



# Fish Passage Center

## Weekly Report #12 - 02

March 23, 2012

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### Summary of Events:

**Water Supply:** Precipitation throughout the Columbia Basin has varied between 115% and 260% of average at individual sub-basins over the first portion of March. Precipitation above The Dalles has been 181% of average over March. Over the 2012 water year, precipitation has ranged between 65% and 113% of average.

**Table 1. Summary of March precipitation and cumulative October through March 19, 2012 precipitation with respect to average (1971-2000), at select locations within the Columbia and Snake River Basins.**

Location	Water Year 2012 March 1-19, 2012		Water Year 2012 October 1, 2011 to March 19, 2012	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	2.43	221	14.24	105
SNAKE RIVER ABOVE ICE HARBOR	1.70	168	9.54	99
Columbia Above The Dalles	2.14	181	13.83	102
Kootenai	2.84	260	14.15	102
Clark Fork	1.32	180	9.61	113
Flathead	2.07	208	12.34	107
Pend Oreille/ Spokane	3.25	191	18.54	97
Central Washington	0.58	115	3.64	65
SNAKE RIVER PLAIN	1.04	151	5.96	105
Salmon/Boise/ Payette	2.45	206	11.79	98
Clearwater	2.91	169	18.42	105
SW Washington Cascades/Cowlitz	6.57	151	47.11	93
Willamette Valley	6.20	158	40.44	94

Snowpack within the Columbia Basin has generally been below average but has seen increases with recent

storms that have resulted in slightly better than average snowpack in most basins. Average snowpack in the Columbia River for basins above the Snake River confluence is 109% of average, for Snake River Basins the average snowpack is 87% of average, and for lower Columbia Basins between McNary and Bonneville Dam average snowpack is 102% of average.

The NWRFC has eliminated the distribution of their Multiple Linear Regression Water Supply Forecasts as their "Official" forecast and are now producing ESP (Ensemble Streamflow Prediction) forecasts at least once per week. The "Official" March ESP forecast was produced on March 7, 2012.

Table 2 displays the March 7<sup>th</sup> and 21<sup>st</sup> ESP runoff volume forecasts for multiple reservoirs. The March 7<sup>th</sup> "Official" forecast at The Dalles between January and July is 99564 Kaf (93% of average).

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

Location	March 7, 2012 ESP		March 21, 2012 ESP	
	% Average (1971 -2000)	Runoff Volume (Kaf)	% Average (1971 -2000)	Runoff Volume (Kaf)
The Dalles (Jan-July)	93	99564	100	107046
Grand Coulee (Jan-July)	96	60617	102	64251
Libby Res. Inflow, MT (Apr-Aug)	103	6442 5635*	109	6810 5635*
Hungry Horse Res. Inflow, MT (Jan-July)	87	1937	99	2209
Lower Granite Res. Inflow (Apr- July)	89	19085	99	21371
Brownlee Res. Inflow (Apr-July)	82	5149	93	5846
Dworshak Res. Inflow (Apr-July)	96	2528 2585*	104	2748 2585*

\* Denotes COE Forecast

Grand Coulee Reservoir is at 1265.9 feet (3-22-12) and drafted 2.7 feet over the last week. The end of March FC Elevation at Grand Coulee is 1270.1 feet. Outflows at Grand Coulee have ranged between 78.8 and 140.2 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2406.9 feet (3-22-12) and has drafted 0.1 feet last week. The end of March FC Elevation at Libby is 2435.7 feet. Outflows at Libby Dam have been 4.0 Kcfs last week.

Hungry Horse is currently at an elevation of 3529.9 feet (3-22-12) and has refilled 0.5 feet last week. The end of March FC Elevation at Hungry Horse is 3537.4 feet. Outflows at Hungry Horse have ranged between 1.1 and 1.5 Kcfs last week.

Dworshak is currently at an elevation of 1525.3 feet (3-22-12) and has drafted 0.6 feet last week. The end of March System Flood Control Elevation is 1522.8 feet. Outflows from Dworshak have ranged from 8.1 to 10.6 Kcfs over the past week.

The Brownlee Reservoir was at an elevation of 2047.5 feet on March 20<sup>th</sup>, 2012 refilling 4.7 feet since March 16<sup>th</sup>, 2012. The end of March FC Elevation at Brownlee is 2042.9 feet. Over the last week, outflows at Brownlee have ranged between 21.4 and 30.1 Kcfs.

#### **Smolt Monitoring:**

Smolt monitoring activities began at Bonneville Dam on March 1, with the first sample available on March 2. SMP traps in the Snake River basin began sampling the first week of March (Lewiston, Grande Ronde and Salmon River traps). As in 2011, SMP will continue collecting species and life-stage data for larval and juvenile lamprey that are sampled at the various dam and trap sites. There are three possible species/life-stages of larval and juvenile lamprey that SMP crews will be using to categorize their samples: 1) pacific lamprey ammocoetes, 2) brook lamprey ammocoetes, and 3) pacific lamprey macrophthalmia. A fourth category (unknown ammocoete) will also be used for those ammocoetes that are undistinguishable to species. Juvenile numbers presented in weekly reports will be for all species/life-stages combined, unless otherwise stated. On-line queries are available on the FPC website that allow users to query sample and collection counts for each of the species/life-stages for 2012 (<http://www.fpc.org/smolt/currentsmppsubmitdata.html>).

Bonneville Dam is still the only SMP dam that has sampled so far this season. The passage index for yearling Chinook has increased substantially over

the past week. The majority of the yearling Chinook being sampled at BON are clipped and likely came from Klickitat Hatchery. The daily average passage index at BON for yearling Chinook this week was 1,416 per day. Chinook fry numbers remained relatively high this week as well, with an average daily passage index of nearly 1,000 per day. Samples of coho fry, holdover fall Chinook, and steelhead juveniles remained small this week. The collection counts of juvenile lamprey have decreased over the past week, with a daily average collection of about 105 per day. All juvenile lamprey sampled over the past week have been pacific lamprey macrophthalmia.

The Grande Ronde Trap is operated by the Oregon Department of Fish and Wildlife and is located at river mile two in the Grande Ronde River. Sampling at the Grande Ronde Trap began on March 7 with the first sample available on March 8. Due to high debris levels, the Grande Ronde Trap was pulled from March 17 to March 18 and no fish were collected. The Grande Ronde Trap continues to collect mostly yearling Chinook. The collection of yearling Chinook increased this week, with a daily average of about 102 fish per day. The majority of these yearling Chinook are unmarked. Only a small number of subyearling Chinook fry and steelhead juveniles have been collected at this trap so far this year.

