



## Fish Passage Center

# Weekly Report #02 - 2

March 22, 2002

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### SUMMARY OF EVENTS:

**Water Supply:** Water Year 2002 continues to be average or better in terms of precipitation and runoff volumes within the Columbia and Snake River Basins. Precipitation was generally average to slightly above average, with respect to the years 1971 through 2000, throughout much of the Columbia region. Table 1 summarizes both early/mid March precipitation and cumulative October through March precipitation at select locations.

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

| Location                       | March 1-19, 2002  |       | Cumulative 10-1-01 to 3-19-02 |       |
|--------------------------------|-------------------|-------|-------------------------------|-------|
|                                | Observed (inches) | % Avg | Observed (inches)             | % Avg |
| Columbia Above Coulee          | 1.46              | 133   | 13.18                         | 97    |
| Snake R. Above Ice Harbor      | 1.06              | 105   | 8.90                          | 92    |
| Columbia Above The Dalles      | 1.42              | 121   | 13.26                         | 98    |
| Kootenai                       | 1.25              | 114   | 11.83                         | 85    |
| Clark Fork                     | 1.06              | 145   | 9.44                          | 111   |
| Flathead                       | 1.60              | 160   | 12.50                         | 108   |
| Pend Oreille/Spokane           | 2.53              | 149   | 22.45                         | 117   |
| Central Washington             | 0.17              | 33    | 4.80                          | 86    |
| Snake R. Plain                 | 0.64              | 92    | 4.31                          | 76    |
| Clearwater                     | 2.45              | 149   | 19.87                         | 113   |
| SW Washington Cascades/Cowlitz | 6.61              | 152   | 59.43                         | 117   |
| Willamette Valley              | 6.12              | 156   | 49.57                         | 116   |

Throughout the beginning of Water Year 2002, the highest cumulative precipitation continued to be at the SW Washington Cascades/Cowlitz and Pend Oreille/Spokane locations, both 117% of average. Additionally, the Clearwater and Willamette Valley locations recorded precipitation that was 113% and 116% of average, respectively. From Table 1, six of twelve locations produced precipitation over the start of WY 2002 that were greater than average; only three locations contained precipitation that was less than 90% of average.

The first nineteen days of March continue to be promising concerning precipitation and resulting water yields. The Flathead location recorded precipitation over the mid-point of March that was 160% of average. From Table 1, six of twelve locations produced precipitation over the beginning of March that were greater than 140% of average; only two locations contained precipitation that was less than average.

Average to slightly above average precipitation throughout the Columbia and Snake River Basins continues to result in increased runoff volume forecasts relative to WY 2001. Over the week from 3-14-02 to 3-21-02, the NWRFC released the March Mid-month water supply forecast. The Mid-month updated water supply forecasts are intended to identify significant departures in previous forecasts. Table 2 displays the 2002 February and March final runoff volume forecasts and the March Mid-month forecast for multiple reservoirs. Overall, the March Mid-month forecasts appear to be very similar to the March final values (Table 2). Of the ten locations displayed in Table 2, five of the sites reported increasing forecasts, three sites reported no change, and two sites reported

increasing forecasts between the March final and Mid-month forecasts. Specifically, the water supply forecast at the Hungry Horse reservoir increased 3% between the March final and Mid-month forecasts and Mica and Dworshak increased 2%.

It is important to again point out that the March final runoff volume forecasts (January to July) at The Dalles and Grand Coulee are 91% and 95% of average, respectively. The March final runoff forecast (April to July) at Dworshak was the highest forecast issued in March by the NWRFC, at 112% of average. For comparison, the 2001 March final runoff forecast at the Dalles, Grand Coulee, and Dworshak were 55%, 59%, and 57% of average. Clearly, the water supply outlook for the WY 2002 is much improved relative to WY 2001.

**Table 2.** February and March 2002 Final Runoff Volume Forecasts and the March Mid-month forecast for various reservoirs within the Columbia and Snake River Basins.

| Site                      | February Final      |         | March Final         |         | March Mid-month     |         |
|---------------------------|---------------------|---------|---------------------|---------|---------------------|---------|
|                           | Runoff Volume (KAF) | %of Avg | Runoff Volume (KAF) | %of Avg | Runoff Volume (KAF) | %of Avg |
| Mica (April-Sept)         | 11500               | 92      | 11300               | 90      | 115000              | 92      |
| Hungry Horse (April-Sept) | 1910                | 90      | 1910                | 90      | 1970                | 93      |
| Libby (April-Sept)        | 6470                | 97      | 6290                | 95      | 6290                | 95      |
| Grand Coulee (Jan-July)   | 60800               | 97      | 60000               | 95      | 60400               | 96      |
| The Dalles (Jan-July)     | 101000              | 94      | 97300               | 91      | 97300               | 91      |
| Brownlee (April-July)     | 4570                | 72      | 4090                | 65      | 3950                | 63      |
| Dworshak (April-July)     | 3000                | 113     | 2950                | 112     | 3020                | 114     |
| Lower Granite (Jan-July)  | 28200               | 94      | 25700               | 86      | 25700               | 86      |
| Heise (ID) (April-July)   | 2960                | 83      | 2710                | 76      | 2740                | 77      |
| Weiser (ID) (April-July)  | 4090                | 71      | 3630                | 63      | 3490                | 61      |

Operations have varied at the major reservoirs within the Columbia and Snake River Basins. The Hungry Horse, Grand Coulee, and Brownlee reservoirs have been primarily operated for power generation and are currently (3-21-02) well below the end of March flood control targets determined by USACE (Table 2). These reservoirs will require between 10 and over 20 feet of fill water to reach the end of March flood targets and the April 10<sup>th</sup>, 2002 Biological Opinion Targets. Figure 1 displays reservoir operations at Grand Coulee; included are reservoir elevations over 2002, February and March flood control targets, and the April 10<sup>th</sup> Biological Opinion Target elevation estimated using the end of March and Mid-April flood control targets issued by USACE in March.

**Table 3.** USACE determined flood control targets issued in March of 2002 along with actual reservoir elevations for Libby, Hungry Horse, Grand Coulee, Brownlee, and Dworshak.

| Reservoir    | Actual Elevation 3/21/02 (ft. Above MSL) | USACE Determined 3/31/02 Flood Control Target (ft. Above MSL) | USACE Determined 4/15/02 Flood Control Target (ft. Above MSL) |
|--------------|--|---|---|
| Libby        | 2371.5                                   | 2375.0  | na  |
| Hungry Horse | 3510.8                                   | 3531.6  | 3528.5  |
| Grand Coulee | 1256.4                                   | 1279.6  | 1263.2  |
| Brownlee     | 2041.3                                   | 2052.8  | 2056.3  |
| Dworshak     | 1516.0                                   | 1505.7  | 1489.7  |

The Libby reservoir is currently (3-21-02) within 3.5 feet of its end of March flood control target as determined by USACE (Table 3).

It is important to note that a flood control shift between the Dworshak and Grand Coulee reservoirs is planned by USACE during WY 2002. Essentially, USACE may potentially shift an amount of water at Dworshak equivalent to the difference in local and system flood control. Table 4 displays the local and system flood control targets at Dworshak for March 31<sup>st</sup> and April 15<sup>th</sup> along with the difference in useable storage volumes between local and system flood control.

**Table 4.** Local and system flood control targets at Dworshak for March 31<sup>st</sup> and April 15<sup>th</sup> along with the difference in useable storage volumes at each elevation.

|                | <b>Local<br/>FCE<br/>(MSL)</b> | <b>System<br/>FCE<br/>(MSL)</b> | <b>Useable<br/>Storage<br/>for shift<br/>(KAF)</b> |
|----------------|--------------------------------|---------------------------------|--|
| March 31, 2002 | 1522.6                         | 1505.7                          | 212.1  |
| April 15, 2002 | 1530.7                         | 1489.7                          | 499.4  |

Currently, the Dworshak reservoir has been operated to meet local flood control requirements. Dworshak must be at or below 1522.6 feet above MSL on March 31<sup>st</sup>, 2002 to meet local flood control requirements; the reservoir is currently at 1516 feet above MSL, 6.06 feet below the local flood control requirement. Because the system flood control elevation is below the local flood control requirement, it is allowable to draft Dworshak down to the system requirement of 1505.7 feet above MSL. From Table 4, the possible amount of shifted water, or the difference between the useable storage volumes at each respective March 31<sup>st</sup>, 2002 elevation, is 212.1 KAF.

Over the beginning of WY 2002, reservoirs on the Upper Snake River have been consistently refilling. Currently, as of March 21, 2002, the entire Upper Snake River System is at 49% of capacity. Individually, American Falls is at 77% of capacity, Palisades is at 30% of capacity, Jackson Lake is at 19% of capacity, Island Park is at 77% of capacity, and Grassy Lake is at 64% of capacity.

**Spill:** No spill has occurred in the system over the past week.

**Smolt Monitoring:** This past week sampling began at John Day Dam on March 18 and also at the Grande Ronde Trap on March 21. Sampling will begin March 25 at Lower Granite and McNary dams.

At the Snake River basin SMP traps the first significant numbers of yearling chinook were captured at the White Bird Trap in the past week beginning with a weekly high of 780 yearling chinook collected March 18 and a low on March 20 of 184. Nearly all of the fish captured were clipped hatchery fish. It is likely that a good portion of those fish came from releases this past week of Rapid River hatchery fish, both volitionally at the hatchery and into Hazard Creek on the Little Salmon River.

Spring Creek releases of subyearling chinook salmon continued passing Bonneville Dam this past week, with passage index numbers rapidly decreasing from the peak of 385,000 on March 14 to 2,600 on March 21. It is likely that well over 90% of the fish had passed the project by March 21.

**Adult Fish Passage:** Fish counts will be starting April 1 at most COE projects with exception of Bonneville Dam (March 15) and Lower Granite Dam (March 1). The PUD projects on the Mid-Columbia River will begin on or near April 15 at Priest Rapids, Rock Island and Rocky Reach dams with Wells Dam initiating fish counting near May 1. The FPC Weekly Report will list in a Table; the adult fish counts for the week with the previous year (2001) and the 10-year average through the same ending date so the reader can compare passage throughout the year for the individual species.

At Bonneville Dam, adult spring chinook counts were 421 through March 18. Winter steelhead will continue to pass Bonneville Dam with a small number of summer steelhead still moving upstream to spawning sites. At Lower Granite Dam, steelhead passage ranged between 19-49 fish per day, averaging 31 per day for the four days counted.

