

Colorado

Water Supply Outlook Report January 1, 2015



Snow Surveyors Bill Ketterhagen (in orange) and Frank Kugel measuring snow with a federal sampler in the Upper Taylor River drainage. Bill and Frank are new snow survey cooperators and will be measuring three snow courses in the Gunnison River basin this season.

Date: 12/11/2014

Photo By: Brian Domonkos

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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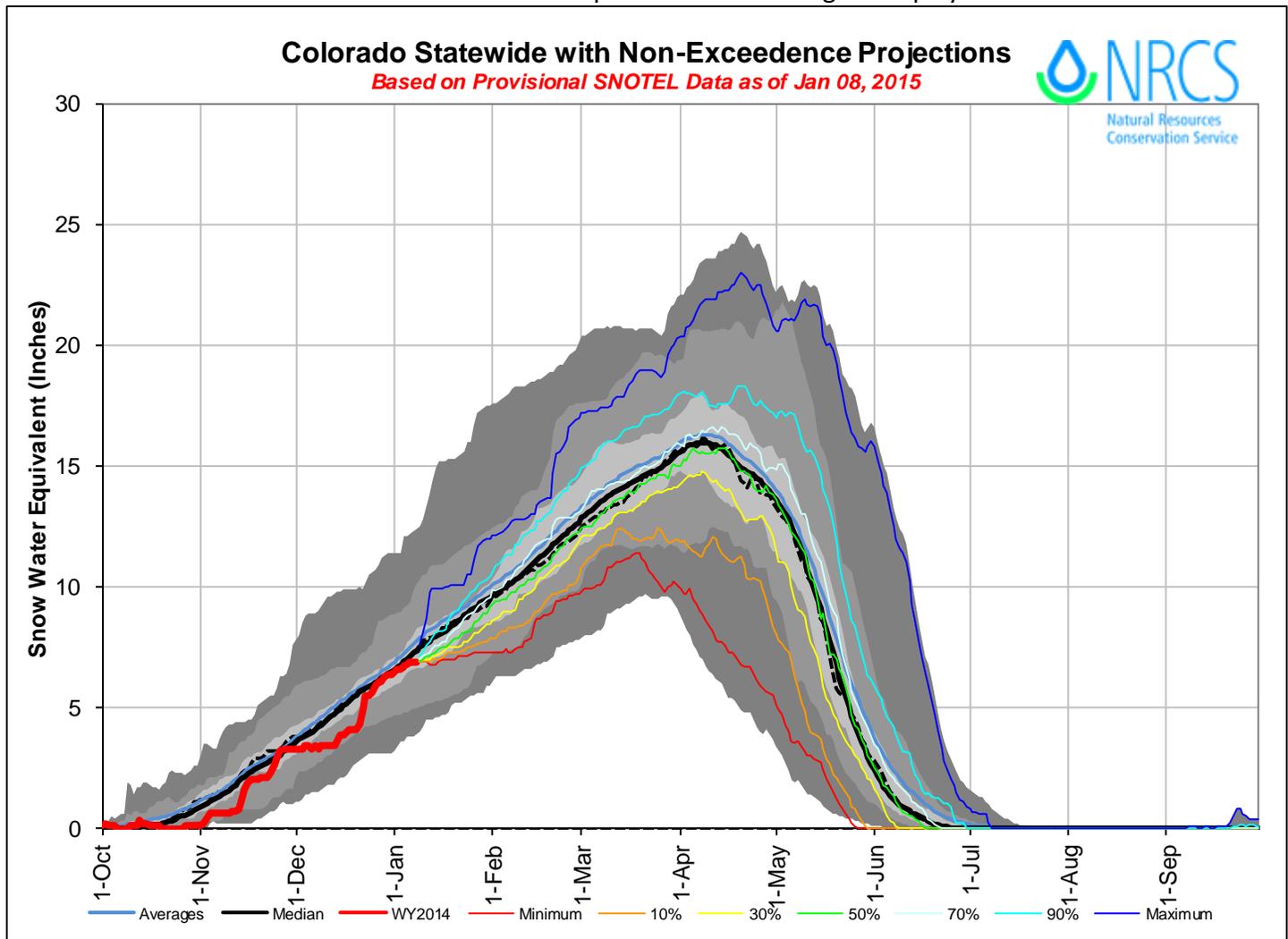
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Statewide Water Supply Conditions

Summary

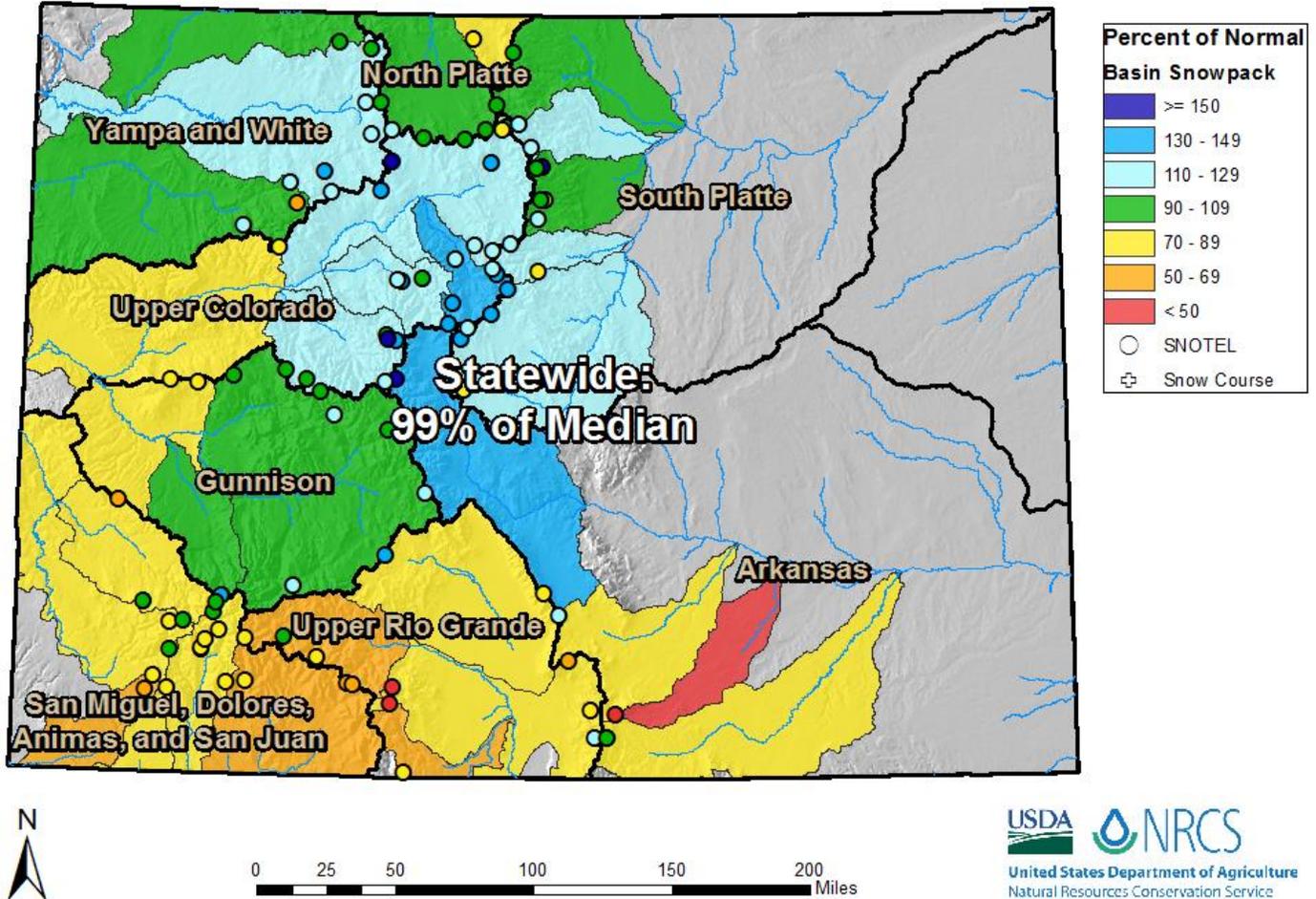
Statewide snow accumulation is currently off to a near normal start, short only fractions of an inch compared to where it was on January 1, 2014. The central basins of Colorado are faring the best for snowpack, while the northern basins range from near to slightly above normal, and the southern basins in Colorado trail behind normal. Precipitation across Colorado had a slow start this fall with all major watersheds falling well below average during October but then making significant gains during November and December. Unfortunately those precipitations gains were not enough to bring the year-to-date total back to normal after the slow start. Statewide reservoir storage is only slightly above normal through January 1 at 105 percent of average. The Arkansas and Upper Rio Grande basins are the only two watersheds with storage totals below 80 percent of average. In general, conditions on January 1 are off to a good start with the three major water supply parameters being close to normal. With 58 percent of the typical snowpack accumulation season remaining, much remains to be seen as to how the 2015 snowpack and water budget will play out.



About this Graph: The heavy red line shows the observed accumulation to date. The remaining colored lines (blue through red) indicate the range of possible futures. Shown are the Min, 10%, 30%, 50%, 70%, 90% non-exceedence scenarios and the Max. The dark black line shows the long term normal data on that date. The gray background shows the historical range of all of the daily data. The uppermost edge and lowermost edges of the gray area are the highest and lowest historical values available during the limited historical period, typically beginning in the mid 1980s (Max, Min). In between these bounds are shown the historical 10, 30, 70 and 90% non-exceedence bounds of the data. The historical 50% non-exceedence is shown as a faint dashed black line.

Snowpack

Colorado Snowpack Summary January 1, 2015

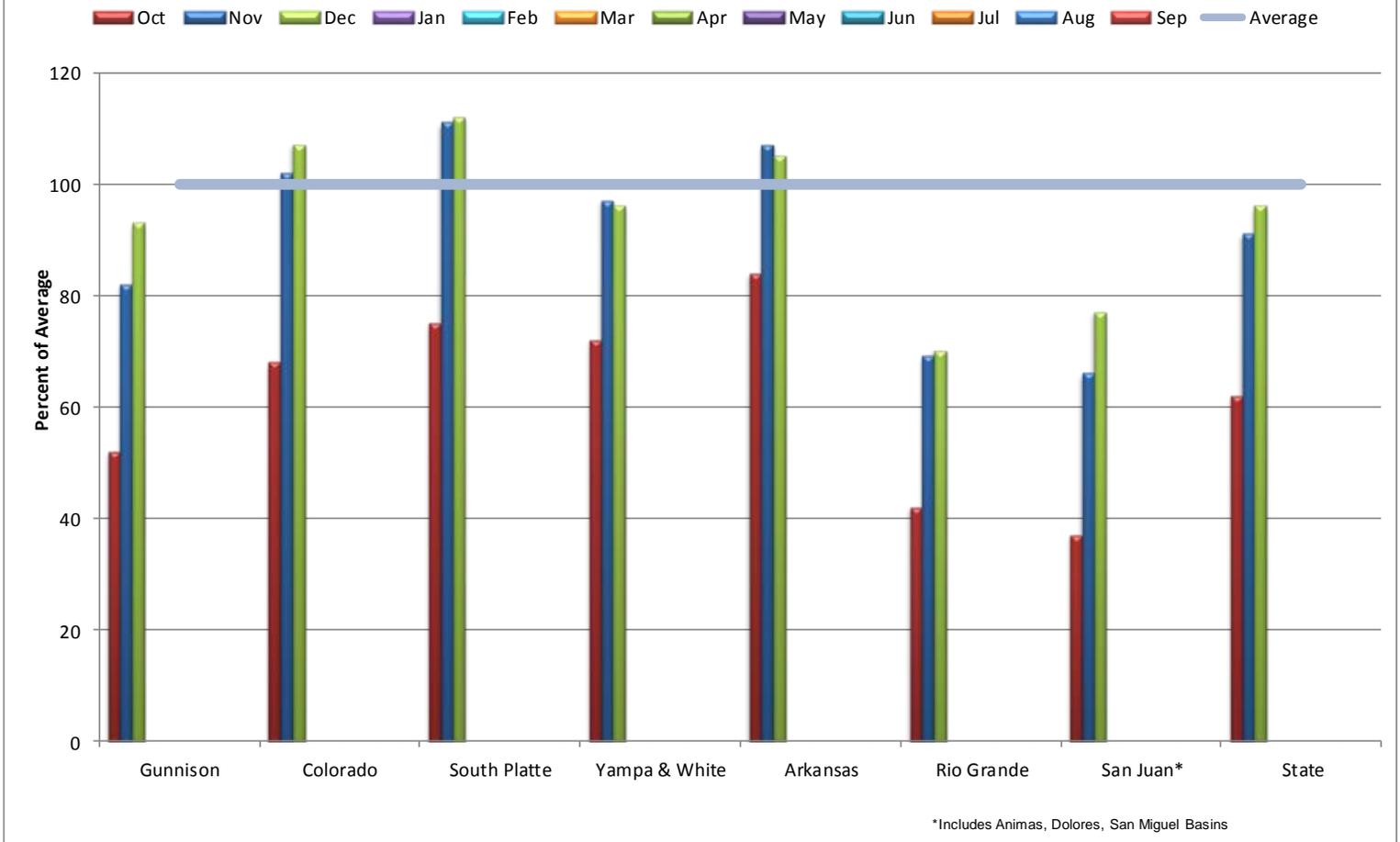


On January 1, at 99 percent of normal, Colorado's snowpack is at exactly the same levels seen in 2001 and close to the totals recorded in 1995 and 2014. It is a positive sign that these years, which closely compare to this year, all experienced snowpack peaks at or above normal. While this information cannot be used as a forecast, it is often useful to examine what occurred in similar years. The snowpack in the Arkansas River basin is currently ranked 11th of the 35 year period of record. Simultaneously the Colorado River basin is currently ranked 8th of 34 years in the period of record. Unfortunately the southern basins such as the Upper Rio Grande and the San Miguel, Dolores, Animas & San Juan, the watersheds with the greatest needs for above normal snowpack's to make up for recent deficits, did not see the same snowpack gains as the central basins. The Upper Rio Grande watershed presently has the 7th lowest snowpack in its 29 year period of record. Looking back to the north, the Laramie River basin, at 88 percent of normal, has the lowest snowpack of the sub-watersheds in the Colorado, South and North Platte River basins yet all other sub-watersheds have snowpack's at 95 percent of normal and above. Statewide snowpack totals range from 47 percent of normal in the Alamosa Creek drainage to 146 percent in the Upper Arkansas basin.

Precipitation

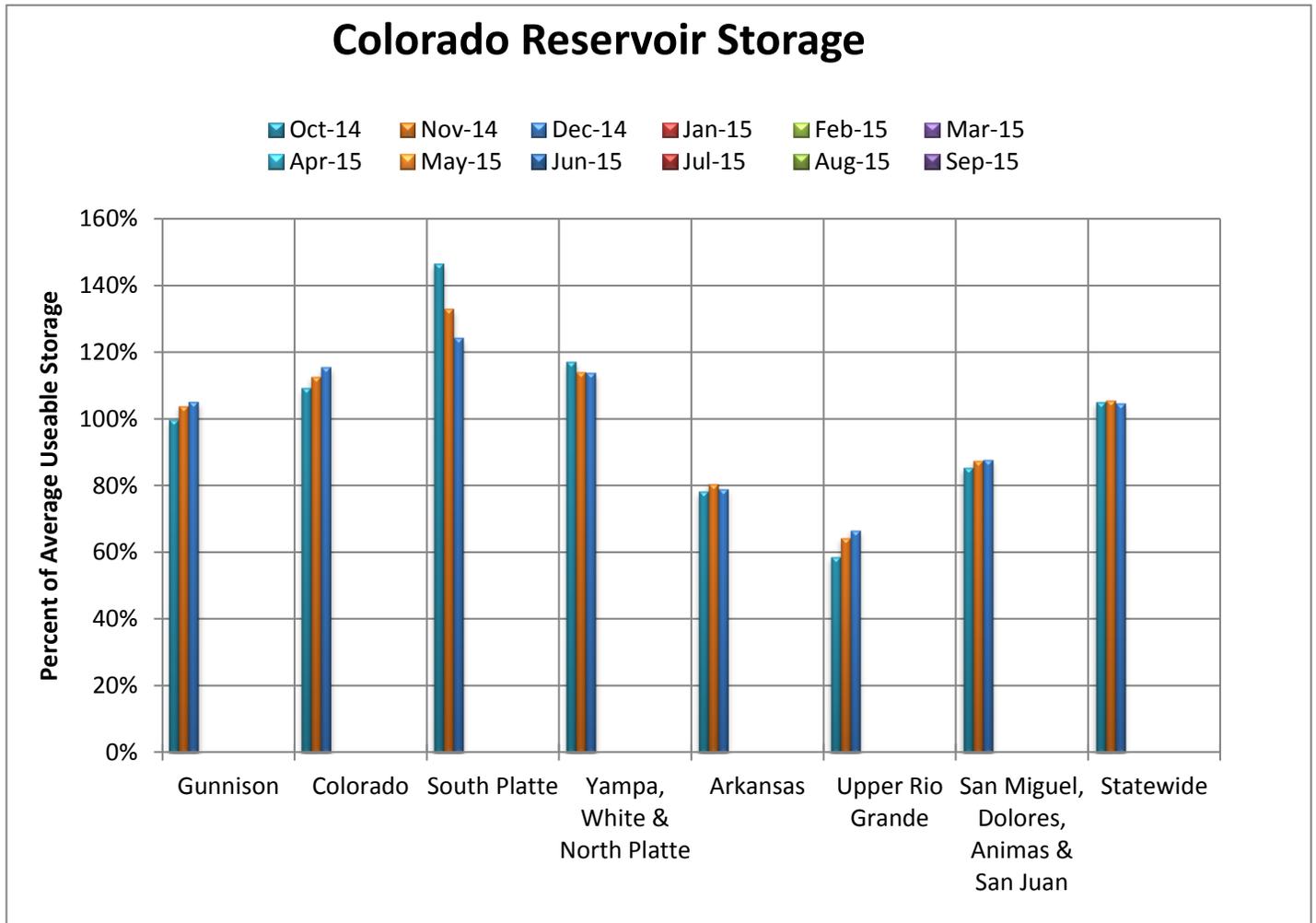
Colorado Year-to-Date Precipitation Summary for WY2015

USDA Natural Resources Conservation Service



Fall precipitation in the mountains of Colorado frequently falls in the form of rain and while rain does not contribute to snowpack totals, it does provide much needed moisture to soils and vegetation that eventually affects how efficiently snowpack melts and contributes to springtime runoff. October precipitation fell well short of the average mark at just 62 percent of average statewide. November and December saw increased precipitation at 118 and 105 percent of average respectively, but these accumulations were not quite enough to bring the year-to-date total to average. January 1 year-to-date precipitation for the state ended up at 96 percent of average. Currently the 2015 year-to-date total is just slightly above totals recorded last year at this time. Specifically, the Colorado, South Platte and Arkansas River basins are faring better than last year, and slightly above the 30 year average. In the Upper Rio Grande and combined San Miguel, Dolores, Animas and San Juan basins, as is the case for snowpack, year-to-date precipitation is below average at 70 and 77 percent respectively. Despite statewide precipitation being four percentage points below the normal, this is not a large margin to make up especially considering we are only a quarter of the way through the water year.

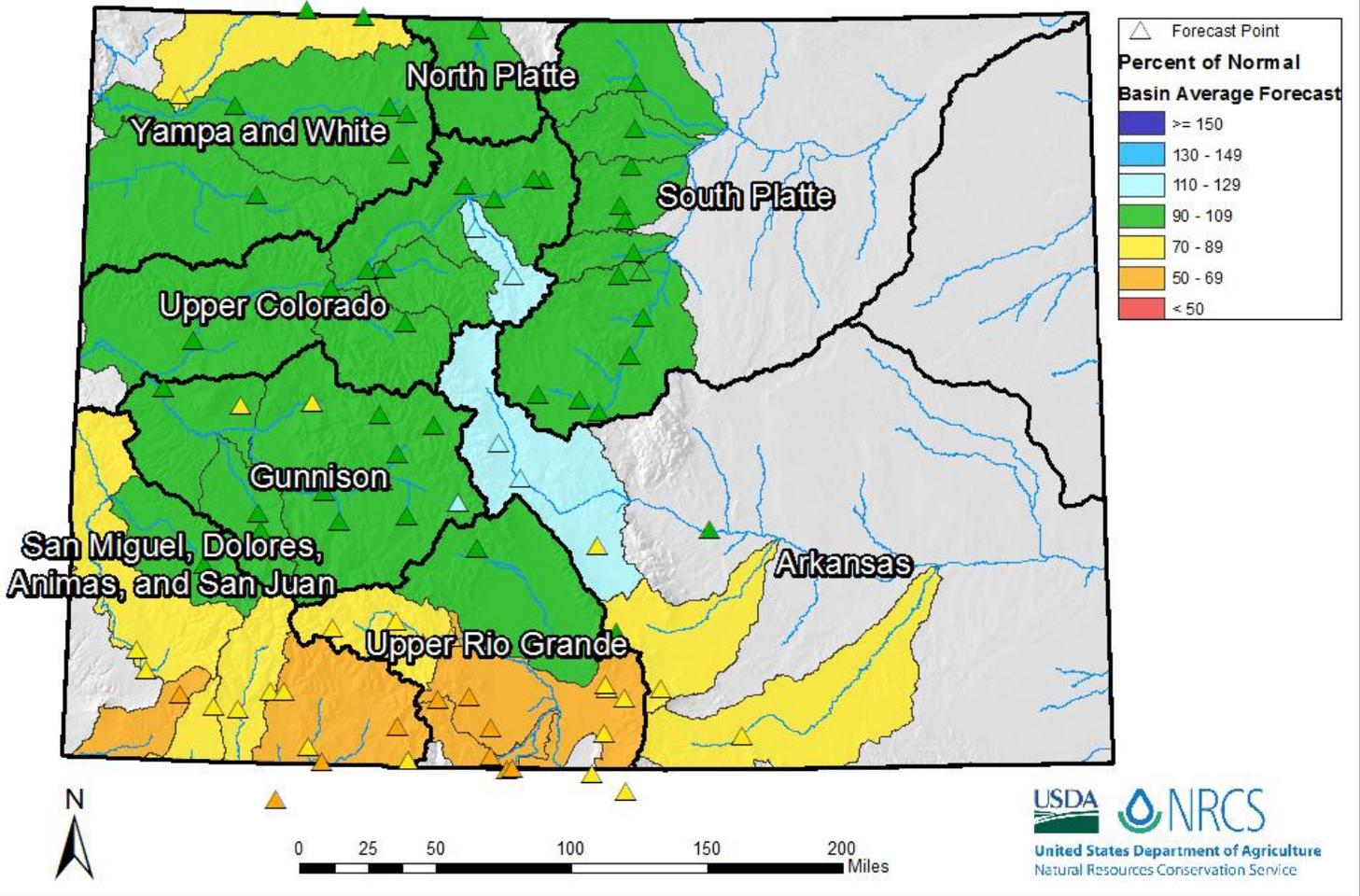
Reservoir Storage



Statewide reservoir storage is at 105 percent of average and 60 percent of capacity. While the current reservoir storage numbers don't reflect outstanding storage levels across the state, it is noteworthy that each major watershed has better storage than last year at this time. Most particularly the Arkansas's combined reservoir storage is 20 percentage points higher than last year at this time. The Gunnison and Colorado basins both had below average storage last year but this year are above average. The three southern basins continue the trend of below average reservoir storage that has persisted in this region for the last few years due to below normal snowpack, precipitation and streamflow volumes.