The Salmon River Trap is located at River km 103 and operated by Idaho Department of Fish and Game. Sampling at the Salmon River Trap began on March 4 with the first sample available on March 5. Yearling Chinook continue dominate the collection at the Salmon River Trap. However, a small number of steelhead juveniles were collected this week. This week's daily average collection for yearling Chinook was 1,080 fish per day. Approximately 57% of the yearling Chinook collected at the Salmon River Trap this week were clipped. On March 17<sup>th</sup>, the Salmon River Trap collected 6 pacific lamprey ammocoetes. These are the first pacific lamprey ammocoetes collected at this site since the SMP began collecting species and life-stage data in 2011.

The Snake River Trap is located at River km 225 and operated by Idaho Department of Fish and Game. Sampling at the Snake River Trap began on March 4 with the first sample available on March 5. Compared to previous weeks, collections at the Snake River Trap this week increased. The majority of fish collected this week were yearling Chinook, followed by coho, steelhead, and subyearling Chinook fry. The

daily average collection for yearling Chinook was 26 fish per day. Nearly 80% of the yearling Chinook collected at the Snake River trap this week were clipped.

To date, the FPC has only received collection data from the Imnaha River Trap for three days of sampling, March 13-15. During this time, the Imnaha Trap has collected a total of 192 yearling Chinook and 4 steelhead, all of which were unclipped.

In the next few weeks more SMP sites will begin reporting data. Lower Granite Dam will begin sampling on or around March 26 and other SMP dam sampling sites will begin sampling by the first week of April.

Finally, it's worth noting that bypass systems at Bonneville Dam has been watered up since mid-February. Since this time, a total of 12 PIT-tagged holdover hatchery fall Chinook have been detected in the bypass. So far this year, a total of 27 PIT-tagged holdover hatchery fall Chinook have been detected in the bypass at Lower Monumental Dam, 62 at Little Goose Dam, and 3 at Lower Granite Dam. However, the bypass system at Lower Granite Dam has only been watered up since March 22, 2012, 8:30 am.

### **Adult Fish Passage**

Historically counts began at Bonneville Dam on March 15th. Using the historical counting schedule allows comparison of current year counts with historical data. We use the historical counting schedule to generate our online Annual Adult Comparison table and our Adult Salmon Passage Graph. Both the comparison table and the graph include the 10 year average counts. The graph and table are available on the fpc.org at [http://www.fpc.org/adultsalmon/adultqueries/Adult\\_Table\\_Species\\_Graph.html](http://www.fpc.org/adultsalmon/adultqueries/Adult_Table_Species_Graph.html) and <http://www.fpc.org/adultsalmon/AdultCumulativeTable.asp>.

Bonneville Dam counts have been updated through 3/21/2012. The comparison table begins with counts on March 15<sup>th</sup>.

The Lower Granite Dam historical counting schedule starts on March 1st. Lower Granite Dam uses video counts from March 1st through March 31st. Bonneville Dam uses video counts from January 1st through March 31st. Video counts are used during the winter months for counting adults. Video counts can cause a delay in posting the data to the web, because the COE staff at the projects have to review the tapes. Willamette Falls Dam also uses video counts and reports adult counts year round. We collect the adult count data from these projects throughout the day,

continuously updating our Adult Dam Count report linked on our homepage (<http://www.fpc.org/>). During the winter season from 1/1/2012 through 3/21/2012 at Bonneville Dam, 29 adult Chinook and 2,088 adult steelhead were counted. In 2011 for the same time frame, 77 adult Chinook and 1,703 adult steelhead were counted. The 2012 Bonneville Dam winter season count of adult Chinook was 38% of the 2011 count, while the 2012 adult steelhead count was 1.23 times greater than the 2011 winter count.

The following paragraphs describe the counts at Willamette Falls Dam (1/1 through 12/31), and Lower Granite Dam (3/1 through 12/15) using the historical counting schedule. At Willamette Falls Dam 2 adult spring Chinook has been counted so far this year.

This year's Lower Granite steelhead count of 2,269 is about 87% of the 2011 count of 2,606 and 68% of the 10 year average count of 3,351. At Willamette Falls Dam, the 2012 count for steelhead was 1,779 as of March 21<sup>st</sup>. This year's steelhead count is about 45% of the 2011 count of 3,957 and about 39% of the 10 year average count of 4,561.

Based on estimates made by the Technical Advisory Committee (TAC) for US v. Oregon this winter, the upriver Spring Chinook run for 2012 is expected to be 314,200. The TAC reported that 221,200 upriver Spring Chinook had returned to the river in 2011 (TAC, 2012).

US v. Oregon Technical Advisory Committee (TAC). Columbia River Mouth Fish Returns 2011 Actual and 2012 Forecasts: Spring Chinook, Summer Chinook, Sockeye and Steelhead, January 24, 2012. Oregon and Washington Departments of Fish and Wildlife, Vancouver, WA. Available at [http://wdfw.wa.gov/fishing/forecasts/columbia\\_river/2012\\_adults\\_returns\\_forecasts.pdf](http://wdfw.wa.gov/fishing/forecasts/columbia_river/2012_adults_returns_forecasts.pdf).

Between March 1-21, a total of 26 Kelts were observed over the separator at the Bonneville Juvenile Monitoring Facility (JMF). The criteria for opening the Bonneville Powerhouse Two Corner Collector to assist with the passage of Kelts was reached on March 19, 2012 (at least 2 Kelts for 2 days with 20 total Kelts). 2012 Kelt passage at the Bonneville JMF can be found at: <http://www.fpc.org/adultsalmon/bonkeltcounts.htm>.

### **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. Several releases of yearling spring Chinook were scheduled to begin this week. In all, these releases are expected to total nearly 1.84 million juveniles. These releases were scheduled to take place throughout this river zone, including: the Clearwater River and



its tributaries (35%), the Snake River (below Hells Canyon Dam) (23%), the Grande Ronde River (17%), the Wallowa River (14%), and the Little Salmon River (11%). In addition, nearly 1.03 million yearling summer Chinook were scheduled to be released into the Salmon River this week. Of these, approximately 23% are unclipped but are marked with coded-wire-tags. Finally, about 525,000 summer steelhead were scheduled for release into the Snake River (below Hells Canyon Dam) on or around March 19<sup>th</sup>.

There are several releases of yearling spring Chinook juveniles scheduled to take place over the next two weeks. In all, these releases will total nearly 3.6 million juveniles. Of these, approximately 94% are scheduled for release into the Clearwater River and its tributaries. These Clearwater River releases are being conducted by several agencies and hatcheries from throughout this river zone. The remaining 6% are scheduled for release into the Tucannon River. The Tucannon River releases are 100% unclipped but are tagged with coded-wire-tags and blue or purple Elastomer tags.

