



# Fish Passage Center

## Weekly Report #11 - 11

May 27, 2011

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### Summary of Events:

**Water Supply:** Precipitation throughout the Columbia Basin has varied between 65% and 235% of average at individual sub-basins over May. Precipitation above The Dalles has been 133% of average over May. Over the 2011 water year, precipitation has ranged between 107% and 128% of average.

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

Location	Water Year 2011 May 1-23, 2011		Water Year 2011 October 1, 2010 to May 23, 2011	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	1.57	95	20.52	117
SNAKE RIVER ABOVE ICE HARBOR	1.93	138	16.79	128
Columbia Above The Dalles	1.95	133	21.23	122
Kootenai	1.61	98	20.71	115
Clark Fork	1.36	90	14.12	120
Flathead	1.18	65	19.78	127
Pend Oreille/ Spokane	2.22	115	29.62	121
Central Washington	1.34	235	8.07	113
SNAKE RIVER PLAIN	1.46	133	10.52	127
Salmon/Boise/ Payette	1.66	125	17.84	114
Clearwater	2.77	123	29.91	127
SW Washington Cascades/Cowlitz	3.73	133	67.53	110
Willamette Valley	2.17	83	56.62	107

Snowpack in the Columbia River for basins above the Snake River confluence is 197% of average, for Snake River Basins snowpack is 228% of average, and for lower Columbia Basins between McNary and Bonneville Dam snowpack is 348% of average.

Table 2 displays the May Final and May Mid-Month runoff volume forecasts for multiple reservoirs. The May Mid-Month forecast at The Dalles between January and July is 133000 Kaf (124% of average).

**Table 2. May Final and May Mid-Month Runoff Volume Forecasts for various reservoirs within the Columbia and Snake River Basins.**

Location	May Final		May Mid-Month	
	% Average (1971 -2000)	Probable Runoff Volume (Kaf)	% Average (1971 -2000)	Probable Runoff Volume (Kaf)
The Dalles (Jan-July)	119	128000	124	133000
Grand Coulee (Jan-July)	117	73700	120	75700
Libby Res. Inflow, MT (Apr-Aug)	123	7660 8165*	125	7840
Hungry Horse Res. Inflow, MT (Jan-July)	149	3310	147	3270
Lower Granite Res. Inflow (Apr- July)	132	28400	140	30200
Brownlee Res. Inflow (Apr-July)	144	9060	152	9620
Dworshak Res. Inflow (Apr-July)	130	3440 3772*	134	3530

\* Denotes COE Forecast

The Biological Opinion flow period began on April 3rd in the lower Snake River (Lower Granite). According to the April Final Water Supply Forecast, the flow objective this spring is 100 Kcfs at Lower Granite. Flows at Lower Granite Dam have averaged 179.9 Kcfs over the last week and 120.2 Kcfs over the spring season.

Based on the April Final Water Supply Forecast, the Spring Biological Opinion Flow Objectives is 260 Kcfs at McNary Dam (began April 10<sup>th</sup>) and 135 Kcfs at Priest Rapids Dam (began April 10<sup>th</sup>). Flows at McNary Dam have averaged 456.7 Kcfs over the last week and 310.5 Kcfs over the spring season. Flows at Priest Rapids Dam have averaged 260.5 Kcfs over the last week and 179.9 Kcfs over the spring season.

Grand Coulee Reservoir is at 1233.6 feet (5-26-11) and has refilled 7.7 feet over the last week. Outflows at Grand Coulee have ranged between 198.6 and 237.2 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2359.1 feet (5-26-11) and has refilled 12.6 feet last week. Outflows at Libby Dam have been 16.0 Kcfs last week.

Hungry Horse is currently at an elevation of 3494.3 feet (5-26-11) and has refilled 9.6 feet last week. Outflows at Hungry Horse have been 8.0 Kcfs last week.

Dworshak is currently at an elevation of 1524.8 feet (5-26-11) and has refilled 21.9 feet last week. Outflows from Dworshak have ranged between 2.4-7.4 Kcfs last week.

The Brownlee Reservoir was at an elevation of 2043.8 feet on May 26<sup>th</sup>, 2011 drafting 1.2 feet last week. Over the last week, outflows at Brownlee have ranged between 62.0-68.6 Kcfs.

**Spill:**

Spill for fish passage began on April 3<sup>rd</sup> at the lower Snake River projects, and on April 10<sup>th</sup> at the lower Columbia River projects.

High flows in the Snake and Columbia rivers have resulted in uncontrolled spill levels throughout the FCRPS, as flows peak and the system is operated for flood control.

A small amount of spill occurred at Dworshak Dam on May 21<sup>st</sup>. Otherwise, the project has been refilling. All units are now operational at Lower Granite Dam. Over the past week, daily average flows at Lower Granite Dam have ranged from 160.1 to 199.8 Kcfs and spill has ranged from 55.7

to 95.8 Kcfs. At Little Goose Dam, spill exceeded the 30% level as specified in the Court Order during the beginning of the week and the project began to spill all river flow, except for 5 Kcfs for station power generation, beginning Tuesday May 24<sup>th</sup> at 0600 hours. The Little Goose Dam powerhouse experienced two separate problems that affected all six generating units. The COE originally expected the repairs to be completed sometime this weekend, however, the completion has been pushed back to Tuesday May 31<sup>st</sup> at the earliest. During repairs the transformer core was exposed to the atmosphere under wet weather conditions and additional work requiring several additional days, is needed to remove all moisture from the transformer core insulation. Daily average Spill at Little Goose Dam has ranged from 82.5 to 177.2 Kcfs. Daily average spill at Lower Monumental Dam this week has ranged from 46.9 to 83.8 Kcfs. Earlier in the past week, the COE attempted to limit spill at this project to address TDG issues whenever possible. However, as flows increased this operation became less possible, and spill occurred as all flow in excess of powerhouse capacity.

Beginning April 28<sup>th</sup>, the Court Order spill operations at Ice Harbor called for an alternating schedule of 45 Kcfs spill during the day and gas cap spill at night versus 30% if instantaneous flow, on 2-day alternating blocks until mid-July. Over the past week spill levels have exceeded the Court Order and, since May 22<sup>nd</sup> spill has occurred as all flow in excess of powerhouse capacity. Spill has ranged from 82.7 to 121.5 Kcfs.

Project	Day/Night Spill
Lower Granite	20 Kcfs/20 Kcfs
Little Goose	30%/30%
Lower Monumental	Gas Cap/Gas Cap
Ice Harbor	<b>April 3-April 27:</b> 45 Kcfs/gas cap <b>April 28--mid-July:</b> 45 Kcfs/gas cap vs. 30%/30%

Spill for fish passage at the Lower Columbia projects began on April 10<sup>th</sup>. However, due to high flows spill is also in excess of the Court Ordered spill for fish passage in the lower Columbia. In addition,

spill is occurring at Grand Coulee Dam, which is being operated for flood control downriver. The COE is targeting a flood control flow of 480 Kcfs at The Dalles Dam. This flow exceeds the 7Q10 flow, above which Oregon and Washington's water quality standards do not apply.

Spill at McNary Dam has been in excess of the Court Order as a result of spill in excess of hydraulic capacity due to unit outages. Spill has ranged between 65.7% and 69.3% of daily average flow (daily average spill ranged from 273.4 to 333 Kcfs) at this project. The planned test at John Day Dam started on the evening of April 27<sup>th</sup>. Under this test, spill at John Day Dam alternates between 30% and 40% of instantaneous flow, roughly every two days. Spill levels at John Day have generally met, or exceeded the Court Order this week (daily average spill ranged from 40% to 44.4% of total river flow). At The Dalles Dam, spill exceeded the 40% objective this past week, ranging from 43.1% to 46.7%. Finally, at Bonneville Dam, spill exceeded the 100 Kcfs in the Court Order over the past week and ranged from a daily average of 253.9 to 275.2 Kcfs.

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

All points of compliance, with the exception of the Lower Granite Dam forebay monitor, were exceeding the 115/120% TDG levels. Limited GBT monitoring has taken place this past week due to Snake River projects operating in primary bypass as a result of The Dalles Dam lock outage, the powerhouse outage at Little Goose Dam and the removal of fish screens from the units at Bonneville Dam. Over the past week, up to two percent of fish were observed with Rank 1 signs of GBT at Rock Island Dam. The GBT percentage increased to near 5% at Lower Monumental Dam, reflecting the powerhouse failure and total river spill occurring at Little Goose Dam. It is likely that these percentages may increase as the 100% spill level continues at Little Goose Dam. The action criteria for GBT with Rank 1 signs of GBT is 15% of the population. However, with the present

flows and spill levels the system is in an uncontrolled state and no action would be possible if the criteria were exceeded.

**Smolt Monitoring:**

Transportation was suspended at Snake River sites beginning May 22 due to a combination of lock outage at The Dalles Dam, high flows and powerhouse outage at Little Goose Dam. All SMP traps have quit operating either temporarily or for the season due to high flows and debris. The two IDFG SMP traps at Salmon River and Snake River have ended sampling for the season. At the Grande Ronde Trap sampling has been sporadic due to high flows and debris. And at the Imnaha Trap sampling has been disrupted due to damage to the trap as well as high flow and debris.

The Salmon River Trap, located at River km 103, and operated by Idaho Department of Fish and Game the trap was badly damaged by logs that jammed into the rotating screen on May 8. The trap will be out of service through the remainder of 2011 season. The Grande Ronde Trap, operated by the Oregon Department of Fish and Wildlife, located at river mile two in the Grande Ronde River has suspended had sampling disrupted due to high flows and debris. The Imnaha River Trap, operated by the Nez Perce Tribe, has suspended sampling also. At the Lewiston Trap, operated by IDFG, located at River km 225 on the Snake River, just above the confluence with the Clearwater River, the trap has ended operations for the season due to high flows and debris concerns.

