USDA United States Department of Agriculture
Natural Resources Conservation Service

Colorado
Water Supply Outlook Report
April 1, 2020

Much like February, precipitation in March maintained normal to above normal snowpack in the Front Range. The Loveland Pass area, seen in the photo above, was no exception. Both the Loveland and the Grizzly Peak SNOTEL measured 99 and 109 percent of normal snow water equivalent for the end of March.

Photo By: Joel Atwood Date: March 21st, 2020

NOTICE: Due to the COVID-19 outbreak most end-of-month snow surveys were not conducted and are not included as part of the April 1st water supply report.

REMINDER: We are soliciting field work photos from the field again this year. Each month we will pick one to grace the cover of this report! Please include information on where, when and of who/what the photo was taken.

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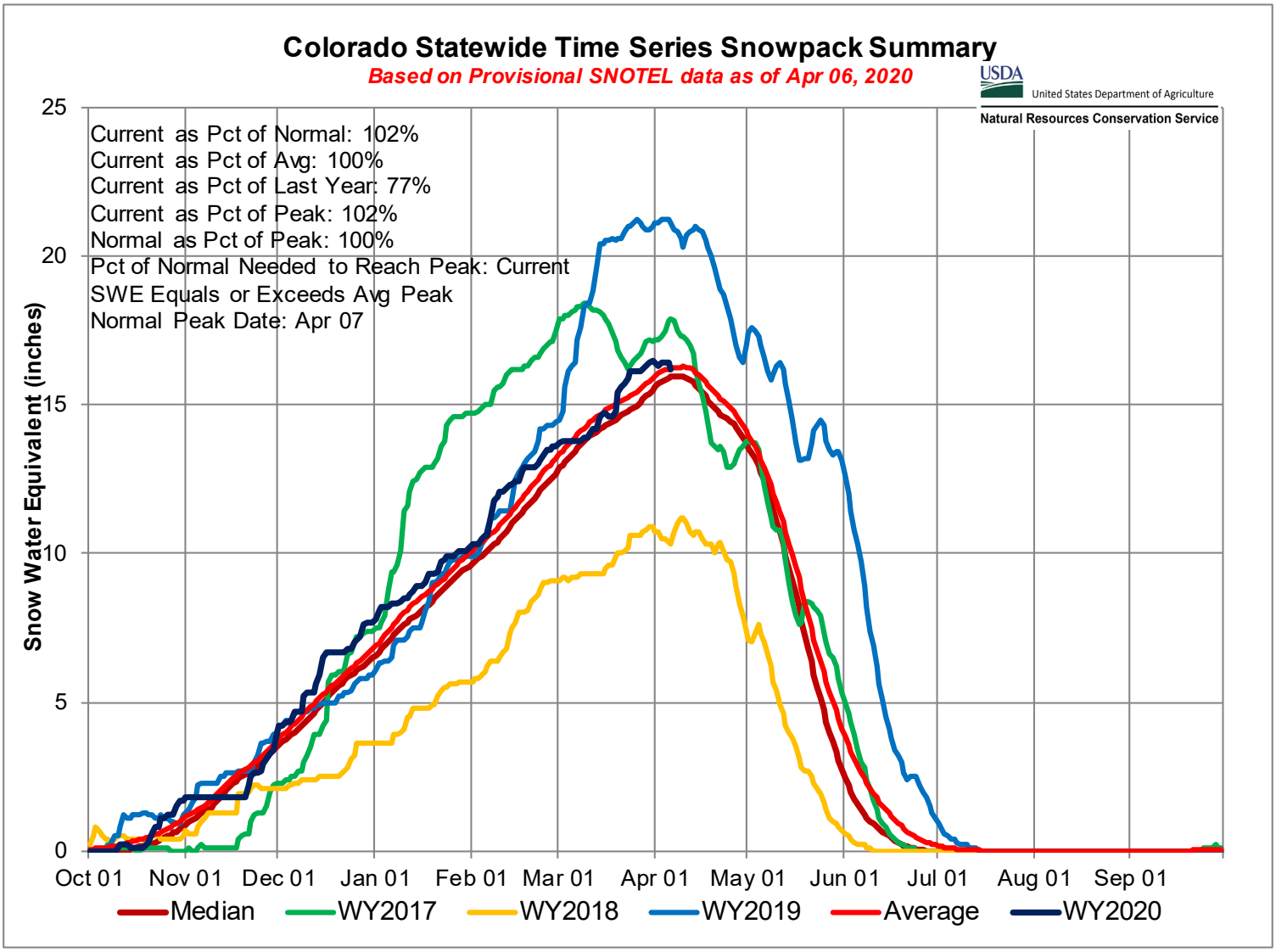
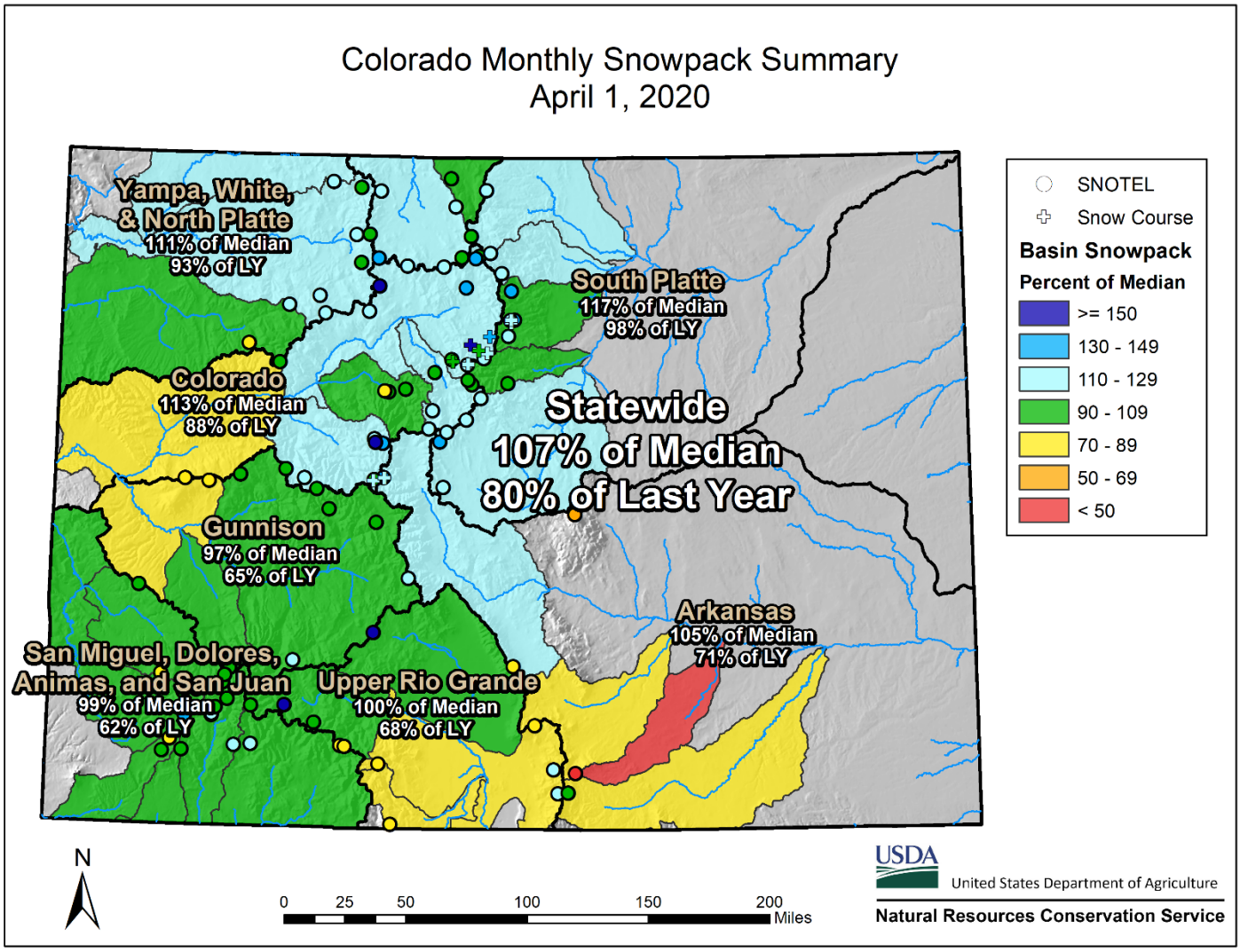
Colorado Statewide Water Supply Conditions

Summary



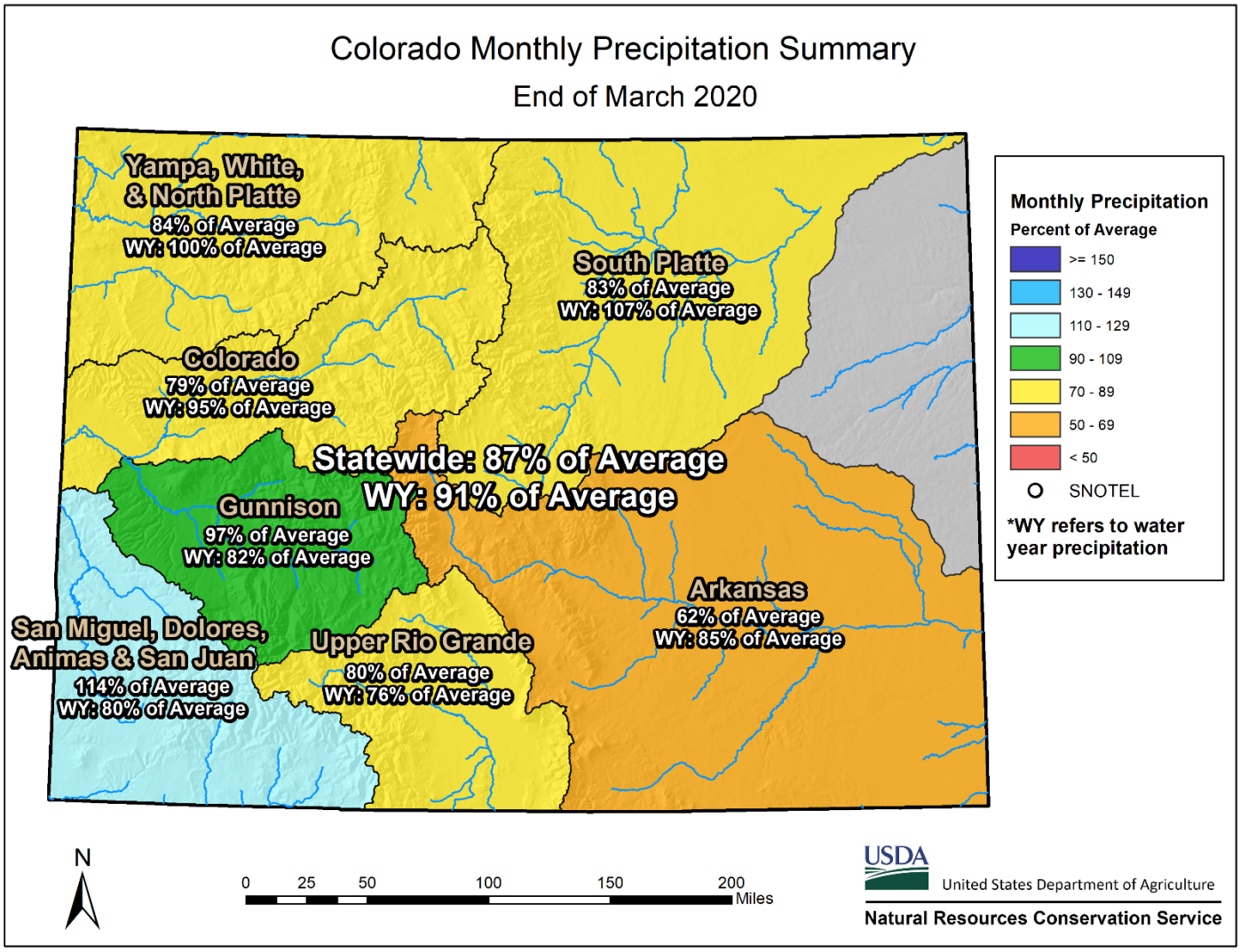
Current snowpack conditions across Colorado are generally near normal. Conditions range from a low of 97 percent of normal in the Gunnison River Basin to a high of 117 percent of normal in the South Platte River Basin. With peak snowpack commonly occurring in early to mid-April, this provides a good metric to base an idea on what this year's snowmelt runoff may be. That said, with a dry late summer and fall, streamflow forecasts have been trending lower than the snowpack values, with respect to normal. Many factors contribute to this but a large portion of that is due to drier than usual soils which will absorb future snowmelt and precipitation on its way to stream channels. Streamflow forecasts are for generally above normal values in Northern Colorado and below normal in the southern half of the state. Statewide reservoir storage is currently 107 percent of average and while this varies basin to basin near-normal conditions in most areas should provide some flexibility in operations to benefit overall water resources for the state and downstream as well. Now that we are near peak snowpack accumulation future weather will largely dictate how flat or steep the curve of the hydrograph of rivers across the state will be over the coming months.

Snowpack



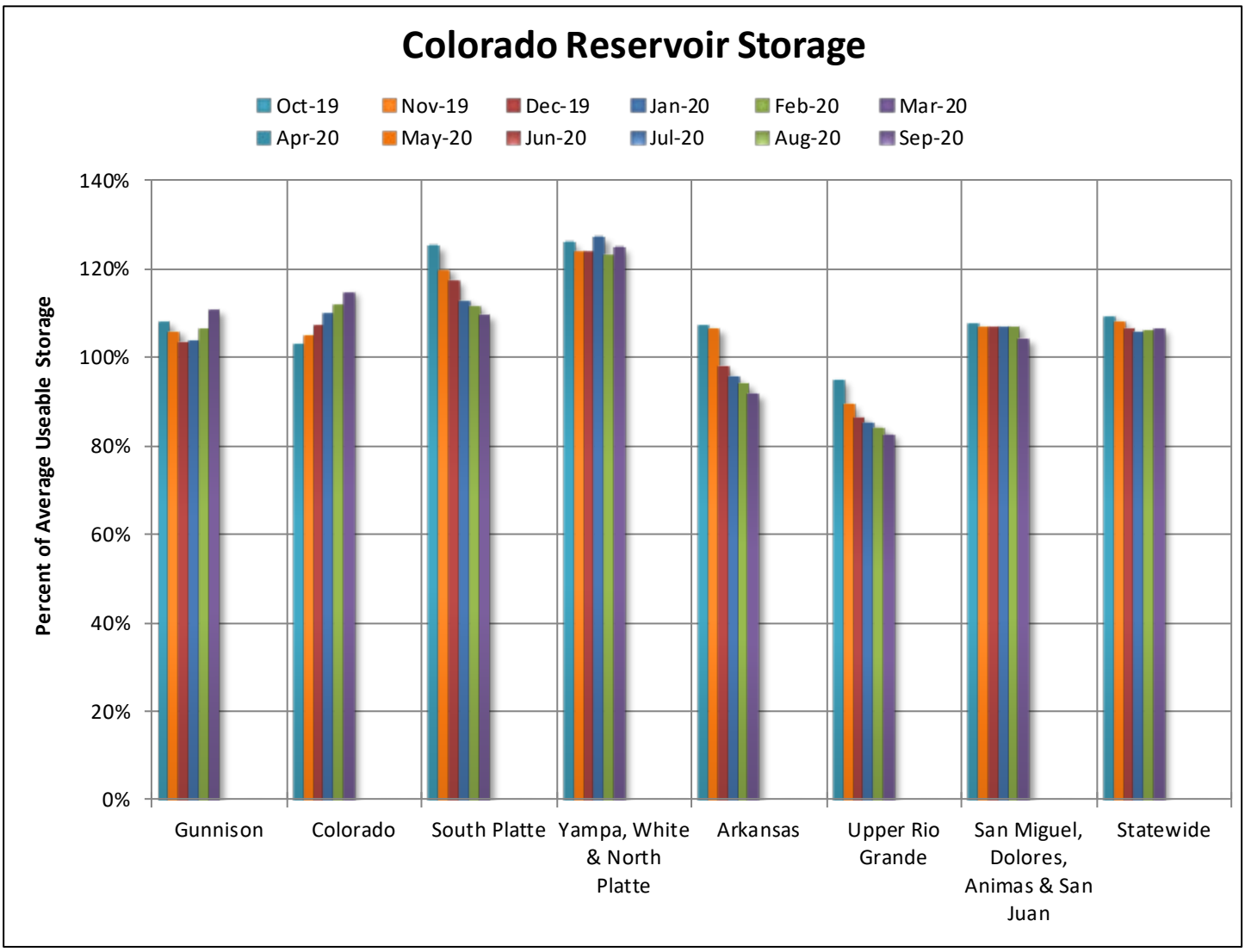
Early this month, several storms moved across the state improving a below-normal snowpack in southwestern Colorado. Both the Gunnison and combined San Miguel, Dolores, Animas river basins ended March with near-normal snow water equivalent (SWE) at 97 and 99 percent of normal, respectively. The Upper Rio Grande River Basin also ended the month with 100 percent of median SWE. Despite improvements in these basins, the snowpack is generally sporadic, ranging from Medano Pass and Upper Rio Grande SNOTEL site which recorded 271 and 196 percent of normal compared to Lone Cone and Chamita with 77 percent of normal SWE. In the combined San Miguel, Dolores, Animas river basins 38 percent of SNOTEL sites recorded below normal SWE. In the Gunnison and Upper Rio Grande river basins 78 and 45 percent of SNOTEL sites recorded below normal SWE. In the Upper Rio Grande River Basin snowpack is generally near normal in the north and below normal in the south. In the Gunnison River Basin snowpack is particularly low on the Grand Mesa. Northern river basins in Colorado maintained substantial above-normal SWE driving the snowpack statewide to 107 percent of median. The Colorado, South Platte and combined Yampa, White and North Platte river basins ended the month with 113, 117, and 111 percent of median SWE, respectively. Despite the above-normal snowpack in much of northern Colorado, SNOTEL sites in southwestern Flattops and the Grand Mesa ended the month below-normal. The far southeastern mountains have also recorded below normal snowpack. The Apishapa, Whiskey Creek and Ute Creek SNOTEL sites on the eastern slopes of the southern Sangre de Cristo Mountains recorded 43 and 96, and 80 percent of median SWE. Despite these deficits, the Arkansas River Basin ended the month with 105 percent of normal, largely due to above-normal snowpack in the Upper Arkansas River Basin.

Precipitation



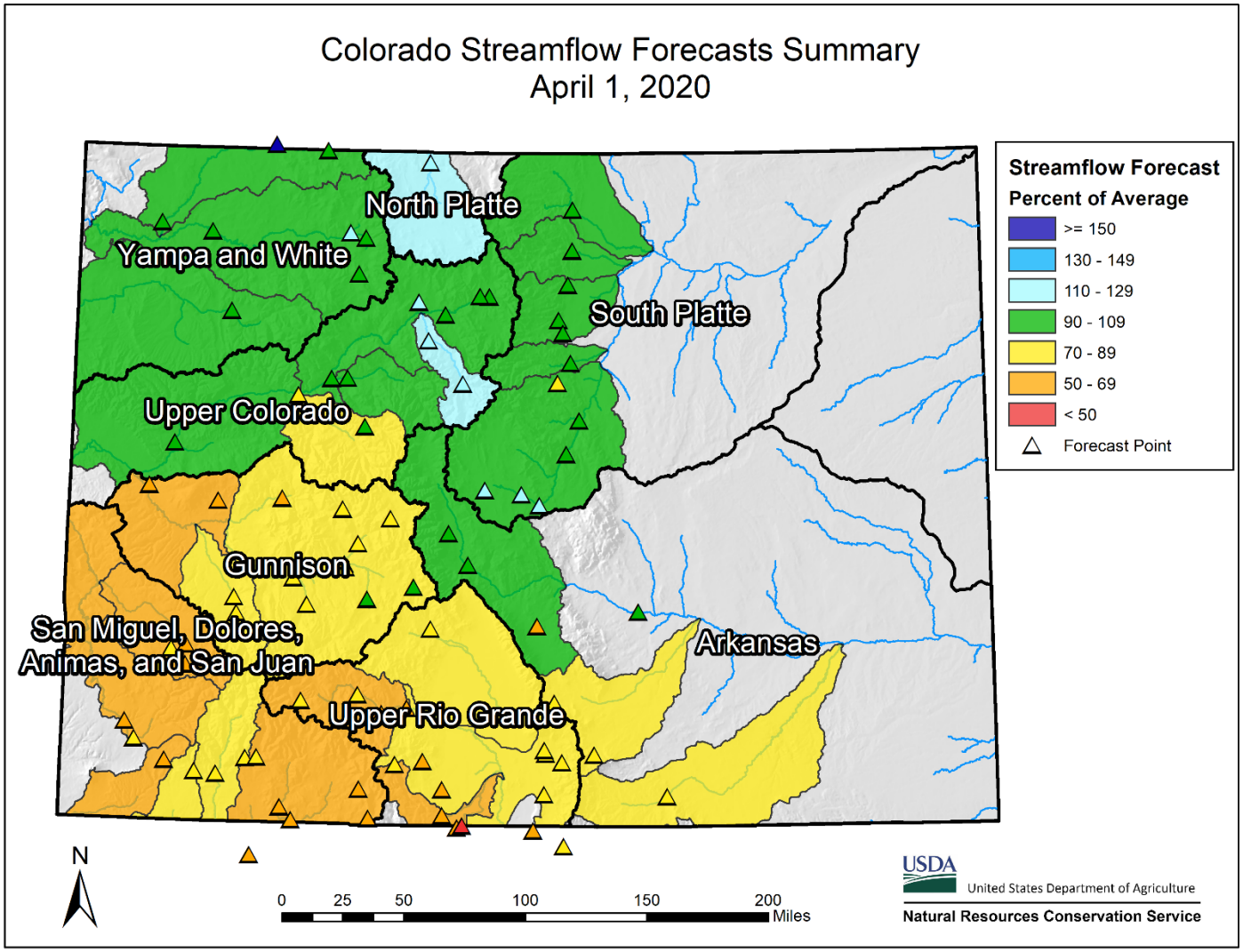
Overall, precipitation amounts for the month of March were below average for most of the state, with statewide water year-to-date precipitation currently at 91 percent of average. Drought conditions remain in place for much of the central and southern portions of the state and have slightly deteriorated in south-central Colorado. Several moisture-rich systems moved across the southwest portions of the state which brought some much-needed relief from the dry conditions that have persisted in those areas throughout much of the water year. The southern basins on the west side of the Continental Divide received higher amounts of precipitation than the southern basins on the east side, likely due to a rain-shadow effect as most of the systems came from the west. The combined San Miguel-Dolores-Animas-San Juan basins and Gunnison basin received 114 and 97 percent of average precipitation, respectively, bringing water year-to-date precipitation to 80 and 82 percent of average. On the east side of the divide, the Upper Rio Grande and Arkansas basins received 80 and 62 percent of average precipitation, respectively, bringing water year-to-date precipitation to 76 and 85 percent of average for those basins. In general, the northern and central mountains across the state received below average precipitation for the month of March. However, most of these basins are still near average for water year-to-date precipitation. The combined Yampa-White-North Platte river basins received 84 percent of average precipitation which brings water year-to-date precipitation to 100 percent of average. The Upper Colorado basin received 79 percent of average precipitation bringing water year-to date precipitation to 95 percent of average. Finally, the South Platte river basin received 83 percent of average precipitation bringing the water year-to-date to 107 percent of average.

