



Fish Passage Center

Weekly Report #18-21

July 27, 2018

This Week's Highlights

Water Supply

Precipitation throughout the Columbia Basin has varied between 0% and 34% of average at individual sub-basins over early July. Precipitation above The Dalles has been 17% of average over July. Over the 2018 water year, precipitation has ranged between 87% and 110% of average.

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

Location	Water Year 2018 July 1-26, 2018		Water Year 2018 October 1, 2017 to July 26, 2018	
	Observed (inches)	% Average	Observed (inches)	% Average
	Columbia Above Coulee	0.50	29	33.1
Snake River Above Ice Harbor	0.03	4	19.1	91
Columbia Above The Dalles	0.17	17	23.3	93
Kootenai	0.63	34	32.2	96
Clark Fork	0.05	4	27.2	110
Flathead	0.20	12	33.9	105
Pend Oreille River Basin above Waneta Dam	0.11	8	30.6	104
Salmon River Basin	0.00	0	25.4	96
Upper Snake Tributaries	0.21	19	22.9	95
Clearwater	0.01	1	41.1	109
Willamette River above Portland	0.00	1	54.2	87

Grand Coulee Reservoir is at 1284.4 feet (7-26-18) and has drafted 3.1 feet over the last week. Outflows at Grand Coulee have ranged between 115.8 Kcfs and 126.4 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2448.1 feet

(7-26-18) and has refilled 0.2 feet over the past week. Daily average outflows at Libby Dam have 9.0 over the last week.

Hungry Horse is currently at an elevation of 3558.9 feet (7-26-18) and has drafted 0.7 feet last week. Outflows at Hungry Horse have been 3.0 – 3.5 Kcfs over the last week.

Dworshak is currently at an elevation of 1577.1 feet (7-26-18) and has drafted 7.7 feet over the last week. Dworshak outflows have been 7.4 – 13.0 Kcfs.

The Brownlee Reservoir was at an elevation of 2062.0 feet on July 27th, 2018 and has drafted 2.0 feet over the last week. Outflows at Hells Canyon have ranged between 8.4 and 24.0 Kcfs over the last four days.

The Biological Opinion flow period began on April 3rd in the lower Snake River (Lower Granite). According to the April Final Water Supply Forecast (April 4th, 2018), the flow objective this spring was 100 Kcfs at Lower Granite. Flows at Lower Granite Dam averaged 111.3 Kcfs over the spring season. The summer biological flow period began on June 21st, 2018 at Lower Granite (Flow Objective = 53.3 Kcfs), flows have averaged 45.1 Kcfs over the summer period and 33.0 Kcfs last week.

Based on the April Final Water Supply Forecast, the Spring Biological Opinion Flow Objective is 260 Kcfs at McNary Dam and 135 Kcfs at Priest Rapids Dam. Flows at McNary averaged 343 Kcfs over the spring season; at Priest Rapids flows averaged 229.6 Kcfs over the spring season. The summer flow period began on July 1, 2018 at McNary Dam, with a flow objective of 200 Kcfs. Flows at McNary have averaged 182.0 Kcfs since the start of the summer period.

Spill

Flows in the Lower Snake River decreased slightly this week, when compared to the previous week. Daily average flows at Lower Granite Dam ranged from 30.5 to 34.6 Kcfs this week. Daily average flows at McNary and Rock Island dams ranged from 160.9 to 200.0 Kcfs and 118.9 to 144.8 Kcfs this week, respectively. Current forecasts for Lower Granite Dam show flows in the 32.0 to 38.5 Kcfs range over the next week while forecasts for McNary Dam show flows decreasing slightly over the next week.

Dworshak is currently in its summer draft operation, with daily average discharge ranging from 7.4 to 13.0 Kcfs over the last week. Due to an issue in the powerhouse, total discharge from Dworshak was reduced to 3.3-5.0 Kcfs for approximately 13 hours on July 24th, resulting in a daily average discharge of 7.4 Kcfs. In addition, a powerhouse outage on July 26th resulted in a reduction in total discharge for approximately five hours. During this time, total discharge ranged from 6.7 to 10.8 Kcfs and the daily average discharge was 12.0 Kcfs. Hells Canyon Complex flows have decreased slightly this week, with daily average outflows at Hells Canyon Dam ranging from 9.8 to 15.4 Kcfs over the last week. The daily average temperature in the Lower Granite tailrace exceeded 68 °F on July 23rd and was 68.0 °F on July 24th. Since July 24th, the daily average temperature in the Lower Granite tailrace has been in the 67.0-67.4 °F range.

The 2018 spill for fish passage program at the lower Snake River and Mid-Columbia FCRPS projects began just after midnight on April 3rd and April 10th, respectively. Spring spill operations at these projects ran through June 15th in the Mid-Columbia and June 20th in the Snake River. According to the Fish Operations Plan, summer spill operations began at 0001 on June 16th at the Mid-Columbia River sites and 0001 on June 21st at the Snake River sites. These summer spill operations will run through August 31st at all eight FCRPS projects. A summary of summer spill operations is provided in Table 2.

Table 2. Summer spill operations at FCRPS projects.

Project	Summer Spill Level (Day/Night)
Lower Granite	18 Kcfs/18 Kcfs
Little Goose	30%/30%
Lower Monumental	17 Kcfs/17 Kcfs
Ice Harbor	Jun. 21-Jul. 13: 45 Kcfs/Gas Cap or 30%/30% Jul. 13-Aug. 31: 45 Kcfs/Gas Cap
McNary	50%/50%
John Day	Jun. 16-Jul. 20: 30%/30% or 40%/40% Jul. 20-Aug. 31: 30%/30%
The Dalles	40%/40%
Bonneville	95 Kcfs/95 Kcfs or 85 Kcfs/121 Kcfs

The summer spill operation for Lower Granite Dam is 18 Kcfs, 24-hours per day. Summer spill volumes at Lower Granite Dam were generally met this week and there were no exceedences in total dissolved gas (TDG) waiver limits in the LGR tailrace or the Little Goose (LGS) forebay. There was a brief period from 1900 on July 24th to 0700 on July 25th when flows were sufficiently low that 18 Kcfs spill could not be met. During this period, spill was all flows in excess of powerhouse minimum requirements. The summer spill operation for LGS is 30%, 24-hours per day. However, when daily average flows drop below 32 Kcfs, the spill operation at LGS switches to a constant spill volume. This constant spill volume ranges from 7 Kcfs to 11 Kcfs, depending on daily average flows from the previous day. A constant spill operation of approximately 11 Kcfs was implemented on July 22nd and continued through July 24th. However, due to increased daily average flows, the spill operation at LGS was switched back to 30% of instantaneous flows for July 25th and 26th. In addition, spill patterns at LGS were modified on July 26th and July 27th to address concerns with sockeye adult count differentials between Little Goose and Lower Monumental dams. This modified operation was discussed at TMT on July 25th and involved turning off the RSW from ~0500 to ~1600 each day and distributing the RSW spill to other spillbays. The intent of the modified operation was to affect hydraulic conditions in the tailrace, which some believe may be adverse to sockeye adults. The modified operation is intended to run for two days (July 26th and 27th). Adult sockeye counts at LGS ranged from one to five per day for the period of July 22nd to July 25th. The adult sockeye count on July 26th (the first day of the modified operation) was six. Summer spill

volumes at LGS were met this week and there were no exceedences in TDG waiver limits in the LGS tailrace or Lower Monumental (LMN) forebay. The summer spill operation for LMN is 17 Kcfs, 24-hours per day. Summer spill volumes at LMN were met this week and there were no exceedences in TDG waiver limits in the LMN tailrace or the Ice Harbor (IHR) forebay. There were some periods this week when flows at LMN were sufficiently low that spill of 17 Kcfs was not possible. Spill during these periods was all flows in excess of powerhouse minimum requirements. The summer spill operation for IHR is 45 Kcfs during the day and gas cap spill at night for the remainder of the season. Summer spill volumes at IHR were met this week. However, due to low flows, the 45 Kcfs daytime spill and/or nighttime spill to the gas cap was not possible. Instead, spill during these periods was all flows in excess of powerhouse minimum requirements. There were no exceedences in TDG waiver limits in the IHR tailrace or the McNary (MCN) forebay this week.

