



# Fish Passage Center

## Weekly Report #16-13

June 10, 2016

### Summary of Events

#### Water Supply

Precipitation throughout the Columbia Basin has varied between 9% and 48% of average at individual sub-basins over June. Precipitation above The Dalles has been 28% of average over June. Over the 2016 water year, precipitation has ranged between 91% and 110% of average.

**Table 1.** Summary of June precipitation and cumulative October through June 8<sup>th</sup> precipitation with respect to average (1981–2010), at select locations within the Columbia and Snake River Basins.

Location	Water Year 2016 June 1–8, 2016		Water Year 2016 October 1, 2015 to June 8, 2016	
	Observed (inches)	% Average	Observed (inches)	% Average
	Columbia above Coulee	0.42	48	29.9
Sneke River above Ice Harbor	0.04	9	18.2	97
Columbia above The Dalles	0.16	28	22.6	100
Kootenai	0.41	44	29.6	102
Clark Fork	0.11	14	19.4	91
Flathead	0.27	28	31.2	110
Pend Oreille River Basin above Waneta Dam	0.19	22	26.2	101
Salmon River Basin	0.10	16	22.9	96
Upper Snake Tributaries	0.07	14	19.4	91
Clearwater	0.07	9	34.4	101
Willamette River above Portland	0.08	11	64.2	106

Table 2 displays the June 8<sup>th</sup> ESP runoff volume forecasts for multiple reservoirs along with the June COE forecasts at Libby and Dworshak. The June 8<sup>th</sup> ESP forecast at The Dalles between April and August is 81,807 Kaf (93% of average).

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

Location	June 8, 2016 5-day QPF ESP	
	% Average (1981–2010)	Runoff Volume (Kaf)
The Dalles (Apr–Aug)	93	81,807
Grand Coulee (Apr–Aug)	96	54,357
Libby Res. Inflow, MT (Apr–Aug)	91 110*	5,374 6,445*
Hungry Horse Res. Inflow, MT (Apr–Aug)	91	1,760
Lower Granite Res. Inflow (Apr–July)	85	17,945
Brownlee Res. Inflow (Apr–July)	76	4,166
Dworshak Res. Inflow (Apr–July)	88 86*	2,131 2,083*

\* Denotes COE June Forecast

Grand Coulee Reservoir is at 1,280.8 feet (6-8-16) and has refilled 3.9 feet over the last week. Outflows at Grand Coulee have ranged between 92.9 and 135.4 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2,426.5 feet (6-8-16) and has refilled 5.6 feet over the previous week. Daily average outflows at Libby Dam have been reduced from 16 Kcfs to 12 Kcfs over the last week for the sturgeon pulse operation.

Hungry Horse is currently at an elevation of 3,553.2 feet (6-8-16) and has refilled 4.1 feet over the last week. Outflows at Hungry Horse have been 3.1-4.0 Kcfs over the last week.

Dworshak is currently at an elevation of 1,598.1 feet (6-8-16) and has refilled 4.0 feet over the last week. Outflows have been 1.4-1.8 Kcfs over the last week.

The Brownlee Reservoir was at an elevation of 2,073.7 feet on June 8, 2016, and has refilled 1.9 ft. over the last week. Inflows at Brownlee have ranged between 17.2 and 18.6 Kcfs over the last week.

The Biological Opinion flow period began on April 3<sup>rd</sup> in the lower Snake River (Lower Granite). According to the April Final Water Supply Forecast (April 7, 2016), the flow objective this spring will be 96 Kcfs at Lower Granite. Flows at Lower Granite Dam have averaged 70.4 Kcfs last week and 89.0 Kcfs between April 3 and June 8, 2016.

Based on the April Final Water Supply Forecast, the Spring Biological Opinion Flow Objectives (which began April 10<sup>th</sup>) will be 243 Kcfs at McNary Dam and 135 Kcfs at Priest Rapids Dam. Over the last week, flows at McNary have averaged 223.4 Kcfs and 146.3 Kcfs at Priest Rapids. Between April 10 and June 8, 2016 flows at McNary Dam averaged 266.3 Kcfs and Priest Rapids Dam flows were 163.1 Kcfs.

**Spill and River Temperature**

No spill occurred at Dworshak Dam over the past week.

Spill for fish passage began on April 3<sup>rd</sup> at the Snake River projects. Spill for fish passage at the Snake River projects is to occur at the following amounts described in the 2016 Fish Operations Plan (FOP).

Project	Spill Level Day/Night
Lower Granite	20 Kcfs/20 Kcfs
Little Goose	30%/30%
Lower Monumental	Gas Cap/Gas Cap
Ice Harbor	April 3–April 28: 45 Kcfs/Gas Cap April 28–June 20: 30%/30% vs. 45 Kcfs/Gas Cap

This past week all Lower Snake River projects (Lower Granite, Little Goose, Lower Monumental and Ice Harbor dams) have spilled at the 2016 FOP levels. The increased protection for fish passage at Lower Monumental Dam ended on June 3, 2016, as it was only agreed to by the Action Agencies for the protection of juvenile sockeye passing the project. The project switched from a uniform spill pattern to a bulk spill pattern. This change back to a bulk pattern reduces spill for fish passage by more than 20 Kcfs.

Spill at Ice Harbor Dam was decreased from 45 Kcfs during the day/gas cap during the night on June 3<sup>rd</sup> to 30% of instantaneous spill due to the anticipated high power demand expected over the weekend. On Thursday, June 9<sup>th</sup>, the spill level was increased from 30% to 45 Kcfs during the day/gas cap during the night as a “make-up” day.

Spill for fish passage began on April 10<sup>th</sup> at the middle Columbia River projects. Spill for fish passage at the middle Columbia River projects is to occur at the following amounts described in the 2016 FOP.

Project	Spill Level Day/Night
McNary	40%/40%
John Day	April 10-April 28: 30%/30% April 28-June 15: 30%/30% and 40%/40%
The Dalles	40%/40%
Bonneville	100 Kcfs/100 Kcfs

This past week all Middle Columbia River projects (McNary, John Day, The Dalles, and Bonneville dams) have spilled at the 2016 FOP levels. A change to the scheduled spill level was made at John Day Dam on June 4<sup>th</sup>. Spill was decreased from 40% of instantaneous flow to 30% of instantaneous spill due to the anticipated high power demand expected over the weekend. On Friday June 10<sup>th</sup>, the spill level will be increased from 30% to 40% of instantaneous flow as a “make-up” day.

Most sites were within TDG criteria over the past week. The two exceptions were the forebay at Ice Harbor Dam where, with the return to the bulk spill pattern and increased river temperatures, the TDG has exceeded the 115%. This has resulted in the COE decreasing the spill volume at Lower Monumental Dam

to 23-24 Kcfs. There were also a few days where the forebay monitor at Bonneville Dam measured 116%, but with the change in temperatures the TDG has decreased to 110%.

**Note:** The State of Oregon TDG waiver requires compliance only 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.

Monitoring for signs of gas bubble trauma (GBT) occurred at Lower Granite, Little Goose, Lower Monumental, McNary, Bonneville and Rock Island dams over the past week. No fish were observed with signs of GBT over the past week.

**Temperature:** At present water temperatures remain below the 68° F temperature standard at all the hydroelectric projects in the FCRPS. With the recent warm weather that prevailed over the region last week, there were increases in water temperature at the project forebays to levels observed at this time in 2015. At Lower Granite, the forebay temperatures increased to 64.3°F on June 9<sup>th</sup>. Thus far it has remained a bit cooler (about 1°F) at Ice Harbor Dam. At McNary and Bonneville dams the forebay temperatures have been above the 10-year average at 63.6°F and 63.7°F, respectively on June 9<sup>th</sup>. It is hoped that water temperatures will moderate over the next week as the weather is predicted to be more moderate in the region with some cloud cover.

## Smolt Monitoring

Smolt Monitoring Program (SMP) sampling is ongoing at all SMP bypass facilities and the Imnaha trap. Sampling at the Salmon River and Snake River traps was officially terminated on May 24<sup>th</sup> and sampling at the Grande Ronde River trap was terminated on May 30<sup>th</sup>.

This week's samples at Bonneville Dam (BON) were dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook at BON was about 4,400 per day, which is a slight increase over last week's daily average passage index of about 3,900 per day. Passage of spring migrants (yearling Chinook, steelhead, coho, and sockeye) all decreased this week, when compared to last week. This week's daily average passage indices for these four species were about 250, 1,030, 740, and 325 per day, respectively. Last week's daily average passage indices were about 830 for yearling Chinook, 1,800 for steelhead, 1,900 for coho, and 1,100 for sockeye. Pacific lamprey ammocoetes were encountered in two of this week's samples (June 3<sup>rd</sup> and 4<sup>th</sup>) while Pacific lamprey macrophthalmia were encountered every day this week. This week's daily average collection for Pacific macrophthalmia was 40 fish per day.

Sampling at John Day Dam (JDA) in 2016 is every-other-day for the entire SMP season. This is the first time every-other-day sampling has occurred at this site over the entire season. Subyearling Chinook dominated the collections at JDA this week, with a daily average passage index of about 5,000 fish per day. This week's daily average passage index for subyearling Chinook is a slight decrease from last week's daily average 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 for spring migrants at JDA were 450 for yearling Chinook, 250 for coho, 400 for sockeye, and 530 for steelhead. Last week's daily average passage indices were 1,600, 840, 2,800, and 1,000 per day, respectively. Pacific lamprey ammocoetes were encountered in one of this week's samples (June 5<sup>th</sup>) while Pacific lamprey macrophthalmia were collected in all four of this week's samples. This week's daily average collection for Pacific macrophthalmia at JDA was about 300 per day, which is a decrease from last week's daily average collection of

about 775 per day.

