



## Fish Passage Center

# Weekly Report #17-23

August 11, 2017

### This Week's Highlights

#### Water Supply

Precipitation throughout the Columbia Basin has varied between 0% and 52% of average at individual sub-basins over August. Precipitation above The Dalles has been 12% of average over August. Over the 2017 water year, precipitation has ranged between 101% and 131% of average.

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

Location	Water Year 2017 August 1-10, 2017		Water Year 2017 October 1, 2016 to August 10, 2017	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	0.03	5	37.4	108
Snow River Above Ice Harbor	0.07	28	24.8	118
Columbia Above The Dalles	0.04	12	28.2	110
Kootenai	0.05	8	38.0	110
Clark Fork	0.01	3	25.7	101
Flathead	0.08	15	38.4	115
Pend Oreille River Basin above Waneta Dam	0.03	7	33.4	110
Salmon River Basin	0.40	11	33.1	122
Upper Snake Tributaries	0.22	52	29.3	120
Clearwater	0.00	0	40.9	107
Willamette River above Portland	0.01	4	82.6	131

Grand Coulee Reservoir is at 1,284.9 feet (8-10-17) and has refilled 1.0 foot over the last week. Outflows at Grand Coulee have ranged between 71.8 Kcfs and 105.3 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2,448.1 feet (8-10-17) and has drafted 0.4 feet over the past week. Daily average outflows at Libby Dam have been 9.0 Kcfs over the last week.

Hungry Horse is currently at an elevation of 3,553.5 feet (8-10-17) and has drafted 0.6 feet last week. Outflows at Hungry Horse have been 2.0 Kcfs over the last week.

Dworshak is currently at an elevation of 1,559.9 feet (8-10-17) and has drafted 7.3 feet over the last week. Dworshak outflows over the last week have been 11.0 Kcfs.

The Brownlee Reservoir was at an elevation of 2,058.1 feet on August 10, 2017, and has held steady last week. Outflows at Hells Canyon have ranged between 9.7 and 14.4 Kcfs over the last four days.

The Biological Opinion flow period began on April 3<sup>rd</sup> and ended on June 20<sup>th</sup> in the lower Snake River (Lower Granite). According to the April Final Water Supply Forecast (April 5<sup>th</sup>, 2017), the flow objective this spring was 100 Kcfs at Lower Granite. Flows at Lower Granite Dam averaged 140.5 Kcfs over the spring season.

The Summer Flow period began on June 21<sup>st</sup> at Lower Granite Dam, the flow objective this year is 55 Kcfs. Over the summer period, flows have averaged 59.5 Kcfs and 32.9 Kcfs over the last week.

Based on the April Final Water Supply Forecast, the Spring Biological Opinion Flow Objectives were 260 Kcfs at McNary Dam (began April 10<sup>th</sup> and ended June 30) and 135 Kcfs at Priest Rapids Dam (began April 10<sup>th</sup>). Over the spring season, flows at McNary Dam have been 378.4 Kcfs and Priest Rapids Dam flows were 237.4 Kcfs.

The Summer Flow period began on July 1<sup>st</sup> at McNary Dam, the flow objective this year is 200 Kcfs. Over the summer period through July 19, 2017, flows have averaged 187.8 Kcfs and 144.0 Kcfs last week.

**Spill**

Flows in the Snake and Columbia rivers decreased over the past week. Dworshak Dam is currently in its summer draft operation, with an average discharge volume of 11.0 Kcfs and an average spill volume of 6.5 Kcfs over the last week. Dworshak operations are currently to discharge cool water targeting tailrace gas levels no greater than 121% with the objective of reducing temperatures at the Lower Granite Dam tailrace. However, due to the limited powerhouse capacity at Dworshak this year, total outflows are limited to approximately 11.0 Kcfs (6.0-6.8 Kcfs spill) in order to not exceed the 121% TDG criteria. Hells Canyon Complex flows have remained steady this week, with daily average outflows at Hells Canyon Dam ranging from 11.1 to 12.3 Kcfs over the last four days. Current outflow projections show flow in the Snake River and in the middle Columbia continuing to decrease as seasonal runoff declines.

The 2017 summer spill for fish passage began on June 21<sup>st</sup> and will continue through August 31<sup>st</sup>. Summer spill for fish passage at the Snake River projects is to occur at the following amounts described in the 2017 Fish Operations Plan (FOP).

Project	Spill Level Day/Night
Lower Granite	18 Kcfs/18 Kcfs
Little Goose	30%/30%
Lower Monumental	17Kcfs/17Kcfs
Ice Harbor	June 21-July 13: 30%/30% vs. 45 Kcfs/Gas Cap July 13-August 31: 45 Kcfs/Gas Cap

Spill at Lower Granite Dam was maintained at the target 18 Kcfs over the past week. However, there were a few periods when flows were sufficiently low that spill was limited to flows minus powerhouse minimums, particularly this week when unit priority was switched to unit 5. This change in unit priority was due to unit 3 being out of service because of a stuck ESBS screen. The screen was successfully removed on Wednesday, August 9<sup>th</sup> and unit priority

was switched back to unit 3 soon thereafter. Spill at Lower Granite Dam continued to occur through the traditional spillbays, instead of the Removable Spillway Weir, in an effort to reduce temperatures in the Lower Granite tailrace. Over the last week, temperatures in the Lower Granite tailrace have ranged from 68.6°F to 69.3°F. Spill operations at Little Goose Dam have also been through traditional spillbays, instead of through the Temporary Spillway Weir. At Little Goose Dam, when flows drop below 32 Kcfs, spill operations switch from 30% to a fixed spill volume of 11 Kcfs, 9 Kcfs, or 7 Kcfs, depending on the total flows. For much of this week, spill at Little Goose Dam was at the fixed volume of 11 Kcfs, which generally equated to daily average spill percentages of over 30%. In addition, Doble testing on August 7<sup>th</sup> and 10<sup>th</sup> resulted up to five hours of spill in excess of the fixed volume. Spill at Lower Monumental Dam met the target 17 Kcfs over the past week. However, there were a few periods when flows were sufficiently low that spill was limited to flows minus powerhouse minimums. Finally, at Ice Harbor, the spill operation for the remainder of the season is 45 Kcfs/gas cap. At current flows, spill to these levels is not always possible. Instead, spill volumes are often limited to flows minus minimum generation requirements.

Summer spill for fish passage began on June 16<sup>th</sup> at the middle Columbia River projects. Spill for fish passage at the lower Columbia River projects at the following amounts described in the 2017 Fish Operations Plan.

Project	Spill Level Day/Night
McNary	June 16-Aug 31: 50%/50%
John Day	June 16-July 20: 30%/30% and 40%/40% July 20-August 31: 30%/30%
The Dalles	40%/40%
Bonneville	June 16 -Aug 31: 85Kcfs/121Kcfs and 95 Kcfs/95 Kcfs

The spring spill period ended on June 15<sup>th</sup> according to the COE's Fish Operation Plan. The original period for the spring spill to end in the Middle Columbia River was June 30<sup>th</sup>. Accommodations were made in past years to initiate summer spill earlier for testing purposes. This was done to assure adequate numbers of test fish were present to conduct the

“performance tests”. Since 2014 the earlier June 15<sup>th</sup> date has been included in the FOP as part of the roll-over operations associated with the FOP. The earlier start date for summer spill is also included in the 2014 Supplemental Biological Opinion.

At McNary Dam, spill averaged 50% of daily average flow over the past week. The spill operation at John Day Dam is 30%/30% for the remainder of the season. This spill operation was met over the past week. Spill at The Dalles Dam was 40% of average daily flow over the past week. Finally, at Bonneville Dam, the FOP spill levels of 85 Kcfs/121 Kcfs or 95 Kcfs/95 Kcfs were met over the last week. However, there were a few periods when flows were sufficiently low that spill was limited to flows minus powerhouse minimums. These instances will likely increase in frequency as flows continue to decrease.

