



Fish Passage Center

Weekly Report #18–25

August 24, 2018

This Week's Highlights

Water Supply

Precipitation throughout the Columbia Basin has varied between 1% and 45% of average at individual sub-basins over August. Precipitation above The Dalles has been 17% of average over August. Over the 2018 water year, precipitation has ranged between 86% and 107% of average.

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

Location	Water Year 2018 August 1-22, 2018		Water Year 2018 October 1, 2017 to August 22, 2018	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	0.22	17	33.4	94
SNAKE RIVER ABOVE ICE HARBOR	0.11	22	19.2	89
Columbia Above The Dalles	0.13	17	23.4	90
Kootenai	0.15	11	32.5	92
Clark Fork	0.45	40	27.6	106
Flathead	0.15	14	34.2	101
Pend Oreille River Basin above Waneta Dam	0.26	25	30.9	100
Salmon River Basin	0.15	19	25.5	93
Upper Snake Tributaries	0.43	45	23.3	93
Clearwater	0.39	41	41.5	107
Willamette River above Portland	0.01	1	54.3	86

Grand Coulee Reservoir is at 1281.9 feet (8-23-18) and has refilled 0.8 foot over the last week. Outflows at Grand Coulee have ranged between 87.8 Kcfs and 113.4 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2445.3 feet (8-23-18) and has drafted 0.9 feet over the past week.

Daily average outflows at Libby Dam have been 9.0 Kcfs over the last week.

Hungry Horse is currently at an elevation of 3555.2 feet (8-23-18) and has drafted 0.8 feet last week. Outflows at Hungry Horse have been 2.4-2.5 Kcfs over the last week.

Dworshak is currently at an elevation of 1542.3 feet (8-23-18) and has drafted 5.7 feet last week. Dworshak outflows have been 7.5 Kcfs.

The Brownlee Reservoir was at an elevation of 2055.2 feet on August 23rd, 2018 and has drafted 0.4 feet. Outflows at Hells Canyon have ranged between 8.7 and 19.0 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 have 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 38.7 Kcfs over the summer period and 26.2 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. McNary flows have averaged 165.2 Kcfs over the summer period and 137.7 Kcfs last week.

Spill

Flows in the Lower Snake River this week were slightly lower than the previous week. Daily average flows at Lower Granite Dam ranged from 24.7 to 27.7 Kcfs this week. Flows in the mid-and Upper Columbia River this week were similar to the previous week. Daily average flows at McNary and Rock Island dams ranged from 117.0 to 168.7 Kcfs and 93.7 to 115.1 Kcfs this week, respectively. Current forecasts show flows in the 26.0 to 27.0 Kcfs range at Lower Granite Dam and 122.0 to 124.0 Kcfs at McNary Dam over the next week.

Dworshak continued its summer draft operation, with daily average discharge ranging from 7.3 to 7.6 Kcfs over the last week. Hells Canyon Complex flows this week were similar to the previous week, with daily average outflows at Hells Canyon Dam ranging from 9.3 to 12.6 Kcfs over the last week. The daily average temperature in the Lower Granite tailrace remained below 68 °F all of this week.

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 (LGR) is 18 Kcfs, 24-hours per day. Flows were sufficiently low over the last week that spill of 18 Kcfs was not possible. Spill during these times was all flows in excess of powerhouse minimum requirements. There

were no exceedences in total dissolved gas (TDG) waiver limits in the LGR tailrace or the Little Goose (LGS) forebay this week. The RSW at LGR has been closed since the afternoon of August 8th. Flows have been sufficiently low this week to warrant a set spill volume operation at LGS. This set spill volume has ranged from 7 Kcfs to ~9 Kcfs, depending on daily average flows from the previous day. There were no exceedences in TDG waiver limits in the LGS tailrace or Lower Monumental (LMN) forebay. The RSW at LGS has been closed since the afternoon of August 3rd. The summer spill operation for LMN is 17 Kcfs, 24-hours per day. Flows were sufficiently low over the last week that spill of 17 Kcfs was not possible. Spill during these times was all flows in excess of powerhouse minimum requirements. There were no exceedences in TDG waiver limits in the LMN tailrace or the Ice Harbor (IHR) forebay this week. The RSW at LMN has been closed since the afternoon of August 8th. The summer spill operation for IHR is 45 Kcfs during the day and gas cap spill at night for the remainder of the season. 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. The TDG monitor at Ice Harbor tailrace was malfunctioning on August 23rd. The RSW at IHR continued to operate this week.

The summer spill operations at McNary (MCN), John Day (JDA), and The Dalles (TDA) dams are 50%, 30%, and 40% of instantaneous flows, respectively. These summer spill operations were met at all three projects this week and there were no exceedences of TDG waiver limits in their respective tailraces or downstream forebays. 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. It is worth noting that there were some periods when flows were sufficiently low that these spill levels were not always possible. During these times, spill was all flows in excess of powerhouse minimum requirements. Total dissolved gas in the BON tailrace (at Cascades Island) has 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 Monitoring

Due to decreasing fish numbers and an inability to reach sample size requirements, Gas Bubble Trauma (GBT) monitoring in smolts did not occur 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 Lower Granite 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 August 22nd was 71.7 °F at Bonneville, 70.8 °F at McNary, and 69.7 °F at Lower Granite. The current 10-year averages for these three projects are 70.3 °F, 70.1 °F, and 66.5 °F, respectively. The forebay temperature at Ice Harbor Dam is similar to the current 10-year average. The daily average temperature for August 16th in the Ice Harbor forebay was 70.8 °F and the current 10-year average for that date is 70.3 °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. When compared to last week, passage of subyearling Chinook decreased at Rock Island and McNary dams but remained the same at the Snake River and Lower Columbia facilities.

After three days of suspended sampling due to an outage at the second powerhouse for roof repairs, sampling at Bonneville resumed at 0700 on August 10th, for the August 11th sample. In addition, sampling at Bonneville Dam (BON) remained in the high temperature protocol this week, where sampling is reduced to a 24-hour sample every-other-day. The 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 BON were dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 800 per day, which is a slight increase from last week's daily average passage index of about 600 per day. No spring migrants were encountered in this week's samples. No lamprey juveniles were encountered in this week's samples.

Sampling at John Day Dam (JDA) remained in the high temperature protocol this week, where sampling is reduced to a 6-hour sample, twice per week, for condition only. The condition only samples occur on Monday and Thursday and data from these samples are 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. The only salmonids that were encountered in the two samples from this week were subyearling Chinook. No lamprey juveniles were encountered at JDA this week.