As in recent years, sampling at McNary Dam (MCN) in 2016 will be every-other-day for the entire SMP season. Subyearling Chinook again were the dominate species at MCN this week, with a daily average passage index of nearly 29,000 per day. This daily average passage index is an increase from last week's daily average passage index of about 11,000 fish per day. Yearling Chinook and steelhead passage this week was similar to last week. This week's daily average passage indices for these two species were about 2,600 and 2,800 fish per day, respectively. Last week's daily average passage indices were 2,800 for yearling Chinook and 2,300 for steelhead. Passage of coho and sockeye decreased this week, when compared to the previous week. This week's daily average passage indices were 850 for coho and 560 for sockeye. Last week's daily average passage indices for these two species were about 2,500 and 3,900 per day, respectively. Finally, Pacific lamprey macrophthalmia were collected in all three of this week's samples, with a daily average collection of about 620 per day. No Pacific ammocoetes have been collected at MCN so far this year.

This week's samples at Lower Granite Dam (LGR) were again dominated by subyearling Chinook, with a daily average passage index of nearly 39,000 per day. This is a substantial increase over last week's daily average passage index of about 19,000 subyearling Chinook 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 at LGR were 560 for yearling Chinook, 120 for coho, and 3,300 for steelhead. Last week's daily average passage indices for these three species were 1,200, 600, and 1,000 per day, respectively. Furthermore, no sockeye juveniles were encountered in this week's samples at LGR. Last week's daily average passage index for sockeye at LGR was nearly 1,000 per day. Finally, Pacific lamprey macrophthalmia were encountered in two of this week's samples (June 8<sup>th</sup> and 9<sup>th</sup>). No Pacific lamprey ammocoetes were encountered this week.

Sampling at Little Goose Dam (LGS) was limited to a 24-hour sample every-other-day until transportation began, at which time sampling switched to daily. Subyearling Chinook dominated this week's collections

at LGS. This week's daily average passage index for subyearling Chinook at LGS was nearly 30,000 fish per day. This is a substantial increase over last week's daily average passage index of 2,800 fish per day. Yearling Chinook, coho, sockeye, and steelhead passage all decreased this week, when compared to last week. This week's daily average passage indices for these spring migrants were 800 for yearling Chinook, 200 for coho, 20 for sockeye, and 2,200 for steelhead. Last week's daily average passage indices were 1,800, 700, 1,000, and 2,900 per day, respectively. Finally, Pacific lamprey ammocoetes were encountered in three of this week's samples while Pacific lamprey macrophthalmia were encountered in five of this week's samples.

Sampling at Lower Monumental Dam (LMN) was limited to a 24-hour sample every-third-day through the April 14<sup>th</sup>, every-other-day from April 16<sup>th</sup> to April 30<sup>th</sup>, and every day with the initiation of transportation. This week's samples at LMN were dominated by subyearling Chinook, with a daily average passage index of about 11,650 per day. This is a substantial increase over last week's daily average passage index of about 700 per day. Passage of yearling Chinook and coho did not change this week, when compared to last week. This week's daily average passage indices were 370 for yearling Chinook and 120 for coho. Sockeye and steelhead passage decreased this week, when compared to last week. This week's daily average passage indices were 30 for sockeye and 940 for steelhead. Last week's daily average passage indices were 500 and 1,100 per day, respectively. Finally, no Pacific lamprey ammocoetes were encountered this week and Pacific macrophthalmia were encountered in only two of this week's samples (June 8<sup>th</sup> and 9<sup>th</sup>).

Subyearling Chinook dominated this week's samples at Rock Island Dam (RIS). This week's daily average passage index for subyearling Chinook at RIS was 200 per day. This is an increase over last week's daily average passage index of about 110 per day. Passage of spring migrants decreased this week when compared to last week. This week's daily average passage indices for yearling coho and steelhead were about 50 and 30 fish per day, respectively. Last week's daily average passage indices for these two species were 120 for coho and 60 per day for steelhead. Yearling Chinook and sockeye passage was extremely low this week, with daily average passage indices of less than 10 per day. Finally, only Pacific lamprey

macrophthalmia were encountered this week but in very low numbers.

The Imnaha River Trap (IMN) is located at river kilometer seven and is operated by the Nez Perce Tribe. Sampling at the Imnaha River Trap is year-round and, for 2016, the Fish Passage Center has been receiving data since the January 1, 2016 sample. However, due to the remote nature of the trap, the Nez Perce Tribe is able to send collection data to the FPC only periodically. Currently, the FPC has data from IMN through the June 6 sample. For the period of May 31-June 6, steelhead dominated the collections at IMN. The daily average collection for steelhead over this time period was about 110 per day. The daily average collection for yearling Chinook over this same period was about 20 fish per day. The only other species of salmonid that was collected during this period was subyearling Chinook. However, subyearling Chinook collections during this time period were generally less than 5 per day.

### Hatchery Release

**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. Nearly 1.3 million subyearling fall Chinook were scheduled to be released into this zone this week. Of these, about 200,000 were scheduled to be released from the Captain Johns Rapids Acclimation Facility on or around June 10<sup>th</sup>. The remaining 1.1 million were released into the Clearwater River Basin. An unknown proportion of the fall Chinook juveniles that were released into the Clearwater River this week were going to be unmarked and, therefore, difficult to distinguish from wild/natural fish. These are the only new releases that were scheduled for this zone over the next two weeks. There are no new releases scheduled for this zone over the next two weeks.

**Mid-Columbia Zone:** The Mid-Columbia Zone encompasses the area of the Columbia River and its tributaries from McNary Dam to Chief Joseph Dam. No new releases of juvenile salmonids were scheduled for this zone this week. However, one volitional release of subyearling summer Chinook from Wells Hatchery that began a few weeks ago was scheduled to end this week.

Approximately 10.5 million subyearling fall Chinook juveniles are scheduled to be released into this zone over the next two weeks. Of these, about 7.0 million will be released from Priest Rapids Hatchery, which is located just below Priest Rapids Dam. The release from Priest Rapids Hatchery is scheduled to begin on or around June 16<sup>th</sup> and run through the end of June. Although all of the fish from Priest Rapids Hatchery are marked with an otolith mark, approximately 3.3 million will be otherwise unmarked (i.e., no clips or CWT) and, therefore, difficult to distinguish from wild/natural fish. The remaining 3.5 million will be released from Ringgold Hatchery, which is also located on the Columbia River, about 72 kilometers below Priest Rapids Dam. The release from Ringgold Hatchery is scheduled to begin on or around June 23<sup>rd</sup> and run through early July.

**Lower Columbia Zone:** The Lower Columbia Zone is defined as the Columbia River and its tributaries from Bonneville Dam to McNary Dam. No new releases were scheduled for this zone this week and there no new releases scheduled for this zone over the next two weeks.

### Adult Passage

The summer Chinook count began June 1st at Bonneville Dam. Daily passage numbers at Bonneville Dam ranged between 1,815 and 2,605 adult summer Chinook in the last week. The 2016 summer Chinook count of 18,589 is about 74.9% of the 2015 count, while having 1,060 more fish than the 10-year average count. The 2016 Bonneville Dam summer Chinook jack count of 1,543 is 65.2% of the 2015 count and about 42.7% of the 10-year average count. At Willamette Falls, 18,126 adult spring Chinook have been counted so far this year. In 2015, 46,659 adult spring Chinook were counted at Willamette Falls. This year's count is about 38.8% of the 2015 count and 75.1% of the 10-year average count of 22,566. A total of 57,617 spring chinook have been counted at Lower Granite Dam as of June 9th. The 2016 Lower Granite Dam adult spring Chinook count is about 57.3% of the 2015 count, while being about 1.1 times greater than the 10-year average count.

The 2016 Bonneville Dam adult steelhead count of 6,704 has 812 more fish than the 2015 count of 5,892 and 92 more fish than the 10-year average count of 6,612. The 2016 Bonneville Dam adult wild steelhead count of 2,447 has 347 fewer fish than the 2015 count of 2,794, while having 638 more fish than the 10-year average count of 1,809. Daily adult steelhead counts at Lower Granite Dam ranged from 0 to 3 adults per day last week. This year's Lower Granite steelhead count of 5,479 is 59.6% of the 2015 count of 9,193 and 59.1% of the 10-year average count of 9,270. The 2016 Lower Granite Dam adult wild steelhead count of 3,119 is 71.7% of the 2015 count of 4,349 and is about 88.6% of the 10-year average count of 3,519. At Willamette Falls, the 2016 count for steelhead was 15,412 as of June 4th. This year's steelhead count is about 2.5 times greater than the 2015 count of 6,257 and 1.1 times greater than the 10-year average count of 13,673.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 565 and 2,112 last week. The 2016 adult sockeye count at Bonneville Dam of 10,146 is 1.5 times greater than the 2015 count and 3.5 times greater than the 10-year average count.

