USDA United States Department of Agriculture
Natural Resources Conservation Service

Colorado
Water Supply Outlook Report
May 1st, 2022

The photo above shows the San Juan Mountains seen from an airplane on April 18th. The grey-red color of the snowpack shows that significant dust has accumulated on the surface. Dust on the surface of the snowpack can significantly increase melt because dust absorbs short wave radiation (sunlight), unlike pristine snow, and transfers that energy as heat to the surrounding snowpack.

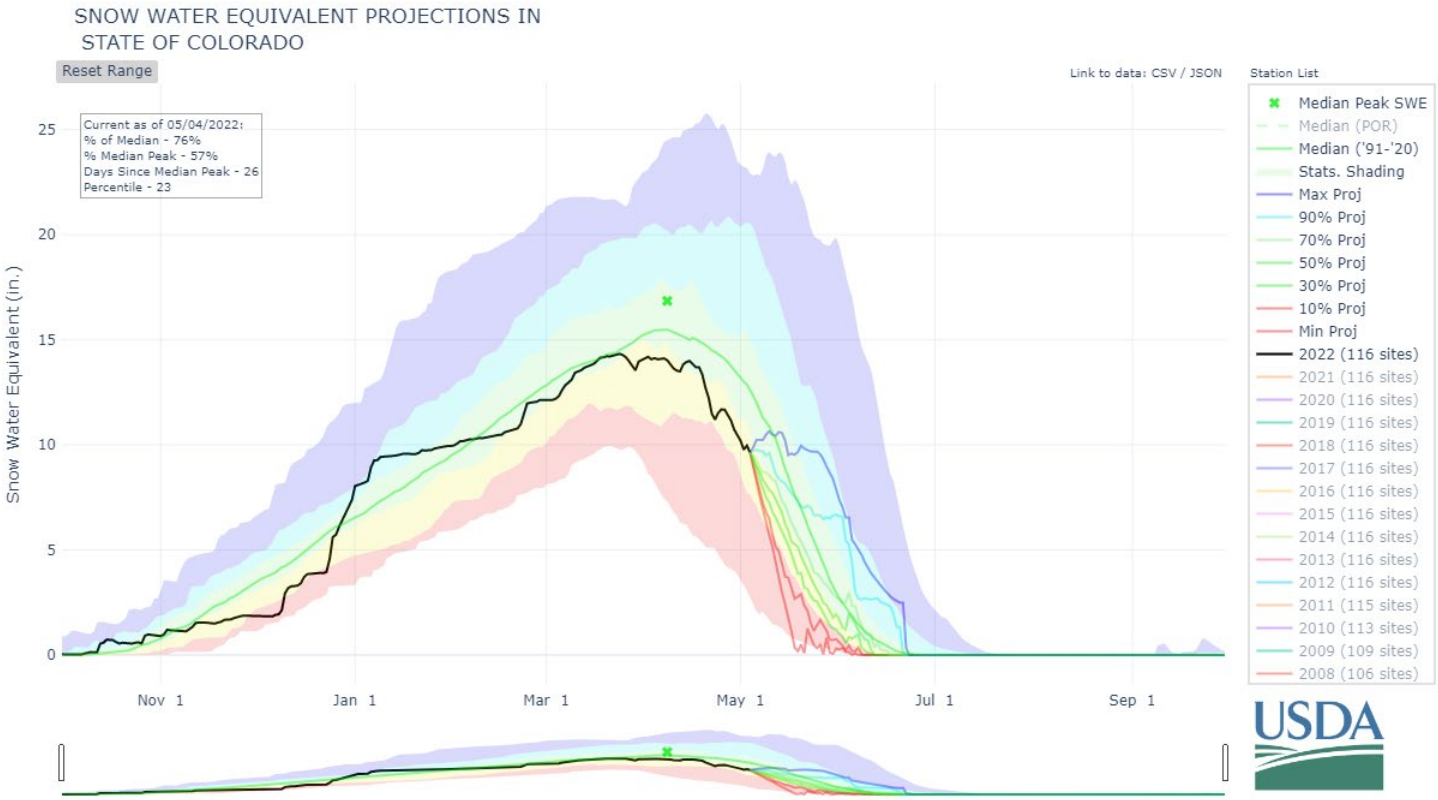
Photo By: Adam Pate

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.