McNary (MCN) 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 320 per

day, which is a decrease from last week's daily average passage index of about 470 per day. No other salmonids were encountered in this week's samples. Pacific lamprey macrophthalmia were encountered in all four of this week's samples but no ammocoetes were encountered this week. This week's daily average collection for lamprey macrophthalmia was about 20 per day.

The juvenile transportation program transitioned from barging to trucking last week. As a result, samples from Lower Granite Dam (LGR) may be held for up to 48-hours before being enumerated. Therefore, data from LGR may be delayed for 1-2 days over the remainder of the season. To date, the FPC has data from LGR through the sample on August 22nd. 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 775 per day, which is similar to last week's daily average passage index of about 800 per day. The only other salmonids that were encountered in this week's samples were steelhead, which were encountered in only one of this week's samples (August 18th). No Pacific lamprey macrophthalmia were encountered this week but Pacific lamprey ammocoetes were encountered in three of this week's samples at LGR.

Even through the juvenile transportation program transitioned from barging to trucking this week, samples from Little Goose Dam (LGS) are still enumerated and sent to FPC daily. Subyearling Chinook continued to dominate the samples at LGS this week. This week's daily average passage index for subyearling Chinook was about 360 per day, which is similar to last week's daily average passage index of 390 per day. Very few spring migrants were encountered in this week's samples. Pacific lamprey macrophthalmia were encountered in five of this week's samples and ammocoetes were encountered every day this week. The daily average collection for Pacific lamprey ammocoetes was only four per day.

Similar to LGR, samples from Lower Monumental Dam (LMN) are held for up to 48-hours before being enumerated, due to the transition to trucking. Therefore, data from LMN may be delayed for 1-2 days over the remainder of the season. To date, the FPC has data from LGR through the sample on August 22nd. This week's samples at LMN were dominated

by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 60 per day, which is similar to last week's daily average passage index of nearly 90 per day. It is worth noting that one of last week's samples (August 15th) was a reduced sample of only 16 hours. This was to accommodate the transition to trucking on that day. The only spring migrants that were encountered this week were steelhead, which were encountered in three of this week's samples. Finally, Pacific lamprey macrophthalmia were encountered in three of this week's samples and Pacific ammocoetes were encountered in one 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 10 per day, which is a decrease from last week's daily average passage index of 50 per day. Passage of spring migrants remained very low this week. Pacific lamprey macrophthalmia were only encountered in one of this week's samples (August 18th) while no ammocoetes were encountered this week.

Hatchery Releases

FPC has not received all data from some hatcheries as of 08/24/18, 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, nor are there any scheduled for the next two.

Adult Passage

Adult Passage Daily passage numbers at Bonneville Dam ranged between 557 and 2,165 adult Chinook in the last week. The 2018 Bonneville Dam adult fall Chinook count of 14,401 is about 87% of the 2017 count and 45.2% of the 10-year average. At Willamette Falls, 55 adult fall Chinook have been counted so far this year. In 2017, 6 adult fall Chinook were counted at Willamette Falls. As of August 23rd, a total of 1,948 adult fall Chinook have been counted at McNary Dam and 116 have been counted at Lower Granite Dam. The 2018 McNary Dam adult fall Chinook count is about 71.2% of the 2017 count and 30.7% of the 10-year average count.

The 2018 Bonneville Dam adult steelhead count of 55,710 is about 97.2% the 2017 count of 57,299 and about 27.3% of the 10-year average count of 204,202. The 2018 Bonneville Dam adult unclipped steelhead count of 22,758 is about 98.1% of the 2017 count of 23,197 and about 28.8% of the 10-year average count of 78,912. Daily adult steelhead counts at Lower Granite Dam ranged from 9 to 25 adults per day last week. This year's Lower Granite steelhead count of 6,176 is about 78.8% of the 2017 count of 7,835 and about 35.4% of the 10-year average count of 17,453. The 2018 Lower Granite Dam adult unclipped steelhead count of 2,150 has 1,244 fewer fish than the 2017 count of 3,394 and 5,200 fewer fish than the 10-year average count of 7,350. At Willamette Falls, the 2018 count for steelhead was 10,481 as of August 21st. This year's steelhead count is about 3.9 times greater than the 2017 count of 2,703 while being 51% of the 10-year average count of 20,555.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 2 and 6 last week. The 2018 adult sockeye count at Bonneville Dam of 193,799 is about 2.2 times greater than the 2017 count, while being 60.2% of the 10-year average count. The 2018 adult sockeye count at McNary Dam of 155,416 is about 2.7 times greater than the 2017 count, while being

67.5% of the 10-year average count. The Lower Granite Dam 2018 adult sockeye count of 272 has 46 more fish than the 2017 count of 226 and 804 fewer fish than the 10-year average count of 1,076. The 2018 Bonneville Dam adult coho count of 656 has 316 more fish than the 2017 count and 1,278 fewer fish than the 10-year average count.

As of August 23rd at Bonneville Dam, the adult shad count was 6,059,329. This year's shad count is about 1.9 times greater than the 2017 count of 3,134,623 and 2.9 times greater than the 10-year average count of 2,101,406. A total of 42,095 lampreys have been counted at Bonneville Dam so far this year. The Bonneville 2018 lamprey count is about 52.3% of the 2017 count of 80,440, while being about 1.5 times greater than the 10-year average count of 28,652.

Hatchery Releases Last Two Weeks

Hatchery Release Summary

From: **8/10/2018** to **8/24/2018**

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
No Planned Releases										
Grand Total					0					

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

Hatchery Releases Next Two Weeks

Hatchery Release Summary

From: **8/25/2018** to **9/7/2018**

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
No Planned Releases										
Grand Total					0					

