTD	0	0	0	332	86,592	77,393	16,929	37,473	125,095	238,319	501,430

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)
06/18/2009	---	---	---	---	2,870	1,785	1,022	39	762	530	393
06/19/2009 *	---	---	---	---	2,131	1,792	688	45	---	748	435
06/20/2009	---	---	---	---	2,084	1,471	510	23	1,157	774	577
06/21/2009 *	---	---	---	---	1,163	1,183	339	10	---	482	365
06/22/2009	---	---	---	---	1,208	698	364	10	408	1,241	554
06/23/2009 *	---	---	---	---	1,304	1,039	407	5	---	621	138
06/24/2009	---	---	---	---	1,161	787	267	4	203	847	131
06/25/2009 *	---	---	---	---	1,610	538	186	0	---	381	453
06/26/2009	---	---	---	---	778	243	155	3	106	906	669
06/27/2009 *	---	---	---	---	321	394	128	5	---	237	401
06/28/2009	---	---	---	---	163	459	104	5	155	158	557
06/29/2009 *	---	---	---	---	195	276	90	2	---	159	184
06/30/2009 *	---	---	---	---	428	203	86	5	206	58	367
07/01/2009 *	---	---	---	---	235	157	68	1	---	0	361
07/02/2009	---	---	---	---	---	---	---	---	---	---	---
Total:	0	0	0	0	15,651	11,025	4,414	157	2,997	7,142	5,585
# Days:	0	0	0	0	14	14	14	14	7	14	14
Average:	0	0	0	0	1,118	788	315	11	428	510	399
YTD	1,833	24,102	9,611	8,297	4,509,128	3,562,234	727,393	17,598	803,446	939,913	676,549

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)
06/18/2009	---	---	---	---	63	0	51	19	339	57	59
06/19/2009 *	---	---	---	---	63	0	0	33	---	84	59
06/20/2009	---	---	---	---	63	0	14	16	267	35	144
06/21/2009 *	---	---	---	---	0	0	5	6	---	355	106
06/22/2009	---	---	---	---	0	0	10	5	206	191	31
06/23/2009 *	---	---	---	---	0	36	12	9	---	0	207
06/24/2009	---	---	---	---	0	36	0	4	102	141	54
06/25/2009 *	---	---	---	---	0	0	12	4	---	191	194
06/26/2009	---	---	---	---	0	0	13	3	102	0	0
06/27/2009 *	---	---	---	---	32	0	5	4	---	0	254
06/28/2009	---	---	---	---	0	22	1	2	0	106	90
06/29/2009 *	---	---	---	---	33	0	1	2	---	0	91
06/30/2009 *	---	---	---	---	0	14	21	2	0	0	0
07/01/2009 *	---	---	---	---	0	14	33	3	---	0	11
07/02/2009	---	---	---	---	---	---	---	---	---	---	---
Total:	0	0	0	0	254	122	178	112	1,016	1,160	1,300
# Days:	0	0	0	0	14	14	14	14	7	14	14
Average:	0	0	0	0	18	9	13	8	145	83	93
YTD	170	0	0	177	46,261	46,280	21,616	4,628	189,459	111,478	74,768

* 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:

7/2/09 10:11 AM

		06/18/09 TO 07/02/09					
Site	Data	Species					Grand Total
		CH0	CH1	CO	ST	SO	
LGR	Sum of NumberCollected	182,000	1,800	5,050	12,420	200	201,470
	Sum of NumberBarged	180,860	1,794	5,044	12,406	192	200,296
	Sum of NumberBypassed	432	0	0	0	0	432
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	28	1	0	1	1	31
	Sum of FacilityMorts	667	5	6	13	7	698
	Sum of ResearchMorts	13	0	0	0	0	13
	Sum of TotalProjectMorts	708	6	6	14	8	742
LGS	Sum of NumberCollected	164,832	1,030	3,594	7,696	85	177,237
	Sum of NumberBarged	161,711	1,030	3,774	7,675	85	174,275
	Sum of NumberBypassed	2,599	0	0	0	0	2,599
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	47	0	0	2	0	49
	Sum of FacilityMorts	469	0	0	19	0	488
	Sum of ResearchMorts	6	0	0	0	0	6
	Sum of TotalProjectMorts	522	0	0	21	0	543
LMN	Sum of NumberCollected	67,777	498	1,385	3,373	114	73,147
	Sum of NumberBarged	59,780	482	972	2,759	98	64,091
	Sum of NumberBypassed	2,922	2	0	596	0	3,520
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	22	1	0	2	0	25
	Sum of FacilityMorts	105	0	0	9	0	114
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	127	1	0	11	0	139
MCN	Sum of NumberCollected	681,169	4,473	2,111	1,629	551	689,933
	Sum of NumberBarged	0	0	0	0	0	0
	Sum of NumberBypassed	680,402	4,451	2,101	1,625	550	689,129
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	46	2	0	0	0	48
	Sum of FacilityMorts	691	19	10	4	1	725
	Sum of ResearchMorts	30	1	0	0	0	31
	Sum of TotalProjectMorts	767	22	10	4	1	804
Total Sum of NumberCollected		1,095,778	7,801	12,140	25,118	950	1,141,787
Total Sum of NumberBarged		402,351	3,306	9,790	22,840	375	438,662
Total Sum of NumberBypassed		686,355	4,453	2,101	2,221	550	695,680
Total Sum of Numbertrucked		0	0	0	0	0	0
Total Sum of SampleMorts		143	4	0	5	1	153
Total Sum of FacilityMorts		1,932	24	16	45	8	2,025
Total Sum of ResearchMorts		49	1	0	0	0	50
Total Sum of TotalProjectMorts		2,124	29	16	50	9	2,228

YTD Transportation Summary

Source: Fish Passage Center

Updated:

7/2/09 10:11 AM

TO: 07/02/09

		Species					
Site	Data	CH0	CH1	CO	SO	ST	Grand Total
LGR	Sum of NumberCollected	636,632	2,352,562	62,108	33,301	3,428,945	6,513,548
	Sum of NumberBarged	617,098	1,500,852	60,035	26,021	1,840,721	4,044,727
	Sum of NumberBypassed	15,615	847,954	1,951	7,068	1,587,772	2,460,360
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	149	118	2	22	31	322
	Sum of FacilityMorts	3,756	2,733	120	190	402	7,201
	Sum of ResearchMorts	14	1,035	0	0	19	1,068
	Sum of TotalProjectMorts	3,919	3,886	122	212	452	8,591
LGS	Sum of NumberCollected	775,830	1,720,113	56,757	33,592	2,516,779	5,103,071
	Sum of NumberBarged	756,704	903,147	50,110	25,719	992,578	2,728,258
	Sum of NumberBypassed	8,658	751,922	2,825	5,826	1,460,070	2,229,301
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	104	49	0	4	17	174
	Sum of FacilityMorts	5,552	1,621	2	43	318	7,536
	Sum of ResearchMorts	12	4	0	0	0	16
	Sum of TotalProjectMorts	5,668	1,674	2	47	335	7,726
LMN	Sum of NumberCollected	280,988	320,765	12,623	15,999	518,351	1,148,726
	Sum of NumberBarged	270,063	311,725	12,195	15,807	506,015	1,115,805
	Sum of NumberBypassed	5,473	8,788	9	114	12,051	26,435
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	38	15	0	2	9	64
	Sum of FacilityMorts	364	237	5	6	253	865
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	402	252	5	8	262	929
MCN	Sum of NumberCollected	830,174	1,302,420	68,901	105,688	467,601	2,774,784
	Sum of NumberBarged	0	0	0	0	0	0
	Sum of NumberBypassed	829,174	1,300,829	68,835	105,631	467,430	2,771,899
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	77	147	1	2	14	241
	Sum of FacilityMorts	892	1,420	65	54	154	2,585
	Sum of ResearchMorts	31	24	0	1	3	59
	Sum of TotalProjectMorts	1,000	1,591	66	57	171	2,885
Total Sum of NumberCollected		2,523,624	5,695,860	200,389	188,580	6,931,676	15,540,129
Total Sum of NumberBarged		1,643,865	2,715,724	122,340	67,547	3,339,314	7,888,790
Total Sum of NumberBypassed		858,920	2,909,493	73,620	118,639	3,527,323	7,487,995
Total Sum of NumberTrucked		0	0	0	0	0	0
Total Sum of SampleMorts		368	329	3	30	71	801
Total Sum of FacilityMorts		10,564	6,011	192	293	1,127	18,187
Total Sum of ResearchMorts		57	1,063	0	1	22	1,143
Total Sum of TotalProjectMorts		10,989	7,403	195	324	1,220	20,131