Reservoir Storage



Reservoir storage has continued to remain slightly above average with statewide storage totals currently at 107 percent of average. Most reservoirs across the state saw little to no change in storage levels for the month of March. This same time last year, statewide reservoir storage was 84 percent of average. Statewide reservoir storage is also currently 61 percent of capacity which could prove to be beneficial if the snowmelt-runoff season is above average or if flood conditions appear. All major basins across the state are above average for reservoir storage, except for the Rio Grande and Arkansas River basins, which currently are at 83 and 92 percent of average, respectively. The combined Yampa, White, and North Platte River basins are currently at 125 percent of average, slightly up from 123 percent at the beginning of March. The combined San Miguel, Dolores, Animas, and San Juan River basins are currently at 104 percent of average, slightly down from 107 percent of average at the beginning of March. The Gunnison and Upper Colorado River basins showed slight gains compared to last month and are currently at 111 and 115 percent of average, respectively. The South Platte River basin showed slight declines in reservoir storage for the month and is currently at 110 percent of average. In general, all the major basins across Colorado are near normal for reservoir storage. This should give reservoir operators flexibility with decision making once snowmelt runoff begins.

Streamflow

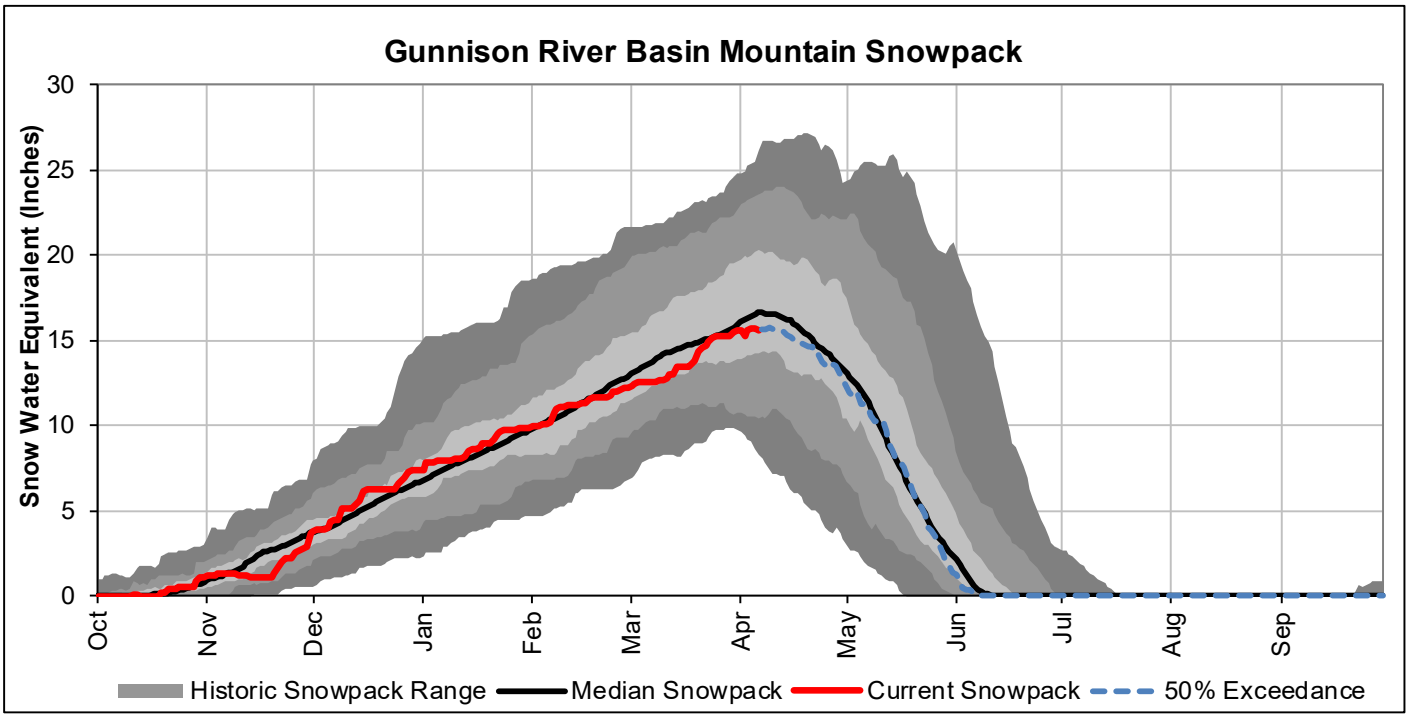


Despite improvements to the overall water supply during March, southwestern Colorado is still expecting below-average streamflow volumes. On average the Gunnison, Upper Rio Grande and combined San Miguel, Dolores, Animas, and San Juan basins are forecasted to have 71, 69, and 68 percent of average runoff volumes. Early seasons precipitation deficits and below normal snowpack has reduced the amount of water available as runoff in these basins. In the Upper Rio Grande River Basin, 7 out of 15 forecast points have forecasted runoff volumes less than 70 percent of average. For the combined San Miguel, Dolores, Animas and San Juan basins, 8 out of 16 forecast points have forecasted runoff volumes less than 70 percent of average. In contrast to basins further west, the Arkansas River Basin is expecting near-average runoff volumes at 96 percent of normal. In general, forecast points in the southeastern part of the Arkansas basin are expecting below normal runoff whereas the upper basin is expecting above-average runoff. Despite receiving below average precipitation for March, northern Colorado basins, having accumulated substantial snowpack, are expecting above-average runoff volumes at most locations. The North Platte, South Platte, the combined Yampa and White River, and Upper Colorado basins have forecasted average streamflow runoff of 118, 104, 104, 100 percent of average, respectively. In total, 73 percent of all forecast points in these basins are expecting above-average runoff volumes. With most basins reaching peak snowpack conditions, certainty in the forecasts have increased. While it is still possible for late-season storms to deliver much-needed precipitation to southwestern Colorado, it is becoming increasingly likely that below-normal streamflow runoff will occur in these basins.

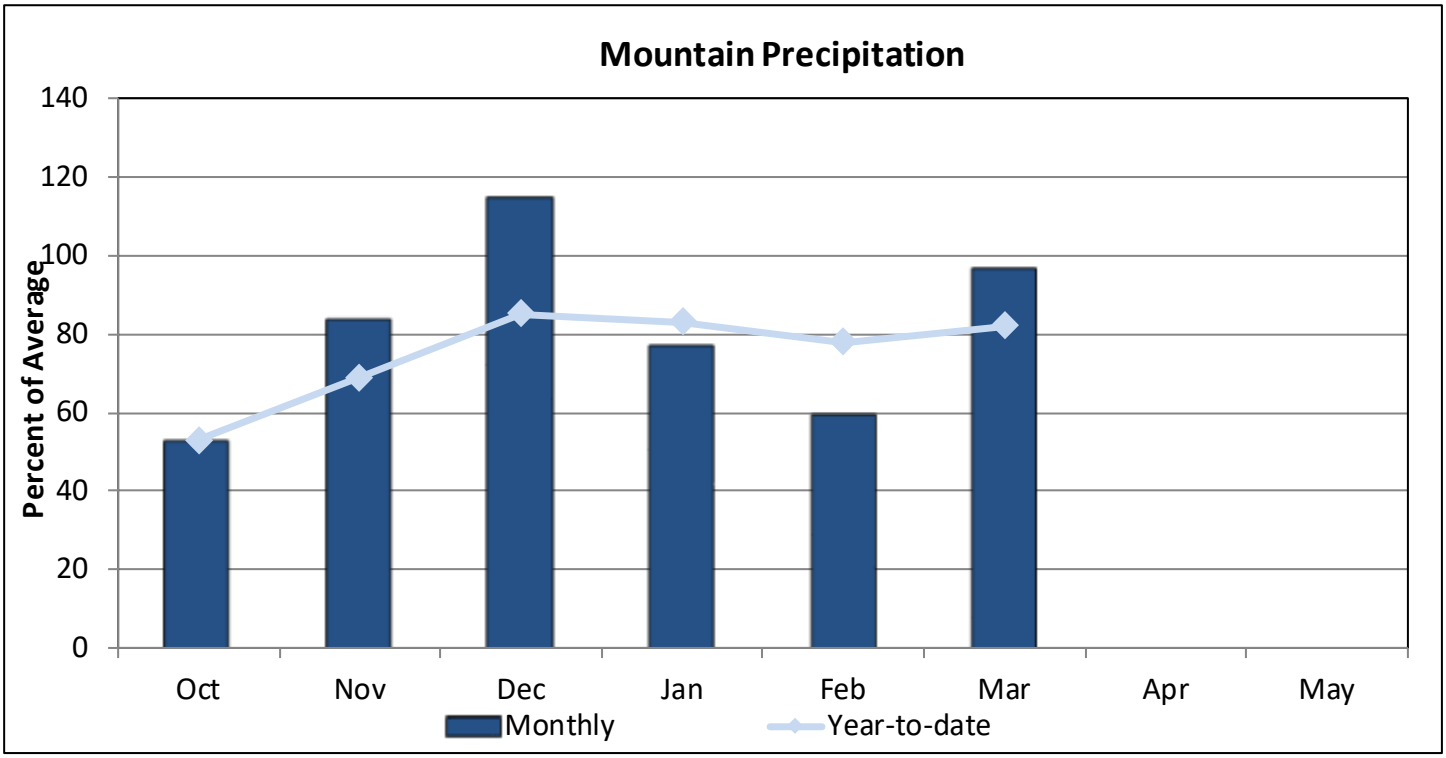
GUNNISON RIVER BASIN

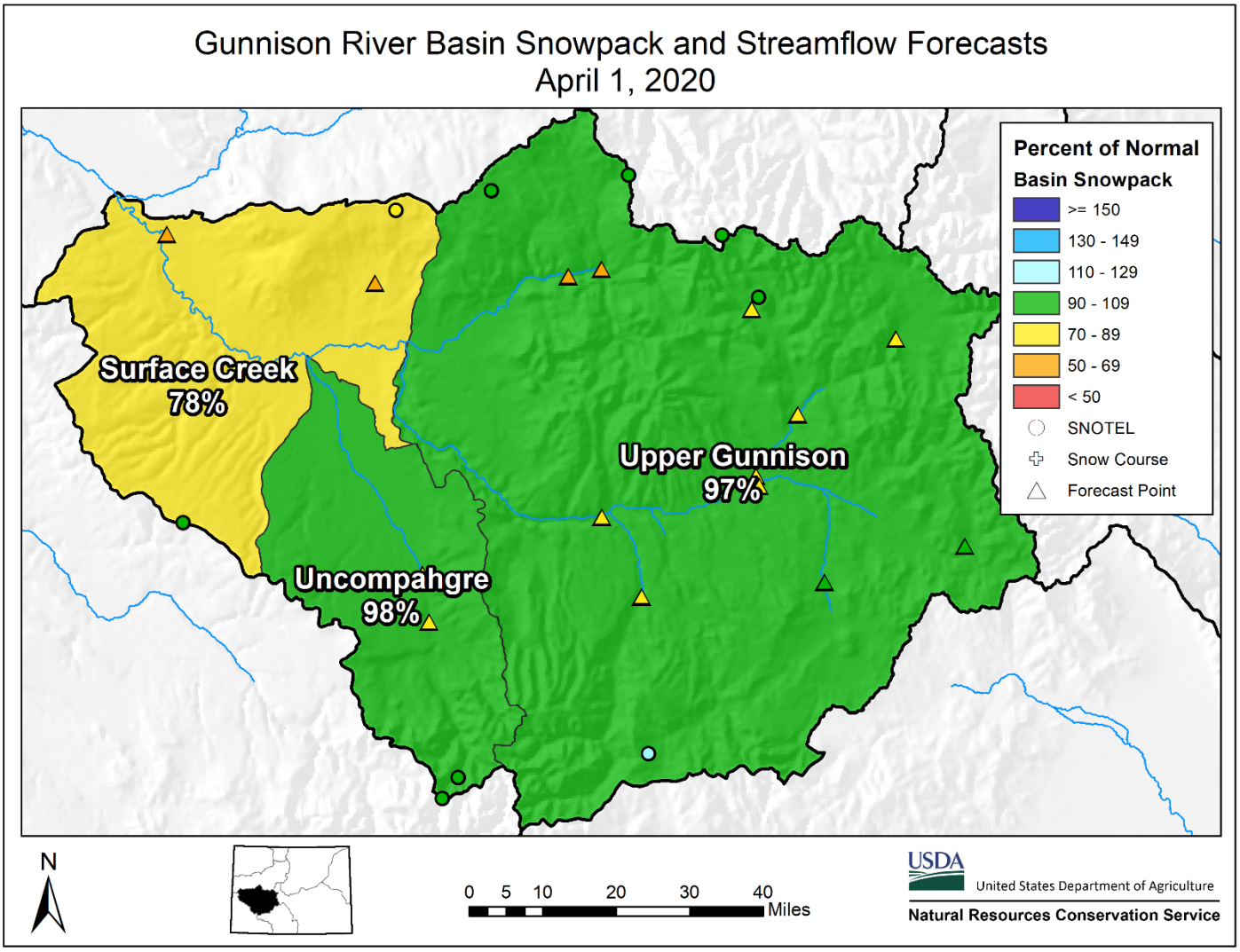
April 1, 2020

Snowpack in the Gunnison River basin is slightly below normal at 97% of the median. Precipitation for March was 97% of average which brings water year-to-date precipitation to 82% of average. Reservoir storage at the end of March was 111% of average compared to 67% last year. Current streamflow forecasts range from 54% of average for Surface Creek at Cedaredge to 93% for Cochetopa Creek below Rock Creek near Parlin.



*SWE values calculated using daily SNOTEL data only

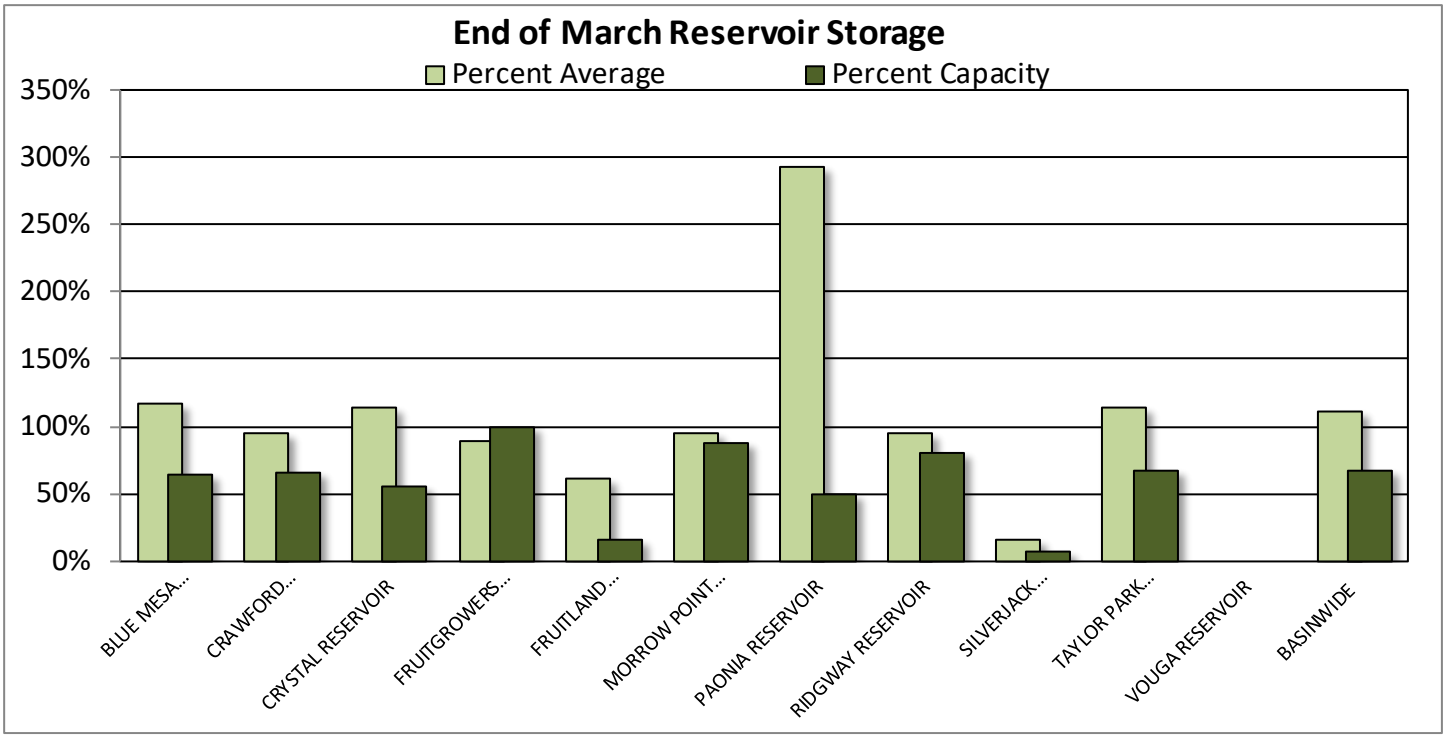




Watershed Snowpack Analysis April 1st, 2020

Sub-Basin	# of Sites	% Median	Last Year % Median
Upper Gunnison	10	97	148
Surface Creek	2	78	142
Uncompahgre	3	98	152
Basin-Wide Total	13	97	149

*SWE values calculated using first of month SNOTEL data and snow course measurements



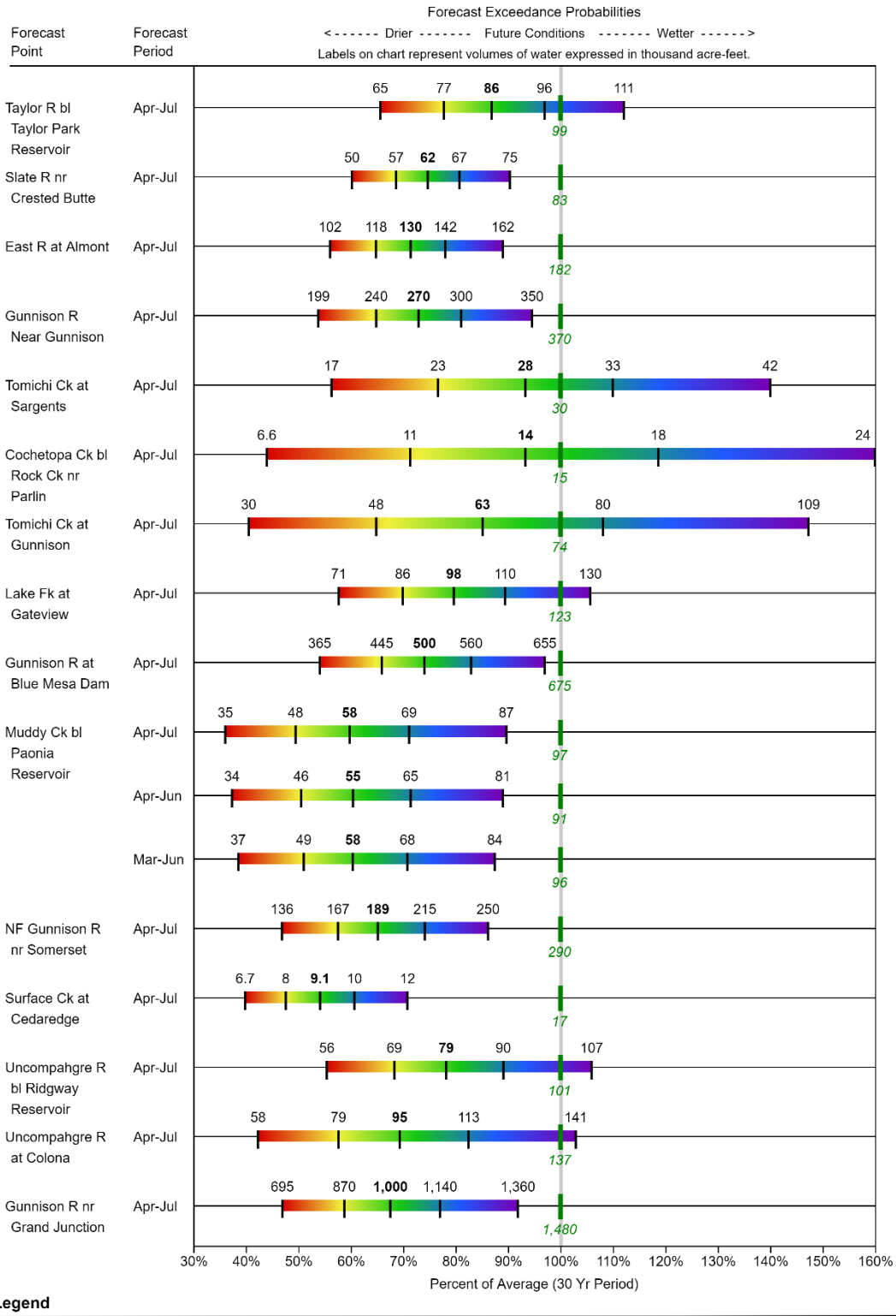
Reservoir Storage End of March 2020

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
BLUE MESA RESERVOIR	534.4	249.7	454.9	830.0
CRAWFORD RESERVOIR	9.2	3.4	9.7	14.0
CRYSTAL RESERVOIR	9.7	9.2	8.5	17.5
FRUITGROWERS RESERVOIR	3.6	3.2	4.0	3.6
FRUITLAND RESERVOIR	1.4	0.5	2.3	9.2
MORROW POINT RESERVOIR	105.9	106.7	111.7	121.0
PAONIA RESERVOIR	7.6	3.8	2.6	15.4
RIDGWAY RESERVOIR	67.0	50.0	70.0	83.0
SILVERJACK RESERVOIR	1.0	1.3	6.0	12.8
TAYLOR PARK RESERVOIR	71.4	60.4	62.4	106.0
VOUGA RESERVOIR		0.2		0.9
BASINWIDE	811.1	488.4	732.1	1213.4
Number of Reservoirs	10	11	10	11

GUNNISON RIVER BASIN

Water Supply Forecasts

April 1, 2020



Legend

95% or 90% Exceedance — There is a 95%/90% chance that flows will exceed this volume

70% Exceedance — There is a 70% chance that flows will exceed this volume

50% Exceedance — There is a 50% chance that flows will exceed this volume

30% Exceedance — There is a 30% chance that flows will exceed this volume

10% or 5% Exceedance — There is a 10%/5% chance that flows will exceed this volume

When selected, the following historic streamflow values and statistics will be shown.

