



Fish Passage Center

Weekly Report #16–25

September 2, 2016

Summary of Events

Water Supply

Precipitation throughout the Columbia Basin varied between 12% and 76% of average at individual sub-basins over August. Precipitation above The Dalles has been 32% of average over early August. Over the 2016 water year, precipitation has ranged between 81% and 105% of average.

Table 1. Summary of August precipitation and cumulative October through August 29th precipitation with respect to average (1981–2010), at select locations within the Columbia and Snake River Basins.

Location	Water Year 2016		Water Year 2016	
	August 1–29, 2016		October 1, 2015 to August 29, 2016	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia above Coulee	0.87	50	34.4	96
Sneke River above Ice Harbor	0.09	12	19.3	89
Columbia above The Dalles	0.33	32	24.9	94
Kootenai	1.06	57	34.2	95
Clark Fork	0.51	35	22.2	84
Flathead	1.15	76	35.5	103
Pend Oreille River Basin above Waneta Dam	0.69	49	29.6	94
Salmon River Basin	0.13	12	24.4	87
Upper Snake Tributaries	0.26	22	20.4	81
Clearwater	0.21	17	37.5	95
Willamette River above Portland	0.10	12	66.9	105

Table 2 displays the September 1st ESP runoff volume forecasts for multiple reservoirs along with the June COE forecasts at Libby and Dworshak. The September 1st ESP forecast at The Dalles between April and August is 78,292 Kaf (89% of average).

Table 2. August ESP Runoff Volume Forecasts for various reservoirs within the Columbia and Snake River Basins.

Location	September 1, 2016 5-day QPF ESP	
	% Average (1981–2010)	Runoff Volume (Kaf)
The Dalles (Apr–Aug)	89	78,292
Grand Coulee (Apr–Aug)	91	51,877
Libby Res. Inflow, MT (Apr–Aug)	92 110*	5,411 6,445*
Hungry Horse Res. Inflow, MT (Apr–Aug)	86	1,671
Lower Granite Res. Inflow (Apr–July)	83	17,420
Brownlee Res. Inflow (Apr–July)	72	3,961
Dworshak Res. Inflow (Apr–July)	85 86*	2,064 2,057*

* Denotes COE June Forecast

Grand Coulee Reservoir is at 1,277.4 feet (9-01-16) and drafted 4.1 feet over the last week. Outflows at Grand Coulee have ranged between 75.5 and 104.7 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2,446.6 feet (9-01-16) and has drafted 0.8 feet over the previous week. Daily average outflows at Libby Dam have been 7.0 Kcfs over the last week.

Hungry Horse is currently at an elevation of 3,553.8 feet (9-01-16) and has drafted 1.6 feet over the last week. Outflows at Hungry Horse have ranged between 2.0 Kcfs and 2.2 over the last week.

Dworshak is currently at an elevation of 1,533.2 feet (9-01-16) and has drafted 10.1 feet over the last week. Dworshak outflows over the last week were reduced from 8.0 Kcfs to 6.1 Kcfs.

The Brownlee Reservoir was at an elevation of 2,051.1 feet on September 1, 2016, and has drafted 1.0 ft. over the last week. Outflows at Hells Canyon have ranged between 8.8 and 14.0 Kcfs over the last week.

The Summer Biological Opinion flow period began on June 21st with a flow objective of 50.4 Kcfs at Lower Granite. Over the Summer Flow Period, flows at Lower Granite Dam averaged 30.8 Kcfs.

The Summer Biological Opinion Flow Objective is 200 Kcfs at McNary Dam (began July 1st). Over the Summer Flow Period, flows at McNary averaged 155.4 Kcfs.

Spill and River Temperature

The 2016 summer fish spill program ended at midnight on August 31st.

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

At Lower Granite Dam the removable spillway weir was closed on June 29th to reduce the amount of surface warm water transferred from the forebay to the tailrace. The spill pattern was changed from a “bulk” spill pattern to a “uniform” spill pattern. Over the past week (through August 31st) spill occurred as all flow in excess of that needed for the operation of one turbine unit and ranged from a daily average of 8.6 to 10.2 Kcfs. At Little Goose Dam spill was changed on July 6th from spilling 30% of instantaneous flow, to a fixed volume spill operation to maintain compatibility with Lower Granite and Lower Monumental operations. Spill at Little Goose Dam was a fixed volume of 7.3 Kcfs. At Lower Monumental Dam spill is supposed to equal 17 Kcfs, but with the low flows in the Snake it is occurring as all flow in excess of that needed to operate one turbine unit. Total daily spill over the past week (through August 31st) ranged from 6.9 Kcfs to 9.0 Kcfs. At Ice Harbor Dam spill has also occurred as all flow in excess of that needed for the operation of one turbine unit. Spill this week (through August 31st) ranged from a

daily average of 10.1 to 14.0 Kcfs.

This past week all Middle Columbia River projects (McNary, John Day and The Dalles dams) have spilled at the 2016 FOP levels. Spill at Bonneville Dam has been changed to 95 Kcfs to address erosion concerns below the project. During some periods spill was less than the 95 Kcfs, but was equal to all flow in excess of powerhouse minimums. Spill at Bonneville this week (through August 31st) ranged from a daily average of 58.8 to 81.3 Kcfs.

Project	Spill Level Day/Night
McNary	50%/50%
John Day	30%/30%
The Dalles	40%/40%
Bonneville	95 Kcfs/95 Kcfs

All sites were within TDG criteria over the past week.

Note: The State of Oregon TDG waiver requires compliance only with 120% TDG in the tailrace, while the State of Washington requires compliance with both a 115% TDG forebay requirement and a 120% tailrace TDG requirement. The State of Oregon and the State of Washington also use different methodologies to estimate the 12-hour average TDG. For Oregon, the 12-hour average is based on the 12 highest hourly TDG measurements in a single calendar day (not necessarily consecutive). For Washington, the 12-hour average is based on 12-hour rolling averages. The highest of the rolling averages is what is reported as the 12-hour average for a given day. The location of a TDG monitor will dictate which of these methodologies is used for compliance monitoring. The Washington methodology will apply to all the lower Snake River projects, as well as the middle Columbia River forebay monitors. On any given day the compliance of the tailrace monitors at the middle Columbia River projects will be determined using either the Washington or Oregon methodology, whichever is the most restrictive, and spill will be decreased if needed.

Low fish numbers has precluded sampling for GBT at the SMP sites. Consequently, monitoring for GBT has concluded for the season.

Temperature: At present, water temperatures are above the 68°F temperature standard at the forebays of Bonneville, McNary and Ice Harbor dams. The forebay temperatures at Lower Granite Dam are similar to last week and to the past ten years' average. The daily average temperature in the Lower Granite forebay for August 31st was 66.3° F. The August 31 temperature in the Ice Harbor forebay was 69.4° F, which is slightly below last week's temperatures that were above 70° F. At McNary and Bonneville dams the forebay temperatures were 70.2° F and 70.8° F, respectively, on August 31st. These forebay temperatures are warmer than observed in 2015, and greater than the ten-year averages observed at these projects.

Smolt Monitoring

Smolt Monitoring Program (SMP) sampling was ongoing at most SMP bypass facilities this week. Following the sample on August 31st sample, sampling at Rock Island has been terminated for the season. High temperature sampling protocols remained in effect at Bonneville, John Day, and McNary dams this week. Subyearling Chinook dominated this week's samples at all of the SMP bypass facilities. When compared to the previous week, subyearling Chinook passage decreased at the Middle Columbia bypass facilities and Lower Granite Dam, while remaining the same at Little Goose, Lower Monumental, and Rock Island dams.

