

# Colorado

## Water Supply Outlook Report

### June 1, 2015



View of Mount Princeton over the Arkansas River from Salida on May 29, 2015. Snowpack in the Upper Arkansas River basin is at 196 percent of the median for June 1<sup>st</sup> and the Arkansas River at Salida is projected to have near normal streamflow volumes this summer.

Photo By: Lexi Landers

**REMINDER:** We are soliciting field work photos from our snow surveyors again this year. Each month we will pick one to grace the cover of this report! The photographer will be given proper credit of course. Please include information on where, when and of who/what the photo was taken.

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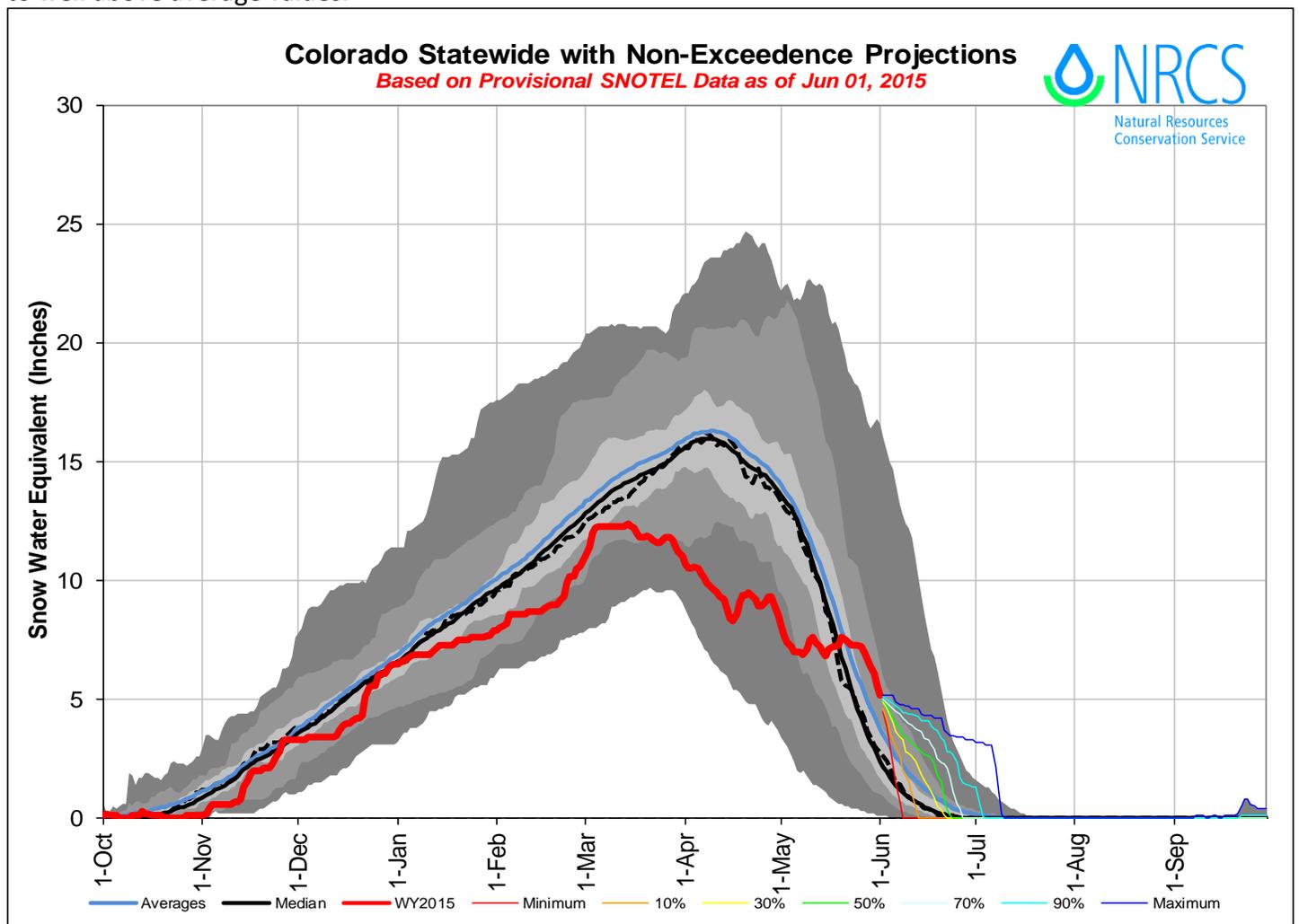
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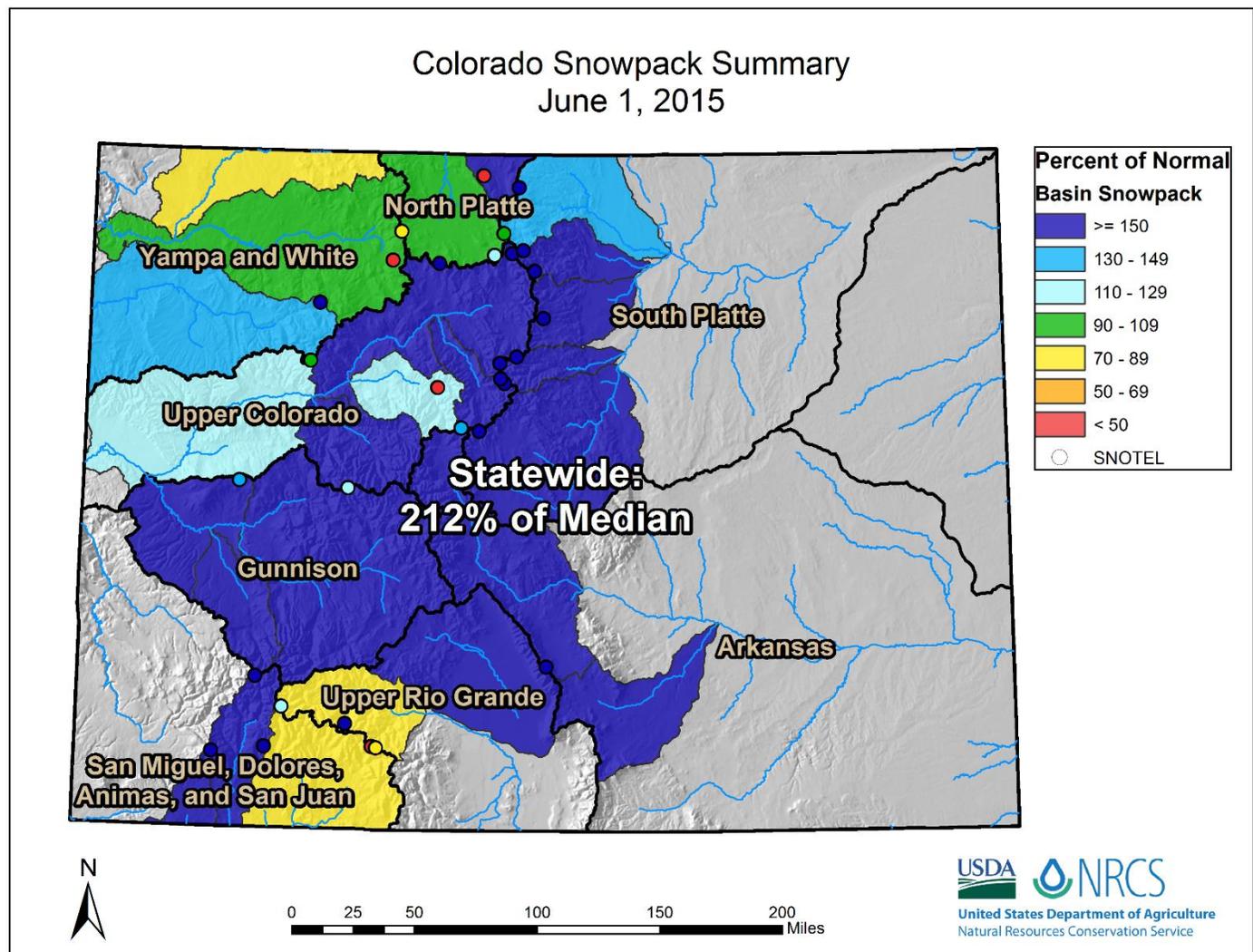
# Statewide Water Supply Conditions

## Summary

Moisture laden air took hold over Colorado during May and contributed heavy precipitation universally across Colorado. Seemingly endless rain and snow broke monthly precipitation records at many mountain SNOTEL sites, delayed snowmelt from advancing rapidly at mid to high elevation sites, improved reservoir storage in many parts of the state, and boosted water supply forecasts for nearly every stream. All of the river basins in Colorado had monthly precipitation values well above normal, which improved the water-year-to-date precipitation to near normal for the state. Cool temperatures coupled with this moisture delayed snowmelt from progressing at SNOTEL sites that had not already transitioned to advanced stages of melt. Almost a third of the SNOTEL sites across the state actually reached peak snow accumulation levels during May and 26 percent of locations that would typically be snow-free on June 1<sup>st</sup> have retained some snow. Ample rainfall has allowed Colorado to maintain above average storage volumes in its reservoirs this month, which will be pivotal in supplementing streamflow for water supply this summer. Although summer streamflow forecasts have improved for streams across the state, May precipitation could not make up for the moisture deficit present in southwest Colorado due to the well below normal snowpack in the Upper Rio Grande and combined San Miguel, Dolores, Animas, and San Juan river basins to bring these forecast volumes up to average levels. Conversely, May precipitation brought all streamflow forecasts in the South Platte basin to well above average values.



## Snowpack

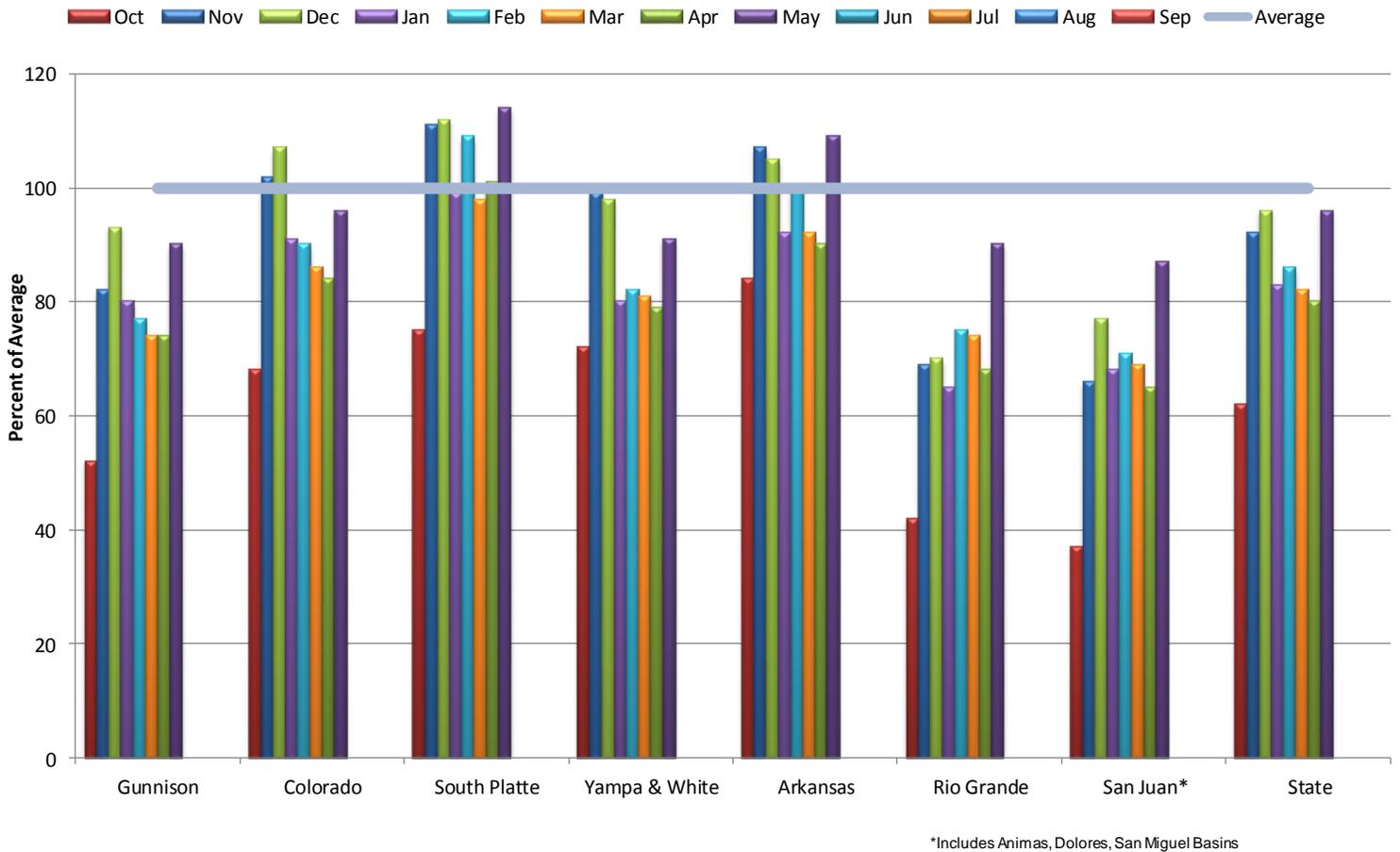


Moisture laden air during May brought an end to the warm weather that caused many locations in the river basins of southern Colorado to reach advanced stages of melt during March and April. Conditions this month favored cool and wet conditions across the state, which moderated snowmelt rates and even promoted additional snow accumulation at several sites. As of June 1<sup>st</sup>, almost half of the SNOTEL sites in Colorado still have at least some snow remaining and approximately 39 percent of the State's seasonal snowpack is still available for melt. Most of the major river basins in Colorado ended May with snowpacks well above normal bringing the statewide percent of median to 212 percent. The South Platte River Basin had the best 2015 snow season compared to normal, and the May weather patterns augmented this trend. Enhanced precipitation and cool temperatures allowed the basin to retain more than half of its seasonal snowpack through the month. The southwest basins did not fare as well this year. Both the Upper Rio Grande and combined San Miguel, Dolores, Animas, and San Juan basins had lackluster snowpacks reaching only 70 and 67 percent of their median snowpack peaks, respectively. Additionally, the Upper Rio Grande is the only basin that continues to have a below normal snowpack with only a handful of SNOTEL sites retaining snow on June 1st. Temperature and precipitation trends in June and July will dictate how quickly Colorado's remaining snowpack will melt and affect summer water supply. We can only hope for moderate mountain temperatures to allow snowmelt driven streamflow to continue later into the summer.

# Precipitation

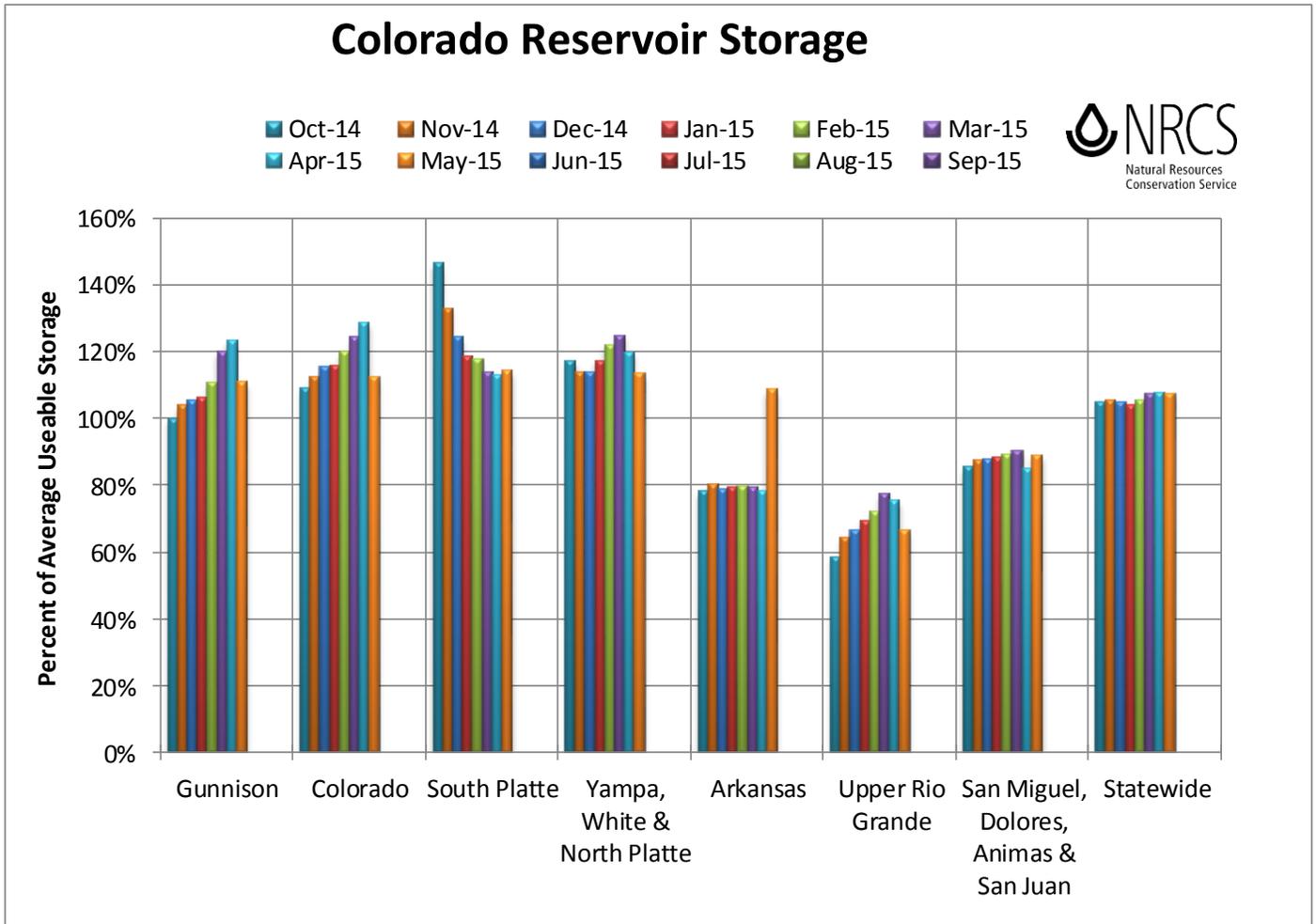
## Colorado Year-to-Date Precipitation Summary for WY2015

USDA Natural Resources Conservation Service



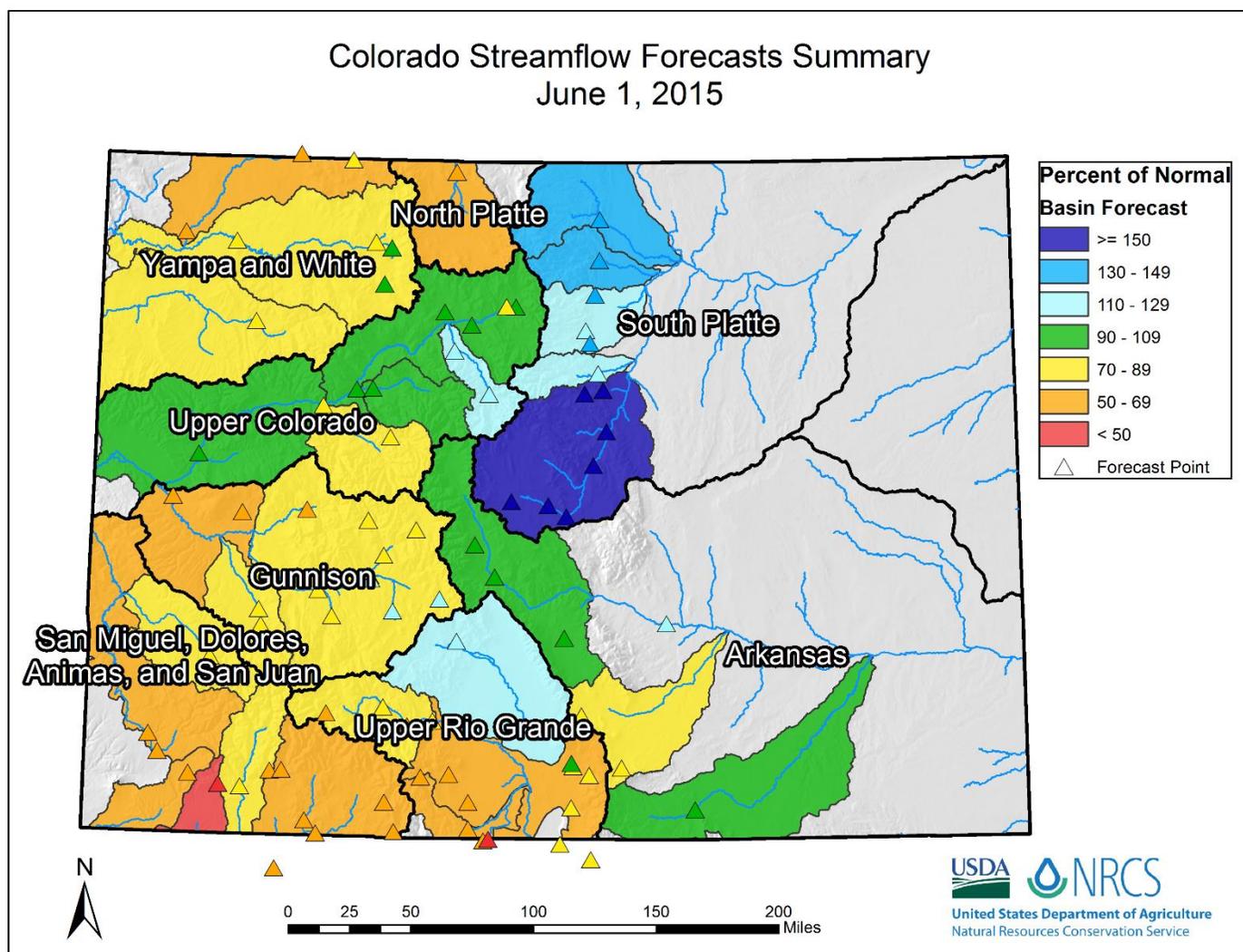
The month of May brought 239 percent of average precipitation to Colorado SNOTEL sites with many sites, particularly in Southwest Colorado, receiving the highest or second highest May precipitation on record. This substantial precipitation increased the statewide water-year-to-date (WYTD) percent of average precipitation back to near normal levels, 96 percent of average, up from 80 percent last month. The most substantial gains were in the previously dry Upper Rio Grande and collective San Miguel, San Juan, Dolores, and Animas basins, receiving 329 and 349 percent of average, respectively. May precipitation was able to raise each of their WYTD amounts by 22 percent of average over the past month, as of June 1<sup>st</sup> the Upper Rio Grande was at 90 percent of average and the collective basins of Southwest Colorado at 87 percent. Also residing near 90 percent of WYTD average precipitation are the Gunnison and collective Yampa, White, and North Platte basins which received 260 and 191 percent of average May precipitation, respectively. Even with such a wet May statewide, the South Platte and Arkansas are the only basins in Colorado with above average WYTD precipitation at the beginning of June, at 114 and 109 percent, respectively. The Arkansas showed the larger increase of the two over the previous month, 19 percent, a result of receiving 254 percent of average May precipitation. The South Platte and the Upper Colorado basins both received just over 200 percent of normal monthly precipitation. Despite this similarity, the Colorado basin still lags behind the South Platte for the water year, at 96 percent of average.

## Reservoir Storage



While reservoir storage across the major basins of Colorado varied considerably compared to last month the collective statewide percent of average storage remained very similar, at 107 percent. The Arkansas basin had largest increase in reservoir storage since the beginning of May, from 79 to 108 percent of average. A small increase in reservoir storage was also observed in the combined San Miguel, Dolores, Animas, and San Juan basins which are now holding 89 percent of their average amount. Reservoirs of the South Platte basin remained at very similar levels as to the previous two months and are currently storing 114 percent of average volume. The Gunnison, Upper Colorado, and combined Yampa, White, and North Platte basins all showed a decrease in storage from last month and reside at similar levels to the South Platte, at 111, 112, and 113 percent of average, respectively. While reservoir management depends on a wide variety of factors it is common for additional water to be released in the spring to make room for incoming water from snowmelt and minimize risk of flooding. Continuing the trend that has been observed so far this water year, the Upper Rio Grande basin has the lowest percent of average reservoir storage in the state decreasing from 75 to 66 percent of average over the past month.

