



## Fish Passage Center

# Weekly Report #18-04

March 30, 2018

### This Week's Highlights

#### Dworshak Operations

Similar to 2017, Unit #3 at Dworshak Dam is out of service for rehabilitation through at least the early summer period. Unit #3 is the largest of the three units at Dworshak Dam, in terms of outflow capacity. Therefore, flows through the powerhouse are limited to 4.5-4.8 Kcfs during this rehabilitation work. Any outflow beyond the constrained powerhouse capacity at Dworshak must be spilled; creating concerns over Total Dissolved Gas supersaturation (TDG) in the river environment below Dworshak Dam and, subsequently, at Dworshak Hatchery as the water supply to the hatchery comes from downstream of Dworshak Dam. Although Dworshak Hatchery has been outfitted with TDG degassing columns (i.e., degassers) which significantly reduce TDG in hatchery supply water, there is still much concern over very high discharges and spill levels at Dworshak that will create elevated levels of TDG below the Dam and, subsequently, elevated TDG levels at the hatchery. At the recent 9.5-10.6 Kcfs spill levels over the last week, TDG directly below has ranged from 122-124%, with the water supply to the hatcheries at approximately 104.5-105.3%.

Over the last month, the Official Water Supply (calculated by USACE) at Dworshak has increased from 2.85 Maf in February to 3.1 Maf in March. At the March 7 TMT call, USACE stated their March Final forecast of 3.1 Maf, would necessitate an April 15<sup>th</sup> draft to the bottom of the active storage at Dworshak (1,445') and require outflows to remain near 16 Kcfs with the potential to go higher in April. At the March 14 TMT call, the fisheries managers requested a reduction in outflows to 14-15 Kcfs for the remainder of March, in order to reduce TDG below the project and at Dworshak NFH. Following a discussion at a special TMT call on March 16<sup>th</sup>, a decision was made to reduce outflows at Dworshak to 14 Kcfs and continue these outflows through March 28<sup>th</sup> when outflows would be further reduced to 12 Kcfs for up to three days to facilitate releases from Dworshak NFH and Clearwater Hatchery.

At the TMT Meeting on March 21<sup>st</sup>, it was agreed to maintain the operation agreed to last week. Early this week (Monday afternoon) outflows were reduced at Dworshak to 8.5 Kcfs, due to less than expected inflows.

#### Water Supply

Precipitation throughout the Columbia Basin has varied between 69% and 135% of average at individual sub-basins over March. Precipitation above The Dalles has been 94% of average over March. Over the 2018 water year, precipitation has ranged between 91% and 118% of average.

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

Location	Water Year 2018		Water Year 2018	
	March 1-28, 2018		October 1, 2017 to March 28, 2018	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	2.50	81	23.8	105
Snow River Above Ice Harbor	2.47	118	12.9	95
Columbia Above The Dalles	2.29	94	16.7	99
Kootenai	2.63	88	23.7	107
Clark Fork	1.88	81	17.0	113
Flathead	2.07	69	23.9	118
Pend Oreille River Basin above Waneta Dam	2.09	76	21.1	112
Salmon River Basin	3.26	118	16.8	99
Upper Snake Tributaries	3.27	135	14.8	97
Clearwater	3.24	87	29.3	115
Willamette River above Portland	5.04	75	44.8	91

Snowpack within the Columbia Basin has been variable. Average snowpack in the Columbia River for basins above the Snake River confluence is 125% of average, for Snake River Basins the average snowpack is 87% of average, and for lower Columbia Basins between McNary and Bonneville Dam average snowpack is 76%

of average.

Table 2 displays the March 29<sup>th</sup> ESP runoff volume forecasts for multiple reservoirs along with the March COE forecasts at Libby and Dworshak. The March 29<sup>th</sup> ESP forecast at The Dalles between April and August is 98,846 Kaf (113% of average).

**Table 2. March 29 ESP Runoff Volume Forecasts for various reservoirs within the Columbia and Snake River Basins.**

Location	March 29, 2018 5-day QPF ESP	
	% Average (1981-2010)	Runoff Volume (Kaf)
The Dalles (Apr-Aug)	113	98,846
Grand Coulee (Apr-Aug)	117	66,621
Libby Res. Inflow, MT (Apr-Aug)	117 122**	6,888 7,205**
Hungry Horse Res. Inflow, MT (Apr-Aug)	147	2,841
Lower Granite Res. Inflow (Apr- July)	110	21,772
Brownlee Res. Inflow (Apr-July)	107	5,860
Dworshak Res. Inflow (Apr-July)	118 127**	2,846 3,093**

\*\* Denotes COE March Forecast

Grand Coulee Reservoir is at 1250.4 feet (3-29-18) and has refilled 0.5 feet over the last week. Outflows at Grand Coulee have ranged between 82.6 Kcfs and 120.9 Kcfs over the last week. The end of March FC Elevation at Grand Coulee is 1256.9 ft. (based on March Forecast).

The Libby Reservoir is currently at elevation 2358.9 feet (3-29-18) and has drafted 4.4 feet over the past week. Daily average outflows at Libby Dam have been 13.5 Kcfs over the last week. The end of March FC at Libby is 2358.3 ft. (based on March Forecast).

Hungry Horse is currently at an elevation of 3497.0 feet (3-29-18) and has drafted 6.3 feet last week. Outflows at Hungry Horse have been 10.4-11.4 Kcfs over the last week. The end of March FC at Hungry Horse is 3496.2 ft. (based on March Forecast).

Dworshak is currently at an elevation of 1456.9 feet

(3-29-18) and has drafted 4.7 feet over last week.

Dworshak outflows have been reduced from 14 Kcfs down to 8.5 Kcfs. The end of March System FC at Dworshak at the end of March is 1461.6 ft.

The Brownlee Reservoir was at an elevation of 2036.0 feet on March 22, 2018. Outflows at Hells Canyon have ranged between 19.0 and 27.8 Kcfs over the last four days. The end of March FC (based on March forecast) is 2037.2 ft.

### Spill

Due to relatively high flows for this time of year and multiple unit outages, involuntary spill continues to occur at John Day Dam. Over the last week, daily average spill volumes at John Day Dam have ranged from 12.3 Kcfs to 28.2 Kcfs. Involuntary spill has also occurred at Ice Harbor Dam through most of the last week. Spill at this project is due to multiple unit outages and, when spill has occurred, daily average spill volumes have ranged from 2.9 Kcfs to 25.4 Kcfs. Over the last five days, spill of 6.8 Kcfs has been occurring at Lower Granite Dam due to the implementation of SOR 2018-1 (<http://www.fpc.org/documents/sors/sor18/2018-1.pdf>.) Finally, due to the continued rehab of unit #3 at Dworshak Dam, hydraulic capacity at this project has been limited to approximately 5 Kcfs. Therefore, Dworshak Dam has been spilling since late January for flood control operations. Over the last week, daily average spill volumes at Dworshak Dam have been approximately 4.2-9.5 Kcfs. Waivers in total dissolved gas levels for the implementation of the voluntary fish spill programs don't begin until April. Therefore, the 110% standard for total dissolved gas is currently in place. However, since the spill at these projects is considered involuntary, any exceedances of the 110% standards are not interpreted as violations by the US Army Corps of Engineers.

### Smolt Monitoring

Smolt Monitoring Program (SMP) activities at bypass facilities continued at Bonneville, John Day, and Little Goose dams this week. Sampling at the Snake, Grande Ronde, Salmon, and Imnaha river traps also continued this week. SMP sampling at the other bypass facilities (Lower Granite, Lower Monumental, McNary, and Rock Island dams) is expected to begin in early April.

Subyearling Chinook continued to dominate the

samples at Bonneville Dam (BON) this week. Similar to past weeks, nearly all of the subyearling Chinook sampled at BON this week were fry. This week's daily average passage index for subyearling Chinook at BON was down slightly from last week at nearly 1300 per day, compared to 1500 per day. Yearling Chinook ticked up from last week with an average passage index of just over 400 per day, compared to last week's average of 65. A relatively small number of coho fry, steelhead, and sockeye were also collected this week. Pacific lamprey macrophthalmia were encountered every day this week. This week's daily average collection for Pacific lamprey macrophthalmia was up from last week at 114 per day. And one Pacific lamprey ammocoete was encountered in this week's samples.

Similar to the last two years, sampling at John Day Dam (JDA) is every-other-day. Yearling Chinook continued to dominate the samples at JDA this week. This week's daily average passage index for yearling Chinook was approximately 1733 per day, which is a substantial decrease from last week's daily average of about 3700 per day. Steelhead, coho, and sub yearling Chinook were also encountered in this week's samples. All of the subyearling Chinook collected at JDA so far this year have been fry. Pacific lamprey macrophthalmia were encountered in all three of this week's samples. This week's daily average collection for Pacific lamprey macrophthalmia was about 450, which is a large decrease from last week's daily average collection of about 7,800 per day. Pacific lamprey ammocoetes were encountered all of this week samples.