**Hatchery Releases:** For the past two weeks, approximately 15 million chinook and coho salmon were directly or volitionally released from State, Federal or Tribal facilities in the Columbia River basin. During the next two weeks, many of the chinook hatcheries will begin releasing fish in Idaho and volitional releases of spring chinook into the Yakama River basin. The first release of coho salmon as well as steelhead will be released in the Clearwater River basin and the Snake River, respectively. The Tribal releases of yearling fall and chinook will continue from the Acclimation Ponds in the Umatilla River.

**Snake River** – For the week, hatchery releases of yearling spring chinook began or are on-going from the Salmon and Imnaha river basins. Additional spring chinook will be released in the next two weeks. About 560,000 coho were released into Lapwai Creek and Potlatch River during the past week.

**Mid-Columbia [above McNary Dam]** – Volitional releases of spring chinook from the Acclimation Ponds in the Yakama River began in mid March and will continue into June. Most hatcheries will be releasing yearling spring chinook during the latter half of April, either volitionally or directly from the raceways to the streams. Sockeye in the Mid-Columbia are normally released into Lake Wenatchee (direct releases) during the fall prior to their migration in April through May.

**Lower Columbia [Bonneville Dam to McNary Dam]** – Yearling spring chinook have been released in the Umatilla, Klickitat and Hood rivers to-date with most other hatchery releases scheduled for April. The initial release of subyearling “tule” fall chinook (7.8 million) was completed from the Spring Creek National Fish Hatchery on March 11<sup>th</sup> with the first release of yearling “bright” fall chinook made March 12 into the Umatilla River.

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

| Date     | Grand Coulee |       | Chief Joseph |       | Wells |       | Rocky Reach |       | Rock Island |       | Wanapum |       | Priest Rapids |       |
|----------|--------------|-------|--------------|-------|-------|-------|-------------|-------|-------------|-------|---------|-------|---------------|-------|
|          | Flow         | Spill | Flow         | Spill | Flow  | Spill | Flow        | Spill | Flow        | Spill | Flow    | Spill | Flow          | Spill |
| 03/08/02 | 91.0         | 0.0   | 93.8         | 0.0   | 93.2  | 0.0   | 100.5       | 0.0   | 105.5       | 0.0   | 112.9   | 0.0   | 117.0         | 0.0   |
| 03/09/02 | 64.0         | 0.0   | 65.7         | 0.0   | 65.4  | 0.0   | 64.6        | 0.0   | 66.2        | 0.0   | 69.5    | 0.0   | 77.0          | 0.0   |
| 03/10/02 | 51.3         | 0.0   | 53.7         | 0.0   | 55.5  | 0.0   | 57.8        | 0.0   | 60.4        | 0.0   | 73.3    | 0.0   | 75.7          | 0.0   |
| 03/11/02 | 91.4         | 0.0   | 91.6         | 0.0   | 88.2  | 0.0   | 90.2        | 0.0   | 92.3        | 0.0   | 72.6    | 0.0   | 74.7          | 0.0   |
| 03/12/02 | 84.9         | 0.0   | 86.0         | 0.0   | 84.3  | 0.0   | 85.4        | 0.0   | 89.8        | 0.0   | 96.0    | 0.0   | 99.4          | 0.0   |
| 03/13/02 | 65.0         | 0.0   | 68.4         | 0.0   | 70.6  | 0.0   | 75.5        | 0.0   | 79.2        | 0.0   | 90.2    | 0.0   | 94.3          | 0.0   |
| 03/14/02 | 67.0         | 0.0   | 68.3         | 0.0   | 70.2  | 0.0   | 72.5        | 0.0   | 74.4        | 0.0   | 75.0    | 0.0   | 77.0          | 0.0   |
| 03/15/02 | 75.7         | 0.0   | 78.8         | 0.0   | 79.8  | 0.0   | 82.7        | 0.0   | 86.6        | 0.0   | 73.4    | 0.0   | 72.8          | 0.0   |
| 03/16/02 | 68.1         | 0.0   | 67.9         | 0.0   | 67.7  | 0.0   | 67.9        | 0.0   | 71.0        | 0.0   | 78.8    | 0.0   | 81.8          | 0.0   |
| 03/17/02 | 47.9         | 0.0   | 52.5         | 0.0   | 54.4  | 0.0   | 60.7        | 0.0   | 63.2        | 0.0   | 71.5    | 0.0   | 77.4          | 0.0   |
| 03/18/02 | 89.1         | 0.0   | 92.8         | 0.0   | 88.2  | 0.0   | 86.6        | 0.0   | 91.3        | 0.0   | 94.1    | 0.0   | 92.1          | 0.0   |
| 03/19/02 | 78.9         | 0.0   | 77.9         | 0.0   | 78.3  | 0.0   | 78.2        | 0.0   | 79.7        | 0.0   | 81.2    | 0.0   | 86.5          | 0.0   |
| 03/20/02 | 99.8         | 0.0   | 99.9         | 0.0   | 97.8  | 0.0   | 99.7        | 0.0   | 102.1       | 0.0   | 96.1    | 0.0   | 100.1         | 0.0   |
| 03/21/02 | 70.4         | 0.0   | 76.2         | 0.0   | 79.7  | 0.0   | 86.6        | 0.0   | 90.1        | 0.0   | 82.8    | 0.0   | 80.6          | 0.0   |

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

| Date     | Dworshak |       | Brownlee Canyon |         | Lower Granite |       | Little Goose |       | Lower Monumental |       | Ice Harbor |       |
|----------|----------|-------|-----------------|---------|---------------|-------|--------------|-------|------------------|-------|------------|-------|
|          | Flow     | Spill | Inflow          | Outflow | Flow          | Spill | Flow         | Spill | Flow             | Spill | Flow       | Spill |
| 03/08/02 | 2.5      | 0.0   | 13.1            | 13.3    | 26.6          | 0.0   | 28.6         | 0.0   | 30.9             | 0.0   | 31.7       | 0.0   |
| 03/09/02 | 2.5      | 0.0   | 12.3            | 9.5     | 22.9          | 0.0   | 22.2         | 0.0   | 23.0             | 0.0   | 22.0       | 0.0   |
| 03/10/02 | 2.5      | 0.0   | 13.9            | 11.0    | 20.1          | 0.0   | 20.2         | 0.0   | 20.1             | 0.0   | 18.7       | 0.0   |
| 03/11/02 | 5.2      | 0.0   | 12.3            | 9.5     | 24.2          | 0.0   | 25.1         | 0.0   | 28.3             | 0.0   | 29.3       | 0.0   |
| 03/12/02 | 6.0      | 0.0   | 14.0            | 16.9    | 48.5          | 0.0   | 48.8         | 0.0   | 50.9             | 0.0   | 51.5       | 0.0   |
| 03/13/02 | 6.0      | 0.0   | 16.7            | 15.6    | 40.7          | 0.0   | 40.3         | 0.0   | 47.1             | 0.0   | 47.5       | 0.0   |
| 03/14/02 | 5.9      | 0.0   | 16.3            | 16.9    | 39.9          | 0.0   | 40.7         | 0.4   | 47.2             | 0.0   | 45.7       | 0.0   |
| 03/15/02 | 1.5      | 0.0   | 14.5            | 14.9    | 31.6          | 0.0   | 34.1         | 0.0   | 36.5             | 0.0   | 34.6       | 0.0   |
| 03/16/02 | 1.4      | 0.0   | 14.6            | 13.0    | 31.6          | 0.0   | 32.6         | 0.0   | 36.6             | 0.0   | 37.0       | 0.0   |
| 03/17/02 | 1.4      | 0.0   | 13.4            | 9.5     | 21.5          | 0.0   | 20.2         | 0.0   | 21.7             | 0.0   | 21.7       | 0.0   |
| 03/18/02 | 1.4      | 0.0   | 14.0            | 19.8    | 28.9          | 0.0   | 30.8         | 0.0   | 33.6             | 0.0   | 34.9       | 0.0   |
| 03/19/02 | 1.4      | 0.0   | 12.9            | 17.3    | 32.4          | 0.0   | 32.7         | 0.0   | 34.1             | 0.0   | 33.4       | 0.0   |
| 03/20/02 | 1.5      | 0.0   | 12.9            | 14.3    | 29.9          | 0.0   | 29.5         | 0.0   | 30.9             | 0.0   | 29.5       | 0.0   |
| 03/21/02 | 1.5      | 0.0   | ---             | ---     | 27.0          | 0.0   | 28.1         | 0.0   | 34.1             | 0.0   | 35.5       | 0.0   |

**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 |      |       |
| 03/08/02 | 128.2  | 0.0   | 108.6    | 0.0   | 110.1      | 0.0   | 117.8      | 0.0   | 17.7 | 94.6  |
| 03/09/02 | 109.3  | 0.0   | 123.7    | 0.0   | 123.6      | 0.0   | 121.8      | 0.0   | 20.0 | 95.5  |
| 03/10/02 | 86.0   | 0.0   | 83.3     | 0.0   | 86.0       | 0.0   | 117.2      | 0.0   | 9.0  | 101.9 |
| 03/11/02 | 99.1   | 0.0   | 108.8    | 0.0   | 110.2      | 0.0   | 110.4      | 0.0   | 7.5  | 96.6  |
| 03/12/02 | 132.7  | 0.0   | 125.8    | 0.0   | 127.5      | 0.0   | 141.0      | 36.5  | 1.6  | 96.7  |
| 03/13/02 | 152.6  | 0.0   | 167.2    | 0.0   | 164.8      | 0.0   | 191.7      | 87.2  | 4.3  | 93.9  |
| 03/14/02 | 128.7  | 0.0   | 138.5    | 0.0   | 137.9      | 0.0   | 161.0      | 76.7  | 0.0  | 77.8  |
| 03/15/02 | 130.6  | 0.0   | 146.8    | 0.0   | 149.0      | 0.0   | 162.8      | 13.7  | 37.9 | 104.5 |
| 03/16/02 | 131.3  | 0.0   | 136.5    | 0.0   | 137.0      | 0.0   | 151.6      | 0.0   | 36.1 | 108.8 |
| 03/17/02 | 103.9  | 0.0   | 112.7    | 0.0   | 113.6      | 0.0   | 122.9      | 0.0   | 17.3 | 98.9  |
| 03/18/02 | 113.6  | 0.0   | 122.1    | 0.0   | 125.8      | 0.0   | 129.4      | 0.0   | 21.6 | 101.1 |
| 03/19/02 | 121.0  | 0.0   | 126.6    | 0.0   | 124.4      | 0.0   | 133.1      | 0.0   | 21.2 | 105.2 |
| 03/20/02 | 105.2  | 0.0   | 107.0    | 0.0   | 109.2      | 0.0   | 126.3      | 0.0   | 17.4 | 102.2 |
| 03/21/02 | 123.3  | 0.0   | 137.5    | 0.0   | 137.2      | 0.0   | 144.7      | 0.0   | 36.5 | 101.5 |