Streamflow

Colorado Streamflow Forecasts Summary January 1, 2015

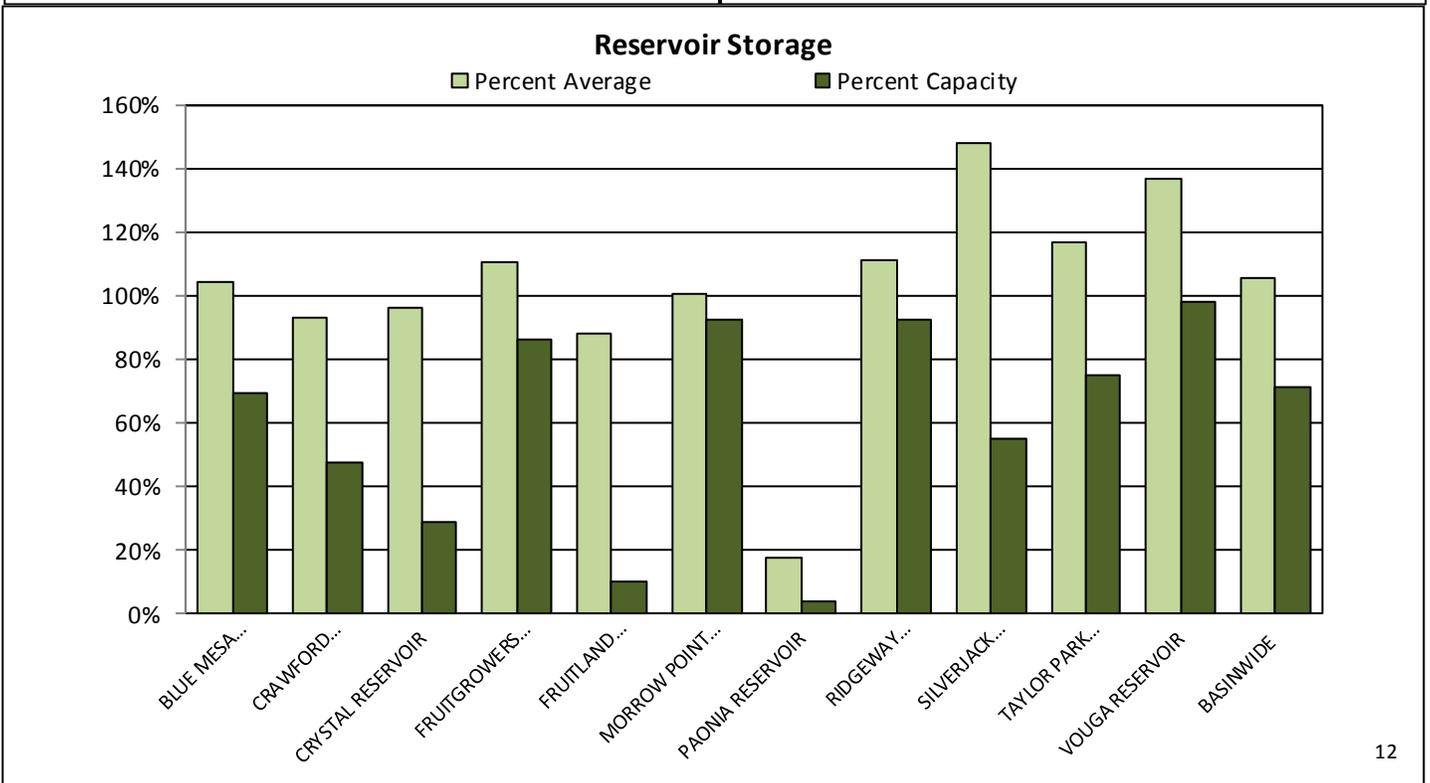
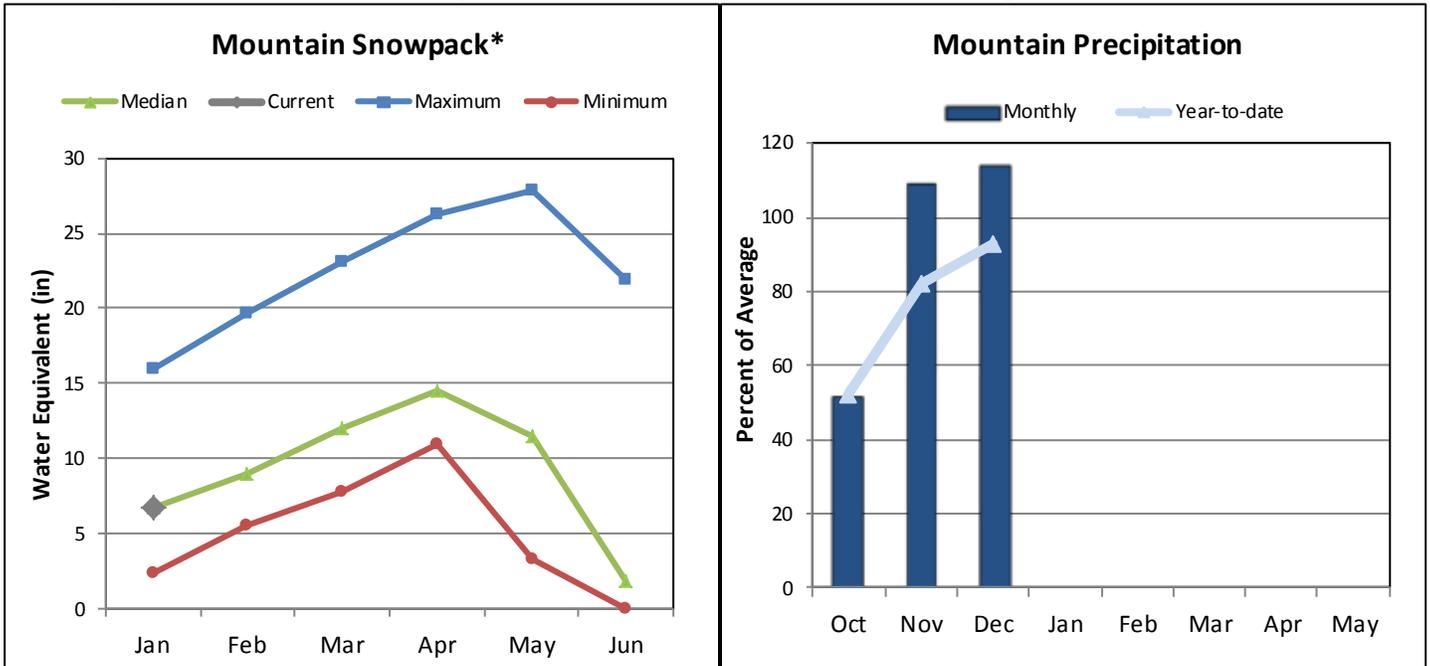


This season's first stab at predicting spring and summer streamflow volumes follows the same trend across the state as snowpack and precipitation totals. Near to above normal fall precipitation and snow accumulation resulted in above average forecasts for the northern and central streams in Colorado. In the southern portion of the state, a lack of precipitation in October and below normal snow accumulation has caused most streamflow forecasts to be below average. Current forecasts in the Yampa, White & North Platte, South Platte, Gunnison and Colorado River basins are for the most part, hovering right around the 100 percent of average mark. The highest forecasts in these regions are for the Blue River basin where the Inflows to Dillon and Green Mountain Reservoirs are expected to be 118 percent of average this season. The forecasts for the Arkansas River basin are somewhat divided, with the upper portion of the basin boasting some of the highest forecast percentages statewide and the forecasts for the southern tributaries below average. Forecasts for San Miguel, Dolores, Animas & San Juan and the Upper Rio Grande basins are for the most part well below average. It is still early in the season, and hopefully weak El Nino conditions expected this winter will bring increased precipitation to this region.

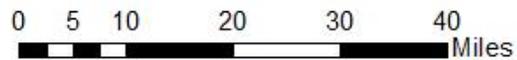
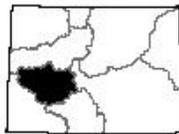
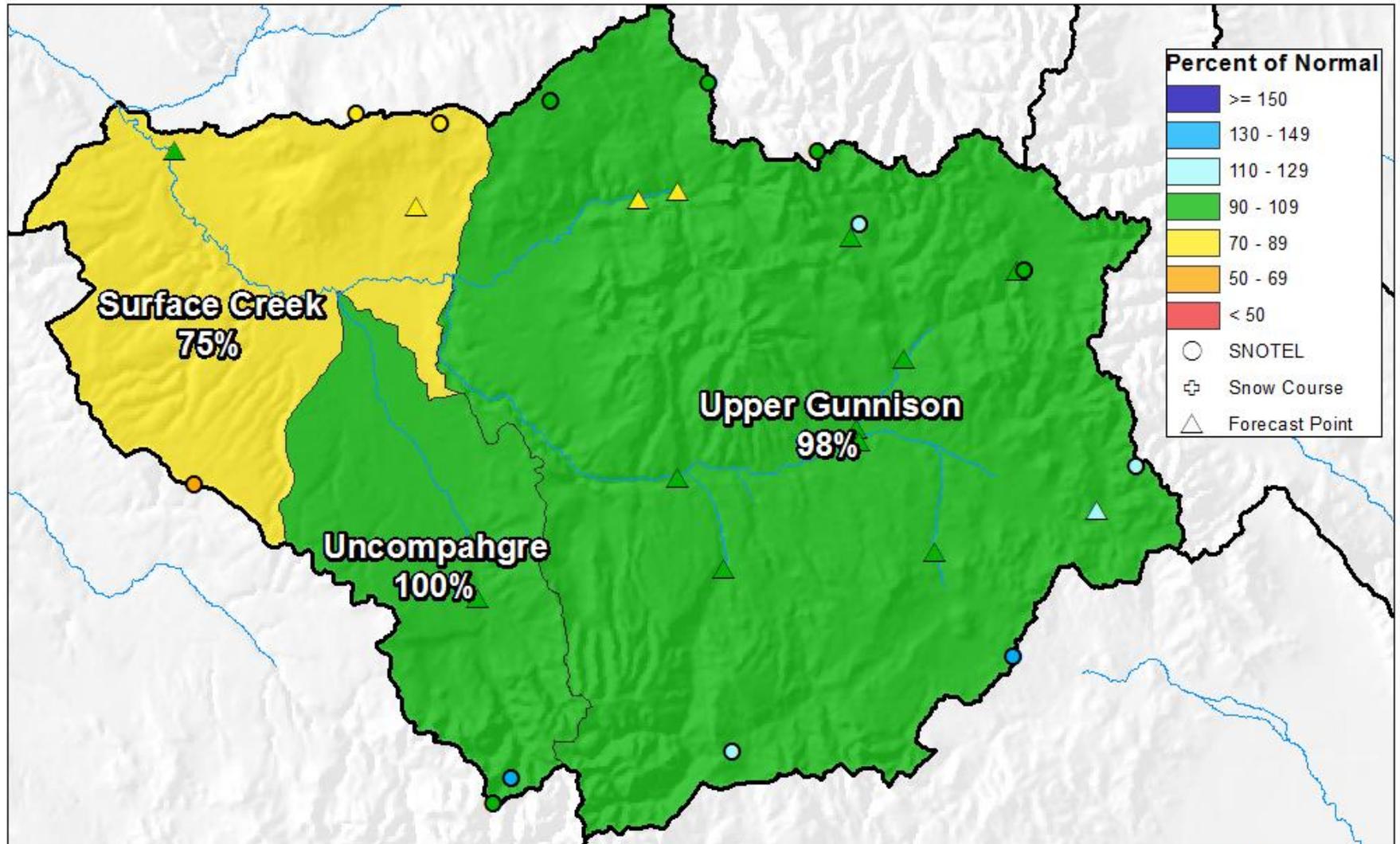
GUNNISON RIVER BASIN

January 1, 2015

Snowpack in the Gunnison River basin is near normal at 99% of the median. Precipitation for December was 114% of average which brings water year-to-date precipitation to 93% of average. Reservoir storage at the end of December was 105% of average compared to 80% last year. Current streamflow forecasts range from 110% of average for Tomichi Creek at Sargents to 74% for Surface Creek at Cedaredge.



Gunnison River Basin Snowpack and Streamflow Forecasts January 1, 2015



Gunnison River Basin Streamflow Forecasts - January 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	67	87	103	104%	120	147	99
Slate R nr Crested Butte	APR-JUL	59	73	80	96%	96	114	83
East R at Almont	APR-JUL	102	141	170	93%	200	255	182
Gunnison R near Gunnison ²	APR-JUL	205	295	360	97%	435	555	370
Tomichi Ck at Sargents	APR-JUL	16.4	26	33	110%	42	56	30
Cochetopa Ck bl Rock Ck nr Parlin	APR-JUL	7.2	12.1	16.1	107%	21	29	15
Tomichi Ck at Gunnison	APR-JUL	35	60	80	108%	103	143	74
Lake Fk at Gateview	APR-JUL	85	109	126	102%	145	175	123
Blue Mesa Reservoir Inflow ²	APR-JUL	395	555	680	101%	815	1040	675
Paonia Reservoir Inflow	MAR-JUN	34	57	75	78%	96	132	96
	APR-JUL	32	56	76	78%	99	139	97
NF Gunnison R nr Somerset ²	APR-JUL	138	196	240	83%	290	375	290
Surface Ck at Cedaredge	APR-JUL	6.2	9.7	12.5	74%	15.6	21	16.8
Ridgway Reservoir Inflow	APR-JUL	66	86	101	100%	117	143	101
Uncompahgre R at Colona ²	APR-JUL	76	109	134	98%	162	210	137
Gunnison R nr Grand Junction ²	APR-JUL	755	1110	1380	93%	1690	2190	1480

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

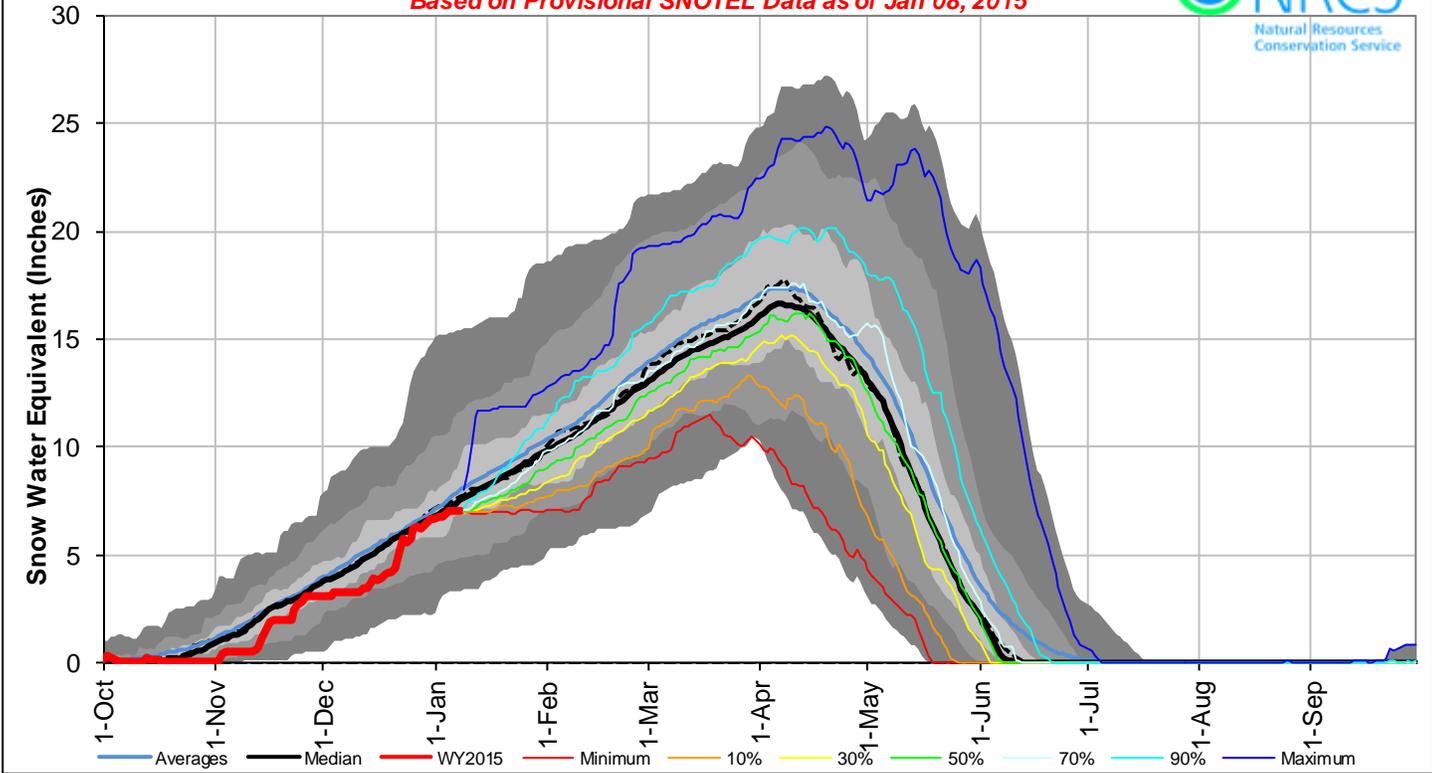
3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Blue Mesa Reservoir	574.3	380.2	549.9	830.0
Crawford Reservoir	6.6	4.0	7.1	14.0
Crystal Reservoir	7.4	8.3	7.7	17.5
Fruitgrowers Reservoir	3.1	2.0	2.8	3.6
Fruitland Reservoir	0.9	0.9	1.0	9.2
Morrow Point Reservoir	111.8	107.3	111.6	121.0
Paonia Reservoir	0.6	0.3	3.5	15.4
Ridgway Reservoir	76.4	72.6	68.8	83.0
Silverjack Reservoir	7.4	9.9	5.0	12.8
Taylor Park Reservoir	79.4	71.4	68.1	106.0
Vouga Reservoir	0.9	0.5	0.7	0.0
Basin-wide Total	868.8	657.4	826.2	1212.5
# of reservoirs	11	11	11	11

Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
UPPER GUNNISON BASIN	10	98%	108%
SURFACE CREEK BASIN	2	75%	117%
UNCOMPAHGRE BASIN	3	100%	102%
GUNNISON RIVER BASIN	13	99%	107%

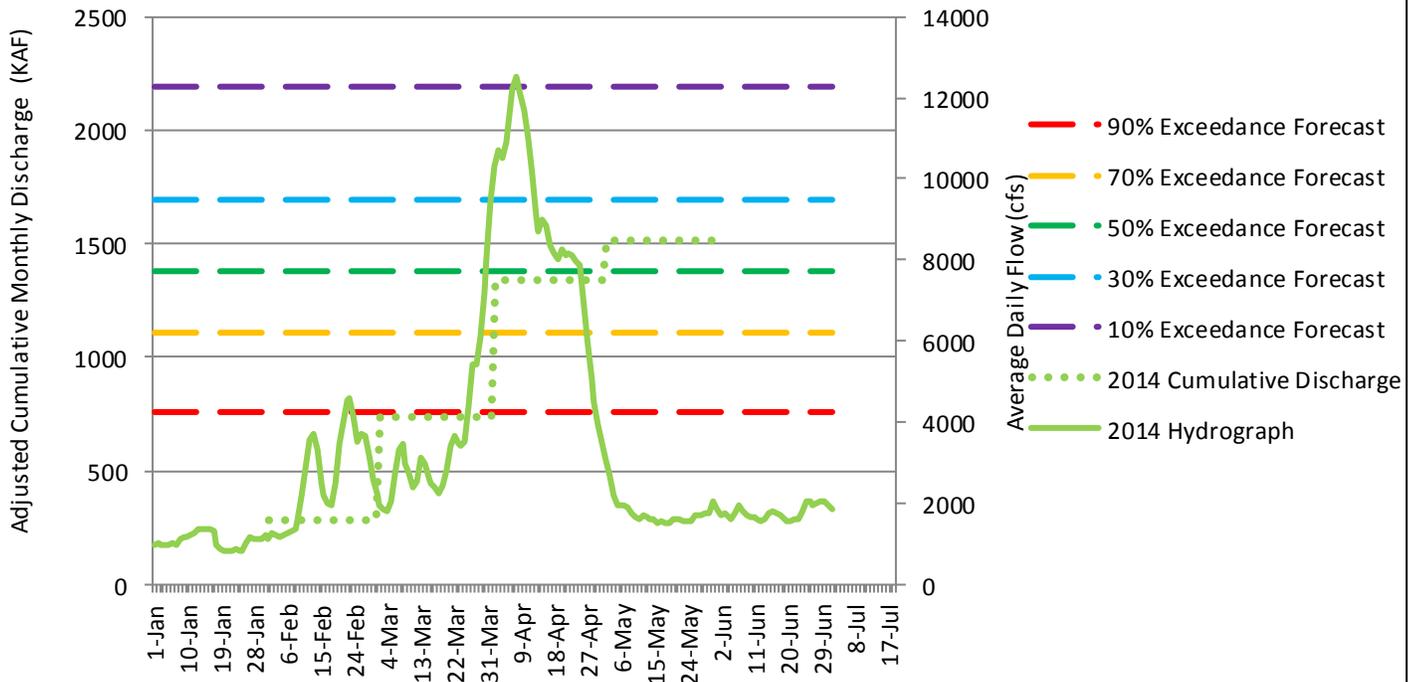
Gunnison River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Jan 08, 2015



