



## Fish Passage Center

# Weekly Report #14 - 12

June 6, 2014

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### Summary of Events

#### Water Supply

Precipitation throughout the Columbia Basin has varied between 0% and 98% of average at individual sub-basins over June. Precipitation above The Dalles has been 33% of average over June. Over the 2014 water year, precipitation has ranged between 76% and 98% of average.

**Table 1. Summary of June precipitation and cumulative October through June 4, 2014, precipitation with respect to average (1971–2000), at select locations within the Columbia and Snake River Basins.**

Location	Water Year 2014		Water Year 2014	
	June 1–4, 2014		October 1, 2013 to June 4, 2014	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia above Coulee	0.25	59	26.9	93
Snake River above Ice Harbor	0.02	9	14.6	79
Columbia above The Dalles	0.09	33	18.4	83
Kootenai	0.21	43	28.8	98
Clark Fork	0.09	27	17.1	80
Flathead	0.41	98	26.9	95
Pend Oreille River Basin above Waneta Dam	0.25	67	22.5	87
Salmon River Basin	0.03	9	17.5	76
Upper Snake Tributaries	0.01	6	19.3	88
Clearwater	0.06	16	30.8	91
Willamette River above Portland	0.00	0	49.2	84

Snowpack within the Columbia Basin has been variable. Average snowpack in the Columbia River for basins above the Snake River confluence is 156% of average. For Snake River Basins the average snowpack is 81% of average, and for lower Columbia Basins between McNary and Bonneville Dam average snowpack is 15% of average.

Table 2 displays the June 5<sup>th</sup> ESP runoff volume forecasts for multiple reservoirs along with the June COE forecasts at Libby and Dworshak. The June 5<sup>th</sup> ESP forecast at The Dalles between January and July is 107,109 Kaf (106% of average).

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

Location	June 5, 2014, 5-day QPF ESP	
	% Average (1981–2010)	Runoff Volume (Kaf)
The Dalles (Jan–July)	106	107109
Grand Coulee (Jan–July)	108	64080
Libby Res. Inflow, MT (Apr–Aug)	117	6893 7074*
Hungry Horse Res. Inflow, MT (Jan–July)	122	2559
Lower Granite Res. Inflow (Apr–July)	101	19994
Brownlee Res. Inflow (Apr–July)	61	3328
Dworshak Res. Inflow (Apr–July)	127	3080 2933*

\* Denotes COE June Forecast

Grand Coulee Reservoir is at 1272.6 feet (6-5-14) and has refilled 8.2 feet over the last week. Outflows at Grand Coulee have ranged between 167.0 and 176.3 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2419.5 feet (6-5-14) and has refilled 7.0 feet over the previous week. The daily average outflows at Libby Dam have been increased from 18.0 Kcfs to 26.0 over the last week for the sturgeon pulse operation.

Hungry Horse is currently at an elevation of 3530.8 feet (6-5-14) and has refilled 10.9 feet over the previous week. Outflows at Hungry Horse have been 2.3–4.5 Kcfs over the last week.

Dworshak is currently at an elevation of 1574.1 feet (6-5-14) and has refilled 10.9 feet over the previous week. Outflows at Dworshak have been 2.3–4.5 Kcfs over the last week.

The Brownlee Reservoir was at an elevation of 2075 feet on June 5, 2014. Inflows to Brownlee Dam have ranged between 16.5 and 20.3 Kcfs 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 8, 2014), the flow objective this spring is 100 Kcfs at Lower Granite. Flows at Lower Granite Dam have averaged 122.0 Kcfs over the last week and 92.8 Kcfs over the spring season.

Based on the April Final Water Supply Forecast, the Spring Biological Opinion Flow Objectives will be 260 Kcfs at McNary Dam (which began April 10<sup>th</sup>) and 135 Kcfs at Priest Rapids Dam (which began April 10<sup>th</sup>). Over the last week, flows at McNary Dam averaged 339.7 Kcfs over the last week and 291.8 over the spring period. Flows at Priest Rapids Dam have averaged 213.0 Kcfs over the last week and 186.7 Kcfs over the spring period.

**Spill**

The 2014 fish spill program was initiated at the lower Snake River projects beginning on April 3<sup>rd</sup> and on April 10<sup>th</sup> at the lower Columbia River projects.

Flows increased in the Lower Snake River over the past week. Consequently, spill greater than required by the Fish Operations Plan (FOP) occurred at Lower Granite Dam throughout the past week. For most of this week, spill at Little Goose Dam was restricted to less than the 30% of total flow volume as specified in the FOP based on the TDG measurements at the Lower Monumental forebay monitor. (Spill averaged about 25%–29% over the past week.) TDG exceeded the Washington State 115% forebay criteria; however TDG at the Lower Monumental forebay monitor was significantly higher than at the upstream Little Goose tailrace for most of the week. This suggests that although spill was being restricted, the higher gas levels were not likely due to upstream spill. At Lower Monumental Dam spill was at the levels specified in

the FOP. The project changed from the bulk to uniform spill pattern on May 28<sup>th</sup>, which allows higher levels of spill to occur without exceeding the gas caps. Lower Monumental Dam returned to the bulk spill pattern on the afternoon of June 5<sup>th</sup>, at which time the spill cap was reduced from 36 Kcfs to about 26 Kcfs. On April 28<sup>th</sup> the “test-like” conditions, where spill alternates between 30% instantaneous and 45 Kcfs/Gas Cap, were initiated at Ice Harbor Dam. Excess generation spill has occurred at this project. However, without excess spill occurring, the net effect of the “test-like” operation is an overall decrease in spill levels during the implementation period.

<b>Project</b>	<b>Spill Level Day/Night</b>
Lower Granite	20 Kcfs/20 Kcfs
Little Goose	30%/30%
Lower Monumental	Gas Cap/Gas Cap
Ice Harbor	April 28–June 1: 30%/30% vs. 45 Kcfs/Gas Cap

At the Middle Columbia River projects, McNary Dam spilled above 40% due to limited hydraulic capacity and excess generation spill. At John Day Dam the testing of the 30% and 40% spill levels occurred over the past week. However, the high flows resulted in spill that often precluded meeting the 30% spill level. Spill at The Dalles Dam was generally less than 40% this week due to TDG exceeding the gas criteria. Bonneville Dam spilled above 100 Kcfs over the past week.

<b>Project</b>	<b>Spill Level Day/Night</b>
McNary	40%/40%
John Day	<b>Testing:</b> 30%/30% vs. 40%/40%
The Dalles	40%/40%
Bonneville	100 Kcfs/100 Kcfs

New this year is a change in the way the U.S. Army Corps of Engineers will assess whether a project is in compliance with the total dissolved gas variances in place. The States of Oregon and Washington 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. In 2014, the location of a TDG monitor and/or type of 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 lower Columbia River forebay monitors (since Oregon does not have a forebay TDG requirement). On any given day the compliance of the tailrace monitors at the lower Columbia River projects will be determined using either the Washington or Oregon methodology, whichever is the most restrictive, and spill may 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. At Little Goose Dam 1% of fish were detected with Rank 1 (minor) signs of GBT on 6/2; at McNary Dam 1% of fish were affected with Rank 1 signs on 6/5; and, at Rock Island Dam 7% of fish were affected with Rank 1 signs on 6/3. The action criterion for GBT is 15% of total fish with any signs of GBT in the fins, or 5% with severe signs (Rank 3 or greater).

### **Smolt Monitoring**

Smolt monitoring is ongoing at all seven SMP dams (BON, JDA, MCN, RIS, LMN, LGS, LGR) and only one of the four traps (IMN). Sampling at the Salmon River (WTB) and Snake River (LEW) traps was terminated after the April 21<sup>st</sup> and May 8<sup>th</sup> samples, respectively. Sampling at the Grande Ronde River Trap (GRN) was terminated after the May 21<sup>st</sup> sample.

Although yearling Chinook continued to dominate this week's samples at Bonneville Dam (BON), yearling Chinook passage decreased this week when compared to last week. This week's daily average passage index for yearling Chinook was about 28,900 per day. Last week's daily average passage index for yearling Chinook was about 62,400 per day. Sockeye, coho, and steelhead passage also decreased this week when compared to last week. The daily average passage indices for these three species were about 27,000, 17,000, and 5,000, respectively. Last week's daily average passage indices were 38,600 for sockeye, 22,400 for coho, and 12,300 for steelhead. Subyearling Chinook passage increased this week. This week's

daily average passage index for subyearling Chinook at BON was about 9,700 per day. So far, no Pacific lamprey ammocoetes have been sampled at BON this year. Pacific lamprey macrophthalmia were encountered in three of this week's samples.

Yearling Chinook passage at John Day Dam (JDA) continued to decrease this week when compared to last week. This week's daily average passage index for yearling Chinook at JDA was about 29,300 per day. Last week's daily average passage index was about 65,300 per day. Sockeye and steelhead passage also decreased this week. This week's daily average passage indices for these two species were about 28,600 and 10,800, respectively. Last week's daily average passage indices for these two species were about 32,700 and 15,400 per day, respectively. Passage of subyearling Chinook and coho increased this week. This week's daily average passage indices were about 6,800 for subyearling Chinook and 7,830 for coho. Last week's daily average passage indices for these two species were about 2,700 and 4,200 per day, respectively. Finally, Pacific lamprey ammocoetes were encountered in two of this week's samples, May 23<sup>rd</sup> and May 26<sup>th</sup>. Pacific lamprey macrophthalmia were present every day this week, with a daily average collection of about 1,630 per day.

Sampling at McNary Dam (MCN) is every-other-day for the entire 2014 SMP season. Although sockeye passage decreased this week when compared to last week, sockeye continued to be the dominant species in this week's collections. The daily average passage index for sockeye at MCN this week was about 37,800 per day. Last week's daily average passage index for sockeye was about 194,200 per day. Yearling Chinook, steelhead, and coho passage also decreased this week when compared to last week. This week's daily average passage indices were 19,300 for yearling Chinook, 3,300 for steelhead, and 5,900 for coho. Last week's daily average passage indices for these three species were about 89,500, 10,400, and 10,900 per day, respectively. Subyearling Chinook passage increased this week, with a daily average passage index of about 10,300 per day. Of the subyearling Chinook that were sampled at MCN this week, about 33% were fry. Finally, only Pacific lamprey macrophthalmia have been collected so far this year. Pacific macrophthalmia were encountered in three of this week's samples.

