

# RECLAMATION

## *Managing Water in the West*

July 15, 2011

Dear Customer:

Attached are the monthly water supply outlook and projected reservoir and river operating plans as prepared in July. Due to the delayed mountain snowmelt, mountain snowpack conditions in the Bighorn Basin on July 1 were over 600 percent of average. Based on current hydrologic and climatic conditions and the planned releases out of Boysen and Buffalo Bill Reservoirs, the July runoff into Bighorn Lake is estimated to be about 810,000 acre-feet (280% of average). If you have any questions or concerns, please feel free to call me at (406) 247-7318.

Tim H. Felchle  
Reservoir and River Operations



U. S. Department of the Interior  
Bureau of Reclamation  
Montana Area Office  
River and Reservoir Operations

## YELLOWTAIL RESERVOIR OPERATIONS

Water Supply Forecasts and Reservoir Operations

July 1, 2011

### Present Elevations & Storages:

| <u>Reservoir</u> | <u>Elevation</u> | <u>Storage</u> | <u>Percent of Average</u> | <u>Percent Full</u> |
|------------------|------------------|----------------|---------------------------|---------------------|
| Boysen           | 4714.38          | 556,211        | 85                        | 75                  |
| Buffalo Bill     | 5370.56          | 472,134        | 83                        | 73                  |
| Bighorn Lake     | 3643.48          | 1,066,584      | 109                       | 105                 |

### Actual Inflows (1,000 Acre-Feet):

| <u>Month</u>                   | <u>Inflow</u>         | <u>Percent of Average</u> |
|--------------------------------|-----------------------|---------------------------|
| June                           | 761.3                 | 184                       |
| July                           | 280.8                 | 97                        |
| August                         | 122.7                 | 77                        |
| September                      | 119.6                 | 70                        |
| <b><i>April-July, 2010</i></b> | <b><i>1,504.4</i></b> | <b><i>135</i></b>         |
| <b><i>WY-2010 Total</i></b>    | <b><i>2,573.5</i></b> | <b><i>109</i></b>         |
| October                        | 122.2                 | 70                        |
| November                       | 122.6                 | 84                        |
| December                       | 122.7                 | 96                        |
| January                        | 121.8                 | 96                        |
| February                       | 111.9                 | 86                        |
| March                          | 167.4                 | 101                       |
| April                          | 245.8                 | 153                       |
| May                            | 529.4                 | 201                       |
| June                           | 1,004.2               | 235                       |

### Actual Gains Between Boysen and Buffalo Bill to Yellowtail (1,000 Acre-Feet):

| <u>Month</u>                   | <u>Gains</u>        | <u>Percent of Average</u> |
|--------------------------------|---------------------|---------------------------|
| June                           | 228.3               | 215                       |
| July                           | -50.8               | ---                       |
| August                         | -71.7               | ---                       |
| September                      | -9.7                | ---                       |
| <b><i>April-July, 2010</i></b> | <b><i>254.2</i></b> | <b><i>163</i></b>         |
| <b><i>WY-2010 Total</i></b>    | <b><i>513.9</i></b> | <b><i>107</i></b>         |
| October                        | 28.7                | 40                        |
| November                       | 54.2                | 89                        |
| December                       | 52.1                | 121                       |
| January                        | 50.9                | 110                       |
| February                       | 47.9                | 90                        |
| March                          | 95.6                | 128                       |
| April                          | 47.7                | 137                       |
| May                            | 168.3               | 280                       |
| June                           | 391                 | 369                       |

### July 1 Runoff Forecast (July Inflows - 1,000 Acre-Feet):

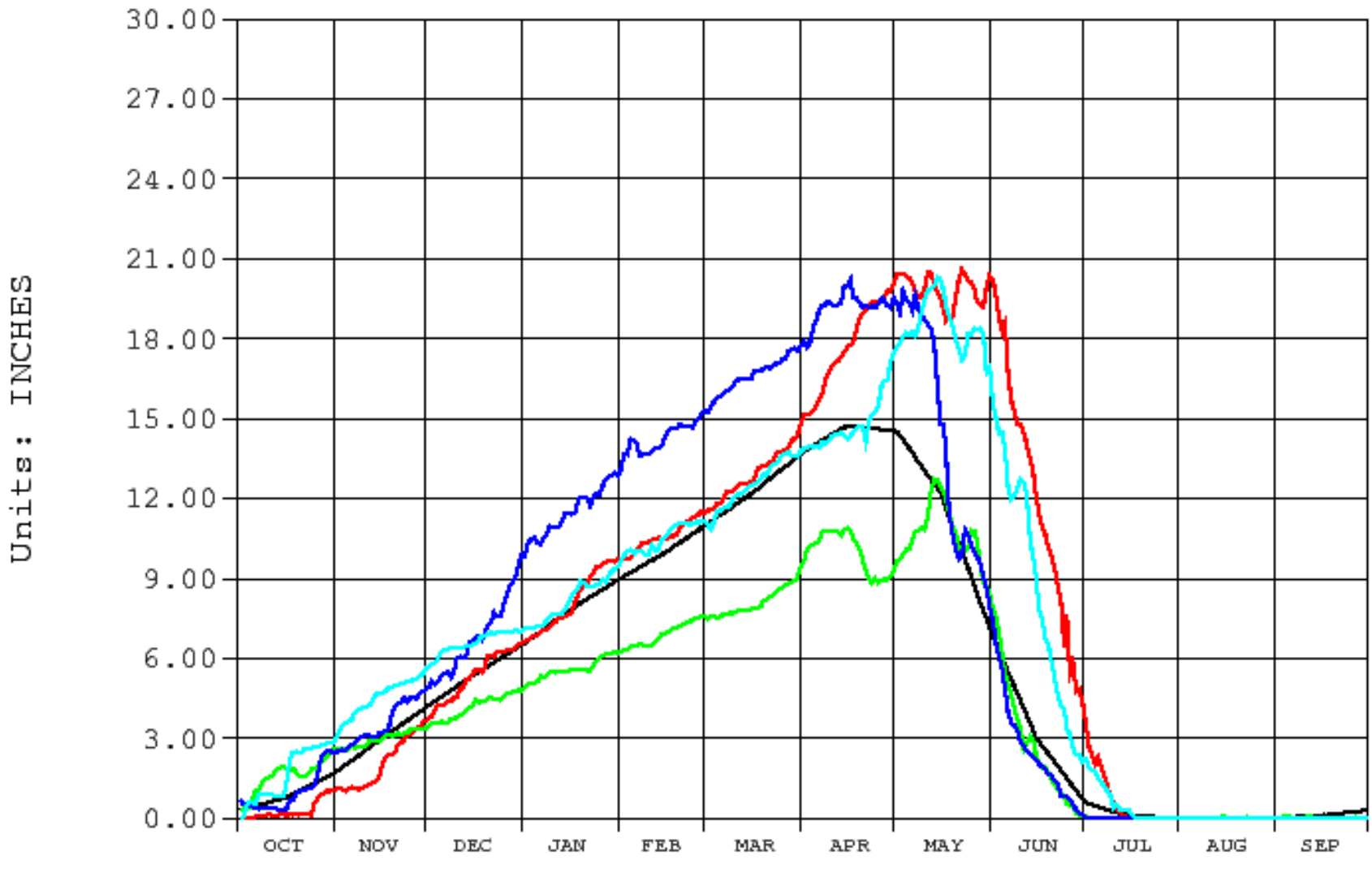
| <u>Agency</u> | <u>Inflows</u> | <u>Percent of Average</u> |
|---------------|----------------|---------------------------|
| <b>USBR</b>   | <b>810.0</b>   | <b>280</b>                |