Juvenile fish transportation was suspended at Snake River dams on May 22 due to both high flows and a lock outage at The Dalles Dam. The lock at The Dalles Dam was shutdown for repairs this week so that barge traffic could not pass the project. Since flows were projected to be at or above levels that were safe for barges to dock at Lower Granite and Lower Monumental this week anyway, and Little Goose Dam was slated to shutdown the entire powerhouse this week, TMT decided to bypass fish at the transport sites. Indeed by May 27 flows were at 200 Kcfs at Lower Granite Dam so that transport collection would not have been possible. And repairs at Little Goose Dam are slated to continue through the end of May, with May 31 the new date when the site will be up and running again.

Juvenile fish collection has been suspended at Little Goose Dam due to no powerhouse

operation. Lower Monumental Dam is sampling for condition every three days during the transportation outage. However Lower Granite Dam has continued sampling this week. At Lower Granite Dam steelhead predominated in the sample again this week with the average index at 48,000 per day compared to 136,000 per day last week. Yearling Chinook collection was decreasing rapidly also with the average index at 21,000 this week compared to 114,000 last week. Sockeye in the sample are likely from the upper Salmon River based on PIT-tag recaptures. PIT-tag sockeye have begun arriving in large numbers in the past 3 days with the first detections on May 17. Nearly 1,200 PIT-tagged sockeye have been detected in the past 3 days. Subyearling Chinook passage indices have begun increasing rapidly with the index averaging 13,000 per day this week compared to 7,000 per day last week.

Sampling at McNary Dam is every other day in the spring. Normal sampling began on April 13. Yearling Chinook continued to predominate in passage at the site this past week, with the average passage index at 71,000 compared to 102,000 last week. For steelhead the index averaged 25,000 and for sockeye the index was at 19,000 per day this week compared to 20,000 per day last week. Increased numbers of coho, subyearling Chinook and lamprey were also passing the project. The subyearling index rose to nearly 35,000 on May 25 which is the highest to date for the site.

At John Day Dam relatively large numbers of yearling Chinook and steelhead have been collected over the past two weeks. Yearling Chinook and steelhead predominated in the sample the past week with the passage index averaging 120,000 per day for both species. Lamprey collections have increased over the past week. The lamprey collection averaged about 25,000 per day this week compared to less than 1,300 per day last week.

At Bonneville Dam the screens have been removed at Powerhouse 2 so that collections are lower than normal. Due to debris and high flows the COE was unable to keep the screens clean so that they decided to remove the screens until flows subside. Given the biased collections the largest collections over the past week have been coho. Yearling Chinook indices dropped rapidly with the average index this week at 9,000 compared to 60,000 per day last week. Subyearling Chinook indices have remained low over the past two weeks, with the passage index averaging of 2,000 per day the past two weeks. This likely indicates subyearling Chinook passage increased over the past

week but that collection proportion was lower due to screens being absent. Steelhead and sockeye indices remained steady in the past week at the site—indicating that passage for those species likely increased but collection proportion went down due to screen removal.

#### **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 subyearling fall Chinook juveniles were scheduled to begin this week. In all, these releases were expected to total over nearly 1.8 million fall Chinook juveniles. Of these, approximately 28% were scheduled to be released from the Big Canyon Creek Acclimation Facility on the Clearwater River. The remaining 72% were scheduled to be released from various locations in the Snake River above Lower Granite Dam. These release sites include: the Pittsburg Landing Acclimation Facility, the Captain Johns Rapids Acclimation Facility, and the Grande Ronde River. Of the nearly 1.8 million fall Chinook juveniles scheduled for release this week, approximately 53% are unmarked. There were no other releases of salmonid smolts scheduled to begin this week.

In addition to the subyearling fall Chinook that were scheduled for release this week, approximately 900,000 fall Chinook subyearlings are scheduled for release into the Clearwater River and its tributaries over the next two weeks. About 22% of the subyearling fall Chinook juveniles are expected to be unmarked. Finally, on or about June 1<sup>st</sup>, approximately 300,000 spring Chinook parr are scheduled for release into the Selway River. These spring Chinook parr are 100% unmarked and are not expected to out-migrate until spring 2012.

**Mid-Columbia Zone:** The Mid-Columbia Zone encompasses the area of the Columbia River and its tributaries from McNary Dam to Chief Joseph Dam. A volitional release of nearly 443,000 subyearling summer Chinook from Wells Hatchery that began last week finished this week. There were no other releases of juvenile salmonids scheduled to begin this week.

Several releases that began in past weeks are scheduled to end over the next two weeks. Most of the releases that are expected to end over the next two weeks are of coho juveniles to the Methow, Wenatchee, and Yakima rivers. These coho releases are part of the Yakama Tribal program to reintroduce

coho into these river systems. The only release of juvenile salmonids that is scheduled to begin over the next two weeks is a release of nearly 6.8 million subyearling fall Chinook into the Mid-Columbia River, from Priest Rapids Hatchery. Approximately 57% of these subyearling fall Chinook juveniles are expected to be unmarked.

**Lower Columbia Zone:** The Lower Columbia Zone is defined as the Columbia River and its tributaries from Bonneville Dam to McNary Dam. Approximately 600,000 subyearling fall Chinook were scheduled for release into the Umatilla River this week. There were no other releases of juvenile salmonids scheduled to begin this week in this zone. Beginning on or around June 1<sup>st</sup>, approximately 4.0 million subyearling fall Chinook juveniles will be released into the Klickitat River from Klickitat Hatchery. There are no other releases scheduled to begin in this zone over the next two weeks.

**Adult Passage:**

Adult counts at Bonneville Dam have been updated through May 26th. Daily adult spring Chinook counts at Bonneville Dam ranged from 443 to 1,048 adult salmon per day. Between March 15th and May 26th, 161,047 adult spring Chinook have been counted at Bonneville Dam. In 2010, 233,016 adult spring Chinook were counted at Bonneville Dam for the same time period. The 2011 adult spring Chinook count at Bonneville Dam is 69.1% of the 2010 count and about 96.4% of the 10 year average of 167,033. The 2011 spring Chinook jack count of 44,220 is about 3.85 times greater than the 2010 count of 11,484 and 2.87 times greater than the 10 year average count of 15,379. At Willamette Falls Dam 17,430 adult spring Chinook have been counted so far this year. At The Dalles Dam the 2011 adult spring Chinook is 117,951 and at McNary Dam 91,004 adult spring Chinook have been counted. The Dalles Dam 2011 adult spring Chinook count is only about 68.1% of the 2010 count of 173,094 and 98.3% of the 10 year average count of 119,972. The 2011 McNary Dam adult spring Chinook count is about 69% of the 2010 count, while being 1.03 times greater than the 10 year average count of 88,632. The 2011 McNary spring Chinook jack count of 20,563 is about 2.90 times greater than the 2010 count and 2.34 times greater than the 10 year average. The 2011 Lower Granite adult spring Chinook count of 36,841 is about 49.3% of the 2010 count and 78.2% of the 10 year average count.

The Bonneville Dam 2011 steelhead count of 3,536 is about 49.8% of the 2010 count of 7,102 and about 83.7% of the 10 year average count of 4,226. At upriver sites, adult steelhead continue to move through the hydro system 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 2 to 18 adults per day last week. This year's Lower Granite steelhead count of 12,264 is about 1.17 times greater than the 2010 count of 10,443 and 1.32 times greater than the 10 year average of 9,317. The 2011 Lower Granite wild steelhead count as of May 26th was 5,746. At Willamette Falls Dam, the 2011 count for steelhead was 12,856, as of May 24th. This year's steelhead count is about 66.4% of the 2010 count of 19,361 at Willamette Falls Dam for the same date range.