Similar to recent years, sampling at Little Goose Dam (LGS) will be every-other-day until the start of transportation, at which time sampling will change to every day. Yearling Chinook, sockeye, and steelhead were all encountered in this week's samples, but in relatively low numbers. The daily passage indices for this week were less than 75 fish per day, per species. It is worth noting that the sockeye collected so far at LGS are likely kokanee from Dworshak reservoir, as Dworshak Dam has been spilling since January. Pacific lamprey macrophthalmia and ammocoetes were encountered in all three of this week's samples, although in relatively low numbers.

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. Sampling at the Snake River Trap began on March 4<sup>th</sup>,

with the first sample tallied and reported to the FPC on March 5<sup>th</sup>. Subyearling Chinook fry, yearling Chinook, coho, and steelhead were all encountered in this week's samples, but in relatively low numbers. Of the 45 yearling Chinook that were collected this week, 41 (90%) were not ad clipped.

The Grande Ronde Trap (GRN) is located at river kilometer 002 of the Grande Ronde River and is operated by the Oregon Department of Fish and Wildlife. Sampling at the Grande Ronde Trap began on March 7<sup>th</sup>, with the first sample tallied and reported to the FPC on March 8<sup>th</sup>. Similar to last week's sampling, yearling Chinook dominated the samples at GRN. This week's daily average collection for yearling Chinook was nearly 200 fish per day, which is an increase from last week's daily average collection of 60 per day. Of the yearling Chinook sampled so far this season, approximately 95% were unmarked. Coho, and steelhead were also encountered in this week's samples, but in very low numbers. The coho collections are likely part of releases of approximately 500,000 hatchery coho juveniles into the Lostine River that began earlier this month.

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. Similar to recent years, sampling at WTB in 2018 will only occur during the weekdays. Sampling at WTB began on March 4<sup>th</sup>, with the first sample tallied and reported to the FPC on March 5<sup>th</sup>. To date, only yearling Chinook have been collected at this trap. Collections of yearling Chinook increased this week, when compared to the previous week. This week's daily average collection was about 270 fish per day, whereas that for last week was about 180 per day. Of the yearling Chinook collected at WTB this week, approximately 64% were of hatchery origin.

The Imnaha River Trap (IMN) is located at river kilometer 007 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<sup>th</sup> through March 27<sup>th</sup>. Over the last week (March 22-27), a total of 431 yearling Chinook and 59 steelhead were collected at the trap. All of the yearling Chinook and steelhead that were encountered this week were unmarked.

## Hatchery Releases

FPC has not received preliminary data from some hatcheries as of 3/30/18, 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. Approximately 4 million spring and summer Chinook were scheduled to be released into this zone over the last week. Of these 45% are from the Clearwater National Fish Hatchery being released into the North Fork of the Clearwater (544,340), and Red River (1,277,096), a tributary of the South Fork Clearwater. The rest were scheduled to be released into tributaries of the Salmon River; 2,107,650 into the Sawtooth, and another 103,000 summer Chinook into Johnson Creek.

In the next two weeks, approximately 3.3 million spring Chinook will be released into this zone. Of these, 77% are planned for releases into the Clearwater River, both at Dworshak Hatchery (1.65 Million), and into Clear Creek (873,207). There are also releases scheduled for the Grande Ronde River (250,000), Imnaha River (280,000), and Tucannon River at Curl Lake Acclimation Pond (211,000) which is a volitional release running through the end of April. Additionally, there are another 1.1 million summer Chinook planned for release into the South Fork Salmon River starting on April 2<sup>nd</sup> and running through the middle of May.

Approximately 5.3 million summer steelhead are also planned for release into this zone over the next two weeks, 60% of which are planned for release into the Salmon River and its tributaries at Sawtooth Hatchery, Pahsimeroi River, Little Salmon River, and the South Fork of the Salmon. The Clearwater River and its tributaries account for a majority of the remaining releases at Clear Creek (353,000), Newsome Creek (131,000), and the South Fork Clearwater (775,000). Finally, the remaining scheduled releases are planned for the Imnaha (Little Sheep Creek: 215,000), Grande Ronde (Cottonwood Acclimation Pond: 225,000), Wallowa (Wallowa Acclimation Pond: 320,000), and Tucannon Rivers (100,000).

Lastly, there are four scheduled fall Chinook

releases planned for the next two weeks; three in the Snake River at Captain John acclimation pond (160,000) and Pittsburg Landing acclimation pond (150,000), and Lyons Ferry Hatchery (275,000), and another scheduled for Big Canyon (150,000) in the Clearwater River on April 10<sup>th</sup>.

### Upper Columbia Zone:

The Upper Columbia Zone encompasses the area of the Columbia River and its tributaries from Priest Rapids Dam to Chief Joseph Dam. No releases were planned during the past week, however, approximately 3.1 million spring and summer Chinook are scheduled to be released in this zone over the next two weeks. Of these, almost a million are expected to be released into the Rocky Reach pool at both Chelan Falls, and at Wells Hatchery. Approximately 430,000 are being released into the Methow River at the Chewuch acclimation pond (64,000), Methow Hatchery (125,000), Twisp River (30,000), and Carlton acclimation pond (215,000). And another 900,000 will be released into the Wenatchee River and its tributaries (Nason Creek, Chiwawa Hatchery, and Dryden acclimation pond). Finally, the remaining releases are scheduled for the Entiat (440,000), and Similkameen Rivers (380,000) on April 1<sup>st</sup>.

During the next two weeks there are also planned releases of nearly half a million summer steelhead within this zone. 54,000 of which will be released into the Twisp River, 68,000 into the Okanogan, and another 210,000 and 150,000 at Wells and Chiwawa hatcheries, respectively.

### 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). Six spring Chinook releases were planned for the past week within this zone, a majority of which were released into the Wind and Klickitat Rivers (250,000 and 600,000 respectively), and another 525,000 were released within the Deschutes River basin in the Metolius, Crooked River, Wycus Creek and Warm Springs Hatchery.

Over the next two weeks approximately 2.9 million spring and summer Chinook are scheduled to be released into this zone. Of these, 58% are scheduled for release into the Umatilla River at Imeques and Thornhollow acclimation ponds, with the rest being

released into the Wind River (1.2 million) on April 10<sup>th</sup>. Additionally, 6 million fall Chinook are planned for release on April 9<sup>th</sup> from Spring Creek Hatchery.

Other scheduled releases include nearly 2.4 million juvenile coho that are planned for release into the Klickitat River on April 1<sup>st</sup>, and summer steelhead releases of approximately 600,000 fish into the Touchet (159,000), Deschutes (162,000), Umatilla (100,000), and Ringold Spring Hatchery (180,000).

#### **Lower Columbia Zone:**

The Lower Columbia Zone is defined as the Columbia River and its tributaries below Bonneville Dam. Over the past week there was only a single release of spring Chinook scheduled for this zone, where 234,000 were planned for release into Dexter Pond on the Willamette River.

Over the next two weeks there are approximately 1.9 million spring Chinook juveniles that are planned for release within this zone. Of these, just over 900,000 are planned to be released into the Cowlitz River, another 66,000 into the Sandy River at the Bull Run acclimation pond, and the remaining 900,000 planned for release into the Columbia River at Tongue Point, the Cathlamet Channel net pens, and at Youngs Bay. Further, approximately 820,000 coho are also planned for release into this zone on April 1<sup>st</sup>; 295,000 at the Grays River Hatchery, 305,000 at Kalama Falls Hatchery, 150,000 at the Lewis River Hatchery, and another 70,000 into the Columbia River below Bonneville Dam.

Approximately 884,000 summer steelhead are scheduled to be released into the Lower Columbia zone in the next two weeks. Of these, roughly 79% will be released into the Willamette and its tributaries the Clackamas and Santiam Rivers. The remaining releases are scheduled for the Elochoman River (30,000), Lewis River (65,000), and Kalama River (91,500).

Finally, another 650,000 winter steelhead are also scheduled to be released in this zone over the next two weeks. 40,000 into Salmon Creek, and 85,000 into the Washougal River are volitional releases beginning April 1<sup>st</sup> and running through the end of the month, while 120,000 will be released from Beaver Creek through mid-May. Other releases include Big Creek Hatchery (60,000), Gnat Creek Hatchery (40,000), Eagle Creek Hatchery (100,000), Kalama Falls Hatchery (45,500), and 160,000 into Cedar Creek on the Sandy River.

#### **Adult Passage**

Bonneville Dam uses video counts from January 1<sup>st</sup> through March 31<sup>st</sup> and direct counting after this period. Bonneville Dam counts adult salmon and steelhead year round. Lower Granite Dam uses video counts from March 1<sup>st</sup> through March 31<sup>st</sup> and direct counting after this period. Lower Granite Dam counts adult salmon and steelhead through December 30<sup>th</sup> each year. Willamette Falls Dam also uses video counts and reports adult counts year round. Video counts can cause a delay in posting the count data to the web, because the counting staff at the projects has to review the tapes. The FPC collects the adult count data from projects several times a day and updates Adult Dam Count Report linked on our homepage (<http://www.fpc.org/>). During the winter season at Bonneville Dam (from 1/1/2018 through 3/28/2018), 17 adult Chinook and 1,513 adult steelhead were counted. In 2017 for the same time frame, 14 adult Chinook and 1,508 adult steelhead were counted. The Bonneville Dam 10-year average count as of March 28<sup>th</sup> for adult Chinook was 224 and for adult steelhead was 2,098.

