



Fish Passage Center

Weekly Report #18–20

July 20, 2018

This Week's Highlights

Water Supply

Precipitation throughout the Columbia Basin has varied between 0% and 44% of average at individual sub-basins over early July. Precipitation above The Dalles has been 21% of average over July. Over the 2018 water year, precipitation has ranged between 87% and 111% 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 1-19, 2018		Water Year 2018 October 1, 2017 to July 19, 2018	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	0.47	37	33.1	99
Sneke River Above Ice Harbor	0.02	4	19.1	92
Columbia Above The Dalles	0.15	21	23.3	94
Kootenai	0.59	44	32.2	97
Clark Fork	0.05	5	27.2	111
Flathead	0.19	16	33.9	107
Pend Oreille River Basin above Waneta Dam	0.10	11	30.6	105
Salmon River Basin	0.00	1	25.4	97
Upper Snake Tributaries	0.14	17	22.8	96
Clearwater	0.01	1	41.1	110
Willamette River above Portland	0.00	1	54.2	87

Grand Coulee Reservoir is at 1287.5 feet (7-19-18) and has refilled 1.6 feet over the last week. Outflows at Grand Coulee have ranged between 112.0 Kcfs and 132.3 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2447.8 feet

(7-12-18) and has refilled 1.2 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 3559.60 feet (7-12-18) and has drafted 0.3 feet last week. Outflows at Hungry Horse have been 3.5 – 3.6 Kcfs over the last week.

Dworshak is currently at an elevation of 1584.8 feet (7-12-18) and has drafted 8.3 feet over the last week. Dworshak outflows have been 8.9 – 12.9 Kcfs.

The Brownlee Reservoir was at an elevation of 2064.0 feet on July 20th, 2018 and has drafted 5.0 feet over the last week. Outflows at Hells Canyon have ranged between 11.0 and 22.5 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 48.1 Kcfs over the summer period and 39.4 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 184.8 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 36.6

to 42.0 Kcfs this week. Daily average flows at McNary and Rock Island dams ranged from 180.2 to 200.5 Kcfs and 120.2 to 143.9 Kcfs this week, respectively. Current forecasts for Lower Granite Dam show flows declining slightly over the next week while forecasts for McNary Dam show flows decreasing over the next three days and then increasing to current levels by mid-week next week.

Dworshak is currently in its summer draft operation, with daily average discharge ranging from 8.9 to 12.9 Kcfs over the last week. Unit 3 was returned to service last week. However, Unit 3 was taken out of service on July 19th for testing. As a result, outflows from Dworshak were decreased to 6.5 Kcfs for approximately 11 hours. By 18:00, outflows had increased to ~11.0 Kcfs where they have remained since (as of 0800 today). It remains to be seen if the decrease in Dworshak outflows on June 19th will relate to increased temperatures in the Lower Granite Dam tailrace. Hells Canyon Complex flows have remained steady this week, with daily average outflows at Hells Canyon Dam ranging from 13.2 to 16.3 Kcfs over the last week. Although some hourly temperatures in the Lower Granite tailrace exceeded 68 °F on July 16th and July 17th, daily average temperatures have remained below 68 °F, to date. The daily average temperature for July 19th at the Lower Granite tailrace was 66.7 °F. 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 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. The summer spill operation for LGS is 30%, 24-hours per day. 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. However, TDG in the Ice Harbor (IHR) forebay exceeded the 115% waiver limit on July 15th and 16th. The 12-hour average TDG on these two days was 116%. Since this time, the 12-hour average TDG in the IHR forebay has been in the 113-114% range. Spill patterns at LMN were modified on July 19th and July 20th to address concerns with sockeye adult count differentials between Ice Harbor and Lower Monumental dams. This modified operation was discussed at TMT on July 18th and involved turning off the RSW from ~0500 to ~1500 each day and distributing the RSW spill to the 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 was intended to run for two days (July 19th and 20th) but there is a TMT conference call scheduled for the afternoon of July 20th to determine if it should continue beyond two days. Adult sockeye counts at LMN did not improve from the first day of the modified operation. 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 has not been 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 has been met this week and there have been no exceedences of TDG waiver limits in the MCN tailrace or the John Day (JDA) forebay. The summer spill operation at JDA alternates between 30% (24-hours) and 40% (24-hours). These two "treatments" will alternate in two-day blocks. 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, McNary, and Bonneville dams this week. GBT monitoring at Lower Granite did not occur this week and will likely not occur the rest of this season. Signs of fin GBT were observed in three of the nine GBT samples conducted this week (July 13-19). Bonneville observed zero signs of fin GBT in their sample on July 14th. The sample on July 17th had one fish (1%) with Rank 1 signs of GBT. This week's samples (July 17th and July 19th) at Rock Island both had fish with signs of fin GBT. The sample on July 17th had one fish (1%) with signs of fin GBT while the sample on July 19th had seven fish (7%) with signs of fin GBT. All signs of fin GBT at RIS this week were Rank 1. McNary observed zero signs of fin GBT in their samples on July 15th, July 17th, and July 19th. Little Goose and Lower Monumental observed zero signs of fin GBT in their samples on July 16th and July 18th, respectively. It should be noted that the last four GBT samples at Lower Monumental Dam have not met sample the size requirement. If fish numbers continue to decline, and TDG levels fall below 110%, sampling at this site 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 1 to 2 °F higher than their respective 10-year averages for this time of year. The daily average temperature for July 19th was 69.4 °F at Bonneville, 69.0 °F at McNary, and 70.0 °F at Ice Harbor. The current 10-year averages for these three projects are 68.0 °F, 67.1 °F, and 68.8 °F, respectively. The forebay temperature at Lower Granite Dam is slightly higher than the current 10-year average. The

daily average temperature for July 19th in the Lower Granite forebay was 66.3 °F and the current 10-year average for that date is 65.7 °F.