Gunnison River at Grand Junction, CO

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

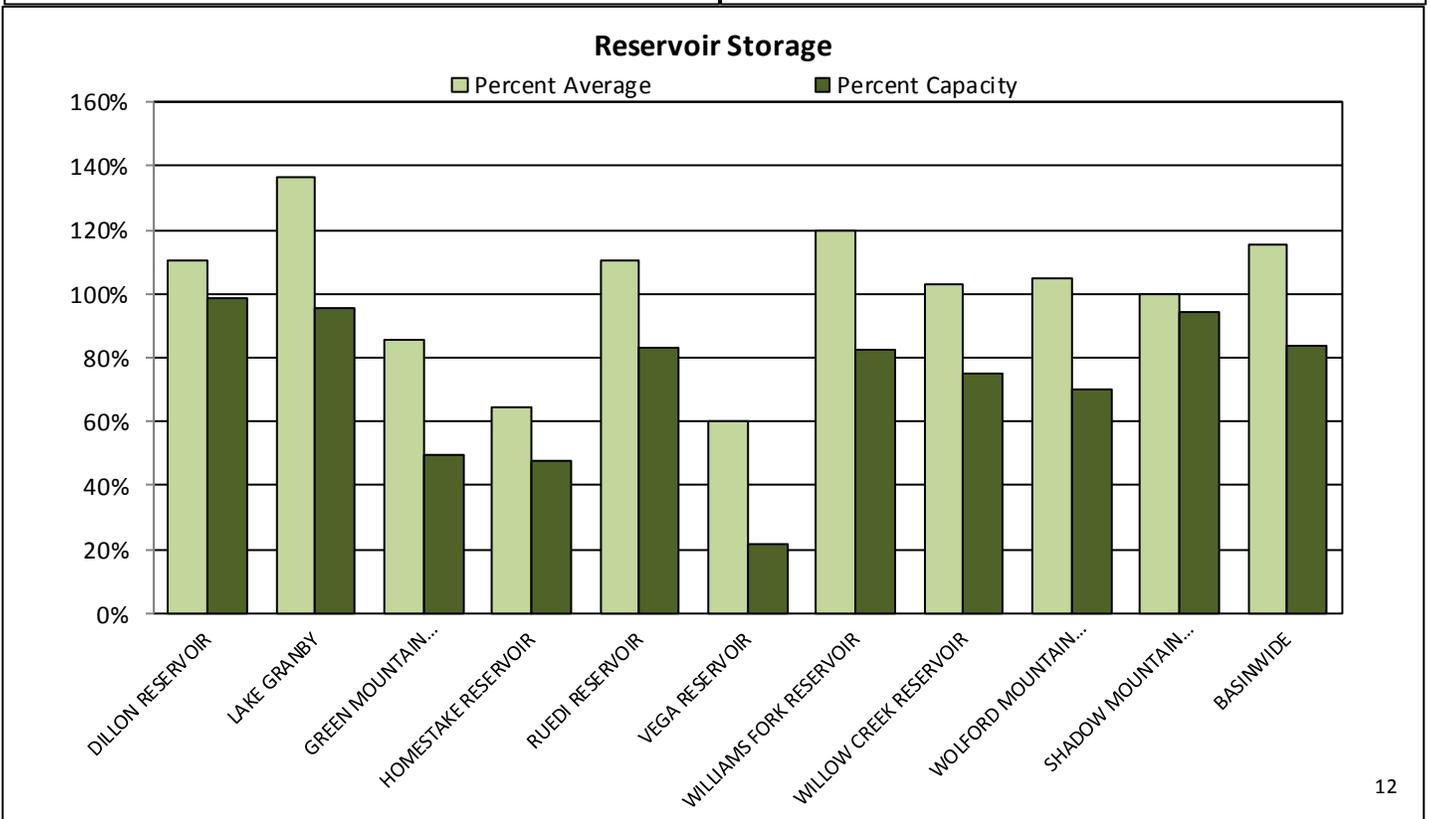
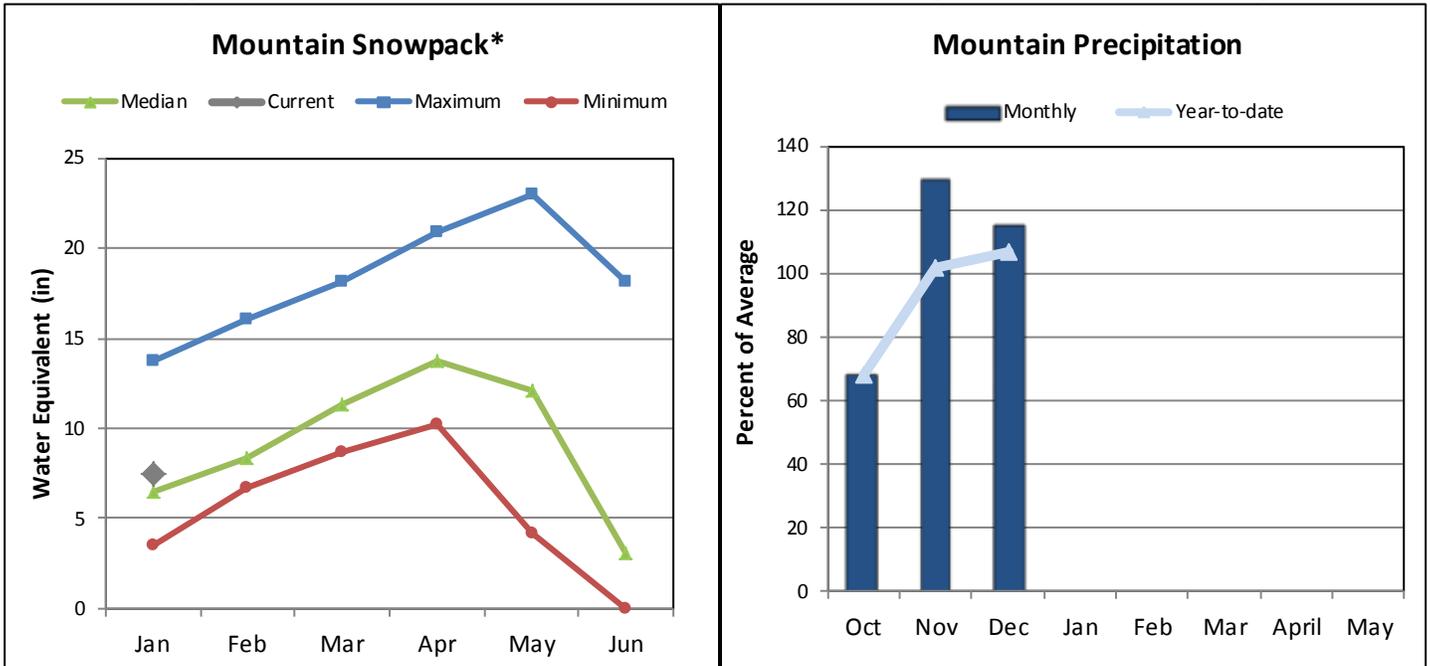


Please refer to the sections at the end of this report for further explanation concerning these graphs.

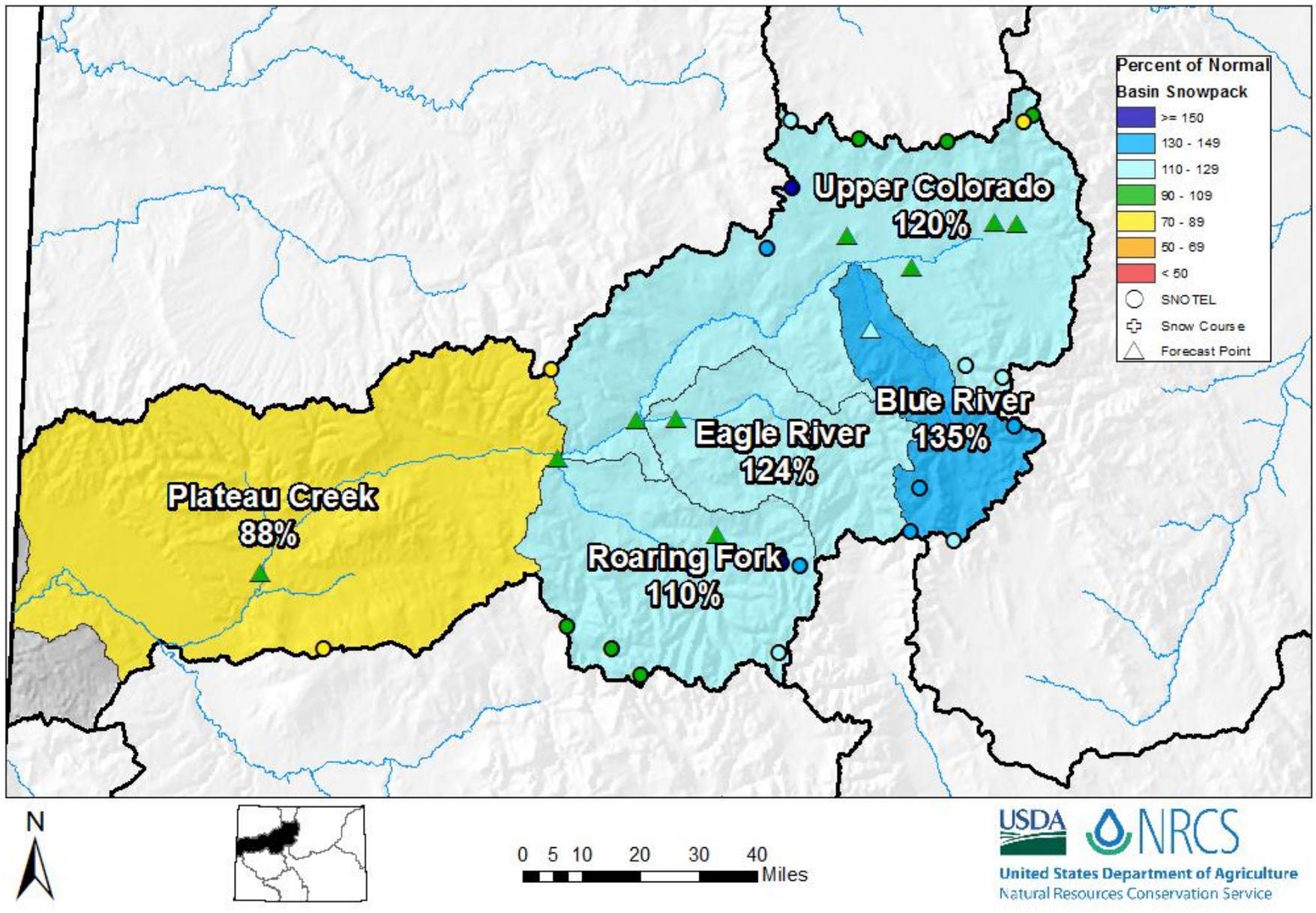
UPPER COLORADO RIVER BASIN

January 1, 2015

Snowpack in the Colorado River basin is above normal at 114% of the median. Precipitation for December was 115% of average which brings water year-to-date precipitation to 107% of average. Reservoir storage at the end of December was 116% of average compared to 98% last year. Current streamflow forecasts range from 118% of average for the Inflow to Dillon Reservoir to 99% for the Roaring Fork at Glenwood Springs.



Upper Colorado River Basin Snowpack and Streamflow Forecasts January 1, 2015



Upper Colorado River Basin Streamflow Forecasts - January 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 ²	APR-JUL	151	191	220	100%	250	300	220
Willow Ck Reservoir Inflow	APR-JUL	27	38	47	100%	57	73	47
Williams Fk bl Williams Fk Reservoir ²	APR-JUL	68	88	102	105%	118	144	97
Wolford Mtn Reservoir Inflow	APR-JUL	32	46	57	106%	70	90	54
Dillon Reservoir Inflow ²	APR-JUL	128	165	193	118%	220	270	163
Green Mountain Reservoir Inflow ²	APR-JUL	220	280	325	118%	375	450	275
Eagle R bl Gypsum ²	APR-JUL	235	305	360	107%	420	510	335
Colorado R nr Dotsero ²	APR-JUL	975	1280	1510	108%	1760	2160	1400
Ruedi Reservoir Inflow ²	APR-JUL	101	127	146	105%	166	199	139
Roaring Fk at Glenwood Springs ²	APR-JUL	440	575	680	99%	790	975	690
Colorado R nr Cameo ²	APR-JUL	1570	2060	2430	103%	2830	3480	2350

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

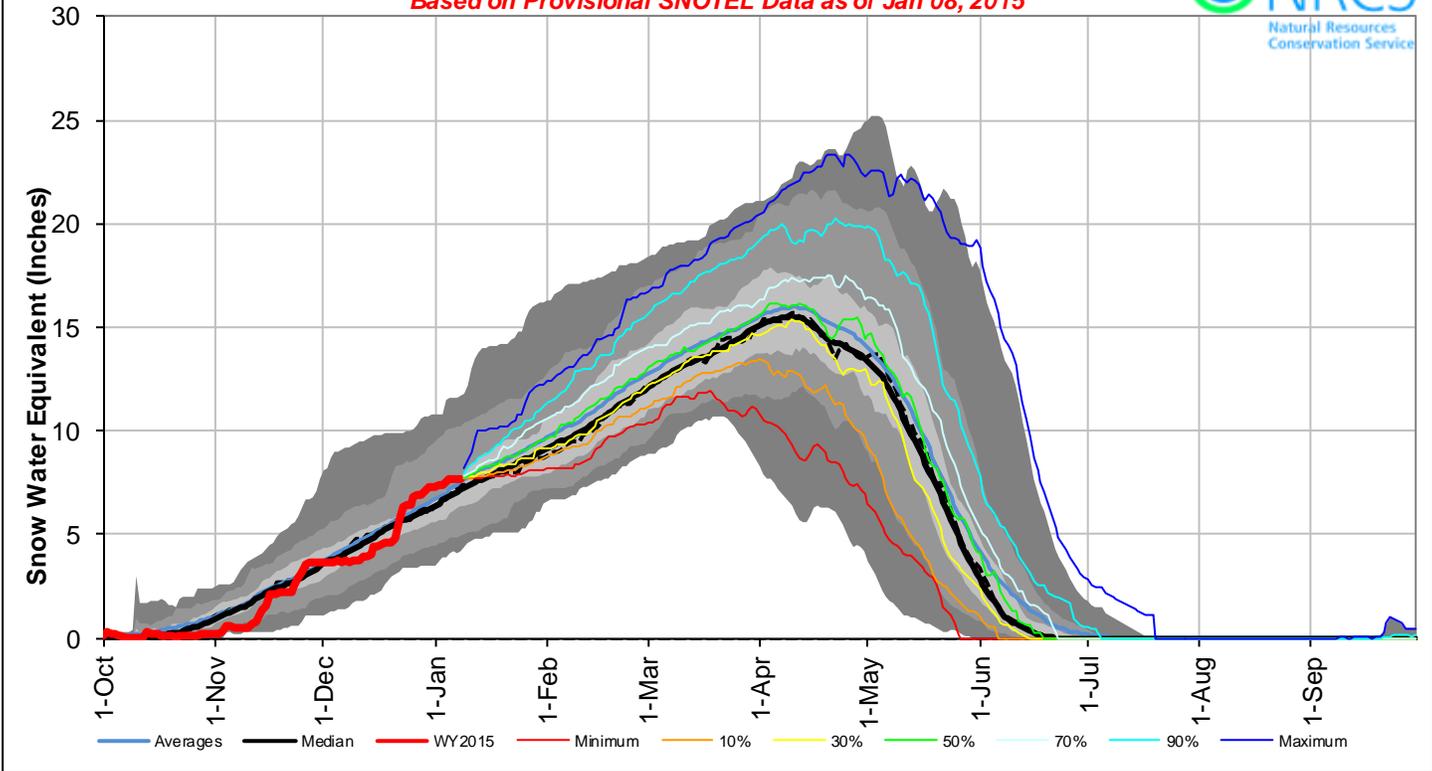
3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Dillon Reservoir	250.9	241.4	227.0	254.0
Green Mountain Reservoir	72.8	83.5	85.2	146.8
Homestake Reservoir	20.5	0.8	31.9	43.0
Lake Granby	445.1	305.4	325.7	465.6
Ruedi Reservoir	85.0	83.0	76.8	102.0
Shadow Mountain Reservoir	17.3	17.4	17.3	18.4
Vega Reservoir	7.1	14.9	11.8	32.9
Williams Fork Reservoir	79.8	75.0	66.5	97.0
Willow Creek Reservoir	6.8	6.7	6.6	9.1
Wolford Mountain Reservoir	46.2	43.8	44.0	65.9
Basin-wide Total	1031.5	871.9	892.8	1234.7
# of reservoirs	10	10	10	10

Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
BLUE RIVER BASIN	5	135%	98%
HEADWATERS COLORADO RIVER	19	120%	102%
MUDDY CREEK BASIN	3	117%	116%
EAGLE RIVER BASIN	4	124%	85%
PLATEAU CREEK BASIN	2	75%	117%
ROARING FORK BASIN	7	110%	101%
WILLIAMS FORK BASIN	3	118%	99%
WILLOW CREEK BASIN	2	110%	123%
UPPER COLORADO RIVER BASIN	28	114%	101%

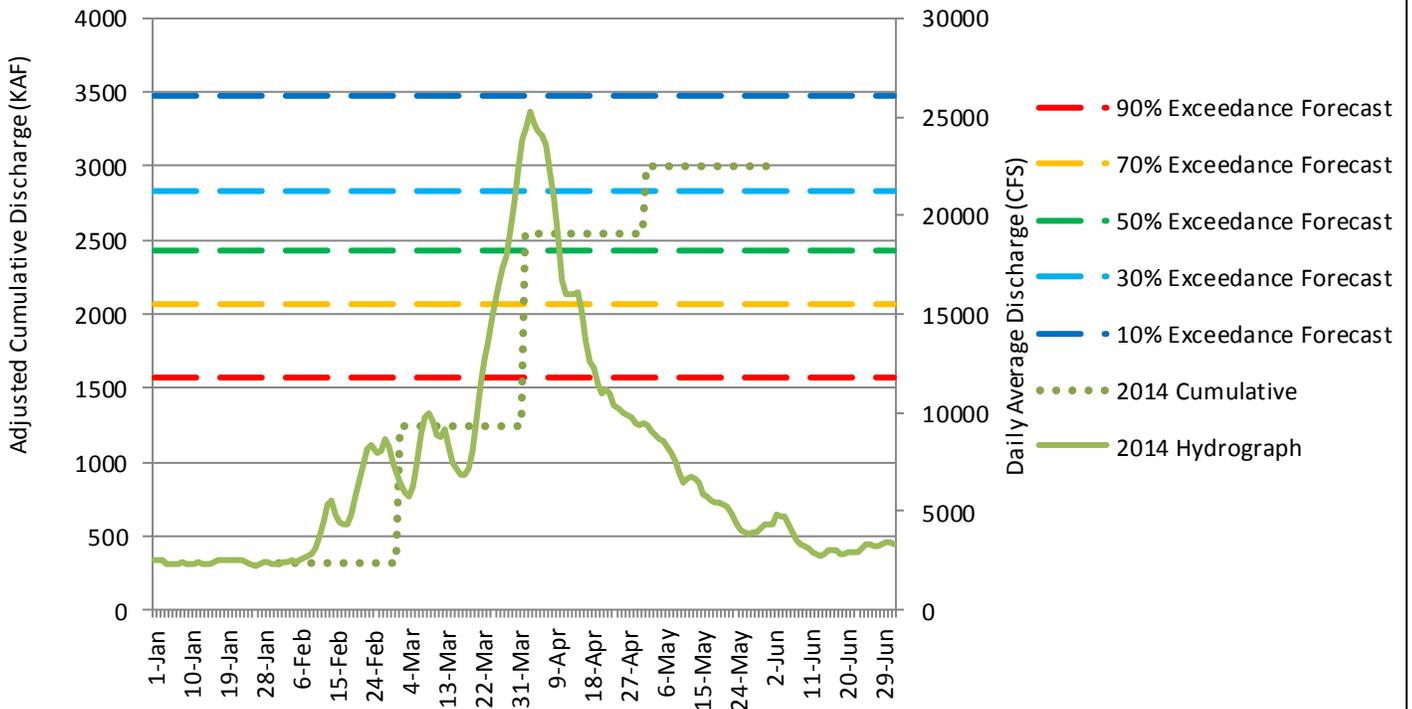
Upper Colorado River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Jan 08, 2015



