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# Fish Passage Center

# Weekly Report #17–14

June 9, 2017

## This Week's Highlights

### River Conditions

Flows in the Snake River have generally decreased over the last week; however remain high for this time of year. Hells Canyon Complex flows have ranged between 37.3 to 38.8 Kcfs over the last four days. Flows at Hells Canyon are expected to be around 38 Kcfs over the next four days.

The 2017 spill for fish passage program at the lower Snake River projects began just after midnight on April 3rd. Due to relatively high river flows this year, significant involuntary spill has occurred at all of the mainstem federal projects, and at the Upper Columbia projects. BPA has indicated that the involuntary spill that is occurring in the Federal Columbia River Power System is mostly in excess of hydraulic capacity, as several projects are presently operating with generation unit outages, limiting hydraulic capacity. Below is a list of unit outages at Snake River and Lower Columbia Dams:

1. Bonneville Dam (as of June 5, 2017): Units 3, 4, 7, 8, 16 Out of Service.
2. The Dalles Dam (as of June 3, 2017): Units 2, 12, 15, 16 Out of Service.
3. John Day Dam (as of June 8, 2017): Units 3, 5, 6, 9 Out of Service.
4. McNary Dam (as of June 1, 2017): All Units available.
5. Ice Harbor Dam (as of June 1, 2017): Units 2 and 4 Out of Service.
6. Lower Monumental Dam (as of June 1, 2017): Units 1 and 5 Out of Service.
7. Little Goose Dam (as of June 1, 2017): Unit 5 Out of Service.
8. Lower Granite Dam (as of June 1, 2017): Units 1 Out of service.

### Water Supply

Precipitation throughout the Columbia Basin has varied between 13% and 78% of average at individual sub-basins over June. Precipitation above The Dalles has been 47% of average over June. Over the 2017 water year, precipitation has ranged between 108% and 135% of average.

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

| Location | Water Year 2017 June 1-7, 2017 | | Water Year 2017 October 1, 2016 to June 7, 2017 | |
|---|---|---|---|---|
| | Observed (inches) | % Average | Observed (inches) | % Average |
| Columbia Above Coulee | 0.42 | 55 | 35.3 | 121 |
| Snake River Above Ice Harbor | 0.19 | 46 | 23.3 | 125 |
| Columbia Above The Dalles | 0.24 | 47 | 26.8 | 120 |
| Kootenai | 0.41 | 49 | 36.2 | 125 |
| Clark Fork | 0.52 | 78 | 22.9 | 108 |
| Flathead | 0.41 | 47 | 35.7 | 127 |
| Pend Oreille River Basin above Waneta Dam | 0.43 | 58 | 31.1 | 121 |
| Salmon River Basin | 0.30 | 53 | 31.0 | 131 |
| Upper Snake Tributaries | 0.06 | 13 | 26.8 | 126 |
| Clearwater | 0.46 | 62 | 39.2 | 116 |
| Willamette River above Portland | 0.29 | 46 | 80.9 | 135 |

Table 2 displays the June 8th ESP runoff volume forecasts for multiple reservoirs along with the June COE forecasts at Libby and Dworshak. The June 8th ESP forecast at The

Dalles between April and August is 114,511 Kaf (131% of average).

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

| Location | June 8, 2017 5-day QPF ESP | |
|---|---|---|
| | % Average (1981-2010) | Runoff Volume (Kaf) |
| The Dalles (Apr-Aug) | 131 | 114,511 |
| Grand Coulee (Apr-Aug) | 122 | 69,309 |
| Libby Res. Inflow, MT (Apr-Aug) | 126<br>129* | 7,413<br>7,594* |
| Hungry Horse Res. Inflow, MT (Apr-Aug) | 117 | 2,259 |
| Lower Granite Res. Inflow (Apr- July) | 147 | 29,198 |
| Brownlee Res. Inflow (Apr-July) | 185 | 10,152 |
| Dworshak Res. Inflow (Apr-July) | 120<br>116* | 2,894<br>2,838* |

* Denotes COE June Forecast

Grand Coulee Reservoir is at 1,274.8 feet (6-8-17) and has refilled 10.1 feet over the last week. Outflows at Grand Coulee have ranged between 186.1 Kcfs and 213.3 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2,415.6 feet (6-8-17) and has refilled 10.9 feet over the past week. Daily average outflows at Libby Dam have been 21.9-25.0 Kcfs over the last week.

Hungry Horse is currently at an elevation of 3,547.0 feet (6-8-17) and has refilled 4.7 feet last week. Outflows at Hungry Horse have been 8.4 Kcfs over the last week.

Dworshak is currently at an elevation of 1,592.3 feet (6-8-17) and has refilled 9.6 feet over the last week. Dworshak outflows over the last week ranged between 2.2-6.5 Kcfs.

The Brownlee Reservoir was at an elevation of 2,067.3 feet on June 8, 2017, and refilled 5.6 feet last week. Outflows at Hells Canyon have ranged between 37.3 and 38.8 Kcfs over the last four days.

The Biological Opinion flow period began on April 3rd in the lower Snake River (Lower Granite). According to the April Final Water Supply Forecast (April 5th, 2017), the flow objective this spring will be 100 Kcfs at Lower Granite. Flows at Lower Granite Dam have averaged 166.3 last week and 142.4 Kcfs over the spring season.

Based on the April Final Water Supply Forecast, the Spring Biological Opinion Flow Objectives will be 260 Kcfs at McNary Dam (began April 10th) and 135 Kcfs at Priest Rapids Dam (began April 10th). Over the last week, flows at McNary were 439.8 Kcfs and 271.0 Kcfs at Priest Rapids. Over the spring season, flows at McNary Dam have been 393.5 Kcfs and Priest Rapids Dam flows were 246.4 Kcfs.

## Spill

Flows in the Snake River have increased over the past week at Lower Granite, relative to the week prior. Dworshak Dam continues its refill operation, with discharge over the week ranging from 2.2 Kcfs to 6.5 Kcfs with spill ranging from 0 to 2.2 Kcfs. Hells Canyon Complex flows have increased slightly, with outflows at Hells Canyon ranging near 38 Kcfs over the last four days. Current outflow projections show flow increasing again in the Snake River and remaining around the same levels in the Lower Columbia as seasonal runoff continues.

The 2017 spill for fish passage program at the lower Snake River projects began just after midnight on April 3rd. However, due to the high river flows and turbine unit outages, significant involuntary spill has occurred at all of the mainstem federal projects, and at the Upper Columbia projects. BPA has indicated that the involuntary spill that is occurring in the Federal Columbia River Power System is mostly in excess of hydraulic capacity, as many projects are presently operating with generation unit outages, limiting hydraulic capacity.

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

Snake River projects continue to spill "involuntarily" above the Biological Opinion levels presently targeted for fish spill. Spill at Lower Granite Dam exceeded the targeted 20 Kcfs, and ranged from 65 Kcfs to 87.6 Kcfs. At Little Goose Dam the Biological Opinion spill is 30% of flow but, as a consequence of the flow, unit outages and screen cleaning, spill ranged from 42.8% to 54.1% of average daily flow. In an effort to improve adult fish passage at the project, spill is being reduced during the hours of 0400 to 1200. Water is being ponded above the minimum operating range (MOP) in the reservoir above the project and spill is then increased from 1600 to 0400 hours to return to MOP. This operation is scheduled to continue through Wednesday, June 14th. Spill at Lower Monumental Dam ranged from 88.4 to 112.3 Kcfs. At Ice Harbor spill ranged from 101.3 Kcfs to 128.4 Kcfs.

Spill for fish passage began in the middle Columbia River on April 10th. Spill for fish passage began on April 10th at the lower Columbia River projects. Spill for fish passage at the lower Columbia River projects at the following amounts described in the 2017 Fish Operations Plan.

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

Spill that has occurred in the middle Columbia River over the past several weeks has also exceeded the planned spill for fish passage levels due to "involuntary" spill. At McNary Dam spill averaged 61% to 63% of daily average flow. At John Day Dam spill averaged between 40% and 45% of average daily flow. At The Dalles Dam spill ranged from 47% to 57% of average daily flow. Bonneville Dam spill was 237 to 279 Kcfs.

Similar to the Snake and Middle Columbia rivers, high spill levels are occurring at projects in the Upper Columbia River.

At Dworshak Dam, tailrace TDG levels have ranged from102% to 110%, dependent on spill levels. TDG supersaturation at the Lower Granite Dam forebay monitor has ranged between 108% and 111% over the past week. The present uncontrolled spill due to unit outages, flood control operations and snowmelt has remained high over the last week, with TDG supersaturation levels often exceeding TDG criteria at projects in the Snake and Columbia rivers. Over the past week the tailwater TDG supersaturation (average of 12 highest hourly levels in a calendar day) ranged from 124% to 129% at Lower Granite Dam; 125% to 130% at Little Goose Dam; 126% to 129% at Lower Monumental Dam; and, 125 to 129% at Ice Harbor Dam. TDG supersaturation levels have also remained high at the Middle Columbia projects, ranging from 118% to 123% at the tailwater of McNary Dam; 123% to 128% below John Day Dam; 120% to 124% at The Dalles Dam; and, 126% to 129% at the Warrendale gage below Bonneville Dam (the Cascade Island gage is currently malfunctioning). Similar to the federal hydrosystem, TDG supersaturation levels have been high prior at the Upper Columbia over the last week with Grand Coulee and Chief Joseph both spilling water above the project (120% yesterday in the forebay of Wells Dam). TDG downstream was well above 125% in the tailraces of Rocky Reach and Rock Island and Priest Rapids dams.

**Note:** The State of Oregon TDG waiver only requires compliance with 120% TDG in the tailrace, while the State of Washington requires compliance with both a 115% TDG forebay requirement and a 120% tailrace TDG requirement. The State of Oregon and the State of Washington also use different methodologies to estimate the 12-hour average TDG. For Oregon, the 12-hour average is based on the 12 highest hourly TDG measurements in a single calendar day (not necessarily consecutive). For Washington, the 12-hour average is based on 12-hour rolling averages. The highest of the rolling averages is what is reported as the 12-hour average for a given day. The location of a TDG monitor will dictate which of these methodologies is used for compliance monitoring. The Washington methodology will apply to all the lower Snake River projects, as well as the middle Columbia River forebay monitors. On any given day the compliance of the tailrace monitors at the middle Columbia River projects will be determined using either the Washington or Oregon methodology, whichever is the most restrictive, and spill will be decreased if needed.

Gas bubble trauma monitoring in smolts took place over the past week at Little Goose, Lower Monumental, Bonneville, McNary, and Rock Island Dams. At Little Goose Dam 1% of fish were detected

with signs of GBT in the exam conducted on 6/05/17. At Lower Monumental Dam, 7% of fish examined were detected with signs of GBT on 6/07/17.

At Bonneville Dam 2% of the sample on 6/03/17 was observed with Rank 1 levels of GBT in their fins, and 7% of the sample taken on 6/06/17 showed Rank 1 and 2 signs. At McNary Dam no fish showed signs of GBT on exams taken on 6/07/17. The observed signs of GBT are presently below the action criteria that would be in place during the voluntary spill for fish passage program. At Rock Island Dam, the GBT exams on 6/06/17 and 6/08/17 showed 22% and 31% of fish with signs of GBT (all at Rank 1 or Rank 2), respectively. The action criteria for interruption of the voluntary spill for fish passage program is defined as either 15 percent of examined fish showing signs of gas bubble trauma in their non-paired fins, or five percent of the fish examined show signs of gas bubble trauma in their non-paired fins where more than 25 percent of the surface area of the fin is occluded by gas bubbles, corresponding to ranks greater than 2.

**Temperature**

Forebay temperatures are now being reported for Lower Granite, Ice Harbor, McNary and Bonneville dams. Thus far, reported temperatures continue near average based on the past ten years of data.

**Smolt Monitoring**

Sampling for the Smolt Monitoring Program (SMP) is underway at all bypass facilities. The Imnaha River Trap is the only trap site that is currently sampling for the SMP.

This week's samples at Bonneville Dam (BON) were dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook at BON was about 11,600 per day, which is an increase over last week's daily average passage index of about 7,400. Passage of spring migrants (i.e., yearling Chinook, coho, sockeye, and steelhead) continued to decrease this week, when compared to the previous week. This week's daily average passage indices for these four species were 1,200, 440, 300, and 700 per day, respectively. Last week's daily average passage indices were 6,500 for yearling Chinook, 2,200 for coho, 1,100 for sockeye, and 1,900 for steelhead. Finally, Pacific lamprey ammocoetes were encountered in two of this week's samples while macropthalmia were encountered every day this week. The daily average collection for macropthalmia this week was 180 per day, which is an increase over last week's daily average collection of 60 per day.

Similar to last year, sampling at John Day Dam (JDA) occurs every-other-day this year. This week's samples at JDA were dominated by subyearling Chinook. This week's daily average passage index was about 23,500, which is an increase over last week's daily average passage index of 6,700 per day. Passage of spring migrants decreased this week, when compared to the previous week. This week's daily average passage indices were 2,700 for yearling Chinook, 1,800 for coho, 800 for sockeye, and 5,000 for steelhead. Last week's daily average passage indices for these four species were 11,400, 3,400, 1,600, and 10,700 per day, respectively. Finally, both Pacific lamprey ammocoetes and macropthalmia were encountered in this week's samples. Pacific ammocoetes were encountered in two samples while macropthalmia were encountered in all three of this week's samples. This week's daily average collection for Pacific ammocoetes was about 80 per day, while that for macropthalmia was about 4,000 per day. This week's daily average collection for macropthalmia represented a substantial increase over last week's daily average collection of 900 per day.

Sampling at McNary Dam (MCN) is also every-other-day. This week's samples at MCN were again dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 72,800 per day, which is a substantial increase over last week's daily average passage index of about 20,200 per day. Passage of spring migrants continued to decrease this week, when compared to the previous week. This week's daily average passage indices for spring migrants were 3,700 for yearling Chinook, 1,050 for steelhead, 600 for sockeye, and 2,300 for steelhead. Last week's daily average passage indices for these four species were 10,000, 3,600, 2,600, and 4,200 per day, respectively. Finally, no Pacific lamprey ammocoetes were encountered this week but Pacific macropthalmia were collected in all four of this week's samples. This week's daily average collection for Pacific macropthalmia was about 1,825 fish per day, which is an increase over last week's daily average of about 440 per day.