The high temperature sampling protocol remained in effect at Bonneville Dam (BON) this week. Under this sampling protocol, sampling at BON occurs every-other-day (24-hour sample), with a target sample size of 100 fish. This sampling protocol will remain in place until temperatures in the Bonneville Forebay drop below 69.5°F. Subyearling Chinook were encountered in all four of this week's three samples, with a daily average passage index of only about 20 fish per day. No other salmonids were encountered in this week's samples at BON. Finally, Pacific lamprey ammocoetes were encountered in only one of this week's samples. No Pacific macrophthalmia were encountered this week.

The high temperature sampling protocol remained in effect at John Day Dam (JDA) this week. Under this protocol, sampling at JDA occurs twice per week (6-hour sample) for condition only. These condition monitoring samples will occur on Mondays and Thursdays, with FPC receiving the data on Tuesdays and

Fridays. The high temperature protocol will remain in place until temperatures in the John Day Forebay drop below 69.5°F. Because the high temperature protocol at JDA calls for a partial sample (i.e., 6-hour sample), it is not appropriate to use the passage index as a measure of magnitude of juvenile passage. Subyearling Chinook dominated the collections at JDA this week. In fact, subyearling Chinook were the only target species encountered in the two condition samples at JDA this week.

The high temperature sampling protocol remained in effect at McNary Dam (MCN) this week. Under this sampling protocol, sampling at MCN remains every-other-day (24-hour sample), with a reduced target sample size of 100 fish. This sampling protocol will remain in place until temperatures in the McNary Forebay drop below 69.5°F. This week's samples at MCN were dominated by subyearling Chinook, with a daily average passage index of about 50 per day. This is lower than last week's daily average passage index of about 90 subyearling Chinook per day. The only spring migrants that were encountered in this week's samples were steelhead, which were encountered on one day this week (August 27th). Pacific lamprey macrophthalmia were encountered every day this week, with a daily average collection of about 12 per day.

This week's samples at Lower Granite Dam (LGR) were again dominated by subyearling Chinook, with a daily average passage index of approximately 180 per day. This is a decrease over last week's daily average passage index of about 600 subyearling Chinook per day. The only spring migrants that were encountered in this week's samples were coho and steelhead, but in very low numbers. Finally, both Pacific lamprey ammocoetes and macrophthalmia were encountered this week. Pacific ammocoetes were encountered in two of this week's samples (August 26th and 31st) while macrophthalmia were encountered only once (August 26th).

Subyearling Chinook dominated this week's collections at Little Goose Dam (LGS). This week's daily average passage index for subyearling Chinook at LGS was about 220 per day, which is very similar to last week's daily passage index of about 240. The only spring migrants that were encountered in this week's samples were steelhead, but in very low numbers. Finally, Pacific macrophthalmia were encountered every day this week, with a daily average collection of three

fish per day. No Pacific ammocoetes were encountered this week.

This week's samples at Lower Monumental Dam (LMN) were again dominated by subyearling Chinook, with a daily average passage index of only about 14 per day, which is very similar to last week's daily average passage index for subyearling Chinook at LMN. The only spring migrants that were encountered in this week's samples at LMN were steelhead, which were encountered nearly every day this week. Finally, Pacific lamprey macrophthalmia were encountered in one of this week's samples (August 29th).

The only salmonids that were encountered in this week's collections at Rock Island Dam (RIS) were subyearling Chinook, sockeye, and steelhead. However, passage indices for these three species were extremely low this week, with daily values ranging from zero to two per day. Finally, no Pacific lamprey ammocoetes were encountered this week while only one Pacific macrophthalmia was encountered this week (August 27th). Following the sample on August 31st, SMP sampling at RIS has been terminated for the season.

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. Approximately 300,000 spring Chinook pre-smolts were scheduled to be released into the Selway River, a tributary of the Clearwater River, on or around September 1st. These spring Chinook pre-smolts are 100% unmarked and are not expected to out-migrate until spring of 2017. No new releases are scheduled for this zone 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. No new releases were scheduled for this zone this week and no new releases are scheduled 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 new releases were scheduled for this zone this week and no new releases are scheduled over the next two weeks.

Adult Passage

The adult fall Chinook count of 144,012 has 8,411 more fish than the 2015 count of 162,845 and is 1.3 times greater than the 10-year average count of 108,727. The 2016 Bonneville Dam fall Chinook jack count of 17,788 is 1.5 times greater than the 2015 count of 11,232 and has 2,151 more fish than the 10-year average count of 15,637. The 2016 adult fall Chinook count of 6,013 at Ice Harbor Dam in the Snake River has 2,207 fewer fish than the 2015 count and 1,118 more fish than the 10-year average count. The 2016 Lower Granite fall Chinook adult count of 3,890 has 637 more fish than the 2015 count and 2179 more fish than the 10-year average count.

The 2016 Bonneville Dam adult steelhead count of 114,775 is about 60% of the 2015 count of 190,689 and about 45% of the 10-year average count of 260,645. The 2016 Bonneville Dam adult wild steelhead count of 37,263 is about 48% of the 2015 count of 76,094 and about 40% of the 10-year average count of 92,837. Daily adult steelhead counts at Lower Granite Dam ranged from 75 to 156 adults per day last week. This year's Lower Granite steelhead count of 11,316 is about 82% of the 2015 count of 13,773 and 51% of the 10-year average count of 21,775. The 2016 Lower Granite Dam adult wild steelhead count of 5,599 is 81% of the 2015 count of 6,831 and is about 67% of the 10-year average count of 8,130. At Willamette Falls, the 2016 count for steelhead was 25,918 as of September 1st. This year's steelhead count is about 3.6 times greater than the 2015 count of 7,082 and about 1.2 times greater than the 10-year average count of 22,076.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 1 and 2 last week. The 2016 adult sockeye count at Bonneville Dam of 342,487 is about 67% of the 2015 count and 1.2 times greater than the 10-year average count. The 2016 adult sockeye count at McNary Dam of 261,650 is about 79% of the 2015 count, while being about 1.2 times greater than the 10-year average count. The Lower Granite Dam 2016 adult sockeye count of 948 has 371 more fish than the 2015 count of 577 and 19 more fish than the 10-year average count. So far this year, 2,713 coho have crossed Bonneville Dam.

Hatchery Releases Last Two Weeks

Hatchery Release Summary

From: 8/20/16 to 9/2/16

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Nez Perce Tribe	Dworshak NFH	CH1	SP	2017	300,000	09-01-16	09-01-16	Selway River	Clearwater River M F
Nez Perce Tribe									
Total					300,000				
Grand Total					300,000				

Hatchery Releases Next Two Weeks

Hatchery Release Summary
From: 9/3/16 to 9/16/16

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
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No Releases Scheduled

CH = Chinook, ST = Steelhead, CO = Coho, SO = Sockeye, CT = Cutthroat Trout, CM = Chum