The Willamette Falls cumulative steelhead count from January 1<sup>st</sup> through March 27<sup>th</sup> was 922. The 2018 Willamette Falls winter steelhead count had 421 more fish than the 2016 count of 501, while being 28.2% of the 10-year average count of 3,272. This year's Lower Granite steelhead count of 1,585 is about 34.7% of the 2016 count of 4,569 and 35.7% of the 10-year average count of 4,433.

The Bonneville Dam corner collector was opened on March 22<sup>nd</sup> for kelt passage. Between March 2<sup>nd</sup> and March 28<sup>th</sup>, a total of 5 steelhead and 1 salmon were observed over the separator at the Bonneville Juvenile Monitoring Facility (JMF). Kelt passage at the Bonneville JMF can be found at: <http://www.fpc.org/adultsalmon/bonkeltcounts.htm>.

The Corp of Engineers adult count project and ladder queries are now available on FPC.org at the following url: <http://www.fpc.org/environment/home.asp>.

## Hatchery Releases Last Two Weeks

Hatchery Release Summary										
From:	3/17/2018		to	03/30/18						
Agency	Hatchery	Species	Race	MiqYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2018	544,340	03-26-18	03-27-18	N Fk Clearwater River	Clearwater River M F	SNAK
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2018	818,207	03-19-18	04-04-18	Clear Creek	Clearwater River M F	SNAK
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2018	1,277,096	03-26-18	03-30-18	Red River	S Fk Clearwater River	SNAK
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2018	322,372	03-19-18	03-23-18	Hells Canyon Dam	Snake River	SNAK
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2018	808,000	03-29-18	04-13-18	Pahsimeroi River	Pahsimeroi River	SNAK
Idaho Dept. of Fish and Game	Sawtooth Hatchery	CH1	SP	2018	169,395	03-30-18	03-30-18	Sawtooth Hatchery	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	Sawtooth Hatchery	CH1	SP	2018	1,938,255	03-28-18	03-28-18	Sawtooth Hatchery	Salmon River (ID)	SNAK
<b>Idaho Dept. of Fish and Game Total</b>					<b>5,877,665</b>					
Nez Perce Tribe	Kooskia NFH	CH1	SP	2018	513,409	03-19-18	03-19-18	Kooskia Hatchery	Clearwater River M F	SNAK
									South Fork Salmon River	SNAK
Nez Perce Tribe	McCall Hatchery	CH1	SU	2018	103,500	03-29-18	04-01-18	Johnson Cr Idaho	River	SNAK
<b>Nez Perce Tribe Total</b>					<b>616,909</b>					
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CH1	SP	2018	300,000	03-22-18	03-22-18	Youngs Bay	Youngs River	LCOL
Oregon Dept. of Fish and Wildlife	McKenzie Hatchery	CH1	SP	2018	202,000	03-21-18	03-21-18	McKenzie Hatchery	Willamette River	LCOL
Oregon Dept. of Fish and Wildlife	Willamette Hatchery	CH1	SP	2018	234,000	03-24-18	03-24-18	Dexter Pond	Willamette River	LCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2018	7,500	03-25-18	03-25-18	Metolius River	Deschutes River	MCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2018	7,500	03-25-18	03-25-18	Wychus Creek	Deschutes River	MCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2018	10,000	03-25-18	03-25-18	Crooked River (OR)	Deschutes River	MCOL
<b>Oregon Dept. of Fish and Wildlife Total</b>					<b>761,000</b>					
Umatilla Tribe	Bonneville Hatchery	CH1	FA	2018	125,000	03-22-18	03-22-18	Pendelton Acclim Pond	Umatilla River	MCOL
Umatilla Tribe	Carson NFH	CH1	SP	2018	247,338	03-28-18	03-28-18	Wind River	Wind River	MCOL
<b>Umatilla Tribe Total</b>					<b>372,338</b>					
Yakama Tribe	Klickitat Hatchery	CH1	SP	2018	600,000	03-26-18	03-26-18	Klickitat Hatchery	Klickitat River	MCOL
<b>Yakama Tribe Total</b>					<b>600,000</b>					
U.S Fish and Wildlife Service	Warm Springs NFH	CH1	SP	2018	487,446	03-29-18	03-29-18	Warm Springs NFH	Deschutes River	MCOL
<b>Grand Total</b>					<b>8,715,358</b>					

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



## Hatchery Releases Next Two Weeks

Hatchery Release Summary										
From:		3/31/2018		to		4/13/2018				
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
Colville Tribe	Wells Hatchery	ST	SU	2018	68,300	04-01-18	04-01-18	Okanogan River	Okanogan River	UCOL
<b>Colville Tribe Total</b>					<b>68,300</b>					
Douglas County PUD	Methow Hatchery	CH1	SP	2018	30,698	04-01-18	04-01-18	Twisp River	Methow River	UCOL
Douglas County PUD	Methow Hatchery	CH1	SP	2018	64,000	04-01-18	04-01-18	Chewuch Acclim Pond	Methow River	UCOL
Douglas County PUD	Methow Hatchery	CH1	SP	2018	124,973	04-01-18	04-01-18	Methow Hatchery	Methow River	UCOL
Douglas County PUD	Methow Hatchery	CH1	SU	2018	215,000	04-01-18	05-01-18	Carlton Acclim Pond	Methow River	UCOL
Douglas County PUD	Wells Hatchery	CH1	SU	2018	356,300	04-01-18	04-01-18	Wells Hatchery	Rocky Reach Pool	UCOL
Douglas County PUD	Wells Hatchery	ST	SU	2018	54,300	04-01-18	04-01-18	Twisp Acclim Pond	Methow River	UCOL
Douglas County PUD	Wells Hatchery	ST	SU	2018	210,400	04-01-18	04-01-18	Wells Hatchery	Rocky Reach Pool	UCOL
<b>Douglas County PUD Total</b>					<b>1,055,671</b>					
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2018	818,207	03-19-18	04-04-18	Clear Creek	Clearwater River M F	SNAK
Idaho Dept. of Fish and Game	Clearwater Hatchery	ST	SU	2018	131,564	04-09-18	04-10-18	Newsome Creek	S Fk Clearwater River	SNAK
Idaho Dept. of Fish and Game	Clearwater Hatchery	ST	SU	2018	233,972	04-02-18	04-03-18	S Fk Clearwater River	Clearwater River M F	SNAK
Idaho Dept. of Fish and Game	Clearwater Hatchery	ST	SU	2018	541,123	04-03-18	04-06-18	S Fk Clearwater River	Clearwater River M F	SNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2018	93,778	04-02-18	04-02-18	Pahsimeroi River	Pahsimeroi River	SNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2018	156,339	04-03-18	04-04-18	Pahsimeroi River	Pahsimeroi River	SNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2018	281,893	04-11-18	04-13-18	Sawtooth Hatchery	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2018	407,487	04-04-18	04-10-18	Little Salmon River	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	McCall Hatchery	CH1	SU	2018	156,500	04-02-18	05-20-18	S Fk Salmon River	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	McCall Hatchery	CH1	SU	2018	969,500	04-02-18	05-05-18	S Fk Salmon River	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2018	808,000	03-29-18	04-13-18	Pahsimeroi River	Pahsimeroi River	SNAK
<b>Idaho Dept. of Fish and Game Total</b>					<b>4,598,363</b>					
Nez Perce Tribe	Lyons Ferry Hatchery	CH1	FA	2018	150,000	04-10-18	04-10-18	Big Canyon (Clearwater River) Pittsburg Landing	Clearwater River M F	SNAK
Nez Perce Tribe	Lyons Ferry Hatchery	CH1	FA	2018	150,000	04-12-18	04-12-18	Acclim Pond	Snake River	SNAK
Nez Perce Tribe	Lyons Ferry Hatchery	CH1	FA	2018	160,000	04-02-18	04-02-18	Cpt John Acclim Pond	Snake River	SNAK
Nez Perce Tribe	McCall Hatchery	CH1	SU	2018	103,500	03-29-18	04-01-18	Johnson Cr Idaho	South Fork Salmon River	SNAK
<b>Nez Perce Tribe Total</b>					<b>563,500</b>					
Oregon Dept. of Fish and Wildlife	Big Creek Hatchery	ST	WI	2018	60,000	04-07-18	04-07-18	Big Creek Hatchery	Big Creek	LCOL
Oregon Dept. of Fish and Wildlife	Bonneville Hatchery	ST	SU	2018	25,000	04-11-18	04-11-18	Clackamas River	Clackamas River	LCOL
Oregon Dept. of Fish and Wildlife	Clackamas Hatchery	CH1	SP	2018	66,000	04-06-18	04-06-18	Bull Run Acclimation	Sandy River	LCOL
Oregon Dept. of Fish and Wildlife	Clackamas Hatchery	ST	SU	2018	125,000	04-07-18	04-07-18	Clackamas Hatchery	Clackamas River	LCOL
Oregon Dept. of Fish and Wildlife	Clackamas Hatchery	ST	WI	2018	100,000	03-31-18	03-31-18	Eagle Creek Hatchery	Eagle Creek	LCOL
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CH1	SP	2018	250,000	03-31-18	03-31-18	Tongue Pt	Col R Bel. Bon Dam	LCOL
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CH1	SP	2018	400,000	03-31-18	03-31-18	Youngs Bay	Youngs River	LCOL
Oregon Dept. of Fish and Wildlife	Enhancement Program	CH1	SP	2018	55,000	04-07-18	04-07-18	Clear Creek	Clearwater River M F	SNAK
Oregon Dept. of Fish and Wildlife	Gnat Creek Hatchery	ST	WI	2018	40,000	04-07-18	04-07-18	Gnat Creek Hatchery	Col R Bel. Bon Dam	LCOL
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2018	215,000	04-01-18	04-20-18	Little Sheep Creek	Imnaha River	SNAK
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2018	320,000	04-01-18	04-01-18	Wallowa Acclim Pond	Wallowa River	SNAK
Oregon Dept. of Fish and Wildlife	Leaburg Hatchery	ST	SU	2018	108,000	04-07-18	04-07-18	McKenzie River	Willamette River	LCOL
Oregon Dept. of Fish and Wildlife	Lookingglass Hatchery	CH1	SP	2018	250,000	04-01-18	04-01-18	Lookingglass Creek	Grande Ronde River	SNAK
Oregon Dept. of Fish and Wildlife	Lookingglass Hatchery	CH1	SP	2018	280,000	04-01-18	04-01-18	Imnaha Acclim Pond	Imnaha River	SNAK
Oregon Dept. of Fish and Wildlife	Roaring River Hatchery	ST	SU	2018	96,000	04-01-18	04-01-18	Willamette River	Willamette River	LCOL
Oregon Dept. of Fish and Wildlife	Round Butte Hatchery	ST	SU	2018	162,000	04-07-18	04-07-18	Deschutes River	Deschutes River	MCOL
Oregon Dept. of Fish and Wildlife	Sandy Hatchery	ST	WI	2018	160,000	04-13-18	04-13-18	Cedar Creek (Sandy R)	Sandy River	LCOL
Oregon Dept. of Fish and Wildlife	South Santiam Hatchery	ST	SU	2018	55,000	03-31-18	03-31-18	Minto Pond South Santiam	Santiam River	LCOL
Oregon Dept. of Fish and Wildlife	South Santiam Hatchery	ST	SU	2018	161,500	04-03-18	04-03-18	Hatchery	Santiam River	MCOL
Oregon Dept. of Fish and Wildlife	Umatilla Hatchery	ST	SU	2018	100,000	04-06-18	04-06-18	Pendelton Acclim Pond	Umatilla River	LCOL
Oregon Dept. of Fish and Wildlife	Willamette Hatchery	ST	SU	2018	61,000	03-31-18	03-31-18	Dexter Pond	Willamette River	LCOL
Oregon Dept. of Fish and Wildlife	Willamette Hatchery	ST	SU	2018	66,000	03-31-18	03-31-18	Minto Pond	Santiam River	LCOL
<b>Oregon Dept. of Fish and Wildlife Total</b>					<b>3,155,500</b>					
U.S. Fish and Wildlife Service	Carson NFH	CH1	SP	2018	1,193,064	04-10-18	04-10-18	Wind River	Wind River	MCOL
U.S. Fish and Wildlife Service	Dworshak NFH	CH1	SP	2018	1,648,668	04-02-18	04-03-18	Dworshak Hatchery	Clearwater River M F	SNAK
U.S. Fish and Wildlife Service	Dworshak NFH	ST	SU	2018	353,626	04-02-18	04-02-18	Clear Creek	Clearwater River M F	SNAK
U.S. Fish and Wildlife Service	Entiat Hatchery	CH1	SU	2018	440,123	04-13-18	04-13-18	Entiat River	Entiat River	UCOL
U.S. Fish and Wildlife Service	Hagerman NFH	ST	SU	2018	1,477,066	04-02-18	04-30-18	S Fk Salmon River	Salmon River (ID)	SNAK
U.S. Fish and Wildlife Service	Spring Creek NFH	CH0	FA	2018	6,000,000	04-09-18	04-09-18	Spring Creek Hatchery	Bonneville Pool	MCOL
<b>U.S. Fish and Wildlife Service Total</b>					<b>11,112,547</b>					
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2018	150,000	04-01-18	04-01-18	Thornhollow Acclim Pond	Umatilla River	MCOL
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2018	159,114	04-06-18	04-06-18	Imeques Acclim Pond Thornhollow Acclim	Umatilla River	MCOL
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2018	220,000	04-01-18	04-01-18	Pond	Umatilla River	MCOL
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2018	440,000	04-01-18	04-01-18	Imeques Acclim Pond	Umatilla River	MCOL
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2018	500,000	04-06-18	04-06-18	Imeques Acclim Pond	Umatilla River	MCOL