This week's samples at Lower Granite Dam (LGR) were again dominated by subyearling Chinook. This

week's daily average passage index for subyearling Chinook was about 28,700 per day, which is a decrease from last week's daily average passage index of nearly 52,000 per day. Passage of spring migrants decreased this week, when compared to the previous week. This week's daily average passage indices for spring migrants were 1,100 for yearling Chinook, 500 for coho, 30 for sockeye, and 5,000 for steelhead. Last week's daily average passage indices for these four species were 4,100, 2,200, 280, and 14,550 per day, respectively. Finally, both Pacific lamprey ammocoetes and macropthalmia were collected at LGR this week. In all, 14 ammocoetes and two macropthalmia were collected in this week's samples at LGR.

Similar to recent years, sampling at Little Goose Dam (LGS) was every-other-day until the start of transportation, at which time sampling went to every day. This week's samples at LGS were again dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was 58,600 per day, which was an increase over last week's daily average passage index of 28,600 per day. Passage of spring migrants (i.e., yearling Chinook, coho, sockeye, and steelhead) all decreased again this week when compared to the previous week. Finally, Pacific lamprey ammocoetes were encountered in four of this week's samples while no macropthalmia were encountered in this week's samples.

Similar to recent years, sampling at Lower Monumental Dam (LMN) was every-third-day from April 1st to April 16th, every-other-day from April 16th until transportation began, at which time sampling switched to every day. This week's samples at LMN were dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 34,600 per day, which is an increase over last week's daily average passage index of about 8,600. Passage of spring migrants (i.e., yearling Chinook, coho, and sockeye) all decreased this week, when compared to last week. This week's daily average passage indices were about 660 for yearling Chinook, 300 for coho, 70 for sockeye, and 2,750 for steelhead. Finally, Pacific lamprey ammocoetes and macropthalmia were each encountered in one of this week's samples.

This week's collections at Rock Island Dam (RIS) were dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 630 per day, which is a decrease over last week's daily average passage index of about 830 per day. Passage of spring migrants (i.e., yearling Chinook, coho, sockeye, and steelhead) decreased this week, when compared to last week. This week's daily average passage indices for these three species were 10, 300, 30, and 190 per day, respectively. Last week's daily average passage indices were 80 for yearling Chinook, 600 for coho, 120 for sockeye, and 240 for steelhead. Finally, three total Pacific lamprey ammocoetes and six total macropthalmia were collected this week.

The Imnaha River Trap (IMN) is located at river kilometer 7 and is operated by the Nez Perce Tribe. Sampling at the Imnaha River Trap is year round. The FPC currently has data from IMN through June 4th. However, due to high flows in the Imnaha River over the last several weeks, sampling at IMN has been intermittent. The most recent days where sampling has been possible were May 27th through May 29th. Although sampling was possible during this time, it was limited to about 10 hours per day. Over these three days, samples at IMN were dominated by steelhead, with a daily average collection of about 70 fish per day. Yearling and subyearling Chinook were also collected during this three day period but in very low numbers. Finally, no Pacific lamprey juveniles were collected over these three days.

**Hatchery Release**

Effective 2017, the FPC has reorganized our hatchery release zones in an effort to more closely match the geographical regions used by NOAA in their ESU designations. The new river zones are: 1) Lower Columbia, 2) Middle Columbia, 3) Upper Columbia, and 4) Snake River. In addition, the FPC now provides a summary of hatchery releases below Bonneville Dam (i.e., Lower Columbia River Zone) in the weekly report.

**Snake River Zone**: The Snake River Zone encompasses the Snake River and its tributaries from its confluence with the Columbia River to Hells Canyon Dam. Approximately 1.19 million subyearling fall Chinook smolts were scheduled for release to the Clearwater River and its tributaries this week. The majority (81%) of these subyearling Chinook smolts were released directly from the Nez Perce Tribal Hatchery. The remaining 19% were released from the Lukes Gulch Acclimation Facility on the South Fork Clearwater River. Of the nearly 1.19 million

smolts released this week, approximately 30% were unmarked. This means that distinguishing them from wild smolts will be difficult. Approximately 200,000 subyearling fall Chinook smolts are scheduled to be released from the Captain John Rapids Acclimation Facility on the Snake River. This release is currently scheduled to occur on or around June 10th.

**Upper Columbia Zone**: The Upper Columbia Zone encompasses the area of the Columbia River and its tributaries from Priest Rapids Dam to Chief Joseph Dam. No releases were scheduled for this zone this week. No new releases are scheduled for this zone over the next two weeks. However, there is one volitional release of approximately 107,000 coho to the Wenatchee River that is scheduled to end on or around June 10th. This coho release began in late April.

**Middle Columbia Zone**: The Middle Columbia Zone is defined as the Columbia River and its tributaries from Bonneville Dam to Priest Rapids Dam (excluding the Snake River). No new releases were scheduled for this zone this week. Nearly 10.3 million subyearling fall Chinook smolts are scheduled to be released to this zone over the next two weeks. Of these, about 3.7 million (33%) will be released from Ringold Springs Hatchery and 6.9 million (67%) will be released from Priest Rapids Hatchery. Both of these hatcheries are located on the Columbia River, between McNary Dam and Priest Rapids Dam. Of these 10.3 million subyearling Chinook smolts, approximately 36% are unclipped.

**Lower Columbia Zone**: The Lower Columbia Zone is defined as the Columbia River and its tributaries below Bonneville Dam. No new releases were scheduled for this zone this week. In addition, no new releases are scheduled for this zone over the next two weeks.

**Adult Passage**

Adult Passage The summer Chinook count began June 8th at Bonneville Dam. Daily passage numbers at Bonneville Dam ranged between 1,335 and 1,747 adult Chinook in the last week. The 2017 summer Chinook count of 12,518 is about 76.7% of the 2016 count of 16,319 and about 78.6% of the 10-year average count of 15,926. The 2017 Bonneville Dam summer Chinook jack count of 1,839 has 437 more fish than the 2016 count, while having 1,418 fewer fish the 10-year average count. At Willamette Falls, 18,639 adult spring Chinook have been counted so far this year. In 2016, 18,640 adult spring Chinook were counted at Willamette Falls. This year's count has 1 fewer fish than the 2016 count and is about 77.5% the 10-year average count of 24,057. A total of 16,759 spring chinook have been counted at Lower Granite Dam as of June 8th. The 2017 Lower Granite Dam adult spring Chinook count is about 29.6% of the 2016 count and 30.1% of the 10-year average count.

The 2017 Bonneville Dam adult steelhead count of 3,565 is about 54.6% of the 2016 count of 6,526 and 55.2% of the 10-year average count of 6,457. The 2017 Bonneville Dam adult wild steelhead count of 1,112 has 1,285 fewer fish than the 2016 count of 2,397 and 774 fewer fish than the 10- year average count of 1,886. This year's Lower Granite steelhead count of 7,309 is about 1.3 times greater than the 2016 count of 5,477, while being 80.8% of the 10-year average count of 9,050. The 2017 Lower Granite Dam adult wild steelhead count of 3,053 has 65 fewer fish than the 2016 count of 3,118 and has 543 fewer fish than the 10-year average count of 3,596. At Willamette Falls, the 2017 count for steelhead was 1,508 as of June 6th. This year's steelhead count is about 9.5% of the 2016 count of 15,925 and 10.7% of the 10-year average count of 14,088.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 36 and 236 last week. The 2017 adult sockeye count at Bonneville Dam of 929 is 11.6% of the 2016 count and 33% of the 10-year average count. A total of 10,312 lampreys have been counted at Bonneville Dam so far this year. The Bonneville 2017 lamprey count is about 1.8 times greater than the 2016 count of 5,684 and 4.5 times greater than the 10-year average count of 2,298.

# Hatchery Releases Last Two Weeks

**Hatchery Release Summary**

**From: 5/27/2017 to 06/09/17**

| Agency | Hatchery | Species | Race | MigYr | NumRel | RelStart | RelEnd | RelSite | RelRiver | Zone |
|---|---|---|---|---|---|---|---|---|---|---|
| Nez Perce Tribe | Nez Perce Tribal Hatchery | CH0 | FA | 2017 | 225,000 | 06-06-17 | 06-06-17 | Lukes Gulch Acclim. | S Fk Clearwater River | SNAK |
| Nez Perce Tribe | Nez Perce Tribal Hatchery | CH0 | FA | 2017 | 322,000 | 06-08-17 | 06-08-17 | Nez Perce Tribal Hatchery | Clearwater River M F | SNAK |
| Nez Perce Tribe | Nez Perce Tribal Hatchery | CH0 | FA | 2017 | 640,000 | 06-07-17 | 06-07-17 | Nez Perce Tribal Hatchery | Clearwater River M F | SNAK |
| **Nez Perce Tribe Total** | | | | | **1,187,000** | | | | | |
| Oregon Dept. of Fish and Wildlife | Enhancement Program | CH0 | FA | 2017 | 16,500 | 06-01-17 | 06-01-17 | Skipanon River | Col R Bel. Bon Dam | LCOL |
| Oregon Dept. of Fish and Wildlife | Enhancement Program | CH0 | FA | 2017 | 25,000 | 06-01-17 | 06-01-17 | Youngs Bay | Youngs River | LCOL |
| Oregon Dept. of Fish and Wildlife | Enhancement Program | CO | UN | 2018 | 5,000 | 06-01-17 | 06-01-17 | Skipanon River | Col R Bel. Bon Dam | LCOL |
| Oregon Dept. of Fish and Wildlife | Irrigon Hatchery Complex | CH0 | FA | 2017 | 424,393 | 05-30-17 | 05-30-17 | Grande Ronde River | Grande Ronde River | SNAK |
| Oregon Dept. of Fish and Wildlife | Round Butte Hatchery | CH1 | SP | 2017 | 240,000 | 04-14-17 | 05-31-17 | Deschutes River | Deschutes River | MCOL |
| **Oregon Dept. of Fish and Wildlife Total** | | | | | **710,893** | | | | | |
| Washington Dept. of Fish and Wildlife | COOP | CO | NO | 2018 | 1,000 | 06-01-17 | 06-01-17 | Campbell Creek | Cowlitz River | LCOL |
| Washington Dept. of Fish and Wildlife | Cowlitz Salmon | CH0 | FA | 2017 | 168,340 | 06-01-17 | 06-01-17 | Cowlitz Hatchery | Cowlitz River | LCOL |
| Washington Dept. of Fish and Wildlife | Cowlitz Salmon | CH0 | FA | 2017 | 3,079,580 | 06-01-17 | 06-01-17 | Cowlitz Hatchery | Cowlitz River | LCOL |
| Washington Dept. of Fish and Wildlife | Fallert Creek Hatchery | CH0 | FA | 2017 | 3,583,300 | 05-20-17 | 05-31-17 | Fallert Creek Hatchery | Kalama River | LCOL |
| Washington Dept. of Fish and Wildlife | Kalama Falls Hatchery | CH0 | FA | 2017 | 3,422,352 | 06-01-17 | 06-01-17 | Kalama Falls Hatchery | Kalama River | LCOL |
| Washington Dept. of Fish and Wildlife | Lyons Ferry Hatchery | CH0 | FA | 2017 | 204,579 | 05-31-17 | 05-31-17 | Lyons Ferry Hatchery | Snake River | SNAK |
| Washington Dept. of Fish and Wildlife | Merwin Hatchery | ST | WI | 2017 | 51,000 | 05-01-17 | 06-01-17 | N Fk Lewis River | Lewis River | LCOL |
| Washington Dept. of Fish and Wildlife | North Toutle Hatchery | CH0 | FA | 2017 | 1,400,000 | 06-01-17 | 07-01-17 | Green River | Cowlitz River | LCOL |
| Washington Dept. of Fish and Wildlife | Washougal Hatchery | CH0 | FA | 2017 | 990,000 | 06-01-17 | 06-01-17 | Deep River Net Pens | Grays River | LCOL |
| Washington Dept. of Fish and Wildlife | Washougal Hatchery | CH0 | FA | 2017 | 1,900,000 | 06-01-17 | 06-01-17 | Washougal Hatchery | Washougal River | LCOL |
| **Washington Dept. of Fish and Wildlife Total** | | | | | **14,800,151** | | | | | |
| Yakama Tribe | Eagle Creek NFH | CO | UN | 2017 | 141,000 | 04-15-17 | 06-01-17 | Holmes Pond | Yakima River | MCOL |
| Yakama Tribe | Eagle Creek NFH | CO | UN | 2017 | 141,000 | 04-15-17 | 06-01-17 | Stiles Pond | Yakima River | MCOL |
| Yakama Tribe | Klickitat Hatchery | CH0 | FA | 2017 | 4,000,000 | 06-01-17 | 06-01-17 | Klickitat Hatchery | Klickitat River | MCOL |
| Yakama Tribe | Prosser Acclim. Pond | CO | UN | 2017 | 250,000 | 04-15-17 | 06-01-17 | Prosser Acclim Pond | Yakima River | MCOL |
| **Yakama Tribe Total** | | | | | **4,532,000** | | | | | |
| **Grand Total** | | | | | **21,230,044** | | | | | |

# Hatchery Releases Next Two Weeks

**Hatchery Release Summary**

**From: 6/10/2017 to 6/23/2017**

| Agency | Hatchery | Species | Race | MigYr | NumRel | RelStart | RelEnd | RelSite | RelRiver | Zone |
|---|---|---|---|---|---|---|---|---|---|---|
| Nez Perce Tribe | Lyons Ferry Hatchery | CH0 | FA | 2017 | 200,000 | 06-10-17 | 06-10-17 | Cpt John Acclim Pond | Snake River | SNAK |
| **Nez Perce Tribe Total** | | | | | **200,000** | | | | | |
| Washington Dept. of Fish and Wildlife | Priest Rapids Hatchery | CH0 | FA | 2017 | 6,900,000 | 06-14-17 | 07-01-17 | Priest Rapids Hatchery | McNary Pool | MCOL |
| Washington Dept. of Fish and Wildlife | Ringold Springs Hatchery | CH0 | FA | 2017 | 3,368,500 | 06-14-17 | 06-27-17 | Ringold Springs Hatchery | McNary Pool | MCOL |
| **Washington Dept. of Fish and Wildlife Total** | | | | | **10,268,500** | | | | | |
| Yakama Tribe | Willard Hatchery | CO | UN | 2017 | 106,937 | 04-26-17 | 06-10-17 | Butcher Creek Acclim. Pond | Wenatchee River | UCOL |
| **Yakama Tribe Total** | | | | | **106,937** | | | | | |
| **Grand Total** | | | | | **10,575,437** | | | | | |