Period of Record Minimum Streamflow KAF (Year)

1981-2010 Normal Streamflow KAF

Observed Streamflow KAF

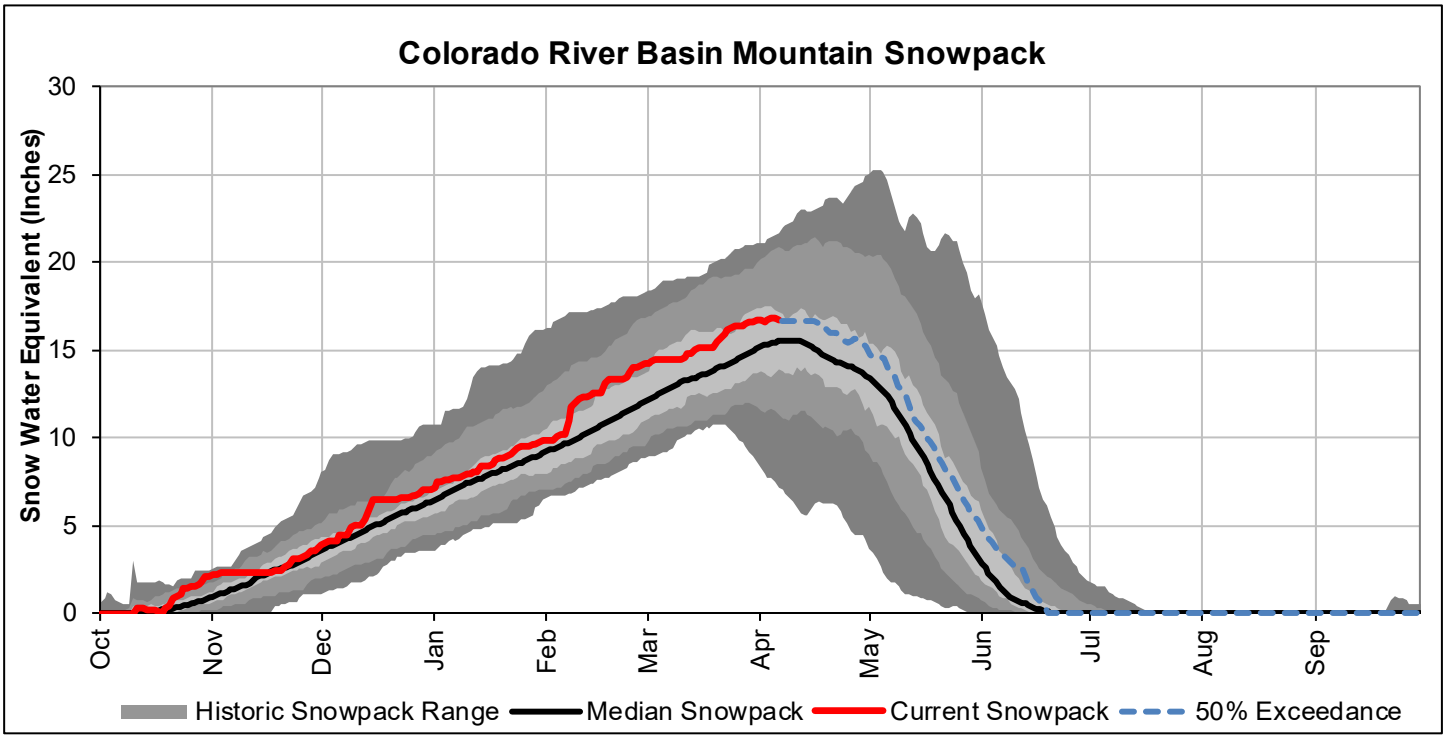
Period of Record Maximum Streamflow KAF (Year)

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

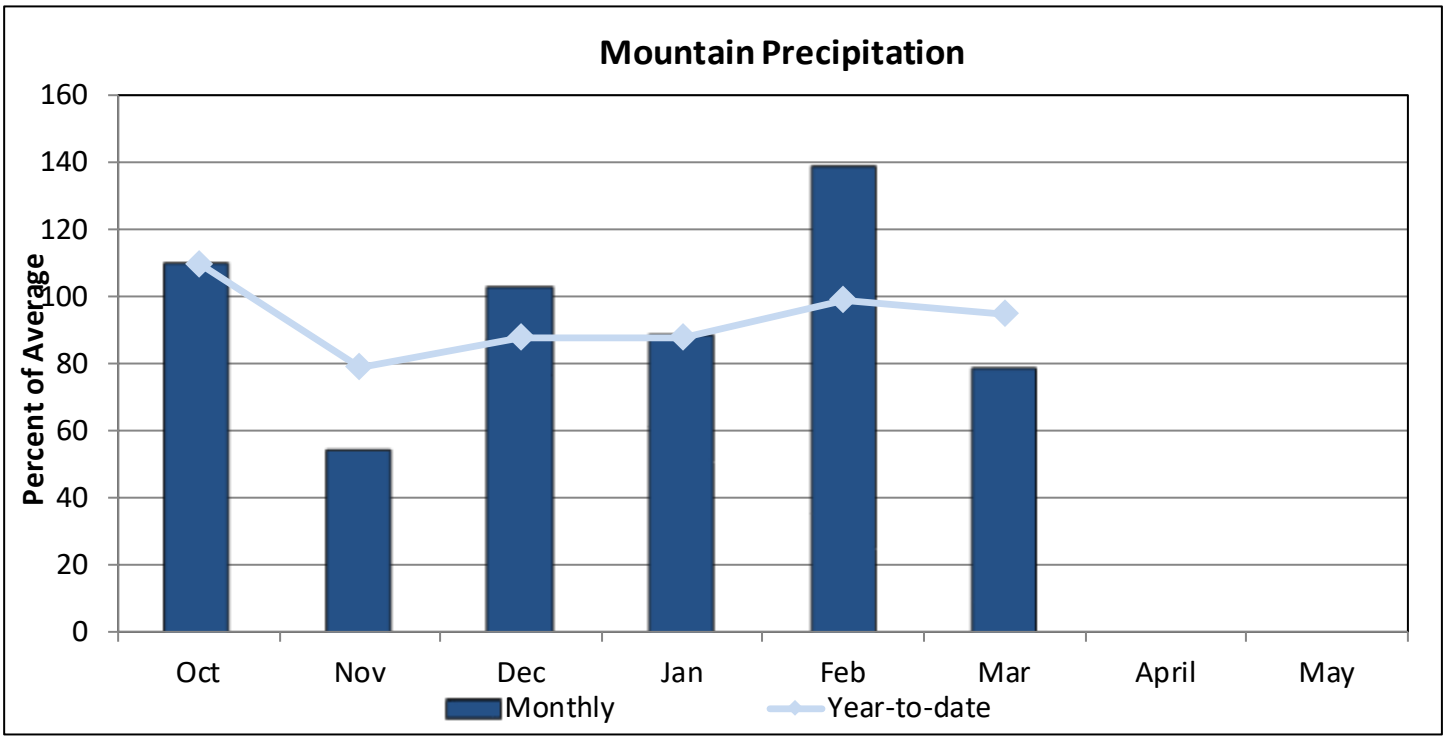
UPPER COLORADO RIVER BASIN

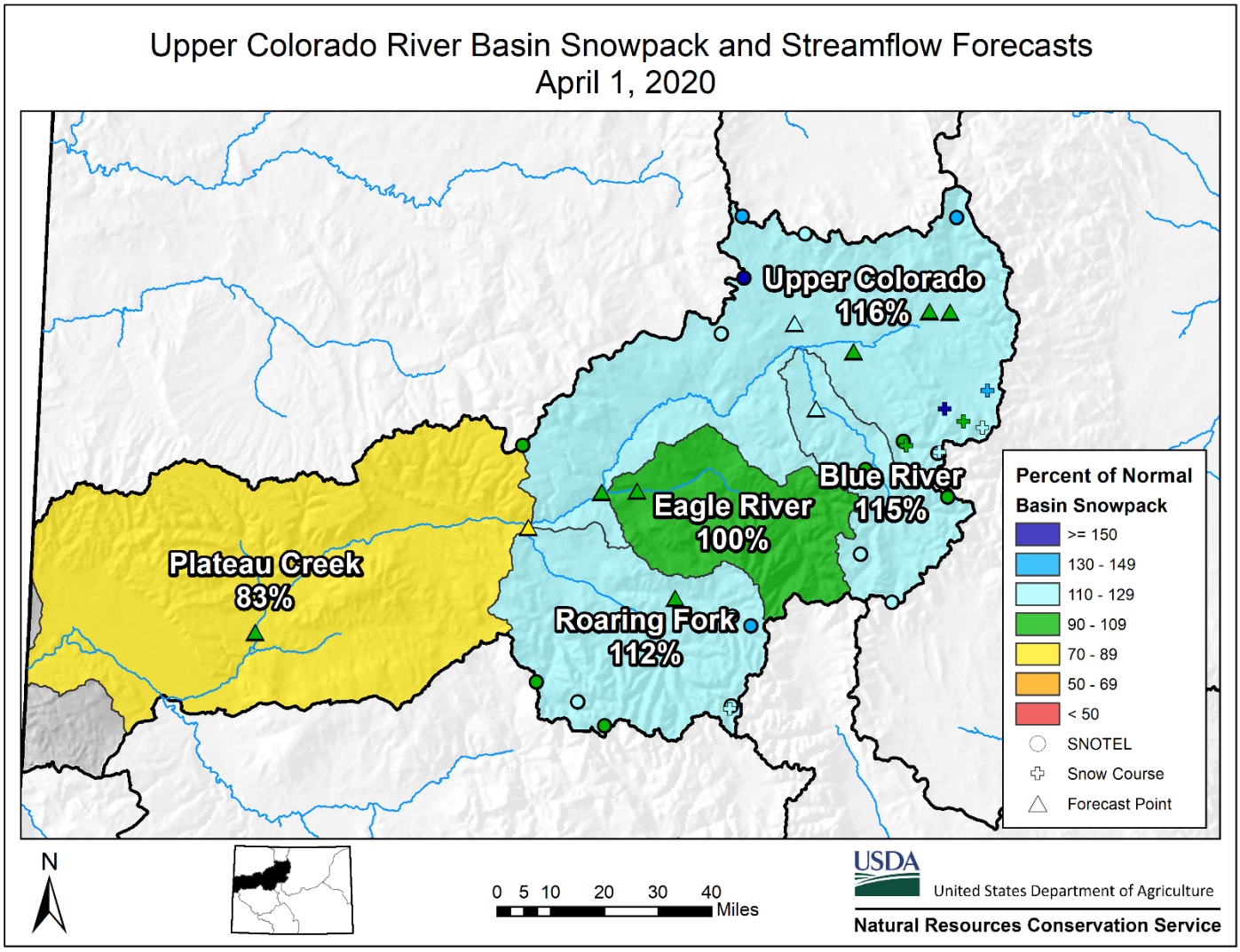
April 1, 2020

Snowpack in the Colorado River basin is above normal at 113% of the median. Precipitation for March was 79% of average which brings water year-to-date precipitation to 95% of average. Reservoir storage at the end of March was 115% of average compared to 90% last year. Current streamflow forecasts range from 85% of average for the Roaring Fork at Glenwood Springs to 113% for Green Mountain Reservoir Inflow.



*SWE values calculated using daily SNOTEL data only

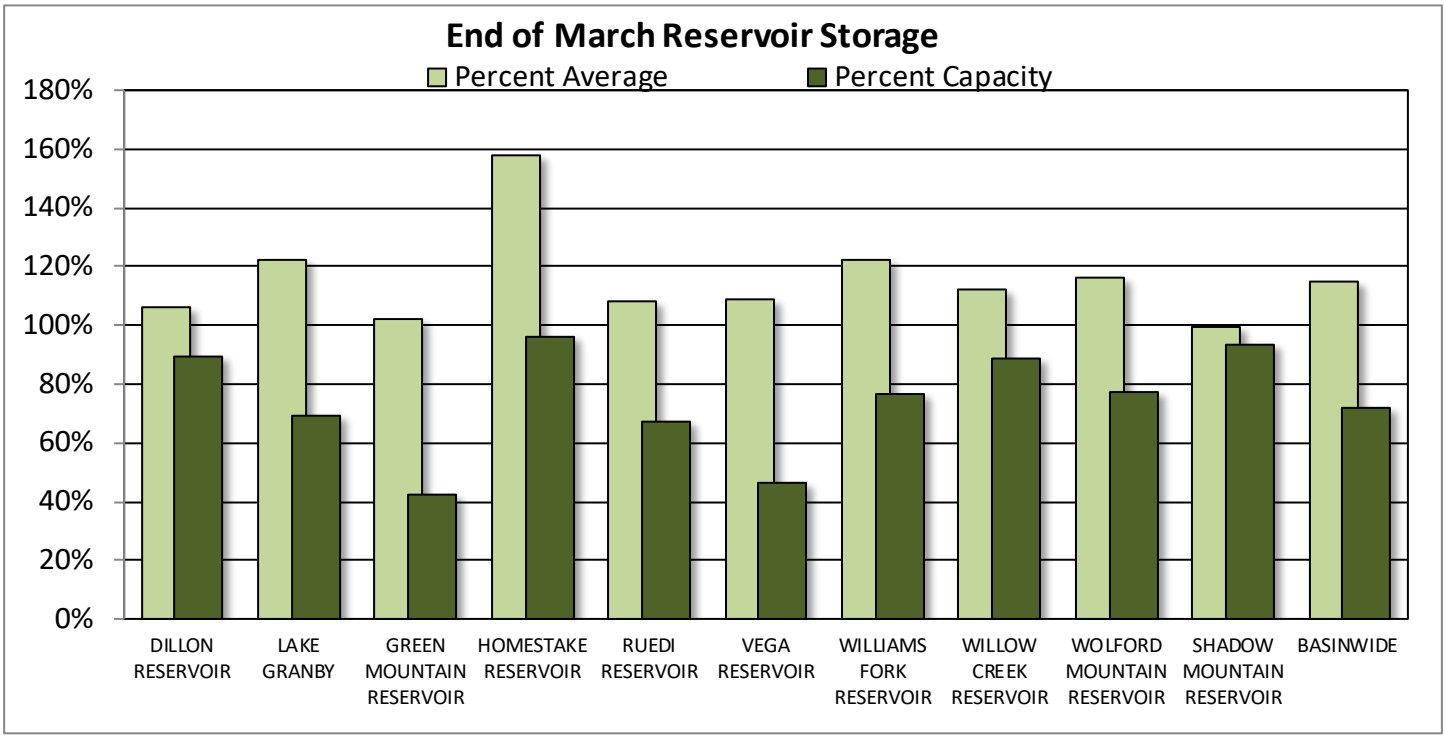




Watershed Snowpack Analysis April 1st, 2020

Sub-Basin	# of Sites	% Median	Last Year % Median
Blue River	5	115	137
Upper Colorado	25	116	121
Muddy Creek	3	133	130
Eagle River	4	100	119
Plateau Creek	5	83	136
Roaring Fork	8	112	147
Williams Fork	5	112	114
Willow Creek	2	121	132
Basin-Wide Total	35	113	129

*SWE values calculated using first of month SNOTEL data and snow course measurements



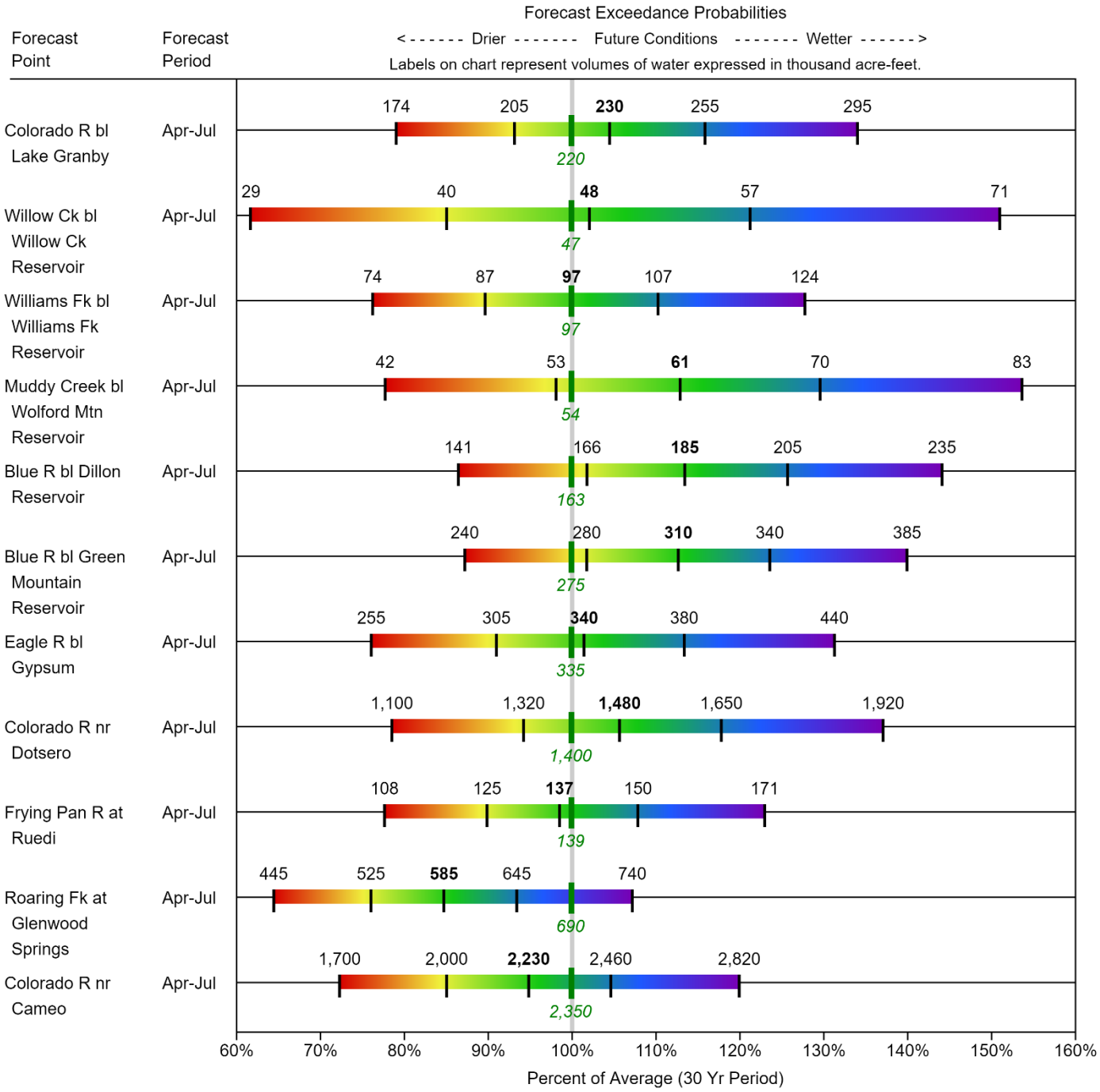
Reservoir Storage End of March 2020

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
DILLON RESERVOIR	223.1	174.1	210.7	249.1
LAKE GRANBY	323.8	270.1	265.0	465.6
GREEN MOUNTAIN RESERVOIR	62.4	42.6	61.2	146.8
HOMESTAKE RESERVOIR	41.2	18.6	26.1	43.0
RUEDI RESERVOIR	68.3	55.8	63.2	102.0
VEGA RESERVOIR	15.2	7.0	14.0	32.9
WILLIAMS FORK RESERVOIR	74.4	64.2	60.8	97.0
WILLOW CREEK RESERVOIR	8.1	7.5	7.2	9.1
WOLFORD MOUNTAIN RESERVOIR	50.9	33.5	43.7	65.9
SHADOW MOUNTAIN RESERVOIR	17.2	17.3	17.3	18.4
BASINWIDE	884.6	690.7	769.2	1229.8
Number of Reservoirs	10	10	10	10

UPPER COLORADO RIVER BASIN

Water Supply Forecasts

April 1, 2020



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When selected, the following historic streamflow values and statistics will be shown.

Period of Record Minimum Streamflow KAF (Year)

1981-2010 Normal Streamflow KAF

Observed Streamflow KAF

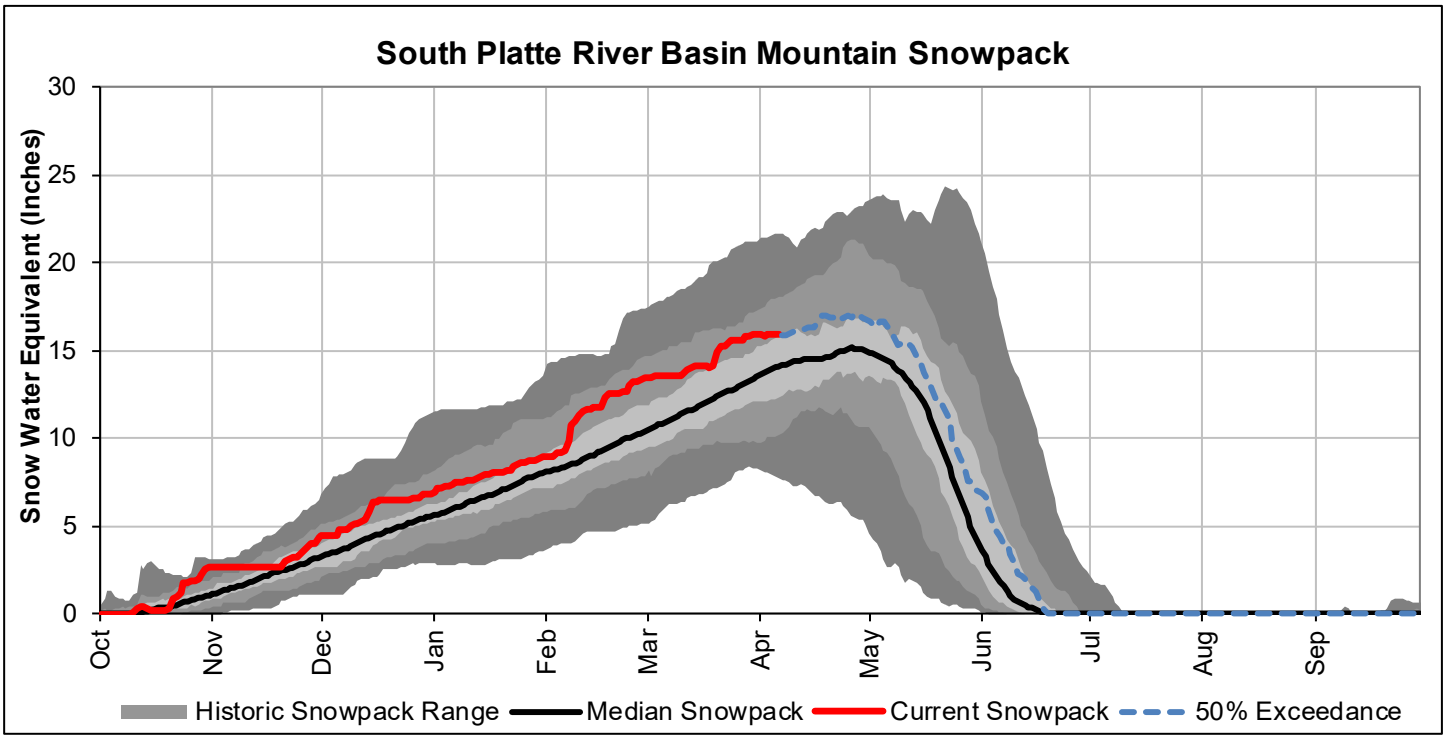
Period of Record Maximum Streamflow KAF (Year)