At spill levels of 6.4 to 6.6 Kcfs over the last week, tailrace TDG levels at Dworshak Dam ranged from 119.2% to 119.6%. TDG supersaturation at the Lower Granite Dam forebay monitor has ranged between 102.6% and 105.1% over the past week. Over the past week, the tailwater TDG supersaturation (average of 12 highest hourly levels in a calendar day) was below 120% at all the Snake and Mid-Columbia river projects. Similar to the federal hydrosystem, TDG supersaturation levels at the Upper Columbia River projects have been below 120% at the tailrace monitors.

**Note:** The State of Oregon TDG waiver only requires compliance 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.

Gas bubble trauma monitoring in smolts took place over the past week at Little Goose, Lower Monumental, Bonneville, McNary, and Rock Island Dams. No fish were observed with signs of GBT this week at Little Goose, Lower Monumental, McNary, and Bonneville dams. GBT sampling at Bonneville and McNary dams remains once-per-week. This is due to the increased temperatures in the river and generally low TDG levels at these projects. Although GBT sampling was planned at Bonneville for Saturday, August 5<sup>th</sup>, no fish were collected in the five hours that sampling occurred. Therefore, there are no data to report for this date. GBT sampling at Bonneville is expected to occur again on Sunday, August 13<sup>th</sup>. In addition, SMP personnel were only able to collect 24 fish for the GBT sample at Lower Monumental on August 3<sup>rd</sup>. Due to low fish numbers and low TDG levels at this site, GBT sampling at Lower Monumental has been canceled for the remainder of the 2016 season.

Two gas bubble trauma samples were conducted at Rock Island Dam this week. In the sample from August 8<sup>th</sup> 3% of examined fish were observed with signs of GBT. In the sample from August 10<sup>th</sup>, 6% of examined fish were observed with signs of GBT. All signs of GBT at RIS from this week were Rank 1 level in the fins. The action criteria for interruption of the voluntary spill for fish passage program is defined as either 15 percent of examined fish showing signs of gas bubble trauma in their non-paired fins, or five percent of the fish examined show signs of gas bubble trauma in their non-paired fins where more than 25 percent of the surface area of the fin is occluded by gas bubbles, corresponding to ranks greater than 2. The observed signs of GBT are presently below the action criteria that would be in place during the voluntary spill for fish passage program.

### Temperature

Forebay temperatures are now being reported for Lower Granite, Ice Harbor, McNary and Bonneville dams. Over the past week, forebay water temperatures at all four of these projects were above the 68°F temperature standard. In addition, the forebay water temperatures at all four of these projects are above their respective ten-year averages for this time. At Lower Granite, the daily average temperature in the Lower Granite forebay on August 10<sup>th</sup> was 68.8°F,

which is about 2.7 degrees warmer than the ten-year average for this date. The forebay temperature at Ice Harbor Dam has exceeded the 68°F standard since July 9<sup>th</sup>. The daily average temperature in the Ice Harbor forebay was 72.0°F on August 10<sup>th</sup>, which is about 1.6°F warmer than the ten-year average for this date. The forebay temperatures at McNary and Bonneville dams have exceeded the 68°F standard since July 12<sup>th</sup>. The daily average forebay temperatures for August 10<sup>th</sup> at McNary and Bonneville dams were 71.6°F and 73.4°F, respectively. These forebay temperatures are about 2.2-3.6 degrees warmer than their respective ten-year averages.

### Smolt Monitoring

Sampling for the Smolt Monitoring Program (SMP) is underway at all bypass facilities except Lower Granite Dam (LGR). Sampling at LGR ended last week in order to accommodate to upgrades to the juvenile bypass system and juvenile fish facility for next season. This week's samples at the bypass facilities were dominated by subyearling Chinook. Passage of subyearling Chinook decreased at all bypass facilities. Very few spring migrants (i.e., yearling Chinook, coho, sockeye, and steelhead) were encountered in this week's samples.

Sampling for the SMP at Bonneville Dam (BON) is now under the high temperature sampling protocol. Under this protocol, sampling at BON occurs every-other-day (24-hour sample) until temperatures in the BON forebay drop below 69.5° F. This week's samples at Bonneville Dam (BON) were again dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook at BON was approximately 1,300 per day, which is a large decrease over last week's daily average passage index of about 17,400. This decrease in subyearling Chinook passage is likely due to two things: 1) decreasing subyearling Chinook numbers in the Columbia River and 2) modified operations and the Bonneville second powerhouse to accommodate construction activities. These modified operations are expected to continue for another week. The only spring migrants that were encountered this week were sockeye (August 5<sup>th</sup>). Finally, no Pacific lamprey juveniles were encountered in this week's samples.

Similar to last year, sampling at John Day Dam (JDA) occurs every-other-day this year. However, the SMP

at JDA is now operating under the high temperature sampling protocol. Under this protocol, sampling at JDA occurs only twice per week for condition only. This condition only sample will be processed on Tuesday's and Friday's and will consist of a sample of approximately six hours. Because these are not 24-hour samples, it is not appropriate to compare this week's passage numbers to previous weeks. The high temperature sampling protocol will remain in place until temperatures in the JDA forebay drop below 69.5° F. This week's samples at JDA were again dominated by subyearling Chinook. The only spring migrants that were encountered at JDA this week were sockeye (August 8<sup>th</sup>). Finally, no pacific lamprey juveniles were encountered in this week's samples.

Sampling at McNary Dam (MCN) is also every-other-day. The MCN juvenile fish facility has been operating under the high temperature sampling protocol since about July 12<sup>th</sup>. Under this protocol, sampling at MCN remains every-other-day (24-hour sample) but the target sample size is reduced to 100 fish per day. This protocol will remain in place until temperatures in the McNary Forebay drop below 68.0°F. This week's samples were again dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 4,600 per day, which is a large decrease over last week's daily average passage index of about 22,300 per day. The only spring migrants that were encountered in this week's samples were sockeye and steelhead. Finally, no Pacific lamprey juveniles were encountered in this week's samples.

Similar to recent years, sampling at Little Goose Dam (LGS) was every-other-day until the start of transportation, at which time sampling went to every day. This week's samples at LGS were again dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 500 per day, which is a decrease over last week's daily average passage index of about 1,650 per day. Passage of spring migrants remained low this week. In fact, the only spring migrants that were encountered in this week's samples were sockeye and steelhead. Finally, Pacific lamprey ammocoetes were encountered every day this week, with a daily average collection of about 8 fish. No Pacific lamprey macrophthalmia were encountered in this week's samples at LGS.

Similar to recent years, sampling at Lower Monumental Dam (LMN) was every-third-day from

April 1<sup>st</sup> to April 16<sup>th</sup>, every-other-day from April 16<sup>th</sup> until transportation began, at which time sampling switched to every day. This week's samples at LMN were again dominated by subyearling Chinook. However, passage of subyearling Chinook at LMN has decreased substantially this week, when compared to the previous week. This week's daily average passage index for subyearling Chinook was only about 50 fish per day, whereas that for last week was 230 per day. The only spring migrants that were encountered this week were steelhead. Finally, Pacific lamprey ammocoetes were encountered in only one of this week's samples (August 4<sup>th</sup>) while no macrophthalmia were encountered this week.

This week's collections at Rock Island Dam (RIS) were again dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 170 per day, which is a decrease from last week's daily average passage index of about 450 per day. Passage of spring migrants remained low this week. Finally, no lamprey juveniles were encountered at RIS this week.

### Hatchery Release

Effective 2017, the FPC has reorganized our hatchery release zones in an effort to more closely match the geographical regions used by NOAA in their ESU designations. The new river zones are: 1) Lower Columbia, 2) Middle Columbia, 3) Upper Columbia, and 4) Snake River. In addition, the FPC now provides a summary of hatchery releases below Bonneville Dam (i.e., Lower Columbia River Zone) in the weekly report.

**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. No new releases were scheduled for this zone this week and no new releases are scheduled over the next two weeks.

**Upper Columbia Zone:** The Upper Columbia Zone encompasses the area of the Columbia River and its tributaries from Priest Rapids 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.

**Middle Columbia Zone:** The Middle Columbia Zone is defined as the Columbia River and its tributaries from Bonneville Dam to Priest Rapids Dam (excluding the

Snake River). No new releases were schedule 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 below Bonneville Dam. No new releases were schedule for this zone this week and no new releases are scheduled over the next two weeks.