Summer spill at McNary (MCN) is 50%, 24-hours per day. This summer spill operation was met this week and there were no exceedences of TDG waiver limits in the MCN tailrace or the John Day (JDA) forebay. The alternating spill operations at JDA ended on July 20th. Since this time, summer spill at JDA is 30% of instantaneous flows. This summer spill operation at JDA has been met this week and there were no exceedences of TDG waivers in the JDA tailrace or The Dalles (TDA) forebay this week. The summer spill operation at TDA is 40%, 24-hours per day. This summer spill operation has been met this week and there were no exceedences of TDG waivers in the TDA tailrace or the Bonneville (BON) forebay this week. Finally, the summer spill operation at BON alternates between 95 Kcfs (24-hours) and 85 Kcfs during the day and 121 Kcfs at night. These two “treatments” will alternate in 2-day blocks through the end of the summer spill season. This summer spill operation has been met this week and TDG in the BON tailrace (at Cascades Island) have remained below the 120% waiver limit. **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 (GBT) monitoring in smolts took place at Little Goose, Lower Monumental, Rock Island, and Bonneville dams this week. Signs of fin GBT were observed in one of the five GBT samples conducted this week (July 20-26). Bonneville observed zero signs of fin GBT in their samples on July 21st and July 24th. Due to high temperatures and generally low TDG levels in the Bonneville forebay, GBT sampling at Bonneville will be reduced from twice-per-week to once-per-week. GBT sampling at Bonneville will occur on Mondays or Tuesdays. This week’s sample (July 24th) at Rock Island had three fish with Rank 1 signs of fin GBT. Rock Island will conduct their second GBT sample for this week today. Sampling for GBT has also been reduced to once-per-week at McNary, due to high temperatures and generally low TDG levels in the forebay. GBT sampling at McNary will also occur on Mondays or Tuesdays. Little Goose and Lower Monumental observed zero signs of fin GBT in their samples on July 23rd and July 24th, respectively. It should be noted that this week’s GBT samples at Little Goose and Lower Monumental did not meet sample size requirements. Furthermore, due to the last several samples not meeting sample the size requirement, GBT sampling at Lower Monumental was terminated for the season after the sample on July 24th. In addition, due to increased temperatures and decreasing fish numbers, GBT sampling at Little Goose may be terminated for the season. The action criteria for interruption of the voluntary spill for fish passage program is defined as either 15% of examined fish showing signs of GBT in their non-paired fins, or 5% of the fish examined showing severe signs of GBT in their non-paired fins. Severe signs of GBT are defined as more than 25% of

the surface area of the fin is occluded by gas bubbles, which corresponds to a rank of 3 or 4. Neither of these action criteria were met this week.

Temperature

Forebay temperatures are now being reported for Lower Granite, Ice Harbor, McNary and Bonneville dams. Currently, forebay temperatures at Bonneville, McNary, and Ice Harbor dams are all approximately 1 to 2 °F higher than their respective 10-year averages for this time of year. The daily average temperature for July 26th was 71.3 °F at Bonneville, 69.9 °F at McNary, and 70.4 °F at Ice Harbor. The current 10-year averages for these three projects are 69.0 °F, 68.0 °F, and 69.5 °F, respectively. The forebay temperature at Lower Granite Dam is slightly higher than the current 10-year average. The daily average temperature for July 26th in the Lower Granite forebay was 66.7 °F and the current 10-year average for that date is 66.0 °F.

Smolt Monitoring

Smolt Monitoring Program (SMP) activities continued at all bypass facilities this week. This week's samples were dominated by subyearling Chinook at all seven SMP bypass facilities.

After the sample on July 25th was completed, SMP staff at Bonneville Dam (BON) implemented the high temperature sampling protocol. Under this protocol, sampling at BON is reduced from every day to every-other-day. The every-other-day sample at BON will remain a 24-hour sample. This high temperature sampling protocol will remain in effect until daily average temperatures in the Bonneville forebay drop below 69.5 °F. This week's samples at Bonneville Dam (BON) were dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 53,300 per day, which is an increase from last week's daily average passage index of about 45,500 per day. However, this increase in daily average passage is largely due to the passage index for July 20th, which was approximately 156,400 subyearling Chinook. Subyearling Chinook passage has decreased at BON since July 20th, with daily passage indices in the 12,000 to 75,000 range. No spring migrants were encountered in this week's samples. Pacific lamprey macrophthalmia were encountered in two of this week's six samples. The only other lamprey juveniles encountered this week were unknown ammocoetes, which were encountered in the sample on July 24th. Unknown ammocoetes are

typically those that are too small to determine whether they are Pacific lamprey ammocoetes or Western Brook lamprey.

After the sample on July 23rd was completed, SMP staff at John Day Dam (JDA) implemented the high temperature sampling protocol. Under this protocol, sampling at JDA is reduced from a 24-hour sample, every-other-day, to a 6-hour sample, twice per week, for condition only. These condition only samples will be conducted on Monday and Thursday and data from these samples will be transmitted to FPC on Tuesday and Friday of each week. This high temperature sampling protocol will remain in effect until daily average temperatures in the John Day forebay drop below 69.5 °F. Since this protocol was implemented after the sample on July 23rd, this week only includes data for two samples at JDA. Subyearling Chinook dominated the two samples at JDA this week. This week's daily average passage index for subyearling Chinook was about 29,400 per day, which is a decrease from last week's daily average passage index of 58,000 per day. No spring migrants that were encountered in this week's sample. Finally, Pacific lamprey macrophthalmia were encountered in one of this week's samples but no ammocoetes were encountered this week.

McNary has been operating under the high temperature sampling protocol since mid-July. Under the high temperature sampling protocol, sampling remains every-other-day but the target sample size is reduced from 300-500 fish per day to approximately 100 fish per day. This protocol will remain in effect until daily average forebay temperatures drop below 68 °F. Subyearling Chinook dominated this week's samples at MCN. This week's daily average passage index for subyearling Chinook was about 29,000 per day, which is a decrease from last week's daily average passage index of about 53,000 per day. No spring migrants were encountered in this week's samples. In addition, no Pacific lamprey macrophthalmia or ammocoetes were encountered this week.

The juvenile bypass system at Lower Granite Dam (LGR) was dewatered for approximately two days last week, which precluded sampling on July 18th and July 19th. Sampling resumed at 1600 on July 19th, which means that the sample for July 20th was a partial sample (i.e., only 15-hours). Therefore, we did not include this sample when estimating the daily average passage

indices for this week's samples. Subyearling Chinook continued to dominate the samples at LGR this week. This week's daily average passage index for subyearling Chinook was about 2,000 per day, which is a decrease over last week's daily average passage index of about 3,600 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 coho and steelhead. Finally, Pacific lamprey macrophthalmia were encountered in two of this week's samples but no Pacific lamprey ammocoetes were encountered this week. When present, daily sample counts for Pacific macrophthalmia were low, ranging from one to three per day.

Similar to recent years, sampling at Little Goose Dam (LGS) began as every-other-day but was increased to every day when transportation started on April 23rd. Subyearling Chinook continued to dominate the samples at LGS this week. This week's daily average passage index for subyearling Chinook was about 1,900 per day, which is a decrease from last week's daily average passage index of about 4,000 per day. Very few spring migrants were encountered in this week's samples. Finally, Pacific lamprey macrophthalmia were encountered in only one of this week's samples and ammocoetes were encountered in two of this week's samples.