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

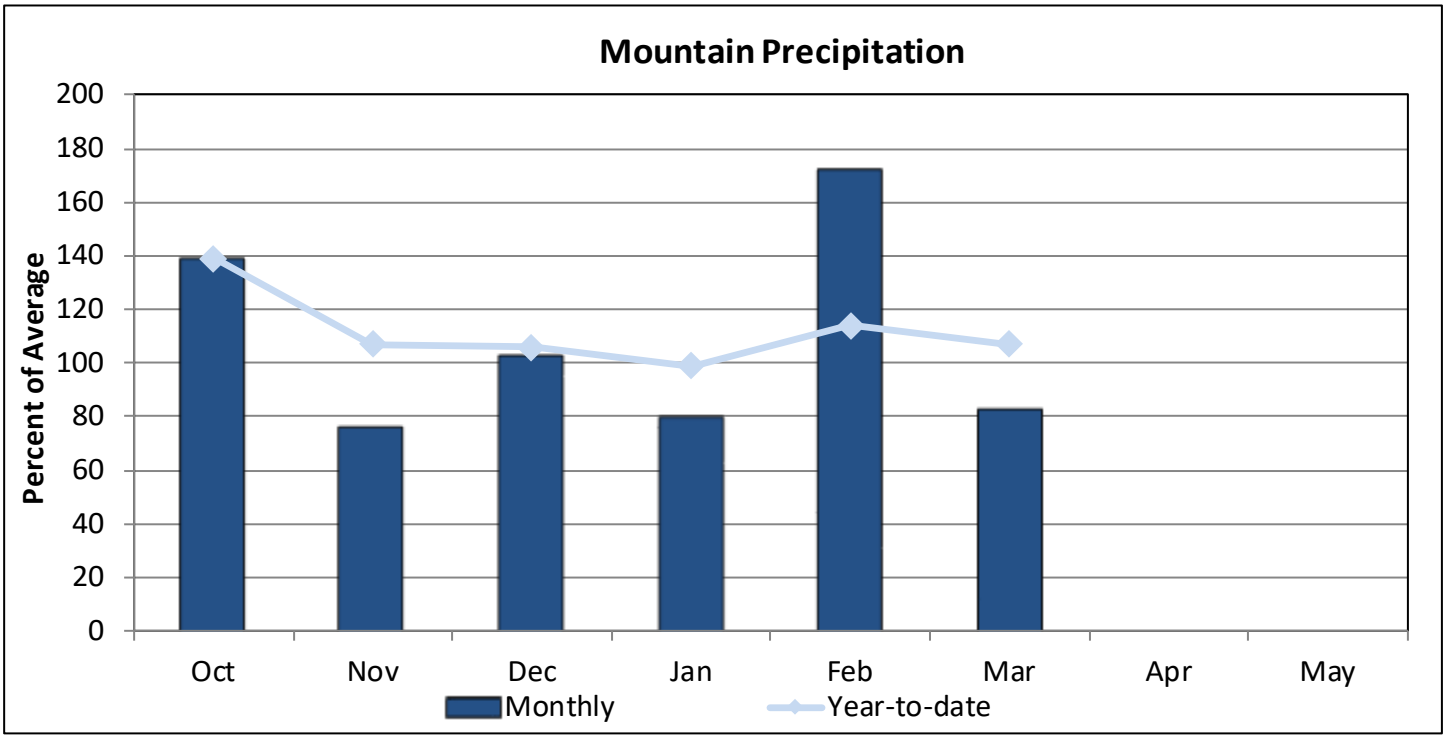
SOUTH PLATTE RIVER BASIN

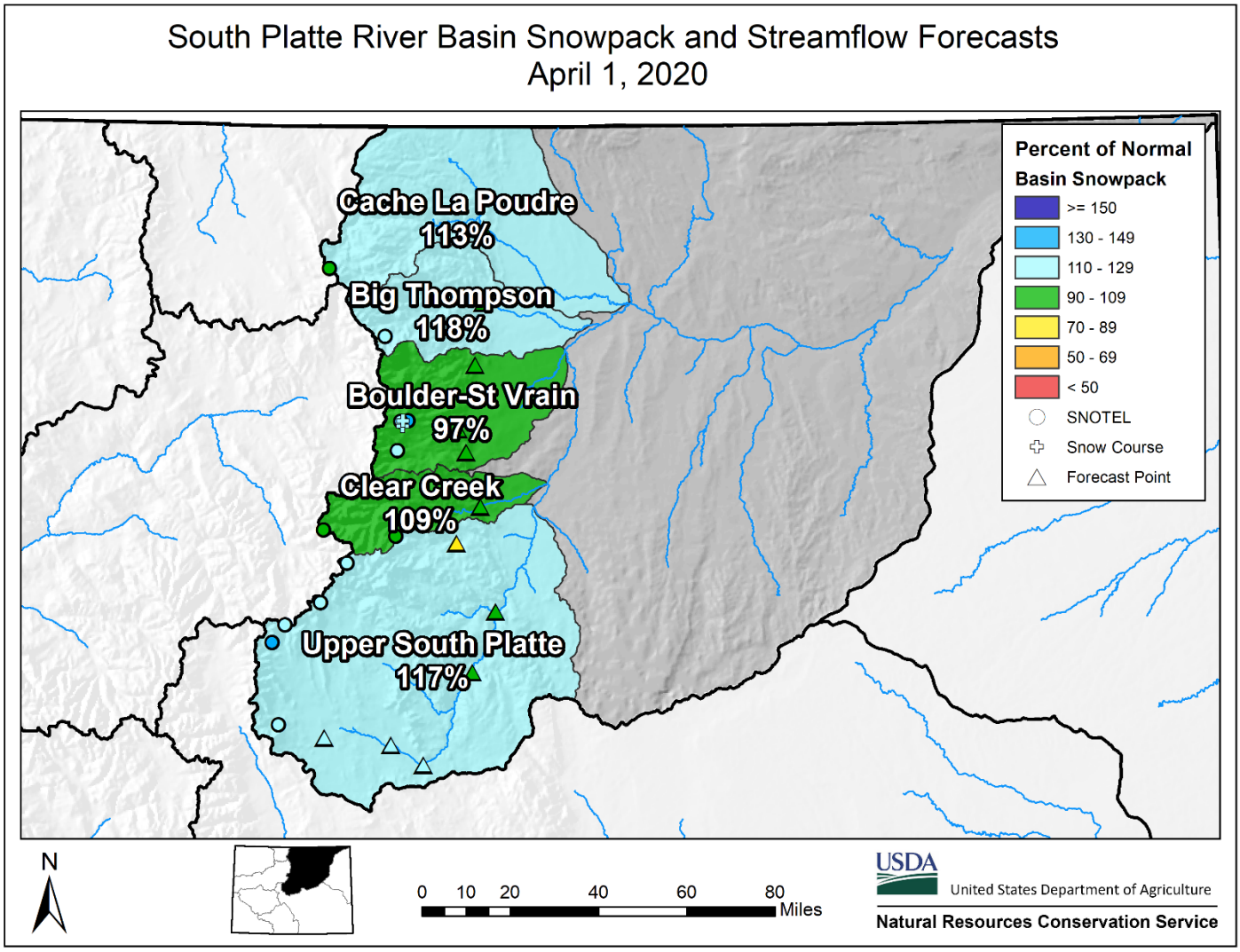
April 1, 2020

Snowpack in the South Platte River basin is above normal at 117% of the median. Precipitation for March was 83% of average which brings water year-to-date precipitation to 107%. Reservoir storage at the end of March was 110% of average compared to 102% last year. Current streamflow forecasts range from 74% of average for Bear Creek above Evergreen to 121% for the South Platte at Antero Reservoir Inflow.



*SWE values calculated using daily SNOTEL data only

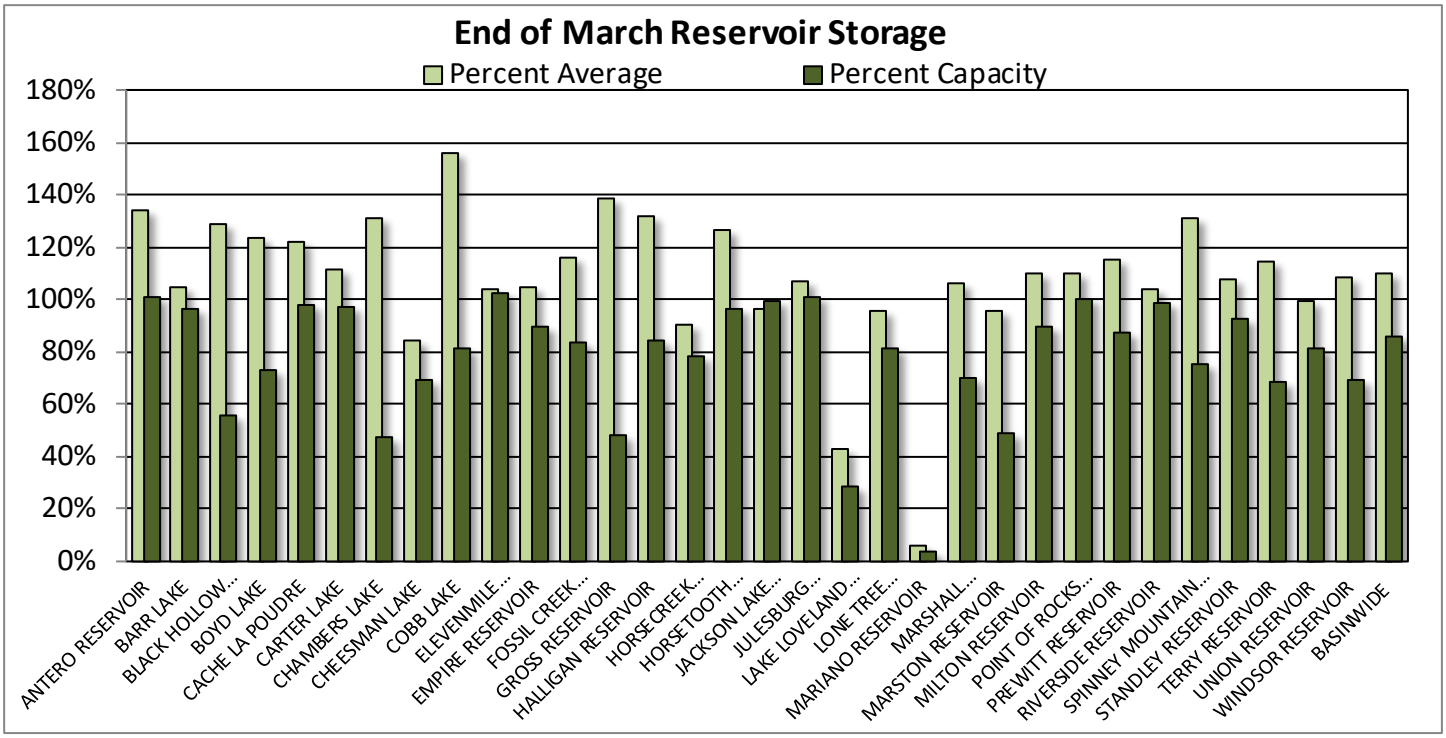




Watershed Snowpack Analysis April 1st, 2020

Sub-Basin	# of Sites	% Median	Last Year % Median
Big Thompson	3	118	110
Boulder Creek	5	121	109
Cache La Poudre	2	113	119
Clear Creek	2	109	112
Saint Vrain	1	143	429
Upper South Platte	6	117	138
Basin-Wide Total	19	117	120

*SWE values calculated using first of month SNOTEL data and snow course measurements



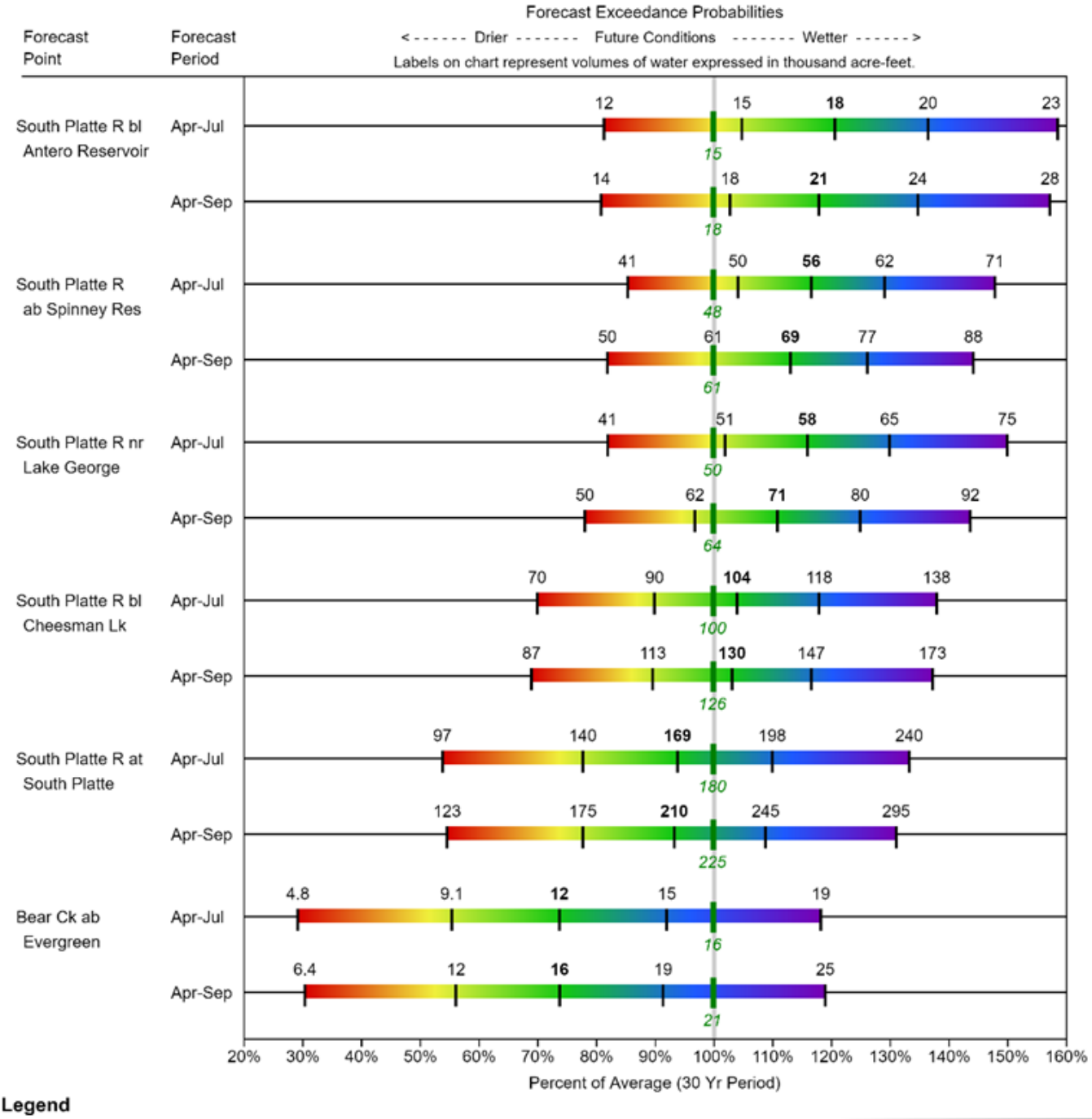
Reservoir Storage End of March 2020

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
ANTERO RESERVOIR	20.0	19.6	14.9	19.9
BARR LAKE	29.0	28.8	27.8	30.1
BLACK HOLLOW RESERVOIR	3.6	4.0	2.8	6.5
BOYD LAKE	35.4	31.4	28.7	48.4
CACHE LA POUDRE	9.9	10.6	8.1	10.1
CARTER LAKE	106.1	105.2	94.9	108.9
CHAMBERS LAKE	4.2	2.1	3.2	8.8
CHEESMAN LAKE	54.7	62.7	65.1	79.0
COBB LAKE	18.1	15.9	11.6	22.3
ELEVENMILE CANYON RESERVOIR	100.1	99.3	96.4	98.0
EMPIRE RESERVOIR	32.6	32.8	31.2	36.5
FOSSIL CREEK RESERVOIR	9.3	10.0	8.0	11.1
GROSS RESERVOIR	14.4	7.2	10.4	29.8
HALLIGAN RESERVOIR	5.4	6.4	4.1	6.4
HORSECREEK RESERVOIR	11.5	8.8	12.7	14.7
HORSETOOTH RESERVOIR	144.0	95.6	113.7	149.7
JACKSON LAKE RESERVOIR	26.0	26.1	26.9	26.1
JULESBURG RESERVOIR	20.7	17.4	19.4	20.5
LAKE LOVELAND RESERVOIR	2.9	0.0	6.8	10.3
LONE TREE RESERVOIR	7.1	7.1	7.4	8.7
MARIANO RESERVOIR	0.2	4.0	3.6	5.4
MARSHALL RESERVOIR	7.0	6.8	6.6	10.0
MARSTON RESERVOIR	6.4	7.4	6.7	13.0
MILTON RESERVOIR	21.0	21.7	19.1	23.5
POINT OF ROCKS RESERVOIR	70.7	69.3	64.4	70.6
PREWITT RESERVOIR	24.6	22.3	21.4	28.2
RIVERSIDE RESERVOIR	55.0	55.8	53.1	55.8
SPINNEY MOUNTAIN RESERVOIR	37.0	33.8	28.2	49.0
STANDLEY RESERVOIR	38.9	29.0	36.2	42.0
TERRY RESERVOIR	5.5	5.5	4.8	8.0
UNION RESERVOIR	10.5	10.5	10.6	13.0
WINDSOR RESERVOIR	10.5	8.7	9.7	15.2
BASINWIDE	942.3	865.8	858.5	1079.5
Number of Reservoirs	32	32	32	32

SOUTH PLATTE RIVER BASIN

Water Supply Forecasts

April 1, 2020



Legend

95% or 90% Exceedance	70% Exceedance	**50% Exceedance**	30% Exceedance	10% or 5% Exceedance
There is a 95%/90% chance that flows will exceed this volume	There is a 70% chance that flows will exceed this volume	There is a 50% chance that flows will exceed this volume	There is a 30% chance that flows will exceed this volume	There is a 10%/5% chance that flows will exceed this volume

When selected, the following historic streamflow values and statistics will be shown.

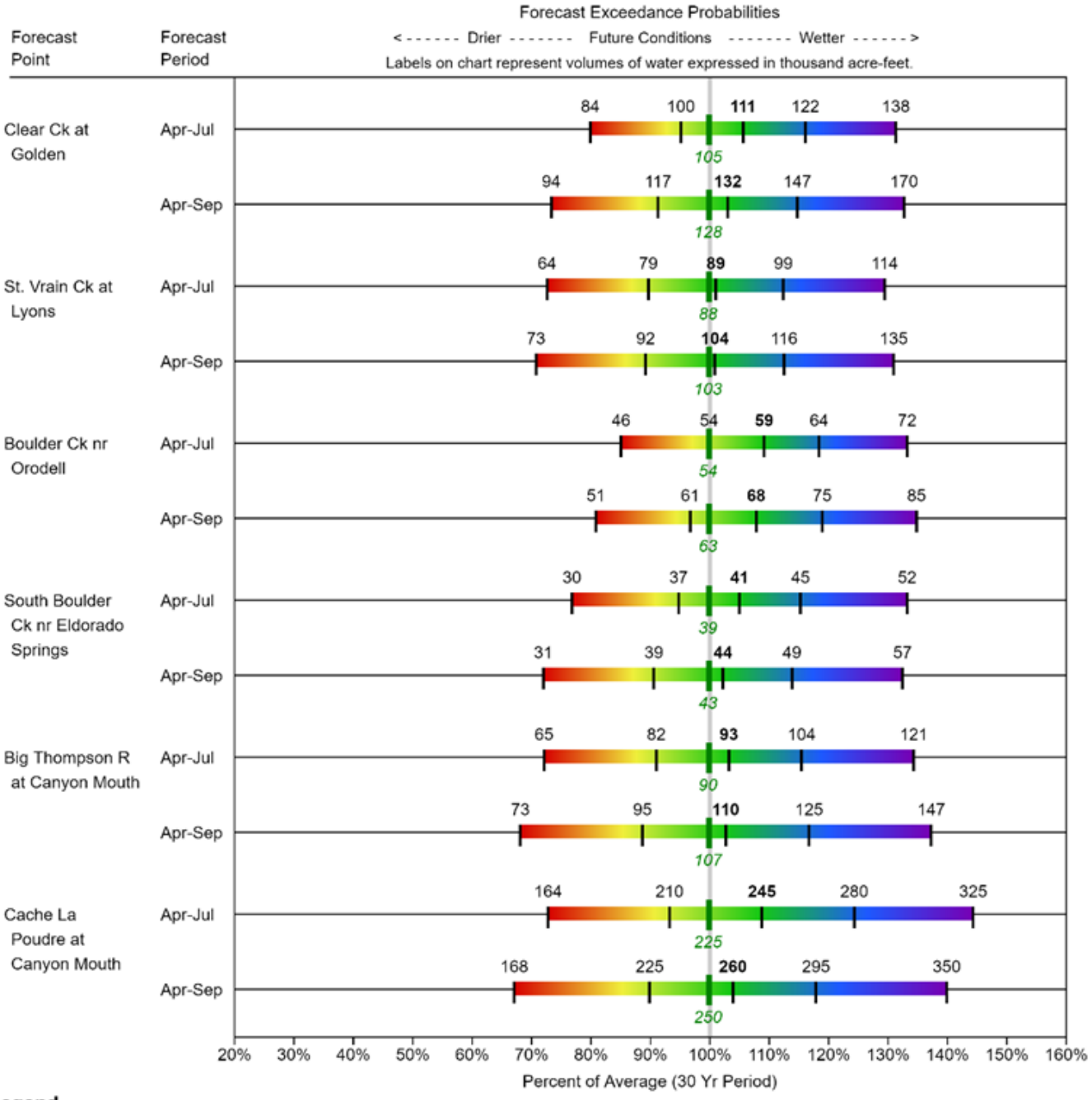
Period of Record Minimum Streamflow KAF (Year)	*1981-2010 Normal Streamflow KAF*	*Observed Streamflow KAF*	*Period of Record Maximum Streamflow KAF (Year)*

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

SOUTH PLATTE RIVER BASIN

Water Supply Forecasts

April 1, 2020



Legend

95% or 90% Exceedance — There is a 95%/90% chance that flows will exceed this volume

70% Exceedance — There is a 70% chance that flows will exceed this volume

50% Exceedance — There is a 50% chance that flows will exceed this volume

30% Exceedance — There is a 30% chance that flows will exceed this volume

10% or 5% Exceedance — There is a 10%/5% chance that flows will exceed this volume

When selected, the following historic streamflow values and statistics will be shown.