Contents

Colorado Statewide Water Supply Conditions for May 1st

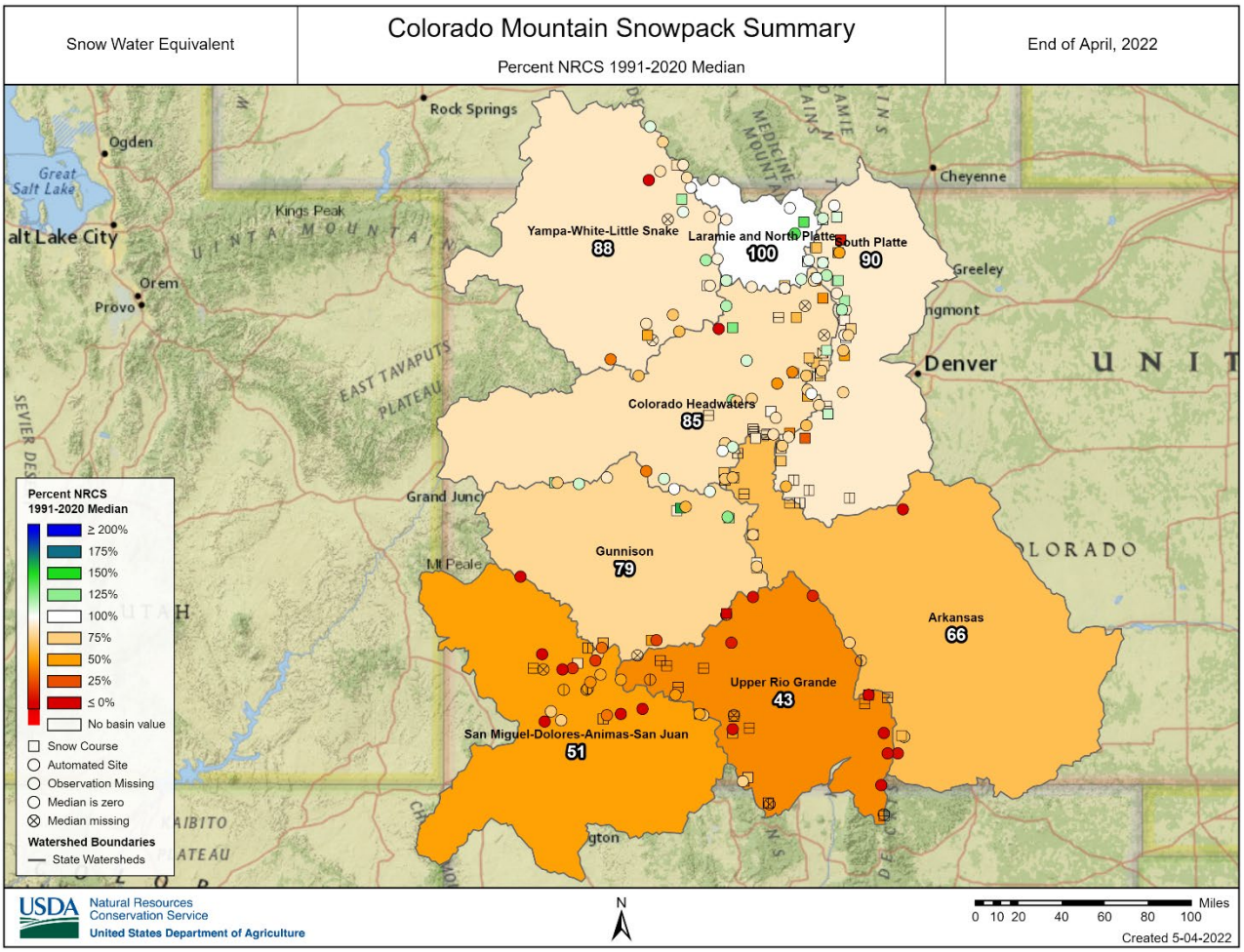
Summary



*For the above graph, snow water equivalent (SWE) values are calculated using daily SNOTEL data only. SWE numbers presented in the text are values from the first of the month and include manual Snow Course measurements along with SNOTEL data.