### Snowpack Conditions:

S N O W - P R E C I P I T A T I O N - U P D A T E  
Based on Mountain Data from NRCS SNOTEL Sites  
As of FRIDAY: JULY 1 , 2011

| BASIN<br>Data Site Name        | ELEV.<br>(Ft) | SNOW WATER EQUIVALENT<br>% |          |              | TOTAL PRECIPITATION<br>% |              |            |
|--------------------------------|---------------|----------------------------|----------|--------------|--------------------------|--------------|------------|
|                                |               | Current                    | Average  | Avg          | Current                  | Average      | Avg        |
| UPPER YELLOWSTONE RIVER BASIN  |               |                            |          |              |                          |              |            |
| BEARTOOTH LAKE                 | 9360          | 17.6                       | 2.1      | 838*         | 39.3                     | 29.8         | 132        |
| BOX CANYON                     | 6670          | .0                         | .0       | 100*         | 25.2                     | 20.6         | 122        |
| BRACKETT CREEK                 | 7320          | .0                         | .0       | 100*         | 50.3                     | 42.3         | 119        |
| BURNT MTN<br>CANYON            | 5880<br>7870  | .0<br>.0                   | .0<br>.0 | 100*<br>100* | 30.7<br>29.6             | 28.6<br>22.7 | 107<br>130 |
| COLE CREEK                     | 7850          | 1.2                        | .8       | 150*         | 27.8                     | 30.9         | 90         |
| EAST BOULDER MINE              | 6335          | .0                         | -M       | *            | 28.2                     | -M           | *          |
| EVENING STAR                   | 9200          | 19.5                       | 4.6      | 424          | 54.9                     | 37.9         | 145        |
| FISHER CREEK                   | 9100          | 31.5                       | 5.7      | 553          | 59.5                     | 50.5         | 118        |
| MONUMENT PEAK                  | 8850          | 7.3                        | .5       | 1460*        | 41.5                     | 32.1         | 129        |
| NORTHEAST ENTRANCE             | 7350          | .0                         | .0       | 100*         | 25.9                     | 20.2         | 128        |
| PARKER PEAK                    | 9400          | 17.9                       | 2.0      | 895*         | 44.2                     | 26.1         | 169        |
| PLACER BASIN                   | 8830          | 9.9                        | 1.0      | 990*         | 41.2                     | 32.6         | 126        |
| PORCUPINE                      | 6500          | .0                         | .0       | 100*         | 26.3                     | 21.9         | 120        |
| SACAJAWEA                      | 6550          | .0                         | .0       | 100*         | 46.7                     | 38.0         | 123        |
| SHOWER FALLS                   | 8100          | 15.7                       | 2.4      | 654*         | 48.5                     | 42.1         | 115        |
| S FORK SHIELDS                 | 8100          | .0                         | .0       | 100*         | 46.2                     | 35.7         | 129        |
| SYLVAN LAKE                    | 8420          | .2                         | .0       | *            | 45.5                     | 32.1         | 142        |
| SYLVAN ROAD                    | 7120          | .0                         | .0       | 100*         | 33.9                     | 25.8         | 131        |
| THUMB DIVIDE                   | 7980          | .1                         | .0       | *            | 33.6                     | 26.8         | 125        |
| TWO OCEAN PLATEAU              | 9240          | 29.1                       | 6.0      | 485          | 48.9                     | 39.2         | 125        |
| WHITE MILL                     | 8700          | 13.6                       | 1.2      | 1133*        | 43.9                     | 38.5         | 114        |
| WOLVERINE                      | 7650          | .0                         | .0       | 100*         | 23.1                     | 20.5         | 113        |
| YOUNTS PEAK                    | 8350          | .0                         | .0       | 100*         | 27.8                     | 24.7         | 113        |
| Basin wide percent of average  |               |                            |          | 622*         |                          |              | 124        |
| WIND RIVER BASIN (WYOMING)     |               |                            |          |              |                          |              |            |
| BURROUGHS CREEK                | 8750          | .0                         | .0       | 100*         | 30.6                     | 24.7         | 124        |
| CASTLE CREEK                   | 8400          | .0                         | -M       | *            | 15.5                     | -M           | *          |
| COLD SPRINGS                   | 9630          | .0                         | .0       | 100*         | 21.5                     | 19.4         | 111        |
| DEER PARK                      | 9700          | .0                         | .0       | 100*         | 36.0                     | 33.4         | 108        |
| HOBBS PARK                     | 10100         | .0                         | .8       | 0*           | 29.3                     | 23.4         | 125        |