Period of Record Minimum Streamflow KAF (Year)

1981-2010 Normal Streamflow KAF

Observed Streamflow KAF

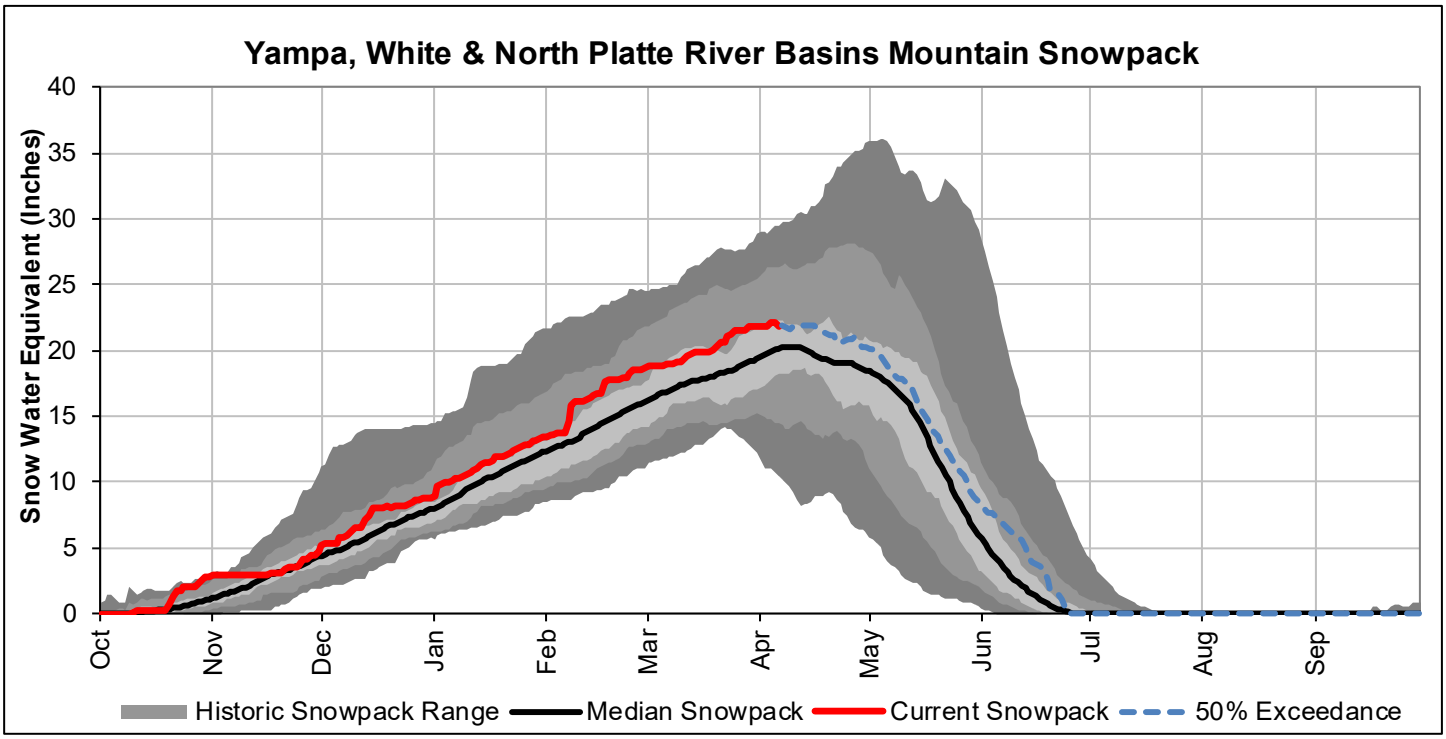
Period of Record Maximum Streamflow KAF (Year)

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

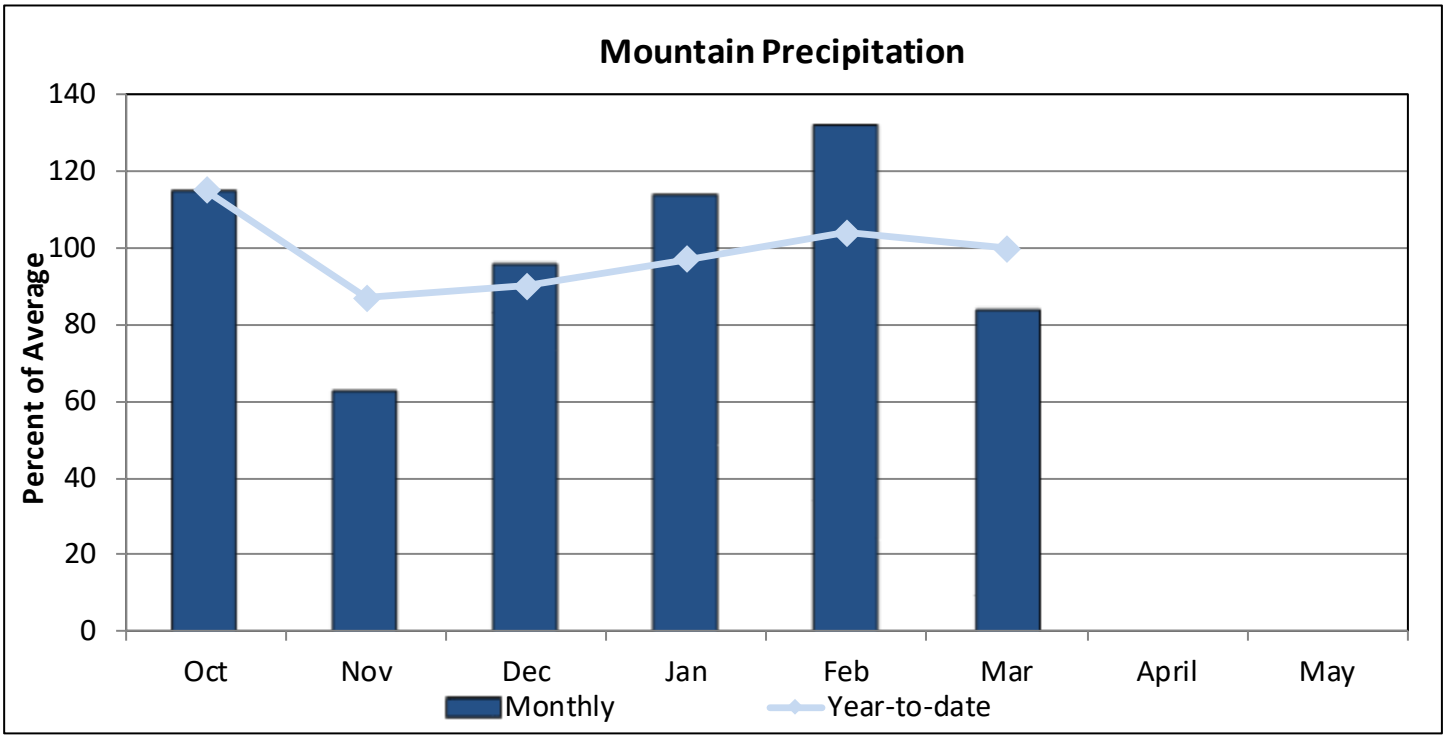
YAMPA, WHITE, NORTH PLATTE, AND LARAMIE RIVER BASINS

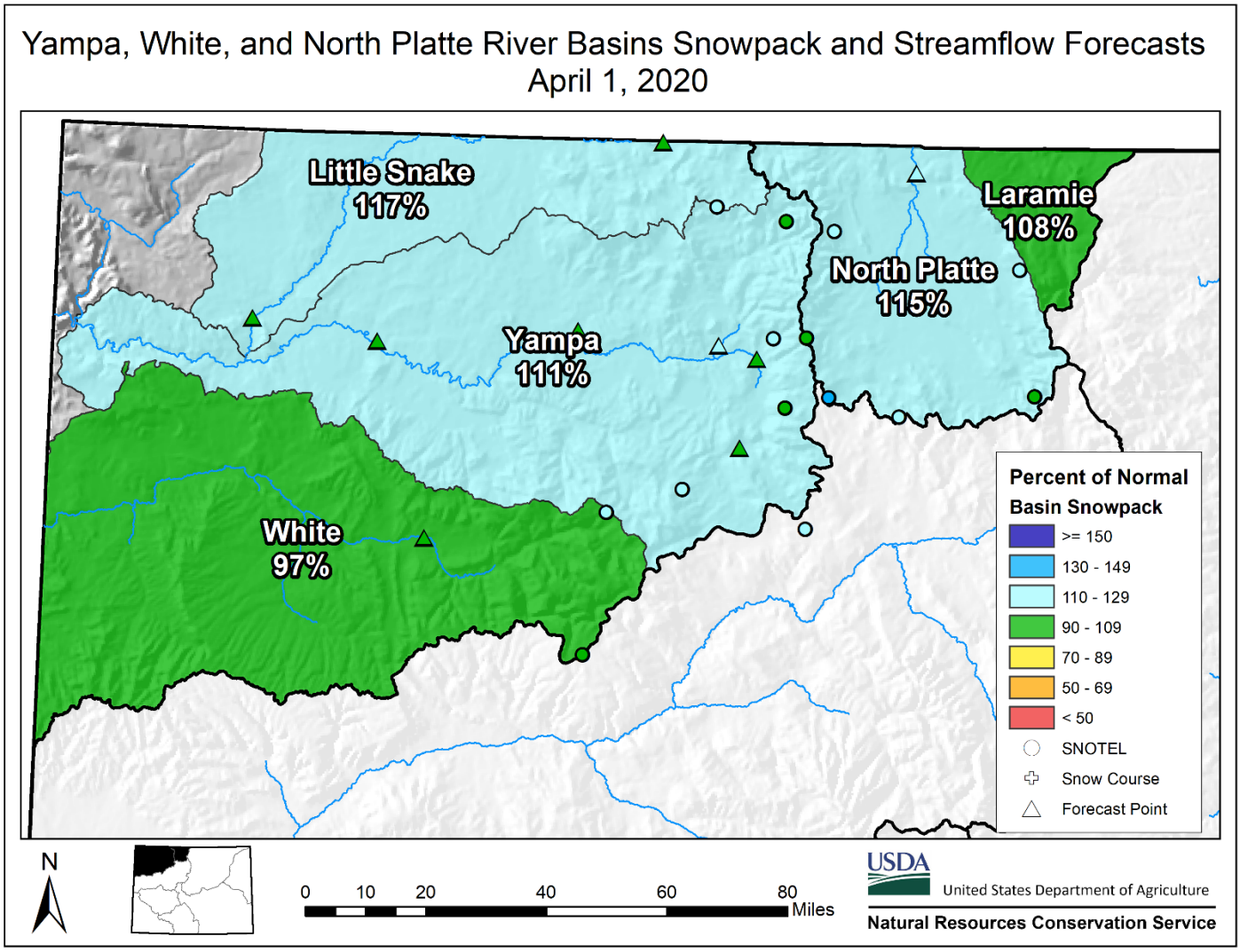
April 1, 2020

Snowpack in the Yampa, White & North Platte basins is above normal at 111% of the median. Precipitation for March was 84% of average and water year-to-date precipitation is 100% of average. Reservoir storage at the end of March was 125% of average compared to 106% last year. Current streamflow forecasts range from 89% of average for White River near Meeker to 118% for the North Platte River near Northgate.



*SWE values calculated using daily SNOTEL data only

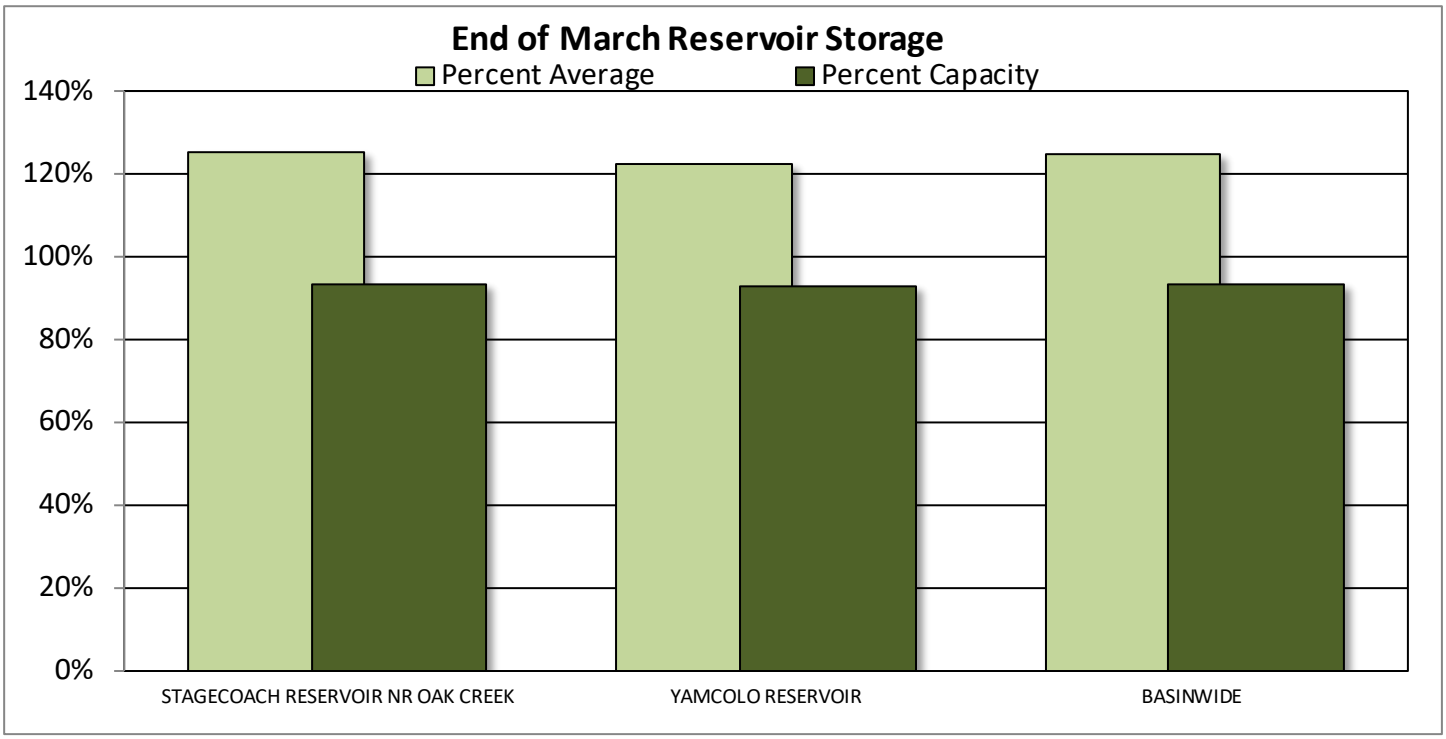




Watershed Snowpack Analysis April 1st, 2020

Sub-Basin	# of Sites	% Median	Last Year % Median
Laramie	2	108	124
North Platte	8	115	123
Total Laramie & North Platte	10	114	123
Elk	2	103	101
Yampa	9	111	116
White	3	97	128
Total Yampa & White	11	107	118
Little Snake	8	117	118
Basin-Wide Total	26	111	120

*SWE values calculated using first of month SNOTEL data and snow course measurements



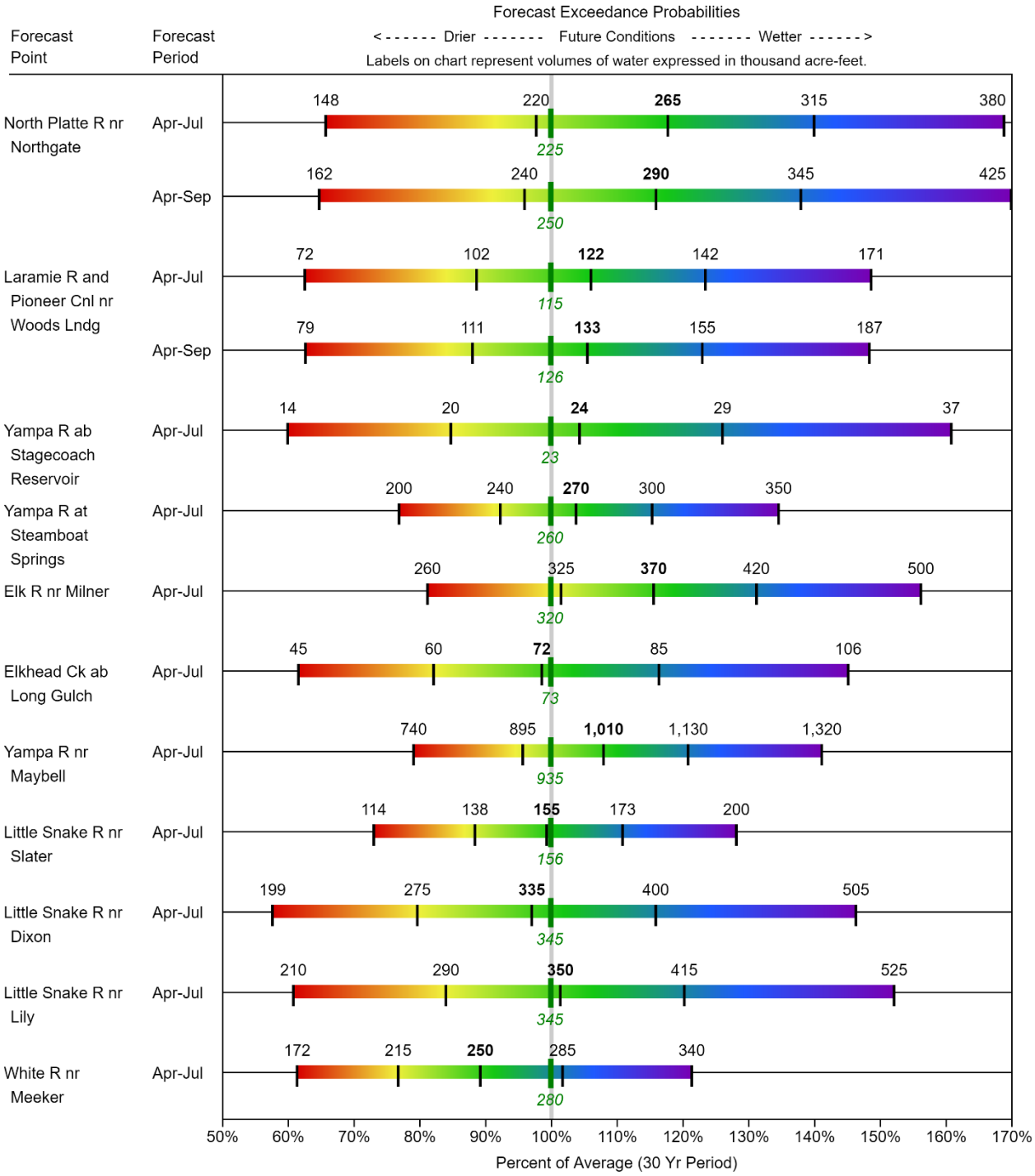
Reservoir Storage End of March 2020

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
STAGECOACH RESERVOIR NR OAK C	34.1	31.2	27.2	36.5
YAMCOLO RESERVOIR	8.1	4.7	6.6	8.7
BASINWIDE	42.2	35.9	33.8	45.2
Number of Reservoirs	2	2	2	2

YAMPA-WHITE-NORTH PLATTE RIVER BASINS

Water Supply Forecasts

April 1, 2020



Legend

95% or 90% Exceedance — There is a 95%/90% chance that flows will exceed this volume

70% Exceedance — There is a 70% chance that flows will exceed this volume

50% Exceedance — There is a 50% chance that flows will exceed this volume

30% Exceedance — There is a 30% chance that flows will exceed this volume

10% or 5% Exceedance — There is a 10%/5% chance that flows will exceed this volume

When selected, the following historic streamflow values and statistics will be shown.

Period of Record Minimum Streamflow KAF (Year)

1981-2010 Normal Streamflow KAF

Observed Streamflow KAF

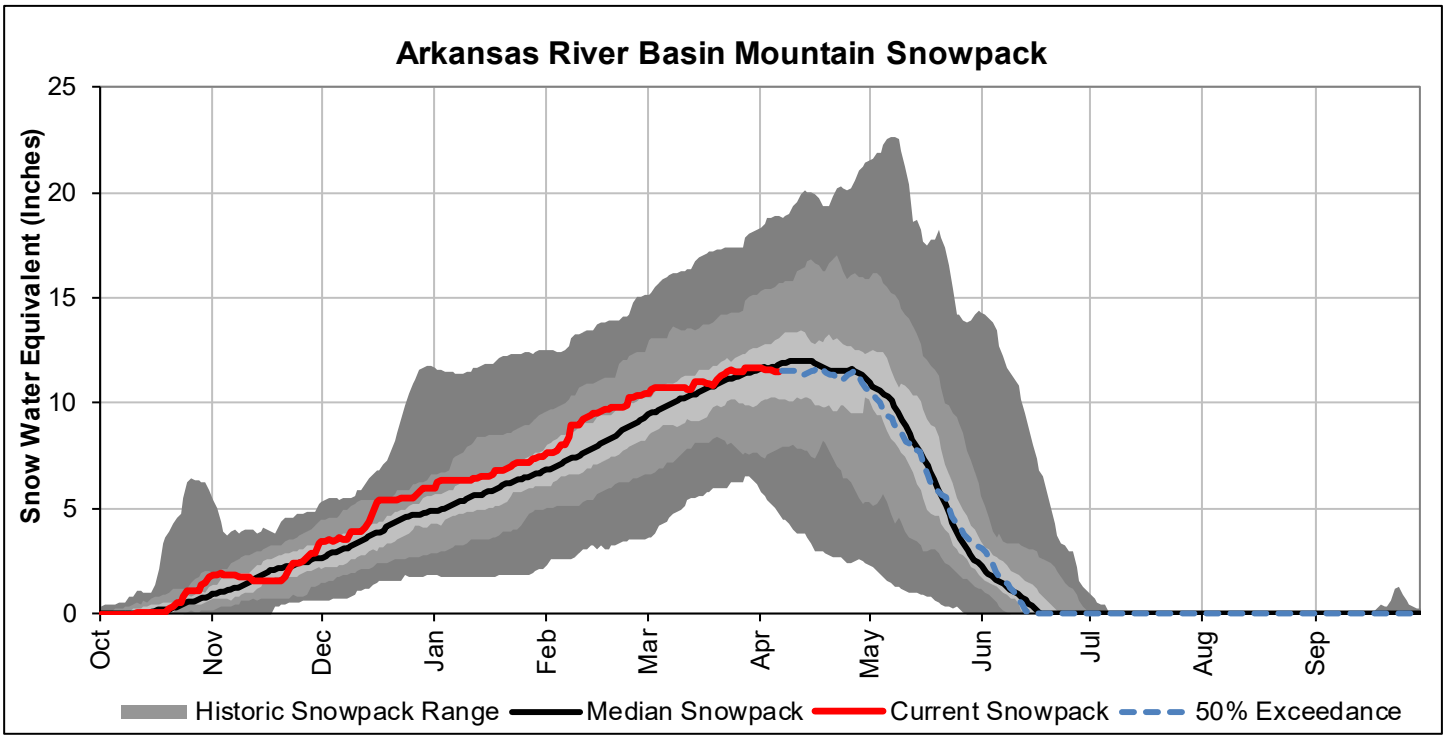
Period of Record Maximum Streamflow KAF (Year)