### Hatchery Releases Last Two Weeks

Hatchery Release Summary									
From:	5/13/2011		to		05/26/11				
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
National Marine Fisheries Service	Lyons Ferry Hatchery	CH0	FA	2011	230,000	05-16-11	06-06-11	Couse Creek	Snake River
<b>National Marine Fisheries Service</b>					<b>230,000</b>				
<b>Total</b>					<b>230,000</b>				
Nez Perce Tribe	Kooskia NFH	CH0	SP	2012	50,000	05-20-11	05-20-11	Meadow Creek - SELW Pittsburg Landing	Selway River
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2011	400,000	05-23-11	05-31-11	Acclim Pond	Snake River
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2011	500,000	05-22-11	05-31-11	Cpt John Acclim Pond Big Canyon (Clearwater River)	Snake River
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2011	500,000	05-25-11	05-31-11	River)	Clearwater River M F
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	FA	2011	300,000	05-20-11	06-15-11	Clearwater River	Snake River
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	FA	2011	500,000	05-10-11	05-25-11	Lapwai Creek	Clearwater River M F
<b>Nez Perce Tribe Total</b>					<b>2,250,000</b>				
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	CH0	FA	2011	399,500	05-24-11	05-24-11	Grande Ronde River	Grande Ronde River
Oregon Dept. of Fish and Wildlife	Round Butte Hatchery	CH1	SP	2011	244,342	04-04-11	06-01-11	Deschutes River	Deschutes River
Oregon Dept. of Fish and Wildlife	Umatilla Hatchery	CH0	FA	2011	600,000	05-23-11	05-23-11	Umatilla River	Umatilla River
<b>Oregon Dept. of Fish and Wildlife</b>					<b>1,243,842</b>				
<b>Total</b>					<b>1,243,842</b>				
U.S. Fish and Wildlife Service	Hagerman NFH	ST	SU	2011	213,919	05-06-11	05-17-11	Yankee Fk (Salmon R)	Salmon River (ID)
U.S. Fish and Wildlife Service	Hagerman NFH	ST	SU	2011	220,419	05-06-11	05-17-11	Yankee Fk (Salmon R)	Salmon River (ID)
<b>U.S. Fish and Wildlife Service Total</b>					<b>434,338</b>				
Warm Springs Tribe	Oak Springs Hatchery	ST	SU	2011	25,000	04-30-11	05-14-11	Parkdale Acclim Pond	Hood River
<b>Warm Springs Tribe Total</b>					<b>25,000</b>				
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	CH1	SP	2011	440,000	04-20-11	05-16-11	Chiwawa River	Wenatchee River
Washington Dept. of Fish and Wildlife	Eastbank Hatchery	CH1	SP	2011	51,000	05-15-11	05-15-11	Lake Wenatchee	Wenatchee River
Washington Dept. of Fish and Wildlife	Eastbank Hatchery	CH1	SP	2011	65,897	05-15-11	05-15-11	White River	Wenatchee River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	CH0	FA	2011	200,000	05-20-11	05-31-11	Couse Creek	Snake River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	CH0	FA	2011	200,000	05-20-11	05-31-11	Lyons Ferry Hatchery	Snake River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2011	54,000	04-15-11	05-15-11	Baileysburg Bridge	Touchet River
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	SU	2011	20,000	05-10-11	05-20-11	White Salmon River	White Salmon River
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	SU	2011	88,300	05-10-11	05-20-11	Klickitat Hatchery	Klickitat River
Washington Dept. of Fish and Wildlife	Turtle Rock Hatchery	CH1	SU	2011	250,000	05-16-11	05-16-11	Turtle Rock Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Wells Hatchery	CH0	SU	2011	442,821	05-19-11	05-24-11	Wells Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2011	3,960	05-19-11	05-19-11	Okanogan River	Okanogan River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2011	62,190	04-27-11	05-16-11	Twisp River	Methow River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2011	73,623	05-09-11	05-17-11	Similkameen Acclim Pd	Okanogan River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2011	83,861	04-26-11	05-16-11	Chewuch River	Methow River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2011	154,370	04-21-11	05-19-11	Methow River	Methow River
<b>Washington Dept. of Fish and Wildlife</b>					<b>2,190,022</b>				
<b>Total</b>					<b>2,190,022</b>				
Yakama Tribe	Cascade Hatchery	CO	UN	2011	69,223	05-07-11	06-16-11	Coulter Creek	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2011	69,322	05-07-11	06-12-11	Rollings Acclim Pond Butcher Creek Acclim. Pond	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2011	69,331	05-07-11	06-07-11	Pond	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2011	69,339	04-29-11	06-07-11	Beaver Creek Acclim Pond	Wenatchee River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2011	273,539	03-15-11	05-14-11	Jack Creek Acclim Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2011	279,639	03-15-11	05-14-11	Clark Flat Acclim Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2011	282,335	03-15-11	05-14-11	Easton Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2011	37,000	04-20-11	06-01-11	Boone Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2011	79,015	04-15-11	06-01-11	Holmes Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2011	88,175	04-20-11	06-01-11	Stiles Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2011	88,942	04-20-11	06-01-11	Lost Creek Acclim Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2011	90,498	04-20-11	06-01-11	Easton Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2011	50,000	04-20-11	06-01-11	Stiles Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2011	100,000	04-20-11	06-01-11	Easton Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2011	100,297	04-20-11	06-01-11	Lost Creek Acclim Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2011	100,671	04-15-11	06-01-11	Holmes Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2011	245,455	04-15-11	06-01-11	Prosser Acclim Pond	Yakima River
Yakama Tribe	Wells Hatchery	CH0	SU	2011	202,000	05-14-11	05-14-11	Stiles Pond	Yakima River
Yakama Tribe	Willard Hatchery	CO	UN	2011	27,365	05-07-11	06-12-11	Rollings Acclim Pond Beaver Creek Acclim Pond	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2011	29,279	04-29-11	06-07-11	Pond	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2011	49,379	04-29-11	06-14-11	Winthrop Hatchery Butcher Creek Acclim. Pond	Methow River
Yakama Tribe	Willard Hatchery	CO	UN	2011	60,901	05-07-11	06-07-11	Pond	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2011	89,403	05-08-11	06-02-11	Twisp Acclim Pond	Methow River
<b>Yakama Tribe Total</b>					<b>2,551,108</b>				
<b>Grand Total</b>					<b>8,924,310</b>				

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Hatchery Release Summary									
From:	5/27/2011		to		6/9/2011				
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH0	SP	2012	300,000	06-01-11	06-01-11	Selway River	Clearwater River M F
<b>Idaho Dept. of Fish and Game Total</b>					<b>300,000</b>				
National Marine Fisheries Service	Lyons Ferry Hatchery	CH0	FA	2011	230,000	05-16-11	06-06-11	Couse Creek	Snake River
<b>National Marine Fisheries Service Total</b>					<b>230,000</b>				
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2011	400,000	05-23-11	05-31-11	Pittsburg Landing Acclim Pond	Snake River
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2011	500,000	05-22-11	05-31-11	Cpt John Acclim Pond Big Canyon (Clearwater River)	Snake River Clearwater River M F
Nez Perce Tribe	Lyons Ferry Hatchery	CH0	FA	2011	500,000	05-25-11	05-31-11	River)	Clearwater River M F
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	FA	2011	200,000	06-01-11	06-15-11	Cedar Flats Acclim.	Selway River
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	FA	2011	200,000	06-01-11	06-15-11	Lukes Gulch Acclim.	S FK Clearwater River
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH0	FA	2011	300,000	05-20-11	06-15-11	Clearwater River Nez Perce Tribal Hatchery	Snake River Clearwater River M F
<b>Nez Perce Tribe Total</b>					<b>2,600,000</b>				
Oregon Dept. of Fish and Wildlife	Round Butte Hatchery	CH1	SP	2011	244,342	04-04-11	06-01-11	Deschutes River	Deschutes River
<b>Oregon Dept. of Fish and Wildlife Total</b>					<b>244,342</b>				
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	CH0	FA	2011	200,000	05-20-11	05-31-11	Couse Creek	Snake River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	CH0	FA	2011	200,000	05-20-11	05-31-11	Lyons Ferry Hatchery	Snake River
Washington Dept. of Fish and Wildlife	Priest Rapids Hatchery	CH0	FA	2011	6,785,432	06-05-11	06-20-11	Priest Rapids Hatchery	Mid-Columbia River
<b>Washington Dept. of Fish and Wildlife Total</b>					<b>7,185,432</b>				
Yakama Tribe	Cascade Hatchery	CO	UN	2011	69,223	05-07-11	06-16-11	Coulter Creek	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2011	69,322	05-07-11	06-12-11	Rolfings Acclim Pond Butcher Creek Acclim.	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2011	69,331	05-07-11	06-07-11	Pond Beaver Creek Acclim	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2011	69,339	04-29-11	06-07-11	Pond	Wenatchee River
Yakama Tribe	Eagle Creek NFH	CO	UN	2011	37,000	04-20-11	06-01-11	Boone Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2011	79,015	04-15-11	06-01-11	Holmes Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2011	88,175	04-20-11	06-01-11	Stiles Pond Lost Creek Acclim	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2011	88,942	04-20-11	06-01-11	Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2011	90,498	04-20-11	06-01-11	Easton Pond	Yakima River
Yakama Tribe	Klickitat Hatchery	CH0	FA	2011	4,000,000	06-01-11	06-01-11	Klickitat Hatchery	Klickitat River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2011	50,000	04-20-11	06-01-11	Stiles Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2011	100,000	04-20-11	06-01-11	Easton Pond Lost Creek Acclim	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2011	100,297	04-20-11	06-01-11	Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2011	100,671	04-15-11	06-01-11	Holmes Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2011	245,455	04-15-11	06-01-11	Prosser Acclim Pond	Yakima River
Yakama Tribe	Willard Hatchery	CO	UN	2011	27,365	05-07-11	06-12-11	Rolfings Acclim Pond Beaver Creek Acclim	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2011	29,279	04-29-11	06-07-11	Pond	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2011	49,379	04-29-11	06-14-11	Winthrop Hatchery Butcher Creek Acclim.	Methow River
Yakama Tribe	Willard Hatchery	CO	UN	2011	60,901	05-07-11	06-07-11	Pond	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2011	89,403	05-08-11	06-02-11	Twisp Acclim Pond	Methow River
<b>Yakama Tribe Total</b>					<b>5,513,595</b>				
<b>Grand Total</b>					<b>16,073,369</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
05/13/2011	174.0	8.9	181.3	38.6	195.9	25.8	194.2	0.0	199.6	40.0	205.7	72.5	207.6	100.2
05/14/2011	171.4	15.2	170.3	69.5	194.0	32.9	194.6	0.0	200.2	42.9	203.8	70.9	211.1	105.6
05/15/2011	167.9	7.9	173.3	88.0	199.5	35.9	191.0	0.0	200.0	42.8	214.1	78.9	216.1	112.2
05/16/2011	138.9	1.8	143.0	36.6	182.1	23.1	186.1	6.0	199.2	43.2	212.3	77.0	216.3	83.4
05/17/2011	159.4	3.2	159.7	35.8	178.9	23.5	178.0	0.0	189.2	23.5	210.3	76.2	215.5	83.5
05/18/2011	198.0	14.9	195.3	86.0	213.8	43.6	215.8	14.9	218.4	24.8	219.0	87.2	222.6	111.1
05/19/2011	201.8	18.1	204.5	94.1	231.4	63.4	233.3	34.1	233.0	31.4	235.8	103.1	233.4	121.3
05/20/2011	214.6	31.1	218.1	115.4	244.3	71.7	238.0	38.9	239.0	54.8	248.9	116.0	252.6	130.8
05/21/2011	229.8	48.1	237.5	113.4	266.1	100.5	265.8	80.8	267.8	84.4	277.0	142.3	283.2	151.0
05/22/2011	237.2	55.5	241.1	109.9	272.3	112.7	269.1	80.4	270.3	96.4	285.1	157.8	292.1	179.1
05/23/2011	207.2	47.1	215.6	92.4	258.4	94.1	262.5	65.9	263.2	76.2	284.4	149.4	295.1	172.9
05/24/2011	200.2	40.5	206.8	86.7	244.2	83.9	249.6	53.1	248.8	55.0	260.5	126.8	271.7	147.9
05/25/2011	198.6	37.5	202.1	80.5	237.4	71.9	240.1	45.0	241.4	46.4	254.3	121.0	266.2	148.1
05/26/2011	213.4	51.3	211.9	98.6	247.3	80.4	246.1	47.5	242.9	45.2	255.6	118.8	262.7	159.9