## 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> | <u>#</u> | <u>24 h</u>     | <u>12 h</u> | <u>#</u> | <u>24 h</u>         | <u>12 h</u> | <u>#</u> | <u>24 h</u>          | <u>12 h</u> | <u>#</u> | <u>24 h</u>         | <u>12 h</u> | <u>#</u> | <u>24 h</u> | <u>12 h</u> | <u>#</u> |            |            |
|      | <u>Avg</u>            | <u>Avg</u>  |          | <u>High</u>     | <u>Avg</u>  |          | <u>Avg</u>          | <u>High</u> |          | <u>Avg</u>           | <u>Avg</u>  |          | <u>High</u>         | <u>Avg</u>  |          | <u>Avg</u>  | <u>High</u> |          | <u>Avg</u> | <u>Avg</u> |
| 3/8  | 95                    | 95          | 96       | 10              | 99          | 99       | 100                 | 24          | 100      | 100                  | 101         | 24       | 99                  | 99          | 100      | 23          | ---         | ---      | ---        | 0          |
| 3/9  | 95                    | 95          | 95       | 10              | 99          | 99       | 100                 | 24          | 100      | 101                  | 101         | 24       | 99                  | 100         | 100      | 23          | ---         | ---      | ---        | 0          |
| 3/10 | 95                    | 96          | 96       | 24              | 99          | 100      | 100                 | 24          | 101      | 101                  | 101         | 24       | 100                 | 101         | 102      | 23          | ---         | ---      | ---        | 0          |
| 3/11 | 96                    | 96          | 97       | 21              | 101         | 101      | 101                 | 24          | 101      | 102                  | 102         | 24       | 100                 | 101         | 102      | 23          | ---         | ---      | ---        | 0          |
| 3/12 | 96                    | 97          | 97       | 13              | 100         | 101      | 101                 | 24          | 101      | 102                  | 102         | 24       | 100                 | 100         | 102      | 23          | ---         | ---      | ---        | 0          |
| 3/13 | 97                    | 97          | 98       | 6               | 100         | 100      | 101                 | 24          | 101      | 101                  | 102         | 24       | 100                 | 101         | 102      | 23          | ---         | ---      | ---        | 0          |
| 3/14 | 96                    | 97          | 97       | 14              | 100         | 100      | 101                 | 24          | 101      | 101                  | 101         | 24       | 100                 | 100         | 101      | 23          | ---         | ---      | ---        | 0          |
| 3/15 | 96                    | 96          | 97       | 19              | 100         | 100      | 101                 | 24          | 102      | 102                  | 102         | 24       | 100                 | 101         | 101      | 23          | ---         | ---      | ---        | 0          |
| 3/16 | 96                    | 96          | 97       | 22              | 101         | 101      | 102                 | 24          | 102      | 102                  | 102         | 24       | 101                 | 102         | 103      | 24          | ---         | ---      | ---        | 0          |
| 3/17 | 95                    | 96          | 96       | 17              | 100         | 100      | 102                 | 24          | 101      | 102                  | 102         | 24       | 101                 | 101         | 102      | 24          | ---         | ---      | ---        | 0          |
| 3/18 | 95                    | 95          | 96       | 18              | 100         | 101      | 106                 | 24          | 101      | 101                  | 102         | 24       | 100                 | 100         | 101      | 23          | ---         | ---      | ---        | 0          |
| 3/19 | 95                    | 95          | 96       | 10              | 101         | 101      | 101                 | 24          | 102      | 102                  | 102         | 24       | 101                 | 101         | 102      | 23          | ---         | ---      | ---        | 0          |
| 3/20 | 95                    | 95          | 95       | 1               | 100         | 100      | 101                 | 24          | 101      | 101                  | 102         | 24       | 99                  | 100         | 101      | 23          | ---         | ---      | ---        | 0          |
| 3/21 | ---                   | ---         | ---      | 0               | 100         | 101      | 101                 | 24          | 100      | 101                  | 101         | 24       | 99                  | 100         | 101      | 23          | ---         | ---      | ---        | 0          |

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

| Date | <u>Chief J. Dnst</u> |             |          | <u>Wells</u> |             |          | <u>Wells Dwnstrm</u> |             |          | <u>Rocky Reach</u> |             |          | <u>Rocky R. Tlwr</u> |             |          |             |             |          |            |            |
|------|----------------------|-------------|----------|--------------|-------------|----------|----------------------|-------------|----------|--------------------|-------------|----------|----------------------|-------------|----------|-------------|-------------|----------|------------|------------|
|      | <u>24 h</u>          | <u>12 h</u> | <u>#</u> | <u>24 h</u>  | <u>12 h</u> | <u>#</u> | <u>24 h</u>          | <u>12 h</u> | <u>#</u> | <u>24 h</u>        | <u>12 h</u> | <u>#</u> | <u>24 h</u>          | <u>12 h</u> | <u>#</u> | <u>24 h</u> | <u>12 h</u> | <u>#</u> |            |            |
|      | <u>Avg</u>           | <u>Avg</u>  |          | <u>High</u>  | <u>Avg</u>  |          | <u>Avg</u>           | <u>High</u> |          | <u>Avg</u>         | <u>Avg</u>  |          | <u>High</u>          | <u>Avg</u>  |          | <u>Avg</u>  | <u>High</u> |          | <u>Avg</u> | <u>Avg</u> |
| 3/8  | ---                  | ---         | ---      | 0            | ---         | ---      | ---                  | 0           | ---      | ---                | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/9  | ---                  | ---         | ---      | 0            | ---         | ---      | ---                  | 0           | ---      | ---                | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/10 | ---                  | ---         | ---      | 0            | ---         | ---      | ---                  | 0           | ---      | ---                | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/11 | ---                  | ---         | ---      | 0            | ---         | ---      | ---                  | 0           | ---      | ---                | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/12 | ---                  | ---         | ---      | 0            | ---         | ---      | ---                  | 0           | ---      | ---                | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/13 | ---                  | ---         | ---      | 0            | ---         | ---      | ---                  | 0           | ---      | ---                | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/14 | ---                  | ---         | ---      | 0            | ---         | ---      | ---                  | 0           | ---      | ---                | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/15 | ---                  | ---         | ---      | 0            | ---         | ---      | ---                  | 0           | ---      | ---                | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/16 | ---                  | ---         | ---      | 0            | ---         | ---      | ---                  | 0           | ---      | ---                | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/17 | ---                  | ---         | ---      | 0            | ---         | ---      | ---                  | 0           | ---      | ---                | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/18 | ---                  | ---         | ---      | 0            | ---         | ---      | ---                  | 0           | ---      | ---                | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/19 | ---                  | ---         | ---      | 0            | ---         | ---      | ---                  | 0           | ---      | ---                | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/20 | ---                  | ---         | ---      | 0            | ---         | ---      | ---                  | 0           | ---      | ---                | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/21 | ---                  | ---         | ---      | 0            | ---         | ---      | ---                  | 0           | ---      | ---                | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |

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

| Date | <u>Rock Island</u> |             |          | <u>Rock I. Tlwr</u> |             |          | <u>Wanapum</u> |             |          | <u>Wanapum Tlwr</u> |             |          | <u>Priest Rapids</u> |             |          |             |             |          |            |            |
|------|--------------------|-------------|----------|---------------------|-------------|----------|----------------|-------------|----------|---------------------|-------------|----------|----------------------|-------------|----------|-------------|-------------|----------|------------|------------|
|      | <u>24 h</u>        | <u>12 h</u> | <u>#</u> | <u>24 h</u>         | <u>12 h</u> | <u>#</u> | <u>24 h</u>    | <u>12 h</u> | <u>#</u> | <u>24 h</u>         | <u>12 h</u> | <u>#</u> | <u>24 h</u>          | <u>12 h</u> | <u>#</u> | <u>24 h</u> | <u>12 h</u> | <u>#</u> |            |            |
|      | <u>Avg</u>         | <u>Avg</u>  |          | <u>High</u>         | <u>Avg</u>  |          | <u>Avg</u>     | <u>High</u> |          | <u>Avg</u>          | <u>Avg</u>  |          | <u>High</u>          | <u>Avg</u>  |          | <u>Avg</u>  | <u>High</u> |          | <u>Avg</u> | <u>Avg</u> |
| 3/8  | ---                | ---         | ---      | 0                   | ---         | ---      | ---            | 0           | ---      | ---                 | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/9  | ---                | ---         | ---      | 0                   | ---         | ---      | ---            | 0           | ---      | ---                 | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/10 | ---                | ---         | ---      | 0                   | ---         | ---      | ---            | 0           | ---      | ---                 | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/11 | ---                | ---         | ---      | 0                   | ---         | ---      | ---            | 0           | ---      | ---                 | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/12 | ---                | ---         | ---      | 0                   | ---         | ---      | ---            | 0           | ---      | ---                 | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/13 | ---                | ---         | ---      | 0                   | ---         | ---      | ---            | 0           | ---      | ---                 | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/14 | ---                | ---         | ---      | 0                   | ---         | ---      | ---            | 0           | ---      | ---                 | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/15 | ---                | ---         | ---      | 0                   | ---         | ---      | ---            | 0           | ---      | ---                 | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/16 | ---                | ---         | ---      | 0                   | ---         | ---      | ---            | 0           | ---      | ---                 | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/17 | ---                | ---         | ---      | 0                   | ---         | ---      | ---            | 0           | ---      | ---                 | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/18 | ---                | ---         | ---      | 0                   | ---         | ---      | ---            | 0           | ---      | ---                 | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/19 | ---                | ---         | ---      | 0                   | ---         | ---      | ---            | 0           | ---      | ---                 | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/20 | ---                | ---         | ---      | 0                   | ---         | ---      | ---            | 0           | ---      | ---                 | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |
| 3/21 | ---                | ---         | ---      | 0                   | ---         | ---      | ---            | 0           | ---      | ---                 | ---         | 0        | ---                  | ---         | ---      | 0           | ---         | ---      | ---        | 0          |