Colorado River at Cameo, CO

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

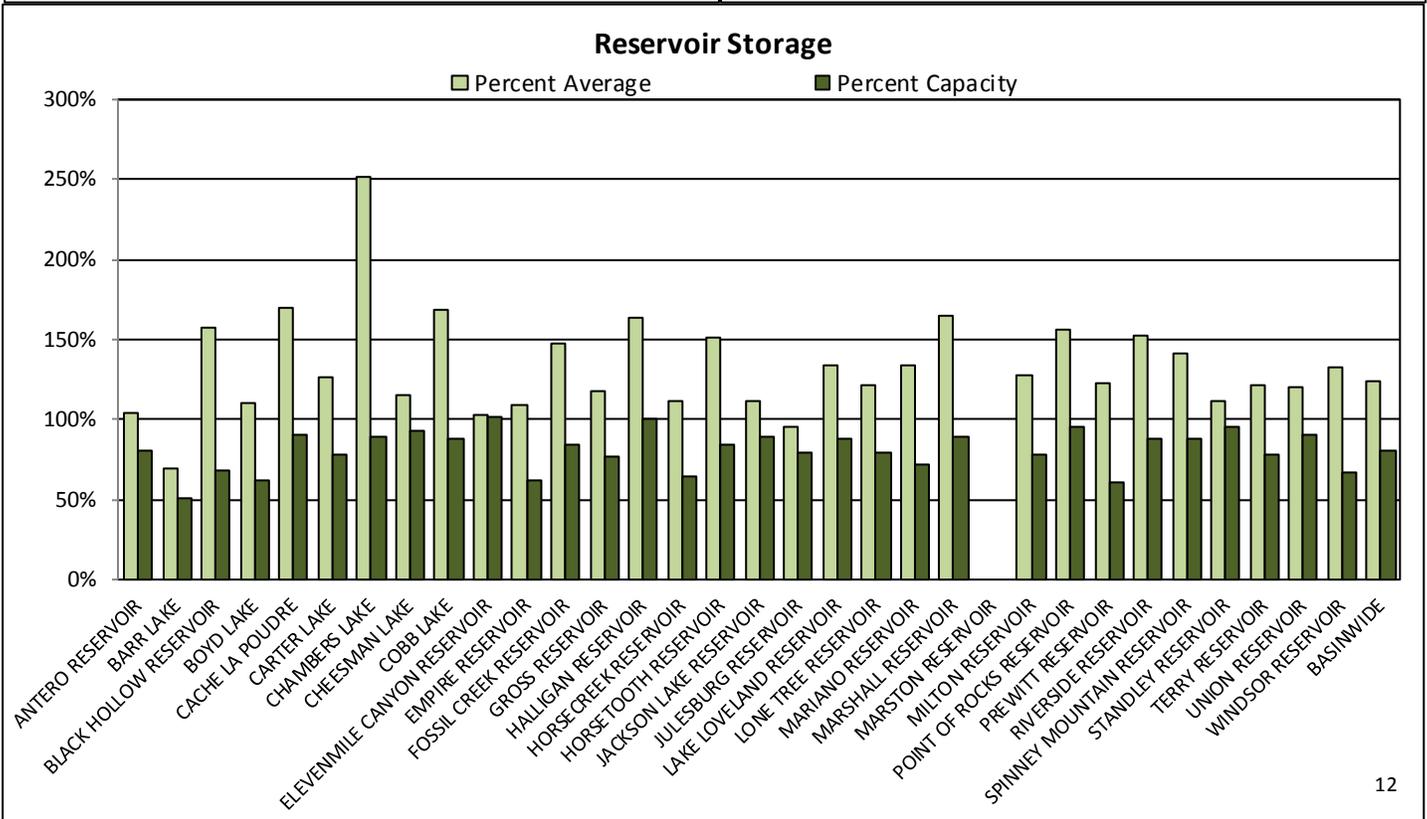
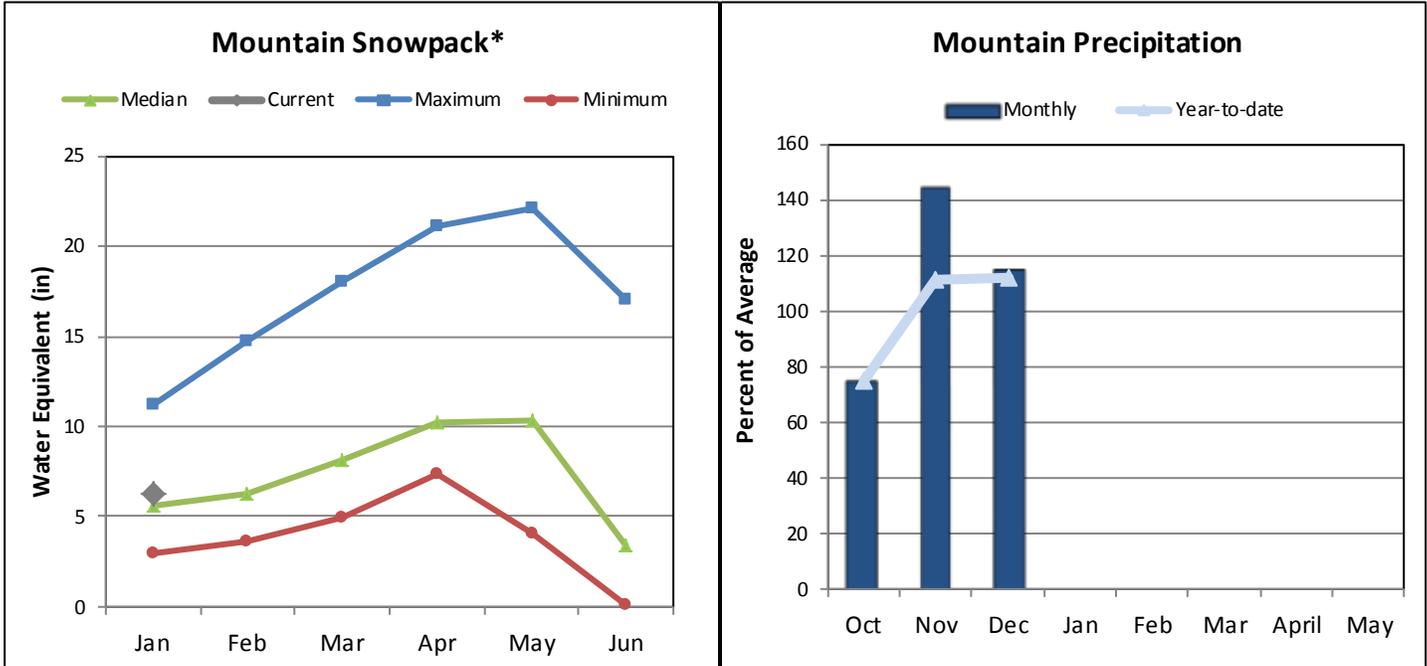


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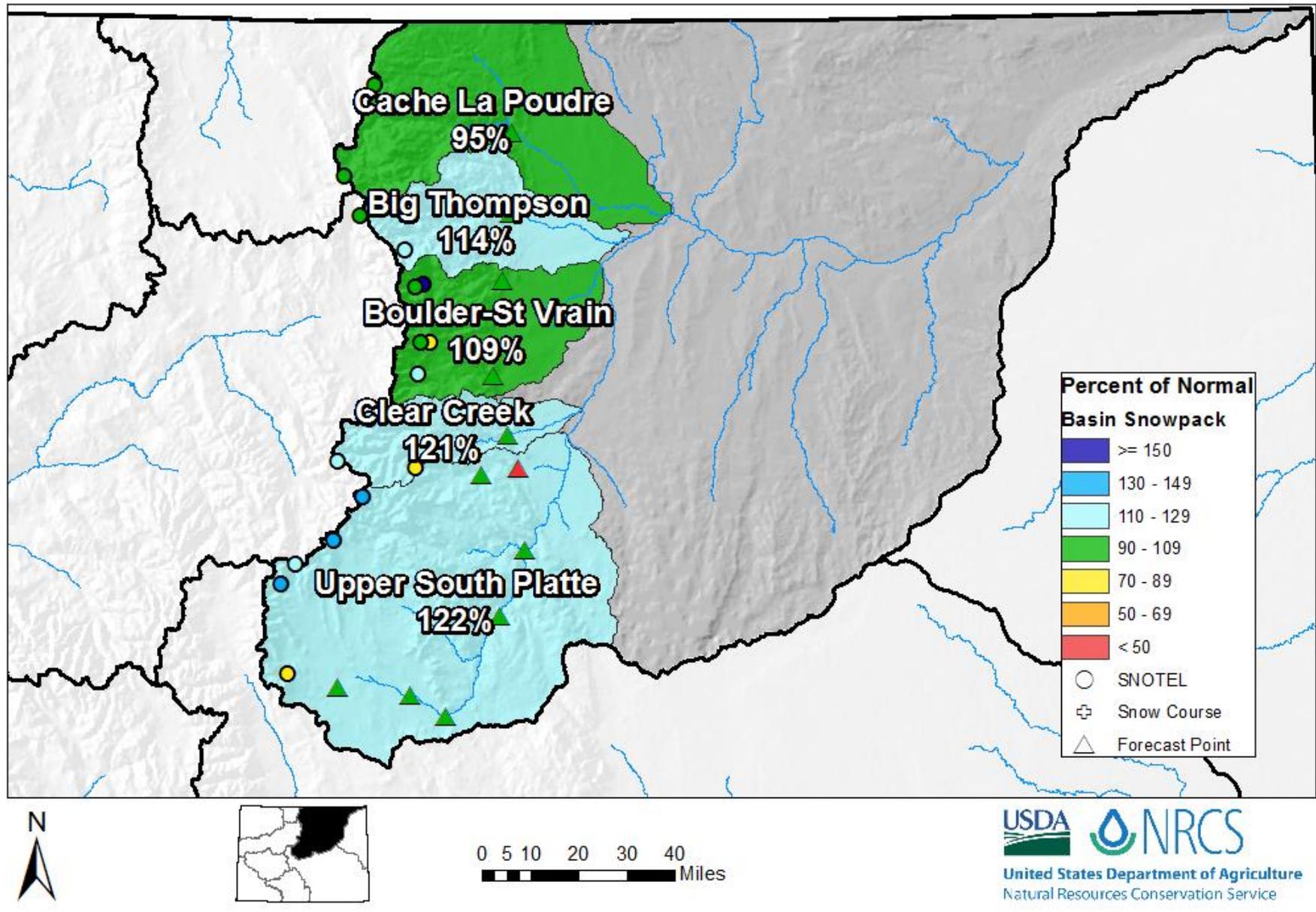
SOUTH PLATTE RIVER BASIN

January 1, 2015

Snowpack in the South Platte River basin is above normal at 112% of the median. Precipitation for December was 115% of average which brings water year-to-date precipitation to 112%. Reservoir storage at the end of December was 124% of average compared to 114% last year. Streamflow forecasts range from 106% of average for the Inflow to Elevenmile Canyon Reservoir to 97% for the Big Thompson at Canyon Mouth.



South Platte River Basin Snowpack and Streamflow Forecasts January 1, 2015



South Platte River Basin Streamflow Forecasts - January 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 ²	APR-JUL	7.6	12	15	103%	17.9	22	14.5
	APR-SEP	9.8	14.9	18.3	103%	22	27	17.8
Spinney Mountain Reservoir Inflow ²	APR-JUL	26	38	50	104%	65	96	48
	APR-SEP	31	48	64	105%	86	131	61
Elevenmile Canyon Reservoir Inflow ²	APR-JUL	26	40	53	106%	70	107	50
	APR-SEP	31	50	68	106%	93	149	64
Cheesman Lake Inflow ²	APR-JUL	52	78	102	102%	134	200	100
	APR-SEP	64	97	129	102%	171	260	126
South Platte R at South Platte ²	APR-JUL	88	135	182	101%	245	380	180
	APR-SEP	108	167	225	100%	305	470	225
Bear Ck ab Evergreen	APR-JUL	7.6	12.4	17.2	105%	24	39	16.4
	APR-SEP	10.2	16	22	105%	30	47	21
Clear Ck at Golden	APR-JUL	78	98	112	107%	126	146	105
	APR-SEP	97	120	136	106%	151	174	128
St. Vrain Ck at Lyons ²	APR-JUL	66	78	86	98%	94	106	88
	APR-SEP	78	91	100	97%	109	122	103
Boulder Ck nr Orodell ²	APR-JUL	43	49	54	100%	59	65	54
	APR-SEP	49	57	63	100%	69	77	63
South Boulder Ck nr Eldorado Springs ²	APR-JUL	30	35	39	100%	42	47	39
	APR-SEP	31	38	43	100%	48	54	43
Big Thompson R at Canyon Mouth ²	APR-JUL	65	78	87	97%	95	108	90
	APR-SEP	79	94	105	98%	115	131	107
Cache La Poudre at Canyon Mouth ²	APR-JUL	144	189	220	98%	250	295	225
	APR-SEP	160	210	245	98%	280	330	250

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

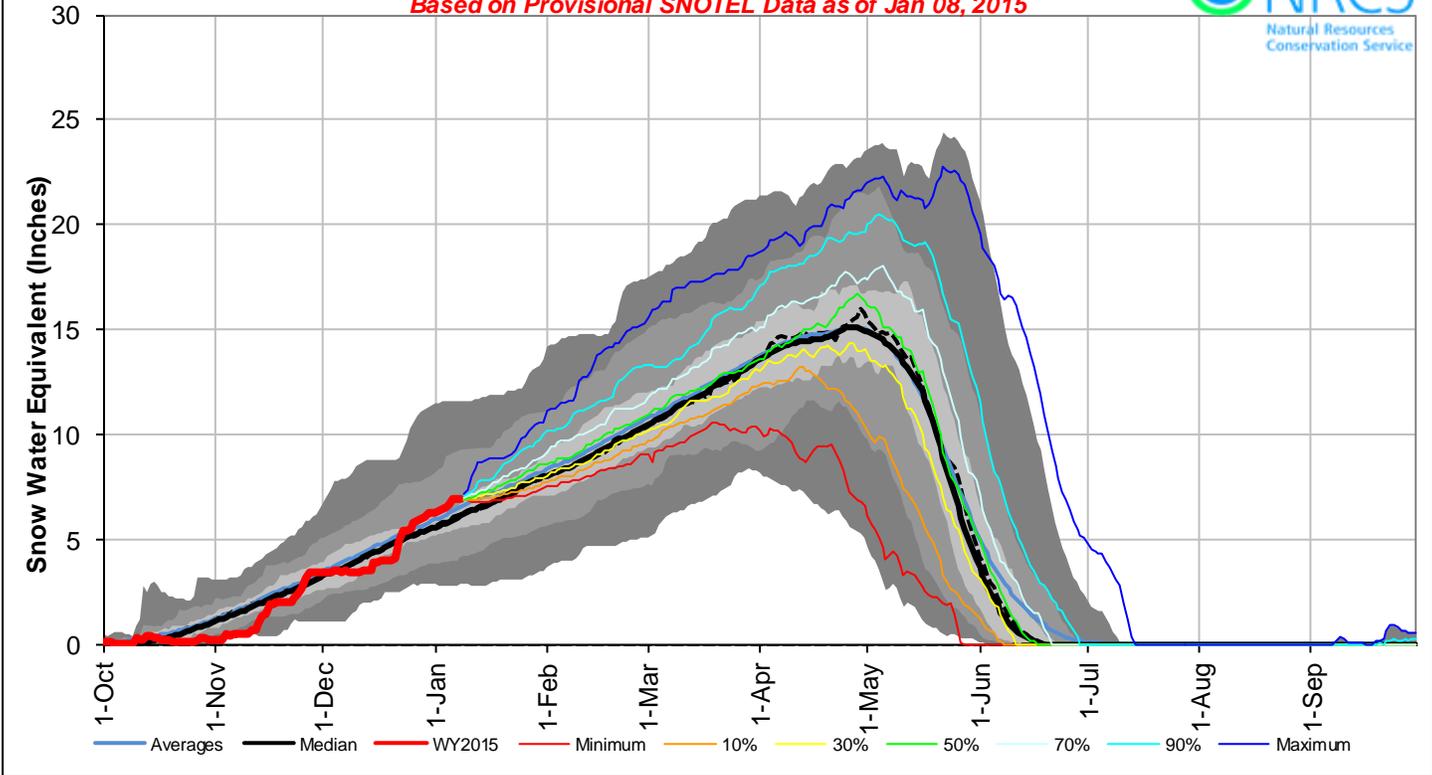
3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Antero Reservoir	16.1	18.3	15.5	19.9
Barr Lake	15.4	25.1	22.3	30.1
Black Hollow Reservoir	4.4	3.6	2.8	6.5
Boyd Lake	30.2	33.7	27.4	48.4
Cache La Poudre	9.2	9.1	5.4	10.1
Carter Lake	85.6	38.9	67.5	108.9
Chambers Lake	7.8	7.2	3.1	8.8
Cheesman Lake	73.8	74.9	64.3	79.0
Cobb Lake	19.7	19.7	11.7	22.3
Elevenmile Canyon Reservoir	99.1	99.7	95.9	98.0
Empire Reservoir	22.4	28.5	20.6	36.5
Fossil Creek Reservoir	9.3	8.6	6.3	11.1
Gross Reservoir	32.2	36.4	27.4	41.8
Halligan Reservoir	6.4	2.0	3.9	6.4
Horsecreek Reservoir	9.5	11.6	8.5	14.7
Horsetooth Reservoir	126.3	88.2	83.5	149.7
Jackson Lake Reservoir	23.2	18.4	20.9	26.1
Julesburg Reservoir	16.2	16.0	17.0	20.5
Lake Loveland Reservoir	9.1	8.5	6.8	10.3
Lone Tree Reservoir	6.9	7.7	5.7	8.7
Mariano Reservoir	3.9	4.3	2.9	5.4
Marshall Reservoir	8.9	8.9	5.4	10.0
Marston Reservoir	0.0	8.9	6.0	13.0
Milton Reservoir	18.3	19.4	14.3	23.5
Point Of Rocks Reservoir	67.7	42.9	43.3	70.6
Prewitt Reservoir	17.1	20.3	13.9	28.2
Ralph Price Reservoir	12.9	13.9		16.2
Riverside Reservoir	49.0	47.6	32.1	55.8
Spinney Mountain Reservoir	43.2	44.0	30.5	49.0
Standley Reservoir	40.0	40.0	35.8	42.0
Terry Reservoir	6.2	5.9	5.1	8.0
Union Reservoir	11.8	11.6	9.8	13.0
Windsor Reservoir	10.2	12.4	7.7	15.2
Basin-wide Total	899.1	822.3	723.3	1091.5
# of reservoirs	32	32	32	32

Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
BIG THOMPSON BASIN	3	114%	106%
BOULDER CREEK BASIN	3	103%	85%
CACHE LA POUDDRE BASIN	2	95%	99%
CLEAR CREEK BASIN	2	121%	106%
SAINT VRAIN BASIN	2	120%	75%
UPPER SOUTH PLATTE BASIN	6	122%	103%
SOUTH PLATTE RIVER BASIN	18	112%	99%

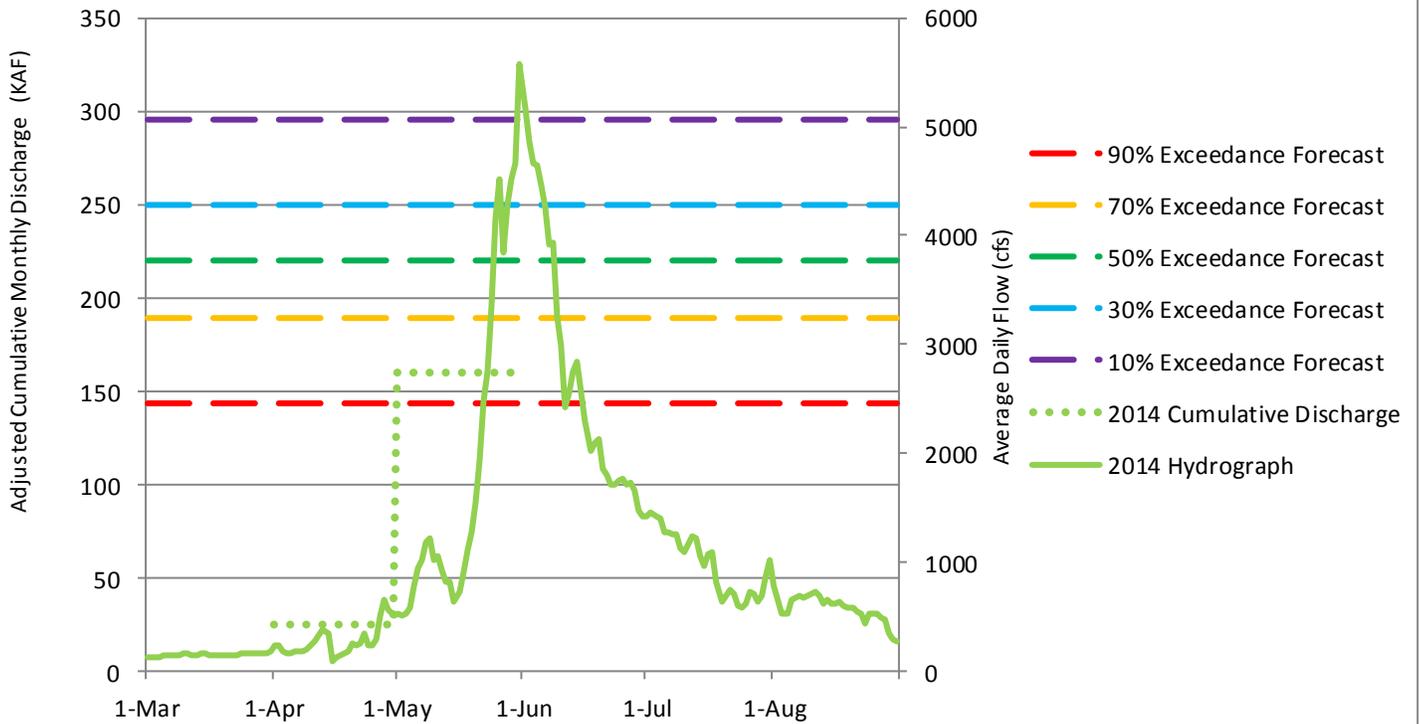
South Platte River Basin with Non-Exceedance Projections

