



Fish Passage Center

Weekly Report #18-14

June 08, 2018

This Week's Highlights

Water Supply

Precipitation throughout the Columbia Basin has varied between 0% and 56% of average at individual sub-basins over early June. Precipitation above The Dalles has been 33% of average over early June. Over the 2018 water year, precipitation has ranged between 88% and 112% of average.

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

Location	Water Year 2018 June 1-7, 2018		Water Year 2018 October 1, 2017 to June 7, 2018	
	Observed (inches)	% Average	Observed (inches)	% Average
	Columbia Above Coulee	0.34	44	30.0
Snake River Above Ice Harbor	0.13	30	17.7	94
Columbia Above The Dalles	0.17	33	21.5	97
Kootenai	0.30	37	29.2	100
Clark Fork	0.30	46	23.5	110
Flathead	0.36	42	31.2	112
Pend Oreille River Basin above Waneta Dam	0.30	40	27.7	108
Salmon River Basin	0.33	56	23.1	98
Upper Snake Tributaries	0.06	13	20.8	97
Clearwater	0.24	32	38.1	112
Willamette River above Portland	0.00	0	52.6	88

Table 2 displays the June 7th ESP runoff volume forecasts for multiple reservoirs along with the May COE forecasts at Libby and Dworshak. The June 7th ESP forecast at The Dalles between April and August is 106,350 Kaf (121% of average).

Table 2. June 7 ESP Runoff Volume Forecasts for various reservoirs within the Columbia and Snake River Basins.

Location	June 7, 2018 5-day QPF ESP	
	% Average (1981-2010)	Runoff Volume (Kaf)
The Dalles (Apr-Aug)	121	106,350
Grand Coulee (Apr-Aug)	122	69,421
Libby Res. Inflow, MT (Apr-Aug)	118 123**	6,940 7,213**
Hungry Horse Res. Inflow, MT (Apr-Aug)	151	2,930
Lower Granite Res. Inflow (Apr- July)	120	23,861
Brownlee Res. Inflow (Apr-July)	112	6,120
Dworshak Res. Inflow (Apr-July)	126 122**	3,037 2,966**

* Denotes COE June Forecast

Grand Coulee Reservoir is at 1277.1 feet (6-7-18) and has refilled 8.1 feet over the last week. Outflows at Grand Coulee have ranged between 173.3 Kcfs and 216.9 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2433.6 feet (6-7-18) and has refilled 2.3 feet over the past week. Daily average outflows at Libby Dam have been 22.4-23.0 Kcfs over the last week.

Hungry Horse is currently at an elevation of 3550.6 feet (6-7-18) and has refilled 6.8 feet last week. Outflows at Hungry Horse have been 2.9-6.1 Kcfs over the last

week.

Dworshak is currently at an elevation of 1588.0 feet (6-7-18) and continues to refill, filling 5.7 feet over last week. Dworshak outflows have been 4.3-6.0 Kcfs.

The Brownlee Reservoir was at an elevation of 2071.3 feet on June 7th, 2018 and has refilled 2.2 feet. Outflows at Hells Canyon have ranged between 18.4 and 28.7 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 is 100 Kcfs at Lower Granite. Flows at Lower Granite Dam have averaged 122.1 Kcfs last week; over the spring season have averaged 118.6 Kcfs.

Based on the April Final Water Supply Forecast, the Spring Biological Opinion Flow Objectives is 260 Kcfs at McNary Dam and 135 Kcfs at Priest Rapids Dam (both began April 10th). Flows at McNary averaged 368.0 Kcfs last week at McNary and 377.9 Kcfs over the spring season. Flows averaged 243.4 Kcfs at Priest Rapids last week and 250.4 Kcfs over the spring season.

Spill

Flows in the Lower Snake River decreased this week, when compared to the previous week. Daily average flows at Lower Granite Dam ranged from 103.9 to 153.6 Kcfs this week. Flows in the Mid-Columbia and Upper Columbia rivers also decreased this week, when compared to the previous week. Daily average flows at McNary and Rock Island dams ranged from 322.6 to 412.5 Kcfs and 196.3 to 250.3 Kcfs this week, respectively.

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. In response to the order from the U.S. District Court of the District of Oregon, the 2018 Fish Operations Plan (FOP) specifies that spring spill operations on the Snake and Mid-Columbia rivers will be to spill to the 115%/120% total dissolved gas (TDG) caps at all eight projects. The COE estimates spill caps for each project on a daily basis and projects will be operated to these estimated spill caps. These daily spill caps are implemented at 1600 each day and are published on the TMT website (<http://pweb.crohms.org/>

[tmt/documents/ops/spill/caps/](http://pweb.crohms.org/tmt/documents/ops/spill/caps/)). The daily spill caps at the Snake and Mid-Columbia river projects for the past week are summarized in Table 3.

Table 3. Spring spill operations and estimated 115%/120% TDG spill caps at Snake and Mid-Columbia river projects. Estimated spill caps for Snake River projects are for most recent week of spill operations.

Project	Spring Spill Level (Day/Night)	Estimated Spill Caps (6/1-6/7)
Lower Granite	Gas Cap/Gas Cap	31-33 Kcfs
Little Goose	Gas Cap/Gas Cap	26 Kcfs
Lower Monumental	Gas Cap/Gas Cap	27 Kcfs
Ice Harbor	Gas Cap/Gas Cap	80 Kcfs
McNary	Gas Cap/Gas Cap	145 Kcfs
John Day	Gas Cap/Gas Cap	90 Kcfs
The Dalles	Gas Cap/Gas Cap	90 Kcfs
Bonneville	Gas Cap/Gas Cap	121 Kcfs

The estimated 115%/120% spill cap for Lower Granite Dam (LGR) was 31 Kcfs for most of this week. Due to the high flows this week, spill volumes at LGR exceeded the estimated 115%/120% spill caps on June 1st and half of June 2nd. By the afternoon of June 2nd, flows had decreased enough to allow for spill to the 115%/120% spill cap, which at that time was 31 Kcfs. Total dissolved gas (TDG) has been below the 120% waiver limit in the LGR tailrace since May 31st and has been as low as 115% this week. Total dissolved gas has been below the 115% waiver in the Little Goose (LGS) forebay since June 1st and has been as low as 112% this week. Despite the low TDG levels in the LGR tailrace and the LGS forebay, the spill cap at LGR was not adjusted until the afternoon of June 7th, at which time it was increased from 31 Kcfs to 33 Kcfs. The estimated spill cap for LGS was 26 Kcfs all of this week. Spill volumes at LGS exceeded the estimated 115%/120% spill cap on June 1st through the morning of June 3rd. The modified operation that was first implemented on May 30th for adult passage was continued through 0400 on June 3rd. Under the modified operation, spill was reduced to 30% of instantaneous flows for the period of 0400-1200 while excess flows are stored into the forebay, inflows were passed for the period of 1200-1600, and spill was increased from 1600-0400 to a level necessary to pass all stored water from the 0400-1200 period (but not to exceed 130% TDG in the tailrace). Since the modified operation expired on June 3rd, flows have been sufficiently low to allow for spill to the

115%/120% spill cap. Total dissolved gas exceeded the 120% waiver limit in the LGS tailrace on June 1st and June 2nd but has not exceeded since. In fact, TDG in the LGS tailrace has been as low as 114% in recent days. Total dissolved gas in the Lower Monumental (LMN) forebay exceeded the 115% waiver limit through June 4th but has not exceeded the 115% standard since. Although TDG standards in the LGS tailrace or LMN forebay have not been exceeded since June 4th, the spill cap at LGS remains at 26 Kcfs. The estimated spill cap for LMN was 27 Kcfs this week. Due to flows in excess of hydraulic capacity, spill volumes at LMN exceeded the estimated spill cap through the morning of June 3rd. Since this time, flows have generally been sufficiently low that spill to the 115%/120% spill cap has been possible. Total dissolved gas in the LMN tailrace exceeded the 120% waiver limit on June 1st and June 2nd but has been below the standard since. In fact, TDG in the LMN tailrace has been as low as 115% in recent days. Total dissolved gas in the Ice Harbor (IHR) forebay exceeded the 115% waiver limit through June 5th but has not exceeded since. The estimated spill cap for IHR was 80 Kcfs all of this week. Due to flows in excess of hydraulic capacity, daily average spill volumes at IHR exceeded the estimated spill cap on June 1st and part of June 2nd. By about 0800 on June 2nd, flows were sufficiently low that spill to the 115%/120% spill cap was possible at IHR. Total dissolved gas exceeded the 120% TDG waiver limit in the IHR tailrace on June 1st and June 2nd but has not exceeded since. Total dissolved gas in the McNary (MCN) forebay has exceeded the 115% waiver limit all of this week. However, it is important to note that TDG from spill at IHR is only a portion of what is measured at the MCN forebay, as TDG coming in from the Upper Columbia has been high for most the last month. Due to flows in excess of hydraulic capacity, spill volumes at the Mid-Columbia projects (McNary, John Day, The Dalles, and Bonneville) exceeded their respective 115%/120% spill caps for most of this week. The estimated spill cap for McNary Dam (MCN) was 145 Kcfs all of this week. Due to the high flows, daily average spill at MCN has ranged from 167.4 to 239.4 Kcfs this week. The 12-hour average TDG exceeded the 120% waiver limit in the MCN tailrace most of this week. The two exceptions to this were on May 5th and May 7th when the 12-hour average TDG was 120%. Total dissolved gas in the John Day (JDA) forebay exceeded the 115% waiver limit all week, with 12-