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

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

| Date | <u>Priest R. Dnst</u> |             |             | <u>Pasco</u> |             |             | <u>Dworshak</u> |             |             | <u>Clrwtr-Peck</u> |             |             | <u>Anatone</u> |             |             | # |     |     |     |   |
|------|-----------------------|-------------|-------------|--------------|-------------|-------------|-----------------|-------------|-------------|--------------------|-------------|-------------|----------------|-------------|-------------|---|-----|-----|-----|---|
|      | <u>24 h</u>           | <u>12 h</u> | <u>High</u> | <u>24 h</u>  | <u>12 h</u> | <u>High</u> | <u>24 h</u>     | <u>12 h</u> | <u>High</u> | <u>24 h</u>        | <u>12 h</u> | <u>High</u> | <u>24 h</u>    | <u>12 h</u> | <u>High</u> |   |     |     |     |   |
|      | Avg                   | Avg         |             | Avg          | Avg         |             | Avg             | Avg         |             | Avg                | Avg         |             | Avg            | Avg         |             |   | Avg | Avg |     |   |
| 3/8  | ---                   | ---         | ---         | 0            | 101         | 101         | 102             | 24          | 97          | 97                 | 102         | 24          | ---            | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/9  | ---                   | ---         | ---         | 0            | 102         | 103         | 103             | 24          | 96          | 97                 | 97          | 24          | ---            | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/10 | ---                   | ---         | ---         | 0            | 102         | 103         | 103             | 24          | 97          | 97                 | 98          | 24          | ---            | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/11 | ---                   | ---         | ---         | 0            | 103         | 103         | 104             | 24          | 96          | 96                 | 97          | 24          | ---            | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/12 | ---                   | ---         | ---         | 0            | 102         | 103         | 103             | 24          | 96          | 96                 | 96          | 23          | ---            | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/13 | ---                   | ---         | ---         | 0            | 102         | 102         | 103             | 24          | 95          | 95                 | 96          | 23          | ---            | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/14 | ---                   | ---         | ---         | 0            | 102         | 102         | 103             | 24          | 95          | 95                 | 95          | 12          | ---            | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/15 | ---                   | ---         | ---         | 0            | 102         | 104         | 104             | 24          | 106         | 107                | 108         | 24          | ---            | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/16 | ---                   | ---         | ---         | 0            | 103         | 103         | 104             | 24          | 107         | 107                | 108         | 24          | ---            | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/17 | ---                   | ---         | ---         | 0            | 101         | 102         | 102             | 24          | 107         | 107                | 108         | 24          | ---            | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/18 | ---                   | ---         | ---         | 0            | 101         | 101         | 102             | 24          | 106         | 106                | 107         | 24          | ---            | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/19 | ---                   | ---         | ---         | 0            | 101         | 102         | 102             | 24          | 105         | 105                | 106         | 24          | ---            | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/20 | ---                   | ---         | ---         | 0            | 100         | 101         | 101             | 24          | 105         | 105                | 107         | 24          | ---            | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/21 | ---                   | ---         | ---         | 0            | 100         | 101         | 101             | 24          | 105         | 106                | 108         | 24          | ---            | ---         | ---         | 0 | --- | --- | --- | 0 |

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

| Date | <u>Clrwtr-Lewiston</u> |             |             | <u>Lower Granite</u> |             |             | <u>L. Granite Tlwr</u> |             |             | <u>Little Goose</u> |             |             | <u>L. Goose Tlwr</u> |             |             | # |     |     |     |   |
|------|------------------------|-------------|-------------|----------------------|-------------|-------------|------------------------|-------------|-------------|---------------------|-------------|-------------|----------------------|-------------|-------------|---|-----|-----|-----|---|
|      | <u>24 h</u>            | <u>12 h</u> | <u>High</u> | <u>24 h</u>          | <u>12 h</u> | <u>High</u> | <u>24 h</u>            | <u>12 h</u> | <u>High</u> | <u>24 h</u>         | <u>12 h</u> | <u>High</u> | <u>24 h</u>          | <u>12 h</u> | <u>High</u> |   |     |     |     |   |
|      | Avg                    | Avg         |             | Avg                  | Avg         |             | Avg                    | Avg         |             | Avg                 | Avg         |             | Avg                  | Avg         |             |   | Avg | Avg |     |   |
| 3/8  | ---                    | ---         | ---         | 0                    | 101         | 101         | 102                    | 18          | 101         | 101                 | 102         | 24          | ---                  | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/9  | ---                    | ---         | ---         | 0                    | 102         | 102         | 102                    | 7           | 101         | 102                 | 102         | 24          | ---                  | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/10 | ---                    | ---         | ---         | 0                    | 102         | 102         | 103                    | 11          | 102         | 103                 | 103         | 24          | ---                  | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/11 | ---                    | ---         | ---         | 0                    | 103         | 103         | 104                    | 12          | 103         | 103                 | 104         | 24          | ---                  | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/12 | ---                    | ---         | ---         | 0                    | 102         | 102         | 103                    | 3           | 103         | 103                 | 103         | 24          | ---                  | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/13 | ---                    | ---         | ---         | 0                    | 101         | 101         | 102                    | 12          | 102         | 102                 | 102         | 24          | ---                  | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/14 | ---                    | ---         | ---         | 0                    | 101         | 101         | 102                    | 10          | 101         | 101                 | 102         | 24          | ---                  | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/15 | ---                    | ---         | ---         | 0                    | 102         | 102         | 103                    | 12          | 102         | 103                 | 103         | 24          | ---                  | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/16 | ---                    | ---         | ---         | 0                    | 102         | 102         | 103                    | 8           | 103         | 103                 | 103         | 24          | ---                  | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/17 | ---                    | ---         | ---         | 0                    | 101         | 101         | 102                    | 10          | 101         | 101                 | 102         | 24          | ---                  | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/18 | ---                    | ---         | ---         | 0                    | 100         | 100         | 100                    | 7           | 100         | 100                 | 101         | 24          | ---                  | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/19 | ---                    | ---         | ---         | 0                    | 101         | 101         | 101                    | 15          | 101         | 101                 | 101         | 24          | ---                  | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/20 | ---                    | ---         | ---         | 0                    | 100         | 100         | 100                    | 7           | 100         | 100                 | 100         | 24          | ---                  | ---         | ---         | 0 | --- | --- | --- | 0 |
| 3/21 | ---                    | ---         | ---         | 0                    | 99          | 99          | 100                    | 5           | 100         | 100                 | 100         | 20          | ---                  | ---         | ---         | 0 | --- | --- | --- | 0 |

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

| Date | <u>Lower Mon.</u> |             |             | <u>L. Mon. Tlwr</u> |             |             | <u>Ice Harbor</u> |             |             | <u>Ice Harbor Tlwr</u> |             |             | <u>McNary-Oregon</u> |             |             | #  |     |     |     |    |
|------|-------------------|-------------|-------------|---------------------|-------------|-------------|-------------------|-------------|-------------|------------------------|-------------|-------------|----------------------|-------------|-------------|----|-----|-----|-----|----|
|      | <u>24 h</u>       | <u>12 h</u> | <u>High</u> | <u>24 h</u>         | <u>12 h</u> | <u>High</u> | <u>24 h</u>       | <u>12 h</u> | <u>High</u> | <u>24 h</u>            | <u>12 h</u> | <u>High</u> | <u>24 h</u>          | <u>12 h</u> | <u>High</u> |    |     |     |     |    |
|      | Avg               | Avg         |             | Avg                 | Avg         |             | Avg               | Avg         |             | Avg                    | Avg         |             | Avg                  | Avg         |             |    | Avg | Avg |     |    |
| 3/8  | ---               | ---         | ---         | 0                   | ---         | ---         | ---               | 0           | 101         | 102                    | 102         | 24          | 101                  | 101         | 101         | 24 | 101 | 101 | 102 | 24 |
| 3/9  | ---               | ---         | ---         | 0                   | ---         | ---         | ---               | 0           | 101         | 102                    | 102         | 24          | 101                  | 101         | 102         | 24 | 100 | 101 | 101 | 24 |
| 3/10 | ---               | ---         | ---         | 0                   | ---         | ---         | ---               | 0           | 102         | 102                    | 102         | 24          | 101                  | 101         | 102         | 24 | 101 | 101 | 102 | 24 |
| 3/11 | ---               | ---         | ---         | 0                   | ---         | ---         | ---               | 0           | 102         | 102                    | 103         | 24          | 102                  | 102         | 103         | 24 | 101 | 101 | 101 | 24 |
| 3/12 | ---               | ---         | ---         | 0                   | ---         | ---         | ---               | 0           | 102         | 102                    | 102         | 24          | 102                  | 102         | 102         | 24 | 101 | 101 | 101 | 24 |
| 3/13 | ---               | ---         | ---         | 0                   | ---         | ---         | ---               | 0           | 102         | 102                    | 103         | 24          | 102                  | 102         | 102         | 24 | 101 | 102 | 102 | 24 |
| 3/14 | ---               | ---         | ---         | 0                   | ---         | ---         | ---               | 0           | 102         | 102                    | 103         | 24          | 101                  | 102         | 102         | 24 | 101 | 102 | 102 | 24 |
| 3/15 | ---               | ---         | ---         | 0                   | ---         | ---         | ---               | 0           | 103         | 103                    | 103         | 24          | 102                  | 102         | 103         | 24 | 102 | 103 | 104 | 24 |
| 3/16 | ---               | ---         | ---         | 0                   | ---         | ---         | ---               | 0           | 103         | 103                    | 103         | 24          | 102                  | 103         | 103         | 24 | 102 | 102 | 102 | 24 |
| 3/17 | ---               | ---         | ---         | 0                   | ---         | ---         | ---               | 0           | 102         | 102                    | 103         | 24          | 101                  | 102         | 102         | 24 | 101 | 102 | 102 | 24 |
| 3/18 | ---               | ---         | ---         | 0                   | ---         | ---         | ---               | 0           | 101         | 102                    | 102         | 24          | 101                  | 101         | 102         | 24 | 101 | 101 | 101 | 24 |
| 3/19 | ---               | ---         | ---         | 0                   | ---         | ---         | ---               | 0           | 101         | 102                    | 102         | 24          | 102                  | 102         | 105         | 24 | 101 | 101 | 102 | 24 |
| 3/20 | ---               | ---         | ---         | 0                   | ---         | ---         | ---               | 0           | 100         | 101                    | 101         | 24          | 100                  | 101         | 101         | 24 | 100 | 101 | 101 | 24 |
| 3/21 | ---               | ---         | ---         | 0                   | ---         | ---         | ---               | 0           | 100         | 100                    | 100         | 24          | 100                  | 100         | 100         | 24 | 100 | 100 | 100 | 24 |