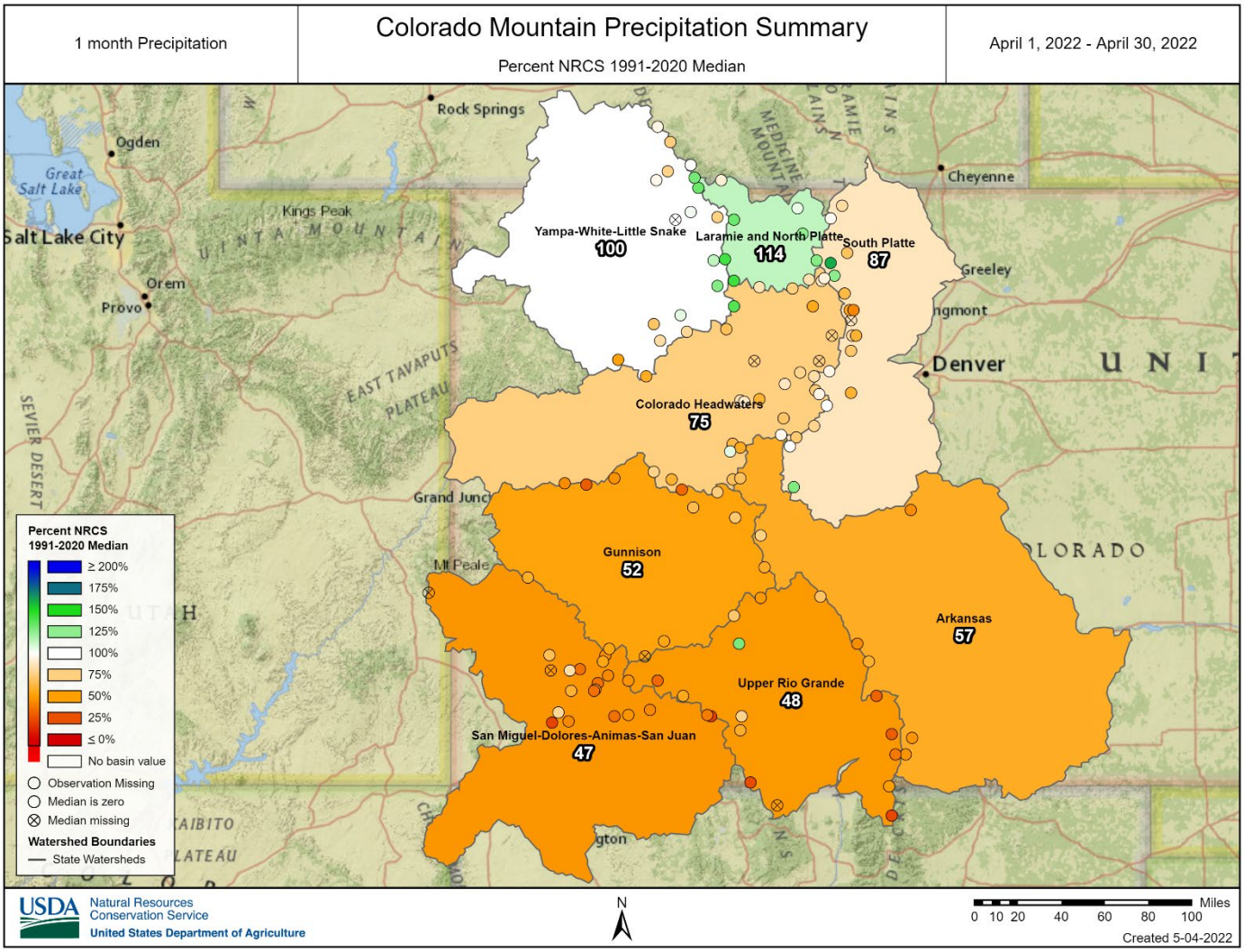
The month of April provided near median precipitation for parts of northern Colorado, but also brought dryer conditions and warmer temperatures for much of the state causing early and fast snowmelt. A large percentage of Colorado snowpack accumulation occurred during a very short interval at the end of December. While March precipitation kept snowpack levels near normal, significant large storms did not appear for the remainder of winter. As of May 1st, statewide snowpack is below normal at 80 percent of median, similar to May last year. Basin snowpack on May 1st ranged from a high of 100 percent of median in the Laramie and North Platte river basin to 43 percent of median in the Upper Rio Grande. As of May 1st, water year-to-date precipitation for Colorado is 92 percent of median. However, monthly precipitation was below median for the month of April and declined from 107 percent of median in March to 79 percent of median during April. As of May 1st, water year-to-date precipitation ranged from 99 percent of median in the Laramie-North Platte river basin to 83 percent of median for the Upper Rio Grande river basin. Statewide streamflow forecasts as of May 1st are 77 percent of median, with a high of 100 percent of median at Elk River near Milner and a low of 18 percent of median at Sangre De Cristo Creek. Reservoir storage across the state has mostly remained below normal due to drought conditions for several years. End of April statewide reservoir storage is 77 percent of median. Despite near normal precipitation for the water year to date, the effects of early snowmelt, consistently low precipitation months this winter and previous drought conditions warrant lower streamflow runoff forecasts. If May provides large precipitation increases, Colorado may experience larger runoff volumes than forecasted. However, this is not expected to be the case.