## Streamflow



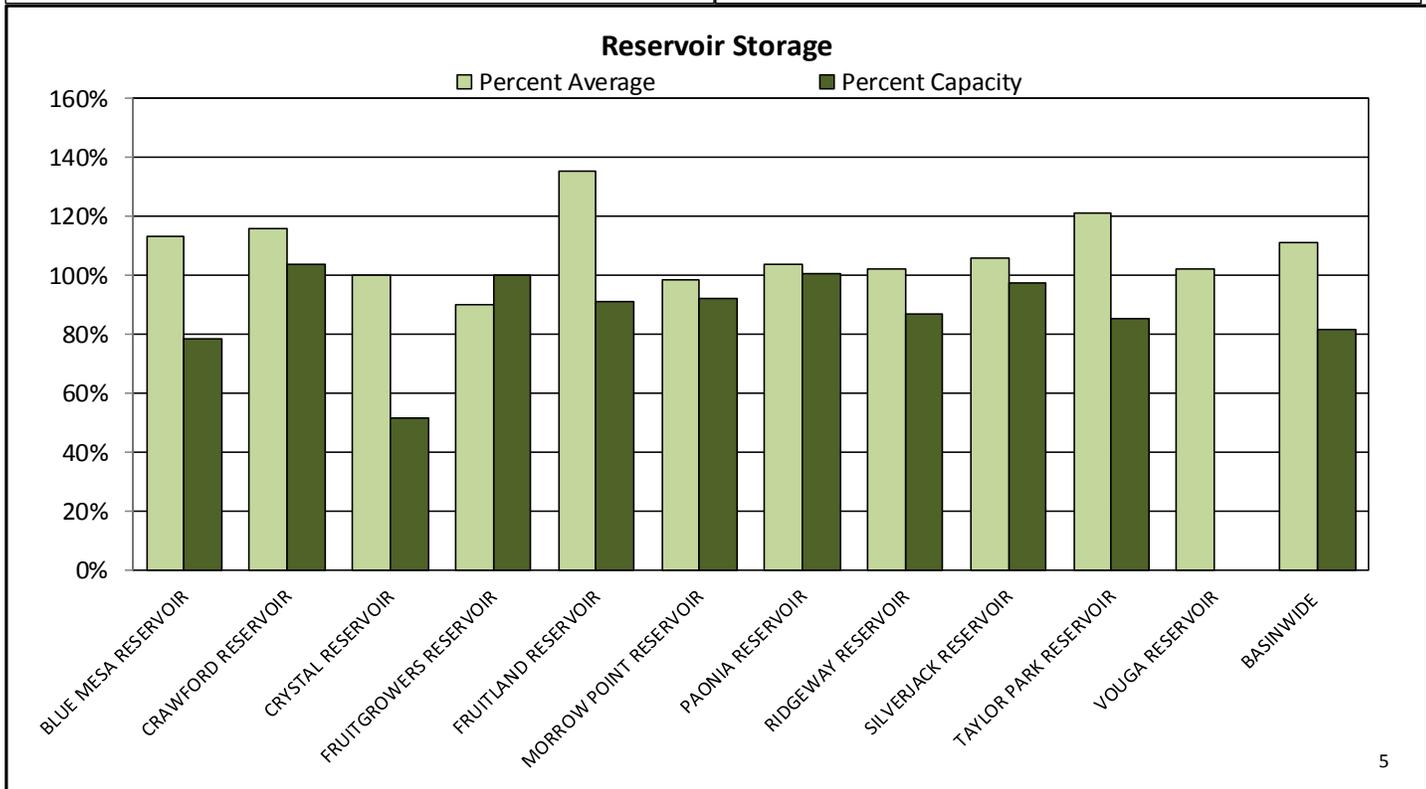
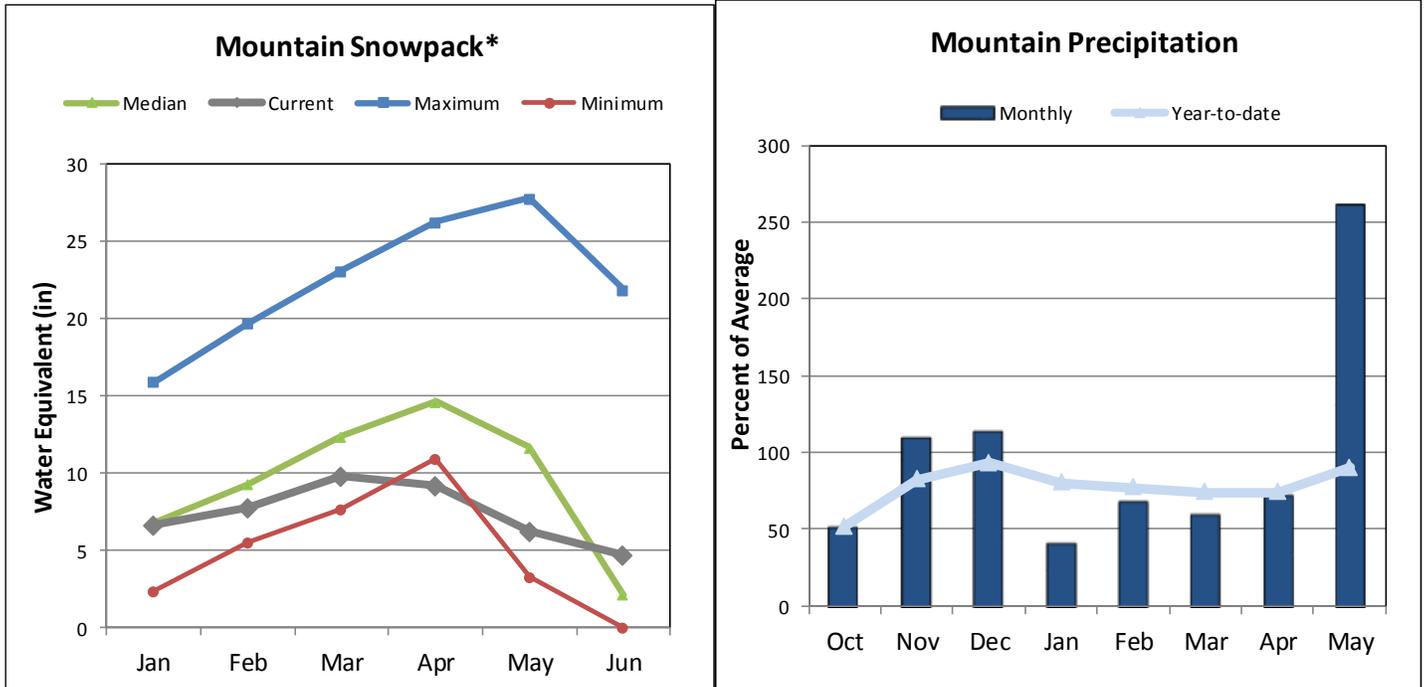
Streamflow forecasts have increased substantially across Colorado after the well above average amount of precipitation that was received statewide in the month of May. While increased forecasts were observed across the state the net effect of the precipitation left even larger discrepancies in forecast volumes between the major basins of Colorado, compared to a month ago. On the low end, the combined San Miguel, Dolores, Animas, and San Juan basins received 349 percent of normal May precipitation but still never reached median peak SWE values. The deficient seasonal snowpack peak ultimately lead to all forecasts remaining at or below average levels and almost all Apr-Jul forecasts below 80 percent of average with only a few June-July forecasts above. The Upper Rio Grande now has some streams forecasted for above normal levels but many still remain well below. The combined Yampa, White, and Upper North Platte basins were the only basins to receive less than 200 percent of normal precipitation in May and this was reflected through smaller increases in streamflow forecasts, still leaving most forecasts at below normal levels. The Upper Colorado and Arkansas basins both have a wide range of forecasted percent of normal streamflow values but they generally range from about 80-125 percent of average, with the exceptions of Green Mountain and Dillon Reservoir inflows which are forecasted at over 140 percent of average for the June-July period. Streamflow forecasts in the South Platte basin have been consistently the highest in the state all season and increased even more over the past month. Currently all forecasts in the South Platte are for well above average seasonal streamflow volumes.

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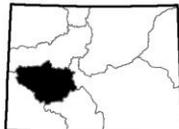
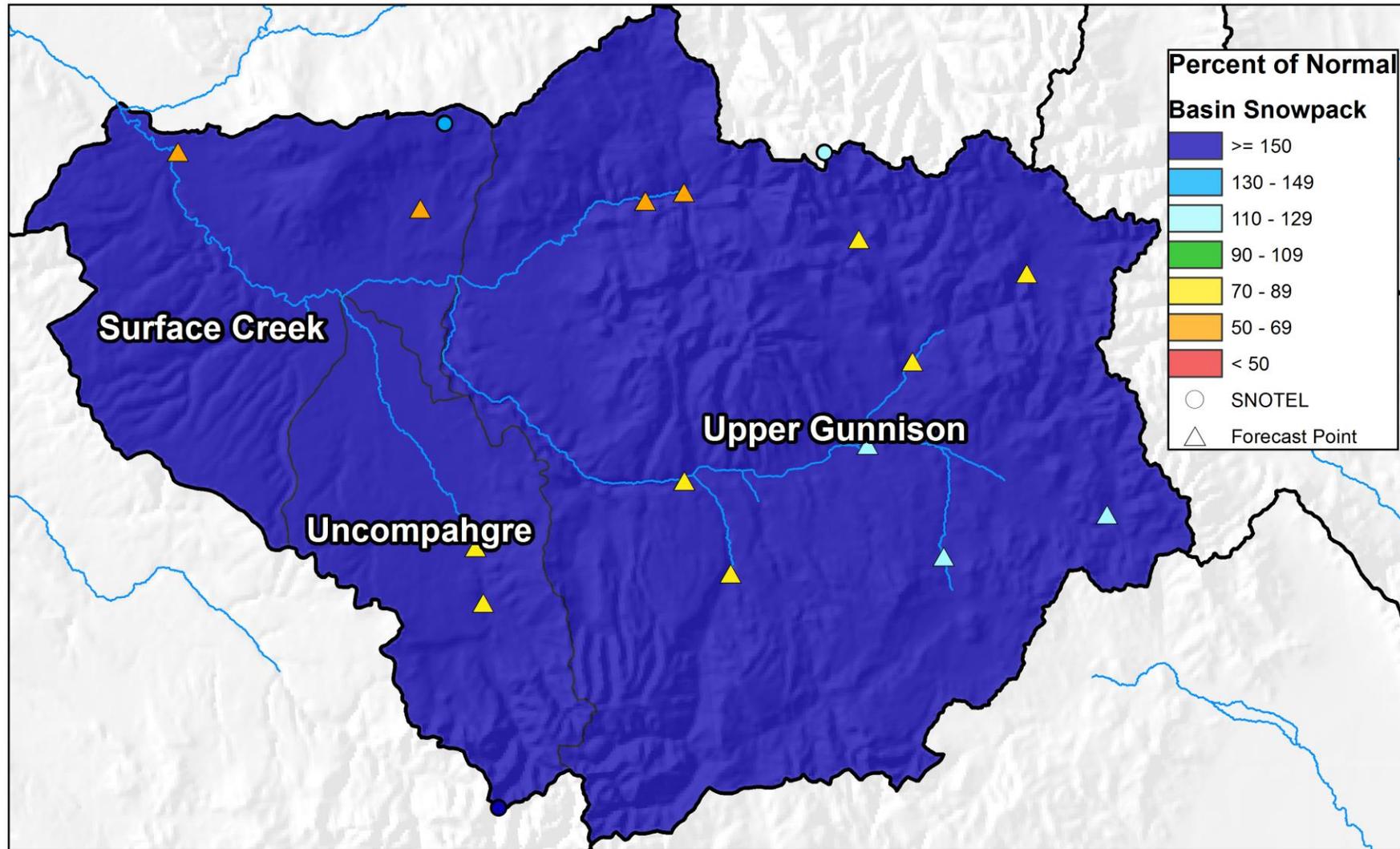
# GUNNISON RIVER BASIN

June 1, 2015

Snowpack in the Gunnison River basin is above normal at 216% of the median. Precipitation for May was 260% of average which brings water year-to-date precipitation up to 90% of average. Reservoir storage at the end of May was 111% of average compared to 109% last year. Current streamflow forecasts range from 140% for Tomichi Creek at Sargents to 54% of average for the Paonia Reservoir Inflow (Jun-Jul).



# Gunnison River Basin Snowpack and Streamflow Forecasts June 1, 2015



0 5 10 20 30 40 Miles

### Gunnison River Basin Streamflow Forecasts - June 1, 2015

 Forecast Exceedance Probabilities for Risk Assessment  
 Chance that actual volume will exceed forecast

GUNNISON RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Taylor Park Reservoir Inflow	APR-JUL	69	77	83	84%	90	100	99
	JUN-JUL	41	49	55	89%	62	72	62
Slate R nr Crested Butte	APR-JUL	55	60	64	77%	67	74	83
	JUN-JUL	27	32	36	86%	39	46	42
East R at Almont	APR-JUL	128	137	143	79%	149	159	182
	JUN-JUL	76	85	91	86%	97	107	106
Gunnison R near Gunnison <sup>2</sup>	APR-JUL	235	260	280	76%	305	340	370
	JUN-JUL	130	158	178	83%	200	235	215
Tomichi Ck at Sargents	APR-JUL	28	32	35	117%	38	44	30
	JUN-JUL	12.5	16.4	19.3	140%	22	28	13.8
Cochetopa Ck bl Rock Ck nr Parlin	APR-JUL	12.9	15.2	17	113%	19	22	15
	JUN-JUL	5.5	7.8	9.6	133%	11.6	14.9	7.2
Tomichi Ck at Gunnison	APR-JUL	66	75	82	111%	89	101	74
	JUN-JUL	35	44	51	138%	58	70	37
Lake Fk at Gateview	APR-JUL	90	101	110	89%	118	132	123
	JUN-JUL	62	73	82	101%	90	104	81
Blue Mesa Reservoir Inflow <sup>2</sup>	APR-JUL	500	535	560	83%	585	625	675
	JUN-JUL	290	325	350	92%	375	415	380
Paonia Reservoir Inflow	MAR-JUN	46	48	53	55%	72	99	96
	APR-JUL	38	41	52	54%	68	92	97
	JUN	5	7	11.8	51%	31	58	23
	JUN-JUL	2	5	15.8	54%	32	56	29
NF Gunnison R nr Somerset <sup>2</sup>	APR-JUL	154	167	177	61%	188	205	290
	JUN-JUL	44	57	67	59%	78	95	114
Surface Ck at Cedaredge	APR-JUL	8.4	9.3	10	60%	10.7	11.9	16.8
	JUN-JUL	2.6	3.5	4.2	55%	4.9	6.1	7.6
Ridgway Reservoir Inflow	APR-JUL	67	74	79	78%	84	92	101
	JUN-JUL	47	54	59	91%	64	72	65
Uncompahgre R at Colona <sup>2</sup>	APR-JUL	73	86	96	70%	106	123	137
	JUN-JUL	48	61	71	88%	81	98	81
Gunnison R nr Grand Junction <sup>2</sup>	APR-JUL	915	965	1000	68%	1040	1100	1480
	JUN-JUL	435	485	525	76%	565	625	695

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

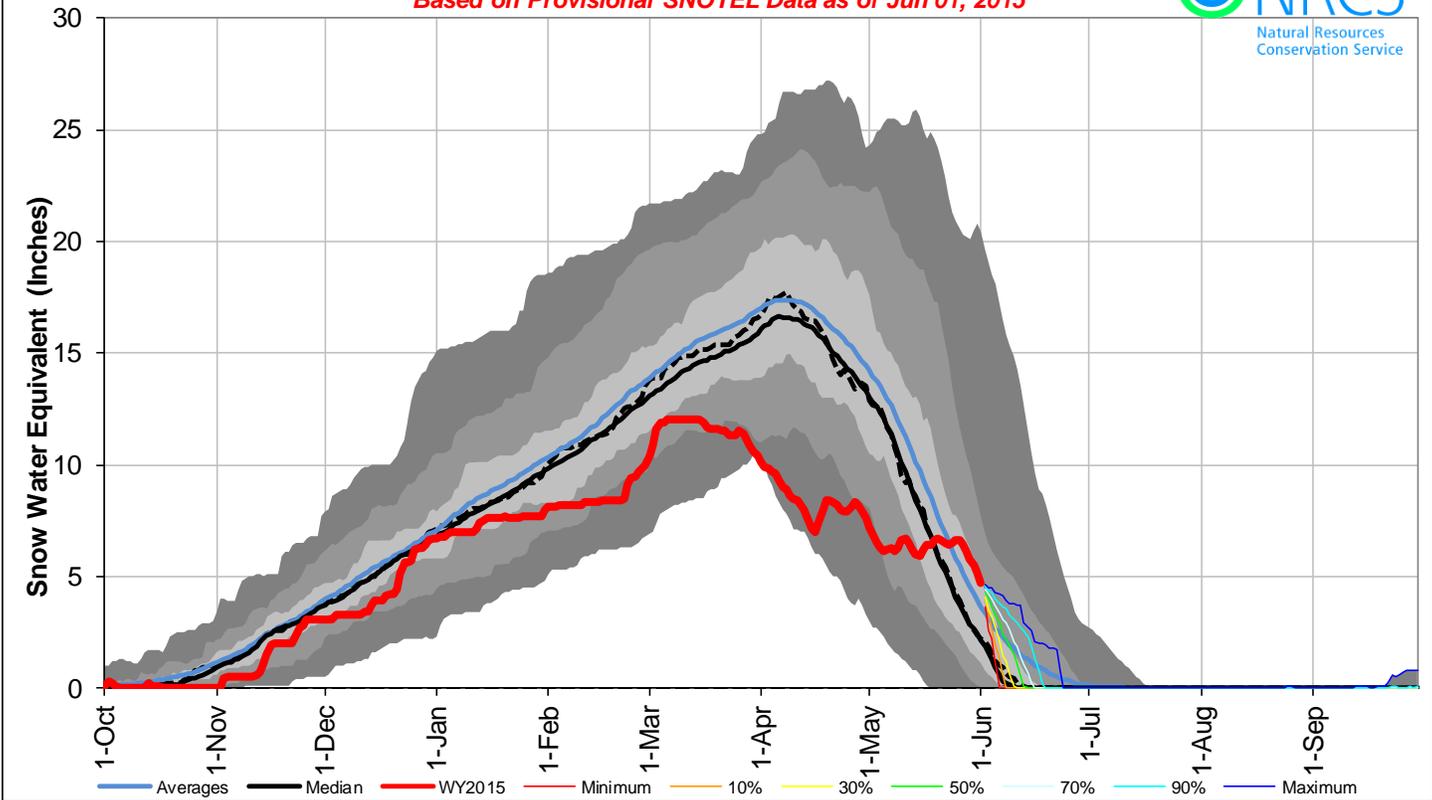
3) Median value used in place of average

Reservoir Storage End of May, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Blue Mesa Reservoir	652.4	675.1	575.3	830.0
Crawford Reservoir	14.5	1.4	12.5	14.0
Crystal Reservoir	9.0	11.0	9.0	17.5
Fruitgrowers Reservoir	3.6	3.5	4.0	3.6
Fruitland Reservoir	8.4	7.8	6.2	9.2
Morrow Point Reservoir	111.6	111.1	113.2	121.0
Paonia Reservoir	15.5	14.3	14.9	15.4
Ridgway Reservoir	72.3	60.8	70.6	83.0
Silverjack Reservoir	12.5	13.5	11.8	12.8
Taylor Park Reservoir	90.5	74.0	74.7	106.0
Vouga Reservoir	0.9	0.9	0.9	0.9
Basin-wide Total	991.2	973.4	893.1	1213.4
# of reservoirs	11	11	11	11

Watershed Snowpack Analysis June 1, 2015	# of Sites	% Median	Last Year % Median
UPPER GUNNISON BASIN	10	198%	153%
SURFACE CREEK BASIN	2	165%	96%
UNCOMPAHGRE BASIN	3	279%	171%
GUNNISON RIVER BASIN	13	216%	158%

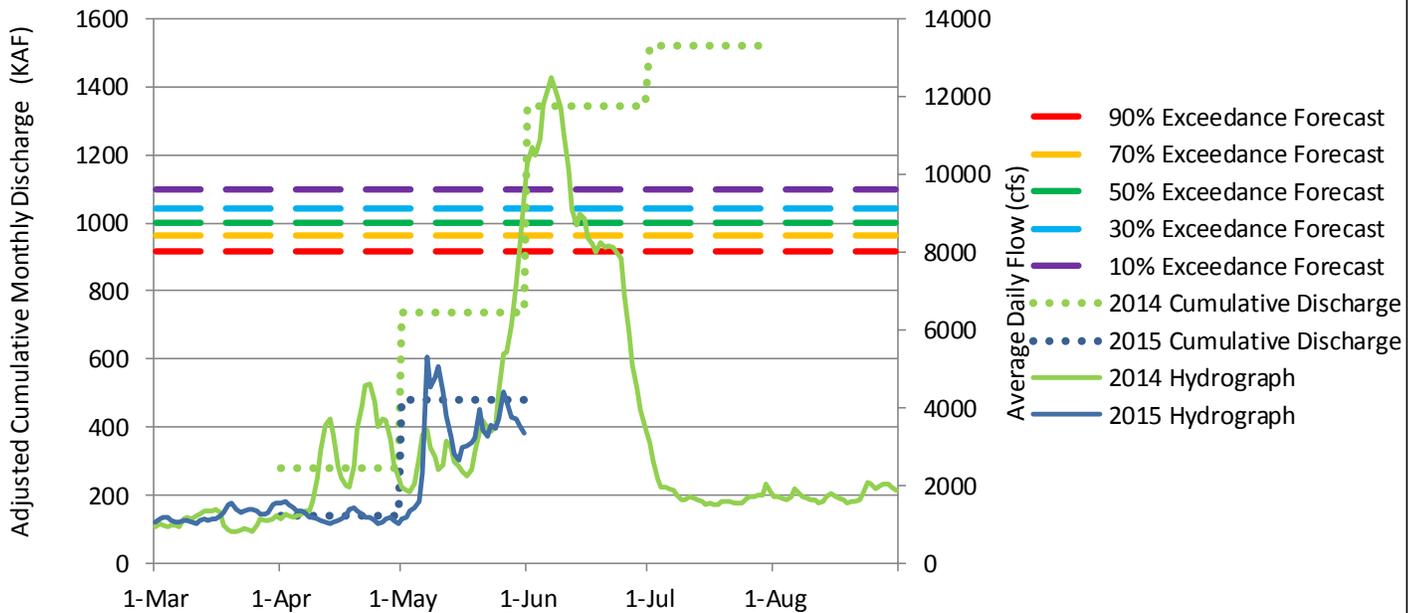
## Gunnison River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Jun 01, 2015



### Gunnison River near Grand Junction, CO

#### Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)

