Peak Flow Forecast Briefing
March 2016

11 am March 10, 2016

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Colorado Basin River Forecast Center
National Weather Service
NOAA

Conference Phone #: 877-929-0660 Passcode #: 1706374
* Please mute your phone until you have a question-Thank You *
Today’s Presentation

• Peak Flow Information
• Mar 9th Snow Conditions
• Peak Flow Forecasts
• Spring Weather Impacts
• Upcoming Weather
What is a Peak Flow Forecast?

• Maximum Mean Daily Flow due to snowmelt
  • April-July period

• Probabilistic Forecasts
  • Exceedance Probabilities = 10%, 25%, 50%, 75%, 90%

• Regulated Flow (Downstream Points)
  • Accounts for reservoirs/diversions
  • Scheduled operations (if known), or assumptions based on past ops.

• Long range outlooks of peak magnitude for several locations

• Do not provide a specific date of the peak forecast
  • May only have a 5-10 day lead time for timing the peak
  • Prior to that we provide the average time period of the peak
Instantaneous Peak Flow Forecasts

- Relationship between max daily flow and instantaneous peak
- Only available for locations with good correlations & historical data
- Sites with frequent heavy rain have poor relationships
Where do I find peak flow flow forecasts?

Map indicates probability of reaching flood flow

Green = Low probability
Red = High probability

www.cbrfc.noaa.gov
Peak Flood Probability – Instantaneous Peak

Forecast Date: 2016-03-01

- Mean Daily
- Instantaneous

- No Forecast
- No Flood Stage
- <10%
- >10-25%
- >25-50%
- >50%
| ID  | River  | Location     | Flood Flow | PI  | Issue Date | Mean Daily 90 | Mean Daily 75 | Mean Daily 50 | Mean Daily 25 | Mean Daily 10 | Historic Peak | Hist Peak Date | Average Peak | Normal Earliest Date | Normal Latest Date | Last Year Peak | Last Year Date |
|-----|--------|--------------|------------|-----|------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------|--------------|-----------------|------------------|---------------|---------------|
| 1   | WBRW4  | Green        | 6100       | 3   | 2016-03-01 | 1300          | 1600          | 2000          | 2200          | 2400          | 2600          | 2800          | 3000         | 3200          | 3400           | 3600           | 3800          | 4000          |
| 2   | BPNW4  | New Fork     | 5840       | 3   | 2016-03-01 | 1800          | 2000          | 3000          | 3300          | 4000          | 4300          | 4600          | 5000         | 5400          | 5800           | 6200           | 6600          | 7000          |
| 3   | LABW4  | Green        | 4448       | 3   | 2016-03-01 | 3500          | 4200          | 5000          | 6000          | 7000          | 7700          | 8400          | 9100         | 9800          | 10600          | 11400          | 12200         | 13000         |
| 4   | GRRW4  | Green River  | 11296      | 3   | 2016-03-01 | 1000          | 1500          | 3000          | 5000          | 7000          | 9000          | 11000         | 13000        | 15000         | 17000          | 19000         | 21000         | 23000         |
| 5   | HMFW4  | Hams Fork    | 1793       | 3   | 2016-03-01 | 250           | 300           | 450           | 700           | 950           | 1200          | 1500          | 1800         | 2100          | 2400           | 2700           | 3000          | 3300          |
| 6   | BNRU1  | Blacks Fork  | 2620       | 3   | 2016-03-01 | 200           | 300           | 400           | 500           | 700           | 900           | 1200          | 1500         | 1800          | 2100           | 2400           | 2700          | 3000          |
| 7   | HFMW4  | Henrys Fork  | 2328       | 3   | 2016-03-01 | 600           | 750           | 950           | 1200          | 1500          | NA            | NA            | NA           | NA            | NA             | NA             | NA            | NA            |
| 8   | STM2C  | Yampa        | 5630       | 3   | 2016-03-01 | 2000          | 2200          | 2700          | 3500          | 4500          | 5800          | 6300         | 7000         | 7300          | 7600           | 7900          | 8200          | 8500          |
| 9   | ENMC2  | Elk          | 5718       | 3   | 2016-03-01 | 2000          | 2500          | 3000          | 3600          | 5000          | 7000          | 9000         | 11000        | 13000        | 15000         | 17000         | 19000        | 21000        |
| 10  | YBLC2  | Maybell      | 21241      | 3   | 2016-03-01 | 5000          | 6000          | 7000          | 9000          | 11000         | 13000         | 15000        | 17000        | 19000        | 21000         | 23000         | 25000        | 27000        |
| 11  | LILC2  | Lily         | 597        | 3   | 2016-03-01 | 1800          | 2000          | 3000          | 4000          | 5000          | 6000          | 7000         | 8000         | 9000         | 10000         | 11000         | 12000        | 13000        |
| 12  | YDC2   | Deenfode Park| 21685      | 3   | 2016-03-01 | 6500          | 8500          | 10000         | 11500         | 13500         | 15500         | 16500        | 17500        | 18500        | 19500         | 20500         | 21500        | 22500        |
| 13  | WRMC2  | White        | 5997       | 3   | 2016-03-01 | 1900          | 2200          | 2400          | 2900          | 3600          | 4300          | 5000         | 5700         | 6400          | 7100           | 7800          | 8500          | 9200          |
Peak Flow Graphic

JESU1 Peak Flow Forecasts

Mean Daily Plot  Instantaneous Plot  Forecasts  Observations  Help
Plot Options (on/off): Record Year Data  Yearly Peaks  Flood Flow

2016 Mean Daily Peak Flow Forecast
Green - Jensen- Nr (JESU1)

Max Year

Min Year

[Graph showing flow data with labeled max and min years]