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
08/19/2016	94.4	0.1	93.0	0.0	102.2	8.2	107.7	10.5	112.6	2.6	127.4	6.6	125.8	4.4
08/20/2016	91.9	0.1	90.0	0.0	92.1	0.0	90.4	0.0	94.9	0.0	111.2	1.4	112.5	2.4
08/21/2016	83.2	0.1	84.6	0.0	81.1	0.0	77.4	0.0	81.4	0.0	71.4	1.5	71.1	2.3
08/22/2016	89.8	0.1	90.3	0.0	95.5	0.0	97.1	0.0	99.5	0.0	114.5	2.1	107.9	2.3
08/23/2016	85.7	0.1	85.3	0.0	92.0	0.0	92.1	0.0	95.6	0.0	111.3	1.8	111.8	2.4
08/24/2016	88.0	0.1	88.1	0.0	88.9	0.0	86.2	0.0	88.6	0.0	96.5	1.7	92.3	2.2
08/25/2016	96.0	0.1	98.0	0.0	95.9	0.0	94.4	0.0	97.5	0.0	96.8	1.6	92.8	2.4
08/26/2016	104.7	0.0	102.0	0.0	101.3	0.0	100.1	0.0	102.2	0.0	115.8	2.1	113.9	2.3
08/27/2016	81.6	0.1	---	---	77.0	0.0	76.3	0.0	80.5	0.0	79.1	1.5	79.1	2.4
08/28/2016	83.2	0.1	93.3	0.0	90.2	0.0	94.0	0.0	96.1	0.0	91.0	1.8	85.1	2.5
08/29/2016	85.2	0.1	84.7	0.0	89.9	0.0	89.7	0.0	93.4	0.0	108.9	1.4	109.6	2.4
08/30/2016	76.8	0.1	71.4	0.0	76.8	0.0	77.3	0.0	80.3	0.0	93.1	1.4	92.1	1.7
08/31/2016	80.0	0.1	83.7	0.0	75.5	0.0	72.6	0.0	75.0	0.0	63.8	1.8	60.3	2.4
09/01/2016	75.5	0.1	82.3	0.0	79.5	0.0	78.3	0.0	80.3	0.0	75.4	2.1	72.2	2.6

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
08/19/2016	10.2	0.0	---	10.3	28.8	16.1	29.3	8.9	28.2	15.0	32.4	21.3
08/20/2016	10.2	0.0	---	9.8	26.5	13.8	23.4	10.7	21.1	8.8	23.9	13.0
08/21/2016	8.0	0.0	---	8.2	24.7	12.0	22.6	7.4	22.2	9.9	24.4	13.6
08/22/2016	7.9	0.0	---	8.4	21.2	8.4	21.4	7.3	19.9	7.6	22.9	12.1
08/23/2016	8.0	0.0	---	7.9	21.4	8.6	21.2	7.3	19.5	7.3	21.9	11.1
08/24/2016	6.9	0.0	---	9.2	21.3	8.6	20.2	7.2	19.5	7.1	22.0	11.1
08/25/2016	6.9	0.0	---	10.4	21.5	8.6	19.9	7.3	19.4	7.1	22.0	11.1
08/26/2016	7.0	0.0	---	9.8	21.9	9.2	20.6	7.3	19.1	6.9	21.1	10.1
08/27/2016	7.0	0.0	---	8.7	23.4	10.4	22.5	7.3	20.8	8.7	22.9	12.3
08/28/2016	6.7	0.0	---	8.8	21.5	8.7	22.5	7.3	21.1	9.0	24.8	14.0
08/29/2016	6.7	0.0	---	10.6	21.5	8.6	20.3	7.3	20.1	7.9	22.8	12.6
08/30/2016	6.7	0.0	---	9.7	21.3	8.6	19.9	7.3	19.2	7.0	20.9	11.0
08/31/2016	6.6	0.0	---	10.6	21.3	8.6	20.1	7.3	19.2	6.9	19.9	10.2
09/01/2016	6.2	1.5	---	11.0	23.0	0.0	24.2	0.0	23.1	0.0	21.8	0.0

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

Date	McNary		John Day		The Dalles		Bonneville		PH1	PH2
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill		
08/19/2016	155.0	77.5	149.8	44.9	137.5	55.1	149.0	94.0	0.9	41.6
08/20/2016	159.8	79.8	148.4	44.1	135.8	54.0	145.6	94.7	0.9	37.5
08/21/2016	121.5	60.5	106.2	31.7	98.9	39.3	126.0	79.3	0.9	33.3
08/22/2016	121.7	60.7	121.4	36.6	112.1	44.8	126.4	82.2	0.7	31.1
08/23/2016	127.4	63.7	123.5	37.3	112.3	44.9	122.9	78.6	0.9	30.9
08/24/2016	133.6	66.9	119.9	35.8	108.6	43.4	122.7	78.4	1.0	30.9
08/25/2016	118.5	59.3	117.7	35.3	108.4	43.3	120.8	76.6	0.9	30.9
08/26/2016	142.5	71.4	127.2	38.2	111.9	44.7	123.2	78.5	---	---
08/27/2016	120.8	60.4	103.4	31.1	96.3	38.8	107.9	63.8	---	---
08/28/2016	113.7	56.9	108.5	32.7	104.2	41.9	112.1	68.0	0.9	30.7
08/29/2016	136.6	68.4	129.7	38.7	121.0	48.3	125.3	81.3	0.9	30.7
08/30/2016	127.1	63.7	113.3	34.0	105.4	42.0	124.2	79.6	0.9	31.2
08/31/2016	114.8	57.7	104.0	31.2	95.3	38.1	102.8	58.8	0.9	30.6
09/01/2016	92.8	0.1	87.9	0.9	84.0	0.0	98.7	1.5	0.9	88.9

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>			
	24 h		12 h		#	24 h		12 h		#	24 h		12 h		#	24 h		12 h		#
	Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr	
8/19	104.0	104.5	105.1	24	---	---	---	0	105.2	105.5	106.1	24	101.7	102.3	102.9	24	102.7	103.2	103.8	24
8/20	103.9	103.9	104.2	12	---	---	---	0	105.7	106.2	107.2	24	102.4	103.3	104.1	24	103.5	104.1	104.4	24
8/21	---	---	---	0	---	---	---	0	106.3	106.6	107.4	24	103.2	103.8	104.7	24	104.1	104.5	105.1	24
8/22	105.5	105.6	105.9	15	---	---	---	0	105.7	105.8	106.1	24	102.4	102.9	103.3	24	103.2	103.5	103.9	24
8/23	104.2	104.7	105.4	24	---	---	---	0	104.4	105.1	106.6	24	101.8	102.4	103.3	24	102.3	102.6	102.9	24
8/24	103.6	104.0	104.7	22	---	---	---	0	103.5	103.9	104.4	24	101.7	102.2	102.7	24	102.4	102.8	103.2	21
8/25	104.1	105.2	105.6	24	---	---	---	0	103.9	104.1	104.3	24	101.8	102.6	103.1	24	102.6	103.1	103.3	24
8/26	105.3	105.7	106.2	24	---	---	---	0	104.4	104.8	105.5	24	102.7	103.5	103.8	24	103.5	103.9	104.1	22
8/27	105.0	105.2	105.3	24	---	---	---	0	104.9	105.1	105.6	24	102.9	103.3	104.0	24	103.8	104.1	104.2	21
8/28	104.7	105.2	106.0	24	---	---	---	0	104.1	104.3	104.6	24	102.1	102.6	102.9	24	102.8	103.0	103.2	24
8/29	103.7	104.0	104.3	24	---	---	---	0	103.7	103.9	104.3	24	102.1	102.8	103.4	24	102.8	103.3	103.6	24
8/30	103.4	103.7	104.1	24	---	---	---	0	103.6	103.8	104.4	24	102.1	102.8	103.1	24	102.8	103.1	103.2	24
8/31	103.7	104.1	104.3	24	---	---	---	0	103.6	103.9	104.1	24	102.3	103.0	103.6	24	103.2	103.7	103.9	24
9/1	103.9	104.5	105.3	23	---	---	---	0	103.4	103.6	103.7	23	102.0	102.4	103.0	23	103.0	103.2	103.5	23