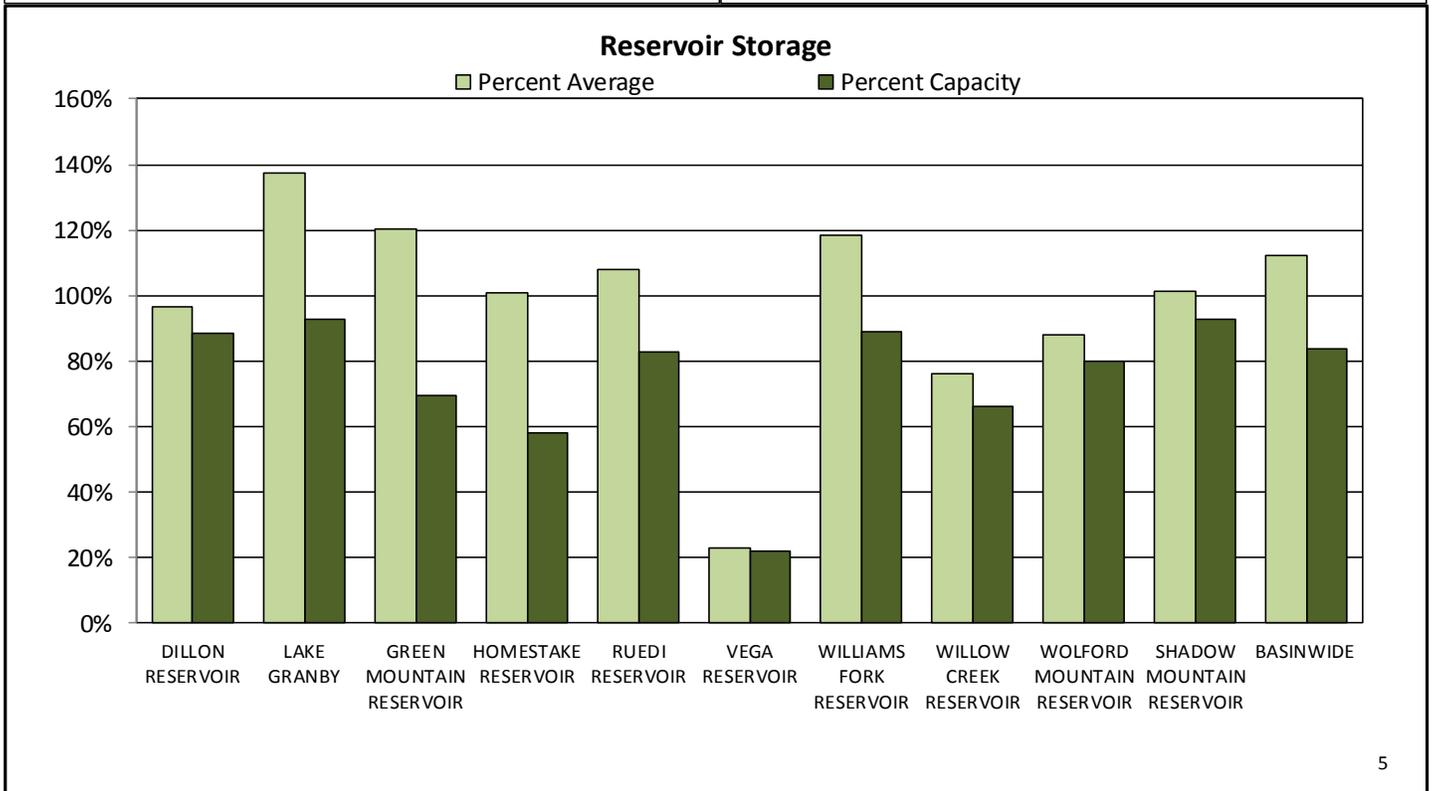
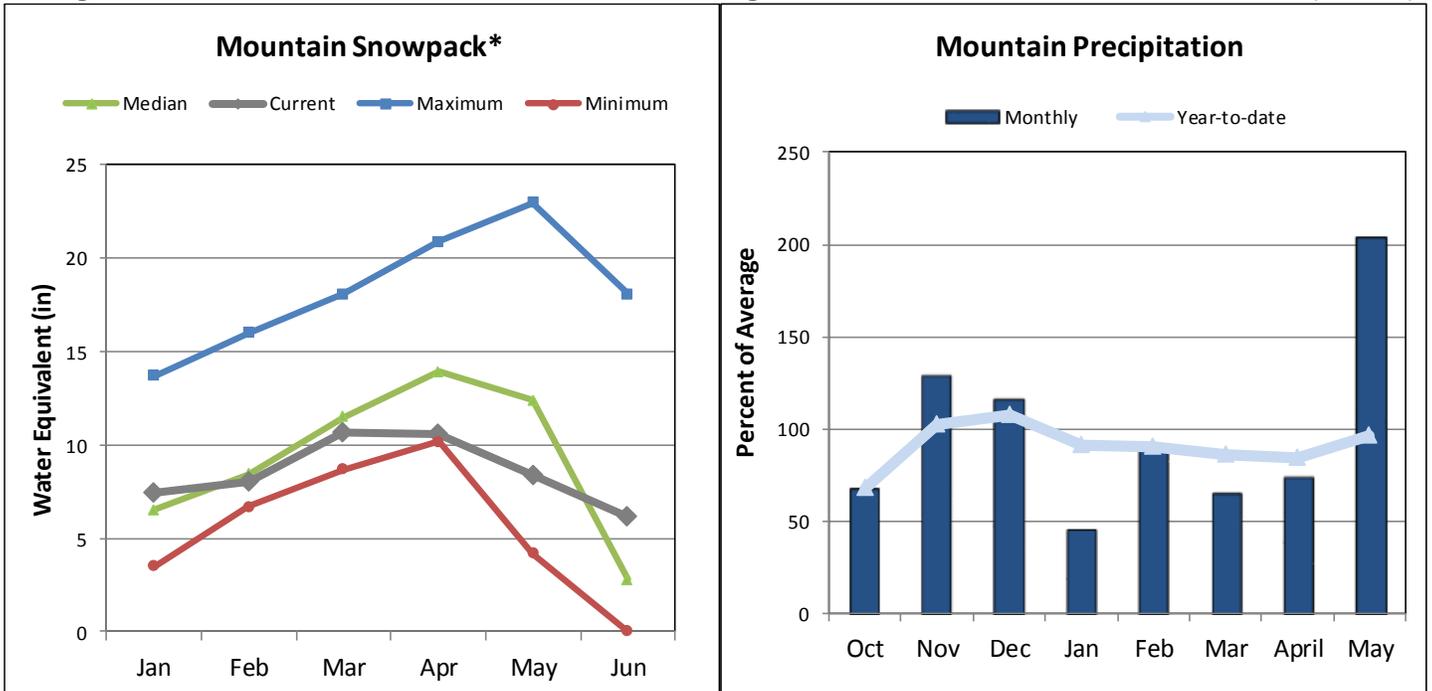


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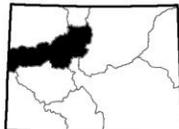
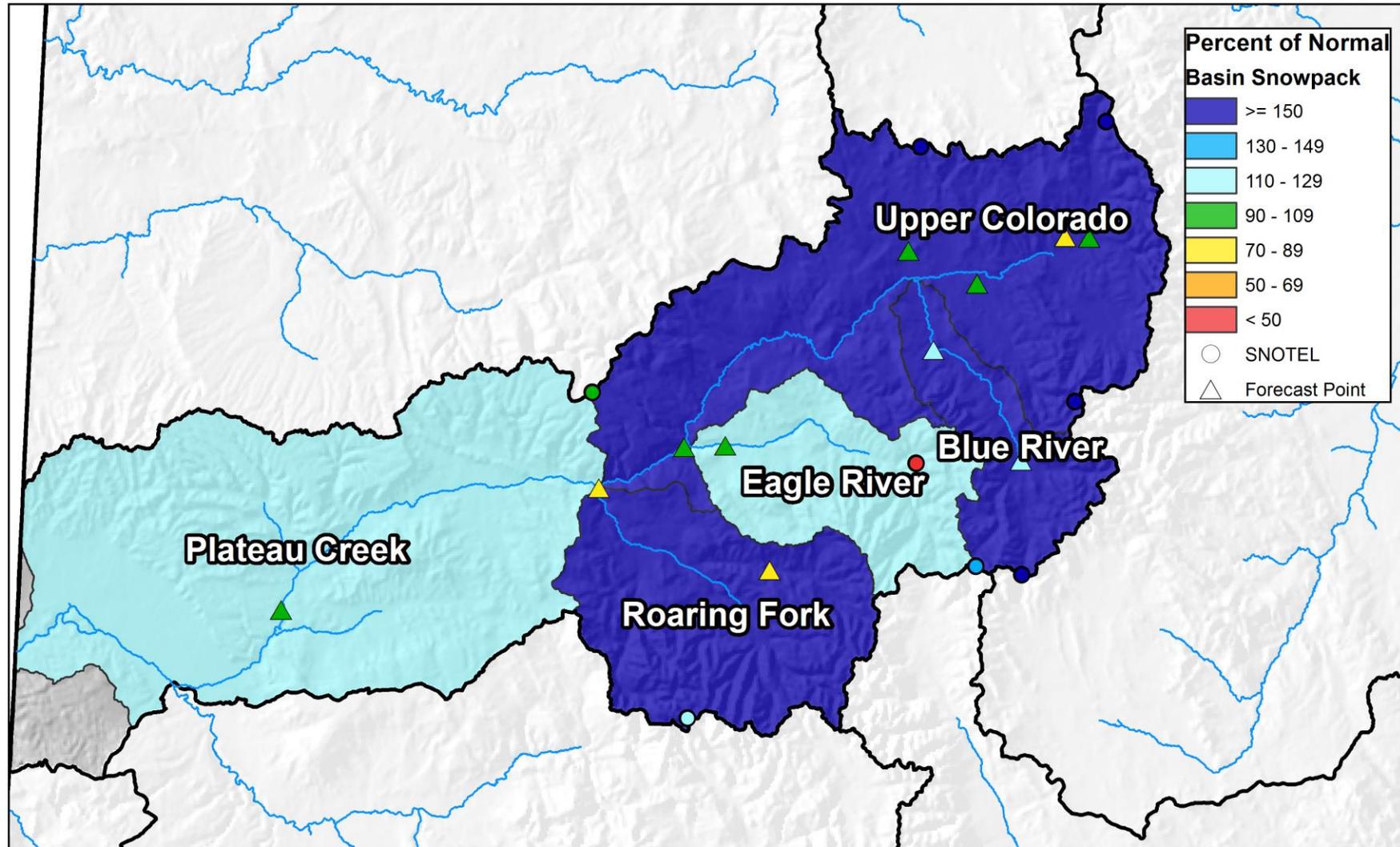
# UPPER COLORADO RIVER BASIN

June 1, 2015

Snowpack in the Colorado River basin is above normal at 223% of the median. Precipitation for May was 204% of average which brings water year-to-date precipitation up to 96% of average. Reservoir storage at the end of May was 112% of average compared to 93% last year. Current streamflow forecasts range from 145% of average for the Inflow to Dillon Reservoir to 76% of average for the inflow to Willow Creek Reservoir (Jun-Jul).



# Upper Colorado River Basin Snowpack and Streamflow Forecasts June 1, 2015



0 5 10 20 30 40  
Miles

## Upper Colorado River Basin Streamflow Forecasts - June 1, 2015

 Forecast Exceedance Probabilities for Risk Assessment  
 Chance that actual volume will exceed forecast

UPPER COLORADO RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Lake Granby Inflow <sup>2</sup>	APR-JUL	191	205	220	100%	230	250	220
	JUN-JUL	121	137	149	103%	161	180	144
Willow Ck Reservoir Inflow	APR-JUL	36	39	41	87%	44	47	47
	JUN-JUL	10.8	13.8	16	76%	18.4	22	21
Williams Fk bl Williams Fk Reservoir <sup>2</sup>	APR-JUL	87	95	100	103%	106	115	97
	JUN-JUL	60	68	73	111%	79	88	66
Woford Mtn Reservoir Inflow	APR-JUL	43	47	50	93%	53	58	54
	JUN-JUL	9.7	13.2	16	87%	19	24	18.4
Dillon Reservoir Inflow <sup>2</sup>	APR-JUL	184	198	210	129%	220	235	163
	JUN-JUL	136	150	160	145%	171	187	110
Green Mountain Reservoir Inflow <sup>2</sup>	APR-JUL	290	320	340	124%	360	390	275
	JUN-JUL	210	240	260	141%	280	310	185
Eagle R bl Gypsum <sup>2</sup>	APR-JUL	245	280	305	91%	330	370	335
	JUN-JUL	151	184	210	100%	235	275	210
Colorado R nr Dotsero <sup>2</sup>	APR-JUL	1260	1380	1460	104%	1550	1690	1400
	JUN-JUL	770	885	970	115%	1060	1190	840
Ruedi Reservoir Inflow <sup>2</sup>	APR-JUL	95	110	121	87%	133	151	139
	JUN-JUL	61	76	87	98%	99	117	89
Roaring Fk at Glenwood Springs <sup>2</sup>	APR-JUL	460	495	525	76%	555	600	690
	JUN-JUL	305	340	370	81%	400	445	455
Colorado R nr Cameo <sup>2</sup>	APR-JUL	1910	2080	2200	94%	2330	2520	2350
	JUN-JUL	1170	1340	1460	103%	1590	1780	1420

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

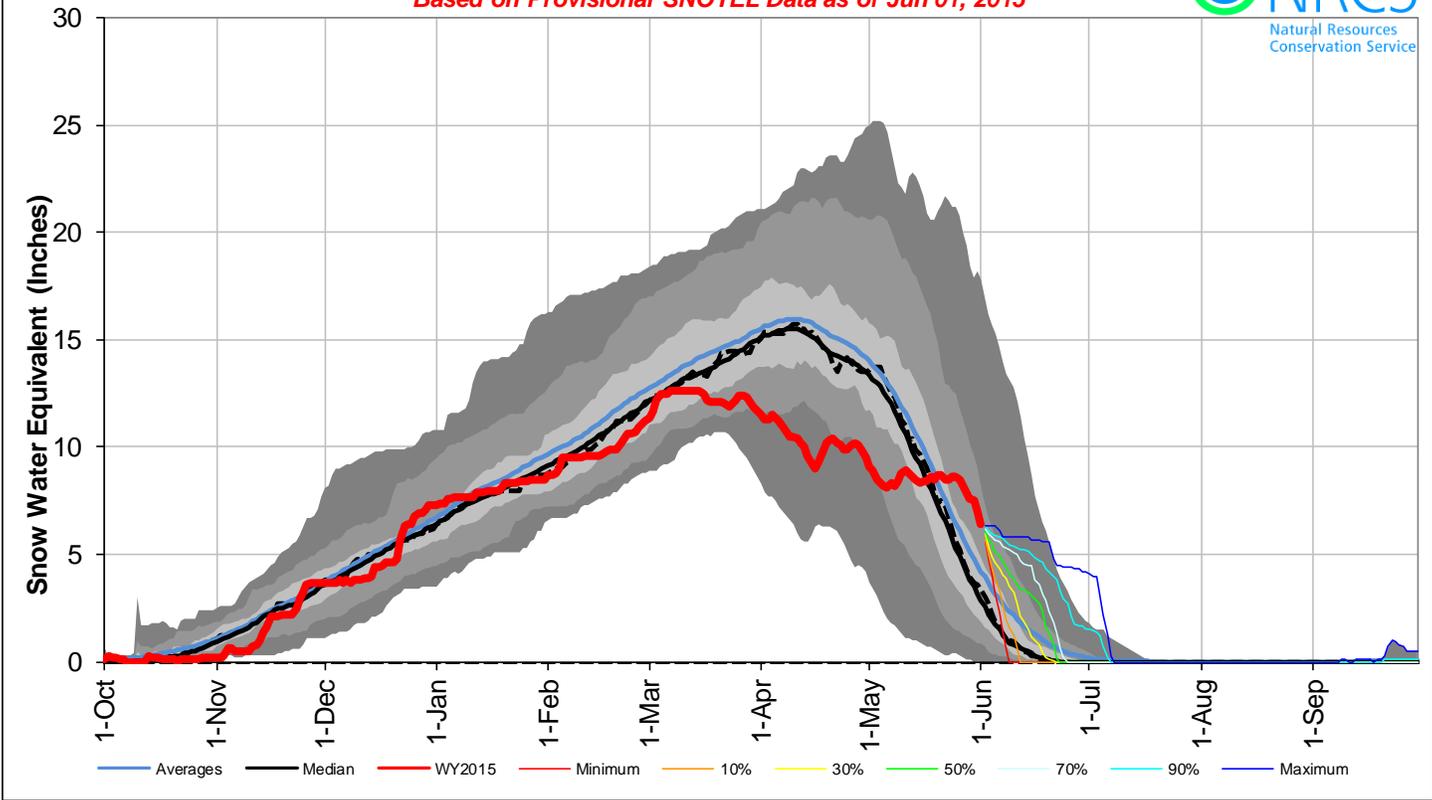
3) Median value used in place of average

Reservoir Storage End of May, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Dillon Reservoir	224.7	203.0	232.7	254.0
Green Mountain Reservoir	102.0	86.5	84.9	146.8
Homestake Reservoir	24.9	1.1	24.7	43.0
Lake Granby	431.2	292.4	313.6	465.6
Ruedi Reservoir	84.2	80.9	78.0	102.0
Shadow Mountain Reservoir	17.1	16.1	16.9	18.4
Vega Reservoir	7.2	9.0	31.3	32.9
Williams Fork Reservoir	86.3	91.9	73.0	97.0
Willow Creek Reservoir	6.0	8.6	7.9	9.1
Woford Mountain Reservoir	52.6	68.3	59.9	65.9
Basin-wide Total	1036.2	857.8	922.9	1234.7
# of reservoirs	10	10	10	10

Watershed Snowpack Analysis June 1, 2015	# of Sites	% Median	Last Year % Median
BLUE RIVER BASIN	5	409%	339%
HEADWATERS COLORADO RIVER	19	271%	278%
MUDDY CREEK BASIN	3	208%	399%
EAGLE RIVER BASIN	4	115%	114%
PLATEAU CREEK BASIN	2	165%	96%
ROARING FORK BASIN	7	224%	213%
WILLIAMS FORK BASIN	3	288%	270%
WILLOW CREEK BASIN	2		
UPPER COLORADO RIVER BASIN	28	223%	223%

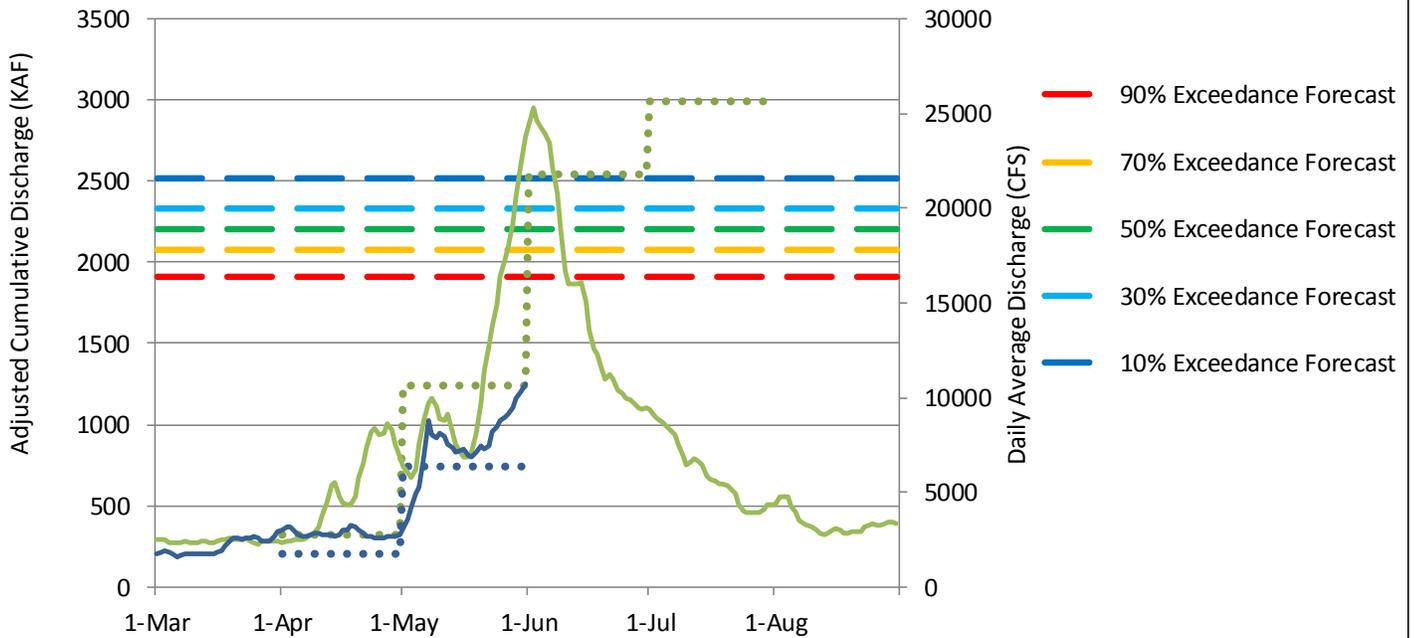
# Upper Colorado River Basin with Non-Exceedance Projections

Based on Provisional SNOTEL Data as of Jun 01, 2015



## Colorado River near Cameo, CO

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)

