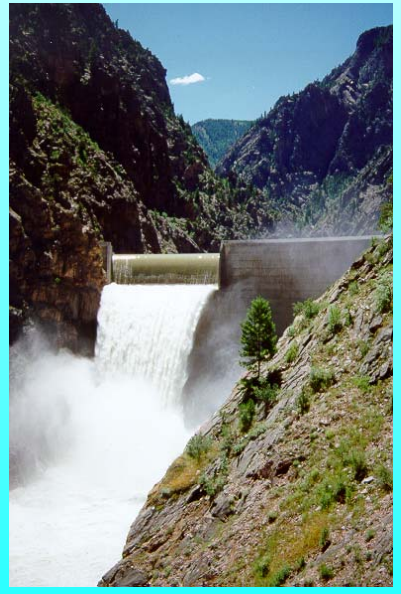
Aspinall Operations Meeting

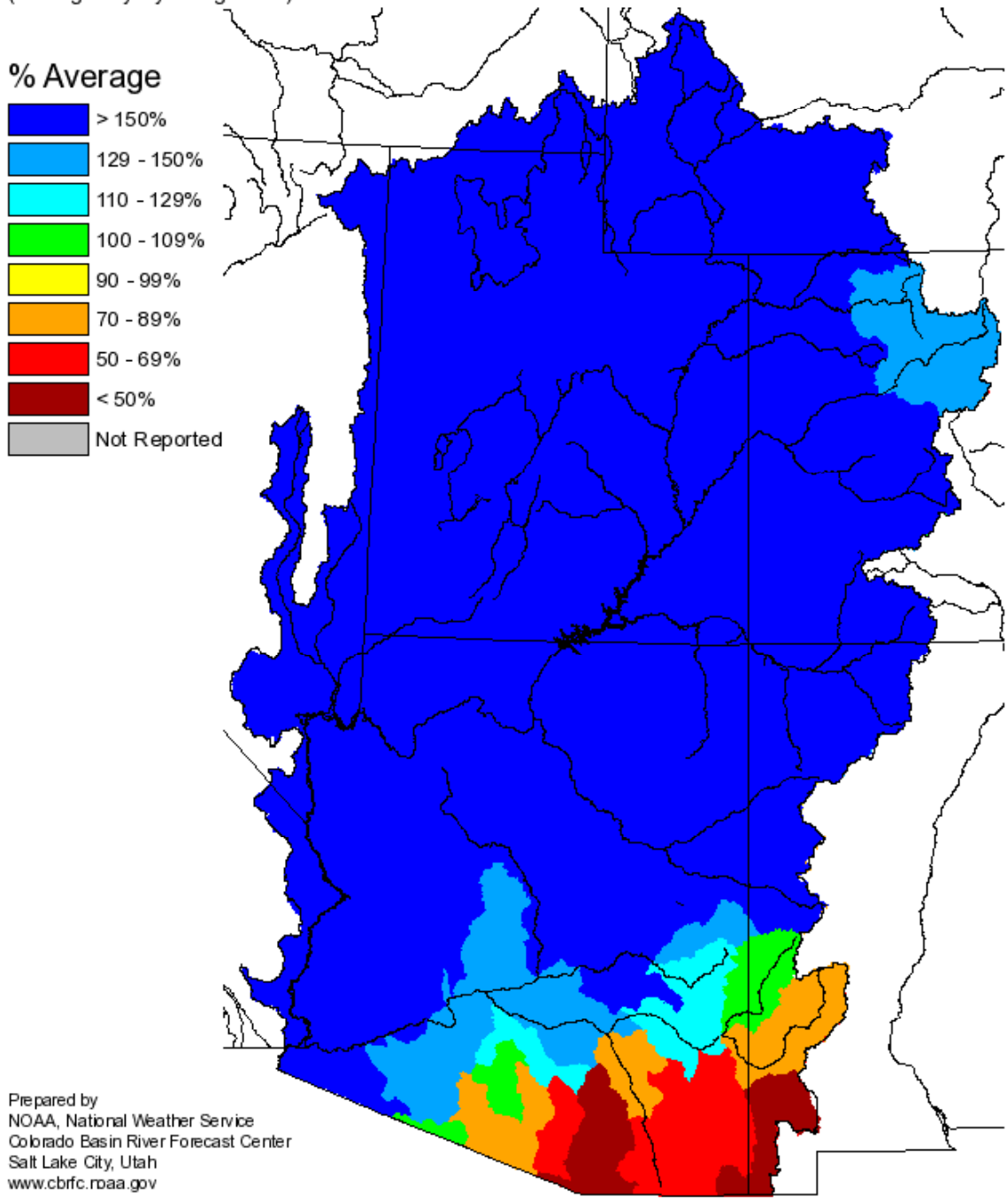
April 21, 2011



PAST OPERATIONS

Monthly Precipitation for December 2010

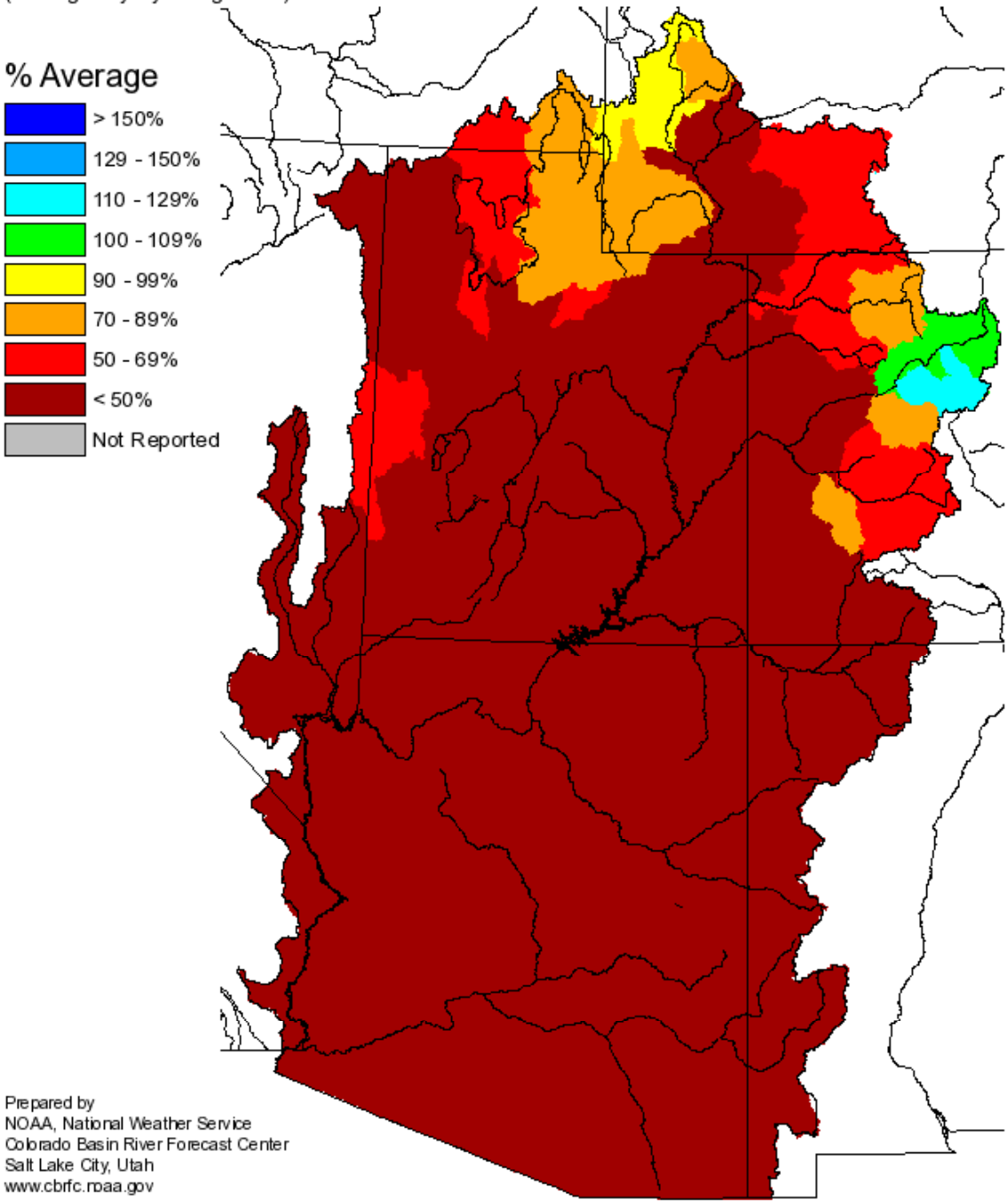
(Averaged by Hydrologic Unit)



Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

Monthly Precipitation for January 2011

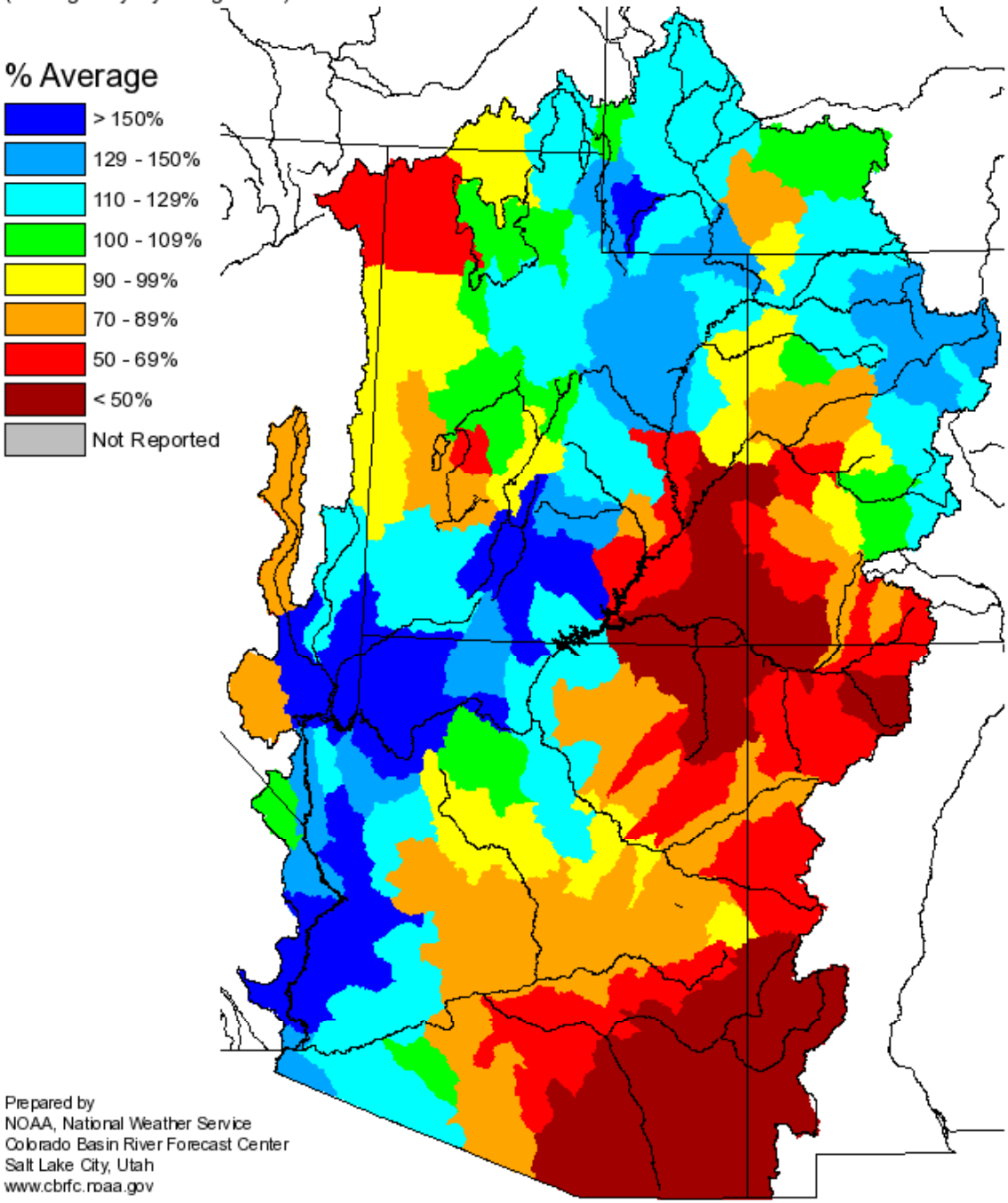
(Averaged by Hydrologic Unit)



Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

Monthly Precipitation for February 2011

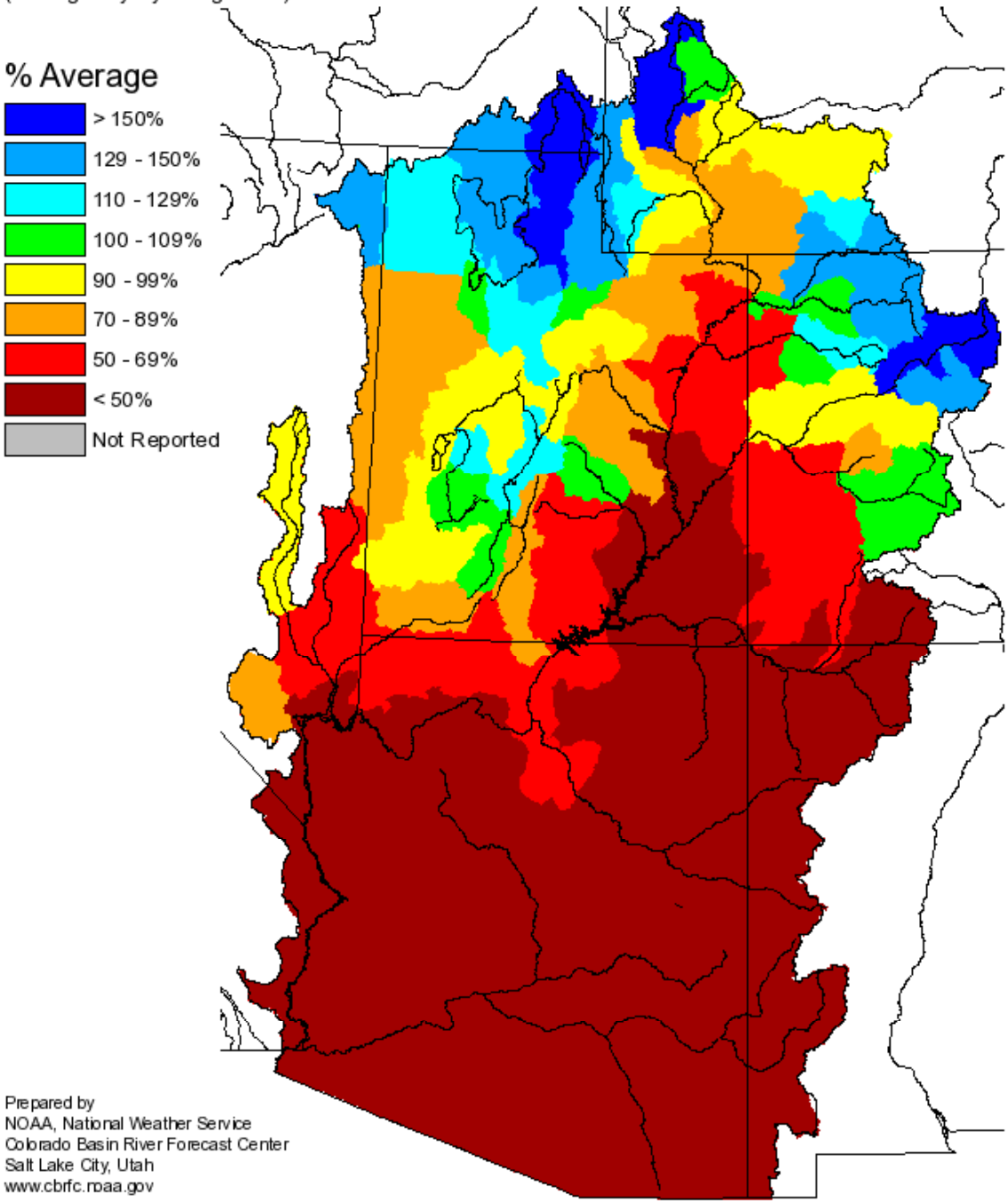
(Averaged by Hydrologic Unit)



Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

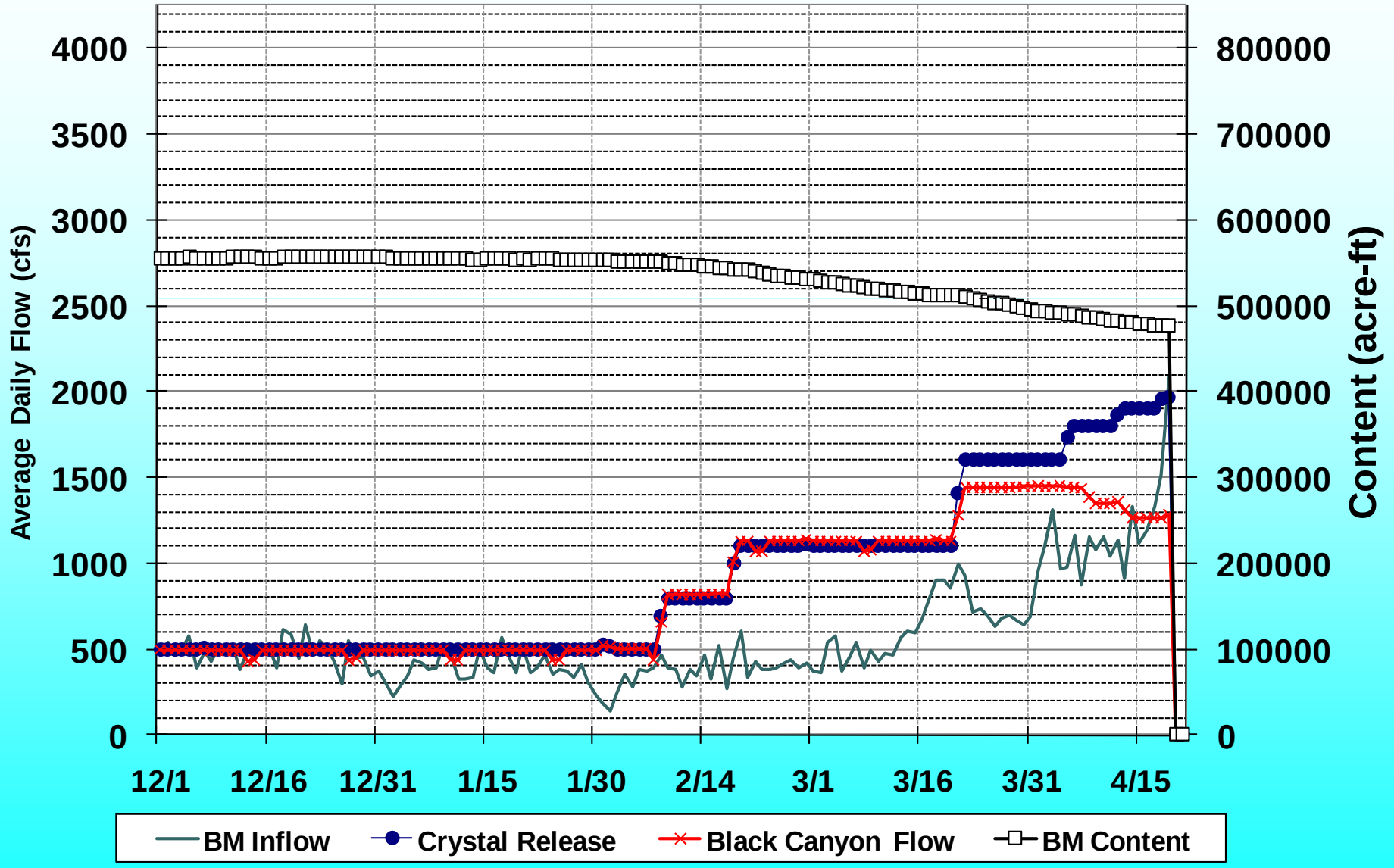
Monthly Precipitation for March 2011

(Averaged by Hydrologic Unit)



Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

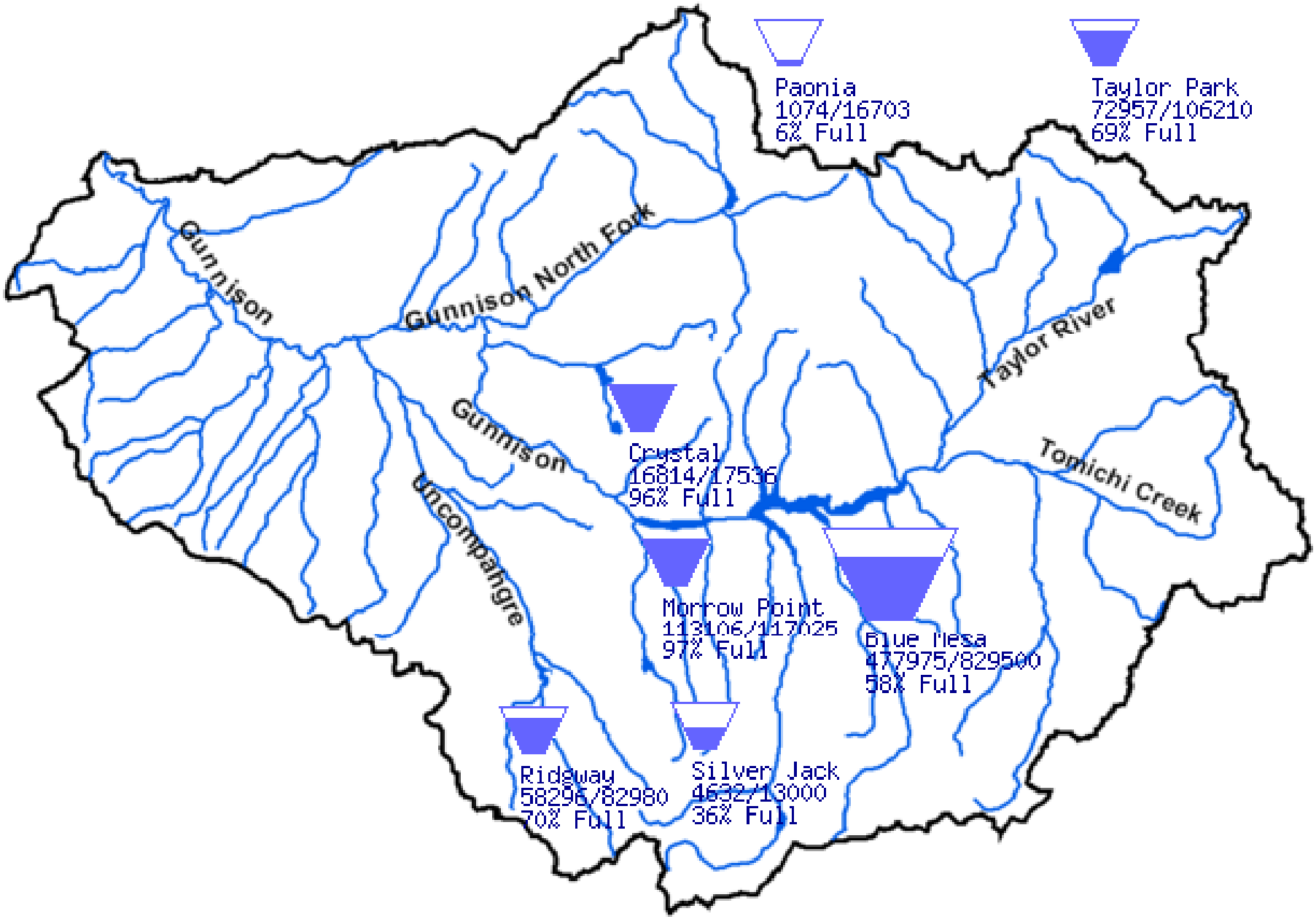
December 2010 - April 2011

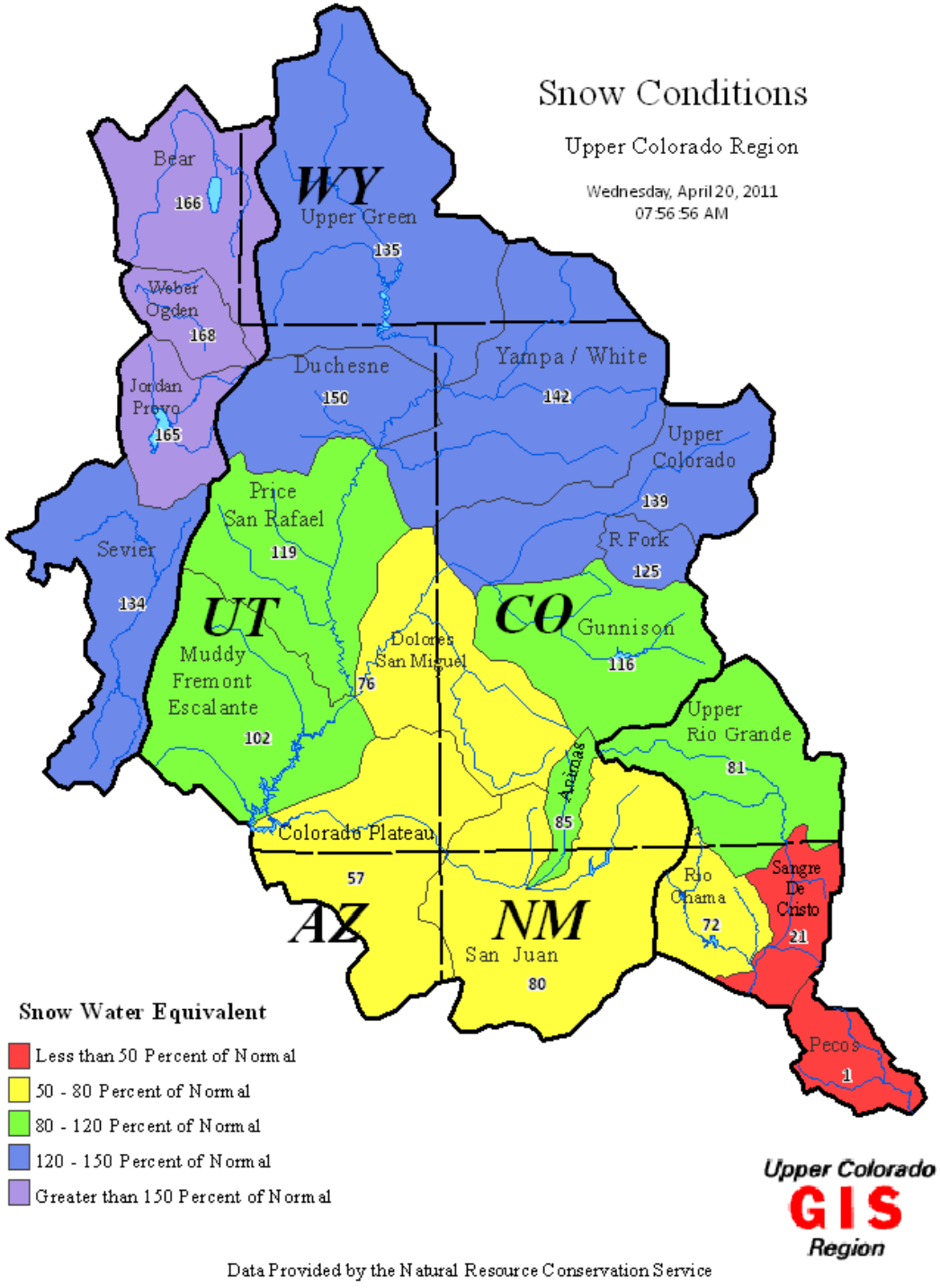


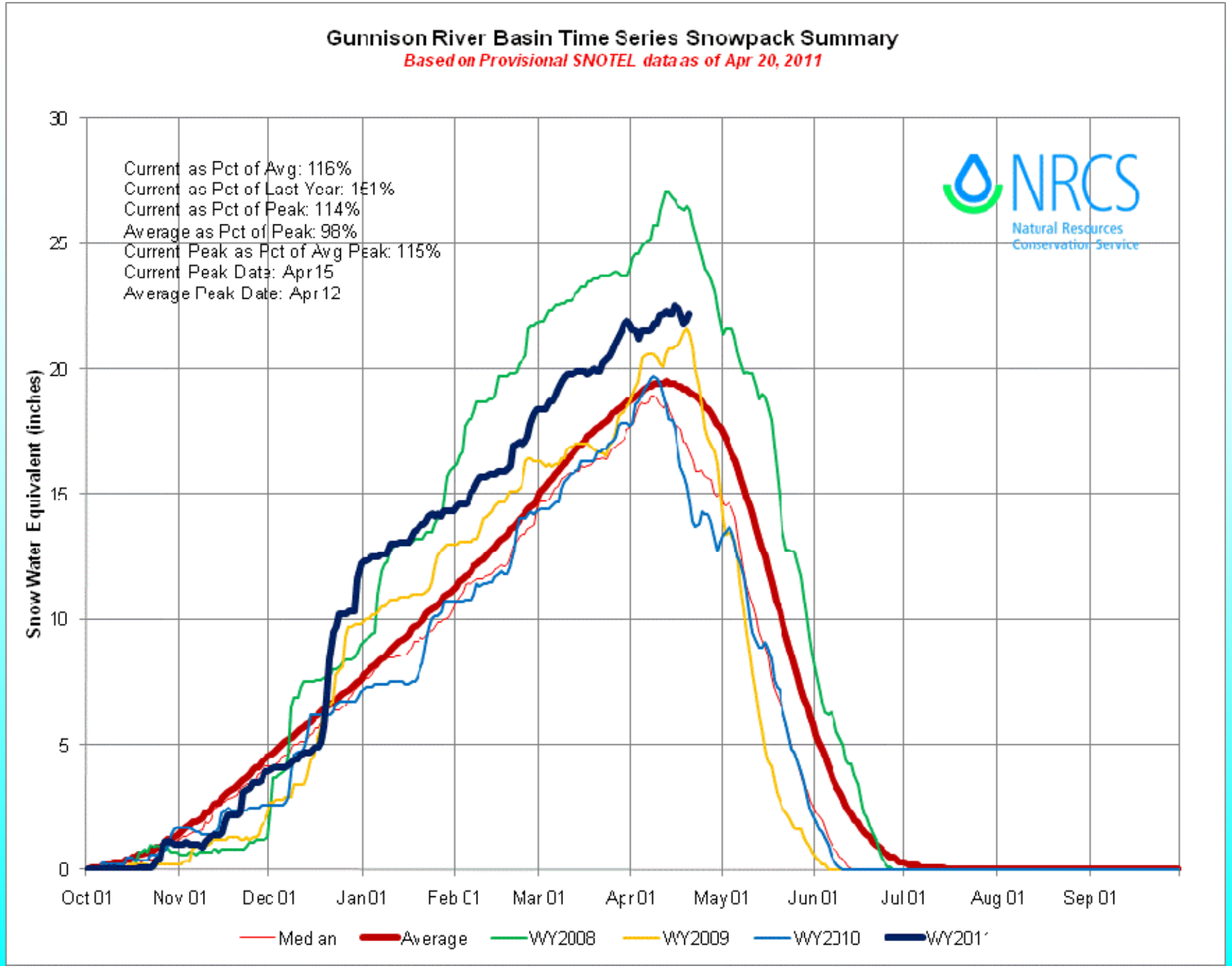
CURRENT CONDITIONS

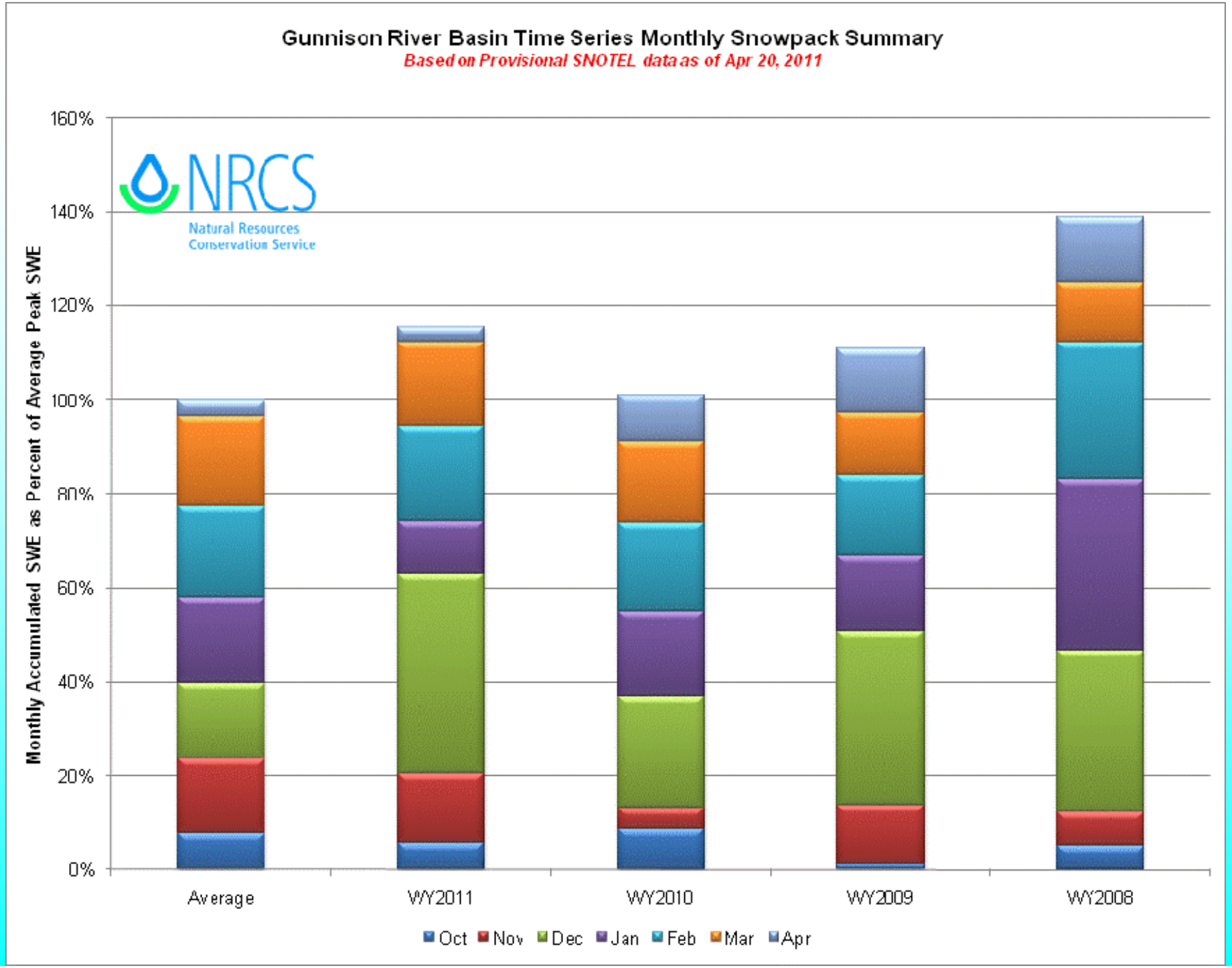
Data Current as of:
04/19/2011

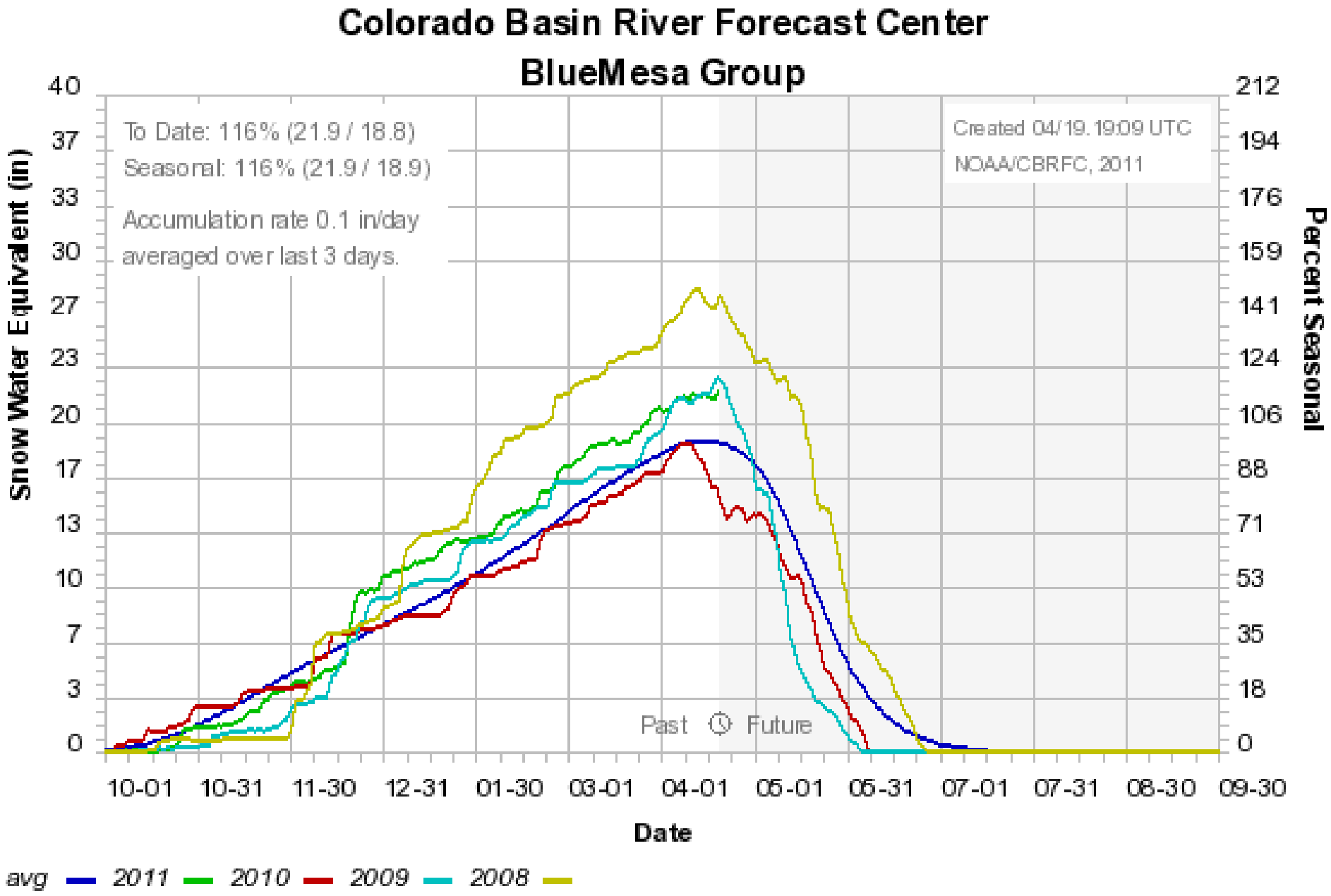
Gunnison River Basin, CO

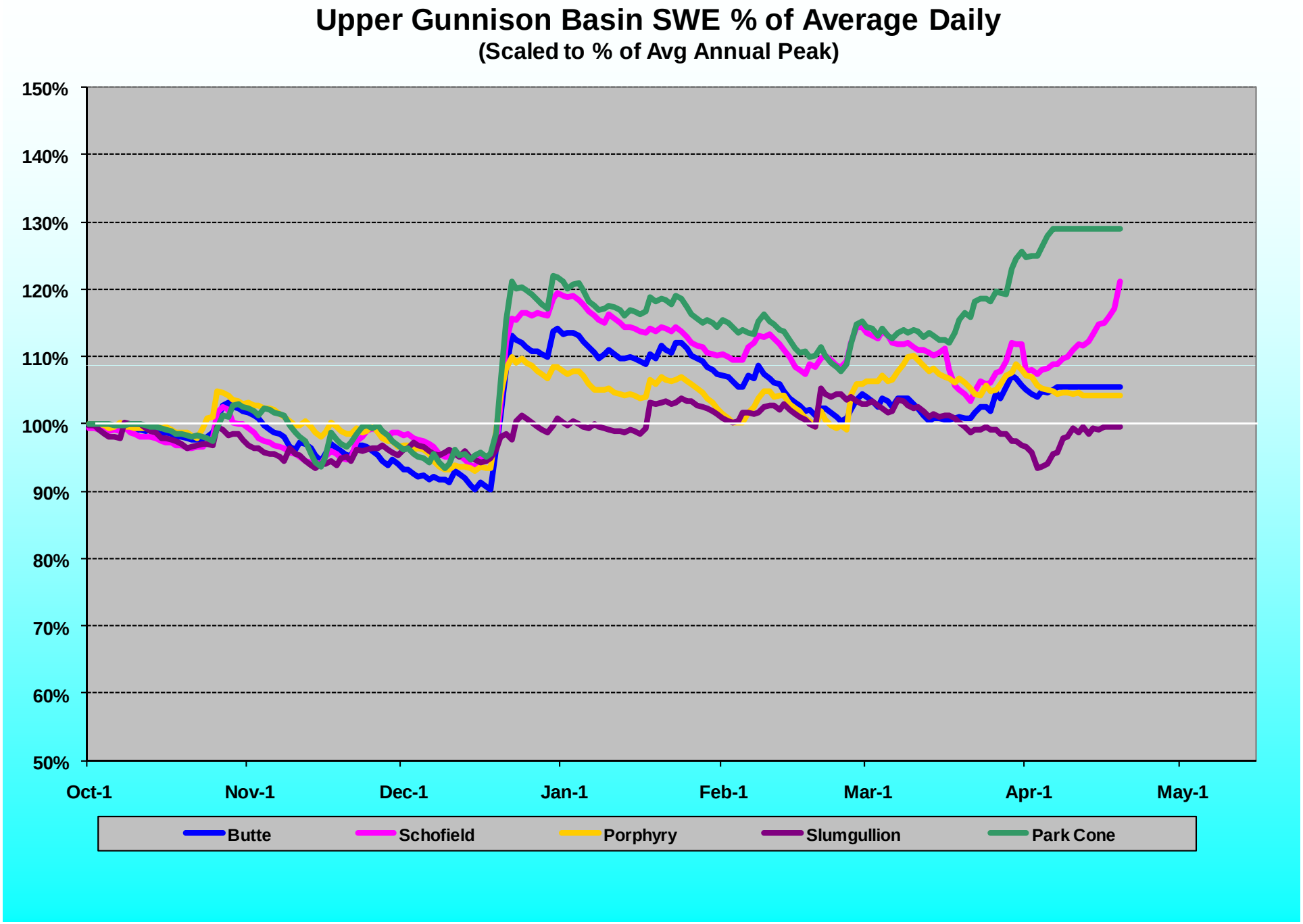


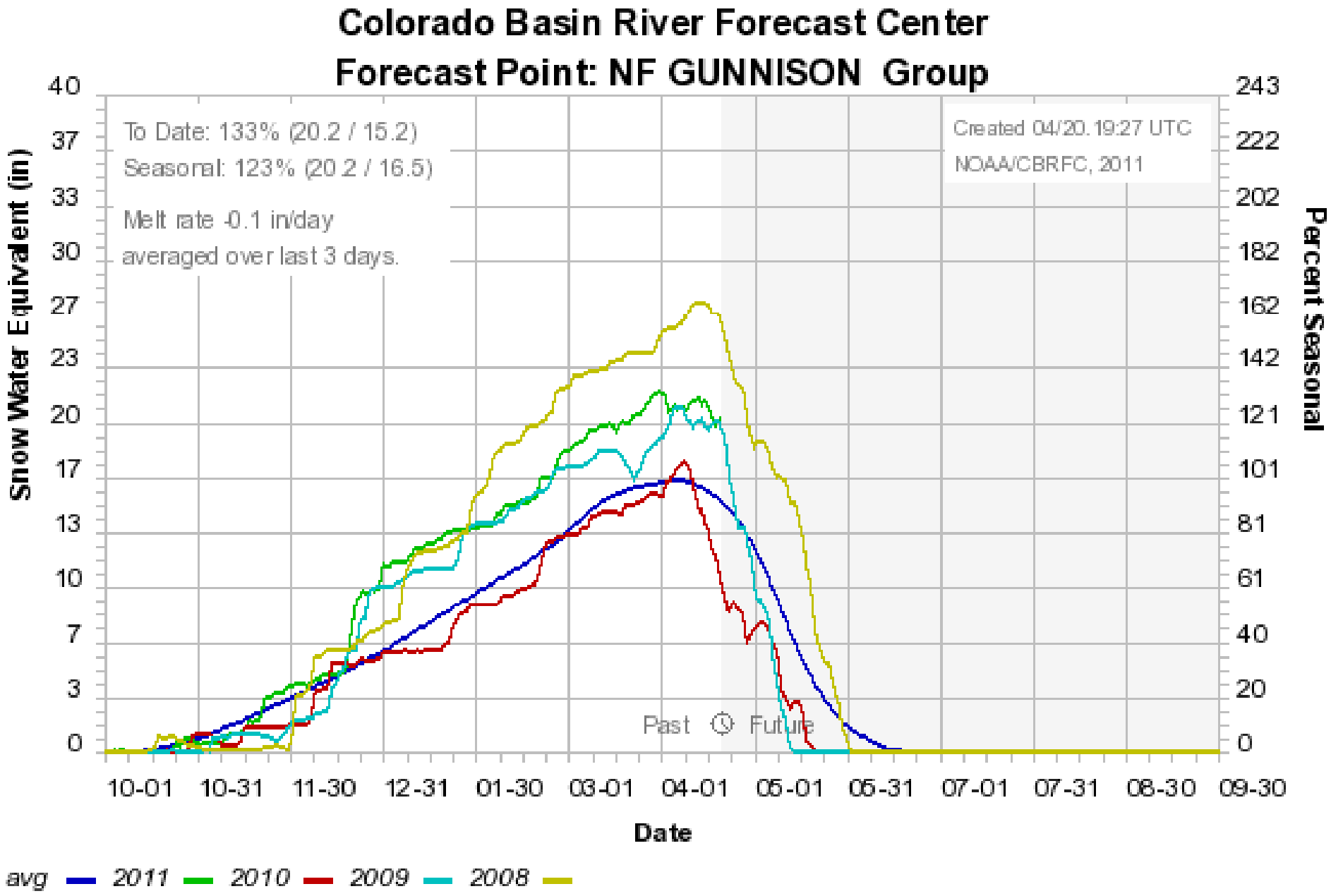

Snow Conditions
Upper Colorado Region
Wednesday, April 20, 2011
07:56:56 AM
WY
Upper Green
135
Bear
166
Weber
Ogden
168
Jordan
Provo
165
Duchesne
150
Yampa / White
142
Upper
Colorado
139
R Fork
125
Price
San Rafael
119
Sevier
134
UT
Muddy
Fremont
Escalante
102
Dolores
San Miguel
76
CO
Gunnison
116
Upper
Rio Grande
81
Animas
85
Colorado Plateau
57
AZ
NM
San Juan
80
Rio
Chama
72
Sangre
De
Cristo
21
Pecos
1
Snow Water Equivalent
Less than 50 Percent of Normal
50 - 80 Percent of Normal
80 - 120 Percent of Normal
120 - 150 Percent of Normal