Sampling at Lower Monumental Dam (LMN) was every-third-day through April 14th, transitioned to every-other-day through April 23rd, and then transitioned to every day with the start of transportation. This week's samples at LMN were dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 1,300 per day, which is a decrease from last week's daily average passage index of about 3,500 per day. Passage of spring migrants remained low this week. Finally, Pacific lamprey macrophthalmia were encountered in two of this week's samples while no ammocoetes were encountered this week.

Subyearling Chinook continued to dominate the samples at Rock Island Dam (RIS). This week's daily average passage index for subyearling Chinook was about 340 per day, which is a slight decrease from last week's daily average passage index of about 430 per day. Passage of spring migrants was very low this week. No Pacific lamprey macrophthalmia or ammocoetes were encountered in this week's samples.

Hatchery Releases

FPC has not received preliminary data from some hatcheries as of 07/27/18, therefore, this hatchery release schedule represents the most up to date accounting that are available, but should not be considered a finalized record of hatchery releases.

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. In the past week there were no scheduled releases into this zone, nor are there any scheduled for the next two.

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. In the past week there were no scheduled releases into this zone, nor are there any scheduled for the next two.

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). In the past week there were no scheduled releases into this zone, nor are there any scheduled for the next two.

Lower Columbia Zone:

The Lower Columbia Zone is defined as the Columbia River and its tributaries below Bonneville Dam. In the past week there were no scheduled releases into this zone, in the next two weeks, there is one scheduled release of 1 million subyearling fall Chinook into Youngs Bay near the mouth of the Columbia River on July 28th.

Adult Passage

Daily passage numbers at Bonneville Dam ranged between 286 and 448 adult summer Chinook in the last week. The 2018 summer Chinook count of 59,683 is about 69.4% of the 2017 count and 60.5% of the 10-year average. The 2018 summer Chinook jack count of 4,154 is about 40% of the 2017 count and 19.7% of the 10-year average count. At Willamette Falls, 24,446 adult spring Chinook have been counted so far this year. In 2017, 33,889 adult spring Chinook were counted at Willamette Falls. This year's count is

about 72.1% of the 2017 count and 69.6% of the 10-year average count of 35,123. As of July 26th, a total of 40,646 adult summer Chinook have been counted at McNary Dam and 6,834 have been counted at Lower Granite Dam. The 2018 McNary Dam adult summer Chinook count is about 74.3% of the 2017 count and 60.9% the 10-year average count. The 2018 Lower Granite Dam adult summer Chinook count is about 81.8% of the 2017 count and 42% of the 10-year average count.

The 2018 Bonneville Dam adult steelhead count of 28,347 is about 1.7 times greater than the 2017 count of 16,940, while being 37.6% of the 10-year average count of 75,380. The 2018 Bonneville Dam adult unclipped steelhead count of 13,311 is about 1.5 times greater than the 2017 count of 8,504, while being 37.5% of the 10-year average count of 35,496. This year's Lower Granite steelhead count of 5,448 is about 72.4% of the 2017 count of 7,521 and 48.6% of the 10-year average count of 11,200. The 2018 Lower Granite Dam adult unclipped steelhead count of 1,775 has 1,417 fewer fish than the 2017 count of 3,192 and has 2,929 fewer fish than the 10-year average count of 4,704. At Willamette Falls, the 2018 count for steelhead was 10,435 as of July 22nd. This year's steelhead count is about 4 times greater than the 2017 count of 2,662, while being about 52.3% of the 10-year average count of 19,962.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 177 and 421 last week. The 2018 adult sockeye count at Bonneville Dam of 193,038 is about 2.2 times greater than the 2017 count, while being about 60.2% of the 10-year average count. A total of 33,886 lampreys have been counted at Bonneville Dam so far this year. The Bonneville 2018 lamprey count is about 52.6% of the 2017 count of 68,147, while being about 1.7 times greater than the 10-year average count of 21,419.

Hatchery Releases Last Two Weeks

Hatchery Release Summary
From: 7/14/2018 to 07/27/18

Agency Hatchery Species Race MigYr NumRel RelStart RelEnd RelSite RelRiver Zone

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

Hatchery Releases Next Two Weeks

Hatchery Release Summary
From: 7/28/2018 to 8/10/2018

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CH0	FA	2018	1,000,000	07-28-18	07-28-18	Youngs Bay	Youngs River	LCOL
Oregon Dept. of Fish and Wildlife Total					1,000,000					
Grand Total					1,000,000					

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
07/13/2018	126.4	0.2	130.5	0.0	136.7	11.5	136.7	14.9	143.9	26.5	140.9	19.2	137.4	19.7
07/14/2018	119.2	0.1	117.1	0.0	127.0	9.9	129.7	9.2	138.0	22.6	137.2	20.3	132.5	19.6
07/15/2018	118.3	0.2	119.0	0.0	122.8	17.6	117.8	9.1	123.2	22.6	128.1	19.7	125.2	19.5
07/16/2018	122.0	0.1	126.0	0.0	130.9	10.9	131.7	12.3	141.3	26.1	144.8	26.9	142.1	25.5
07/17/2018	132.5	0.1	128.1	0.0	137.4	10.0	130.7	11.9	136.9	25.3	144.1	20.1	140.3	19.3
07/18/2018	120.1	0.2	118.4	0.0	119.6	10.5	115.7	12.3	120.8	26.9	134.1	20.2	134.1	12.6
07/19/2018	112.5	0.1	113.6	0.0	115.0	10.4	115.1	11.6	120.2	26.6	128.7	19.5	124.1	13.6
07/20/2018	126.4	0.1	131.7	0.0	135.3	14.9	128.5	12.2	133.3	27.2	134.2	19.7	128.3	18.1
07/21/2018	115.8	0.1	112.0	0.0	117.2	13.3	118.9	9.0	126.9	23.5	138.7	19.9	134.8	19.0
07/22/2018	121.7	0.1	123.9	0.0	126.4	20.4	117.9	9.3	123.0	22.0	110.3	21.6	105.2	23.1
07/23/2018	120.0	0.2	123.4	0.0	138.7	10.2	138.1	13.3	144.8	26.4	150.7	33.5	148.2	34.7
07/24/2018	119.7	0.0	114.8	0.0	112.6	12.7	114.5	12.2	118.9	25.7	140.8	28.4	140.2	23.6
07/25/2018	123.2	0.1	113.9	0.0	111.1	13.0	119.0	12.2	122.4	26.6	136.4	22.4	131.9	19.1
07/26/2018	121.0	0.1	126.7	0.0	133.2	15.7	122.8	12.3	127.9	26.4	126.2	18.7	123.0	20.4

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
07/13/2018	12.8	3.1	---	---	41.4	17.7	39.1	11.8	40.2	16.3	43.5	28.9
07/14/2018	12.6	3.0	---	---	40.2	17.8	39.1	11.8	38.6	15.5	41.2	31.1
07/15/2018	12.8	3.2	---	---	38.5	17.7	37.5	11.3	39.1	16.6	40.8	30.9
07/16/2018	12.8	3.2	---	---	39.1	17.7	37.9	11.4	38.3	16.9	39.6	29.9
07/17/2018	12.9	3.2	---	---	42.0	17.8	40.8	12.3	41.9	16.3	43.8	34.0
07/18/2018	12.9	3.2	---	---	37.8	17.8	37.5	11.3	38.0	16.9	40.4	30.3
07/19/2018	8.9	1.9	---	---	36.6	17.8	35.9	10.7	35.4	16.6	37.7	28.0
07/20/2018	10.6	1.0	---	---	34.6	17.7	32.7	9.8	32.4	17.1	36.2	26.2
07/21/2018	10.6	0.9	---	---	32.3	17.7	31.4	9.4	32.1	16.6	33.3	23.3
07/22/2018	11.8	2.1	---	---	30.5	17.7	29.1	10.3	30.5	17.1	33.2	23.3
07/23/2018	13.0	3.2	---	---	32.4	17.8	31.8	11.1	33.6	16.6	35.1	25.2
07/24/2018	7.4	2.2	---	---	33.7	16.2	33.1	11.1	34.6	17.1	35.2	25.6
07/25/2018	12.9	3.1	---	---	34.4	15.6	35.3	10.7	35.3	14.2	36.8	26.8
07/26/2018	12.0	3.9	---	---	33.0	17.3	31.9	9.5	32.5	16.0	35.1	24.9