hour averages in the 116%-117% range. The estimated spill cap for JDA was 90 Kcfs all this week. Due to the high flows, daily average spill at JDA has ranged from 91.1 to 156.1 Kcfs this week. Since 0300 on June 7th, flows at JDA have been sufficiently low that spill to the 115%/120% spill cap has been possible. Total dissolved gas exceeded the 120% waiver limit in the JDA tailrace on June 1st and June 2nd but has been below the standard since. Total dissolved gas in The Dalles (TDA) forebay exceeded the 115% standard for most of this week, with two exceptions. These two exceptions were June 1st when the 12-hour average TDG was 115% and June 4th when the 12-hour average TDG was 114%. The estimated spill cap for The Dalles Dam was also 90 Kcfs all this week. Due to the high flows, daily average spill at TDA ranged from 104.8 to 204.9 Kcfs this week. Total dissolved gas in the tailrace at TDA exceeded the 120% waiver limit on June 2nd (121%) but was at or below the 120% standard all other days this week. Total dissolved gas in the Bonneville (BON) forebay exceeded the 115% waiver nearly every day this week. The one exception was on June 5th when the 12-hour average was 115%. It is worth noting that TDG measurements at the BON forebay on June 4th were also generally low but, because the methodology used to estimate the 12-hour average includes data from the previous day, the reported value was 120%. The FPC reviewed this instance and provided a summary memo describing the issue to the Salmon Managers on June 7th (<http://www.fpc.org/documents/memos/31-18.pdf>). Finally, the estimated spill cap for BON has been 121 Kcfs all week. Due to the flows in excess of hydraulic capacity, daily average spill at BON has ranged from 123.8 to 207.8 Kcfs this week. Since 0600 on June 7th, flows at BON have been sufficiently low that spill to the 115%/120% spill cap has been possible. The tailrace monitor at Cascade Island has been out of service since May 13th, likely as a result of high flows and spill volumes. The 12-hour average TDG at the Warrendale gauge has been in the 119% to 125% range over the past week.

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 over the past week at Lower Granite, Little Goose, Lower Monumental, Rock Island, McNary, and Bonneville dams this week. Signs of GBT were observed in eight of the nine GBT samples conducted this week (June 1-June 7). Bonneville observed signs of GBT in each of their samples on June 2nd and June 5th. In each of these samples, one fish (1.0%) had signs of fin GBT. All signs of GBT observed at BON this week were rank 1. Levels of GBT decreased at Rock Island this week, when compared to last week. In the samples on June 5th and June 7th, 14% and 6% of the fish examined had signs of fin GBT, respectively. Of the fish that had signs of fin GBT on June 5th, 12 were rank 1 and two were rank 2. McNary observed one fish (1.0%) with rank 1 signs of fin GBT in their sample on June 1st but zero fish had signs of GBT in their sample on June 7th. Lower Granite was only able to collect 35 fish for their GBT sample on June 7th. Of these, one had rank 1 signs of fin GBT. Caution is warranted when interpreting these data, as the required sample size was not met on this date. Little Goose observed one fish (1.0%) with rank 1 signs of GBT in their sample on June 4th. Lower Monumental observed ten fish (10.0%) with signs of fin GBT in their sample on June 6th. Of the fish that were observed to have signs of fin GBT, eight had rank 1 signs and two had rank 2 signs. 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. The 15% action criterion was not met

this week.

Temperature

Forebay temperatures are now being reported for Lower Granite, Ice Harbor, McNary and Bonneville dams. Currently, temperatures at Bonneville and McNary dams are very similar to their respective 10-year averages. The daily average temperature for June 7th was 59.9 °F at Bonneville and 58.8 °F at McNary. The current 10-year average temperature at these two sites is 59.6 °F and 58.4 °F, respectively. However, current temperatures at Ice Harbor and Lower Granite are about two to three degrees above their respective 10-year averages. The daily average temperature for June 7th was 59.0 °F at Ice Harbor and 59.2 °F at Lower Granite. The current 10-year average temperature at these two sites is 57.3 °F and 56.2 °F, respectively.

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 at Bonneville Dam (BON) were dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was nearly 26,000 per day, which is an increase from last week's daily average passage index of about 6,000 per day. Passage of spring migrants (yearling Chinook, coho, sockeye, and steelhead) all decreased this week, when compared to the previous week. This week's daily average passage indices for spring migrants were 1,600 for yearling Chinook, 1,400 for coho, 1,275 for sockeye, and 1,100 for steelhead. Last week's daily average passage indices for these four species were 6,900, 2,800, 6,250, and 2,700 per day, respectively. Pacific lamprey macrophthalmia were encountered every day this week while ammocoetes were encountered in three of this week's samples. This week's daily average collection for Pacific lamprey macrophthalmia was about 600 per day, which is an increase from last week's daily average collection of 500 per day. Daily mortality rates for sockeye ranged from 0.0% to 5.6% this week.

Similar to the last two years, sampling at John Day Dam (JDA) is every-other-day. However, the Action Agencies and Salmon Managers implemented a coordinated operation at JDA, beginning Friday, May 25th. As part of this coordinated operation, daily sampling was implemented at JDA, beginning May

26th. Daily sampling continued through June 5th, after which every-other-day sampling resumed. Subyearling Chinook dominated this week's samples at JDA. This week's daily average passage index for subyearling Chinook was about 26,800 per day. This is a substantial increase over last week's daily average passage index of about 5,300 per day. Passage of spring migrants all decreased this week, when compared to last week. This week's daily average passage indices were 1,760 for yearling Chinook, 2,000 for coho, 1,300 for sockeye, and 3,000 for steelhead. Last week's daily average passage indices for these four species were 8,100, 4,000, 5,300, and 8,100 per day, respectively. Pacific lamprey macrophthalmia were encountered in all of this week's samples while ammocoetes were encountered in five of this week's six samples. This week's daily average collection for Pacific lamprey macrophthalmia at JDA was 3,500 per day, which is a decrease from last week's daily average collection of about 7,150 per day.

Similar to John Day, sampling at McNary (MCN) is every-other-day. However, the Action Agencies and Salmon Managers implemented a coordinated operation at MCN, beginning Wednesday, May 16th. This coordinated operation was renewed on Wednesday, May 23rd, at which time the salmon managers requested the implementation of daily sampling at MCN, beginning May 25th. Daily sampling was expected to continue through June 6th. However, an equipment failure above the juvenile fish facility caused the sample for June 3rd to terminate prematurely and prevented sampling on June 4th through June 6th. The sample for June 3rd is based on only 8.5 hours of sample data and, therefore, should not be compared to previous day's samples. Sampling resumed at 0700 on June 7th. Data from this sample will be enumerated and transmitted to FPC on June 8th. Subyearling Chinook dominated the two full samples from this week. The daily average passage index for subyearling Chinook over these two samples was nearly 81,400 per day, which is a large increase over last week's daily average passage index of 40,500 per day. Passage of all spring migrants decreased this week, when compared to last week. The daily average passage indices for spring migrants over the May 1-May 2 period were 7,500 for yearling Chinook, 2,300 for coho, 2,600 for sockeye, and 700 for steelhead. Last week's daily average passage indices for these four species were 9,100, 3,200, 13,300, and 1,700 per day, respectively. Finally, Pacific lamprey macrophthalmia were encountered in all of this week's samples while

ammocoetes were not encountered this week. The daily average collection for Pacific macrophthalmia over the May 1-May 2 period was 5,700 per day, which is a decrease from last week's daily average collection of about 7,600 macrophthalmia per day.

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 11,000 per day, which is a decrease from last week's daily average passage index of 45,000 per day. Passage of spring migrants all decreased this week. This week's daily average passage indices for spring migrants were 1,200 for yearling Chinook, 850 for coho, 130 for sockeye, and 3,850 for steelhead. Last week's daily average passage indices for these four species were 4,450, 3,550, 600, and 22,100 per day, respectively. Pacific lamprey macrophthalmia were encountered in three of this week's samples and ammocoetes were encountered in all seven of this week's samples.

Similar to recent years, sampling at Little Goose Dam (LGS) was every-other-day until the start of transportation (April 23rd), at which time sampling changed to every day. It is worth noting that, due to a separator cleanout, the sample on June 7th was a partial sample (21.75 hours) and, therefore, passage indices on this date are likely underestimates. Subyearling Chinook continued to dominate the samples at LGS this week. This week's daily average passage index for subyearling Chinook was about 16,400 per day, which is a decrease from last week's daily average passage index of about 58,000 per day. Yearling Chinook, coho, sockeye, and steelhead passage all decreased this week, when compared to the previous week. This week's daily average passage indices for these four species were 680, 1,000, 200, and 3,250 per day, respectively. Last week's daily average passage indices were 5,700 for yearling Chinook, 4,150 for coho, 1,900 for sockeye, and 18,300 for steelhead. Finally, Pacific lamprey macrophthalmia were encountered in only two of this week's samples while ammocoetes were encountered in four 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 nearly 15,000 per day, which is a decrease from last week's daily average passage index of about 26,000 per day. Passage of spring migrants all decreased this week, when compared to last week. This week's daily average passage indices for spring migrants were 900 for yearling Chinook, 500 for coho, 170 for sockeye, and 1,600 for steelhead. Last week's daily average passage indices for these four species were 2,800, 860, 1,700, and 7,350 per day, respectively. Finally, Pacific lamprey macrophthalmia were encountered in six of this week's samples and ammocoetes were encountered in four of this week's samples. This week's daily average collection for Pacific lamprey macrophthalmia was about 800 per day, which is a decrease from last week's daily average collection of about 960 per day.