Greater than 150 Percent of Normal
Upper Colorado
GIS
Region
Data Provided by the Natural Resource Conservation Service


Gunnison River Basin Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Apr 20, 2011
Current as Pct of Avg: 116%
Current as Pct of Last Year: 161%
Current as Pct of Peak: 114%
Average as Pct of Peak: 98%
Current Peak as Pct of Avg Peak: 115%
Current Peak Date: Apr 15
Average Peak Date: Apr 12
NRCS
Natural Resources Conservation Service
Snow Water Equivalent (inches)
30
25
20
15
10
5
0
Oct 01
Nov 01
Dec 01
Jan 01
Feb 01
Mar 01
Apr 01
May 01
Jun 01
Jul 01
Aug 01
Sep 01
Median
Average
WY2008
WY2009
WY2010
WY2011

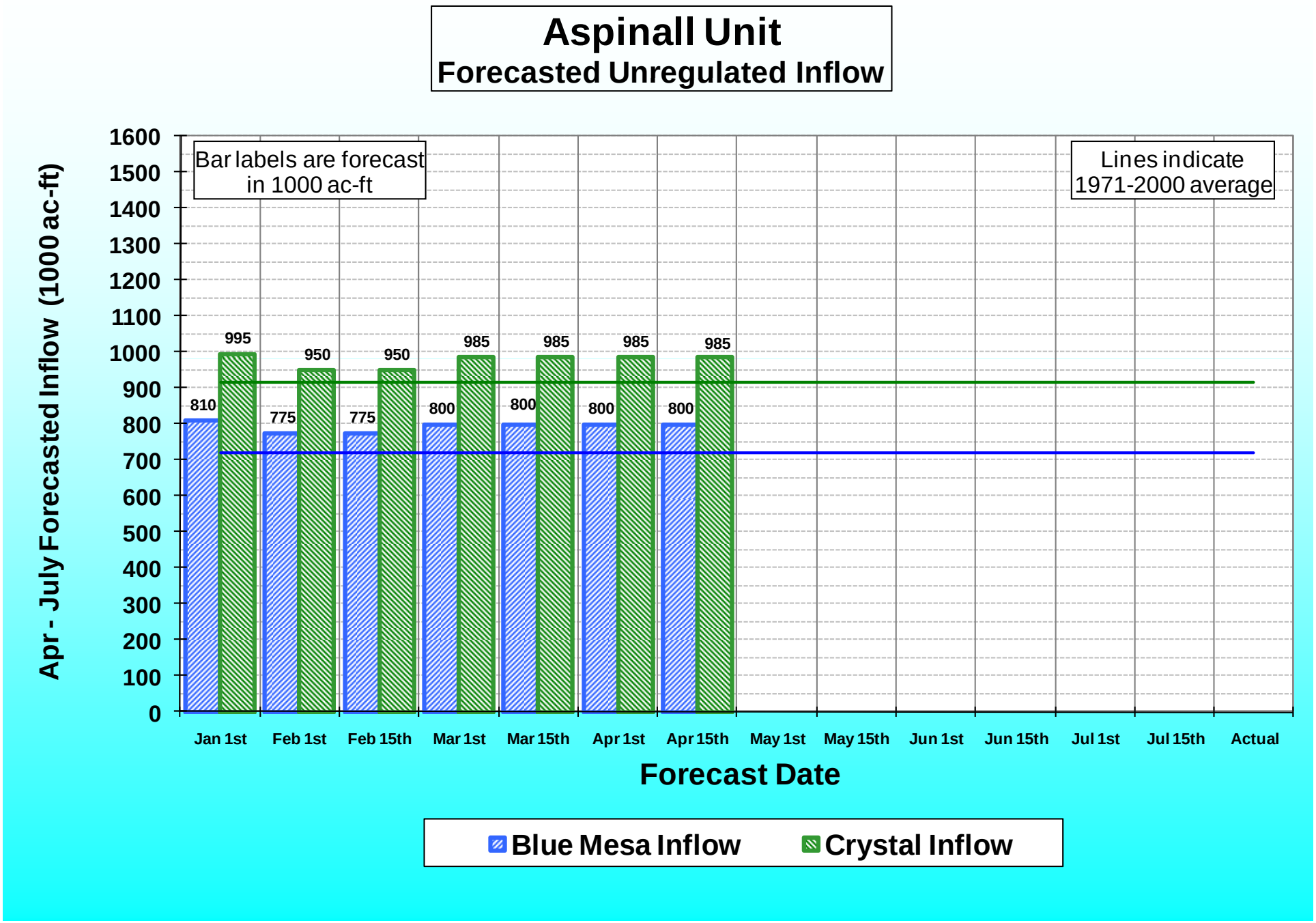

Gunnison River Basin Time Series Monthly Snowpack Summary
Based on Provisional SNOTEL data as of Apr 20, 2011
NRCS
Natural Resources
Conservation Service
Monthly Accumulated SWE as Percent of Average Peak SWE
160%
140%
120%
100%
80%
60%
40%
20%
0%
Average
WY2011
WY2010
WY2009
WY2008
Oct
Nov
Dec
Jan
Feb
Mar
Apr