| KIRWIN                         | 9550          | .0                         | .0       | 100*         | 25.3                     | 20.4         | 124        |
| LITTLE WARM                    | 9370          | .0                         | .0       | 100*         | 25.1                     | 22.2         | 113        |
| OWL CREEK                      | 8975          | .0                         | .0       | 100*         | 15.7                     | 13.5         | 116        |
| SOUTH PASS                     | 9040          | .0                         | .0       | 100*         | 27.3                     | 28.1         | 97         |
| ST. LAWRENCE ALT               | 8620          | .0                         | .0       | 100*         | 21.4                     | 17.5         | 122        |
| TOGWOTEE PASS                  | 9580          | 23.7                       | 2.9      | 817          | 49.3                     | 35.0         | 141        |
| TOWNSEND CREEK                 | 8700          | .0                         | .0       | 100*         | 23.3                     | 21.0         | 111        |
| YOUNTS PEAK                    | 8350          | .0                         | .0       | 100*         | 27.8                     | 24.7         | 113        |
| Basin wide percent of average  |               |                            |          | 641*         |                          |              | 117        |
| SHOSHONE RIVER BASIN (WYOMING) |               |                            |          |              |                          |              |            |
| BLACKWATER                     | 9780          | 25.5                       | 5.3      | 481          | 44.3                     | 32.3         | 137        |
| EVENING STAR                   | 9200          | 19.5                       | 4.6      | 424          | 54.9                     | 37.9         | 145        |
| MARQUETTE                      | 8760          | .0                         | -M       | *            | 22.0                     | 21.2         | 104        |
| SYLVAN LAKE                    | 8420          | .2                         | .0       | *            | 45.5                     | 32.1         | 142        |
| SYLVAN ROAD                    | 7120          | .0                         | .0       | 100*         | 33.9                     | 25.8         | 131        |
| YOUNTS PEAK                    | 8350          | .0                         | .0       | 100*         | 27.8                     | 24.7         | 113        |
| Basin wide percent of average  |               |                            |          | 457*         |                          |              | 131        |
| BIGHORN RIVER BASIN (WYOMING)  |               |                            |          |              |                          |              |            |
| BALD MTN.                      | 9380          | 16.5                       | .9       | 1833*        | 38.0                     | 28.3         | 134        |
| BEAR TRAP MEADOW               | 8200          | .0                         | .0       | 100*         | 21.7                     | 17.0         | 128        |
| BLACKWATER                     | 9780          | 25.5                       | 5.3      | 481          | 44.3                     | 32.3         | 137        |
| BONE SPRINGS DIV               | 9350          | 2.0                        | .0       | *            | 33.4                     | 25.6         | 130        |
| EVENING STAR                   | 9200          | 19.5                       | 4.6      | 424          | 54.9                     | 37.9         | 145        |
| GRAVE SPRINGS                  | 8550          | .0                         | .0       | 100*         | 22.6                     | 18.7         | 121        |
| KIRWIN                         | 9550          | .0                         | .0       | 100*         | 25.3                     | 20.4         | 124        |
| MARQUETTE                      | 8760          | .0                         | -M       | *            | 22.0                     | 21.2         | 104        |
| MIDDLE POWDER                  | 7760          | .0                         | .0       | 100*         | 24.1                     | 21.8         | 111        |
| OWL CREEK                      | 8975          | .0                         | .0       | 100*         | 15.7                     | 13.5         | 116        |
| POWDER RIVER PASS              | 9480          | .0                         | .0       | 100*         | 33.0                     | 22.5         | 147        |
| SHELL CREEK                    | 9580          | 3.9                        | .0       | *            | 32.0                     | 23.9         | 134        |
| SYLVAN LAKE                    | 8420          | .2                         | .0       | *            | 45.5                     | 32.1         | 142        |
| SYLVAN ROAD                    | 7120          | .0                         | .0       | 100*         | 33.9                     | 25.8         | 131        |
| TIMBER CREEK                   | 7950          | .0                         | .0       | 100*         | 17.5                     | 16.7         | 105        |
| YOUNTS PEAK                    | 8350          | .0                         | .0       | 100*         | 27.8                     | 24.7         | 113        |
| Basin wide percent of average  |               |                            |          | 626*         |                          |              | 129        |