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

## Daily Average Flow and Spill (in Kcfs) at Mid-Columbia Projects

| | Grand Coulee | | Chief Joseph | | Wells | | Rocky Reach | | Rock Island | | Wanapum | | Priest Rapids | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Flow | Spill | Flow | Spill | Flow | Spill | Flow | Spill | Flow | Spill | Flow | Spill | Flow | Spill |
| 05/26/2017 | 197.4 | 6.4 | 201.2 | 106.1 | 239.2 | 59.1 | 246.2 | 92.6 | 247.4 | 108.8 | 267.0 | 135.0 | 273.5 | 152.9 |
| 05/27/2017 | 200.7 | 16.6 | 198.1 | 105.1 | 235.2 | 54.9 | 246.2 | 100.0 | 244.1 | 106.8 | 266.0 | 142.8 | 272.1 | 155.1 |
| 05/28/2017 | 204.8 | 1.5 | 205.9 | 99.6 | 243.4 | 63.4 | 250.1 | 104.9 | 248.1 | 117.0 | 272.4 | 150.5 | 279.7 | 164.8 |
| 05/29/2017 | 200.7 | 0.0 | 204.6 | 99.2 | 242.2 | 61.8 | 252.6 | 97.4 | 250.9 | 121.1 | 271.3 | 138.2 | 277.5 | 173.8 |
| 05/30/2017 | 200.0 | 1.8 | 203.5 | 110.4 | 242.4 | 62.7 | 252.2 | 111.3 | 257.8 | 121.4 | 279.5 | 146.7 | 286.5 | 177.4 |
| 05/31/2017 | 190.9 | 27.5 | 191.2 | 104.1 | 233.3 | 55.6 | 252.5 | 101.5 | 258.1 | 123.3 | 279.5 | 150.1 | 285.0 | 172.1 |
| 06/01/2017 | 186.4 | 12.5 | 189.1 | 86.3 | 227.2 | 47.0 | 239.3 | 88.6 | 246.8 | 112.9 | 269.9 | 169.9 | 276.6 | 140.4 |
| 06/02/2017 | 186.1 | 7.1 | 188.3 | 92.8 | 226.5 | 46.0 | 241.2 | 83.4 | 246.1 | 108.6 | 261.5 | 147.9 | 266.7 | 148.6 |
| 06/03/2017 | 195.4 | 8.7 | 193.3 | 94.3 | 230.3 | 50.9 | 244.9 | 88.0 | 248.4 | 108.2 | 265.1 | 161.4 | 269.6 | 154.0 |
| 06/04/2017 | 199.9 | 0.0 | 195.9 | 86.0 | 225.7 | 47.0 | 243.6 | 86.1 | 245.7 | 103.2 | 259.8 | 159.2 | 266.1 | 165.4 |
| 06/05/2017 | 198.4 | 11.0 | 202.6 | 99.8 | 231.2 | 53.5 | 242.9 | 84.4 | 241.8 | 109.3 | 259.5 | 133.4 | 262.2 | 149.5 |
| 06/06/2017 | 212.0 | 25.2 | 211.0 | 127.4 | 234.4 | 59.0 | 249.2 | 90.7 | 246.6 | 104.4 | 258.4 | 134.6 | 259.2 | 144.5 |
| 06/07/2017 | 213.0 | 0.6 | 213.3 | 141.3 | 241.1 | 64.1 | 254.7 | 99.6 | 256.8 | 117.1 | 278.9 | 150.2 | 278.9 | 168.5 |
| 06/08/2017 | 213.3 | 5.1 | 220.8 | 130.3 | 242.5 | 70.0 | 255.0 | 98.9 | 256.0 | 117.0 | 279.7 | 162.1 | 283.7 | 173.4 |

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

| | Dworshak | | Brownlee | Hells Canyon | Lower Granite | | Little Goose | | Lower Monumental | | Ice Harbor | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Flow | Spill | Inflow | Outflow | Flow | Spill | Flow | Spill | Flow | Spill | Flow | Spill |
| 05/26/2017 | 6.2 | 1.8 | --- | 30.9 | 153.1 | 63.1 | 149.9 | 65.5 | 151.6 | 74.0 | 156.7 | 101.8 |
| 05/27/2017 | 6.2 | 1.8 | --- | 29.2 | 146.7 | 56.7 | 141.9 | 57.3 | 141.5 | 64.1 | 148.5 | 93.5 |
| 05/28/2017 | 6.2 | 1.8 | --- | 28.6 | 136.5 | 49.9 | 132.7 | 52.0 | 130.9 | 57.5 | 136.5 | 89.8 |
| 05/29/2017 | 6.1 | 1.8 | --- | 28.7 | 141.0 | 51.4 | 135.9 | 51.8 | 137.0 | 58.9 | 141.2 | 88.2 |
| 05/30/2017 | 6.1 | 1.9 | --- | 31.7 | 148.4 | 58.4 | 143.9 | 59.2 | 143.5 | 65.4 | 145.9 | 91.7 |
| 05/31/2017 | 5.4 | 1.8 | --- | 37.0 | 163.6 | 73.4 | 160.2 | 80.7 | 161.1 | 82.8 | 166.1 | 110.9 |
| 06/01/2017 | 3.7 | 0.0 | --- | 35.9 | 176.7 | 85.7 | 175.1 | 90.5 | 174.2 | 103.4 | 172.7 | 117.6 |
| 06/02/2017 | 4.4 | 0.0 | --- | 36.7 | 179.2 | 87.6 | 178.8 | 94.3 | 179.4 | 101.4 | 183.4 | 128.4 |
| 06/03/2017 | 4.3 | 0.0 | --- | 38.2 | 171.9 | 80.7 | 169.1 | 84.1 | 169.3 | 91.4 | 168.7 | 114.2 |
| 06/04/2017 | 4.4 | 0.7 | --- | 38.1 | 168.4 | 77.4 | 165.2 | 80.5 | 165.6 | 88.4 | 170.1 | 118.2 |
| 06/05/2017 | 4.3 | 0.2 | --- | 38.2 | 171.8 | 80.5 | 168.1 | 91.0 | 168.4 | 91.6 | 170.8 | 118.8 |
| 06/06/2017 | 2.2 | 0.0 | --- | 38.1 | 163.7 | 73.5 | 160.8 | 84.6 | 161.5 | 103.0 | 163.1 | 117.0 |
| 06/07/2017 | 2.8 | 0.0 | --- | 38.2 | 154.3 | 65.0 | 149.7 | 64.1 | 153.2 | 108.1 | 154.1 | 102.0 |
| 06/08/2017 | 6.5 | 2.2 | --- | 38.0 | 154.4 | 65.4 | 150.4 | 64.7 | 155.7 | 112.3 | 154.4 | 101.3 |

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

| | McNary | | John Day | | The Dalles | | Bonneville | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | Flow | Spill | Flow | Spill | Flow | Spill | Flow | Spill | PH1 | PH2 |
| 05/26/2017 | 431.1 | 261.3 | 443.2 | 178.8 | 422.9 | 207.2 | 440.3 | 247.1 | 66.4 | 114.4 |
| 05/27/2017 | 418.7 | 250.2 | 426.7 | 163.3 | 412.5 | 218.5 | 432.1 | 239.9 | 64.1 | 115.8 |
| 05/28/2017 | 413.1 | 244.3 | 413.3 | 158.0 | 390.0 | 219.7 | 420.9 | 230.5 | 64.0 | 114.0 |
| 05/29/2017 | 418.3 | 249.7 | 418.9 | 160.8 | 400.0 | 217.8 | 414.5 | 224.1 | 66.6 | 111.5 |
| 05/30/2017 | 427.2 | 258.2 | 428.7 | 169.2 | 410.8 | 227.9 | 426.4 | 238.4 | 66.3 | 109.3 |
| 05/31/2017 | 438.1 | 268.7 | 439.9 | 184.1 | 426.9 | 228.7 | 446.9 | 265.4 | 65.7 | 103.4 |
| 06/01/2017 | 445.2 | 276.9 | 449.3 | 190.0 | 431.2 | 230.0 | 452.7 | 269.7 | 65.5 | 105.0 |
| 06/02/2017 | 460.0 | 291.0 | 460.6 | 201.8 | 438.5 | 238.3 | 449.7 | 275.6 | 62.6 | 99.1 |
| 06/03/2017 | 450.8 | 280.2 | 457.2 | 191.4 | 440.3 | 250.5 | 454.4 | 279.3 | 62.9 | 99.8 |
| 06/04/2017 | 440.1 | 269.0 | 438.4 | 176.8 | 420.9 | 196.7 | 442.3 | 257.7 | 64.7 | 107.4 |
| 06/05/2017 | 448.8 | 277.4 | 453.4 | 209.6 | 431.8 | 234.3 | 448.2 | 261.5 | 64.8 | 109.5 |
| 06/06/2017 | 433.0 | 264.8 | 429.5 | 189.9 | 411.9 | 224.9 | 434.6 | 250.2 | 58.8 | 113.2 |
| 06/07/2017 | 421.4 | 254.8 | 424.5 | 189.3 | 405.4 | 226.0 | 428.5 | 238.7 | 64.2 | 113.1 |
| 06/08/2017 | 424.8 | 260.8 | 427.2 | 172.9 | 412.2 | 233.4 | 430.5 | 237.2 | 68.7 | 112.2 |

# 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Lower Granite Dam** | | | | | | | | | | | |
| | 06/01/17 | Chinook + Steelhead | 101 | 0 | 0 | 0.00% | 0.00% | 0 | 0 | 0 | 0 |
| **Little Goose Dam** | | | | | | | | | | | |
| | 05/29/17 | Chinook + Steelhead | 100 | 0 | 0 | 0.00% | 0.00% | 0 | 0 | 0 | 0 |
| | 06/05/17 | Chinook + Steelhead | 100 | 1 | 1 | 1.00% | 0.00% | 1 | 0 | 0 | 0 |
| **Lower Monumental Dam** | | | | | | | | | | | |
| | 05/31/17 | Chinook + Steelhead | 100 | 1 | 1 | 1.00% | 0.00% | 1 | 0 | 0 | 0 |
| | 06/07/17 | Chinook + Steelhead | 100 | 8 | 7 | 7.00% | 0.00% | 6 | 1 | 0 | 0 |
| **McNary Dam** | | | | | | | | | | | |
| | 05/30/17 | Chinook + Steelhead | 100 | 0 | 0 | 0.00% | 0.00% | 0 | 0 | 0 | 0 |
| | 06/05/17 | Chinook + Steelhead | 100 | 0 | 0 | 0.00% | 0.00% | 0 | 0 | 0 | 0 |
| | 06/07/17 | Chinook + Steelhead | 100 | 0 | 0 | 0.00% | 0.00% | 0 | 0 | 0 | 0 |
| **Bonneville Dam** | | | | | | | | | | | |
| | 05/27/17 | Chinook + Steelhead | 100 | 3 | 3 | 3.00% | 0.00% | 3 | 0 | 0 | 0 |
| | 05/30/17 | Chinook + Steelhead | 91* | 2 | 2 | | | 2 | 0 | 0 | 0 |
| | 06/03/17 | Chinook + Steelhead | 100 | 2 | 2 | 2.00% | 0.00% | 1 | 1 | 0 | 0 |
| | 06/06/17 | Chinook + Steelhead | 100 | 7 | 7 | 7.00% | 0.00% | 6 | 1 | 0 | 0 |

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

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

| | Hungry H. Dnst | | | | Boundary | | | | Grand Coulee | | | | Grand C. Tlwr | | | | Chief Joseph | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | 24 h Avg | 12 h Avg | High | # hr | 24 h Avg | 12 h Avg | High | # hr | 24 h Avg | 12 h Avg | High | # hr | 24 h Avg | 12 h Avg | High | # hr | 24 h Avg | 12 h Avg | High | # hr |
| 5/26 | --- | --- | --- | 0 | --- | --- | --- | 0 | 114.8 | 114.9 | 115.0 | 24 | 120.9 | 121.6 | 122.2 | 24 | 119.9 | 120.4 | 120.9 | 24 |
| 5/27 | --- | --- | --- | 0 | --- | --- | --- | 0 | 114.6 | 114.7 | 114.8 | 24 | 123.3 | 125.6 | 125.9 | 24 | 120.7 | 121.2 | 121.9 | 24 |
| 5/28 | --- | --- | --- | 0 | --- | --- | --- | 0 | 114.9 | 115.1 | 115.4 | 24 | 116.4 | 118.4 | 119.9 | 24 | 120.4 | 121.7 | 123.6 | 24 |
| 5/29 | --- | --- | --- | 0 | --- | --- | --- | 0 | 115.9 | 116.4 | 116.6 | 24 | 115.0 | 115.6 | 115.8 | 24 | 122.0 | 123.7 | 124.3 | 24 |
| 5/30 | --- | --- | --- | 0 | --- | --- | --- | 0 | 117.3 | 117.8 | 118.2 | 24 | 116.4 | 117.2 | 117.9 | 24 | 115.8 | 116.3 | 117.0 | 24 |
| 5/31 | --- | --- | --- | 0 | --- | --- | --- | 0 | 118.1 | 118.3 | 118.4 | 24 | 130.2 | 132.2 | 135.1 | 24 | 115.8 | 116.0 | 116.2 | 24 |
| 6/1 | --- | --- | --- | 0 | --- | --- | --- | 0 | 118.0 | 118.2 | 118.3 | 24 | 125.5 | 127.0 | 128.2 | 24 | 120.2 | 124.2 | 126.2 | 24 |
| 6/2 | --- | --- | --- | 0 | --- | --- | --- | 0 | 117.4 | 118.1 | 118.3 | 24 | 123.2 | 123.7 | 125.1 | 24 | 127.2 | 128.2 | 129.2 | 24 |
| 6/3 | --- | --- | --- | 0 | --- | --- | --- | 0 | 118.4 | 118.7 | 118.8 | 24 | 124.4 | 125.4 | 125.7 | 24 | 123.7 | 124.2 | 124.9 | 24 |
| 6/4 | --- | --- | --- | 0 | --- | --- | --- | 0 | 118.4 | 118.6 | 118.9 | 24 | 116.9 | 117.3 | 118.5 | 24 | 122.9 | 123.4 | 123.8 | 24 |
| 6/5 | --- | --- | --- | 0 | --- | --- | --- | 0 | 117.6 | 118.1 | 118.4 | 24 | 122.9 | 125.2 | 126.2 | 24 | 119.8 | 122.1 | 122.9 | 24 |
| 6/6 | --- | --- | --- | 0 | --- | --- | --- | 0 | 118.2 | 118.7 | 118.9 | 24 | 129.2 | 130.2 | 130.6 | 24 | 118.0 | 120.5 | 123.3 | 24 |
| 6/7 | --- | --- | --- | 0 | --- | --- | --- | 0 | 119.7 | 120.2 | 120.6 | 24 | 119.4 | 120.7 | 130.7 | 24 | 126.4 | 128.5 | 130.0 | 24 |
| 6/8 | --- | --- | --- | 0 | --- | --- | --- | 0 | 120.8 | 121.3 | 121.5 | 23 | 124.0 | 124.8 | 125.0 | 23 | 124.7 | 129.0 | 130.2 | 23 |