Approximately 1.24 million yearling summer Chinook are scheduled for release into this zone over the next two weeks. Of these, approximately 1.03 million will be released from Pahsimeroi Hatchery into the Pahsimeroi River. The remaining 206,000 are scheduled to be released into the Crooked River, a tributary of the Clearwater River. This is the second year that yearling summer Chinook are to be released into the Clearwater River basin. As with last year, these Clearwater summer Chinook are 100% unclipped and tagged with coded-wire-tags. Kooskia NFH plans to release about 300,000 coho juveniles to the Clearwater River in early April. Of these, 100% are unclipped but about 60,000 are tagged with coded-wire-tags. Finally, nearly 1.8 million summer steelhead are scheduled for release to this zone over the next two weeks. Of these, about 50% are scheduled for release into the Clearwater River and its tributaries, while 47% are scheduled for release into the Pahsimeroi River and 3% are scheduled for release into the Tucannon River. Of the 1.8 million steelhead that are scheduled for release over the next two weeks, approximately 14% are unclipped.

**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 volitional releases of about 800,000 spring Chinook juveniles from Cle Elem Hatchery

acclimation sites that began last week continued this week. These releases are expected to run through mid-May. The only release that was scheduled to begin in this zone this week was a release of approximately 250,000 yearling spring Chinook to the Walla Walla River, which was scheduled to begin on March 19<sup>th</sup>. There are no releases of juvenile salmonids expected to begin over the next two weeks in this zone.

**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 week in this zone. Beginning April 1<sup>st</sup>, Warm Springs NFH plans to release about 480,000 yearling spring Chinook into the Deschutes River. The only other releases scheduled for this zone over the next two weeks are releases of coho juveniles to the Klickitat River (~2.6 million) and Umatilla River (1.0 million).

### Hatchery Releases Last Two Weeks

**Hatchery Release Summary**

From: 3/9/2012 to 03/22/12

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2012	234,000	03-22-12	03-23-12	Clear Creek	Clearwater River M F
Idaho Dept. of Fish and Game	McCall Hatchery	CH1	SU	2012	241,000	03-22-12	03-25-12	Knox Bridge	Salmon River (ID)
Idaho Dept. of Fish and Game	McCall Hatchery	CH1	SU	2012	788,000	03-22-12	03-25-12	Knox Bridge	Salmon River (ID)
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2012	525,000	03-19-12	03-27-12	Hells Canyon Dam	Snake River
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2012	418,000	03-19-12	03-22-12	Hells Canyon Dam	Snake River
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2012	2,500,000	03-12-12	04-27-12	Rapid River Hatchery	Little Salmon River
<b>Idaho Dept. of Fish and Game Total</b>					<b>4,706,000</b>				
Nez Perce Tribe	Clearwater Hatchery	CH1	SP	2012	415,000	03-21-12	03-22-12	Selway River	Clearwater River M F
Nez Perce Tribe	Eagle Creek NFH	CO	UN	2012	275,000	03-01-12	03-15-12	Clear Creek	Clearwater River M F
Nez Perce Tribe	Eagle Creek NFH	CO	UN	2012	275,000	03-01-12	03-15-12	Lapwai Creek	Clearwater River M F
Nez Perce Tribe	Lookingglass Hatchery	CH1	SP	2012	265,000	03-22-12	04-01-12	Lostine Acclim Pond	Wallowa River
Nez Perce Tribe	McCall Hatchery	CH1	SU	2012	106,000	03-14-12	04-05-12	Johnson Cr Idaho	South Fork Salmon River
<b>Nez Perce Tribe Total</b>					<b>1,336,000</b>				
Umatilla Tribe	Carson NFH	CH1	SP	2012	250,000	03-19-12	03-23-12	Walla Walla River Grande Ronde Acclim	Walla Walla River
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2012	146,804	03-21-12	03-30-12	Pond Catherine Cr Acclim	Grande Ronde River
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2012	160,000	03-22-12	04-16-12	Pond	Grande Ronde River
<b>Umatilla Tribe Total</b>					<b>556,804</b>				
Washington Dept. of Fish and Wildlife	Methow Hatchery	ST	SU	2012	50,000	03-15-12	03-31-12	Twisp Acclim Pond	Methow River
<b>Washington Dept. of Fish and Wildlife Total</b>					<b>50,000</b>				
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2012	264,721	03-15-12	05-15-12	Clark Flat Acclim Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2012	265,151	03-15-12	05-15-12	Easton Pond Jack Creek Acclim	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2012	267,107	03-15-12	05-15-12	Pond	Yakima River
Yakama Tribe	Klickitat Hatchery	CH1	SP	2012	622,000	03-15-12	03-15-12	Klickitat Hatchery	Klickitat River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2012	100,000	03-02-12	07-01-12	Prosser Acclim Pond	Yakima River
<b>Yakama Tribe Total</b>					<b>1,518,979</b>				
<b>Grand Total</b>					<b>8,167,783</b>				