Descaling at MCN continued to be elevated this week. Daily descaling rates for all species combined ranged from 10.2% to 20.6% with some species exhibiting higher levels of descaling than others. As mentioned above, sockeye dominated this week's collection at MCN. Daily descaling rates for sockeye ranged from 16.7% on May 29<sup>th</sup> to as high as 36.8% on May 27<sup>th</sup>. In an effort to reduce descaling, seven units at MCN were operated at the mid-range of the 1% efficiency range, beginning at 1800 on May 27<sup>th</sup>. This operation was continued through 0700 on May 29<sup>th</sup>. Overall descaling for the May 29<sup>th</sup> sample was 10.2%, which was lower than the 20.6% descaling rate from the May 27<sup>th</sup> sample. In addition, the COE began work on removing a debris mat from in front of the MCN powerhouse. Work on debris removal began on the afternoon of May 29<sup>th</sup> and is expected to be finished sometime today. Due to the improvement in descaling rates from the May 29<sup>th</sup> sample, the mid-range operation was resumed on the afternoon of May 29<sup>th</sup>. This mid-range operation is scheduled to continue through 0700 on Sunday, June 1<sup>st</sup>. Beginning at 0700 on Sunday, June 1<sup>st</sup>, the COE will operate all units within the normal 1% operating range through 0700 on Monday, June 2<sup>nd</sup>. This will enable the COE to evaluate full operations at MCN, post debris removal. After this period of evaluation, operation of seven turbine units will then be reduced to the mid-range of the 1% efficiency curve. These reduced operations are expected to begin at 0700 on Monday, June 2<sup>nd</sup>, and continue until the data from the June 2<sup>nd</sup> sample can be evaluated.

Steelhead continued to dominate the collections at Lower Granite Dam (LGR) this week. This week's daily average passage index for steelhead at LGR was about 42,000 per day, which is a decrease from last week's daily average passage index of nearly 57,000 per day. Yearling Chinook and sockeye passage also decreased this week. This week's daily average passage indices were 16,250 for yearling Chinook and 550 for sockeye. Last week's daily average passage indices for these two species were about 51,000 and 4,650 per day, respectively. The daily average passage index for coho this week was about 2,700 per day, which was slightly lower than last week's daily average of nearly 3,000 per day. As expected, subyearling Chinook passage increased substantially this week. This week's daily average passage index for subyearling Chinook at LGR was about 19,700 per day. Last week's daily average

passage index was only 400 per day. Pacific lamprey ammocoetes were encountered in six of the seven samples at LGR this week. The daily average sample count for Pacific lamprey ammocoetes this week was two per day. Only one Pacific lamprey macrophthalmia was sampled at LGR this week, on May 28<sup>th</sup>.

This week's samples at Little Goose Dam (LGS) were dominated by steelhead. In fact, there was a slight increase in steelhead passage at LGS this week, when compared to last week. This week's daily average passage index for steelhead at LGS was nearly 33,000 per day. Last week's daily average passage index for steelhead at LGS was about 32,600 per day. Passage of yearling Chinook and sockeye continued to decrease this week. This week's daily average passage indices were about 20,000 for yearling Chinook and only 820 for sockeye. Subyearling Chinook and coho passage increased this week, when compared to last week. This week's daily average passage indices for these two species were 5,100 and 2,500 per day, respectively. Last week's daily average passage indices were only 600 for subyearling Chinook and about 1,900 for coho. Finally, both Pacific lamprey ammocoetes and macrophthalmia were collected at LGS this week. The Pacific lamprey ammocoetes were collected in the May 28<sup>th</sup> sample while macrophthalmia were collected in five of this week's samples (May 23<sup>rd</sup>-26<sup>th</sup> and May 29<sup>th</sup>).

Steelhead also dominated this week's samples at Lower Monumental Dam (LMN). This week's daily average passage index for steelhead was nearly 18,000, which represents a decrease from last week's daily average passage index of about 20,600 per day. Yearling Chinook, coho, and sockeye passage at LMN also decreased this week, when compared to last week. This week's daily average passage indices were 12,350 for yearling Chinook, 1,100 for coho, and 700 for sockeye. Last week's daily average passage indices for these three species were 51,800, 1,300, and 2,900 per day, respectively. Although still fairly low, subyearling Chinook passage increased this week. This week's daily average passage index for subyearling Chinook at LMN was about 130 per day. Finally, only Pacific lamprey macrophthalmia have been collected so far this year at LMN. Pacific macrophthalmia were encountered at LMN every day this week. The daily average collection for Pacific lamprey macrophthalmia was nearly 700 per day.

Coho continued to dominate the samples at Rock Island Dam (RIS) this week. This week's daily average passage index for coho at RIS was about 3,330 per day, which is very similar to last week's daily average passage index of about 3,650 per day. Steelhead, sockeye, and yearling Chinook passage decreased this week, when compared to last week. This week's daily average passage indices for these three species were about 500, 550, and 450 per day, respectively. Last week's daily average passage indices were about 1,430 for steelhead, 1,800 for sockeye, and 750 for yearling Chinook. Subyearling Chinook passage this week was very similar to last week. This week's daily average passage index for subyearling Chinook was about 165 per day. Finally, Pacific lamprey macrophthalmia were encountered in three of this week's samples.

The Imnaha River Trap (IMN) is located at river kilometer seven and is operated by the Nez Perce Tribe. Sampling at IMN is year-round, however the FPC typically receives data only from early March through June. Due to the remote nature of the trap, the Nez Perce Tribe is able to send collection data to the FPC only periodically. Therefore, data for IMN may be several days behind. To date, we have received data through May 27<sup>th</sup>. For the period of May 21–May 27, the average daily collection for yearling Chinook was about 15 per day, which is a decrease from the previous week's daily average collection of about 52 per day. Steelhead collections over the May 21–May 27 period also decreased when compared to the previous 7-day period. The daily average collection for steelhead for the period of May 21–27 was about 250 per day. One Pacific lamprey ammocoete was collected in the May 26<sup>th</sup> sample.

### 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. No new releases were scheduled for this zone this week. However, about 900,000 subyearling fall Chinook juveniles are scheduled for release to this zone over the next 2 weeks. Of these, about 200,000 are scheduled to be released from Lyons Ferry Hatchery, below Little Goose Dam. The remaining 700,000 are scheduled to be released from the Nez Perce Tribal Hatchery into the Clearwater River (71%) or directly

into the Snake River near Captain Johns Rapids Acclimation Pond (29%). Approximately 40% of the subyearling Chinook juveniles that are scheduled for release from the Nez Perce Tribal Hatchery are unmarked and another 40% are marked with coded-wire tags only. There are no other releases scheduled for this zone over the next 2 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. The only new release that was scheduled for this zone this week was a release of about 225 subyearling fall Chinook juveniles to Crab Creek, which was part of the WDFW Cooperative Program. Many of the volitional releases of subyearling fall Chinook and subyearling summer Chinook that began several weeks ago are scheduled to end over the next 2 weeks. In addition, there are two new releases of subyearling fall Chinook scheduled to begin in this zone over the next 2 weeks. The first is a Yakama Tribal release of about 80,000 fall Chinook juveniles to the Yakima River. This Yakima River release is expected to be 100% unclipped but tagged with coded-wire tags. The second is a release of about 7.2 million fall Chinook juveniles from Priest Rapids Hatchery, which is scheduled to begin on or around June 10<sup>th</sup>. Of the fall Chinook juveniles that are scheduled to be released from Priest Rapids Hatchery, approximately 61% are unmarked and another 8% are marked with coded-wire tags only. The remaining 31% are expected to be clipped.

**Lower Columbia Zone:** The Lower Columbia Zone is defined as the Columbia River and its tributaries from Bonneville Dam to McNary Dam. There were no releases scheduled for this zone this week. However, two new releases of subyearling fall Chinook juveniles are scheduled for this zone over the next 2 weeks. The first is a release of approximately 4,000,000 juveniles to the Klickitat River, on or around June 1<sup>st</sup>. The second is a release of about 2,400 juveniles to the Umatilla River, on or around June 5<sup>th</sup>. Finally, the volitional release of about 209,000 yearling spring Chinook juveniles from Round Butte Hatchery on the Deschutes River that began in early April is scheduled to end on or around June 1<sup>st</sup>.

## Adult Passage

Adult counts at Bonneville Dam have been updated through May 29<sup>th</sup>. Daily adult spring Chinook counts at Bonneville Dam ranged from 1,691 to 2,093 adult salmon per day. As of May 29<sup>th</sup>, a total of 184,394 spring Chinook have been counted at Bonneville Dam. In 2013, 81,636 adult spring Chinook were counted at Bonneville Dam for the same time period. The 2014 adult spring Chinook count at Bonneville Dam is about 2.3 times greater than the 2013 count and 1.4 times greater than the 10-year average count of 127,238. The 2014 spring Chinook jack count of 25,428 is 76.5% of the 2013 count of 33,228, while being 1.2 times greater than the 10-year average count of 21,451. At Willamette Falls 18,210 adult spring Chinook have been counted so far this year. In 2013, 16,712 adult spring Chinook were counted at Willamette Falls. This year's count is about 1.1 times greater than the 2013 count, while being 70.1% of the 10-year average count of 25,985. As of May 29<sup>th</sup>, a total of 135,828 adult spring Chinook have been counted at The Dalles Dam and 96,913 have been counted at McNary Dam. The Dalles Dam 2014 adult spring Chinook count is 2.1 times greater than the 2013 and 1.4 times greater than the 10-year average count. The 2014 McNary Dam adult spring Chinook count is about 2.1 times greater than the 2013 count and 1.4 times greater than the 10-year average count.