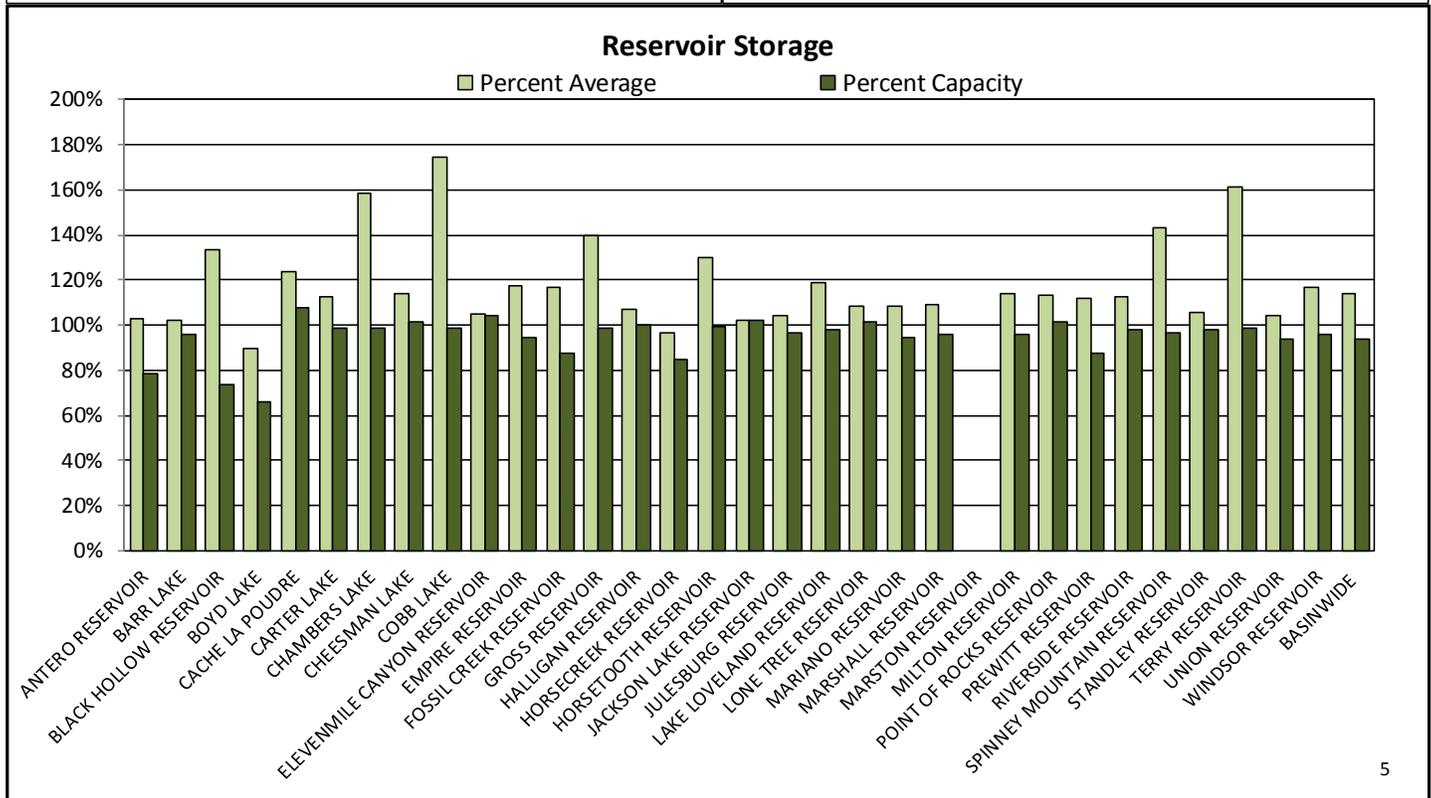
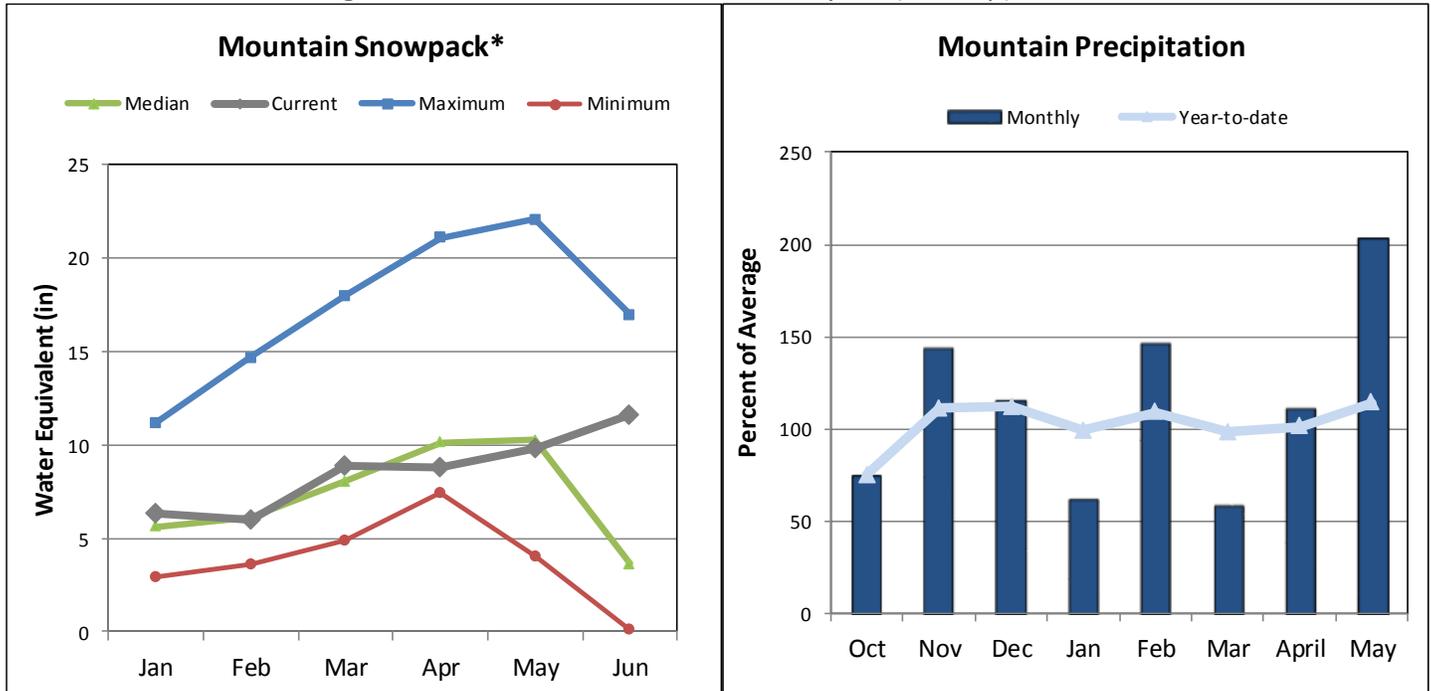


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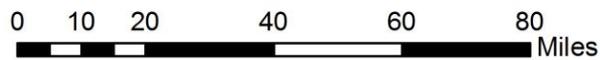
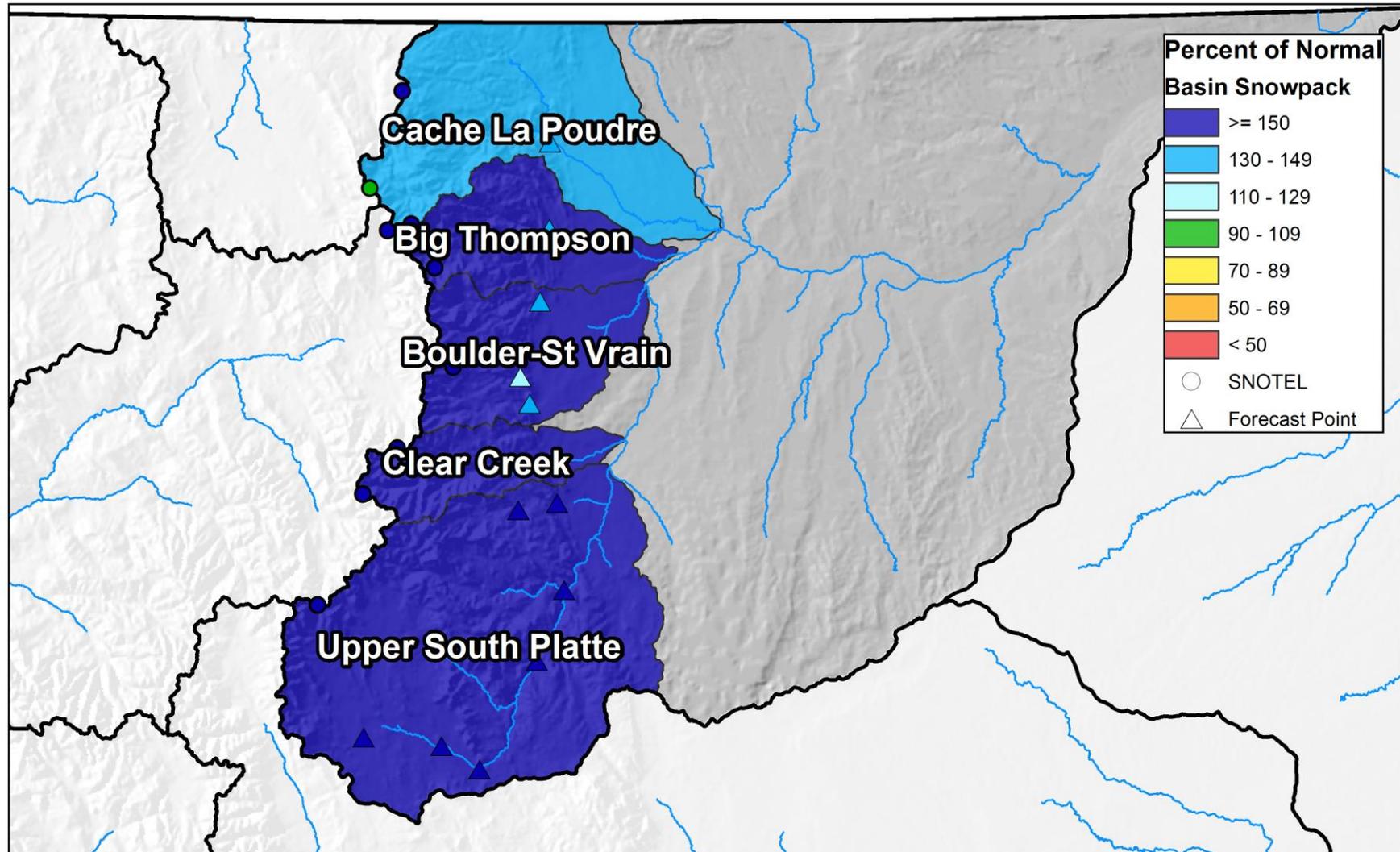
# SOUTH PLATTE RIVER BASIN

June 1, 2015

Snowpack in the South Platte River basin is above normal at 320% of the median. Precipitation for May was 203% of average which brings water year-to-date precipitation up to 114%. Reservoir storage at the end of May was 114% of average, very similar to last year. Current streamflow forecasts range from 178% of average for Bear Creek above Evergreen to 118% for St. Vrain Creek at Lyons (Jun-Sep).



# South Platte River Basin Snowpack and Streamflow Forecasts June 1, 2015



### South Platte River Basin Streamflow Forecasts - June 1, 2015

 Forecast Exceedance Probabilities for Risk Assessment  
 Chance that actual volume will exceed forecast

SOUTH PLATTE RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Antero Reservoir Inflow <sup>2</sup>	APR-JUL	19.9	21	22	152%	23	25	14.5
	APR-SEP	24	26	27	152%	29	31	17.8
	JUN-JUL	13.5	14.9	15.9	159%	16.9	18.3	10
	JUN-SEP	17.7	19.8	21	159%	23	25	13.2
Spinney Mountain Reservoir Inflow <sup>2</sup>	APR-JUL	58	68	76	158%	84	97	48
	APR-SEP	70	85	96	157%	108	127	61
	JUN-JUL	40	50	58	171%	66	79	34
	JUN-SEP	52	67	78	170%	90	109	46
Elevenmile Canyon Reservoir Inflow <sup>2</sup>	APR-JUL	61	71	79	158%	87	100	50
	APR-SEP	74	89	101	158%	114	134	64
	JUN-JUL	40	50	58	166%	66	79	35
	JUN-SEP	53	68	80	167%	93	113	48
Cheesman Lake Inflow <sup>2</sup>	APR-JUL	134	153	167	167%	182	205	100
	APR-SEP	160	190	210	167%	235	275	126
	JUN-JUL	68	87	101	166%	116	140	61
	JUN-SEP	94	124	146	166%	170	210	88
South Platte R at South Platte <sup>2</sup>	APR-JUL	245	275	300	167%	320	360	180
	APR-SEP	295	345	380	169%	415	475	225
	JUN-JUL	115	145	168	158%	192	230	106
	JUN-SEP	165	215	250	163%	285	345	153
Bear Ck ab Evergreen	APR-JUL	30	33	35	213%	38	42	16.4
	APR-SEP	37	41	44	210%	48	53	21
	JUN-JUL	10.9	13.8	15.9	181%	18.2	22	8.8
	JUN-SEP	17.2	21	24	178%	28	33	13.5
Clear Ck at Golden	APR-JUL	114	127	136	130%	146	160	105
	APR-SEP	140	158	171	134%	185	205	128
	JUN-JUL	73	86	95	123%	105	119	76
	JUN-SEP	99	117	130	130%	144	165	100
St. Vrain Ck at Lyons <sup>2</sup>	APR-JUL	102	110	115	131%	121	130	88
	APR-SEP	115	125	133	129%	141	153	103
	JUN-JUL	55	63	68	117%	74	83	58
	JUN-SEP	68	78	86	118%	94	106	73
Boulder Ck nr Orode <sup>2</sup>	APR-JUL	52	56	60	111%	62	68	54
	APR-SEP	60	66	70	111%	74	80	63
	JUN-JUL	38	42	45	125%	48	53	36
	JUN-SEP	46	52	56	124%	60	66	45
South Boulder Ck nr Eldorado Springs <sup>2</sup>	APR-JUL	41	48	53	136%	59	68	39
	APR-SEP	43	52	58	135%	65	77	43
	JUN-JUL	18.9	26	31	135%	37	46	23
	JUN-SEP	21	30	36	133%	43	55	27
Big Thompson R at Canyon Mouth <sup>2</sup>	APR-JUL	112	121	128	142%	135	146	90
	APR-SEP	127	140	149	139%	159	174	107
	JUN-JUL	62	71	78	124%	85	96	63
	JUN-SEP	77	90	99	124%	109	124	80
Cache La Poudre at Canyon Mouth <sup>2</sup>	APR-JUL	290	315	335	149%	355	390	225
	APR-SEP	310	340	360	144%	390	430	250
	JUN-JUL	128	152	172	120%	192	230	143
	JUN-SEP	145	177	200	121%	225	265	165

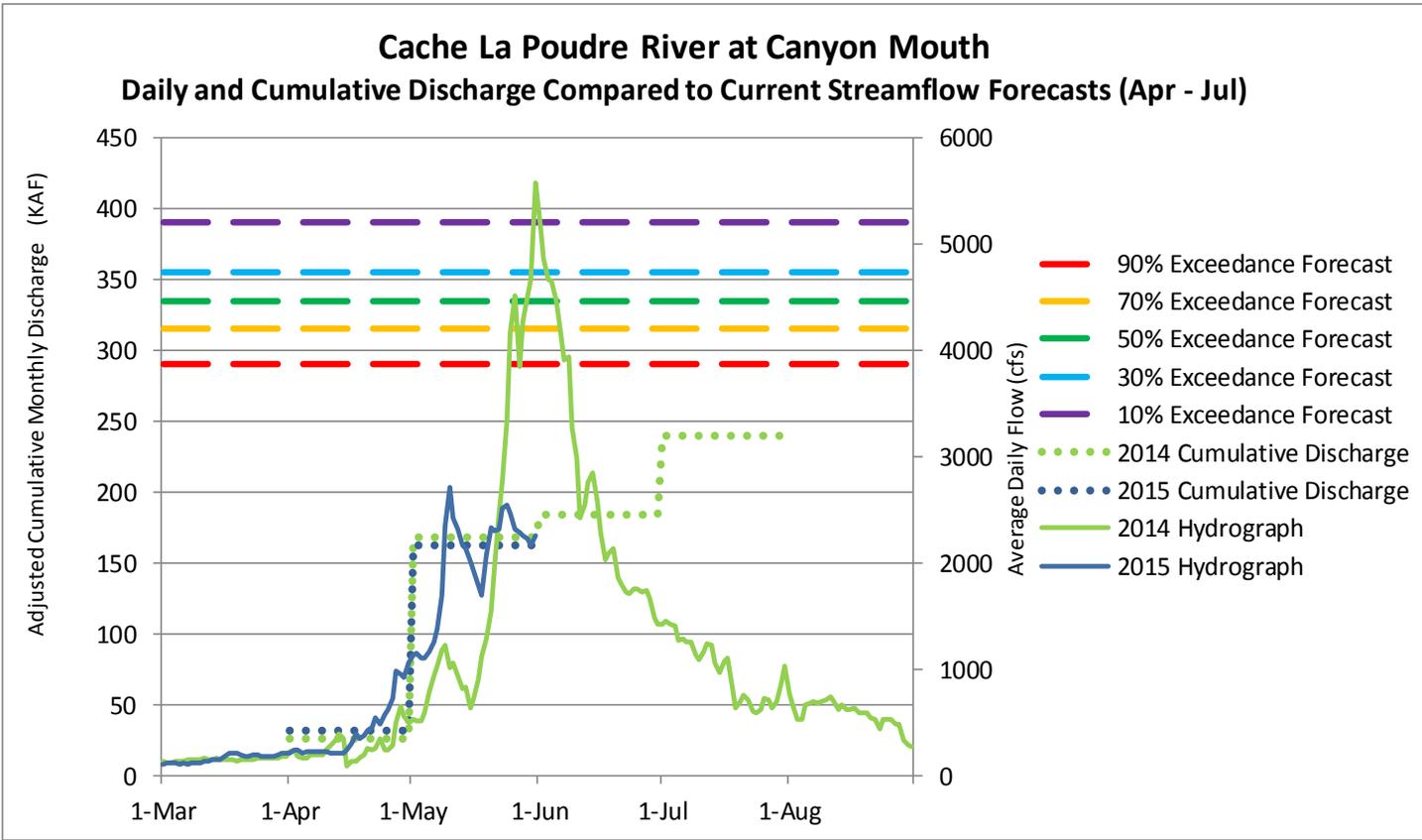
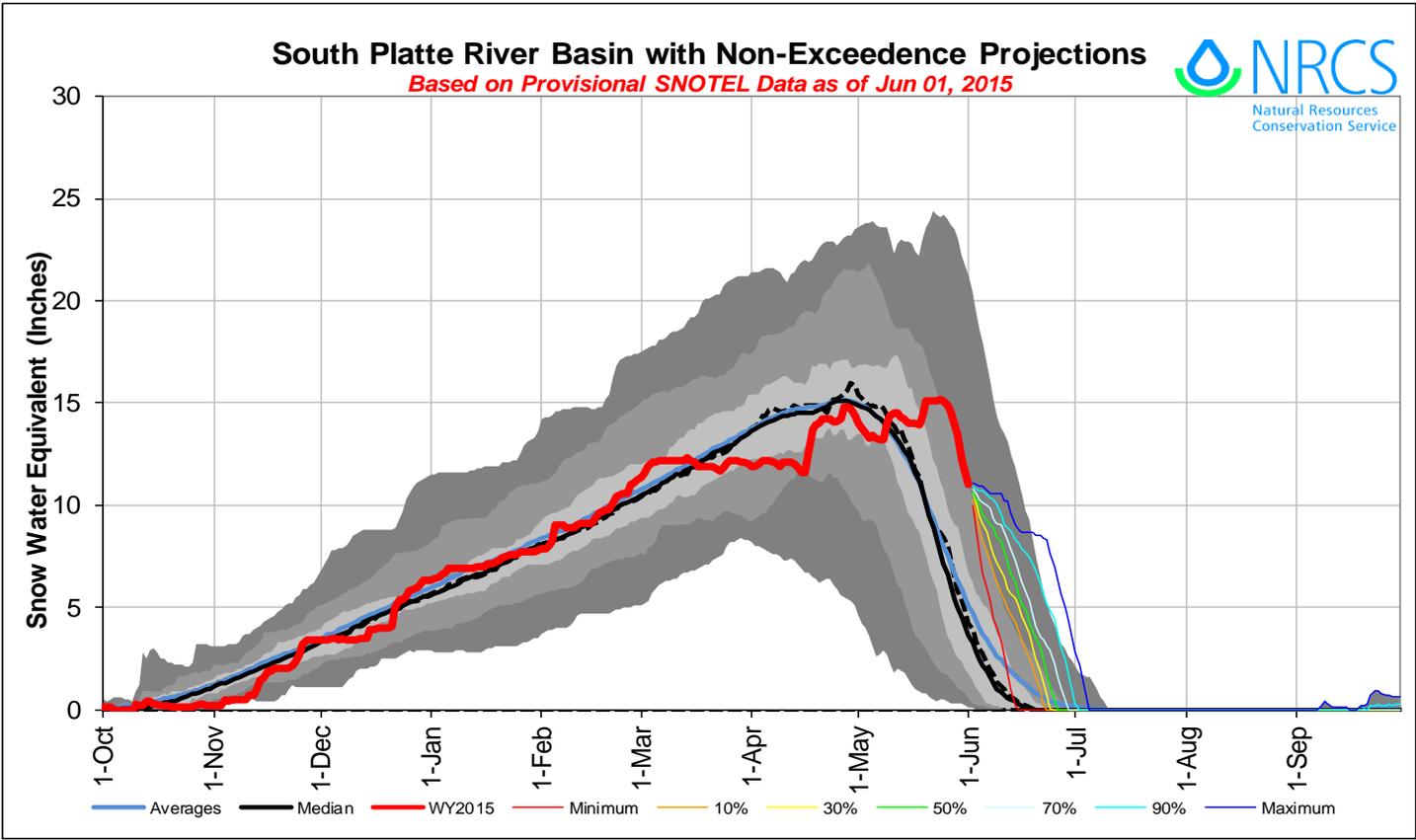
1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of May, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Antero Reservoir	15.6	16.2	15.2	19.9
Barr Lake	28.8	28.8	28.2	30.1
Black Hollow Reservoir	4.8	4.6	3.6	6.5
Boyd Lake	31.8	42.5	35.4	48.4
Cache La Poudre	10.9	10.6	8.8	10.1
Carter Lake	107.4	106.1	95.2	108.9
Chambers Lake	8.7	7.9	5.5	8.8
Cheesman Lake	79.9	79.6	70.3	79.0
Cobb Lake	22.0	22.0	12.6	22.3
Elevenmile Canyon Reservoir	102.4	99.7	97.3	98.0
Empire Reservoir	34.5	36.5	29.4	36.5
Fossil Creek Reservoir	9.7	9.8	8.3	11.1
Gross Reservoir	41.3	38.7	29.6	41.8
Halligan Reservoir	6.4	6.4	6.0	6.4
Horsecreek Reservoir	12.5	11.4	12.9	14.7
Horsetooth Reservoir	148.6	147.4	114.2	149.7
Jackson Lake Reservoir	26.7	26.1	26.1	26.1
Julesburg Reservoir	19.8	19.3	19.0	20.5
Lake Loveland Reservoir	10.1	10.1	8.5	10.3
Lone Tree Reservoir	8.8	8.6	8.1	8.7
Mariano Reservoir	5.1	5.2	4.7	5.4
Marshall Reservoir	9.6	9.6	8.8	10.0
Marston Reservoir	0.0	0.1	9.7	13.0
Milton Reservoir	22.5	22.7	19.8	23.5
Point Of Rocks Reservoir	71.6	68.7	63.2	70.6
Prewitt Reservoir	24.6	24.0	22.0	28.2
Ralph Price Reservoir	14.5	12.1	16.2	16.2
Riverside Reservoir	54.5	52.8	48.5	55.8
Spinney Mountain Reservoir	47.4	38.3	33.1	49.0
Standley Reservoir	41.2	41.2	39.1	42.0
Terry Reservoir	7.9	7.2	4.9	8.0
Union Reservoir	12.2	12.5	11.7	13.0
Windsor Reservoir	14.6	14.9	12.5	15.2
Basin-wide Total	1041.9	1029.5	912.2	1091.5
# of reservoirs	32	32	32	32

Watershed Snowpack Analysis June 1, 2015	# of Sites	% Median	Last Year % Median
BIG THOMPSON BASIN	3	249%	257%
BOULDER CREEK BASIN	3	317%	290%
CACHE LA POUFRE BASIN	2	133%	203%
CLEAR CREEK BASIN	2	233%	287%
SAINT VRAIN BASIN	1		
UPPER SOUTH PLATTE BASIN	6	16650%	8900%
SOUTH PLATTE RIVER BASIN	17	320%	306%