## Hatchery Releases Next Two Weeks

Agency	Hatchery	Species	Year	Quantity	Release Dates	Location	Destination	Category
Umatilla Tribe	Umatilla Hatchery	CH1	SU	2018	212,400	04-05-18 04-05-18	Thornhollow Acclim Pond	Umatilla River
<b>Umatilla Tribe Total</b>				<b>1,681,514</b>				
Washington Dept. of Fish and Wildlife	Beaver Creek Hatchery	ST	SU	2018	30,000	04-01-18 05-01-18	Beaver Creek	Elochoman River
Washington Dept. of Fish and Wildlife	Beaver Creek Hatchery	ST	WI	2018	120,000	04-01-18 05-18-18	Beaver Creek	Elochoman River
Washington Dept. of Fish and Wildlife	Chelan Hatchery	CH1	SU	2018	604,500	04-01-18 04-01-18	Chelan Falls	Rocky Reach Pool
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	CH1	SP	2018	158,500	04-01-18 04-01-18	Chiwawa Hatchery	Wenatchee River
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	CH1	SP	2018	234,000	04-01-18 04-01-18	Nason Creek	Wenatchee River
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	ST	SU	2018	149,500	04-01-18 04-01-18	Chiwawa Hatchery	Wenatchee River
Washington Dept. of Fish and Wildlife	COOP	CH1	SU	2018	1,500	04-01-18 04-01-18	Chelan Falls	Rocky Reach Pool
Washington Dept. of Fish and Wildlife	COOP	CO	NO	2018	30,800	04-01-18 05-01-18	Below Bonn Dam	Col R Bel. Bon Dam
Washington Dept. of Fish and Wildlife	COOP	CO	NO	2018	39,000	04-01-18 04-01-18	Pen	Col R Bel. Bon Dam
Washington Dept. of Fish and Wildlife	Cowlitz Hatchery	CH1	SP	2018	250,000	04-01-18 05-01-18	Pen	Col R Bel. Bon Dam
Washington Dept. of Fish and Wildlife	Cowlitz Salmon	CH1	SP	2018	100,000	03-01-18 04-01-18	Cowlitz Hatchery	Cowlitz River
Washington Dept. of Fish and Wildlife	Cowlitz Salmon	CH1	SP	2018	809,000	03-01-18 04-01-18	Cowlitz River	Cowlitz River
Washington Dept. of Fish and Wildlife	Eastbank Hatchery	CH1	SU	2018	505,000	04-01-18 04-01-18	Dryden Acclim Pond	Wenatchee River
Washington Dept. of Fish and Wildlife	Grays River Hatchery	CO	NO	2018	295,000	04-01-18 04-01-18	Grays River Hatchery	Grays River
Washington Dept. of Fish and Wildlife	Kalama Falls Hatchery	CO	NO	2018	305,000	04-01-18 05-01-18	Kalama Falls Hatchery	Kalama River
Washington Dept. of Fish and Wildlife	Kalama Falls Hatchery	ST	SU	2018	91,500	04-01-18 04-01-18	Kalama Falls Hatchery	Kalama River
Washington Dept. of Fish and Wildlife	Kalama Falls Hatchery	ST	WI	2018	45,500	04-01-18 04-01-18	Kalama Falls Hatchery	Kalama River
Washington Dept. of Fish and Wildlife	Lewis River Hatchery	CO	SO	2018	150,000	04-01-18 05-01-18	Lewis River Hatchery	Lewis River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	CH1	FA	2018	274,845	04-01-18 04-01-18	Lyons Ferry Hatchery	Snake River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2018	50,000	04-01-18 04-01-18	Tucannon River	Tucannon River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2018	59,000	04-01-18 04-01-18	Dayton Acclim Pond	Touchet River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2018	100,000	04-01-18 04-01-18	Dayton Acclim Pond	Touchet River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2018	225,000	04-01-18 04-01-18	Cottonwood Acclim Pond	Grande Ronde River
Washington Dept. of Fish and Wildlife	Merwin Hatchery	ST	SU	2018	65,000	04-01-18 05-01-18	Echo Net Pens	Lewis River
Washington Dept. of Fish and Wildlife	Ringold Springs Hatchery	ST	SU	2018	180,000	04-01-18 05-01-18	Hatchery	McNary Pool
Washington Dept. of Fish and Wildlife	Similkameen Hatchery	CH1	SU	2018	380,000	04-01-18 04-01-18		Okanogan River
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	WI	2018	40,000	04-01-18 05-01-18	Salmon Creek (WA)	Col R Bel. Bon Dam
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	WI	2018	85,000	04-01-18 05-01-18	Washougal River	Washougal River
Washington Dept. of Fish and Wildlife	Tucannon Hatchery	CH1	SP	2018	211,400	04-01-18 04-30-18	Curl Lake Acclim Pond	Tucannon River
Washington Dept. of Fish and Wildlife	Tucannon Hatchery	ST	SU	2018	50,000	04-01-18 04-01-18	Tucannon River	Tucannon River
Washington Dept. of Fish and Wildlife	Washougal Hatchery	CO	NO	2018	2,366,000	04-01-18 04-01-18	Klickitat River	Klickitat River
<b>Washington Dept. of Fish and Wildlife Total</b>				<b>8,005,045</b>				
<b>Grand Total</b>				<b>30,240,440</b>				