## Hatchery Releases Last Two Weeks

### Hatchery Release Summary

From: **5/28/2016** to **06/10/16**

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Colville Tribe	Chief Joseph Hatchery	CH0	SU	2016	222,000	05-25-16	05-29-16	Omak Pond	Okanogan River
Colville Tribe	Chief Joseph Hatchery	CH0	SU	2016	240,000	05-25-16	05-29-16	Chief Joseph Hatchery	Wells Pool
<b>Colville Tribe Total</b>					<b>462,000</b>				
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2016	500,000	05-24-16	05-24-16	Cpt John Acclim Pond	Snake River
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2016	500,000	05-26-16	05-26-16	Big Canyon (Clearwater River)	Clearwater River M F
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	FA	2016	319,580	05-31-16	05-31-16	Lapwai Creek	Clearwater River M F
<b>Nez Perce Tribe Total</b>					<b>1,319,580</b>				
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	CH0	FA	2016	400,000	05-31-16	05-31-16	Grande Ronde River	Grande Ronde River
Oregon Dept. of Fish and Wildlife	Round Butte Hatchery	CH1	SP	2016	240,000	04-15-16	05-31-16	Deschutes River	Deschutes River
<b>Oregon Dept. of Fish and Wildlife Total</b>					<b>640,000</b>				
WA Dept. of Fish and Wildlife	COOP	CH0	FA	2016	175	05-01-16	05-31-16	Wenatchee River	Wenatchee River
WA Dept. of Fish and Wildlife	COOP	CH0	FA	2016	1,025	05-01-16	05-31-16	Above McNary Dam	McNary Pool
WA Dept. of Fish and Wildlife	COOP	CH0	FA	2016	3,850	05-01-16	05-31-16	Above McNary Dam	McNary Pool
WA Dept. of Fish and Wildlife	COOP	CH0	FA	2016	3,975	05-01-16	05-31-16	Above McNary Dam	McNary Pool
WA Dept. of Fish and Wildlife	COOP	CH0	FA	2016	13,600	05-01-16	05-31-16	Yakama River	Yakima River
WA Dept. of Fish and Wildlife	COOP	CH0	SU	2017	225	05-01-16	05-31-16	Methow River	Methow River
WA Dept. of Fish and Wildlife	Eastbank Hatchery	CH1	SU	2016	535,000	04-25-16	05-30-16	Dryden Acclim Pond	Wenatchee River
WA Dept. of Fish and Wildlife	Eastbank Hatchery	ST	SU	2016	24,000	04-20-16	05-31-16	Blackbird Island Acc Pond	Wenatchee River
WA Dept. of Fish and Wildlife	Lyons Ferry Hatchery	CH0	FA	2016	200,000	05-30-16	05-30-16	Lyons Ferry Hatchery	Snake River
WA Dept. of Fish and Wildlife	Wells Hatchery	CH0	SU	2016	484,000	05-25-16	06-07-16	Wells Hatchery	Rocky Reach Pool
WA Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2016	160,000	04-20-16	05-31-16	Wells Hatchery	Rocky Reach Pool
<b>WA Dept. of Fish and Wildlife Total</b>					<b>1,425,850</b>				
Yakama Tribe	Cascade Hatchery	CO	UN	2016	68,020	05-01-16	05-31-16	Twisp Acclim Pond	Methow River
Yakama Tribe	Cascade Hatchery	CO	UN	2016	79,496	05-01-16	05-31-16	Coulter Creek	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2016	135,272	05-01-16	05-31-16	Butcher Creek Acclim. Pond	Wenatchee River
Yakama Tribe	Eagle Creek NFH	CO	UN	2016	95,939	04-15-16	06-01-16	Stiles Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2016	193,067	04-15-16	06-01-16	Holmes Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2016	215,045	04-15-16	06-01-16	Easton Pond	Yakima River
Yakama Tribe	Klickitat Hatchery	CH0	FA	2016	4,000,000	06-01-16	06-01-16	Klickitat Hatchery	Klickitat River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2016	74,227	04-15-16	06-01-16	Lost Creek Acclim Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2016	74,951	04-15-16	06-01-16	Stiles Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2016	76,167	04-15-16	06-01-16	Yakama River	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2016	299,959	04-15-16	06-01-16	Prosser Acclim Pond	Yakima River
Yakama Tribe	Willard Hatchery	CO	UN	2016	121,443	05-01-16	05-31-16	Rolfings Acclim Pond	Wenatchee River
<b>Yakama Tribe Total</b>					<b>5,433,586</b>				
<b>Grand Total</b>					<b>9,281,016</b>				

## Hatchery Releases Next Two Weeks

### Hatchery Release Summary

From: 6/11/2016 to 6/24/2016

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2016	200,000	06-10-16	06-10-16	Cpt John Acclim Pond	Snake River
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	FA	2016	280,070	06-13-16	06-13-16	Cedar Flats Acclim.	Selway River
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	FA	2016	280,070	06-13-16	06-13-16	Lukes Gulch Acclim.	S Fk Clearwater River
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	FA	2016	520,919	06-13-16	06-13-16	Nez Perce Tribal Hatchery	Clearwater River M F
<b>Nez Perce Tribe Total</b>					<b>1,281,059</b>				
WA Dept. of Fish and Wildlife	Priest Rapids Hatchery	CH0	FA	2016	7,039,543	06-10-16	06-25-16	Priest Rapids Hatchery	McNary Pool
WA Dept. of Fish and Wildlife	Wells Hatchery	CH0	SU	2016	484,000	05-25-16	06-07-16	Wells Hatchery	Rocky Reach Pool
<b>WA Dept. of Fish and Wildlife Total</b>					<b>7,523,543</b>				
<b>Grand Total</b>					<b>8,804,602</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
05/27/2016	125.8	0.0	121.9	0.0	133.2	9.1	127.0	0.4	137.5	12.8	128.4	19.2	122.9	26.8
05/28/2016	127.9	0.1	126.6	0.0	139.7	9.4	138.4	0.0	151.2	12.7	148.5	20.6	141.0	28.9
05/29/2016	88.1	0.1	91.5	0.0	106.5	7.6	110.3	12.4	121.7	25.0	143.1	20.8	149.8	30.0
05/30/2016	98.1	0.1	97.3	0.0	116.0	8.4	117.1	11.0	126.3	24.0	131.7	16.0	128.9	26.0
05/31/2016	115.9	0.1	118.8	0.0	129.2	9.2	122.7	11.4	131.2	27.8	143.4	18.5	139.2	26.4
06/01/2016	130.2	0.1	126.3	0.0	140.0	9.4	139.1	13.1	148.5	26.9	150.5	18.8	145.9	26.4
06/02/2016	107.9	0.1	108.3	0.0	120.3	9.4	118.9	10.8	130.1	28.2	135.5	18.7	133.5	26.7
06/03/2016	135.4	0.1	131.5	0.0	138.3	10.0	138.2	10.8	148.3	28.5	143.2	19.1	138.7	27.2
06/04/2016	127.7	0.1	127.6	0.0	144.0	10.0	144.9	11.4	157.2	28.4	157.6	20.0	153.5	27.4
06/05/2016	116.3	0.1	121.4	0.0	133.2	10.0	133.1	11.5	147.0	29.1	156.9	19.8	154.3	27.5
06/06/2016	123.6	0.1	125.1	0.0	137.6	10.0	138.9	11.8	151.9	29.1	154.3	20.0	150.8	27.6
06/07/2016	111.7	0.1	115.0	0.0	129.9	8.9	133.9	10.7	149.6	27.0	155.2	20.0	152.3	27.4
06/08/2016	92.9	0.1	85.8	0.0	105.5	9.0	109.2	10.9	123.5	28.0	142.2	19.5	140.6	27.3
06/09/2016	109.5	0.1	110.8	0.0	121.6	8.5	119.5	10.1	129.5	23.3	134.0	19.0	131.6	27.0

**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		Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
05/27/2016	1.6	0.0	---	16.6	69.7	20.6	65.8	19.8	63.1	45.3	65.9	19.7	
05/28/2016	1.6	0.0	---	19.9	68.8	20.6	68.5	20.4	66.2	47.0	69.8	43.6	
05/29/2016	1.6	0.0	---	18.8	68.7	20.6	65.7	19.8	65.1	45.5	69.7	54.2	
05/30/2016	1.6	0.0	---	18.7	64.5	20.6	62.9	18.8	61.1	47.0	64.7	51.9	
05/31/2016	1.6	0.0	---	20.3	67.8	20.6	65.0	19.5	62.3	45.1	65.4	49.6	
06/01/2016	1.5	0.0	---	18.0	66.4	20.6	63.9	19.2	63.3	47.1	68.2	29.2	
06/02/2016	1.4	0.0	---	15.2	67.1	20.6	63.1	18.9	62.6	45.0	64.4	19.2	
06/03/2016	1.4	0.0	---	15.4	65.4	20.6	61.4	18.3	60.2	41.1	62.8	18.9	
06/04/2016	1.4	0.0	---	18.4	66.3	20.5	62.4	18.7	61.9	26.5	64.9	19.5	
06/05/2016	1.4	0.0	---	16.7	70.6	20.5	66.6	19.9	65.6	26.4	69.2	20.7	
06/06/2016	1.5	0.0	---	16.4	72.4	20.4	66.3	19.7	66.7	24.6	69.3	20.7	
06/07/2016	1.8	0.0	---	15.6	76.3	20.4	75.9	22.7	70.7	23.9	74.4	47.1	
06/08/2016	1.6	0.0	---	18.4	75.1	20.4	71.0	21.4	69.2	23.0	75.2	54.0	
06/09/2016	1.6	0.0	---	17.0	76.2	20.3	72.6	21.9	71.0	23.9	76.5	54.8	

**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		
05/27/2016	211.2	84.9	225.8	71.2	211.2	84.6	228.2	101.3	1.3	113.3
05/28/2016	209.3	84.0	204.3	81.4	190.7	76.1	208.3	100.9	1.0	94.0
05/29/2016	209.8	84.4	193.8	73.9	174.9	70.0	201.6	100.8	1.5	86.9
05/30/2016	209.5	84.2	216.6	64.9	201.6	80.5	213.6	100.1	0.9	100.2
05/31/2016	223.7	89.8	223.5	70.5	207.2	82.8	224.4	99.7	4.3	108.0
06/01/2016	199.3	79.9	180.1	71.7	163.9	65.8	194.5	98.9	9.3	73.9
06/02/2016	210.7	84.3	209.0	79.8	192.4	77.1	204.5	98.9	11.2	82.0
06/03/2016	204.4	81.8	215.1	64.4	202.7	81.0	220.3	99.8	10.5	97.6
06/04/2016	216.2	86.6	210.4	62.9	194.2	77.4	210.8	99.9	13.4	85.1
06/05/2016	242.0	96.8	236.6	70.7	216.9	86.7	223.3	100.3	16.2	94.5
06/06/2016	233.5	93.5	219.3	65.7	202.6	81.0	236.4	100.2	22.0	101.8
06/07/2016	233.9	93.5	234.1	70.3	220.5	88.2	236.4	99.8	27.9	96.3
06/08/2016	225.7	90.4	215.4	68.2	201.6	80.7	220.7	100.1	4.5	103.7
06/09/2016	217.6	87.1	219.6	87.9	204.3	81.6	217.5	100.7	0.9	103.5

### 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
<b>Lower Granite Dam</b>											
	06/02/16	Chinook + Steelhead	54*	0	0			0	0	0	0
	06/09/16	Chinook + Steelhead	101	0	0	0.00%	0.00%	0	0	0	0
<b>Little Goose Dam</b>											
	05/30/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/06/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Lower Monumental Dam</b>											
	06/01/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/08/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>McNary Dam</b>											
	05/30/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/05/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/09/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Bonneville Dam</b>											
	06/07/16	Chinook + Steelhead	96*	0	0			0	0	0	0
	06/08/16	Chinook + Steelhead	4*	0	0			0	0	0	0
<b>Rock Island Dam</b>											
	06/07/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/09/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0

\* Sample size criteria not met, therefore no % fish with GBT estimated for this sample day.