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

Date	Grand Coulee		Chief Joseph		Wells		Rocky Reach		Rock Island		Wanapum		Priest Rapids	
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
08/10/2018	101.9	0.1	106.6	0.0	110.0	11.4	108.2	0.0	117.9	18.6	124.6	19.1	122.5	19.8
08/11/2018	79.2	0.0	79.3	0.0	88.7	9.9	83.0	0.0	86.1	16.8	78.4	18.1	77.0	18.6
08/12/2018	88.1	0.1	92.4	0.0	88.8	12.7	84.1	0.0	86.9	16.0	93.1	19.3	90.8	20.0
08/13/2018	93.7	0.1	92.9	0.0	98.6	10.1	102.4	0.0	109.5	20.0	113.7	19.8	109.0	19.2
08/14/2018	93.1	0.1	86.8	0.0	89.5	9.3	86.9	0.0	88.3	21.8	119.1	18.2	117.2	19.5
08/15/2018	98.0	0.1	97.2	0.0	100.4	9.8	96.6	0.0	100.2	3.6	109.5	17.0	105.9	18.8
08/16/2018	95.7	0.1	93.0	0.0	98.5	9.5	95.9	0.0	100.4	0.0	96.2	16.8	94.2	19.4
08/17/2018	87.8	0.1	93.5	0.0	90.6	15.0	81.6	0.0	84.0	0.6	75.5	7.3	75.0	19.8
08/18/2018	99.0	0.1	97.6	0.0	97.3	14.4	98.6	0.0	100.2	0.0	95.0	1.7	89.3	6.5
08/19/2018	94.0	0.1	91.3	0.0	96.3	20.6	91.2	0.5	93.8	0.3	86.9	2.9	83.9	2.7
08/20/2018	100.3	0.1	100.4	0.0	100.2	3.8	103.2	2.2	108.2	0.0	123.1	11.4	121.4	21.7
08/21/2018	113.4	0.1	108.8	0.0	111.2	0.0	111.8	0.0	115.1	0.0	126.2	1.9	119.7	1.7
08/22/2018	113.3	0.1	113.8	0.0	113.7	10.8	105.2	0.0	108.2	0.0	121.9	1.3	118.9	1.3
08/23/2018	110.6	0.1	111.2	0.0	113.3	4.8	109.2	0.0	113.4	0.0	116.6	1.6	113.3	1.5

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

Date	Dworshak		Brownlee Inflow	Hells Canyon Outflow	Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill			Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
08/10/2018	13.0	2.9	---	---	32.0	17.9	31.6	9.4	29.5	16.1	29.5	19.7
08/11/2018	10.1	0.0	---	---	34.5	17.6	31.9	10.5	30.8	16.7	31.9	21.9
08/12/2018	10.1	0.0	---	---	27.5	14.5	26.5	10.5	27.1	13.6	27.9	18.1
08/13/2018	10.1	0.0	---	---	29.2	18.8	27.9	8.6	25.2	11.6	27.0	17.0
08/14/2018	10.1	0.0	---	---	30.9	19.3	28.3	8.7	27.6	11.0	30.5	20.3
08/15/2018	10.2	0.0	---	---	29.9	19.8	29.1	10.4	28.4	15.0	31.3	20.8
08/16/2018	7.6	0.0	---	---	29.4	20.0	27.1	10.4	25.3	11.8	27.2	17.1
08/17/2018	7.5	0.0	---	---	26.9	14.1	25.7	8.6	23.4	9.9	24.6	15.2
08/18/2018	7.5	0.0	---	---	26.4	13.6	25.4	8.6	23.6	10.1	27.9	17.9
08/19/2018	7.5	0.0	---	---	24.7	12.0	24.0	8.6	22.0	8.7	26.1	16.2
08/20/2018	7.5	0.0	---	---	25.2	12.5	22.0	8.7	20.2	6.9	23.8	14.0
08/21/2018	7.6	0.0	---	---	26.0	13.2	23.7	7.1	22.7	9.3	26.1	16.2
08/22/2018	7.6	0.0	---	---	27.7	14.5	27.8	7.0	27.2	11.4	29.7	19.7
08/23/2018	7.6	0.0	---	---	26.7	13.6	25.6	8.7	22.9	9.5	28.7	18.6

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
08/10/2018	168.5	84.4	157.4	47.2	147.0	59.0	161.5	96.5	3.2	49.3
08/11/2018	143.8	72.3	136.4	41.1	124.8	49.8	145.4	101.1	0.0	31.9
08/12/2018	122.2	61.4	119.4	35.8	108.2	43.5	125.5	82.6	0.0	30.5
08/13/2018	133.9	67.2	123.5	37.0	116.2	46.8	124.2	80.7	2.0	29.1
08/14/2018	156.7	78.8	142.8	42.9	129.6	52.7	138.6	93.8	0.0	32.4
08/15/2018	156.7	78.9	154.2	46.1	142.2	56.5	148.4	99.5	0.0	36.5
08/16/2018	137.8	69.2	136.7	41.0	123.5	49.2	139.9	95.9	0.0	31.6
08/17/2018	122.5	61.4	118.3	35.5	107.1	42.7	121.0	77.7	0.0	30.9
08/18/2018	117.0	58.7	107.2	32.1	100.2	39.8	119.0	76.0	0.0	30.6
08/19/2018	120.8	60.6	106.5	31.8	96.8	38.4	112.4	69.5	0.0	30.5
08/20/2018	136.2	68.2	130.0	39.1	123.6	49.4	125.9	80.0	0.0	33.5
08/21/2018	145.7	72.9	143.5	43.2	132.9	53.5	145.1	92.0	0.0	40.7
08/22/2018	168.7	84.3	154.3	46.3	141.9	56.9	156.6	97.9	-1.0	47.4
08/23/2018	152.9	76.6	137.1	41.0	123.1	49.1	140.7	96.8	0.2	31.4

FISH PASSAGE CENTER

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

Date 8/23/2018 12:15:08 PM

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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				
08/09									107.2	107.4	107.6	24	106.4	107.0	109.0	24	106.7	107.2	107.7	24	106.2	106.7	107.1	24					08/09
08/10									107.7	107.9	108.2	24	107.0	107.8	108.8	24	106.7	107.2	107.8	24	106.3	106.7	107.1	24					08/10
08/11									107.3	107.4	107.8	24	106.7	107.5	108.9	24	106.2	106.6	106.8	24	105.8	106.3	106.8	24					08/11
08/12									106.7	107.0	107.3	24	105.9	106.6	107.7	24	105.1	105.3	105.6	24	104.9	105.1	105.3	24					08/12
08/13									106.6	106.8	107.0	24	105.8	106.6	107.5	24	105.3	105.5	105.7	23	104.9	105.3	105.7	24					08/13
08/14									107.0	107.5	107.6	24	106.1	106.9	108.2	24	106.1	106.5	106.7	21	105.5	106.1	106.5	24					08/14
08/15									107.0	107.1	107.3	24	106.3	107.0	108.3	24	106.6	106.8	107.1	24	106.0	106.3	106.5	24					08/15
08/16									106.7	106.9	107.0	24	106.2	106.9	108.4	24	106.2	106.4	106.6	24	105.9	106.0	106.1	24					08/16
08/17									106.5	106.6	106.7	24	106.1	106.9	108.2	24	105.9	106.1	106.5	24	105.6	105.8	106.0	24					08/17
08/18									105.9	106.1	106.5	24	105.5	106.1	106.9	24	105.2	105.4	105.7	24	105.0	105.2	105.4	24					08/18
08/19									106.3	106.5	106.6	24	105.7	106.4	107.5	24	105.2	105.3	105.5	24	105.1	105.2	105.5	24					08/19
08/20									106.1	106.4	106.6	24	105.5	106.2	107.1	24	104.9	105.0	105.3	18	104.9	105.2	105.5	24					08/20
08/21									105.5	106.0	106.2	24	105.0	105.5	106.0	24	104.5	104.9	105.3	22	104.3	104.6	104.7	24					08/21
08/22									106.3	106.6	106.9	23	105.4	105.7	107.2	23	105.3	105.9	106.5	23	105.0	105.5	105.8	23					08/22