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
07/13/2018	180.5	90.3	162.3	48.9	148.7	59.7	166.8	94.7	0.0	59.7
07/14/2018	180.2	90.3	182.7	57.2	170.4	67.9	182.8	100.4	0.0	70.0
07/15/2018	184.6	92.4	165.3	66.5	148.1	59.3	175.3	95.2	0.0	67.7
07/16/2018	200.5	100.4	199.5	77.4	182.0	73.1	193.1	89.7	7.0	84.0
07/17/2018	185.1	92.8	175.4	52.8	162.1	64.9	186.3	94.5	5.8	73.6
07/18/2018	182.1	91.3	166.5	52.6	154.0	61.0	167.4	100.0	0.0	55.0
07/19/2018	184.9	92.5	170.9	68.2	158.4	62.6	177.0	95.9	0.0	68.7
07/20/2018	172.7	86.5	159.2	61.3	142.3	56.9	148.6	90.4	0.0	45.8
07/21/2018	174.0	87.3	178.8	53.6	167.9	67.0	180.9	94.7	0.0	73.8
07/22/2018	160.9	80.7	138.9	41.5	125.6	50.5	154.9	99.0	0.0	43.5
07/23/2018	171.7	86.2	171.9	51.1	162.5	64.6	167.7	93.7	11.6	50.0
07/24/2018	200.0	100.4	191.8	57.9	177.7	71.2	191.1	90.1	28.0	60.6
07/25/2018	167.3	84.3	151.5	45.6	140.9	56.3	168.2	94.5	8.3	53.0
07/26/2018	174.0	87.1	168.6	50.6	150.2	60.2	165.9	100.4	5.2	48.0

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
Lower Granite Dam											
Little Goose Dam											
	07/16/18	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/23/18	Chinook + Steelhead	80*	0	0			0	0	0	0
Lower Monumental Dam											
	07/18/18	Chinook + Steelhead	91*	0	0			0	0	0	0
	07/25/18	Chinook + Steelhead	33*	0	0			0	0	0	0
McNary Dam											
	07/15/18	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/17/18	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/19/18	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
Bonneville Dam											
	07/14/18	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/17/18	Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
	07/21/18	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/24/18	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
Rock Island Dam											
	07/17/18	Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
	07/19/18	Chinook + Steelhead	100	7	7	7.00%	0.00%	7	0	0	0
	07/24/18	Chinook + Steelhead	100	3	3	3.00%	0.00%	3	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.

FISH PASSAGE CENTER

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

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Total Dissolved Gas Data at Upper Columbia Sites

Date	Hungry H. Dnst				Boundary				Grand Coulee				Grand C. Tlwr				Chief Joseph				Chief J. Dnst				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
07/13									109.8	110.1	110.5	24	110.3	110.8	111.7	24	110.7	111.2	111.6	24	110.2	110.8	111.4	24	07/13
07/14									109.4	110.2	109.9	24	109.9	110.4	111.1	24	109.3	110.6	109.7	24	109.0	110.0	110.0	24	07/14
07/15									109.3	109.5	109.7	24	109.7	110.2	111.1	24	109.2	109.7	110.1	24	108.7	109.4	110.0	24	07/15
07/16									109.5	109.8	110.1	24	109.3	109.6	110.9	24	109.6	110.3	110.9	24	109.2	110.0	110.4	24	07/16
07/17									110.0	110.2	110.4	24	109.3	109.5	110.5	24	110.0	110.6	111.0	24	109.5	110.1	110.6	24	07/17
07/18									109.5	110.3	110.4	24	109.6	110.0	110.8	24	109.5	110.3	110.0	24	111.7	114.5	125.5	24	07/18
07/19									109.6	109.9	110.1	24	109.8	110.1	110.8	24	109.2	109.6	110.0	24	119.0	131.7	138.7	24	07/19
07/20									109.2	109.8	109.7	24	109.1	109.5	110.3	24	108.8	109.3	109.8	24	108.5	109.1	109.4	24	07/20
07/21									109.1	109.5	109.5	24	108.8	109.3	109.9	24	108.6	109.2	109.4	24	108.3	109.1	109.5	24	07/21
07/22									108.6	109.0	108.9	24	108.1	108.4	108.6	24	108.2	108.9	108.8	24	107.7	108.5	108.4	24	07/22
07/23									108.6	108.8	109.1	24	108.0	108.4	109.7	24	108.6	109.3	109.8	24	108.4	108.8	109.2	24	07/23
07/24									108.8	109.0	109.2	24	108.2	108.5	110.4	24	108.8	109.3	109.8	24	108.4	108.9	109.2	24	07/24
07/25									108.2	108.7	108.7	24	108.0	108.7	111.0	24	108.5	109.2	109.3	24	108.0	108.7	108.7	24	07/25
07/26									108.3	108.5	108.8	22	107.7	108.2	109.4	22	108.3	108.8	109.0	22	107.8	108.3	108.6	22	07/26

Total Dissolved Gas Data at Upper Columbia Sites

Date	Wells				Wells Dwnstrm				Rocky Reach				Rocky R. Tlwr				Rock Island				Rock I. Tlwr				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
07/13	111.2	111.8	112.6	24	112.9	113.6	115.3	24	114.1	114.5	114.8	24	116.0	117.1	117.8	21	113.1	114.7	115.1	21	116.8	118.2	118.5	20	07/13
07/14	110.1	111.3	111.2	24	112.0	113.7	114.3	24	112.1	114.3	113.4	24	114.6	117.0	116.1	22	112.7	114.7	114.2	23	116.9	118.3	118.3	22	07/14
07/15	110.3	111.3	111.8	24	113.3	115.8	120.1	24	112.0	112.6	112.9	23	114.2	115.5	115.8	20	111.7	112.6	113.0	23	116.4	116.8	117.1	18	07/15
07/16	110.4	111.0	111.5	24	112.1	116.1	116.1	24	111.9	112.6	112.4	23	115.1	115.8	116.1	18	112.2	112.7	113.3	21	116.9	117.5	117.9	19	07/16
07/17	110.9	111.6	112.2	24	112.0	112.8	113.3	24	113.9	115.0	115.9	24	115.7	116.7	117.5	22	112.7	114.5	116.2	23	117.4	118.5	119.5	21	07/17
07/18	110.6	111.2	111.6	24	112.0	112.5	113.1	24	111.4	114.1	112.7	24	114.4	116.2	115.4	21	112.0	114.8	114.0	24	117.0	118.9	118.4	20	07/18
07/19	109.8	110.5	111.3	24	111.1	112.0	112.5	24	111.1	111.2	111.7	22	113.8	114.5	114.9	19	110.7	111.6	112.2	20	115.8	116.9	116.8	19	07/19
07/20	108.7	109.6	109.9	24	111.2	112.6	113.7	24	110.3	111.2	111.1	23	114.0	114.5	114.7	20	110.2	111.4	111.8	23	115.4	116.6	116.6	20	07/20
07/21	108.8	109.5	109.9	24	110.8	111.8	114.3	24	109.5	110.1	110.2	24	112.9	114.2	114.2	23	109.8	111.0	110.6	24	114.9	116.2	116.0	21	07/21
07/22	108.7	109.6	110.4	24	112.1	113.5	115.8	24	110.1	110.3	110.5	24	112.8	114.1	114.4	20	109.7	110.8	112.0	21	114.9	115.4	116.4	20	07/22
07/23	109.3	109.8	110.2	23	110.8	113.4	112.0	23	111.2	112.1	112.7	23	114.3	115.1	115.7	20	110.8	111.9	112.8	20	115.8	117.1	117.6	20	07/23
07/24	109.7	110.5	111.2	24	111.8	113.1	114.2	24	113.0	113.3	113.9	24	114.7	115.4	116.5	22	112.5	113.4	114.2	24	116.8	117.2	117.6	22	07/24
07/25	109.6	110.5	111.3	24	112.1	113.4	116.5	24	110.8	112.8	111.6	23	114.2	115.3	115.8	22	111.6	113.4	113.0	24	116.3	117.3	117.3	21	07/25
07/26	109.4	110.1	110.3	21	112.0	113.4	119.6	21	111.7	112.3	112.6	22	114.9	116.0	116.4	22	111.4	112.6	113.5	22	115.9	116.8	117.6	18	07/26