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>			
	24 h		12 h		#	24 h		12 h		#	24 h		12 h		#	24 h		12 h		#
	Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr	
8/19	102.8	103.0	103.3	24	103.2	103.9	104.6	24	104.4	105.3	106.0	24	105.6	105.9	106.2	24	108.2	110.9	120.5	24
8/20	103.4	103.7	103.9	24	103.8	104.8	105.5	24	103.1	104.5	105.2	24	106.2	106.6	106.8	24	105.8	106.3	106.7	24
8/21	104.3	104.9	106.0	24	104.2	104.7	105.1	24	103.2	104.0	104.7	24	106.7	107.1	107.7	24	106.0	106.3	106.7	24
8/22	103.4	104.0	104.5	24	102.7	103.2	103.5	24	102.0	102.6	103.1	24	104.6	105.1	106.0	24	104.2	104.7	105.4	24
8/23	102.5	103.1	103.9	24	102.2	103.0	103.9	23	101.3	102.3	102.8	23	102.5	102.8	103.2	24	102.4	102.6	103.0	24
8/24	102.3	102.8	103.5	24	102.5	103.1	103.8	23	101.6	102.5	103.2	23	102.1	102.5	103.0	24	101.7	102.4	102.7	24
8/25	102.3	102.7	103.0	24	103.2	104.0	104.6	24	102.7	104.1	104.9	24	102.6	103.1	103.5	24	102.4	103.1	103.5	24
8/26	102.8	103.3	103.7	22	103.7	104.4	105.1	22	103.9	104.6	105.3	22	103.8	104.2	104.6	22	103.7	104.2	104.5	22
8/27	103.9	104.3	104.9	21	103.9	103.9	104.9	10	103.9	103.9	105.1	10	104.5	104.5	104.5	2	104.3	104.3	104.4	2
8/28	102.9	103.2	103.6	24	102.5	102.6	103.1	15	102.6	102.7	103.3	15	103.2	103.2	103.2	4	103.1	103.1	103.2	4
8/29	102.7	103.1	103.5	23	103.0	103.9	104.6	23	103.0	104.0	104.8	23	102.8	103.1	103.4	24	102.6	103.1	103.3	24
8/30	102.9	103.3	104.0	24	103.3	103.6	104.2	18	103.3	103.6	104.1	18	103.2	103.3	103.4	24	102.8	103.4	103.5	24
8/31	103.3	103.8	104.5	24	103.2	103.5	104.0	22	103.3	103.8	104.4	22	103.0	103.2	103.3	24	102.5	103.1	103.3	24
9/1	103.2	103.8	104.4	23	102.6	102.9	103.0	23	102.5	102.8	103.1	23	102.9	103.0	103.1	23	102.4	102.8	103.1	23

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>			
	24 h		12 h		#	24 h		12 h		#	24 h		12 h		#	24 h		12 h		#
	Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr		Avg	Avg	High	hr	
8/19	107.0	109.5	113.8	24	107.3	109.6	112.5	24	105.5	106.2	107.0	24	106.7	108.0	118.7	24	107.5	108.0	109.2	24
8/20	105.4	106.0	106.5	24	105.1	105.6	106.3	24	104.9	105.7	106.3	24	105.0	105.6	105.9	24	108.6	109.0	109.3	24
8/21	105.7	105.9	106.4	24	105.1	105.3	105.8	24	104.0	104.7	105.4	24	104.8	105.6	106.0	24	106.4	106.6	106.9	24
8/22	104.1	104.4	105.3	24	103.8	104.1	104.7	24	102.7	103.4	104.5	24	103.8	104.1	104.6	24	105.0	105.3	105.9	24
8/23	102.2	102.5	102.9	24	102.0	102.3	103.2	24	102.4	103.6	104.5	24	102.8	103.1	103.3	24	103.6	103.7	103.9	24
8/24	101.8	102.2	102.5	24	101.3	101.8	102.0	24	102.6	104.3	105.2	24	102.8	103.7	104.0	24	103.5	103.6	103.7	24
8/25	102.3	102.7	103.1	24	101.7	102.2	102.6	24	103.4	105.3	106.2	24	103.2	103.8	104.2	24	103.8	104.2	104.4	24
8/26	103.2	103.8	104.5	22	102.9	103.3	103.9	22	104.1	105.4	107.0	24	103.6	104.2	104.6	24	104.4	104.7	105.0	24
8/27	104.3	104.3	104.3	2	103.9	103.9	103.9	2	101.3	102.0	102.3	24	102.8	103.1	103.3	24	104.7	104.9	104.9	24
8/28	103.2	103.2	103.4	4	102.8	102.8	102.8	4	100.3	101.8	102.4	24	101.3	101.8	102.0	24	103.2	103.3	103.8	24
8/29	102.6	103.0	103.2	24	102.7	102.9	103.1	24	101.8	102.6	103.4	24	102.0	102.5	103.0	24	102.9	103.0	103.2	24
8/30	102.5	102.8	103.1	24	102.5	102.7	103.0	24	101.7	102.7	103.0	24	102.1	102.5	102.7	24	102.3	102.5	102.6	24
8/31	102.6	102.8	103.0	24	102.9	103.8	108.9	24	---	---	---	0	---	---	---	0	---	---	---	0
9/1	102.2	102.3	102.4	23	101.9	102.0	102.4	23	---	---	---	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>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High					
8/19	106.6	107.4	109.6	24	---	---	---	0	99.7	100.0	100.3	24	100.9	101.9	102.8	24	101.6	103.0	104.3	24
8/20	106.9	107.6	109.7	24	---	---	---	0	100.0	100.4	100.7	24	100.9	102.0	102.9	24	101.8	103.3	104.7	24
8/21	105.7	106.5	107.1	24	---	---	---	0	100.7	101.2	101.6	24	99.2	101.5	104.0	24	101.9	103.3	104.8	24
8/22	103.4	103.7	104.0	24	---	---	---	0	100.1	100.4	100.8	24	99.4	101.5	102.6	24	100.9	102.0	102.9	24
8/23	102.5	103.1	103.4	24	---	---	---	0	99.5	99.8	100.2	24	98.2	100.3	102.4	24	100.9	102.3	103.6	24
8/24	103.2	103.8	104.2	24	---	---	---	0	99.5	99.9	100.4	24	96.9	98.2	99.3	24	101.3	102.8	104.1	24
8/25	103.9	104.7	105.1	24	---	---	---	0	99.8	100.2	100.6	24	97.5	99.0	100.3	24	101.6	103.0	104.3	24
8/26	104.4	105.1	105.6	24	---	---	---	0	100.1	100.3	101.1	17	97.3	97.8	101.0	16	101.4	101.8	104.4	16
8/27	104.2	104.7	105.1	24	---	---	---	0	100.6	101.0	101.4	24	97.8	99.0	100.9	23	101.6	102.7	104.1	22
8/28	102.4	102.8	103.1	24	---	---	---	0	99.9	100.2	100.6	24	96.8	98.1	99.9	24	101.2	102.5	103.8	24
8/29	102.4	102.8	103.1	24	---	---	---	0	100.0	100.6	101.0	24	97.7	99.6	102.3	24	101.5	102.9	104.4	24
8/30	102.4	102.9	103.2	24	---	---	---	0	100.3	100.8	101.2	24	96.9	97.9	98.9	24	101.0	101.9	103.1	24
8/31	---	---	---	0	---	---	---	0	100.6	101.0	101.6	24	95.9	97.4	99.5	24	100.8	102.0	103.3	23
9/1	---	---	---	0	---	---	---	0	104.3	104.9	105.4	23	95.7	97.1	99.2	23	101.1	102.3	103.8	23