Colorado Basin River Forecast Center
BlueMesa Group
To Date: 116% (21.9 / 18.8)
Seasonal: 116% (21.9 / 18.9)
Accumulation rate 0.1 in/day
averaged over last 3 days.
Created 04/19.19:09 UTC
NOAA/CBRFC, 2011
Past
Future
Snow Water Equivalent (in)
Percent Seasonal
Date
40
37
33
30
27
23
20
17
13
10
7
3
0
212
194
176
159
141
124
106
88
71
53
35
18
0
10-01
10-31
11-30
12-31
01-30
03-01
04-01
05-01
05-31
07-01
07-31
08-30
09-30
avg
2011
2010
2009
2008


Upper Gunnison Basin SWE % of Average Daily
(Scaled to % of Avg Annual Peak)
150%
140%
130%
120%
110%
100%
90%
80%
70%
60%
50%
Oct-1
Nov-1
Dec-1
Jan-1
Feb-1
Mar-1
Apr-1
May-1
Butte
Schofield
Porphyry
Slumgullion
Park Cone

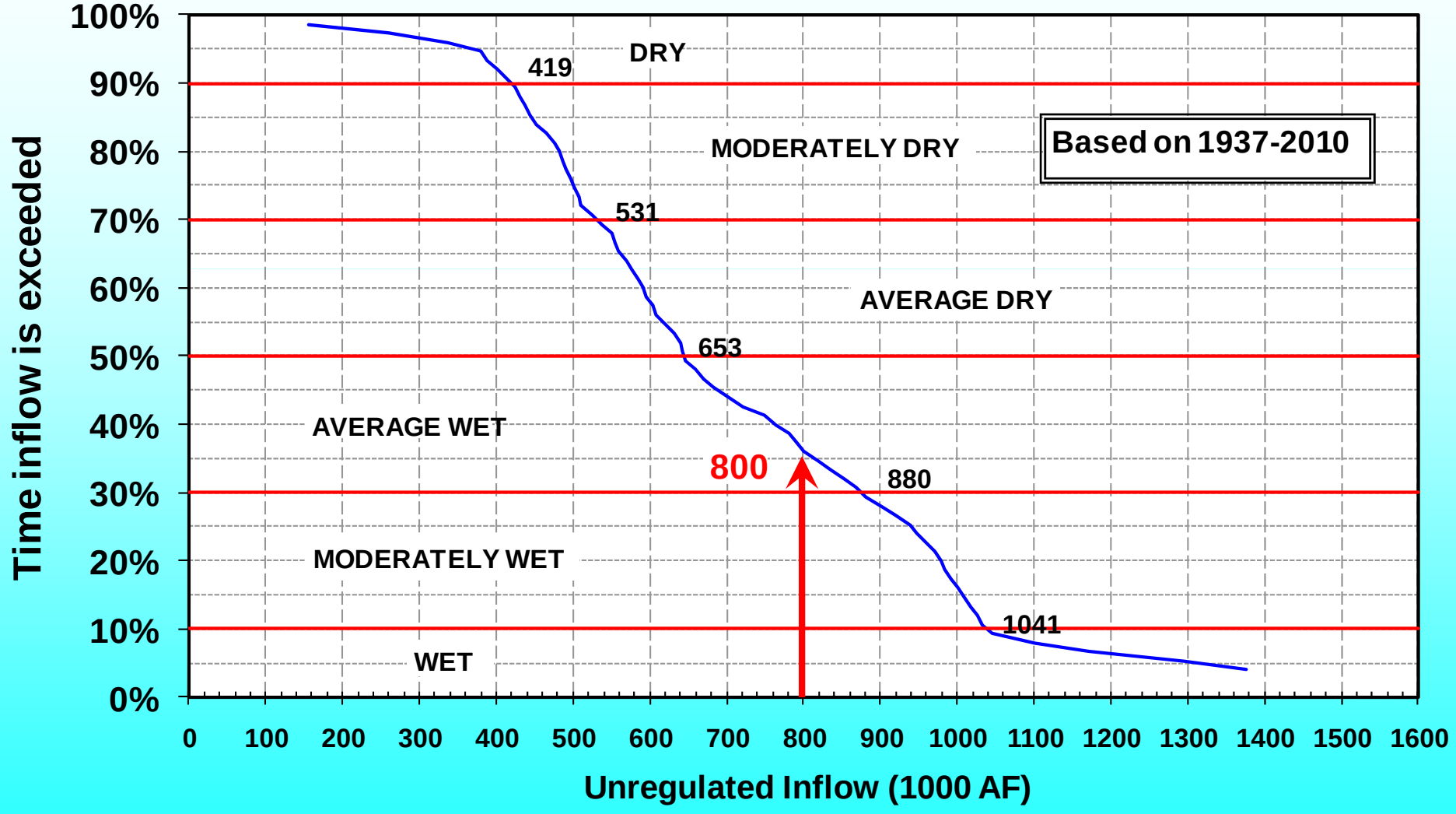

Colorado Basin River Forecast Center
Forecast Point: NF GUNNISON Group
To Date: 133% (20.2 / 15.2)
Seasonal: 123% (20.2 / 16.5)
Melt rate -0.1 in/day
averaged over last 3 days.
Created 04/20 19:27 UTC
NOAA/CBRFC, 2011
Past
Future
Snow Water Equivalent (in)
Percent Seasonal
Date
40
37
33
30
27
23
20
17
13
10
7
3
0
243
222
202
182
162
142
121
101
81
61
40
20
0
10-01
10-31
11-30
12-31
01-30
03-01
04-01
05-01
05-31
07-01
07-31
08-30
09-30
avg
2011
2010
2009
2008

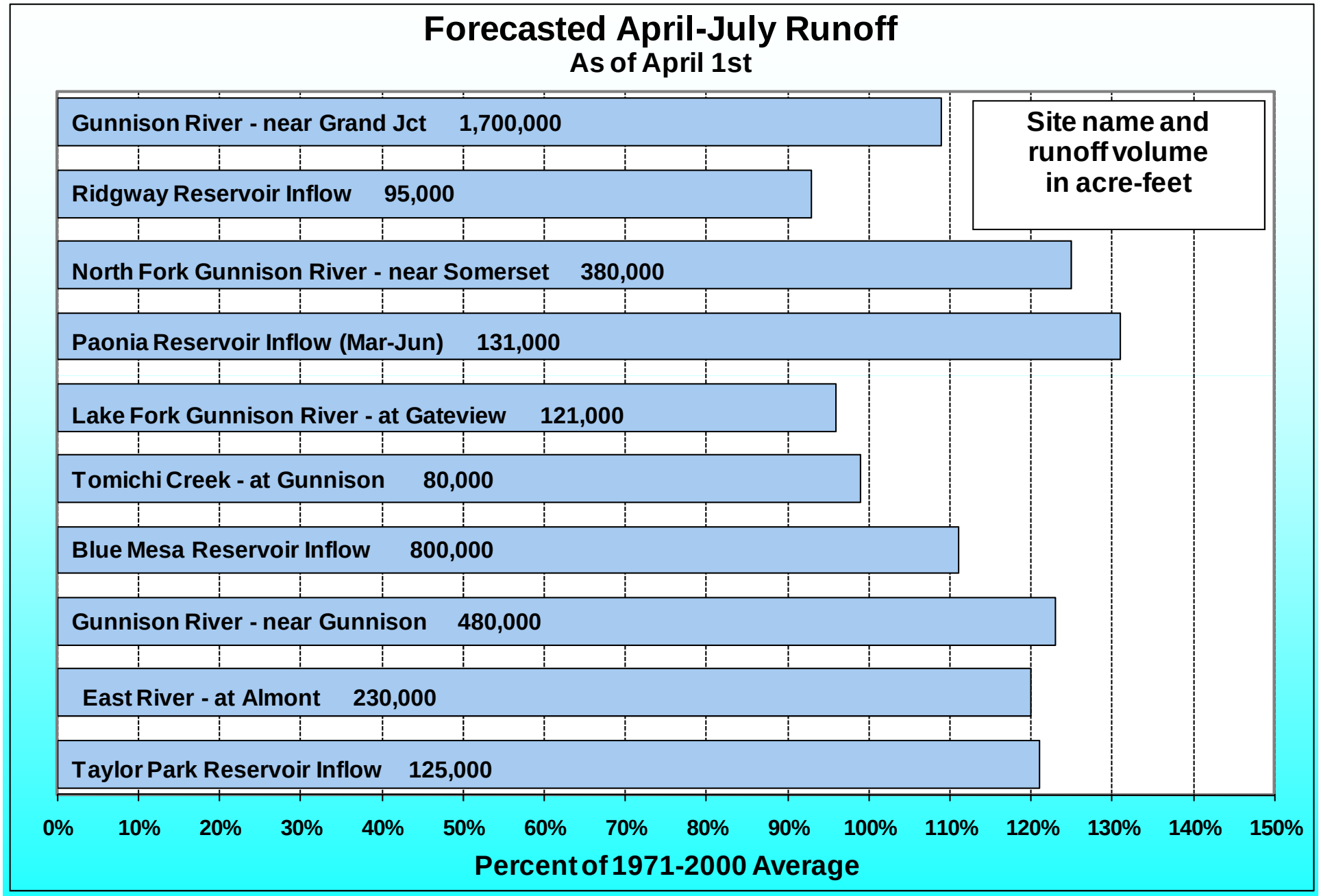
RUNOFF FORECASTS


Aspinall Unit
Forecasted Unregulated Inflow
Bar labels are forecast in 1000 ac-ft
Lines indicate 1971-2000 average
Apr - July Forecasted Inflow (1000 ac-ft)
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
810
995
775
950
775
950
800
985
800
985
800
985
800
985
Jan 1st
Feb 1st
Feb 15th
Mar 1st
Mar 15th
Apr 1st
Apr 15th
May 1st
May 15th
Jun 1st
Jun 15th
Jul 1st
Jul 15th
Actual
Forecast Date
Blue Mesa Inflow
Crystal Inflow