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

Date	Dworshak		Brownlee Canyon		Hells Granite		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
05/13/2011	2.5	0.0	53.9	45.0	119.8	34.9	113.8	41.7	116.3	27.0	117.7	67.6		
05/14/2011	2.5	0.0	56.5	49.7	140.2	49.9	134.2	62.8	139.0	28.7	143.2	72.0		
05/15/2011	2.5	0.0	62.9	52.5	175.3	84.0	167.7	97.0	173.5	57.9	175.2	93.6		
05/16/2011	2.5	0.0	66.3	51.6	203.4	111.3	195.4	124.7	209.7	93.2	213.8	131.0		
05/17/2011	2.4	0.0	68.7	50.0	188.7	97.5	183.4	112.6	198.7	83.5	202.1	120.8		
05/18/2011	2.4	0.0	65.8	55.1	173.0	83.7	164.3	93.1	173.2	64.7	178.7	97.0		
05/19/2011	2.4	0.0	65.2	57.7	158.6	64.7	152.6	79.0	160.6	48.9	166.9	87.2		
05/20/2011	2.4	0.0	65.4	64.1	158.7	55.7	147.0	104.4	155.4	46.9	160.9	82.7		
05/21/2011	2.5	0.2	65.8	64.0	163.2	60.3	155.9	82.5	162.2	55.8	168.6	93.4		
05/22/2011	2.7	0.0	63.7	66.0	171.0	61.2	163.0	91.7	169.9	54.9	174.3	92.5		
05/23/2011	3.7	0.0	63.3	69.7	182.6	74.8	173.2	98.7	180.8	64.3	186.9	103.3		
05/24/2011	4.6	0.0	62.4	66.1	187.6	77.2	174.1	151.1	189.2	72.6	191.9	108.6		
05/25/2011	7.3	0.0	60.7	65.8	196.1	85.2	178.4	172.6	193.5	76.7	198.4	114.9		
05/26/2011	7.4	0.0	---	---	200.0	95.8	182.7	177.2	200.2	83.8	204.2	121.5		

**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		
05/13/2011	325.3	188.8	347.0	103.7	335.2	130.5	333.6	102.9	94.1	124.2
05/14/2011	347.3	209.8	351.8	105.3	338.0	130.7	358.8	129.2	92.9	124.3
05/15/2011	385.8	250.3	383.6	122.6	366.7	134.1	377.0	156.0	91.8	116.8
05/16/2011	422.9	293.5	438.6	148.7	423.5	163.9	430.3	214.7	90.3	112.8
05/17/2011	437.8	299.4	454.9	170.2	442.3	192.9	447.5	234.7	88.4	112.0
05/18/2011	422.0	279.6	457.9	187.1	445.0	201.2	454.3	241.3	94.1	106.5
05/19/2011	421.5	279.6	463.9	201.5	450.0	203.9	458.6	249.0	88.6	108.6
05/20/2011	416.4	273.4	467.3	186.9	451.2	200.4	462.1	253.9	88.1	107.7
05/21/2011	443.0	298.1	474.3	194.7	461.1	215.4	468.9	258.6	86.8	111.1
05/22/2011	452.2	305.4	476.7	193.8	457.1	197.1	470.7	254.6	87.5	116.2
05/23/2011	480.2	333.0	493.6	214.9	471.7	209.5	483.0	265.2	87.8	117.5
05/24/2011	473.1	325.5	495.3	220.0	477.8	214.2	484.7	268.7	88.0	115.6
05/25/2011	470.1	321.4	490.8	200.2	476.6	215.3	492.3	275.2	87.0	117.7
05/26/2011	461.7	312.5	483.0	205.7	462.1	209.9	482.7	274.4	84.4	111.5



## 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		
5/13	98.3	98.7	99.0	24	118.0	119.0	119.5	24	110.0	110.5	110.8	24	115.7	117.3	118.8	24	108.0	108.3	108.4	24
5/14	99.7	100.6	100.9	24	119.8	120.8	121.2	24	110.9	111.1	111.5	24	120.3	121.4	122.1	24	109.3	110.6	114.3	24
5/15	101.8	102.4	102.7	24	120.8	122.0	125.2	23	111.1	111.3	111.6	24	118.2	118.7	120.4	23	115.2	116.2	117.5	24
5/16	101.9	102.2	102.5	24	121.4	122.0	122.3	21	110.4	110.6	110.8	24	114.4	116.6	118.6	21	116.7	117.4	117.8	24
5/17	101.7	101.8	101.9	23	122.4	123.1	123.6	20	110.5	110.9	111.4	24	113.1	114.7	116.5	20	114.7	114.9	115.1	24
5/18	101.3	101.6	101.9	23	123.1	124.1	124.9	22	110.8	111.1	111.6	24	119.2	121.5	122.4	22	111.5	113.0	114.5	24
5/19	100.3	100.7	100.9	22	124.4	125.2	126.4	21	110.1	110.2	110.3	24	120.2	121.3	123.5	21	113.7	115.1	116.1	24
5/20	99.0	99.2	99.6	24	123.9	125.0	126.3	22	110.4	110.8	111.0	24	124.8	129.2	131.4	22	118.2	119.1	119.7	24
5/21	99.3	99.5	99.7	24	125.3	125.8	126.8	23	111.6	112.2	113.1	24	131.8	132.6	133.3	23	119.1	120.7	125.6	24
5/22	99.4	99.5	99.7	24	125.8	126.2	126.4	22	111.9	112.3	112.8	24	133.6	134.6	135.7	22	127.9	128.7	129.2	24
5/23	99.3	99.4	99.7	24	127.1	127.6	128.1	23	112.8	113.2	113.5	24	131.7	133.5	134.3	23	129.4	129.6	130.4	18
5/24	98.9	99.2	99.4	24	127.0	127.3	127.9	22	113.6	113.9	114.3	24	129.8	130.0	130.3	22	---	---	---	0
5/25	98.9	99.2	99.4	23	127.2	127.8	129.7	19	114.5	115.1	115.3	24	130.1	130.8	131.8	19	127.0	127.1	127.4	14
5/26	99.6	99.8	100.0	23	127.5	128.5	129.9	20	114.8	115.0	115.4	24	131.1	132.3	136.6	17	126.5	126.8	127.3	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>	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		
5/13	113.8	116.0	118.9	24	109.0	110.3	111.5	24	112.2	113.8	114.9	24	110.6	111.6	112.4	24	109.2	110.0	110.8	24
5/14	116.8	118.8	120.2	24	110.7	112.2	115.1	23	114.6	115.5	116.8	23	112.7	113.3	114.2	24	111.1	111.5	112.1	24
5/15	119.0	119.7	120.3	24	113.7	115.6	117.0	22	117.2	118.7	119.9	22	114.2	114.9	115.3	24	112.6	112.8	113.4	24
5/16	116.6	117.7	118.6	24	115.0	115.5	116.9	22	117.1	118.2	119.6	22	114.9	115.6	116.0	24	113.2	113.8	114.1	24
5/17	116.0	116.9	120.2	24	114.4	114.7	115.4	24	117.1	117.9	119.1	24	116.1	116.6	116.7	24	114.2	114.6	114.9	24
5/18	118.5	120.1	121.9	24	114.3	114.9	115.9	22	118.9	119.4	120.0	22	115.6	116.1	116.9	24	115.7	116.1	116.5	24
5/19	119.4	120.6	121.9	24	114.3	115.2	116.5	20	121.1	121.6	123.5	20	117.4	117.8	118.3	24	119.8	120.9	121.2	24
5/20	120.4	121.2	121.7	24	118.2	120.0	120.5	21	124.2	126.1	128.8	21	119.5	120.0	120.3	24	121.6	122.5	124.0	24
5/21	119.3	119.8	120.5	24	118.1	118.6	120.3	22	127.0	127.7	129.1	22	123.1	125.1	126.5	24	125.6	126.4	126.9	24
5/22	119.9	120.2	120.4	24	119.5	120.8	122.1	19	128.7	129.6	130.5	19	125.1	125.8	126.4	24	126.8	127.1	127.4	24
5/23	118.5	119.4	120.0	24	121.9	122.2	122.4	22	128.3	129.2	130.4	22	127.1	127.8	128.3	24	127.3	127.6	128.0	24
5/24	117.4	118.1	119.3	24	121.6	122.0	122.8	24	127.7	128.5	129.9	24	126.2	127.0	127.8	24	126.8	127.4	128.2	24
5/25	117.0	117.8	121.6	24	121.6	122.2	122.8	24	126.6	127.4	128.7	24	125.4	125.8	126.6	24	126.3	126.9	127.1	24
5/26	118.6	119.6	121.7	24	119.2	119.8	120.2	24	125.6	126.9	127.9	24	123.5	124.6	125.3	24	125.5	125.8	126.1	24