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>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High					
8/19	102.5	104.5	106.1	24	101.7	101.9	102.2	24	109.7	111.1	112.0	24	106.2	106.9	108.3	24	108.6	109.0	109.4	24
8/20	102.4	104.5	106.1	24	101.9	102.2	102.5	24	108.0	109.3	109.9	24	106.3	106.6	107.4	24	109.2	109.8	110.2	24
8/21	102.7	104.8	106.7	24	102.4	102.8	103.0	24	108.5	109.0	109.4	24	106.1	106.2	106.5	24	108.2	108.5	108.9	24
8/22	102.0	103.6	104.8	24	101.7	101.8	101.9	24	104.9	105.6	106.3	24	106.0	106.5	106.7	24	108.0	108.4	108.9	24
8/23	101.9	104.0	105.7	24	100.8	101.0	101.1	24	104.9	105.2	105.5	24	106.0	106.1	106.4	24	108.2	108.8	109.4	24
8/24	102.2	104.4	106.2	24	100.9	101.0	101.3	24	104.8	105.2	105.3	24	105.5	105.6	105.8	24	108.0	108.7	109.0	24
8/25	102.4	104.5	106.2	24	101.4	101.7	102.0	24	105.0	105.5	106.4	24	105.9	106.3	106.5	24	108.5	109.1	109.6	24
8/26	101.4	101.9	105.6	15	101.3	101.4	101.7	18	104.9	105.4	106.5	18	106.3	106.3	106.8	14	108.6	108.7	109.6	14
8/27	102.4	104.2	105.9	24	101.4	101.6	101.7	24	106.2	106.6	107.1	24	106.2	106.5	106.7	24	108.0	108.3	108.4	24
8/28	102.4	104.2	105.8	24	99.7	100.0	100.3	24	105.2	105.3	105.5	24	104.4	104.7	104.9	24	107.6	108.1	108.6	24
8/29	102.6	104.6	106.1	24	99.7	99.9	100.5	24	105.3	105.5	105.8	24	105.0	105.1	105.2	24	108.0	108.5	108.9	24
8/30	101.6	102.7	104.0	22	100.5	100.7	100.9	24	105.2	105.5	105.8	24	104.8	104.9	105.3	24	108.1	108.4	108.9	24
8/31	101.7	103.6	105.3	24	100.4	100.6	100.7	24	105.0	105.3	105.5	24	105.1	105.2	105.4	24	108.2	108.7	109.4	24
9/1	102.3	104.2	105.5	23	100.0	100.2	100.3	23	99.0	99.6	104.1	23	104.0	104.4	105.0	23	103.5	104.0	107.0	23

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>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High					
8/19	106.4	106.7	107.0	24	111.9	112.7	114.3	24	108.9	109.2	110.2	24	110.0	112.1	114.2	24	---	---	---	0
8/20	106.5	106.7	106.9	24	109.3	110.5	111.7	24	108.4	108.7	109.3	24	106.8	107.5	108.1	24	---	---	---	0
8/21	106.9	107.3	108.0	24	109.5	110.0	110.3	24	109.2	109.4	109.8	24	106.5	107.2	108.2	24	---	---	---	0
8/22	106.4	106.6	107.3	24	107.7	108.1	108.4	24	108.1	108.4	108.9	24	106.6	107.3	108.1	24	---	---	---	0
8/23	106.0	106.3	106.8	24	108.1	108.8	109.4	24	107.0	107.3	107.7	24	107.0	107.8	108.4	24	---	---	---	0
8/24	105.9	106.1	106.3	24	108.3	108.7	109.2	24	106.8	107.1	107.3	24	106.9	107.5	108.4	24	---	---	---	0
8/25	105.8	105.9	106.0	24	107.8	108.2	108.5	24	106.7	106.8	106.9	24	106.7	107.4	108.1	24	---	---	---	0
8/26	105.4	105.5	105.8	18	107.8	108.1	108.5	18	106.4	106.5	106.6	18	106.6	107.0	108.0	18	---	---	---	0
8/27	105.9	106.1	106.4	24	108.8	109.3	109.5	24	106.2	106.3	106.5	24	106.6	107.5	108.1	24	---	---	---	0
8/28	105.3	105.6	106.0	24	109.6	110.1	110.4	24	105.7	105.9	106.1	24	107.5	108.2	108.9	24	---	---	---	0
8/29	105.4	105.6	105.7	24	109.0	109.6	110.4	24	106.0	106.2	106.5	24	106.8	107.4	108.0	24	---	---	---	0
8/30	105.2	105.4	105.7	24	107.8	108.0	108.3	24	106.1	106.3	106.4	24	106.3	106.8	107.4	24	---	---	---	0
8/31	104.9	105.1	105.3	24	107.5	107.7	108.0	24	105.2	105.4	105.7	24	105.7	106.3	106.9	24	---	---	---	0
9/1	103.8	104.0	104.4	23	103.7	104.2	106.8	23	104.5	104.7	105.0	23	104.1	104.5	105.0	23	---	---	---	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>		
	<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>	
8/19	108.1	108.6	110.1	24	115.6	116.7	117.1	24	108.7	109.2	109.6	24	114.9	115.4	116.0	24	109.4	110.2	110.6	24
8/20	108.6	109.1	109.7	24	116.2	116.8	117.2	24	108.4	108.9	109.3	24	114.5	115.0	115.3	24	110.3	110.8	111.1	24
8/21	107.0	107.9	108.4	24	113.7	114.3	114.8	24	108.0	108.5	108.8	24	114.0	114.2	114.5	24	109.4	109.9	110.1	24
8/22	103.8	104.1	104.8	24	113.3	114.2	115.2	24	106.1	106.3	106.8	24	113.1	113.3	113.5	24	105.0	105.7	106.6	24
8/23	103.6	103.7	104.2	24	113.5	114.0	114.4	24	105.2	105.7	106.0	24	112.4	112.7	113.1	24	104.6	105.5	105.8	24
8/24	103.4	103.8	105.1	24	113.5	113.9	114.1	24	105.8	106.5	107.7	24	112.5	112.8	112.9	24	107.6	108.5	109.0	24
8/25	102.9	103.1	103.2	24	113.1	113.5	113.8	24	105.9	106.4	106.9	24	113.2	113.7	114.4	24	108.2	109.0	109.5	24
8/26	103.7	104.1	104.8	23	113.9	114.5	115.0	23	106.6	106.8	107.3	24	113.4	114.0	114.5	24	109.1	109.6	111.1	19
8/27	103.9	104.3	104.6	24	112.7	113.0	113.4	24	106.2	107.0	107.7	24	112.8	113.1	113.6	24	108.0	108.0	109.0	7
8/28	102.9	103.1	103.8	24	112.9	113.3	113.7	24	104.2	104.4	104.6	24	112.1	112.4	112.7	24	105.6	106.0	106.7	24
8/29	103.5	103.8	104.8	24	113.3	113.9	114.3	24	104.4	104.8	105.2	24	112.9	113.5	114.1	24	106.6	107.7	108.1	24
8/30	103.6	103.9	104.5	24	112.8	112.9	113.1	24	103.3	103.6	104.1	24	112.6	112.8	113.1	24	105.9	106.3	106.7	24
8/31	102.6	102.7	102.8	24	112.7	113.1	113.6	24	103.1	103.6	104.1	24	112.0	112.4	112.7	24	104.3	104.6	104.9	24
9/1	102.3	102.4	102.7	23	103.9	105.1	112.0	23	102.6	102.8	103.1	23	104.6	105.0	109.4	23	104.3	104.6	104.8	23