### Hatchery Releases Next Two Weeks

#### Hatchery Release Summary

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
						From:	3/23/2012	to	4/5/2012
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2012	234,000	03-22-12	03-23-12	Clear Creek	Clearwater River M F
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2012	408,000	03-28-12	03-29-12	Powell Acclim Pond	Lochsa River
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2012	1,123,000	03-28-12	04-06-12	Red River	S Fk Clearwater River
Idaho Dept. of Fish and Game	McCall Hatchery	CH1	SU	2012	241,000	03-22-12	03-25-12	Knox Bridge	Salmon River (ID)
Idaho Dept. of Fish and Game	McCall Hatchery	CH1	SU	2012	788,000	03-22-12	03-25-12	Knox Bridge	Salmon River (ID)
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2012	525,000	03-19-12	03-27-12	Hells Canyon Dam	Snake River
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2012	830,000	03-27-12	04-13-12	Pahsimeroi River	Pahsimeroi River
Idaho Dept. of Fish and Game	Pahsimeroi Hatchery	CH1	SU	2012	180,000	04-01-12	04-22-12	Pahsimeroi Hatchery	Pahsimeroi River
Idaho Dept. of Fish and Game	Pahsimeroi Hatchery	CH1	SU	2012	853,000	04-01-12	04-22-12	Pahsimeroi Hatchery	Pahsimeroi River
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2012	200,000	03-23-12	03-23-12	Pinehurst Bridge	Little Salmon River
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2012	2,500,000	03-12-12	04-27-12	Rapid River Hatchery	Little Salmon River
<b>Idaho Dept. of Fish and Game Total</b>					<b>7,882,000</b>				
Nez Perce Tribe	Clearwater Hatchery	CH1	SU	2012	206,000	03-26-12	03-27-12	Crooked River	S Fk Clearwater River
Nez Perce Tribe	Dworshak NFH	CO	UN	2012	300,000	04-01-12	04-15-12	Kooskia Hatchery	Clearwater River M F
Nez Perce Tribe	Dworshak NFH	ST	SU	2012	40,000	04-02-12	04-02-12	Lolo Creek	Clearwater River M F
Nez Perce Tribe	Dworshak NFH	ST	SU	2012	160,000	04-02-12	04-02-12	Meadow Creek - CLES	S Fk Clearwater River
Nez Perce Tribe	Kooskia NFH	CH1	SP	2012	620,000	03-26-12	03-26-12	Clear Creek	Clearwater River M F
Nez Perce Tribe	Lookingglass Hatchery	CH1	SP	2012	265,000	03-22-12	04-01-12	Lostine Accim Pond	Wallowa River
Nez Perce Tribe	McCall Hatchery	CH1	SU	2012	106,000	03-14-12	04-05-12	Johnson Cr Idaho	South Fork Salmon River
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH1	SP	2012	195,058	04-01-12	04-15-12	Nez Perce Tribal Hatchery	Clearwater River M F
<b>Nez Perce Tribe Total</b>					<b>1,892,058</b>				
U.S. Fish and Wildlife Service	Dworshak NFH	CH1	SP	2012	1,045,000	03-28-12	03-29-12	Dworshak Hatchery	Clearwater River M F
U.S. Fish and Wildlife Service	Dworshak NFH	ST	SU	2012	300,000	04-02-12	04-02-12	Clear Creek	Clearwater River M F
U.S. Fish and Wildlife Service	Dworshak NFH	ST	SU	2012	400,000	04-02-12	04-02-12	Redhouse (Sfk ClearH2S	S Fk Clearwater River
U.S. Fish and Wildlife Service	Warm Springs NFH	CH1	SP	2012	481,751	04-01-12	04-30-12	Warm Springs Hatchery	Deschutes River
<b>U.S. Fish and Wildlife Service Total</b>					<b>2,226,751</b>				
Umatilla Tribe	Carson NFH	CH1	SP	2012	250,000	03-19-12	03-23-12	Walla Walla River	Walla Walla River
Umatilla Tribe	Cascade Hatchery	CO	UN	2012	1,000,000	04-05-12	04-05-12	Pendelton Acclim Pond	Umatilla River
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2012	146,804	03-21-12	03-30-12	Grande Ronde Acclim P	Grande Ronde River
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2012	160,000	03-22-12	04-16-12	Catherine Cr Acclim Por	Grande Ronde River
<b>Umatilla Tribe Total</b>					<b>1,556,804</b>				
Washington Dept. of Fish and Wildlife	Methow Hatchery	ST	SU	2012	50,000	03-15-12	03-31-12	Twisp Acclim Pond	Methow River
Washington Dept. of Fish and Wildlife	Tucannon Hatchery	CH1	SP	2012	101,000	04-01-12	04-30-12	Curl Lake Acclim Pond	Tucannon River
Washington Dept. of Fish and Wildlife	Tucannon Hatchery	CH1	SP	2012	101,000	04-01-12	04-30-12	Curl Lake Acclim Pond	Tucannon River
Washington Dept. of Fish and Wildlife	Tucannon Hatchery	ST	SU	2012	51,000	04-05-12	05-01-12	Tucannon Hatchery	Tucannon River
Washington Dept. of Fish and Wildlife	Washougal Hatchery	CO	NO	2012	2,575,000	04-01-12	04-05-12	Klickitat River	Klickitat River
<b>Washington Dept. of Fish and Wildlife Total</b>					<b>2,878,000</b>				
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2012	264,721	03-15-12	05-15-12	Clark Flat Acclim Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2012	265,151	03-15-12	05-15-12	Easton Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2012	267,107	03-15-12	05-15-12	Jack Creek Acclim Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2012	100,000	03-02-12	07-01-12	Prosser Acclim Pond	Yakima River
<b>Yakama Tribe Total</b>					<b>896,979</b>				
<b>Grand Total</b>					<b>17,332,592</b>				

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

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

Date	Grand Coulee		Chief Joseph		Wells		Rocky Reach		Rock Island		Wanapum		Priest Rapids	
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
03/09/2012	102.6	0.0	103.2	0.0	107.3	0.0	110.3	0.0	113.0	0.0	125.9	0.0	126.3	0.0
03/10/2012	83.7	0.0	80.5	0.0	81.9	0.0	79.9	0.0	83.7	0.0	96.7	0.0	91.0	0.0
03/11/2012	100.1	0.0	97.2	0.0	97.2	0.0	95.6	0.0	97.0	0.0	98.3	0.0	96.4	0.0
03/12/2012	114.8	0.0	115.0	0.0	115.0	0.0	117.9	0.0	121.8	0.1	126.1	0.0	122.0	0.0
03/13/2012	95.7	0.0	94.8	0.0	96.5	0.0	98.6	0.0	101.5	0.0	113.3	0.0	116.4	0.0
03/14/2012	114.3	0.0	118.1	0.0	118.6	0.0	118.8	0.0	121.8	0.0	125.4	0.6	115.9	0.0
03/15/2012	120.5	0.0	119.1	0.0	117.6	0.0	115.5	0.0	117.6	0.0	121.3	0.6	118.7	0.0
03/16/2012	97.3	0.0	95.3	0.0	100.9	0.2	111.6	3.5	116.0	0.0	133.1	0.8	129.5	0.0
03/17/2012	78.8	0.0	80.1	0.0	87.6	0.0	88.7	0.0	93.5	0.0	114.5	0.0	112.3	0.0
03/18/2012	78.8	0.0	79.6	0.0	81.7	0.0	84.6	0.0	90.0	0.0	98.5	0.0	105.9	0.0
03/19/2012	115.2	0.0	114.4	0.0	107.2	0.0	104.2	0.0	104.3	0.0	100.3	0.0	93.1	0.0
03/20/2012	131.5	0.0	127.8	0.0	124.3	0.0	121.5	0.0	123.3	0.0	119.7	2.0	107.6	0.0
03/21/2012	134.8	0.0	139.0	0.0	142.0	0.5	138.8	1.2	141.2	0.0	149.5	24.7	138.0	0.0
03/22/2012	140.2	0.0	136.6	0.0	136.4	11.1	137.4	7.7	137.9	0.0	151.4	29.1	147.8	2.8