### 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		
5/13	109.4	110.5	110.9	24	114.4	115.1	115.5	24	110.4	111.3	111.7	24	114.8	115.3	115.5	24	113.7	114.6	115.2	24
5/14	111.2	111.6	111.9	24	116.1	116.5	116.9	24	112.1	112.7	112.9	24	115.6	115.9	116.1	24	114.7	115.1	115.4	24
5/15	112.5	112.8	113.0	24	116.5	116.6	116.8	24	112.3	112.5	113.0	24	116.7	116.9	117.5	24	114.4	114.8	115.0	24
5/16	112.2	112.5	113.1	24	116.4	116.6	117.0	24	110.8	111.4	111.7	34	116.5	118.8	119.1	34	115.3	117.6	119.0	34
5/17	114.3	115.0	115.3	24	116.3	116.9	117.1	24	113.0	114.7	115.7	24	116.2	118.6	120.1	24	113.7	114.4	115.5	24
5/18	113.7	114.5	114.9	24	115.7	116.2	116.8	24	115.8	117.4	119.6	24	119.6	120.6	121.8	24	116.9	117.9	118.9	24
5/19	116.2	117.3	117.7	24	118.2	119.4	120.1	24	114.5	115.7	117.5	24	122.0	122.8	123.9	24	117.3	119.2	120.4	24
5/20	118.0	119.0	119.4	24	120.6	121.5	122.3	24	117.0	118.9	120.0	24	124.0	124.9	126.6	24	120.4	121.4	121.8	24
5/21	121.4	122.5	123.4	24	124.4	125.3	125.8	24	118.3	118.8	119.5	24	127.4	127.8	128.8	24	122.6	123.3	123.8	24
5/22	123.8	124.0	124.2	24	126.5	126.7	126.9	24	120.1	121.5	122.5	24	129.9	130.8	131.8	24	123.0	123.7	124.0	24
5/23	124.4	125.0	125.6	24	126.4	126.7	126.9	24	123.1	124.0	126.1	24	129.6	129.8	130.9	24	125.3	126.6	127.5	24
5/24	124.0	124.4	124.6	24	125.4	125.9	127.2	24	123.2	124.3	125.0	24	128.6	128.9	129.3	24	125.2	126.1	126.7	24
5/25	123.0	123.9	124.2	24	123.5	125.2	125.4	24	---	---	---	0	---	---	---	0	---	---	---	0
5/26	121.9	122.2	122.3	24	123.5	123.6	123.9	24	---	---	---	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			#	Clrwr-Peck			#	Anatone			#			
	24 h	12 h			24 h	12 h			24 h	12 h			24 h	12 h			24 h	12 h			24 h	12 h	
	Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High
5/13	118.2	118.9	119.3	24	113.7	114.9	115.7	24	105.5	107.3	108.6	24	120.3	122.5	126.9	24	106.1	107.5	108.1	24			
5/14	119.0	119.6	120.3	24	113.0	113.9	114.8	24	106.2	107.5	108.2	24	128.7	128.7	134.0	10	107.0	107.6	108.5	24			
5/15	118.9	119.2	119.3	24	105.3	106.8	108.8	24	103.0	107.7	108.3	24	139.2	139.2	139.2	1	106.6	106.8	107.0	24			
5/16	118.3	118.8	119.0	34	106.5	107.1	107.8	24	60.9	60.9	104.7	11	104.7	104.7	107.1	11	107.1	107.5	108.0	24			
5/17	117.6	119.0	119.8	24	107.7	108.8	109.5	24	105.3	106.3	107.3	22	103.8	104.3	104.8	24	106.8	107.1	107.6	24			
5/18	120.2	120.7	121.1	24	108.2	109.6	110.6	24	106.0	107.3	108.0	24	103.0	103.8	104.4	24	106.7	107.2	107.8	24			
5/19	120.5	121.5	122.3	24	108.5	109.3	110.1	24	106.7	109.3	110.8	24	102.9	104.0	104.8	24	106.4	106.9	107.4	24			
5/20	122.3	123.2	123.7	24	104.8	105.8	106.4	24	107.4	109.1	109.8	24	102.8	103.5	103.9	24	106.7	107.5	107.9	24			
5/21	123.6	123.9	124.3	24	101.9	103.1	103.6	24	108.5	111.3	114.1	24	103.3	104.0	104.9	24	106.8	107.2	107.6	24			
5/22	124.6	125.2	125.4	24	100.9	101.7	103.0	24	104.9	106.9	108.5	24	102.5	103.0	103.4	24	107.1	107.6	108.1	24			
5/23	125.1	125.6	126.4	24	98.9	99.3	100.2	24	104.0	105.9	106.7	24	103.2	104.0	104.8	24	107.5	107.9	108.3	24			
5/24	124.9	125.4	125.6	24	99.8	100.5	100.8	24	102.3	104.1	104.8	24	102.3	102.8	103.3	24	107.4	107.7	107.9	24			
5/25	---	---	---	0	101.5	101.7	101.9	24	102.7	103.1	104.8	16	103.6	104.1	104.5	24	108.7	109.2	109.4	24			
5/26	---	---	---	0	98.1	98.8	100.4	24	101.4	102.2	104.8	22	102.6	103.3	103.7	24	107.9	108.3	108.7	24			

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

Date	Clrwr-Lewiston			#	Lower Granite			#	L. Granite Tlwr			#	Little Goose			#	L. Goose Tlwr			#			
	24 h	12 h			24 h	12 h			24 h	12 h			24 h	12 h			24 h	12 h			24 h	12 h	
	Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High
5/13	102.3	103.6	104.5	24	103.7	104.1	104.3	24	115.0	116.5	117.0	24	107.4	107.9	108.3	24	115.5	117.1	119.9	24			
5/14	103.1	103.8	104.6	24	105.5	106.5	107.2	24	119.0	121.2	122.7	24	110.1	111.5	113.3	24	120.6	121.4	123.6	24			
5/15	102.8	103.0	103.1	24	106.5	107.0	107.7	24	127.8	130.5	131.3	24	113.5	113.9	115.1	24	126.1	128.0	129.1	24			
5/16	102.6	103.1	103.5	24	104.4	104.8	105.4	24	130.6	130.6	132.5	12	116.0	116.8	118.4	24	128.8	129.5	130.1	24			
5/17	103.2	103.7	104.4	24	105.9	106.6	106.7	24	129.3	130.8	132.7	24	121.8	124.2	125.3	24	128.3	129.0	129.9	24			
5/18	102.5	103.1	103.9	24	106.6	106.8	107.0	24	125.9	126.4	127.4	24	125.1	125.5	125.8	24	126.2	126.3	126.7	24			
5/19	102.2	103.1	103.7	24	105.8	106.2	106.5	24	122.8	125.3	128.6	24	121.5	121.9	122.8	24	124.1	125.1	126.0	24			
5/20	102.4	103.1	103.9	24	106.2	106.7	107.1	24	120.5	122.5	126.7	24	120.5	120.7	121.3	24	126.6	129.6	154.5	24			
5/21	102.6	103.3	104.4	24	107.0	107.4	107.7	24	122.1	124.0	127.1	24	118.0	118.9	120.5	24	124.4	124.9	125.8	24			
5/22	101.8	102.2	102.7	24	106.7	107.0	107.2	24	122.5	124.1	125.0	24	116.0	116.6	117.5	24	125.5	127.1	127.9	24			
5/23	102.1	102.6	103.1	24	106.4	106.6	106.8	24	125.6	127.1	129.3	24	115.1	115.3	115.9	24	126.5	127.3	127.4	24			
5/24	101.3	101.6	102.1	24	106.3	106.4	106.5	24	126.2	128.3	130.6	24	116.2	116.5	116.7	24	131.3	135.1	142.1	24			
5/25	102.7	103.3	103.9	24	106.8	107.1	107.3	24	127.9	129.2	129.8	24	117.5	118.0	119.2	24	133.9	135.9	138.8	24			
5/26	101.6	102.1	102.3	24	106.6	106.8	107.0	24	129.6	132.2	133.0	24	117.7	118.9	119.8	24	133.4	136.4	139.3	24			