The 2014 Bonneville Dam adult steelhead count of 5,539 is about 1.7 times greater than the 2013 count of 3,295 and has 261 more fish than the 10-year average count of 5,278. The 2014 Bonneville Dam adult wild steelhead count of 1,439 is about 1.6 times greater than the 2013 count of 893 and about 1.1 times greater than the 10-year average count of 1,350. At upriver sites, adult steelhead continue to move through the hydrosystem to reach their tributaries and spawning sites. The majority of these fish over-wintered in pools and will complete their trip to their spawning grounds in March through early May. Daily adult steelhead counts at Lower Granite Dam ranged from 1 to 11 adults per day last week. This year's Lower Granite steelhead count of 7,473 has 38 more fish than the 2013 count of 7,435, while being about 84.9% of the 10-year average count of 8,802. The 2014 Lower Granite Dam adult wild steelhead count of 3,461 has 230 more fish than the 2013 count of 3,231 and is about 1.1 times greater than the 10-year average count of 3,152. At Willamette

Falls, the 2014 count for steelhead was 10,944 as of May 27<sup>th</sup>. This year's steelhead count is about 1.1 times greater than the 2013 count of 9,945, while being about 78.5% of the 10-year average count of 13,949.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 0 and 8 last week. The 2014 adult sockeye count at Bonneville Dam of 28 has 6 fewer fish than the 2013 count, while having 12 more fish than the 10-year average count.

## *Wanapum Dam Update*

At Wanapum Dam a significant crack (65-feet long by 2-inches wide) was discovered in a spillway monolith (#4) on February 27, 2014. This discovery has led to an emergency drawdown of the Wanapum pool to an elevation range of 541–545 feet, which is over 20 feet below its typical forebay elevation. Preliminary results of an investigation by Grant PUD and its consultants has determined that the primary contributing factor to a fracture developing within the dam's spillway was a mathematical error during the pre-construction design of Wanapum Dam.

The drawdown of Wanapum pool had caused the adult fishways at Wanapum Dam to not be operational. The adult fishways exits have been approximately 10 feet above the forebay water level. Grant County has designed adult fishway retrofits that involve the use of weir boxes and chutes to deliver adult fish into the forebay of Wanapum Dam. On April 15, 2014, the weir and chute retrofit was operational at the left bank fishway. A weir and chute has also been installed at the right bank fishway at Wanapum and was operational on April 26, 2014. Grant County will not be capable of counting adult fish at the usual count stations at either the left or right bank fishways at Wanapum Dam due to the lower than normal upper ladder flows. Grant County does have people monitoring/observing passage at the exit structures at Wanapum Dam.

Visual observations of the exit retrofits have been promising. During Wanapum Dam site visits on May 7 and 21, 2014, several hundred adult fish have been seen passing the left bank fishway weir and chute. During these observations, fish generally pass the left

bank weir quickly and there were no signs of stress or mortality upon entry into the forebay. On the dates of observation, no adult fish have been seen passing the right bank weir structure. Grant County PUD does have plans to modify the exit chutes to include a spiral flume that will reduce the elevation of the chute outflow from approximately 10 feet down to several feet. However, the installation of these spirals is not expected to occur until early to mid-June and will require a ladder outage for a period of 5–10 days for installation. The spiral flume is now expected to first be installed at the left bank fishway. Observations on May 7 and 21, 2014, have showed all adult fish to be passing via the left bank ladder. A 5- to 10-day outage of the left bank ladder for spiral flume installation during the onset of the summer Chinook and sockeye runs could be difficult. Although the right bank ladder will be operating during the outage at the left bank ladder, to date this year a small proportion of salmonids have passed via the right bank ladder. Investigating the possibility of maximizing the attraction of salmonids to the right bank ladder should be conducted before the installation of the spiral and the outage of the left bank ladder

The drawdown of Wanapum pool has also had a significant impact on the adult fishways at Rock Island Dam, operated by Chelan PUD. With the lower than normal tailrace levels, Chelan PUD has constructed extensions or denils at several ladder entrances. Chelan County PUD currently has two denils in place at the right bank fishway. A denil extension is also planned to be in place at the left bank fishway in June.

The WDFW has noticed an unusually large percentage of adult fish at the Wells Dam Trap with significant injuries. The WDFW has sampled fish from the trap at Wells Dam for approximately 3 weeks and the first 2 weeks of sampling indicated that approximately 20% of fish had notable injuries and 10% of the sampled fish had notable injuries that looked fresh and likely occurred within the last several days. Previous years sampling showed 2%–5% of fish with injuries. The source of these injuries is currently being investigated and video counts at dams below Wells are being reviewed to narrow the source of the large/fresh injuries. The drawdown of Wanapum pool has caused adult fishways to be significantly modified at several projects this year, these modifications will need to be thoroughly investigated in terms of potential for injury

as well as other sources such as predation, and other project operations.

### Hatchery Releases Last Two Weeks

Hatchery Release Summary									
From:	5/23/2014		to		06/05/14				
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Colville Tribe	Chief Joseph Hatchery	CH0	SU	2014	180,000	05-15-14	06-01-14	Omak Creek	Okanogan River
<b>Colville Tribe Total</b>					<b>180,000</b>				
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	FA	2014	500,000	06-03-14	06-14-14	Nez Perce Tribal Hatchery	Clearwater River M F
<b>Nez Perce Tribe Total</b>					<b>500,000</b>				
Oregon Dept. of Fish and Wildlife	Round Butte Hatchery	CH1	SP	2014	209,117	04-01-14	06-01-14	Deschutes River	Deschutes River
Oregon Dept. of Fish and Wildlife	Umatilla Hatchery	CH0	FA	2014	2,400	06-05-14	06-05-14	Umatilla River	Umatilla River
<b>Oregon Dept. of Fish and Wildlife Total</b>					<b>211,517</b>				
Washington Dept. of Fish and Wildlife	COOP	CH0	FA	2014	225	05-25-14	05-31-14	Crab Creek	Mid-Columbia River
Washington Dept. of Fish and Wildlife	COOP	CH0	FA	2014	4,700	05-01-14	05-31-14	Above McNary Dam	Mid-Columbia River
Washington Dept. of Fish and Wildlife	COOP	CH0	SU	2014	175	05-01-14	05-31-14	Methow River	Methow River
Washington Dept. of Fish and Wildlife	COOP	CH0	SU	2014	225	05-01-14	05-31-14	Similkameen Acclim Pd	Okanogan River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	CH0	FA	2014	209,972	06-03-14	06-03-14	Lyons Ferry Hatchery	Snake River
Washington Dept. of Fish and Wildlife	Methow Hatchery	ST	SU	2014	100,000	05-05-14	06-15-14	Methow Hatchery	Methow River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2014	160,000	05-20-14	05-25-14	Wells Hatchery	Mid-Columbia River
<b>Washington Dept. of Fish and Wildlife Total</b>					<b>475,297</b>				
Yakama Tribe	Cascade Hatchery	CO	UN	2014	49,841	05-01-14	05-30-14	Methow River	Methow River
Yakama Tribe	Cascade Hatchery	CO	UN	2014	49,892	05-01-14	05-30-14	Winthrop Hatchery	Methow River
Yakama Tribe	Cascade Hatchery	CO	UN	2014	64,822	05-01-14	05-30-14	Biddle Pond	Methow River
Yakama Tribe	Cascade Hatchery	CO	UN	2014	89,748	05-01-14	05-30-14	Twisp Acclim Pond	Methow River
Yakama Tribe	Eagle Creek NFH	CO	UN	2014	72,750	04-15-14	06-15-14	Easton Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2014	92,105	04-15-14	06-15-14	Holmes Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2014	92,376	04-15-14	06-15-14	Stiles Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2014	94,680	04-15-14	06-15-14	Lost Creek Acclim Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2014	140,342	04-15-14	06-15-14	Easton Pond	Yakima River
Yakama Tribe	Klickitat Hatchery	CH0	FA	2014	4,000,000	06-01-14	06-01-14	Klickitat Hatchery	Klickitat River
Yakama Tribe	Marion Drain Hatchery	CH0	FA	2014	80,000	06-01-14	06-01-14	Nelson Springs	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2014	43,408	04-15-14	06-15-14	Yakama River	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2014	108,570	04-15-14	06-15-14	Stiles Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2014	221,567	04-15-14	06-15-14	Prosser Acclim Pond	Yakima River
Yakama Tribe	Willard Hatchery	CO	UN	2014	17,280	05-01-14	05-30-14	Butcher Creek Acclim. Pond	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2014	33,608	05-01-14	05-30-14	Butcher Creek Acclim. Pond	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2014	62,997	05-01-14	05-30-14	Coulter Creek	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2014	72,081	05-01-14	05-30-14	Butcher Creek Acclim. Pond	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2014	101,921	05-01-14	05-30-14	Rolfings Acclim Pond	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2014	109,688	05-01-14	05-30-14	Butcher Creek Acclim. Pond	Wenatchee River
Yakama Tribe	Winthrop NFH	CO	UN	2014	279,377	05-01-14	05-30-14	Winthrop Hatchery	Methow River
<b>Yakama Tribe Total</b>					<b>5,877,053</b>				
<b>Grand Total</b>					<b>7,243,867</b>				