FISH PASSAGE CENTER

**Total Dissolved Gas Saturation(%) - Average of
12 Highest Hours, 24 Hours Average and 24 Hours High
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Total Dissolved Gas Data at Upper and Mid-Columbia Sites

Date	Wanapum				Wanapum Tlwr				Priest Rapids				Priest R. Dnstr				Pasco				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
07/13	114.3	114.9	116.1	24	114.1	114.4	114.8	24	113.0	113.3	114.1	24	112.2	112.4	112.6	24					07/13
07/14	112.0	114.8	113.4	24	113.4	114.4	114.6	24	111.7	113.3	112.7	24	111.1	112.4	111.8	24					07/14
07/15	113.2	114.2	115.1	24	113.9	114.2	114.5	24	112.2	112.5	113.0	24	111.3	111.5	111.7	24					07/15
07/16	114.4	115.5	116.0	24	114.7	114.9	115.6	24	113.5	114.1	114.5	24	112.9	113.3	114.1	24					07/16
07/17	114.1	115.5	116.2	24	114.3	114.8	114.9	24	113.5	114.3	114.7	24	112.5	113.0	112.8	24					07/17
07/18	111.6	114.4	114.2	24	113.1	114.3	113.8	24	112.1	113.6	116.5	24	111.2	112.5	111.8	8					07/18
07/19	111.3	112.1	112.5	24	112.7	113.5	113.8	24	110.9	111.5	112.4	24				0					07/19
07/20	110.1	111.8	112.5	24	112.0	113.1	113.2	24	108.9	111.3	110.6	24				0					07/20
07/21	110.5	111.4	113.2	24	112.1	112.6	113.4	24	109.5	110.1	111.0	24				0					07/21
07/22	111.8	113.4	113.9	24	113.6	113.9	115.1	24	110.5	111.2	112.1	24				0					07/22
07/23	113.6	114.4	115.1	24	113.9	114.4	116.5	24	113.3	113.4	113.7	24				0					07/23
07/24	114.1	115.3	117.1	24	113.9	114.6	115.9	24	113.0	113.5	113.5	24	112.5	112.6	112.6	2					07/24
07/25	114.0	115.9	117.7	24	113.4	114.2	114.0	24	112.8	113.2	113.3	24	112.4	112.6	112.8	24					07/25
07/26	114.3	115.7	117.0	24	114.0	114.5	114.8	24	112.4	112.9	113.2	24	112.3	112.6	113.0	24					07/26

Total Dissolved Gas Data at Snake and Clearwater Sites

Date	Dworshak				Clrwr Peck				Anatone				Clrwr-Lewiston				Lower Granite				Lower G. Tlwr				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
07/13	109.0	109.2	110.2	24	108.1	109.0	109.8	24	103.2	104.7	106.1	24	106.7	109.5	111.4	24	103.3	103.4	103.6	24	115.6	115.8	116.4	24	07/13
07/14	108.6	109.0	109.2	24	107.8	108.8	109.6	24	102.7	104.2	105.4	24	106.4	109.1	111.0	24	103.1	103.5	103.7	24	115.2	115.8	116.0	24	07/14
07/15	108.9	109.4	109.6	24	108.1	109.2	110.0	24	102.5	104.0	105.4	24	106.1	108.8	110.4	24	103.4	103.7	103.9	24	115.3	115.6	116.5	24	07/15
07/16	109.0	109.2	109.5	24	107.8	108.8	109.3	24	102.1	103.5	104.5	24	105.5	108.2	109.8	24	104.8	105.4	105.8	24	115.2	115.6	116.6	24	07/16
07/17	109.1	109.4	109.7	24	108.1	109.2	110.1	24	102.6	104.2	105.5	24	106.4	109.2	111.1	24	105.4	105.6	105.9	24	115.5	115.9	116.7	24	07/17
07/18	109.0	109.3	109.6	24	108.1	109.2	110.0	24	102.3	103.8	105.0	24	106.3	108.9	110.7	24	104.1	105.6	105.0	24	115.3	115.7	116.4	24	07/18
07/19	107.0	109.1	110.0	24	107.0	108.7	110.3	24	102.4	103.8	105.1	24	106.3	109.2	111.4	24	102.9	103.8	103.3	24	115.1	115.5	116.6	24	07/19
07/20	102.4	105.3	103.1	24	103.9	106.9	105.9	24	101.9	103.3	104.4	24	104.7	108.4	108.8	24	102.9	103.1	103.2	24	115.6	115.9	116.5	24	07/20
07/21	102.1	102.5	102.8	24	103.5	104.8	105.6	24	101.5	102.9	104.2	24	104.1	106.6	108.5	24	102.9	103.1	103.3	24	115.7	115.9	116.8	24	07/21
07/22	105.1	108.8	109.2	24	105.0	107.8	109.4	24	101.7	103.3	104.7	24	104.0	106.6	108.3	24	103.4	103.4	103.6	24	116.1	116.4	116.6	24	07/22
07/23	108.8	109.2	109.5	24	107.9	109.1	109.9	24	102.2	103.8	105.2	24	105.9	108.5	110.2	24	103.0	103.4	103.4	24	115.8	116.2	116.3	24	07/23
07/24	110.1	113.5	124.5	24	107.5	109.9	112.7	24	102.2	103.6	104.9	24	106.1	108.7	110.7	24	102.3	103.1	102.6	24	115.1	116.0	116.3	24	07/24
07/25	108.3	108.9	109.3	24	107.2	108.7	109.6	24	102.1	103.6	105.1	24	105.1	108.2	109.8	24	101.0	102.1	101.6	24	114.0	114.9	116.1	24	07/25
07/26	111.7	115.2	124.2	23	109.7	112.8	117.5	23	102.3	103.8	105.2	23	106.0	108.5	110.1	23	101.3	101.9	102.5	23	115.3	115.4	116.6	23	07/26

FISH PASSAGE CENTER

**Total Dissolved Gas Saturation(%) - Average of
12 Highest Hours, 24 Hours Average and 24 Hours High
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Total Dissolved Gas Data at Lower Snake Sites