**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	12 h			24 h	12 h			24 h	12 h			24 h	12 h			24 h	12 h			24 h	12 h	
	Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High
5/13	112.9	113.5	114.4	24	119.2	120.0	121.0	23	115.1	116.4	116.9	24	118.6	119.9	120.5	24	---	---	---	0			
5/14	117.1	118.0	120.5	24	120.4	121.2	121.6	24	116.4	116.7	117.1	24	120.2	120.8	121.4	24	---	---	---	0			
5/15	122.3	123.0	124.4	24	122.0	124.3	125.3	24	116.1	116.3	116.6	24	122.8	123.8	126.5	24	---	---	---	0			
5/16	126.2	127.0	127.8	24	126.0	126.8	128.7	24	117.4	118.1	119.0	24	128.3	129.5	129.9	24	---	---	---	0			
5/17	131.5	132.7	133.1	24	124.9	126.0	127.7	24	123.0	124.7	125.3	24	127.1	128.6	130.1	24	---	---	---	0			
5/18	130.2	130.9	131.9	24	122.5	123.2	127.4	24	124.5	124.8	125.3	24	123.5	124.0	125.3	24	---	---	---	0			
5/19	127.8	128.1	128.3	24	120.8	122.7	124.1	24	122.9	123.1	123.5	24	121.9	123.0	124.5	24	---	---	---	0			
5/20	126.7	127.2	127.9	24	120.8	121.9	124.6	24	122.7	123.0	123.2	24	121.8	122.2	124.0	24	---	---	---	0			
5/21	128.9	130.6	132.4	24	122.1	123.0	123.7	23	122.3	122.7	123.1	24	122.9	123.7	124.4	24	---	---	---	0			
5/22	125.9	126.1	126.4	24	122.1	123.1	124.2	24	121.7	121.8	122.0	24	122.5	123.6	124.8	24	---	---	---	0			
5/23	126.9	127.8	128.1	24	122.9	123.6	124.4	24	120.7	121.0	121.2	24	124.5	125.2	125.9	24	---	---	---	0			
5/24	127.4	127.9	128.4	24	123.7	124.9	127.8	24	120.9	121.3	121.6	24	125.2	126.4	130.4	24	---	---	---	0			
5/25	134.8	138.3	140.6	24	124.4	125.4	127.7	24	122.8	123.5	123.9	24	126.2	127.4	130.6	24	---	---	---	0			
5/26	132.0	133.8	136.8	24	125.0	126.4	128.3	24	121.9	122.6	123.3	24	126.8	128.1	130.1	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	McNary-Wash			#	McNary Tlwr			#	John Day			#	John Day Tlwr			#	The Dalles			#
	24 h	12 h	High		24 h	12 h	High		24h	12h	High		24h	12h	High		24h	12h	High	
	Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg			Avg	AVG		
5/13	112.0	113.8	115.1	24	119.6	120.2	120.4	24	110.3	111.8	112.7	24	117.8	118.6	118.9	24	110.9	112.1	113.0	24
5/14	115.5	116.1	116.9	24	120.6	120.8	121.1	24	113.4	113.7	114.2	24	118.1	118.8	119.1	24	112.7	113.1	113.5	24
5/15	114.5	115.1	115.3	24	122.7	123.9	125.2	24	112.9	113.1	113.3	24	118.9	120.0	120.3	24	111.5	111.9	112.3	24
5/16	110.7	111.1	112.0	24	124.6	125.9	126.5	24	111.8	112.0	112.4	24	120.8	121.8	122.8	24	111.6	112.2	112.6	24
5/17	114.9	117.4	119.0	24	125.4	126.0	126.4	24	111.5	111.8	111.9	24	122.1	122.5	122.9	24	114.2	114.9	115.6	24
5/18	117.9	118.3	118.8	24	124.1	124.3	124.5	24	112.3	113.0	114.3	24	123.9	124.2	124.4	24	113.9	114.9	115.5	24
5/19	116.0	116.5	116.8	24	124.2	124.5	125.3	24	117.5	119.5	120.3	24	125.2	125.7	127.1	24	116.6	118.3	118.8	24
5/20	116.2	116.8	117.5	24	124.1	124.5	125.0	24	120.4	120.8	121.3	24	123.8	124.7	127.6	24	118.9	119.7	120.6	24
5/21	116.1	116.4	116.8	24	126.1	127.1	127.7	24	118.7	119.3	120.5	24	125.1	125.6	126.6	24	116.9	117.3	118.2	24
5/22	115.7	116.0	116.6	24	126.6	127.3	127.6	24	118.0	118.2	118.4	24	125.6	126.0	126.6	24	117.3	117.7	118.1	24
5/23	115.7	115.8	115.9	24	128.2	128.9	130.1	24	115.8	116.1	117.0	24	127.3	128.8	129.2	24	116.7	117.3	118.0	24
5/24	117.0	117.6	118.0	24	128.5	128.8	129.2	24	116.7	117.2	118.0	24	128.1	129.1	129.8	24	118.5	120.0	121.9	24
5/25	117.8	118.4	119.5	24	128.7	129.0	129.5	24	120.8	122.0	122.6	24	127.0	127.3	128.4	24	120.4	120.9	121.9	24
5/26	115.5	116.3	118.7	24	127.9	128.3	128.9	24	120.8	121.3	121.5	24	126.9	127.7	129.0	24	119.8	120.8	122.0	24

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

Date	The Dalles Dnst			#	Bonneville			#	Warrendale			#	Camas\Washougal			#	Cascade Island			#
	24 h	12 h	High		24 h	12 h	High		24h	12h	High		24h	12h	High		24h	12h	High	
	Avg	Avg			Avg	Avg			Avg	Avg			Avg	Avg			Avg	AVG		
5/13	117.4	117.9	118.3	24	114.9	116.1	117.5	24	115.6	116.6	118.2	24	113.5	114.5	114.9	24	119.8	120.8	124.5	24
5/14	118.1	118.7	119.4	24	117.1	118.0	118.4	24	118.4	118.9	119.2	24	116.4	117.7	118.1	24	123.2	124.4	124.7	24
5/15	116.8	117.9	119.7	24	114.3	114.7	115.3	24	117.5	118.1	118.9	24	115.4	115.9	116.6	24	123.7	125.0	125.6	24
5/16	116.9	117.7	119.4	24	113.5	114.7	115.3	24	120.2	120.8	122.7	24	117.3	119.0	120.1	24	124.1	124.7	125.3	24
5/17	119.1	119.9	120.7	24	117.3	118.6	119.3	24	123.9	124.5	124.9	24	121.0	122.4	122.7	24	125.6	125.6	125.7	11
5/18	118.9	119.4	119.9	24	118.4	118.9	119.2	24	124.6	124.8	124.9	24	122.9	123.6	124.2	24	125.8	125.8	126.2	8
5/19	120.3	121.0	121.6	24	117.1	117.3	117.9	24	124.1	124.5	125.2	24	122.5	123.3	123.6	24	---	---	---	0
5/20	122.0	122.3	122.7	24	119.4	120.0	120.5	24	125.6	126.2	126.7	24	123.5	124.5	125.1	24	---	---	---	0
5/21	120.5	120.9	121.3	24	118.4	119.0	119.4	24	125.5	125.8	126.2	24	124.0	124.5	124.8	24	---	---	---	0
5/22	120.4	121.1	121.9	24	117.8	118.0	118.1	24	124.7	124.8	125.0	24	123.3	123.5	124.1	24	---	---	---	0
5/23	120.1	120.4	120.9	24	117.3	117.5	117.9	24	125.2	125.5	125.7	24	123.2	123.6	124.1	24	---	---	---	0
5/24	121.8	122.6	124.1	24	118.7	120.1	121.3	24	125.9	126.7	127.1	24	124.6	125.5	125.8	24	---	---	---	0
5/25	123.0	123.7	124.4	24	121.9	122.1	122.4	24	128.0	128.4	128.8	24	125.9	126.2	126.6	24	---	---	---	0
5/26	122.0	122.8	123.2	24	119.6	120.5	121.0	24	126.8	127.3	128.3	24	125.5	125.9	126.4	24	---	---	---	0

## 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>											
	05/19/11	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/26/11	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Little Goose Dam</b>											
	05/16/11	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/21/11	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Lower Monumental Dam</b>											
	05/20/11	Chinook + Steelhead	100	3	3	3.00%	0.00%	3	0	0	0
	05/25/11	Chinook + Steelhead	104	5	5	4.81%	0.00%	5	0	0	0
<b>McNary Dam</b>											
	05/16/11	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/20/11	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/22/11	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/26/11	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Bonneville Dam</b>											
	05/14/11	Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
	05/17/11	Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
	05/21/11	Chinook + Steelhead	70	0	0	0.00%	0.00%	0	0	0	0
	05/24/11	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Rock Island Dam</b>											
	05/17/11	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/19/11	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	05/24/11	Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
	05/26/11	Chinook + Steelhead	100	2	2	2.00%	0.00%	2	0	0	0