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
03/16/2018	124.1	0.0	125.4	0.0	127.8	1.7	129.1	0.0	136.6	2.1	139.8	0.0	130.9	0.0
03/17/2018	97.1	0.0	99.3	0.0	110.5	0.0	111.6	0.0	118.3	0.2	124.1	0.0	123.9	0.0
03/18/2018	75.4	0.0	70.2	0.0	71.0	0.0	72.1	0.0	75.1	0.0	99.2	0.0	100.8	0.0
03/19/2018	105.4	0.0	112.7	0.0	110.7	4.1	102.8	0.0	106.6	1.4	107.9	0.0	102.6	0.0
03/20/2018	108.4	0.0	109.4	0.0	122.8	0.0	124.3	0.0	130.6	8.8	136.6	0.0	126.9	0.0
03/21/2018	111.4	0.0	109.0	0.0	109.1	0.0	110.0	0.0	117.8	0.0	136.5	0.0	134.9	1.8
03/22/2018	108.7	0.0	105.9	0.0	102.2	0.0	96.2	0.0	99.6	3.3	103.6	0.0	100.9	0.0
03/23/2018	120.9	0.0	119.7	0.0	121.0	4.9	111.0	0.0	116.6	7.7	118.0	0.0	111.6	0.0
03/24/2018	109.2	0.0	112.6	0.0	118.3	3.4	119.5	0.0	125.9	9.2	102.5	0.0	98.6	0.0
03/25/2018	93.1	0.0	95.3	0.0	108.6	0.0	106.8	0.0	113.0	0.5	111.5	0.0	106.6	0.0
03/26/2018	105.9	0.0	112.0	0.0	105.4	5.8	103.1	0.0	107.6	0.0	128.4	0.0	125.4	0.0
03/27/2018	87.1	0.0	89.0	0.0	97.3	0.0	103.9	0.0	110.5	1.3	117.4	0.0	120.8	2.5
03/28/2018	82.6	0.0	81.7	0.0	86.0	0.0	83.8	0.0	87.5	0.0	109.4	0.0	111.6	0.0
03/29/2018	98.6	0.0	97.3	0.0	96.1	0.0	96.6	0.0	101.4	0.0	124.0	0.0	124.5	0.0

**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	
03/16/2018	14.9	10.6	---	---	70.2	0.0	63.5	0.0	63.8	0.0	64.4	8.7	
03/17/2018	14.0	9.7	---	---	64.8	0.0	53.6	0.0	55.6	0.0	55.0	0.0	
03/18/2018	14.0	9.6	---	---	69.2	0.0	67.8	0.0	69.2	0.0	68.4	12.9	
03/19/2018	14.1	9.6	---	---	62.7	0.2	61.3	0.0	67.3	1.9	75.3	25.4	
03/20/2018	14.0	9.6	---	---	61.9	0.0	61.0	0.0	61.6	1.7	65.4	13.8	
03/21/2018	14.0	9.5	---	---	63.1	0.0	60.5	0.0	63.2	3.9	61.4	8.1	
03/22/2018	14.0	9.5	---	---	62.2	0.0	57.6	0.0	60.9	0.6	63.9	8.4	
03/23/2018	13.9	9.4	---	---	68.0	0.0	69.9	0.0	70.0	1.4	67.8	12.6	
03/24/2018	14.0	9.5	---	---	70.9	0.0	69.8	0.0	73.7	4.8	74.1	18.9	
03/25/2018	13.9	9.4	---	---	65.9	6.9	60.8	0.0	67.5	0.1	70.3	14.9	
03/26/2018	11.1	6.7	---	---	61.4	6.9	65.4	0.0	63.9	2.4	63.3	14.8	
03/27/2018	8.4	4.2	---	---	57.5	6.9	57.7	0.0	60.4	0.0	62.2	13.0	
03/28/2018	8.4	4.2	---	---	56.1	6.8	61.5	0.0	64.7	0.0	65.3	12.9	
03/29/2018	8.4	4.2	---	---	55.3	6.8	59.7	0.1	60.7	0.0	60.7	2.9	

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

Date	McNary		John Day		The Dalles		Bonneville		PH1	PH2
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill		
03/16/2018	189.3	0.0	197.2	63.0	186.1	0.0	204.9	1.2	104.0	92.3
03/17/2018	192.5	0.0	205.6	54.5	199.0	0.0	213.9	1.3	106.1	99.1
03/18/2018	180.4	0.0	198.3	47.0	191.4	0.0	198.5	1.3	96.7	93.1
03/19/2018	185.3	0.0	201.3	49.9	191.0	0.0	209.1	1.3	116.6	83.9
03/20/2018	179.4	0.0	187.3	38.6	182.7	0.0	203.1	1.2	103.7	90.8
03/21/2018	195.1	0.0	199.5	53.3	189.9	0.0	203.8	1.3	102.3	92.8
03/22/2018	200.7	0.0	202.3	46.4	192.6	0.0	205.8	1.2	102.4	94.8
03/23/2018	172.7	0.0	190.8	19.8	189.2	0.0	208.9	1.2	105.0	95.2
03/24/2018	170.3	0.0	190.5	19.3	185.2	0.0	212.6	1.3	107.5	96.5
03/25/2018	182.7	0.0	187.0	15.1	181.5	0.0	186.4	1.2	83.2	94.5
03/26/2018	187.6	0.0	188.2	22.6	182.4	0.0	194.8	1.2	92.4	93.8
03/27/2018	190.5	0.0	194.0	28.2	186.9	0.0	204.0	0.9	101.7	94.1
03/28/2018	184.7	0.0	183.2	12.3	180.9	0.0	198.0	3.6	91.0	96.0
03/29/2018	184.1	0.0	188.5	17.7	186.5	0.0	204.5	1.2	91.9	104.0

FISH PASSAGE CENTER

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

Date 3/30/2018 8:15:08 AM

Page 1 of 4

**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
03/16									101.6	101.9	102.1	24	101.0	101.4	101.9	24	101.7	101.9	102.3	24	101.0	101.2	101.6	24	03/16
03/17									101.7	101.9	102.1	24	101.6	101.9	102.3	24	101.7	102.0	102.7	24	101.0	101.3	101.7	24	03/17
03/18									101.2	101.4	101.5	24	101.8	102.2	102.6	24	101.0	101.2	101.7	24	100.8	101.4	102.7	24	03/18
03/19									100.9	101.3	101.5	24	101.0	101.5	102.6	24	100.9	101.2	101.6	23	100.2	100.5	100.8	24	03/19
03/20									101.6	102.0	102.2	24	101.5	102.1	102.6	24	101.9	102.4	102.7	21	101.2	101.8	102.0	24	03/20
03/21									101.9	101.9	101.9	3	102.1	102.5	103.1	24	103.2	103.4	104.4	18	102.3	102.5	102.8	24	03/21
03/22												0	102.9	103.4	104.0	24	103.4	103.8	104.2	24	102.8	103.4	104.4	24	03/22
03/23									102.5	102.6	102.8	15	102.0	102.4	103.0	24	102.4	102.5	103.0	16	101.5	101.8	102.1	24	03/23
03/24									102.8	103.0	103.1	24	102.4	102.8	103.3	24	102.5	102.7	103.3	24	101.8	102.1	102.8	24	03/24
03/25									102.3	102.5	102.8	24	102.2	102.6	103.4	24	102.0	102.1	102.4	18	101.3	101.7	102.6	24	03/25
03/26									101.8	101.9	101.9	24	101.5	101.9	102.4	24	101.5	101.5	102.1	17	100.8	100.9	101.2	24	03/26
03/27									102.2	102.4	102.6	24	101.7	102.3	103.1	24	102.0	102.5	103.0	24	101.5	102.0	102.7	24	03/27
03/28									102.0	102.2	102.3	24	101.9	102.5	103.4	24	102.3	103.1	104.6	24	101.8	102.4	103.2	24	03/28
03/29									102.2	102.5	102.7	23	101.7	102.3	103.1	23	102.4	102.8	103.7	22	101.8	102.3	103.0	23	03/29