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>		
	<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>	
8/19	113.6	114.8	115.2	24	106.4	107.3	108.6	24	115.5	116.1	116.6	24	111.3	113.1	114.6	24	117.0	117.3	117.4	24
8/20	114.4	115.1	115.5	24	109.8	110.8	111.3	24	116.9	117.9	118.5	24	111.2	112.6	114.4	24	117.2	117.4	117.6	24
8/21	112.4	113.0	114.1	24	110.0	110.6	111.3	24	115.4	115.9	116.8	24	112.9	113.7	114.5	24	114.5	115.6	117.5	24
8/22	111.0	111.4	111.9	24	105.9	106.5	107.9	24	114.9	115.3	116.0	24	109.8	111.1	111.7	24	114.7	116.2	116.6	24
8/23	110.4	111.4	111.8	24	104.4	104.8	105.0	24	115.4	115.8	116.2	24	111.6	113.4	114.1	24	113.5	113.9	116.6	24
8/24	111.6	112.3	112.7	24	105.2	106.4	107.5	24	115.5	116.1	117.0	24	112.6	113.9	114.3	24	113.4	113.6	113.7	24
8/25	112.3	112.6	112.9	24	108.8	109.5	110.2	24	116.1	116.9	117.7	24	113.3	114.3	115.1	24	113.4	113.8	113.9	24
8/26	113.0	113.2	114.1	19	110.7	111.2	111.7	24	116.5	117.2	117.9	24	113.4	114.9	115.3	24	113.7	113.8	114.0	24
8/27	110.5	110.5	110.9	7	110.1	110.9	111.5	24	116.5	117.1	117.4	24	113.7	114.5	115.2	24	112.8	112.9	113.1	24
8/28	110.8	111.2	111.4	24	107.0	107.2	107.8	24	116.3	116.6	117.1	24	112.0	113.3	114.3	24	112.8	113.0	113.1	24
8/29	111.3	111.8	112.4	24	106.3	106.6	106.8	24	116.0	116.2	116.4	24	113.6	114.7	115.7	24	114.8	115.8	116.7	24
8/30	111.5	111.7	112.1	24	104.6	104.9	105.7	24	115.4	115.7	116.0	24	112.0	112.9	113.5	24	114.0	114.9	116.5	24
8/31	110.6	111.0	111.4	24	104.5	104.7	104.9	24	115.6	116.1	116.6	24	112.1	112.8	113.4	24	112.5	112.9	113.1	24
9/1	107.1	108.8	110.0	23	102.7	102.8	103.2	23	107.8	110.5	115.6	23	111.7	112.1	113.0	23	106.9	108.0	111.9	23

Two-Week Summary of Passage Indices

Source: Fish Passage Center

Updated: 9/2/2016 8:28

Two-Week Summary of Passage Indices

* One or more of the sites on this date had an incomplete or biased sample.

See Sampling Comments: <http://www.fpc.org/currentDaily/smpcomments.htm>

For clip information see: <http://www.fpc.org/CurrentDaily/catch.htm>

For sockeye and yearling chinook (Snake only) race information see: <http://www.fpc.org/smoltqueries/currentsmppsubmitdata.asp>

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)	
08/18/2016	*	---	---	---	---	0	0	0	0	---	---	0
08/19/2016	*	---	---	---	---	0	0	0	0	0	0	---
08/20/2016	*	---	---	---	---	0	0	0	0	---	---	0
08/21/2016	*	---	---	---	---	0	0	0	0	0	---	---
08/22/2016	*	---	---	---	---	2	0	0	0	---	---	0
08/23/2016	*	---	---	---	---	0	0	0	0	0	0	---
08/24/2016	*	---	---	---	---	0	0	0	0	---	---	0
08/25/2016	*	---	---	---	---	0	0	0	0	0	---	---
08/26/2016	*	---	---	---	---	0	0	0	0	---	0	0
08/27/2016	*	---	---	---	---	0	0	0	0	0	---	---
08/28/2016	*	---	---	---	---	0	0	0	0	---	---	0
08/29/2016	*	---	---	---	---	0	0	0	0	0	---	---
08/30/2016	*	---	---	---	---	0	0	0	0	---	0	0
08/31/2016	*	---	---	---	---	0	0	0	0	0	---	---
09/01/2016	*	---	---	---	---	---	0	---	---	---	---	0
<hr/>												
Total:		0	0	0	0	2	0	0	0	0	0	0
# Days:		0	0	0	0	14	15	14	14	7	4	8
Average:		0	0	0	0	0	0	0	0	0	0	0
YTD		27,295	56,779	16,183	7,757	5,899,060	3,490,956	4,892,141	44,784	2,181,660	1,456,048	2,660,728

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)	
08/18/2016	*	---	---	---	---	684	674	40	8	---	---	242
08/19/2016	*	---	---	---	---	832	330	23	8	67	3	---
08/20/2016	*	---	---	---	---	917	311	20	9	---	---	156
08/21/2016	*	---	---	---	---	849	312	33	4	58	---	---
08/22/2016	*	---	---	---	---	577	310	22	1	---	---	0
08/23/2016	*	---	---	---	---	333	92	11	7	75	1	---
08/24/2016	*	---	---	---	---	360	79	28	4	---	---	0
08/25/2016	*	---	---	---	---	343	259	16	1	150	---	---
08/26/2016	*	---	---	---	---	152	148	18	0	---	1	15
08/27/2016	*	---	---	---	---	213	380	5	1	33	---	---
08/28/2016	*	---	---	---	---	202	231	9	1	---	---	26
08/29/2016	*	---	---	---	---	188	154	11	2	59	---	---
08/30/2016	*	---	---	---	---	90	197	23	1	---	0	16
08/31/2016	*	---	---	---	---	244	275	18	2	50	---	---
09/01/2016	*	---	---	---	---	---	168	---	---	---	---	16
<hr/>												
Total:		0	0	0	0	5,984	3,920	277	49	492	5	471
# Days:		0	0	0	0	14	15	14	14	7	4	8
Average:		0	0	0	0	427	261	20	4	70	1	59
YTD		0	78	698	2,869	1,179,220	877,948	327,843	20,979	4,329,509	939,657	3,125,488

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)
08/18/2016	*	---	---	---	0	0	0	0	---	---	0
08/19/2016	*	---	---	---	0	0	0	0	0	0	---
08/20/2016	*	---	---	---	0	0	0	0	---	---	0
08/21/2016	*	---	---	---	0	0	0	0	0	---	---
08/22/2016	*	---	---	---	0	0	0	0	---	---	0
08/23/2016	*	---	---	---	0	0	0	0	0	0	---
08/24/2016	*	---	---	---	0	0	0	0	---	---	0
08/25/2016	*	---	---	---	0	0	0	0	0	---	---
08/26/2016	*	---	---	---	0	0	0	0	---	0	0
08/27/2016	*	---	---	---	0	0	0	0	0	---	---
08/28/2016	*	---	---	---	0	0	0	0	---	---	0
08/29/2016	*	---	---	---	2	0	0	0	0	---	---
08/30/2016	*	---	---	---	0	0	0	0	---	0	0
08/31/2016	*	---	---	---	0	0	0	0	0	---	---
09/01/2016	*	---	---	---	---	0	---	---	---	---	0
<hr/>											
Total:	0	0	0	0	2	0	0	0	0	0	0
# Days:	0	0	0	0	14	15	14	14	7	4	8
Average:	0	0	0	0	0	0	0	0	0	0	0
YTD	0	0	0	316	198,074	147,678	60,123	45,366	154,245	58,662	802,520