Subyearling Chinook dominated this week's samples at Rock Island Dam (RIS). This week's daily average passage index for subyearling Chinook was 540 per day, which is slightly lower than last week's daily average passage index of 590 per day. Passage of most spring migrants decreased this week, when compared to the previous week. The one exception to this was steelhead, where passage this week was higher than last week. This week's daily average passage index for steelhead at RIS was 365 per day. Last week's daily average passage index for steelhead was 280 per day. Pacific lamprey macrophthalmia and Pacific ammocoetes were collected in three of this week's samples.

The Snake River Trap at Lewiston, ID (LEW) is located at river kilometer 225 of the Snake River and is operated by the Idaho Department of Fish and Game. Due to high flows and upcoming releases of listed subyearling fall Chinook above the trap, sampling at LEW was terminated after the sample on May 11th.

The Grande Ronde Trap (GRN) is located at river kilometer 2 of the Grande Ronde River and is operated by the Oregon Department of Fish and Wildlife. Sampling at GRN was terminated for the season after the sample on May 26th.

The Salmon River Trap at Whitebird (WTB) is located at river kilometer 103 of the Salmon River and is operated by the Idaho Department of Fish and Game. Due to high flows, sampling for the 2018 season was terminated after the sample on May 4th.

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. For 2018, the FPC currently has data from IMN for the period of February 15 through June 2nd. However, the trap was not operated on May 27th through May 29th due to high water. In addition, many of the samples over the last few weeks have been partial samples (i.e., less than 24 hours) due to high flows and debris. Therefore, comparing collections between weeks is not advised, as the collection counts reflect the number of hours that were sampled. Steelhead dominated the collections over the last four days of available data (May 30-June 2). The daily average collection for steelhead during this period was about 40 per day. The daily average collection for yearling Chinook over this period was nearly 10 fish per day. The sample on June 2nd was a full sample. Collections for this sample were 57 steelhead, 23 yearling Chinook, and 2 subyearling Chinook.

Hatchery Releases

FPC has not received preliminary data from some hatcheries as of 06/08/18, 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 approximately 960,000 fall Chinook juveniles released into this zone. Of these, 660,000 were released at the Nez Perce Tribal Hatchery, and another 300,000 were released at the Cedar Flats acclimation pond on the Selway River.

In the next two weeks, there are no more scheduled releases in this zone.

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). Over the past week there were 5,000 fall Chinook subyearlings released into this zone. These were all in the Yakima River and consisted of three separate releases of less than 2,000 fish each.

Over the next two weeks just over 2 million subyearling fall Chinook are scheduled for release into this zone. Almost all of these will be released from Priest Rapids Hatchery, with another three releases into the Yakima River, again, totaling approximately 5,000 fish.

Over the next two weeks there are approximately 5.5 million fall Chinook subyearlings scheduled to be released into this zone. Three million of these are planned releases from the Priest Rapids Hatchery of 1 million each on the 11th, 15th, and 20th. The remaining 2.5 million will be released from Ringold Springs Hatchery on June 18th.

Lower Columbia Zone:

The Lower Columbia Zone is defined as the Columbia River and its tributaries below Bonneville Dam. There were no scheduled releases into this zone over the past week, nor are there any scheduled over the next two weeks.

Adult Passage

The summer Chinook adult passage count began June 1st at Bonneville Dam. Daily passage numbers at Bonneville Dam ranged between 996 and 1,403 adult Chinook in the last week. The 2018 adult summer Chinook count of 7,408 is about 79% of the 2017 count of 9,371 and about 61.1% of the 10-year average count of 12,119. The 2018 Bonneville Dam summer Chinook jack count of 395 is about 28.4% of the 2017 count and 16.3% of the 10-year average count. The 2018 Bonneville Dam spring Chinook adult count of 87,894 has 4,270 more fish than the 2017 count, while being 57.7% of the 10 year average count of 152,393. The 2018 Bonneville Dam spring Chinook jack count of 6,456 is about 35.6% of the 2017 count and about 25% of the 10 year average count. At Willamette Falls, 16,419 adult spring Chinook have been counted so far this year. In 2017, 20,496 adult spring Chinook were counted at Willamette Falls. This year's count is about 80.1% of the 2017 count and is about 67.5% the 10-year average count of 24,342. A total of 25,115 spring chinook have been counted at Lower Granite Dam as of June 6th. The 2018 Lower Granite Dam adult spring Chinook count is about 1.7 times greater than the 2017

count, while being 46.6% of the 10-year average count.

The 2018 Bonneville Dam adult steelhead count of 4,038 is about 1.2 times greater than the 2017 count of 3,484, while being about 68% of the 10-year average count of 5,936. The 2018 Bonneville Dam adult unclipped steelhead count of 1,598 is about 1.5 times greater than the 2017 count of 1,089, while being about 89.8% of the 10- year average count of 1,780. This year's Lower Granite steelhead count of 4,531 is about 62% of the 2017 count of 7,308 and about 52% of the 10-year average count of 8,716. The 2018 Lower Granite Dam adult unclipped steelhead count of 1,260 is about 41.3% of the 2017 count of 3,052 and about 34.4% of the 10-year average count of 3,664. At Willamette Falls, the 2018 count for steelhead was 5,718 as of June 6th. This year's steelhead count is about 3.5 times greater than the 2017 count of 1,646, while being about 43.9% of the 10-year average count of 13,033.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 28 and 361 last week. The 2018 adult sockeye count at Bonneville Dam of 1,022 is about 2 times greater than the 2017 count, while being about 71% of the 10-year average count. A total of 4,772 lampreys have been counted at Bonneville Dam so far this year. The Bonneville 2018 lamprey count is about 60.9% of the 2017 count of 7,840, while being about 1.8 times greater than the 10-year average count of 2,591.

Hatchery Releases Last Two Weeks

Hatchery Release Summary

	From:	5/26/2018	to	06/08/18						
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2018	300,000	05-30-18	05-30-18	Lukes Gulch Acclim.	S Fk Clearwater River	SNAK
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2018	300,000	06-04-18	06-05-18	Cedar Flats Acclim.	Selway River	SNAK
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2018	475,000	05-30-18	05-31-18	Nez Perce Tribal Hatche	Clearwater River M F	SNAK
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2018	660,000	06-07-18	06-08-18	Nez Perce Tribal Hatche	Clearwater River M F	SNAK
Nez Perce Tribe Total					1,735,000					
Oregon Dept. of Fish and Wildlife	Enhancement Program	CH0	FA	2018	16,500	06-01-18	06-01-18	Skipanon River	Col R Bel. Bon Dam	LCOL
Oregon Dept. of Fish and Wildlife	Enhancement Program	CH0	FA	2018	25,000	06-01-18	06-01-18	Youngs Bay	Youngs River	LCOL
Oregon Dept. of Fish and Wildlife	Enhancement Program	CO	UN	2018	5,000	06-01-18	06-01-18	Skipanon River	Col R Bel. Bon Dam	LCOL
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	CH0	FA	2018	200,000	05-31-18	05-31-18	Grande Ronde River	Grande Ronde River	SNAK
Oregon Dept. of Fish and Wildlife Total					246,500					
Washington Dept. of Fish and Wildlife	COOP	CO	NO	2018	1,000	06-01-18	06-01-18	Campbell Creek	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Cowlitz Salmon	CH0	FA	2018	1,581,000	05-01-18	06-01-18	Cowlitz Hatchery	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Cowlitz Salmon	CH0	FA	2018	2,093,500	05-01-18	06-01-18	Cowlitz Hatchery	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2018	60,000	06-01-18	06-01-18	Lyons Ferry Hatchery	Snake River	SNAK
Washington Dept. of Fish and Wildlife	Merwin Hatchery	ST	WI	2018	104,000	05-01-18	06-01-18	N Fk Lewis River	Lewis River	LCOL
Washington Dept. of Fish and Wildlife	North Toutle Hatchery	CH0	FA	2018	830,000	06-01-18	07-01-18	Green River	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Priest Rapids Hatchery	CH0	FA	2018	1,567,495	05-25-18	06-01-18	Priest Rapids Hatchery	McNary Pool	MCOL
Washington Dept. of Fish and Wildlife	Priest Rapids Hatchery	CH0	FA	2018	1,629,346	05-15-18	06-01-18	Priest Rapids Hatchery	McNary Pool	MCOL
Washington Dept. of Fish and Wildlife	Ringold Springs Hatchery	CH0	FA	2018	1,000,000	05-25-18	05-29-18	Ringold Springs Hatcher	McNary Pool	MCOL
Washington Dept. of Fish and Wildlife	Washougal Hatchery	CH0	FA	2018	1,900,000	06-01-18	06-01-18	Washougal Hatchery	Washougal River	LCOL
Washington Dept. of Fish and Wildlife	Washougal Hatchery	CO	NO	2018	150,000	05-01-18	06-01-18	Washougal River	Washougal River	LCOL
Washington Dept. of Fish and Wildlife Total					10,916,341					
Yakama Tribe	Klickitat Hatchery	CH0	FA	2018	4,000,000	06-01-18	06-01-18	Klickitat Hatchery	Klickitat River	MCOL
Yakama Tribe	Prosser Acclim. Pond	CH0	FA	2018	1,000	05-30-18	05-30-18	Yakama River	Yakima River	MCOL
Yakama Tribe	Prosser Acclim. Pond	CH0	FA	2018	1,000	06-05-18	06-05-18	Yakama River	Yakima River	MCOL
Yakama Tribe	Prosser Acclim. Pond	CH0	FA	2018	2,000	05-30-18	05-30-18	Prosser Acclim Pond	Yakima River	MCOL
Yakama Tribe	Prosser Acclim. Pond	CH0	FA	2018	2,000	05-30-18	05-30-18	Yakama River	Yakima River	MCOL
Yakama Tribe	Prosser Acclim. Pond	CH0	FA	2018	2,000	06-05-18	06-05-18	Prosser Acclim Pond	Yakima River	MCOL
Yakama Tribe	Prosser Acclim. Pond	CH0	FA	2018	2,000	06-05-18	06-05-18	Yakama River	Yakima River	MCOL
Yakama Tribe Total					4,010,000					
Grand Total					16,907,841					