Date	Little Goose				L. Goose Tlwr				Lower Mon.				Lwr. Mon. Tlwr				Ice Harbor				Tlwr Ice Harbor				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
07/13	109.7	110.2	110.9	24	113.2	113.4	113.6	24	111.8	112.2	113.0	24	116.2	116.7	117.3	24	112.4	113.1	113.6	24	111.5	112.5	113.0	24	07/13
07/14	109.9	110.3	110.7	24	112.9	113.3	113.4	24	112.2	112.4	113.0	24	116.0	117.1	117.7	24	113.5	114.1	114.2	24	111.1	112.2	112.7	24	07/14
07/15	112.1	113.1	113.6	24	113.6	114.0	114.3	24	113.1	113.4	113.9	24	116.4	116.9	117.5	24	114.7	115.5	116.0	24	112.4	113.4	114.0	24	07/15
07/16	112.7	113.0	113.7	24	113.2	113.9	113.7	24	112.9	113.5	113.3	24	116.5	117.1	117.6	24	114.3	115.6	115.3	24	111.7	113.2	112.7	24	07/16
07/17	112.7	113.2	114.1	24	113.2	113.5	113.7	24	112.5	113.1	113.7	24	116.2	116.9	117.0	24	113.8	114.3	114.2	24	111.7	112.4	113.3	24	07/17
07/18	111.8	113.0	112.3	24	112.8	113.5	113.1	24	113.3	113.8	117.1	24	116.6	117.1	117.6	24	113.4	113.9	113.7	24	112.0	112.8	113.4	24	07/18
07/19	110.5	111.7	111.4	24	114.2	115.7	123.0	24	112.6	113.5	113.1	24	114.9	117.1	116.5	24	112.4	113.3	113.2	24	112.2	112.9	113.3	24	07/19
07/20	109.4	110.6	110.2	24	113.6	115.7	114.2	24	111.0	112.5	111.8	24	114.8	115.6	116.5	24	111.2	112.2	112.3	24	112.0	112.9	113.9	24	07/20
07/21	108.8	109.6	109.4	24	113.9	114.2	114.4	24	110.1	110.9	110.7	24	116.2	116.5	117.2	24	110.4	110.8	111.1	24	111.6	112.4	112.9	24	07/21
07/22	108.6	108.9	109.1	24	114.2	114.8	115.3	24	109.4	110.0	109.8	24	116.4	116.8	117.1	24	110.5	110.6	110.9	24	111.3	111.9	112.5	24	07/22
07/23	109.3	109.4	109.7	24	114.4	114.7	115.1	24	109.6	109.9	110.3	24	115.8	116.5	117.0	24	110.3	110.7	111.2	24	111.6	112.5	113.2	24	07/23
07/24	109.7	109.9	110.2	24	114.3	114.5	114.9	24	110.1	110.4	111.8	24	116.1	116.5	117.2	24	110.6	110.8	111.1	24	111.8	112.5	113.3	24	07/24
07/25	109.6	109.9	110.5	24	114.0	114.5	115.0	24	110.6	111.0	111.8	24	114.9	116.3	116.8	24	112.1	113.1	114.1	23	111.9	112.6	112.8	20	07/25
07/26	109.9	110.0	110.7	23	112.1	113.9	114.0	23	112.1	112.3	112.8	23	117.6	118.8	120.5	23	114.6	114.9	115.4	23	112.8	113.1	113.6	23	07/26

Total Dissolved Gas Data at Mid-Columbia Sites

Date	McNary-Wash.				Tlwr McNary				John Day				Tlwr John Day				The Dalles				Dnstr T. Dalles				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
07/13	110.5	111.1	111.6	24	115.1	116.2	116.5	24	108.0	108.2	108.7	24	114.4	115.6	115.3	24	111.6	112.2	112.3	24	115.3	116.3	116.0	24	07/13
07/14	109.8	110.8	110.8	24	115.0	116.2	116.5	24	107.2	108.2	108.0	24	114.2	114.7	115.3	24	108.4	111.0	109.9	24	113.8	115.2	114.4	24	07/14
07/15	110.2	110.8	112.2	24	115.3	116.1	116.4	24	108.0	108.5	110.1	24	112.9	113.7	113.8	24	110.7	110.9	111.2	24	114.8	115.6	116.0	24	07/15
07/16	110.3	111.1	112.1	24	115.9	117.5	118.3	24	110.4	111.2	112.3	24	115.4	116.8	118.2	24	111.6	111.7	111.9	24	115.8	116.7	117.8	24	07/16
07/17	109.9	111.1	110.5	24	115.3	117.0	118.1	24	110.9	111.4	111.6	24	114.9	116.8	116.3	24	111.2	111.8	112.1	24	115.3	116.6	116.7	24	07/17
07/18	109.1	110.0	109.6	24	115.6	116.9	116.8	24	109.2	110.8	110.2	24	114.9	115.2	115.7	24	108.0	110.3	109.1	24	113.1	115.8	114.0	24	07/18
07/19	108.3	109.1	109.1	24	115.6	116.2	116.4	24	107.3	108.9	108.0	24	113.6	114.9	114.6	24	106.6	107.5	106.9	24	112.1	113.1	112.6	24	07/19
07/20	106.4	107.8	107.5	24	114.5	115.6	116.1	24	105.9	107.2	106.4	24	113.7	114.0	114.8	24	105.9	106.6	106.2	24	111.6	112.1	112.5	24	07/20
07/21	107.0	107.8	108.5	24	115.1	115.7	115.7	24	105.1	106.0	105.7	24	114.1	115.0	115.2	24	106.9	107.4	107.7	24	112.3	112.9	113.2	24	07/21
07/22	106.3	106.9	107.7	24	114.4	115.0	115.5	24	104.2	105.0	104.8	24	113.6	114.2	114.6	24	107.5	107.6	107.8	24	112.7	113.7	114.1	24	07/22
07/23	107.2	107.9	108.8	24	115.0	116.5	117.0	24	104.8	104.8	105.3	24	113.3	114.1	114.8	24	108.7	109.3	109.9	24	113.8	115.2	116.1	24	07/23
07/24	107.8	108.3	109.4	24	115.9	117.4	118.7	24	104.6	105.0	105.5	24	113.6	114.3	114.6	24	108.2	109.3	109.4	24	113.8	115.3	115.2	24	07/24
07/25	108.6	108.8	109.3	24	114.5	116.7	116.0	24	105.0	105.6	106.2	24	113.4	114.4	114.8	24	107.4	107.6	107.8	24	113.2	114.3	114.4	24	07/25
07/26	110.1	111.1	111.7	22	115.4	115.9	117.0	22	106.0	107.2	108.0	22	114.2	115.1	115.6	22	107.9	108.2	108.5	22	113.5	114.4	114.8	22	07/26

FISH PASSAGE CENTER

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

[INTERNAL PURPOSES ONLY]

Date 7/27/2018 8:15:10 AM

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Total Dissolved Gas Data at Mid-Columbia Sites

Date	Bonneville				Warrendale				Camas\Washug.				Cascade Isl.				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
07/13	114.2	114.5	114.8	24	117.2	117.6	118.6	24	115.3	117.0	118.4	24	115.5	116.5	117.4	24	07/13
07/14	111.8	113.9	113.2	24	117.3	118.0	118.5	24	115.4	117.3	118.7	24	116.9	116.9	117.1	24	07/14
07/15	112.3	113.1	113.4	24	116.7	117.5	118.1	24	115.2	117.6	116.9	24	116.7	116.9	117.0	24	07/15
07/16	113.5	114.0	114.2	24	116.3	117.4	117.0	24	115.4	116.8	117.9	24	115.7	116.7	117.9	24	07/16
07/17	112.1	113.5	112.9	24	116.2	117.0	117.7	24	114.4	116.8	117.3	24	115.7	116.5	117.9	24	07/17
07/18	109.0	111.4	110.2	24	115.8	116.3	117.1	24	112.2	115.6	115.3	24	116.4	116.7	117.6	24	07/18
07/19	106.1	108.4	106.8	24	114.0	115.5	114.5	24	110.8	113.9	113.1	24	116.2	116.3	116.5	24	07/19
07/20	104.8	106.1	105.2	24	114.6	115.2	115.6	24	110.1	111.7	113.0	24	114.8	116.2	116.6	24	07/20
07/21	104.6	105.0	105.4	24	114.1	115.2	116.6	24	111.7	113.1	114.8	24	115.0	115.6	116.8	24	07/21
07/22	106.6	107.6	108.3	24	116.7	117.1	117.9	24	111.9	114.7	116.5	24	117.0	117.1	117.3	24	07/22
07/23	110.4	111.9	112.8	24	116.7	117.4	117.7	24	115.4	117.2	118.1	24	116.9	117.2	117.4	24	07/23
07/24	111.6	112.1	112.2	24	115.3	116.8	116.1	24	115.0	117.3	116.5	24	115.5	116.6	117.8	24	07/24
07/25	111.2	111.8	112.2	24	116.0	116.1	116.7	24	114.0	115.7	116.8	24	115.4	116.4	117.8	24	07/25
07/26	110.4	111.6	111.5	22	117.1	117.6	118.2	22	115.0	117.2	118.9	22	116.5	116.8	117.1	22	07/26