Smolt Monitoring

Smolt Monitoring Program (SMP) activities continued at all bypass facilities this week. Sampling also continued at the Imnaha River trap this week. This week's samples were dominated by subyearling Chinook at all seven SMP bypass facilities. When compared to last week, subyearling Chinook passage increase at several sites this week, including Bonneville, John Day, Lower Monumental, and Lower Granite dams. Subyearling Chinook passage stayed the same at Little Goose Dam this week and decreased at McNary and Rock Island dams, when compared to last week. Passage of spring migrants (yearling Chinook, coho, sockeye, and steelhead) remained low at all bypass facilities. Finally, sampling at the Imnaha River Trap was terminated after the sample on July 13th.

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 45,500 per day, which is a large increase from last week's daily average passage index of about 11,500 per day. Passage of spring migrants (yearling Chinook, coho, sockeye, and steelhead) remained low this week. In fact, the only spring migrants that were encountered in this week's samples were coho, which were encountered in only one of this week's samples (July 17th). Pacific lamprey macrophthalmia were not encountered in this week's samples and ammocoetes were encountered in three of this week's samples.

Similar to the last two years, sampling at John Day Dam (JDA) is every-other-day. Subyearling Chinook again dominated the samples at JDA this week. This week's daily average passage index for subyearling Chinook was about 58,000 per day, which is an increase from last week's daily average passage index of 35,700 per day. The only spring migrants that were encountered this week were yearling Chinook and coho, which were both encountered in one of this week's samples (July 15th). Pacific lamprey macrophthalmia were encountered in three of this week's four samples but no ammocoetes were encountered this week.

Sampling at McNary (MCN) is also every-other-day. Subyearling Chinook dominated this week's samples at MCN. This week's daily average passage

index for subyearling Chinook was about 53,000 per day, which is a decrease from last week's daily average passage index of about 83,600 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 yearling Chinook and steelhead, which were each encountered in one of this week's samples. Finally, 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 this week for repair work. Therefore, sampling at this facility did not occur on July 18th and July 19th. Repairs were completed on the afternoon of July 19th and sampling was to resume soon thereafter. Subyearling Chinook continued to dominate the samples at Lower Granite Dam (LGR) this week. This week's daily average passage index for subyearling Chinook was about 3,600 per day, which is an increase over last week's daily average passage index of about 2,900 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, each of which were encountered in only one of this week's five samples. Finally, no Pacific lamprey macrophthalmia were encountered this week but Pacific lamprey ammocoetes were encountered in four of this week's five samples. When present, daily sample counts for Pacific ammocoetes 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 4,000 per day, which is similar to last week's daily average passage index. Daily passage indices for subyearling Chinook ranged from 2,264 to 7,349 this week. The only spring migrants that were encountered in this week's samples were steelhead. Finally, Pacific lamprey macrophthalmia and ammocoetes were each encountered in only 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 3,500 per day, which is an increase from last week's daily average passage index of about 2,200 per day. Passage of spring migrants remained low this week. Finally, no Pacific lamprey macrophthalmia were encountered this week and ammocoetes were encountered in only two of this week's samples.

Subyearling Chinook continued to dominate the samples at Rock Island Dam (RIS). This week's daily average passage index for subyearling Chinook was about 430 per day, which is a slight decrease from last week's daily average passage index of about 520 per day. Passage of spring migrants was very low this week. Pacific lamprey macrophthalmia were encountered in three of this week's samples while ammocoetes were encountered in only one of this week's samples.

The Imnaha River Trap (IMN) is located at river kilometer 7 of the Imnaha River and is operated by the Nez Perce Tribe. Sampling at the Imnaha River Trap is year round. However, sampling for migration year 2018 was terminated after the sample on July 13th. Sampling at this trap for migration year 2019 will begin in the fall. For 2018, the FPC currently has data from IMN for the period of February 15 through July 13th. Very few yearling Chinook and steelhead were collected over the last three days of sampling.

Hatchery Releases

FPC has not received preliminary data from some hatcheries as of 07/20/18, 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.