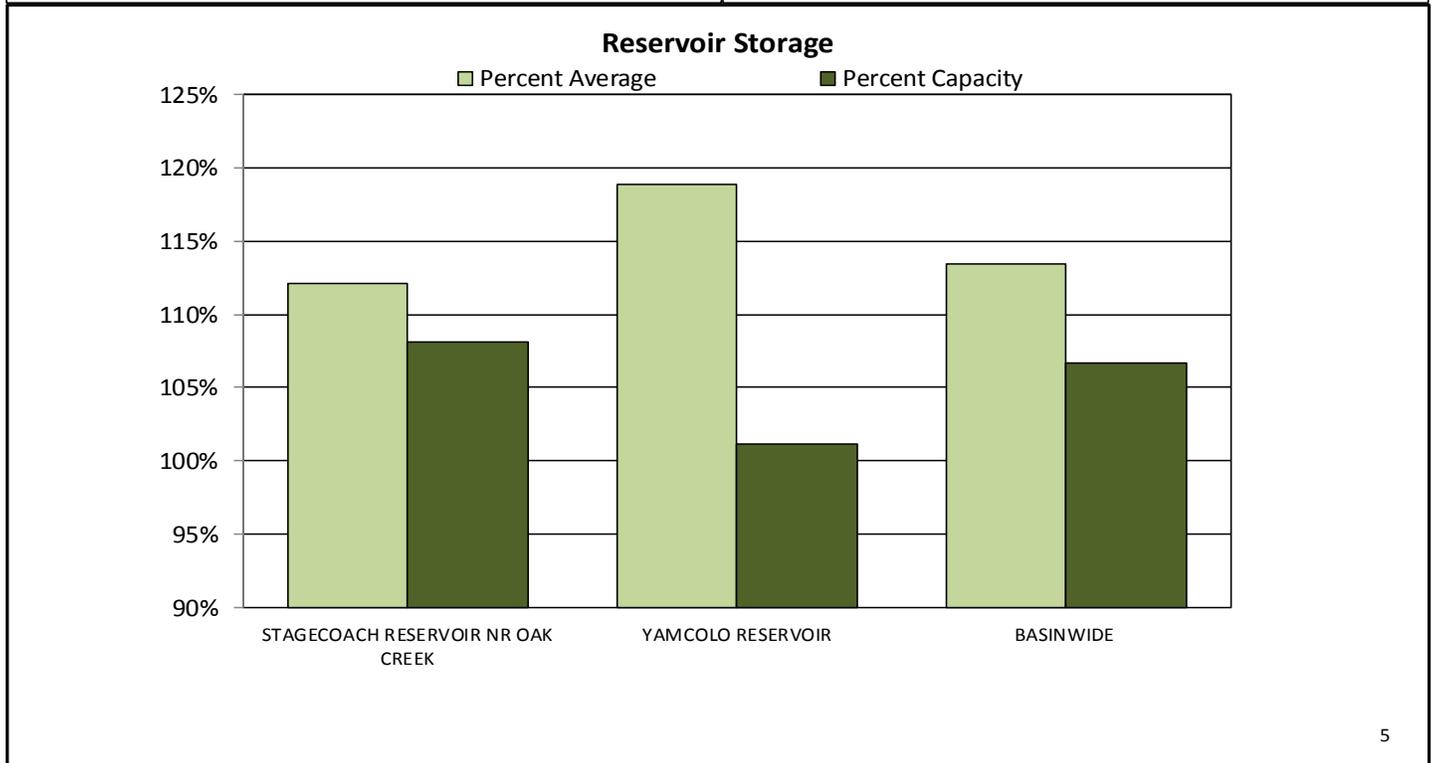
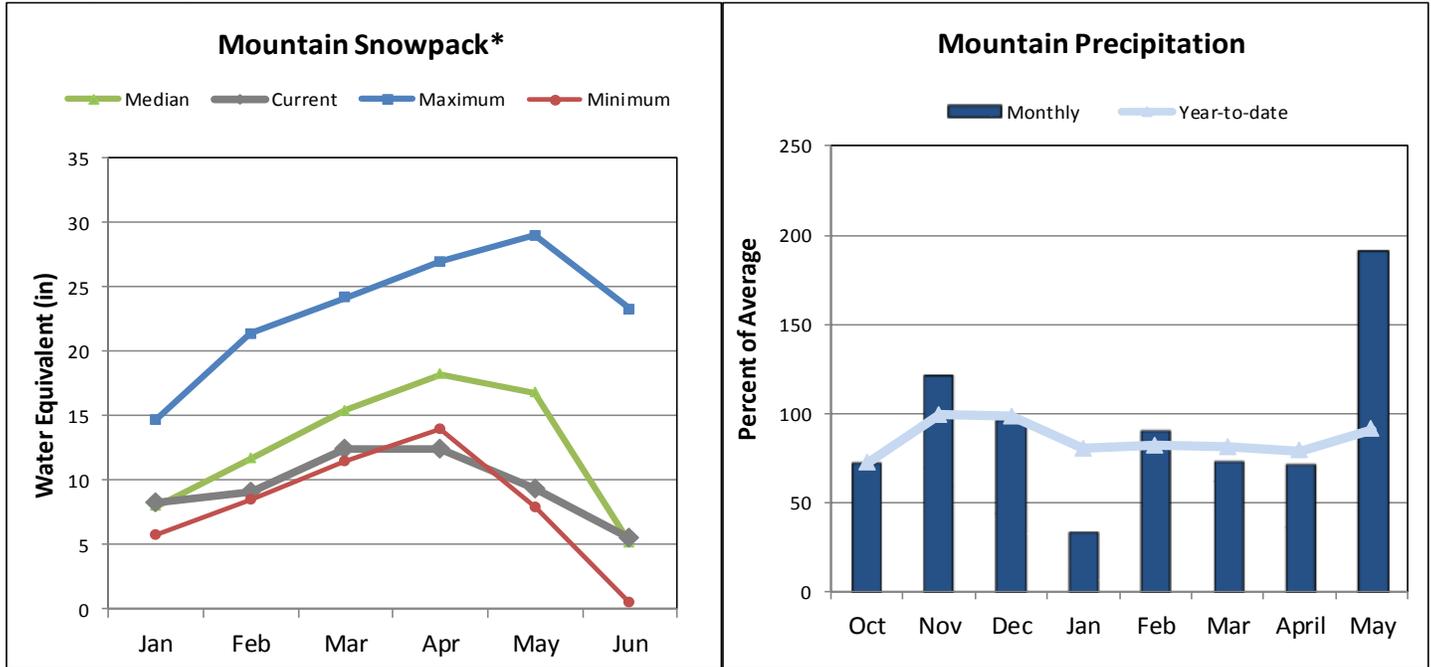


Please refer to the sections at the end of this report for further explanation concerning these graphs.

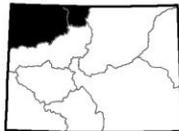
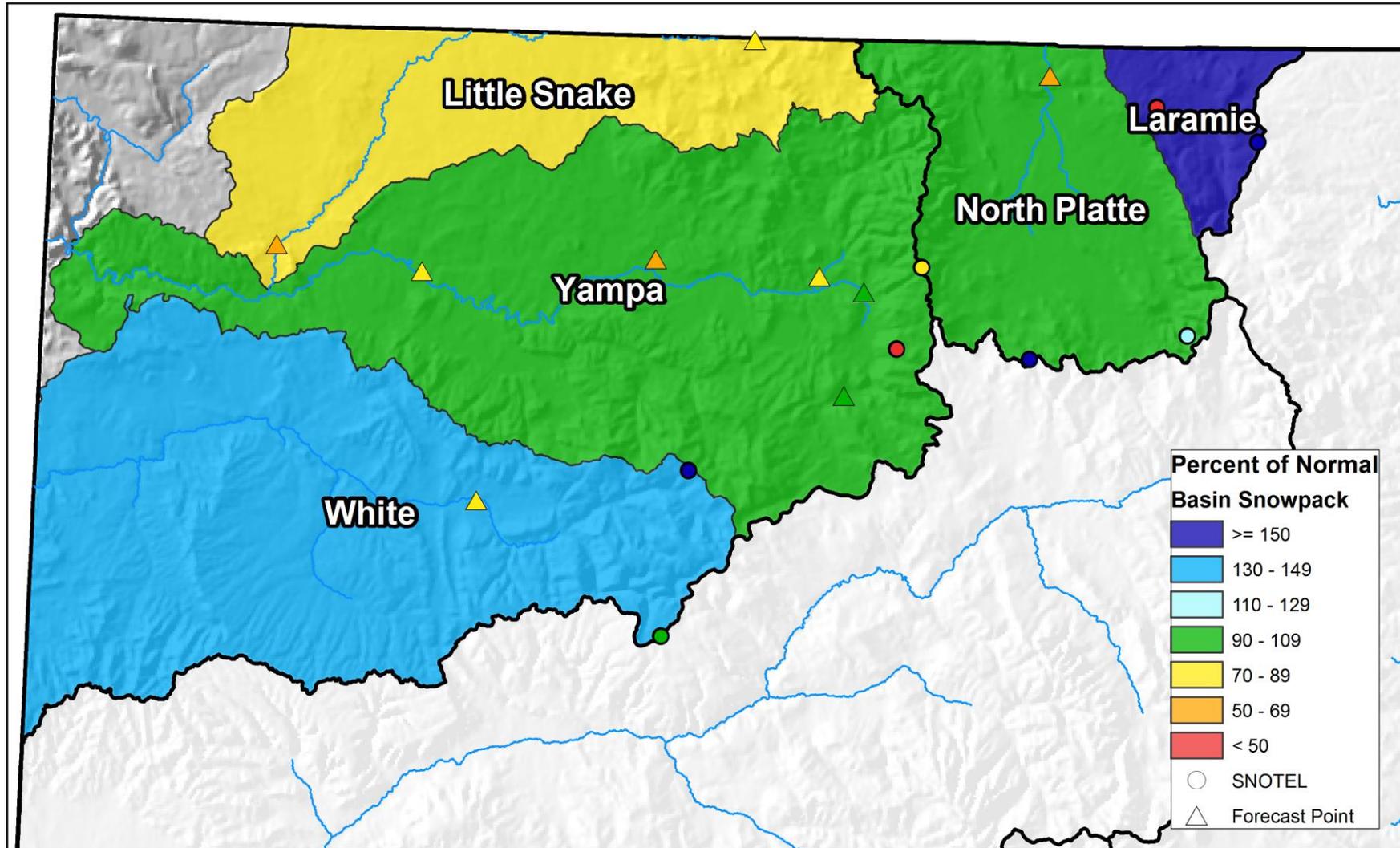
# YAMPA, WHITE, NORTH PLATTE AND LARAMIE RIVER BASINS

June 1, 2015

Snowpack in the Yampa, White, North Platte & Laramie basins is above normal at 107% of the median. Precipitation for May was 192% of average which brings water year-to-date precipitation up to 91%. Reservoir storage at the end of May was 113% of average compared to 114% last year. Current streamflow forecasts range from 73% of average for the Laramie near Woods to 38% of average for Elkhead Creek above Long Gulch (Jun-Jul).



# Yampa, White, and North Platte River Basins Snowpack and Streamflow Forecasts June 1, 2015



0 5 10 20 30 40  
Miles



United States Department of Agriculture  
Natural Resources Conservation Service

## Yampa-White-North Platte River Basins Streamflow Forecasts - June 1, 2015

 Forecast Exceedance Probabilities for Risk Assessment  
 Chance that actual volume will exceed forecast

<b>YAMPA-WHITE-NORTH PLATTE RIVER BASINS</b>	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
North Platte R nr Northgate	JUN-JUL	38	64	82	67%	100	126	123
	JUN-SEP	44	76	98	67%	120	152	146
Laramie R nr Woods <sup>2</sup>	JUN-JUL	29	42	51	72%	60	73	71
	JUN-SEP	35	50	60	73%	70	85	82
Yampa R ab Stagecoach Reservoir <sup>2</sup>	APR-JUL	22	24	25	109%	27	29	23
	JUN-JUL	2.6	4.2	5.5	64%	7	9.5	8.6
Yampa R at Steamboat Springs <sup>2</sup>	APR-JUL	210	225	240	92%	255	275	260
	JUN-JUL	45	61	74	62%	88	110	119
Elk R nr Milner	APR-JUL	205	225	245	77%	260	290	320
	JUN-JUL	73	95	112	70%	130	160	159
Elkhead Ck ab Long Gulch	APR-JUL	42	44	45	62%	48	52	73
	JUN-JUL	0.47	2.2	4	38%	6.4	11	10.4
Yampa R nr Maybell <sup>2</sup>	APR-JUL	600	645	680	73%	720	780	935
	JUN-JUL	148	195	230	59%	270	330	390
Little Snake R nr Slater <sup>2</sup>	APR-JUL	96	104	110	71%	117	128	156
	JUN-JUL	16.1	24	30	45%	37	48	66
Little Snake R nr Dixon <sup>2</sup>	APR-JUL	138	156	171	50%	188	220	345
	JUN-JUL	22	40	55	41%	72	102	135
Little Snake R nr Lily <sup>2</sup>	APR-JUL	168	191	210	61%	235	280	345
	JUN-JUL	20	43	63	47%	87	130	134
White R nr Meeker	APR-JUL	205	220	235	84%	245	270	280
	JUN-JUL	71	87	100	69%	113	134	144

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

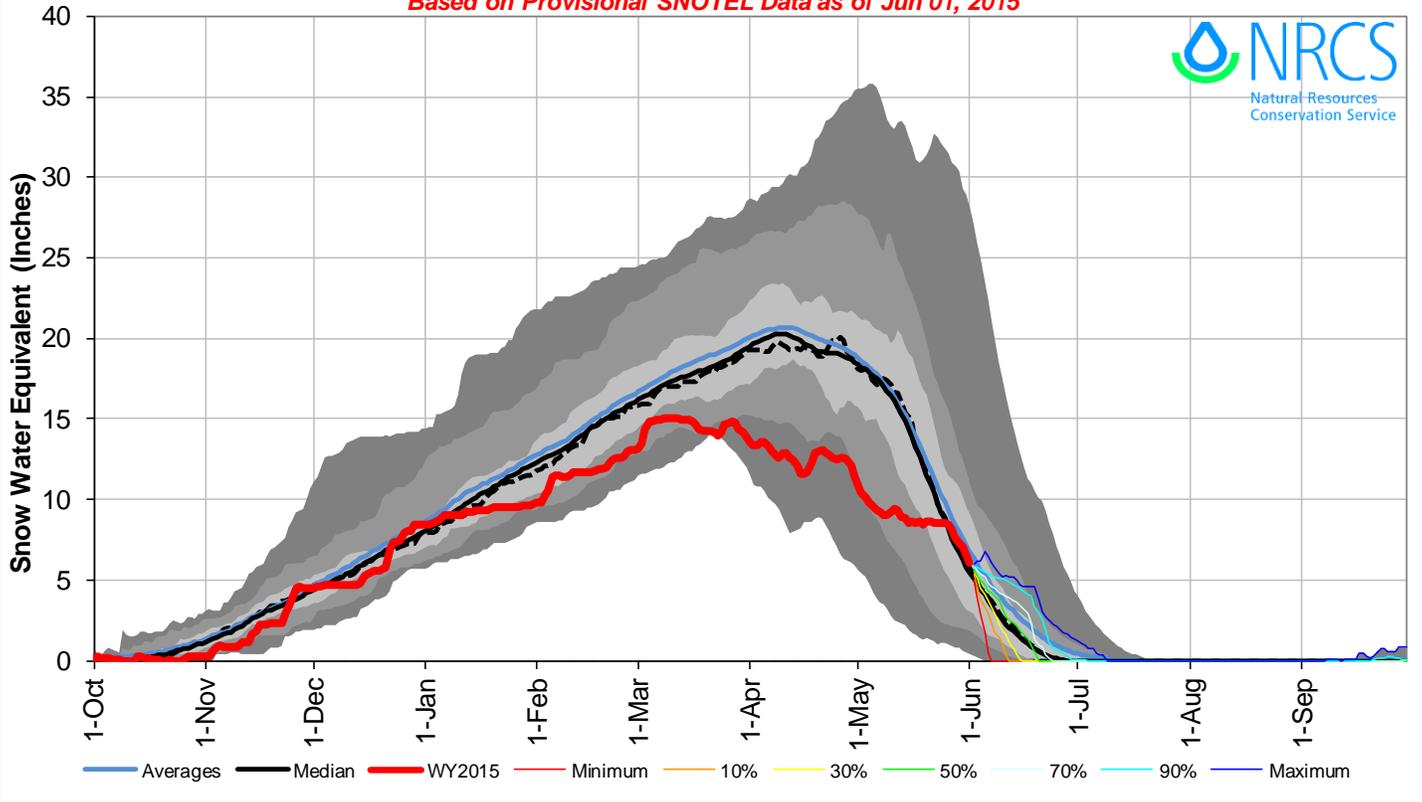
3) Median value used in place of average

<b>Reservoir Storage End of May, 2015</b>	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Stagecoach Reservoir nr Oak Creek	36.0	36.8	32.1	33.3
Yamcolo Reservoir	8.8	8.1	7.4	8.7
Basin-wide Total	44.8	44.9	39.5	42.0
# of reservoirs	2	2	2	2

<b>Watershed Snowpack Analysis June 1, 2015</b>	# of Sites	% Median	Last Year % Median
LARAMIE RIVER BASIN	2	153%	278%
NORTH PLATTE RIVER BASIN	8	100%	180%
LARAMIE & NORTH PLATTE RIVER BASINS	10	107%	193%
ELK RIVER BASIN	2		
YAMPA RIVER BASIN	9	99%	157%
WHITE RIVER BASIN	4	132%	129%
YAMPA & WHITE RIVER BASINS	12	98%	139%
LITTLE SNAKE RIVER BASIN	7	81%	161%
YAMPA-WHITE-NORTH PLATTE RIVER BASINS	26	107%	176%

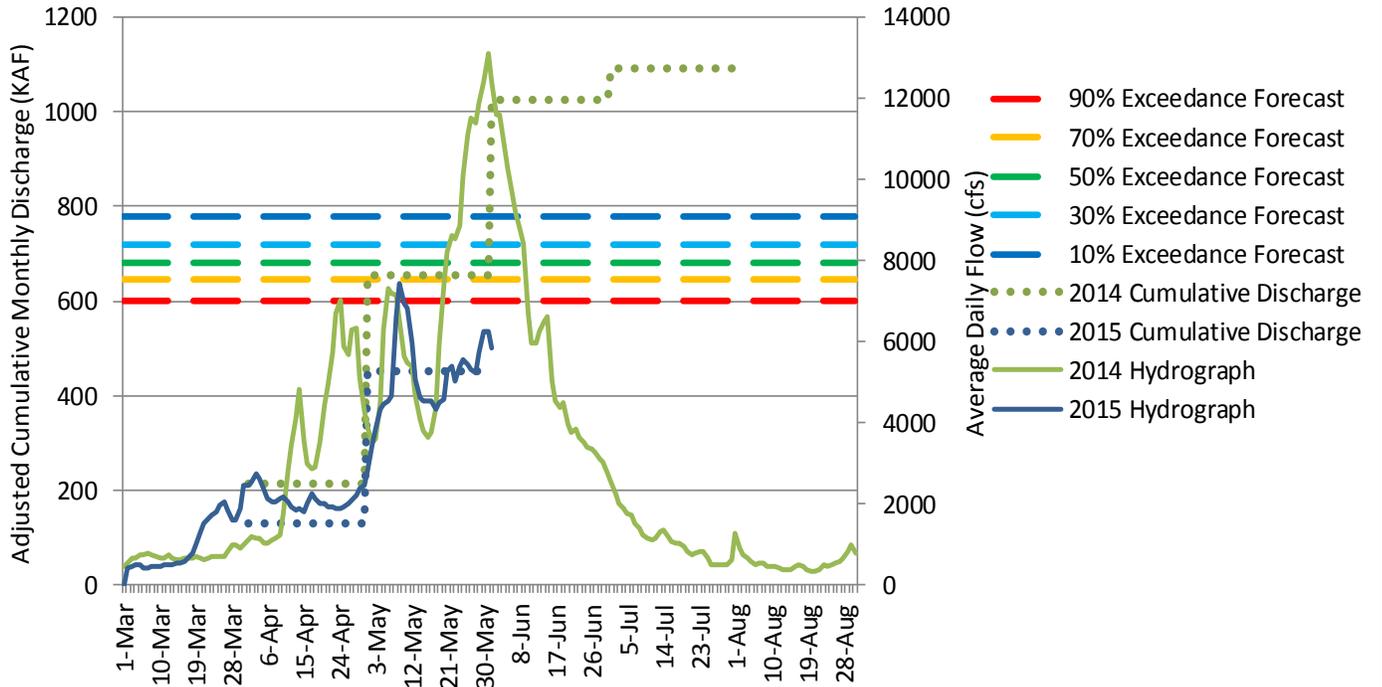
## Yampa, White & North Platte River Basins with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Jun 01, 2015



## Yampa River near Maybell

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)

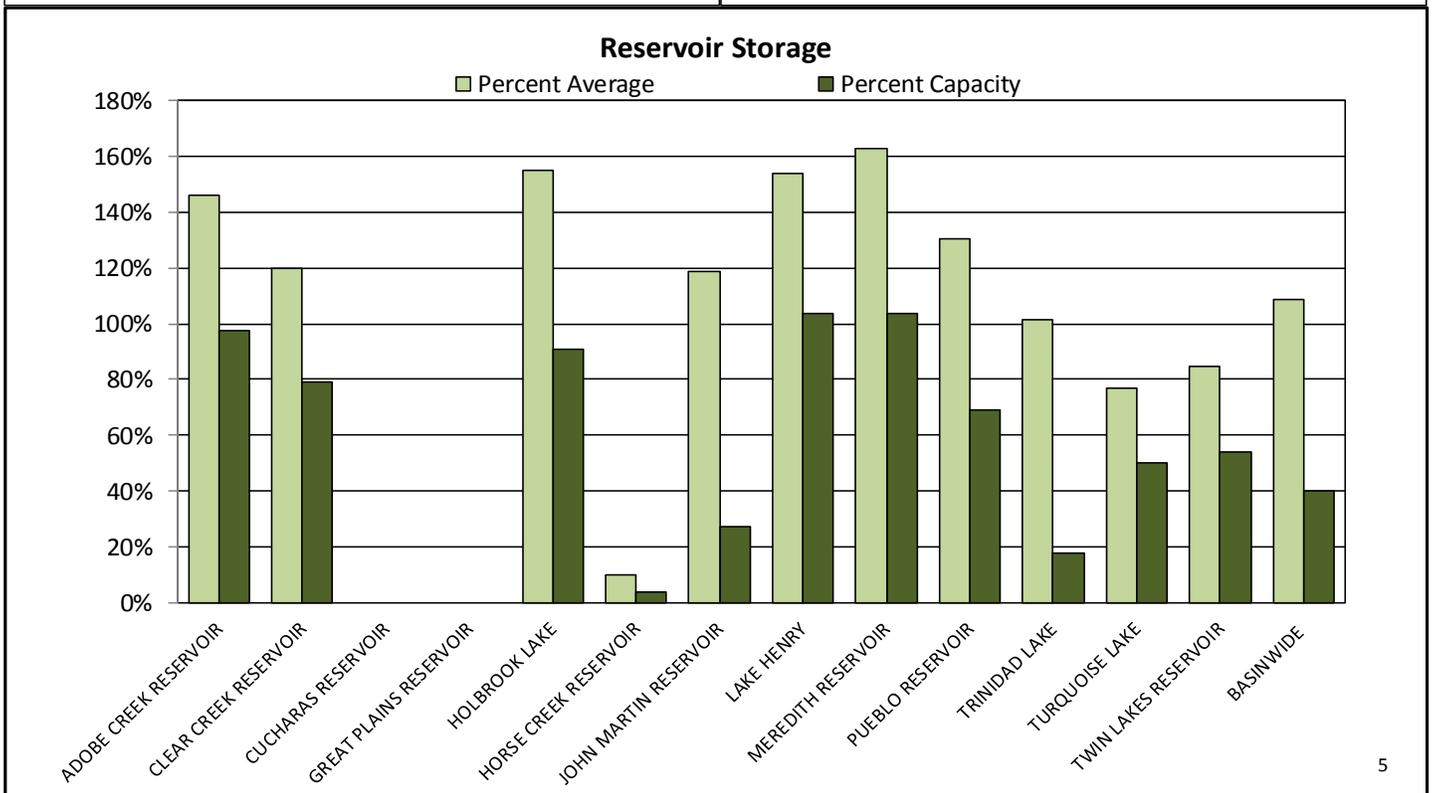
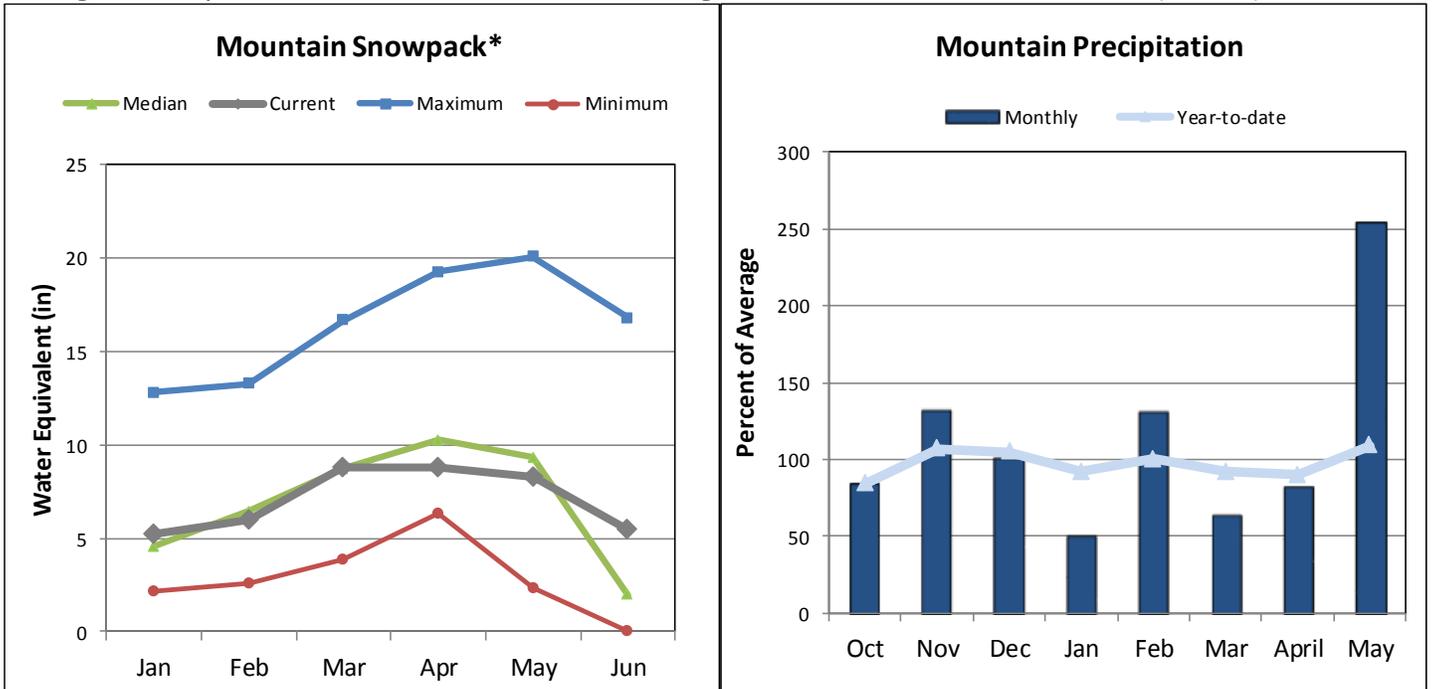


Please refer to the sections at the end of this report for further explanation concerning these graphs.