Hours used in calculating values:

24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
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FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

Date 7/27/2018 9:17:06 AM

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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)
07/13/2018		0			0	0	0	0		0	0
07/14/2018					0	0	0	0	0		0
07/15/2018					0	0	19	0		151	0
07/16/2018					0	0	0	0	0		0
07/17/2018					0	0	0	0		0	0
07/18/2018						0	72	0	0		0
07/19/2018						0	0	0		0	0
07/20/2018					0	0	0	0	0		0
07/21/2018					0	0	0	0		0	0
07/22/2018					0	0	0	0	0		0
07/23/2018					0	0	0	0		0	0
07/24/2018					0	0	0	0	0		0
07/25/2018					0	0	0	0			0
07/26/2018					0	0	7	0	0		
07/27/2018											
Total:	0	0	0	0	0	0	98	0	0	151	0
# Days:	0	1	0	0	12	14	14	14	7	6	13
Average:	0	0	0	0	0	0	7	0	0	25	0
YTD:	23,452	41,213	21,824	12,792	4,639,013	2,838,048	2,045,317	49,702	1,494,206	1,257,455	1,890,717

Number of hours sampled:

- No data available or no sample conducted

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

Date 7/27/2018 9:17:06 AM

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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)
07/13/2018		0			4,530	3,484	1,943	488		42,916	26,370
07/14/2018					5,568	3,520	1,603	498	42,741		28,522
07/15/2018					1,918	2,265	1,847	425		80,543	39,704
07/16/2018					1,523	3,457	5,419	387	37,650		39,786
07/17/2018					4,352	4,278	5,523	420		36,589	80,511
07/18/2018						7,349	5,031	413	78,831		63,426
07/19/2018						3,799	3,018	380		72,034	40,017
07/20/2018					415	2,793	3,280	479	47,114		156,367
07/21/2018					575	1,731	959	434		38,546	19,795
07/22/2018					1,991	1,076	972	270	22,740		74,758
07/23/2018					1,500	1,283	553	240		20,188	12,168
07/24/2018					4,253	1,363	875	507	19,369		27,600
07/25/2018					2,491	2,756	632	232			29,057
07/26/2018					1,489	2,177	1,893	192	26,094		
07/27/2018											
Total:	0	0	0	0	30,605	41,331	33,548	5,365	274,539	290,816	638,081
# Days:	0	1	0	0	12	14	14	14	7	6	13
Average:	0	0	0	0	2,550	2,952	2,396	383	39,220	48,469	49,083
YTD:	0	6	89	192	839,536	922,269	502,723	33,991	2,251,636	1,060,839	2,814,074

Number of hours sampled:

- No data available or no sample conducted

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

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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)
07/13/2018		0			0	0	0	3		0	0
07/14/2018					0	0	0	1	411		0
07/15/2018					0	0	0	3		303	0
07/16/2018					0	0	0	0	0		0
07/17/2018					9	0	0	0		0	154
07/18/2018						0	0	4	0		0
07/19/2018						0	0	2		0	0
07/20/2018					0	0	0	0	0		0
07/21/2018					0	14	0	4		0	0
07/22/2018					5	14	0	3	0		0
07/23/2018					0	0	0	1		0	0
07/24/2018					0	0	0	3	0		0
07/25/2018					7	0	0	0			0
07/26/2018					0	0	0	2	0		
07/27/2018											
Total:	0	0	0	0	21	28	0	26	411	303	154
# Days:	0	1	0	0	12	14	14	14	7	6	13
Average:	0	0	0	0	2	2	0	2	59	51	12
YTD:	0	0	1,224	1,365	262,500	215,247	42,470	44,199	226,511	120,093	477,464

Number of hours sampled:

- No data available or no sample conducted

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

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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)
07/13/2018		1			0	0	51	4		0	0
07/14/2018					0	14	0	0	0		0
07/15/2018					18	14	0	0		0	0
07/16/2018					0	29	51	3	2		0
07/17/2018					0	14	0	4		0	0
07/18/2018						29	0	3	0		0
07/19/2018						0	0	3		0	0
07/20/2018					0	0	0	0	0		0
07/21/2018					10	0	0	1		0	0
07/22/2018					0	0	12	1	0		0
07/23/2018					0	0	0	0		0	0
07/24/2018					0	0	10	0	0		0
07/25/2018					0	0	9	0			0
07/26/2018					0	7	7	0	0		
07/27/2018											
Total:	0	1	0	0	28	107	140	19	2	0	0
# Days:	0	1	0	0	12	14	14	14	7	6	13
Average:	0	1	0	0	2	8	10	1	0	0	0
YTD:	723	27,448	3,888	5,328	3,924,731	3,004,274	1,942,797	24,913	240,968	681,267	356,557

Number of hours sampled:

- No data available or no sample conducted

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

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COMBINED SOCKEYE

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (Index)	LGS (Index)	LMN (Index)	RIS (Index)	MCN (Index)	JDA (Index)	BO2 (Index)
07/13/2018		0			0	0	0	0		0	0
07/14/2018					0	0	0	0	0		0
07/15/2018					0	0	0	0		0	0
07/16/2018					0	0	0	1	0		0
07/17/2018					0	0	0	0		0	0
07/18/2018						0	0	0	0		0
07/19/2018						0	0	0		0	0
07/20/2018					0	0	0	0	0		0
07/21/2018					0	0	0	0		0	0
07/22/2018					0	14	0	0	0		0
07/23/2018					0	0	0	0		0	0
07/24/2018					0	0	0	2	0		0
07/25/2018					0	0	9	0			0
07/26/2018					0	0	0	2	0		
07/27/2018											
Total:	0	0	0	0	0	14	9	5	0	0	0
# Days:	0	0	0	0	0	1	1	0	0	0	0
Average:	0	0	0	0	0	1	1	0	0	0	0
YTD:	0	0	4	115	260,629	120,859	58,625	76,229	1,527,701	383,702	741,292

Number of hours sampled:

- No data available or no sample conducted

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

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COMBINED LAMPREY JUVENILES

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR* (Sample)	LGS (Coll)	LMN (Coll)	RIS (Coll)	MCN (Coll)	JDA (Coll)	BO2 (Coll)
07/13/2018		0			1	20	0	0		0	0
07/14/2018					1	0	0	0	0		0
07/15/2018					0	10	10	0		100	5
07/16/2018					1	0	10	1	0		0
07/17/2018					3	0	0	2		100	67
07/18/2018						0	0	1	0		5
07/19/2018						20	0	0		100	0
07/20/2018					0	0	0	0	0		143
07/21/2018					0	0	0	0		300	0
07/22/2018					0	0	0	0	0		0
07/23/2018					0	5	0	0		0	0
07/24/2018					0	8	0	0	0		50
07/25/2018					3	8	10	0			100
07/26/2018					1	0	4	0	0		
07/27/2018											
Total:	0	0	0	0	10	71	34	4	0	600	370
# Days:	0	1	0	0	12	15	14	15	7	6	13
Average:	0	0	0	0	1	5	2	0	0	100	28
YTD:		1	3		450	35,750	56,784	368	219,162	227,728	27,260

- No data available or no sample conducted

- 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.

Number of hours sampled:

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

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Smolt Monitoring Program Sites and Agency Collaborations:

- 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
- LGS (Index) - Little Goose Bypass Collection System : Passage Index Counts
- LMN (Index) - Lower Monumental Dam Bypass Collection System : Passage Index Counts
- RIS (Index) - Rock Island Dam Second Powerhouse Bypass Trap : Passage Index Counts
- MCN (Index) - McNary Dam Bypass Collection System : Passage Index Counts
- JDA (Index) - John Day Dam Bypass Collection System : Passage Index Counts
- BO2 (Index) - Bonneville Dam Second Powerhouse Bypass Collection System : Passage Index Counts

- No data available or no sample conducted

Number of hours sampled:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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Important Information About this Report:

- For clip information see: <http://www.fpc.org/currentdaily/smpcomments.htm>
- 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. Equations for passage index are provided below for each site.
 LGR, LGS, LMN, MCN, JDA (Index) = Lower Granite Dam Bypass Collection System : Passage Index Counts $\text{Passage Index} = \text{Collection Counts} / (\text{Powerhouse Flow} / (\text{Powerhouse Flow} + \text{Spill}))$
 RIS, BO2 (Index) = Rock Island Dam Second Powerhouse Bypass Trap : Passage Index Counts $\text{Passage Index} = \text{Collection Counts} / (\text{Powerhouse 2 Flow} / (\text{Powerhouse 1 \& 2 Flow} + \text{Spill}))$
- 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.
- 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.