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				
08/09	108.0	108.6	109.2	23	113.6	116.9	124.1	23	111.8	113.4	114.5	23	111.4	113.0	114.0	22	109.2	110.4	112.9	23	113.9	114.5	115.6	22					08/09
08/10	108.0	108.6	109.2	22	110.4	111.2	116.1	22	113.1	114.2	115.1	21	112.6	113.3	114.2	19	111.6	112.4	113.3	20	115.0	115.6	116.2	20					08/10
08/11	106.5	106.9	107.2	21	109.2	110.1	112.0	21	113.0	114.1	114.7	24	111.8	113.1	115.1	22	111.2	112.3	113.2	24	115.8	116.9	118.2	22					08/11
08/12	105.3	105.6	106.0	24	108.3	109.2	110.3	24	111.1	112.2	113.9	24	110.4	111.5	113.9	24	111.3	112.2	112.9	24	115.8	116.6	117.3	24					08/12
08/13	105.3	106.0	106.5	24	107.7	108.3	109.2	24	107.4	107.8	108.2	24	107.5	107.9	108.9	21	107.7	108.2	109.8	23	112.9	113.4	114.4	20					08/13
08/14	106.0	106.8	107.4	24	108.1	108.8	109.3	24	107.8	108.6	109.2	24	107.2	108.1	109.4	24	106.3	106.8	107.1	24	113.0	113.6	115.3	24					08/14
08/15	106.4	107.1	107.5	24	108.4	108.9	109.4	24	108.5	108.8	109.1	24	108.1	108.5	109.1	24	107.4	108.0	108.2	24	108.8	109.4	113.7	24					08/15
08/16	106.3	106.9	107.5	24	108.3	108.7	109.1	24	107.7	107.9	108.0	24	107.3	107.8	108.3	24	106.2	107.3	107.8	24	107.0	107.3	107.9	23					08/16
08/17	105.9	106.3	106.8	24	109.5	111.1	115.4	24	107.4	107.5	107.7	24	106.7	107.3	107.8	23	106.1	106.4	107.0	24	106.3	106.6	107.6	23					08/17
08/18	105.5	105.9	106.8	24	110.3	111.9	115.7	24	107.2	107.4	107.8	24	106.6	107.1	108.0	23	106.0	106.5	107.0	23	106.1	106.5	107.1	23					08/18
08/19	104.9	105.2	105.4	24	110.7	113.7	118.8	24	107.7	108.2	109.7	24	107.3	107.9	109.2	24	106.3	106.6	106.8	24	106.4	106.7	107.0	23					08/19
08/20	104.4	104.7	104.9	24	106.1	107.7	114.5	24	109.1	109.7	110.3	24	109.1	110.0	113.5	23	107.8	108.8	110.1	24	107.7	108.7	109.8	23					08/20
08/21	104.3	104.7	105.3	19	102.6	105.2	109.0	24	109.5	110.5	111.7	24	109.3	110.2	111.2	23	107.9	108.7	110.2	23	107.8	108.5	109.7	21					08/21
08/22	105.1	105.6	105.7	22	107.4	109.8	112.5	22	107.2	107.7	108.2	23	107.4	108.1	108.9	21	108.6	109.7	110.5	21	108.9	110.0	110.6	21					08/22

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

Wanapum				Wanapum Tlwr				Priest Rapids				Priest R. Dnstr				Pasco				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	Date
08/09	114.3	115.5	116.5	24	113.8	114.1	114.9	24	112.6	113.3	113.6	24	112.9	113.4	113.7	24					08/09
08/10	113.8	114.5	115.2	24	113.6	114.1	115.4	24	113.0	113.4	113.9	24	113.2	113.6	114.6	24					08/10
08/11	109.0	109.9	112.0	24	112.1	112.9	114.1	24	110.5	111.3	112.2	24	111.8	112.5	114.0	24					08/11
08/12	106.9	107.4	108.1	24	111.3	112.5	114.0	24	108.0	108.7	110.1	24	111.2	112.1	113.7	24					08/12
08/13	109.2	111.8	112.6	24	111.7	112.1	113.5	24	110.9	111.9	113.2	24	112.0	112.9	114.1	24					08/13
08/14	112.5	113.5	114.3	24	112.2	112.7	113.5	24	111.2	112.3	113.5	24	112.0	112.3	112.8	24					08/14
08/15	112.9	113.8	114.3	24	112.2	112.7	113.6	24	111.8	112.3	112.7	24	112.4	112.5	112.7	24					08/15
08/16	111.6	113.0	114.3	24	111.1	111.5	112.6	24	111.8	112.1	112.6	24	112.6	113.2	115.3	24					08/16
08/17	107.7	108.5	109.2	24	107.5	109.5	111.6	24	109.2	110.0	111.3	24	111.6	112.5	114.2	24					08/17
08/18	107.2	109.0	110.3	24	104.1	105.8	106.3	24	106.7	107.4	108.2	24	109.7	111.5	113.0	24					08/18
08/19	107.0	108.0	109.2	24	104.3	105.6	106.9	24	105.6	106.0	106.6	24	106.5	107.2	108.0	24					08/19
08/20	105.3	105.3	105.7	10	110.0	110.0	121.2	10	104.6	104.6	104.8	10	110.3	110.3	114.9	10					08/20
08/21				0				0				0				0					08/21
08/22				0				0				0				0					08/22