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

Date	Dworshak		Hells Brownlee Canyon		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
03/09/2012	3.1	0.0	16.4	22.6	38.1	0.0	36.0	0.0	38.1	0.0	38.6	0.0
03/10/2012	1.6	0.0	16.2	22.7	41.8	0.0	40.6	0.0	43.1	0.0	45.0	0.0
03/11/2012	1.6	0.0	16.4	23.1	33.8	0.0	33.6	0.0	36.8	0.0	35.5	0.0
03/12/2012	7.9	0.0	18.3	23.9	49.7	0.0	48.0	0.0	50.6	0.0	48.7	0.0
03/13/2012	8.1	0.0	18.6	24.8	46.5	0.0	50.7	0.0	57.3	0.0	58.1	0.0
03/14/2012	8.1	0.0	18.7	24.8	51.5	0.0	54.1	0.0	58.6	0.0	58.9	0.0
03/15/2012	8.1	0.0	20.4	24.8	52.4	0.0	51.7	0.0	57.3	0.0	56.3	0.0
03/16/2012	8.1	0.0	26.7	24.3	66.7	0.0	63.6	0.0	69.4	0.0	68.5	0.0
03/17/2012	8.1	0.0	34.3	23.8	75.8	15.0	62.3	3.3	69.0	0.0	67.3	0.0
03/18/2012	8.1	0.0	33.0	23.9	69.9	11.0	56.9	4.1	63.9	0.0	69.4	0.0
03/19/2012	10.6	0.0	29.2	25.3	70.1	0.0	67.6	0.0	73.7	0.0	68.3	0.0
03/20/2012	10.6	0.0	26.6	31.0	68.2	0.0	65.4	0.0	71.3	0.0	68.5	6.6
03/21/2012	10.6	0.0	23.9	33.9	73.4	0.0	72.9	0.0	81.3	0.0	81.2	17.5
03/22/2012	10.6	0.0	---	---	73.9	0.0	69.6	0.0	75.7	0.0	82.0	10.9

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

Date	McNary		John Day		The Dalles		Bonneville			
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	PH1	PH2
03/09/2012	153.7	0.0	143.4	0.0	151.8	0.0	176.0	1.1	81.7	86.2
03/10/2012	147.3	0.0	132.3	0.0	144.4	0.0	148.5	1.2	56.7	83.6
03/11/2012	133.7	0.0	162.2	0.0	133.3	0.0	154.5	1.3	62.8	83.4
03/12/2012	162.8	0.0	162.2	0.0	165.4	0.0	181.9	0.7	79.0	95.2
03/13/2012	168.0	0.0	180.3	0.0	181.7	0.0	193.4	0.8	82.9	102.7
03/14/2012	179.0	24.5	183.2	0.0	184.6	0.0	202.0	1.3	90.1	103.7
03/15/2012	189.2	61.6	172.8	0.0	172.6	0.0	198.8	1.4	85.4	105.0
03/16/2012	199.3	72.6	192.5	0.0	190.6	0.0	219.8	1.3	94.0	117.5
03/17/2012	214.7	76.4	188.4	0.0	190.1	0.0	222.9	1.2	93.4	121.3
03/18/2012	194.7	54.9	193.4	0.0	198.6	0.0	216.4	1.2	92.6	115.5
03/19/2012	197.8	46.5	208.1	0.0	202.9	0.0	224.7	1.3	99.2	113.6
03/20/2012	172.9	8.0	171.6	0.0	174.4	0.0	201.3	1.2	84.8	103.3
03/21/2012	213.1	35.8	224.4	0.0	219.3	0.0	233.8	1.2	97.6	122.8
03/22/2012	220.8	53.4	213.4	0.0	215.9	0.0	242.9	1.2	116.3	113.0

## 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>	#	<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>	#					
	Avg	Avg		High	Avg		Avg	High		Avg	Avg		High	Avg		Avg	High			
3/9	---	---	---	0	102.3	103.6	103.9	23	100.7	101.1	101.4	24	99.4	100.0	100.3	23	---	---	---	0
3/10	---	---	---	0	104.4	105.0	105.6	23	101.9	102.3	102.5	24	100.9	101.5	101.6	23	---	---	---	0
3/11	---	---	---	0	106.3	106.6	107.0	22	102.6	102.8	103.1	22	101.5	101.9	102.5	22	---	---	---	0
3/12	---	---	---	0	105.9	106.5	107.0	21	102.6	103.1	103.7	24	101.0	101.3	101.8	21	---	---	---	0
3/13	---	---	---	0	106.0	106.3	106.5	23	102.9	103.5	103.8	24	101.6	102.2	103.1	23	---	---	---	0
3/14	97.7	97.7	97.8	2	105.0	105.4	105.8	21	101.7	101.8	102.1	24	99.9	100.2	101.2	21	---	---	---	0
3/15	98.1	98.4	98.7	24	105.4	105.6	105.9	22	102.6	102.8	102.9	24	101.1	101.5	102.1	22	---	---	---	0
3/16	99.2	99.7	99.9	24	105.8	106.2	106.6	22	102.8	103.0	103.2	24	101.6	102.0	102.8	22	---	---	---	0
3/17	100.1	100.2	100.4	23	106.5	106.8	107.3	21	103.4	103.6	103.8	23	102.8	103.3	104.4	21	---	---	---	0
3/18	100.2	100.3	100.7	22	105.8	106.1	107.0	17	102.8	103.0	103.3	19	102.1	102.3	102.8	17	---	---	---	0
3/19	99.7	99.7	99.9	10	104.5	104.5	105.3	10	102.3	102.3	102.5	9	101.5	101.5	101.8	10	---	---	---	0
3/20	99.7	100.0	100.4	24	105.2	105.5	106.0	21	102.8	103.1	103.2	24	101.5	101.9	102.2	21	---	---	---	0
3/21	99.5	99.7	100.0	20	104.3	104.3	104.7	11	102.1	102.1	102.2	14	100.7	100.9	101.2	21	101.5	101.5	102.3	11
3/22	99.4	99.6	99.7	21	104.3	104.3	104.3	1	102.1	102.1	102.5	13	100.8	101.0	101.5	18	101.2	101.3	101.6	24

### 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>	#					
	Avg	Avg		High	Avg		Avg	High		Avg	Avg		High	Avg		Avg	High			
3/9	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/10	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/11	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/12	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/13	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/14	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/15	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/16	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/17	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/18	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/19	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/20	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/21	99.9	99.9	105.2	12	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0
3/22	100.3	100.7	101.4	24	---	---	---	0	---	---	---	0	---	---	---	0	---	---	---	0