Adult Passage

Daily passage numbers at Bonneville Dam ranged between 282 and 619 adult summer Chinook in the last week. The 2018 summer Chinook count of 57,190 is about 70% of the 2017 count and 60.7% of the 10-year average. The 2018 summer Chinook jack count of 3,842 is about 39.1% of the 2017 count and 19.2% of the 10-year average count. At Willamette Falls, 24,419 adult spring Chinook have been counted so far this year. In 2017, 33,269 adult spring Chinook were counted at Willamette Falls. This year's count is about 73.4% of the 2017 count and 70.3% of the 10-year average count of 34,753. As of July 19th, a total of 38,654 adult summer Chinook have been counted at McNary Dam and 6,544 have been counted at Lower Granite Dam. The 2018 McNary Dam adult summer Chinook count is about 74.1% of the 2017 count and 61.9% the 10-year average count. The 2018 Lower Granite Dam adult summer Chinook count is about 83.9% of the 2017 count and 42.1% fewer fish than the 10-year average count.

The 2018 Bonneville Dam adult steelhead count of 21,202 is about 1.9 times greater than the 2017 count of 10,921, while being 42.3% of the 10-year average count of 50,056. The 2018 Bonneville Dam adult unclipped steelhead count of 9,856 is about 1.9 times greater than the 2017 count of 5,153, while being 42.2% of the 10-year average count of 23,355. This year's Lower Granite steelhead count of 5,146 is about 69.4% of the 2017 count of 7,413 and 50.2% of the 10-year average count of 10,247. The 2018 Lower Granite Dam adult unclipped steelhead count of 1,590 has 1,531 fewer fish than the 2017 count of 3,121 and

has 2,670 fewer fish than the 10-year average count of 4,260. At Willamette Falls, the 2018 count for steelhead was 10,429 as of July 16th. This year's steelhead count is about 4 times greater than the 2017 count of 2,603, while being about 53% of the 10-year average count of 19,668.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 363 and 1,153 last week. The 2018 adult sockeye count at Bonneville Dam of 190,836 is about 2.2 times greater than the 2017 count, while being about 60% of the 10-year average count. A total of 33,538 lampreys have been counted at Bonneville Dam so far this year. The Bonneville 2018 lamprey count is about 53.3% of the 2017 count of 62,828, while being about 1.9 times greater than the 10-year average count of 18,232.

Hatchery Releases Last Two Weeks

Hatchery Release Summary
From: 7/7/2018 to 07/20/18

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
U.S. Fish and Wildlife Service	Little White Salmon NFH	CH0	FA	2018	3,860,000	07-11-18	07-11-18	Little White Salmon River	Little White Salmon River	MCOL
U.S. Fish and Wildlife Service	Willard Hatchery	CH0	FA	2018	950,000	07-09-18	07-11-18	Little White Salmon River	Little White Salmon River	MCOL
U.S. Fish and Wildlife Service	Willard Hatchery	CH0	FA	2018	950,000	07-10-18	07-10-18	Willard Hatchery	Little White Salmon River	MCOL
U.S. Fish and Wildlife Service Total					5,760,000					
Grand Total					5,760,000					

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

Hatchery Releases Next Two Weeks

Hatchery Release Summary
From: 7/21/2018 to 8/3/2018

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
07/06/2018	114.2	0.1	115.2	0.0	120.4	13.0	114.8	11.8	120.5	22.8	116.2	18.4	113.8	19.7
07/07/2018	108.5	0.1	109.2	0.0	119.1	14.0	118.8	11.7	127.7	22.8	128.3	20.0	124.0	20.0
07/08/2018	81.8	0.1	82.7	0.0	91.2	9.9	93.5	9.1	102.4	17.7	122.7	19.5	121.3	19.9
07/09/2018	126.0	0.1	125.6	0.0	131.9	15.3	125.0	13.5	128.4	28.5	109.9	20.2	103.1	21.5
07/10/2018	119.8	0.2	114.5	0.0	135.6	9.7	133.5	11.9	141.8	26.6	152.0	22.8	150.9	45.7
07/11/2018	126.8	0.2	130.3	0.0	117.8	14.7	119.5	12.3	126.0	25.8	149.8	18.9	146.3	18.8
07/12/2018	133.9	0.2	130.7	0.0	133.6	10.2	130.7	13.1	137.8	26.4	140.9	18.4	137.0	19.7
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	118.3	39.7	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	113.5	10.4	115.1	11.6	120.2	26.6	128.7	19.5	124.1	13.6

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
07/06/2018	8.3	0.6	---	---	42.6	17.6	42.3	12.7	43.1	17.1	46.5	34.1
07/07/2018	9.5	0.0	---	---	43.0	17.6	42.1	12.6	43.3	16.6	42.1	16.3
07/08/2018	9.5	0.0	---	---	42.5	17.6	43.8	13.1	42.9	17.5	46.7	13.9
07/09/2018	11.1	1.6	---	---	41.2	17.6	38.1	11.5	39.6	16.7	41.4	27.6
07/10/2018	12.8	3.2	---	---	44.9	17.6	45.4	13.6	45.1	17.0	48.1	33.5
07/11/2018	12.8	3.3	---	---	43.1	17.6	42.3	12.7	43.1	16.9	43.1	17.9
07/12/2018	12.8	3.3	---	---	43.4	17.7	43.6	13.1	44.6	17.1	45.8	13.7
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	38.8	29.0