Based on Provisional SNOTEL Data as of Jan 08, 2015



Cache La Poudre River at Canyon Mouth

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

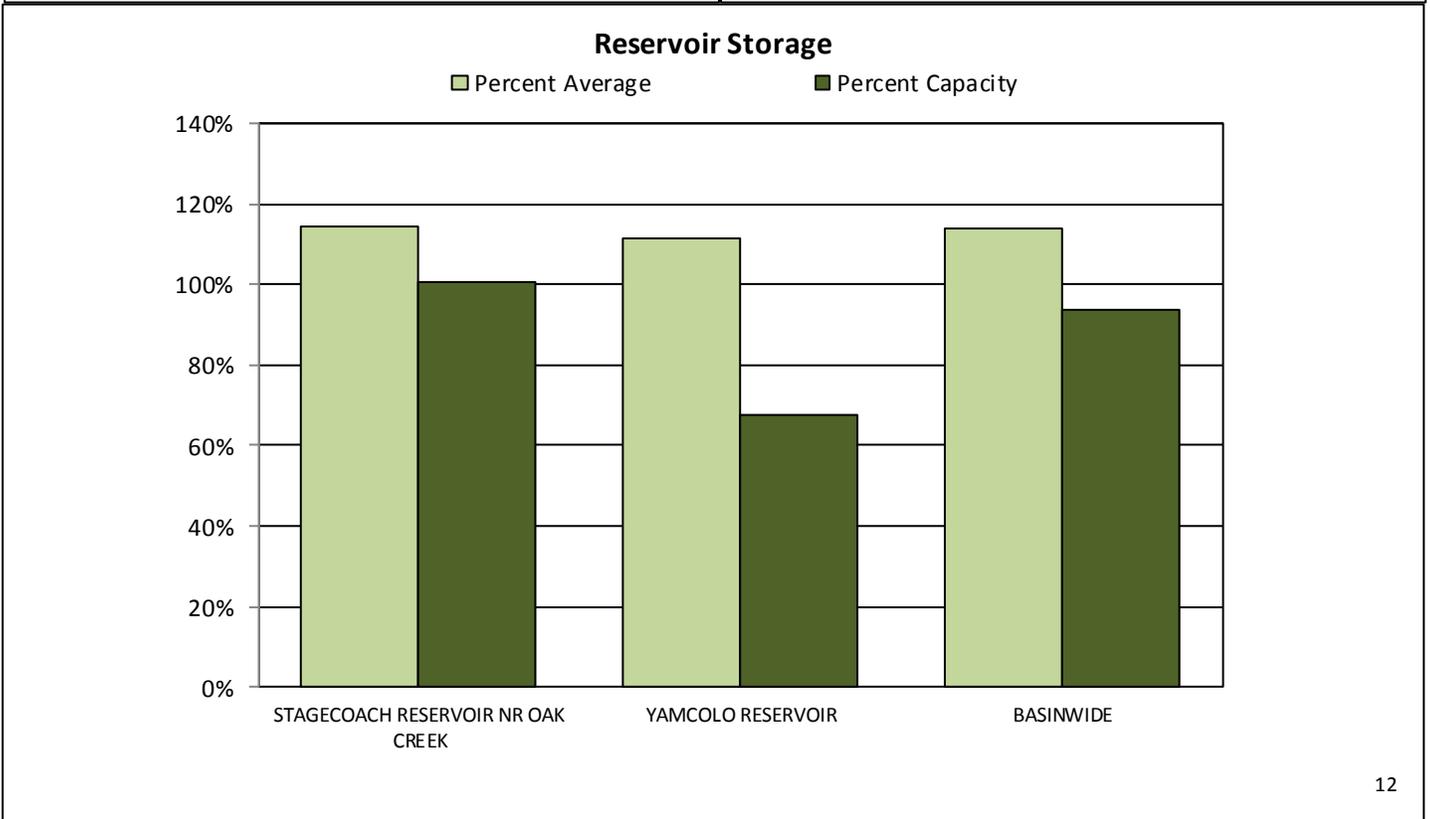
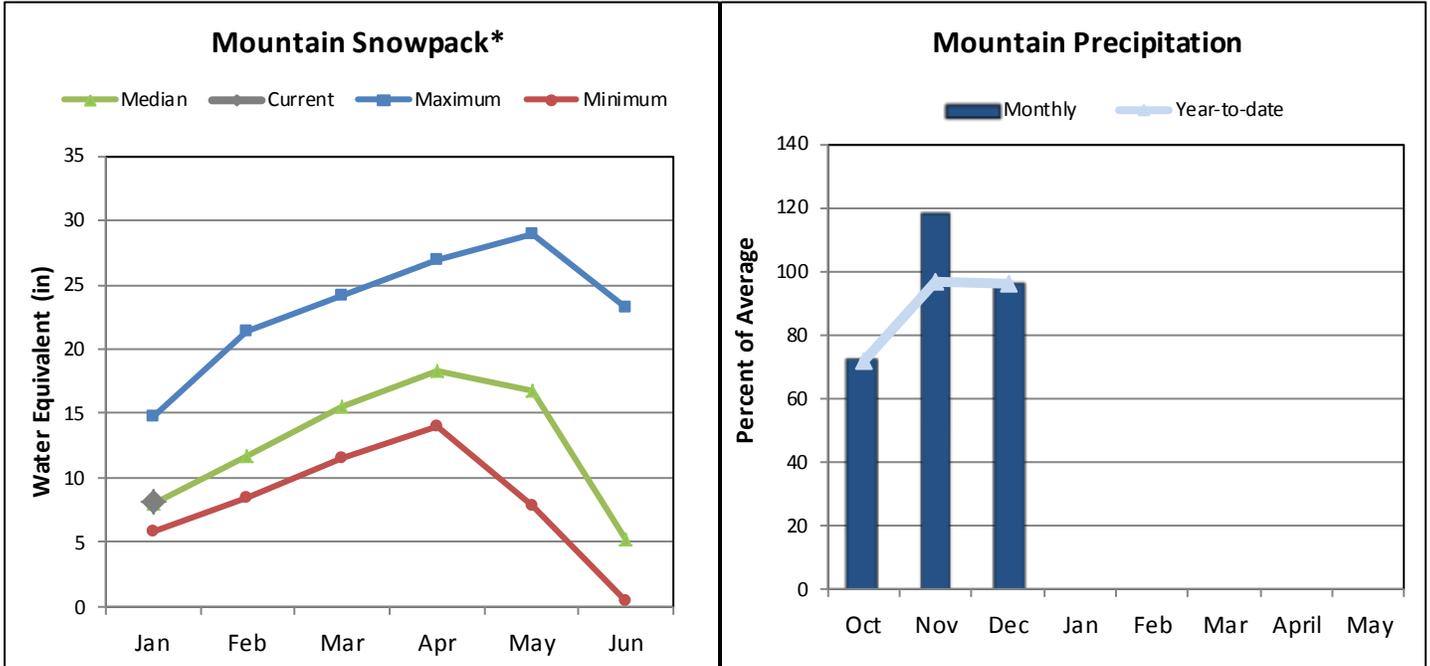


Please refer to the sections at the end of this report for further explanation concerning these graphs.

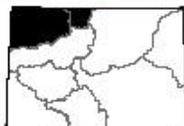
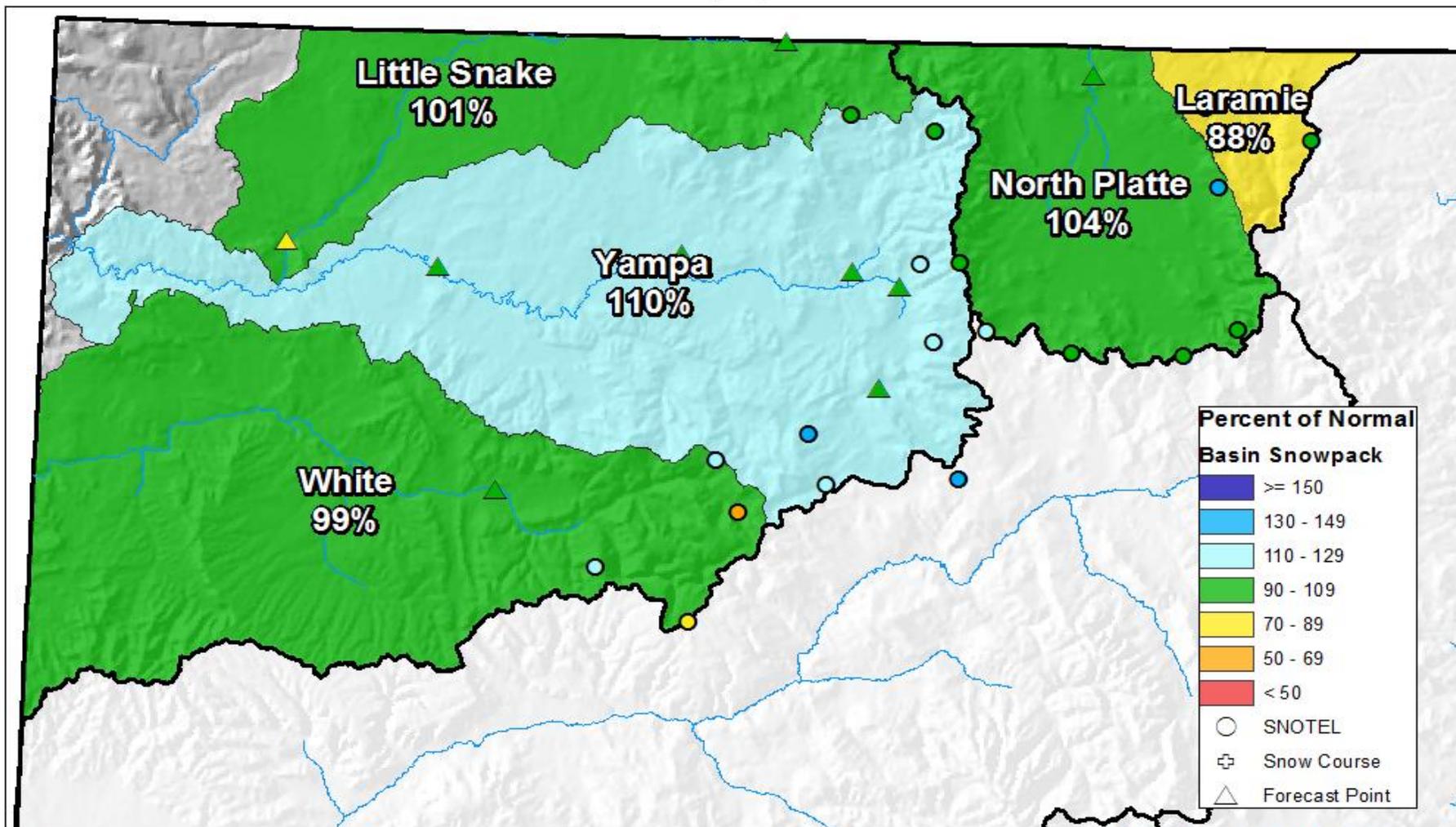
YAMPA, WHITE, NORTH PLATTE AND LARAMIE RIVER BASINS

January 1, 2015

Snowpack in the Yampa, White & North Platte basins is above normal at 103% of the median. Precipitation for December was 96% of average and water year-to-date precipitation is also 96% of average. Reservoir storage at the end of December was 114% of average compared to 109% last year. Streamflow forecasts range from 109% of average for the Yampa River above Stagecoach Reservoir to 80% for the Little Snake River near Dixon.



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



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

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

YAMPA-WHITE-NORTH PLATTE RIVER BASINS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
North Platte R nr Northgate	APR-JUL	90	161	210	93%	260	330	225
	APR-SEP	103	182	235	94%	290	365	250
Laramie R nr Woods ²	APR-JUL	56	79	94	82%	109	131	115
	APR-SEP	63	87	103	82%	119	143	126
Yampa R ab Stagecoach Reservoir ²	APR-JUL	10.3	18.3	25	109%	33	46	23
Yampa R at Steamboat Springs ²	APR-JUL	168	225	270	104%	320	395	260
Elk R nr Milner	APR-JUL	210	285	340	106%	405	505	320
Elkhead Ck ab Long Gulch	APR-JUL	31	52	70	96%	90	124	73
Yampa R nr Maybell ²	APR-JUL	565	780	950	102%	1140	1440	935
Little Snake R nr Slater ²	APR-JUL	83	118	145	93%	175	225	156
Little Snake R nr Dixon ²	APR-JUL	102	194	275	80%	365	530	345
Little Snake R nr Lily ²	APR-JUL	135	215	285	83%	360	490	345
White R nr Meeker	APR-JUL	172	230	275	98%	325	400	280

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

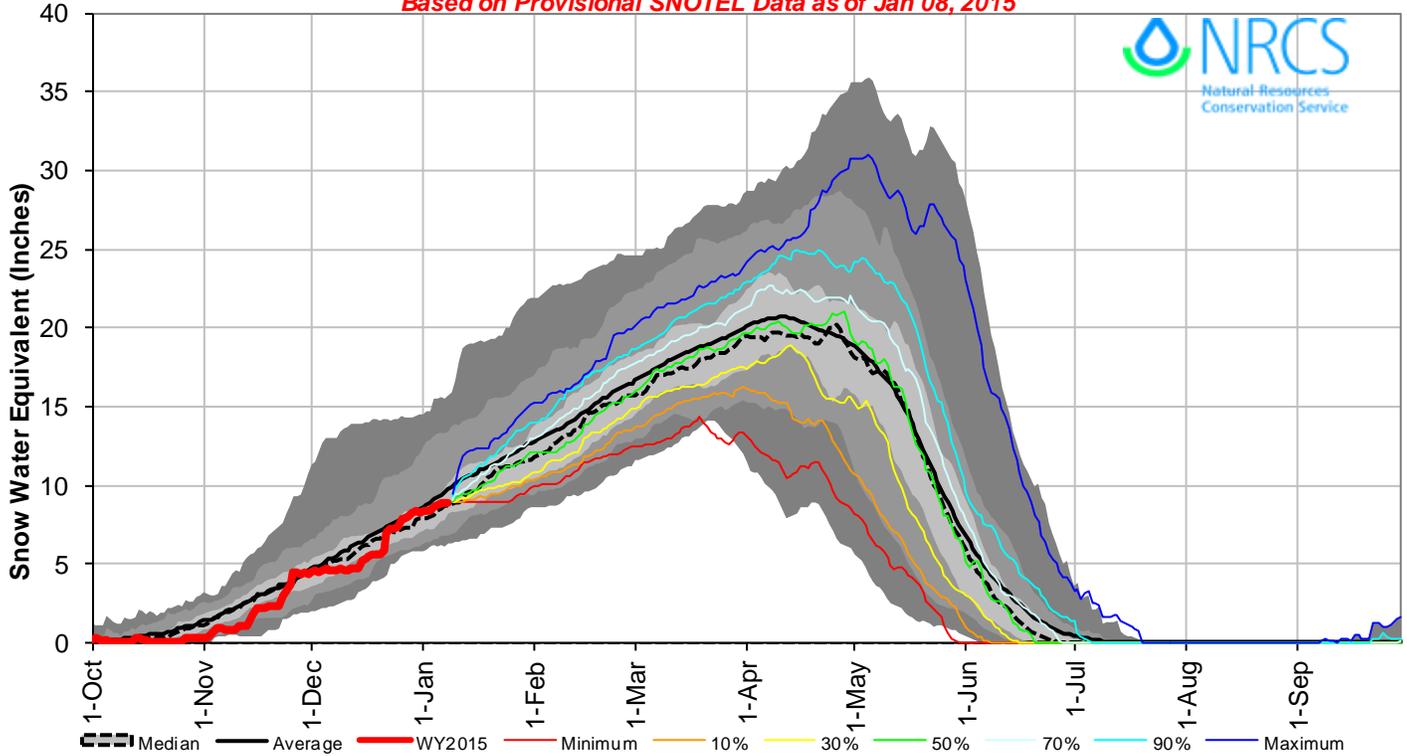
3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Stagecoach Reservoir nr Oak Creek	33.5	33.7	29.3	33.3
Yamcolo Reservoir	5.9	4.0	5.3	8.7
Basin-wide Total	39.4	37.7	34.6	42.0
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
LARAMIE RIVER BASIN	2	88%	117%
NORTH PLATTE RIVER BASIN	25	103%	110%
LARAMIE & NORTH PLATTE RIVER BASINS	9	101%	113%
ELK RIVER BASIN	2	98%	106%
YAMPA RIVER BASIN	9	110%	111%
WHITE RIVER BASIN	4	99%	103%
YAMPA & WHITE RIVER BASINS	12	105%	106%
LITTLE SNAKE RIVER BASIN	7	101%	118%
YAMPA-WHITE-NORTH PLATTE RIVER BASINS	25	103%	110%

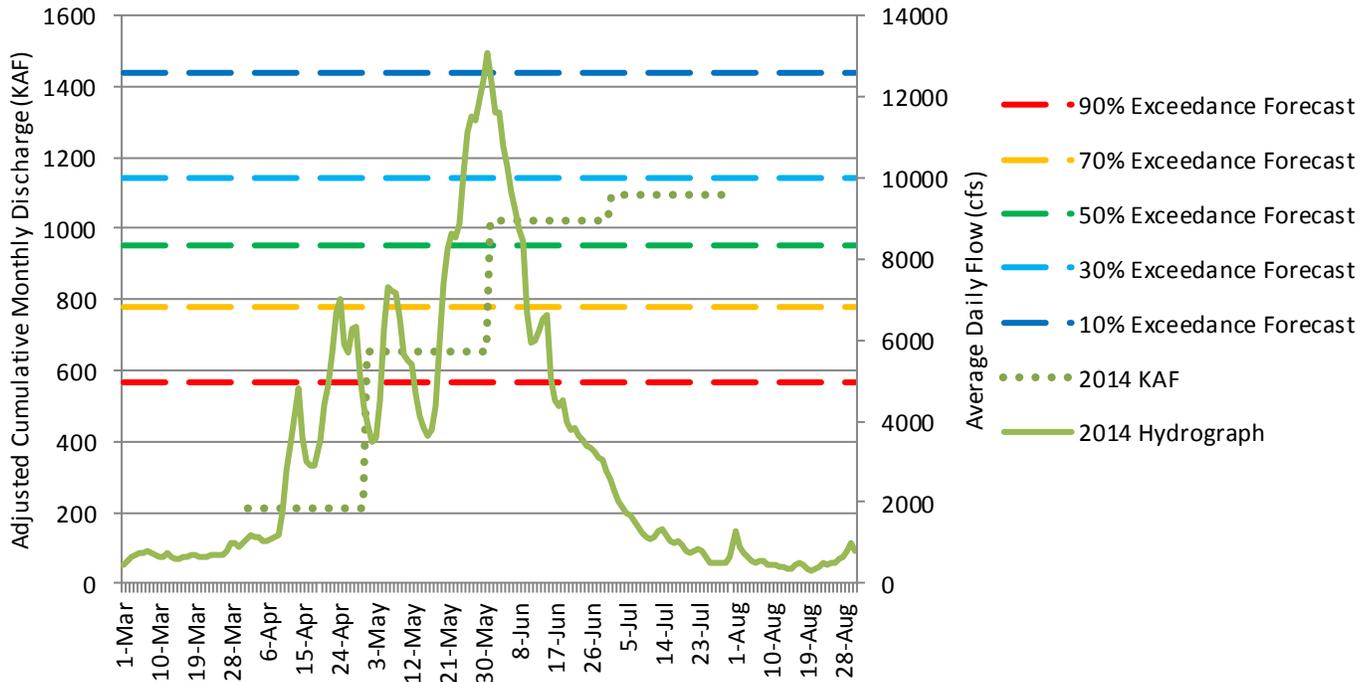
Yampa, White & North Platte River Basins with Non-Exceedance Projections