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

### Total Dissolved Gas Saturation Data at Upper Columbia River Sites

Date	<u>Hungry H. Dnst</u>			#	<u>Boundary</u>			#	<u>Grand Coulee</u>			#	<u>Grand C. Tlwr</u>			#	<u>Chief Joseph</u>			#
	<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>		
	<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	
5/27	103.8	104.0	104.3	24	---	---	---	0	109.8	109.9	110.2	24	108.1	108.4	108.7	24	108.2	108.5	108.8	24
5/28	103.2	103.5	103.7	24	---	---	---	0	109.4	109.5	109.6	24	107.7	107.9	108.2	24	107.6	107.8	107.9	24
5/29	103.3	103.7	103.8	24	---	---	---	0	109.1	109.3	109.4	24	108.1	108.5	109.1	24	107.7	108.1	108.5	24
5/30	103.0	103.3	103.5	24	---	---	---	0	108.6	108.7	108.9	24	107.2	107.5	107.7	24	107.2	107.7	107.9	24
5/31	102.7	103.0	103.4	24	---	---	---	0	108.6	108.7	109.0	24	107.4	107.9	108.2	24	107.7	108.3	108.6	24
6/1	103.8	104.6	105.0	24	---	---	---	0	109.3	109.6	109.7	24	108.3	108.5	108.8	24	109.0	109.3	109.6	24
6/2	104.3	104.4	104.6	24	---	---	---	0	109.3	109.5	109.7	24	108.1	108.5	109.2	24	108.2	108.5	108.8	24
6/3	103.3	103.5	103.8	24	---	---	---	0	108.2	108.4	108.5	24	107.1	107.2	107.6	24	107.1	107.5	108.0	24
6/4	103.4	104.0	104.2	24	---	---	---	0	108.3	108.8	109.1	24	107.2	107.6	107.8	24	107.4	107.9	108.9	19
6/5	104.3	104.6	105.0	24	---	---	---	0	109.0	109.3	109.6	24	107.9	108.3	108.5	24	109.0	109.0	109.0	2
6/6	104.9	105.4	105.6	24	---	---	---	0	109.6	109.9	110.2	24	108.4	108.8	109.2	24	109.2	109.7	110.0	24
6/7	105.7	106.0	106.4	24	---	---	---	0	109.8	110.0	110.2	24	108.5	108.9	109.1	24	109.4	109.9	110.2	24
6/8	105.6	106.0	106.5	24	---	---	---	0	109.7	109.9	110.0	24	108.2	108.6	109.2	24	109.3	109.5	109.7	24
6/9	104.9	105.2	105.6	23	---	---	---	0	109.3	109.5	109.6	23	107.7	108.0	108.6	23	108.4	108.5	108.7	23

### Total Dissolved Gas Saturation Data at Mid Columbia River Sites

Date	<u>Chief J. Dnst</u>			#	<u>Wells</u>			#	<u>Wells Dwnstrm</u>			#	<u>Rocky Reach</u>			#	<u>Rocky R. Tlwr</u>			#
	<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>		
	<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	
5/27	108.0	108.5	108.9	24	107.5	107.9	108.3	23	109.3	109.7	110.2	23	108.8	108.9	109.3	24	108.7	108.8	110.2	24
5/28	107.4	107.6	108.0	24	106.8	107.1	107.3	24	108.8	109.1	109.5	24	108.2	108.4	108.6	24	108.1	108.3	109.3	24
5/29	108.0	108.5	109.3	24	106.4	106.8	107.1	24	108.2	108.6	109.0	24	108.4	108.6	108.9	24	112.6	113.3	113.6	24
5/30	107.1	107.4	107.7	24	106.0	106.9	107.3	23	107.6	108.5	108.8	23	107.5	107.6	107.9	24	112.5	113.1	113.3	24
5/31	107.2	107.5	107.7	24	107.6	108.4	108.8	24	109.0	109.9	110.3	24	107.6	108.1	108.6	24	113.2	114.0	114.3	24
6/1	108.6	108.9	109.1	24	108.4	108.6	109.0	24	110.0	110.6	112.4	24	109.4	109.9	110.2	24	114.6	115.2	115.5	24
6/2	108.2	108.7	109.5	24	107.6	108.2	108.4	24	109.2	109.6	109.8	24	109.3	109.5	110.0	24	113.9	114.4	115.1	24
6/3	106.5	106.7	106.9	24	106.6	107.1	107.7	24	108.5	109.0	109.5	24	107.8	108.0	108.6	24	113.2	114.2	115.0	24
6/4	107.1	107.6	107.9	24	107.8	108.3	108.8	24	109.5	110.4	110.9	24	108.4	109.2	109.6	24	113.5	114.8	115.7	24
6/5	108.4	108.6	109.1	24	108.9	109.5	110.2	23	110.5	111.3	112.1	23	109.9	110.7	111.1	24	114.6	115.8	116.8	24
6/6	108.7	109.2	110.2	24	109.7	110.2	110.6	24	111.2	111.9	112.2	24	110.8	111.3	111.7	24	115.3	116.4	117.2	24
6/7	109.0	109.3	109.6	24	109.5	110.0	110.6	24	111.0	111.7	112.2	24	111.1	111.4	111.6	24	114.8	115.5	115.9	24
6/8	109.2	109.6	110.7	24	109.1	109.6	109.9	24	110.4	110.9	111.4	24	110.9	111.3	111.6	24	114.6	115.0	115.4	24
6/9	108.3	108.7	109.2	23	107.3	107.5	107.8	22	108.8	109.1	109.5	22	109.5	109.8	110.0	23	113.8	114.1	114.5	23

### Total Dissolved Gas Saturation at Mid Columbia River Sites

Date	<u>Rock Island</u>			#	<u>Rock I. Tlwr</u>			#	<u>Wanapum</u>			#	<u>Wanapum Tlwr</u>			#	<u>Priest Rapids</u>			#
	<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>		
	<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	
5/27	107.4	107.7	108.0	24	109.9	110.2	110.6	24	105.5	105.7	106.1	24	108.4	108.4	109.1	11	106.0	106.1	106.6	24
5/28	107.2	107.5	107.7	24	109.5	109.8	110.4	24	106.3	107.2	107.9	24	---	---	---	0	106.9	107.7	108.4	24
5/29	107.7	108.5	108.8	24	112.9	115.5	116.2	24	107.5	107.7	108.0	24	---	---	---	0	108.3	108.5	108.7	24
5/30	108.0	108.5	108.9	24	113.0	114.1	114.4	24	107.4	108.5	109.2	24	---	---	---	0	107.5	107.9	108.7	24
5/31	108.3	109.0	109.5	24	113.8	115.0	115.4	24	109.4	111.0	112.2	24	110.3	111.1	111.9	24	108.8	109.2	109.7	24
6/1	109.1	110.1	110.5	24	114.1	114.9	115.6	23	112.4	113.4	113.9	24	112.3	112.6	112.8	24	110.9	111.4	111.7	24
6/2	109.5	109.6	110.0	24	114.6	115.2	115.5	24	110.7	111.0	111.2	24	112.0	112.2	112.5	24	110.4	110.7	111.1	24
6/3	108.7	109.1	109.5	24	113.9	114.6	115.2	24	111.1	112.3	113.5	24	111.5	111.8	112.0	24	110.0	110.4	110.9	24
6/4	108.4	109.4	110.3	24	113.3	114.7	115.3	24	112.7	114.1	114.9	24	112.5	113.2	113.5	24	111.2	111.6	112.3	24
6/5	109.7	110.6	111.3	24	114.7	115.3	115.8	24	114.9	116.2	117.3	24	113.6	113.9	114.1	24	112.6	112.9	113.3	24
6/6	110.6	111.3	111.8	24	115.4	116.6	117.2	24	115.2	116.5	117.8	24	113.9	114.2	114.6	24	113.3	113.6	113.8	24
6/7	110.6	111.2	111.7	24	115.3	116.2	116.8	24	---	---	---	0	---	---	---	0	---	---	---	0
6/8	110.2	110.4	110.8	24	115.8	116.6	117.4	24	---	---	---	0	---	---	---	0	---	---	---	0
6/9	109.4	109.8	110.2	23	113.8	114.4	116.0	23	---	---	---	0	---	---	---	0	---	---	---	0