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
07/06/2018	181.5	90.8	168.7	52.6	158.4	63.3	176.8	99.7	0.0	64.7
07/07/2018	168.4	84.3	160.5	64.2	146.1	58.4	160.8	95.3	0.0	53.1
07/08/2018	175.0	87.5	169.6	65.6	153.5	61.6	166.4	90.0	0.1	63.9
07/09/2018	168.1	84.3	155.3	46.7	145.3	57.7	167.1	94.3	0.0	60.4
07/10/2018	185.0	92.7	174.4	55.0	159.1	63.7	165.2	100.0	0.0	52.8
07/11/2018	200.3	100.2	200.0	80.1	184.2	73.5	194.1	95.3	0.0	86.4
07/12/2018	206.8	103.5	194.8	76.1	178.1	70.9	198.0	89.6	3.8	92.2
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

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										
	07/09/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/16/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
Lower Monumental Dam										
	07/11/18 Chinook + Steelhead	55*	0	0			0	0	0	0
	07/18/18 Chinook + Steelhead	91*	0	0			0	0	0	0
McNary Dam										
	07/07/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/09/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	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										
	07/07/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/10/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	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
Rock Island Dam										
	07/10/18 Chinook + Steelhead	100	4	4	4.00%	0.00%	3	1	0	0
	07/12/18 Chinook + Steelhead	100	4	4	4.00%	0.00%	3	1	0	0
	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

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 Hours Average and 24 Hours High
(Washington Calculation)**

Total Dissolved Gas Data at Upper Columbia Sites

Hungry H. Dnst				Boundary				Grand Coulee				Grand C. Tlwr				Chief Joseph				Chief J. Dnst				Date	
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	Date
07/05									109.3	109.6	110.6	24	112.8	113.8	116.3	24	113.5	113.9	114.4	24	112.7	112.9	113.2	24	07/05
07/06									110.8	111.2	111.6	24	112.5	113.2	115.2	24	113.2	113.9	113.8	24	112.6	113.0	113.7	24	07/06
07/07									109.5	111.1	110.6	24	112.0	112.6	114.1	24	113.2	113.4	113.8	24	112.6	112.7	113.1	24	07/07
07/08									109.0	109.8	109.9	24	112.6	113.8	115.6	24	112.7	113.4	113.6	24	112.1	112.6	112.8	24	07/08
07/09									109.7	110.0	110.4	24	111.5	112.4	114.5	24	112.0	113.0	113.3	24	111.7	112.4	112.4	24	07/09
07/10									108.8	109.9	109.5	24	110.8	111.2	112.1	24	111.8	112.7	112.4	24	111.3	112.1	112.1	24	07/10
07/11									109.0	109.3	109.5	24	110.0	110.5	113.1	24	110.9	111.8	111.4	24	110.5	111.4	111.5	24	07/11
07/12									109.0	109.6	110.1	24	110.2	110.7	112.2	24	110.5	111.1	111.6	24	110.0	110.5	110.9	24	07/12
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	23	109.6	110.0	110.8	23	109.5	110.3	110.0	23	111.1	113.5	123.6	23	07/18

Total Dissolved Gas Data at Upper Columbia Sites

Wells				Wells Dwnstrm				Rocky Reach				Rocky R. Tlwr				Rock Island				Rock I. Tlwr				Date	
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	Date
07/05	113.0	113.6	114.1	24	114.4	115.0	115.7	24	113.0	113.6	114.2	24	114.1	115.3	116.2	22	111.5	112.6	113.4	23	115.4	116.0	116.6	21	07/05
07/06	112.8	113.4	113.9	24	114.5	115.6	118.2	24	113.9	114.4	114.6	24	115.2	116.6	117.0	21	112.6	113.5	114.8	21	116.0	116.5	117.4	21	07/06
07/07	111.9	112.9	113.0	24	114.2	115.7	116.9	24	113.1	114.3	113.7	24	115.1	116.4	116.4	23	113.0	113.9	113.9	23	116.4	116.9	117.1	21	07/07
07/08	112.6	113.7	114.5	24	113.9	114.9	115.5	24	113.7	114.7	115.3	24	114.7	115.6	116.0	23	112.5	113.3	114.0	23	116.2	116.9	117.1	23	07/08
07/09	112.8	113.7	114.4	24	114.7	116.3	119.3	24	114.3	114.9	115.2	24	116.0	117.4	117.7	20	113.6	114.2	115.2	22	117.5	118.4	119.0	20	07/09
07/10	111.3	113.2	111.9	24	112.6	116.1	113.5	24	112.9	114.6	114.1	24	115.9	117.3	116.9	22	111.6	114.2	113.4	23	116.8	118.7	118.5	19	07/10
07/11	111.0	111.9	112.3	24	112.8	114.6	115.9	24	113.0	113.4	113.9	24	115.1	116.3	116.7	20	112.1	113.3	114.3	23	116.4	117.1	117.7	16	07/11
07/12	111.5	112.1	112.6	24	113.2	114.6	114.5	24	112.6	113.4	113.3	23	114.8	116.4	116.2	22	112.6	113.5	113.6	24	116.7	117.1	117.6	22	07/12
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	110.7	111.2	111.6	23	112.0	112.5	113.1	23	111.5	114.1	112.7	23	114.4	116.2	115.4	20	112.0	114.8	114.0	23	117.0	118.9	118.4	19	07/18