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

Hatchery Releases Next Two Weeks

Hatchery Release Summary

	From:	6/9/2018		to	6/22/2018					
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
Washington Dept. of Fish and Wildlife	Priest Rapids Hatchery	CH0	FA	2018	1,000,000	06-11-18	06-11-18	Priest Rapids Hatchery	McNary Pool	MCOL
Washington Dept. of Fish and Wildlife	Priest Rapids Hatchery	CH0	FA	2018	1,000,000	06-15-18	06-15-18	Priest Rapids Hatchery	McNary Pool	MCOL
Washington Dept. of Fish and Wildlife	Priest Rapids Hatchery	CH0	FA	2018	1,000,000	06-20-18	06-20-18	Priest Rapids Hatchery	McNary Pool	MCOL
Washington Dept. of Fish and Wildlife	Ringold Springs Hatchery	CH0	FA	2018	2,500,000	06-18-18	06-18-18	Ringold Springs Hatchery	McNary Pool	MCOL
Washington Dept. of Fish and Wildlife Total					5,500,000					
Grand Total					5,500,000					

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
05/25/2018	229.1	10.7	240.7	119.8	277.7	130.6	284.6	143.2	281.8	147.2	313.7	190.4	316.7	200.3
05/26/2018	226.1	6.2	234.0	117.1	272.0	124.9	277.0	156.8	277.8	139.2	305.7	174.9	314.2	201.8
05/27/2018	228.8	9.7	226.0	89.2	259.8	114.6	266.7	142.5	270.2	129.7	294.7	163.1	301.2	184.7
05/28/2018	232.2	10.0	231.7	106.0	259.1	112.6	261.7	135.1	263.5	122.7	289.0	172.7	294.3	182.2
05/29/2018	225.9	5.3	246.6	124.2	269.3	121.7	276.7	143.0	275.8	145.3	299.8	170.5	308.2	202.1
05/30/2018	205.1	0.0	205.4	67.8	234.9	88.4	242.0	107.2	249.2	111.0	267.4	146.4	273.9	153.9
05/31/2018	202.0	0.0	194.2	64.4	217.2	75.1	219.2	83.0	222.4	79.4	236.5	135.3	240.8	123.6
06/01/2018	216.6	0.0	228.5	89.0	255.4	106.8	255.6	115.0	250.3	105.7	265.9	150.4	268.6	146.3
06/02/2018	214.5	0.0	213.7	61.3	235.6	84.2	242.6	101.9	239.4	94.6	258.8	122.9	262.0	138.6
06/03/2018	212.2	0.0	211.1	61.0	231.8	82.8	237.3	106.2	233.8	89.1	251.0	123.3	253.5	136.4
06/04/2018	192.6	8.8	194.1	61.7	211.5	62.4	215.4	75.3	214.5	69.0	229.3	101.5	235.7	132.8
06/05/2018	197.2	0.0	198.6	68.7	212.8	56.7	219.1	78.0	219.5	72.0	240.3	109.6	242.2	129.4
06/06/2018	191.1	0.0	194.1	45.7	208.1	51.4	213.8	73.1	215.1	67.4	227.2	87.1	228.5	109.0
06/07/2018	173.3	0.0	174.3	22.1	187.8	36.0	193.9	56.3	196.3	56.9	209.2	74.5	213.1	102.8

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
05/25/2018	4.4	0.0	---	---	163.3	57.4	158.1	68.0	160.8	73.5	163.9	109.3
05/26/2018	6.0	1.5	---	---	174.9	73.4	169.8	79.3	167.5	79.8	170.0	115.2
05/27/2018	6.0	1.6	---	---	175.4	66.6	171.6	81.0	172.4	84.5	178.0	122.9
05/28/2018	6.1	1.7	---	---	164.6	56.5	158.5	68.9	157.9	69.8	163.1	108.4
05/29/2018	6.0	1.6	---	---	160.5	51.7	155.9	77.5	152.4	64.2	158.4	103.8
05/30/2018	6.1	1.7	---	---	158.2	49.6	151.0	61.6	149.8	61.5	156.2	101.5
05/31/2018	6.1	1.7	---	---	149.9	42.1	144.4	54.6	143.8	55.1	151.7	97.8
06/01/2018	6.1	1.7	---	---	153.6	45.4	145.2	55.8	143.6	54.9	148.3	96.9
06/02/2018	6.1	1.7	---	---	139.9	33.9	136.7	46.6	136.0	58.7	145.2	92.1
06/03/2018	6.1	1.7	---	---	123.5	30.7	116.2	27.0	116.3	29.3	123.9	81.5
06/04/2018	5.2	0.9	---	---	111.7	30.9	107.7	25.3	103.7	26.9	113.0	80.4
06/05/2018	4.3	0.0	---	---	113.2	31.0	110.8	27.7	110.1	31.4	117.4	80.3
06/06/2018	4.3	0.0	---	---	108.9	30.9	106.3	25.2	105.0	29.5	112.0	80.2
06/07/2018	4.3	0.0	---	---	103.9	31.6	101.8	25.2	99.3	26.7	103.2	80.0

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

Date	McNary		John Day		The Dalles		Bonneville			
	Flow	Spill	Flow	Spill	Flow	Spill	PH1	PH2		
05/25/2018	487.8	327.9	486.1	256.3	474.7	300.8	484.5	269.6	63.5	138.8
05/26/2018	479.9	320.7	480.5	228.1	464.3	292.7	474.7	255.8	64.8	141.7
05/27/2018	482.2	323.6	485.9	221.5	464.4	284.8	474.7	257.6	65.6	139.1
05/28/2018	454.0	295.4	464.3	199.6	448.1	277.6	469.1	257.5	65.3	133.9
05/29/2018	449.6	297.7	453.3	210.9	433.1	261.8	444.6	247.9	52.9	131.5
05/30/2018	443.5	294.5	451.6	217.8	434.8	243.5	445.0	241.6	55.5	135.5
05/31/2018	395.1	233.1	404.7	159.2	391.2	213.6	415.8	212.8	56.5	134.1
06/01/2018	404.8	230.4	396.8	144.7	367.9	196.3	388.0	179.4	58.5	137.7
06/02/2018	412.5	239.4	420.1	156.1	404.9	204.9	422.0	207.8	58.0	143.9
06/03/2018	380.6	207.4	374.3	114.0	347.9	114.2	370.5	160.3	58.5	139.4
06/04/2018	356.1	191.2	364.6	105.0	353.3	120.0	369.4	159.8	58.7	138.4
06/05/2018	352.0	189.6	344.3	114.5	319.8	109.3	344.7	138.9	59.0	134.4
06/06/2018	347.7	192.8	354.6	126.8	329.9	121.0	348.8	141.8	57.9	136.7
06/07/2018	322.6	167.4	323.9	91.1	302.7	104.8	333.5	123.8	65.7	131.6

Gas Bubble Trauma Monitoring Results from Representative Sites on the Snake River and Columbia River