Archive Data From 1-OCT Through 30-SEP  
 Plotted 07/14/2011 19:59



BHR Bighorn Lake (Yellowtail), Bighorn River near Fort Smith, MT

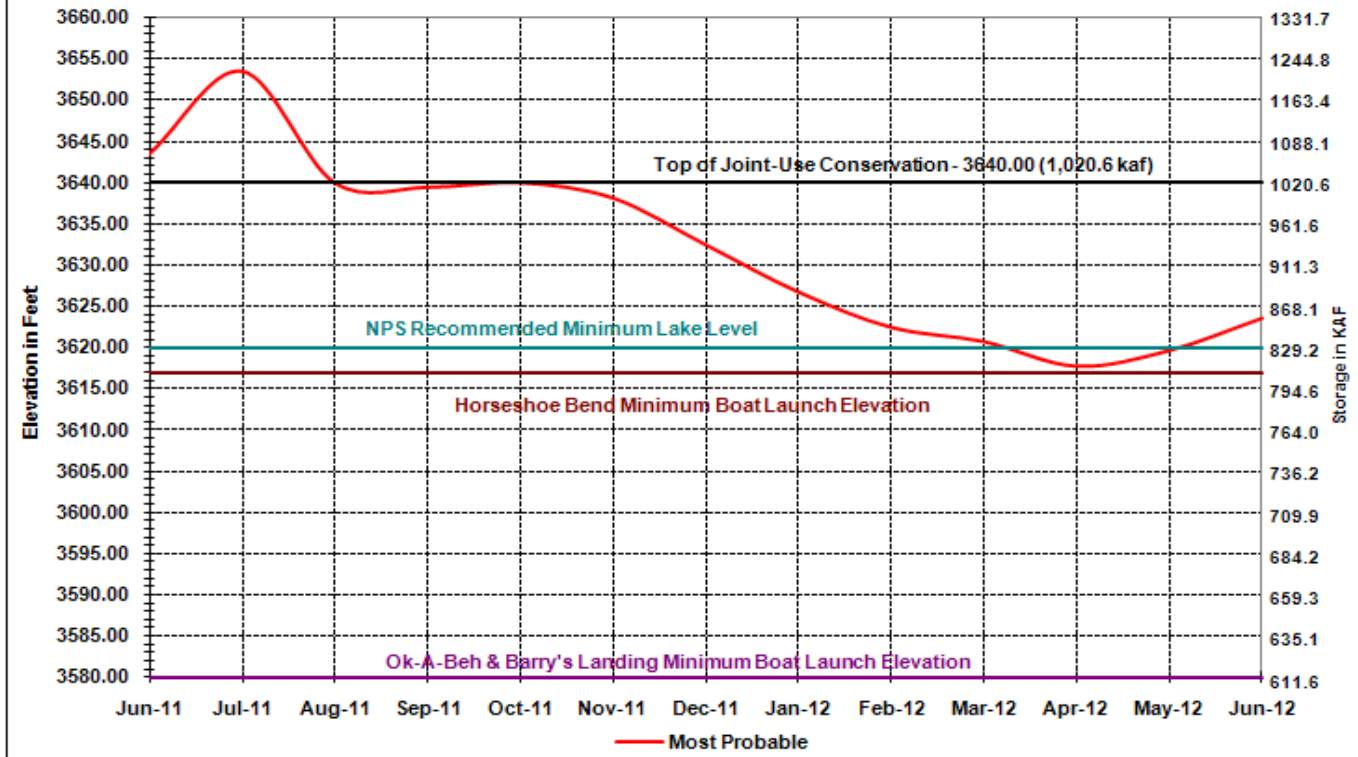
SE\_AVG Snow Water Equivalent Average (inches) 2011  
 SE Snow Water Equivalent (inches) 2011 2010 1997 1995