Total Dissolved Gas Data at Snake and Clearwater Sites

Dworshak				Clrwr Peck				Anatone				Clrwr-Lewiston				Lower Granite				Lower G. 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
08/09	109.2	110.1	116.9	24	107.9	109.2	112.5	24	102.4	103.9	105.3	24	105.8	108.2	110.0	24	102.5	102.6	102.8	24	110.9	111.3	111.4	24	08/09
08/10	108.8	109.2	109.6	24	107.9	108.9	109.7	24	102.3	103.5	104.8	24	105.8	107.9	109.5	24	103.0	103.3	103.5	24	111.5	111.8	112.3	24	08/10
08/11	102.5	102.9	103.9	24	103.7	105.0	106.7	24	101.7	102.9	104.2	24	104.8	106.5	107.8	24	102.9	103.1	103.4	24	110.9	111.1	111.3	24	08/11
08/12	101.7	102.1	102.4	24	102.8	104.0	105.0	24	101.2	102.7	104.2	24	103.5	105.7	107.4	24	102.7	103.0	103.2	24	109.4	110.3	111.2	24	08/12
08/13	101.8	102.2	102.5	24	102.6	103.8	104.9	24	101.5	102.9	104.2	24	103.1	105.1	106.7	24	103.0	103.3	103.7	24	112.5	115.8	117.9	24	08/13
08/14	102.2	102.6	102.9	24	102.9	104.1	105.0	24	101.9	103.4	104.9	24	103.3	105.4	107.1	24	102.8	103.2	103.5	24	114.0	116.3	117.3	24	08/14
08/15	102.3	102.6	103.0	24	102.9	104.0	105.0	24	101.8	103.1	104.6	24	103.2	105.2	106.9	24	102.7	103.2	103.7	24	113.0	115.6	117.3	24	08/15
08/16	102.2	102.6	103.1	24	102.9	104.2	105.4	24	101.5	102.7	104.0	24	103.1	105.1	106.8	24	101.6	101.8	102.1	24	112.9	114.9	116.3	24	08/16
08/17	102.0	102.3	102.7	24	102.6	103.6	105.1	24	101.1	102.2	103.6	24	103.0	104.9	106.4	24	100.8	101.0	101.3	24	109.5	110.0	110.9	24	08/17
08/18	101.7	102.0	102.4	24	102.7	104.0	105.2	24	101.2	102.5	103.8	24	103.1	105.1	106.6	24	100.9	101.0	101.1	24	109.5	109.7	110.2	24	08/18
08/19	102.1	102.6	103.0	24	103.0	104.5	105.7	24	101.6	103.1	104.6	24	103.4	105.5	107.1	24	100.7	101.1	101.4	24	108.3	109.1	109.6	24	08/19
08/20	101.9	102.2	102.5	24	102.4	103.1	104.0	24	100.7	101.5	102.3	24	102.3	103.5	105.0	24	100.9	101.2	101.5	24	107.0	108.1	108.7	24	08/20
08/21	101.8	102.1	102.5	24	102.5	103.8	104.9	24	101.0	102.4	103.6	24	102.9	105.0	106.6	24	100.6	100.8	101.1	24	108.4	108.9	109.3	24	08/21
08/22	102.2	102.6	103.0	23	102.8	104.1	105.3	23	102.0	103.2	104.5	23	103.1	105.0	106.5	23	102.0	102.7	103.6	23	109.7	110.9	112.4	23	08/22

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**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

Little Goose				L. Goose Tlwr				Lower Mon.				Lwr. Mon. Tlwr				Ice Harbor				Tlwtr 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
08/09	108.9	109.4	109.9	24	112.8	114.9	115.6	24	108.6	108.7	108.9	24	115.0	115.4	115.9	24	113.3	113.8	114.3	24	113.3	114.1	114.7	24	08/09
08/10	110.3	110.9	111.9	24	109.6	109.9	110.3	24	109.1	109.3	109.5	24	114.5	115.1	115.6	24	113.7	113.9	114.2	24	112.9	113.7	114.3	24	08/10
08/11	111.5	111.8	112.3	24	109.4	109.7	110.0	24	109.6	109.7	109.9	24	114.4	114.6	114.8	24	113.0	113.4	114.0	24	112.9	113.2	113.6	24	08/11
08/12	109.2	109.7	110.7	24	109.0	109.4	109.8	24	108.9	109.2	110.0	24	112.9	114.8	115.3	24	110.9	111.1	111.7	24	112.4	113.4	114.6	24	08/12
08/13	108.7	109.3	109.7	24	108.7	109.3	109.6	24	108.4	108.7	109.3	24	111.7	113.1	115.1	24	110.6	110.8	111.0	24	110.9	111.6	112.4	24	08/13
08/14	108.4	108.7	109.0	24	108.8	109.3	109.6	24	108.3	109.0	109.5	24	111.8	114.8	115.3	24	110.3	110.7	110.9	24	112.2	113.0	114.0	24	08/14
08/15	107.6	107.9	108.1	24	108.7	109.2	109.6	24	107.1	107.4	107.6	24	113.7	115.2	115.8	24	109.7	110.2	111.2	24	112.3	113.7	114.3	24	08/15
08/16	106.1	106.3	106.7	24	108.4	108.8	109.1	24	107.7	108.0	108.4	24	112.6	113.1	113.4	24	110.3	110.7	111.1	24	111.0	112.2	113.5	23	08/16
08/17	106.0	106.3	106.9	24	107.7	108.0	108.3	24	107.7	108.1	108.5	24	117.6	124.9	139.3	24	109.6	109.9	110.7	24	110.2	111.0	112.2	24	08/17
08/18	106.8	107.4	107.8	24	108.1	108.7	109.1	24	107.7	107.9	108.3	24	111.6	112.4	112.9	24	109.7	110.2	110.5	24	109.6	110.3	110.9	24	08/18
08/19	107.3	107.7	108.2	24	107.8	108.3	108.7	24	108.2	108.4	108.6	24	110.4	111.4	112.7	24	110.2	110.4	110.7	24	108.5	109.3	110.5	24	08/19
08/20	107.9	108.5	109.0	24	107.3	107.7	107.8	24	106.8	107.4	109.0	24	109.1	109.5	110.0	24	110.4	110.6	110.9	24	107.0	107.7	108.5	24	08/20
08/21	108.1	108.4	109.1	24	107.5	107.9	108.3	24	108.6	109.1	110.5	24	110.8	111.9	112.6	24	110.2	110.6	111.6	24	107.8	109.1	110.1	24	08/21
08/22	109.0	109.2	109.5	23	107.7	108.5	108.9	23	107.5	107.8	108.1	23	112.3	113.0	115.2	23	109.7	110.0	110.2	23	108.8	109.9	112.7	23	08/22

