CBRFC
March 2014
Water Supply Webinar

March 6, 2014

Greg Smith

These slides: www.cbrfc.noaa.gov/present/present.php
February Water Supply Webinar

- Soil Moisture
- February weather
- Current snow conditions
- Water supply forecasts
- Why is spring (Mar-Apr) so pivotal?
- Upcoming weather
Well above Upper Colorado and well below Great Basin

How will this affect water supply forecasts?

Positive effect on the upper Colorado

Negative affect on the Great Basin and Lower Colorado
February 2014 Upper Air Pattern

Progressive weather pattern developed

Strong zonal (west to east) upper air flow pattern

Very moist and mild air transported into the Western U.S.
Very moist and mild air transported into the Western U.S. – “atmospheric river”

Significant precipitation in the Green River Basin of Wyoming and northern Bear River Basin
February 2014

Very moist air of a tropical origin
February 2014 Precipitation Observed

10-14 inches
Water Year Precipitation

Oct-Jan Precipitation
% of Average

Oct-Feb Precipitation
% of Average
Oct-Feb Precipitation Areas Above 7500 Feet
Snow

February 5th Snow

March 5th Snow
SNOW - Green River Basin (above Fontenelle)
SNOW - Historical Ranking – March 5th

Colorado Basin River Forecast Center
CPMC2 - COPPER MOUNTAIN

Percent Median To Date: 157% (17.9 / 11.4)
Percent Seasonal Median: 115% (17.9 / 15.6)
Accumulation rate 0.1 in/day average for last 3 days.

Colorado Basin River Forecast Center
PCKU1 - PINE CREEK

Percent Median To Date: 68% (10.7 / 15.7)
Percent Seasonal Median: 47% (10.7 / 22.9)
Accumulation rate 0.1 in/day average for last 3 days.
Basin Snow Groups:

**Colorado Basin River Forecast Center**

**Duchesne River Group**

- Percent Median To Date: 91% (11.0 / 12.1)
- Percent Seasonal Median: 74% (11.0 / 14.8)
- Accumulation rate: 0.0 in/day averaged over last 3 days

**Colorado Basin River Forecast Center**

**Bear River Drainage Group**

- Percent Median To Date: 113% (16.8 / 14.8)
- Percent Seasonal Median: 96% (16.8 / 17.5)
- Accumulation rate: 0.2 in/day averaged over last 3 days

**Colorado Basin River Forecast Center**

**Weber River Drainage Group**

- Percent Median To Date: 109% (18.7 / 17.1)
- Percent Seasonal Median: 91% (18.7 / 20.4)
- Accumulation rate: 0.2 in/day averaged over last 3 days

**Colorado Basin River Forecast Center**

**virgin Group**

- Percent Median To Date: 41% (3.7 / 8.0)
- Percent Seasonal Median: 35% (3.7 / 10.7)
- Net rate: 0.1 in/day averaged over last 3 days
March 1st Water Supply Forecasts
Apr-Jul Volumes / % Average

Lake Powell: 8300 KAF / 116%

Flaming Gorge: 1430 KAF / 146%

Navajo Res: 630 KAF / 86%

Blue Mesa: 850 KAF / 126%

Yampa-Deerlodge: 1600 KAF / 129%

Colorado-Cameo: 2950 KAF / 125%

McPhee Res: 280 KAF / 95%

Weber-Oakley: 99 KAF / 84%

Virgin-Virgin: 21 KAF / 36%
March 1\textsuperscript{st} Water Supply Forecasts
Mar-May Volumes / % Median

Little Colorado-Lyman:
1.1 KAF / 19%

Verde-Horseshoe:
49 KAF / 46%

Salt - Roosevelt:
66 KAF / 28%

Gila-Gila:
14.8 KAF / 44%
Water Supply Forecast Trend
Change in the forecast % of average between Feb 1\textsuperscript{st} and Mar 1\textsuperscript{st}
Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov) Select: Water Supply  Click: Point of Interest

Colorado - Lake Powell- Glen Cyn Dam- At (GLDA3) Apr-Jul 2014 Runoff Forecast
2014-03-01 Official 50% Forecast: 8300kaf (116% of average)

Mar 1st Official Forecast

- 10%
- 30%
- 50%
- 70%
- 90%

Plot Created 2014-03-05 13:01:28, Latest ESP Run from 2014-03-05, NOAA / NWS / CBRFC