BIGHORN LAKE MONTHLY OPERATIONS

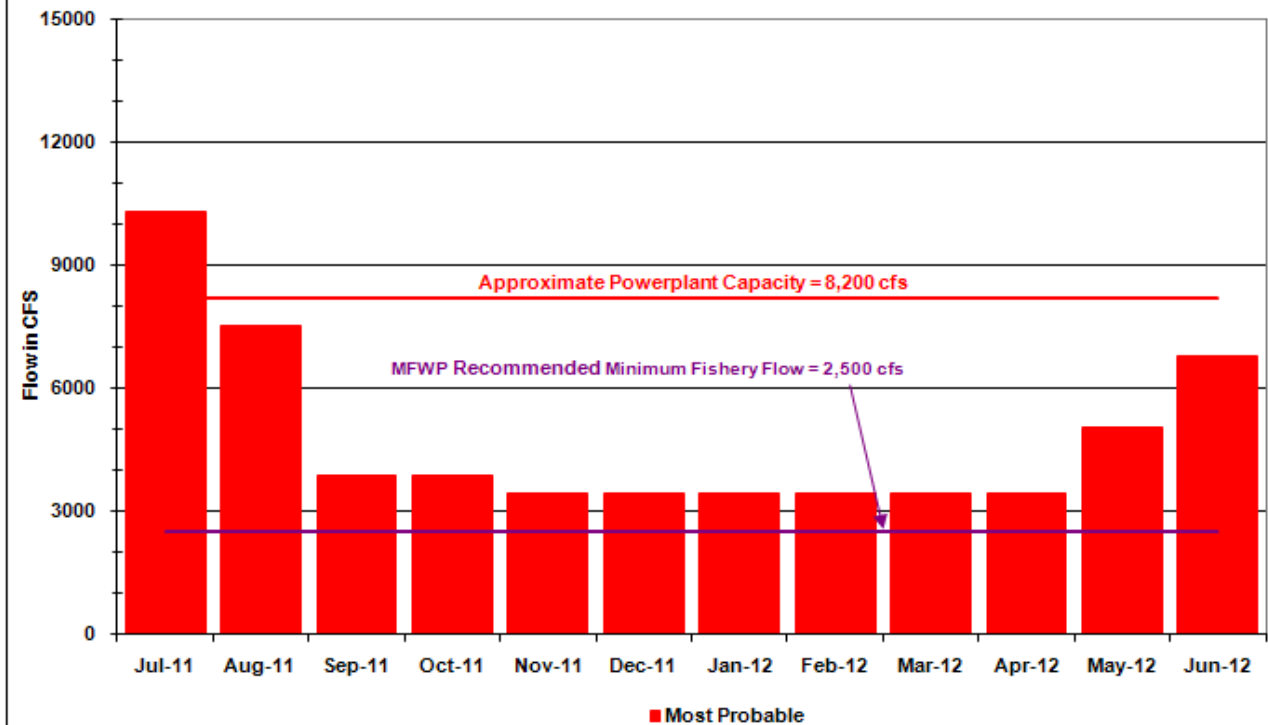
| Bighorn Reservoir    |      | Initial Cont 1066.6 kaf<br>Elev 3643.48 ft |         |         |         | Maximum Cont 1278.9 kaf<br>Elev 3657.00 ft |         |         |         | Minimum Cont 469.9 kaf<br>Elev 3547.00 ft |         |         |         | Total    |
|----------------------|------|--|---------|---------|---------|--|---------|---------|---------|---|---------|---------|---------|----------|
|                      | 2011 | Jul  | Aug     | Sep     | Oct     | Nov  | Dec     | Jan     | Feb     | Mar                                       | Apr     | May     | Jun     | Total    |
| Boysen Release       | kaf  | 288.9                                      | 125.1   | 78.2    | 61.4    | 59.5                                       | 61.4    | 61.5    | 57.5    | 61.4                                      | 68.0    | 136.3   | 132.2   | 1191.4   |
| Boysen Release       | cfs  | 4699                                       | 2035    | 1314    | 999     | 1000                                       | 999     | 1000    | 1000    | 999                                       | 1143    | 2217    | 2222    |          |
| Buffalo Bill Release | kaf  | 288.2                                      | 154.3   | 112.2   | 46.5    | 24.7                                       | 21.8    | 21.8    | 20.4    | 21.8                                      | 60.8    | 108.7   | 146.8   | 1028.0   |
| Buffalo Bill Release | cfs  | 4687                                       | 2509    | 1886    | 756     | 415  | 355     | 355     | 355     | 355                                       | 1022    | 1768    | 2467    |          |
| Station Gain         | kaf  | 232.9                                      | 5.9     | 47.4    | 135.9   | 94.5                                       | 62.3    | 72.4    | 82.2    | 111.8                                     | 51.5    | 87.3    | 174.5   | 1158.6   |
| Monthly Inflow       | kaf  | 810.0                                      | 285.3   | 237.8   | 243.8   | 178.7                                      | 145.5   | 155.7   | 160.1   | 195.0                                     | 180.3   | 332.3   | 453.5   | 3378.0   |
| Monthly Inflow       | cfs  | 13173                                      | 4640    | 3996    | 3965    | 3003                                       | 2366    | 2532    | 2783    | 3171                                      | 3030    | 5404    | 7621    |          |
| Turbine Release      | kaf  | 511.9                                      | 484.7   | 244.7   | 236.9   | 201.4                                      | 208.2   | 208.2   | 194.8   | 208.2                                     | 201.9   | 318.7   | 423.6   | 3443.2   |
| Bypass/Spill/Waste   | kaf  | 144.7                                      | 0.0     | 0.0     | 0.0     | 0.0  | 0.0     | 0.0     | 0.0     | 0.0                                       | 0.0     | 0.0     | 0.0     | 144.7    |
| Total Release        | kaf  | 656.6                                      | 484.7   | 244.7   | 236.9   | 201.4                                      | 208.2   | 208.2   | 194.8   | 208.2                                     | 201.9   | 318.7   | 423.6   | 3587.9   |
| Total Release        | cfs  | 10679                                      | 7883    | 4112    | 3853    | 3385                                       | 3386    | 3386    | 3387    | 3386                                      | 3393    | 5183    | 7119    |          |
| Spring Flow          | kaf  | 4.3  | 4.3     | 4.2     | 4.3     | 4.2  | 4.3     | 4.3     | 4.0     | 4.3                                       | 4.2     | 4.3     | 4.2     | 50.9     |
| Irrigation Reqmnt    | kaf  | 28.2                                       | 27.4    | 18.8    | 3.5     | 0.0  | 0.0     | 0.0     | 0.0     | 0.0                                       | 0.9     | 11.6    | 23.2    | 113.6    |
| Afterbay Rels        | kaf  | 660.9                                      | 489.0   | 248.9   | 241.2   | 205.6                                      | 212.5   | 212.5   | 198.8   | 212.5                                     | 206.1   | 323.0   | 427.8   | 3638.8   |