Site	Date & Species	Number of Fish	Number w/ GBT signs	Number w/ Fin Signs	% Fin GBT	% Severe Fin GBT	Number of Fish with Fin GBT Listed by Highest Rank			
							Rank 1	Rank 2	Rank 3	Rank 4
Lower Granite Dam										
	05/31/18 Chinook + Steelhead	100	2	1	1.00%	0.00%	1	0	0	0
	06/07/18 Chinook + Steelhead	35*	2	1			1	0	0	0
Little Goose Dam										
	05/28/18 Chinook + Steelhead	100	9	9	9.00%	0.00%	7	2	0	0
	06/04/18 Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
Lower Monumental Dam										
	05/30/18 Chinook + Steelhead	100	9	9	9.00%	1.00%	6	2	1	0
	06/06/18 Chinook + Steelhead	100	10	10	10.00%	0.00%	8	2	0	0
McNary Dam										
	05/27/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/29/18 Chinook + Steelhead	100	2	2	2.00%	0.00%	1	1	0	0
	06/01/18 Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
	06/07/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
Bonneville Dam										
	05/26/18 Chinook + Steelhead	97*	4	4			3	1	0	0
	05/30/18 Chinook + Steelhead	100	5	5	5.00%	0.00%	5	0	0	0
	06/02/18 Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
	06/05/18 Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
Rock Island Dam										
	05/29/18 Chinook + Steelhead	100	30	29	29.00%	1.00%	23	5	1	0
	05/31/18 Chinook + Steelhead	100	31	30	30.00%	2.00%	27	1	2	0
	06/05/18 Chinook + Steelhead	100	14	14	14.00%	0.00%	12	2	0	0
	06/07/18 Chinook + Steelhead	100	7	6	6.00%	0.00%	6	0	0	0

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

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

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 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
05/25									122.0	122.3	122.5	24	125.5	129.2	126.3	24	133.3	134.4	135.2	24	125.4	125.7	126.5	24	05/25
05/26									121.8	122.3	122.2	24	124.9	125.7	125.8	24	125.2	133.7	130.6	24	124.2	125.6	126.9	24	05/26
05/27									121.6	121.9	122.1	24	128.1	128.9	129.1	24	122.9	124.1	123.8	24	122.1	123.2	123.3	24	05/27
05/28									122.7	123.1	123.4	24	129.6	130.1	130.3	24	126.0	127.9	128.4	24	123.7	124.1	124.9	24	05/28
05/29									123.7	124.0	124.2	24	126.8	130.1	130.3	24	128.0	128.3	128.6	24	125.4	126.1	127.0	24	05/29
05/30									124.2	124.5	124.7	24	122.3	123.1	122.9	24	128.1	128.6	129.1	24	120.4	124.4	121.9	24	05/30
05/31									124.5	124.6	124.7	24	122.6	122.8	123.1	24	122.2	128.0	125.3	24	119.0	120.8	121.2	24	05/31
06/01									123.0	124.4	124.0	24	121.1	122.5	121.9	24	120.2	121.4	120.9	24	122.1	123.2	123.8	24	06/01
06/02									122.1	122.5	122.4	24	120.3	120.7	120.8	24	119.8	120.3	120.6	24	118.5	122.3	119.4	24	06/02
06/03									123.0	123.3	123.6	24	121.2	121.6	121.8	24	120.6	121.1	121.5	24	118.6	118.9	119.0	24	06/03
06/04									123.1	123.3	123.2	24	121.5	121.8	122.1	24	120.3	121.0	120.9	24	118.4	118.7	118.8	24	06/04
06/05									122.7	123.1	123.1	24	120.9	121.6	121.3	24	120.0	120.4	120.8	24	119.4	120.6	122.6	24	06/05
06/06									122.4	122.7	123.0	24	120.5	121.0	121.2	24	120.2	120.4	121.5	24	116.2	118.3	117.0	24	06/06
06/07									122.9	123.0	123.1	23	121.1	121.4	121.9	23	120.5	120.9	121.1	23	112.9	115.2	117.7	23	06/07

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
05/25	124.0	125.7	125.1	24	134.1	135.0	135.6	24	133.5	134.6	134.8	22	131.5	133.2	132.7	21	128.6	130.4	129.8	21	132.0	134.6	132.5	21	05/25
05/26	121.6	124.8	124.3	24	132.3	134.3	133.6	24	130.7	133.1	132.3	24	129.2	130.9	130.9	24	126.7	128.5	127.4	24	130.7	131.8	131.2	23	05/26
05/27	119.1	120.6	120.6	24	130.6	131.6	132.0	24	156.1	157.3	157.5	24	129.0	130.2	130.4	22	126.5	127.0	127.5	23	130.0	130.4	130.4	17	05/27
05/28	120.0	120.8	121.4	24	130.8	131.0	132.8	24	141.5	157.3	157.4	24	129.0	129.8	130.5	22	126.3	127.1	128.2	23	129.7	130.0	130.5	20	05/28
05/29	121.5	122.2	122.4	24	131.7	132.5	133.5	24	129.1	130.0	130.9	24	130.0	130.7	132.0	22	125.8	126.8	127.7	24	129.4	130.1	130.4	20	05/29
05/30	121.5	122.2	122.4	24	129.3	132.5	131.8	24	129.7	131.0	132.2	23	128.7	129.9	130.6	21	126.4	126.6	127.2	21	129.7	129.8	130.1	18	05/30
05/31	119.9	122.2	122.3	24	127.0	129.3	129.3	24	127.8	131.0	129.8	24	127.2	129.1	128.2	22	125.2	127.0	127.4	22	127.9	130.0	130.3	20	05/31
06/01	116.9	117.9	118.0	24	128.0	128.4	129.0	24	124.1	126.7	125.9	24	127.9	128.3	129.2	24	123.3	124.4	124.3	24	127.4	127.9	128.1	24	06/01
06/02	117.5	118.1	118.5	24	126.3	128.4	127.3	24	126.1	127.1	128.0	24	127.8	128.5	129.1	24	124.6	125.1	125.6	24	128.1	128.4	129.0	24	06/02
06/03	118.1	118.4	118.6	24	127.2	128.1	129.4	24	125.8	127.1	126.3	24	127.6	128.4	128.4	23	124.9	125.4	125.7	24	128.2	128.7	128.7	22	06/03
06/04	117.0	118.3	117.7	24	122.8	127.6	126.7	24	124.3	125.7	124.9	24	126.6	127.7	128.4	20	123.0	125.1	124.6	23	126.7	128.5	128.2	20	06/04
06/05	117.0	117.5	118.2	24	122.1	122.9	124.9	24	120.7	123.8	121.9	24	126.8	127.5	130.0	20	121.9	123.0	123.8	23	125.9	126.4	127.3	17	06/05
06/06	117.5	118.1	118.3	24	121.5	121.8	123.4	24	121.4	121.9	122.5	20	126.5	127.2	127.8	17	121.7	122.9	124.0	17	126.0	126.6	127.0	17	06/06
06/07	117.5	118.1	118.1	23	120.4	122.1	123.4	23	121.0	121.8	122.1	22	125.1	126.8	127.7	21	120.8	122.3	122.5	22	125.6	126.4	126.3	19	06/07

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
05/25	130.8	132.4	133.8	24	137.1	138.9	139.8	24	133.9	136.9	135.8	24	128.4	130.6	129.1	24	128.4	130.6	129.1	24	05/25
05/26	124.8	129.4	126.6	24	133.7	135.5	134.7	24	128.0	133.0	129.6	24	126.1	128.3	126.6	24	126.1	128.3	126.6	24	05/26
05/27	126.3	127.5	128.3	24	132.8	134.2	134.9	24	129.7	130.7	131.8	24	126.1	126.8	127.0	24	126.1	126.8	127.0	24	05/27
05/28	125.3	127.1	126.7	24	134.0	135.2	136.9	24	128.2	130.2	131.3	24	125.7	126.8	126.8	24	125.7	126.8	126.8	24	05/28
05/29	124.1	125.0	126.0	24	132.7	134.5	135.3	24	127.4	129.0	130.7	24	125.6	126.5	127.1	24	125.6	126.5	127.1	24	05/29
05/30	125.0	126.9	127.4	24	130.3	131.9	134.2	24	128.2	129.5	131.3	24	125.1	126.0	126.3	24	125.1	126.0	126.3	24	05/30
05/31	125.8	126.9	127.8	24	130.4	130.5	131.2	24	127.0	129.0	130.7	24	124.6	125.7	141.4	24	124.6	125.7	141.4	24	05/31
06/01	121.8	125.0	122.9	24	130.0	132.5	134.2	24	126.7	129.0	130.2	24	124.1	125.4	126.0	24	124.1	125.4	126.0	24	06/01
06/02	123.8	125.5	125.8	24	126.6	127.9	129.0	24	125.4	128.5	129.2	24	124.2	125.3	125.2	24	124.2	125.3	125.2	24	06/02
06/03	126.0	127.3	128.7	24	127.7	128.0	129.7	24	125.5	127.2	128.5	24	124.0	124.7	125.0	24	124.0	124.7	125.0	24	06/03
06/04	122.7	124.7	124.9	24	124.1	129.2	131.7	24	123.6	125.3	126.2	24	122.5	124.1	123.0	24	122.5	124.1	123.0	24	06/04
06/05	123.1	124.0	124.5	24	125.5	126.5	128.5	24	122.6	124.6	124.7	24	122.1	123.3	123.6	24	122.1	123.3	123.6	24	06/05
06/06	124.4	125.6	126.3	24	122.2	124.1	124.6	24	122.4	124.5	124.2	24	122.2	123.3	122.9	24	122.2	123.3	122.9	24	06/06
06/07	123.8	125.6	125.5	24	121.4	123.1	126.5	24	121.2	123.2	124.5	24	121.2	122.4	121.8	24	121.2	122.4	121.8	24	06/07