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

| | Chief J. Dnst | | | | Wells | | | | Wells Dwnstrm | | | | Rocky Reach | | | | Rocky R. Tlwr | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | 24 h Avg | 12 h Avg | High | # hr | 24 h Avg | 12 h Avg | High | # hr | 24 h Avg | 12 h Avg | High | # hr | 24 h Avg | 12 h Avg | High | # hr | 24 h Avg | 12 h Avg | High | # hr |
| 5/26 | 116.8 | 117.0 | 117.1 | 24 | 116.5 | 116.9 | 117.1 | 23 | 121.2 | 122.3 | 123.2 | 23 | 119.2 | 120.0 | 120.7 | 24 | 127.5 | 127.9 | 128.6 | 23 |
| 5/27 | 116.4 | 116.8 | 117.5 | 24 | 116.6 | 117.3 | 117.8 | 24 | 121.3 | 122.3 | 122.9 | 24 | 120.0 | 120.4 | 121.0 | 24 | 127.2 | 127.7 | 128.0 | 23 |
| 5/28 | 116.7 | 117.1 | 117.3 | 24 | 116.9 | 117.5 | 117.8 | 24 | 122.3 | 123.5 | 124.8 | 24 | 120.2 | 120.6 | 120.8 | 24 | 127.6 | 128.4 | 129.0 | 23 |
| 5/29 | 116.3 | 117.0 | 117.5 | 24 | 118.2 | 119.2 | 119.6 | 24 | 122.6 | 124.0 | 124.9 | 24 | 121.4 | 121.7 | 121.9 | 24 | 127.9 | 128.6 | 129.0 | 24 |
| 5/30 | 116.8 | 117.1 | 117.6 | 22 | 116.4 | 117.0 | 118.3 | 24 | 121.9 | 122.7 | 124.8 | 24 | 122.0 | 122.6 | 123.1 | 24 | 128.8 | 129.1 | 129.4 | 22 |
| 5/31 | 116.3 | 116.8 | 117.2 | 24 | 114.8 | 115.0 | 115.4 | 24 | 120.4 | 121.4 | 123.4 | 24 | 120.3 | 120.8 | 121.3 | 23 | 128.2 | 128.8 | 129.3 | 23 |
| 6/1 | 115.6 | 115.9 | 116.1 | 24 | 113.8 | 114.0 | 114.5 | 24 | 118.4 | 119.3 | 120.5 | 24 | 118.5 | 119.1 | 119.6 | 24 | 127.1 | 127.7 | 128.6 | 23 |
| 6/2 | 115.7 | 116.0 | 116.5 | 24 | 117.3 | 118.6 | 120.0 | 24 | 120.4 | 121.7 | 122.5 | 24 | 116.7 | 117.2 | 117.6 | 24 | 126.0 | 126.6 | 127.5 | 22 |
| 6/3 | 115.9 | 116.5 | 117.4 | 24 | 118.6 | 119.0 | 120.1 | 24 | 122.4 | 123.6 | 124.6 | 24 | 119.5 | 120.2 | 120.9 | 24 | 126.8 | 127.6 | 128.6 | 22 |
| 6/4 | 115.6 | 115.9 | 116.3 | 24 | 116.9 | 117.2 | 117.7 | 24 | 120.9 | 121.5 | 122.0 | 24 | 120.3 | 121.1 | 121.5 | 24 | 126.9 | 127.4 | 128.0 | 22 |
| 6/5 | 116.6 | 116.8 | 117.2 | 24 | 116.9 | 117.6 | 118.1 | 24 | 121.2 | 122.2 | 123.3 | 24 | 118.5 | 118.7 | 119.8 | 24 | 126.1 | 126.9 | 127.7 | 21 |
| 6/6 | 117.2 | 117.8 | 118.3 | 23 | 115.9 | 116.5 | 117.2 | 24 | 121.4 | 122.4 | 124.8 | 24 | 120.6 | 121.2 | 121.5 | 24 | 127.3 | 127.7 | 128.6 | 22 |
| 6/7 | 117.6 | 117.9 | 118.3 | 24 | 119.2 | 120.5 | 120.9 | 24 | 124.0 | 124.7 | 125.8 | 24 | 121.5 | 122.5 | 123.7 | 23 | 128.6 | 128.9 | 129.6 | 18 |
| 6/8 | 117.7 | 118.2 | 118.9 | 23 | 120.0 | 120.4 | 120.9 | 23 | 125.5 | 127.6 | 129.0 | 23 | 122.8 | 123.4 | 124.4 | 22 | 128.4 | 129.4 | 130.7 | 19 |

## Total Dissolved Gas Saturation at Mid Columbia River Sites

| | Rock Island | | | | Rock I. Tlwr | | | | Wanapum | | | | Wanapum Tlwr | | | | Priest Rapids | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | 24 h Avg | 12 h Avg | High | # hr | 24 h Avg | 12 h Avg | High | # hr | 24 h Avg | 12 h Avg | High | # hr | 24 h Avg | 12 h Avg | High | # hr | 24 h Avg | 12 h Avg | High | # hr |
| 5/26 | 120.3 | 121.2 | 121.6 | 23 | 127.2 | 127.8 | 128.2 | 21 | 121.7 | 121.7 | 122.0 | 5 | 126.1 | 126.9 | 127.0 | 24 | 124.5 | 125.0 | 125.6 | 24 |
| 5/27 | 120.4 | 121.4 | 121.7 | 23 | 126.1 | 128.2 | 128.6 | 23 | --- | --- | --- | 0 | 127.0 | 129.1 | 134.0 | 24 | 124.7 | 125.7 | 128.7 | 24 |
| 5/28 | 121.0 | 121.9 | 122.3 | 23 | 128.2 | 128.9 | 129.2 | 23 | --- | --- | --- | 0 | 127.8 | 128.1 | 128.3 | 24 | 125.4 | 125.8 | 126.3 | 24 |
| 5/29 | 121.6 | 122.3 | 123.0 | 24 | 128.8 | 129.3 | 129.8 | 24 | --- | --- | --- | 0 | 127.0 | 127.9 | 128.3 | 24 | 125.6 | 125.9 | 126.3 | 24 |
| 5/30 | 122.0 | 122.6 | 123.3 | 22 | 128.4 | 128.7 | 129.0 | 21 | 125.2 | 125.2 | 126.9 | 7 | 128.0 | 128.3 | 128.7 | 24 | 125.4 | 126.2 | 126.7 | 24 |
| 5/31 | 121.1 | 121.5 | 122.2 | 24 | 127.6 | 127.8 | 128.2 | 23 | 124.0 | 124.4 | 124.7 | 24 | 127.4 | 128.0 | 128.4 | 24 | 124.2 | 125.1 | 126.5 | 24 |
| 6/1 | 120.2 | 120.6 | 121.2 | 23 | 126.6 | 126.9 | 127.3 | 23 | 123.6 | 123.9 | 124.2 | 24 | 130.7 | 133.1 | 134.7 | 24 | 126.9 | 128.3 | 131.0 | 24 |
| 6/2 | 118.6 | 119.5 | 120.3 | 23 | 125.5 | 126.1 | 126.7 | 22 | 123.1 | 123.9 | 124.8 | 24 | 127.3 | 127.8 | 128.8 | 24 | 126.1 | 126.9 | 128.9 | 24 |
| 6/3 | 119.5 | 120.6 | 121.3 | 23 | 126.1 | 126.8 | 127.5 | 21 | 123.3 | 123.8 | 124.7 | 24 | 128.8 | 129.9 | 130.8 | 24 | 125.2 | 125.8 | 126.5 | 24 |
| 6/4 | 119.9 | 120.7 | 122.0 | 23 | 126.3 | 126.7 | 127.3 | 22 | 120.1 | 120.6 | 121.5 | 24 | 127.2 | 127.7 | 130.7 | 24 | 123.7 | 124.6 | 125.2 | 24 |
| 6/5 | 118.6 | 120.0 | 121.0 | 23 | 125.9 | 126.5 | 127.4 | 21 | 119.0 | 119.0 | 119.3 | 3 | 124.9 | 125.6 | 126.8 | 24 | 122.8 | 123.6 | 123.8 | 24 |
| 6/6 | 120.8 | 121.7 | 122.1 | 23 | 126.8 | 127.4 | 127.7 | 21 | --- | --- | --- | 0 | 126.3 | 127.2 | 127.5 | 24 | 124.8 | 126.1 | 126.5 | 24 |
| 6/7 | 122.2 | 122.6 | 123.6 | 20 | 128.5 | 128.7 | 129.3 | 17 | --- | --- | --- | 0 | 127.5 | 129.4 | 132.0 | 24 | 126.0 | 127.5 | 128.3 | 24 |
| 6/8 | 122.4 | 122.7 | 123.0 | 21 | 128.5 | 128.7 | 129.2 | 16 | --- | --- | --- | 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

| | Priest R. Dnst | | | | Pasco | | | | Dworshak | | | | Clrwtr-Peck | | | | Anatone | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 24 h | 12 h | | # | 24 h | 12 h | | # | 24 h | 12 h | | # | 24 h | 12 h | | # | 24 h | 12 h | | # |
| Date | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | Avg | High | hr |
| 5/26 | 123.0 | 123.3 | 123.4 | 24 | --- | --- | --- | 0 | 106.9 | 107.8 | 108.8 | 24 | 103.2 | 104.1 | 104.7 | 24 | 108.1 | 108.7 | 109.2 | 24 |
| 5/27 | 123.2 | 123.7 | 124.3 | 24 | --- | --- | --- | 0 | 106.4 | 106.8 | 107.4 | 24 | 103.1 | 104.2 | 104.9 | 24 | 107.9 | 108.6 | 109.2 | 24 |
| 5/28 | 123.7 | 124.4 | 125.2 | 24 | --- | --- | --- | 0 | 106.7 | 107.6 | 108.6 | 24 | 103.4 | 104.5 | 105.2 | 24 | 107.8 | 108.5 | 109.1 | 24 |
| 5/29 | 124.3 | 124.6 | 125.0 | 24 | --- | --- | --- | 0 | 106.8 | 107.5 | 107.8 | 24 | 103.7 | 104.8 | 105.6 | 24 | 107.9 | 108.7 | 109.3 | 24 |
| 5/30 | 124.5 | 124.7 | 125.1 | 24 | --- | --- | --- | 0 | 107.5 | 108.1 | 108.7 | 24 | 104.0 | 105.1 | 105.8 | 24 | 108.3 | 109.2 | 109.7 | 24 |
| 5/31 | 124.0 | 124.4 | 124.6 | 24 | --- | --- | --- | 0 | 108.2 | 109.3 | 110.9 | 24 | 103.7 | 104.5 | 105.0 | 24 | 109.0 | 109.7 | 110.2 | 24 |
| 6/1 | 123.7 | 124.1 | 124.3 | 24 | --- | --- | --- | 0 | 102.3 | 103.2 | 106.1 | 24 | 102.8 | 103.4 | 103.8 | 24 | 109.7 | 110.2 | 110.6 | 24 |
| 6/2 | 123.5 | 123.8 | 123.9 | 24 | --- | --- | --- | 0 | 101.6 | 102.3 | 103.0 | 24 | 103.3 | 104.3 | 104.9 | 24 | 110.8 | 111.7 | 112.2 | 24 |
| 6/3 | 123.7 | 124.1 | 124.2 | 24 | --- | --- | --- | 0 | 102.1 | 103.0 | 103.7 | 24 | 103.5 | 104.5 | 105.3 | 24 | 111.2 | 111.7 | 112.2 | 24 |
| 6/4 | 122.6 | 122.8 | 123.6 | 24 | --- | --- | --- | 0 | 105.0 | 108.5 | 110.5 | 24 | 102.9 | 103.2 | 103.8 | 24 | 110.0 | 110.3 | 110.7 | 24 |
| 6/5 | 122.2 | 122.5 | 123.4 | 21 | --- | --- | --- | 0 | 102.8 | 104.5 | 107.9 | 24 | 102.9 | 104.0 | 104.7 | 24 | 110.5 | 111.6 | 112.1 | 24 |
| 6/6 | 124.2 | 125.5 | 127.7 | 24 | --- | --- | --- | 0 | 102.2 | 103.5 | 104.7 | 24 | 102.9 | 103.9 | 104.6 | 24 | 111.0 | 111.5 | 112.0 | 24 |
| 6/7 | 131.4 | 131.4 | 152.5 | 7 | --- | --- | --- | 0 | 103.1 | 104.3 | 105.7 | 24 | 103.1 | 104.1 | 104.9 | 24 | 110.8 | 111.5 | 112.0 | 24 |
| 6/8 | --- | --- | --- | 0 | --- | --- | --- | 0 | 109.2 | 110.1 | 111.4 | 22 | 103.1 | 103.3 | 104.1 | 22 | 109.2 | 109.6 | 110.5 | 22 |