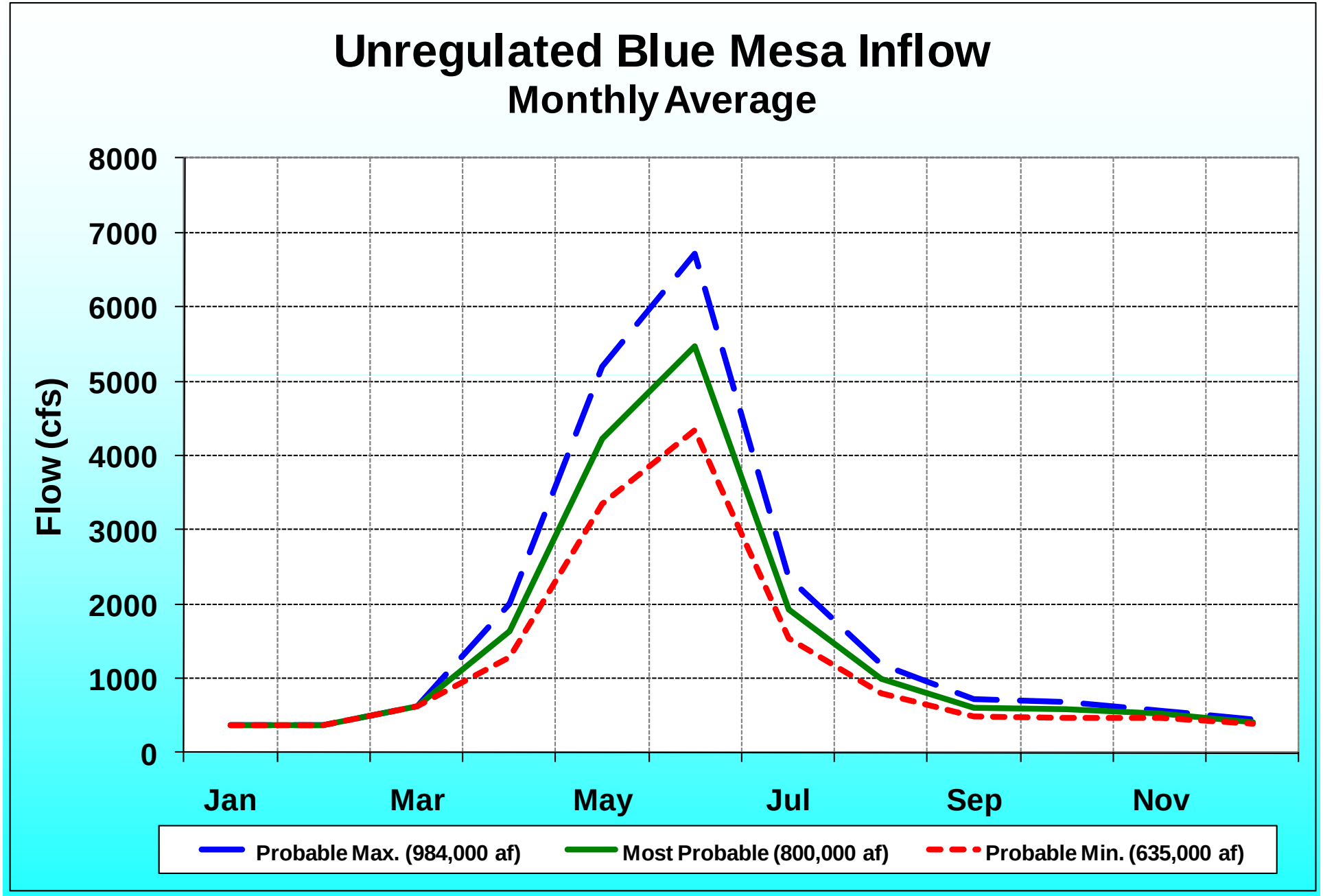
Blue Mesa Reservoir

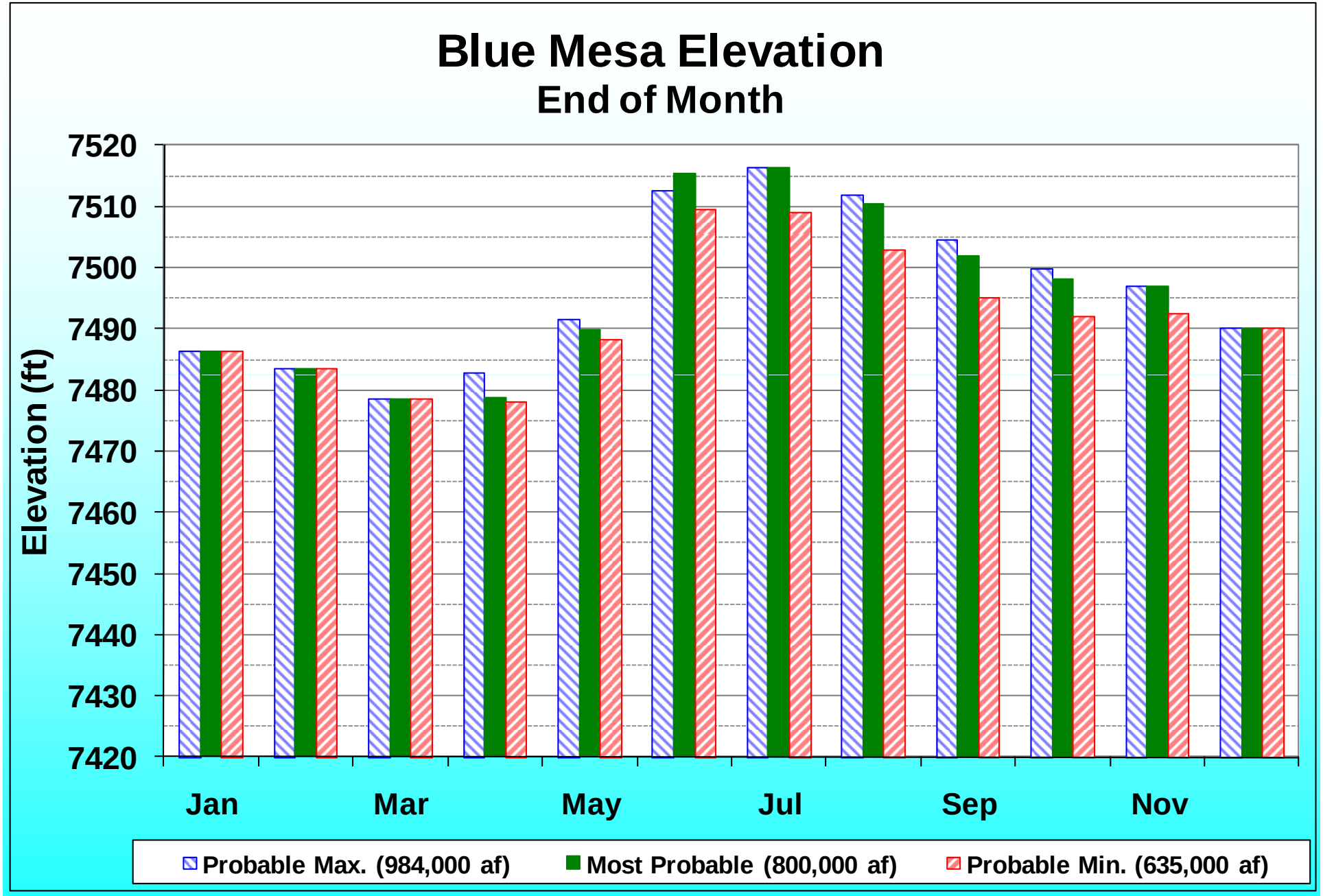
April - July Unregulated Inflow

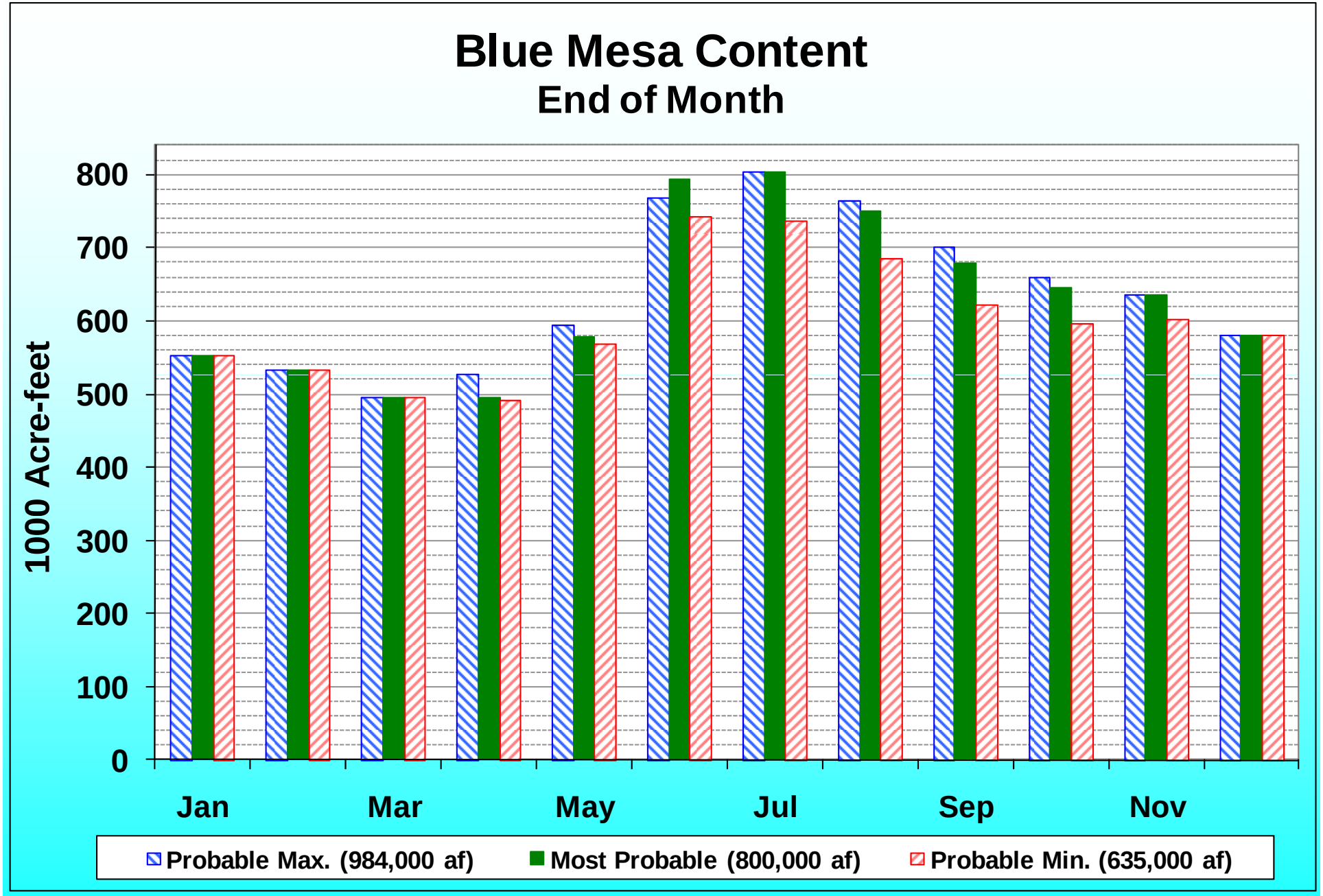


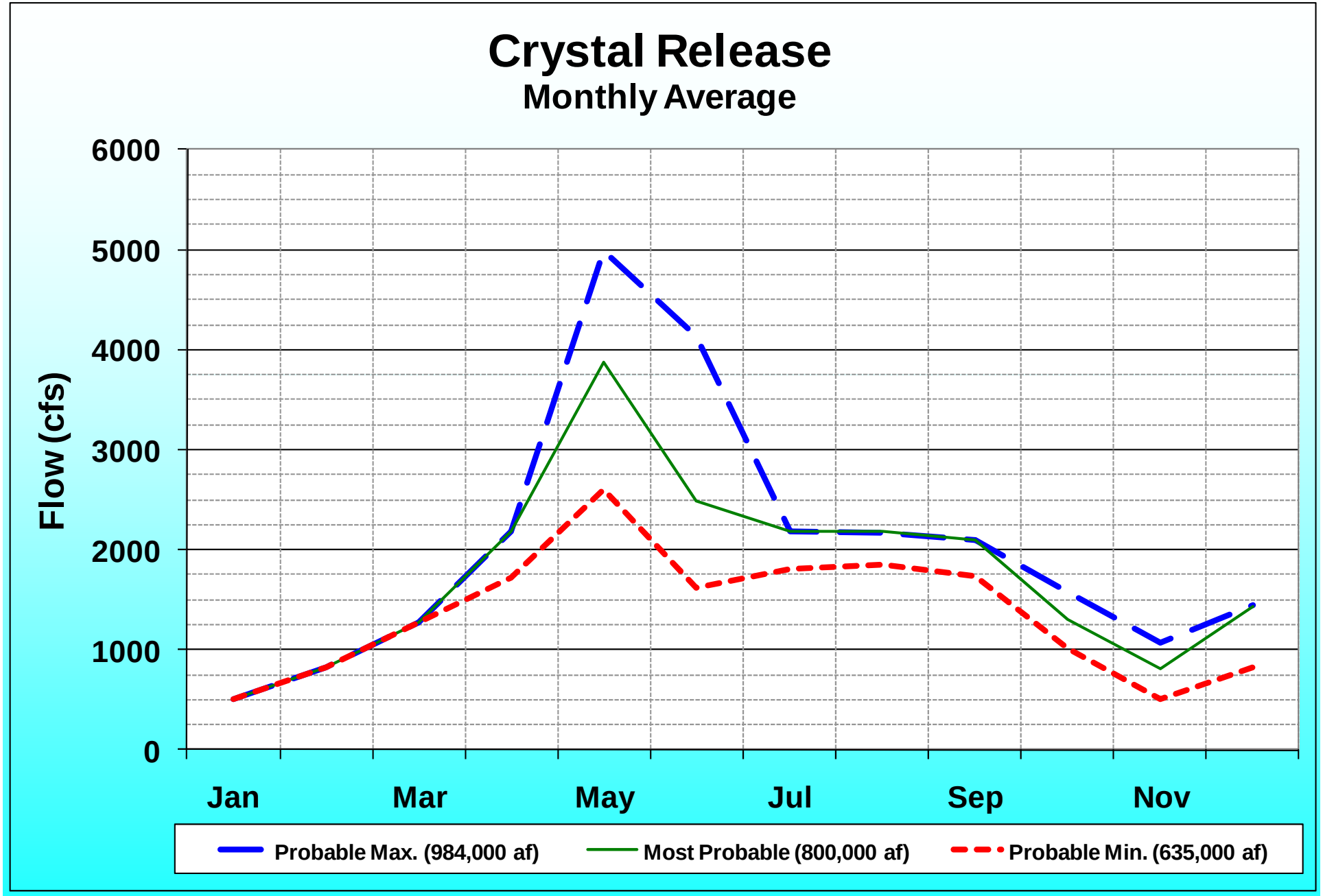

Forecasted April-July Runoff
As of April 1st
Gunnison River - near Grand Jct 1,700,000
Ridgway Reservoir Inflow 95,000
North Fork Gunnison River - near Somerset 380,000
Paonia Reservoir Inflow (Mar-Jun) 131,000
Lake Fork Gunnison River - at Gateview 121,000
Tomichi Creek - at Gunnison 80,000
Blue Mesa Reservoir Inflow 800,000
Gunnison River - near Gunnison 480,000
East River - at Almont 230,000
Taylor Park Reservoir Inflow 125,000
Site name and runoff volume in acre-feet
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
110%
120%
130%
140%
150%
Percent of 1971-2000 Average