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
05/25	101.4	102.2	102.8	24	104.6	105.7	106.4	24	108.0	108.6	109.4	24	103.5	104.2	104.7	24	105.9	106.4	106.9	24	121.5	123.8	127.6	24	05/25
05/26	104.7	105.1	105.7	24	103.9	105.5	104.9	24	106.9	108.5	107.5	23	102.6	104.2	103.4	24	105.9	106.5	106.4	24	125.5	126.2	127.9	24	05/26
05/27	104.9	105.4	105.9	24	104.2	105.2	105.9	24	107.2	107.8	108.4	24	103.1	103.9	104.5	24	105.1	105.9	105.6	24	123.7	125.6	125.6	24	05/27
05/28	105.5	106.3	106.8	24	104.2	105.2	105.7	24	107.4	108.0	108.5	24	103.3	104.0	104.5	24	106.4	107.1	107.5	24	121.3	122.6	122.1	24	05/28
05/29	105.7	106.3	106.8	24	104.1	105.1	105.7	24	107.4	108.1	108.8	24	103.2	103.9	104.3	24	106.6	107.2	107.1	24	120.0	121.8	121.8	24	05/29
05/30	106.2	106.9	107.4	24	103.5	105.0	104.2	24	107.2	108.0	107.8	24	102.6	103.7	103.5	24	106.3	106.9	106.8	24	119.2	121.1	121.3	24	05/30
05/31	106.3	106.5	106.9	24	102.9	104.0	103.6	24	106.8	107.5	107.1	24	101.8	102.9	102.2	24	105.9	106.6	106.5	24	117.6	119.0	119.2	24	05/31
06/01	105.7	106.4	106.6	24	102.9	103.5	103.8	24	107.1	107.7	108.1	24	101.9	102.7	103.5	24	103.8	105.5	104.8	24	117.7	118.0	118.1	24	06/01
06/02	105.6	106.2	106.8	24	103.4	104.5	105.1	24	107.4	108.1	108.6	24	102.7	103.7	104.3	24	104.3	105.2	106.0	24	115.2	117.5	116.7	24	06/02
06/03	106.3	107.1	107.7	24	103.6	104.5	105.1	24	107.1	108.0	108.3	24	103.1	104.0	105.0	24	106.5	106.9	107.3	24	114.7	114.9	115.2	24	06/03
06/04	104.2	106.7	107.2	24	102.5	104.4	103.4	24	105.5	107.2	106.2	23	102.0	103.7	103.0	24	106.6	107.1	107.2	24	114.7	114.8	115.3	24	06/04
06/05	101.5	102.2	102.7	24	102.4	103.3	103.9	24	105.3	105.9	106.5	24	101.8	102.7	103.5	24	104.9	106.2	106.0	24	114.8	114.9	115.4	24	06/05
06/06	101.8	102.6	103.2	24	102.6	103.5	104.2	24	105.4	106.2	106.8	24	102.2	103.3	104.0	24	104.0	104.2	104.1	24	114.6	114.9	114.9	24	06/06
06/07	101.8	102.4	103.2	23	102.2	103.5	103.0	23	104.8	106.0	105.7	23	101.9	103.0	103.5	23	104.2	104.3	104.4	23	115.0	115.3	115.8	23	06/07

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 Lower Snake Sites

Date	Little Goose				L. Goose Tlwr				Lower Mon.				Lwr. Mon. Tlwr				Ice Harbor				Tlwr Ice Harbor				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
05/25	115.0	115.9	116.6	24	123.2	124.4	124.5	24	122.9	123.4	123.7	24	121.9	122.2	122.4	24	120.1	120.4	120.6	24	123.9	124.9	125.7	24	05/25
05/26	114.2	115.9	115.5	24	124.9	125.8	127.8	24	123.6	123.9	124.1	24	121.4	122.2	121.9	24	119.9	120.4	120.6	24	125.0	125.9	130.1	24	05/26
05/27	116.2	117.6	118.1	24	125.4	127.4	127.8	24	125.5	127.2	129.0	24	120.7	121.2	121.0	24	120.7	121.9	123.0	24	126.7	129.8	130.3	24	05/27
05/28	119.1	119.7	120.1	24	123.7	124.0	124.6	24	127.6	129.1	129.8	24	121.1	121.4	121.7	24	123.1	123.2	123.6	24	124.0	124.6	125.2	24	05/28
05/29	117.5	119.7	119.0	24	124.7	125.7	127.0	24	124.6	126.3	125.8	24	121.5	121.8	121.9	24	122.3	123.1	123.0	24	123.2	124.0	125.5	24	05/29
05/30	115.9	117.0	116.3	24	122.3	125.4	126.2	24	125.4	126.4	126.8	24	121.9	122.2	122.4	24	121.0	122.0	121.5	24	123.1	124.4	125.8	24	05/30
05/31	115.3	116.1	115.7	24	120.7	125.4	125.7	24	123.3	126.5	126.4	24	120.6	122.3	122.3	24	121.1	121.4	121.6	24	122.3	125.6	125.9	24	05/31
06/01	112.7	115.0	114.5	24	120.2	122.3	123.6	24	119.4	124.1	124.2	24	119.9	120.3	122.1	24	117.6	120.9	120.4	24	121.6	122.7	127.6	24	06/01
06/02	110.5	111.7	111.5	24	118.5	122.9	123.4	24	120.4	122.6	124.5	24	120.5	121.4	122.2	24	117.3	118.2	119.9	24	121.7	125.2	127.9	24	06/02
06/03	113.0	113.9	114.3	24	114.6	118.3	117.5	24	121.4	124.2	125.1	24	116.0	119.7	119.1	24	120.5	121.0	121.4	24	119.4	119.9	120.1	24	06/03
06/04	112.8	114.0	113.7	24	113.7	114.2	114.0	24	116.7	120.0	119.2	24	113.8	114.8	114.2	24	119.3	121.0	120.3	24	118.6	119.0	119.1	24	06/04
06/05	111.4	112.2	111.8	24	113.8	114.5	117.8	24	113.7	115.7	114.6	24	115.1	116.4	118.0	24	116.2	118.5	119.2	23	118.7	118.9	119.0	23	06/05
06/06	111.7	112.1	112.4	24	113.6	113.9	114.1	24	113.7	114.6	115.9	24	114.7	115.5	115.9	24	114.7	115.8	115.5	24	118.1	118.6	118.8	24	06/06
06/07	112.7	113.1	113.5	23	113.8	114.1	114.5	23	114.0	114.8	114.4	23	114.3	114.7	115.6	23	114.6	115.1	115.1	23	117.7	118.4	118.4	23	06/07

Total Dissolved Gas Data at Mid-Columbia Sites

Date	McNary-Wash.				Tlwr McNary				John Day				Tlwr John Day				The Dalles				Dnstr T. Dalles				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
05/25	123.0	123.9	123.6	24	130.2	131.2	131.2	22	124.8	126.6	126.1	24	129.8	132.1	131.1	24	125.4	127.5	126.8	24	124.8	125.7	126.1	24	05/25
05/26	120.2	123.0	122.3	24	131.1	131.3	131.6	24	119.3	123.7	121.8	24	127.9	129.0	129.7	24	118.9	123.9	120.1	24	120.8	123.7	122.0	24	05/26
05/27	118.6	119.2	119.8	24	131.1	131.4	132.9	24	118.4	118.8	119.2	24	127.8	128.7	129.3	24	119.9	121.9	123.1	24	121.5	122.3	122.8	24	05/27
05/28	119.9	120.7	121.0	24	129.6	132.0	132.8	24	117.7	118.7	118.2	24	125.0	127.3	125.4	24	117.8	121.9	120.7	24	120.5	122.4	122.3	24	05/28
05/29	119.7	120.6	120.7	24	127.9	128.6	129.0	24	118.4	118.6	119.0	24	125.8	126.7	127.8	24	116.8	117.0	117.3	24	119.2	119.6	120.3	24	05/29
05/30	118.8	119.7	119.9	24	127.5	128.8	129.3	24	118.8	119.3	119.5	24	126.9	127.8	128.2	24	121.1	122.9	124.0	24	121.9	123.0	123.8	24	05/30
05/31	118.5	119.6	119.3	24	125.6	129.3	131.7	24	117.5	119.3	118.7	24	122.0	125.9	125.5	24	116.8	122.9	120.9	24	119.8	123.0	122.5	24	05/31
06/01	115.0	118.0	117.0	24	120.6	122.0	122.3	21	115.2	116.8	116.3	24	120.2	121.3	122.0	24	113.9	115.2	115.4	24	118.1	119.0	119.6	24	06/01
06/02	114.9	116.5	117.7	24	122.9	123.3	123.9	24	116.3	116.8	117.2	24	121.4	122.0	122.3	24	117.6	119.2	119.9	24	120.2	121.0	121.7	24	06/02
06/03	119.6	120.7	121.4	24	121.1	122.8	122.2	24	115.2	116.9	116.7	24	119.1	120.6	119.5	24	115.7	119.3	118.9	24	115.5	120.5	118.1	24	06/03
06/04	118.5	120.6	119.2	24	120.3	121.0	120.9	24	114.9	115.6	116.3	24	118.4	119.3	118.8	24	113.0	114.3	113.6	24	112.1	114.0	113.2	24	06/04
06/05	116.6	118.1	117.6	24	120.1	120.5	120.5	24	116.5	117.0	117.2	24	118.1	118.5	118.8	24	114.7	115.5	116.0	24	114.0	117.1	117.6	24	06/05
06/06	117.1	117.5	117.8	24	120.3	120.5	120.7	24	116.1	116.9	116.5	24	118.8	119.0	119.3	24	116.1	117.0	117.6	24	118.5	119.0	119.6	24	06/06
06/07	117.3	118.1	118.5	23	119.0	120.2	119.6	23	114.7	116.0	115.6	23	116.7	118.6	118.5	23	112.9	117.1	116.4	23	115.9	118.8	118.4	23	06/07