Two-Week Summary of Passage Indices

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)	
05/13/2011	*	---	---	298	---	146,247	225,379	87,719	752	95,034	63,892	93,442
05/14/2011	*	---	---	117	---	168,831	239,839	100,844	1,118	---	82,098	109,058
05/15/2011	*	---	---	162	---	137,049	120,477	161,218	1,224	96,695	98,019	74,674
05/16/2011	*	---	---	---	---	123,530	218,528	214,898	1,044	---	155,052	47,933
05/17/2011	*	---	---	---	---	118,908	141,253	---	941	112,347	161,808	39,900
05/18/2011	*	---	---	---	---	70,193	178,540	---	585	---	120,146	26,760
05/19/2011	*	---	---	24	---	31,469	128,931	52,422	727	103,868	91,125	26,300
05/20/2011	*	---	---	73	---	32,731	90,171	45,155	848	---	106,550	13,342
05/21/2011	*	---	---	68	---	12,069	27,051	37,738	870	72,045	134,913	14,576
05/22/2011	*	---	---	81	---	21,972	36,672	51,389	889	---	169,855	10,584
05/23/2011	*	---	---	74	---	25,817	---	---	605	66,001	140,416	7,308
05/24/2011	*	---	---	63	---	22,584	---	---	544	---	130,014	6,897
05/25/2011	*	---	---	---	---	20,858	---	263	443	74,630	73,509	6,518
05/26/2011	*	---	---	---	---	13,519	---	---	377	---	87,998	4,481
05/27/2011		---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>960</b>	<b>0</b>	<b>945,777</b>	<b>1,406,841</b>	<b>751,646</b>	<b>10,967</b>	<b>620,620</b>	<b>1,615,395</b>	<b>481,773</b>
<b># Days:</b>		<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>14</b>	<b>10</b>	<b>9</b>	<b>14</b>	<b>7</b>	<b>14</b>	<b>14</b>
<b>Average:</b>		<b>0</b>	<b>0</b>	<b>107</b>	<b>0</b>	<b>67,556</b>	<b>140,684</b>	<b>83,516</b>	<b>783</b>	<b>88,660</b>	<b>115,385</b>	<b>34,412</b>
<b>YTD</b>		<b>31,090</b>	<b>30,074</b>	<b>12,492</b>	<b>18,836</b>	<b>3,755,490</b>	<b>2,486,654</b>	<b>1,186,739</b>	<b>23,638</b>	<b>1,790,906</b>	<b>2,566,444</b>	<b>1,290,864</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)	
05/13/2011	*	---	---	0	---	266	0	0	5	2,213	57	4,467
05/14/2011	*	---	---	0	---	1,126	0	378	23	---	57	3,821
05/15/2011	*	---	---	0	---	2,284	0	0	22	9,043	498	1,725
05/16/2011	*	---	---	---	---	3,645	1,008	760	187	---	3,854	335
05/17/2011	*	---	---	---	---	13,512	567	---	290	16,405	0	1,544
05/18/2011	*	---	---	---	---	18,664	2,967	---	140	---	1,619	325
05/19/2011	*	---	---	0	---	12,044	923	224	101	26,617	2,120	2,840
05/20/2011	*	---	---	0	---	10,580	2,555	214	33	---	2,036	2,904
05/21/2011	*	---	---	1	---	8,258	1,905	457	75	31,535	2,618	1,770
05/22/2011	*	---	---	0	---	3,612	3,020	0	50	---	4,373	1,330
05/23/2011	*	---	---	0	---	9,403	---	---	130	32,550	8,147	1,475
05/24/2011	*	---	---	0	---	5,646	---	---	158	---	7,489	1,473
05/25/2011	*	---	---	---	---	23,117	---	10	118	34,773	10,764	2,422
05/26/2011	*	---	---	---	---	30,549	---	---	207	---	9,558	2,923
05/27/2011		---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>142,706</b>	<b>12,945</b>	<b>2,043</b>	<b>1,539</b>	<b>153,136</b>	<b>53,190</b>	<b>29,354</b>
<b># Days:</b>		<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>14</b>	<b>10</b>	<b>9</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>10,193</b>	<b>1,295</b>	<b>227</b>	<b>110</b>	<b>21,877</b>	<b>3,799</b>	<b>2,097</b>
<b>YTD</b>		<b>9</b>	<b>27</b>	<b>12</b>	<b>163</b>	<b>145,805</b>	<b>13,527</b>	<b>2,043</b>	<b>2,111</b>	<b>165,546</b>	<b>56,160</b>	<b>2,648,901</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)	
05/13/2011	*	---	---	0	---	2,392	1,800	197	412	6,199	9,349	18,986
05/14/2011	*	---	---	0	---	4,784	2,344	188	742	---	11,367	30,285
05/15/2011	*	---	---	0	---	3,589	1,979	409	705	6,718	15,257	29,950
05/16/2011	*	---	---	---	---	1,620	6,048	1,771	1,649	---	13,896	16,760
05/17/2011	*	---	---	---	---	4,054	7,937	---	1,503	6,827	16,859	21,725
05/18/2011	*	---	---	---	---	2,840	8,900	---	1,208	---	21,281	15,762
05/19/2011	*	---	---	0	---	1,943	8,772	896	875	8,469	15,066	20,417
05/20/2011	*	---	---	0	---	1,924	9,368	2,148	1,009	---	16,571	22,764
05/21/2011	*	---	---	0	---	1,906	3,809	2,744	2,050	9,602	17,847	18,116
05/22/2011	*	---	---	0	---	2,558	2,157	1,469	2,721	---	23,814	10,708
05/23/2011	*	---	---	0	---	2,709	---	---	2,446	5,744	30,671	8,271
05/24/2011	*	---	---	0	---	4,277	---	---	2,389	---	27,840	5,308
05/25/2011	*	---	---	---	---	1,738	---	2	1,963	17,492	15,273	7,211
05/26/2011	*	---	---	---	---	2,458	---	---	2,176	---	20,274	2,495
05/27/2011		---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>38,792</b>	<b>53,114</b>	<b>9,824</b>	<b>21,848</b>	<b>61,051</b>	<b>255,365</b>	<b>228,758</b>
<b># Days:</b>		<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>14</b>	<b>10</b>	<b>9</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>2,771</b>	<b>5,311</b>	<b>1,092</b>	<b>1,561</b>	<b>8,722</b>	<b>18,240</b>	<b>16,340</b>
<b>YTD</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>218</b>	<b>66,546</b>	<b>74,600</b>	<b>11,699</b>	<b>23,167</b>	<b>107,086</b>	<b>323,260</b>	<b>408,799</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)	
05/13/2011	*	---	---	219	---	180,846	109,235	38,833	571	16,871	27,681	11,542
05/14/2011	*	---	---	153	---	161,796	100,164	40,716	941	---	33,616	8,081
05/15/2011	*	---	---	172	---	110,944	68,500	48,958	1,110	17,324	40,622	9,658
05/16/2011	*	---	---	---	---	150,666	108,485	107,831	1,735	---	66,705	4,693
05/17/2011	*	---	---	---	---	133,321	146,282	---	1,280	21,532	130,341	6,135
05/18/2011	*	---	---	---	---	137,141	211,619	---	706	---	125,303	7,225
05/19/2011	*	---	---	43	---	78,479	160,685	103,721	539	42,345	84,140	6,694
05/20/2011	*	---	---	64	---	57,516	131,135	76,753	662	---	121,085	6,442
05/21/2011	*	---	---	44	---	30,491	18,410	42,539	1,029	18,692	182,740	7,809
05/22/2011	*	---	---	50	---	51,018	43,309	33,558	1,825	---	185,648	8,913
05/23/2011	*	---	---	29	---	36,813	---	---	1,189	19,160	131,309	6,911
05/24/2011	*	---	---	33	---	67,238	---	---	798	---	95,231	6,723
05/25/2011	*	---	---	---	---	39,977	---	406	674	18,783	65,378	3,881
05/26/2011	*	---	---	---	---	56,358	---	---	610	---	61,964	3,039
05/27/2011		---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>807</b>	<b>0</b>	<b>1,292,604</b>	<b>1,097,824</b>	<b>493,315</b>	<b>13,669</b>	<b>154,707</b>	<b>1,351,763</b>	<b>97,746</b>
<b># Days:</b>		<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>14</b>	<b>10</b>	<b>9</b>	<b>14</b>	<b>7</b>	<b>14</b>	<b>14</b>
<b>Average:</b>		<b>0</b>	<b>0</b>	<b>90</b>	<b>0</b>	<b>92,329</b>	<b>109,782</b>	<b>54,813</b>	<b>976</b>	<b>22,101</b>	<b>96,555</b>	<b>6,982</b>
<b>YTD</b>		<b>1,080</b>	<b>11,844</b>	<b>4,071</b>	<b>2,934</b>	<b>3,798,034</b>	<b>1,904,565</b>	<b>651,315</b>	<b>16,500</b>	<b>555,914</b>	<b>2,193,265</b>	<b>214,378</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)	
05/13/2011	*	---	0	---	266	1,206	592	326	15,060	6,786	7,259	
05/14/2011	*	---	0	---	844	1,005	943	451	---	7,083	4,884	
05/15/2011	*	---	0	---	979	430	821	214	18,864	12,373	7,071	
05/16/2011	*	---	---	---	405	18	1,012	451	---	13,432	3,352	
05/17/2011	*	---	---	---	1,351	1,134	---	740	19,129	14,298	4,129	
05/18/2011	*	---	---	---	1,217	504	---	1,039	---	16,584	2,888	
05/19/2011	*	---	0	---	1,166	1,851	224	612	26,024	13,021	2,836	
05/20/2011	*	---	0	---	3,527	1,290	214	2,821	---	14,391	3,080	
05/21/2011	*	---	0	---	4,129	6	228	1,330	18,911	22,367	3,540	
05/22/2011	*	---	0	---	6,923	3,905	419	1,120	---	16,766	2,157	
05/23/2011	*	---	0	---	8,287	---	---	557	30,569	20,607	2,831	
05/24/2011	*	---	1	---	5,304	---	---	505	---	30,143	4,540	
05/25/2011	*	---	---	---	10,081	---	32	397	18,857	16,188	5,400	
05/26/2011	*	---	---	---	2,634	---	---	437	---	26,416	2,555	
05/27/2011		---	---	---	---	---	---	---	---	---	---	
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>47,113</b>	<b>11,349</b>	<b>4,485</b>	<b>11,000</b>	<b>147,414</b>	<b>230,455</b>	<b>56,522</b>
<b># Days:</b>		<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>14</b>	<b>10</b>	<b>9</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>3,365</b>	<b>1,135</b>	<b>498</b>	<b>786</b>	<b>21,059</b>	<b>16,461</b>	<b>4,037</b>
<b>YTD</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>94,291</b>	<b>28,033</b>	<b>8,714</b>	<b>14,399</b>	<b>258,893</b>	<b>280,344</b>	<b>87,937</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)	
05/13/2011	*	---	0	---	200	0	0	0	400	258	0	
05/14/2011	*	---	0	---	200	0	0	0	---	100	0	
05/15/2011	*	---	0	---	600	0	0	0	100	86	20	
05/16/2011	*	---	---	---	0	200	0	14	---	0	0	
05/17/2011	*	---	---	---	600	1,000	---	140	200	3,000	0	
05/18/2011	*	---	---	---	200	3,600	---	60	---	4,214	0	
05/19/2011	*	---	0	---	0	1,600	298	10	5,700	1,228	350	
05/20/2011	*	---	0	---	0	600	448	4	---	2,083	500	
05/21/2011	*	---	0	---	0	600	0	1	11,100	14,429	150	
05/22/2011	*	---	0	---	0	110	0	0	---	30,000	383	
05/23/2011	*	---	0	---	100	---	---	1	42,000	32,285	614	
05/24/2011	*	---	0	---	0	---	---	1	---	42,786	743	
05/25/2011	*	---	---	---	100	---	0	0	11,000	26,143	658	
05/26/2011	*	---	---	---	0	---	---	0	---	29,441	430	
05/27/2011		---	---	---	---	---	---	---	---	---	---	
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,000</b>	<b>7,710</b>	<b>746</b>	<b>231</b>	<b>70,500</b>	<b>186,053</b>	<b>3,848</b>
<b># Days:</b>		<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>14</b>	<b>10</b>	<b>9</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>143</b>	<b>771</b>	<b>83</b>	<b>17</b>	<b>10,071</b>	<b>13,290</b>	<b>275</b>
<b>YTD</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5,527</b>	<b>10,601</b>	<b>746</b>	<b>272</b>	<b>93,510</b>	<b>310,100</b>	<b>22,423</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:

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, and pacific lamprey macrophthalmia.