**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
03/16	101.3	101.6	101.9	24	102.0	102.8	106.0	24	101.8	102.1	102.7	24	102.6	103.0	103.5	23	101.3	101.7	101.9	24	101.9	102.5	103.6	21	03/16
03/17	101.5	101.9	102.3	24	101.9	102.5	103.3	24	104.7	105.3	105.6	24	104.9	105.4	105.8	22	103.4	105.0	105.8	22	103.5	104.8	105.8	21	03/17
03/18	100.9	101.0	101.3	24	101.0	101.3	101.8	24	102.6	102.9	103.5	24	102.8	103.7	105.1	24	102.7	103.4	105.0	24	103.1	103.9	105.9	24	03/18
03/19	100.7	101.1	101.5	24	102.1	103.8	107.7	24	102.1	102.3	102.4	24	102.9	103.3	103.6	24	101.6	102.1	102.3	24	102.1	102.6	103.9	24	03/19
03/20	101.2	101.6	101.8	24	101.6	102.1	103.8	24	102.1	102.5	102.7	24	103.0	103.4	104.1	23	101.5	102.4	102.7	24	103.7	104.9	106.8	22	03/20
03/21	102.0	102.4	102.6	24	102.1	102.5	102.9	24	104.0	104.3	104.5	24	104.9	105.1	105.6	24	103.0	104.0	104.6	24	102.9	103.8	104.5	24	03/21
03/22	102.9	103.4	103.8	24	102.9	103.4	103.8	24	103.5	103.9	104.0	24	104.2	104.4	104.8	17	103.4	103.9	104.3	21	104.2	104.3	105.3	14	03/22
03/23	101.4	101.6	102.0	24	102.6	103.5	104.6	24	102.3	102.5	102.6	24	103.4	103.6	103.9	23	101.7	102.0	102.4	24	103.2	104.5	107.4	23	03/23
03/24	101.6	101.8	102.3	24	102.5	103.4	105.8	24	103.0	103.3	103.9	24	103.7	104.2	105.0	23	102.1	102.3	102.4	23	104.0	105.0	106.4	22	03/24
03/25	101.1	101.4	101.9	24	101.3	101.7	102.4	24	102.9	103.2	103.8	24	103.6	104.3	105.0	22	102.5	102.7	103.1	22	102.5	102.8	104.4	22	03/25
03/26	100.9	101.2	101.5	24	102.2	103.7	111.7	24	101.9	102.2	102.8	24	103.1	103.5	104.2	20	101.7	101.8	102.0	23	101.6	101.6	101.7	18	03/26
03/27	101.4	101.8	102.2	24	102.3	103.3	109.9	24	101.7	102.0	102.3	24	102.7	102.9	103.1	22	101.5	101.8	102.1	23	101.7	102.0	104.5	21	03/27
03/28	101.4	101.9	102.4	24	101.6	102.3	102.8	24	102.4	103.2	104.1	24	103.0	103.7	105.5	23	101.5	101.7	101.9	24	101.5	101.6	101.7	22	03/28
03/29	101.9	102.4	102.6	23	102.0	102.6	102.8	23	103.5	103.8	104.3	23	104.4	105.0	106.0	21	103.2	103.9	104.4	21	103.0	103.7	104.3	21	03/29

FISH PASSAGE CENTER

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

Date 3/30/2018 8:15:08 AM

Page 2 of 4

**Total Dissolved Gas Data at Upper and Mid-Columbia Sites**

Date	Wanapum				Wanapum Tlwr				Priest Rapids				Priest R. Dnstr				Pasco				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
03/16	103.2	103.5	104.1	24	103.1	103.3	103.8	24	104.2	104.4	104.6	24									03/16
03/17	102.8	102.9	103.0	24	102.6	102.7	102.8	24	103.3	103.7	103.8	24									03/17
03/18	101.8	102.0	102.4	24	101.7	101.9	102.2	24	102.1	102.4	102.9	24									03/18
03/19	102.0	102.6	103.2	24	101.6	101.9	102.0	24	101.7	102.4	103.0	24									03/19
03/20	103.9	104.6	105.1	24	103.6	104.4	104.7	24	102.7	103.4	103.6	24	102.6	102.7	103.1	16					03/20
03/21	104.6	104.9	105.0	24	104.3	104.4	104.6	24	104.7	104.8	104.9	24	104.6	105.1	107.5	24					03/21
03/22	105.2	105.8	106.2	24	105.0	105.4	105.7	24	105.0	105.4	105.7	24	104.5	104.9	105.2	24					03/22
03/23	103.4	103.7	104.0	24	103.3	103.4	103.8	24	103.5	103.7	103.9	24	103.2	103.6	103.8	24					03/23
03/24	103.6	103.8	104.1	24	103.3	103.4	103.6	24	103.3	103.5	103.6	24	103.0	103.1	103.2	24					03/24
03/25	102.7	102.8	103.1	24	102.5	102.7	103.0	24	102.6	102.9	103.5	24	102.4	102.6	102.8	24					03/25
03/26	102.6	102.8	103.0	24	102.3	102.5	102.7	24	101.8	102.0	102.3	24	101.6	101.7	101.8	24					03/26
03/27	102.8	103.0	103.2	24	102.6	102.8	102.9	24	102.5	103.0	103.2	24	102.5	103.3	104.5	24					03/27
03/28	102.5	102.7	102.9	24	102.4	102.6	102.9	24	102.5	102.8	103.1	24	102.4	102.6	103.0	24					03/28
03/29	102.7	103.2	103.5	24	102.4	102.8	103.1	24	102.4	103.0	103.6	24	102.2	102.6	102.9	24					03/29

**Total Dissolved Gas Data at Snake and Clearwater Sites**

Date	Dworshak				Clwrtr Peck				Anatone				Clwrtr-Lewiston				Lower Granite				Lower G. Tlwr				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
03/16	122.6	122.7	123.0	24	111.3	112.0	112.3	24				0	105.6	106.8	107.8	24				0	104.4	104.6	104.8	24	03/16
03/17	122.3	122.4	122.5	24	110.8	111.0	111.6	24				0	104.9	105.1	105.4	24				0	103.0	103.5	103.7	24	03/17
03/18	121.7	121.8	122.0	24	109.6	109.9	110.3	24				0	104.5	104.9	105.3	24				0	101.3	101.6	102.1	24	03/18
03/19	121.7	121.8	122.0	24	110.2	110.9	111.3	24				0	105.1	106.3	107.4	24				0	101.5	102.0	102.8	24	03/19
03/20	121.9	122.1	122.2	24	110.9	111.5	112.1	24	102.3	103.1	104.1	17	106.1	107.6	108.5	24				0	102.1	102.4	102.8	24	03/20
03/21	122.9	123.7	124.2	24	111.5	112.1	112.7	24	102.5	103.0	103.5	24	106.4	107.3	108.1	24				0	103.5	103.9	104.3	24	03/21
03/22	123.7	123.9	124.1	24	111.5	111.9	112.2	24	102.0	102.4	103.1	24	106.1	106.6	107.3	24				0	104.4	104.6	105.0	24	03/22
03/23	123.4	123.5	123.7	24	110.6	110.8	111.1	24	101.5	102.1	102.6	24	105.3	106.1	106.9	24				0	103.9	104.1	104.3	24	03/23
03/24	123.7	123.8	123.9	24	110.6	110.9	111.3	24	102.0	102.5	103.4	24	105.7	106.4	107.4	24	104.2	104.5	105.0	24	103.6	104.0	104.3	24	03/24
03/25	123.2	123.4	123.6	24	110.7	111.2	111.6	24	101.6	102.3	103.1	24	105.7	106.8	107.7	24	102.6	102.9	103.4	24	105.9	106.4	108.6	24	03/25
03/26	118.3	122.5	123.1	24	108.6	110.5	110.9	24	101.7	102.4	103.0	24	105.8	106.9	107.8	24	102.2	102.3	102.5	24	105.7	106.0	106.4	24	03/26
03/27	113.8	114.0	114.3	24	105.6	106.0	106.3	24	102.1	102.6	103.1	24	103.3	104.0	104.6	24	102.4	102.6	102.8	24	106.0	106.2	106.5	24	03/27
03/28	113.9	114.1	114.4	24	105.8	106.4	107.0	24	102.1	102.8	103.5	24	103.6	104.9	106.0	24	102.5	102.6	102.7	24	105.7	106.0	107.6	24	03/28
03/29	113.9	114.2	114.6	23	105.7	106.5	107.2	23	102.2	103.0	103.7	23	103.6	105.1	106.2	23	102.9	103.4	103.9	23	106.0	106.5	107.6	23	03/29