# ARKANSAS RIVER BASIN

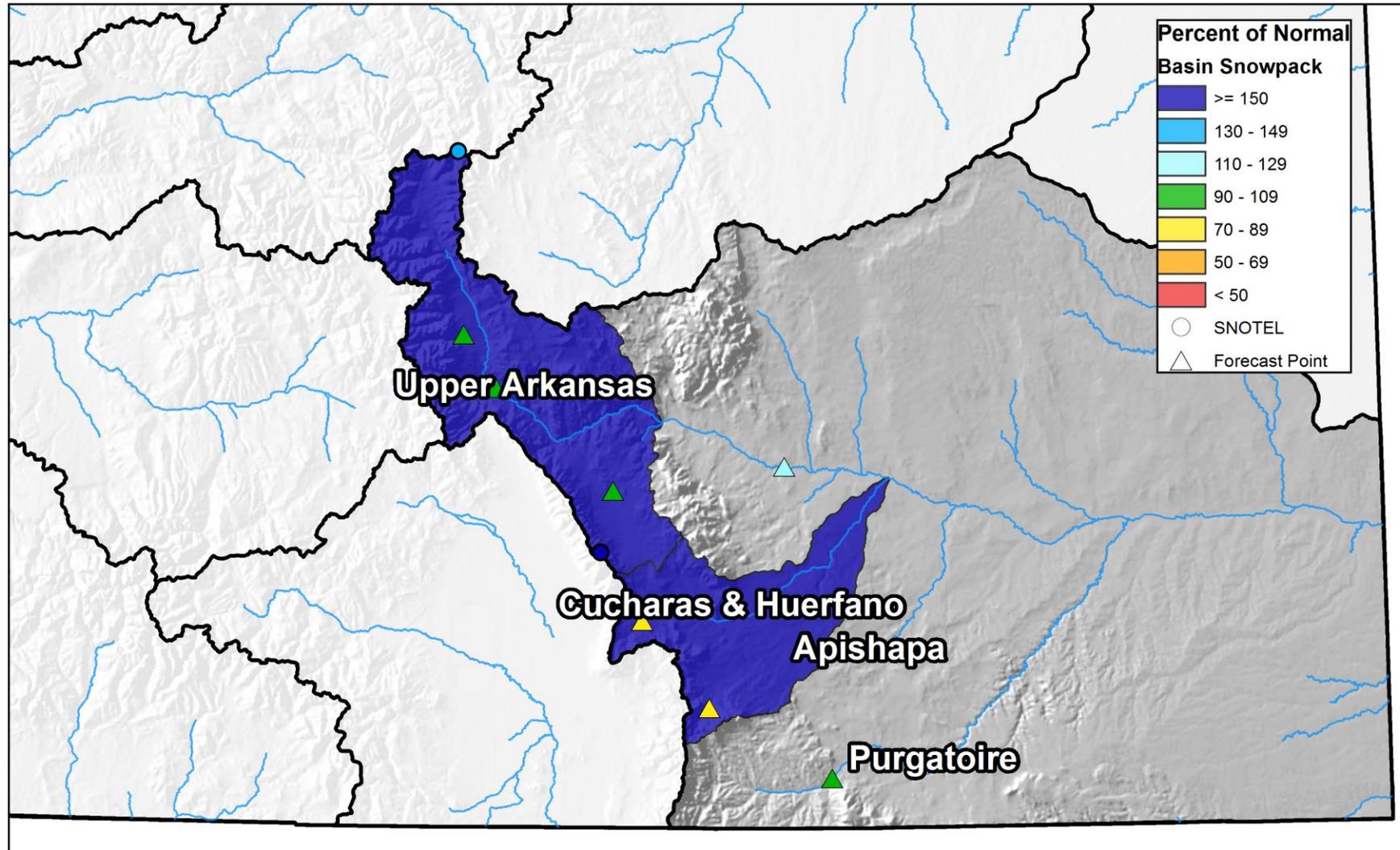
June 1, 2015

Snowpack in the Arkansas River basin is above normal at 282% of the median. Precipitation for May was 254% of average which brings water year-to-date precipitation up to 109% of average. Reservoir storage at the end of May was 108% of average compared to 56% last year. Current streamflow forecasts range from 122% of average for Grape Creek at Westcliffe to 77% of average the Cucharas River near La Veta (Jun-Jul).



# Arkansas River Basin Snowpack and Streamflow Forecasts

## June 1, 2015



0 10 20 40 60 80 Miles

## Arkansas River Basin Streamflow Forecasts - June 1, 2015

 Forecast Exceedance Probabilities for Risk Assessment  
 Chance that actual volume will exceed forecast

ARKANSAS RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Chalk Ck nr Nathrop	APR-JUL	14.4	18.2	21	100%	25	30	21
	APR-SEP	16.8	22	26	100%	31	38	26
	JUN-JUL	10.5	14.3	17.3	106%	21	26	16.3
	JUN-SEP	12.9	18.1	22	105%	27	34	21
Arkansas R at Salida <sup>2</sup>	APR-JUL	172	205	235	98%	260	310	240
	APR-SEP	210	260	300	102%	340	410	295
	JUN-JUL	113	148	174	100%	200	250	174
	JUN-SEP	151	200	240	104%	280	350	230
Grape Ck nr Westcliffe	APR-JUL	8.5	11.6	14.3	90%	17.4	23	15.9
	APR-SEP	10.8	15	18.3	93%	22	28	19.6
	JUN-JUL	4.3	7.4	10.1	122%	13.2	18.4	8.3
	JUN-SEP	6.6	10.8	14.1	118%	17.8	24	12
Pueblo Reservoir Inflow <sup>2</sup>	APR-JUL	365	415	450	125%	490	550	360
	APR-SEP	425	490	545	120%	600	685	455
	JUN-JUL	181	230	265	110%	305	365	240
	JUN-SEP	240	305	360	107%	415	500	335
Huerfano R nr Redwing	APR-JUL	7.1	8.6	9.7	82%	10.9	13	11.9
	APR-SEP	8.8	10.8	12.3	81%	14	16.8	15.2
	JUN-JUL	3.4	4.9	6	85%	7.2	9.3	7.1
	JUN-SEP	5.1	7.1	8.6	83%	10.3	13.1	10.4
Cucharas R nr La Veta	APR-JUL	7.7	8.8	9.7	80%	10.7	12.3	12.2
	APR-SEP	9.4	10.8	11.9	84%	13	14.9	14.1
	JUN-JUL	2.6	3.7	4.6	77%	5.6	7.2	6
	JUN-SEP	4.3	5.7	6.8	87%	7.9	9.8	7.8
Trinidad Lake Inflow <sup>2</sup>	MAR-JUL	28	32	36	97%	39	45	37
	APR-SEP	30	37	42	89%	48	59	47
	JUN-JUL	8.3	12.6	16.1	83%	20	26	19.4
	JUN-SEP	13.4	20	25	81%	31	42	31

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

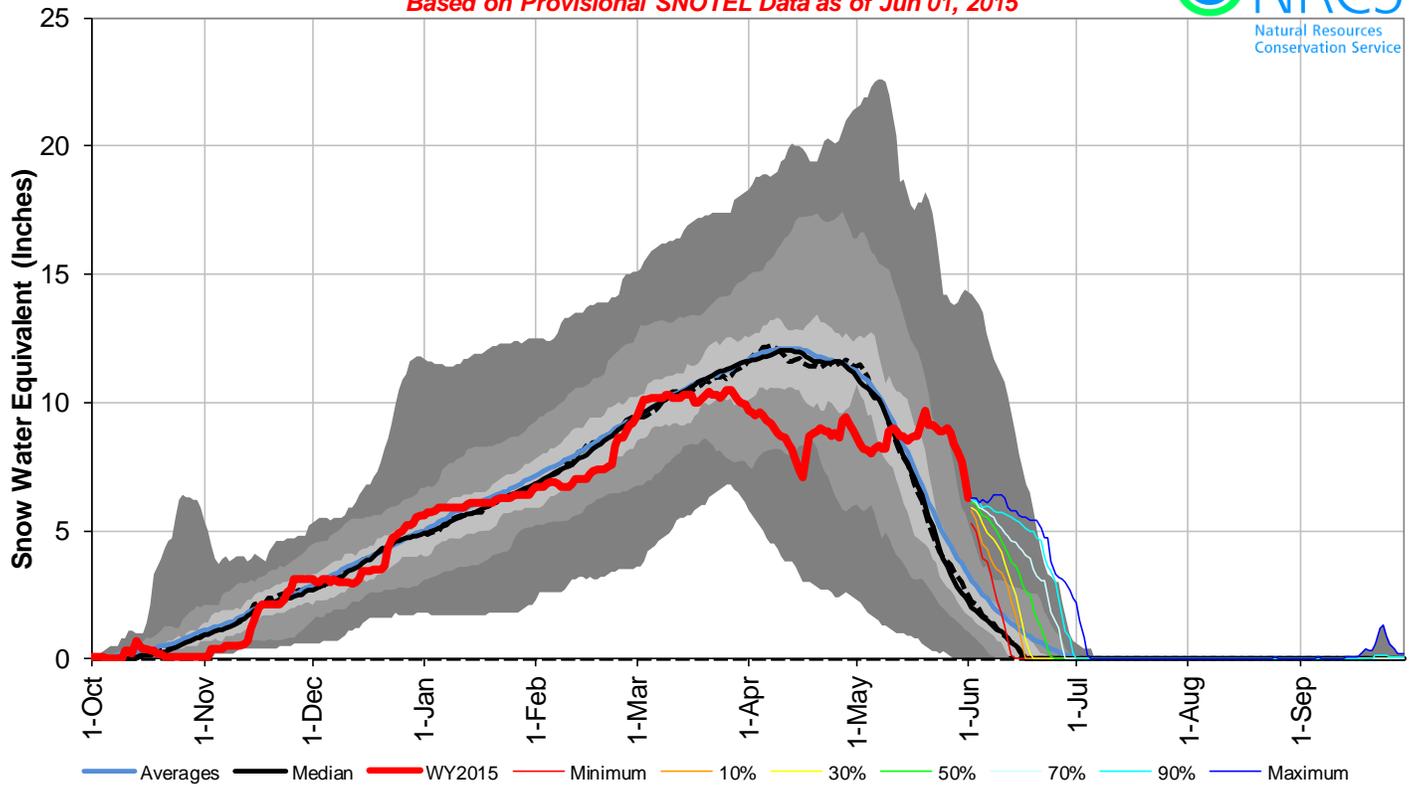
3) Median value used in place of average

Reservoir Storage End of May, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Adobe Creek Reservoir	60.5	15.5	41.4	62.0
Clear Creek Reservoir	9.0	7.9	7.5	11.4
Cucharas Reservoir			6.0	40.0
Great Plains Reservoir	0.0	0.0	37.4	150.0
Holbrook Lake	6.4	0.1	4.1	7.0
Horse Creek Reservoir	1.0	0.0	9.9	27.0
John Martin Reservoir	168.4	26.0	141.9	616.0
Lake Henry	9.7	4.6	6.3	9.4
Meredith Reservoir	43.6	12.5	26.8	42.0
Pueblo Reservoir	243.5	183.7	186.4	354.0
Trinidad Lake	29.7	14.1	29.3	167.0
Turquoise Lake	63.4	53.2	82.3	127.0
Twin Lakes Reservoir	46.4	33.5	54.9	86.0
Basin-wide Total	681.6	351.1	628.2	1658.8
# of reservoirs	12	12	12	12

Watershed Snowpack Analysis June 1, 2015	# of Sites	% Median	Last Year % Median
UPPER ARKANSAS BASIN	3	196%	143%
CUCHARAS & HUERFANO BASINS	3	556%	38%
PURGATOIRE RIVER BASIN	2		
ARKANSAS RIVER BASIN	8	282%	132%

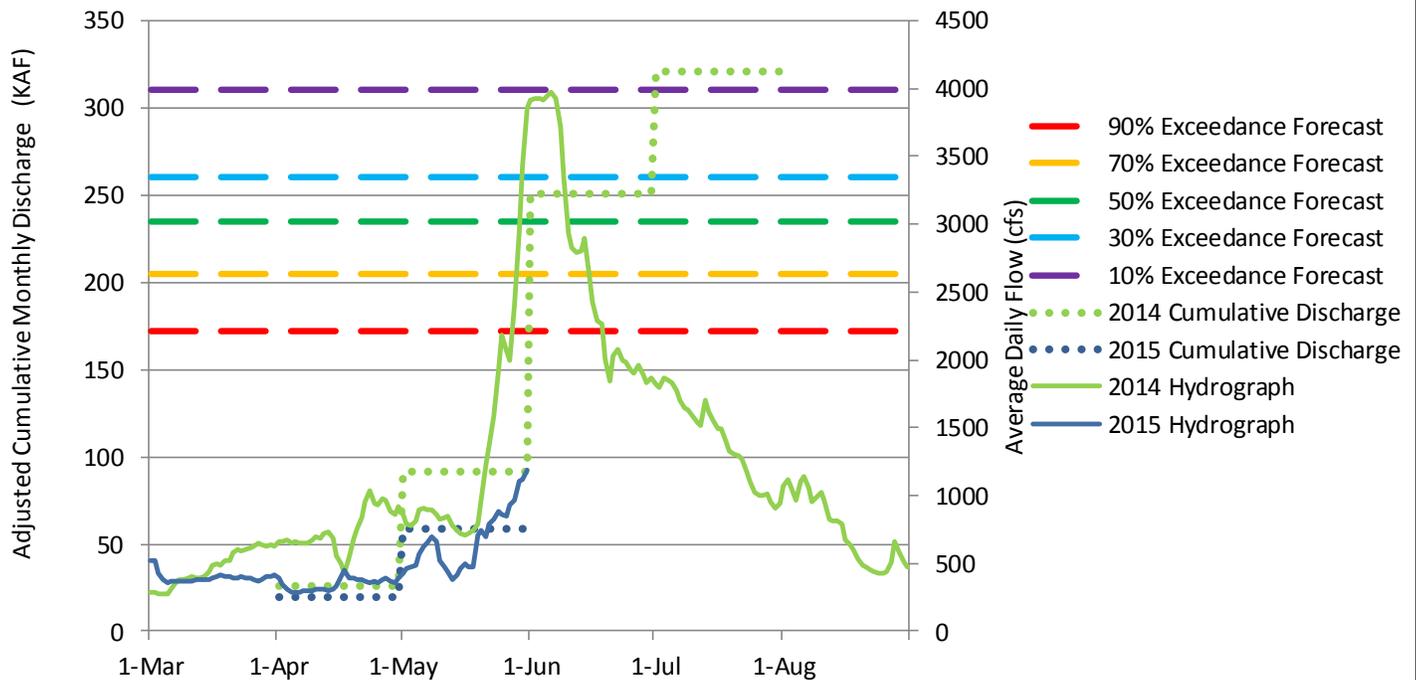
# Arkansas River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Jun 01, 2015



## Arkansas River at Salida, CO

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)

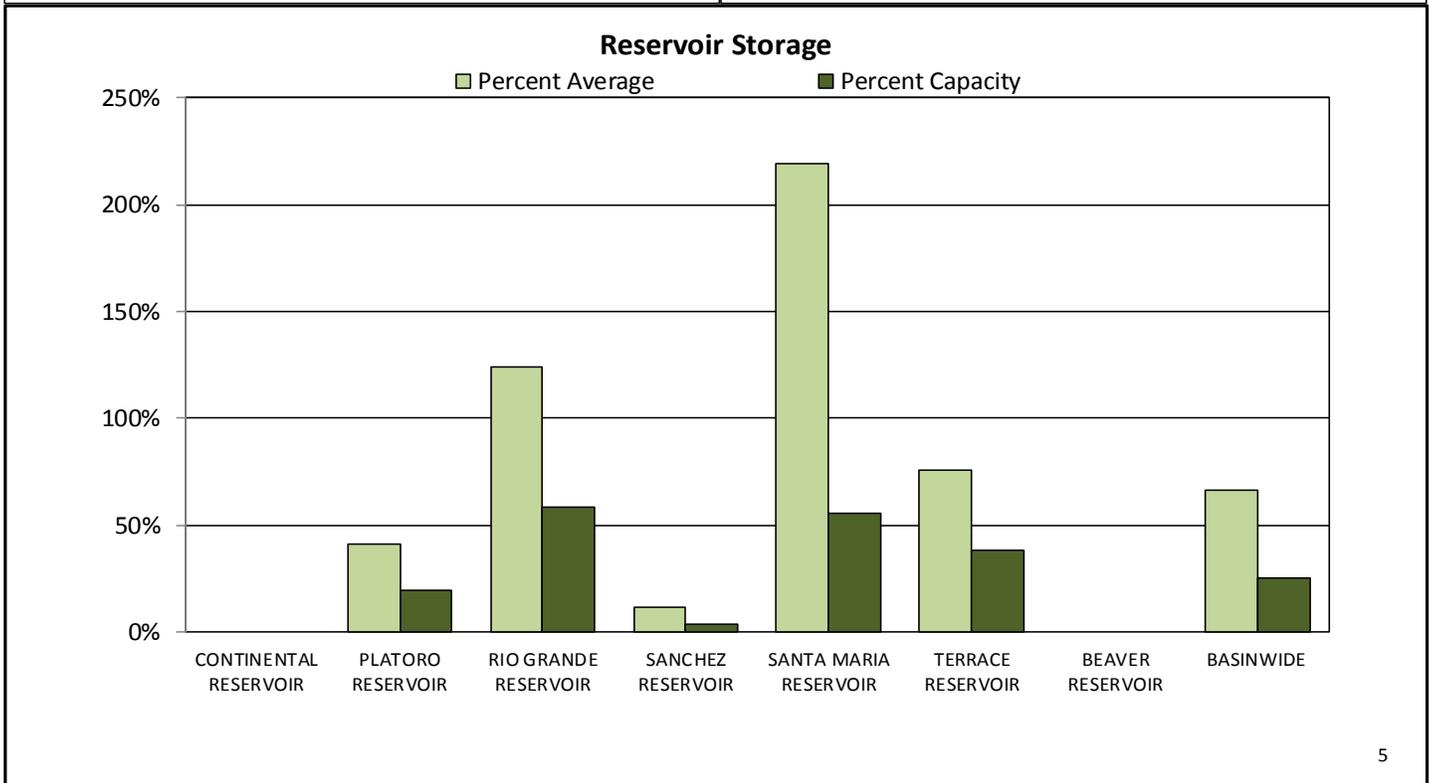
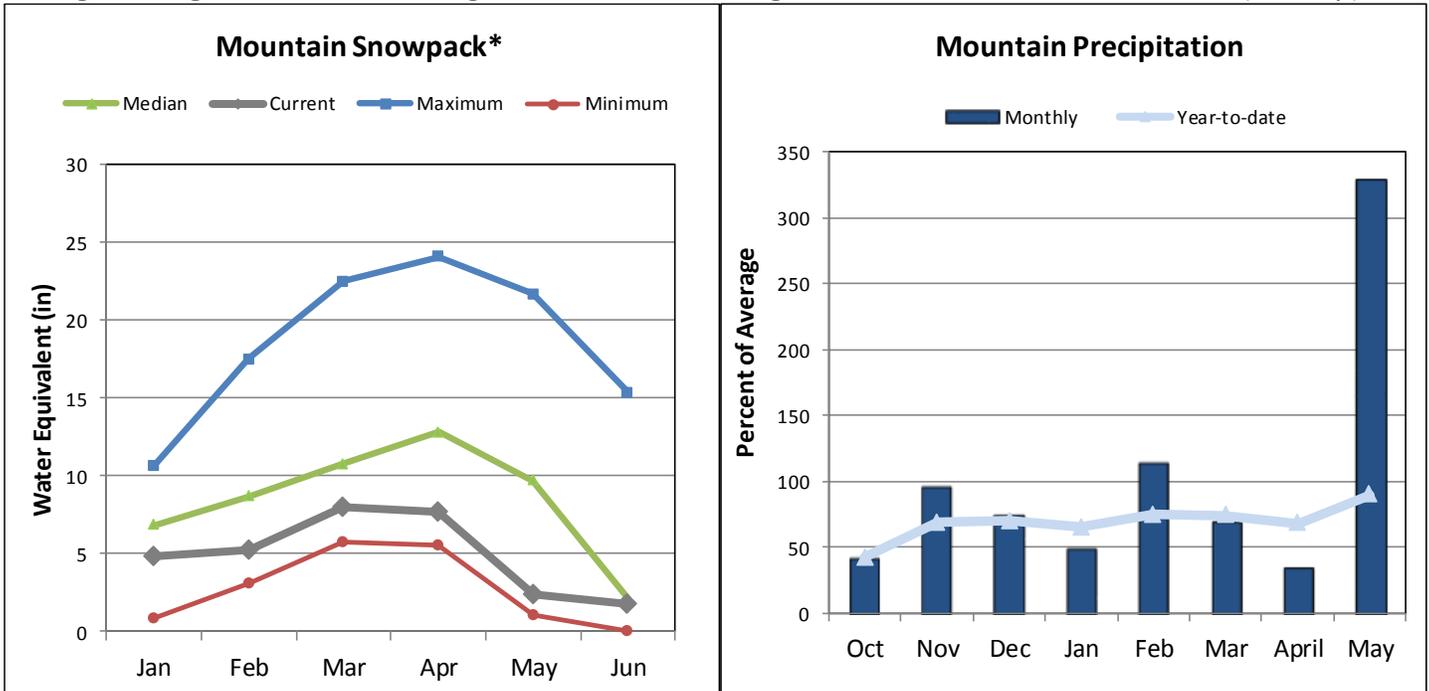