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

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

| Date | <u>McNary-Wash</u> |             |      | <u>McNary Tlwr</u> |             |      | <u>John Day</u> |            |      | <u>John Day Tlwr</u> |            |      | <u>The Dalles</u> |            |      | # |     |     |     |   |
|------|--------------------|-------------|------|--------------------|-------------|------|-----------------|------------|------|----------------------|------------|------|-------------------|------------|------|---|-----|-----|-----|---|
|      | <u>24 h</u>        | <u>12 h</u> | High | <u>24 h</u>        | <u>12 h</u> | High | <u>24h</u>      | <u>12h</u> | High | <u>24h</u>           | <u>12h</u> | High | <u>24h</u>        | <u>12h</u> | High |   |     |     |     |   |
|      | Avg                | Avg         |      | Avg                | Avg         |      | Avg             | Avg        |      | Avg                  | Avg        |      | Avg               | Avg        |      |   | Avg |     |     |   |
| 3/8  | 101                | 102         | 102  | 24                 | 100         | 101  | 101             | 24         | ---  | ---                  | ---        | 0    | ---               | ---        | ---  | 0 | --- | --- | --- | 0 |
| 3/9  | 101                | 102         | 102  | 24                 | 100         | 101  | 101             | 24         | ---  | ---                  | ---        | 0    | ---               | ---        | ---  | 0 | --- | --- | --- | 0 |
| 3/10 | 101                | 101         | 101  | 24                 | 100         | 100  | 101             | 24         | ---  | ---                  | ---        | 0    | ---               | ---        | ---  | 0 | --- | --- | --- | 0 |
| 3/11 | 101                | 101         | 102  | 24                 | 101         | 101  | 101             | 24         | ---  | ---                  | ---        | 0    | ---               | ---        | ---  | 0 | --- | --- | --- | 0 |
| 3/12 | 102                | 102         | 102  | 24                 | 101         | 101  | 102             | 24         | ---  | ---                  | ---        | 0    | ---               | ---        | ---  | 0 | --- | --- | --- | 0 |
| 3/13 | 102                | 102         | 102  | 24                 | 101         | 101  | 102             | 24         | ---  | ---                  | ---        | 0    | ---               | ---        | ---  | 0 | --- | --- | --- | 0 |
| 3/14 | 102                | 102         | 102  | 24                 | 101         | 101  | 101             | 24         | ---  | ---                  | ---        | 0    | ---               | ---        | ---  | 0 | --- | --- | --- | 0 |
| 3/15 | 102                | 103         | 103  | 24                 | 101         | 102  | 102             | 24         | ---  | ---                  | ---        | 0    | ---               | ---        | ---  | 0 | --- | --- | --- | 0 |
| 3/16 | 103                | 103         | 103  | 24                 | 102         | 102  | 102             | 24         | ---  | ---                  | ---        | 0    | ---               | ---        | ---  | 0 | --- | --- | --- | 0 |
| 3/17 | 102                | 102         | 102  | 24                 | 101         | 101  | 101             | 24         | ---  | ---                  | ---        | 0    | ---               | ---        | ---  | 0 | --- | --- | --- | 0 |
| 3/18 | 101                | 101         | 101  | 24                 | 101         | 101  | 102             | 24         | ---  | ---                  | ---        | 0    | ---               | ---        | ---  | 0 | --- | --- | --- | 0 |
| 3/19 | 102                | 102         | 102  | 24                 | 102         | 102  | 102             | 24         | ---  | ---                  | ---        | 0    | ---               | ---        | ---  | 0 | --- | --- | --- | 0 |
| 3/20 | 100                | 101         | 101  | 24                 | 101         | 101  | 102             | 24         | ---  | ---                  | ---        | 0    | ---               | ---        | ---  | 0 | --- | --- | --- | 0 |
| 3/21 | 100                | 100         | 100  | 19                 | 100         | 100  | 101             | 15         | ---  | ---                  | ---        | 0    | ---               | ---        | ---  | 0 | --- | --- | --- | 0 |

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

| Date | <u>The Dalles Dnst</u> |             |      | <u>Bonneville</u> |             |      | <u>Warrendale</u> |            |      | <u>Skamania</u> |            |      | <u>CamasWashugal</u> |            |      | #  |     |     |     |    |
|------|------------------------|-------------|------|-------------------|-------------|------|-------------------|------------|------|-----------------|------------|------|----------------------|------------|------|----|-----|-----|-----|----|
|      | <u>24 h</u>            | <u>12 h</u> | High | <u>24 h</u>       | <u>12 h</u> | High | <u>24h</u>        | <u>12h</u> | High | <u>24h</u>      | <u>12h</u> | High | <u>24h</u>           | <u>12h</u> | High |    |     |     |     |    |
|      | Avg                    | Avg         |      | Avg               | Avg         |      | Avg               | Avg        |      | Avg             | Avg        |      | Avg                  | Avg        |      |    | Avg |     |     |    |
| 3/8  | ---                    | ---         | ---  | 0                 | 102         | 102  | 103               | 24         | 102  | 102             | 103        | 24   | 101                  | 102        | 102  | 24 | 102 | 102 | 103 | 23 |
| 3/9  | ---                    | ---         | ---  | 0                 | 102         | 102  | 102               | 24         | 102  | 103             | 103        | 24   | 101                  | 102        | 103  | 24 | 101 | 102 | 102 | 23 |
| 3/10 | ---                    | ---         | ---  | 0                 | 102         | 102  | 103               | 24         | 102  | 103             | 103        | 24   | 101                  | 101        | 102  | 24 | 101 | 102 | 102 | 23 |
| 3/11 | ---                    | ---         | ---  | 0                 | 103         | 103  | 103               | 24         | 103  | 103             | 103        | 24   | 101                  | 102        | 102  | 24 | 102 | 103 | 103 | 23 |
| 3/12 | ---                    | ---         | ---  | 0                 | 103         | 103  | 103               | 24         | 104  | 106             | 107        | 24   | 102                  | 103        | 104  | 24 | 102 | 103 | 103 | 23 |
| 3/13 | ---                    | ---         | ---  | 0                 | 102         | 103  | 103               | 24         | 110  | 111             | 112        | 24   | 103                  | 104        | 105  | 24 | 103 | 104 | 105 | 23 |
| 3/14 | ---                    | ---         | ---  | 0                 | 102         | 102  | 103               | 24         | 110  | 112             | 112        | 24   | 104                  | 105        | 107  | 24 | 105 | 107 | 108 | 23 |
| 3/15 | ---                    | ---         | ---  | 0                 | 102         | 102  | 103               | 10         | 105  | 106             | 106        | 18   | 103                  | 103        | 104  | 24 | 107 | 108 | 109 | 23 |
| 3/16 | ---                    | ---         | ---  | 0                 | ---         | ---  | ---               | 0          | 103  | 103             | 103        | 4    | 102                  | 103        | 104  | 24 | 103 | 103 | 104 | 24 |
| 3/17 | ---                    | ---         | ---  | 0                 | ---         | ---  | ---               | 0          | 103  | 103             | 103        | 22   | 102                  | 103        | 104  | 24 | 102 | 102 | 103 | 24 |
| 3/18 | ---                    | ---         | ---  | 0                 | 102         | 102  | 103               | 18         | 103  | 103             | 103        | 23   | 102                  | 102        | 102  | 24 | 102 | 102 | 102 | 23 |
| 3/19 | ---                    | ---         | ---  | 0                 | 102         | 102  | 102               | 24         | 102  | 102             | 103        | 24   | 102                  | 102        | 102  | 24 | 102 | 102 | 102 | 23 |
| 3/20 | ---                    | ---         | ---  | 0                 | 102         | 102  | 102               | 24         | 102  | 103             | 103        | 24   | 101                  | 102        | 103  | 24 | 102 | 103 | 103 | 23 |
| 3/21 | ---                    | ---         | ---  | 0                 | 101         | 101  | 101               | 24         | 101  | 102             | 102        | 24   | 98                   | 99         | 100  | 24 | 101 | 101 | 101 | 23 |

## HATCHERY RELEASE SUMMARY LAST TWO WEEKS

### Hatchery Release Summary

From: **3/8/02** to **3/21/02**

| Agency                       | Hatchery     | Species | Race | MigYr | NumRel    | RelStart | RelEnd   | RelSite                   | RelRiver                |
|------------------------------|--------------|---------|------|-------|-----------|----------|----------|---------------------------|-------------------------|
| Colville Tribe               | Winthrop     | CH1     | SP   | 2002  | 265,000   | 03-18-02 | 03-25-02 | Okanogan R                | Okanogan River          |
| <b>Colville Tribe Total</b>  |              |         |      |       | 265,000   |          |          |                           |                         |
| IDFG                         | Pahsimeroi   | CH1     | SU   | 2002  | 89,944    | 03-15-02 | 03-22-02 | Pahsimeroi H              | Pahsimeroi River        |
| IDFG                         | Pahsimeroi   | CH1     | SU   | 2002  | 418,500   | 03-15-02 | 03-22-02 | Pahsimeroi H              | Pahsimeroi River        |
| IDFG                         | Rapid River  | CH1     | SP   | 2002  | 300,000   | 03-14-02 | 03-15-02 | Hazard Cr/Little Salmon R | Little Salmon River     |
| IDFG                         | Rapid River  | CH1     | SP   | 2002  | 500,000   | 03-11-02 | 03-13-02 | Hells Canyon Dam          | Snake River             |
| IDFG                         | Rapid River  | CH1     | SP   | 2002  | 2,600,000 | 03-11-02 | 04-22-02 | Rapid River H             | Little Salmon River     |
| <b>IDFG Total</b>            |              |         |      |       | 3,908,444 |          |          |                           |                         |
| Nez Perce Tribe              | McCall       | CH1     | SU   | 2002  | 57,000    | 03-18-02 | 03-22-02 | Johnson Cr Idaho          | South Fork Salmon River |
| Nez Perce Tribe              | Willard      | CO      | UN   | 2002  | 280,000   | 03-15-02 | 03-29-02 | Lapwai Cr                 | Clearwater Rvr M F      |
| Nez Perce Tribe              | Willard      | CO      | UN   | 2002  | 280,000   | 03-15-02 | 03-29-02 | Potlatch R                | Clearwater Rvr M F      |
| <b>Nez Perce Tribe Total</b> |              |         |      |       | 617,000   |          |          |                           |                         |
| ODFW                         | Lookingglass | CH1     | SP   | 2002  | 303,800   | 03-21-02 | 04-17-02 | Imnaha Acclim Pd          | Imnaha River            |
| <b>ODFW Total</b>            |              |         |      |       | 303,800   |          |          |                           |                         |
| Umatilla Tribe               | Bonneville   | CH1     | FA   | 2002  | 40,000    | 03-12-02 | 03-19-02 | Umatilla R                | Umatilla River          |
| Umatilla Tribe               | Umatilla     | CH1     | SP   | 2002  | 363,932   | 03-01-02 | 03-08-02 | Imeques Acclim Pd         | Umatilla River          |
| Umatilla Tribe               | Willard      | CH1     | SP   | 2002  | 143,516   | 03-08-02 | 03-14-02 | Imeques Acclim Pd         | Umatilla River          |
| <b>Umatilla Tribe Total</b>  |              |         |      |       | 547,448   |          |          |                           |                         |
| USFWS                        | Spring Creek | CH0     | FA   | 2002  | 7,791,715 | 03-11-02 | 03-11-02 | Spring Creek H            | L Col R (D/s McN Dam)   |
| <b>USFWS Total</b>           |              |         |      |       | 7,791,715 |          |          |                           |                         |
| WDFW                         | Klickitat    | CH1     | SP   | 2002  | 610,000   | 03-08-02 | 03-12-02 | Klickitat H               | Klickitat River         |
| <b>WDFW Total</b>            |              |         |      |       | 610,000   |          |          |                           |                         |
| Yakima Tribe                 | Cle Elum     | CH1     | SP   | 2002  | 265,500   | 03-18-02 | 06-07-02 | Easton Pd                 | Yakama River            |
| Yakima Tribe                 | Cle Elum     | CH1     | SP   | 2002  | 288,000   | 03-18-02 | 06-07-02 | Clark Flat Acclim Pd      | Yakama River            |
| Yakima Tribe                 | Cle Elum     | CH1     | SP   | 2002  | 288,000   | 03-18-02 | 06-07-02 | Jack Creek Acclim Pd      | Yakama River            |