Based on Provisional SNOTEL Data as of Jan 08, 2015



Yampa River at Maybell

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

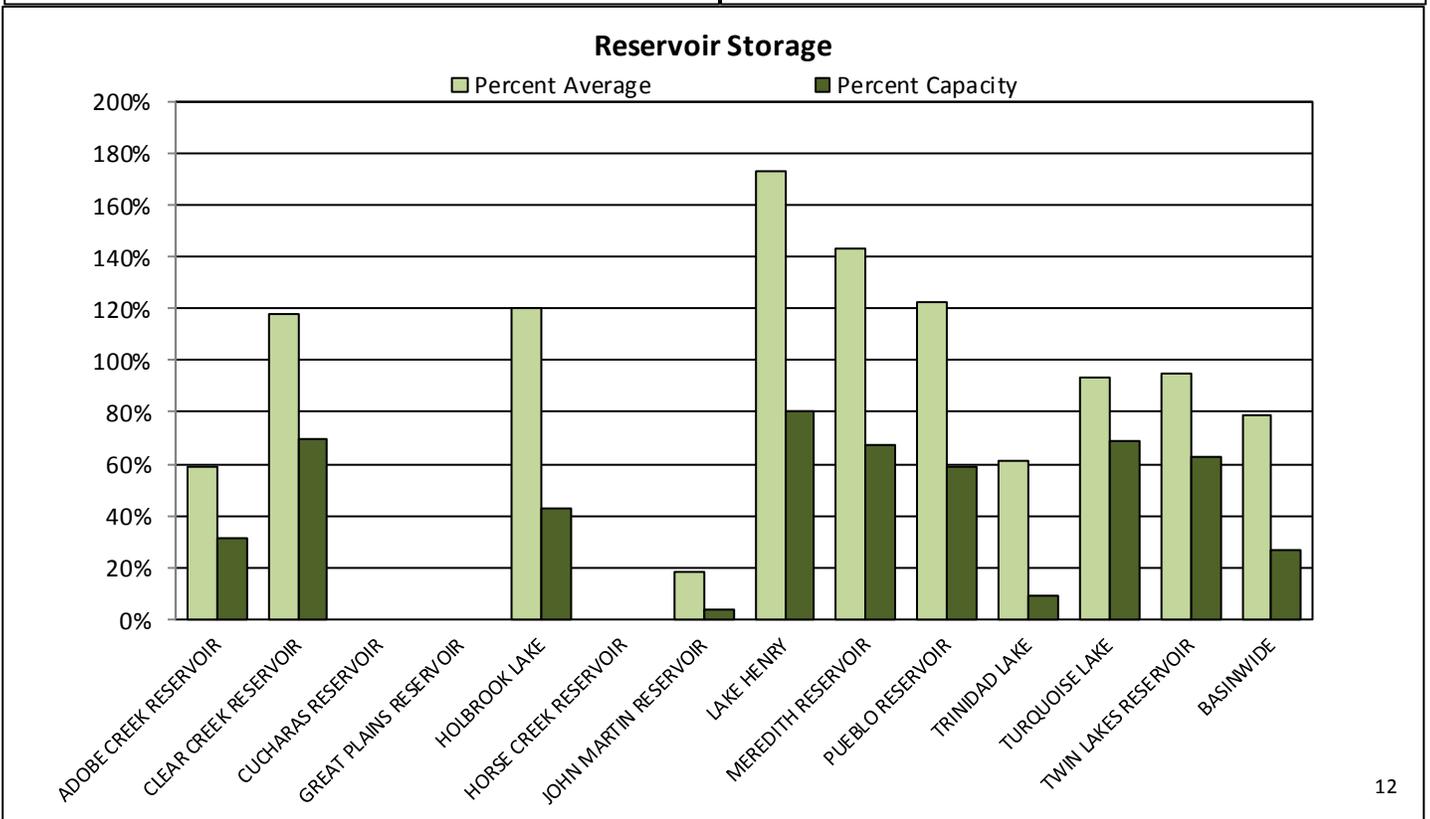
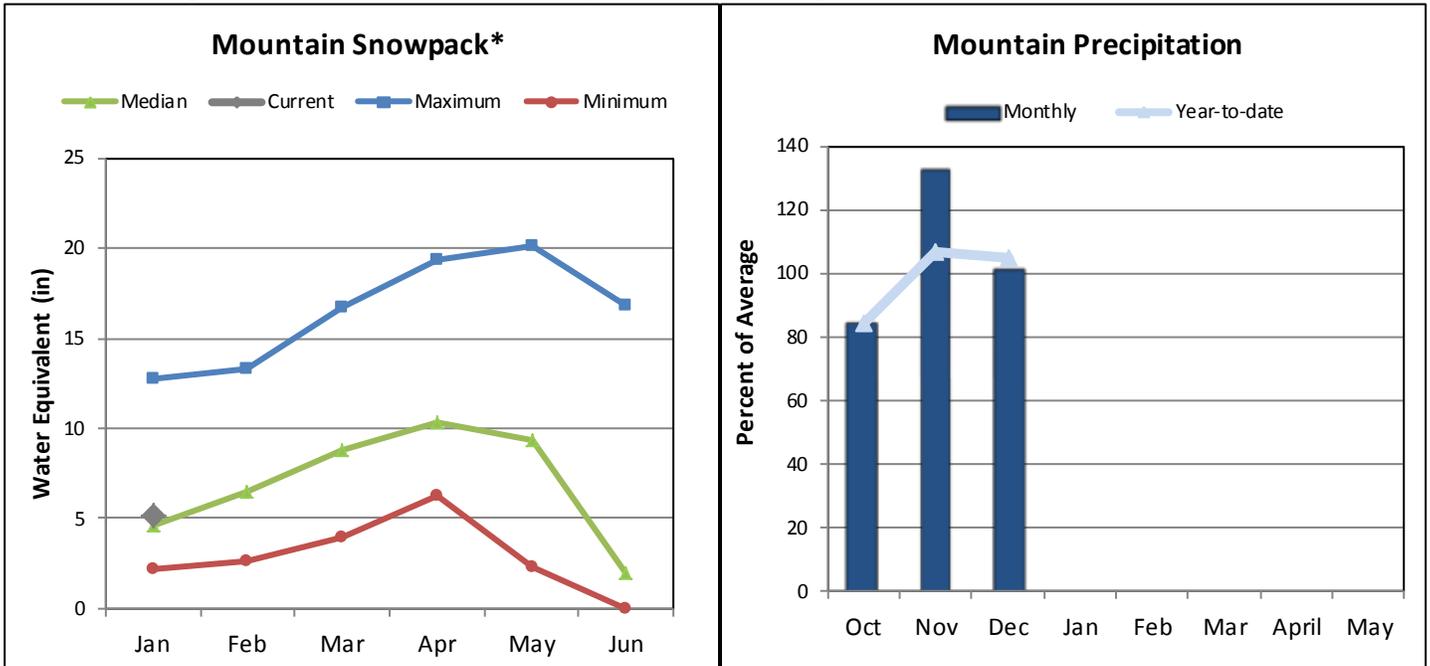


Please refer to the sections at the end of this report for further explanation concerning these graphs.

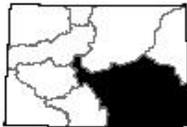
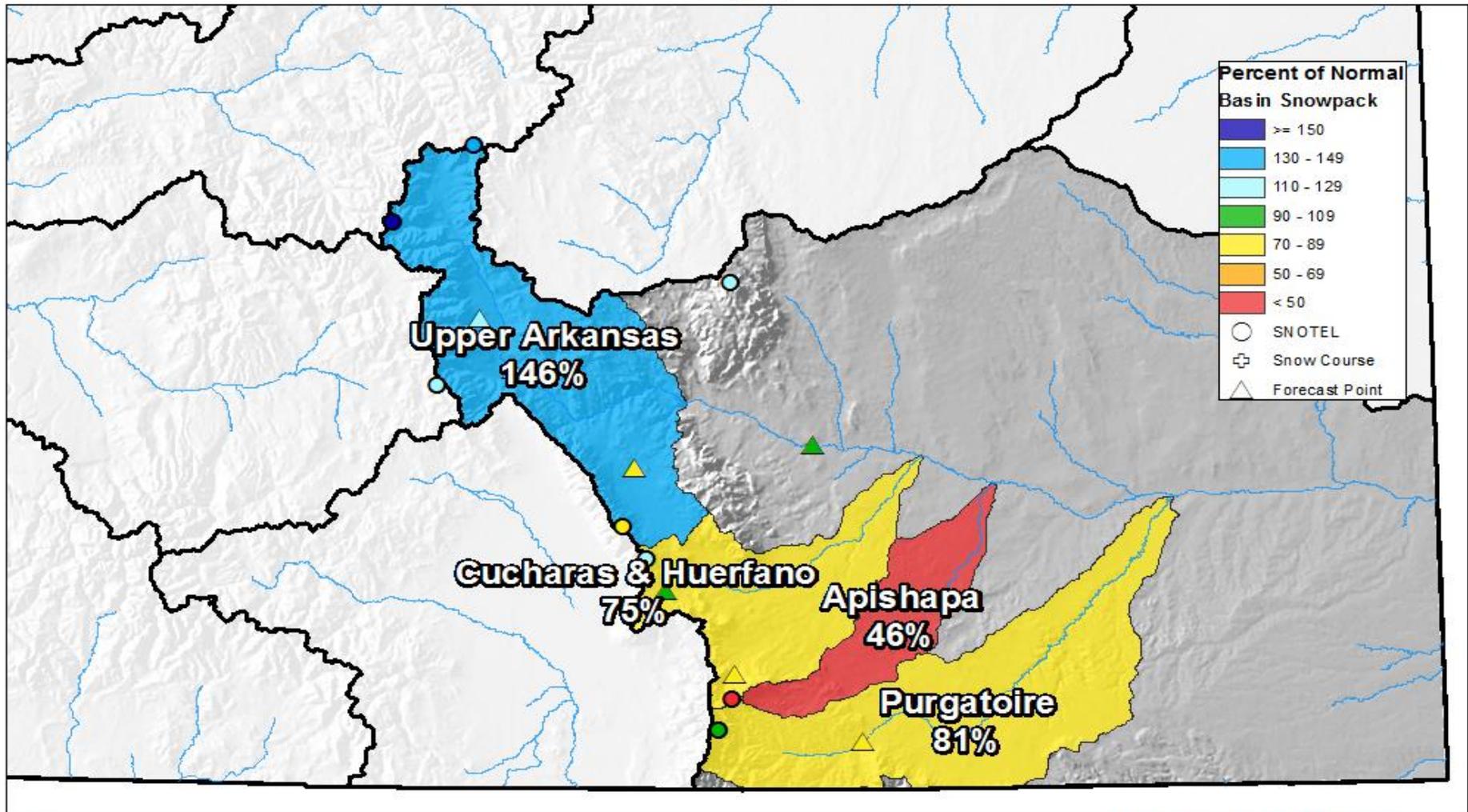
ARKANSAS RIVER BASIN

January 1, 2015

Snowpack in the Arkansas River basin is above normal at 114% of the median. Precipitation for December was 101% of average which brings water year-to-date precipitation to 105% of average. Reservoir storage at the end of December was 79% of average compared to 59% last year. Current streamflow forecasts range from 119% of average for Chalk Creek near Nathrop to 82% of average for the Cucharas River near La Veta.



Arkansas River Basin Snowpack and Streamflow Forecasts January 1, 2015



0 10 20 40 60 80 Miles



United States Department of Agriculture
Natural Resources Conservation Service

Arkansas River Basin Streamflow Forecasts - January 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	13.5	19.9	25	119%	31	40	21
	APR-SEP	17.6	25	31	119%	37	48	26
Arkansas R at Salida ²	APR-JUL	189	235	270	113%	305	365	240
	APR-SEP	235	290	330	112%	375	440	295
Grape Ck nr Westcliffe	APR-JUL	2.2	7.7	13.4	84%	21	34	15.9
	APR-SEP	5.6	11.3	16.4	84%	22	33	19.6
Pueblo Reservoir Inflow ²	APR-JUL	230	315	385	107%	460	580	360
	APR-SEP	305	405	485	107%	570	710	455
Huerfano R nr Redwing	APR-JUL	6.2	8.8	10.9	92%	13.2	17	11.9
	APR-SEP	8.4	11.6	14	92%	16.7	21	15.2
Cucharas R nr La Veta	APR-JUL	3.1	6.8	10	82%	13.9	21	12.2
	APR-SEP	4.1	8	11.5	82%	15.6	23	14.1
Trinidad Lake Inflow ²	MAR-JUL	9.9	21	31	84%	43	64	37
	APR-SEP	15.6	29	40	85%	53	76	47

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

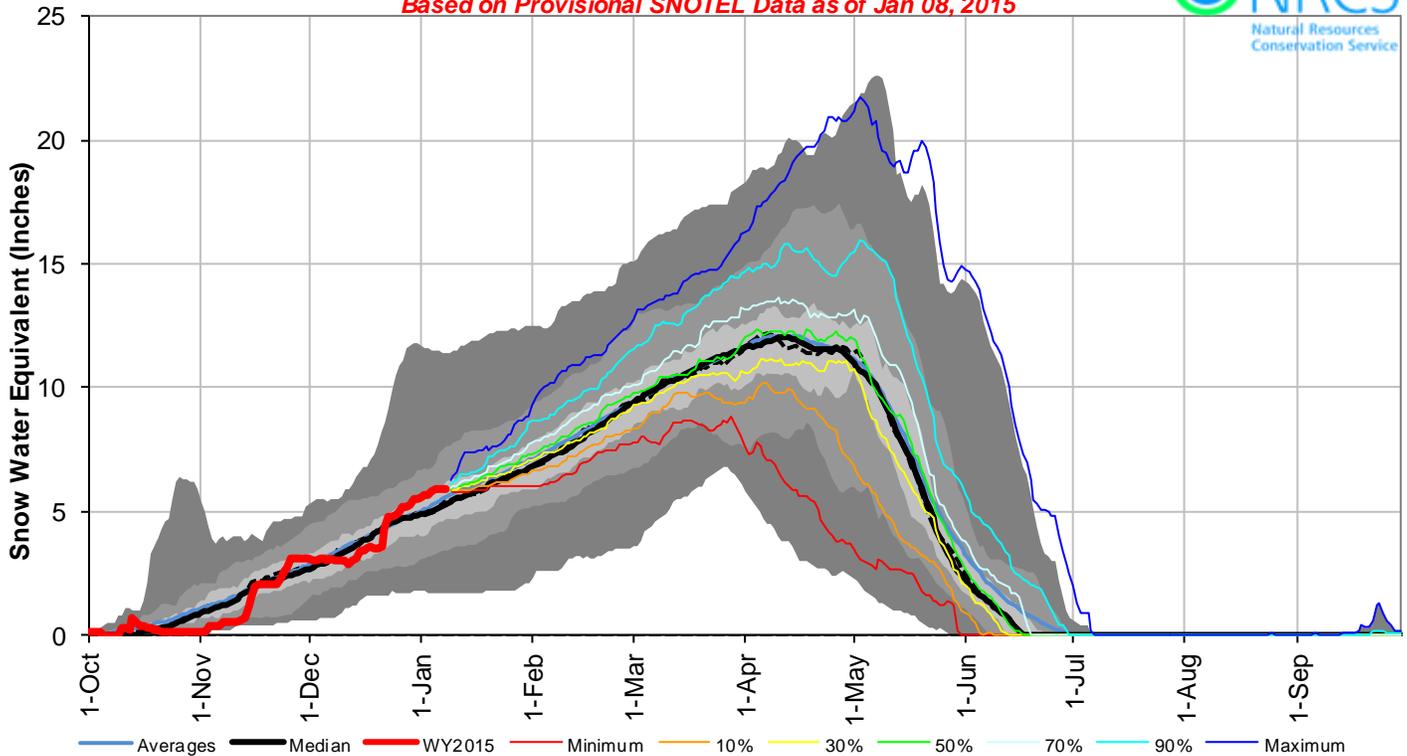
3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Adobe Creek Reservoir	19.3	21.3	32.7	62.0
Clear Creek Reservoir	7.9	7.7	6.7	11.4
Cucharas Reservoir			5.3	40.0
Great Plains Reservoir	0.0	0.0	30.0	150.0
Holbrook Lake	3.0	0.2	2.5	7.0
Horse Creek Reservoir	0.0	0.0	9.4	27.0
John Martin Reservoir	22.3	26.1	122.8	616.0
Lake Henry	6.4	1.5	3.7	8.0
Meredith Reservoir	28.3	1.2	19.7	42.0
Pueblo Reservoir	209.1	146.4	170.8	354.0
Trinidad Lake	14.9	14.9	24.4	167.0
Turquoise Lake	87.7	83.1	94.1	127.0
Twin Lakes Reservoir	54.1	36.7	57.0	86.0
Basin-wide Total	453.0	339.1	573.8	1657.4
# of reservoirs	12	12	12	12

Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
UPPER ARKANSAS BASIN	3	146%	92%
CUCHARAS & HUERFANO BASINS	3	75%	111%
PURGATOIRE RIVER BASIN	2	81%	130%
ARKANSAS RIVER BASIN	8	114%	105%

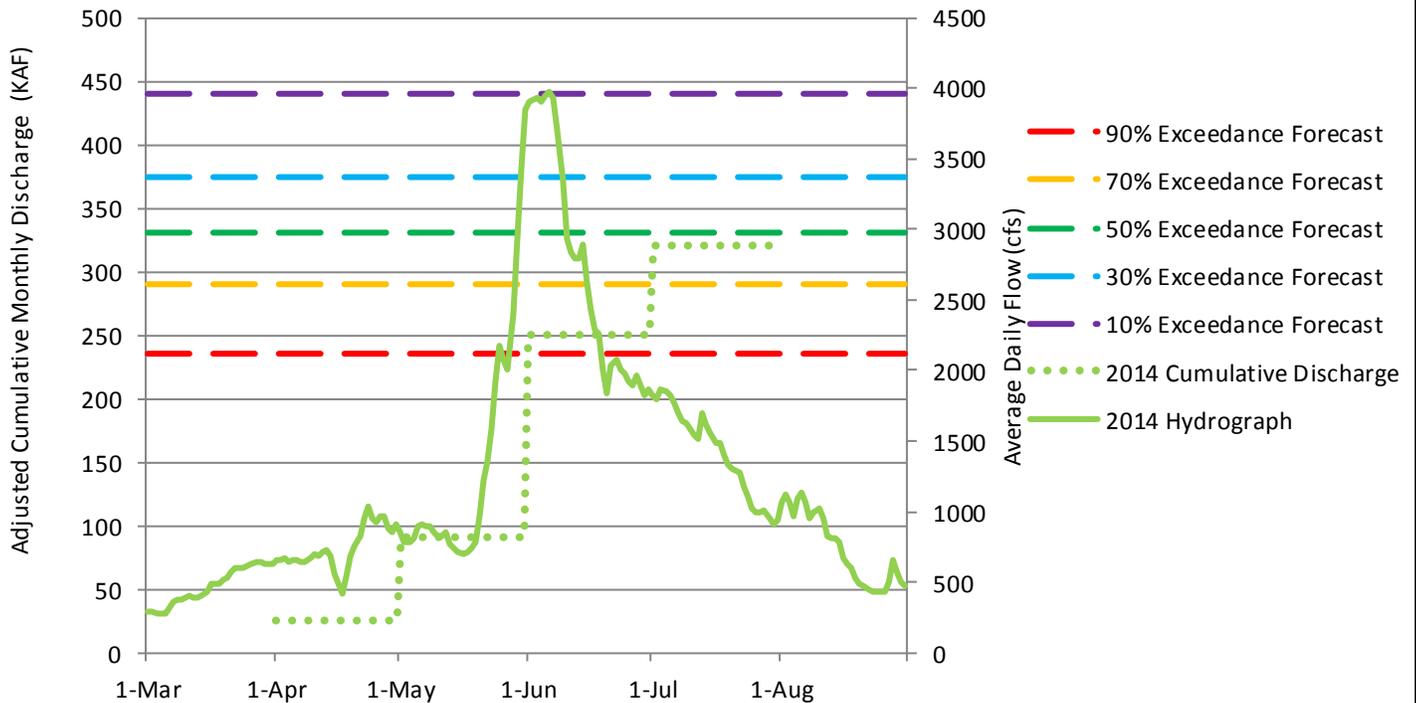
Arkansas River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Jan 08, 2015



Arkansas River at Salida, CO

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts

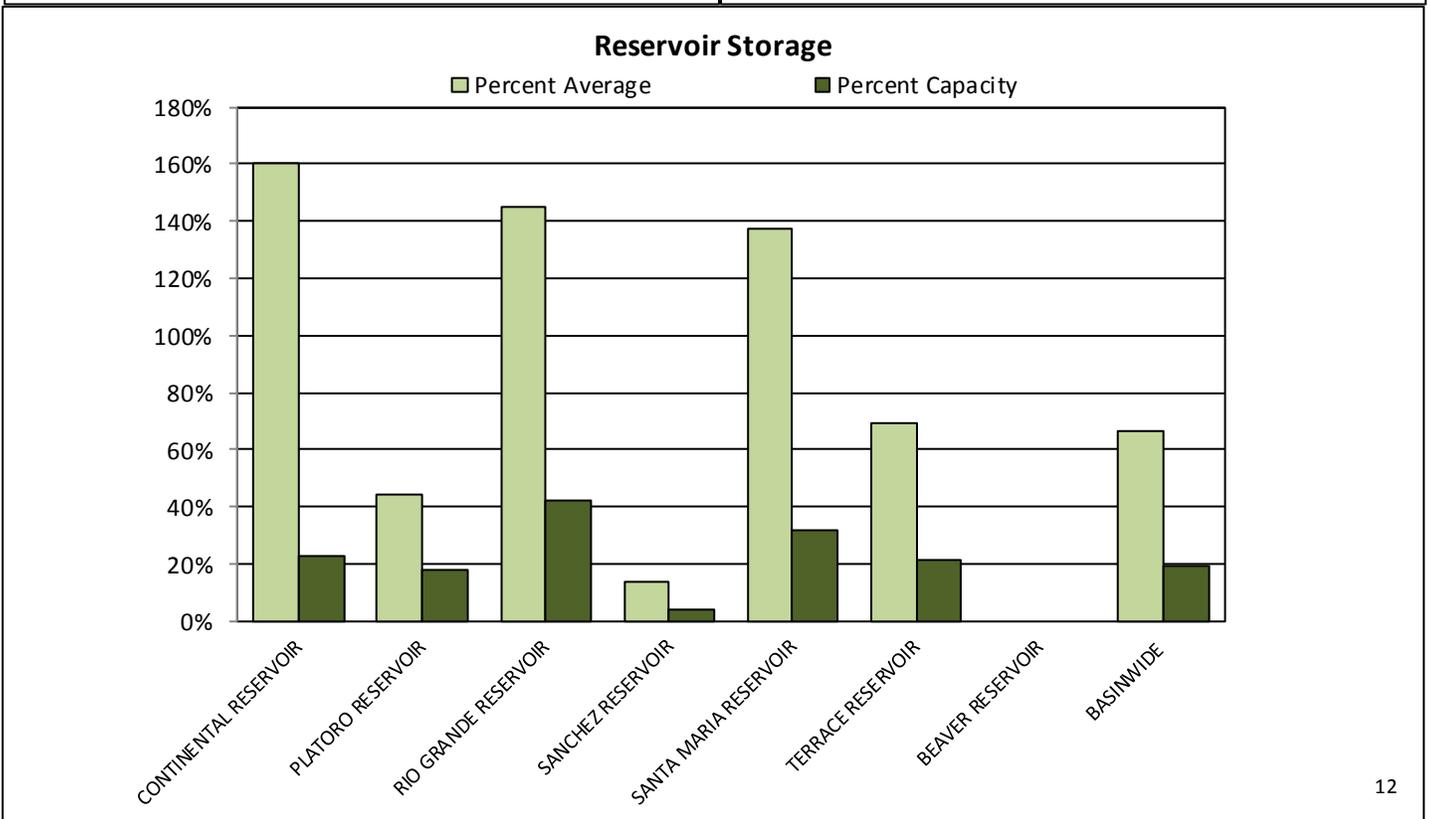
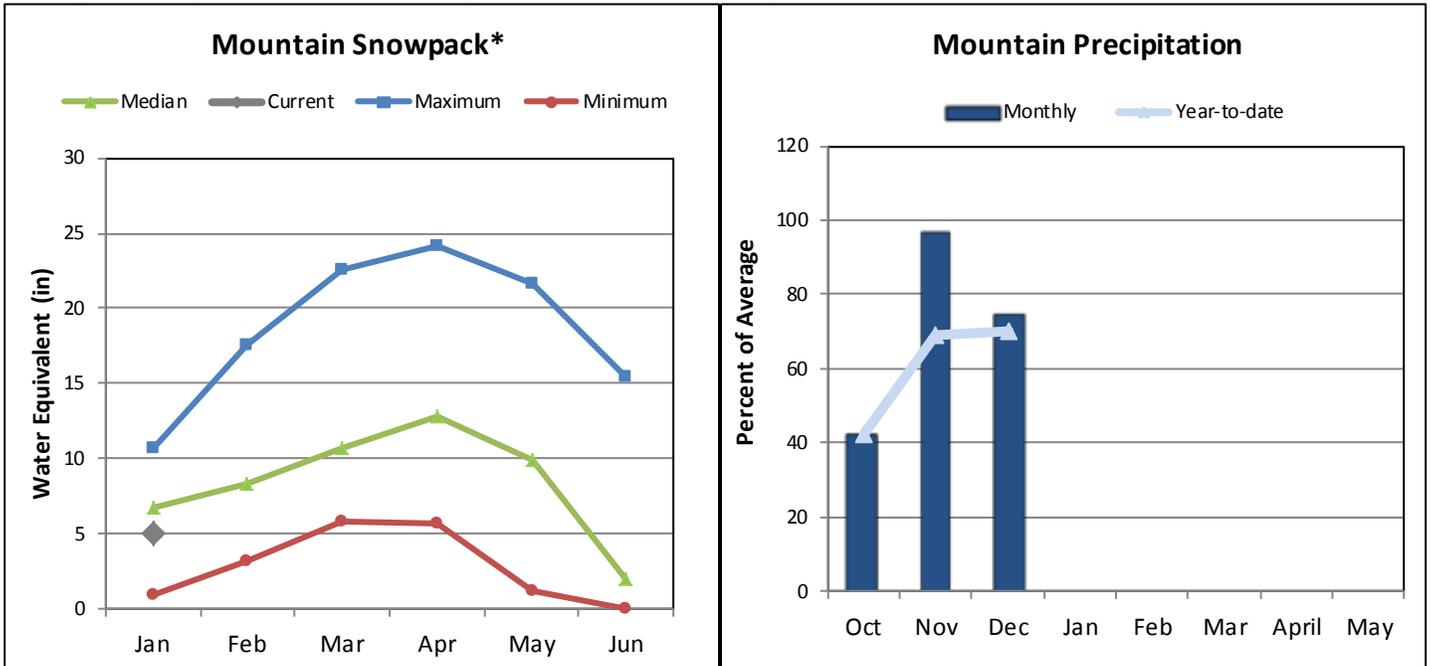


Please refer to the sections at the end of this report for further explanation concerning these graphs.