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

### Total Dissolved Gas Saturation Data at Lower Columbia and Snake River Sites

Date	<u>Priest R. Dnst</u>			<u>Pasco</u>			<u>Dworshak</u>			<u>Clrwtr-Peck</u>			<u>Anatone</u>							
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>				
5/27	109.4	109.8	110.1	24	---	---	---	0	103.9	104.9	105.8	24	101.2	101.6	102.1	24	103.9	104.4	104.8	24
5/28	110.1	111.1	112.7	24	---	---	---	0	104.0	105.2	106.1	24	101.3	102.2	102.4	24	104.0	104.8	105.4	24
5/29	111.1	111.3	111.6	24	---	---	---	0	104.3	105.6	106.8	24	102.0	102.8	103.1	24	104.0	104.6	105.4	24
5/30	110.1	110.4	110.7	24	---	---	---	0	103.7	104.9	106.0	24	101.6	102.5	102.7	24	103.8	104.6	105.3	24
5/31	111.0	111.5	111.7	24	---	---	---	0	104.1	105.5	106.6	24	101.9	102.8	103.2	24	104.3	105.3	106.0	24
6/1	112.2	112.5	112.8	24	---	---	---	0	105.1	106.7	107.9	24	102.1	102.9	103.3	24	104.5	105.2	106.1	23
6/2	111.8	112.1	112.6	24	---	---	---	0	105.2	105.9	106.4	24	101.0	101.4	102.1	24	103.6	103.8	104.0	24
6/3	111.7	112.2	112.5	24	---	---	---	0	106.0	107.5	108.7	24	101.5	102.6	103.0	24	104.2	105.3	106.0	24
6/4	112.6	113.1	113.2	24	---	---	---	0	105.8	107.4	109.0	24	102.5	103.4	104.1	24	104.9	105.9	106.6	24
6/5	113.4	113.7	113.8	24	---	---	---	0	106.8	108.5	109.5	24	102.4	103.2	104.1	24	104.8	105.5	106.3	24
6/6	113.9	114.1	114.4	24	---	---	---	0	106.4	107.9	109.2	24	102.4	103.5	104.2	24	104.9	105.8	106.5	24
6/7	---	---	---	0	---	---	---	0	106.6	109.1	113.3	24	102.3	103.1	104.0	24	105.0	105.7	106.2	23
6/8	---	---	---	0	---	---	---	0	105.4	106.7	108.5	24	101.9	102.4	103.1	24	104.7	105.2	106.0	24
6/9	---	---	---	0	---	---	---	0	106.6	108.1	109.3	23	101.7	102.6	103.3	23	104.4	105.2	105.8	23

### Total Dissolved Gas Saturation Data at Snake River Sites

Date	<u>Clrwtr-Lewiston</u>			<u>Lower Granite</u>			<u>L. Granite Tlwr</u>			<u>Little Goose</u>			<u>L. Goose Tlwr</u>							
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>				
5/27	101.1	102.1	103.0	24	103.3	103.5	103.8	24	109.7	109.8	110.0	24	106.8	106.9	107.1	24	110.1	110.3	110.4	24
5/28	101.6	103.4	104.5	24	103.4	103.5	103.9	24	110.0	110.3	111.6	24	106.7	107.0	107.3	24	110.4	110.8	112.3	24
5/29	101.8	103.2	104.2	24	103.3	103.4	103.5	24	110.0	110.4	111.0	24	107.4	107.8	108.1	24	110.6	110.7	111.1	24
5/30	101.8	103.4	104.5	24	102.2	102.5	102.8	24	109.9	110.2	110.6	24	107.2	107.6	108.1	24	110.4	110.7	111.0	24
5/31	102.0	103.7	105.0	24	103.4	103.6	103.8	24	110.3	110.6	111.4	24	109.1	110.0	110.8	24	110.9	111.3	111.4	24
6/1	102.0	103.3	104.5	24	104.0	104.4	104.6	24	110.4	110.8	112.3	24	111.1	111.3	111.7	24	111.3	111.5	111.8	24
6/2	100.6	101.2	102.0	24	103.6	103.9	104.2	24	110.4	110.6	111.6	24	110.3	110.6	111.0	24	110.9	111.0	111.3	24
6/3	101.9	103.7	105.0	24	103.1	103.3	103.6	24	110.1	110.4	110.7	24	109.0	109.2	109.3	24	111.0	111.2	111.4	24
6/4	102.6	104.4	105.7	24	103.0	103.1	103.6	24	110.2	110.5	111.1	24	110.0	110.4	111.0	24	111.7	112.0	112.2	24
6/5	102.4	103.9	105.1	24	103.7	104.4	105.0	24	110.1	110.5	111.7	24	111.1	111.4	112.7	24	111.7	112.2	112.5	24
6/6	102.5	104.1	105.4	24	105.6	106.1	106.4	24	110.5	110.7	111.8	24	112.6	112.8	113.8	15	112.4	112.5	113.2	15
6/7	102.1	103.6	104.7	24	105.1	105.4	105.7	24	110.8	111.1	111.5	24	114.3	114.5	115.3	14	113.0	113.2	113.6	14
6/8	101.8	103.0	104.6	24	104.6	104.8	105.3	24	110.6	110.9	111.3	24	113.9	114.5	115.9	24	112.1	112.6	113.2	24
6/9	101.7	103.4	104.4	23	103.2	103.3	103.6	23	110.4	110.5	110.7	23	112.3	112.7	113.4	23	111.9	112.2	112.5	23

### Total Dissolved Gas Saturation Data at Snake and Lower Columbia River Sites

Date	<u>Lower Mon.</u>			<u>L. Mon. Tlwr</u>			<u>Ice Harbor</u>			<u>Ice Harbor Tlwr</u>			<u>McNary-Oregon</u>							
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>				
5/27	110.1	110.3	111.0	24	116.6	116.8	116.8	24	114.3	114.5	115.3	24	114.5	115.2	115.4	24	---	---	---	0
5/28	109.2	109.5	109.9	24	116.5	116.8	116.9	24	113.9	114.2	114.4	24	114.9	115.2	115.4	24	---	---	---	0
5/29	109.7	109.8	109.9	24	116.4	116.8	117.0	24	115.1	115.5	115.7	24	115.1	115.3	115.4	24	---	---	---	0
5/30	109.5	109.8	110.0	24	115.6	116.3	116.6	24	115.5	115.8	116.0	24	114.9	115.2	115.5	24	---	---	---	0
5/31	110.5	110.8	111.2	24	116.8	117.0	117.2	24	116.3	116.6	117.0	24	114.9	115.3	115.4	24	---	---	---	0
6/1	111.8	112.1	112.2	24	117.4	117.6	117.8	24	118.0	118.5	118.8	24	116.2	116.7	117.2	24	---	---	---	0
6/2	111.6	111.9	112.1	24	116.7	117.2	117.5	24	117.7	118.2	118.6	24	115.2	116.2	116.4	24	---	---	---	0
6/3	110.4	110.5	110.7	24	116.0	116.8	117.8	24	115.5	115.8	116.2	24	115.5	115.7	116.0	24	---	---	---	0
6/4	110.5	110.8	111.5	24	117.9	118.2	118.8	24	115.7	116.0	116.3	24	114.7	116.0	116.4	24	---	---	---	0
6/5	112.4	112.8	113.2	24	118.5	119.0	119.2	24	118.1	119.0	119.4	24	116.5	117.0	117.6	24	---	---	---	0
6/6	113.7	114.0	114.2	24	119.0	119.4	119.9	24	119.4	119.7	119.8	24	115.6	117.2	117.6	24	---	---	---	0
6/7	113.7	113.9	114.1	24	115.8	116.4	116.7	24	118.7	119.0	119.9	24	116.0	116.4	116.6	24	---	---	---	0
6/8	114.1	114.4	114.5	24	116.9	117.5	117.7	24	118.4	119.1	120.0	24	115.6	115.9	116.6	24	---	---	---	0
6/9	113.4	113.5	113.7	23	117.0	117.5	117.9	23	116.0	116.4	117.0	23	115.8	116.0	116.2	23	---	---	---	0

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

### Total Dissolved Gas Saturation Data at Lower Columbia River Sites

Date	<u>McNary-Wash</u>			#	<u>McNary Tlwr</u>			#	<u>John Day</u>			#	<u>John Day Tlwr</u>			#	<u>The Dalles</u>			#
	<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>			<u>24h</u>	<u>12h</u>			<u>24h</u>	<u>12h</u>			<u>24h</u>	<u>12h</u>		
	Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High	
5/27	106.9	107.2	107.7	24	113.7	114.0	114.2	24	103.3	103.5	103.7	24	113.6	114.0	115.3	24	105.0	105.5	105.8	24
5/28	106.4	106.7	107.5	24	113.9	114.4	115.5	24	103.8	104.3	104.6	24	114.6	115.7	116.4	24	106.3	107.3	108.3	24
5/29	107.9	108.4	108.7	24	114.0	114.2	114.4	24	104.1	104.3	104.4	24	113.5	113.9	114.5	24	108.9	109.4	109.6	24
5/30	107.6	108.6	110.3	24	114.2	114.4	114.7	24	103.9	104.4	104.9	24	113.7	114.2	114.6	24	107.5	108.1	108.4	24
5/31	109.7	110.5	111.5	24	114.2	114.5	114.8	24	105.5	106.1	106.9	24	113.7	114.2	116.7	24	108.6	108.8	109.0	24
6/1	111.4	111.5	111.8	24	115.0	115.4	116.4	24	107.1	107.3	107.7	24	113.5	114.1	114.9	24	109.3	109.5	109.9	24
6/2	110.7	111.2	111.4	24	115.3	115.8	116.8	24	106.9	107.1	107.3	24	114.1	115.6	116.7	24	108.9	109.0	109.4	24
6/3	109.4	109.6	110.7	24	115.2	115.8	117.0	24	107.1	107.8	108.3	24	113.9	114.4	114.8	24	110.0	110.6	110.9	24
6/4	110.0	110.7	111.2	24	115.2	115.6	116.1	24	109.9	111.2	113.3	24	114.4	114.7	115.9	24	111.0	111.5	111.8	24
6/5	112.4	112.9	114.1	24	114.7	114.9	115.3	24	111.4	111.8	112.4	24	116.4	117.1	122.8	24	112.2	112.6	113.2	24
6/6	114.0	114.4	114.7	24	115.2	115.8	115.9	24	112.1	112.7	113.4	24	115.0	115.6	116.0	24	112.3	112.7	113.0	24
6/7	114.2	114.6	115.3	24	115.6	116.4	120.9	24	112.8	113.5	114.2	24	114.7	115.3	116.0	24	111.9	112.2	112.4	24
6/8	113.7	114.6	115.2	24	117.1	118.3	118.6	24	113.9	114.2	114.4	24	115.0	116.0	116.3	24	111.0	111.5	112.1	24
6/9	111.2	111.4	111.8	23	116.6	117.1	117.6	23	112.4	112.7	113.2	22	115.2	116.3	116.6	22	110.6	111.6	112.3	23