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 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	
07/05	114.4	115.5	117.1	24	113.4	113.9	114.5	24	112.6	113.1	114.0	24	112.1	112.8	113.0	24					07/05
07/06	112.6	115.4	113.3	24	113.1	113.6	113.9	24	111.7	113.1	112.5	24	111.8	112.7	112.2	24					07/06
07/07	112.5	113.1	114.0	24	113.3	113.7	114.0	24	110.9	111.7	112.4	24	111.2	111.7	111.8	24					07/07
07/08	113.6	115.5	116.6	24	113.1	113.3	113.7	24	112.4	112.9	113.5	24	111.6	111.9	112.1	24					07/08
07/09	114.0	115.5	115.5	24	114.2	114.6	115.3	24	112.6	113.1	113.1	24	111.8	112.0	112.3	24					07/09
07/10	110.6	114.6	113.6	24	112.0	114.5	114.2	24	110.8	112.4	111.6	24	112.3	113.5	114.9	24					07/10
07/11	111.8	114.1	115.6	24	112.2	112.8	113.2	24	110.0	110.9	111.9	24	109.9	111.0	110.8	24					07/11
07/12	113.7	114.6	115.3	24	113.3	113.5	113.6	24	112.0	112.5	113.2	24	111.5	112.0	112.4	24					07/12
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

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	
07/05	101.4	102.0	102.6	24	102.6	103.8	104.8	24	103.0	104.2	105.2	24	103.9	106.4	108.4	24	100.8	102.4	101.8	24	115.3	115.6	116.2	24	07/05
07/06	102.9	105.3	107.8	24	103.2	104.8	106.5	24	102.6	103.8	104.2	24	103.4	105.9	106.6	24	99.3	100.4	99.8	24	114.5	115.2	115.9	24	07/06
07/07	100.7	104.1	101.3	24	102.4	104.5	104.2	24	102.6	103.8	104.9	24	103.9	106.1	107.9	24	99.9	100.5	101.0	24	114.3	114.7	115.7	24	07/07
07/08	100.8	101.1	101.5	24	102.7	103.8	104.6	24	102.8	104.1	105.2	24	103.9	106.5	108.4	24	101.4	102.0	102.6	24	114.3	114.8	115.3	24	07/08
07/09	104.8	108.9	110.1	24	104.8	107.7	109.4	24	102.8	104.2	105.3	24	104.3	106.8	108.7	24	101.8	102.3	102.4	24	114.6	114.9	115.5	24	07/09
07/10	108.6	109.0	109.3	24	107.2	108.2	108.9	24	102.5	103.8	104.7	24	105.8	108.2	109.9	24	100.4	101.9	101.3	24	114.4	114.6	115.7	24	07/10
07/11	108.8	109.1	109.4	23	107.4	108.4	109.2	24	102.8	104.3	106.5	24	106.1	108.7	110.5	24	102.6	103.2	103.7	24	114.8	115.4	115.9	24	07/11
07/12	108.9	109.2	109.5	24	107.7	108.8	109.6	24	103.0	104.5	105.6	24	106.4	109.1	111.0	24	103.1	103.3	103.4	24	115.2	115.4	116.1	24	07/12
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	23	108.2	109.2	110.0	23	102.4	103.8	105.0	23	106.4	109.1	110.7	23	104.1	105.6	105.0	23	115.3	115.7	116.4	23	07/18

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 Lower Snake Sites

Little Goose				L. Goose Tlwr				Lower Mon.				Lwr. Mon. Tlwr				Ice Harbor				Tlwr Ice Harbor				Date	
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	Date
07/05	108.1	108.2	108.4	24	112.7	112.8	113.1	24	109.5	109.6	110.0	24	115.9	116.3	116.8	24	111.1	111.8	111.5	24	112.0	113.1	114.0	24	07/05
07/06	107.9	108.2	108.9	24	112.3	112.8	112.6	24	109.5	109.9	110.2	24	116.1	116.5	117.0	24	111.1	111.3	111.7	24	113.0	114.2	115.3	24	07/06
07/07	107.9	108.4	108.8	24	112.2	112.5	112.8	24	110.4	110.7	111.3	24	115.8	116.3	116.7	24	111.1	111.4	111.6	24	111.7	113.3	113.0	24	07/07
07/08	110.5	111.8	113.4	24	113.1	113.5	113.7	24	111.2	111.4	111.7	24	115.8	116.4	116.7	24	112.6	113.0	113.5	24	111.5	112.1	112.6	24	07/08
07/09	111.9	112.1	112.3	24	113.4	113.7	113.9	24	111.3	111.4	112.0	24	116.1	116.4	117.3	24	112.9	113.3	113.6	24	112.5	113.6	114.4	24	07/09
07/10	110.5	111.9	111.3	24	112.5	113.7	113.1	24	111.0	111.4	111.5	24	116.4	117.3	118.4	24	112.5	113.3	113.2	24	112.9	114.1	114.7	24	07/10
07/11	109.9	110.3	110.3	24	113.0	113.4	113.6	24	111.4	111.6	111.9	24	116.3	116.9	117.1	24	112.5	112.7	112.8	24	111.7	113.8	112.6	24	07/11
07/12	109.7	110.0	110.5	24	113.3	113.5	113.8	24	111.5	111.7	111.8	24	116.3	116.7	117.1	24	112.4	112.7	112.7	24	111.1	111.6	112.0	24	07/12
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	23	112.7	113.5	113.1	23	113.3	113.8	117.1	23	116.6	117.1	117.6	23	113.4	113.9	113.7	23	112.1	112.8	113.4	23	07/18