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

# HATCHERY RELEASE SUMMARY NEXT TWO WEEKS

## Hatchery Release Summary

From: **3/22/02** to **4/4/02**

| Agency                       | Hatchery        | Species | Race | MigYr | NumRel    | RelStart | RelEnd   | RelSite                   | RelRiver                |
|------------------------------|-----------------|---------|------|-------|-----------|----------|----------|---------------------------|-------------------------|
| Colville Tribe               | Leavenworth     | CH1     | SP   | 2002  | 50,000    | 04-02-02 | 04-02-02 | Omak Cr                   | Okanogan River          |
| Colville Tribe               | Winthrop        | CH1     | SP   | 2002  | 265,000   | 03-18-02 | 03-25-02 | Okanogan R                | Okanogan River          |
| <b>Colville Tribe Total</b>  |                 |         |      |       | 315,000   |          |          |                           |                         |
| IDFG                         | Clearwater      | CH1     | SP   | 2002  | 350,100   | 03-25-02 | 03-25-02 | Powell Acclim Pd          | Lochsa River            |
| IDFG                         | Clearwater      | CH1     | SP   | 2002  | 350,500   | 03-28-02 | 03-28-02 | Red River Acclim Pd       | S Fk Clearwater River   |
| IDFG                         | Clearwater      | CH1     | SP   | 2002  | 732,800   | 04-01-02 | 04-01-02 | Crooked R Acclim Pd       | S Fk Clearwater River   |
| IDFG                         | McCall          | CH1     | SU   | 2002  | 41,700    | 03-25-02 | 03-29-02 | Knox Bridge               | Salmon River            |
| IDFG                         | McCall          | CH1     | SU   | 2002  | 1,023,000 | 03-25-02 | 03-29-02 | Knox Bridge               | Salmon River            |
| IDFG                         | Niagara Springs | ST      | SU   | 2002  | 525,000   | 03-25-02 | 04-05-02 | Hells Canyon Dam          | Snake River             |
| IDFG                         | Pahsimeroi      | CH1     | SU   | 2002  | 89,944    | 03-15-02 | 03-22-02 | Pahsimeroi H              | Pahsimeroi River        |
| IDFG                         | Pahsimeroi      | CH1     | SU   | 2002  | 418,500   | 03-15-02 | 03-22-02 | Pahsimeroi H              | Pahsimeroi River        |
| IDFG                         | Rapid River     | CH1     | SP   | 2002  | 2,600,000 | 03-11-02 | 04-22-02 | Rapid River H             | Little Salmon River     |
| <b>IDFG Total</b>            |                 |         |      |       | 6,131,544 |          |          |                           |                         |
| Nez Perce Tribe              | Clearwater      | CH1     | SP   | 2002  | 20,200    | 04-01-02 | 04-19-02 | Lochsa R                  | Clearwater Rvr M F      |
| Nez Perce Tribe              | Clearwater      | CH1     | SP   | 2002  | 81,500    | 04-01-02 | 04-19-02 | Lochsa R                  | Clearwater Rvr M F      |
| Nez Perce Tribe              | Clearwater      | CH1     | SP   | 2002  | 115,000   | 04-01-02 | 04-19-02 | Newsome Cr                | S Fk Clearwater River   |
| Nez Perce Tribe              | Clearwater      | CH1     | SP   | 2002  | 149,300   | 04-01-02 | 04-19-02 | Lolo Cr                   | Clearwater Rvr M F      |
| Nez Perce Tribe              | Clearwater      | CH1     | SP   | 2002  | 297,500   | 04-01-02 | 04-19-02 | Meadow Cr                 | Selway River            |
| Nez Perce Tribe              | Clearwater      | ST      | SU   | 2002  | 29,700    | 04-02-02 | 04-30-02 | Lolo Cr                   | Clearwater Rvr M F      |
| Nez Perce Tribe              | Clearwater      | ST      | SU   | 2002  | 50,000    | 04-02-02 | 04-30-02 | Meadow Cr                 | S Fk Clearwater River   |
| Nez Perce Tribe              | Hagerman        | ST      | SU   | 2002  | 50,000    | 04-01-02 | 05-07-02 | Hazard Cr/Little Salmon R | Little Salmon River     |
| Nez Perce Tribe              | Hagerman        | ST      | SU   | 2002  | 100,000   | 04-01-02 | 05-07-02 | American R                | S Fk Clearwater River   |
| Nez Perce Tribe              | Hagerman        | ST      | SU   | 2002  | 100,000   | 04-01-02 | 05-07-02 | Newsome Cr                | S Fk Clearwater River   |
| Nez Perce Tribe              | Hagerman        | ST      | SU   | 2002  | 140,000   | 04-01-02 | 05-07-02 | Yankee Fk (Salmon R)      | Salmon River            |
| Nez Perce Tribe              | Hagerman        | ST      | SU   | 2002  | 150,000   | 04-01-02 | 05-07-02 | Little Salmon R           | Salmon River            |
| Nez Perce Tribe              | Lookingglass    | CH1     | SP   | 2002  | 31,000    | 04-01-02 | 04-15-02 | Lostine Accim Pd          | Wallowa River           |
| Nez Perce Tribe              | Lookingglass    | CH1     | SP   | 2002  | 77,500    | 04-01-02 | 04-15-02 | Lostine Accim Pd          | Wallowa River           |
| Nez Perce Tribe              | McCall          | CH1     | SU   | 2002  | 57,000    | 03-18-02 | 03-22-02 | Johnson Cr Idaho          | South Fork Salmon River |
| Nez Perce Tribe              | Willard         | CO      | UN   | 2002  | 280,000   | 03-15-02 | 03-29-02 | Lapwai Cr                 | Clearwater Rvr M F      |
| Nez Perce Tribe              | Willard         | CO      | UN   | 2002  | 280,000   | 03-15-02 | 03-29-02 | Potlatch R                | Clearwater Rvr M F      |
| <b>Nez Perce Tribe Total</b> |                 |         |      |       | 2,008,700 |          |          |                           |                         |
| ODFW                         | Lookingglass    | CH1     | SP   | 2002  | 303,800   | 03-21-02 | 04-17-02 | Imnaha Acclim Pd          | Imnaha River            |
| ODFW                         | Round Butte     | ST      | SU   | 2002  | 162,000   | 04-01-02 | 04-05-02 | Bel. Pelton Dam           | Deschutes River         |
| ODFW                         | Wallowa         | ST      | SU   | 2002  | 348,000   | 04-04-02 | 04-06-02 | Wallowa Acclim Pd         | Wallowa River           |
| <b>ODFW Total</b>            |                 |         |      |       | 813,800   |          |          |                           |                         |
| Umatilla Tribe               | Lookingglass    | CH1     | SP   | 2002  | 151,388   | 04-01-02 | 04-15-02 | Grande Ronde Acclim Pd    | Grande Ronde River      |
| Umatilla Tribe               | Lookingglass    | CH1     | SP   | 2002  | 180,500   | 04-01-02 | 04-15-02 | Catherine Cr Acclim Pd    | Grande Ronde River      |
| Umatilla Tribe               | Umatilla        | ST      | SU   | 2002  | 54,000    | 04-01-02 | 04-05-02 | Bonifer Acclim Pd         | Umatilla River          |
| <b>Umatilla Tribe Total</b>  |                 |         |      |       | 385,888   |          |          |                           |                         |
| USFWS                        | Dworshak        | CH1     | SP   | 2002  | 500,000   | 03-25-02 | 04-05-02 | Kooskia H                 | Clearwater Rvr M F      |
| USFWS                        | Dworshak        | CH1     | SP   | 2002  | 1,000,000 | 03-25-02 | 04-05-02 | Dworshak H                | Clearwater Rvr M F      |
| USFWS                        | Entiat          | CH1     | SP   | 2002  | 550,000   | 04-01-02 | 04-02-02 | Entiat H                  | Entiat River            |
| USFWS                        | Hagerman        | ST      | SU   | 2002  | 750,000   | 04-01-02 | 05-07-02 | Sawtooth H                | Salmon River            |
| USFWS                        | Kooskia         | CH1     | SP   | 2002  | 50,000    | 03-25-02 | 04-05-02 | Clear Cr                  | Clearwater Rvr M F      |
| USFWS                        | Warm Springs    | CH1     | SP   | 2002  | 582,800   | 03-26-02 | 04-18-02 | Warm Springs H            | Deschutes River         |
| USFWS                        | Winthrop        | CO      | SO   | 2002  | 200,000   | 04-02-02 | 04-02-02 | Winthrop H                | Methow River            |
| <b>USFWS Total</b>           |                 |         |      |       | 3,632,800 |          |          |                           |                         |