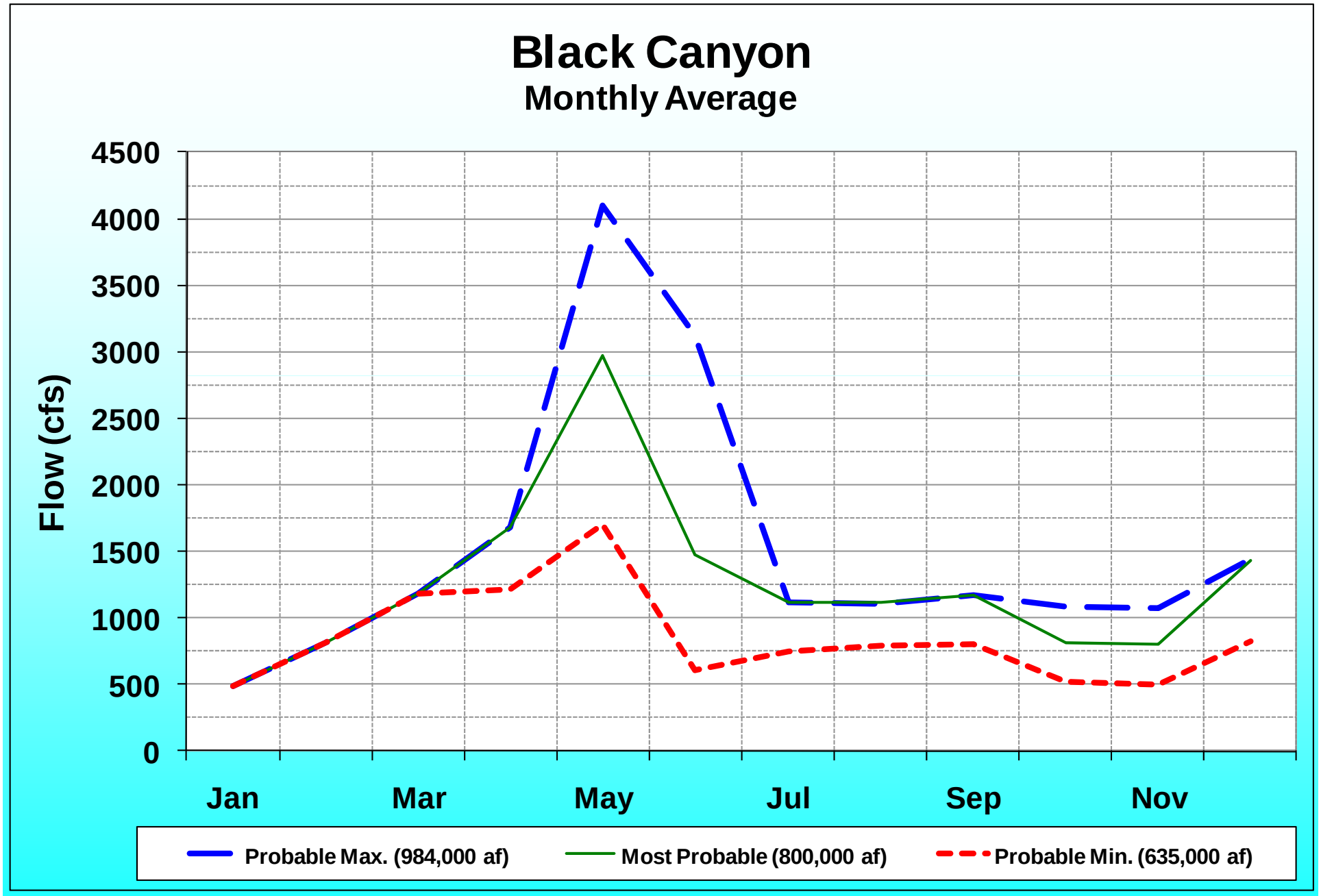
24 MONTH STUDY


Unregulated Blue Mesa Inflow
Monthly Average
Flow (cfs)
8000
7000
6000
5000
4000
3000
2000
1000
0
Jan
Mar
May
Jul
Sep
Nov
Probable Max. (984,000 af)
Most Probable (800,000 af)
Probable Min. (635,000 af)


Blue Mesa Elevation
End of Month
Elevation (ft)
7520
7510
7500
7490
7480
7470
7460
7450
7440
7430
7420
Jan
Mar
May
Jul
Sep
Nov
Probable Max. (984,000 af)
Most Probable (800,000 af)
Probable Min. (635,000 af)


Blue Mesa Content
End of Month
1000 Acre-feet
800
700
600
500
400
300
200
100
0
Jan
Mar
May
Jul
Sep
Nov
Probable Max. (984,000 af)
Most Probable (800,000 af)
Probable Min. (635,000 af)

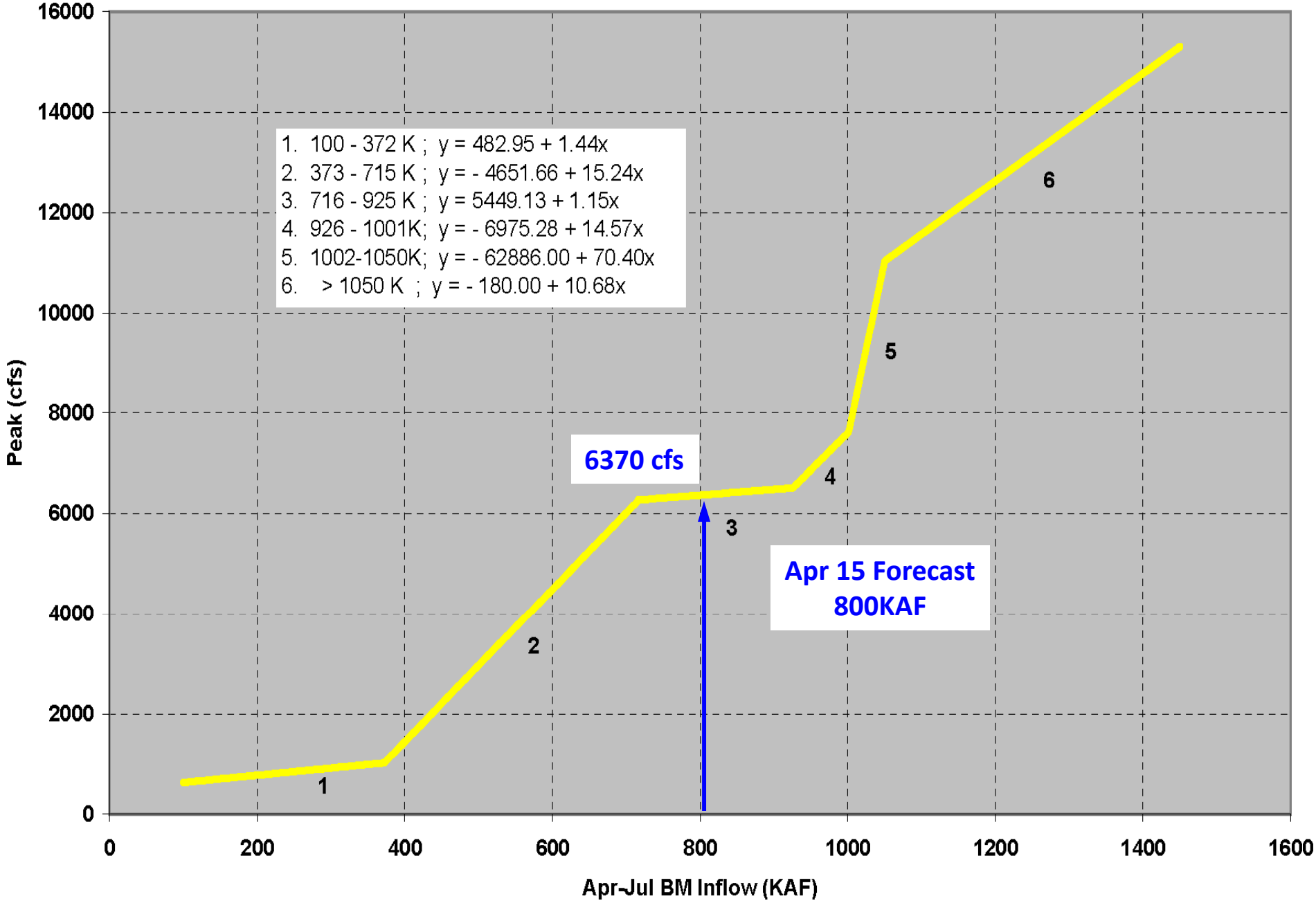

Crystal Release
Monthly Average
Flow (cfs)
6000
5000
4000
3000
2000
1000
0
Jan
Mar
May
Jul
Sep
Nov
Probable Max. (984,000 af)
Most Probable (800,000 af)
Probable Min. (635,000 af)


Black Canyon
Monthly Average
Flow (cfs)
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Jan
Mar
May
Jul
Sep
Nov
Probable Max. (984,000 af)
Most Probable (800,000 af)
Probable Min. (635,000 af)