## Total Dissolved Gas Saturation Data at Snake River Sites

| | Clrwtr-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 | | # |
| Date | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | Avg | High | hr |
| 5/26 | 103.3 | 104.6 | 106.0 | 24 | 105.3 | 105.9 | 106.2 | 24 | 122.6 | 123.4 | 124.3 | 24 | 116.2 | 117.3 | 117.7 | 24 | 122.3 | 123.5 | 124.9 | 24 |
| 5/27 | 103.2 | 104.4 | 105.4 | 24 | 106.4 | 107.1 | 107.5 | 24 | 120.6 | 120.9 | 121.4 | 24 | 117.9 | 118.2 | 118.7 | 24 | 120.8 | 121.3 | 122.4 | 24 |
| 5/28 | 103.3 | 104.5 | 105.4 | 24 | 107.2 | 107.7 | 108.1 | 24 | 119.4 | 120.4 | 122.7 | 24 | 118.7 | 119.0 | 119.3 | 24 | 119.6 | 120.9 | 122.1 | 24 |
| 5/29 | 103.4 | 104.5 | 105.5 | 24 | 107.8 | 108.2 | 108.5 | 24 | 120.1 | 120.8 | 121.7 | 24 | 118.9 | 119.3 | 119.9 | 24 | 119.9 | 120.4 | 121.3 | 24 |
| 5/30 | 103.5 | 104.6 | 105.6 | 24 | 108.2 | 108.5 | 108.8 | 24 | 122.2 | 122.7 | 123.1 | 24 | 118.6 | 118.9 | 119.5 | 24 | 121.5 | 122.4 | 123.4 | 24 |
| 5/31 | 103.0 | 103.5 | 104.2 | 24 | 107.4 | 107.7 | 108.1 | 24 | 124.5 | 125.2 | 128.0 | 24 | 117.5 | 117.7 | 118.1 | 24 | 124.7 | 125.7 | 127.5 | 24 |
| 6/1 | 102.1 | 102.5 | 102.9 | 24 | 107.2 | 107.4 | 107.5 | 24 | 128.2 | 128.7 | 129.2 | 24 | 117.7 | 118.1 | 118.2 | 24 | 126.5 | 127.5 | 128.9 | 24 |
| 6/2 | 102.1 | 103.1 | 103.8 | 24 | 107.3 | 107.6 | 107.9 | 24 | 128.7 | 129.1 | 129.7 | 24 | 119.0 | 120.0 | 120.8 | 24 | 126.8 | 127.7 | 128.9 | 24 |
| 6/3 | 102.9 | 103.8 | 104.5 | 24 | 109.3 | 110.1 | 110.7 | 24 | 127.4 | 128.4 | 129.4 | 24 | 122.1 | 123.1 | 123.7 | 24 | 125.6 | 128.1 | 129.4 | 24 |
| 6/4 | 101.7 | 102.0 | 102.6 | 24 | 109.2 | 109.6 | 110.0 | 24 | 126.9 | 127.9 | 129.5 | 24 | 121.5 | 121.9 | 122.9 | 24 | 124.8 | 127.4 | 128.5 | 24 |
| 6/5 | 101.8 | 102.9 | 103.7 | 24 | 107.4 | 107.8 | 108.1 | 24 | 127.4 | 128.4 | 129.7 | 24 | 120.1 | 120.3 | 120.4 | 24 | 125.5 | 128.3 | 129.0 | 24 |
| 6/6 | 102.2 | 103.1 | 103.8 | 24 | 108.7 | 109.5 | 110.0 | 24 | 125.6 | 126.3 | 126.5 | 24 | 121.5 | 122.1 | 122.5 | 23 | 125.9 | 129.9 | 143.8 | 23 |
| 6/7 | 102.7 | 103.8 | 104.7 | 24 | 110.5 | 111.0 | 111.4 | 24 | 124.7 | 125.6 | 125.8 | 24 | 123.3 | 123.8 | 124.1 | 24 | 122.6 | 124.8 | 126.8 | 24 |
| 6/8 | 101.6 | 102.0 | 102.8 | 22 | 109.9 | 110.5 | 111.2 | 22 | 123.8 | 124.4 | 127.3 | 22 | 121.7 | 122.7 | 124.0 | 22 | 122.1 | 125.2 | 127.0 | 22 |

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

| | 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 | | # |
| Date | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | Avg | High | hr |
| 5/26 | 124.9 | 125.4 | 125.7 | 24 | 122.9 | 123.5 | 124.3 | 24 | 121.7 | 121.8 | 122.0 | 24 | 122.8 | 124.4 | 125.7 | 24 | --- | --- | --- | 0 |
| 5/27 | 124.3 | 125.3 | 125.7 | 24 | 121.2 | 121.7 | 122.2 | 24 | 121.9 | 121.9 | 122.1 | 24 | 121.3 | 121.6 | 121.8 | 24 | --- | --- | --- | 0 |
| 5/28 | 123.0 | 123.3 | 123.3 | 24 | 121.0 | 121.3 | 121.7 | 24 | 121.5 | 121.7 | 121.8 | 24 | 120.5 | 120.9 | 121.3 | 24 | --- | --- | --- | 0 |
| 5/29 | 123.4 | 123.8 | 124.2 | 24 | 120.4 | 120.6 | 120.8 | 24 | 121.4 | 121.5 | 121.6 | 24 | 120.5 | 120.8 | 121.1 | 24 | --- | --- | --- | 0 |
| 5/30 | 122.6 | 122.9 | 123.4 | 24 | 121.6 | 122.4 | 123.9 | 24 | 121.4 | 121.8 | 122.1 | 24 | 121.0 | 121.3 | 122.4 | 24 | --- | --- | --- | 0 |
| 5/31 | 122.3 | 123.1 | 123.5 | 24 | 124.4 | 124.9 | 125.2 | 24 | 119.7 | 120.0 | 120.3 | 24 | 123.9 | 124.9 | 125.1 | 24 | --- | --- | --- | 0 |
| 6/1 | 125.8 | 126.4 | 126.7 | 24 | 126.0 | 126.8 | 128.1 | 24 | 120.8 | 121.1 | 121.4 | 24 | 125.3 | 125.8 | 127.9 | 24 | --- | --- | --- | 0 |
| 6/2 | 127.0 | 128.1 | 128.9 | 24 | 126.4 | 126.6 | 127.3 | 24 | 122.8 | 123.7 | 124.4 | 24 | 127.4 | 127.9 | 128.4 | 24 | --- | --- | --- | 0 |
| 6/3 | 129.7 | 130.3 | 130.9 | 24 | 124.8 | 126.5 | 127.3 | 24 | 125.1 | 125.4 | 125.7 | 24 | 125.2 | 127.8 | 131.0 | 24 | --- | --- | --- | 0 |
| 6/4 | 127.3 | 128.3 | 129.5 | 24 | 125.0 | 127.2 | 128.1 | 24 | 123.2 | 123.6 | 124.8 | 24 | 125.9 | 128.9 | 131.4 | 24 | --- | --- | --- | 0 |
| 6/5 | 126.2 | 127.7 | 128.6 | 24 | 124.5 | 126.4 | 127.5 | 24 | 121.9 | 123.0 | 124.0 | 24 | 125.5 | 128.2 | 133.1 | 24 | --- | --- | --- | 0 |
| 6/6 | 129.0 | 130.9 | 131.8 | 24 | 124.9 | 126.3 | 126.9 | 24 | 124.3 | 125.5 | 126.3 | 24 | 126.1 | 128.7 | 133.4 | 24 | --- | --- | --- | 0 |
| 6/7 | 130.1 | 132.3 | 132.9 | 24 | 126.8 | 128.8 | 130.7 | 24 | 126.3 | 127.2 | 128.0 | 24 | 123.4 | 125.1 | 127.4 | 24 | --- | --- | --- | 0 |
| 6/8 | 126.4 | 128.0 | 131.4 | 22 | 125.0 | 125.9 | 126.3 | 22 | 126.3 | 126.8 | 127.9 | 22 | 123.1 | 125.0 | 126.4 | 21 | --- | --- | --- | 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**

| | McNary-Wash | | | | McNary Tlwr | | | | John Day | | | | John Day Tlwr | | | | The Dalles | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 24 h | 12 h | | # | 24 h | 12 h | | # | 24h | 12h | | # | 24h | 12h | | # | 24h | 12h | | # |
| Date | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | AVG | High | hr |
| 5/26 | 116.7 | 117.3 | 117.9 | 24 | 124.1 | 124.4 | 124.8 | 24 | 115.9 | 116.5 | 117.2 | 24 | 123.6 | 124.2 | 124.8 | 24 | 118.7 | 118.7 | 119.2 | 9 |
| 5/27 | 118.1 | 119.0 | 119.4 | 24 | 123.5 | 123.6 | 123.9 | 24 | 118.5 | 119.8 | 120.8 | 24 | 122.0 | 122.4 | 123.2 | 24 | 118.2 | 119.0 | 119.7 | 24 |
| 5/28 | 119.2 | 120.1 | 120.6 | 24 | 123.6 | 123.7 | 124.0 | 24 | 121.8 | 122.8 | 123.5 | 24 | 121.1 | 121.3 | 121.6 | 24 | 119.7 | 120.9 | 121.5 | 24 |
| 5/29 | 120.3 | 120.9 | 121.8 | 24 | 123.9 | 124.2 | 124.5 | 24 | 123.3 | 123.9 | 124.2 | 24 | 121.6 | 122.1 | 122.4 | 24 | 120.5 | 121.4 | 122.1 | 24 |
| 5/30 | 120.3 | 120.9 | 121.7 | 24 | 124.2 | 124.4 | 124.8 | 24 | 122.9 | 123.5 | 124.0 | 24 | 122.3 | 122.4 | 122.6 | 24 | 119.3 | 120.1 | 120.8 | 24 |
| 5/31 | 117.7 | 118.5 | 119.1 | 24 | 124.6 | 125.0 | 125.2 | 24 | 119.9 | 120.4 | 121.2 | 24 | 123.7 | 125.0 | 125.4 | 24 | 118.2 | 119.2 | 119.9 | 24 |
| 6/1 | 117.1 | 117.7 | 118.0 | 24 | 124.8 | 124.9 | 125.0 | 24 | 117.5 | 118.1 | 119.1 | 24 | 124.8 | 124.9 | 125.1 | 24 | 118.3 | 118.7 | 119.5 | 24 |
| 6/2 | 117.3 | 118.1 | 118.7 | 24 | 125.5 | 126.3 | 126.9 | 24 | 115.9 | 116.9 | 117.8 | 24 | 126.1 | 127.7 | 130.4 | 24 | 118.1 | 119.4 | 120.3 | 24 |
| 6/3 | 120.4 | 122.0 | 122.5 | 24 | 125.2 | 125.3 | 125.5 | 24 | 118.6 | 118.9 | 119.2 | 24 | 124.6 | 125.5 | 128.1 | 24 | 119.0 | 120.1 | 120.5 | 24 |
| 6/4 | 118.3 | 119.6 | 121.1 | 24 | 124.3 | 124.6 | 125.0 | 24 | 117.0 | 117.6 | 118.4 | 24 | 122.9 | 123.2 | 123.6 | 24 | 115.4 | 115.8 | 116.6 | 24 |
| 6/5 | 117.4 | 118.4 | 119.6 | 24 | 124.9 | 125.1 | 125.5 | 24 | 116.3 | 117.0 | 117.2 | 24 | 125.6 | 126.6 | 127.1 | 24 | 118.6 | 121.4 | 122.5 | 24 |
| 6/6 | 119.4 | 120.7 | 121.9 | 24 | 124.7 | 125.0 | 125.2 | 24 | 116.9 | 117.8 | 118.4 | 24 | 124.1 | 125.7 | 126.6 | 24 | 119.4 | 119.7 | 120.6 | 24 |
| 6/7 | 122.0 | 122.7 | 123.4 | 24 | 124.5 | 124.8 | 125.1 | 24 | 120.9 | 122.5 | 123.3 | 24 | 124.3 | 126.1 | 126.7 | 24 | 121.0 | 122.3 | 123.3 | 24 |
| 6/8 | 120.4 | 121.6 | 122.6 | 23 | 124.7 | 125.4 | 127.6 | 23 | 121.9 | 122.5 | 123.1 | 23 | 123.0 | 124.2 | 124.9 | 23 | 119.3 | 119.8 | 120.1 | 23 |