### Adult Passage

Fall Chinook began to pass Bonneville Dam on August 1st. Daily adult fall Chinook passage numbers at Bonneville Dam ranged between 133 and 331 last week. The adult fall Chinook count of 2,786 has 5,148 fewer fish than the 2016 count of 7,934 and has 2,966 fewer fish than the 10-year average count of 5,752. The 2017 Bonneville Dam fall Chinook jack count of 416 has 424 fewer fish than the 2016 count of 840 and 716 fewer fish than the 10-year average count of 1,132. The 2017 adult summer Chinook count of 8,857 at Lower Granite Dam in the Snake River is about 78.3% of the 2016 count and 52.5% of the 10-year average count. The 2017 Lower Granite summer Chinook jack count of 3,603 is about 1.8 times greater than the 2016 count, while being about 53.3% of the 10-year average count.

The 2017 Bonneville Dam adult steelhead count of 34,762 is about 44.2% of the 2016 count of 78,591 and 23.2% of the 10-year average count of 150,159. The 2017 Bonneville Dam adult unclipped steelhead count of 16,253 is about 56.3% of the 2016 count of 28,863 and 25.6% of the 10-year average count of 63,496. Daily adult steelhead counts at Lower Granite Dam ranged from 7 to 17 adults per day last week. This year's Lower Granite steelhead count of 7,703 has 1,230 fewer fish than the 2016 count of 8,933 and is 53% of the 10-year average count of 14,520. The 2017 Lower Granite Dam adult unclipped steelhead count of 3,313 has 1,503 fewer fish than the 2016 count of 4,816 and 2,591 fewer fish than the 10-year average count of 5,904. At Willamette Falls, the 2017 count for steelhead was 2,662 as of August 10th. This year's steelhead count is about 10% of the 2016 count of 26,625 and 12.1% of the 10-year average count of 22,050.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 2 and 20 last week. The 2017 adult sockeye count at Bonneville Dam of 87,602 is about 25.6% of the 2016 count and 27.8% of the 10-year average count. The 2017 adult sockeye count at McNary Dam of 57,945 is about 22.2% of the

2016 count and 25.6% of the 10-year average count. The Lower Granite Dam 2017 adult sockeye count of 226 has 573 fewer fish than the 2016 count of 799 and 824 fewer fish than the 10-year average count of 1,050.

As of August 10th at Bonneville Dam, the adult shad count was 3,099,855. This year's shad count is about 1.8 times greater than the 2016 count of 1,767,901 and 1.5 times greater than the 10-year average count of 2,044,731. A total of 76,893 lampreys have been counted at Bonneville Dam so far this year. The Bonneville 2017 lamprey count is about 1.7 times greater than the 2016 count of 43,998 and 3.7 times greater than the 10-year average count of 20,557.

## Hatchery Releases Last Two Weeks

Hatchery Release Summary  
From: 7/29/2017 to 08/11/17

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

## Hatchery Releases Next Two Weeks

Hatchery Release Summary  
From: 8/12/2017 to 8/25/2017

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
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
07/28/2017	105.5	0.1	108.7	0.0	120.7	9.0	123.2	15.6	129.7	21.7	139.7	20.1	135.2	27.8
07/29/2017	88.0	0.1	86.0	0.0	90.0	6.7	85.8	9.4	88.6	21.5	114.2	18.9	110.8	26.1
07/30/2017	93.6	0.1	91.1	0.0	100.8	7.8	97.1	9.2	101.3	19.4	95.4	19.3	87.6	25.7
07/31/2017	110.8	0.1	112.8	0.0	116.5	9.1	111.8	11.7	116.0	24.5	128.3	19.3	119.7	28.7
08/01/2017	90.1	0.1	86.7	0.0	100.8	8.0	96.9	9.1	101.0	19.7	114.9	18.7	111.4	27.6
08/02/2017	88.4	0.1	90.8	0.0	88.9	6.6	86.7	8.3	92.7	19.5	117.2	18.0	114.1	25.8
08/03/2017	114.3	0.1	104.3	0.0	110.5	8.1	106.5	9.3	109.9	22.3	104.3	18.2	94.3	26.0
08/04/2017	90.0	0.1	99.5	0.0	101.2	8.1	96.5	9.0	99.1	21.4	104.5	19.0	99.0	26.8
08/05/2017	90.7	0.1	86.9	0.0	100.3	7.3	103.1	9.1	108.2	19.4	102.2	19.9	92.4	29.1
08/06/2017	71.8	0.1	79.8	0.0	76.3	6.8	73.6	7.2	75.4	16.4	95.0	19.6	93.9	27.6
08/07/2017	97.7	0.1	91.4	0.0	98.7	8.4	96.3	8.2	98.7	20.0	109.8	18.9	103.6	26.1
08/08/2017	105.3	0.1	101.8	0.0	102.8	9.2	102.9	8.7	105.6	20.2	111.4	19.2	104.5	26.9
08/09/2017	101.1	0.1	101.0	0.0	111.3	9.0	105.4	12.0	106.0	20.3	114.9	19.1	108.6	26.1
08/10/2017	103.3	0.1	108.3	0.0	110.3	10.0	109.0	11.6	110.8	19.3	115.8	19.4	107.7	27.2

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

Date	Dworshak		Brownlee Inflow	Hells Canyon	Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill		Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
07/28/2017	11.0	6.6	---	17.3	40.8	18.1	39.5	11.7	38.8	16.9	40.4	30.4
07/29/2017	11.0	6.6	---	16.9	41.0	18.1	40.2	11.9	40.5	16.6	42.5	32.3
07/30/2017	11.0	6.6	---	17.4	39.7	18.1	37.2	11.0	36.5	16.8	38.2	28.2
07/31/2017	11.2	6.8	---	18.8	41.0	18.0	39.5	11.7	39.5	16.5	39.8	29.7
08/01/2017	11.2	6.7	---	17.6	40.2	18.0	39.2	11.6	38.5	17.0	40.4	30.3
08/02/2017	11.2	6.7	---	17.6	40.8	18.1	39.7	11.8	39.6	16.7	42.1	31.7
08/03/2017	11.1	6.7	---	16.4	38.9	18.1	38.2	11.4	38.3	17.0	38.9	28.9
08/04/2017	10.9	6.4	---	15.4	36.7	18.0	35.0	10.6	35.1	16.4	36.8	26.7
08/05/2017	10.9	6.4	---	12.7	34.7	18.0	32.9	9.9	31.5	17.0	32.2	22.2
08/06/2017	10.9	6.5	---	12.0	32.6	18.1	31.9	9.5	31.0	16.6	32.1	22.1
08/07/2017	11.1	6.6	---	11.3	32.6	18.1	31.7	12.0	31.7	17.0	33.1	23.3
08/08/2017	11.1	6.6	---	11.7	32.6	18.1	31.1	10.7	30.0	16.5	32.3	22.5
08/09/2017	11.0	6.6	---	11.1	31.1	17.0	29.0	10.7	29.3	17.0	30.1	20.2
08/10/2017	11.0	6.5	---	12.3	30.4	17.9	29.2	13.3	29.4	16.6	30.1	19.9

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

Date	McNary		John Day		The Dalles		Bonneville			
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	PH1	PH2
07/28/2017	163.2	81.8	154.2	46.1	143.2	57.0	151.9	89.9	0.9	48.7
07/29/2017	180.8	90.6	175.1	52.5	164.6	65.7	178.4	95.1	0.9	70.0
07/30/2017	149.6	75.0	138.0	41.2	124.7	50.0	149.6	99.6	0.9	36.7
07/31/2017	157.9	79.1	158.1	47.1	149.2	59.9	160.6	93.8	0.9	53.6
08/01/2017	165.2	83.0	150.9	45.4	139.2	55.7	159.6	89.9	0.9	56.4
08/02/2017	168.3	84.6	161.5	48.4	148.6	59.4	165.5	95.2	0.9	57.0
08/03/2017	155.3	77.9	145.9	43.9	136.2	54.4	145.6	100.4	0.8	32.0
08/04/2017	149.3	75.0	144.1	43.1	132.2	52.9	140.4	96.3	0.8	31.0
08/05/2017	147.2	74.0	133.7	40.1	125.9	50.2	137.4	90.8	0.9	33.3
08/06/2017	142.4	71.3	130.3	38.9	116.9	46.8	140.2	95.0	0.9	31.9
08/07/2017	120.8	60.5	119.4	35.7	112.5	45.3	134.9	91.1	7.9	23.5
08/08/2017	145.0	72.6	140.6	42.3	130.8	52.3	137.4	94.2	0.9	29.9
08/09/2017	153.0	76.6	143.6	43.1	134.0	53.3	142.2	90.9	9.3	29.6
08/10/2017	150.3	75.3	146.5	43.7	136.8	55.1	147.1	96.0	7.1	31.6