### Hatchery Releases Next Two Weeks

Agency	Hatchery	Hatchery Release Summary		MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	
		From:	to							
Nez Perce Tribe	Nez Perce Tribal Hatchery	6/6/2014	6/19/2014	CH0	FA	2014	240,000	06-13-14 06-13-14	Cedar Flats Acclim.	Selway River
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	FA	2014	270,000	06-13-14 06-13-14	Lukes Gulch Acclim.	S Fk Clearwater River		
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	FA	2014	500,000	06-03-14 06-14-14	Nez Perce Tribal Hatchery	Clearwater River M F		
<b>Nez Perce Tribe Total</b>					<b>1,010,000</b>					
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	CH0	FA	2014	200,000	06-12-14 06-12-14	Cpt John Acclim Pond	Snake River		
Washington Dept. of Fish and Wildlife	Methow Hatchery	ST	SU	2014	100,000	05-05-14 06-15-14	Methow Hatchery	Methow River		
Washington Dept. of Fish and Wildlife	Priest Rapids Hatchery	CH0	FA	2014	7,229,543	06-10-14 06-15-14	Priest Rapids Hatchery	Mid-Columbia River		
<b>Washington Dept. of Fish and Wildlife Total</b>					<b>7,529,543</b>					
Yakama Tribe	Eagle Creek NFH	CO	UN	2014	72,750	04-15-14 06-15-14	Easton Pond	Yakima River		
Yakama Tribe	Eagle Creek NFH	CO	UN	2014	92,105	04-15-14 06-15-14	Holmes Pond	Yakima River		
Yakama Tribe	Eagle Creek NFH	CO	UN	2014	92,376	04-15-14 06-15-14	Stiles Pond	Yakima River		
Yakama Tribe	Eagle Creek NFH	CO	UN	2014	94,680	04-15-14 06-15-14	Lost Creek Acclim Pond	Yakima River		
Yakama Tribe	Eagle Creek NFH	CO	UN	2014	140,342	04-15-14 06-15-14	Easton Pond	Yakima River		
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2014	43,408	04-15-14 06-15-14	Yakama River	Yakima River		
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2014	108,570	04-15-14 06-15-14	Stiles Pond	Yakima River		
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2014	221,567	04-15-14 06-15-14	Prosser Acclim Pond	Yakima River		
<b>Yakama Tribe Total</b>					<b>865,798</b>					
<b>Grand Total</b>					<b>9,405,341</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
05/23/2014	168.6	0.7	167.3	39.1	197.8	47.3	195.1	39.7	208.4	27.2	199.2	74.7	213.5	84.3
05/24/2014	158.8	1.7	160.7	42.5	194.4	48.0	195.4	28.8	206.3	42.1	203.7	82.3	224.3	95.8
05/25/2014	164.2	1.1	165.3	47.7	199.5	30.2	193.4	22.2	204.2	42.2	199.5	72.7	212.2	96.8
05/26/2014	164.9	1.4	166.1	53.6	196.8	40.4	195.5	29.0	205.7	42.8	202.6	82.7	224.8	96.8
05/27/2014	168.6	1.6	164.4	70.0	198.5	31.9	198.8	30.3	205.9	45.1	200.3	80.9	220.7	103.3
05/28/2014	144.6	3.8	150.4	54.4	182.7	24.8	179.8	32.5	177.8	59.4	183.6	62.5	199.9	76.8
05/29/2014	159.4	3.9	162.6	49.5	195.1	53.4	197.7	50.3	193.5	128.2	202.9	79.2	224.7	104.7
05/30/2014	169.3	3.9	165.7	20.7	180.3	77.2	178.8	62.1	183.4	83.1	178.8	62.5	200.0	64.8
05/31/2014	174.3	4.0	171.8	35.4	200.5	29.2	195.7	41.8	195.9	65.9	188.7	73.0	192.6	91.7
06/01/2014	175.2	5.9	186.8	57.0	216.3	56.9	216.3	69.8	220.5	76.3	212.3	99.4	237.0	110.3
06/02/2014	176.3	10.0	171.1	46.5	191.1	33.4	189.6	44.7	197.5	50.4	194.9	80.4	228.2	93.9
06/03/2014	168.2	6.2	174.6	49.9	201.9	25.2	200.3	28.6	205.5	46.7	195.2	76.2	205.2	104.6
06/04/2014	166.9	0.1	166.5	40.8	191.2	16.0	189.5	27.7	198.0	43.1	196.4	76.6	214.6	105.5
06/05/2014	167.8	1.2	169.1	35.8	197.9	19.6	198.5	30.4	205.4	43.5	198.1	74.6	213.2	100.2

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

Date	Dworshak		Brownlee		Hells Canyon		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
05/23/2014	2.3	0.1	16.8	11.1	128.2	38.6	121.9	36.3	123.1	26.8	128.4	79.7	128.4	79.7
05/24/2014	2.4	0.3	17.3	13.2	138.4	47.2	132.7	34.6	131.8	32.8	136.5	80.7	136.5	80.7
05/25/2014	2.3	0.2	18.1	13.3	148.9	57.8	140.0	34.6	140.9	33.1	148.6	80.6	148.6	80.6
05/26/2014	2.3	0.3	18.7	13.7	145.5	54.4	139.2	34.5	139.6	33.1	145.2	80.4	145.2	80.4
05/27/2014	2.3	0.0	18.9	12.9	142.9	51.6	135.9	34.6	136.2	37.3	142.9	72.4	142.9	72.4
05/28/2014	2.3	0.2	19.1	13.0	140.6	49.1	132.9	34.7	134.2	37.2	140.2	80.1	140.2	80.1
05/29/2014	2.3	0.0	19.7	16.0	136.6	45.6	130.0	34.6	130.7	35.5	137.0	78.9	137.0	78.9
05/30/2014	2.3	0.0	20.3	22.0	132.5	48.7	127.2	34.6	127.8	36.3	132.1	74.0	132.1	74.0
05/31/2014	2.3	0.0	20.2	21.8	128.6	38.1	123.1	34.5	123.0	38.0	129.6	72.3	129.6	72.3
06/01/2014	4.5	0.3	19.4	18.7	121.5	34.2	116.2	31.7	117.9	36.1	121.2	66.4	121.2	66.4
06/02/2014	4.4	0.0	18.1	20.3	120.2	31.3	114.1	29.0	112.6	35.9	118.8	57.6	118.8	57.6
06/03/2014	4.4	0.0	17.4	16.6	116.5	31.0	110.8	28.9	113.3	35.7	116.4	70.1	116.4	70.1
06/04/2014	4.4	0.0	16.9	15.9	118.6	33.1	113.3	29.0	114.2	35.9	117.7	67.7	117.7	67.7
06/05/2014	4.4	0.0	16.5	17.6	116.2	29.6	110.9	32.2	112.1	29.3	116.6	53.7	116.6	53.7

**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		
05/23/2014	351.5	200.1	347.9	144.4	328.3	125.1	340.1	138.8	---	---
05/24/2014	353.1	203.1	354.7	142.1	339.5	124.9	359.6	157.0	---	---
05/25/2014	362.1	211.1	362.0	147.4	344.3	130.9	369.9	162.6	---	---
05/26/2014	359.6	209.1	358.9	149.6	336.6	129.3	354.2	152.7	---	---
05/27/2014	375.5	227.9	376.1	154.7	357.7	135.5	372.2	169.6	99.3	90.9
05/28/2014	360.4	220.5	365.4	140.3	350.2	130.1	370.7	169.4	97.8	91.1
05/29/2014	348.7	207.6	356.9	140.3	340.3	129.2	358.6	157.6	98.8	89.8
05/30/2014	356.4	220.0	357.5	140.3	337.5	129.8	360.3	156.8	100.1	91.0
05/31/2014	332.0	193.3	332.8	116.3	314.2	105.9	335.3	135.4	97.2	90.3
06/01/2014	325.4	177.6	327.6	117.6	308.0	104.8	324.9	128.3	93.8	90.4
06/02/2014	365.7	219.0	355.9	144.6	336.7	126.4	357.9	147.4	96.8	101.3
06/03/2014	334.3	184.4	340.9	141.6	322.3	125.3	343.4	125.6	96.0	109.4
06/04/2014	329.7	186.4	325.1	109.9	309.5	118.7	333.2	118.1	94.5	108.3
06/05/2014	334.5	193.2	329.8	112.3	314.4	123.2	333.2	113.8	95.6	111.4

## 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>											
	05/29/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/05/14	Chinook + Steelhead	61	0	0	0.00%	0.00%	0	0	0	0
<b>Little Goose Dam</b>											
	05/26/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/02/14	Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
<b>Lower Monumental Dam</b>											
	05/28/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/04/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>McNary Dam</b>											
	05/26/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/30/14	Chinook + Steelhead	75	0	0	0.00%	0.00%	0	0	0	0
	06/01/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/05/14	Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
<b>Bonneville Dam</b>											
	05/24/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/27/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/31/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/03/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Rock Island Dam</b>											
	05/27/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/30/14	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/03/14	Chinook + Steelhead	70	5	5	7.14%	0.00%	4	1	0	0
	06/05/14	Chinook + Steelhead	71	0	0	0.00%	0.00%	0	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 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>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High	
	Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg		
5/23	106.3	109.1	109.4	24	---	---	---	0	114.9	115.2	115.4	24	113.8	114.0	114.6	24	112.8	112.9	113.0	24
5/24	100.1	100.5	101.6	24	---	---	---	0	115.4	115.7	116.0	24	114.4	114.9	115.8	24	113.1	113.7	114.3	24
5/25	99.5	99.7	99.7	24	---	---	---	0	116.1	116.4	116.5	24	114.9	115.6	117.4	24	114.0	114.6	116.6	24
5/26	99.4	99.8	100.1	24	---	---	---	0	116.5	116.7	116.8	24	115.3	116.1	116.6	24	115.3	116.1	116.9	24
5/27	99.3	99.6	100.1	24	---	---	---	0	116.7	116.9	117.1	24	115.5	116.6	118.8	24	114.9	115.7	116.7	24
5/28	103.1	106.7	109.3	24	---	---	---	0	116.9	117.0	117.2	24	117.1	117.8	118.5	24	115.4	116.5	116.9	24
5/29	109.2	109.4	109.6	24	---	---	---	0	116.3	116.4	116.5	24	117.8	118.3	118.6	24	115.2	116.6	117.7	24
5/30	109.3	109.5	109.8	24	---	---	---	0	116.4	116.5	116.6	24	118.1	118.6	119.1	24	118.1	118.6	118.9	24
5/31	109.4	109.5	109.9	24	---	---	---	0	116.7	116.9	117.0	24	118.5	119.0	119.5	24	118.9	119.3	119.6	24
6/1	109.3	109.5	109.7	24	---	---	---	0	117.2	117.4	117.5	24	117.3	118.1	118.7	24	118.9	119.1	119.3	24
6/2	105.2	108.6	109.4	24	---	---	---	0	117.8	118.1	118.3	24	116.5	117.0	117.3	24	119.6	120.2	120.8	24
6/3	102.4	102.8	104.3	24	---	---	---	0	118.2	118.3	118.4	24	116.1	116.3	116.6	24	117.1	118.3	119.8	24
6/4	104.9	105.2	105.6	24	---	---	---	0	117.9	118.2	118.4	24	115.9	116.4	116.8	24	115.3	115.6	115.9	24
6/5	105.0	105.4	105.6	23	---	---	---	0	117.5	117.8	118.0	23	114.4	115.1	116.0	23	114.6	115.3	115.7	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>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High	
	Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg		
5/23	113.0	113.7	114.8	24	111.7	111.8	112.3	17	117.1	117.6	118.2	17	115.7	116.3	116.6	24	119.8	120.9	122.2	24
5/24	114.0	114.6	115.0	24	111.6	111.7	112.0	14	117.4	117.6	118.4	14	114.9	115.5	116.0	24	119.1	119.7	120.6	22
5/25	115.2	115.7	115.9	24	112.3	112.4	112.6	17	115.0	115.1	115.2	15	116.4	116.9	117.1	24	118.5	118.8	119.1	24
5/26	115.7	115.9	116.2	24	113.1	113.5	114.1	17	117.0	117.5	119.0	17	114.2	114.4	115.1	22	118.3	119.0	120.8	22
5/27	115.7	116.1	116.4	24	113.5	114.2	114.8	20	116.9	117.5	118.7	20	115.2	115.7	115.9	22	119.0	119.4	119.8	22
5/28	115.4	115.8	116.2	24	114.1	114.3	114.6	21	116.2	116.7	118.4	21	116.0	116.7	117.1	19	119.9	120.1	120.8	15
5/29	114.3	115.6	116.1	24	113.2	113.5	113.9	19	119.0	120.6	124.7	19	114.2	114.7	115.6	22	121.0	121.4	121.8	19
5/30	111.8	112.1	112.4	24	114.6	115.2	115.8	20	126.1	127.8	131.3	20	117.2	118.4	122.2	21	122.5	123.0	124.2	19
5/31	113.8	115.3	115.7	24	116.2	116.6	116.8	23	119.2	121.1	127.7	23	123.6	123.9	126.2	16	124.4	124.6	125.3	14
6/1	115.9	116.2	117.1	24	116.6	117.0	117.3	23	121.9	122.9	124.6	23	119.0	120.2	126.1	19	125.7	126.3	126.7	19
6/2	114.9	115.9	118.2	24	116.8	117.2	117.7	22	119.9	121.2	122.8	22	120.7	121.1	122.2	20	123.7	124.8	126.5	17
6/3	114.7	116.2	116.8	24	116.6	117.0	117.4	22	118.5	119.2	120.7	22	119.1	120.4	120.9	23	120.9	121.1	121.6	21
6/4	113.8	115.0	115.6	24	113.8	114.1	115.3	19	115.4	115.8	116.8	19	116.7	116.8	117.5	14	120.4	120.5	121.0	14
6/5	113.1	114.2	115.5	23	113.0	113.6	113.9	22	114.7	115.4	115.9	22	114.0	114.2	114.8	16	119.5	119.8	120.0	16