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

## HATCHERY RELEASE SUMMARY NEXT TWO WEEKS

### Hatchery Release Summary

From: 3/22/02 to 4/4/02

|                              |                 |     |    |      |           |          |          |                       |                    |
|------------------------------|-----------------|-----|----|------|-----------|----------|----------|-----------------------|--------------------|
| Warm Spgs Tribe              | Blackberry Pond | CH1 | SP | 2002 | 47,000    | 04-01-02 | 04-26-02 | Blackberry Acclim Pd  | Hood River         |
| Warm Spgs Tribe              | Jones Cr Pond   | CH1 | SP | 2002 | 33,000    | 04-01-02 | 04-26-02 | Jones Creek Acclim Pd | Hood River         |
| Warm Spgs Tribe              | Round Butte     | CH1 | SP | 2002 | 31,000    | 04-01-02 | 04-15-02 | Parkdale Acclim Pd    | Hood River         |
| <b>Warm Spgs Tribe Total</b> |                 |     |    |      | 111,000   |          |          |                       |                    |
| WDFW                         | Lyons Ferry     | CH1 | FA | 2002 | 600,000   | 04-01-02 | 04-15-02 | Lyons Ferry H         | Snake River        |
| WDFW                         | Lyons Ferry     | ST  | SU | 2002 | 45,000    | 04-01-02 | 04-30-02 | Dayton Acclim Pd      | Touchet River      |
| WDFW                         | Lyons Ferry     | ST  | SU | 2002 | 100,000   | 04-01-02 | 04-30-02 | Dayton Acclim Pd      | Touchet River      |
| WDFW                         | Lyons Ferry     | ST  | SU | 2002 | 200,000   | 04-01-02 | 04-30-02 | Cottonwood Acclim Pd  | Grande Ronde River |
| WDFW                         | Ringold Springs | ST  | SU | 2002 | 160,000   | 04-01-02 | 04-15-02 | Ringold Springs H     | Mid-Columbia River |
| WDFW                         | Tucannon        | CH1 | SP | 2002 | 3,000     | 04-01-02 | 04-30-02 | Curl Lake             | Tucannon River     |
| WDFW                         | Tucannon        | CH1 | SP | 2002 | 105,000   | 04-01-02 | 04-30-02 | Curl Lake             | Tucannon River     |
| WDFW                         | Washougal       | CO  | NO | 2002 | 2,500,000 | 04-02-02 | 04-10-02 | Klickitat R           | Klickitat River    |
| <b>WDFW Total</b>            |                 |     |    |      | 3,713,000 |          |          |                       |                    |
| Yakima Tribe                 | Cle Elum        | CH1 | SP | 2002 | 265,500   | 03-18-02 | 06-07-02 | Easton Pd             | Yakama River       |
| Yakima Tribe                 | Cle Elum        | CH1 | SP | 2002 | 288,000   | 03-18-02 | 06-07-02 | Clark Flat Acclim Pd  | Yakama River       |
| Yakima Tribe                 | Cle Elum        | CH1 | SP | 2002 | 288,000   | 03-18-02 | 06-07-02 | Jack Creek Acclim Pd  | Yakama River       |
| <b>Yakima Tribe Total</b>    |                 |     |    |      | 841,500   |          |          |                       |                    |

## Two-Week Summary of Passage Indices COMBINED YEARLING CHINOOK

| Date            | WTB<br>(Coll) | IMN<br>(Coll) | GRN<br>(Coll) | LEW<br>(Coll) | LGR<br>(INDEX) | LGS<br>(INDEX) | LMN<br>(INDEX) | RIS<br>(INDEX) | MCN<br>(INDEX) | JDA<br>(INDEX) | BO2<br>(INDEX) |
|-----------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 03/08/2002      | ---           | 4             | ---           | ---           | ---            | ---            | ---            | ---            | ---            | ---            | ---            |
| 03/09/2002      | ---           | 8             | ---           | ---           | ---            | ---            | ---            | ---            | ---            | ---            | ---            |
| 03/10/2002      | ---           | ---           | ---           | ---           | ---            | ---            | ---            | ---            | ---            | ---            | ---            |
| 03/11/2002      | 0             | 8             | ---           | 0             | ---            | ---            | ---            | ---            | ---            | ---            | ---            |
| 03/12/2002 *    | 1             | 3             | 0             | 0             | ---            | ---            | ---            | ---            | ---            | ---            | 106            |
| 03/13/2002 *    | 1             | 1             | 0             | 0             | ---            | ---            | ---            | ---            | ---            | ---            | 0              |
| 03/14/2002 *    | 151           | 3             | 0             | 0             | ---            | ---            | ---            | ---            | ---            | ---            | 976            |
| 03/15/2002 *    | 78            | 5             | 0             | 1             | ---            | ---            | ---            | ---            | ---            | ---            | 0              |
| 03/16/2002 *    | 579           | 7             | ---           | ---           | ---            | ---            | ---            | ---            | ---            | ---            | 2,804          |
| 03/17/2002      | ---           | 3             | ---           | ---           | ---            | ---            | ---            | ---            | ---            | ---            | 1,354          |
| 03/18/2002 *    | 730           | 11            | 0             | 0             | ---            | ---            | ---            | ---            | ---            | ---            | 481            |
| 03/19/2002 *    | 545           | 3             | 0             | 0             | ---            | ---            | ---            | ---            | ---            | 40             | 315            |
| 03/20/2002 *    | 158           | 1             | 0             | 0             | ---            | ---            | ---            | ---            | ---            | 20             | 104            |
| 03/21/2002 *    | 384           | ---           | 12            | ---           | ---            | ---            | ---            | ---            | ---            | 55             | 131            |
| 03/22/2002 *    | ---           | ---           | ---           | ---           | ---            | ---            | ---            | ---            | ---            | 135            | 0              |
| <b>Total:</b>   | <b>2,627</b>  | <b>57</b>     | <b>12</b>     | <b>1</b>      | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>250</b>     | <b>6,271</b>   |
| <b># Days:</b>  | <b>10</b>     | <b>12</b>     | <b>8</b>      | <b>8</b>      | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>4</b>       | <b>11</b>      |
| <b>Average:</b> | <b>263</b>    | <b>5</b>      | <b>2</b>      | <b>0</b>      | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>63</b>      | <b>570</b>     |
| <b>YTD</b>      | <b>2,627</b>  | <b>62</b>     | <b>12</b>     | <b>1</b>      | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>250</b>     | <b>6,271</b>   |

## COMBINED SUBYEARLING CHINOOK

| Date            | WTB<br>(Coll) | IMN<br>(Coll) | GRN<br>(Coll) | LEW<br>(Coll) | LGR<br>(INDEX) | LGS<br>(INDEX) | LMN<br>(INDEX) | RIS<br>(INDEX) | MCN<br>(INDEX) | JDA<br>(INDEX) | BO2<br>(INDEX) |
|-----------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 03/08/2002      | ---           | 0             | ---           | ---           | ---            | ---            | ---            | ---            | ---            | ---            | ---            |
| 03/09/2002      | ---           | 1             | ---           | ---           | ---            | ---            | ---            | ---            | ---            | ---            | ---            |
| 03/10/2002      | ---           | ---           | ---           | ---           | ---            | ---            | ---            | ---            | ---            | ---            | ---            |
| 03/11/2002      | 0             | 0             | ---           | 0             | ---            | ---            | ---            | ---            | ---            | ---            | ---            |
| 03/12/2002 *    | 0             | 0             | 0             | 1             | ---            | ---            | ---            | ---            | ---            | ---            | 847            |
| 03/13/2002 *    | 0             | 0             | 0             | 0             | ---            | ---            | ---            | ---            | ---            | ---            | 18,242         |
| 03/14/2002 *    | 0             | 0             | 0             | 0             | ---            | ---            | ---            | ---            | ---            | ---            | 385,935        |
| 03/15/2002 *    | 0             | 0             | 0             | 0             | ---            | ---            | ---            | ---            | ---            | ---            | 197,382        |
| 03/16/2002 *    | 0             | 0             | ---           | ---           | ---            | ---            | ---            | ---            | ---            | ---            | 166,540        |
| 03/17/2002      | ---           | 0             | ---           | ---           | ---            | ---            | ---            | ---            | ---            | ---            | 12,186         |
| 03/18/2002 *    | 0             | 0             | 0             | 1             | ---            | ---            | ---            | ---            | ---            | ---            | 5,927          |
| 03/19/2002 *    | 0             | 0             | 0             | 1             | ---            | ---            | ---            | ---            | ---            | 0              | 3,718          |
| 03/20/2002 *    | 0             | 0             | 0             | 0             | ---            | ---            | ---            | ---            | ---            | 0              | 1,672          |
| 03/21/2002 *    | 0             | ---           | 1             | ---           | ---            | ---            | ---            | ---            | ---            | 0              | 2,624          |
| 03/22/2002 *    | ---           | ---           | ---           | ---           | ---            | ---            | ---            | ---            | ---            | 5              | 0              |
| <b>Total:</b>   | <b>0</b>      | <b>1</b>      | <b>1</b>      | <b>3</b>      | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>5</b>       | <b>795,073</b> |
| <b># Days:</b>  | <b>10</b>     | <b>12</b>     | <b>8</b>      | <b>8</b>      | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>4</b>       | <b>11</b>      |
| <b>Average:</b> | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>0</b>      | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>1</b>       | <b>72,279</b>  |
| <b>YTD</b>      | <b>0</b>      | <b>1</b>      | <b>1</b>      | <b>3</b>      | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>0</b>       | <b>5</b>       | <b>795,073</b> |

\*The total, #days and average do not include the current day's data. \*See sampling comments. [http://www.fpc.org/current daily/smpcomments.htm](http://www.fpc.org/current%20daily/smpcomments.htm). This means that one or more of the sites on this date had an incomplete or biased sample.

These data are preliminary and have been derived from various sources. For verification and/or origin of these data, contact the operators of the Fish Passage Data System at (503) 230-4099.

Smolt indices, clipped & unclipped or combined, are presented in the following order: yearling chinook (chinook 1's,) subyearling chinook (chinook 0's), steelhead, coho, and sockeye. Two classes of fish counts are shown in these tables: collection counts, which account for sample rates but are not adjusted for flow; and passage indices, 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.