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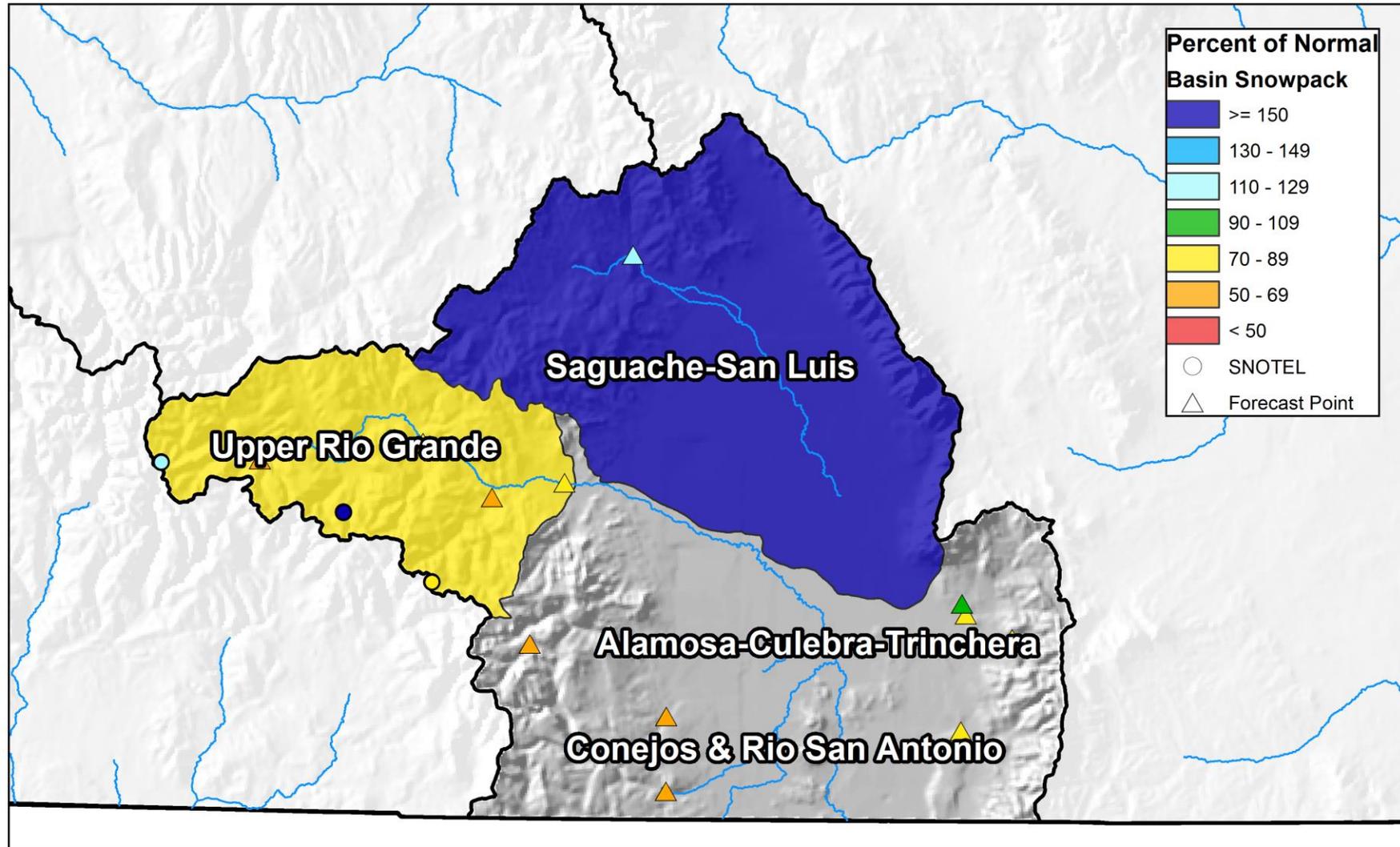
# UPPER RIO GRANDE RIVER BASIN

June 1, 2015

Snowpack in the Upper Rio Grande River basin is below normal at 86% of median. Precipitation for May was 328% of average which brings water year-to-date precipitation up to 90% of average. Reservoir storage at the end of May was 66% of average compared to 63% last year. Current streamflow forecasts range from 125% of average for Saguache Creek near Saguache to 43% of average for the San Antonio River at Ortiz (Jun-Sep).



# Upper Rio Grande River Basin Snowpack and Streamflow Forecasts June 1, 2015



0 5 10 20 30 40 Miles



United States Department of Agriculture  
Natural Resources Conservation Service

### Upper Rio Grande Basin Streamflow Forecasts - June 1, 2015

 Forecast Exceedance Probabilities for Risk Assessment  
 Chance that actual volume will exceed forecast

UPPER RIO GRANDE BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Rio Grande at Thirty Mile Bridge <sup>2</sup>	APR-JUL	63	70	75	66%	81	89	113
	APR-SEP	70	79	87	67%	94	107	129
	JUN-JUL	31	38	43	63%	49	57	68
	JUN-SEP	38	47	55	65%	62	75	84
Rio Grande at Wagon Wheel Gap <sup>2</sup>	APR-SEP	220	245	265	78%	285	320	340
	JUN-SEP	111	137	157	75%	177	210	210
SF Rio Grande at South Fork <sup>2</sup>	APR-SEP	64	69	73	57%	77	84	127
	JUN-SEP	22	27	31	48%	35	42	65
Rio Grande nr Del Norte <sup>2</sup>	APR-SEP	300	350	385	75%	425	490	515
	JUN-SEP	133	180	215	70%	255	320	305
Saguache Ck nr Saguache	APR-SEP	30	35	38	119%	42	49	32
	JUN-SEP	16.8	22	25	125%	29	36	20
Alamosa Ck ab Terrace Reservoir	APR-SEP	29	33	36	53%	38	44	68
	JUN-SEP	12.6	16.6	19.6	52%	22	28	38
La Jara Ck nr Capulin	MAR-JUL	4.4	4.8	5.2	58%	5.6	6.4	8.9
	JUN-JUL	0.47	0.9	1.28	56%	1.72	2.5	2.3
Trinchera Ck ab Turners Ranch	APR-SEP	7.7	8.8	9.6	76%	10.4	11.8	12.6
	JUN-SEP	5.7	6.8	7.6	97%	8.4	9.8	7.8
Sangre de Cristo Ck <sup>2</sup>	APR-SEP	9.8	11.1	12.2	75%	13.4	15.5	16.3
	JUN-SEP	2.4	3.7	4.8	96%	6	8.1	5
Ute Ck nr Fort Garland	APR-SEP	8.2	10.2	11.7	91%	13.4	16.2	12.8
	JUN-SEP	5	7	8.5	106%	10.2	13	8
Platoro Reservoir Inflow	APR-JUL	25	28	30	54%	32	36	56
	APR-SEP	26	30	33	53%	37	42	62
	JUN-JUL	12.5	15.6	17.9	51%	20	24	35
	JUN-SEP	14.2	18.3	21	51%	25	30	41
Conejos R nr Mogote <sup>2</sup>	APR-SEP	86	99	109	56%	119	136	194
	JUN-SEP	41	54	64	57%	74	91	112
San Antonio R at Ortiz	APR-SEP	5.4	5.6	5.8	37%	6.1	6.5	15.6
	JUN-SEP	0.13	0.34	0.54	43%	0.78	1.21	1.25
Los Pinos R nr Ortiz	APR-SEP	32	37	45	62%	54	74	73
	JUN-SEP	0.56	6.1	13.2	55%	23	43	24
Culebra Ck at San Luis	APR-SEP	9.5	13.1	16.1	70%	19.5	25	23
	JUN-SEP	6.4	10	13	87%	16.4	22	14.9
Costilla Reservoir Inflow	MAR-JUL	8	8.6	9	81%	9.5	10.2	11.1
	JUN-JUL	3.5	4.1	4.5	85%	5	5.7	5.3
Costilla Ck nr Costilla <sup>2</sup>	MAR-JUL	19.3	21	22	85%	23	24	26
	JUN-JUL	5.8	7.1	8.1	82%	9.1	10.7	9.9

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

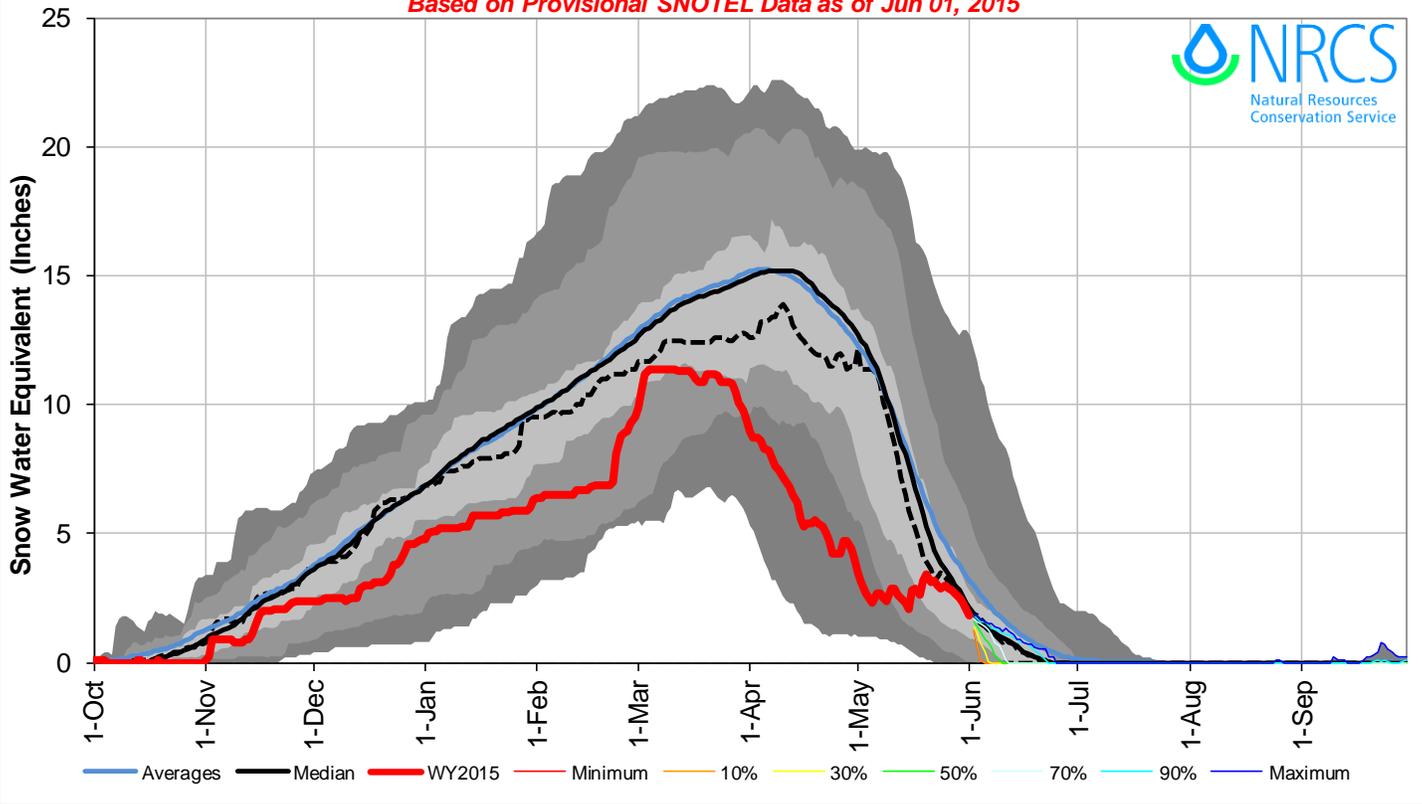
3) Median value used in place of average

Reservoir Storage End of May, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Beaver Reservoir	0.0	0.0	4.2	4.5
Continental Reservoir	0.0	4.8	7.7	27.0
Platoro Reservoir	11.8	10.1	28.7	60.0
Rio Grande Reservoir	29.7	28.1	23.9	51.0
Sanchez Reservoir	3.6	7.3	30.8	103.0
Santa Maria Reservoir	24.8	15.6	11.3	45.0
Terrace Reservoir	6.9	7.5	9.1	18.0
Basin-wide Total	76.8	73.4	115.7	308.5
# of reservoirs	7	7	7	7

Watershed Snowpack Analysis June 1, 2015	# of Sites	% Median	Last Year % Median
ALAMOSA CREEK BASIN	1		
CONEJOS & RIO SAN ANTONIO BASINS	2		
CULEBRA & TRINCHERA BASINS	3		
HEADWATERS RIO GRANDE RIVER BASIN	6	86%	27%
UPPER RIO GRANDE BASIN	12	86%	27%

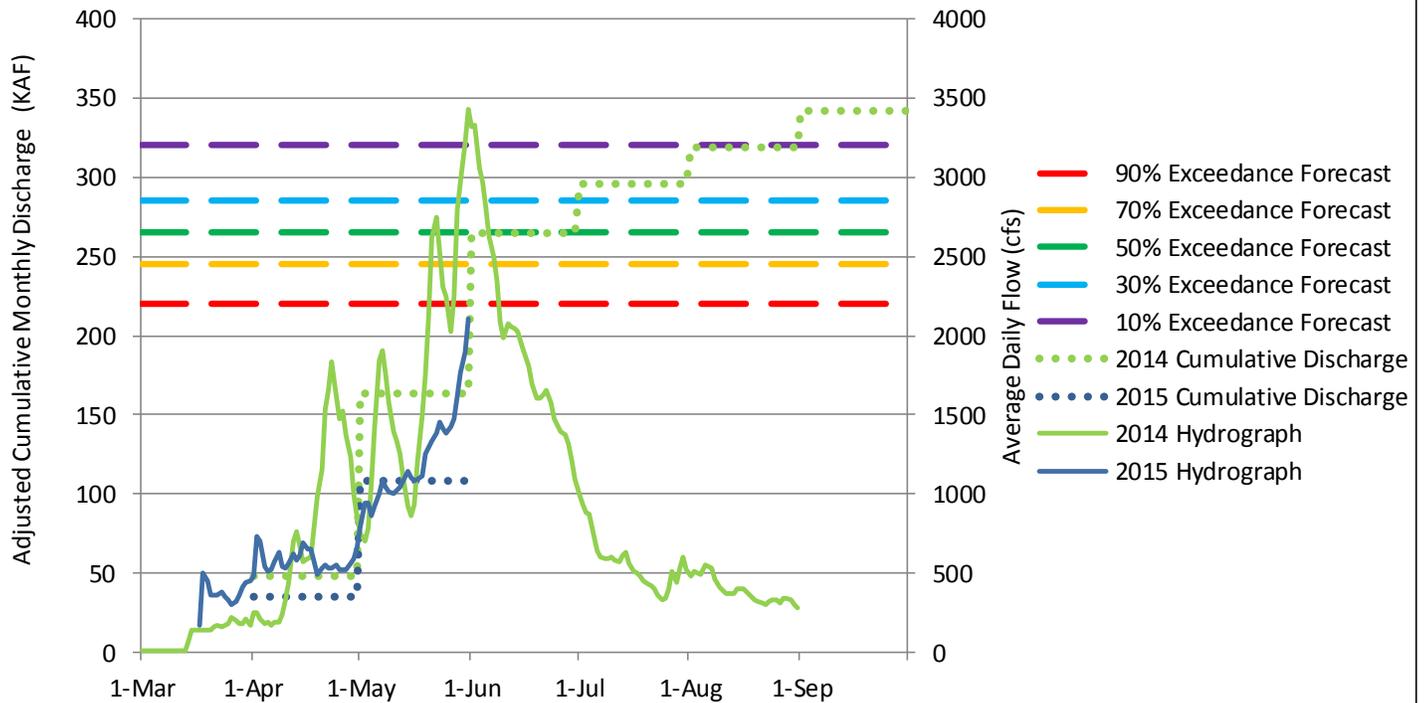
## Upper Rio Grande River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Jun 01, 2015



## Rio Grande at Wagon Wheel Gap

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr-Sep)

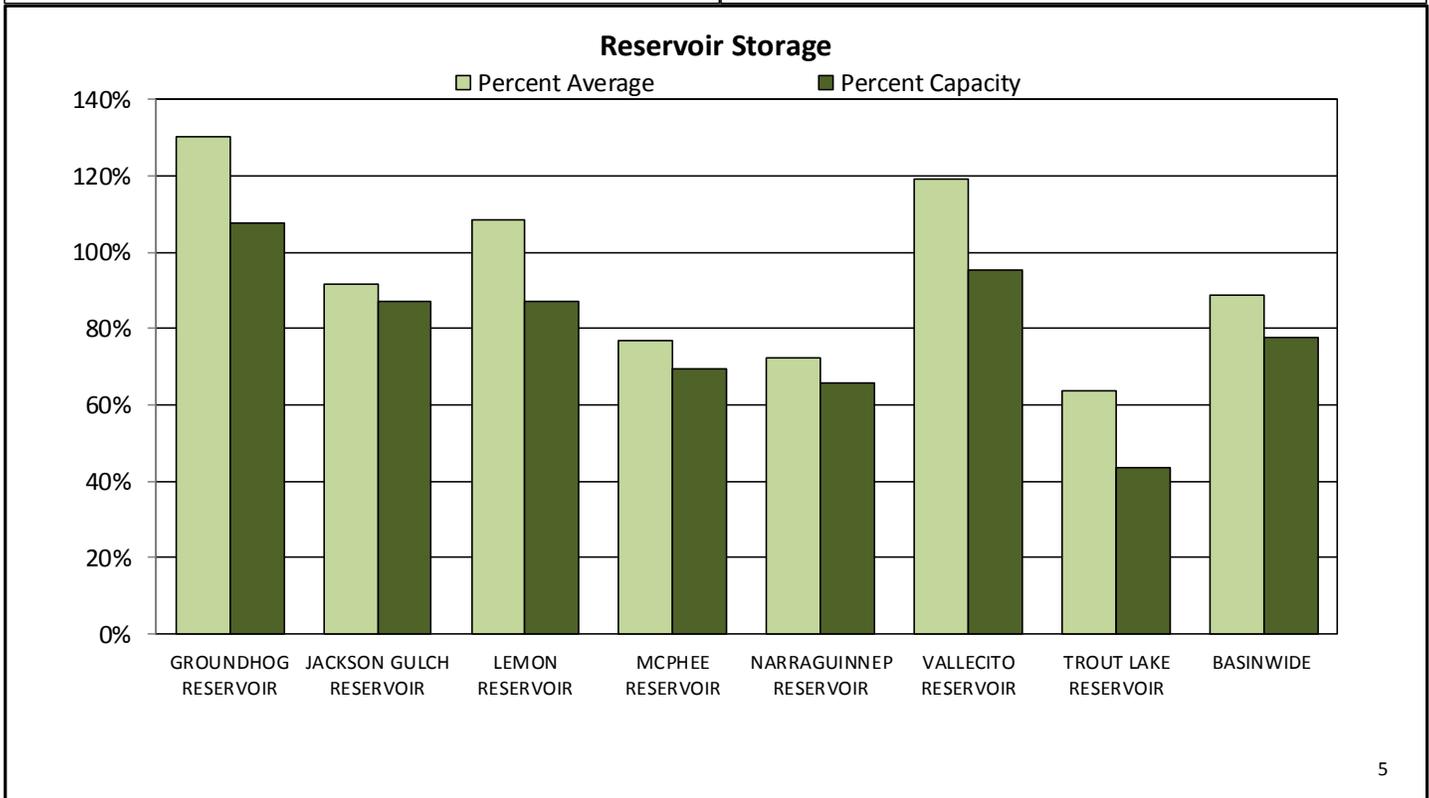
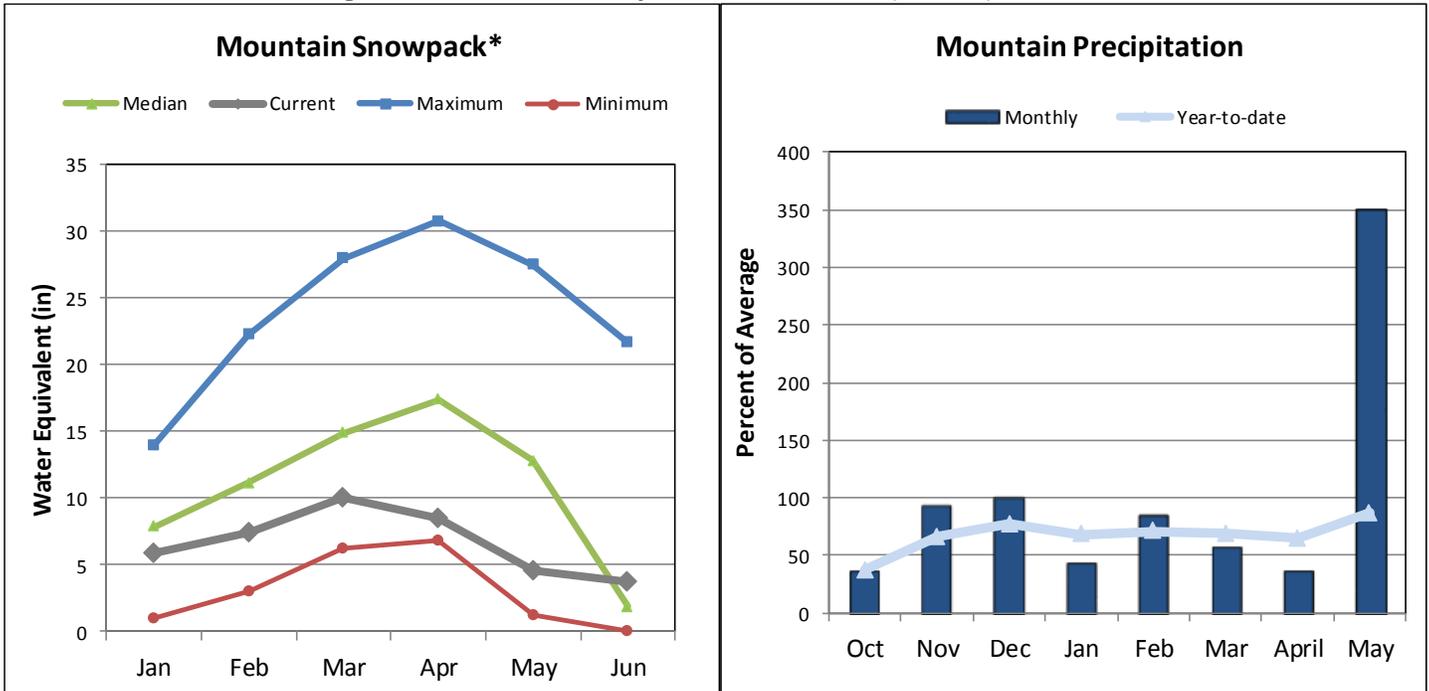


Please refer to the sections at the end of this report for further explanation concerning these graphs.