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

| | The Dalles Dnst | | | | Bonneville | | | | Warrendale | | | | Camas\Washougal | | | | Cascade Island | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 24 h | 12 h | | # | 24 h | 12 h | | # | 24h | 12h | | # | 24h | 12h | | # | 24h | 12h | | # |
| Date | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | Avg | High | hr | Avg | Avg | High | hr |
| 5/26 | 122.0 | 122.3 | 123.0 | 24 | 122.9 | 124.1 | 124.5 | 24 | 127.5 | 128.4 | 128.6 | 24 | 124.9 | 125.8 | 126.2 | 24 | 126.3 | 127.2 | 127.4 | 24 |
| 5/27 | 121.8 | 122.2 | 122.6 | 24 | 123.2 | 123.7 | 124.1 | 24 | 127.3 | 127.6 | 128.3 | 24 | 126.3 | 126.9 | 127.3 | 24 | 125.4 | 125.8 | 127.3 | 24 |
| 5/28 | 123.0 | 123.8 | 124.3 | 24 | 123.6 | 123.9 | 124.2 | 24 | 126.7 | 126.9 | 127.0 | 24 | 125.4 | 126.3 | 127.1 | 24 | 124.6 | 124.7 | 125.0 | 24 |
| 5/29 | 123.6 | 124.1 | 125.0 | 24 | 123.1 | 123.3 | 124.0 | 24 | 125.8 | 126.2 | 126.5 | 24 | 124.0 | 124.5 | 125.1 | 24 | 124.3 | 124.4 | 124.7 | 24 |
| 5/30 | 122.7 | 123.2 | 123.7 | 24 | 120.0 | 121.4 | 122.9 | 24 | 125.6 | 126.1 | 126.5 | 24 | 123.2 | 123.8 | 124.5 | 24 | 124.9 | 125.6 | 126.1 | 24 |
| 5/31 | 121.3 | 121.9 | 122.8 | 24 | 119.3 | 120.1 | 120.5 | 24 | 126.6 | 127.6 | 127.9 | 24 | 124.5 | 125.7 | 126.3 | 24 | 126.6 | 127.8 | 128.9 | 24 |
| 6/1 | 121.4 | 121.9 | 122.4 | 24 | 120.7 | 120.9 | 121.1 | 24 | 127.3 | 127.5 | 127.6 | 24 | 125.6 | 125.8 | 126.0 | 24 | 125.6 | 126.0 | 126.2 | 24 |
| 6/2 | 121.1 | 122.1 | 122.6 | 24 | 121.2 | 122.2 | 122.5 | 24 | 128.2 | 129.0 | 129.6 | 24 | 126.4 | 127.7 | 128.6 | 24 | 126.1 | 126.3 | 126.6 | 24 |
| 6/3 | 121.6 | 122.1 | 122.7 | 24 | 120.7 | 121.8 | 122.9 | 24 | 128.3 | 129.1 | 129.7 | 24 | 126.6 | 127.1 | 127.7 | 24 | 119.3 | 123.4 | 126.4 | 24 |
| 6/4 | 119.4 | 119.9 | 120.4 | 24 | 117.7 | 118.1 | 118.8 | 24 | 125.3 | 125.6 | 126.4 | 24 | 123.7 | 124.3 | 126.0 | 24 | 110.0 | 111.1 | 112.7 | 24 |
| 6/5 | 121.8 | 123.4 | 124.1 | 24 | 119.2 | 121.1 | 122.9 | 24 | 126.4 | 127.5 | 128.1 | 24 | 123.8 | 125.3 | 125.9 | 24 | 107.4 | 107.6 | 108.0 | 24 |
| 6/6 | 123.2 | 123.7 | 124.1 | 24 | 124.1 | 125.1 | 125.8 | 24 | 128.2 | 128.5 | 129.2 | 24 | 126.0 | 126.7 | 127.2 | 24 | 106.6 | 106.8 | 107.2 | 24 |
| 6/7 | 123.8 | 124.3 | 124.7 | 24 | 123.7 | 124.6 | 125.1 | 24 | 127.3 | 128.0 | 128.2 | 24 | 126.4 | 127.0 | 127.6 | 24 | 105.6 | 105.7 | 105.8 | 24 |
| 6/8 | 122.3 | 122.7 | 123.2 | 23 | 121.8 | 122.4 | 122.7 | 23 | 126.0 | 126.9 | 127.6 | 23 | 123.8 | 124.4 | 125.2 | 23 | 104.9 | 105.3 | 105.6 | 23 |

# Two-Week Summary of Passage Indices

Source: Fish Passage Center Updated: 6/9/2017 11:44

## Two-Week Summary of Passage Indices

* One or more of the sites on this date had an incomplete or biased sample.
See Sampling Comments: http://www.fpc.org/currentDaily/smpcomments.htm
For clip information see: http://www.fpc.org/CurrentDaily/catch.htm
For sockeye and yearling chinook (Snake only) race information see: http://www.fpc.org/smoltqueries/currentsmpsubmitdata.asp

| | | | | COMBINED YEARLING CHINOOK | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WTB | IMN | GRN | LEW | LGR | LGS | LMN | RIS | MCN | JDA | BO2 |
| Date | | (Coll) | (Coll) | (Coll) | (Coll) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) |
| 05/26/2017 | | --- | --- | 42 | --- | 9,949 | 4,452 | 5,831 | 150 | --- | 12,411 | 9,327 |
| 05/27/2017 | * | --- | 2 | 28 | --- | 8,225 | 4,615 | 5,272 | 121 | 14,677 | --- | 9,748 |
| 05/28/2017 | * | --- | 1 | --- | --- | 3,273 | 6,427 | 4,351 | 103 | --- | 15,586 | 9,196 |
| 05/29/2017 | * | --- | 0 | --- | --- | 2,473 | 4,579 | 4,513 | 63 | 8,365 | --- | 7,668 |
| 05/30/2017 | | --- | --- | --- | --- | 1,433 | 7,346 | 2,328 | 34 | --- | 9,752 | 4,942 |
| 05/31/2017 | | --- | --- | --- | --- | 1,532 | 3,524 | 3,185 | 65 | 6,575 | --- | 1,795 |
| 06/01/2017 | | --- | --- | --- | --- | 1,856 | 1,867 | 1,683 | 26 | --- | 7,789 | 2,716 |
| 06/02/2017 | | --- | --- | --- | --- | 1,374 | 734 | 1,833 | 29 | 6,465 | --- | 1,737 |
| 06/03/2017 | | --- | --- | --- | --- | 2,338 | 1,550 | 109 | 12 | --- | 3,439 | 1,368 |
| 06/04/2017 | * | --- | --- | --- | --- | 1,882 | 1,603 | 650 | 17 | 5,052 | --- | 921 |
| 06/05/2017 | | --- | --- | --- | --- | 736 | 288 | 435 | 10 | --- | 3,301 | 1,250 |
| 06/06/2017 | | --- | --- | --- | --- | 756 | 543 | 491 | 17 | 2,130 | --- | 891 |
| 06/07/2017 | | --- | --- | --- | --- | 180 | 214 | 0 | 2 | --- | 1,399 | 1,286 |
| 06/08/2017 | | --- | --- | --- | --- | 517 | 699 | 1,123 | 8 | 1,044 | --- | 805 |
| 06/09/2017 | | --- | --- | --- | --- | --- | 263 | --- | 8 | --- | 873 | 565 |
| **Total:** | | **0** | **3** | **70** | **0** | **36,524** | **38,704** | **31,804** | **665** | **44,308** | **54,550** | **54,215** |
| **# Days:** | | **0** | **3** | **2** | **0** | **14** | **15** | **14** | **15** | **7** | **8** | **15** |
| **Average:** | | **0** | **1** | **35** | **0** | **2,609** | **2,580** | **2,272** | **44** | **6,330** | **6,819** | **3,614** |
| **YTD** | | **33,704** | **22,191** | **21,106** | **8** | **3,993,590** | **2,398,669** | **2,873,653** | **50,581** | **1,581,525** | **1,718,080** | **1,944,718** |

| | | | | COMBINED SUBYEARLING CHINOOK | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WTB | IMN | GRN | LEW | LGR | LGS | LMN | RIS | MCN | JDA | BO2 |
| Date | | (Coll) | (Coll) | (Coll) | (Coll) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) |
| 05/26/2017 | | --- | --- | 2 | --- | 39,492 | 949 | 202 | 1,169 | --- | 3,839 | 7,878 |
| 05/27/2017 | * | --- | 0 | 1 | --- | 40,790 | 3,477 | 439 | 936 | 11,409 | --- | 7,844 |
| 05/28/2017 | * | --- | 0 | --- | --- | 51,056 | 17,152 | 781 | 532 | --- | 3,581 | 5,305 |
| 05/29/2017 | * | --- | 1 | --- | --- | 60,430 | 23,947 | 3,211 | 646 | 14,467 | --- | 6,193 |
| 05/30/2017 | | --- | --- | --- | --- | 50,963 | 51,553 | 6,267 | 640 | --- | 7,511 | 6,858 |
| 05/31/2017 | | --- | --- | --- | --- | 47,676 | 30,369 | 12,995 | 1,135 | 34,789 | --- | 8,216 |
| 06/01/2017 | | --- | --- | --- | --- | 72,392 | 72,956 | 36,176 | 783 | --- | 11,753 | 9,565 |
| 06/02/2017 | | --- | --- | --- | --- | 31,897 | 85,106 | 53,964 | 547 | 50,915 | --- | 9,107 |
| 06/03/2017 | | --- | --- | --- | --- | 35,455 | 69,722 | 3,586 | 473 | --- | 17,554 | 9,151 |
| 06/04/2017 | * | --- | --- | --- | --- | 35,764 | 33,347 | 25,128 | 746 | 81,863 | --- | 7,329 |
| 06/05/2017 | | --- | --- | --- | --- | 32,391 | 54,469 | 43,017 | 817 | --- | 24,689 | 7,468 |
| 06/06/2017 | | --- | --- | --- | --- | 30,979 | 72,715 | 25,557 | 995 | 93,677 | --- | 13,167 |
| 06/07/2017 | | --- | --- | --- | --- | 19,271 | 53,172 | 46,063 | 450 | --- | 28,495 | 17,989 |
| 06/08/2017 | | --- | --- | --- | --- | 15,178 | 41,440 | 44,917 | 386 | 64,702 | --- | 17,301 |
| 06/09/2017 | | --- | --- | --- | --- | --- | 21,546 | --- | 349 | --- | 34,385 | 16,308 |
| **Total:** | | **0** | **1** | **3** | **0** | **563,734** | **631,920** | **302,303** | **10,604** | **351,822** | **131,807** | **149,679** |
| **# Days:** | | **0** | **3** | **2** | **0** | **14** | **15** | **14** | **15** | **7** | **8** | **15** |
| **Average:** | | **0** | **0** | **2** | **0** | **40,267** | **42,128** | **21,593** | **707** | **50,260** | **16,476** | **9,979** |
| **YTD** | | **0** | **3** | **40** | **0** | **584,626** | **634,888** | **308,567** | **16,355** | **445,862** | **166,085** | **1,600,869** |

# Two-Week Summary of Passage Indices

| | | | | COMBINED COHO | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WTB | IMN | GRN | LEW | LGR | LGS | LMN | RIS | MCN | JDA | BO2 |
| Date | | (Coll) | (Coll) | (Coll) | (Coll) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) |
| 05/26/2017 | | --- | --- | 11 | --- | 3,430 | 1,801 | 1,093 | 551 | --- | 3,214 | 2,620 |
| 05/27/2017 | * | --- | 0 | 10 | --- | 3,693 | 1,824 | 1,721 | 432 | 5,256 | --- | 2,513 |
| 05/28/2017 | * | --- | 0 | --- | --- | 1,964 | 3,126 | 1,525 | 830 | --- | 2,889 | 2,710 |
| 05/29/2017 | * | --- | 0 | --- | --- | 1,391 | 1,687 | 955 | 806 | 3,702 | --- | 4,129 |
| 05/30/2017 | | --- | --- | --- | --- | 956 | 1,481 | 1,074 | 762 | --- | 3,624 | 1,402 |
| 05/31/2017 | | --- | --- | --- | --- | 1,362 | 880 | 397 | 662 | 1,930 | --- | 998 |
| 06/01/2017 | | --- | --- | --- | --- | 2,413 | 1,452 | 481 | 595 | --- | 4,034 | 898 |
| 06/02/2017 | | --- | --- | --- | --- | 978 | 1,251 | 458 | 397 | 1,616 | --- | 508 |
| 06/03/2017 | | --- | --- | --- | --- | 779 | 722 | 87 | 339 | --- | 2,651 | 435 |
| 06/04/2017 | * | --- | --- | --- | --- | 753 | 1,002 | 433 | 328 | 1,063 | --- | 386 |
| 06/05/2017 | | --- | --- | --- | --- | 184 | 577 | 869 | 323 | --- | 1,719 | 256 |
| 06/06/2017 | | --- | --- | --- | --- | 756 | 1,194 | 246 | 299 | 528 | --- | 572 |
| 06/07/2017 | | --- | --- | --- | --- | 0 | 0 | 0 | 247 | --- | 1,031 | 500 |
| 06/08/2017 | | --- | --- | --- | --- | 172 | 175 | 0 | 251 | 1,031 | --- | 417 |
| 06/09/2017 | | --- | --- | --- | --- | --- | 0 | --- | 290 | --- | 1,142 | 170 |
| **Total:** | | **0** | **0** | **21** | **0** | **18,831** | **17,172** | **9,339** | **7,112** | **15,126** | **20,304** | **18,514** |
| **# Days:** | | **0** | **3** | **2** | **0** | **14** | **15** | **14** | **15** | **7** | **8** | **15** |
| **Average:** | | **0** | **0** | **11** | **0** | **1,345** | **1,145** | **667** | **474** | **2,161** | **2,538** | **1,234** |
| **YTD** | | **0** | **0** | **2,232** | **0** | **126,695** | **85,010** | **68,143** | **34,327** | **85,136** | **95,045** | **354,016** |

| | | | | COMBINED STEELHEAD | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WTB | IMN | GRN | LEW | LGR | LGS | LMN | RIS | MCN | JDA | BO2 |
| Date | | (Coll) | (Coll) | (Coll) | (Coll) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) |
| 05/26/2017 | | --- | --- | 27 | --- | 20,924 | 5,397 | 15,145 | 331 | --- | 10,982 | 1,839 |
| 05/27/2017 | * | --- | 62 | 11 | --- | 25,683 | 9,906 | 14,388 | 247 | 5,127 | --- | 1,371 |
| 05/28/2017 | * | --- | 52 | --- | --- | 24,546 | 15,793 | 15,321 | 298 | --- | 12,574 | 2,018 |
| 05/29/2017 | * | --- | 92 | --- | --- | 6,491 | 8,678 | 12,410 | 226 | 4,134 | --- | 1,917 |
| 05/30/2017 | | --- | --- | --- | --- | 7,485 | 5,802 | 7,879 | 171 | --- | 9,290 | 2,338 |
| 05/31/2017 | | --- | --- | --- | --- | 6,981 | 3,696 | 5,776 | 216 | 3,093 | --- | 1,834 |
| 06/01/2017 | | --- | --- | --- | --- | 9,652 | 2,904 | 6,370 | 201 | --- | 10,014 | 2,245 |
| 06/02/2017 | | --- | --- | --- | --- | 7,826 | 5,419 | 3,093 | 221 | 2,424 | --- | 1,186 |
| 06/03/2017 | | --- | --- | --- | --- | 6,039 | 7,016 | 370 | 139 | --- | 6,162 | 843 |
| 06/04/2017 | * | --- | --- | --- | --- | 9,600 | 8,216 | 3,899 | 159 | 2,658 | --- | 903 |
| 06/05/2017 | | --- | --- | --- | --- | 2,392 | 6,153 | 1,738 | 180 | --- | 4,745 | 545 |
| 06/06/2017 | | --- | --- | --- | --- | 3,400 | 3,286 | 2,949 | 172 | 3,192 | --- | 445 |
| 06/07/2017 | | --- | --- | --- | --- | 3,782 | 1,072 | 4,217 | 210 | --- | 4,050 | 460 |
| 06/08/2017 | | --- | --- | --- | --- | 2,070 | 2,096 | 2,994 | 233 | 1,042 | --- | 518 |
| 06/09/2017 | | --- | --- | --- | --- | --- | 1,756 | --- | 230 | --- | 1,545 | 735 |
| **Total:** | | **0** | **206** | **38** | **0** | **136,871** | **87,190** | **96,549** | **3,234** | **21,670** | **59,362** | **19,197** |
| **# Days:** | | **0** | **3** | **2** | **0** | **14** | **15** | **14** | **15** | **7** | **8** | **15** |
| **Average:** | | **0** | **69** | **19** | **0** | **9,777** | **5,813** | **6,896** | **216** | **3,096** | **7,420** | **1,280** |
| **YTD** | | **7,117** | **15,702** | **7,614** | **1** | **4,040,232** | **1,840,429** | **2,509,116** | **30,531** | **440,564** | **1,311,538** | **261,134** |