PROJECTED RUNOFF OPERATIONS

Black Canyon Peak Flow Determination

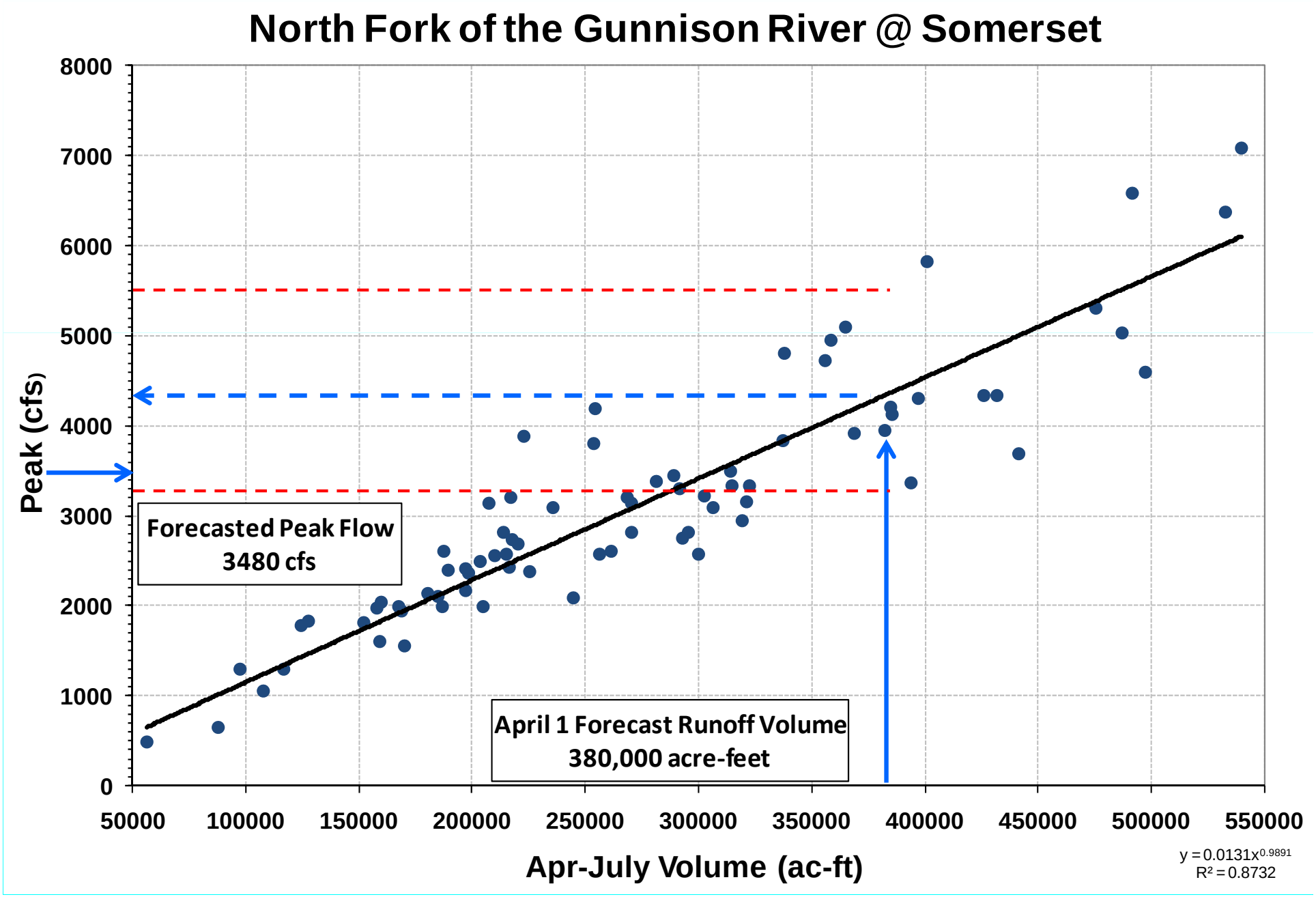
based on Blue Mesa May 1 forecast

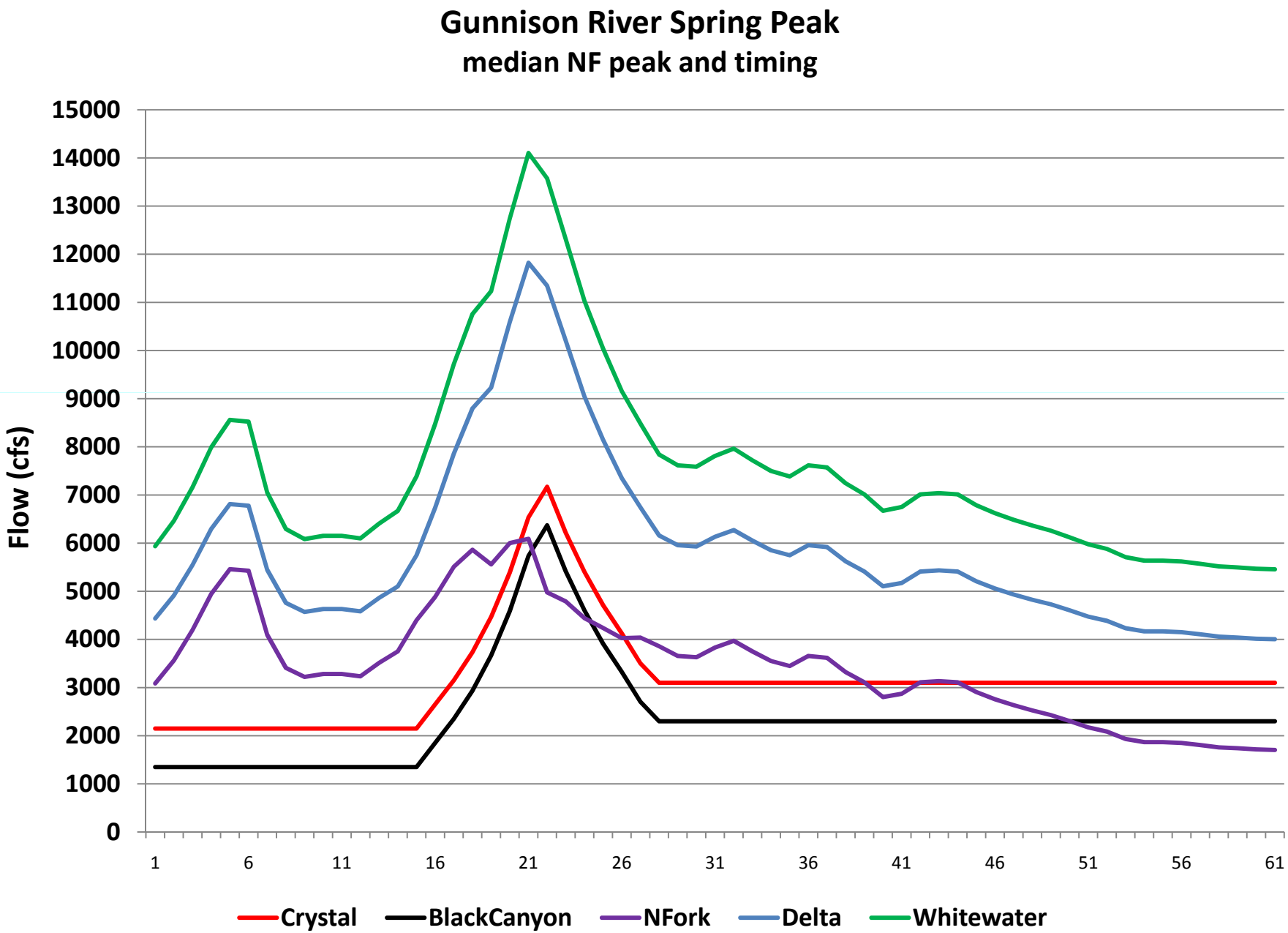


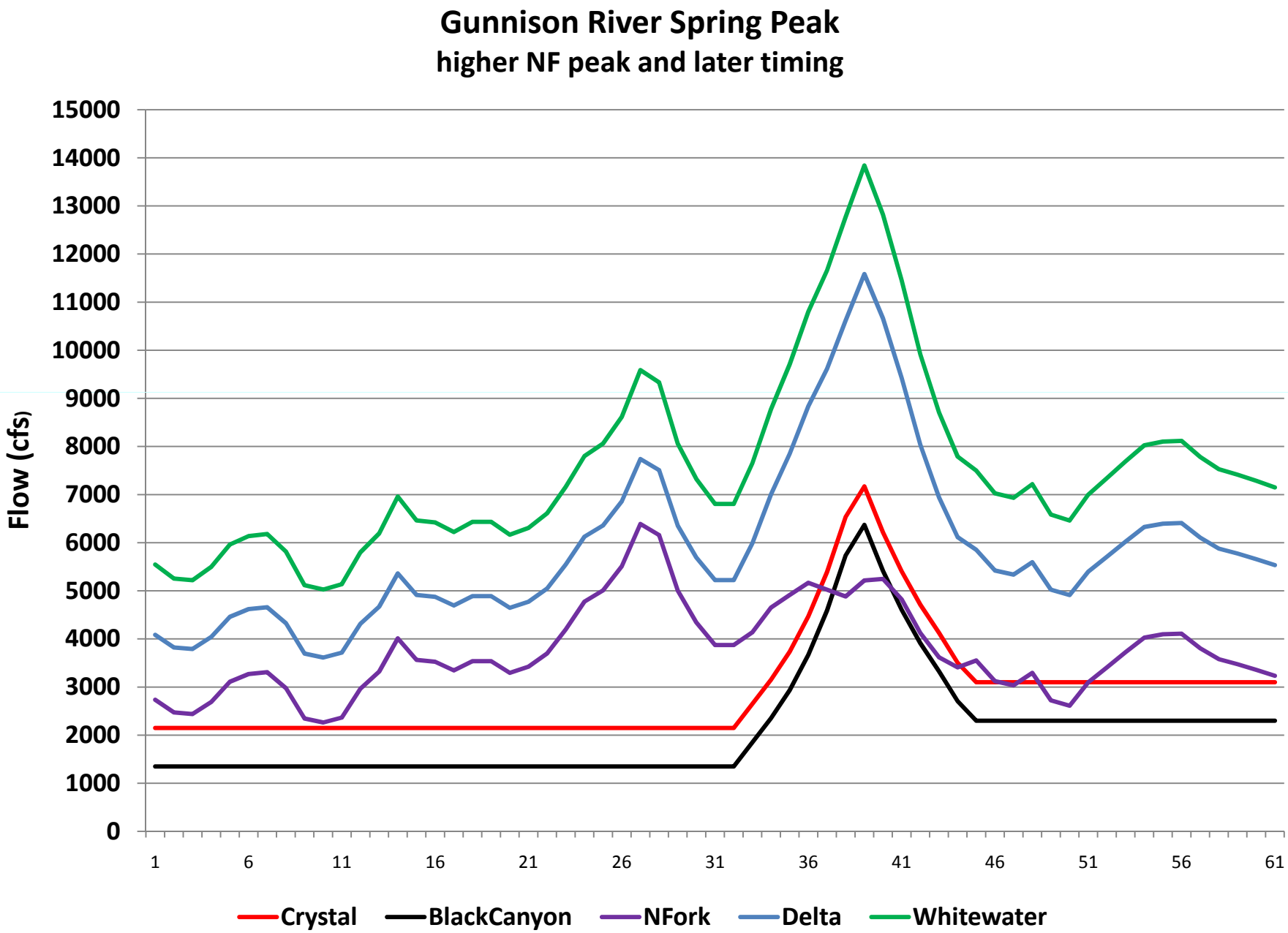
North Fork Gunnison Peaks

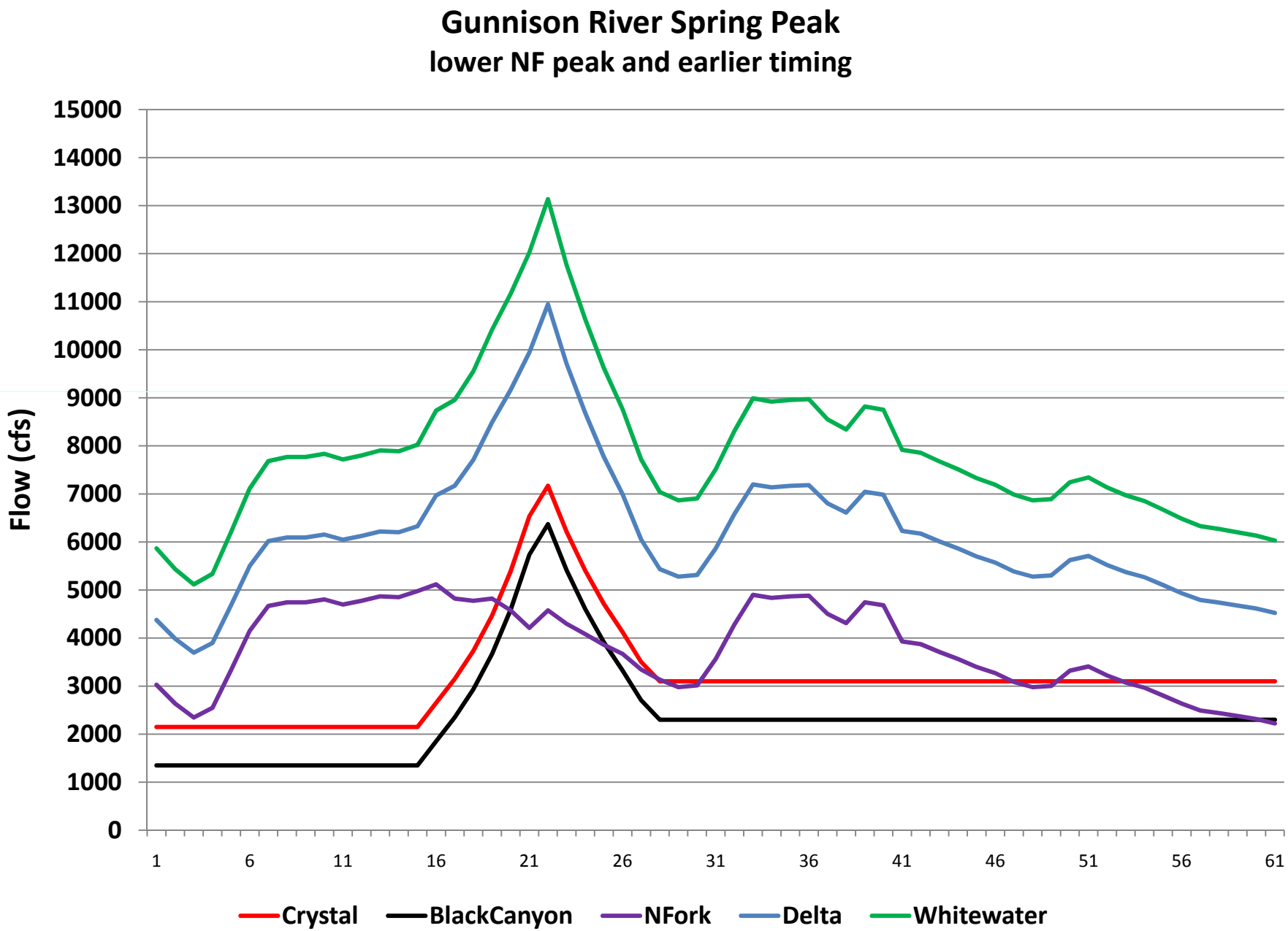
www.cbrfc.noaa.gov/product/peak/peak.cgi

Exceedence Prob.	**90%**	**75%**	**50%**	**25%**	**10%**
N Fork @ Somerset: average peak 3,310 cfs between 5/11 & 6/2					
CFSD	2890	3100	3480	3930	4310
Date of Peak	5/6	5/12	5/19	5/26	6/2
Delta (minus flow from Crystal):					
CFSD	4480	4780	5340	6050	6720
Date of Peak	5/7	5/13	5/19	5/23	5/31


North Fork of the Gunnison River @ Somerset
Peak (cfs)
8000
7000
6000
5000
4000
3000
2000
1000
0
50000
100000
150000
200000
250000
300000
350000
400000
450000
500000
550000
Apr-July Volume (ac-ft)
Forecasted Peak Flow
3480 cfs
April 1 Forecast Runoff Volume
380,000 acre-feet
y = 0.0131x^0.9891
R² = 0.8732


Gunnison River Spring Peak
median NF peak and timing
Flow (cfs)
15000
14000
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1
6
11
16
21
26
31
36
41
46
51
56
61
Crystal
BlackCanyon
NFork
Delta
Whitewater


Gunnison River Spring Peak
higher NF peak and later timing
Flow (cfs)
15000
14000
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1
6
11
16
21
26
31
36
41
46
51
56
61
Crystal
BlackCanyon
NFork
Delta
Whitewater


Gunnison River Spring Peak
lower NF peak and earlier timing
Flow (cfs)
15000
14000
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1
6
11
16
21
26
31
36
41
46
51
56
61
Crystal
BlackCanyon
NFork
Delta
Whitewater