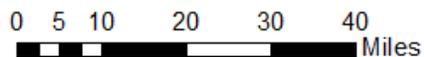
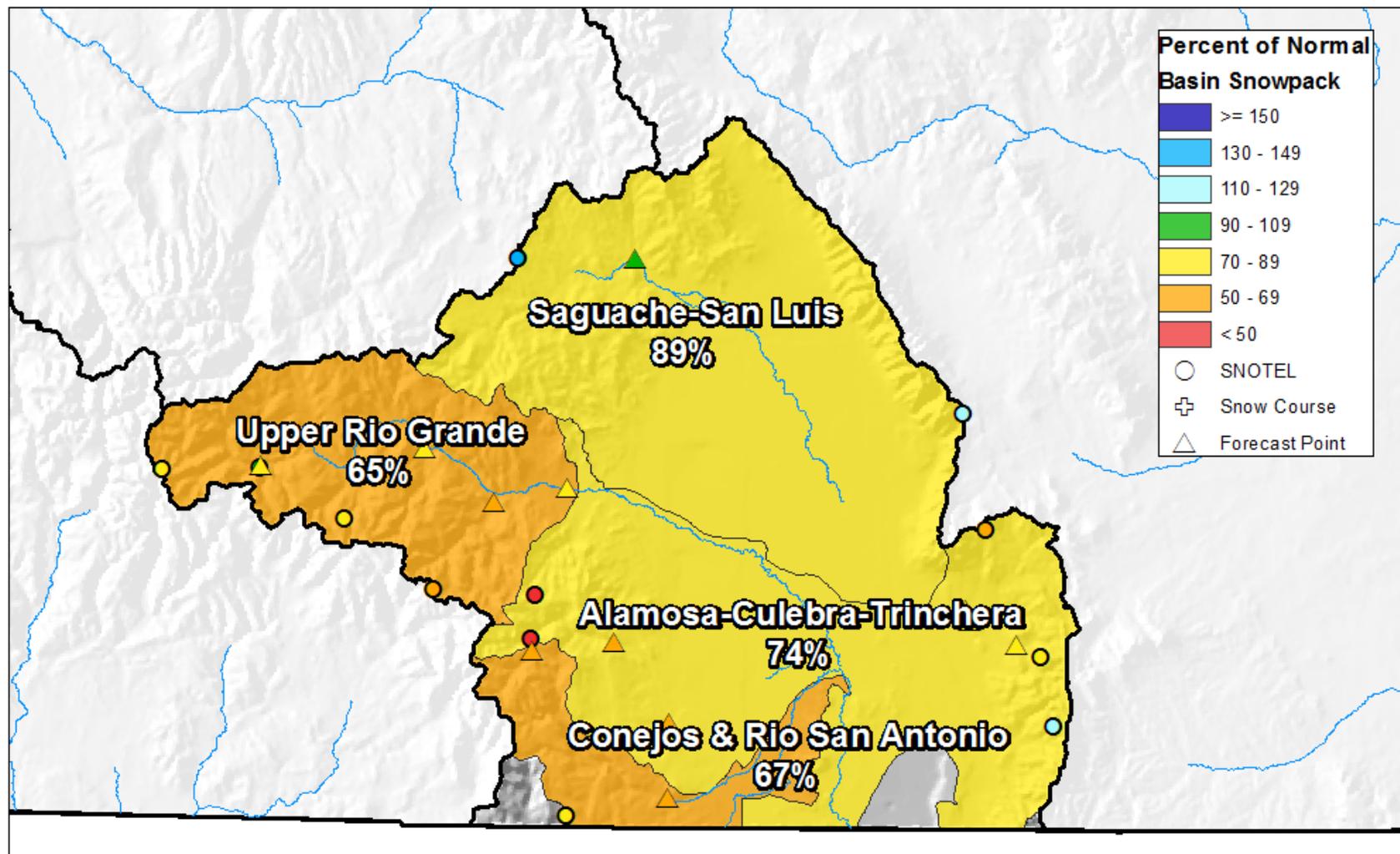
UPPER RIO GRANDE RIVER BASIN

January 1, 2015

Snowpack in the Upper Rio Grande River basin is below normal at 71% of median. Precipitation for December was 74% of average which brings water year-to-date precipitation to 70% of average. Reservoir storage at the end of December was 67% of average compared to 61% last year. Streamflow forecasts range from 109% of average for Saguache Creek near Saguache to 56% of average for the San Antonio River at Ortiz.



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



Upper Rio Grande Basin Streamflow Forecasts - January 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 ²	APR-JUL	58	78	93	82%	109	135	113
	APR-SEP	66	88	105	81%	123	153	129
Rio Grande at Wagon Wheel Gap ²	APR-SEP	173	235	285	84%	340	425	340
SF Rio Grande at South Fork ²	APR-SEP	50	70	86	68%	103	131	127
Rio Grande nr Del Norte ²	APR-SEP	240	330	400	78%	475	600	515
Saguache Ck nr Saguache	APR-SEP	20	29	35	109%	42	54	32
Alamosa Ck ab Terrace Reservoir	APR-SEP	24	34	41	60%	49	62	68
La Jara Ck nr Capulin	MAR-JUL	2.5	4	5.2	58%	6.7	9	8.9
Trinchera Ck ab Turners Ranch	APR-SEP	6.3	8.6	10.5	83%	12.4	15.7	12.6
Sangre de Cristo Ck ²	APR-SEP	4.1	8.6	12.6	77%	17.4	26	16.3
Ute Ck nr Fort Garland	APR-SEP	4.7	7.9	10.5	82%	13.5	18.6	12.8
Platoro Reservoir Inflow	APR-JUL	25	32	38	68%	45	55	56
	APR-SEP	26	35	42	68%	49	60	62
Conejos R nr Mogote ²	APR-SEP	77	107	129	66%	153	193	194
San Antonio R at Ortiz	APR-SEP	2.9	6	8.7	56%	11.9	17.5	15.6
Los Pinos R nr Ortiz	APR-SEP	27	39	50	68%	61	80	73
Culebra Ck at San Luis	APR-SEP	9	14.1	18.3	80%	23	31	23
Costilla Reservoir Inflow	MAR-JUL	5.2	7.3	9	81%	10.9	13.9	11.1
Costilla Ck nr Costilla ²	MAR-JUL	11.2	16.9	21	81%	27	35	26

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

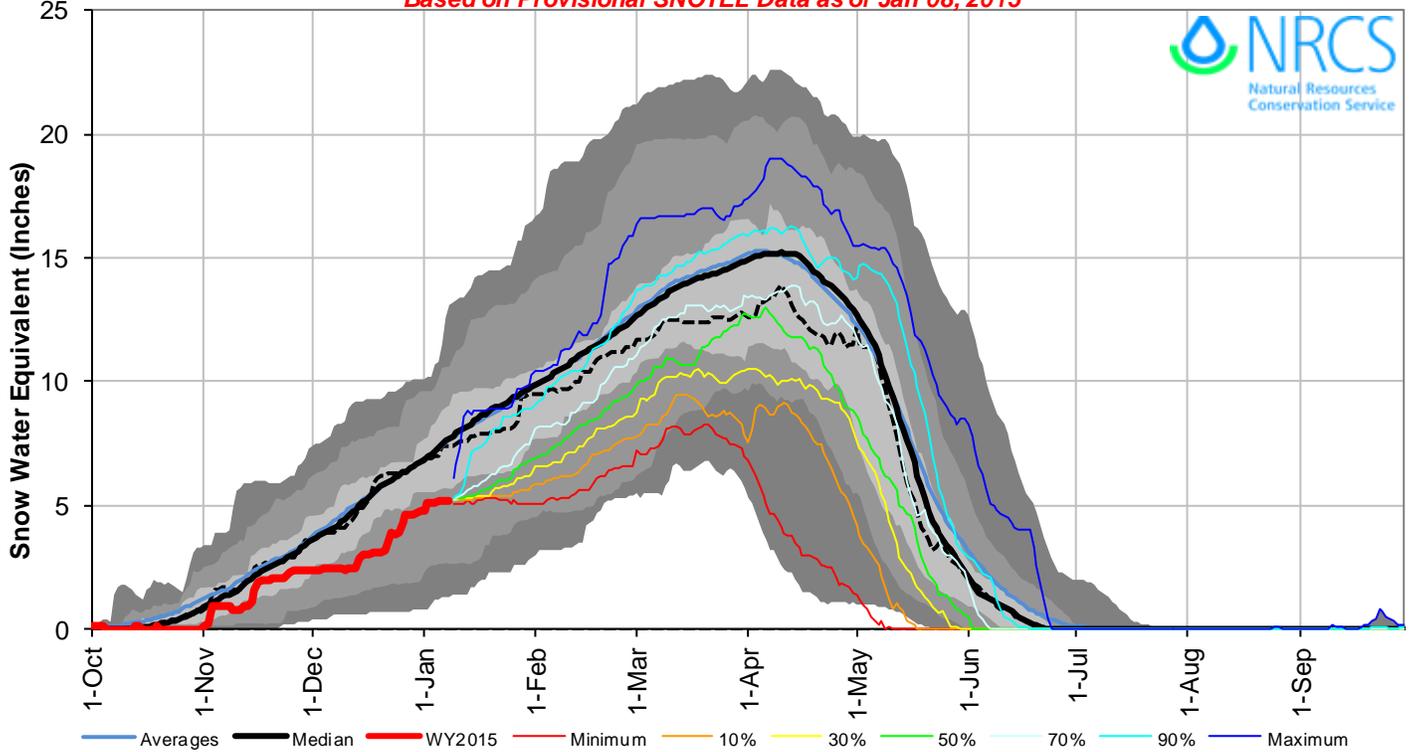
3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Beaver Reservoir	0.0	1.5	4.1	4.5
Continental Reservoir	6.1	9.0	3.8	27.0
Platoro Reservoir	10.6	9.3	24.0	60.0
Rio Grande Reservoir	21.5	17.6	14.8	51.0
Sanchez Reservoir	3.7	5.6	27.5	103.0
Santa Maria Reservoir	14.3	8.0	10.4	45.0
Terrace Reservoir	3.8	4.1	5.5	18.0
Basin-wide Total	60.0	55.1	90.1	308.5
# of reservoirs	7	7	7	7

Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
ALAMOSA CREEK BASIN	1	47%	94%
CONEJOS & RIO SAN ANTONIO BASINS	2	67%	90%
CULEBRA & TRINCHERA BASINS	3	85%	121%
HEADWATERS RIO GRANDE RIVER BASIN	6	65%	97%
UPPER RIO GRANDE BASIN	12	71%	100%

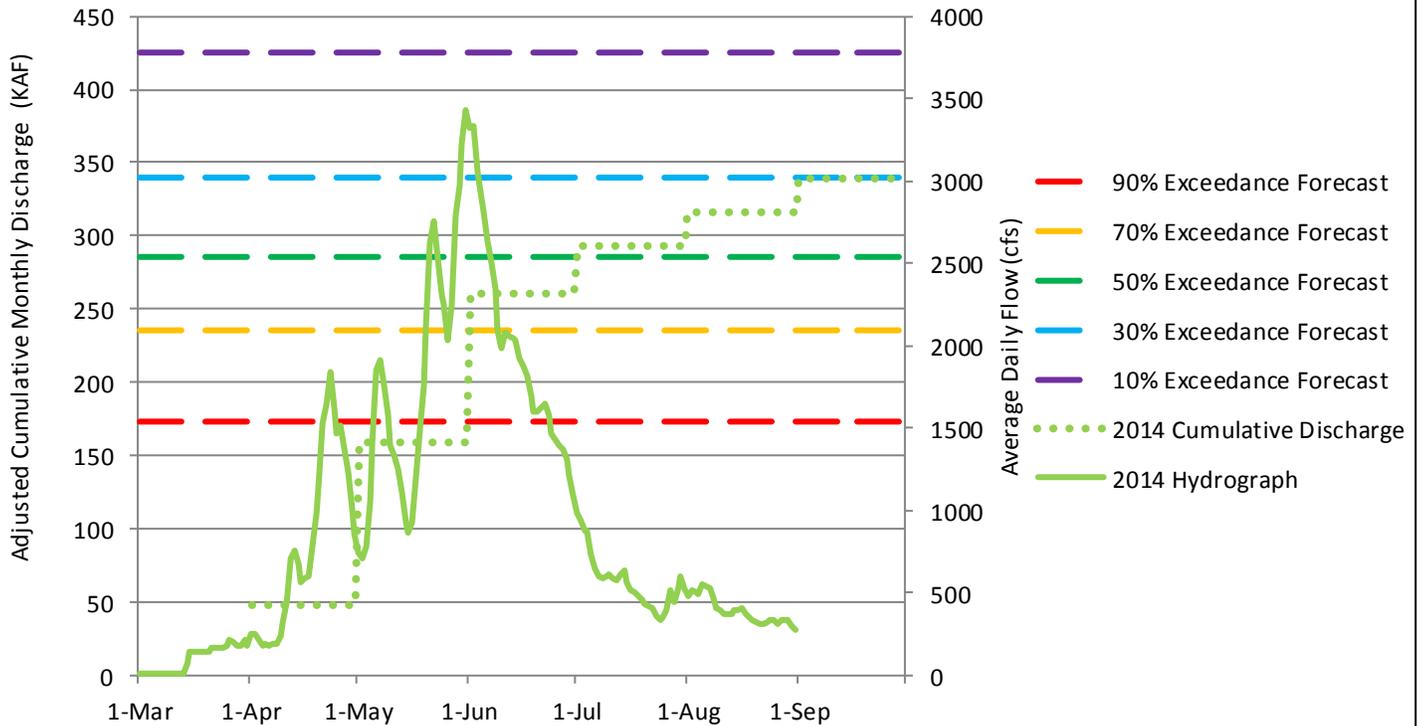
Upper Rio Grande River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Jan 08, 2015



Rio Grande at Wagon Wheel Gap

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

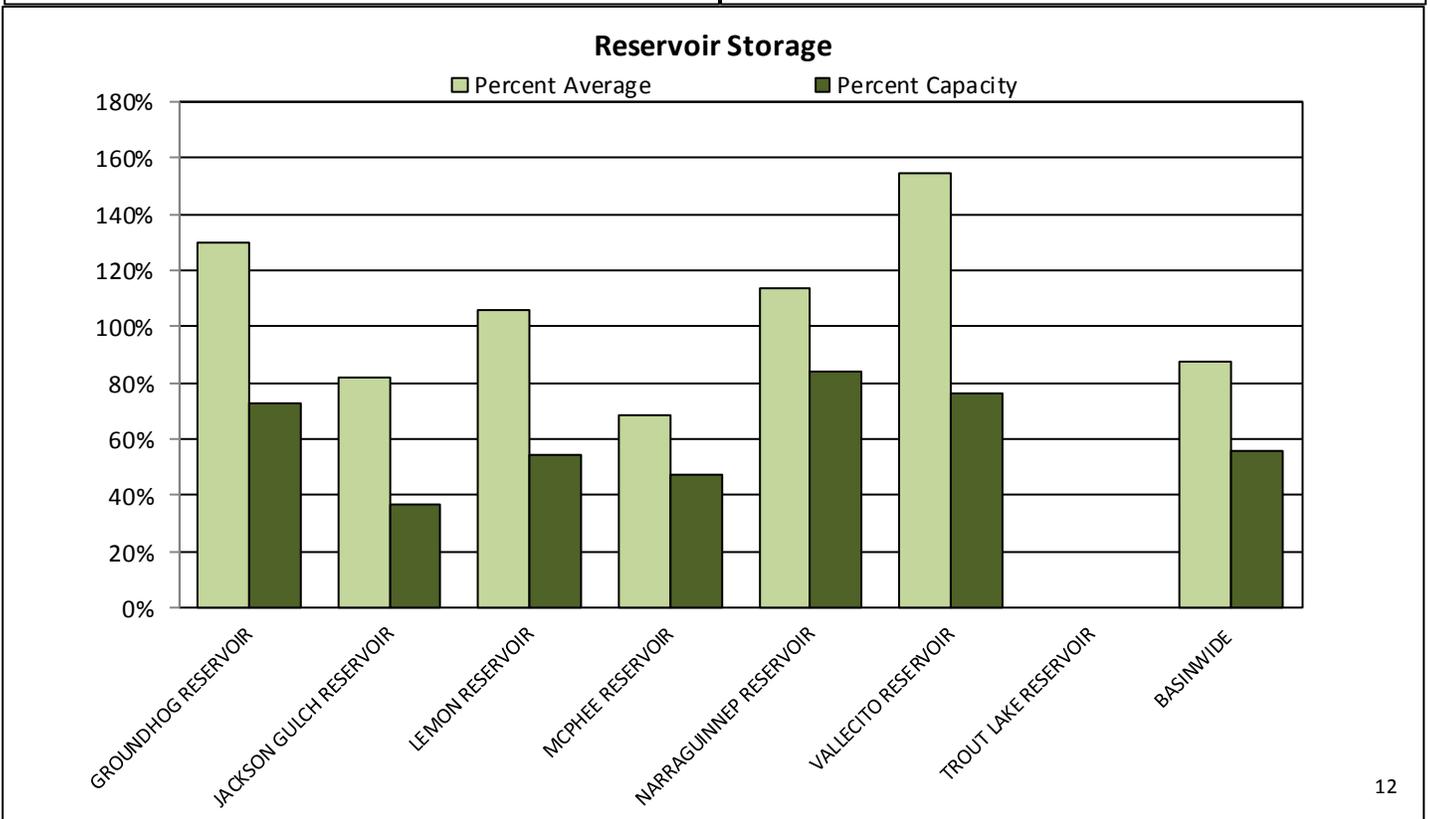
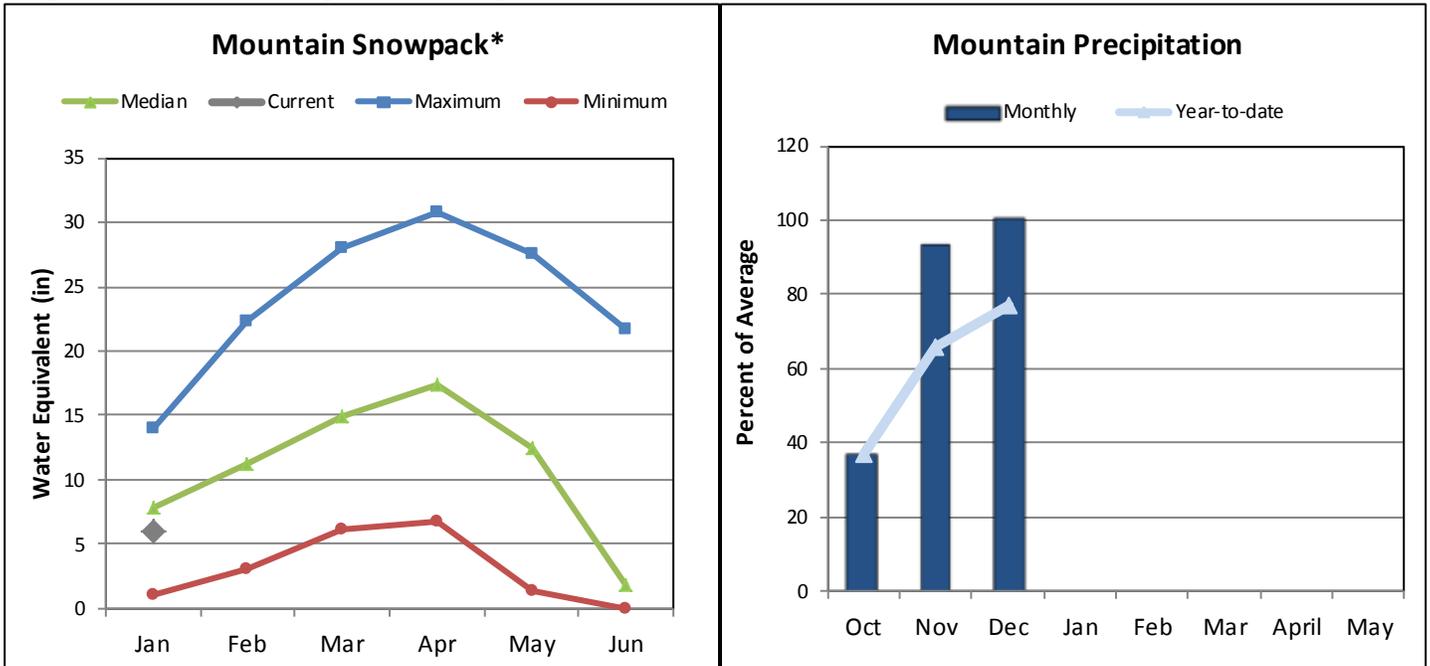


Please refer to the sections at the end of this report for further explanation concerning these graphs.