## 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
<b>Lower Granite Dam</b>											
<b>Little Goose Dam</b>											
	07/31-08/01	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	08/07-08/08	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Lower Monumental Dam</b>											
	08/03-08/04	Chinook + Steelhead	24*	0	0			0	0	0	0
<b>McNary Dam</b>											
	07/31/17	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	08/02/17	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	08/06/17	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Bonneville Dam</b>											
	07/30/17	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Rock Island Dam</b>											
	08/01/17	Chinook + Steelhead	100	5	5	5.00%	0.00%	5	0	0	0
	08/03/17	Chinook + Steelhead	100	2	2	2.00%	0.00%	1	1	0	0
	08/08/17	Chinook + Steelhead	100	3	3	3.00%	0.00%	3	0	0	0
	08/10/17	Chinook + Steelhead	100	6	6	6.00%	0.00%	6	0	0	0

Samples marked with an asterisk indicate the sample size criteria of 100 fish was not met due to insufficient numbers of fish to sample that day. The inability to collect an adequate sample precludes the accurate estimation of the percentage of fish with GBT, and no estimate is provided.

The action criteria for interruption of the voluntary spill for fish program is defined as either 15% of examined fish showing signs of gas bubble trauma in their non-paired fins, or 5% of the fish examined showing severe signs of gas bubble trauma in their non-paired fins where severe signs constitute >25% of the surface area of the fin is occluded by gas bubbles, corresponding to ranks of 3 or 4.

## 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>#</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>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>
7/28	---	---	---	0	---	---	---	0	110.6	110.8	111.3	24	109.7	110.3	111.6	24	111.3	111.8	112.3	24
7/29	---	---	---	0	---	---	---	0	109.9	110.1	110.6	24	109.5	110.1	111.3	24	110.7	111.3	111.7	24
7/30	---	---	---	0	---	---	---	0	109.5	109.7	109.9	24	109.1	109.7	110.6	24	110.8	111.1	111.6	24
7/31	---	---	---	0	---	---	---	0	109.1	109.3	109.5	24	108.4	109.0	110.0	24	110.3	110.7	111.1	24
8/1	---	---	---	0	---	---	---	0	109.0	109.2	109.6	24	108.6	109.3	110.4	24	110.5	110.8	111.0	24
8/2	---	---	---	0	---	---	---	0	108.8	109.1	109.6	24	109.0	109.7	111.1	24	110.3	110.6	111.0	24
8/3	---	---	---	0	---	---	---	0	108.9	109.3	109.7	24	109.0	109.7	110.6	24	110.1	110.6	111.1	24
8/4	---	---	---	0	---	---	---	0	109.0	109.1	109.3	24	109.0	109.6	111.5	24	110.6	110.7	111.1	24
8/5	---	---	---	0	---	---	---	0	108.5	108.6	108.7	24	108.9	109.7	110.4	24	109.8	110.1	110.5	24
8/6	---	---	---	0	---	---	---	0	108.0	108.1	108.4	24	108.5	109.2	110.6	24	108.9	109.2	109.5	24
8/7	---	---	---	0	---	---	---	0	107.9	108.1	108.1	24	108.4	109.2	109.8	24	109.1	109.4	109.7	24
8/8	---	---	---	0	---	---	---	0	107.8	107.9	108.3	24	107.7	108.4	109.1	24	109.4	109.6	109.7	24
8/9	---	---	---	0	---	---	---	0	107.6	107.8	108.0	24	107.2	107.9	109.7	24	109.6	109.9	110.4	24
8/10	---	---	---	0	---	---	---	0	107.7	107.9	108.6	23	107.1	107.8	109.1	23	108.4	108.9	109.5	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>							
	<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>					
	<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>
7/28	110.8	111.3	111.8	24	111.5	111.9	112.5	23	---	---	---	0	112.4	112.7	112.9	24	115.5	116.5	120.0	20
7/29	109.8	110.4	110.8	24	111.4	112.3	112.9	24	---	---	---	0	112.4	112.7	113.3	24	112.8	113.8	114.2	22
7/30	109.9	110.2	110.5	24	110.5	111.1	111.9	24	---	---	---	0	111.8	112.1	112.4	24	113.1	114.0	114.8	23
7/31	109.5	109.8	110.1	24	110.4	111.3	111.8	24	---	---	---	0	111.0	111.4	111.7	24	113.9	115.1	115.7	21
8/1	109.9	110.3	110.6	24	110.2	111.1	111.7	24	94.8	94.8	95.0	11	111.2	111.6	112.3	24	113.2	115.0	116.8	24
8/2	109.3	109.9	110.2	24	109.9	111.3	112.0	24	94.7	95.0	95.1	24	111.3	111.7	111.9	24	113.0	114.1	115.0	20
8/3	109.3	109.6	109.7	24	110.7	111.7	112.3	24	105.9	113.2	113.5	24	111.6	112.1	112.4	24	113.6	115.4	115.9	23
8/4	109.9	110.1	110.2	24	110.1	110.4	111.1	24	112.0	112.5	112.8	24	111.8	112.0	112.1	24	113.3	115.0	115.6	24
8/5	109.3	109.7	110.0	24	109.4	109.9	110.1	24	111.1	111.5	111.7	24	111.5	111.7	111.8	24	113.6	114.8	115.2	21
8/6	108.5	108.9	110.0	24	109.0	109.9	110.4	24	111.1	111.6	111.9	24	111.2	111.6	111.9	24	111.1	112.0	112.6	23
8/7	108.4	108.7	109.2	24	109.2	109.9	110.4	24	111.2	111.5	112.0	24	110.4	110.7	111.1	24	112.2	113.7	114.4	21
8/8	108.8	109.0	109.1	24	109.2	110.0	110.8	24	110.9	111.4	112.0	24	110.7	111.3	111.8	23	112.7	113.8	114.5	21
8/9	109.0	109.4	109.5	24	108.9	109.9	110.7	24	110.7	111.0	111.5	24	111.2	111.5	112.1	24	113.2	114.5	114.9	21
8/10	107.8	108.3	108.6	23	109.8	110.6	111.2	23	111.2	112.0	112.4	23	110.9	111.2	111.7	23	112.7	113.3	114.3	19

### 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>#</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>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>
7/28	112.6	113.3	114.4	18	115.4	116.1	116.8	17	---	---	---	0	---	---	---	0	---	---	---	0
7/29	111.7	112.2	112.5	22	115.2	115.7	116.0	21	110.2	111.0	111.7	24	110.8	111.1	111.4	24	107.7	108.7	109.1	24
7/30	110.8	111.6	111.9	24	114.1	114.8	115.3	21	---	---	---	0	---	---	---	0	---	---	---	0
7/31	110.9	111.5	112.2	22	114.8	115.3	115.8	21	---	---	---	0	---	---	---	0	---	---	---	0
8/1	111.1	111.7	112.6	24	114.2	114.6	115.6	24	112.5	113.5	114.8	24	111.7	111.9	112.1	24	109.7	110.7	111.5	24
8/2	110.9	111.4	111.9	23	113.6	113.9	115.1	18	113.8	114.4	115.0	24	112.0	112.3	112.6	24	111.0	111.3	111.6	24
8/3	111.4	112.1	113.1	24	113.7	114.2	114.3	22	113.9	115.3	116.6	24	111.9	112.7	113.0	24	111.5	112.0	112.6	24
8/4	111.4	111.8	112.5	24	113.7	114.1	114.2	24	113.3	114.1	114.5	24	112.5	112.9	113.0	24	111.5	112.0	112.4	24
8/5	111.2	111.8	112.3	23	112.8	113.3	114.0	19	113.5	114.6	115.7	24	112.7	113.0	113.2	24	111.0	111.3	111.6	24
8/6	110.6	111.2	112.0	24	112.6	113.0	113.3	21	114.1	115.1	116.0	24	112.7	112.8	113.0	24	111.2	111.5	111.8	24
8/7	109.9	110.4	110.8	23	111.8	112.1	112.5	19	113.3	114.4	115.6	24	112.2	112.4	112.6	24	111.4	111.6	112.0	24
8/8	110.0	111.0	111.5	23	113.0	114.2	115.5	20	113.0	114.2	114.9	24	112.4	112.8	113.0	24	111.3	111.5	111.7	24
8/9	111.0	111.5	112.0	21	115.3	115.8	116.8	20	113.6	114.7	116.2	24	112.9	113.1	113.5	24	111.7	112.0	112.2	24
8/10	110.6	111.3	111.7	22	114.5	114.9	115.4	16	112.6	114.1	115.6	24	112.8	113.0	113.3	24	111.9	112.2	112.4	24