FISH PASSAGE CENTER

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

Date 3/30/2018 8:15:08 AM

Page 3 of 4

**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	
03/16				0	103.8	103.9	104.1	24				0	104.8	105.0	105.3	24				0	106.9	108.6	109.0	24	03/16
03/17				0	103.6	103.7	103.8	24				0	104.7	104.9	105.4	24				0	104.9	105.1	105.5	24	03/17
03/18				0	102.8	103.0	103.2	24				0	103.2	103.5	104.0	24				0	105.8	106.7	108.2	24	03/18
03/19				0	102.6	102.8	103.0	24				0	103.9	105.3	108.2	24				0	110.3	113.5	116.0	24	03/19
03/20				0	102.8	103.3	103.4	24				0	104.3	105.7	109.5	24				0	106.6	107.2	107.9	24	03/20
03/21				0	103.3	103.6	104.0	24				0	106.5	107.7	110.5	24				0	106.1	106.5	107.1	24	03/21
03/22				0	103.5	104.0	104.3	24				0	104.9	105.5	107.2	24				0	106.6	108.2	109.8	23	03/22
03/23				0	102.3	102.4	102.6	24				0	104.3	105.8	108.5	24				0	107.2	108.4	109.1	24	03/23
03/24				0	102.3	102.5	102.7	24				0	108.4	108.5	108.6	24				0	109.6	110.4	111.1	24	03/24
03/25				0	101.8	101.9	102.0	24				0	102.2	102.6	107.9	24				0	107.8	108.2	110.4	24	03/25
03/26				0	101.4	101.5	101.6	24				0	103.0	105.0	109.9	24				0	107.0	107.2	107.4	24	03/26
03/27				0	101.7	102.0	102.2	24				0	102.5	103.9	111.3	24	101.8	101.9	102.0	22	106.4	107.3	110.6	24	03/27
03/28				0	101.9	102.2	102.4	24				0	101.5	101.7	101.9	24	101.7	102.1	102.4	24	106.3	107.7	111.6	24	03/28
03/29	104.1	104.1	104.8	8	102.9	103.4	104.0	22	102.9	102.9	105.1	12	101.9	102.4	102.7	23	102.0	102.3	102.6	23	102.8	104.1	105.9	23	03/29

**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	
03/16				0	104.2	104.6	104.9	24	105.3	105.4	105.7	24	116.7	118.2	118.6	24	109.0	109.3	109.4	24	108.3	108.8	109.0	24	03/16
03/17				0	103.9	104.0	104.3	24	104.7	104.9	104.9	24	115.0	115.5	118.6	24	108.1	108.6	108.9	24	107.7	108.2	108.7	24	03/17
03/18				0	103.7	104.2	104.5	24	103.5	103.7	104.0	24	113.9	114.1	114.2	24	105.4	105.7	106.2	24	105.1	105.3	105.8	24	03/18
03/19				0	102.7	103.0	103.3	24	103.2	103.6	103.8	24	114.2	114.3	114.6	24	105.7	106.2	106.4	24	105.3	105.8	106.0	24	03/19
03/20				0	103.1	103.3	103.5	24	104.1	104.6	105.2	24	113.6	114.4	114.6	24	106.9	107.4	107.7	24	106.6	107.0	107.3	24	03/20
03/21	106.1	106.0	106.2	6	104.8	105.2	105.6	22	105.4	105.6	106.0	24	115.1	115.5	115.7	24	107.4	107.7	107.9	24	106.9	107.2	107.3	24	03/21
03/22	104.9	105.4	106.0	24	105.7	105.7	106.0	24	105.4	105.9	106.1	24	114.2	115.0	115.7	24	107.6	108.2	108.3	24	107.0	107.6	107.8	24	03/22
03/23	103.2	103.4	103.5	24	103.8	104.4	105.3	24	104.2	104.5	104.9	24	110.1	110.4	110.6	24	105.4	105.6	106.0	24	105.1	105.3	105.5	24	03/23
03/24	103.2	103.4	103.6	24	103.0	103.4	103.6	24	104.5	104.6	104.9	24	109.8	110.0	110.3	24	104.6	104.8	105.2	24	104.0	104.2	104.5	24	03/24
03/25	102.8	103.0	103.1	24	102.2	102.6	102.8	24	103.7	103.9	104.2	24	108.4	109.7	109.9	24	104.1	104.3	104.5	24	103.5	103.7	104.0	24	03/25
03/26	102.0	102.2	102.5	24	101.5	101.8	102.3	24	102.7	102.8	103.0	24	109.6	111.7	112.0	24	103.0	103.3	103.5	24	102.5	102.7	102.9	24	03/26
03/27	102.3	102.5	102.7	24	101.3	101.6	102.4	24	102.5	102.6	102.8	24	110.4	113.2	113.9	24	103.6	104.1	104.3	24	103.0	103.7	103.9	24	03/27
03/28	102.2	102.4	102.7	24	102.2	102.7	103.0	24	102.2	102.4	102.5	24	106.0	108.6	110.8	24	103.5	104.0	104.2	24	103.2	103.8	104.2	24	03/28
03/29	102.6	103.1	103.9	23	101.9	102.2	102.4	23	102.3	102.6	102.9	23	108.4	110.5	112.3	23	102.9	103.4	103.5	23	102.3	102.9	103.3	23	03/29

FISH PASSAGE CENTER

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

Date 3/30/2018 8:15:08 AM

Page 4 of 4

Total Dissolved Gas Data at Mid-Columbia Sites

Date	Bonneville				Warrendale				Camas\Washug.				Cascade Isld.				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	
03/16	107.0	107.1	107.2	24	107.3	107.6	107.9	24	107.2	107.7	108.5	24	108.9	109.5	109.8	24	03/16
03/17	106.8	107.0	107.4	24	106.8	106.9	107.1	24	106.4	106.7	107.0	24	108.3	108.6	108.8	24	03/17
03/18	106.9	107.0	107.3	24	107.2	107.5	108.0	24	106.3	107.1	107.6	24	108.4	109.1	109.8	24	03/18
03/19	106.4	106.5	106.7	24	107.0	107.4	108.0	24	106.9	107.7	108.6	24	108.2	108.7	109.0	24	03/19
03/20	106.7	107.3	107.8	24	107.1	107.8	108.4	24	107.2	108.2	109.0	24	108.5	109.3	109.8	24	03/20
03/21	108.3	108.7	109.1	24	108.5	108.9	109.2	24	107.5	108.1	108.6	24	110.0	110.2	110.6	24	03/21
03/22	108.0	108.9	109.4	24	108.2	109.0	109.5	24	107.6	107.9	108.4	24	108.8	109.2	109.3	24	03/22
03/23	106.2	106.4	106.8	24	106.4	106.6	106.7	24	105.8	106.2	106.3	24	107.6	108.1	108.5	24	03/23
03/24	106.1	106.3	106.9	24	106.2	106.4	106.6	24	105.5	105.9	106.2	24	107.6	108.1	108.4	24	03/24
03/25	104.6	105.0	105.4	24	105.0	105.3	105.7	24	105.0	105.3	105.7	24	107.5	108.1	108.6	24	03/25
03/26	103.3	103.5	103.8	24	104.1	104.3	104.5	24	103.8	104.0	104.4	24	107.6	107.9	108.2	24	03/26
03/27	103.1	103.2	103.4	24	103.6	103.7	103.8	24	103.5	103.8	104.1	24	106.7	107.1	107.5	24	03/27
03/28	102.7	103.1	103.2	24	103.7	104.2	105.2	24	103.8	104.6	105.3	24	110.8	114.7	122.4	24	03/28
03/29	103.9	104.3	104.6	23	104.6	105.2	105.7	23	104.6	105.7	106.5	23	110.4	111.0	111.5	23	03/29

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
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	---	---	---	---	---	---	---	---	---

FISH PASSAGE CENTER

## Smolt Monitoring Program Two Week Passage Index Report

Date 3/30/2018 8:17:23 AM

Page 1 of 7

### 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)
03/16/2018	235	46	14	4		23					42
03/17/2018		37	70	3						4,299	64
03/18/2018		26	62	15		10					21
03/19/2018	225	18	90	6						3,455	64
03/20/2018	324	15	68	7		20					106
03/21/2018	92	44	53	3						3,419	84
03/22/2018	73	28	45	1		39					74
03/23/2018	176	37	38	0						3,263	232
03/24/2018			214	2		30					275
03/25/2018		139	264	3						2,127	292
03/26/2018	706	164	194	5		74					302
03/27/2018	193	63	130	1						1,842	435
03/28/2018	167		224	3		70					494
03/29/2018	0		297	0						1,434	779
03/30/2018											
<b>Total:</b>	<b>2,191</b>	<b>617</b>	<b>1,763</b>	<b>53</b>	<b>0</b>	<b>266</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>19,839</b>	<b>3,264</b>
<b># Days:</b>	<b>10</b>	<b>11</b>	<b>14</b>	<b>14</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>14</b>
<b>Average:</b>	<b>219</b>	<b>56</b>	<b>126</b>	<b>4</b>	<b>0</b>	<b>38</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,834</b>	<b>233</b>
<b>YTD:</b>	<b>4,687</b>	<b>728</b>	<b>1,944</b>	<b>56</b>	<b>0</b>	<b>331</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>22,586</b>	<b>3,376</b>

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
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

FISH PASSAGE CENTER

## Smolt Monitoring Program Two Week Passage Index Report

Date 3/30/2018 8:17:23 AM

Page 2 of 7

### 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)
03/16/2018	0	0	0	1		0					1,256
03/17/2018		0	0	1						77	1,611
03/18/2018		0	0	1		0					1,687
03/19/2018	0	0	0	0						47	1,234
03/20/2018	0	0	0	0		0					1,139
03/21/2018	0	0	0	1						64	1,547
03/22/2018	0	0	1	2		0					1,770
03/23/2018	0	0	0	1						25	1,600
03/24/2018			0	1		0					1,882
03/25/2018		0	0	5						0	1,730
03/26/2018	0	0	0	1		0					943
03/27/2018	0	0	0	1						12	922
03/28/2018	0		0	2		0					1,172
03/29/2018	153		0	3						0	720
03/30/2018											
Total:	153	0	1	20	0	0	0	0	0	225	19,213
# Days:	10	11	14	14	0	7	0	0	0	7	14
Average:	15	0	0	1	0	0	0	0	0	32	1,372
YTD:	306	0	1	22	0	0	0	0	0	248	31,558