| Afterbay Rels        | cfs  | 10749                                      | 7953    | 4183    | 3923    | 3455                                       | 3456    | 3456    | 3456    | 3456                                      | 3464    | 5253    | 7189    |          |
| River Release        | kaf  | 632.7                                      | 461.6   | 230.1   | 237.7   | 205.6                                      | 212.5   | 212.5   | 198.8   | 212.5                                     | 205.2   | 311.4   | 404.6   | 3525.2   |
| River Release        | cfs  | 10290                                      | 7507    | 3867    | 3866    | 3455                                       | 3456    | 3456    | 3456    | 3456                                      | 3449    | 5064    | 6800    |          |
| Min Release          | kaf  | 153.7                                      | 153.7   | 148.8   | 153.7   | 148.8                                      | 153.7   | 153.7   | 143.8   | 153.7                                     | 148.8   | 153.7   | 148.8   | 1814.9   |
| End-Month Targets    | kaf  | 1220.0                                     | 1020.6  |         | 1020.6  |  |         |         |         | 834.8                                     |         |         |         |          |
| End-Month Content    | kaf  | 1220.0                                     | 1020.6  | 1013.7  | 1020.6  | 997.9                                      | 935.2   | 882.7   | 848.0   | 834.8                                     | 813.2   | 826.8   | 856.7   |          |
| End-Month Elevation  | ft   | 3653.51                                    | 3640.00 | 3639.45 | 3640.00 | 3638.15                                    | 3632.48 | 3626.75 | 3622.48 | 3620.75                                   | 3617.76 | 3619.67 | 3623.58 |          |
| Net Change Content   | kaf  | 153.4                                      | -199.4  | -6.9    | 6.9     | -22.7                                      | -62.7   | -52.5   | -34.7   | -13.2                                     | -21.6   | 13.6    | 29.9    | -209.9   |
| Yellowtail Power     | 2011 | Jul  | Aug     | Sep     | Oct     | Nov  | Dec     | Jan     | Feb     | Mar                                       | Apr     | May     | Jun     | Total    |
| Turbine Release      | kaf  | 511.9                                      | 484.7   | 244.7   | 236.9   | 201.4                                      | 208.2   | 208.2   | 194.8   | 208.2                                     | 201.9   | 318.7   | 423.6   | 3443.2   |
| Generation           | gwh  | 214.272                                    | 201.615 | 98.757  | 95.609  | 81.084                                     | 82.696  | 81.123  | 74.744  | 79.187                                    | 76.291  | 120.243 | 161.134 | 1366.755 |
| End-Month Power Cap  | mw   | 288.0                                      | 283.4   | 282.7   | 283.4   | 281.3                                      | 275.1   | 269.3   | 265.0   | 263.3                                     | 260.4   | 262.3   | 266.1   |          |
| % Max Gen            |      | 100  | 94      | 48      | 45      | 39   | 39      | 38      | 37      | 37  | 37      | 56      | 78      |          |
| Ave kwh/af           |      | 419  | 416     | 404     | 404     | 403  | 397     | 390     | 384     | 380                                       | 378     | 377     | 380     | 397      |
| Upstream Generation  | gwh  | 29.122                                     | 34.634  | 29.501  | 11.811  | 6.614                                      | 5.772   | 5.758   | 5.359   | 5.722                                     | 21.286  | 32.197  | 34.001  | 221.777  |
| Total Generation     | gwh  | 243.394                                    | 236.249 | 128.258 | 107.420 | 87.698                                     | 88.468  | 86.881  | 80.103  | 84.909                                    | 97.577  | 152.440 | 195.135 | 1588.532 |