Today's 50% ESP forecast changed -0.5 % from yesterday and 3.8 % from March 1

Forecasts in the observed period include observed values.
Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov Select: Water Supply  Click: Point of Interest

Green - Fontenelle Res - Fontenelle Nr (GBRW4) Apr-Jul 2014 Runoff Forecast
2014-03-01 Official 50% Forecast: 1210 kaf (167% of average)

555 KAF Increase
Feb1st – Mar 1st

Plot Created 2014-03-05 13:00:13, Lastest ESP Run from 2014-03-05, NOAA / NWS / CBRFC
Today's 50% ESP forecast changed -0.9 % from yesterday and -9.1 % from March 1
Forecasts in the observed period include observed values.
Daily Ensemble Streamflow Prediction (ESP) Model Run & Official Forecast

Available at: www.cbrfc.noaa.gov  Select: Water Supply  Click: Point of Interest

Weber - Oakley- Nr (OAWU1) Apr-Jul 2014 Runoff Forecast
2014-03-01 Official 50% Forecast: 99kaf (84% of average)
The Impact of Spring Weather

<table>
<thead>
<tr>
<th>Location</th>
<th>Average</th>
<th>2006</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mar</td>
<td>Apr</td>
<td>Mar</td>
</tr>
<tr>
<td>USJ: Upper San Juan</td>
<td>6.1</td>
<td>4.3 (10.4)</td>
<td>10.2</td>
</tr>
<tr>
<td>WCS: Wolf Creek Summit</td>
<td>5.6</td>
<td>4.5 (10.1)</td>
<td>10.5</td>
</tr>
</tbody>
</table>

PSP: San Juan Pagosa Springs

Mar-Apr 2006 ~ 155 % of average
Mar-Apr 2008 ~ 30 % of average
San Juan Pagosa Springs: Official Forecast 182 KAF / 85% of average
San Juan Pagosa Springs: Official Forecast 182 KAF / 85% of average

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Forecast</th>
<th>Chance of Exceeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>237 KAF</td>
<td>16%</td>
</tr>
<tr>
<td>Climatology</td>
<td>188 KAF</td>
<td>50%</td>
</tr>
<tr>
<td>2008</td>
<td>136 KAF</td>
<td>94%</td>
</tr>
</tbody>
</table>
San Juan - Pagosa Springs (PSPC2) Apr-Jul 2014 Runoff Forecast
2014-03-01 Official 50% Forecast: 182kaf (85% of average)

Today's 50% ESP forecast changed -1.6% from yesterday and -8% from March 1
Forecasts in the observed period include observed values.
Future Weather: Progressive Weather Pattern into mid March

(1) Storm system moving through now through Saturday
(2) Another Storm System early next week

Impacting northern areas
Precipitation Forecast: Now through Saturday Morning

0.5 to 1.0 inches

1-2 inches

0.5 – 1.0 Inches
Spring Temperature Outlook
Climate Prediction Center

March 2014

March-May 2014

www.cpc.ncep.noaa.gov
Summary

• **Soil Moisture Impacts**
  – Positive in much of the Upper Colorado
  – Negative in the Great Basin / Lower Colorado

• **Snow**
  – Significant Green Basin (Wyoming), Yampa, Colorado-abv Cameo, Gunnison above Blue Mesa, parts of Bear River Basin

• **Forecasts**
  – Much Above average Yampa, Colorado above Cameo, Gunnison
  – Improved in the Weber, Provo, Six Creeks, Bear
  – Below average San Juan, concern about dry spring weather
  – Below average Sevier, Virgin, and Lower Colorado Basins

• **Weather: Still active into mid March**
  – Periods of showers and warm/dry but precip favors northern areas (central Utah / Gunnison Basin North)
  – Hint of an El Nino developing late summer or fall
2014 Forecast Webinar Schedule

* March 11 at 11 am MDT – Peak Flow (new)
April 7 at 1pm MDT
May 6 at 1pm MDT
June 5 at 1pm MDT

Registration available:
Please contact us with any specific questions

- Key Water Supply Contacts:
  - Michelle Stokes (Hydrologist in Charge)
  - Brenda Alcorn (Upper Colorado)
  - Ashley Nielson (Green + Yampa / White)
  - Greg Smith (San Juan + Gunnison + Dolores)
  - Paul Miller (Great Basin – Bear, Weber, Provo, Six-Creeks/Jordan)
  - Tracy Cox (Lower Colorado + Virgin + Sevier)

Good Luck Kevin Werner
Western Region Climate Services Director
National Climatic Data Center (NESDIS)