# Two-Week Summary of Passage Indices

| | | | | COMBINED SOCKEYE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WTB | IMN | GRN | LEW | LGR | LGS | LMN | RIS | MCN | JDA | BO2 |
| Date | | (Coll) | (Coll) | (Coll) | (Coll) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) | (INDEX) |
| 05/26/2017 | | --- | --- | 0 | --- | 616 | 570 | 567 | 155 | --- | 1,518 | 1,616 |
| 05/27/2017 | * | --- | 0 | 0 | --- | 671 | 785 | 549 | 200 | 3,846 | --- | 1,523 |
| 05/28/2017 | * | --- | 0 | --- | --- | 0 | 762 | 372 | 95 | --- | 1,465 | 1,254 |
| 05/29/2017 | * | --- | 0 | --- | --- | 309 | 485 | 347 | 114 | 3,024 | --- | 1,475 |
| 05/30/2017 | | --- | --- | --- | --- | 0 | 579 | 179 | 83 | --- | 1,515 | 747 |
| 05/31/2017 | | --- | --- | --- | --- | 341 | 269 | 99 | 114 | 1,034 | --- | 703 |
| 06/01/2017 | | --- | --- | --- | --- | 0 | 315 | 481 | 93 | --- | 2,017 | 600 |
| 06/02/2017 | | --- | --- | --- | --- | 0 | 521 | 0 | 58 | 1,616 | --- | 381 |
| 06/03/2017 | | --- | --- | --- | --- | 0 | 316 | 22 | 30 | --- | 1,290 | 399 |
| 06/04/2017 | * | --- | --- | --- | --- | 0 | 4 | 217 | 30 | 266 | --- | 447 |
| 06/05/2017 | | --- | --- | --- | --- | 0 | 0 | 0 | 36 | --- | 688 | 449 |
| 06/06/2017 | | --- | --- | --- | --- | 189 | 2 | 246 | 32 | 528 | --- | 254 |
| 06/07/2017 | | --- | --- | --- | --- | 0 | 217 | 0 | 22 | --- | 442 | 151 |
| 06/08/2017 | | --- | --- | --- | --- | 0 | 5 | 0 | 18 | 0 | --- | 160 |
| 06/09/2017 | | --- | --- | --- | --- | --- | 0 | --- | 18 | --- | 269 | 225 |
| **Total:** | | **0** | **0** | **0** | **0** | **2,126** | **4,830** | **3,079** | **1,098** | **10,314** | **9,204** | **10,384** |
| **# Days:** | | **0** | **3** | **2** | **0** | **14** | **15** | **14** | **15** | **7** | **8** | **15** |
| **Average:** | | **0** | **0** | **0** | **0** | **152** | **322** | **220** | **73** | **1,473** | **1,151** | **692** |
| **YTD** | | **6** | **0** | **0** | **0** | **60,019** | **23,830** | **33,044** | **10,948** | **153,797** | **116,151** | **142,989** |

| | | | | COMBINED LAMPREY JUVENILES | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WTB | IMN | GRN | LEW | LGR† | LGS | LMN | RIS | MCN | JDA | BO2 |
| Date | | (Coll) | (Coll) | (Coll) | (Coll) | (Samp) | (Coll) | (Coll) | (Coll) | (Coll) | (Coll) | (Coll) |
| 05/26/2017 | | --- | --- | 0 | --- | 1 | 150 | 0 | 2 | --- | 250 | 100 |
| 05/27/2017 | * | --- | 0 | 0 | --- | 0 | 50 | 40 | 1 | 150 | --- | 40 |
| 05/28/2017 | * | --- | 0 | --- | --- | 1 | 50 | 0 | 0 | --- | 275 | 16 |
| 05/29/2017 | * | --- | 0 | --- | --- | 4 | 0 | 0 | 0 | 225 | --- | 40 |
| 05/30/2017 | | --- | --- | --- | --- | 0 | 0 | 0 | 1 | --- | 320 | 57 |
| 05/31/2017 | | --- | --- | --- | --- | 1 | 50 | 100 | 1 | 950 | --- | 55 |
| 06/01/2017 | | --- | --- | --- | --- | 0 | 1 | 0 | 1 | --- | 1,480 | 99 |
| 06/02/2017 | | --- | --- | --- | --- | 2 | 0 | 50 | 2 | 2,100 | --- | 210 |
| 06/03/2017 | | --- | --- | --- | --- | 2 | 0 | 0 | 3 | --- | 1,720 | 204 |
| 06/04/2017 | * | --- | --- | --- | --- | 3 | 0 | 0 | 1 | 600 | --- | 128 |
| 06/05/2017 | | --- | --- | --- | --- | 4 | 100 | 0 | 2 | --- | 3,800 | 128 |
| 06/06/2017 | | --- | --- | --- | --- | 1 | 100 | 0 | 1 | 1,400 | --- | 184 |
| 06/07/2017 | | --- | --- | --- | --- | 0 | 200 | 100 | 0 | --- | 1,320 | 236 |
| 06/08/2017 | | --- | --- | --- | --- | 4 | 100 | 0 | 0 | 3,200 | --- | 211 |
| 06/09/2017 | | --- | --- | --- | --- | --- | 150 | --- | 1 | --- | 2,120 | 271 |
| **Total:** | | **0** | **0** | **0** | **0** | **23** | **951** | **290** | **16** | **8,625** | **11,285** | **1,979** |
| **# Days:** | | **0** | **3** | **2** | **0** | **14** | **15** | **14** | **15** | **7** | **8** | **15** |
| **Average:** | | **0** | **0** | **0** | **0** | **2** | **63** | **21** | **1** | **1,232** | **1,411** | **132** |
| **YTD** | | **0** | **3** | **4** | **0** | **69** | **4,001** | **2,390** | **42** | **26,005** | **50,441** | **39,425** |

# 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.

Three classes of fish counts are shown in these tables:
Sample counts (Samp) are provided for juvenile lamprey at LGR. See note below for details †.
Collection counts (Coll), which account for sample rates but are not adjusted for flow;
Passage indices (INDEX), which are collection counts divided by the proportion of water passing through the sampled powerhouse.
Passage indices are not population estimates, but are used to adjust collection counts for daily fluctuations in the site's or project's operations.

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 macropthalmia, and unidentified lamprey species.

† In 2013 it was confirmed that juvenile lamprey can escape the sample tank at LGR which would lead to unreliable estimates of collection. Therefore, only sample counts are provided in this report.

**Definitions for Smolt Index Counts**

WTB (Collection) = Salmon River Trap at Whitebird : Collection Counts
IMN (Collection) = Imnaha River Trap : Collection Counts
GRN (Collection) = Grande Ronde River Trap : Collection Counts
LEW (Collection) = Snake River Trap at Lewiston : Collection Counts
LGR (Index) = Lower Granite Dam Bypass Collection System : Passage Index Counts
  Passage Index = 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.
LGR, LMN, and MCN data collected for the FPC by Washington Dept. of Fish and Wildlife.
LGS and GRN data collected for the FPC by Oregon Dept. of Fish and Wildlife.
IMN data collected for the FPC by the Nez Perce Tribe.
Fall (post SMP season) trapping at the Imnaha River Fish Trap (IMN) is funded by the Lower Snake River Compensation Program (LSRCP)
WTB and LEW data collected for the FPC by Idaho Dept. of Fish and Game.

# Two Week Transportation Summary

Source: Fish Passage Center Updated: 6/9/17 11:46 AM

**05/26/17 TO 06/09/17**

| | | Species | | | | | |
|---|---|---|---|---|---|---|---|
| Site | Data | **CH0** | **CH1** | CO | ST | SO | **Grand Total** |
| **LGR** | Sum of NumberCollected | 323,050 | 21,058 | 10,850 | 78,994 | 1,250 | 435,202 |
| | Sum of NumberBarged | 311,891 | 19,902 | 10,725 | 72,615 | 1,235 | 416,368 |
| | Sum of NumberBypassed | 21 | 676 | 0 | 5,448 | 0 | 6,145 |
| | Sum of Numbertrucked | 0 | 0 | 0 | 0 | 0 | 0 |
| | Sum of SampleMorts | 56 | 1 | 1 | 1 | 1 | 60 |
| | Sum of FacilityMorts | 2,421 | 182 | 24 | 56 | 14 | 2,697 |
| | Sum of ResearchMorts | 0 | 0 | 0 | 0 | 0 | 0 |
| | Sum of TotalProjectMorts | 2,477 | 183 | 25 | 57 | 15 | 2,757 |
| **LGS** | Sum of NumberCollected | 325,192 | 21,981 | 9,402 | 47,843 | 2,673 | 407,091 |
| | Sum of NumberBarged | 323,540 | 21,928 | 9,390 | 47,813 | 2,613 | 405,284 |
| | Sum of NumberBypassed | 19 | 0 | 0 | 0 | 0 | 19 |
| | Sum of Numbertrucked | 0 | 0 | 0 | 0 | 0 | 0 |
| | Sum of SampleMorts | 25 | 0 | 0 | 1 | 1 | 27 |
| | Sum of FacilityMorts | 1,608 | 53 | 12 | 29 | 59 | 1,761 |
| | Sum of ResearchMorts | 0 | 0 | 0 | 0 | 0 | 0 |
| | Sum of TotalProjectMorts | 1,633 | 53 | 12 | 30 | 60 | 1,788 |
| **LMN** | Sum of NumberCollected | 119,984 | 16,153 | 4,790 | 48,023 | 1,540 | 190,490 |
| | Sum of NumberBarged | 122,717 | 16,266 | 5,147 | 48,721 | 1,613 | 194,464 |
| | Sum of NumberBypassed | 0 | 0 | 0 | 0 | 0 | 0 |
| | Sum of Numbertrucked | 0 | 0 | 0 | 0 | 0 | 0 |
| | Sum of SampleMorts | 4 | 1 | 2 | 4 | 1 | 12 |
| | Sum of FacilityMorts | 125 | 36 | 1 | 28 | 16 | 206 |
| | Sum of ResearchMorts | 0 | 0 | 0 | 0 | 0 | 0 |
| | Sum of TotalProjectMorts | 129 | 37 | 3 | 32 | 17 | 218 |
| Total Sum of NumberCollected | | 768,226 | 59,192 | 25,042 | 174,860 | 5,463 | 1,032,783 |
| Total Sum of NumberBarged | | 758,148 | 58,096 | 25,262 | 169,149 | 5,461 | 1,016,116 |
| Total Sum of NumberBypassed | | 40 | 676 | 0 | 5,448 | 0 | 6,164 |
| Total Sum of Numbertrucked | | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Sum of SampleMorts | | 85 | 2 | 3 | 6 | 3 | 99 |
| Total Sum of FacilityMorts | | 4,154 | 271 | 37 | 113 | 89 | 4,664 |
| Total Sum of ResearchMorts | | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Sum of TotalProjectMorts | | 4,239 | 273 | 40 | 119 | 92 | 4,763 |

# YTD Transportation Summary

Source: Fish Passage Center Updated: 6/9/17 11:46 AM

**TO: 06/09/17**

| | | Species | | | | | |
|---|---|---|---|---|---|---|---|
| Site | Data | **CH0** | **CH1** | CO | SO | ST | **Grand Total** |
| **LGR** | Sum of NumberCollected | 335,458 | 2,359,548 | 73,000 | 34,794 | 2,312,661 | 5,115,461 |
| | Sum of NumberBarged | 320,702 | 975,255 | 61,925 | 18,957 | 933,241 | 2,310,080 |
| | Sum of NumberBypassed | 3,566 | 1,381,285 | 10,900 | 15,644 | 1,378,313 | 2,789,708 |
| | Sum of NumberTrucked | 0 | 0 | 0 | 0 | 0 | 0 |
| | Sum of SampleMorts | 66 | 90 | 4 | 11 | 52 | 223 |
| | Sum of FacilityMorts | 2,463 | 2,603 | 71 | 182 | 179 | 5,498 |
| | Sum of ResearchMorts | 0 | 18 | 0 | 0 | 2 | 20 |
| | Sum of TotalProjectMorts | 2,529 | 2,711 | 75 | 193 | 233 | 5,741 |
| **LGS** | Sum of NumberCollected | 326,899 | 1,336,708 | 42,123 | 13,301 | 1,056,793 | 2,775,824 |
| | Sum of NumberBarged | 324,734 | 494,469 | 38,883 | 9,659 | 305,023 | 1,172,768 |
| | Sum of NumberBypassed | 523 | 837,161 | 3,200 | 3,296 | 751,526 | 1,595,706 |
| | Sum of NumberTrucked | 0 | 0 | 0 | 0 | 0 | 0 |
| | Sum of SampleMorts | 25 | 29 | 1 | 7 | 10 | 72 |
| | Sum of FacilityMorts | 1,617 | 5,049 | 39 | 339 | 234 | 7,278 |
| | Sum of ResearchMorts | 0 | 0 | 0 | 0 | 0 | 0 |
| | Sum of TotalProjectMorts | 1,642 | 5,078 | 40 | 346 | 244 | 7,350 |
| **LMN** | Sum of NumberCollected | 123,184 | 1,451,734 | 32,740 | 16,740 | 1,289,142 | 2,913,540 |
| | Sum of NumberBarged | 125,316 | 924,222 | 32,259 | 12,109 | 705,198 | 1,799,104 |
| | Sum of NumberBypassed | 600 | 489,493 | 800 | 4,597 | 560,085 | 1,055,575 |
| | Sum of NumberTrucked | 0 | 0 | 0 | 0 | 0 | 0 |
| | Sum of SampleMorts | 4 | 37 | 2 | 5 | 30 | 78 |
| | Sum of FacilityMorts | 126 | 1,065 | 39 | 119 | 381 | 1,730 |
| | Sum of ResearchMorts | 0 | 0 | 0 | 0 | 0 | 0 |
| | Sum of TotalProjectMorts | 130 | 1,102 | 41 | 124 | 411 | 1,808 |
| Total Sum of NumberCollected | | 785,541 | 5,147,990 | 147,863 | 64,835 | 4,658,596 | 10,804,825 |
| Total Sum of NumberBarged | | 770,752 | 2,393,946 | 133,067 | 40,725 | 1,943,462 | 5,281,952 |
| Total Sum of NumberBypassed | | 4,689 | 2,707,939 | 14,900 | 23,537 | 2,689,924 | 5,440,989 |
| Total Sum of NumberTrucked | | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Sum of SampleMorts | | 95 | 156 | 7 | 23 | 92 | 373 |
| Total Sum of FacilityMorts | | 4,206 | 8,717 | 149 | 640 | 794 | 14,506 |
| Total Sum of ResearchMorts | | 0 | 18 | 0 | 0 | 2 | 20 |
| Total Sum of TotalProjectMorts | | 4,301 | 8,891 | 156 | 663 | 888 | 14,899 |