# BIGHORN LAKE

## BIGHORN LAKE ELEVATION



## BIGHORN RIVER FLOW BELOW AFTERBAY



WATER YEAR 2011

# Supplemental Information

BHXAOP V1.12 Run: 19-Jul-2011 16:13  
 Based on Minimum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

| Bighorn Reservoir    |      | Initial Cont 1066.6 kaf<br>Elev 3643.48 ft |         |         |         | Maximum Cont 1278.9 kaf<br>Elev 3657.00 ft |         |         |         | Minimum Cont 469.9 kaf<br>Elev 3547.00 ft |         |         |         | Total    |
|----------------------|------|--|---------|---------|---------|--|---------|---------|---------|---|---------|---------|---------|----------|
|                      | 2011 | Jul  | Aug     | Sep     | Oct     | Nov  | Dec     | Jan     | Feb     | Mar                                       | Apr     | May     | Jun     |          |
| Boysen Release       | kaf  | 226.4                                      | 111.4   | 59.5    | 61.5    | 59.5                                       | 61.5    | 61.5    | 57.5    | 61.5                                      | 56.6    | 67.6    | 72.3    | 956.8    |
| Boysen Release       | cfs  | 3682                                       | 1812    | 1000    | 1000    | 1000                                       | 1000    | 1000    | 1000    | 1000                                      | 951     | 1099    | 1215    |          |
| Buffalo Bill Release | kaf  | 238.2                                      | 141.9   | 111.6   | 44.7    | 23.6                                       | 21.8    | 21.8    | 20.4    | 21.8                                      | 31.7    | 101.2   | 90.8    | 869.5    |
| Buffalo Bill Release | cfs  | 3874                                       | 2308    | 1876    | 727     | 397  | 355     | 355     | 355     | 355                                       | 533     | 1646    | 1526    |          |
| Station Gain         | kaf  | 215.0                                      | 5.2     | 42.7    | 96.3    | 88.9                                       | 58.6    | 68.2    | 77.4    | 105.3                                     | 43.8    | 74.2    | 148.3   | 1023.9   |
| Monthly Inflow       | kaf  | 679.6                                      | 258.5   | 213.8   | 202.5   | 172.0                                      | 141.9   | 151.5   | 155.3   | 188.6                                     | 132.1   | 243.0   | 311.4   | 2850.2   |
| Monthly Inflow       | cfs  | 11053                                      | 4204    | 3593    | 3293    | 2891                                       | 2308    | 2464    | 2700    | 3067                                      | 2220    | 3952    | 5233    |          |
| Turbine Release      | kaf  | 513.3                                      | 437.9   | 212.6   | 203.7   | 196.4                                      | 202.9   | 203.0   | 189.9   | 202.9                                     | 145.5   | 199.3   | 289.5   | 2996.9   |
| Bypass/Spill/Waste   | kaf  | 32.9                                       | 0.0     | 0.0     | 0.0     | 0.0  | 0.0     | 0.0     | 0.0     | 0.0                                       | 0.0     | 0.0     | 0.0     | 32.9     |
| Total Release        | kaf  | 546.2                                      | 437.9   | 212.6   | 203.7   | 196.4                                      | 202.9   | 203.0   | 189.9   | 202.9                                     | 145.5   | 199.3   | 289.5   | 3029.8   |
| Total Release        | cfs  | 8883                                       | 7122    | 3573    | 3313    | 3301                                       | 3300    | 3301    | 3301    | 3300                                      | 2445    | 3241    | 4865    |          |
| Spring Flow          | kaf  | 4.3  | 4.3     | 4.2     | 4.3     | 4.2  | 4.3     | 4.3     | 4.0     | 4.3                                       | 4.2     | 4.3     | 4.2     | 50.9     |
| Irrigation Reqmnt    | kaf  | 28.2                                       | 27.4    | 18.8    | 3.5     | 0.0  | 0.0     | 0.0     | 0.0     | 0.0                                       | 0.9     | 11.6    | 23.2    | 113.6    |
| Afterbay Rels        | kaf  | 550.5                                      | 442.2   | 216.8   | 208.0   | 200.6                                      | 207.2   | 207.3   | 193.9   | 207.2                                     | 149.7   | 203.6   | 293.7   | 3080.7   |
| Afterbay Rels        | cfs  | 8953                                       | 7192    | 3643    | 3383    | 3371                                       | 3370    | 3371    | 3371    | 3370                                      | 2516    | 3311    | 4936    |          |
| River Release        | kaf  | 522.3                                      | 414.8   | 198.0   | 204.5   | 200.6                                      | 207.2   | 207.3   | 193.9   | 207.2                                     | 148.8   | 192.0   | 270.5   | 2967.1   |
| River Release        | cfs  | 8494                                       | 6746    | 3328    | 3326    | 3371                                       | 3370    | 3371    | 3371    | 3370                                      | 2501    | 3123    | 4546    |          |
| Min Release          | kaf  | 153.7                                      | 153.7   | 148.8   | 153.7   | 119.0                                      | 123.0   | 123.0   | 115.0   | 123.0                                     | 148.8   | 153.7   | 148.8   | 1664.2   |
| End-Month Targets    | kaf  | 1200.0                                     | 1020.6  |         | 1020.6  |  |         |         |         | 834.8                                     |         |         |         |          |
| End-Month Content    | kaf  | 1200.0                                     | 1020.6  | 1021.8  | 1020.6  | 996.2                                      | 935.2   | 883.7   | 849.1   | 834.8                                     | 821.4   | 865.1   | 887.0   |          |
| End-Month Elevation  | ft   | 3652.29                                    | 3640.00 | 3640.10 | 3640.00 | 3638.01                                    | 3632.48 | 3626.87 | 3622.62 | 3620.75                                   | 3618.92 | 3624.63 | 3627.25 |          |
| Net Change Content   | kaf  | 133.4                                      | -179.4  | 1.2     | -1.2    | -24.4                                      | -61.0   | -51.5   | -34.6   | -14.3                                     | -13.4   | 43.7    | 21.9    | -179.6   |
| Yellowtail Power     | 2011 | Jul  | Aug     | Sep     | Oct     | Nov  | Dec     | Jan     | Feb     | Mar                                       | Apr     | May     | Jun     | Total    |
| Turbine Release      | kaf  | 513.3                                      | 437.9   | 212.6   | 203.7   | 196.4                                      | 202.9   | 203.0   | 189.9   | 202.9                                     | 145.5   | 199.3   | 289.5   | 2996.9   |
| Generation           | gwh  | 214.272                                    | 181.638 | 85.909  | 82.312  | 79.050                                     | 80.569  | 79.110  | 72.891  | 77.187                                    | 55.065  | 75.855  | 111.508 | 1195.366 |
| End-Month Power Cap  | mw   | 288.0                                      | 283.4   | 283.5   | 283.4   | 281.2                                      | 275.1   | 269.4   | 265.2   | 263.3                                     | 261.5   | 267.2   | 269.8   |          |
| % Max Gen            |      | 100  | 85      | 41      | 38      | 38   | 38      | 37      | 36      | 36  | 27      | 35      | 54      |          |
| Ave kwh/af           |      | 417  | 415     | 404     | 404     | 402  | 397     | 390     | 384     | 380                                       | 378     | 381     | 385     | 399      |
| Upstream Generation  | gwh  | 29.156                                     | 33.380  | 27.833  | 11.168  | 6.299                                      | 5.768   | 5.745   | 5.341   | 5.700                                     | 12.142  | 25.247  | 25.948  | 193.727  |
| Total Generation     | gwh  | 243.428                                    | 215.018 | 113.742 | 93.480  | 85.349                                     | 86.337  | 84.855  | 78.232  | 82.887                                    | 67.207  | 101.102 | 137.456 | 1389.093 |



BHXAOP V1.12 Run: 19-Jul-2011 16:17  
 Based on Maximum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