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
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----



FISH PASSAGE CENTER

## Smolt Monitoring Program Two Week Passage Index Report

Date 3/30/2018 8:17:23 AM

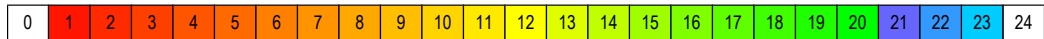
Page 3 of 7

### 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)
03/16/2018	0	0	0	0		0					21
03/17/2018		0	4	0						39	43
03/18/2018		0	6	0		1					31
03/19/2018	0	0	3	0						7	21
03/20/2018	0	0	2	1		0					0
03/21/2018	0	0	2	0						0	53
03/22/2018	0	0	2	0		0					0
03/23/2018	0	0	1	0						12	21
03/24/2018			2	0		0					11
03/25/2018		0	0	0						11	42
03/26/2018	0	0	0	0		0					9
03/27/2018	0	0	1	0						23	0
03/28/2018	0		1	0		0					21
03/29/2018	0		0	8						33	10
03/30/2018											
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>24</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>125</b>	<b>283</b>
<b># Days:</b>	<b>10</b>	<b>11</b>	<b>14</b>	<b>14</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>20</b>
<b>YTD:</b>	<b>0</b>	<b>0</b>	<b>38</b>	<b>9</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>132</b>	<b>809</b>

Number of hours sampled:

- No data available or no sample conducted



FISH PASSAGE CENTER

## Smolt Monitoring Program Two Week Passage Index Report

Date 3/30/2018 8:17:23 AM

Page 4 of 7

### 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)
03/16/2018	0	1	3	0		21					11
03/17/2018		0	2	1						13	0
03/18/2018		0	1	0		10					0
03/19/2018	0	0	0	1						40	0
03/20/2018	0	1	0	2		24					0
03/21/2018	0	3	0	1						64	0
03/22/2018	0	7	2	1		42					0
03/23/2018	0	5	1	0						25	21
03/24/2018			1	4		18					0
03/25/2018		17	1	3						22	0
03/26/2018	0	20	1	7		30					27
03/27/2018	0	10	0	4						70	32
03/28/2018	0		0	6		42					21
03/29/2018	0		0	22						89	30
03/30/2018											
Total:	0	64	12	52	0	187	0	0	0	323	142
# Days:	10	11	14	14	0	7	0	0	0	7	14
Average:	0	6	1	4	0	27	0	0	0	46	10
YTD:	0	75	14	57	0	287	0	0	0	371	142

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
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

FISH PASSAGE CENTER

## Smolt Monitoring Program Two Week Passage Index Report

Date 3/30/2018 8:17:23 AM

Page 5 of 7

### 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)
03/16/2018	0	0	0	0		7					0
03/17/2018		0	0	0						0	0
03/18/2018		0	0	0		6					0
03/19/2018	0	0	0	0						0	0
03/20/2018	0	0	0	0		9					12
03/21/2018	0	0	0	0						0	0
03/22/2018	0	0	0	0		14					0
03/23/2018	0	0	0	0						0	0
03/24/2018			0	0		17					0
03/25/2018		0	0	0						0	0
03/26/2018	0	0	0	0		9					0
03/27/2018	0	0	0	0						0	0
03/28/2018	0		0	0		19					0
03/29/2018	0		0	0						0	10
03/30/2018											
Total:	0	0	0	0	0	81	0	0	0	0	22
# Days:	0	0	0	0	0	12	0	0	0	0	2
Average:	0	0	0	0	0	12	0	0	0	0	2
YTD:	0	0	0	0	0	156	0	0	0	0	22

Number of hours sampled:

- No data available or no sample conducted



FISH PASSAGE CENTER

## Smolt Monitoring Program Two Week Passage Index Report

Date 3/30/2018 8:17:23 AM

Page 6 of 7

### 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)
03/16/2018	0	0	3	0		9					75
03/17/2018		0	0	0						2,840	70
03/18/2018		0	0	0		24					65
03/19/2018	0	0	0	0						15,720	45
03/20/2018	0	0	0	0		19					60
03/21/2018	0	0	0	0						4,880	105
03/22/2018	0	0	0	0		31					115
03/23/2018	0	0	0	0						690	70
03/24/2018			0	0		34					100
03/25/2018		0	0	0						570	95
03/26/2018	0	0	0	0		15					100
03/27/2018	0	0	0	0						740	165
03/28/2018	0		0	0		4					170
03/29/2018	0		0	0						300	105
03/30/2018											
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>136</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>25,740</b>	<b>1,340</b>
<b># Days:</b>	<b>10</b>	<b>11</b>	<b>14</b>	<b>14</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>15</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,145</b>	<b>89</b>
<b>YTD:</b>			<b>3</b>			<b>152</b>				<b>32,210</b>	<b>2,355</b>

- 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:



FISH PASSAGE CENTER

## Smolt Monitoring Program Two Week Passage Index Report

Date 3/30/2018 8:17:23 AM

Page 7 of 7

### 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
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

### 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

### 3/16/2018 12:00:00 AM TO 3/30/2018 12:00:00 AM

Date 3/30/2018 8:17:57 AM

Page 1 of 2

#### Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	0	0	0	0	0	0
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	0	0	0	0	0	0
Sum of Facility Morts	0	0	0	0	0	0
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	0	0	0	0	0	0

#### Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	0	266	1	81	187	722
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	0	261	1	78	187	714
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	0	5	0	2	0	7
Sum of Facility Morts	0	0	0	1	0	1
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	0	5	0	3	0	8

FISH PASSAGE CENTER

## Two Week Transportation Summary Report

### 3/16/2018 12:00:00 AM TO 3/30/2018 12:00:00 AM

Date 3/30/2018 8:17:57 AM

Page 2 of 2

#### Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	0	0	0	0	0	0
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	0	0	0	0	0	0
Sum of Facility Morts	0	0	0	0	0	0
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	0	0	0	0	0	0

#### Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	0	266	1	81	187	722
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	0	261	1	78	187	714
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	0	5	0	2	0	7
Sum of Facility Morts	0	0	0	1	0	1
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	0	5	0	3	0	8



FISH PASSAGE CENTER

## YTD Transportation Summary Report

Date 3/30/2018 8:17:35 AM

Page 1 of 2

### Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	0	0	0	0	0	0
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	0	0	0	0	0	0
Sum of Facility Morts	0	0	0	0	0	0
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	0	0	0	0	0	0

### Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	0	331	1	137	245	959
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	0	325	1	134	245	950
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	0	5	0	2	0	7
Sum of Facility Morts	0	1	0	1	0	2
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	0	6	0	3	0	9

FISH PASSAGE CENTER

## YTD Transportation Summary Report

Date 3/30/2018 8:17:35 AM

Page 2 of 2

### Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	0	0	0	0	0	0
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	0	0	0	0	0	0
Sum of Facility Morts	0	0	0	0	0	0
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	0	0	0	0	0	0

### Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	0	331	1	137	245	959
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	0	325	1	134	245	950
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	0	5	0	2	0	7
Sum of Facility Morts	0	1	0	1	0	2
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	0	6	0	3	0	9

**Cumulative Adult Passage at Mainstem Dams Through: 03/29**

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	03/28	17	0	14	0	224	0	0	0	0	0	0	0	0	0	0	0	0	0
TDA	02/28	9	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
JDA	03/27	8	-1	0	0	9	7	0	0	0	0	0	0	0	0	0	0	0	0
MCN	02/27	1	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
IHR	03/27	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
LMN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LGS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LGR	03/28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRD		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WAN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RRH		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEL		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WFA	03/27	8	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0

DAM	ENDDATE	Coho						Sockeye			Steelhead						Lamprey		
		2018		2017		10-Yr Avg.		2018	2017	10-Yr Avg.	10-Yr Unclipped		Unclipped		10-Yr Avg.	2018	2017	10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack				2018	2017	2018	2017					2018
BON	03/28	1	-1	0	0	0	0	0	0	0	1513	1508	2098	601	506	767	0	0	0
TDA	02/28	4	0	0	0	0	0	0	0	0	43	0	79	15	0	38	0	0	0
JDA	03/27	0	0	0	0	0	1	0	0	0	210	0	2352	72	0	879	0	0	-1
MCN	02/27	0	0	0	0	1	0	0	0	0	184	0	214	79	0	82	0	0	0
IHR	03/27	0	0	0	0	0	0	0	0	0	524	0	1862	164	0	527	0	0	0
LMN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LGS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LGR	03/28	0	0	0	0	0	0	0	0	0	1585	4569	4433	354	1625	1506	0	0	0
PRD		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WAN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RRH		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEL		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WFA	03/27	0	2	117	117	0	0	0	0	0	922	501	3272	877	495	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.