### 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>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High		<u>24 h</u>	<u>12 h</u>	High	
	Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg		
5/23	111.9	115.2	115.6	22	116.0	116.2	116.5	22	115.4	116.5	117.4	24	120.6	121.5	123.6	24	118.7	119.0	119.5	24
5/24	100.1	102.2	107.1	23	115.9	116.0	116.1	23	114.4	115.6	116.0	24	121.1	122.0	123.3	24	119.5	120.7	121.6	24
5/25	102.7	104.3	107.9	24	116.1	116.3	116.4	24	115.4	115.9	116.2	24	120.2	120.7	121.8	24	118.3	118.9	119.2	24
5/26	101.4	102.1	103.1	23	115.9	116.0	116.1	23	115.3	116.0	116.4	23	121.9	123.3	123.7	23	120.6	121.9	122.3	23
5/27	102.0	103.0	103.8	22	117.1	118.3	119.0	21	114.5	115.3	115.5	24	120.2	121.0	121.6	24	118.5	119.7	120.4	24
5/28	107.9	112.1	115.1	21	117.7	118.9	124.5	21	114.4	115.4	116.2	24	118.2	119.3	119.6	24	116.3	117.3	118.0	24
5/29	115.3	115.7	116.4	20	122.8	123.7	124.6	20	---	---	---	0	---	---	---	0	---	---	---	0
5/30	117.4	118.3	119.0	20	121.9	122.7	123.6	20	---	---	---	0	---	---	---	0	---	---	---	0
5/31	120.8	121.3	122.6	15	122.4	122.6	123.3	14	---	---	---	0	---	---	---	0	---	---	---	0
6/1	121.0	121.5	122.4	17	123.5	124.1	125.0	17	---	---	---	0	---	---	---	0	---	---	---	0
6/2	120.4	120.6	122.2	13	121.9	122.0	123.9	13	---	---	---	0	---	---	---	0	---	---	---	0
6/3	117.7	118.6	119.6	23	120.0	120.7	122.4	23	---	---	---	0	---	---	---	0	---	---	---	0
6/4	115.7	115.8	116.9	14	118.0	118.2	119.9	14	---	---	---	0	---	---	---	0	---	---	---	0
6/5	115.0	115.2	116.1	15	118.3	118.6	119.1	15	---	---	---	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	Priest R. Dnst			#	Pasco			#	Dworshak			#	Clrwtr-Peck			#	Anatone			#
	24 h Avg	12 h Avg	High		24 h Avg	12 h Avg	High		24 h Avg	12 h Avg	High		24 h Avg	12 h Avg	High		24 h Avg	12 h Avg	High	
5/23	119.6	120.1	120.9	24	---	---	---	0	101.3	102.1	102.9	24	103.8	104.7	105.2	24	107.1	107.3	108.0	16
5/24	119.8	120.3	120.6	24	---	---	---	0	104.2	105.8	107.0	24	104.2	105.0	105.3	24	107.5	108.3	108.8	24
5/25	119.4	119.7	120.0	24	---	---	---	0	104.0	104.9	105.4	24	104.6	105.4	106.1	24	108.3	109.1	109.7	24
5/26	120.1	120.5	120.8	23	---	---	---	0	104.2	106.0	106.7	24	103.9	104.6	105.2	24	108.2	108.8	109.4	24
5/27	119.7	120.1	120.4	24	---	---	---	0	101.9	102.6	103.1	24	103.9	104.8	105.2	24	108.3	109.1	109.7	24
5/28	117.4	118.6	119.8	24	---	---	---	0	102.1	103.6	105.0	24	103.3	103.6	103.9	24	107.8	108.0	108.2	23
5/29	---	---	---	0	---	---	---	0	100.7	101.7	102.5	24	102.9	103.6	104.7	24	108.2	109.2	109.9	24
5/30	---	---	---	0	---	---	---	0	101.6	102.6	103.2	24	103.7	104.7	105.4	24	108.5	109.1	109.5	24
5/31	---	---	---	0	---	---	---	0	130.5	130.7	130.9	24	103.3	104.3	105.0	24	107.2	107.7	108.3	24
6/1	---	---	---	0	---	---	---	0	132.4	132.8	133.0	24	103.3	104.4	105.0	24	106.8	107.5	108.0	24
6/2	---	---	---	0	---	---	---	0	115.5	129.9	132.9	24	103.4	104.3	105.0	24	106.8	107.4	108.0	24
6/3	---	---	---	0	---	---	---	0	100.9	101.4	101.8	24	103.1	103.8	104.5	24	106.4	106.9	107.4	24
6/4	---	---	---	0	---	---	---	0	101.7	103.3	104.7	24	102.8	103.7	105.3	24	106.2	107.0	107.6	24
6/5	---	---	---	0	---	---	---	0	100.8	101.2	101.5	23	103.3	104.2	104.8	23	106.5	106.9	107.3	23

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

Date	Clrwtr-Lewiston			#	Lower Granite			#	L. Granite Tlwr			#	Little Goose			#	L. Goose Tlwr			#
	24 h Avg	12 h Avg	High		24 h Avg	12 h Avg	High		24 h Avg	12 h Avg	High		24 h Avg	12 h Avg	High		24 h Avg	12 h Avg	High	
5/23	103.1	103.4	103.7	24	105.8	106.1	106.2	24	117.3	117.7	118.0	24	110.0	110.2	110.5	24	115.3	115.4	115.5	24
5/24	103.5	104.0	104.5	24	105.3	105.4	105.6	24	119.1	120.5	121.5	24	110.4	111.4	111.9	24	115.8	116.0	116.2	24
5/25	103.9	104.7	105.2	24	105.8	106.4	106.7	24	121.9	122.4	122.9	24	112.9	113.7	114.0	24	116.2	116.4	116.6	24
5/26	103.3	103.7	104.1	24	106.5	106.7	106.9	24	121.0	121.3	121.4	24	115.5	116.0	116.3	24	116.7	116.8	117.0	24
5/27	103.5	104.2	104.9	24	106.5	106.7	106.8	24	120.2	120.6	121.1	24	116.2	116.5	116.9	24	116.7	116.8	116.9	24
5/28	102.7	102.9	103.3	24	106.4	106.5	106.8	24	119.3	119.7	120.0	24	116.4	116.7	116.9	24	116.6	116.8	117.0	24
5/29	102.5	103.1	103.8	24	105.5	105.7	106.1	24	118.4	118.6	119.6	24	114.1	114.5	115.4	24	116.2	116.2	116.4	24
5/30	103.7	104.3	104.9	24	106.5	107.0	107.7	24	119.8	121.5	123.3	24	115.0	115.8	116.6	24	116.5	116.7	116.9	24
5/31	103.1	103.7	104.3	24	107.5	107.7	107.8	24	117.4	118.1	118.3	24	116.3	116.8	116.9	24	116.7	116.9	117.1	24
6/1	103.0	103.8	104.3	24	106.8	107.0	107.6	24	116.3	117.4	118.0	24	117.2	117.5	117.9	24	116.1	116.9	117.1	24
6/2	103.3	103.9	104.5	24	106.3	106.5	106.6	24	115.1	115.8	117.5	24	115.8	116.0	116.6	24	115.1	115.3	115.4	24
6/3	102.9	103.3	103.7	24	106.0	106.2	106.6	24	115.3	116.7	118.2	24	114.5	115.3	116.1	24	114.5	114.8	115.1	24
6/4	102.6	103.4	104.7	24	105.2	105.4	105.7	24	115.9	117.2	117.5	24	112.1	112.5	113.1	24	114.0	114.1	114.2	24
6/5	103.3	103.9	104.3	23	104.6	104.8	105.0	23	114.8	116.3	117.6	23	111.4	111.7	112.1	23	114.8	115.7	115.8	23