Total Dissolved Gas Data at Mid-Columbia Sites

McNary-Wash.				Tlwr McNary				John Day				Tlwr John Day				The Dalles				Dnstr T. Dalles				Date	
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	Date
07/05	108.1	109.2	109.3	24	115.4	116.0	116.5	24	106.2	106.8	106.8	24	113.8	114.2	114.5	24	110.1	110.9	110.8	24	114.5	115.8	115.8	24	07/05
07/06	109.0	109.6	110.1	24	115.3	116.8	118.1	24	105.5	106.3	106.2	24	113.7	114.4	114.9	24	108.1	110.1	108.8	24	113.9	114.8	114.7	24	07/06
07/07	108.1	109.1	109.8	24	114.5	115.9	116.3	24	105.1	105.6	105.7	24	113.0	113.8	113.5	24	107.5	107.8	108.2	24	113.1	114.1	114.8	24	07/07
07/08	110.6	110.9	112.0	24	115.3	115.9	116.2	24	105.8	106.5	106.8	24	113.0	114.0	114.6	24	109.5	110.3	110.6	24	114.3	115.0	115.5	24	07/08
07/09	110.6	111.3	111.9	24	114.8	115.7	116.1	24	106.4	106.8	107.3	24	113.8	114.1	114.4	24	109.2	110.3	109.9	24	113.9	115.0	114.6	24	07/09
07/10	108.4	110.4	109.3	24	114.3	115.7	116.1	24	105.8	106.7	106.6	24	113.7	114.3	114.7	24	106.1	108.5	107.0	24	112.6	113.4	113.6	24	07/10
07/11	108.6	108.8	110.3	24	115.5	116.2	116.8	24	106.2	106.7	107.0	24	113.6	114.9	116.4	24	108.0	109.5	110.9	24	113.6	114.8	115.2	24	07/11
07/12	108.9	109.1	110.0	24	115.6	116.5	117.5	24	107.2	107.6	108.1	24	114.0	115.5	117.1	24	111.9	112.2	112.6	24	115.5	116.3	117.1	24	07/12
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	23	115.6	116.9	116.8	23	109.2	110.8	110.2	23	114.9	115.2	115.7	23	108.0	110.3	109.1	23	113.1	115.8	114.0	23	07/18

FISH PASSAGE CENTER

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

[INTERNAL PURPOSES ONLY]

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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	
07/05	112.0	112.6	112.9	24	116.4	116.7	117.3	24	112.8	115.4	116.9	24				0	07/05
07/06	111.0	112.3	112.1	24	116.7	117.8	118.7	24	115.3	116.3	117.9	24				0	07/06
07/07	109.1	111.1	109.9	24	116.1	117.1	117.7	24	113.6	116.2	116.6	24				0	07/07
07/08	110.4	111.2	111.7	24	115.9	116.8	117.2	24	114.7	115.7	116.7	24				0	07/08
07/09	109.7	111.2	110.2	24	115.3	116.0	117.6	24	112.7	115.6	114.9	24				0	07/09
07/10	107.5	109.4	108.5	24	116.3	116.8	118.0	24	113.3	115.4	117.5	24				0	07/10
07/11	109.1	110.3	111.2	24	115.8	116.7	117.2	24	114.7	115.9	116.2	24	116.8	116.8	117.1	11	07/11
07/12	113.1	114.2	114.7	24	116.3	117.0	117.7	24	114.3	115.6	116.5	24	115.7	116.9	117.8	24	07/12
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	109.1	111.4	110.2	23	115.9	116.3	117.1	23	112.1	115.6	115.3	23	116.4	116.7	117.6	23	07/18

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

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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)
07/05/2018					0	0	17	0		0	0
07/06/2018		3			19	0	34	0	0		0
07/07/2018					0	0	0	0		0	63
07/08/2018					0	0	16	0	2		0
07/09/2018		0			0	0	0	0		0	0
07/10/2018		0			35	1	16	0	0		0
07/11/2018		2			0	0	0	0		0	0
07/12/2018		1			0	0	0	0	0		0
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
Total:	0	6	0	0	54	1	174	0	2	151	63
# Days:	0	6	0	0	13	15	15	15	7	8	15
Average:	0	1	0	0	4	0	12	0	0	19	4
YTD:	23,452	41,213	21,824	12,792	4,639,013	2,838,048	2,045,310	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