## Two-Week Summary of Passage Indices

### COMBINED COHO

| Date            | WTB       | IMN       | GRN      | LEW      | LGR      | LGS      | LMN      | RIS      | MCN      | JDA      | BO2       |
|-----------------|-----------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
|                 | (Coll)    | (Coll)    | (Coll)   | (Coll)   | (INDEX)  | (INDEX)  | (INDEX)  | (INDEX)  | (INDEX)  | (INDEX)  | (INDEX)   |
| 03/08/2002      | ---       | 0         | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---       |
| 03/09/2002      | ---       | 0         | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---       |
| 03/10/2002      | ---       | ---       | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---       |
| 03/11/2002      | 0         | 0         | ---      | 0        | ---      | ---      | ---      | ---      | ---      | ---      | ---       |
| 03/12/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | ---      | 0         |
| 03/13/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | ---      | 0         |
| 03/14/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | ---      | 0         |
| 03/15/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | ---      | 0         |
| 03/16/2002 *    | 0         | 0         | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---      | 0         |
| 03/17/2002      | ---       | 0         | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---      | 0         |
| 03/18/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | ---      | 0         |
| 03/19/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | 0        | 0         |
| 03/20/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | 0        | 23        |
| 03/21/2002 *    | 0         | ---       | 0        | ---      | ---      | ---      | ---      | ---      | ---      | 5        | 12        |
| 03/22/2002 *    | ---       | ---       | ---      | ---      | ---      | ---      | ---      | ---      | ---      | 0        | 0         |
| <b>Total:</b>   | <b>0</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>5</b> | <b>35</b> |
| <b># Days:</b>  | <b>10</b> | <b>12</b> | <b>8</b> | <b>8</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>4</b> | <b>11</b> |
| <b>Average:</b> | <b>0</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>1</b> | <b>3</b>  |
| <b>YTD</b>      | <b>0</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>5</b> | <b>35</b> |

### COMBINED STEELHEAD

| Date            | WTB       | IMN       | GRN      | LEW      | LGR      | LGS      | LMN      | RIS      | MCN      | JDA       | BO2       |
|-----------------|-----------|-----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|
|                 | (Coll)    | (Coll)    | (Coll)   | (Coll)   | (INDEX)  | (INDEX)  | (INDEX)  | (INDEX)  | (INDEX)  | (INDEX)   | (INDEX)   |
| 03/08/2002      | ---       | 1         | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---       | ---       |
| 03/09/2002      | ---       | 0         | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---       | ---       |
| 03/10/2002      | ---       | ---       | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---       | ---       |
| 03/11/2002      | 0         | 5         | ---      | 0        | ---      | ---      | ---      | ---      | ---      | ---       | ---       |
| 03/12/2002 *    | 0         | 2         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | ---       | 0         |
| 03/13/2002 *    | 0         | 2         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | ---       | 0         |
| 03/14/2002 *    | 0         | 3         | 0        | 1        | ---      | ---      | ---      | ---      | ---      | ---       | 0         |
| 03/15/2002 *    | 0         | 1         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | ---       | 0         |
| 03/16/2002 *    | 0         | 1         | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---       | 0         |
| 03/17/2002      | ---       | 1         | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---       | 0         |
| 03/18/2002 *    | 0         | 1         | 0        | 2        | ---      | ---      | ---      | ---      | ---      | ---       | 0         |
| 03/19/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | 0         | 0         |
| 03/20/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | 10        | 0         |
| 03/21/2002 *    | 0         | ---       | 0        | ---      | ---      | ---      | ---      | ---      | ---      | 5         | 0         |
| 03/22/2002 *    | ---       | ---       | ---      | ---      | ---      | ---      | ---      | ---      | ---      | 10        | 0         |
| <b>Total:</b>   | <b>0</b>  | <b>17</b> | <b>0</b> | <b>3</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>25</b> | <b>0</b>  |
| <b># Days:</b>  | <b>10</b> | <b>12</b> | <b>8</b> | <b>8</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>4</b>  | <b>11</b> |
| <b>Average:</b> | <b>0</b>  | <b>1</b>  | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>6</b>  | <b>0</b>  |
| <b>YTD</b>      | <b>0</b>  | <b>25</b> | <b>0</b> | <b>3</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>25</b> | <b>0</b>  |

## Two-Week Summary of Passage Indices

### COMBINED SOCKEYE

| Date            | WTB       | IMN       | GRN      | LEW      | LGR      | LGS      | LMN      | RIS      | MCN      | JDA      | BO2       |
|-----------------|-----------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
|                 | (Coll)    | (Coll)    | (Coll)   | (Coll)   | (INDEX)  | (INDEX)  | (INDEX)  | (INDEX)  | (INDEX)  | (INDEX)  | (INDEX)   |
| 03/08/2002      | ---       | 0         | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---       |
| 03/09/2002      | ---       | 0         | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---       |
| 03/10/2002      | ---       | ---       | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---       |
| 03/11/2002      | 0         | 0         | ---      | 0        | ---      | ---      | ---      | ---      | ---      | ---      | ---       |
| 03/12/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | ---      | 0         |
| 03/13/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | ---      | 0         |
| 03/14/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | ---      | 0         |
| 03/15/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | ---      | 0         |
| 03/16/2002 *    | 0         | 0         | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---      | 0         |
| 03/17/2002      | ---       | 0         | ---      | ---      | ---      | ---      | ---      | ---      | ---      | ---      | 0         |
| 03/18/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | ---      | 0         |
| 03/19/2002 *    | 0         | 0         | 0        | 0        | ---      | ---      | ---      | ---      | ---      | 0        | 0         |
| 03/20/2002 *    | 0         | 0         | 0        | 1        | ---      | ---      | ---      | ---      | ---      | 0        | 0         |
| 03/21/2002 *    | 0         | ---       | 0        | ---      | ---      | ---      | ---      | ---      | ---      | 0        | 0         |
| 03/22/2002 *    | ---       | ---       | ---      | ---      | ---      | ---      | ---      | ---      | ---      | 0        | 0         |
| <b>Total:</b>   | <b>0</b>  | <b>0</b>  | <b>0</b> | <b>1</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b>  |
| <b># Days:</b>  | <b>10</b> | <b>12</b> | <b>8</b> | <b>8</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>4</b> | <b>11</b> |
| <b>Average:</b> | <b>0</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b>  |
| <b>YTD</b>      | <b>0</b>  | <b>0</b>  | <b>0</b> | <b>1</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b>  |

#### 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)}

BO1 (Index) = Bonneville Dam First Powerhouse Bypass Collection System : Passage Index Counts

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

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

RIS data collected for the FPC by Chelan Co. PUD/Washington Dept. of Fish and Wildlife.

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

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

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

**Cumulative Adult Passage at Mainstem Dams Through: 03/19**

| DAM | Spring Chinook |      |       |      |            |      | Summer Chinook |      |       |      |            |      | Fall Chinook |      |       |      |            |      |  |
|-----|----------------|------|-------|------|------------|------|----------------|------|-------|------|------------|------|--------------|------|-------|------|------------|------|--|
|     | 2002           |      | 2001  |      | 10-Yr Avg. |      | 2002           |      | 2001  |      | 10-Yr Avg. |      | 2002         |      | 2001  |      | 10-Yr Avg. |      |  |
|     | Adult          | Jack | Adult | Jack | Adult      | Jack | Adult          | Jack | Adult | Jack | Adult      | Jack | Adult        | Jack | Adult | Jack | Adult      | Jack |  |
| BON | 421            | 0    | 1,154 | 1    | 225        | 0    | 0              | 0    | 0     |      |            |      |              | 0    | 0     |      |            |      |  |
| TDA | ---            | ---  |       |      |            |      | ---            | ---  |       |      |            |      |              | ---  | ---   |      |            |      |  |
| JDA | ---            | ---  |       |      |            |      | ---            | ---  |       |      |            |      |              | ---  | ---   |      |            |      |  |
| MCN | ---            | ---  |       |      |            |      | ---            | ---  |       |      |            |      |              | ---  | ---   |      |            |      |  |
| IHR | ---            | ---  |       |      |            |      | ---            | ---  |       |      |            |      |              | ---  | ---   |      |            |      |  |
| LMN | ---            | ---  |       |      |            |      | ---            | ---  |       |      |            |      |              | ---  | ---   |      |            |      |  |
| LGS | ---            | ---  |       |      |            |      | ---            | ---  |       |      |            |      |              | ---  | ---   |      |            |      |  |
| LWG | 0              | 0    | 0     | 0    | 0          | 0    | 0              | 0    |       |      |            |      |              | 0    | 0     |      |            |      |  |
| PRD | ---            | ---  |       |      |            |      | ---            | ---  |       |      |            |      |              | ---  | ---   |      |            |      |  |
| RIS | ---            | ---  |       |      |            |      | ---            | ---  |       |      |            |      |              | ---  | ---   |      |            |      |  |
| RRH | ---            | ---  |       |      |            |      | ---            | ---  |       |      |            |      |              | ---  | ---   |      |            |      |  |
| WEL | ---            | ---  |       |      |            |      | ---            | ---  |       |      |            |      |              | ---  | ---   |      |            |      |  |

| DAM | Coho  |      |       |      |            |      | Sockeye |      |               | Steelhead |       |               | Wild<br>2002 |
|-----|-------|------|-------|------|------------|------|---------|------|---------------|-----------|-------|---------------|--------------|
|     | 2002  |      | 2001  |      | 10-Yr Avg. |      | 2002    | 2001 | 10-Yr<br>Avg. | 2002      | 2001  | 10-Yr<br>Avg. |              |
|     | Adult | Jack | Adult | Jack | Adult      | Jack |         |      |               |           |       |               |              |
| BON | 0     | 0    |       |      |            |      | 0       |      |               | 122       | 420   | 266           | 0            |
| TDA | ---   | ---  |       |      |            |      | ---     |      |               | ---       |       |               | ---          |
| JDA | ---   | ---  |       |      |            |      | ---     |      |               | ---       |       |               | ---          |
| MCN | ---   | ---  |       |      |            |      | ---     |      |               | ---       |       |               | ---          |
| IHR | ---   | ---  |       |      |            |      | ---     |      |               | ---       |       |               | ---          |
| LMN | ---   | ---  |       |      |            |      | ---     |      |               | ---       |       |               | ---          |
| LGS | ---   | ---  |       |      |            |      | ---     |      |               | ---       |       |               | ---          |
| LWG | 0     | 0    |       |      |            |      | 0       |      |               | 2,664     | 2,115 | 1,425         | 137          |
| PRD | ---   | ---  |       |      |            |      | ---     |      |               | ---       |       |               | **           |
| RIS | ---   | ---  |       |      |            |      | ---     |      |               | ---       |       |               | ---          |
| RRH | ---   | ---  |       |      |            |      | ---     |      |               | ---       |       |               | ---          |
| WEL | ---   | ---  |       |      |            |      | ---     |      |               | ---       |       |               | ---          |

BO2 through March 18, LGR through March 19.

\*\*PRD is not reporting Wild Steelhead numbers.

These numbers were collected from the COE's Running Sums text files.

Wild steelhead numbers are included in the total.

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.