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

Date	Lower Mon.			#	L. Mon. Tlwr			#	Ice Harbor			#	Ice Harbor Tlwr			#	McNary-Oregon			#
	24 h Avg	12 h Avg	High		24 h Avg	12 h Avg	High		24 h Avg	12 h Avg	High		24 h Avg	12 h Avg	High		24 h Avg	12 h Avg	High	
5/23	116.1	116.3	116.6	24	116.3	116.9	117.5	24	116.5	116.9	117.1	24	119.7	120.3	120.5	24	---	---	---	0
5/24	114.6	114.8	115.1	24	116.3	116.5	117.4	24	115.4	115.6	115.7	24	120.0	120.5	121.0	24	---	---	---	0
5/25	114.8	115.0	115.3	24	116.4	116.7	116.9	24	115.1	115.2	115.5	24	120.5	121.2	121.5	24	---	---	---	0
5/26	114.5	114.6	114.7	24	116.4	116.5	116.7	24	114.3	114.6	114.9	24	120.4	120.9	121.2	24	---	---	---	0
5/27	115.6	116.3	116.8	24	117.7	118.9	119.8	24	113.8	114.2	114.5	24	120.3	120.7	121.0	24	---	---	---	0
5/28	116.2	116.5	116.7	24	117.5	118.4	119.6	24	114.6	114.8	115.1	24	119.4	120.0	120.4	24	---	---	---	0
5/29	115.3	115.5	115.8	24	116.6	116.7	117.1	24	113.9	114.1	114.3	24	119.7	120.2	120.4	24	---	---	---	0
5/30	116.4	117.0	117.3	24	116.9	117.2	117.4	24	115.1	115.8	116.2	24	119.7	119.9	120.1	24	---	---	---	0
5/31	117.2	117.6	117.8	24	117.3	117.4	117.6	24	116.2	116.6	116.7	24	119.7	120.0	120.5	24	---	---	---	0
6/1	117.4	117.8	118.1	24	116.8	116.9	117.2	24	116.5	116.9	117.2	24	118.6	119.2	119.6	24	---	---	---	0
6/2	118.3	118.8	119.3	24	116.6	116.8	117.1	24	117.4	117.8	118.0	24	117.9	118.9	119.6	24	---	---	---	0
6/3	116.5	117.0	117.9	24	116.3	116.5	116.7	24	117.0	117.3	117.6	24	118.4	119.3	119.6	24	---	---	---	0
6/4	114.7	114.9	115.3	24	116.5	116.7	116.8	24	115.8	116.0	116.6	24	118.7	119.7	120.2	24	---	---	---	0
6/5	113.8	114.0	114.2	23	117.7	118.8	119.3	23	115.0	115.2	115.4	23	117.3	118.1	120.0	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	McNary-Wash			#	McNary Tlwr			#	John Day			#	John Day Tlwr			#	The Dalles			#
	24 h Avg	12 h Avg	High		24 h Avg	12 h Avg	High		24h Avg	12h Avg	High		24h Avg	12h Avg	High		24h Avg	12h Avg	High	
5/23	115.5	115.8	115.9	24	120.2	120.3	120.5	24	117.1	117.4	117.6	24	118.6	118.9	119.3	24	115.9	116.3	117.1	24
5/24	114.5	114.7	114.8	24	120.3	120.5	120.9	24	116.1	116.4	116.5	24	118.3	118.5	118.9	24	115.2	115.5	115.7	24
5/25	114.8	115.1	115.4	24	120.7	120.9	121.1	24	114.8	115.1	115.2	24	118.6	118.9	119.1	24	115.3	116.1	116.7	24
5/26	114.6	114.8	115.1	24	120.5	120.9	121.7	24	113.4	113.6	114.2	24	118.5	118.7	119.4	24	114.5	114.8	115.5	24
5/27	113.5	113.7	114.1	24	121.8	122.1	122.6	24	113.5	113.8	113.9	24	119.7	119.8	120.1	24	114.5	115.0	115.3	24
5/28	113.7	113.9	114.1	24	121.3	121.7	121.8	24	112.7	113.5	113.8	24	118.4	118.5	118.7	24	113.7	113.7	114.2	5
5/29	112.4	112.7	113.1	24	123.6	126.7	129.2	24	111.1	111.8	112.4	24	118.2	118.3	118.4	24	114.3	114.3	114.4	6
5/30	113.1	113.7	114.2	24	123.7	126.0	134.0	24	113.1	113.6	113.9	24	118.6	118.8	119.1	24	114.8	115.6	116.6	22
5/31	114.6	115.1	115.8	24	120.1	120.4	120.6	24	113.6	113.9	114.1	24	117.7	118.2	118.7	24	114.9	114.9	115.5	4
6/1	116.4	116.7	117.0	24	119.2	119.6	120.3	24	115.9	117.6	118.8	24	117.8	118.4	119.2	24	111.9	111.9	111.9	1
6/2	116.4	116.9	117.0	24	121.4	122.0	122.4	24	120.3	121.1	121.6	24	119.6	120.0	120.9	24	118.2	118.3	118.9	13
6/3	116.6	116.8	116.9	24	119.6	120.1	120.5	24	116.6	117.8	119.5	24	119.0	119.3	120.0	24	114.7	115.9	118.0	24
6/4	116.2	116.6	116.8	24	119.7	120.0	120.5	24	114.4	114.7	115.0	24	117.7	118.3	118.6	24	113.1	114.3	115.2	24
6/5	115.2	115.7	116.3	23	119.8	120.3	120.5	23	113.7	114.0	114.5	23	117.9	118.3	119.3	23	112.7	114.4	115.4	23

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

Date	The Dalles Dnst			#	Bonneville			#	Warrendale			#	Camas\Washougal			#	Cascade Island			#
	24 h Avg	12 h Avg	High		24 h Avg	12 h Avg	High		24h Avg	12h Avg	High		24h Avg	12h Avg	High		24h Avg	12h Avg	High	
5/23	119.9	120.3	121.0	24	116.0	116.6	117.0	24	117.6	118.0	118.3	24	116.3	116.9	117.4	24	123.6	123.7	123.8	24
5/24	118.7	118.9	119.2	24	116.0	116.1	116.3	24	118.3	118.8	119.1	24	116.8	118.1	118.6	24	123.7	123.9	124.1	24
5/25	119.3	119.7	119.9	24	116.2	116.6	117.1	24	118.8	118.9	119.1	24	118.3	118.8	119.2	24	123.9	124.0	124.2	24
5/26	119.2	119.7	120.0	24	116.6	117.0	117.2	24	118.5	118.7	119.0	24	117.2	117.8	118.3	24	123.9	124.1	124.2	24
5/27	119.2	119.7	121.0	24	116.6	116.9	117.3	24	119.2	119.5	119.8	24	117.9	118.9	119.6	24	124.1	124.1	124.3	24
5/28	117.6	118.0	118.8	24	115.0	115.4	115.7	24	118.3	118.5	118.8	24	117.6	117.9	118.0	24	123.9	124.0	124.2	24
5/29	117.8	118.4	119.2	24	114.7	115.4	116.0	24	117.4	118.0	118.6	24	117.2	117.5	118.0	24	123.3	123.5	123.7	24
5/30	119.6	120.2	120.5	24	117.6	117.6	118.4	11	119.2	119.2	119.6	11	118.6	118.6	119.9	11	123.3	123.3	124.3	11
5/31	117.9	118.3	119.8	24	116.9	117.8	118.3	24	118.3	119.1	119.7	24	118.0	118.9	119.7	24	122.3	123.5	124.3	24
6/1	117.0	118.0	118.8	24	113.7	114.0	115.2	24	115.9	116.1	116.4	24	115.5	116.2	116.8	24	120.9	121.5	123.2	24
6/2	120.0	121.8	122.4	24	114.3	114.8	115.1	24	116.9	117.5	117.7	24	115.4	116.3	116.9	24	123.7	124.0	124.2	24
6/3	119.4	121.0	122.5	24	113.9	114.2	114.5	24	115.7	116.2	116.7	24	114.5	114.7	115.0	24	122.1	123.6	124.0	24
6/4	117.9	119.0	119.4	24	112.7	113.2	113.4	24	114.7	115.0	115.3	24	114.2	114.7	115.5	24	120.3	121.2	121.4	24
6/5	118.3	119.2	120.1	23	112.9	113.4	114.5	23	114.5	114.9	115.4	23	113.0	114.0	114.6	23	119.7	120.5	123.3	23

## Two-Week Summary of Passage Indices

Source: Fish Passage Center

Updated: 6/6/2014 7:38

### 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>

COMBINED YEARLING CHINOOK												
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)	
05/23/2014	*	---	20	---	---	19,050	30,406	20,208	498	53,544	25,377	44,996
05/24/2014	*	---	15	---	---	16,937	15,947	14,344	598	---	39,303	30,314
05/25/2014	*	---	13	---	---	26,019	21,320	15,206	567	37,454	36,239	31,130
05/26/2014	*	---	3	---	---	20,615	21,363	8,836	267	---	31,986	33,413
05/27/2014	*	---	5	---	---	14,113	23,845	8,517	229	10,154	35,030	28,145
05/28/2014	*	---	11	---	---	10,250	14,473	7,032	266	---	21,267	24,133
05/29/2014		---	---	---	---	6,746	12,080	19,653	683	10,293	15,922	10,046
05/30/2014	*	---	---	---	---	3,975	4,364	2,943	223	---	12,916	6,653
05/31/2014	*	---	---	---	---	3,353	2,733	1,729	67	5,240	11,301	7,025
06/01/2014	*	---	---	---	---	2,016	1,434	1,403	82	---	7,499	6,469
06/02/2014		---	---	---	---	1,921	1,490	1,149	67	4,208	7,612	4,264
06/03/2014	*	---	---	---	---	2,210	672	736	41	---	7,011	6,308
06/04/2014		---	---	---	---	810	1,907	590	41	6,106	3,666	5,593
06/05/2014	*	---	---	---	---	2,344	2,019	426	28	---	4,362	3,975
06/06/2014		---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>		<b>0</b>	<b>67</b>	<b>0</b>	<b>0</b>	<b>130,359</b>	<b>154,053</b>	<b>102,772</b>	<b>3,657</b>	<b>126,999</b>	<b>259,491</b>	<b>242,464</b>
<b># Days:</b>		<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>14</b>	<b>14</b>
<b>Average:</b>		<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>9,311</b>	<b>11,004</b>	<b>7,341</b>	<b>261</b>	<b>18,143</b>	<b>18,535</b>	<b>17,319</b>
<b>YTD</b>		<b>65,404</b>	<b>63,121</b>	<b>25,420</b>	<b>10,159</b>	<b>4,790,496</b>	<b>2,827,544</b>	<b>1,963,108</b>	<b>26,275</b>	<b>1,999,524</b>	<b>2,297,433</b>	<b>2,128,807</b>