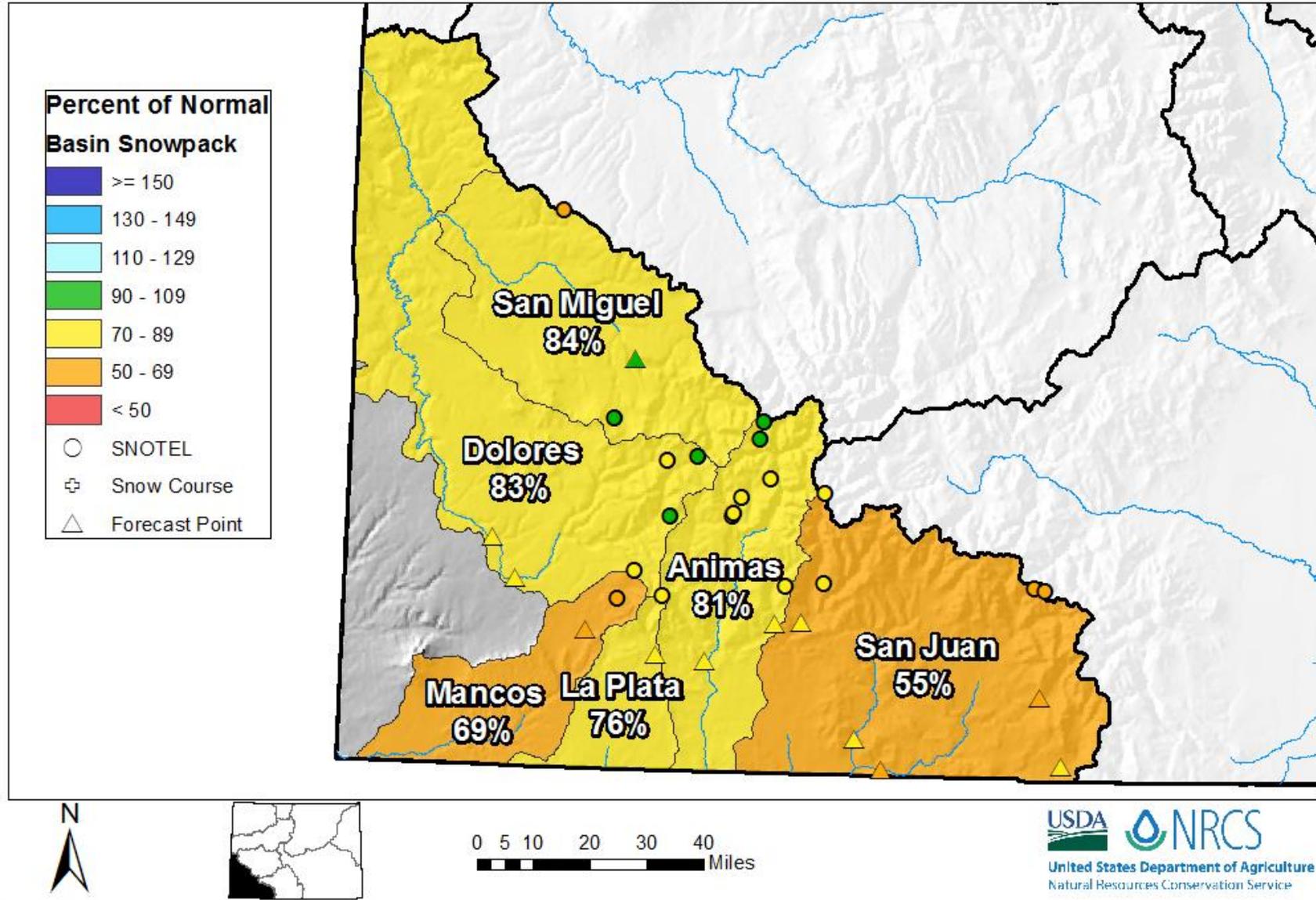
SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS

January 1, 2015

Snowpack in the combined southwest river basins is below normal at 75% of median. Precipitation for December was 100% of average which brings water year-to-date precipitation to 77% of average. Reservoir storage at the end of December was 88% of average compared to 83% last year. Current streamflow forecasts range from 95% of average for San Miguel River near Placerville to 66% for the San Juan River near Carracas.



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



San Miguel-Dolores-Animas-San Juan River Basins Streamflow Forecasts - January 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	119	173	215	88%	260	340	245
McPhee Reservoir Inflow	APR-JUL	127	195	250	85%	310	415	295
San Miguel R nr Placerville	APR-JUL	75	102	122	95%	144	180	128
Cone Reservoir Inlet	APR-JUL	1.53	2.2	2.8	93%	3.4	4.4	3
Gurley Reservoir Inlet	APR-JUL	8.2	12	16	98%	18.3	24	16.4
Lilywands Reservoir Inlet	APR-JUL	0.9	1.51	2	104%	2.6	3.5	1.92
Rio Blanco at Blanco Diversion ²	APR-JUL	21	30	37	69%	45	58	54
Navajo R at Oso Diversion ²	APR-JUL	25	37	46	71%	56	72	65
San Juan R nr Carracas ²	APR-JUL	130	197	250	66%	310	410	380
Piedra R nr Arboles	APR-JUL	74	114	147	70%	183	245	210
Vallecito Reservoir Inflow	APR-JUL	91	124	150	77%	178	225	194
Navajo Reservoir Inflow ²	APR-JUL	260	385	485	66%	595	780	735
Animas R at Durango	APR-JUL	215	295	355	86%	420	530	415
Lemon Reservoir Inflow	APR-JUL	23	33	41	75%	49	64	55
La Plata R at Hesperus	APR-JUL	7.1	12	16	70%	21	28	23
Mancos R nr Mancos ²	APR-JUL	9	15.8	21	68%	28	39	31

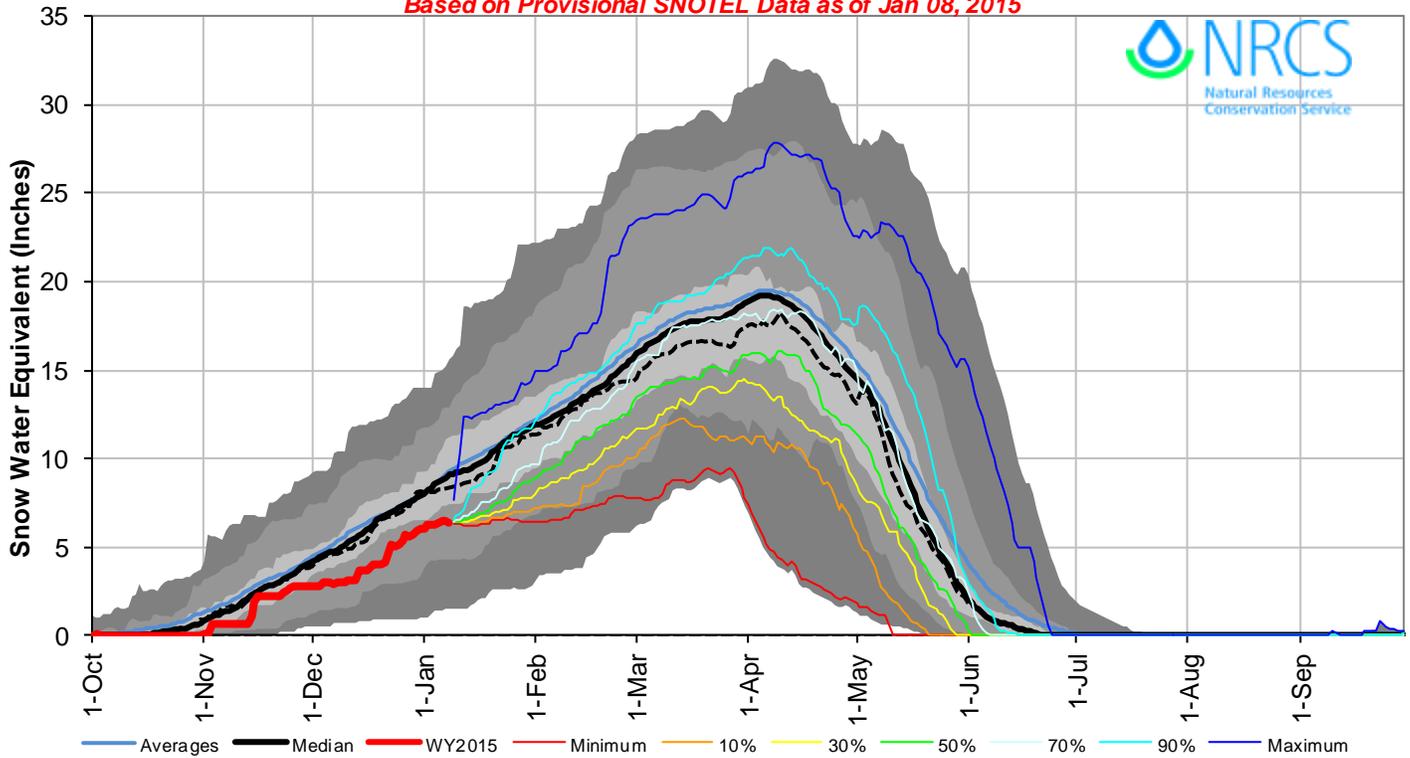
- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Groundhog Reservoir	16.0	6.8	12.3	22.0
Jackson Gulch Reservoir	3.7	2.7	4.5	10.0
Lemon Reservoir	21.9	17.2	20.7	40.0
McPhee Reservoir	181.4	182.4	265.6	381.0
Narraguinep Reservoir	16.0	13.6	14.1	19.0
Trout Lake Reservoir	0.0	1.2	2.5	3.2
Vallecito Reservoir	96.4	92.6	62.4	126.0
Basin-wide Total	335.4	316.5	382.1	601.2
# of reservoirs	7	7	7	7

Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
ANIMAS RIVER BASIN	9	81%	107%
DOLORES RIVER BASIN	5	83%	93%
SAN MIGUEL RIVER BASIN	3	84%	99%
SAN JUAN RIVER BASIN	19	75%	101%
SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVER BASINS	19	75%	101%

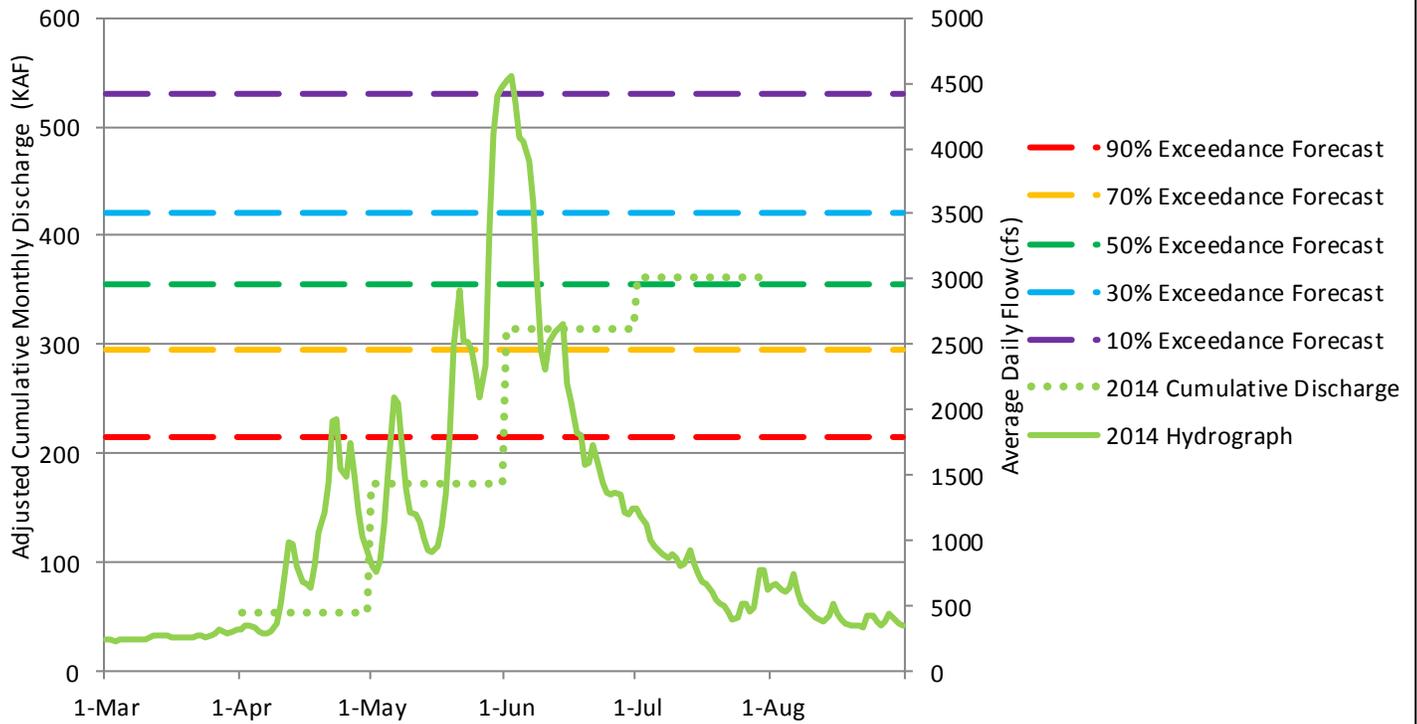
San Miguel, Dolores, Animas and San Juan River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Jan 08, 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.

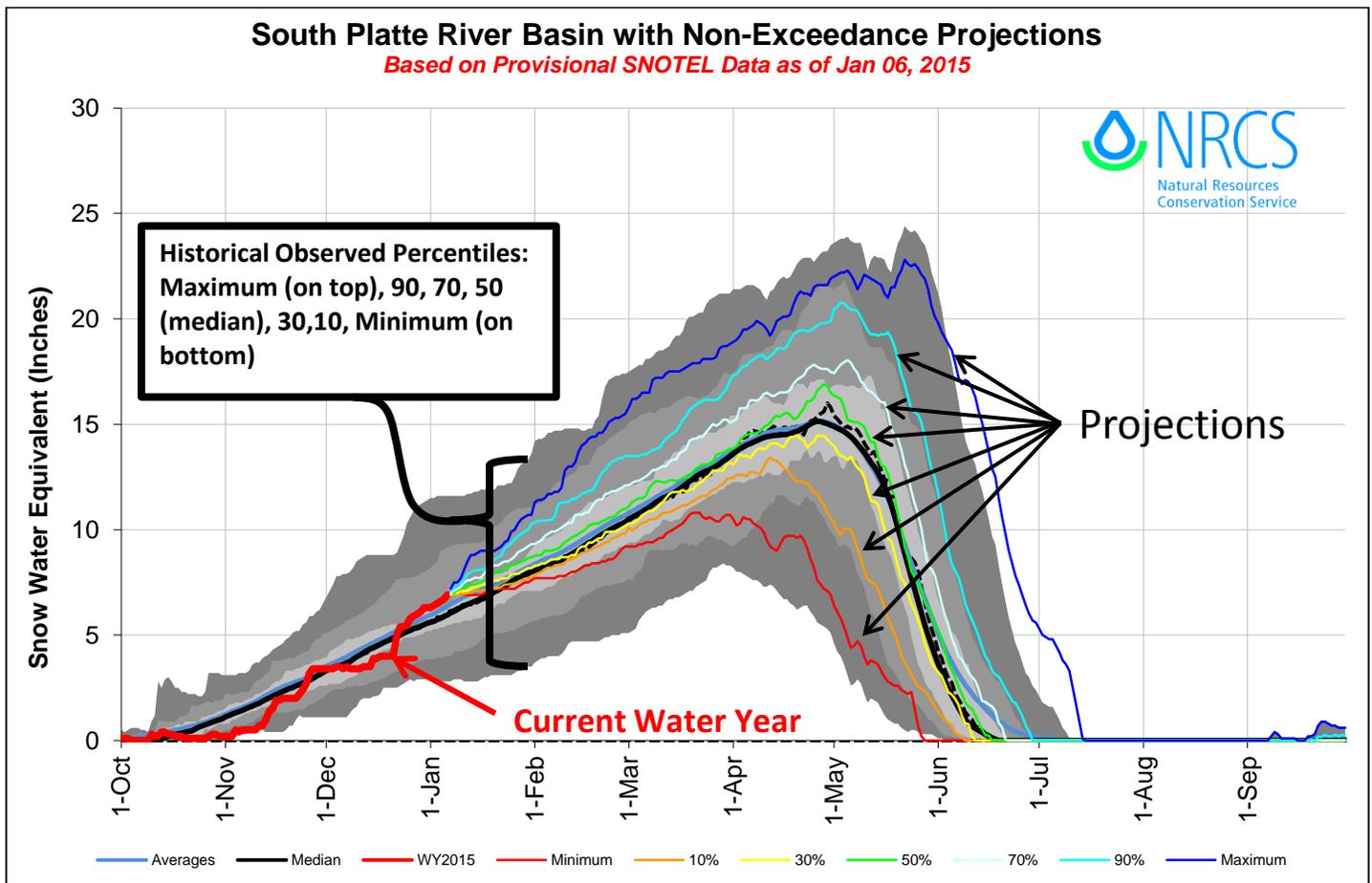
Current water year is represented by the heavy red line terminating on the last day the graphic was updated.

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.

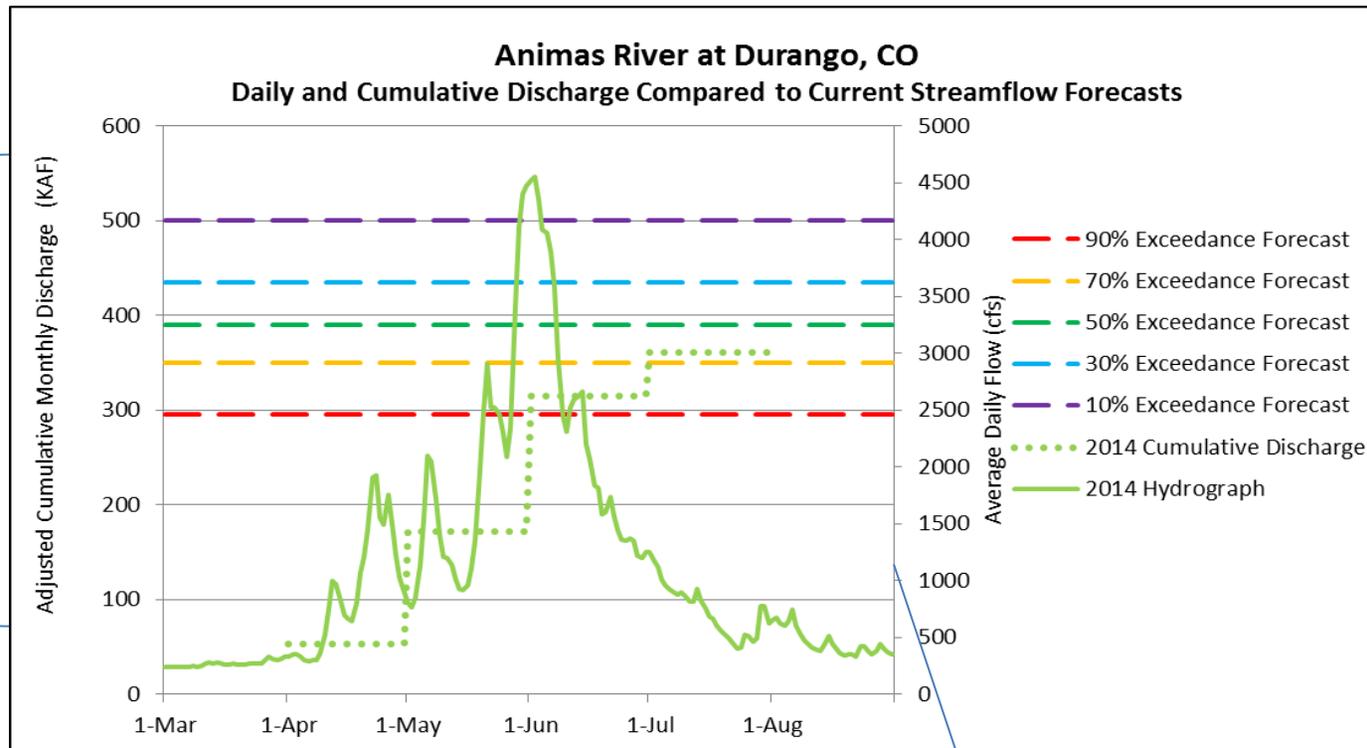
For more detailed information on these graphs visit:

http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_062291.pdf



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

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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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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/vs/westwide.html>

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