These graphics are updated approximately every two weeks between 3/1 and 5/1
Plot Created 2016-03-03 12:20:33
CBRFC / NWS / NOAA
Select to plot all historical peaks.
Today’s Presentation

- Peak Flow Information
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Snow Conditions: CBRFC Hydro Model

Modeled Major Contributing Areas
March 9 2016
Green River Basin

Green River – LaBarge

Forecast: 5800 CFS
Average: 8000 CFS
Flood: 11500 CFS
Last Year: 7630 CFS

Forecasts are 50% Exceedance

Green River – Green River, WY

Forecast: 3000 CFS
Average: 5790 CFS
Flood: 11300 CFS
Last Year: 7450 CFS

Forecasts are 50% Exceedance
Yampa River Basin

**Yampa River - Steamboat Springs**

- **Forecast:** 2700 CFS
- **Average:** 3070 CFS
- **Flood:** 5930 CFS
- **Last Year:** 3320 CFS

Forecasts are 50% Exceedance

**Yampa River - Deerlodge**

- **Forecast:** 10000 CFS
- **Average:** 13500 CFS
- **Flood:** 20700 CFS
- **Last Year:** 10100 CFS

Forecasts are 50% Exceedance
Upper Colorado River Basin

**Eagle River - Gypsum**

- **Forecast:** 2700 CFS
- **Average:** 3600 CFS
- **Flood:** 6500 CFS
- **Last Year:** 4870 CFS

**Colorado River - Cameo**

- **Forecast:** 12200 CFS
- **Average:** 17000 CFS
- **Flood:** 26000 CFS
- **Last Year:** 21200 CFS

Forecasts are 50% Exceedance
Gunnison River Basin

East River - Almont

Forecast: 1300 CFS  
Average: 2000 CFS  
Flood: 3170 CFS  
Last Year: 2410 CFS

NF Gunnison - Somerset

Forecast: 2800 CFS  
Average: 3120 CFS  
Flood: 13100 CFS  
Last Year: 3130 CFS

Forecasts are 50% Exceedance
San Juan River Basin

Animas River - Durango

Forecast: 3700 CFS
Average: 4710 CFS
Flood: 10200 CFS
Last Year: 6210 CFS

San Juan River - Bluff

Forecast: 8500 CFS
Average: 7340 CFS
Flood: 33800 CFS
Last Year: 8120 CFS

Forecasts are 50% Exceedance
Great Basin

**Weber River - Oakley**

- **Forecast:** 1250 CFS
- **Average:** 1645 CFS
- **Flood:** 2510 CFS
- **Last Year:** 978 CFS

**Logan River - Logan**

- **Forecast:** 710 CFS
- **Average:** 950 CFS
- **Flood:** 1370 CFS
- **Last Year:** 545 CFS

Forecasts are 50% Exceedance
Great Basin

**Little Cottonwood - SLC**

- **Forecast:** 310 CFS
- **Average:** 455 CFS
- **Flood:** 800 CFS
- **Last Year:** 205 CFS

Forecasts are 50% Exceedance

**Provo River - Woodland**

- **Forecast:** 1350 CFS
- **Average:** 1795 CFS
- **Flood:** 3100 CFS
- **Last Year:** 1110 CFS

Forecasts are 50% Exceedance
Peak Flow Forecast Summary

• Below or near average peak flows expected across the Colorado River and eastern Great Basins

• No locations are currently forecast to exceed flood level at any forecast probability

• Forecast procedures do not exist for all locations

• Not a forecast of peak timing
• See daily forecast hydrographs as peak nears
  • Peak flow list may indicate:
    “Peaking Soon” or “Peak has Already Occurred”
Today’s Presentation

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- Spring Weather Impacts
- Upcoming Weather
Impacts of Spring Weather

Yampa River Basin

2012: 5360 CFS
2015: 10,100 CFS
Impacts of Spring Weather

Yampa River Basin

May 2012
Dry and Warm
Peak Flow = 5360 CFS (40%)

May 2015
Wet and Cold
Peak Flow: 10100 CFS (100%)
Impacts of Spring Weather

Animas – Durango March 1 2015 Forecast

<table>
<thead>
<tr>
<th>Probability (%)</th>
<th>Flow (cfs)</th>
</tr>
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<tbody>
<tr>
<td>90%</td>
<td>2200</td>
</tr>
<tr>
<td>75%</td>
<td>2700</td>
</tr>
<tr>
<td>50%</td>
<td>3200</td>
</tr>
<tr>
<td>25%</td>
<td>3700</td>
</tr>
<tr>
<td>10%</td>
<td>4100</td>
</tr>
</tbody>
</table>

Normal Peak Period 5/20 – 6/8

Colorado Basin River Forecast Center
ANIMAS - DURANGO - Hydrograph

2015 Peak: 6210
6/12/2015
A range of possibilities

Trace Ensemble for ANIMAS - DURANGO
Forecast Period: 2016-03-09 - 2016-08-01 Simulation date: 2016-03-09

1984: 4700 CFS
1989: 2195 CFS
A range of possibilities
A range of possibilities
A range of possibilities

1984: 4700 CFS

1989: 2195 CFS
Upcoming Weather

6-10 day outlook
March 15 - March 19 2016
Upcoming Weather

8-16 day outlook
March 17 - March 23 2016
Long range outlook: Climate Prediction Center

CPC outlook for March - May 2016
Up Next

- Peak Flow updates twice a month (next week)
- Another peak flow webinar if conditions change significantly
- April - Colorado River Basin water supply briefing
  - April 7th at 11 am MDT ([www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov))
- April - Great Basin water supply briefing
  - April 7th at 1 pm MDT ([www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov))

These slides are available at: [www.cbrfc.noaa.gov/present/present2016.cgi](http://www.cbrfc.noaa.gov/present/present2016.cgi)