COMBINED SUBYEARLING CHINOOK												
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)	
05/23/2014	*	---	0	---	---	268	1,434	499	62	6,381	7,214	6,679
05/24/2014	*	---	0	---	---	287	564	0	95	---	5,687	14,787
05/25/2014	*	---	0	---	---	9,202	1,599	130	310	8,747	6,346	11,241
05/26/2014	*	---	2	---	---	28,024	1,068	132	190	---	6,574	11,307
05/27/2014	*	---	0	---	---	31,113	2,940	0	132	11,938	7,542	8,958
05/28/2014	*	---	0	---	---	31,062	19,207	3	143	---	8,206	9,645
05/29/2014		---	---	---	---	38,023	8,932	2,866	224	10,293	6,262	5,289
05/30/2014	*	---	---	---	---	34,541	32,322	3,901	330	---	7,452	8,121
05/31/2014	*	---	---	---	---	41,148	32,179	7,134	102	6,169	6,438	7,506
06/01/2014	*	---	---	---	---	20,740	27,244	4,062	324	---	5,155	5,809
06/02/2014		---	---	---	---	28,259	52,271	13,433	247	5,237	5,785	5,685
06/03/2014	*	---	---	---	---	43,508	49,898	17,065	299	---	5,258	5,448
06/04/2014		---	---	---	---	20,798	25,203	16,390	328	12,121	6,665	6,621
06/05/2014	*	---	---	---	---	21,648	46,299	18,734	392	---	6,017	5,475
06/06/2014		---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>		<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>348,621</b>	<b>301,160</b>	<b>84,349</b>	<b>3,178</b>	<b>60,886</b>	<b>90,601</b>	<b>112,571</b>
<b># Days:</b>		<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>14</b>	<b>14</b>
<b>Average:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>24,902</b>	<b>21,511</b>	<b>6,025</b>	<b>227</b>	<b>8,698</b>	<b>6,472</b>	<b>8,041</b>
<b>YTD</b>		<b>0</b>	<b>19</b>	<b>4</b>	<b>332</b>	<b>372,924</b>	<b>308,025</b>	<b>85,349</b>	<b>5,790</b>	<b>83,518</b>	<b>111,116</b>	<b>1,869,773</b>

### Two-Week Summary of Passage Indices

COMBINED COHO												
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)	
05/23/2014	*	---	0	---	---	1,609	1,004	499	3,998	11,394	4,264	31,286
05/24/2014	*	---	0	---	---	4,880	1,693	812	4,672	---	7,404	18,854
05/25/2014	*	---	0	---	---	5,077	3,064	1,300	3,344	10,204	10,204	18,612
05/26/2014	*	---	0	---	---	2,899	4,273	1,714	2,474	---	9,836	15,421
05/27/2014	*	---	0	---	---	2,245	2,271	1,217	2,073	3,974	11,433	13,817
05/28/2014	*	---	0	---	---	932	1,894	841	1,941	---	5,344	12,608
05/29/2014	*	---	---	---	---	1,227	3,113	4,504	4,803	3,430	6,311	7,073
05/30/2014	*	---	---	---	---	611	409	684	3,999	---	4,090	7,044
05/31/2014	*	---	---	---	---	610	555	0	1,453	5,024	3,101	5,870
06/01/2014	*	---	---	---	---	0	141	148	1,472	---	5,312	6,441
06/02/2014	*	---	---	---	---	137	0	72	772	2,808	2,740	5,923
06/03/2014	*	---	---	---	---	0	268	147	828	---	1,870	5,919
06/04/2014	*	---	---	---	---	0	272	73	558	3,105	3,083	5,322
06/05/2014	*	---	---	---	---	276	135	142	509	---	2,031	5,175
06/06/2014	*	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20,503</b>	<b>19,092</b>	<b>12,153</b>	<b>32,896</b>	<b>39,939</b>	<b>77,023</b>	<b>159,365</b>
<b># Days:</b>		<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>14</b>	<b>14</b>
<b>Average:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,465</b>	<b>1,364</b>	<b>868</b>	<b>2,350</b>	<b>5,706</b>	<b>5,502</b>	<b>11,383</b>
<b>YTD</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>267</b>	<b>73,584</b>	<b>59,016</b>	<b>27,178</b>	<b>63,989</b>	<b>138,281</b>	<b>217,871</b>	<b>752,011</b>

COMBINED STEELHEAD												
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)	
05/23/2014	*	---	332	---	---	42,755	25,955	17,464	618	6,399	9,686	8,085
05/24/2014	*	---	361	---	---	42,487	33,156	11,908	429	---	8,134	4,436
05/25/2014	*	---	243	---	---	36,173	29,577	18,975	512	3,894	12,237	6,443
05/26/2014	*	---	155	---	---	38,976	39,254	19,387	553	---	12,390	3,339
05/27/2014	*	---	142	---	---	65,112	40,296	23,119	395	3,520	15,567	6,141
05/28/2014	*	---	167	---	---	46,904	33,545	15,939	323	---	10,862	2,481
05/29/2014	*	---	---	---	---	22,385	28,566	32,345	591	2,377	6,859	2,906
05/30/2014	*	---	---	---	---	15,129	11,594	7,118	227	---	4,725	978
05/31/2014	*	---	---	---	---	13,716	6,539	3,603	67	1,608	7,344	1,444
06/01/2014	*	---	---	---	---	13,971	7,618	2,585	84	---	2,500	1,718
06/02/2014	*	---	---	---	---	10,289	9,205	3,161	65	1,739	2,335	1,777
06/03/2014	*	---	---	---	---	6,077	2,989	2,060	98	---	3,038	2,075
06/04/2014	*	---	---	---	---	6,077	4,359	2,102	74	1,322	1,666	1,257
06/05/2014	*	---	---	---	---	4,274	7,268	2,058	105	---	1,429	1,650
06/06/2014	*	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>		<b>0</b>	<b>1,400</b>	<b>0</b>	<b>0</b>	<b>364,325</b>	<b>279,921</b>	<b>161,824</b>	<b>4,141</b>	<b>20,859</b>	<b>98,772</b>	<b>44,730</b>
<b># Days:</b>		<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>14</b>	<b>14</b>
<b>Average:</b>		<b>0</b>	<b>233</b>	<b>0</b>	<b>0</b>	<b>26,023</b>	<b>19,994</b>	<b>11,559</b>	<b>296</b>	<b>2,980</b>	<b>7,055</b>	<b>3,195</b>
<b>YTD</b>		<b>2,080</b>	<b>41,936</b>	<b>4,243</b>	<b>12,842</b>	<b>3,326,855</b>	<b>1,936,420</b>	<b>1,168,335</b>	<b>26,622</b>	<b>572,920</b>	<b>1,022,196</b>	<b>444,097</b>



### Two-Week Summary of Passage Indices

COMBINED SOCKEYE											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
05/23/2014 *	---	0	---	---	1,073	575	0	1,314	105,816	25,903	41,129
05/24/2014 *	---	0	---	---	574	1,271	1,624	777	---	38,272	42,883
05/25/2014 *	---	0	---	---	952	1,335	780	556	64,256	30,914	26,003
05/26/2014 *	---	0	---	---	322	801	659	341	---	30,669	23,389
05/27/2014 *	---	0	---	---	321	536	811	221	28,418	36,246	23,282
05/28/2014 *	---	0	---	---	311	406	280	255	---	17,520	20,962
05/29/2014	---	---	---	---	307	815	819	401	20,597	20,687	11,033
05/30/2014 *	---	---	---	---	0	682	890	73	---	12,775	10,958
05/31/2014 *	---	---	---	---	610	416	288	53	13,607	11,612	8,950
06/01/2014 *	---	---	---	---	144	564	443	31	---	12,498	5,160
06/02/2014	---	---	---	---	137	271	503	28	5,919	8,424	5,447
06/03/2014 *	---	---	---	---	414	134	441	18	---	7,712	5,006
06/04/2014	---	---	---	---	0	681	367	16	7,660	5,249	6,606
06/05/2014 *	---	---	---	---	138	269	142	13	---	5,265	3,900
06/06/2014	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5,303</b>	<b>8,756</b>	<b>8,047</b>	<b>4,097</b>	<b>246,273</b>	<b>263,746</b>	<b>234,708</b>
<b># Days:</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>14</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>379</b>	<b>625</b>	<b>575</b>	<b>293</b>	<b>35,182</b>	<b>18,839</b>	<b>16,765</b>
<b>YTD</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>180,572</b>	<b>86,852</b>	<b>68,731</b>	<b>37,701</b>	<b>1,482,543</b>	<b>559,860</b>	<b>570,028</b>