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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)
07/05/2018					3,263	4,484	6,271	240		21,013	25,561
07/06/2018		0			2,227	4,447	2,575	219	54,921		16,741
07/07/2018					1,304	2,851	2,465	307		21,345	10,865
07/08/2018					3,088	4,059	1,327	409	85,309		9,764
07/09/2018		0			4,541	4,233	1,852	636		37,314	10,836
07/10/2018		0			4,168	4,632	2,961	750	108,621		10,019
07/11/2018		0			1,898	4,745	2,416	793		48,565	7,818
07/12/2018		0			2,983	3,054	1,664	545	85,656		14,114
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
Total:	0	0	0	0	41,363	60,657	45,915	6,910	493,729	360,319	424,054
# Days:	0	6	0	0	13	15	15	15	7	8	15
Average:	0	0	0	0	3,182	4,044	3,061	461	70,533	45,040	28,270
YTD:	0	6	89	192	826,822	909,090	493,559	31,825	2,136,319	1,002,105	2,494,329

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)
07/05/2018					0	14	52	9		0	0
07/06/2018		0			0	14	0	5	0		0
07/07/2018					0	0	0	3		0	63
07/08/2018					8	0	16	13	0		0
07/09/2018		0			9	7	0	8		0	0
07/10/2018		0			18	0	0	6	0		0
07/11/2018		0			0	0	0	10		0	0
07/12/2018		0			0	0	0	6	0		0
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
Total:	0	0	0	0	44	35	68	73	411	303	217
# Days:	0	6	0	0	13	15	15	15	7	8	15
Average:	0	0	0	0	3	2	5	5	59	38	14
YTD:	0	0	1,224	1,365	262,488	215,219	42,470	44,186	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)
07/05/2018					37	72	17	5		0	0
07/06/2018		1			0	43	0	2	0		0
07/07/2018					0	29	34	1		0	0
07/08/2018					0	29	0	1	0		0
07/09/2018		0			9	29	76	3		0	0
07/10/2018		0			0	59	0	9	0		0
07/11/2018		0			16	0	0	3		0	5
07/12/2018		0			0	0	0	3	0		0
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
Total:	0	2	0	0	80	361	229	44	2	0	5
# Days:	0	6	0	0	13	15	15	15	7	8	15
Average:	0	0	0	0	6	24	15	3	0	0	0
YTD:	723	27,448	3,888	5,328	3,924,721	3,004,267	1,942,759	24,911	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)
07/05/2018					0	0	0	0		0	0
07/06/2018		0			0	0	0	2	0		0
07/07/2018					0	1	0	3		0	0
07/08/2018					0	0	0	0	411		0
07/09/2018		0			0	0	0	0		0	0
07/10/2018		0			0	0	16	0	414		0
07/11/2018		0			0	0	0	1		0	0
07/12/2018		0			0	0	0	1	0		0
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
Total:	0	0	0	0	0	1	16	8	825	0	0
# Days:	0	0	0	0	0	0	1	1	118	0	0
Average:	0	0	0	0	0	0	1	1	118	0	0
YTD:	0	0	4	115	260,629	120,845	58,616	76,224	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)
07/05/2018					2	0	0	1		150	67
07/06/2018		0			3	0	60	0	0		0
07/07/2018					3	0	0	0		0	25
07/08/2018					1	5	20	0	200		0
07/09/2018		0			1	15	0	1		0	0
07/10/2018		0			0	20	0	1	200		0
07/11/2018		0			1	10	10	0		0	77
07/12/2018		0			1	20	0	1	0		0
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
Total:	0	0	0	0	18	120	110	8	400	450	246
# Days:	0	6	0	0	13	16	16	16	7	8	15
Average:	0	0	0	0	1	8	7	1	57	56	16
YTD:		1	3		446	35,729	56,770	368	219,162	227,428	26,967

- 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

7/5/2018 12:00:00 AM TO 7/19/2018 12:00:00 AM

Date 7/19/2018 5:17:44 PM

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Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	23,396	30	25	0	45	23,541
Sum of Number Barged	25,064	30	30	0	44	25,212
Sum of Number Bypassed	399	0	0	0	0	399
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	51	0	0	0	0	51
Sum of Facility Morts	104	0	0	0	1	106
Sum of Reseach Morts	10	0	0	0	0	10
Sum of Total Project Mort	165	0	0	0	1	167

Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	42,188	1	25	1	251	42,717
Sum of Number Barged	44,270	1	25	0	257	44,810
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	31	0	0	0	0	31
Sum of Facility Morts	270	0	0	1	3	277
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	301	0	0	1	3	308

FISH PASSAGE CENTER

Two Week Transportation Summary Report

7/5/2018 12:00:00 AM TO 7/19/2018 12:00:00 AM

Date 7/19/2018 5:17:44 PM

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Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	26,645	101	40	10	130	27,056
Sum of Number Barged	29,410	121	50	10	130	29,851
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	3	0	0	0	0	3
Sum of Facility Morts	47	0	0	0	0	47
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	50	0	0	0	0	50

Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	92,229	132	90	11	426	93,314
Sum of Number Barged	98,744	152	105	10	431	99,873
Sum of Number Bypassed	399	0	0	0	0	399
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	85	0	0	0	0	85
Sum of Facility Morts	421	0	0	1	4	430
Sum of Reseach Morts	10	0	0	0	0	10
Sum of Total Project Mort	516	0	0	1	4	525