Total Dissolved Gas Data at Mid-Columbia Sites

McNary-Wash.				Tlwtr McNary				John Day				Tlwtr 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
08/09	109.1	109.7	110.7	24	115.1	115.5	116.0	24	106.1	106.7	107.2	24	113.8	114.7	115.1	24	108.2	108.5	108.6	24	113.2	113.8	114.2	24	08/09
08/10	109.9	110.4	111.5	23	115.2	115.6	116.4	23	106.9	107.2	107.7	23	114.5	114.8	115.0	23	107.0	107.3	107.4	23	112.8	113.1	113.5	23	08/10
08/11	107.8	108.2	108.9	24	113.4	113.9	114.8	24	106.0	106.2	106.6	24	113.6	114.1	114.7	24	105.1	105.6	106.1	24	111.0	111.4	111.8	24	08/11
08/12	106.3	106.5	106.9	24	113.0	113.4	113.7	24	106.0	106.4	106.8	24	113.4	113.8	114.4	24	104.9	105.7	106.1	24	110.8	111.8	112.3	24	08/12
08/13	106.2	106.6	107.2	24	113.6	114.1	114.7	24	106.8	107.6	108.8	24	113.6	114.0	114.3	24	108.2	109.7	110.2	24	112.4	113.9	114.7	24	08/13
08/14	105.8	106.7	107.6	24	114.5	115.2	115.7	24	106.7	107.1	108.0	24	114.2	114.9	115.7	24	109.9	110.5	111.2	24	113.9	115.0	115.7	24	08/14
08/15	106.5	106.8	107.2	24	114.7	115.6	116.2	24	106.7	107.0	107.7	24	113.3	114.3	114.8	24	110.5	111.3	123.3	23	113.9	114.3	114.5	24	08/15
08/16	106.5	106.8	107.1	24	114.7	115.1	115.6	24	106.0	106.3	106.7	24	113.6	114.1	114.7	24				0	113.1	113.5	113.7	24	08/16
08/17	106.7	107.0	107.5	24	114.0	114.3	114.7	24	104.5	104.7	105.2	24	112.3	112.5	112.8	24	105.2	105.2	105.9	12	111.0	111.4	111.8	24	08/17
08/18	106.8	107.0	107.5	24	113.9	114.5	115.0	24	103.9	104.4	105.2	24	111.8	112.2	112.6	24	104.2	104.8	105.2	24	110.4	110.7	111.0	24	08/18
08/19	106.8	107.1	107.8	24	114.0	114.6	115.2	24	105.0	105.7	106.7	24	112.3	112.8	113.1	24	107.3	108.9	109.7	24	111.5	112.3	112.5	24	08/19
08/20	106.3	106.8	107.5	24	113.6	113.9	114.1	24	106.4	106.9	108.1	24	113.5	114.3	115.1	24	108.8	109.3	109.7	24	113.0	113.7	114.1	24	08/20
08/21	105.3	106.4	107.6	24	113.4	114.1	114.8	24	106.9	107.4	107.8	24	113.5	114.1	114.5	24	108.6	109.0	109.4	24	113.3	114.1	114.6	24	08/21
08/22	105.8	106.1	106.5	23	115.3	116.3	116.5	23	106.6	106.8	107.2	23	113.8	114.5	115.3	23	109.7	110.2	110.6	23	113.9	114.8	115.3	23	08/22

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 Mid-Columbia Sites

Date	Bonneville				Warrendale				Camas\Washug.				Cascade Isl.d.				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	
08/09	111.2	111.6	112.0	24	115.9	116.4	117.0	24	116.1	117.1	117.7	24	115.2	116.3	117.3	24	08/09
08/10	108.5	108.9	109.9	24	116.4	117.4	118.8	24	115.8	116.9	118.3	24	115.4	116.2	117.2	24	08/10
08/11	106.0	106.3	107.2	24	116.7	117.1	117.8	24	111.9	113.2	114.0	24	116.8	116.8	116.9	24	08/11
08/12	105.5	106.1	106.4	24	116.6	116.9	117.3	24	113.9	114.9	115.6	24	114.6	115.7	116.8	24	08/12
08/13	105.9	106.4	107.0	24	116.4	116.7	117.0	24	114.3	115.5	116.4	24	114.1	114.6	117.2	24	08/13
08/14	107.8	108.4	109.0	24	117.3	117.8	118.6	24	114.0	115.3	116.8	24	114.9	115.8	117.5	24	08/14
08/15	110.7	111.7	112.3	24	118.1	118.5	118.8	24	115.9	117.7	119.2	24	117.4	117.5	117.6	24	08/15
08/16	109.7	110.6	112.0	24	116.7	117.1	117.5	24	114.6	115.5	117.0	24	117.1	117.2	117.4	24	08/16
08/17	105.1	105.7	107.5	24	115.8	116.3	116.8	24	113.0	114.3	115.3	24	113.9	114.3	117.0	24	08/17
08/18	104.1	104.5	104.9	24	116.1	116.7	117.4	24	113.7	115.2	115.7	24	113.6	113.8	113.9	24	08/18
08/19	105.1	105.7	105.9	24	116.6	117.0	117.9	24	115.1	116.0	116.7	24	113.4	113.5	113.6	24	08/19
08/20	106.1	107.0	107.8	24	116.7	117.0	117.5	24	114.8	115.7	116.1	24	114.9	116.6	117.2	24	08/20
08/21	106.9	107.5	108.2	24	115.6	116.3	116.7	24	113.1	113.9	115.5	24	115.5	116.7	117.9	24	08/21
08/22	109.6	110.8	111.6	23	117.6	118.3	119.1	23	113.3	115.6	118.2	23	115.8	116.6	117.8	23	08/22

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 8/23/2018 12:17:01 PM

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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)
08/09/2018					0	0	0	0	0		
08/10/2018					0	5	0	0		0	
08/11/2018					0	0	0	0	0		0
08/12/2018					0	0	0	0			
08/13/2018					4	0	0	0	0		0
08/14/2018					0	0	0	0		0	
08/15/2018					0	0	0	0	0		0
08/16/2018					0	0	0	0			
08/17/2018					0	0	0	0	0	0	0
08/18/2018					0	0	0	0			
08/19/2018					0	0	0	0	0		0
08/20/2018					0	0	0	0			
08/21/2018					0	0	0	0	0	0	0
08/22/2018					0	0	0	0			
08/23/2018						0		0	0		
Total:	0	0	0	0	4	5	0	0	0	0	0
# Days:	0	0	0	0	14	15	14	15	8	4	6
Average:	0	0	0	0	0	0	0	0	0	0	0
YTD:	23,452	41,212	21,824	12,792	4,639,017	2,838,053	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