### Total Dissolved Gas Saturation Data at Lower Columbia River Sites

Date	<u>The Dalles Dnst</u>			#	<u>Bonneville</u>			#	<u>Warrendale</u>			#	<u>Camas\Washougal</u>			#	<u>Cascade Island</u>			#
	<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>			<u>24h</u>	<u>12h</u>			<u>24h</u>	<u>12h</u>			<u>24h</u>	<u>12h</u>		
	Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High	
5/27	111.7	111.9	112.1	24	107.6	107.9	108.1	24	114.1	114.4	114.5	24	109.9	110.6	111.1	24	117.1	117.1	117.3	24
5/28	112.6	113.3	114.0	24	108.8	109.3	109.6	24	115.0	115.5	115.7	24	111.2	112.8	113.6	24	116.8	117.1	117.2	24
5/29	113.6	113.9	114.2	24	109.5	109.7	109.7	24	114.9	115.3	115.7	24	111.3	111.6	112.1	24	116.7	116.9	117.2	24
5/30	113.3	113.7	114.1	24	110.3	111.2	111.8	24	115.4	116.0	116.3	24	111.9	113.4	114.0	24	116.8	116.9	117.0	24
5/31	114.3	114.7	115.1	24	112.9	113.6	114.1	24	116.4	116.9	117.1	24	112.8	113.6	114.2	24	117.2	117.5	117.7	24
6/1	114.4	114.7	115.0	24	114.5	114.7	114.8	24	116.7	117.0	117.2	24	114.2	115.4	116.2	24	116.9	117.0	117.5	24
6/2	114.1	114.4	114.6	24	111.3	112.2	113.4	24	115.5	115.9	116.4	24	113.3	113.8	114.1	24	116.8	116.9	117.1	24
6/3	114.8	115.5	116.0	24	111.4	112.5	113.0	24	115.7	116.3	116.8	24	113.3	114.6	115.6	24	117.0	117.3	117.5	24
6/4	115.6	116.5	117.0	24	114.1	114.7	116.1	24	116.6	117.1	117.5	24	113.3	113.5	114.0	24	117.1	117.5	117.8	24
6/5	116.5	117.1	117.3	24	116.1	116.4	116.6	24	117.5	117.9	118.2	24	115.2	116.8	118.0	24	117.5	117.9	118.0	24
6/6	116.3	116.8	117.3	24	115.4	116.1	116.5	24	117.4	117.7	117.9	24	115.9	117.0	118.0	24	117.8	118.0	118.4	24
6/7	116.1	116.4	116.7	24	113.3	113.5	113.6	24	116.0	116.3	116.7	24	114.6	115.4	116.0	24	117.7	117.9	118.2	24
6/8	115.3	115.7	116.1	24	111.2	112.0	112.9	24	115.3	115.6	115.8	24	112.5	113.1	113.9	24	117.4	117.6	117.9	24
6/9	115.0	115.5	115.9	23	109.8	110.2	110.3	23	115.0	115.1	115.3	23	110.8	111.3	111.7	23	117.2	117.4	117.7	23

## Two-Week Summary of Passage Indices

Source: Fish Passage Center

Updated: 6/10/2016 8:05

### Two-Week Summary of Passage Indices

\* One or more of the sites on this date had an incomplete or biased sample.

See Sampling Comments: <http://www.fpc.org/currentDaily/smpcomments.htm>

For clip information see: <http://www.fpc.org/CurrentDaily/catch.htm>

For sockeye and yearling chinook (Snake only) race information see: <http://www.fpc.org/smoltqueries/currentsmpsubmitdata.asp>

<b>COMBINED YEARLING CHINOOK</b>											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
05/27/2016 *	---	10	---	---	1,796	4,044	1,337	37	4,470	---	1,220
05/28/2016 *	---	16	1	---	1,936	3,242	328	56	---	2,697	1,319
05/29/2016 *	---	15	0	---	1,583	574	148	40	2,969	---	1,014
05/30/2016 *	---	13	0	---	862	1,177	148	23	---	928	815
05/31/2016 *	---	22	---	---	875	1,299	79	6	3,032	---	521
06/01/2016 *	---	21	---	---	575	1,232	479	5	---	1,217	257
06/02/2016 *	---	34	---	---	733	1,288	85	11	848	---	670
06/03/2016 *	---	16	---	---	578	1,214	203	5	---	420	168
06/04/2016 *	---	17	---	---	590	886	200	2	2,795	---	303
06/05/2016 *	---	15	---	---	570	643	725	0	---	372	206
06/06/2016 *	---	9	---	---	423	857	406	0	2,705	---	323
06/07/2016 *	---	---	---	---	554	715	581	2	---	572	301
06/08/2016 *	---	---	---	---	274	287	236	2	2,195	---	313
06/09/2016 *	---	---	---	---	954	933	221	1	---	425	134
06/10/2016	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>0</b>	<b>188</b>	<b>1</b>	<b>0</b>	<b>12,303</b>	<b>18,391</b>	<b>5,176</b>	<b>190</b>	<b>19,014</b>	<b>6,631</b>	<b>7,564</b>
<b># Days:</b>	<b>0</b>	<b>11</b>	<b>3</b>	<b>0</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>7</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>879</b>	<b>1,314</b>	<b>370</b>	<b>14</b>	<b>2,716</b>	<b>947</b>	<b>540</b>
<b>YTD</b>	<b>27,295</b>	<b>56,155</b>	<b>16,183</b>	<b>7,757</b>	<b>5,894,125</b>	<b>3,488,735</b>	<b>4,887,692</b>	<b>44,778</b>	<b>2,180,283</b>	<b>1,455,519</b>	<b>2,658,912</b>

<b>COMBINED SUBYEARLING CHINOOK</b>											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
05/27/2016 *	---	3	---	---	6,113	946	869	99	13,145	---	3,508
05/28/2016 *	---	0	21	---	10,254	1,520	474	109	---	6,875	3,092
05/29/2016 *	---	0	9	---	13,815	1,718	591	227	8,567	---	4,113
05/30/2016 *	---	4	12	---	19,405	2,239	332	206	---	4,641	5,011
05/31/2016 *	---	5	---	---	26,311	3,330	556	68	12,733	---	3,941
06/01/2016 *	---	3	---	---	29,919	5,459	694	32	---	4,313	3,583
06/02/2016 *	---	3	---	---	26,155	3,950	1,484	39	8,991	---	4,016
06/03/2016 *	---	1	---	---	48,611	15,016	5,970	71	---	4,684	3,041
06/04/2016 *	---	2	---	---	47,512	39,213	3,085	73	35,154	---	3,622
06/05/2016 *	---	0	---	---	30,234	32,816	10,216	145	---	3,060	4,198
06/06/2016 *	---	0	---	---	37,505	23,983	6,830	248	16,565	---	5,752
06/07/2016 *	---	---	---	---	33,120	26,643	18,339	335	---	5,584	5,512
06/08/2016 *	---	---	---	---	28,070	27,292	24,534	237	35,120	---	4,719
06/09/2016 *	---	---	---	---	45,530	44,586	12,620	320	---	6,917	3,909
06/10/2016	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>0</b>	<b>21</b>	<b>42</b>	<b>0</b>	<b>402,554</b>	<b>228,711</b>	<b>86,594</b>	<b>2,209</b>	<b>130,275</b>	<b>36,074</b>	<b>58,017</b>
<b># Days:</b>	<b>0</b>	<b>11</b>	<b>3</b>	<b>0</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>7</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>2</b>	<b>14</b>	<b>0</b>	<b>28,754</b>	<b>16,337</b>	<b>6,185</b>	<b>158</b>	<b>18,611</b>	<b>5,153</b>	<b>4,144</b>
<b>YTD</b>	<b>0</b>	<b>40</b>	<b>698</b>	<b>2,869</b>	<b>499,206</b>	<b>267,029</b>	<b>102,933</b>	<b>9,203</b>	<b>395,596</b>	<b>83,483</b>	<b>1,715,003</b>

## Two-Week Summary of Passage Indices

<b>COMBINED COHO</b>												
	WTB	IMN	GRN	LEW	LGR	LGS	LMN	RIS	MCN	JDA	BO2	
Date	(Coll)	(Coll)	(Coll)	(Coll)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)
05/27/2016	*	---	0	---	---	343	1,291	201	227	3,723	---	3,203
05/28/2016	*	---	0	0	---	1,004	545	73	230	---	1,178	3,279
05/29/2016	*	---	0	0	---	791	200	0	225	2,545	---	1,577
05/30/2016	*	---	0	0	---	934	775	185	93	---	619	1,658
05/31/2016	*	---	0	---	---	656	930	40	17	2,462	---	1,361
06/01/2016	*	---	0	---	---	216	874	377	14	---	723	1,412
06/02/2016	*	---	0	---	---	293	347	0	39	1,188	---	907
06/03/2016	*	---	0	---	---	144	443	0	70	---	405	1,027
06/04/2016	*	---	0	---	---	0	244	200	56	1,017	---	685
06/05/2016	*	---	0	---	---	0	357	297	69	---	257	375
06/06/2016	*	---	0	---	---	282	0	101	27	1,352	---	665
06/07/2016	*	---	---	---	---	0	286	61	19	---	172	709
06/08/2016	*	---	---	---	---	274	143	76	32	169	---	664
06/09/2016	*	---	---	---	---	136	72	74	48	---	152	1,036
06/10/2016	*	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5,073</b>	<b>6,507</b>	<b>1,685</b>	<b>1,166</b>	<b>12,456</b>	<b>3,506</b>	<b>18,558</b>
<b># Days:</b>		<b>0</b>	<b>11</b>	<b>3</b>	<b>0</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>7</b>	<b>14</b>
<b>Average:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>362</b>	<b>465</b>	<b>120</b>	<b>83</b>	<b>1,779</b>	<b>501</b>	<b>1,326</b>
<b>YTD</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>316</b>	<b>197,714</b>	<b>146,796</b>	<b>59,953</b>	<b>45,299</b>	<b>154,245</b>	<b>58,544</b>	<b>796,694</b>