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

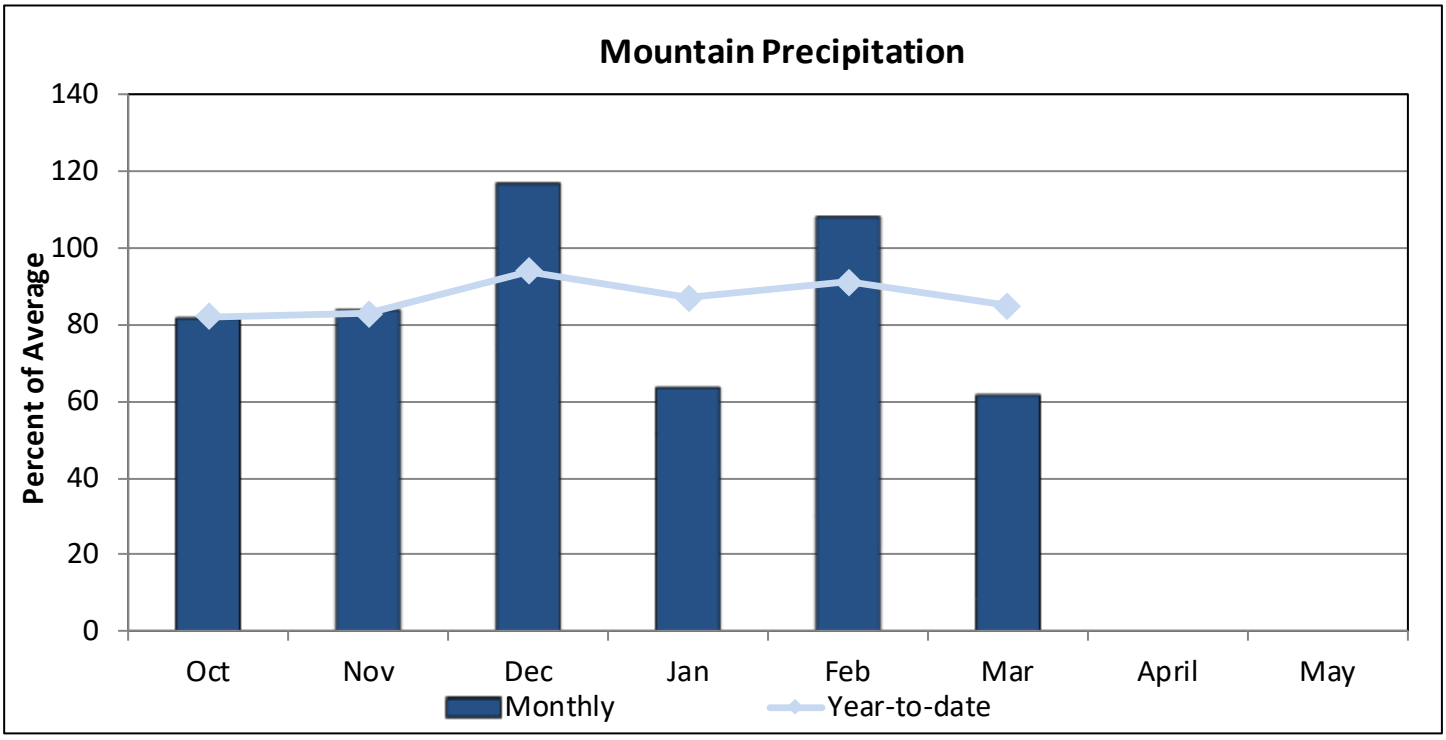
ARKANSAS RIVER BASIN

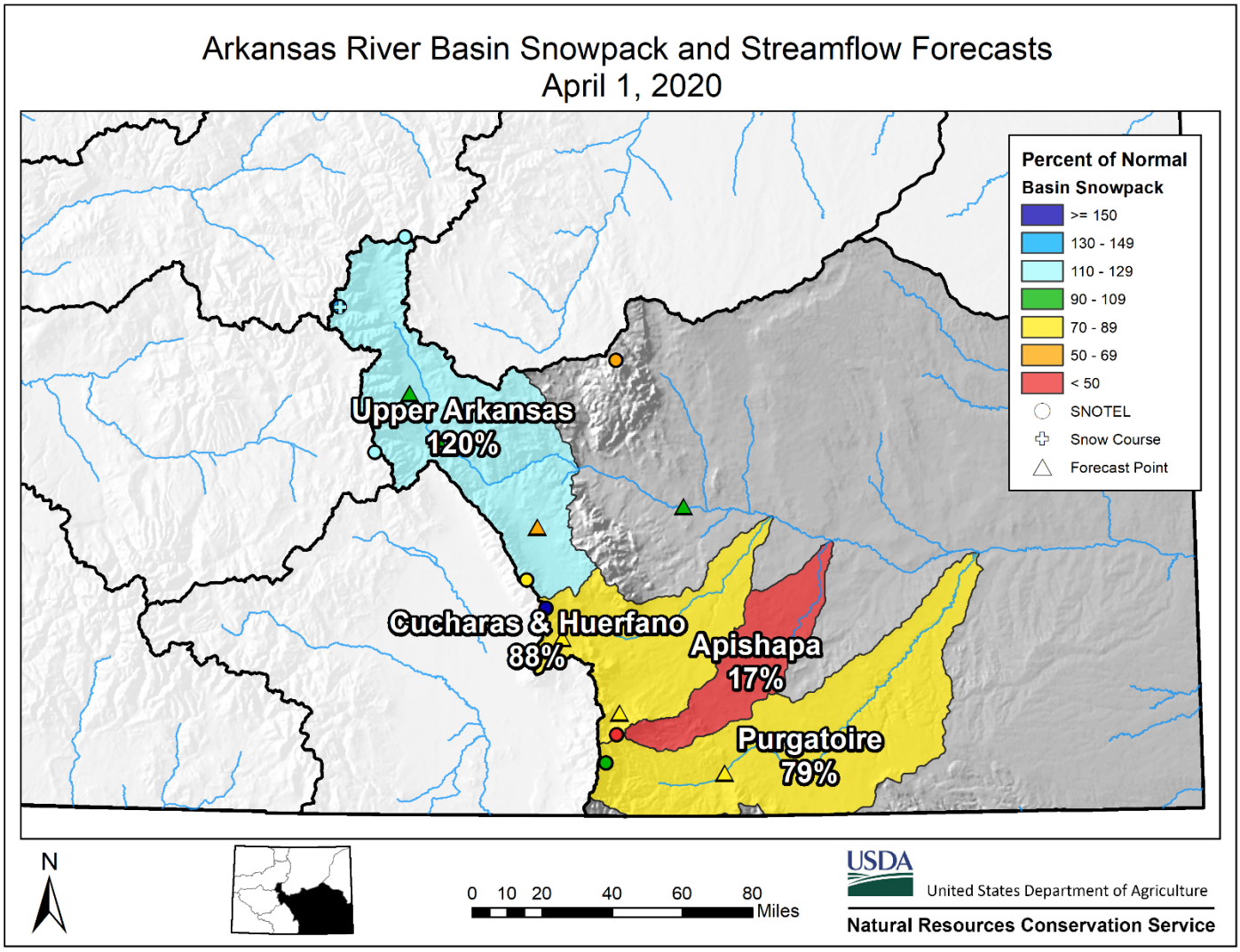
April 1, 2020

Snowpack in the Arkansas River basin is above normal at 105% of the median. Precipitation for March was 62% of average which brings water year-to-date precipitation to 85% of average. Reservoir storage at the end of March was 92% of average compared to 90% last year. Current streamflow forecasts range from 66% of average for Grape Creek near Westcliffe to 104% for the Arkansas River at Salida.



*SWE values calculated using daily SNOTEL data only

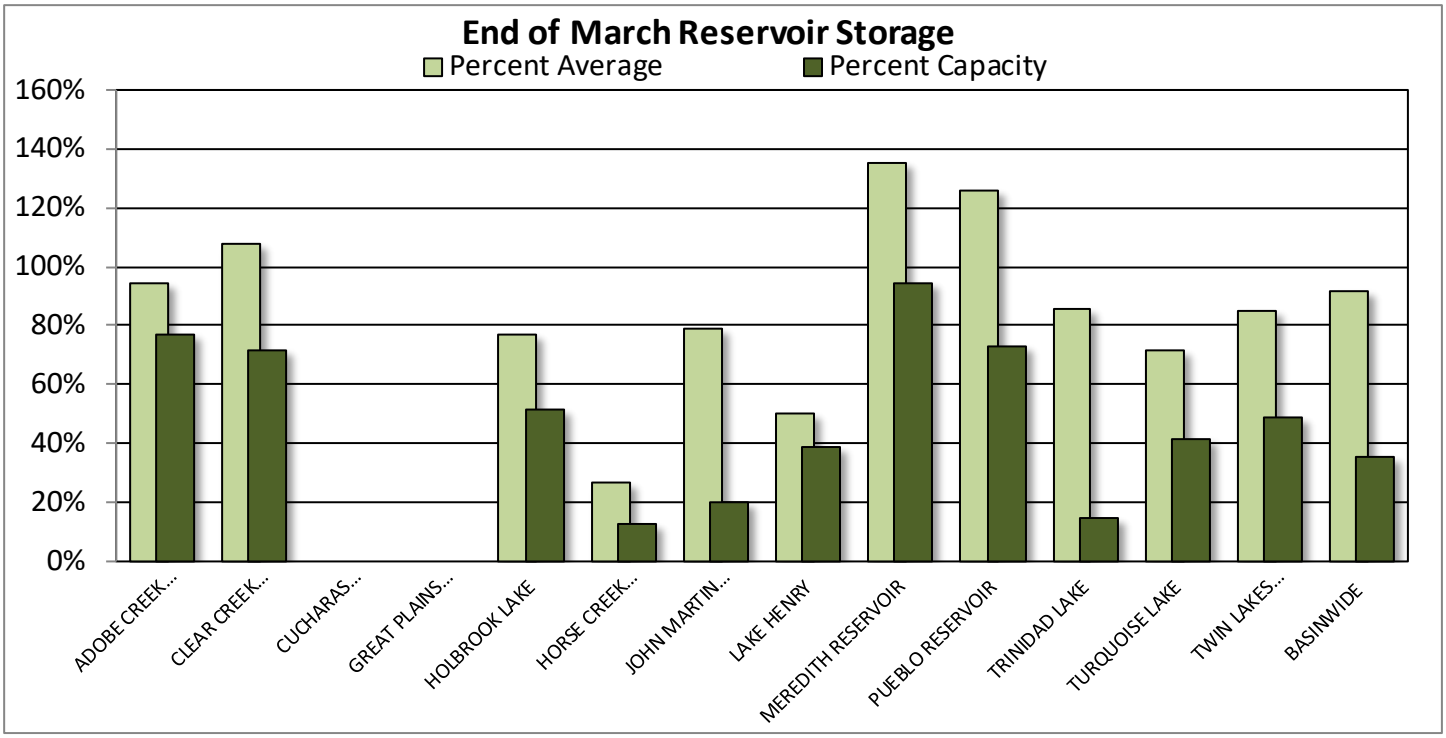




Watershed Snowpack Analysis April 1st, 2020

Sub-Basin	# of Sites	% Median	Last Year % Median
Upper Arkansas	4	120	145
Cucharas & Huerfano	3	88	169
Purgatoire	2	79	173
Basin-Wide Total	9	105	148

*SWE values calculated using first of month SNOTEL data and snow course measurements



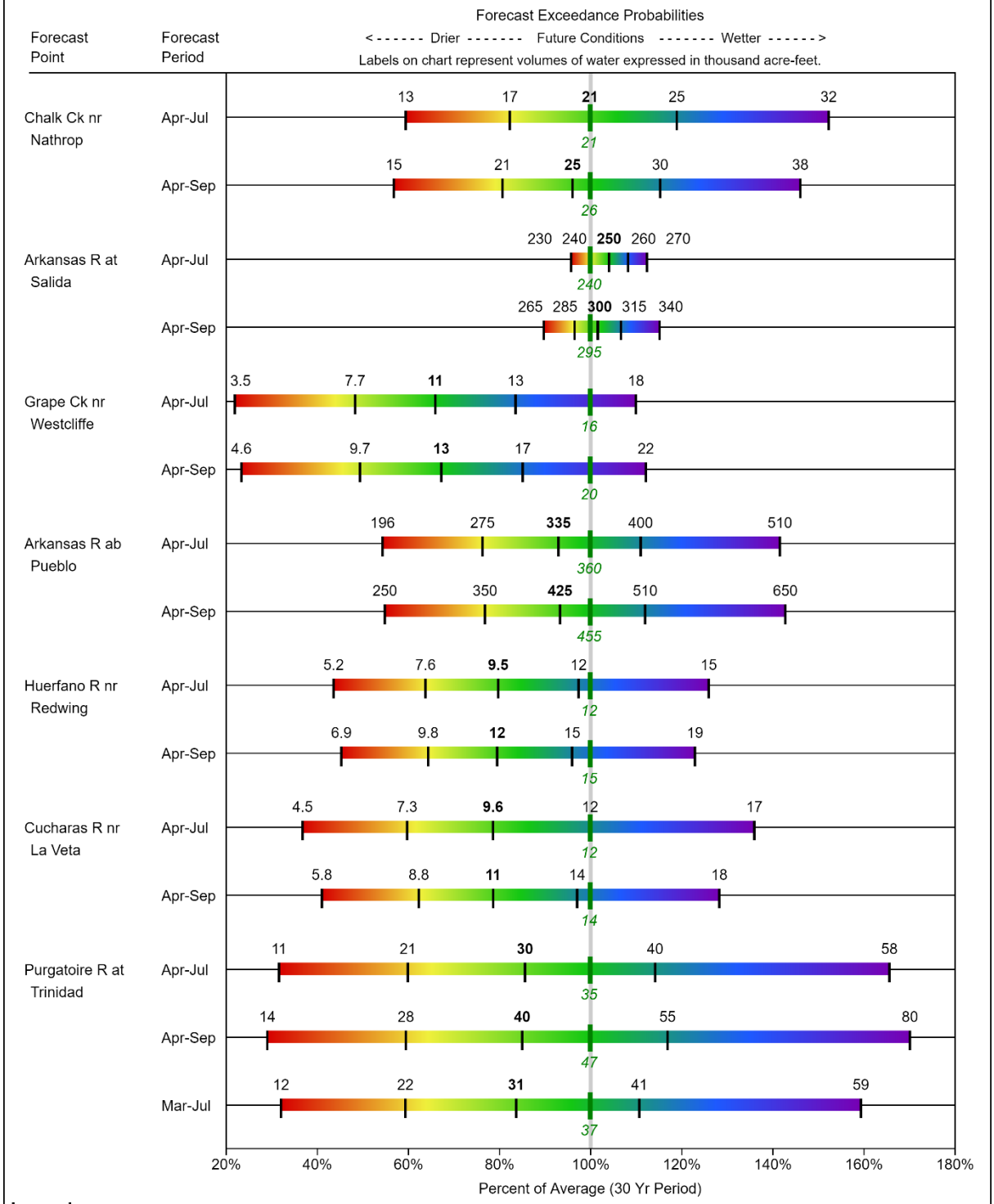
Reservoir Storage End of March 2020

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
ADOBE CREEK RESERVOIR	47.6	8.9	50.4	62.0
CLEAR CREEK RESERVOIR	8.2	7.6	7.6	11.4
CUCHARAS RESERVOIR				40.0
GREAT PLAINS RESERVOIR				150.0
HOLBROOK LAKE	3.6	0.3	4.7	7.0
HORSE CREEK RESERVOIR	3.4	26.8	12.8	27.0
JOHN MARTIN RESERVOIR	122.9	175.8	155.0	616.0
LAKE HENRY	3.6	7.3	7.3	9.4
MEREDITH RESERVOIR	39.6	32.1	29.2	42.0
PUEBLO RESERVOIR	258.7	235.6	205.8	354.0
TRINIDAD LAKE	24.3	22.9	28.5	167.0
TURQUOISE LAKE	52.8	46.2	73.5	127.0
TWIN LAKES RESERVOIR	42.2	32.0	49.6	86.0
BASINWIDE	606.8	595.4	624.4	1698.8
Number of Reservoirs	11	11	11	13

ARKANSAS RIVER BASIN

Water Supply Forecasts

April 1, 2020



Legend

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When selected, the following historic streamflow values and statistics will be shown.

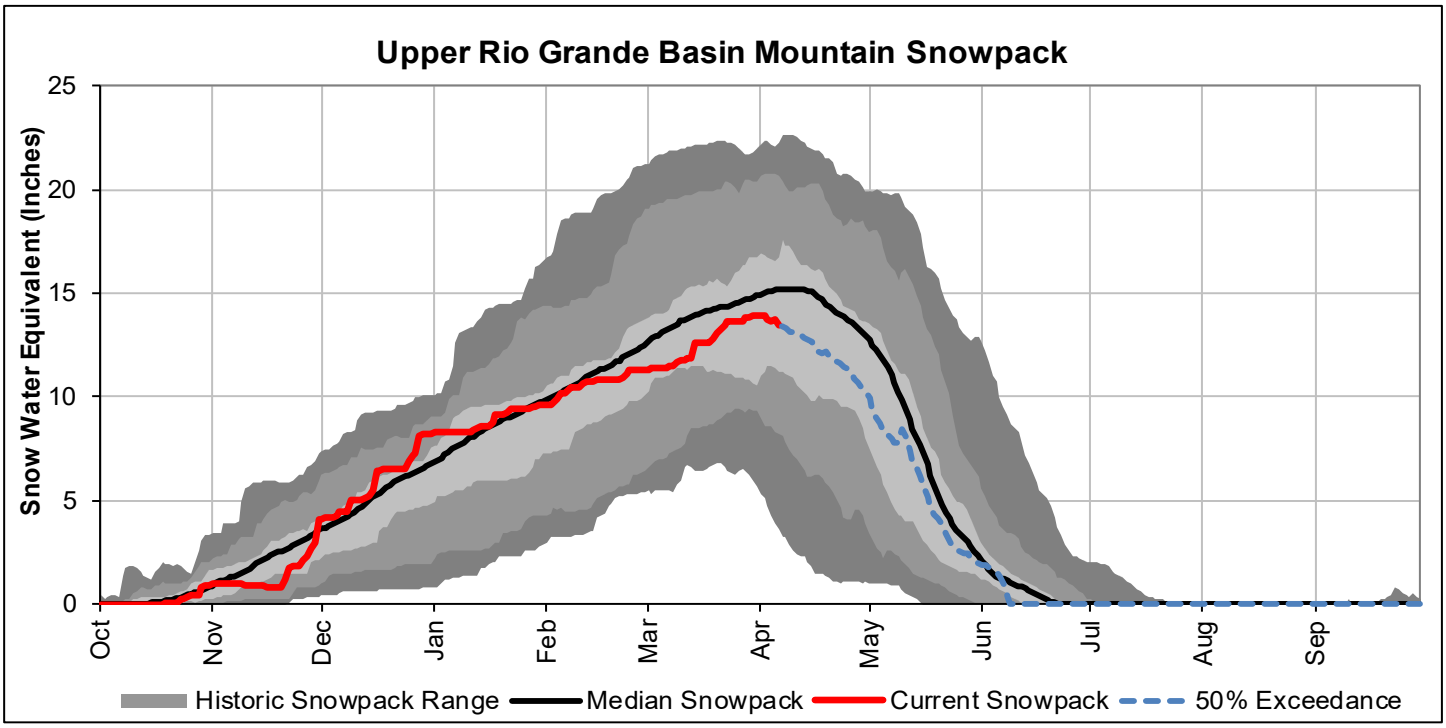
Period of Record Minimum Streamflow KAF (Year)	*1981-2010 Normal Streamflow KAF*	*Observed Streamflow KAF*	*Period of Record Maximum Streamflow KAF (Year)*