Cumulative Adult Passage at Mainstem Dams Through: 07/01

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	07/01	114525	66631	125543	17554	160243	11507	61957	28619	59162	9212	51842	6136	0	0	0	0	0	0
TDA	06/30	93908	53646	95438	15801	113852	9048	56955	20317	46420	8892	41033	4384	0	0	0	0	0	0
JDA	07/01	76806	49733	81772	14925	95147	7579	45647	22647	44915	10001	37794	4111	0	0	0	0	0	0
MCN	07/01	70413	43328	68080	12133	86998	7409	38581	13821	34376	8238	31813	3507	0	0	0	0	0	0
IHR	07/01	55435	28223	53142	7757	59050	4663	16402	7721	19460	4440	10550	1782	0	0	0	0	0	0
LMN	07/01	66931	20009	54512	6885	57079	4270	17909	6739	20529	2312	9951	1244	0	0	0	0	0	0
LGS	07/01	52642	24331	50396	7805	54016	4453	12693	7101	15201	3822	7600	1518	0	0	0	0	0	0
LGR	07/01	49667	31064	50146	10946	54673	5280	9861	8548	14983	3294	7119	1431	0	0	0	0	0	0
PRD	06/29	13469	2910	12178	620	18164	621	18985	613	8365	513	13491	376	0	0	0	0	0	0
RIS	06/29	12634	6003	12490	1119	14914	1069	12469	1889	4377	246	7581	567	0	0	0	0	0	0
RRH	06/29	6090	1086	4065	371	5734	430	6291	598	1096	55	3188	154	0	0	0	0	0	0
WEL	06/30	6313	1857	2708	426	4250	321	1095	53	312	2	632	19	0	0	0	0	0	0
WFA	06/19	20713	1937	9208	181	-	-	0	0	0	0	-	-	0	0	0	0	-	-

DAM	Coho						Sockeye			Steelhead			
	2009		2008		10-Yr Avg.		2009	2008	10-Yr Avg.	2009	2008	10-Yr Avg.	Wild 2009
	Adult	Jack	Adult	Jack	Adult	Jack							
BON	0	0	0	0	0	0	148463	193707	64918	15291	17344	17651	4060
TDA	0	0	0	0	0	0	114189	152261	50643	5559	6314	6698	1553
JDA	0	0	0	0	0	0	107852	160102	53909	8664	10168	8438	3017
MCN	0	0	0	0	0	0	69099	105639	38468	4742	5024	4883	1508
IHR	0	0	0	0	0	0	286	146	28	4396	4015	3349	1239
LMN	0	0	0	0	0	0	294	138	25	6190	4662	3185	2425
LGS	0	0	0	0	0	0	196	70	17	6038	2822	2759	2269
LGR	0	0	0	0	0	0	129	57	12	11297	7898	8125	3445
PRD	0	0	0	0	0	0	37856	48863	22209	127	527	188	0
RIS	0	0	0	0	0	0	18097	17053	7974	138	524	159	76
RRH	0	0	0	0	0	0	10638	9065	3960	468	765	240	240
WEL	0	0	0	0	0	0	7160	3632	2272	106	312	62	75
WFA	0	0	0	0	-	-	0	0	-	12619	15674	-	-

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: 07/02/09

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