<b>COMBINED STEELHEAD</b>												
	WTB	IMN	GRN	LEW	LGR	LGS	LMN	RIS	MCN	JDA	BO2	
Date	(Coll)	(Coll)	(Coll)	(Coll)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)
05/27/2016	*	---	43	---	---	5,142	4,245	2,474	82	3,459	---	1,983
05/28/2016	*	---	56	0	---	7,457	2,927	765	80	---	1,216	2,097
05/29/2016	*	---	67	1	---	8,634	1,002	812	126	2,290	---	1,920
05/30/2016	*	---	42	0	---	3,162	2,755	443	56	---	851	1,788
05/31/2016	*	---	68	---	---	3,353	2,339	397	17	2,231	---	2,057
06/01/2016	*	---	98	---	---	1,798	4,069	2,373	29	---	799	1,354
06/02/2016	*	---	126	---	---	2,198	2,691	467	33	1,103	---	1,615
06/03/2016	*	---	139	---	---	2,741	2,286	731	50	---	436	900
06/04/2016	*	---	118	---	---	2,804	2,130	521	29	1,864	---	445
06/05/2016	*	---	95	---	---	2,567	2,788	2,043	30	---	729	450
06/06/2016	*	---	110	---	---	4,512	2,998	1,048	17	5,240	---	1,514
06/07/2016	*	---	---	---	---	3,464	1,681	703	19	---	549	1,383
06/08/2016	*	---	---	---	---	2,328	1,934	854	18	1,184	---	1,217
06/09/2016	*	---	---	---	---	4,771	1,867	664	27	---	410	1,286
06/10/2016	*	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>		<b>0</b>	<b>962</b>	<b>1</b>	<b>0</b>	<b>54,931</b>	<b>35,712</b>	<b>14,295</b>	<b>613</b>	<b>17,371</b>	<b>4,990</b>	<b>20,009</b>
<b># Days:</b>		<b>0</b>	<b>11</b>	<b>3</b>	<b>0</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>7</b>	<b>14</b>
<b>Average:</b>		<b>0</b>	<b>87</b>	<b>0</b>	<b>0</b>	<b>3,924</b>	<b>2,551</b>	<b>1,021</b>	<b>44</b>	<b>2,482</b>	<b>713</b>	<b>1,429</b>
<b>YTD</b>		<b>755</b>	<b>26,289</b>	<b>3,377</b>	<b>9,186</b>	<b>3,945,701</b>	<b>2,286,222</b>	<b>1,834,831</b>	<b>17,408</b>	<b>733,232</b>	<b>502,319</b>	<b>617,108</b>

## Two-Week Summary of Passage Indices

<b>COMBINED SOCKEYE</b>											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
05/27/2016	*	---	0	---	2,061	2,983	1,137	20	6,854	---	1,576
05/28/2016	*	---	0	0	3,298	1,606	219	11	---	4,444	1,556
05/29/2016	*	---	0	0	1,151	630	960	18	4,326	---	1,230
05/30/2016	*	---	0	0	287	432	665	0	---	2,978	1,465
05/31/2016	*	---	0	---	73	645	199	4	2,292	---	986
06/01/2016	*	---	0	---	0	186	226	8	---	1,026	565
06/02/2016	*	---	0	---	73	130	85	6	2,205	---	551
06/03/2016	*	---	0	---	0	43	122	6	---	591	405
06/04/2016	*	---	0	---	0	29	0	0	678	---	356
06/05/2016	*	---	0	---	0	73	66	12	---	415	225
06/06/2016	*	---	0	---	0	0	0	6	676	---	351
06/07/2016	*	---	---	---	0	0	0	0	---	366	585
06/08/2016	*	---	---	---	0	0	0	0	338	---	277
06/09/2016	*	---	---	---	0	1	0	0	---	212	84
06/10/2016		---	---	---	---	---	---	---	---	---	---
<hr/>											
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>6,943</b>	<b>6,758</b>	<b>3,679</b>	<b>91</b>	<b>17,369</b>	<b>10,032</b>	<b>10,212</b>
<b># Days:</b>		<b>0</b>	<b>11</b>	<b>3</b>	<b>0</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>7</b>
<b>Average:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>496</b>	<b>483</b>	<b>263</b>	<b>7</b>	<b>2,481</b>	<b>1,433</b>	<b>729</b>
<b>YTD</b>		<b>1</b>	<b>0</b>	<b>0</b>	<b>133</b>	<b>43,851</b>	<b>32,770</b>	<b>24,148</b>	<b>56,597</b>	<b>859,841</b>	<b>302,227</b>

<b>COMBINED LAMPREY JUVENILES</b>												
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR <sup>†</sup> (Samp)	LGS (Coll)	LMN (Coll)	RIS (Coll)	MCN (Coll)	JDA (Coll)	BO2 (Coll)	
05/27/2016	*	---	0	---	---	0	80	20	0	550	---	50
05/28/2016	*	---	0	0	---	0	80	20	0	---	1,600	65
05/29/2016	*	---	0	0	---	0	160	20	0	150	---	131
05/30/2016	*	---	0	0	---	0	120	40	0	---	500	229
05/31/2016	*	---	0	---	---	0	80	30	0	50	---	86
06/01/2016	*	---	0	---	---	0	10	0	0	---	225	71
06/02/2016	*	---	0	---	---	0	120	0	0	1,100	---	43
06/03/2016	*	---	0	---	---	0	40	0	0	---	570	80
06/04/2016	*	---	0	---	---	0	30	0	1	550	---	32
06/05/2016	*	---	0	---	---	0	50	0	0	---	200	16
06/06/2016	*	---	0	---	---	0	0	0	1	1,000	---	60
06/07/2016	*	---	---	---	---	0	150	0	0	---	216	24
06/08/2016	*	---	---	---	---	1	100	50	0	300	---	24
06/09/2016	*	---	---	---	---	2	50	50	0	---	250	56
06/10/2016		---	---	---	---	---	---	---	---	---	---	---
<hr/>												
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1,070</b>	<b>230</b>	<b>2</b>	<b>3,700</b>	<b>3,561</b>	<b>967</b>	
<b># Days:</b>		<b>0</b>	<b>11</b>	<b>3</b>	<b>0</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>7</b>	
<b>Average:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>76</b>	<b>16</b>	<b>0</b>	<b>529</b>	<b>509</b>	<b>69</b>	
<b>YTD</b>		<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>161</b>	<b>32,520</b>	<b>29,420</b>	<b>86</b>	<b>31,343</b>	<b>24,390</b>	



## Two-Week Summary of Passage Indices

\* See sampling comments

<http://www.fpc.org/currentDaily/smpcomments.htm>

Smolt indices, clipped & unclipped or combined, are presented in the following order: yearling chinook (chinook 1's), subyearling chinook (chinook 0's), steelhead, coho, sockeye, and lamprey juveniles.

Two 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.

The classes of counts presented in the report are defined below for each site. 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.

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.

† In 2013 it was confirmed that 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.

### Definitions for Smolt Index Counts

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

Passage Index =  $\text{Collection Counts} / \{\text{Powerhouse Flow} / (\text{Powerhouse Flow} + \text{Spill})\}$

LGS (Index) = Little Goose Bypass Collection System : Passage Index Counts

Passage Index =  $\text{Collection Counts} / \{\text{Powerhouse Flow} / (\text{Powerhouse Flow} + \text{Spill})\}$

LMN (Index) = Lower Monumental Dam Bypass Collection System : Passage Index Counts

Passage Index =  $\text{Collection Counts} / \{\text{Powerhouse Flow} / (\text{Powerhouse Flow} + \text{Spill})\}$

RIS (Index) = Rock Island Dam Second Powerhouse Bypass Trap : Passage Index Counts

Passage Index =  $\text{Collection Counts} / \{\text{Powerhouse 2 Flow} / (\text{Powerhouse 1 \& 2 Flow} + \text{Spill})\}$

MCN (Index) = McNary Dam Bypass Collection System : Passage Index Counts

Passage Index =  $\text{Collection Counts} / \{\text{Powerhouse Flow} / (\text{Powerhouse Flow} + \text{Spill})\}$

JDA (Index) = John Day Dam Bypass Collection System : Passage Index Counts

Passage Index =  $\text{Collection Counts} / \{\text{Powerhouse Flow} / (\text{Powerhouse Flow} + \text{Spill})\}$

BO2 (Index) = Bonneville Dam Second Powerhouse Bypass Collection System : Passage Index Counts

Passage Index =  $\text{Collection Counts} / \{\text{Powerhouse 2 Flow} / (\text{Powerhouse 1 \& 2 Flow} + \text{Spill})\}$

JDA and BO2 data collected for the FPC by Pacific States Marine Fisheries Commission.

RIS data collected for the FPC by Chelan Co. PUD.

LGR, LMN, and MCN data collected for the FPC by Washington Dept. of Fish and Wildlife.

LGS and GRN data collected for the FPC by Oregon Dept. of Fish and Wildlife.

IMN data collected for the FPC by the Nez Perce Tribe.