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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)
08/09/2018					547	478	122	67	572		
08/10/2018					650	449	98	74		57	
08/11/2018					1,027	344	27	99	538		1,194
08/12/2018					581	406	241	50			
08/13/2018					350	346	56	29	602		399
08/14/2018					725	444	92	55		46	
08/15/2018					773	450	46	18	258		263
08/16/2018					1,465	291	53	24			
08/17/2018					1,334	288	85	16	258	80	611
08/18/2018					578	348	59	15			
08/19/2018					484	704	63	10	117		974
08/20/2018					327	505	42	6			
08/21/2018					819	161	46	11	290	20	768
08/22/2018					1,119	219	68	13			
08/23/2018						282		14	626		
Total:	0	0	0	0	10,779	5,715	1,098	501	3,261	203	4,209
# Days:	0	0	0	0	14	15	14	15	8	4	6
Average:	0	0	0	0	770	381	78	33	408	51	702
YTD:	0	6	89	192	868,933	938,447	507,828	36,229	2,287,509	1,067,853	2,877,882

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)
08/09/2018					0	0	0	0	0		
08/10/2018					0	0	0	1		0	
08/11/2018					0	0	0	6	0		0
08/12/2018					9	0	0	3			
08/13/2018					0	0	0	0	0		0
08/14/2018					11	0	0	0		0	
08/15/2018					0	0	0	1	0		0
08/16/2018					0	0	0	0			
08/17/2018					0	0	0	0	0	0	0
08/18/2018					0	0	0	0			
08/19/2018					0	2	0	0	0		0
08/20/2018					0	0	0	0			
08/21/2018					0	0	0	0	0	0	0
08/22/2018					0	1	0	0			
08/23/2018						0		0	0		
Total:	0	0	0	0	20	3	0	11	0	0	0
# Days:	0	0	0	0	14	15	14	15	8	4	6
Average:	0	0	0	0	1	0	0	1	0	0	0
YTD:	0	0	1,224	1,365	262,520	215,275	42,479	44,218	226,511	120,100	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)
08/09/2018					4	5	0	0	0		
08/10/2018					0	0	0	0		7	
08/11/2018					4	6	0	0	0		0
08/12/2018					0	0	9	0			
08/13/2018					0	0	0	1	0		0
08/14/2018					6	0	0	0		0	
08/15/2018					0	0	0	1	0		0
08/16/2018					0	0	0	0			
08/17/2018					0	2	0	0	0	0	0
08/18/2018					2	0	0	0			
08/19/2018					0	0	2	1	0		0
08/20/2018					0	3	3	0			
08/21/2018					0	0	0	0	0	0	0
08/22/2018					0	1	2	0			
08/23/2018						0		0	0		
Total:	0	0	0	0	16	17	16	3	0	7	0
# Days:	0	0	0	0	14	15	14	15	8	4	6
Average:	0	0	0	0	1	1	1	0	0	2	0
YTD:	723	27,446	3,888	5,328	3,924,760	3,004,336	1,942,821	24,916	240,968	681,274	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)
08/09/2018					0	0	0	0	0		
08/10/2018					0	0	0	0		0	
08/11/2018					0	0	0	0	0		0
08/12/2018					0	0	0	0			
08/13/2018					0	0	0	1	0		0
08/14/2018					0	0	0	0		0	
08/15/2018					0	0	0	0	8		0
08/16/2018					0	0	0	0			
08/17/2018					0	0	0	1	0	0	0
08/18/2018					0	0	0	0			
08/19/2018					0	2	0	0	0		0
08/20/2018					0	0	0	0			
08/21/2018					0	0	0	0	0	0	0
08/22/2018					0	0	0	0			
08/23/2018						0		1	0		
Total:	0	0	0	0	0	2	0	3	8	0	0
# Days:	0	0	0	0	0	0	0	0	1	0	0
Average:	0	0	0	0	0	0	0	0	1	0	0
YTD:	0	0	4	115	260,629	120,861	58,625	76,237	1,527,709	383,716	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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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)
08/09/2018					4	6	0	0	4		
08/10/2018					0	8	0	0		0	
08/11/2018					0	8	4	0	12		0
08/12/2018					3	24	4	0			
08/13/2018					0	10	0	0	8		0
08/14/2018					4	6	0	0		0	
08/15/2018					0	3	1	0	16		0
08/16/2018					0	5	3	0			
08/17/2018					1	3	1	0	24	0	0
08/18/2018					1	12	0	1			
08/19/2018					2	6	1	0	20		0
08/20/2018					0	9	1	0			
08/21/2018					0	4	1	0	16	0	0
08/22/2018					0	9	0	0			
08/23/2018						2		0	24		
Total:	0	0	0	0	15	115	16	1	124	0	0
# Days:	0	0	0	0	15	23	14	15	8	4	6
Average:	0	0	0	0	1	5	1	0	16	0	0
YTD:		1	3		494	35,942	56,816	371	219,310	227,728	27,305

- 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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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 8/9/2018 12:00:00 AM TO 8/23/2018 12:00:00 AM

Date 8/23/2018 12:17:36 PM

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Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	4,496	2	8	0	7	4,520
Sum of Number Barged	1,696	2	8	0	6	1,718
Sum of Number Bypassed	0	0	0	0	1	2
Sum of Number Trucked	2,769	0	0	0	0	2,769
Sum of Sample Morts	24	0	0	0	0	24
Sum of Facility Morts	7	0	0	0	0	7
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	31	0	0	0	0	31

Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	3,492	2	2	1	10	3,517
Sum of Number Barged	1,364	0	0	0	6	1,376
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	1,888	0	2	0	4	1,898
Sum of Sample Morts	16	1	0	0	0	17
Sum of Facility Morts	18	1	0	1	0	20
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	34	2	0	1	0	37

FISH PASSAGE CENTER

Two Week Transportation Summary Report 8/9/2018 12:00:00 AM TO 8/23/2018 12:00:00 AM

Date 8/23/2018 12:17:36 PM

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Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	562	0	0	0	8	578
Sum of Number Barged	301	0	0	0	4	309
Sum of Number Bypassed	127	0	0	0	4	135
Sum of Number Trucked	129	0	0	0	0	129
Sum of Sample Morts	2	0	0	0	0	2
Sum of Facility Morts	3	0	0	0	0	3
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	5	0	0	0	0	5

Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	8,550	4	10	1	25	8,615
Sum of Number Barged	3,361	2	8	0	16	3,403
Sum of Number Bypassed	127	0	0	0	5	137
Sum of Number Trucked	4,786	0	2	0	4	4,796
Sum of Sample Morts	42	1	0	0	0	43
Sum of Facility Morts	28	1	0	1	0	30
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	70	2	0	1	0	73

FISH PASSAGE CENTER

YTD Transportation Summary Report

Date 8/23/2018 12:17:13 PM

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Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	527389	3041145	182820	188701	2522941	8985937
Sum of Number Barged	508800	2429169	179217	184065	1811318	6923887
Sum of Number Bypassed	14636	610813	3539	4465	711354	2056161
Sum of Number Trucked	2769	0	0	0	0	2769
Sum of Sample Morts	223	58	0	9	44	378
Sum of Facility Morts	936	1063	64	162	190	2605
Sum of Reseach Morts	25	42	0	0	35	137
Sum of Total Project Mort	1184	1163	64	171	269	3120

Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	566311	1857033	137102	74670	1969533	6574182
Sum of Number Barged	559195	1546147	136377	66134	1357466	5022785
Sum of Number Bypassed	854	306206	407	7716	611659	1538501
Sum of Number Trucked	1888	0	2	0	4	1898
Sum of Sample Morts	150	41	4	13	14	236
Sum of Facility Morts	4018	4639	312	807	390	10556
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	4168	4680	316	820	404	10792

FISH PASSAGE CENTER

YTD Transportation Summary Report

Date 8/23/2018 12:17:13 PM

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Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	305060	1218103	24944	35305	1178568	3940548
Sum of Number Barged	304570	1018208	24840	33659	926249	3233775
Sum of Number Bypassed	127	199433	100	1598	252171	705600
Sum of Number Trucked	129	0	0	0	0	129
Sum of Sample Morts	15	7	0	3	7	39
Sum of Facility Morts	219	455	4	45	141	1005
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	234	462	4	48	148	1044

Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	1398760	6116281	344866	298676	5671042	19500667
Sum of Number Barged	1372565	4993524	340434	283858	4095033	15180447
Sum of Number Bypassed	15617	1116452	4046	13779	1575184	4300262
Sum of Number Trucked	4786	0	2	0	4	4796
Sum of Sample Morts	388	106	4	25	65	653
Sum of Facility Morts	5173	6157	380	1014	721	14166
Sum of Reseach Morts	25	42	0	0	35	137
Sum of Total Project Mort	5586	6305	384	1039	821	14956

Cumulative Adult Passage at Mainstem Dams Through: 08/23

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	08/23	87894	6456	83624	18110	152393	25835	61057	4349	88044	10648	101791	21805	14401	1854	16538	2271	31842	5523
TDA	08/23	57935	4793	58310	12497	119227	21697	49296	3787	69246	9277	84539	17568	7285	797	7160	921	16027	3192
JDA	08/23	50572	5053	46675	12475	103731	20380	42835	4293	60416	7363	75555	16777	3213	523	3698	587	9166	2091
MCN	08/23	44427	3472	44292	7020	94405	16297	42649	2513	57279	4705	71705	12468	1948	314	2735	250	6340	1124
IHR	08/23	32600	2197	28306	6949	68113	11204	6046	521	9284	2087	19109	4826	444	32	573	46	1615	209
LMN	08/22	35398	3020	28545	8270	68100	11017	6091	716	8216	3388	19658	6010	271	53	263	44	1029	187
LGS	08/23	31834	2486	26598	8335	63992	12109	7458	589	9086	3754	19425	6430	211	24	176	50	877	111
LGR	08/23	31161	2948	27357	8256	62850	13009	7304	819	8952	3627	17398	6872	116	15	152	33	495	93
PRD	08/22	7067	949	7268	783	18018	1858	40076	2269	52981	1760	60015	3091	526	199	848	141	2182	900
WAN	08/22	8071	964	6612	484	17542	2163	37808	1450	49392	1355	56843	2474	446	210	641	105	1856	667
RIS	08/22	7894	997	8080	564	18255	2598	38816	1646	56265	1333	59661	4992	261	72	484	90	1213	582
RRH	08/22	5919	807	5864	406	8195	1153	33110	1106	42608	1060	47856	3464	179	46	181	39	694	311
WEL	08/22	7500	976	6589	820	8670	1609	21875	1055	29721	1052	36764	3310	0	0	0	0	0	0
WFA	08/21	24543	1999	34391	2474	35770	1705	0	0	0	0	0	0	55	6	0	0	66	16

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.	
BON	08/23	656	74	340	67	1934	253	193799	87669	321923	55710	57299	204202	22758	23197	78912	42095	80440	28652	
TDA	08/23	95	12	12	3	255	76	151992	63965	273623	15590	12593	93398	7344	6144	41137	9730	27920	8327	
JDA	08/23	17	7	6	-1	122	47	168391	65885	264634	8388	5575	66578	4758	3517	28604	7832	20228	6227	
MCN	08/23	-4	0	5	1	18	5	155416	57955	230314	7264	6044	48868	3823	2848	20116	1348	2018	1018	
IHR	08/23	0	1	1	0	0	0	658	392	959	3928	2441	27054	1628	1273	8746	868	1060	370	
LMN	08/22	0	0	0	0	0	0	392	345	1118	4118	2872	27400	1858	1584	9885	374	335	106	
LGS	08/23	0	0	0	0	0	0	265	285	1046	2922	2177	16380	1235	1116	7061	117	454	83	
LGR	08/23	0	0	1	0	0	0	272	226	1076	6176	7835	17453	2150	3394	7350	179	303	38	
PRD	08/22	0	0	0	0	13	0	189864	66663	271025	1416	913	6670	0	0	0	9829	20844	4610	
WAN	08/22	0	0	0	0	0	0	196169	76072	241617	1370	779	6540	0	0	0	6369	18404	3332	
RIS	08/22	0	0	0	0	0	0	171820	73128	263799	1397	822	5153	779	505	2561	3325	12791	1817	
RRH	08/22	0	0	0	0	0	0	162513	46642	220694	992	547	3709	518	267	1715	3543	15297	2036	
WEL	08/22	0	0	0	0	0	0	153452	42247	209296	801	444	2059	416	268	978	157	71	1	
WFA	08/21	0	2	117	117	11	21	0	0	0	10481	2703	20555	2117	744	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.