† 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

### 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/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.



## Two Week Transportation Summary

Source: Fish Passage Center

Updated:

5/27/11 9:48 AM

		05/13/11	TO	05/27/11			
Site	Data	Species					Grand Total
		CH0	CH1	CO	ST	SO	
<b>LGR</b>	Sum of NumberCollected	79,700	570,353	23,100	767,147	28,400	1,468,700
	Sum of NumberBarged	23,966	368,765	12,678	451,063	11,422	867,894
	Sum of NumberBypassed	55,705	201,090	10,416	316,004	16,900	600,115
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	6	23	0	5	4	38
	Sum of FacilityMorts	23	436	6	58	74	597
	Sum of ResearchMorts	0	39	0	17	0	56
	Sum of TotalProjectMorts	29	498	6	80	78	691
<b>LGS</b>	Sum of NumberCollected	5,400	686,827	22,800	504,570	5,452	1,225,049
	Sum of NumberBarged	5,387	685,376	22,799	504,248	5,372	1,223,182
	Sum of NumberBypassed	10	0	0	0	0	10
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	0	32	0	3	2	37
	Sum of FacilityMorts	3	1,419	1	319	78	1,820
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	3	1,451	1	322	80	1,857
<b>LMN</b>	Sum of NumberCollected	1,349	518,108	6,567	335,226	3,154	864,404
	Sum of NumberBarged	895	390,408	5,518	271,036	2,451	670,308
	Sum of NumberBypassed	454	126,699	1,045	63,849	598	192,645
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	0	0	0	2	0	2
	Sum of FacilityMorts	0	1,002	6	340	105	1,453
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	0	1,002	6	342	105	1,455
<b>MCN</b>	Sum of NumberCollected	49,594	215,441	20,612	52,693	50,054	388,394
	Sum of NumberBarged	0	0	0	0	0	0
	Sum of NumberBypassed	49,497	214,978	20,600	52,671	49,998	387,744
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	3	37	0	1	2	43
	Sum of FacilityMorts	94	426	12	21	54	607
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	97	463	12	22	56	650
Total Sum of NumberCollected		136,043	1,990,729	73,079	1,659,636	87,060	3,946,547
Total Sum of NumberBarged		30,248	1,444,549	40,995	1,226,347	19,245	2,761,384
Total Sum of NumberBypassed		105,666	542,767	32,061	432,524	67,496	1,180,514
Total Sum of Numbertrucked		0	0	0	0	0	0
Total Sum of SampleMorts		9	92	0	11	8	120
Total Sum of FacilityMorts		120	3,283	25	738	311	4,477
Total Sum of ResearchMorts		0	39	0	17	0	56
Total Sum of TotalProjectMorts		129	3,414	25	766	319	4,653

### YTD Transportation Summary

Source: Fish Passage Center

Updated:

5/27/11 9:49 AM

TO: 05/27/11

		Species					
Site	Data	CH0	CH1	CO	SO	ST	Grand Total
<b>LGR</b>	Sum of NumberCollected	81,775	2,671,022	44,259	62,589	2,515,082	5,374,727
	Sum of NumberBarged	24,420	1,664,950	30,936	21,993	1,260,163	3,002,462
	Sum of NumberBypassed	57,317	1,004,040	13,312	40,151	1,254,649	2,369,469
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	12	100	1	64	34	211
	Sum of FacilityMorts	26	1,691	10	381	178	2,286
	Sum of ResearchMorts	0	241	0	0	58	299
	Sum of TotalProjectMorts	38	2,032	11	445	270	2,796
<b>LGS</b>	Sum of NumberCollected	5,807	1,426,710	37,600	17,112	1,064,279	2,551,508
	Sum of NumberBarged	5,785	1,321,783	37,199	11,769	825,290	2,201,826
	Sum of NumberBypassed	12	103,168	400	5,227	238,633	347,440
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	0	50	0	6	7	63
	Sum of FacilityMorts	10	1,709	1	110	349	2,179
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	10	1,759	1	116	356	2,242
<b>LMN</b>	Sum of NumberCollected	1,349	821,741	7,910	6,081	445,468	1,282,549
	Sum of NumberBarged	895	605,279	6,712	4,338	347,085	964,309
	Sum of NumberBypassed	454	215,251	1,194	1,585	97,962	316,446
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	0	2	0	0	4	6
	Sum of FacilityMorts	0	1,206	6	158	417	1,787
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	0	1,208	6	158	421	1,793
<b>MCN</b>	Sum of NumberCollected	56,638	895,965	46,967	115,022	280,064	1,394,656
	Sum of NumberBarged	0	0	0	0	0	0
	Sum of NumberBypassed	56,529	894,842	46,939	114,902	279,958	1,393,170
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	11	91	1	5	9	117
	Sum of FacilityMorts	98	1,032	27	115	97	1,369
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	109	1,123	28	120	106	1,486
Total Sum of NumberCollected		145,569	5,815,438	136,736	200,804	4,304,893	10,603,440
Total Sum of NumberBarged		31,100	3,592,012	74,847	38,100	2,432,538	6,168,597
Total Sum of NumberBypassed		114,312	2,217,301	61,845	161,865	1,871,202	4,426,525
Total Sum of NumberTrucked		0	0	0	0	0	0
Total Sum of SampleMorts		23	243	2	75	54	397
Total Sum of FacilityMorts		134	5,638	44	764	1,041	7,621
Total Sum of ResearchMorts		0	241	0	0	58	299
Total Sum of TotalProjectMorts		157	6,122	46	839	1,153	8,317

**Cumulative Adult Passage at Mainstem Dams Through: 05/26**

DAM	EndDate	Spring Chinook						Summer Chinook						Fall Chinook					
		2011		2010		10-Yr Avg.		2011		2010		10-Yr Avg.		2011		2010		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	05/26	161047	44220	233016	11484	167033	15379	0	0	0	0	0	0	0	0	0	0	0	0
TDA	05/26	117951	32092	173094	9981	119972	11955	0	0	0	0	0	0	0	0	0	0	0	0
JDA	05/26	96208	30079	160681	10128	100168	10404	0	0	0	0	0	0	0	0	0	0	0	0
MCN	05/26	91004	20563	131953	7080	88632	8782	0	0	0	0	0	0	0	0	0	0	0	0
IHR	05/26	61151	10361	89494	5003	58356	4996	0	0	0	0	0	0	0	0	0	0	0	0
LMN	05/26	57164	8959	85247	4691	54999	3395	0	0	0	0	0	0	0	0	0	0	0	0
LGS	05/26	45346	8339	79306	3988	48786	3580	0	0	0	0	0	0	0	0	0	0	0	0
LGR	05/26	36841	5879	74703	4275	47125	4087	0	0	0	0	0	0	0	0	0	0	0	0
PRD	05/24	10506	1711	25070	566	16469	449	0	0	0	0	0	0	0	0	0	0	0	0
RIS	05/25	7964	1462	24071	790	12942	717	0	0	0	0	0	0	0	0	0	0	0	0
RRH	05/25	3016	300	7226	244	4661	173	0	0	0	0	0	0	0	0	0	0	0	0
WEL	05/25	1300	210	5562	264	2643	93	0	0	0	0	0	0	0	0	0	0	0	0
WFA	05/24	17430	416	41823	905	-	-	-	-	-	-	-	-	0	0	0	0	-	-

DAM	Coho						Sockeye			Steelhead			
	2011		2010		10-Yr Avg.		10-Yr			10-Yr			Wild
	Adult	Jack	Adult	Jack	Adult	Jack	2011	2010	Avg.	2011	2010	Avg.	2011
BON	0	0	0	0	0	0	7	10	1	3536	7102	4226	1222
TDA	0	0	0	0	0	0	0	5	0	1404	2328	1441	747
JDA	0	0	0	0	0	0	0	0	0	2775	2540	2810	1744
MCN	0	0	0	0	0	0	0	0	0	2605	2302	2150	1580
IHR	0	0	0	0	0	0	0	0	0	3039	3054	2481	1197
LMN	0	0	0	0	0	0	0	0	0	3860	4061	2890	2179
LGS	0	0	0	0	0	0	0	0	0	6188	3101	2895	3315
LGR	0	0	0	0	0	0	0	0	0	12264	10443	9317	5746
PRD	0	0	0	0	0	0	0	0	0	42	86	26	0
RIS	0	0	0	0	0	0	0	0	1	68	112	68	46
RRH	0	0	0	0	0	0	0	0	0	531	343	225	472
WEL	0	0	0	0	0	0	0	0	0	110	84	48	84
WFA	0	0	0	0	-	-	-	-	-	12856	19361	-	-

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: 05/27/11

BON counts from January 1, 2009 to March 15, 2010 (historical counts begin March 15):

Year	Chinook Adult	Chinook Jack	Steelhead	Wild Steelhead
2011	49	1	1,419	600
2010	39	0	2,318	657