FISH PASSAGE CENTER

Two Week Transportation Summary Report

7/13/2018 12:00:00 AM TO 7/27/2018 12:00:00 AM

Date 7/27/2018 8:17:48 AM

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Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	15,918	0	11	0	15	15,959
Sum of Number Barged	16,762	0	11	0	15	16,803
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	60	0	0	0	0	60
Sum of Facility Morts	80	0	0	0	0	80
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	140	0	0	0	0	140

Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	28,510	0	20	10	75	28,690
Sum of Number Barged	28,817	0	18	7	70	28,982
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	39	0	0	1	0	40
Sum of Facility Morts	257	0	2	2	0	261
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	296	0	2	3	0	301

FISH PASSAGE CENTER

Two Week Transportation Summary Report

7/13/2018 12:00:00 AM TO 7/27/2018 12:00:00 AM

Date 7/27/2018 8:17:48 AM

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Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	18,492	55	0	5	79	18,710
Sum of Number Barged	18,442	51	0	5	75	18,648
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	5	0	0	0	0	5
Sum of Facility Morts	36	0	0	0	0	36
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	41	0	0	0	0	41

Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	62,920	55	31	15	169	63,359
Sum of Number Barged	64,021	51	29	12	160	64,433
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	104	0	0	1	0	105
Sum of Facility Morts	373	0	2	2	0	377
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	477	0	2	3	0	482

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Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	514257	3041143	182812	188701	2522928	8972769
Sum of Number Barged	497785	2429167	179209	184065	1811307	6912840
Sum of Number Bypassed	14636	610813	3539	4465	711353	2056159
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	154	58	0	9	44	309
Sum of Facility Morts	890	1063	64	162	189	2557
Sum of Reseach Morts	25	42	0	0	35	137
Sum of Total Project Mort	1069	1163	64	171	268	3003

Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	555919	1857031	137085	74669	1969495	6563694
Sum of Number Barged	549505	1546147	136364	66134	1357427	5013004
Sum of Number Bypassed	854	306206	407	7716	611659	1538501
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	118	40	3	13	14	202
Sum of Facility Morts	3945	4638	311	806	390	10480
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	4063	4678	314	819	404	10682

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Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	302470	1218103	24940	35305	1178556	3937930
Sum of Number Barged	301236	1018204	24837	33659	926237	3230410
Sum of Number Bypassed	0	199433	100	1598	252167	705465
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	12	7	0	3	7	36
Sum of Facility Morts	207	455	3	45	141	992
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	219	462	3	48	148	1028

Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	1372646	6116277	344837	298675	5670979	19474393
Sum of Number Barged	1348526	4993518	340410	283858	4094971	15156254
Sum of Number Bypassed	15490	1116452	4046	13779	1575179	4300125
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	284	105	3	25	65	547
Sum of Facility Morts	5042	6156	378	1013	720	14029
Sum of Reseach Morts	25	42	0	0	35	137
Sum of Total Project Mort	5351	6303	381	1038	820	14713

Cumulative Adult Passage at Mainstem Dams Through: 07/26

dam	enddate	Spring Chinook						Summer Chinook						Fall Chinook					
		2018		2017		10-Yr Avg.		2018		2017		10-Yr Avg.		2018		2017		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	07/26	87894	6456	83624	18110	152393	25835	59683	4154	85961	10393	98696	21072	0	0	0	0	0	0
TDA	07/26	57935	4793	58310	12497	119227	21697	47959	3562	67056	8932	80867	16623	0	0	0	0	0	0
JDA	07/26	50572	5053	46675	12475	103731	20380	41524	4081	58526	6967	71744	15737	0	0	0	0	0	0
MCN	07/26	44427	3472	44292	7020	94405	16297	40646	2262	54736	4385	66745	11566	0	0	0	0	0	0
IHR	07/26	32600	2197	28306	6949	68113	11204	5802	502	8899	2025	18236	4701	0	0	0	0	0	0
LMN	07/26	35398	3020	28545	8270	68100	11017	5762	651	7831	3263	18751	5786	0	0	0	0	0	0
LGS	07/26	31834	2486	26598	8335	63992	12109	7099	556	8738	3635	18249	6196	0	0	0	0	0	0
LGR	07/26	31161	2948	27357	8256	62850	13009	6834	770	8357	3489	16250	6490	0	0	0	0	0	0
PRD	07/25	7067	949	7268	783	18018	1858	36427	1782	48629	1265	51933	1967	0	0	0	0	0	0
WAN	07/25	8071	964	6612	484	17542	2163	33768	1035	45138	1024	48381	1633	0	0	0	0	0	0
RIS	07/25	7894	997	8080	564	18255	2598	34181	1013	49635	808	48449	3204	0	0	0	0	0	0
RRH	07/25	5919	807	5864	406	8195	1153	27800	608	35816	527	35401	2018	0	0	0	0	0	0
WEL	07/25	7500	976	6589	820	8670	1609	16544	633	22762	519	24859	1701	0	0	0	0	0	0
WFA	07/22	24446	1986	33889	2373	35123	1602	0	0	0	0	0	0	0	0	0	0	0	0

DAM	ENDDATE	Coho						Sockeye			Steelhead						Lamprey				
		2018		2017		10-Yr Avg.		10-Yr		10-Yr			Unclipped		Unclipped		10-Yr		10-Yr		
		Adult	Jack	Adult	Jack	Adult	Jack	2018	2017	Avg.	2018	2017	Avg.	2018	2017	Avg.	2018	2017	Avg.	2018	2017
BON	07/26	2	-1	0	0	0	0	193038	87144	320700	28347	16940	75380	13311	8504	35496	35886	68147	21419		
TDA	07/26	4	0	0	0	0	0	151158	63559	272233	10194	5254	40800	4861	2747	20084	7714	22677	5703		
JDA	07/26	0	0	0	0	0	1	167432	65535	262726	6331	3123	29632	3639	2109	13831	6157	15869	3923		
MCN	07/26	-4	0	0	0	1	0	154402	57678	228435	4855	3910	19570	2570	1602	8242	981	1134	419		
IHR	07/26	-1	0	0	0	0	0	631	382	931	3038	1823	11762	1260	906	3945	623	625	167		
LMN	07/26	0	0	0	0	0	0	354	343	1084	2947	2086	14611	1287	1080	5151	264	170	33		
LGS	07/26	0	0	0	0	0	0	245	283	992	2244	1771	8241	883	834	3844	96	277	39		
LGR	07/26	0	0	0	0	0	0	238	225	987	5448	7521	11200	1775	3192	4704	109	128	12		
PRD	07/25	0	0	0	0	0	0	187416	65961	265665	709	314	1690	0	0	0	4912	7020	1380		
WAN	07/25	0	0	0	0	0	0	193369	74727	235919	640	266	1646	0	0	0	2360	3444	678		
RIS	07/25	0	0	0	0	0	0	168146	70966	254640	504	245	1107	298	135	588	1111	975	159		
RRH	07/25	0	0	0	0	0	0	158159	44513	209842	323	195	911	164	63	473	989	498	91		
WEL	07/25	0	0	0	0	0	0	147013	39387	193650	273	128	382	130	78	202	137	12	0		
WFA	07/22	0	2	117	117	0	0	0	0	0	10435	2662	19962	2112	736	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.