## 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>Clrwr-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					
7/28	---	---	---	0	---	---	---	0	119.3	119.7	120.1	24	116.0	117.4	118.4	24	112.5	113.4	114.3	24
7/29	---	---	---	0	---	---	---	0	119.1	119.5	119.9	24	116.0	117.3	118.3	24	112.3	113.3	114.3	24
7/30	---	---	---	0	---	---	---	0	118.9	119.3	119.7	24	115.8	117.1	118.2	24	111.9	112.7	113.3	24
7/31	---	---	---	0	---	---	---	0	119.2	119.5	119.9	24	116.0	117.3	118.4	24	108.6	113.1	114.7	24
8/1	---	---	---	0	---	---	---	0	119.2	119.6	120.0	24	116.0	117.3	118.4	24	102.9	104.4	106.0	24
8/2	---	---	---	0	---	---	---	0	119.3	119.6	120.0	24	116.0	117.2	118.3	24	102.7	104.2	105.9	23
8/3	---	---	---	0	---	---	---	0	119.4	119.8	120.1	24	116.1	117.4	118.3	24	102.7	104.2	105.7	23
8/4	---	---	---	0	---	---	---	0	119.3	119.5	120.0	24	115.9	117.0	117.8	24	102.5	104.1	105.8	24
8/5	---	---	---	0	---	---	---	0	119.1	119.3	119.9	24	115.5	116.4	117.3	24	101.2	101.9	104.4	19
8/6	---	---	---	0	---	---	---	0	119.0	119.3	119.7	24	115.5	116.5	117.3	24	101.1	102.4	103.5	24
8/7	---	---	---	0	---	---	---	0	119.2	119.5	119.7	24	115.5	116.6	117.4	24	100.3	101.1	102.4	24
8/8	---	---	---	0	---	---	---	0	119.2	119.5	119.8	24	115.5	116.7	117.6	24	100.0	101.0	102.5	23
8/9	---	---	---	0	---	---	---	0	119.1	119.4	119.6	24	115.3	116.2	117.0	24	99.2	99.9	101.1	24
8/10	---	---	---	0	---	---	---	0	119.1	119.4	119.7	23	115.3	116.2	117.0	23	99.3	100.9	102.3	23