FISH PASSAGE CENTER

YTD Transportation Summary Report

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Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	508304	3041143	182806	188701	2522923	8966800
Sum of Number Barged	492653	2429167	179203	184065	1811302	6907692
Sum of Number Bypassed	14636	610813	3539	4465	711353	2056159
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	125	58	0	9	44	280
Sum of Facility Morts	865	1063	64	162	189	2532
Sum of Reseach Morts	25	42	0	0	35	137
Sum of Total Project Mort	1015	1163	64	171	268	2949

Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	546976	1857031	137065	74659	1969490	6554711
Sum of Number Barged	542166	1546147	136346	66127	1357427	5005640
Sum of Number Bypassed	854	306206	407	7716	611659	1538501
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	94	40	3	12	14	177
Sum of Facility Morts	3862	4638	309	804	390	10393
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	3956	4678	312	816	404	10570

FISH PASSAGE CENTER

YTD Transportation Summary Report

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Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	297948	1218099	24940	35300	1178537	3933361
Sum of Number Barged	297744	1018204	24837	33654	926222	3226883
Sum of Number Bypassed	0	199433	100	1598	252167	705465
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	9	7	0	3	7	33
Sum of Facility Morts	195	455	3	45	141	980
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	204	462	3	48	148	1013

Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	1353228	6116273	344811	298660	5670950	19454872
Sum of Number Barged	1332563	4993518	340386	283846	4094951	15140215
Sum of Number Bypassed	15490	1116452	4046	13779	1575179	4300125
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	228	105	3	24	65	490
Sum of Facility Morts	4922	6156	376	1011	720	13905
Sum of Reseach Morts	25	42	0	0	35	137
Sum of Total Project Mort	5175	6303	379	1035	820	14532

Cumulative Adult Passage at Mainstem Dams Through: 07/19

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	07/19	87894	6456	83624	18110	152393	25835	57190	3842	81759	9832	94140	20052	0	0	0	0	0	0
TDA	07/19	57935	4793	58310	12497	119227	21697	46006	3312	64371	8419	76852	15686	0	0	0	0	0	0
JDA	07/19	50572	5053	46675	12475	103731	20380	39928	3848	56152	6441	67908	14790	0	0	0	0	0	0
MCN	07/19	44427	3472	44292	7020	94405	16297	38654	2135	52191	4108	62468	10823	0	0	0	0	0	0
IHR	07/19	32600	2197	28306	6949	68113	11204	5671	496	8671	1990	17752	4589	0	0	0	0	0	0
LMN	07/18	35398	3020	28545	8270	68100	11017	5557	638	7513	3121	18095	5546	0	0	0	0	0	0
LGS	07/19	31834	2486	26598	8335	63992	12109	6846	541	8253	3469	17541	5943	0	0	0	0	0	0
LGR	07/19	31161	2948	27357	8256	62850	13009	6544	736	7800	3282	15556	6159	0	0	0	0	0	0
PRD	07/17	7067	949	7268	783	18018	1858	33026	1484	44361	1054	45328	1654	0	0	0	0	0	0
WAN	07/17	8071	964	6612	484	17542	2163	30223	821	40795	860	41488	1381	0	0	0	0	0	0
RIS	07/18	7894	997	8080	564	18255	2598	30267	808	44547	675	41829	2587	0	0	0	0	0	0
RRH	07/18	5919	807	5864	406	8195	1153	23644	431	30720	368	29297	1535	0	0	0	0	0	0
WEL	07/18	7500	976	6589	820	8670	1609	13155	460	18272	339	19171	1179	0	0	0	0	0	0
WFA	07/16	24419	1981	33269	2304	34753	1558	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	07/19	1	-1	0	0	0	0	190836	86351	317728	21202	10921	50056	9856	5153	23355	33538	62828	18232		
TDA	07/19	4	0	0	0	0	0	149366	62894	268963	7763	3605	25858	3724	1723	12706	6820	19895	4652		
JDA	07/19	0	0	0	0	0	1	165409	64834	258840	5048	2035	20242	2965	1369	9307	5312	13099	3152		
MCN	07/19	-4	0	0	0	1	0	152508	56764	224176	3246	3226	13432	1751	1163	5459	810	716	283		
IHR	07/19	-4	1	0	0	0	0	615	378	873	2366	1533	8983	969	721	2997	549	364	106		
LMN	07/18	0	0	0	0	0	0	277	332	976	2223	1795	11982	908	905	4070	232	119	21		
LGS	07/19	0	0	0	0	0	0	212	261	883	1874	1654	6984	665	761	3286	74	204	26		
LGR	07/19	0	0	0	0	0	0	191	205	821	5146	7413	10247	1590	3121	4260	67	51	5		
PRD	07/17	0	0	0	0	0	0	180038	61648	248653	476	226	1055	0	0	0	3328	2235	624		
WAN	07/17	0	0	0	0	0	0	181632	70018	217601	433	211	1024	0	0	0	1544	983	304		
RIS	07/18	0	0	0	0	0	0	158310	64999	230852	325	179	700	198	89	377	733	293	57		
RRH	07/18	0	0	0	0	0	0	146639	39492	184210	228	176	666	114	54	366	534	133	29		
WEL	07/18	0	0	0	0	0	0	130155	33563	160498	205	101	246	86	72	139	126	11	0		
WFA	07/16	0	2	117	117	0	0	0	0	0	10429	2603	19668	2112	734	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.