| Bighorn Reservoir    | Initial Cont 1066.6 kaf<br>Elev 3643.48 ft |         |         |         |         | Maximum Cont 1278.9 kaf<br>Elev 3657.00 ft |         |         |         | Minimum Cont 469.9 kaf<br>Elev 3547.00 ft |         |         |         | Total    |
|----------------------|--|---------|---------|---------|---------|--|---------|---------|---------|---|---------|---------|---------|----------|
|                      | 2011                                       | Jul     | Aug     | Sep     | Oct     | Nov  | Dec     | Jan     | Feb     | Mar                                       | Apr     | May     | Jun     |          |
| Boysen Release       | kaf  | 294.7   | 158.5   | 118.7   | 61.4    | 59.4                                       | 61.4    | 61.5    | 57.5    | 61.4                                      | 109.0   | 230.6   | 282.5   | 1556.6   |
| Boysen Release       | cfs  | 4793    | 2578    | 1995    | 999     | 998  | 999     | 1000    | 1000    | 999                                       | 1832    | 3750    | 4748    |          |
| Buffalo Bill Release | kaf  | 338.2   | 153.2   | 126.2   | 48.4    | 26.0                                       | 21.8    | 21.8    | 20.4    | 21.8                                      | 89.9    | 195.2   | 256.8   | 1319.7   |
| Buffalo Bill Release | cfs  | 5500    | 2492    | 2121    | 787     | 437  | 355     | 355     | 355     | 355                                       | 1511    | 3175    | 4316    |          |
| Station Gain         | kaf  | 279.5   | 23.4    | 52.1    | 159.2   | 101.2                                      | 66.7    | 77.6    | 88.1    | 119.9                                     | 71.6    | 108.2   | 218.9   | 1366.4   |
| Monthly Inflow       | kaf  | 912.4   | 335.1   | 297.0   | 269.0   | 186.6                                      | 149.9   | 160.9   | 166.0   | 203.1                                     | 270.5   | 534.0   | 758.2   | 4242.7   |
| Monthly Inflow       | cfs  | 14839   | 5450    | 4991    | 4375    | 3136                                       | 2438    | 2617    | 2886    | 3303                                      | 4546    | 8685    | 12742   |          |
| Turbine Release      | kaf  | 511.2   | 514.4   | 297.0   | 269.0   | 207.7                                      | 214.6   | 214.6   | 200.8   | 214.6                                     | 366.4   | 507.6   | 498.8   | 4016.7   |
| Bypass/Spill/Waste   | kaf  | 237.8   | 30.1    | 0.0     | 0.0     | 0.0  | 0.0     | 0.0     | 0.0     | 0.0                                       | 0.0     | 22.4    | 103.4   | 393.7    |
| Total Release        | kaf  | 749.0   | 544.5   | 297.0   | 269.0   | 207.7                                      | 214.6   | 214.6   | 200.8   | 214.6                                     | 366.4   | 530.0   | 602.2   | 4410.4   |
| Total Release        | cfs  | 12181   | 8855    | 4991    | 4375    | 3491                                       | 3490    | 3490    | 3491    | 3490                                      | 6158    | 8620    | 10120   |          |
| Spring Flow          | kaf  | 4.3     | 4.3     | 4.2     | 4.3     | 4.2  | 4.3     | 4.3     | 4.0     | 4.3                                       | 4.2     | 4.3     | 4.2     | 50.9     |
| Irrigation Reqmnt    | kaf  | 28.2    | 27.4    | 18.8    | 3.5     | 0.0  | 0.0     | 0.0     | 0.0     | 0.0                                       | 0.9     | 11.6    | 23.2    | 113.6    |
| Afterbay Rels        | kaf  | 753.3   | 548.8   | 301.2   | 273.3   | 211.9                                      | 218.9   | 218.9   | 204.8   | 218.9                                     | 370.6   | 534.3   | 606.4   | 4461.3   |
| Afterbay Rels        | cfs  | 12251   | 8925    | 5062    | 4445    | 3561                                       | 3560    | 3560    | 3560    | 3560                                      | 6228    | 8690    | 10191   |          |
| River Release        | kaf  | 725.1   | 521.4   | 282.4   | 269.8   | 211.9                                      | 218.9   | 218.9   | 204.8   | 218.9                                     | 369.7   | 522.7   | 583.2   | 4347.7   |
| River Release        | cfs  | 11793   | 8480    | 4746    | 4388    | 3561                                       | 3560    | 3560    | 3560    | 3560                                      | 6213    | 8501    | 9801    |          |
| Min Release          | kaf  | 153.7   | 153.7   | 148.8   | 153.7   | 148.8                                      | 153.7   | 153.7   | 136.3   | 151.0                                     | 148.8   | 153.7   | 148.8   | 1804.7   |
| End-Month Targets    | kaf  | 1230.0  | 1020.6  | 1020.6  | 1020.6  |  |         |         |         | 834.8                                     |         |         |         |          |
| End-Month Content    | kaf  | 1230.0  | 1020.6  | 1020.6  | 1020.6  | 999.5                                      | 934.8   | 881.1   | 846.3   | 834.8                                     | 738.9   | 742.9   | 898.9   |          |
| End-Month Elevation  | ft   | 3654.12 | 3640.00 | 3640.00 | 3640.00 | 3638.29                                    | 3632.44 | 3626.56 | 3622.26 | 3620.75                                   | 3605.50 | 3606.24 | 3628.62 |          |
| Net Change Content   | kaf  | 163.4   | -209.4  | 0.0     | 0.0     | -21.1                                      | -64.7   | -53.7   | -34.8   | -11.5                                     | -95.9   | 4.0     | 156.0   | -167.7   |
| Yellowtail Power     | 2011                                       | Jul     | Aug     | Sep     | Oct     | Nov  | Dec     | Jan     | Feb     | Mar                                       | Apr     | May     | Jun     | Total    |
| Turbine Release      | kaf  | 511.2   | 514.4   | 297.0   | 269.0   | 207.7                                      | 214.6   | 214.6   | 200.8   | 214.6                                     | 366.4   | 507.6   | 498.8   | 4016.7   |
| Generation           | gwh  | 214.272 | 214.272 | 119.991 | 108.679 | 83.641                                     | 85.255  | 83.588  | 77.000  | 81.596                                    | 136.468 | 185.552 | 188.261 | 1578.575 |
| End-Month Power Cap  | mw   | 288.0   | 283.4   | 283.4   | 283.4   | 281.5                                      | 275.1   | 269.1   | 264.8   | 263.3                                     | 249.1   | 249.7   | 271.2   |          |
| % Max Gen            |  | 100     | 100     | 58      | 51      | 40   | 40      | 39      | 38      | 38  | 66      | 87      | 91      |          |
| Ave kwh/af           |  | 419     | 417     | 404     | 404     | 403  | 397     | 390     | 383     | 380                                       | 372     | 366     | 377     | 393      |
| Upstream Generation  | gwh  | 29.145  | 35.302  | 32.961  | 12.328  | 6.981                                      | 5.769   | 5.765   | 5.369   | 5.740                                     | 27.794  | 33.525  | 33.862  | 234.541  |
| Total Generation     | gwh  | 243.417 | 249.574 | 152.952 | 121.007 | 90.622                                     | 91.024  | 89.353  | 82.369  | 87.336                                    | 164.262 | 219.077 | 222.123 | 1813.116 |