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

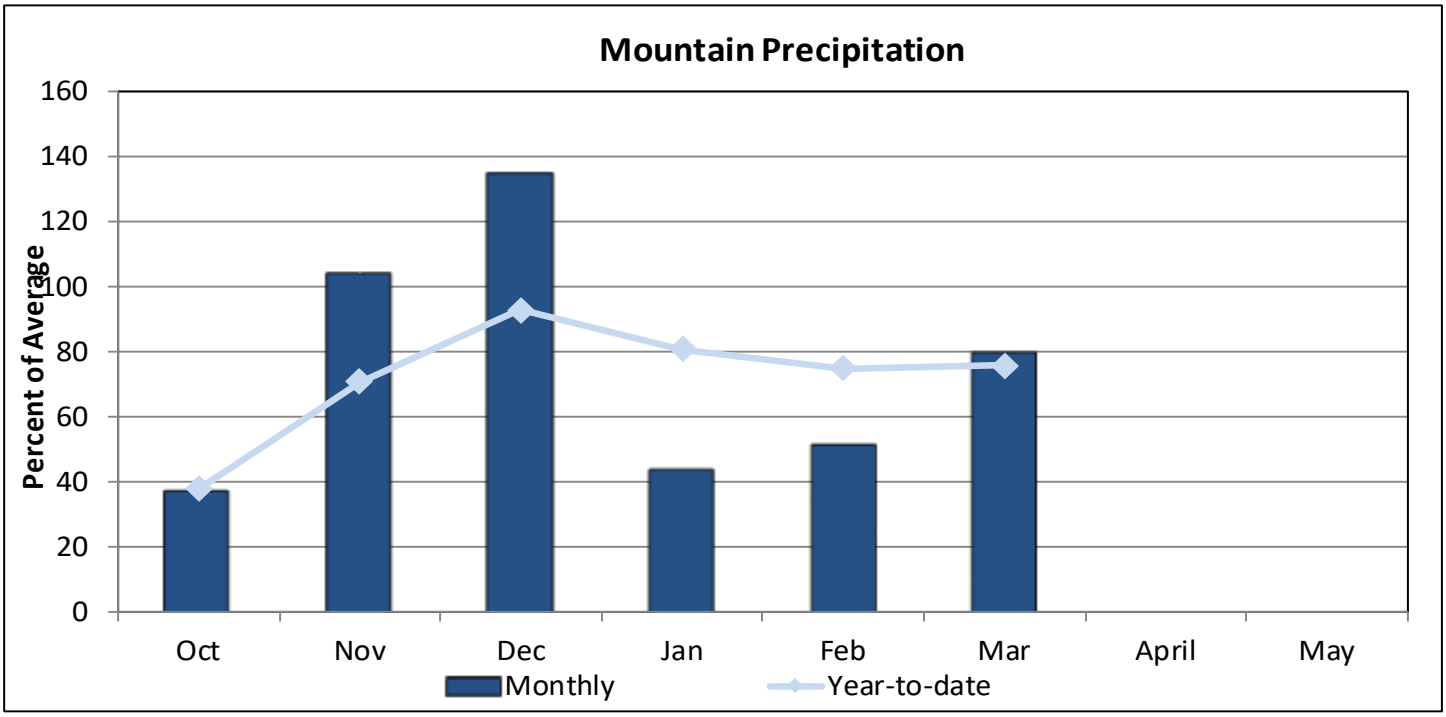
UPPER RIO GRANDE RIVER BASIN

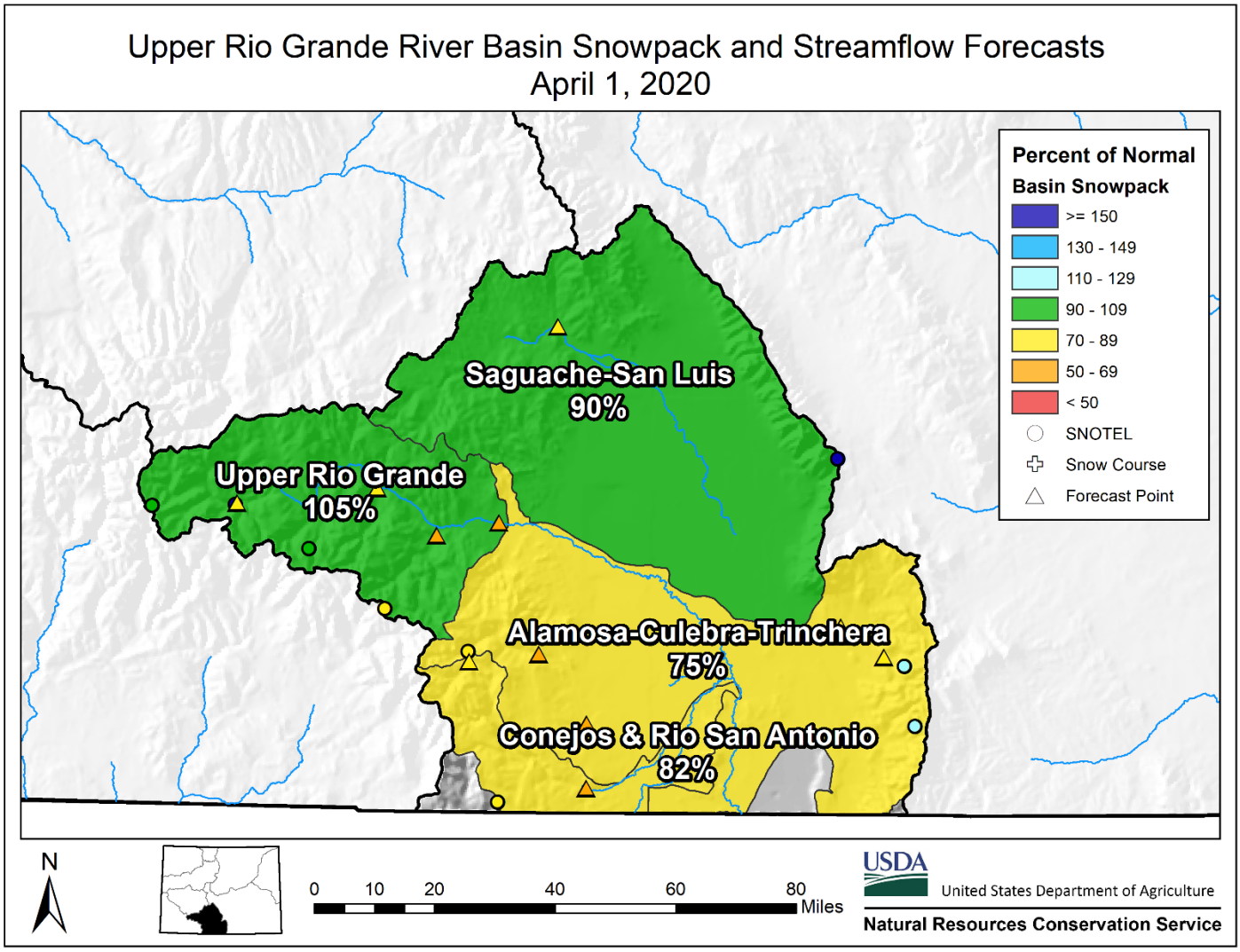
April 1, 2020

Snowpack in the Upper Rio Grande River basin is normal at 100% of median. Precipitation for March was 80% of average which brings water year-to-date precipitation to 76% of average. Reservoir storage at the end of March was 83% of average compared to 78% last year. Current streamflow forecasts range from 43% of average for San Antonio River at Ortiz to 88% for Saguache Creek near Saguache.



*Note: the mountain snowpack time series is calculated using a different method resulting in slightly different median and basin wide SWE values compared to the official monthly percent-of-median value. The SWE values are also calculated using daily SNOTEL data only.

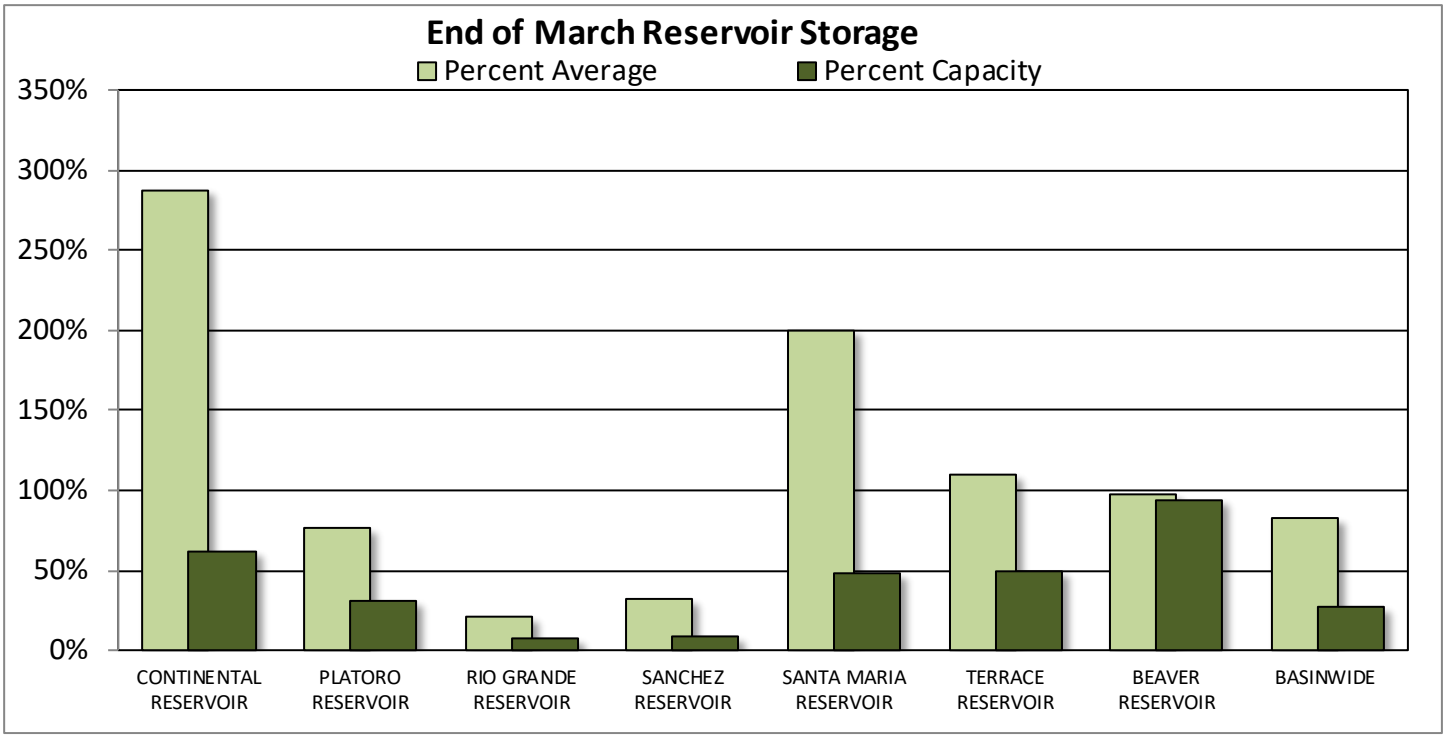




Watershed Snowpack Analysis April 1st, 2020

Sub-Basin	# of Sites	% Median	Last Year % Median
Alamosa Creek	1	80	149
Conejos & Rio San Antonio	2	82	131
Culebra & Trinchera Creek	3	103	121
Upper Rio Grande	5	105	160
Basin-Wide Total	11	100	147

*SWE values calculated using first of month SNOTEL data and snow course measurements



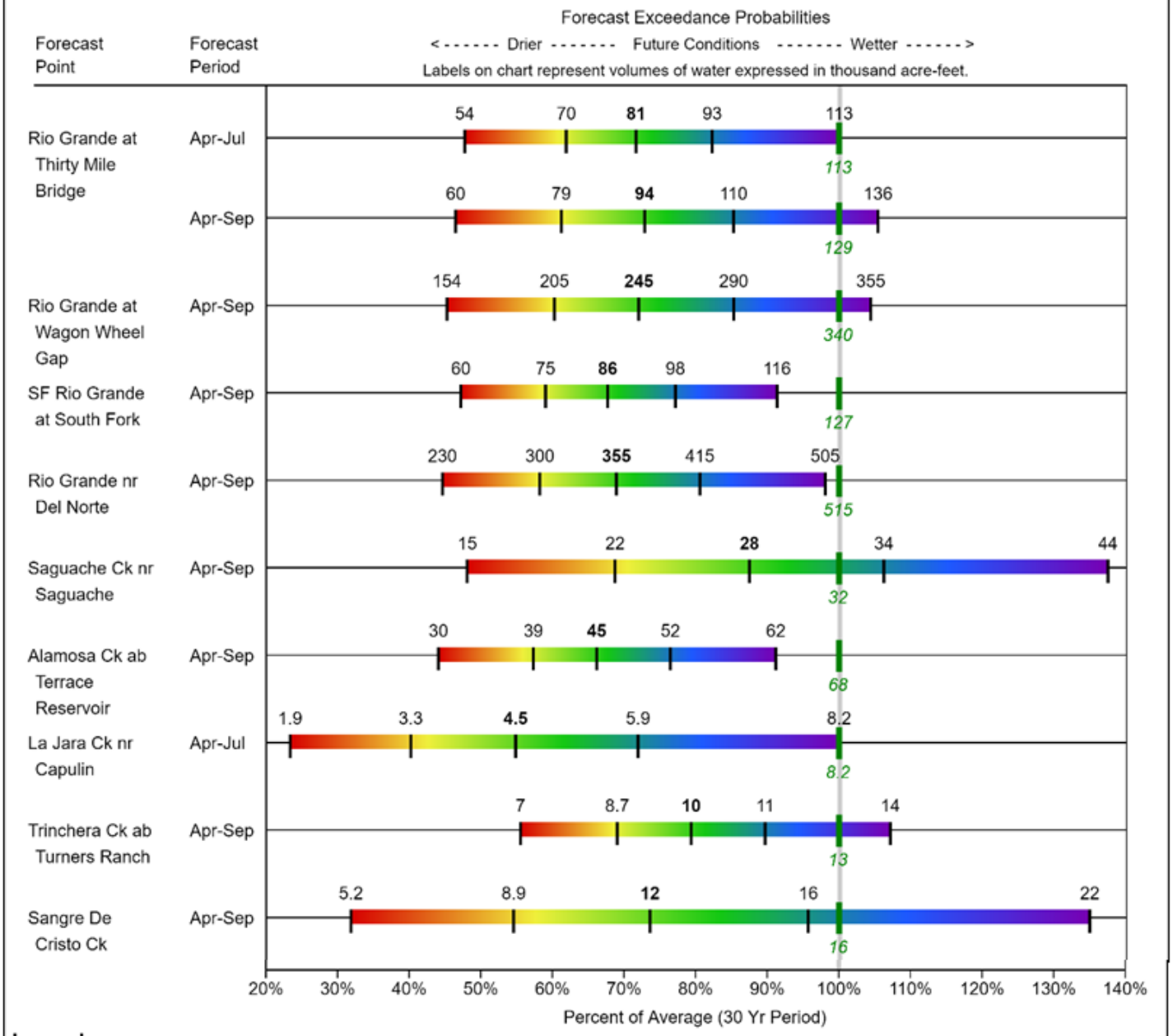
Reservoir Storage End of March 2020

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
CONTINENTAL RESERVOIR	16.7	16.5	5.8	27.0
PLATORO RESERVOIR	18.4	18.9	24.2	60.0
RIO GRANDE RESERVOIR	4.0	2.2	19.1	51.0
SANCHEZ RESERVOIR	9.1	8.6	28.1	103.0
SANTA MARIA RESERVOIR	21.8	23.7	10.9	45.0
TERRACE RESERVOIR	9.0	5.5	8.2	18.0
BEAVER RESERVOIR	4.2	3.5	4.3	4.5
BASINWIDE	83.1	78.8	100.6	308.5
Number of Reservoirs	7	7	7	7

UPPER RIO GRANDE BASIN

Water Supply Forecasts

April 1, 2020



Legend

95% or 90% Exceedance — There is a 95%/90% chance that flows will exceed this volume

70% Exceedance — There is a 70% chance that flows will exceed this volume

50% Exceedance — There is a 50% chance that flows will exceed this volume

30% Exceedance — There is a 30% chance that flows will exceed this volume

10% or 5% Exceedance — There is a 10%/5% chance that flows will exceed this volume

When selected, the following historic streamflow values and statistics will be shown.

Period of Record Minimum Streamflow KAF (Year)

1981-2010 Normal Streamflow KAF

Observed Streamflow KAF

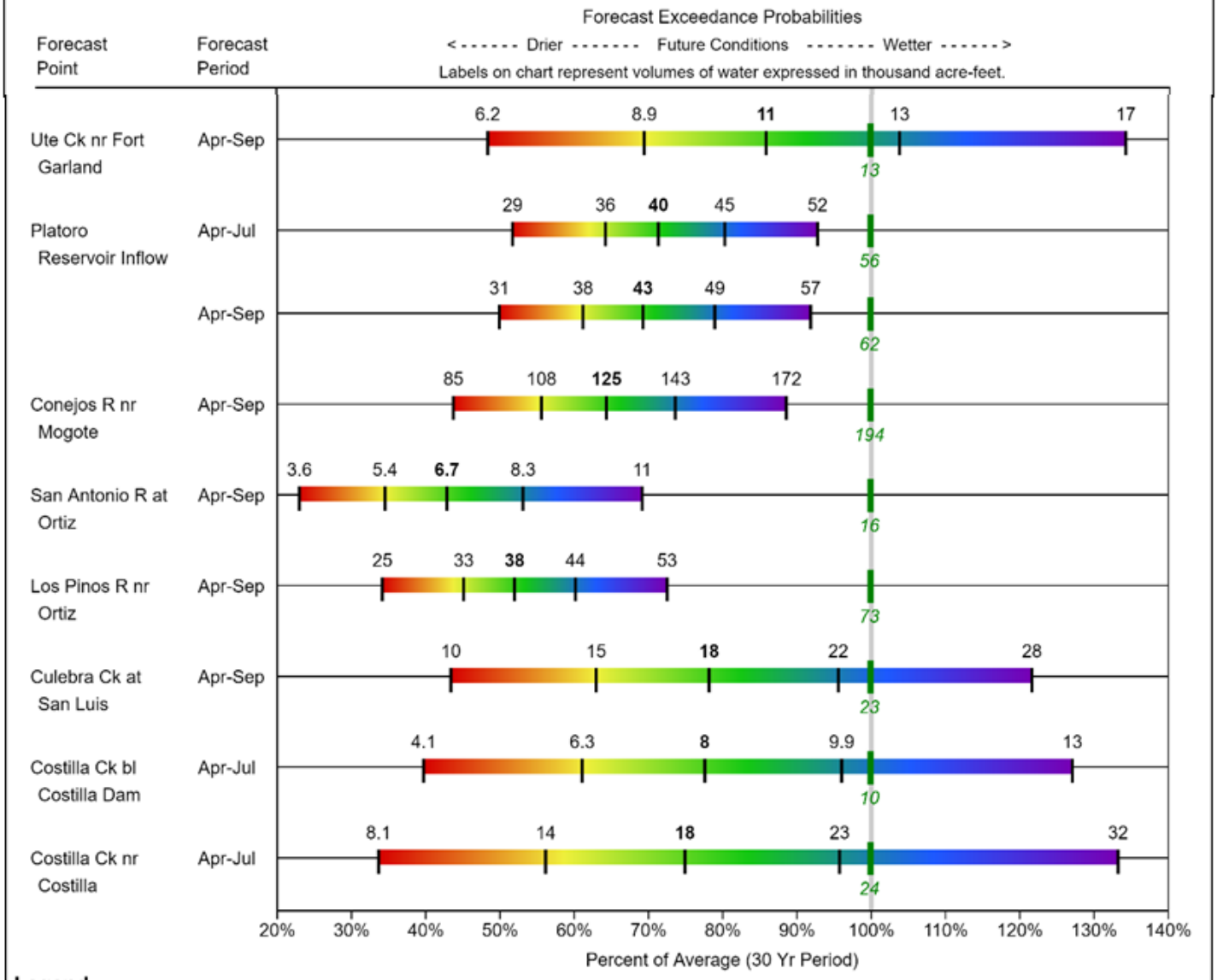
Period of Record Maximum Streamflow KAF (Year)

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

UPPER RIO GRANDE BASIN

Water Supply Forecasts

April 1, 2020



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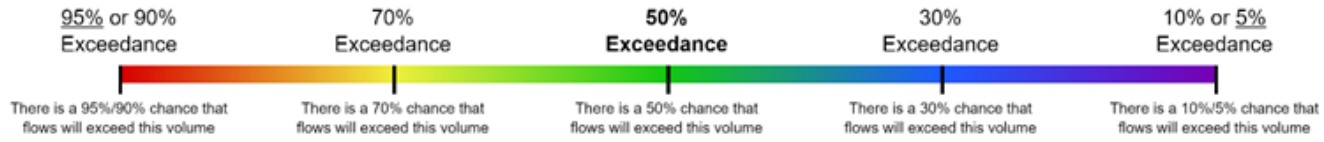


When selected, the following historic streamflow values and statistics will be shown.

Period of Record Minimum Streamflow KAF (Year)

1981-2010 Normal Streamflow KAF

Observed Streamflow KAF

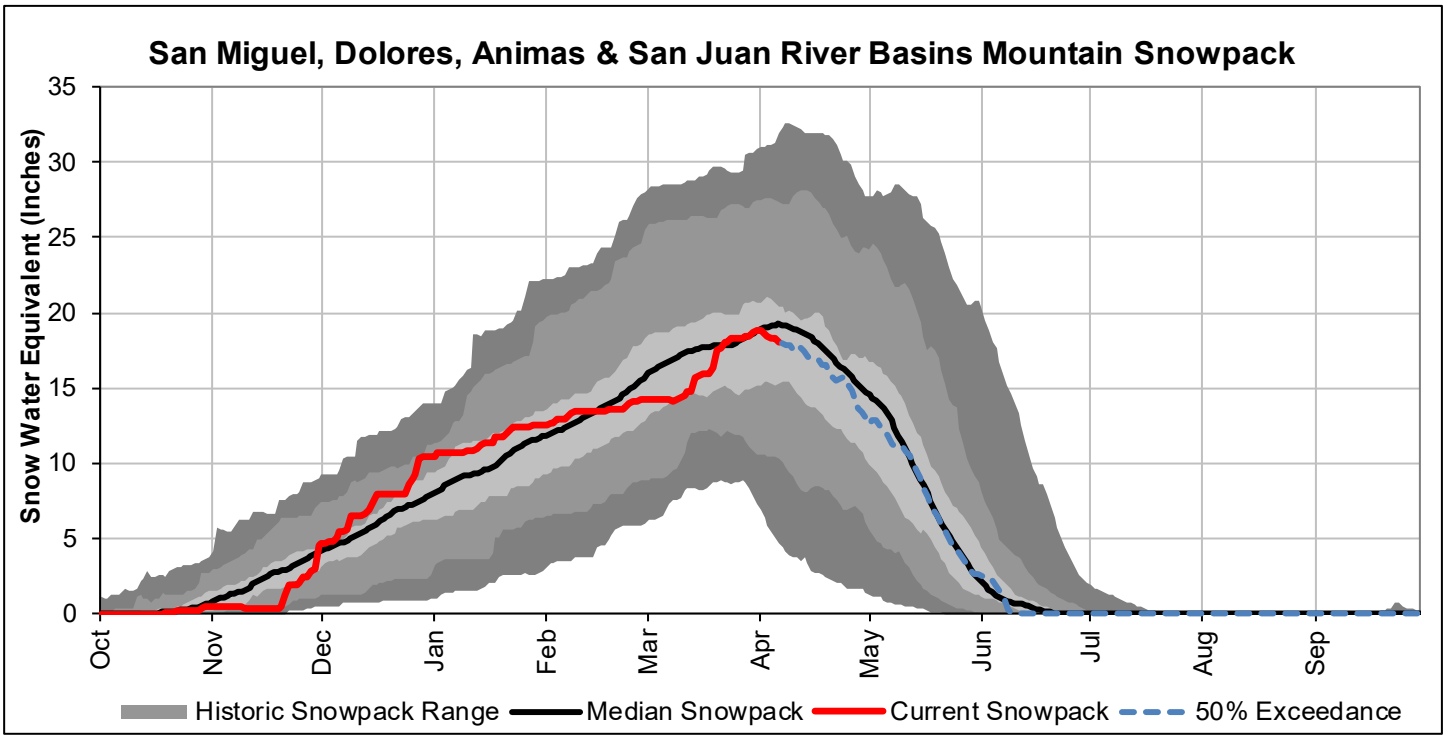
Period of Record Maximum Streamflow KAF (Year)

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

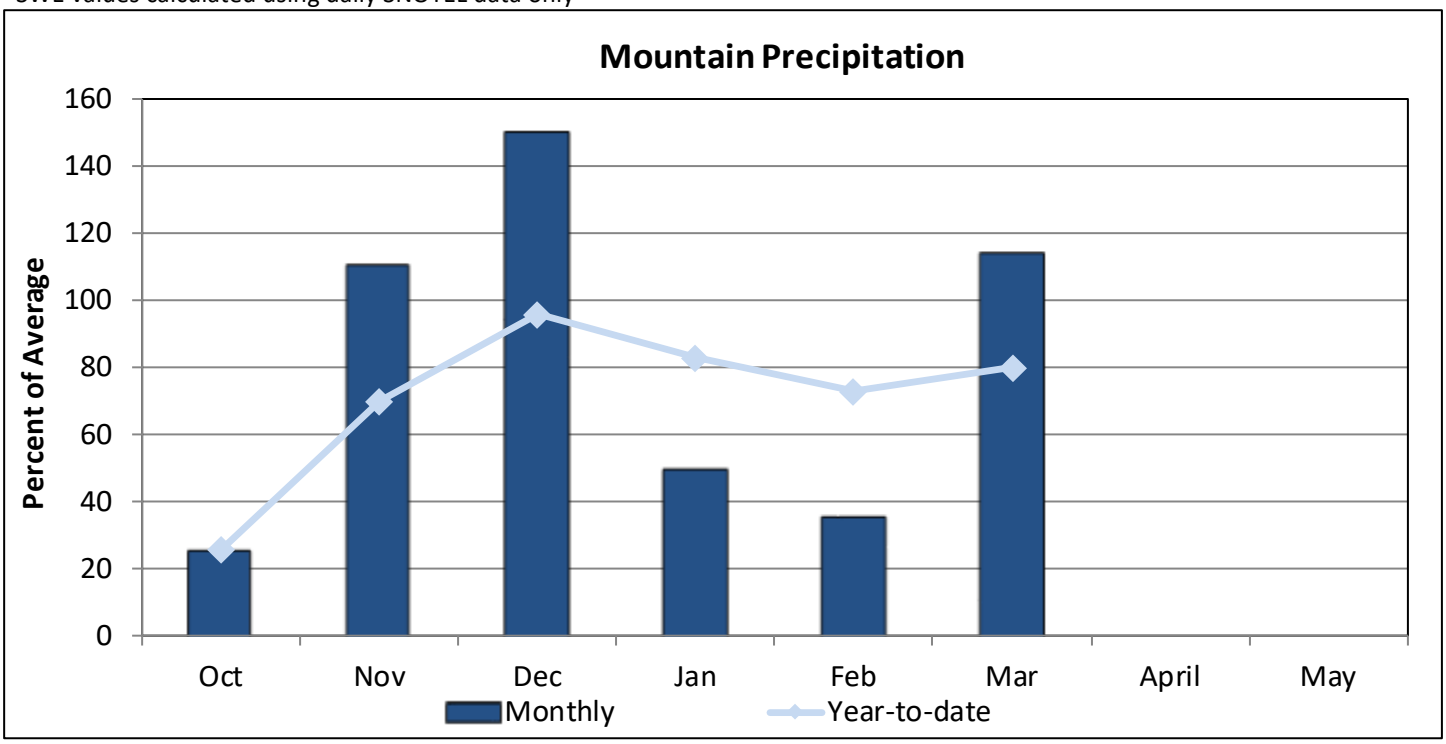
SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS