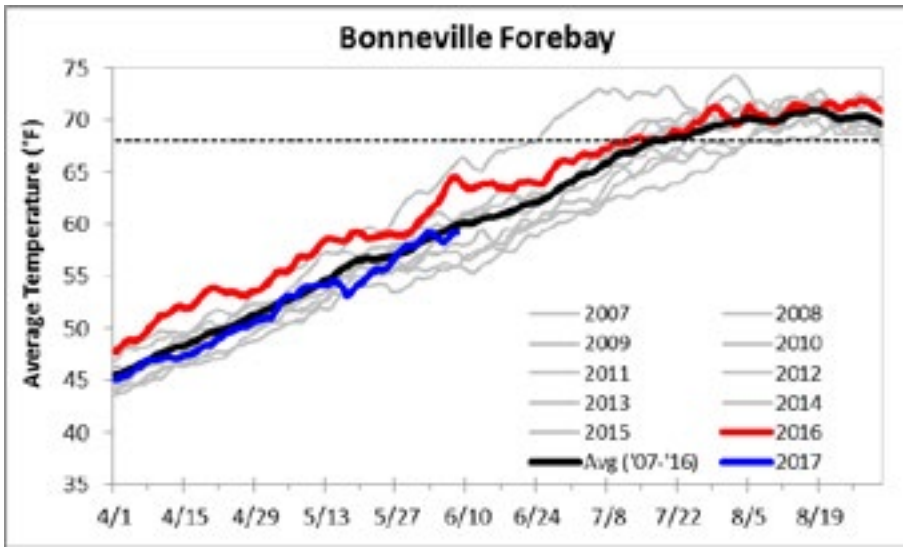
## Cumulative Adult Passage at Mainstem Dams Through: 06/08

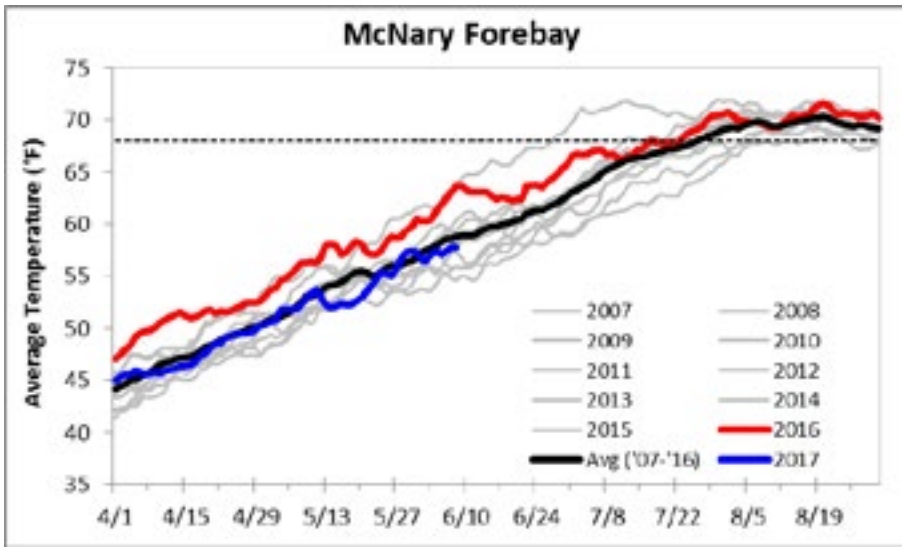
| | | Spring Chinook | | | | | | Summer Chinook | | | | | | Fall Chinook | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2017 | | 2016 | | 10-Yr Avg. | | 2017 | | 2016 | | 10-Yr Avg. | | 2017 | | 2016 | | 10-Yr Avg. | |
| dam | enddate | Adult | Jack | Adult | Jack | Adult | Jack | Adult | Jack | Adult | Jack | Adult | Jack | Adult | Jack | Adult | Jack | Adult | Jack |
| BON | 06/08 | 83624 | 18110 | 137215 | 11145 | 150783 | 25708 | 12518 | 1839 | 16319 | 1402 | 15926 | 3257 | 0 | 0 | 0 | 0 | 0 | 0 |
| TDA | 06/08 | 58308 | 12497 | 105504 | 9999 | 118766 | 22002 | 5726 | 991 | 8682 | 797 | 7933 | 1589 | 0 | 0 | 0 | 0 | 0 | 0 |
| JDA | 06/08 | 46675 | 12475 | 93659 | 8262 | 103450 | 20515 | 3127 | 445 | 4752 | 367 | 4017 | 858 | 0 | 0 | 0 | 0 | 0 | 0 |
| MCN | 06/07 | 43550 | 6904 | 85454 | 7269 | 92406 | 16502 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IHR | 06/08 | 26956 | 6576 | 65127 | 4784 | 65823 | 10644 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LMN | 06/08 | 24756 | 7055 | 63013 | 5872 | 64344 | 10002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LGS | 06/08 | 19425 | 6395 | 58769 | 5831 | 58738 | 10575 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LGR | 06/08 | 16759 | 5196 | 56713 | 4763 | 55702 | 10973 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PRD | 06/07 | 6058 | 601 | 13877 | 859 | 15916 | 1663 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WAN | 06/07 | 5415 | 345 | 14150 | 635 | 15985 | 1899 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RIS | 06/07 | 5892 | 397 | 13583 | 576 | 14834 | 2217 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RRH | 06/07 | 4074 | 245 | 5736 | 297 | 6016 | 964 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WEL | 06/07 | 2425 | 315 | 4020 | 615 | 4239 | 1084 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WFA | 06/06 | 18639 | 1112 | 18640 | 1085 | 24057 | 889 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

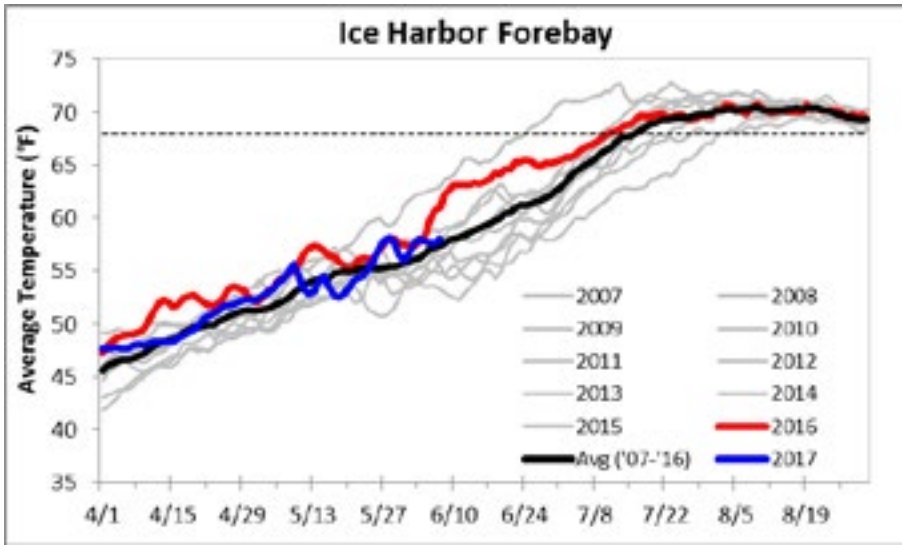
| | | Coho | | | | | | Sockeye | | | Steelhead | | | | | | Lamprey | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2017 | | 2016 | | 10-Yr Avg. | | | | 10-Yr | | | 10-Yr | Unclipped | Unclipped | 10-Yr | | | 10-Yr |
| DAM | ENDDATE | Adult | Jack | Adult | Jack | Adult | Jack | 2017 | 2016 | Avg. | 2017 | 2016 | Avg. | 2017 | 2016 | Avg. | 2017 | 2016 | Avg. |
| BON | 06/08 | 0 | 0 | 0 | 0 | 0 | 0 | 929 | 8034 | 2813 | 3565 | 6526 | 6457 | 1112 | 2397 | 1886 | 10312 | 5684 | 2298 |
| TDA | 06/08 | 0 | 0 | 0 | 0 | 0 | 0 | 398 | 4770 | 1329 | 1310 | 561 | 2934 | 455 | 292 | 1122 | 32 | 338 | 111 |
| JDA | 06/08 | 0 | 0 | 0 | 0 | 0 | 1 | 305 | 3926 | 1000 | 538 | 503 | 5426 | 344 | 355 | 2116 | 368 | 444 | 96 |
| MCN | 06/07 | 0 | 0 | 0 | 0 | 1 | 0 | 63 | 908 | 189 | 2522 | 498 | 6575 | 749 | 318 | 2133 | 18 | 60 | 7 |
| IHR | 06/08 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1076 | 1381 | 5628 | 503 | 719 | 1563 | 11 | 6 | 0 |
| LMN | 06/08 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1451 | 1453 | 8301 | 697 | 1007 | 2818 | 2 | 2 | 0 |
| LGS | 06/08 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1497 | 3417 | 5086 | 658 | 1980 | 2543 | 0 | 1 | 0 |
| LGR | 06/08 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7309 | 5477 | 9050 | 3053 | 3118 | 3596 | 0 | -1 | 0 |
| PRD | 06/07 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 72 | 23 | 49 | 33 | 54 | 0 | 0 | 0 | 71 | 191 | 15 |
| WAN | 06/07 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 46 | 10 | 43 | 34 | 110 | 0 | 0 | 0 | 13 | 123 | 6 |
| RIS | 06/07 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 12 | 1 | 66 | 50 | 125 | 19 | 26 | 61 | 0 | 10 | 0 |
| RRH | 06/07 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 125 | 92 | 331 | 30 | 32 | 219 | 0 | 0 | 0 |
| WEL | 06/07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 38 | 65 | 76 | 24 | 28 | 52 | 0 | 1 | 0 |
| WFA | 06/06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1508 | 15925 | 14088 | 0 | 0 | 0 | 0 | 0 | 0 |

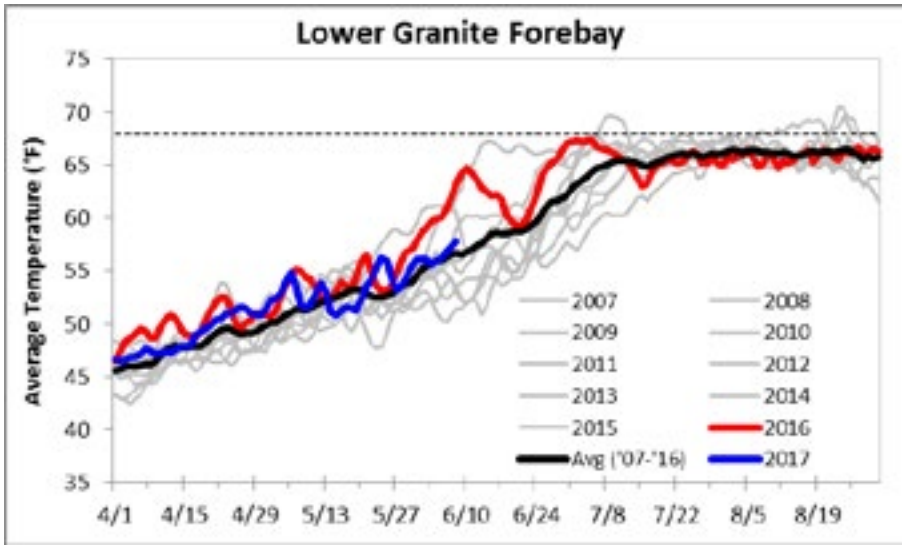
PRD does not post wild steelhead numbers.
These numbers were collected from USACE, Grant PUD, Douglas PUD, Chelan PUD, ODFW and DART.
Wild steelhead numbers are included in the total. Wild Steelhead are defined as unclipped fish.
Historic counts (pre-1996) were obtained from CRITFC and compiled by the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

Page last updated on: 06/09/17


Bonneville Forebay
Average Temperature (°F)
75
70
65
60
55
50
45
40
35
4/1
4/15
4/29
5/13
5/27
6/10
6/24
7/8
7/22
8/5
8/19
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Avg ('07-'16)
2017


McNary Forebay
Average Temperature (°F)
75
70
65
60
55
50
45
40
35
4/1
4/15
4/29
5/13
5/27
6/10
6/24
7/8
7/22
8/5
8/19
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Avg ('07-'16)
2017


Ice Harbor Forebay
Average Temperature (°F)
75
70
65
60
55
50
45
40
35
4/1
4/15
4/29
5/13
5/27
6/10
6/24
7/8
7/22
8/5
8/19
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Avg ('07-'16)
2017


Lower Granite Forebay
Average Temperature (°F)
75
70
65
60
55
50
45
40
35
4/1
4/15
4/29
5/13
5/27
6/10
6/24
7/8
7/22
8/5
8/19
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Avg ('07-'16)
2017