### 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>	#					
	Avg	Avg		High	Avg		Avg	High		Avg	Avg		High	Avg		Avg	High			
3/9	---	---	---	0	---	---	---	0	101.2	101.8	102.0	24	101.0	101.5	101.8	24	101.8	102.3	102.7	24
3/10	---	---	---	0	---	---	---	0	102.2	102.5	102.8	24	102.1	102.5	102.7	24	102.7	103.0	103.6	24
3/11	---	---	---	0	---	---	---	0	102.8	103.1	103.3	23	102.5	102.8	102.9	23	103.1	103.4	103.6	23
3/12	---	---	---	0	---	---	---	0	102.7	103.3	103.9	24	102.6	103.0	103.4	24	102.9	103.4	103.9	24
3/13	---	---	---	0	---	---	---	0	102.4	103.0	103.9	24	102.2	102.8	103.6	24	102.3	103.0	103.9	24
3/14	---	---	---	0	---	---	---	0	101.4	101.4	101.5	24	101.3	101.5	101.7	24	101.4	101.7	101.8	24
3/15	---	---	---	0	---	---	---	0	101.7	101.9	102.1	24	102.1	102.4	103.5	24	102.5	102.7	102.9	24
3/16	---	---	---	0	---	---	---	0	102.0	102.3	102.6	24	101.9	102.1	102.4	24	102.4	102.7	103.1	24
3/17	---	---	---	0	---	---	---	0	102.3	102.5	102.7	24	102.3	102.5	102.7	24	102.7	103.2	103.4	24
3/18	---	---	---	0	---	---	---	0	101.9	102.1	102.3	24	101.6	101.8	101.9	24	102.1	102.7	103.0	24
3/19	---	---	---	0	---	---	---	0	101.5	101.7	101.9	24	101.2	101.4	101.6	24	101.1	101.6	101.9	24
3/20	---	---	---	0	---	---	---	0	101.9	102.3	102.5	24	101.8	102.2	103.1	24	101.8	102.0	102.1	24
3/21	---	---	---	0	---	---	---	0	101.3	101.5	101.7	24	104.7	107.0	109.2	24	101.2	101.6	102.6	24
3/22	---	---	---	0	---	---	---	0	101.4	101.6	101.8	24	105.5	106.2	108.0	24	106.3	107.0	108.4	24



## 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>Clwrtr-Peck</u>			#	<u>Anatone</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>		
	Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High	
3/9	101.5	102.1	102.4	24	102.4	103.3	103.8	24	101.3	103.3	105.0	24	100.0	101.4	102.4	24	103.1	104.0	105.0	24
3/10	102.5	102.9	103.2	24	103.2	103.7	103.9	24	102.3	102.8	103.4	24	102.2	103.3	104.1	20	103.3	104.0	104.9	24
3/11	102.8	103.1	103.3	23	102.9	103.2	103.4	22	100.7	102.1	103.1	22	102.1	102.5	103.0	22	102.3	102.6	102.9	22
3/12	102.7	103.3	103.7	24	101.9	102.7	103.0	24	98.2	98.5	98.7	24	100.2	100.4	100.5	22	102.3	103.1	103.4	24
3/13	102.2	102.9	103.8	24	101.6	102.2	102.9	24	97.3	97.6	98.1	24	99.6	100.2	100.6	24	102.3	102.7	102.9	24
3/14	101.3	101.6	101.7	24	100.6	101.3	101.5	24	97.2	97.3	97.5	24	98.7	99.3	99.7	24	103.0	103.9	104.6	24
3/15	102.4	102.8	103.1	24	101.9	102.5	102.8	24	97.4	97.5	97.6	24	99.6	99.6	99.8	17	103.5	103.8	104.5	24
3/16	102.4	102.6	103.1	24	102.6	103.4	103.9	24	98.0	98.3	98.4	24	99.7	100.1	100.8	24	102.3	102.5	102.9	24
3/17	102.9	103.2	103.2	24	102.8	103.1	103.8	24	97.9	98.1	98.2	24	100.0	100.3	101.0	22	101.7	101.9	102.1	24
3/18	102.2	102.6	103.0	24	101.6	102.0	102.4	24	97.6	98.0	98.3	24	99.7	99.8	100.0	19	101.3	101.4	101.8	22
3/19	101.3	101.6	101.9	24	100.9	101.5	102.0	20	96.5	96.7	96.9	20	99.0	99.3	99.5	20	101.6	101.6	102.7	12
3/20	101.9	102.3	102.5	24	100.9	101.2	101.5	24	96.0	96.3	96.9	24	98.5	98.9	99.0	24	101.5	101.7	101.8	24
3/21	101.4	101.8	102.6	24	100.2	100.8	101.2	24	95.8	95.8	95.8	13	97.9	98.0	98.3	22	102.3	103.1	103.3	24
3/22	105.6	106.6	107.1	24	101.1	101.9	102.3	24	316.9	316.9	979.8	4	98.4	98.5	98.8	13	102.8	103.1	103.4	19

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

Date	<u>Clwrtr-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>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>		
	Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High	
3/9	101.1	102.9	104.6	24	102.2	102.7	102.9	24	101.9	102.4	102.7	24	100.7	101.5	101.9	24	100.2	100.7	101.0	24
3/10	102.0	103.8	105.5	23	102.8	102.9	102.9	24	102.1	102.3	102.4	24	101.7	102.3	102.5	24	101.2	101.6	101.8	24
3/11	100.4	100.8	101.6	20	102.7	103.0	103.2	22	102.1	102.4	102.5	22	102.3	102.6	102.7	22	101.7	102.0	102.1	22
3/12	99.8	100.6	101.0	24	102.9	103.6	104.2	24	102.5	103.2	103.9	24	102.3	102.8	103.3	24	101.7	102.3	102.7	24
3/13	99.3	99.8	100.4	22	104.0	104.5	104.9	24	103.6	104.0	105.1	24	102.5	103.0	103.6	24	101.9	102.5	103.1	24
3/14	99.8	101.0	101.9	24	103.3	103.4	103.4	24	102.8	102.9	103.2	24	101.6	101.7	101.8	24	101.1	101.4	101.6	24
3/15	99.9	100.3	100.8	22	102.8	103.2	103.4	24	102.1	102.4	102.6	24	101.9	102.0	102.1	24	101.5	101.6	101.8	24
3/16	98.9	99.5	99.8	20	102.0	102.3	102.9	24	101.5	101.8	102.4	24	102.1	102.5	103.1	24	101.6	102.0	102.8	24
3/17	82.6	82.6	82.6	1	103.1	103.3	103.5	24	109.3	111.9	112.6	24	103.5	103.7	103.8	24	103.9	104.6	105.7	24
3/18	81.1	81.1	81.1	1	103.3	103.6	103.6	24	108.2	111.0	111.7	24	103.2	103.3	103.4	24	103.8	104.9	107.7	24
3/19	99.6	99.6	101.1	11	101.1	101.4	102.1	20	100.9	101.4	102.5	20	101.3	101.5	102.2	20	100.6	100.8	101.8	20
3/20	97.2	97.2	97.4	14	100.4	100.8	101.0	24	99.9	100.3	100.6	24	102.0	102.5	103.1	24	101.9	102.7	103.0	24
3/21	97.3	97.3	97.5	9	99.5	99.6	100.3	14	99.1	99.2	99.5	20	103.7	103.9	104.2	24	103.2	103.4	103.6	24
3/22	97.2	97.2	97.2	1	138.4	173.6	978.0	23	385.8	385.8	385.8	1	102.3	103.0	104.1	24	101.2	101.9	102.8	24