COMBINED LAMPREY JUVENILES											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR† (Samp)	LGS (Coll)	LMN (Coll)	RIS (Coll)	MCN (Coll)	JDA (Coll)	BO2 (Coll)
05/23/2014 *	---	0	---	---	0	2,600	200	4	0	285	0
05/24/2014 *	---	0	---	---	2	1,300	1,000	1	---	1,947	0
05/25/2014 *	---	0	---	---	2	200	5,100	0	0	900	5
05/26/2014 *	---	1	---	---	1	200	1,700	0	---	1,077	0
05/27/2014 *	---	0	---	---	4	0	1,800	0	200	1,857	133
05/28/2014 *	---	0	---	---	2	200	300	0	---	533	77
05/29/2014	---	---	---	---	6	400	5,100	1	1,400	4,818	100
05/30/2014 *	---	---	---	---	2	1,800	2,150	0	---	3,050	25
05/31/2014 *	---	---	---	---	4	1,400	3,600	0	1,300	4,600	25
06/01/2014 *	---	---	---	---	0	1,000	950	0	---	10,700	103
06/02/2014	---	---	---	---	0	500	2,400	0	1,725	4,400	133
06/03/2014 *	---	---	---	---	0	300	1,000	0	---	4,600	100
06/04/2014	---	---	---	---	0	100	300	0	6,350	5,400	335
06/05/2014 *	---	---	---	---	0	100	900	0	---	4,450	325
06/06/2014	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>23</b>	<b>10,100</b>	<b>26,500</b>	<b>6</b>	<b>10,975</b>	<b>48,617</b>	<b>1,361</b>
<b># Days:</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>7</b>	<b>14</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>721</b>	<b>1,893</b>	<b>0</b>	<b>1,568</b>	<b>3,473</b>	<b>97</b>
<b>YTD</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>93</b>	<b>11,963</b>	<b>27,917</b>	<b>28</b>	<b>13,705</b>	<b>63,093</b>	<b>13,229</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:

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:

6/6/14 7:40 AM

**05/23/14 TO 06/06/14**

		Species					
Site	Data	CH0	CH1	CO	ST	SO	Grand Total
<b>LGR</b>	Sum of NumberCollected	235,000	86,510	13,500	241,990	3,600	580,600
	Sum of NumberBarged	233,382	84,224	13,497	235,895	3,581	570,579
	Sum of NumberBypassed	1,354	2,252	0	6,073	0	9,679
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	25	4	1	3	0	33
	Sum of FacilityMorts	239	28	2	19	19	307
	Sum of ResearchMorts	0	2	0	0	0	2
	Sum of TotalProjectMorts	264	34	3	22	19	342
<b>LGS</b>	Sum of NumberCollected	221,325	112,673	14,100	205,514	6,407	560,019
	Sum of NumberBarged	221,012	112,337	14,094	205,438	6,374	559,255
	Sum of NumberBypassed	15	0	0	0	0	15
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	11	10	0	2	3	26
	Sum of FacilityMorts	287	326	6	74	30	723
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	298	336	6	76	33	749
<b>LMN</b>	Sum of NumberCollected	58,568	77,222	9,000	120,210	5,850	270,850
	Sum of NumberBarged	57,031	67,486	6,800	104,253	5,427	240,997
	Sum of NumberBypassed	68	22	0	110	0	200
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	2	3	0	1	0	6
	Sum of FacilityMorts	67	127	0	52	29	275
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	69	130	0	53	29	281
<b>Total Sum of NumberCollected</b>		<b>514,893</b>	<b>276,405</b>	<b>36,600</b>	<b>567,714</b>	<b>15,857</b>	<b>1,411,469</b>
<b>Total Sum of NumberBarged</b>		<b>511,425</b>	<b>264,047</b>	<b>34,391</b>	<b>545,586</b>	<b>15,382</b>	<b>1,370,831</b>
<b>Total Sum of NumberBypassed</b>		<b>1,437</b>	<b>2,274</b>	<b>0</b>	<b>6,183</b>	<b>0</b>	<b>9,894</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>38</b>	<b>17</b>	<b>1</b>	<b>6</b>	<b>3</b>	<b>65</b>
<b>Total Sum of FacilityMorts</b>		<b>593</b>	<b>481</b>	<b>8</b>	<b>145</b>	<b>78</b>	<b>1,305</b>
<b>Total Sum of ResearchMorts</b>		<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>
<b>Total Sum of TotalProjectMorts</b>		<b>631</b>	<b>500</b>	<b>9</b>	<b>151</b>	<b>81</b>	<b>1,372</b>

### YTD Transportation Summary

Source: Fish Passage Center

Updated:

6/6/14 7:40 AM

TO: 06/06/14

		Species					
Site	Data	CH0	CH1	CO	SO	ST	Grand Total
<b>LGR</b>	Sum of NumberCollected	252,500	3,429,412	52,272	129,950	2,366,748	6,230,882
	Sum of NumberBarged	242,281	1,926,550	48,542	69,860	1,290,846	3,578,079
	Sum of NumberBypassed	9,913	1,501,395	3,722	59,638	1,075,670	2,650,338
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	54	131	1	43	54	283
	Sum of FacilityMorts	252	1,277	7	409	89	2,034
	Sum of ResearchMorts	0	59	0	0	89	148
	Sum of TotalProjectMorts	306	1,467	8	452	232	2,465
<b>LGS</b>	Sum of NumberCollected	226,084	1,943,913	41,542	60,134	1,342,270	3,613,943
	Sum of NumberBarged	225,505	1,760,576	40,643	53,797	1,122,146	3,202,667
	Sum of NumberBypassed	276	182,657	890	6,109	220,102	410,034
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	11	34	1	13	12	71
	Sum of FacilityMorts	292	646	8	215	140	1,301
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	303	680	9	228	152	1,372
<b>LMN</b>	Sum of NumberCollected	59,269	1,321,573	19,800	47,618	781,620	2,229,880
	Sum of NumberBarged	57,730	1,133,947	17,400	44,356	675,731	1,929,164
	Sum of NumberBypassed	70	177,056	0	2,568	89,907	269,601
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	2	25	0	1	16	44
	Sum of FacilityMorts	67	957	0	299	170	1,493
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	69	982	0	300	186	1,537
Total Sum of NumberCollected		537,853	6,694,898	113,614	237,702	4,490,638	12,074,705
Total Sum of NumberBarged		525,516	4,821,073	106,585	168,013	3,088,723	8,709,910
Total Sum of NumberBypassed		10,259	1,861,108	4,612	68,315	1,385,679	3,329,973
Total Sum of NumberTrucked		0	0	0	0	0	0
Total Sum of SampleMorts		67	190	2	57	82	398
Total Sum of FacilityMorts		611	2,880	15	923	399	4,828
Total Sum of ResearchMorts		0	59	0	0	89	148
Total Sum of TotalProjectMorts		678	3,129	17	980	570	5,374

Cumulative Adult Passage at Mainstem Dams Through: 05/29

DAM	END DATE	Spring Chinook						Summer Chinook						Fall Chinook					
		2014		2013		10-Yr Avg.		2014		2013		10-Yr Avg.		2014		2013		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	05/29	184394	25428	81636	33228	127238	21451	0	0	0	0	0	0	0	0	0	0	0	0
TDA	05/29	135828	19634	65316	31075	93810	17532	0	0	0	0	0	0	0	0	0	0	0	0
JDA	05/29	115230	17377	52448	27246	79861	15901	0	0	0	0	0	0	0	0	0	0	0	0
MCN	05/29	96913	13620	45235	19988	69516	12380	0	0	0	0	0	0	0	0	0	0	0	0
IHR	05/29	70084	9269	32811	15699	46188	7286	0	0	0	0	0	0	0	0	0	0	0	0
LMN	05/28	67257	9480	29715	14593	42903	5552	0	0	0	0	0	0	0	0	0	0	0	0
LGS	05/29	66121	9206	27182	14723	37029	5999	0	0	0	0	0	0	0	0	0	0	0	0
LGR	05/29	63801	8425	26365	14408	35562	6466	0	0	0	0	0	0	0	0	0	0	0	0
PRD	05/28	17760	1763	9804	1048	11337	911	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	05/27	16080	1420	7519	2045	9300	1078	0	0	0	0	0	0	0	0	0	0	0	0
RRH	05/27	8176	1050	3644	1363	3462	378	0	0	0	0	0	0	0	0	0	0	0	0
WEL	05/28	6373	611	2298	1524	2130	337	0	0	0	0	0	0	0	0	0	0	0	0
WFA	05/27	18210	594	16712	735	25985	502	0	0	0	0	0	0	0	0	0	0	0	0

DAM	END DATE	Coho						Sockeye			Steelhead					Lamprey			
		2014		2013		10-Yr Avg.		2014	2013	10-Yr Avg.	2014	2013	10-Yr Avg.	Wild 2014	Wild 2013	10-Yr Avg.	2014	2013	10-Yr Avg.
		Adult	Jack	Adult	Jack	Adult	Jack												
BON	05/29	5	-2	0	0	0	0	28	34	16	5539	3295	5278	1439	893	1350	2366	1142	574
TDA	05/29	0	0	0	0	0	0	2	8	3	888	832	2510	215	353	922	0	0	0
JDA	05/29	0	1	0	0	0	0	4	4	1	3138	933	4917	1129	480	1601	131	24	40
MCN	05/29	0	0	1	0	1	0	0	0	0	832	1447	5532	336	706	1862	7	21	2
IHR	05/29	0	0	0	0	0	0	0	0	0	1758	3838	4595	765	1508	1371	5	8	0
LMN	05/28	0	0	0	0	0	0	1	0	0	1635	2491	6744	940	1377	2848	1	2	0
LGS	05/29	0	0	0	0	0	0	0	0	0	1548	2206	6752	1002	1184	2332	0	2	0
LGR	05/29	0	0	0	0	0	0	0	0	0	7473	7435	8802	3461	3231	3152	0	2	0
PRD	05/28	0	0	0	0	0	0	23	1	0	111	52	49	0	0	0	1	7	2
WAN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIS	05/27	0	0	0	0	0	0	2	0	1	275	96	93	147	69	53	0	0	0
RRH	05/27	0	0	0	0	0	0	1	0	0	246	153	350	157	129	262	0	0	0
WEL	05/28	0	0	0	0	0	0	0	0	0	121	57	63	74	50	44	0	0	2
WFA	05/27	9	0	2	0	0	0	0	0	0	10944	9945	13949	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.