FISH PASSAGE CENTER

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

[INTERNAL PURPOSES ONLY]

Date 6/8/2018 7:15:10 AM

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Total Dissolved Gas Data at Mid-Columbia Sites

Bonneville				Warrendale				Camas\Washug.				Cascade Isld.				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	Date
05/25	123.8	124.5	124.7	24	128.1	129.4	129.2	24	126.1	128.2	127.2	24					05/25
05/26	119.0	122.9	121.5	24	124.9	127.1	125.9	24	122.8	125.9	124.1	24					05/26
05/27	119.0	119.6	120.4	24	125.1	125.5	126.2	24	122.5	123.3	123.9	24					05/27
05/28	119.4	120.3	120.8	24	125.4	126.1	126.5	24	122.9	123.6	124.0	24					05/28
05/29	117.4	118.7	118.7	24	124.9	125.2	125.9	24	121.6	123.4	122.5	24					05/29
05/30	118.9	120.1	121.0	24	125.3	126.0	126.4	24	121.7	122.5	122.9	24					05/30
05/31	120.1	121.1	121.4	24	124.4	126.3	126.4	24	122.1	122.7	123.4	24					05/31
06/01	117.3	119.1	118.0	24	120.9	122.6	122.7	24	118.9	122.1	120.1	24					06/01
06/02	120.6	122.3	123.0	24	124.1	124.9	125.2	24	120.8	122.6	123.2	24					06/02
06/03	122.1	123.5	123.7	24	122.6	124.9	124.5	24	121.8	122.8	122.7	24					06/03
06/04	114.3	120.3	117.2	24	118.7	121.6	120.1	24	117.3	121.0	119.1	24					06/04
06/05	114.3	114.6	114.8	24	118.0	118.7	118.8	24	116.1	116.8	117.1	24					06/05
06/06	116.2	117.4	117.9	24	119.3	120.6	122.7	24	116.6	117.8	118.6	24					06/06
06/07	115.7	117.4	116.9	23	117.6	120.0	118.6	23	116.4	117.9	117.6	23					06/07

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 6/8/2018 7:17:27 AM

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COMBINED YEARLING CHINOOK

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (Index)	LGS (Index)	LMN (Index)	RIS (Index)	MCN (Index)	JDA (Index)	BO2 (Index)
05/25/2018		0	73		8,067	10,154	8,307	99	22,546		16,083
05/26/2018		0	38		7,001	3,272	1,884	127	9,515	12,235	9,159
05/27/2018					8,443	7,808	3,046	96	9,840	9,526	3,974
05/28/2018					2,814	5,513	1,181	51	9,868	8,385	4,967
05/29/2018					2,117	5,918	2,079	74	2,620	7,759	7,304
05/30/2018		3			1,184	5,511	1,658	65	3,828	7,006	3,777
05/31/2018		5			1,508	1,697	1,355	57	5,293	3,660	3,000
06/01/2018		5			2,447	799	1,941	30	10,171	2,332	1,621
06/02/2018			23		840	506	1,484	24	4,899	2,891	2,078
06/03/2018					1,898	1,374	426	12	466	1,351	2,096
06/04/2018					1,092	646	471	4		1,721	2,514
06/05/2018					1,165	654	760	11		1,684	1,251
06/06/2018					623	907	583	4			725
06/07/2018					528	496	551	5		600	1,077
06/08/2018											
Total:	0	36	111	0	39,727	45,255	25,726	659	79,046	59,150	59,626
# Days:	0	6	2	0	14	14	14	14	10	12	14
Average:	0	6	56	0	2,838	3,233	1,838	47	7,905	4,929	4,259
YTD:	23,452	40,937	21,824	12,792	4,636,055	2,836,361	2,042,214	49,692	1,488,109	1,255,165	1,886,627

Number of hours sampled:

- No data available or no sample conducted

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

Smolt Monitoring Program Two Week Passage Index Report

Date 6/8/2018 7:17:27 AM

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COMBINED SUBYEARLING CHINOOK

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (Index)	LGS (Index)	LMN (Index)	RIS (Index)	MCN (Index)	JDA (Index)	BO2 (Index)
05/25/2018		0	6		45,951	10,994	9,014	260	16,430		6,542
05/26/2018		0	8		57,841	5,813	4,521	600	14,114	3,670	5,427
05/27/2018					77,340	21,984	4,874	675	24,907	3,549	6,250
05/28/2018					51,284	101,285	14,996	783	58,451	4,329	4,218
05/29/2018					62,304	111,359	44,527	707	32,899	4,453	3,208
05/30/2018		0			7,102	84,975	68,258	701	46,988	5,527	7,554
05/31/2018		0			12,641	69,459	36,251	405	89,977	10,084	8,597
06/01/2018		0			8,740	32,064	42,223	443	76,759	9,013	7,653
06/02/2018		2			10,502	20,078	24,302	445	85,951	11,050	12,067
06/03/2018					9,032	26,202	11,228	499	17,251	26,955	14,992
06/04/2018					14,123	5,381	5,110	496		33,741	23,853
06/05/2018					10,686	4,140	9,049	666		43,360	31,648
06/06/2018					12,149	10,486	6,315	626			38,015
06/07/2018					10,307	16,276	5,922	591		36,434	53,740
06/08/2018											
Total:	0	2	14	0	390,002	520,496	286,590	7,897	463,727	192,165	223,764
# Days:	0	6	2	0	14	14	14	14	10	12	14
Average:	0	0	7	0	27,857	37,178	20,471	564	46,373	16,014	15,983
YTD:	0	3	89	192	515,569	549,538	300,925	13,115	807,846	246,389	1,565,060

Number of hours sampled:

- No data available or no sample conducted

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

Smolt Monitoring Program Two Week Passage Index Report

Date 6/8/2018 7:17:27 AM

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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)
05/25/2018		0	58		2,737	6,653	1,944	765	4,509		7,087
05/26/2018		0	82		2,334	4,166	188	764	3,068	4,486	3,731
05/27/2018					5,741	4,196	1,219	650	5,227	4,483	1,022
05/28/2018					4,691	3,943	273	540	4,272	3,874	1,973
05/29/2018					5,444	4,142	693	421	1,456	3,218	2,526
05/30/2018		0			2,071	3,931	331	656	2,790	4,048	1,107
05/31/2018		0			1,796	2,022	1,355	515	1,176	4,034	2,048
06/01/2018		0			1,049	956	647	389	3,698	2,773	681
06/02/2018		0			1,190	2,142	1,484	336	975	2,570	1,560
06/03/2018					785	1,591	284	373	932	1,842	1,623
06/04/2018					478	258	538	418		2,008	1,812
06/05/2018					891	777	276	396		1,684	1,663
06/06/2018					969	673	211	356			1,199
06/07/2018					598	726	138	260		1,349	1,159
06/08/2018											
Total:	0	0	140	0	30,774	36,176	9,581	6,839	28,103	36,369	29,191
# Days:	0	6	2	0	14	14	14	14	10	12	14
Average:	0	0	70	0	2,198	2,584	684	489	2,810	3,031	2,085
YTD:	0	0	1,224	1,365	258,747	211,674	39,866	43,367	222,060	116,464	461,101

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)
05/25/2018		42	27		27,514	27,572	11,488	110	1,610		4,271
05/26/2018		32	13		33,005	15,568	5,086	162	1,534	5,811	2,968
05/27/2018					37,826	26,502	5,687	249	1,691	6,351	1,435
05/28/2018					22,828	13,621	7,180	280	1,861	7,428	2,517
05/29/2018					16,635	29,334	7,623	222	1,747	8,773	2,526
05/30/2018		21			9,913	11,389	9,350	457	948	10,432	3,126
05/31/2018		28			7,254	4,374	5,082	499	2,352	10,009	2,309
06/01/2018		47			6,712	3,985	3,721	529	925	5,042	1,534
06/02/2018		57			4,201	5,756	2,968	424	512	3,983	1,597
06/03/2018					4,843	4,840	1,563	310	0	2,640	1,147
06/04/2018					4,776	2,582	941	359		2,812	888
06/05/2018					2,740	1,687	1,243	283		2,386	927
06/06/2018					1,731	2,318	481	356			325
06/07/2018					1,935	1,617	138	295		1,050	1,323
06/08/2018											
Total:	0	227	40	0	181,913	151,145	62,551	4,535	13,180	66,717	26,893
# Days:	0	6	2	0	14	14	14	14	10	12	14
Average:	0	38	20	0	12,994	10,796	4,468	324	1,318	5,560	1,921
YTD:	723	26,787	3,888	5,328	3,912,876	2,995,775	1,939,215	23,397	237,822	678,251	352,365