### 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>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>		
	Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High	
3/9	100.1	100.6	100.8	24	99.5	100.0	101.0	24	101.2	101.7	101.9	24	100.8	101.4	101.9	24	---	---	---	0
3/10	101.3	101.7	102.0	24	100.7	101.2	102.1	24	102.3	102.6	102.9	24	101.6	102.0	102.2	24	---	---	---	0
3/11	102.1	102.3	102.4	22	101.3	101.5	101.6	22	102.7	103.0	103.3	22	102.1	102.4	102.9	22	---	---	---	0
3/12	102.2	102.8	103.3	24	101.9	102.9	104.3	24	102.5	102.9	103.3	24	101.9	102.3	102.6	24	---	---	---	0
3/13	102.2	102.9	103.5	24	101.4	102.1	102.9	24	101.9	102.6	103.5	24	101.3	101.9	102.8	24	---	---	---	0
3/14	101.0	101.1	101.2	24	100.2	100.3	101.1	24	100.9	101.2	101.4	24	100.2	100.5	100.7	24	---	---	---	0
3/15	101.5	101.7	101.8	24	100.9	101.3	102.2	24	101.8	101.9	102.0	24	101.2	101.3	101.4	24	---	---	---	0
3/16	102.1	102.5	103.5	24	101.5	102.0	102.6	24	102.2	102.5	103.1	24	101.5	101.9	102.4	24	---	---	---	0
3/17	103.0	103.3	103.7	24	102.4	102.6	103.6	24	102.8	103.0	103.2	24	102.0	102.3	102.5	24	---	---	---	0
3/18	102.2	102.4	102.5	24	101.5	101.7	102.2	24	102.2	102.3	102.4	24	101.6	101.8	102.1	24	---	---	---	0
3/19	101.4	101.6	102.1	20	101.1	101.4	101.7	20	101.5	101.7	101.9	20	101.0	101.2	102.2	20	---	---	---	0
3/20	102.2	102.4	102.6	24	101.5	101.7	102.0	24	101.4	101.8	101.9	24	103.5	106.1	109.9	24	---	---	---	0
3/21	101.2	101.4	101.6	24	100.6	100.7	102.2	13	100.7	100.9	101.3	23	107.8	112.1	112.3	23	---	---	---	0
3/22	100.6	101.1	101.6	24	---	---	---	0	100.9	101.2	101.4	24	106.3	108.9	112.4	24	---	---	---	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>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>High</u>	<u>#</u>	
	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	AVG	High	hr
3/9	101.8	102.3	102.7	24	102.2	102.4	102.6	24	---	---	---	0	101.7	101.8	102.6	14	---	---	---	0
3/10	103.2	103.7	104.3	24	103.8	104.1	104.3	24	---	---	---	0	103.1	103.3	103.7	19	---	---	---	0
3/11	104.1	104.4	104.9	22	103.6	103.8	104.1	22	---	---	---	0	103.7	103.9	104.1	22	---	---	---	0
3/12	104.2	104.7	105.0	24	104.5	104.8	105.1	24	---	---	---	0	104.3	105.0	105.4	24	---	---	---	0
3/13	103.2	104.0	105.1	24	102.2	102.8	103.4	24	---	---	---	0	103.9	104.5	105.4	24	102.5	102.5	102.8	9
3/14	101.7	101.8	102.1	24	108.9	109.4	110.1	24	103.6	103.7	104.0	14	103.3	103.6	103.9	24	102.8	103.1	103.2	24
3/15	101.9	102.0	102.2	24	113.1	113.5	113.6	24	104.1	104.3	104.8	24	103.7	104.0	105.6	24	103.7	103.8	104.0	24
3/16	102.4	102.9	103.6	24	114.6	115.3	115.5	24	104.4	105.0	105.7	24	103.8	104.3	104.7	24	104.0	104.6	105.1	24
3/17	103.1	103.3	103.7	24	113.5	114.9	115.1	24	105.0	105.3	105.7	24	104.2	104.4	104.7	24	104.4	104.8	105.3	24
3/18	103.0	103.1	103.2	24	110.3	110.6	112.1	24	104.1	104.3	104.4	22	103.4	103.7	103.9	22	103.6	103.8	104.0	22
3/19	101.9	102.1	102.3	20	108.4	109.0	110.9	20	103.4	103.4	103.9	12	102.9	102.9	103.4	12	102.8	102.8	103.2	12
3/20	101.8	102.2	102.3	24	103.2	105.0	106.2	24	103.8	104.1	104.3	24	103.5	103.7	103.9	24	102.9	103.4	103.5	24
3/21	101.0	101.2	101.6	24	110.8	114.2	115.2	24	103.5	103.5	103.6	13	103.7	104.0	104.4	24	102.9	103.3	104.0	24
3/22	101.2	101.6	102.0	22	108.0	113.9	114.6	24	104.2	104.4	104.7	16	103.9	104.1	104.2	24	103.5	103.8	104.0	24