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

Date	<u>Clrwr-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					
7/28	108.4	111.0	112.8	24	104.0	104.2	104.4	24	111.9	112.2	112.4	24	108.5	109.0	109.3	24	109.4	109.9	110.3	24
7/29	108.3	110.7	112.6	24	103.6	103.7	103.8	24	111.8	112.1	112.3	24	107.9	108.1	108.6	24	109.3	109.7	110.1	24
7/30	108.1	110.6	112.5	24	103.5	103.7	103.8	24	111.6	112.0	112.3	24	107.7	107.9	108.2	24	109.2	109.5	109.9	24
7/31	108.2	110.8	112.6	24	103.5	103.8	104.0	24	111.8	112.2	112.5	24	106.9	107.3	107.8	24	109.1	109.5	109.8	24
8/1	108.2	110.7	112.6	24	104.0	104.3	104.5	24	112.0	112.3	112.5	24	107.4	108.0	108.6	24	109.3	109.8	110.3	24
8/2	108.2	110.6	112.4	24	104.1	104.4	104.6	24	112.0	112.2	112.4	24	108.0	108.3	108.9	24	109.5	109.9	110.4	24
8/3	108.2	110.5	112.2	24	104.2	104.6	104.9	24	112.4	112.9	113.3	24	108.2	108.4	109.3	24	109.4	109.8	110.0	24
8/4	108.3	110.5	112.3	24	104.8	105.1	105.5	24	112.8	113.1	113.3	24	109.3	109.6	110.7	24	109.6	109.8	110.0	24
8/5	107.4	109.4	111.2	24	104.0	104.2	104.9	24	112.5	112.8	113.0	24	109.4	109.7	110.2	24	109.5	109.7	109.9	24
8/6	107.7	110.1	112.0	24	103.4	103.5	103.6	24	112.4	112.7	112.9	24	109.1	109.4	109.5	24	109.3	109.7	110.0	24
8/7	107.4	109.4	110.7	24	103.6	103.9	104.2	24	112.5	112.9	113.1	24	108.9	109.4	109.8	24	109.8	110.7	112.3	24
8/8	107.5	109.6	111.5	23	103.3	103.5	103.7	24	112.4	112.6	112.9	24	108.6	108.9	109.2	24	109.3	109.7	110.0	24
8/9	107.2	109.1	110.6	24	102.6	102.7	102.9	24	111.6	112.3	112.5	24	108.3	108.4	108.5	24	109.8	110.5	112.5	24
8/10	107.2	109.1	110.6	23	102.5	102.6	102.8	23	112.1	112.4	112.6	23	108.5	108.9	109.1	23	111.1	112.6	115.5	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					
7/28	106.1	106.5	107.2	24	116.0	116.3	116.5	24	112.3	112.6	112.8	24	112.6	113.2	113.6	24	---	---	---	0
7/29	106.7	106.9	107.2	24	115.4	115.9	116.4	24	112.1	112.3	112.6	24	113.1	113.4	114.4	24	---	---	---	0
7/30	106.0	106.1	106.3	24	115.4	115.5	115.7	24	111.5	111.6	111.9	24	113.4	114.0	114.5	24	---	---	---	0
7/31	106.3	106.6	106.8	24	115.3	115.7	116.1	24	111.7	112.1	112.6	24	112.7	113.3	114.2	23	---	---	---	0
8/1	106.7	106.8	106.9	24	115.4	115.6	115.9	24	112.5	112.9	113.2	24	112.1	112.6	113.4	24	---	---	---	0
8/2	106.4	106.5	106.7	24	115.1	115.6	116.5	24	112.8	113.1	113.9	24	112.6	113.3	114.1	24	---	---	---	0
8/3	107.1	107.4	107.6	24	115.5	115.8	116.4	24	113.7	114.2	114.9	24	112.3	112.9	113.4	24	---	---	---	0
8/4	107.5	107.7	107.8	24	115.3	115.7	116.0	24	114.6	114.8	115.1	24	112.3	112.9	113.5	24	---	---	---	0
8/5	107.4	107.8	108.0	24	115.8	116.0	116.3	24	113.7	114.0	114.4	24	111.7	112.0	112.3	24	---	---	---	0
8/6	107.4	107.7	107.9	24	115.5	115.8	116.3	24	113.1	113.3	113.6	24	111.2	111.9	112.4	24	---	---	---	0
8/7	107.3	107.6	107.7	24	115.7	116.0	116.5	24	112.5	112.9	113.5	24	111.4	111.7	112.0	24	---	---	---	0
8/8	107.1	107.2	107.3	24	115.6	115.9	116.2	24	111.8	112.0	112.3	24	111.5	112.2	113.0	24	---	---	---	0
8/9	107.5	107.7	107.8	24	116.0	116.2	116.7	24	111.7	112.0	112.3	24	111.2	111.6	112.2	24	---	---	---	0
8/10	107.5	107.7	108.0	23	115.6	115.9	116.2	23	112.1	112.5	112.7	23	111.2	111.8	112.4	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>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>					
	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	AVG	High	hr				
7/28	109.6	109.9	110.2	24	114.5	115.8	116.3	24	105.6	106.0	106.7	24	113.6	114.3	114.7	24	105.9	106.3	106.6	24
7/29	109.4	109.9	110.3	24	115.4	116.1	116.7	24	105.7	106.0	106.2	24	113.4	113.6	113.9	24	106.4	106.7	107.0	24
7/30	109.0	109.3	109.6	24	113.8	114.1	115.3	24	105.2	105.3	105.4	24	112.2	112.6	112.9	24	105.9	106.1	106.7	24
7/31	109.0	109.6	110.8	24	114.5	115.6	116.5	24	105.1	105.5	106.0	24	112.3	112.9	113.9	24	106.6	107.7	108.6	24
8/1	110.8	111.4	113.4	24	113.6	113.8	116.2	15	105.6	105.8	106.2	24	112.7	113.2	113.7	24	109.4	109.8	110.1	24
8/2	111.2	111.7	112.4	24	116.2	116.4	117.0	14	105.9	106.3	106.8	24	113.2	113.5	113.9	24	109.1	109.5	109.8	24
8/3	111.7	112.2	112.8	24	114.9	115.8	116.7	24	107.1	107.8	108.7	24	113.3	113.7	114.5	24	109.2	109.5	109.7	24
8/4	112.7	113.1	113.5	24	114.9	115.3	115.6	24	108.1	108.6	109.2	24	113.1	113.6	114.0	24	108.9	109.4	109.8	24
8/5	112.2	112.5	113.1	24	114.4	114.8	115.1	24	107.8	108.2	108.8	24	113.3	113.9	114.5	24	106.9	107.1	107.3	24
8/6	111.8	112.0	112.8	24	114.3	114.9	115.3	24	108.0	108.3	108.5	24	113.9	114.4	114.8	24	107.9	108.7	108.9	24
8/7	111.2	111.5	112.0	24	113.9	114.6	115.2	24	108.6	109.0	109.3	24	114.1	114.5	114.9	24	109.7	110.6	111.3	24
8/8	110.3	110.7	111.0	24	113.4	114.4	115.2	24	108.6	108.9	109.2	24	114.1	114.5	114.8	24	110.3	111.0	111.6	24
8/9	111.0	111.3	111.8	24	113.6	114.4	115.6	24	108.3	108.4	108.7	24	113.7	114.1	114.9	24	110.3	110.6	111.3	24
8/10	111.3	112.2	113.4	23	113.8	115.1	118.5	23	108.6	109.1	109.9	23	113.9	114.4	115.1	23	110.1	110.4	111.0	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>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>					
	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr				
7/28	111.1	111.9	112.2	24	106.0	106.3	106.8	24	114.9	115.6	116.0	24	113.8	115.1	116.3	24	114.5	115.4	116.9	24
7/29	111.9	112.4	112.9	24	105.1	105.5	105.8	24	114.3	115.5	117.1	24	112.1	113.9	115.6	24	114.6	115.3	116.5	24
7/30	112.1	112.5	112.8	24	105.6	106.1	106.6	24	116.3	117.0	117.3	24	111.1	113.7	115.7	24	116.4	116.5	116.6	24
7/31	112.4	113.8	114.8	24	106.8	107.5	108.0	24	116.2	117.3	118.6	24	114.4	116.2	117.0	24	116.1	116.3	116.8	24
8/1	113.6	114.4	115.1	24	108.9	110.1	110.6	24	115.7	117.1	118.1	24	113.8	114.8	115.4	24	114.6	115.3	116.7	24
8/2	113.9	114.6	115.5	24	111.5	112.4	113.1	24	117.0	118.1	118.9	24	115.1	116.7	118.1	24	115.0	115.9	117.0	24
8/3	113.3	114.0	114.8	24	113.1	113.8	114.2	24	118.4	119.2	119.9	24	115.1	117.1	118.8	24	116.8	116.9	117.1	24
8/4	113.8	114.3	114.8	24	113.3	113.6	113.8	24	118.4	119.0	119.6	24	117.5	118.5	119.3	24	116.8	116.8	117.0	24
8/5	113.1	113.5	114.0	24	110.2	110.7	112.2	24	116.8	117.5	118.2	24	116.0	116.6	117.4	24	114.6	115.6	116.8	24
8/6	112.5	113.3	113.8	24	107.9	108.3	109.2	24	116.9	117.7	118.6	24	115.1	116.3	117.0	24	114.8	116.0	117.5	24
8/7	112.9	113.5	114.4	24	108.4	108.8	109.0	24	116.4	117.2	117.9	24	115.0	116.2	117.0	24	115.7	116.7	117.4	24
8/8	113.4	114.4	114.9	24	108.6	109.3	109.7	24	116.8	117.4	118.2	24	115.1	116.3	116.9	24	116.4	116.5	116.5	24
8/9	114.0	114.7	115.3	24	109.4	110.0	110.3	24	116.8	117.5	118.1	24	116.1	117.5	118.5	24	114.7	115.7	117.2	24
8/10	113.8	114.7	115.4	23	110.4	110.9	111.3	23	116.8	117.4	118.2	23	115.8	117.3	118.1	23	114.8	115.9	117.4	23

## Two-Week Summary of Passage Indices

Source: Fish Passage Center

Updated: 8/11/2017 13:24

### 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/currentsmptsubmitdata.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)	
07/28/2017	*	---	---	---	---	0	0	0	0	0	0	---
07/29/2017		---	---	---	---	0	0	0	0	---	---	0
07/30/2017		---	---	---	---	0	0	7	0	0	---	---
07/31/2017		---	---	---	---	0	0	0	0	---	---	0
08/01/2017	*	---	---	---	---	0	0	0	0	0	0	---
08/02/2017		---	---	---	---	0	0	0	0	---	---	0
08/03/2017		---	---	---	---	---	0	7	0	0	---	---
08/04/2017	*	---	---	---	---	---	0	0	0	---	0	0
08/05/2017		---	---	---	---	---	0	0	0	0	---	---
08/06/2017		---	---	---	---	---	0	0	0	---	---	0
08/07/2017	*	---	---	---	---	---	0	0	0	0	---	---
08/08/2017	*	---	---	---	---	---	0	0	0	---	0	0
08/09/2017		---	---	---	---	---	0	0	0	0	---	---
08/10/2017		---	---	---	---	---	0	0	0	---	---	0
08/11/2017		---	---	---	---	---	0	---	0	0	---	---
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b># Days:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>15</b>	<b>14</b>	<b>15</b>	<b>8</b>	<b>4</b>	<b>7</b>
<b>Average:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>YTD</b>		<b>33,704</b>	<b>22,233</b>	<b>21,106</b>	<b>8</b>	<b>3,998,337</b>	<b>2,400,545</b>	<b>2,885,789</b>	<b>50,596</b>	<b>1,583,272</b>	<b>1,720,241</b>	<b>1,947,910</b>

COMBINED SUBYEARLING CHINOOK												
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)	
07/28/2017	*	---	---	---	---	3,698	2,801	296	630	31,486	2,068	---
07/29/2017		---	---	---	---	3,127	2,572	202	766	---	---	25,034
07/30/2017		---	---	---	---	1,700	2,469	204	382	23,948	---	---
07/31/2017		---	---	---	---	1,425	1,272	339	467	---	---	16,887
08/01/2017	*	---	---	---	---	1,013	961	192	411	18,811	1,294	---
08/02/2017		---	---	---	---	1,349	772	279	304	---	---	10,254
08/03/2017		---	---	---	---	---	694	118	165	14,914	---	---
08/04/2017	*	---	---	---	---	---	649	80	174	---	430	4,027
08/05/2017		---	---	---	---	---	469	68	131	6,771	---	---
08/06/2017		---	---	---	---	---	530	35	175	---	---	565
08/07/2017	*	---	---	---	---	---	535	55	148	4,239	---	---
08/08/2017	*	---	---	---	---	---	784	24	156	---	327	432
08/09/2017		---	---	---	---	---	353	52	236	2,859	---	---
08/10/2017		---	---	---	---	---	311	59	167	---	---	261
08/11/2017		---	---	---	---	---	393	---	153	2,008	---	---
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12,312</b>	<b>15,565</b>	<b>2,003</b>	<b>4,465</b>	<b>105,036</b>	<b>4,119</b>	<b>57,460</b>
<b># Days:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>15</b>	<b>14</b>	<b>15</b>	<b>8</b>	<b>4</b>	<b>7</b>
<b>Average:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,052</b>	<b>1,038</b>	<b>143</b>	<b>298</b>	<b>13,130</b>	<b>1,030</b>	<b>8,209</b>
<b>YTD</b>		<b>0</b>	<b>11</b>	<b>40</b>	<b>0</b>	<b>1,020,549</b>	<b>1,059,774</b>	<b>654,637</b>	<b>72,216</b>	<b>2,463,673</b>	<b>1,067,070</b>	<b>4,037,861</b>