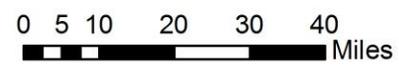
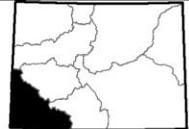
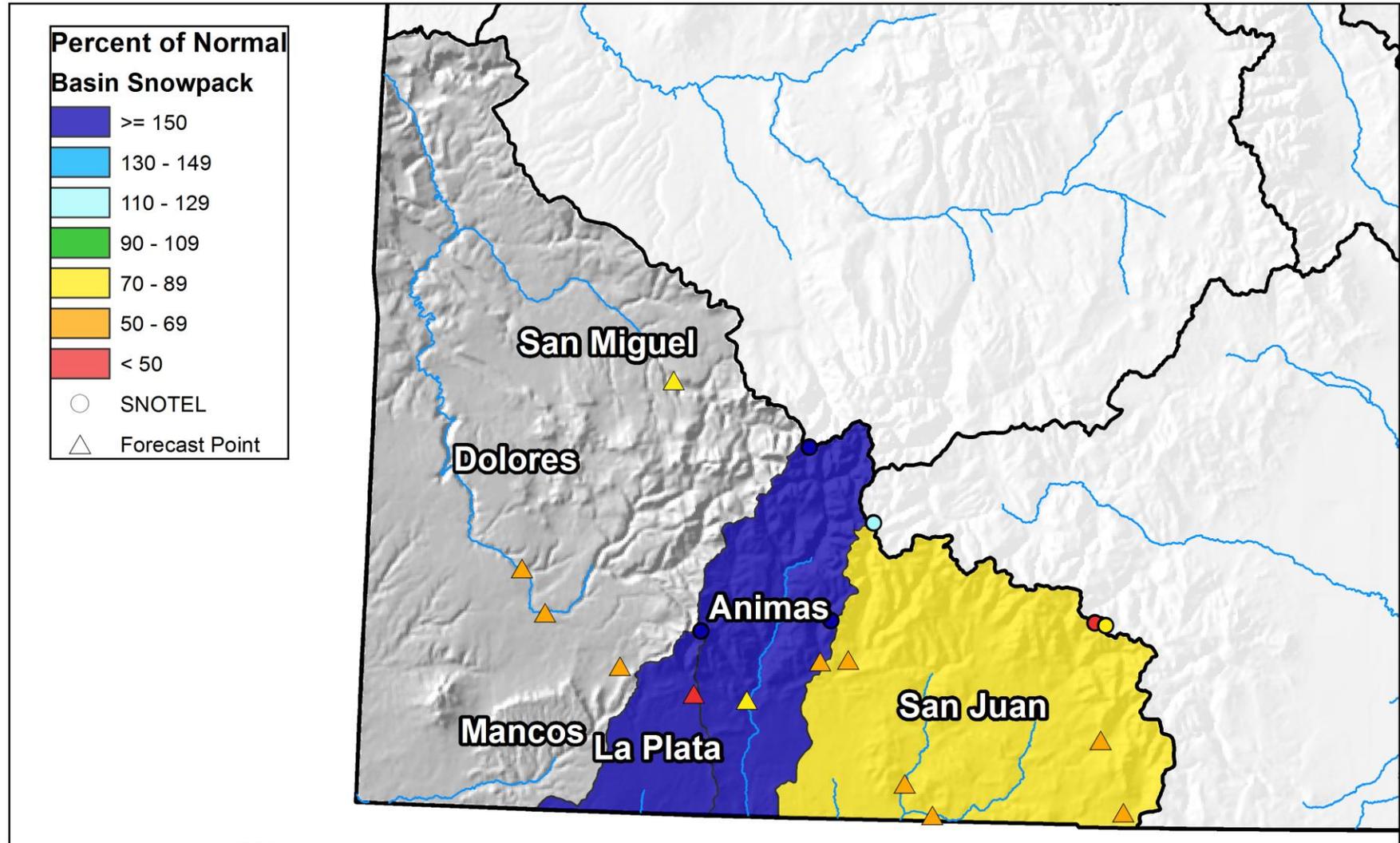
# SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS

June 1, 2015

Snowpack in the combined southwest river basins is above normal at 207% of median. Precipitation for May was 349% of average which brings water year-to-date precipitation up to 87% of average. Reservoir storage at the end of May was 89%, the same as last year. Current streamflow forecasts range from 91% of average for the Animas River at Durango to 51% for the Navajo Reservoir inflow (Jun-Jul).



# San Miguel, Dolores, Animas, and San Juan River Basins Snowpack and Streamflow Forecasts June 1, 2015



### San Miguel-Dolores-Animas-San Juan River Basins Streamflow Forecasts - June 1, 2015

 Forecast Exceedance Probabilities for Risk Assessment  
 Chance that actual volume will exceed forecast

SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVER BASINS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Dolores R at Dolores	APR-JUL	135	147	156	64%	165	181	245
	JUN-JUL	44	56	65	71%	74	90	92
McPhee Reservoir Inflow	APR-JUL	146	156	164	56%	172	185	295
	JUN-JUL	49	59	67	69%	75	88	97
San Miguel R nr Placerville	APR-JUL	75	88	98	77%	109	127	128
	JUN-JUL	41	54	64	85%	75	93	75
Cone Reservoir Inlet	JUN-JUL	0.52	0.79	1	81%	1.24	1.64	1.24
Gurley Reservoir Inlet	JUN-JUL	2.3	3.5	4.5	80%	5.6	7.4	5.6
Lilyands Reservoir Inlet	JUN-JUL	0.2	0.41	0.6	82%	0.82	1.22	0.73
Rio Blanco at Blanco Diversion <sup>2</sup>	APR-JUL	29	33	36	67%	39	45	54
	JUN-JUL	7.3	11	13.9	60%	17.1	23	23
Navajo R at Oso Diversion <sup>2</sup>	APR-JUL	31	36	39	60%	43	49	65
	JUN-JUL	10.8	15.3	18.9	63%	23	29	30
San Juan R nr Carracas <sup>2</sup>	APR-JUL	200	220	235	62%	250	270	380
	JUN-JUL	61	79	93	59%	108	132	158
Piedra R nr Arboles	APR-JUL	113	121	126	60%	133	142	210
	JUN-JUL	27	35	40	54%	47	56	74
Vallecito Reservoir Inflow	APR-JUL	110	117	123	63%	129	137	194
	JUN-JUL	48	55	61	62%	67	75	99
Navajo Reservoir Inflow <sup>2</sup>	APR-JUL	360	385	405	55%	430	465	735
	JUN-JUL	99	127	147	51%	170	205	290
Animas R at Durango	APR-JUL	295	310	325	78%	340	360	415
	JUN-JUL	170	187	200	91%	215	235	220
Lemon Reservoir Inflow	APR-JUL	27	31	33	60%	36	40	55
	JUN-JUL	12.4	15.8	18.3	68%	21	25	27
La Plata R at Hesperus	APR-JUL	9.5	10.5	11.2	49%	12	13.2	23
	JUN-JUL	3.6	4.6	5.3	62%	6.1	7.3	8.5
Mancos R nr Mancos <sup>2</sup>	APR-JUL	12.6	14.6	16.2	52%	18	21	31
	JUN-JUL	3.6	5.6	7.2	69%	9	12	10.4

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

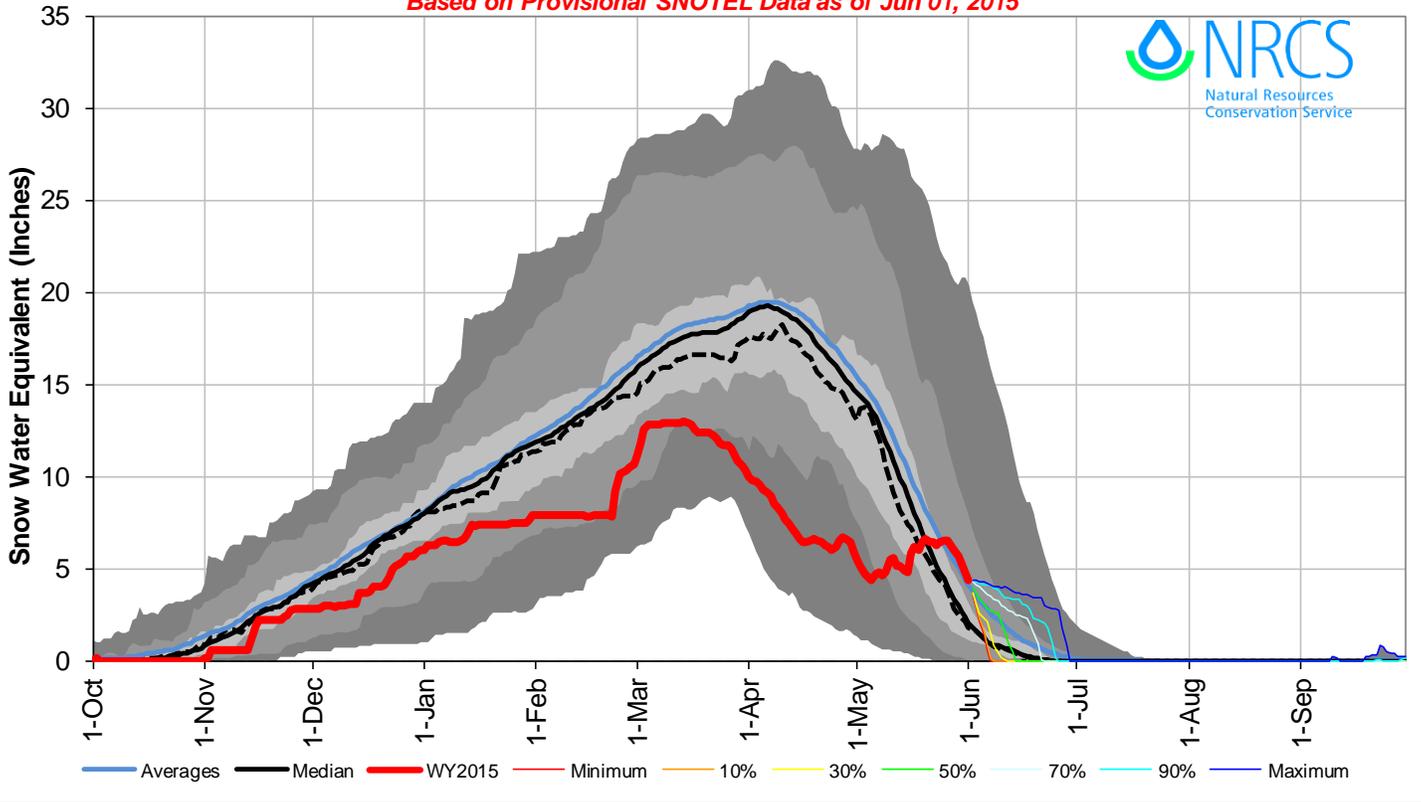
3) Median value used in place of average

Reservoir Storage End of May, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Groundhog Reservoir	23.7	15.1	18.2	22.0
Jackson Gulch Reservoir	8.7	6.4	9.5	10.0
Lemon Reservoir	34.8	33.3	32.1	40.0
McPhee Reservoir	265.0	270.0	344.7	381.0
Narraguinep Reservoir	12.5	16.6	17.3	19.0
Trout Lake Reservoir	1.4	1.2	2.2	3.2
Vallecito Reservoir	120.0	122.5	100.7	126.0
Basin-wide Total	466.1	465.1	524.7	601.2
# of reservoirs	7	7	7	7

Watershed Snowpack Analysis June 1, 2015	# of Sites	% Median	Last Year % Median
ANIMAS RIVER BASIN	9	379%	80%
DOLORES RIVER BASIN	5		
SAN MIGUEL RIVER BASIN	3		
SAN JUAN RIVER BASIN	3	71%	32%
SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVER BASINS	19	207%	51%

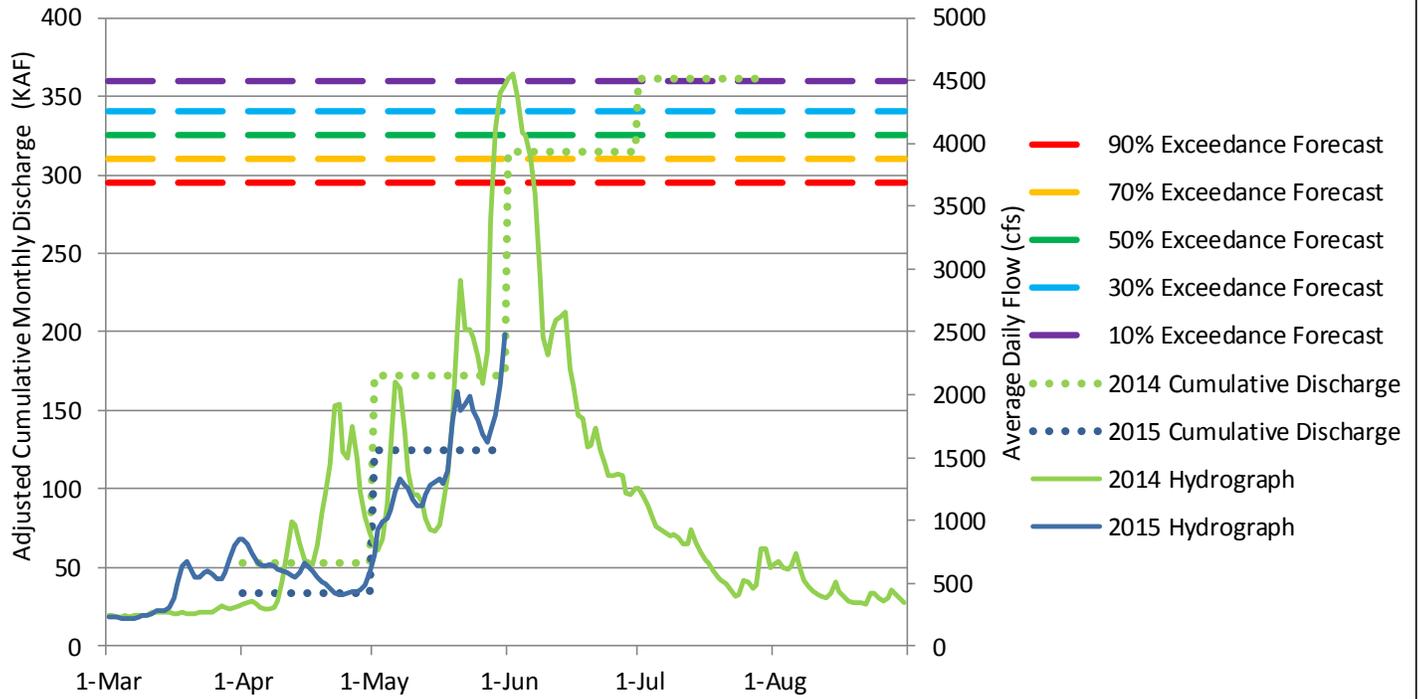
# San Miguel, Dolores, Animas and San Juan River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Jun 01, 2015



## Animas River at Durango, CO

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)



Please refer to the sections at the end of this report for further explanation concerning these graphs.

# How to Read Non-Exceedance Projections Graphs

The graphs show snow water equivalent (SWE) projections (in inches) for the October 1 through September 30 water year. Basin “observed” SWE values are computed using SNOTEL sites which are characteristic of the snowpack of the particular basin. The SWE observations at these sites are averaged and normalized to produce these basin snowpack graphs. This new graph format uses non-exceedance projections.

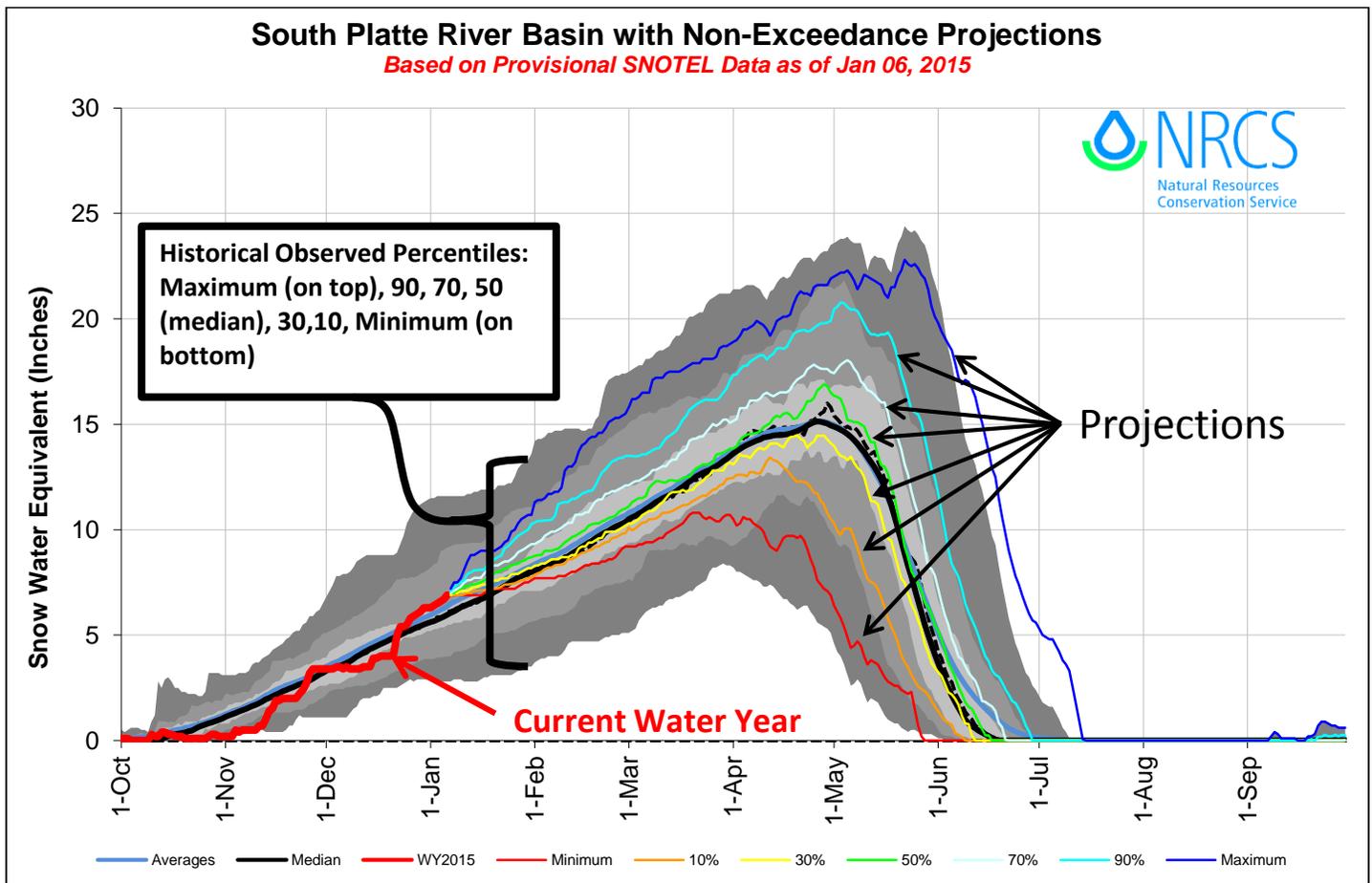
**Current** water year is represented by the heavy red line terminating on the last day the graphic was updated.

**Historical** observed percentile range is shown as a gray background area on the graph. Shades of gray indicate maximum, 90 percentile, 70 percentile, 50 percentile (solid black line), 30 percentile, 10 percentile, and minimum for the period of record.

**Projections** for maximum, 90 percent, 70 percent, 50 percent (most probabilistic snowpack projection, based on median), 30 percent, 10 percent, and minimum exceedances are projected forward from the end of the current line as different colored lines.

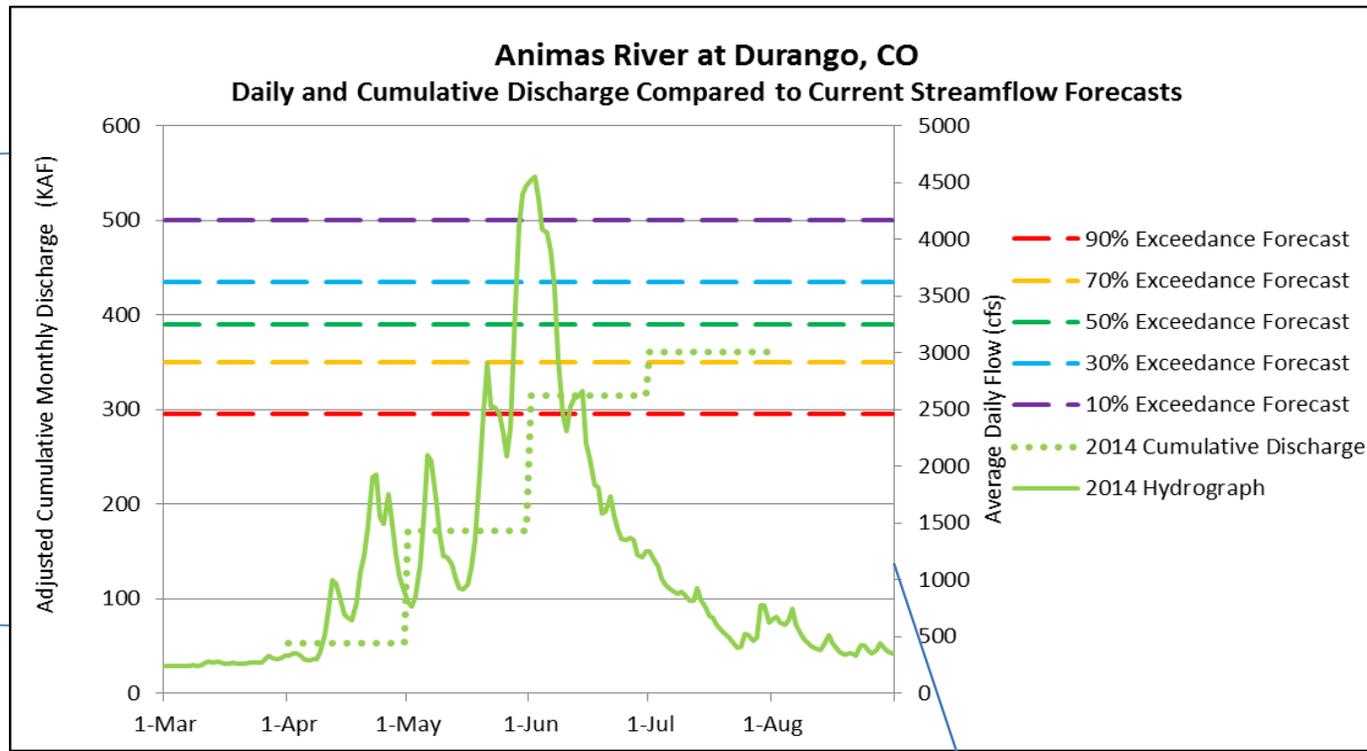
For more detailed information on these graphs visit:

[http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs144p2\\_062291.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_062291.pdf)



# Explanation of Flow Comparison Charts

The flow comparison charts were developed to provide a quick comparison between the previous years' observed hydrograph, cumulative seasonal discharge, the current streamflow forecasts, and the current years' observed discharge (both hydrograph and cumulative discharge, as the season progresses). Forecast points for these products were generally chosen to be lower in the basin to best represent the basin-wide streamflow response for the season; the true degree of representativeness will vary between basins. When making comparisons of how the shape of the hydrograph relates to the monthly (and seasonal) cumulative discharges it is important to note that the hydrograph represents observed daily flows at the forecast point while the cumulative values may be adjusted for changes in reservoir storage and diversions to best represent what would be "natural flows" if these impoundments and diversions did not exist. This product can provide additional guidance regarding how to most wisely utilize the five exceedance forecasts based on past observations, current trends, and future uncertainty for a wide variety of purposes and water users.



The left y-axis represents values of adjusted cumulative discharge (KAF). This axis is to be used for comparing the current and previous years to the current five volumetric seasonal exceedance forecasts. This graphic only displays the previous years data but data for the current water year will be added as the season progresses.

The legend displays the symbology and color schemes for the various parameters represented. Exceedance forecasts represent total cumulative discharge for the April through July time period with the exception of the Rio Grande at Wagon Wheel Gap (Apr-Sep).

The right y-axis represents observed daily average discharge at the forecast point of interest. This graphic only displays the previous years data but data for the current water year will be added as the Season progresses.

# How Forecasts Are Made

*For more water supply and resource management information, contact:*

**Brian Domonkos**

**Snow Survey Supervisor**

**USDA, Natural Resources Conservation Service**

**Denver Federal Center, Bldg 56, Rm 2604**

**PO Box 25426**

**Denver, CO 80225-0426**

**Phone (720) 544-2852**

**Website: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/co/snow/>**

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Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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Denver Federal Center, Bldg 56, Rm 2604  
PO Box 25426  
Denver, CO 80225-0426

In addition to the water supply outlook reports, water supply forecast information for the Western United States is available from the Natural Resources Conservation Service and the National Weather Service monthly, January through June. The information may be obtained from the Natural Resources Conservation Service web page at <http://www.wcc.nrcs.usda.gov/wsf/westwide.html>

*Issued by*

**Jason Weller**  
**Chief**  
**Natural Resources Conservation Service**  
**U.S. Department of Agriculture**

*Released by*

**Clint Evans**  
**State Conservationist**  
**Natural Resources Conservation Service**  
**Lakewood, Colorado**

**Colorado**  
**Water Supply Outlook Report**  
Natural Resources Conservation Service  
Lakewood, CO