Fall (post SMP season) trapping at the Imnaha River Fish Trap (IMN) is funded by the Lower Snake River Compensation Program (LSRCP)

WTB and LEW data collected for the FPC by Idaho Dept. of Fish and Game.

### Two Week Transportation Summary

Source: Fish Passage Center

Updated:

6/10/16 7:58 AM

		05/27/16	TO	06/10/16			
		Species					
Site	Data	CH0	CH1	CO	ST	SO	Grand Total
<b>LGR</b>	Sum of NumberCollected	282,950	8,658	3,550	38,696	4,900	338,754
	Sum of NumberBarged	255,882	8,973	3,798	38,018	6,936	313,607
	Sum of NumberBypassed	341	446	0	2,018	0	2,805
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	29	0	0	0	14	43
	Sum of FacilityMorts	940	9	1	16	524	1,490
	Sum of ResearchMorts	130	61	0	15	5	211
	Sum of TotalProjectMorts	1,099	70	1	31	543	1,744
<b>LGS</b>	Sum of NumberCollected	159,765	12,830	4,541	24,921	4,714	206,771
	Sum of NumberBarged	129,653	13,395	5,373	26,360	5,702	180,483
	Sum of NumberBypassed	22	0	0	0	5	27
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	9	2	0	2	15	28
	Sum of FacilityMorts	108	81	35	20	169	413
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	117	83	35	22	184	441
<b>LMN</b>	Sum of NumberCollected	51,343	2,253	720	5,904	1,040	61,260
	Sum of NumberBarged	42,813	2,953	930	6,510	1,304	54,510
	Sum of NumberBypassed	147	13	0	94	0	254
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	3	2	0	5	3	13
	Sum of FacilityMorts	12	11	0	5	8	36
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	15	13	0	10	11	49
Total Sum of NumberCollected		494,058	23,741	8,811	69,521	10,654	606,785
Total Sum of NumberBarged		428,348	25,321	10,101	70,888	13,942	548,600
Total Sum of NumberBypassed		510	459	0	2,112	5	3,086
Total Sum of Numbertrucked		0	0	0	0	0	0
Total Sum of SampleMorts		41	4	0	7	32	84
Total Sum of FacilityMorts		1,060	101	36	41	701	1,939
Total Sum of ResearchMorts		130	61	0	15	5	211
Total Sum of TotalProjectMorts		1,231	166	36	63	738	2,234

### YTD Transportation Summary

Source: Fish Passage Center

Updated:

6/10/16 7:58 AM

**TO: 06/10/16**

		Species					
Site	Data	CH0	CH1	CO	SO	ST	Grand Total
<b>LGR</b>	Sum of NumberCollected	357,040	4,506,799	150,170	33,350	2,978,670	8,026,029
	Sum of NumberBarged	290,990	1,399,311	116,935	31,849	1,099,672	2,938,757
	Sum of NumberBypassed	31,744	3,104,914	33,069	650	1,875,521	5,045,898
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	43	94	1	16	33	187
	Sum of FacilityMorts	1,061	1,359	65	830	85	3,400
	Sum of ResearchMorts	190	421	0	5	65	681
	Sum of TotalProjectMorts	1,294	1,874	66	851	183	4,268
<b>LGS</b>	Sum of NumberCollected	186,626	2,436,577	103,741	22,898	1,594,329	4,344,171
	Sum of NumberBarged	152,611	1,020,008	90,070	22,682	663,189	1,948,560
	Sum of NumberBypassed	2,855	1,415,436	13,600	7	929,747	2,361,645
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	12	23	1	22	12	70
	Sum of FacilityMorts	115	460	38	187	83	883
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	127	483	39	209	95	953
<b>LMN</b>	Sum of NumberCollected	61,973	3,507,856	40,500	11,370	1,283,599	4,905,298
	Sum of NumberBarged	51,432	1,894,893	34,211	11,348	628,266	2,620,150
	Sum of NumberBypassed	1,977	1,612,334	6,238	0	654,771	2,275,320
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	3	127	0	5	21	156
	Sum of FacilityMorts	13	352	1	18	91	475
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	16	479	1	23	112	631
<b>Total Sum of NumberCollected</b>		<b>605,639</b>	<b>10,451,232</b>	<b>294,411</b>	<b>67,618</b>	<b>5,856,598</b>	<b>17,275,498</b>
<b>Total Sum of NumberBarged</b>		<b>495,033</b>	<b>4,314,212</b>	<b>241,216</b>	<b>65,879</b>	<b>2,391,127</b>	<b>7,507,467</b>
<b>Total Sum of NumberBypassed</b>		<b>36,576</b>	<b>6,132,684</b>	<b>52,907</b>	<b>657</b>	<b>3,460,039</b>	<b>9,682,863</b>
<b>Total Sum of NumberTrucked</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total Sum of SampleMorts</b>		<b>58</b>	<b>244</b>	<b>2</b>	<b>43</b>	<b>66</b>	<b>413</b>
<b>Total Sum of FacilityMorts</b>		<b>1,189</b>	<b>2,171</b>	<b>104</b>	<b>1,035</b>	<b>259</b>	<b>4,758</b>
<b>Total Sum of ResearchMorts</b>		<b>190</b>	<b>421</b>	<b>0</b>	<b>5</b>	<b>65</b>	<b>681</b>
<b>Total Sum of TotalProjectMorts</b>		<b>1,437</b>	<b>2,836</b>	<b>106</b>	<b>1,083</b>	<b>390</b>	<b>5,852</b>

**Cumulative Adult Passage at Mainstem Dams Through: 06/09**

DAM	ENDDATE	Spring Chinook						Summer Chinook						Fall Chinook					
		2016		2015		10-Yr Avg.		2016		2015		10-Yr Avg.		2016		2015		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	06/09	137215	11145	220480	13314	146704	24884	18589	1543	24832	2365	17529	3616	0	0	0	0	0	0
TDA	06/09	105504	9999	194116	12307	114381	21222	10847	947	12820	1297	9454	1885	0	0	0	0	0	0
JDA	06/09	93659	8262	166015	11514	99110	19896	6535	493	6741	784	5300	1161	0	0	0	0	0	0
MCN	06/09	82626	7237	156151	8767	89797	16347	1646	97	1518	134	1029	201	0	0	0	0	0	0
IHR	06/09	65908	4898	114615	5571	62413	10423	0	0	0	0	0	0	0	0	0	0	0	0
LMN	06/09	63552	5955	108741	8151	60747	9619	0	0	0	0	0	0	0	0	0	0	0	0
LGS	06/09	59295	5914	101730	7803	55249	10243	0	0	0	0	0	0	0	0	0	0	0	0
LGR	06/09	57617	4848	100536	7401	52575	10773	0	0	0	0	0	0	0	0	0	0	0	0
PRD	06/08	14168	878	24397	1428	15537	1601	0	0	0	0	0	0	0	0	0	0	0	0
WAN	06/07	13964	619	22863	931	15269	1838	0	0	0	0	0	0	0	0	0	0	0	0
RIS	06/08	13939	604	25575	980	14522	2258	0	0	0	0	0	0	0	0	0	0	0	0
RRH	06/08	5814	304	10351	502	5964	987	0	0	0	0	0	0	0	0	0	0	0	0
WEL	06/08	4058	627	8282	978	4166	1062	0	0	0	0	0	0	0	0	0	0	0	0
WFA	06/04	18126	1017	46659	1768	24130	760	0	0	0	0	0	0	0	0	0	0	0	0

DAM	ENDDATE	Coho						Sockeye			Steelhead						Lamprey		
		2016		2015		10-Yr Avg.		2016	2015	10-Yr Avg.	2016	2015	10-Yr Avg.	2016	2015	10-Yr Avg.	2016	2015	10-Yr Avg.
		Adult	Jack	Adult	Jack	Adult	Jack												
BON	06/09	0	0	0	0	0	0	10146	6874	2928	6704	5892	6612	2447	2794	1809	5854	2956	2078
TDA	06/09	0	0	0	0	0	0	6228	3426	1289	597	654	2826	318	231	1003	408	935	103
JDA	06/09	0	0	0	0	0	1	5734	3429	918	524	790	5164	369	392	1904	472	419	75
MCN	06/09	-1	0	9	4	1	0	2258	1181	261	512	890	5743	326	423	1888	59	35	5
IHR	06/09	0	0	0	0	0	0	1	4	0	1385	1280	5225	719	705	1550	7	15	0
LMN	06/09	-2	0	0	0	0	0	0	7	0	1457	3485	8447	1008	1853	2828	3	7	0
LGS	06/09	0	0	0	0	0	0	1	11	0	3421	1504	3150	1984	1002	1500	-1	-1	0
LGR	06/09	0	0	0	0	0	0	0	13	0	5479	9193	9270	3119	4349	3519	0	0	0
PRD	06/08	0	0	0	0	0	0	160	272	31	33	47	59	0	0	0	196	67	4
WAN	06/07	0	0	0	0	0	0	25	58	6	33	61	115	0	0	0	115	37	1
RIS	06/08	0	0	0	0	0	0	19	28	2	50	128	127	26	85	67	10	0	0
RRH	06/08	0	0	0	0	0	0	8	7	0	92	116	339	32	80	229	1	0	0
WEL	06/08	0	0	0	0	0	0	4	2	0	68	47	75	28	35	53	1	0	0
WFA	06/04	0	0	1	0	0	0	0	0	0	15412	6257	13673	0	0	0	0	0	0

PRD does not post wild steelhead numbers.  
 These numbers were collected from USACE, Grant PUD, Douglas PUD, Chelan PUD, ODFW and DART.  
 Wild steelhead numbers are included in the total. Wild Steelhead are defined as unclipped fish.  
 Historic counts (pre-1996) were obtained from CRITFC and compiled by the FPC.  
 Historic counts 1997 to present were obtained from the Corps of Engineers.

### Columbia/Snake Project Forebay Temperatures