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)
08/18/2016	*	---	---	---	6	5	0	0	---	---	0
08/19/2016	*	---	---	---	0	6	4	0	0	0	---
08/20/2016	*	---	---	---	2	0	0	0	---	---	0
08/21/2016	*	---	---	---	0	4	2	0	0	---	---
08/22/2016	*	---	---	---	4	3	2	0	---	---	0
08/23/2016	*	---	---	---	3	2	3	0	0	0	---
08/24/2016	*	---	---	---	0	2	2	0	---	---	0
08/25/2016	*	---	---	---	0	3	2	0	0	---	---
08/26/2016	*	---	---	---	0	2	0	0	---	0	0
08/27/2016	*	---	---	---	2	0	0	0	8	---	---
08/28/2016	*	---	---	---	0	0	2	1	---	---	0
08/29/2016	*	---	---	---	0	0	0	0	0	---	---
08/30/2016	*	---	---	---	0	2	3	0	---	0	0
08/31/2016	*	---	---	---	0	2	0	0	0	---	---
09/01/2016	*	---	---	---	---	0	---	---	---	---	---
<hr/>											
Total:	0	0	0	0	17	31	20	1	8	0	0
# Days:	0	0	0	0	14	15	14	14	7	4	8
Average:	0	0	0	0	1	2	1	0	1	0	0
YTD	755	26,537	3,377	9,186	3,957,229	2,295,503	1,838,111	17,664	735,196	502,821	622,598

Two-Week Summary of Passage Indices

COMBINED SOCKEYE											
	WTB	IMN	GRN	LEW	LGR	LGS	LMN	RIS	MCN	JDA	BO2
Date	(Coll)	(Coll)	(Coll)	(Coll)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)
08/18/2016	*	---	---	---	0	0	0	0	---	---	0
08/19/2016	*	---	---	---	0	0	0	1	0	0	---
08/20/2016	*	---	---	---	0	0	0	0	---	---	0
08/21/2016	*	---	---	---	0	0	0	0	0	---	---
08/22/2016	*	---	---	---	0	0	0	0	---	---	0
08/23/2016	*	---	---	---	0	0	0	0	0	0	---
08/24/2016	*	---	---	---	0	0	0	0	---	---	0
08/25/2016	*	---	---	---	0	0	0	0	0	---	---
08/26/2016	*	---	---	---	0	0	0	1	---	0	0
08/27/2016	*	---	---	---	0	0	0	0	0	---	---
08/28/2016	*	---	---	---	0	0	0	0	---	---	0
08/29/2016	*	---	---	---	0	0	0	0	0	---	---
08/30/2016	*	---	---	---	0	0	0	0	---	0	0
08/31/2016	*	---	---	---	0	0	0	0	---	---	---
09/01/2016	*	---	---	---	---	0	---	---	---	---	0
<hr/>											
Total:	0	0	0	0	0	0	0	2	0	0	0
# Days:	0	0	0	0	14	15	14	14	7	4	8
Average:	0	0	0	0	0	0	0	0	0	0	0
YTD	1	0	0	133	43,851	32,774	24,148	56,642	861,061	303,206	801,582

COMBINED LAMPREY JUVENILES											
	WTB	IMN	GRN	LEW	LGR†	LGS	LMN	RIS	MCN	JDA	BO2
Date	(Coll)	(Coll)	(Coll)	(Coll)	(Samp)	(Coll)	(Coll)	(Coll)	(Coll)	(Coll)	(Coll)
08/18/2016	*	---	---	---	0	4	0	0	---	---	0
08/19/2016	*	---	---	---	0	3	1	0	4	0	---
08/20/2016	*	---	---	---	0	3	0	0	---	---	0
08/21/2016	*	---	---	---	0	6	0	0	4	---	---
08/22/2016	*	---	---	---	0	0	0	0	---	---	0
08/23/2016	*	---	---	---	1	2	1	0	16	0	---
08/24/2016	*	---	---	---	2	2	0	0	---	---	0
08/25/2016	*	---	---	---	1	1	5	1	4	---	---
08/26/2016	*	---	---	---	4	4	0	0	---	0	0
08/27/2016	*	---	---	---	0	7	0	1	12	---	---
08/28/2016	*	---	---	---	0	1	0	0	---	---	0
08/29/2016	*	---	---	---	0	4	1	0	12	---	---
08/30/2016	*	---	---	---	0	1	0	0	---	0	4
08/31/2016	*	---	---	---	1	3	0	0	12	---	---
09/01/2016	*	---	---	---	---	2	---	---	---	---	0
<hr/>											
Total:	0	0	0	0	9	43	8	2	64	0	4
# Days:	0	0	0	0	14	15	14	14	7	4	8
Average:	0	0	0	0	1	3	1	0	9	0	1
YTD	0	5	1	0	221	34,797	29,713	113	34,556	26,193	10,119

Two-Week Summary of Passage Indices

* 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, sockeye, and lamprey juveniles.

Two classes of fish counts are shown in these tables:

Sample counts (Samp) are provided for juvenile lamprey at LGR. See note below for details †.

Collection counts (Coll), which account for sample rates but are not adjusted for flow;

Passage indices (INDEX), 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.

Combined lamprey juvenile collection counts are provided for all sites. Combined lamprey juveniles is a combination of pacific lamprey ammocoetes, brook lamprey ammocoetes, unknown lamprey ammocoetes, pacific lamprey macrophthalmia, and unidentified lamprey species.

† In 2013 it was confirmed that juvenile lamprey can escape the sample tank at LGR which would lead to unreliable estimates of collection. Therefore, only sample counts are provided in this report.

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.

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.

Fall (post SMP season) trapping at the Imnaha River Fish Trap (IMN) is funded by the Lower Snake River Compensation Program (LSRCP)

WTB and LEW data collected for the FPC by Idaho Dept. of Fish and Game.

Two Week Transportation Summary

Source: Fish Passage Center

Updated:

9/2/16 8:27 AM

		08/19/16	TO	09/02/16			
		Species					
Site	Data	CH0	CH1	CO	ST	Grand Total	
LGR	Sum of NumberCollected	3,066	1	1	9	3,077	
	Sum of NumberBarged	0	0	0	0	0	
	Sum of NumberBypassed	0	0	0	8	8	
	Sum of Numbertrucked	3,000	1	1	0	3,002	
	Sum of SampleMorts	66	0	0	1	67	
	Sum of FacilityMorts	0	0	0	0	0	
	Sum of ResearchMorts	0	0	0	0	0	
	Sum of TotalProjectMorts	66	0	0	1	67	
LGS	Sum of NumberCollected	2,444			17	2,461	
	Sum of NumberBarged	0			0	0	
	Sum of NumberBypassed	0			0	0	
	Sum of Numbertrucked	2,310			17	2,327	
	Sum of SampleMorts	5			0	5	
	Sum of FacilityMorts	3			0	3	
	Sum of ResearchMorts	0			0	0	
	Sum of TotalProjectMorts	8			0	8	
LMN	Sum of NumberCollected	155			11	166	
	Sum of NumberBarged	0			0	0	
	Sum of NumberBypassed	0			0	0	
	Sum of Numbertrucked	154			11	165	
	Sum of SampleMorts	1			0	1	
	Sum of FacilityMorts	0			0	0	
	Sum of ResearchMorts	0			0	0	
	Sum of TotalProjectMorts	1			0	1	
Total Sum of NumberCollected		5,665	1	1	37	5,704	
Total Sum of NumberBarged		0	0	0	0	0	
Total Sum of NumberBypassed		0	0	0	8	8	
Total Sum of Numbertrucked		5,464	1	1	28	5,494	
Total Sum of SampleMorts		72	0	0	1	73	
Total Sum of FacilityMorts		3	0	0	0	3	
Total Sum of ResearchMorts		0	0	0	0	0	
Total Sum of TotalProjectMorts		75	0	0	1	76	