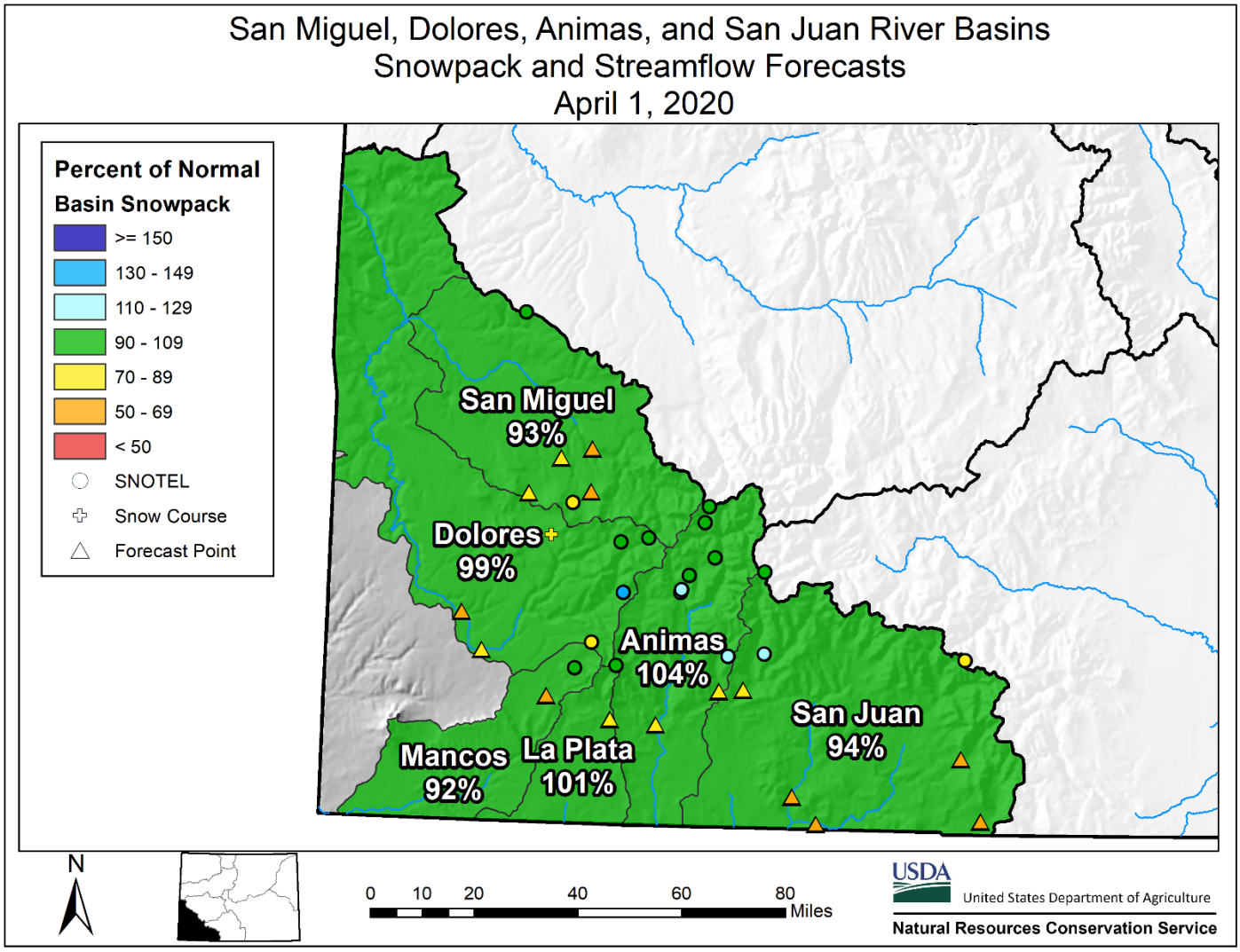
April 1, 2020

Snowpack in the combined southwest river basins is at 99% of median. Precipitation for March was 114% of average which brings water year-to-date precipitation to 80% of average. Reservoir storage at the end of March was 104% of average compared to 58% last year. Current streamflow forecasts range from 61% of average for the Navajo Reservoir Inflow to 80% for the Animas River at Durango.



*SWE values calculated using daily SNOTEL data only

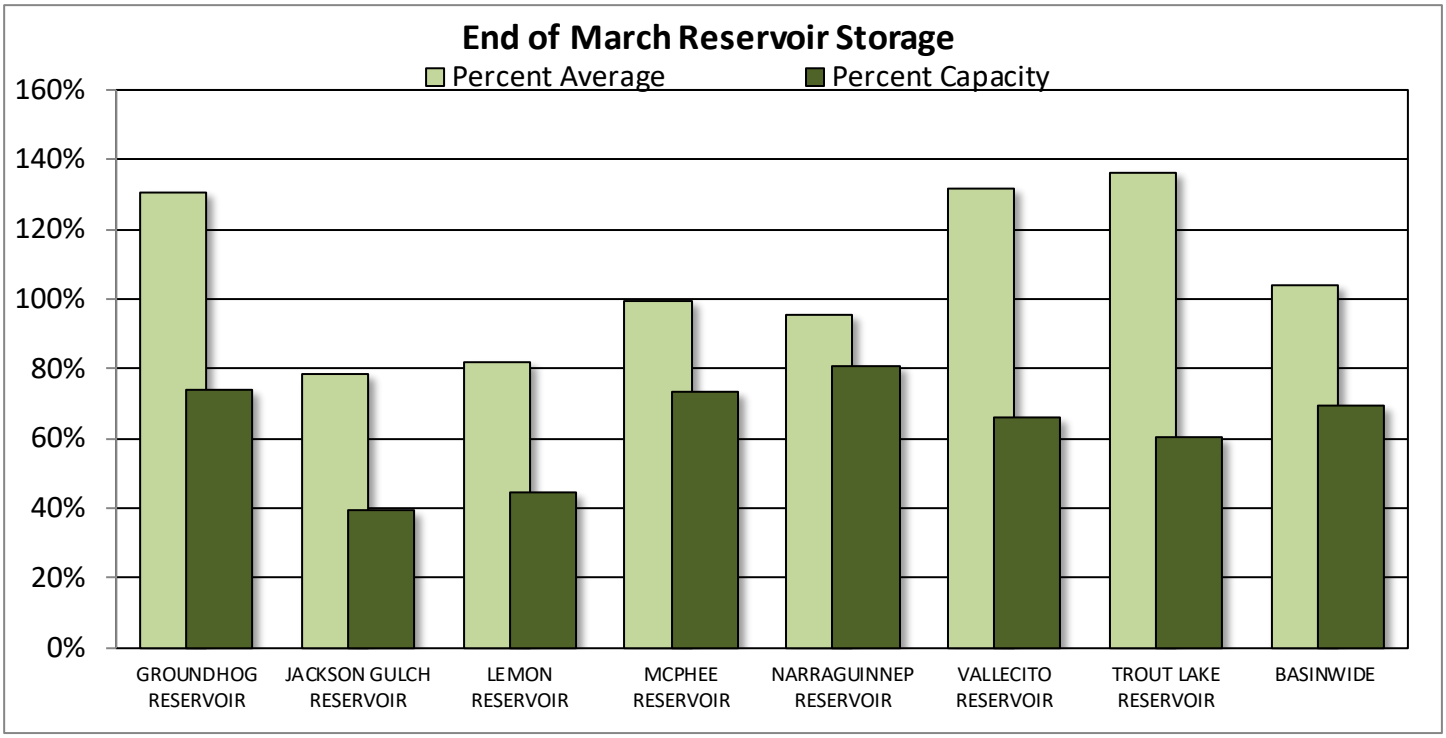




Watershed Snowpack Analysis April 1st, 2020

Sub-Basin	# of Sites	% Median	Last Year % Median
Animas	9	104	169
Dolores	6	99	159
San Miguel	3	93	149
San Juan	3	94	143
Basin-Wide Total	20	99	159

*SWE values calculated using first of month SNOTEL data and snow course measurements



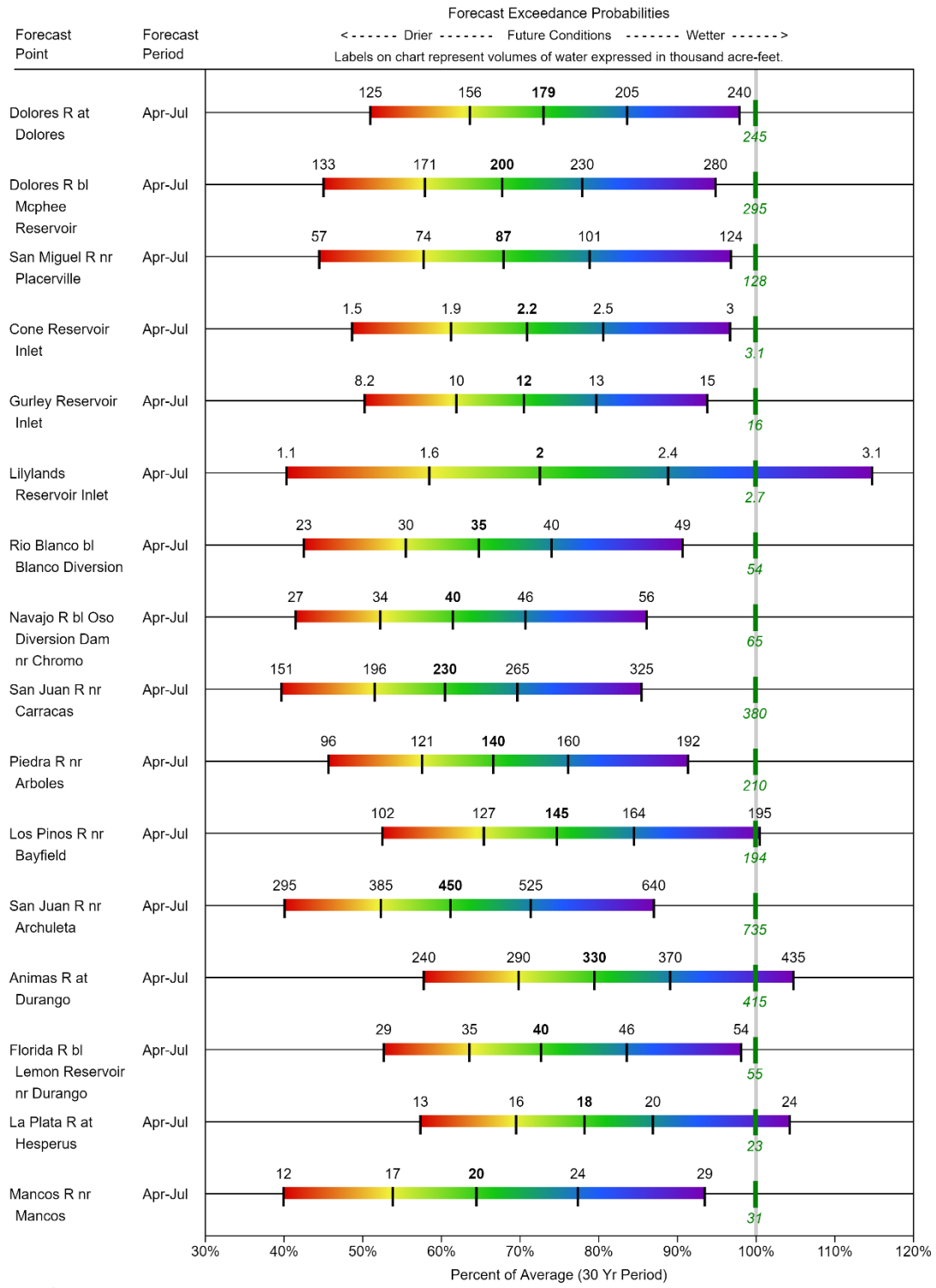
Reservoir Storage End of March 2020

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
GROUNDHOG RESERVOIR	16.3	0.3	12.5	22.0
JACKSON GULCH RESERVOIR	3.9	2.0	5.0	10.0
LEMON RESERVOIR	17.7	7.3	21.7	40.0
MCPHEE RESERVOIR	280.5	168.2	282.2	381.0
NARRAGUINNEP RESERVOIR	15.4	12.4	16.1	19.0
VALLECITO RESERVOIR	83.5	40.3	63.3	126.0
TROUT LAKE RESERVOIR	1.9	2.0	1.4	3.2
BASINWIDE	419.3	232.4	402.2	601.2
Number of Reservoirs	7	7	7	7

SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVER BASINS

Water Supply Forecasts

April 1, 2020



Legend

95% or 90% Exceedance	70% Exceedance	**50% Exceedance**	30% Exceedance	10% or 5% Exceedance
There is a 95%/90% chance that flows will exceed this volume	There is a 70% chance that flows will exceed this volume	There is a 50% chance that flows will exceed this volume	There is a 30% chance that flows will exceed this volume	There is a 10%/5% chance that flows will exceed this volume

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Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

How to Read Snowpack Graphs

The graphs show snow water equivalent (SWE) (in inches), using daily SNOTEL data. 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.

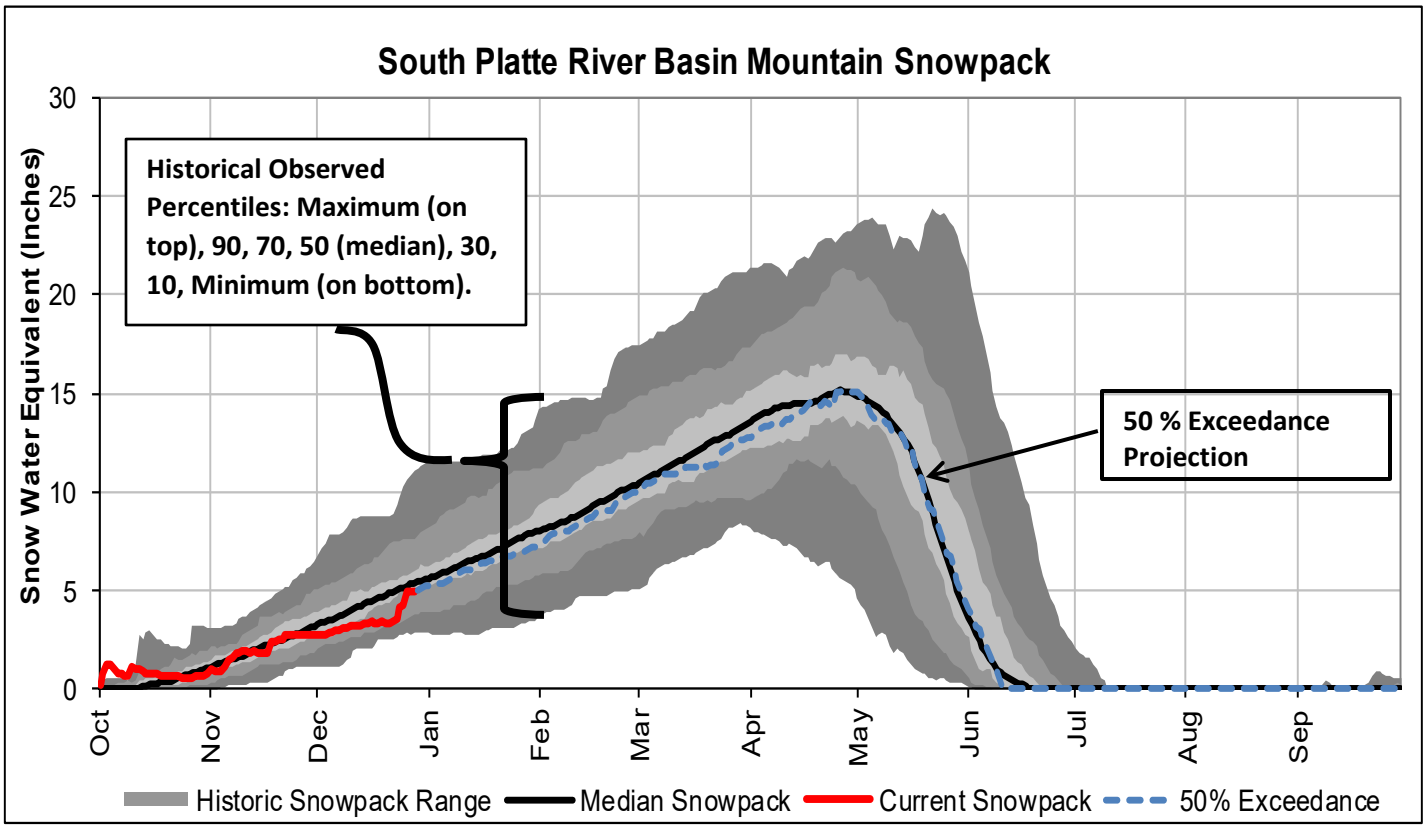
Current water year is represented by the heavy red line terminating on the last day the graphic was updated.

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.

50 % Excedance Projection: The most probabilistic snowpack projection, based on the median snowpack is projected forward from the end of the current period to the end of the current water year.

For more detailed information on these graphs visit:

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



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/

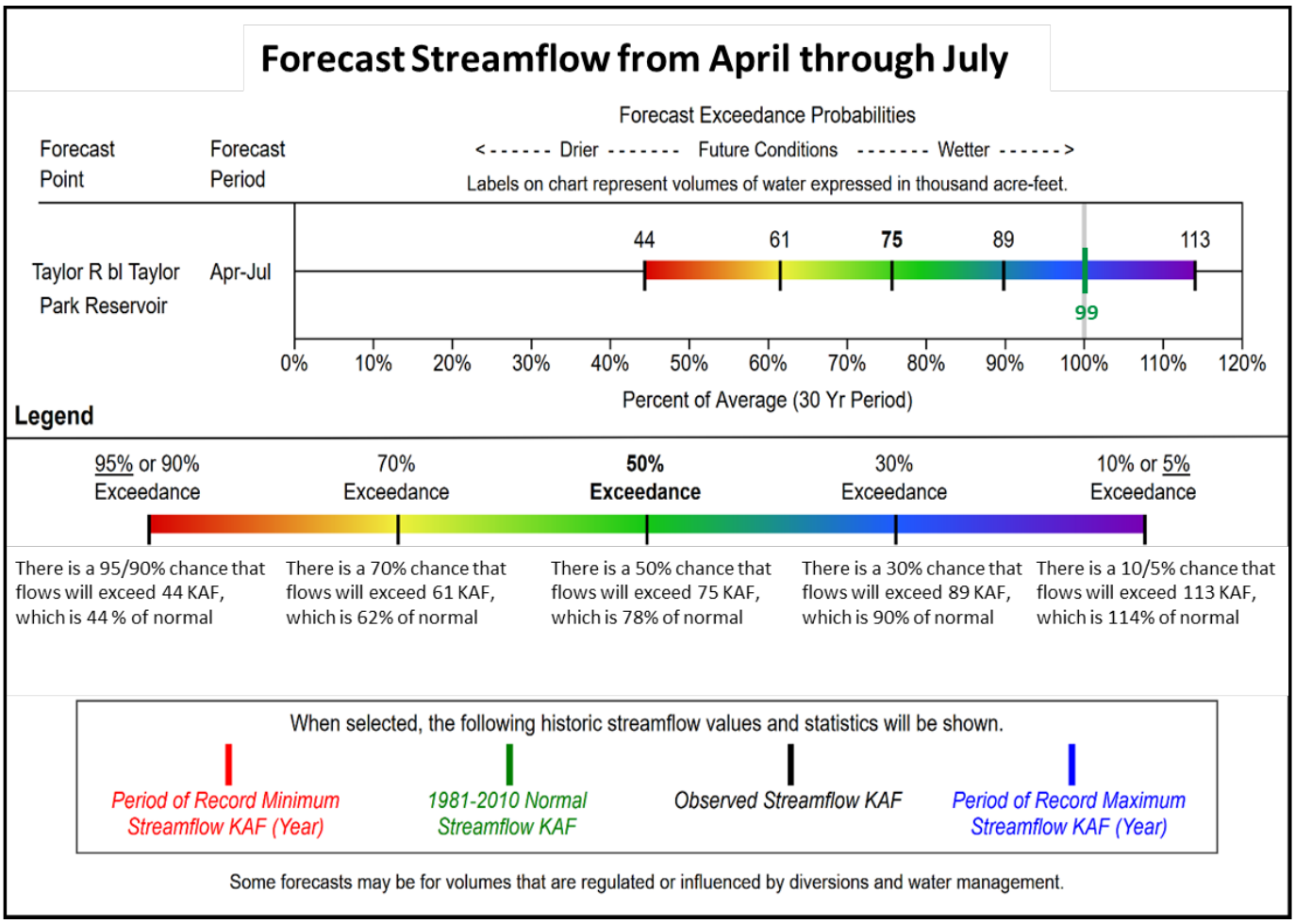
Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual 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.

Interpreting the Forecast Graphics

These graphics provide a new way to visualize the range of streamflows represented by the forecast exceedance probabilities for each forecast period. The colors in the bar for each forecast point indicate the exceedance probability of the forecasts and the vertical lines on the bar signify the five published forecast exceedance probabilities. The numbers displayed above the color scale represent the actual forecasted streamflow volume (in KAF) for the given exceedance probability. The horizontal axis provides the percent of average represented by each forecast and the gray line centered above 100% represents the 1981-2010 historical average streamflow. The position of the gray line relative to the color scale provides a benchmark for considering future streamflows. If the majority of the forecast range is to the right of the gray line, there is a higher likelihood of above average streamflow volumes during the provided forecast period. Conversely, if the majority of the color bar is to the left of the average mark, below average volumes are more likely. The horizontal span of the forecasts offers an indication of the uncertainty in a given forecast: when the bar spans a large horizontal range, the forecast skill is low and uncertainty is high; when the bar is narrow in width, the forecast skill is higher and uncertainty lower.



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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/wsf/westwide.html

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