### 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>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>#</u>	<u>24h</u>	<u>12h</u>	<u>High</u>	<u>#</u>	
	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
3/9	102.2	102.7	103.0	24	---	---	---	0	103.4	104.1	104.3	24	103.3	104.6	105.2	24	108.6	109.0	110.2	24
3/10	103.2	103.6	103.9	24	---	---	---	0	104.6	105.0	105.2	24	104.3	104.8	105.0	24	108.7	109.1	109.9	24
3/11	103.6	103.8	104.0	22	---	---	---	0	104.7	104.9	105.3	22	104.1	104.3	104.6	22	108.9	109.4	110.1	22
3/12	103.8	104.2	104.4	24	---	---	---	0	104.7	104.8	104.8	24	103.4	103.6	103.7	24	107.8	108.2	109.0	24
3/13	103.0	103.5	104.0	24	---	---	---	0	103.8	104.2	104.4	24	102.7	102.9	103.3	24	107.5	108.6	109.9	24
3/14	102.7	103.0	103.3	24	102.4	102.4	102.6	9	103.0	103.1	103.2	24	101.9	102.1	102.5	24	106.2	106.4	106.6	24
3/15	103.6	103.9	104.0	24	103.0	103.2	103.6	24	103.5	103.6	103.8	24	102.5	103.1	103.6	24	106.3	106.7	107.0	24
3/16	103.8	104.3	104.6	24	104.5	105.4	106.2	24	104.8	105.7	106.2	24	104.1	105.4	106.2	24	107.0	108.4	109.2	24
3/17	104.1	104.4	104.6	24	104.8	105.2	106.1	24	105.1	105.4	106.3	24	104.7	105.2	105.4	24	107.5	108.0	108.3	24
3/18	103.3	103.6	103.7	22	103.9	104.1	104.3	22	104.3	104.5	104.8	22	104.0	104.2	104.5	22	107.0	107.5	108.0	22
3/19	102.3	102.3	102.5	12	103.2	103.2	103.4	12	103.7	103.7	104.0	12	103.5	103.5	104.1	12	106.8	106.8	107.8	12
3/20	102.6	103.0	103.3	24	102.9	103.3	103.5	24	103.5	104.0	104.4	24	102.9	103.1	103.4	24	105.8	106.1	106.6	24
3/21	102.4	102.6	103.3	19	101.9	102.2	102.4	24	102.4	102.5	102.9	13	102.1	102.5	102.9	24	105.7	106.6	107.4	22
3/22	103.2	103.4	103.6	24	102.3	102.8	103.0	24	---	---	---	0	102.1	102.9	103.3	23	105.7	105.7	106.9	12





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)
03/09/2012	0	---	0	0	---	---	---	---	---	---	0
03/10/2012	*	0	---	0	0	---	---	---	---	---	0
03/11/2012		0	---	0	0	---	---	---	---	---	0
03/12/2012	*	0	---	0	0	---	---	---	---	---	0
03/13/2012	*	0	0	0	0	---	---	---	---	---	0
03/14/2012	*	0	0	0	0	---	---	---	---	---	0
03/15/2012		0	0	0	0	---	---	---	---	---	0
03/16/2012		0	---	0	0	---	---	---	---	---	0
03/17/2012	*	0	---	---	0	---	---	---	---	---	0
03/18/2012	*	0	---	---	0	---	---	---	---	---	0
03/19/2012	*	0	---	0	0	---	---	---	---	---	0
03/20/2012	*	0	---	0	0	---	---	---	---	---	0
03/21/2012	*	0	---	0	0	---	---	---	---	---	0
03/22/2012		0	---	0	0	---	---	---	---	---	0
03/23/2012		---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b># Days:</b>	<b>14</b>	<b>3</b>	<b>12</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>YTD</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

COMBINED LAMPREY JUVENILES											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR <sup>†</sup> (Coll)	LGS (Coll)	LMN (Coll)	RIS (Coll)	MCN (Coll)	JDA (Coll)	BO2 (Coll)
03/09/2012	0	---	0	0	---	---	---	---	---	---	300
03/10/2012	*	0	---	0	0	---	---	---	---	---	468
03/11/2012		0	---	0	0	---	---	---	---	---	340
03/12/2012	*	0	---	0	0	---	---	---	---	---	232
03/13/2012	*	0	0	0	0	---	---	---	---	---	172
03/14/2012	*	0	0	0	0	---	---	---	---	---	84
03/15/2012		0	0	0	0	---	---	---	---	---	44
03/16/2012		0	---	0	0	---	---	---	---	---	16
03/17/2012	*	6	---	---	0	---	---	---	---	---	40
03/18/2012	*	0	---	---	0	---	---	---	---	---	234
03/19/2012	*	0	---	0	0	---	---	---	---	---	70
03/20/2012	*	0	---	0	0	---	---	---	---	---	140
03/21/2012	*	0	---	0	0	---	---	---	---	---	80
03/22/2012		0	---	0	0	---	---	---	---	---	143
03/23/2012		---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,363</b>
<b># Days:</b>	<b>14</b>	<b>3</b>	<b>12</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>169</b>
<b>YTD</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3,303</b>

\* 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: 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.

† Caution should be used with interpreting lamprey juvenile collection counts at LGR because of the possibility that lamprey may escape the sample tank before being sampled



## Two-Week Summary of Passage Indices

### 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 = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill)}

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

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

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

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

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

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

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

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

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

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

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

Passage Index = Collection Counts / {Powerhouse 2 Flow / (Powerhouse 1 & 2 Flow + 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/Washington Dept. of Fish and Wildlife.

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.

Cumulative Adult Passage at Mainstem Dams Through: 03/22

DAM	EndDate	Spring Chinook						Summer Chinook						Fall Chinook					
		2012		2011		10-Yr Avg.		2012		2011		10-Yr Avg.		2012		2011		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	21-Mar	15	1	28	0	520	0	0	0	0	0	0	0	0	0	0	0	0	0
TDA	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JDA	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MCN	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IHR	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LMN	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LGS	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LGR	20-Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRD	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIS	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RRH	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEL	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WFA	21-Mar	2	0	1	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0

DAM	Coho						Sockeye			Steelhead					
	2012		2011		10-Yr Avg.		2012	2011	10-Yr Avg.	2012	2011	10-Yr Avg.	Wild 2012	Wild 2011	10-Yr Avg.
	Adult	Jack	Adult	Jack	Adult	Jack									
BON	0	0	0	0	0	0	0	0	0	556	284	264	187	0	0
TDA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JDA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MCN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IHR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LMN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LGS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LGR	0	0	0	0	0	0	0	0	0	2,269	2,606	3,351	773	0	0
PRD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RRH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WFA	0	0	0	0	0	0	0	0	0	1,779	3,957	4,561	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.

Page last updated on: 03/16/12

BON counts from January 1, 2012 to March 21, 2012 (historical counts begin March 15):

Year	Chinook Adult	Chinook Jack	Steelhead	Wild Steelhead
2012	29	2	2,088	700
2011	77	1	1,703	727