YTD Transportation Summary

Source: Fish Passage Center

Updated:

9/2/16 8:27 AM

TO: 09/02/16

		Species					
Site	Data	CH0	CH1	CO	SO	ST	Grand Total
LGR	Sum of NumberCollected	755,353	4,510,005	150,415	33,350	2,986,092	8,435,215
	Sum of NumberBarged	717,253	1,403,213	117,278	31,849	1,110,010	3,379,603
	Sum of NumberBypassed	31,770	3,104,914	33,069	650	1,875,874	5,046,277
	Sum of NumberTrucked	3,724	1	1	0	0	3,726
	Sum of SampleMorts	245	94	1	16	37	393
	Sum of FacilityMorts	2,159	1,361	66	830	103	4,519
	Sum of ResearchMorts	202	422	0	5	68	697
	Sum of TotalProjectMorts	2,606	1,877	67	851	208	5,609
LGS	Sum of NumberCollected	609,584	2,438,124	104,356	22,900	1,600,771	4,775,735
	Sum of NumberBarged	602,659	1,022,201	90,682	22,669	670,896	2,409,107
	Sum of NumberBypassed	2,872	1,415,436	13,600	7	929,747	2,361,662
	Sum of NumberTrucked	2,824	0	0	0	19	2,843
	Sum of SampleMorts	147	23	1	22	12	205
	Sum of FacilityMorts	956	464	73	202	97	1,792
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	1,103	487	74	224	109	1,997
LMN	Sum of NumberCollected	183,614	3,510,225	40,585	11,370	1,285,418	5,031,212
	Sum of NumberBarged	180,110	1,897,394	34,346	11,348	630,499	2,753,697
	Sum of NumberBypassed	2,568	1,612,351	6,238	0	654,785	2,275,942
	Sum of NumberTrucked	179	0	0	0	12	191
	Sum of SampleMorts	51	127	0	5	23	206
	Sum of FacilityMorts	144	353	1	18	99	615
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	195	480	1	23	122	821
Total Sum of NumberCollected		1,548,551	10,458,354	295,356	67,620	5,872,281	18,242,162
Total Sum of NumberBarged		1,500,022	4,322,808	242,306	65,866	2,411,405	8,542,407
Total Sum of NumberBypassed		37,210	6,132,701	52,907	657	3,460,406	9,683,881
Total Sum of NumberTrucked		6,727	1	1	0	31	6,760
Total Sum of SampleMorts		443	244	2	43	72	804
Total Sum of FacilityMorts		3,259	2,178	140	1,050	299	6,926
Total Sum of ResearchMorts		202	422	0	5	68	697
Total Sum of TotalProjectMorts		3,904	2,844	142	1,098	439	8,427

Cumulative Adult Passage at Mainstem Dams Through: 09/01

DAM	ENDDATE	Spring Chinook						Summer Chinook						Fall Chinook					
		2016		2015		10-Yr Avg.		2016		2015		10-Yr Avg.		2016		2015		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	09/01	137215	11145	220480	13314	146704	24884	119591	10834	161735	17730	95523	21451	144012	17788	162845	11232	108727	15637
TDA	09/01	105504	9999	194116	12307	114381	21222	95764	8800	123915	15458	80170	17256	53572	7992	80087	7711	48143	9205
JDA	09/01	93659	8262	166015	11514	99110	19896	90259	7715	108768	10988	71447	16841	29676	3802	52226	4166	27732	6488
MCN	09/01	82626	7237	156151	8767	89797	16347	83894	6501	96287	8723	67089	12624	21519	2681	32084	2392	16841	3425
IHR	09/01	67484	5029	116462	5745	63912	10829	13980	1538	21408	2807	18404	4767	6013	1329	8220	585	4895	1143
LMN	09/01	66115	6268	111511	8697	63840	10328	12460	2344	17764	4835	19733	5633	5720	1255	6428	932	3656	1051
LGS	09/01	62597	6365	105124	8553	59587	11445	12480	1919	15494	4464	18840	6201	4808	844	5242	577	2705	515
LGR	09/01	62050	5480	104873	8379	58449	12640	12075	2107	14958	4222	16726	6692	3890	774	3193	418	1711	392
PRD	08/30	16843	1003	27716	1570	17080	1731	80288	5126	78139	3550	55483	2565	3454	487	7840	551	3891	1750
WAN	08/30	17164	919	25982	1077	16645	2069	79255	4110	76636	2180	52935	2019	2716	583	7291	389	3085	1329
RIS	08/30	18646	715	31748	1092	17101	2726	79253	3434	88691	2476	55112	5343	2458	631	5608	320	2350	1317
RRH	08/30	9449	351	15244	609	7441	1202	58559	2827	76246	1937	44031	3757	1722	438	3941	195	1887	791
WEL	08/31	11789	833	19971	1520	7481	1542	44646	2492	62129	3311	34173	3761	283	59	557	32	356	146
WFA	08/30	29294	2123	51046	2042	35288	1298	0	0	0	0	0	0	43	17	104	10	139	29

DAM	ENDDATE	Coho						Sockeye			Steelhead						Lamprey		
		2016		2015		10-Yr Avg.		2016	2015	10-Yr Avg.	2016	2015	Avg.	2016	2015	10-Yr Avg.	2016	2015	10-Yr Avg.
		Adult	Jack	Adult	Jack	Adult	Jack												
BON	09/01	2713	647	3308	592	11929	868	342487	510651	285068	114775	190689	260645	37263	76094	92837	51218	37586	21591
TDA	09/01	360	131	489	174	1953	436	288313	429514	243334	36103	79024	126324	14912	36074	49774	10731	11710	6025
JDA	09/01	59	47	293	82	1058	287	289878	365837	235062	19720	40054	93996	9440	18852	35833	8800	7516	5054
MCN	09/01	143	58	162	60	293	66	261650	278643	203125	17245	34393	68692	7769	15921	25477	1380	1509	1248
IHR	09/01	5	1	0	0	4	0	898	1052	840	10761	16718	38369	4213	6967	10987	803	706	249
LMN	09/01	2	5	0	0	1	0	1024	885	983	10431	15956	36256	4852	7591	11956	232	230	82
LGS	09/01	1	0	0	0	0	0	948	577	929	9800	8238	19070	4775	4472	7192	187	110	30
LGR	09/01	1	0	0	0	0	0	812	418	983	11316	13773	21775	5599	6831	8310	98	55	13
PRD	08/30	3	1	10	0	28	2	311067	301185	238393	2895	6484	9054	0	0	0	6730	5877	3174
WAN	08/30	3	0	8	2	5	0	322441	296283	202995	2627	6391	8623	0	0	0	5498	4348	1714
RIS	08/30	0	0	0	0	0	0	310266	263907	231543	2556	5487	7227	1139	2681	3411	2177	1914	758
RRH	08/30	0	0	0	0	0	0	235846	215742	197112	1871	3774	5249	776	1797	2313	2126	1854	611
WEL	08/31	0	0	0	0	0	0	215950	186419	188024	1415	3003	3300	616	1378	1492	2	0	0
WFA	08/30	1	2	5	10	43	42	0	0	0	25918	7082	22076	0	0	0	0	0	0

PRD does not post 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.

Columbia/Snake Project Forebay Temperatures