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)
05/25/2018		0	0		1,008	3,351	3,358	302	31,242		12,721
05/26/2018		0	1		500	3,276	3,768	180	19,637	9,584	7,802
05/27/2018					0	2,544	1,828	138	14,760	6,818	6,002
05/28/2018					938	1,791	1,091	107	12,205	4,466	8,777
05/29/2018					907	1,427	1,386	98	4,076	4,938	3,413
05/30/2018		0			592	801	662	57	5,579	3,970	2,931
05/31/2018		0			287	348	0	117	5,881	1,942	2,126
06/01/2018		0			280	327	0	60	3,698	1,639	2,163
06/02/2018		0			140	166	557	50	1,462	1,285	1,359
06/03/2018					131	290	426	45	466	1,105	1,592
06/04/2018					136	260	67	14		2,066	1,333
06/05/2018					206	194	0	22		702	800
06/06/2018					0	35	141	11			812
06/07/2018					0	99	0	13		900	869
06/08/2018											
Total:	0	0	1	0	5,125	14,909	13,284	1,214	99,006	39,415	52,700
# Days:	0	0	1	0	366	1,065	949	87	9,901	3285	3,764
Average:	0	0	1	0	366	1,065	949	87	9,901	3,285	3,764
YTD:	0	0	4	115	260,390	120,436	58,395	76,109	1,525,061	382,309	739,278

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)
05/25/2018		0	0		5	500	700	2	5,700		925
05/26/2018		0	0		0	800	400	0	8,900	4,200	425
05/27/2018					4	150	900	2	13,600	4,100	335
05/28/2018					6	250	150	1	13,600	4,025	500
05/29/2018					3	1,050	500	0	6,100	7,875	280
05/30/2018		0			1	200	2,600	0	3,400	13,680	580
05/31/2018		0			3	400	1,800	1	2,200	9,560	648
06/01/2018		0			3	100	400	2	3,800	10,040	1,312
06/02/2018		0			2	0	1,200	0	7,600	1,840	1,085
06/03/2018					15	1,000	400	2	2,200	1,360	565
06/04/2018					4	0	750	2		4,000	371
06/05/2018					2	0	1,750	0		4,000	246
06/06/2018					7	25	1,550	0			186
06/07/2018					10	225	0	1		700	617
06/08/2018											
Total:	0	0	0	0	65	4,700	13,100	13	67,100	65,380	8,075
# Days:	0	6	2	0	19	20	20	17	13	20	21
Average:	0	0	0	0	3	235	655	1	5,162	3,269	385
YTD:		1	3		279	34,034	55,300	332	216,312	224,023	24,519

- 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 5/25/2018 12:00:00 AM TO 6/8/2018 12:00:00 AM

Date 6/8/2018 7:18:02 AM

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Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	254,900	26,125	20,275	3,450	118,276	541,302
Sum of Number Barged	253,973	25,473	20,257	3,440	113,610	530,363
Sum of Number Bypassed	510	579	0	0	4,615	10,319
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	17	0	0	1	2	22
Sum of Facility Morts	398	36	18	9	21	503
Sum of Reseach Morts	2	37	0	0	28	95
Sum of Total Project Mort	417	73	18	10	51	620

Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	302,320	25,939	21,031	8,498	86,920	531,628
Sum of Number Barged	299,094	25,816	20,985	8,345	86,851	527,942
Sum of Number Bypassed	9	0	0	0	0	9
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	25	0	0	1	1	28
Sum of Facility Morts	3,192	123	46	152	68	3,649
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	3,217	123	46	153	69	3,677

FISH PASSAGE CENTER

Two Week Transportation Summary Report 5/25/2018 12:00:00 AM TO 6/8/2018 12:00:00 AM

Date 6/8/2018 7:18:02 AM

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Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	172,741	14,867	5,600	7,350	36,042	272,642
Sum of Number Barged	172,670	14,817	5,600	7,346	36,010	272,453
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	2	0	0	0	1	4
Sum of Facility Morts	69	50	0	4	31	185
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	71	50	0	4	32	189

Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	729,961	66,931	46,906	19,298	241,238	1,345,572
Sum of Number Barged	725,737	66,106	46,842	19,131	236,471	1,330,758
Sum of Number Bypassed	519	579	0	0	4,615	10,328
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	44	0	0	2	4	54
Sum of Facility Morts	3,659	209	64	165	120	4,337
Sum of Reseach Morts	2	37	0	0	28	95
Sum of Total Project Mort	3,705	246	64	167	152	4,486

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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	341700	3039408	180575	188571	2515872	8781998
Sum of Number Barged	329016	2427439	176978	183939	1805135	6727642
Sum of Number Bypassed	12176	610813	3539	4464	710487	2051966
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	29	58	0	8	44	183
Sum of Facility Morts	477	1056	58	160	171	2093
Sum of Reseach Morts	2	42	0	0	35	114
Sum of Total Project Mort	508	1156	58	168	250	2390

Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	320159	1855872	134765	74396	1963797	6312786
Sum of Number Barged	316077	1544991	134050	65879	1351748	4764493
Sum of Number Bypassed	817	306206	407	7716	611659	1538464
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	29	40	3	11	13	109
Sum of Facility Morts	3236	4635	305	790	377	9720
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	3265	4675	308	801	390	9829

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	181391	1216150	23250	35150	1176309	3808559
Sum of Number Barged	181304	1016262	23148	33504	923996	3102210
Sum of Number Bypassed	0	199433	100	1598	252167	705465
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	3	7	0	3	7	27
Sum of Facility Morts	84	448	2	45	139	857
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	87	455	2	48	146	884

Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	843250	6111430	338590	298117	5655978	18903343
Sum of Number Barged	826397	4988692	334176	283322	4080879	14594345
Sum of Number Bypassed	12993	1116452	4046	13778	1574313	4295895
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	61	105	3	22	64	319
Sum of Facility Morts	3797	6139	365	995	687	12670
Sum of Reseach Morts	2	42	0	0	35	114
Sum of Total Project Mort	3860	6286	368	1017	786	13103

Cumulative Adult Passage at Mainstem Dams Through: 06/07

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	06/06	87894	6456	83624	18110	152393	25835	7408	395	9371	1390	12119	2417	0	0	0	0	0	0
TDA	06/06	57935	4793	58310	12497	119227	21697	3563	163	3254	593	4511	897	0	0	0	0	0	0
JDA	06/06	50572	5053	46675	12475	103731	20380	1110	57	988	165	1272	237	0	0	0	0	0	0
MCN	06/06	42198	3375	42611	6750	91730	15668	0	0	0	0	0	0	0	0	0	0	0	0
IHR	06/06	29550	2040	26184	6315	64720	10279	0	0	0	0	0	0	0	0	0	0	0	0
LMN	06/06	31137	2685	24026	6757	62915	9626	0	0	0	0	0	0	0	0	0	0	0	0
LGS	06/06	27730	2064	16643	5773	56968	10057	0	0	0	0	0	0	0	0	0	0	0	0
LGR	06/06	25115	2248	14395	4345	53934	10165	0	0	0	0	0	0	0	0	0	0	0	0
PRD	06/06	5603	823	5778	558	15672	1636	0	0	0	0	0	0	0	0	0	0	0	0
WAN	06/06	6408	819	5081	327	15584	1843	0	0	0	0	0	0	0	0	0	0	0	0
RIS	06/06	5653	859	5444	386	14721	2016	0	0	0	0	0	0	0	0	0	0	0	0
RRH	06/06	4134	691	3822	217	6104	872	0	0	0	0	0	0	0	0	0	0	0	0
WEL	06/06	2830	651	2110	238	4273	1010	0	0	0	0	0	0	0	0	0	0	0	0
WFA	06/06	16419	1358	20496	1318	24342	1004	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	06/06	1	-1	0	0	0	0	1022	524	1440	4038	3484	5936	1598	1089	1780	4772	7840	2591		
TDA	06/06	4	0	0	0	0	0	408	192	624	201	1503	2337	74	521	957	32	8	65		
JDA	06/06	0	0	0	0	0	1	224	165	446	400	536	4191	190	342	1819	162	351	100		
MCN	06/06	-4	0	0	0	1	0	47	44	121	362	2526	4256	161	753	1680	64	16	5		
IHR	06/06	-1	0	0	0	0	0	0	0	0	1303	1073	4226	434	503	1505	14	8	0		
LMN	06/06	0	0	0	0	0	0	0	0	0	1206	1451	8189	317	697	2800	9	2	0		
LGS	06/06	0	0	0	0	0	0	0	0	0	1221	1491	4998	318	658	2537	1	0	0		
LGR	06/06	0	0	0	0	0	0	0	0	0	4531	7308	8716	1260	3052	3664	0	0	0		
PRD	06/06	0	0	0	0	0	0	3	3	12	35	49	54	0	0	0	203	64	19		
WAN	06/06	0	0	0	0	0	0	2	3	4	56	42	114	0	0	0	152	12	6		
RIS	06/06	0	0	0	0	0	0	1	2	0	65	65	118	25	18	61	0	0	0		
RRH	06/06	0	0	0	0	0	0	0	0	0	86	125	324	30	30	216	0	0	0		
WEL	06/06	0	0	0	0	0	0	0	0	0	118	37	76	42	24	49	51	0	0		
WFA	06/06	0	2	117	117	0	0	0	0	0	5718	1646	13033	1759	697	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.