## Two-Week Summary of Passage Indices

COMBINED COHO												
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)	
07/28/2017	*	---	---	---	---	0	0	0	0	0	---	
07/29/2017		---	---	---	---	0	0	0	0	---	0	
07/30/2017		---	---	---	---	0	0	0	0	---	---	
07/31/2017		---	---	---	---	0	0	0	0	---	0	
08/01/2017	*	---	---	---	---	0	0	0	1	0	---	
08/02/2017		---	---	---	---	0	0	0	0	---	0	
08/03/2017		---	---	---	---	---	0	0	0	---	---	
08/04/2017	*	---	---	---	---	---	0	0	0	---	0	
08/05/2017		---	---	---	---	---	0	0	0	---	---	
08/06/2017		---	---	---	---	---	0	0	0	---	0	
08/07/2017	*	---	---	---	---	---	0	0	0	---	---	
08/08/2017	*	---	---	---	---	---	0	0	0	---	0	
08/09/2017		---	---	---	---	---	0	0	0	---	---	
08/10/2017		---	---	---	---	---	0	0	0	---	0	
08/11/2017		---	---	---	---	---	0	---	1	0	---	
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b># Days:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>15</b>	<b>14</b>	<b>15</b>	<b>8</b>	<b>4</b>	
<b>Average:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>YTD</b>		<b>0</b>	<b>0</b>	<b>2,232</b>	<b>0</b>	<b>128,502</b>	<b>86,636</b>	<b>69,601</b>	<b>35,300</b>	<b>86,630</b>	<b>96,620</b>	<b>356,042</b>

COMBINED STEELHEAD												
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)	
07/28/2017	*	---	---	---	---	0	0	0	0	0	---	
07/29/2017		---	---	---	---	0	14	0	0	---	0	
07/30/2017		---	---	---	---	0	11	0	0	---	---	
07/31/2017		---	---	---	---	0	0	0	0	---	0	
08/01/2017	*	---	---	---	---	0	0	0	0	0	---	
08/02/2017		---	---	---	---	0	6	0	0	---	0	
08/03/2017		---	---	---	---	---	6	0	0	---	---	
08/04/2017	*	---	---	---	---	---	6	0	0	---	0	
08/05/2017		---	---	---	---	---	6	0	0	---	---	
08/06/2017		---	---	---	---	---	3	4	1	---	0	
08/07/2017	*	---	---	---	---	---	0	4	0	---	---	
08/08/2017	*	---	---	---	---	---	7	0	0	---	0	
08/09/2017		---	---	---	---	---	0	0	0	2	---	
08/10/2017		---	---	---	---	---	0	0	0	---	0	
08/11/2017		---	---	---	---	---	0	---	0	---	---	
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>59</b>	<b>8</b>	<b>1</b>	<b>2</b>	<b>0</b>	
<b># Days:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>15</b>	<b>14</b>	<b>15</b>	<b>8</b>	<b>4</b>	
<b>Average:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>YTD</b>		<b>7,117</b>	<b>15,916</b>	<b>7,614</b>	<b>1</b>	<b>4,065,200</b>	<b>1,853,154</b>	<b>2,517,515</b>	<b>32,131</b>	<b>442,841</b>	<b>1,317,075</b>	<b>264,513</b>

## Two-Week Summary of Passage Indices

Date	COMBINED SOCKEYE											
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)	
07/28/2017	*	---	---	---	---	0	0	0	1	0	0	---
07/29/2017		---	---	---	---	0	0	0	3	---	---	0
07/30/2017		---	---	---	---	0	0	0	0	0	---	---
07/31/2017		---	---	---	---	0	0	0	0	---	---	16
08/01/2017	*	---	---	---	---	0	0	0	0	0	0	---
08/02/2017		---	---	---	---	0	0	0	3	---	---	0
08/03/2017		---	---	---	---	---	0	0	1	41	---	---
08/04/2017	*	---	---	---	---	---	0	0	0	---	0	0
08/05/2017		---	---	---	---	---	0	0	0	0	---	---
08/06/2017		---	---	---	---	6	0	1	---	---	---	55
08/07/2017	*	---	---	---	---	---	0	0	0	42	---	---
08/08/2017	*	---	---	---	---	---	0	0	0	---	1	0
08/09/2017		---	---	---	---	---	3	0	0	0	---	---
08/10/2017		---	---	---	---	---	0	0	0	---	---	0
08/11/2017		---	---	---	---	---	0	---	1	0	---	---
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>10</b>	<b>83</b>	<b>1</b>	<b>71</b>	
<b># Days:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>15</b>	<b>14</b>	<b>15</b>	<b>8</b>	<b>4</b>	<b>7</b>
<b>Average:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>10</b>	<b>0</b>	<b>10</b>	
<b>YTD</b>		<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>61,191</b>	<b>24,466</b>	<b>34,028</b>	<b>11,173</b>	<b>156,370</b>	<b>117,049</b>	<b>145,281</b>

Date	COMBINED LAMPREY JUVENILES											
	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR <sup>†</sup> (Samp)	LGS (Coll)	LMN (Coll)	RIS (Coll)	MCN (Coll)	JDA (Coll)	BO2 (Coll)	
07/28/2017	*	---	---	---	---	0	10	0	0	200	0	---
07/29/2017		---	---	---	---	0	30	0	1	---	---	0
07/30/2017		---	---	---	---	0	16	0	0	0	---	---
07/31/2017		---	---	---	---	0	8	0	0	---	---	0
08/01/2017	*	---	---	---	---	0	0	0	0	0	0	---
08/02/2017		---	---	---	---	0	12	0	0	---	---	0
08/03/2017		---	---	---	---	---	12	0	0	0	---	---
08/04/2017	*	---	---	---	---	6	2	0	---	---	0	0
08/05/2017		---	---	---	---	8	0	0	0	---	---	---
08/06/2017		---	---	---	---	8	0	0	---	---	---	0
08/07/2017	*	---	---	---	---	---	14	0	0	0	---	---
08/08/2017	*	---	---	---	---	---	4	0	0	---	0	0
08/09/2017		---	---	---	---	---	8	0	0	0	---	---
08/10/2017		---	---	---	---	---	8	0	0	---	---	0
08/11/2017		---	---	---	---	---	4	---	0	0	---	---
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>148</b>	<b>2</b>	<b>1</b>	<b>200</b>	<b>0</b>	<b>0</b>	
<b># Days:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>15</b>	<b>14</b>	<b>15</b>	<b>8</b>	<b>4</b>	<b>7</b>
<b>Average:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>25</b>	<b>0</b>	<b>0</b>	
<b>YTD</b>		<b>0</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>287</b>	<b>7,183</b>	<b>2,982</b>	<b>58</b>	<b>32,805</b>	<b>62,483</b>	<b>42,204</b>

## 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.

Three 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:

8/11/17 1:25 PM

		Species				
Site	Data	CH0	CH1	ST	SO	Grand Total
<b>LGR</b>	Sum of NumberCollected	6,640				6,640
	Sum of NumberBarged	6,544				6,544
	Sum of NumberBypassed	0				0
	Sum of Numbertrucked	0				0
	Sum of SampleMorts	14				14
	Sum of FacilityMorts	82				82
	Sum of ResearchMorts	0				0
	Sum of TotalProjectMorts	96				96
<b>LGS</b>	Sum of NumberCollected	10,666		40	6	10,712
	Sum of NumberBarged	10,262		39	3	10,304
	Sum of NumberBypassed	0		0	0	0
	Sum of Numbertrucked	0		0	0	0
	Sum of SampleMorts	24		0	1	25
	Sum of FacilityMorts	169		1	2	172
	Sum of ResearchMorts	0		0	0	0
	Sum of TotalProjectMorts	193		1	3	197
<b>LMN</b>	Sum of NumberCollected	1,102	8	4		1,114
	Sum of NumberBarged	1,096	8	4		1,108
	Sum of NumberBypassed	0	0	0		0
	Sum of Numbertrucked	0	0	0		0
	Sum of SampleMorts	0	0	0		0
	Sum of FacilityMorts	6	0	0		6
	Sum of ResearchMorts	0	0	0		0
	Sum of TotalProjectMorts	6	0	0		6
Total Sum of NumberCollected		18,408	8	44	6	18,466
Total Sum of NumberBarged		17,902	8	43	3	17,956
Total Sum of NumberBypassed		0	0	0	0	0
Total Sum of Numbertrucked		0	0	0	0	0
Total Sum of SampleMorts		38	0	0	1	39
Total Sum of FacilityMorts		257	0	1	2	260
Total Sum of ResearchMorts		0	0	0	0	0
Total Sum of TotalProjectMorts		295	0	1	3	299

**YTD Transportation Summary**

Source: Fish Passage Center

Updated:

8/11/17 1:25 PM

TO: 08/11/17

		Species					
Site	Data	CH0	CH1	CO	SO	ST	Grand Total
<b>LGR</b>	Sum of NumberCollected	628,393	2,362,698	74,225	35,589	2,329,514	5,430,419
	Sum of NumberBarged	601,027	978,688	63,247	19,699	949,358	2,612,019
	Sum of NumberBypassed	21,922	1,381,285	10,900	15,670	1,379,888	2,809,665
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	252	90	5	11	53	411
	Sum of FacilityMorts	5,180	2,609	73	209	193	8,264
	Sum of ResearchMorts	12	26	0	0	22	60
	Sum of TotalProjectMorts	5,444	2,725	78	220	268	8,735
<b>LGS</b>	Sum of NumberCollected	614,413	1,337,946	43,198	13,724	1,065,058	3,074,339
	Sum of NumberBarged	594,003	495,706	39,956	10,029	313,266	1,452,960
	Sum of NumberBypassed	17,361	837,161	3,201	3,318	751,538	1,612,579
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	128	29	1	11	10	179
	Sum of FacilityMorts	2,710	5,050	40	366	244	8,410
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	2,838	5,079	41	377	254	8,589
<b>LMN</b>	Sum of NumberCollected	330,055	1,459,190	33,440	17,200	1,293,664	3,133,549
	Sum of NumberBarged	339,130	931,886	32,959	12,568	710,514	2,027,057
	Sum of NumberBypassed	5,516	489,562	800	4,597	560,085	1,060,560
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	48	37	2	5	31	123
	Sum of FacilityMorts	308	1,089	39	120	387	1,943
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	356	1,126	41	125	418	2,066
Total Sum of NumberCollected		1,572,861	5,159,834	150,863	66,513	4,688,236	11,638,307
Total Sum of NumberBarged		1,534,160	2,406,280	136,162	42,296	1,973,138	6,092,036
Total Sum of NumberBypassed		44,799	2,708,008	14,901	23,585	2,691,511	5,482,804
Total Sum of NumberTrucked		0	0	0	0	0	0
Total Sum of SampleMorts		428	156	8	27	94	713
Total Sum of FacilityMorts		8,198	8,748	152	695	824	18,617
Total Sum of ResearchMorts		12	26	0	0	22	60
Total Sum of TotalProjectMorts		8,638	8,930	160	722	940	19,390

**Cumulative Adult Passage at Mainstem Dams Through: 08/10**

dam	enddate	Spring Chinook						Summer Chinook						Fall Chinook					
		2017		2016		10-Yr Avg.		2017		2016		10-Yr Avg.		2017		2016		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	08/10	83624	18110	137215	11145	150783	25708	88044	10648	119591	10834	97732	22097	2786	416	7934	840	5752	1132
TDA	08/10	58308	12497	105504	9999	118766	22002	69246	9277	95764	8800	81626	17772	814	177	4288	495	3156	725
JDA	08/10	46675	12475	93659	8262	103450	20515	60416	7363	90259	7715	73088	17197	355	97	2388	256	1671	432
MCN	08/10	44292	7020	87191	7374	93925	16835	56982	4616	83894	6501	69220	12937	166	26	856	87	614	115
IHR	08/10	28306	6949	67484	5029	68114	11248	9269	2086	13858	1525	18876	4856	0	0	0	0	0	0
LMN	08/10	28545	8270	66115	6266	68087	10905	8170	3376	12201	2307	19811	5773	0	0	0	0	1	0
LGS	08/10	26598	8335	62597	6365	63765	12007	9005	3730	12104	1882	18958	6292	0	0	0	0	0	0
LGR	08/10	27357	8256	62050	5480	62403	13092	8857	3603	11308	2019	16872	6763	0	0	0	0	0	0
PRD	08/09	7268	783	16843	1003	17901	1826	52600	1699	79300	5005	56684	2684	0	0	0	0	0	0
WAN	08/09	6612	484	17164	919	17602	2161	48965	1309	78576	4022	54168	2132	0	0	0	0	0	0
RIS	08/09	8080	564	18646	715	18006	2748	55148	1125	76891	2913	54331	4798	0	0	0	0	0	0
RRH	08/09	5864	406	9449	351	7849	1209	41262	854	55580	2297	42488	3252	0	0	0	0	0	0
WEL	08/09	6589	820	11789	833	8215	1601	28077	894	40656	2140	31514	2881	0	0	0	0	0	0
WFA	08/10	34144	2438	30180	2132	34564	1462	0	0	0	0	0	0	0	0	0	0	0	0

DAM	ENDDATE	Coho						Sockeye			Steelhead						Lamprey		
		2017		2016		10-Yr Avg.		10-Yr			10-Yr Unclipped		Unclipped		10-Yr		10-Yr		
		Adult	Jack	Adult	Jack	Adult	Jack	2017	2016	Avg.	2017	2016	Avg.	2017	2016	Avg.	2017	2016	Avg.
BON	08/10	0	0	8	3	28	7	87602	342270	315510	34762	78591	150159	16253	28863	63496	76893	43998	20557
TDA	08/10	0	0	0	0	0	0	63891	288083	269026	8364	25395	74319	4429	11772	34617	26112	8630	5315
JDA	08/10	0	0	0	0	3	1	65854	289629	260324	4487	15001	52602	2949	7775	23605	18465	7152	3995
MCN	08/10	0	0	0	0	1	0	57945	261441	226191	5352	13072	40389	2474	6268	16568	1722	974	817
IHR	08/10	0	0	0	0	0	0	391	894	921	2268	8215	22141	1171	3508	6786	914	610	213
LMN	08/10	0	0	0	0	0	0	345	1015	1090	2615	7924	22531	1425	4011	8016	256	174	53
LGS	08/10	0	0	0	0	0	0	285	938	1022	1981	7868	12555	986	4138	5528	385	148	27
LGR	08/10	1	0	0	0	0	0	226	799	1050	7703	8933	14520	3313	4816	5904	251	76	7
PRD	08/09	0	0	0	1	0	0	66623	310727	266552	694	2096	4332	0	0	0	15521	4336	1743
WAN	08/09	0	0	0	0	0	0	76052	322042	235522	562	1943	4326	0	0	0	11130	2327	799
RIS	08/09	0	0	0	0	0	0	73031	309577	258439	557	1531	2974	333	690	1541	5704	678	249
RRH	08/09	0	0	0	0	0	0	46556	235147	217424	337	1100	2118	141	445	1017	5389	556	195
WEL	08/09	0	0	0	0	0	0	42112	214943	206299	228	790	1013	137	327	493	22	1	0
WFA	08/10	0	0	0	0	1	0	0	0	0	2662	26625	22050	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.