Snowpack



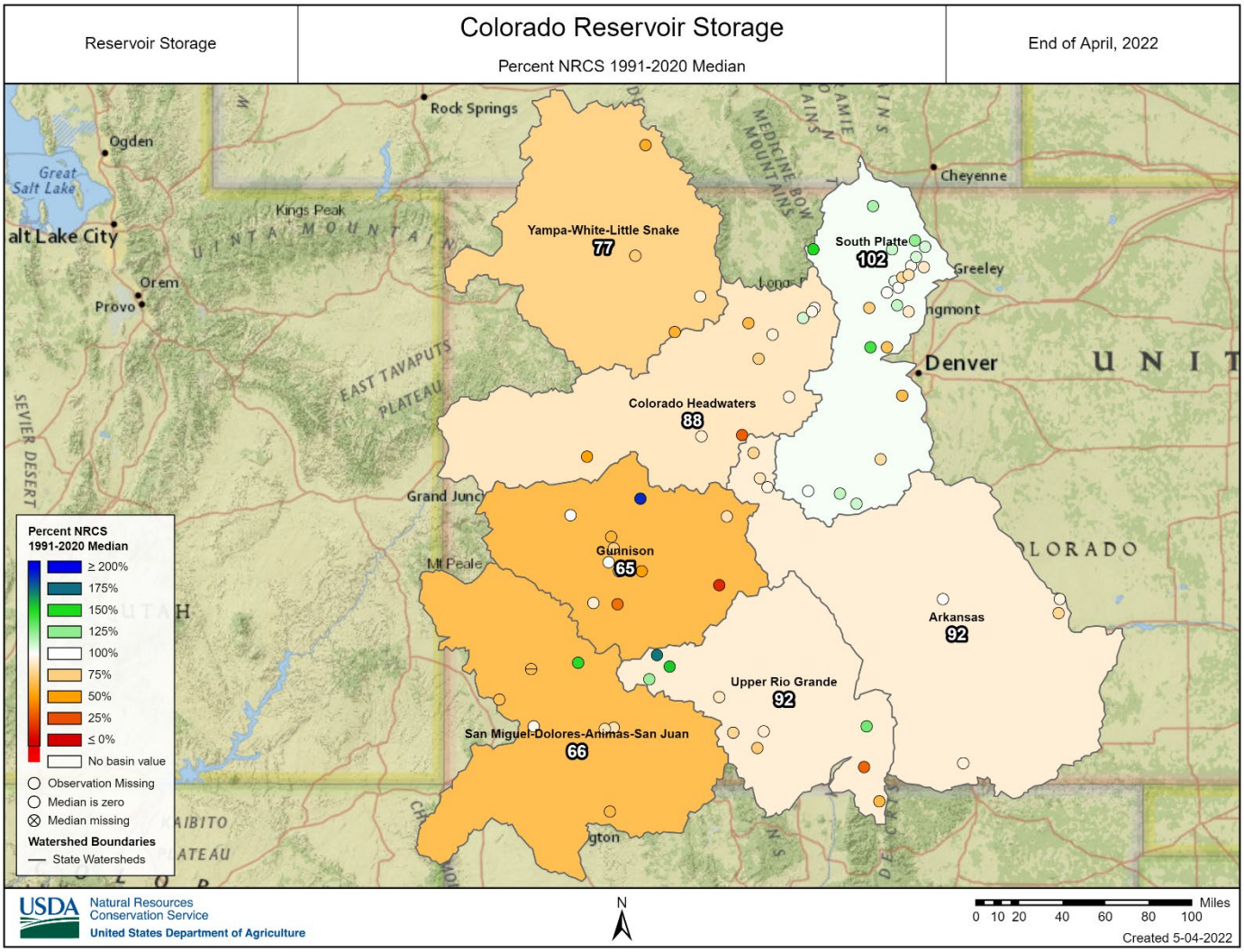
The month of April continued the dry trend that has been observed for much of this spring, providing few new contributions to the snowpack. During the month of April the statewide median has continued to fall below the norm to its current value of 80 percent. The CO Dust-on-Snow Program documented several significant events that impacted the state from the San Juan to the Front Range mountains during the month of April. These events contributed to rapid melting at many of the SNOTEL sites-primarily those in the southern mountains and at lower altitude sites. In the San Juan Mountains, a loss of ten inches of SWE was observed at the Wolf Creek Summit SNOTEL site during the month of April. Despite the unfavorable conditions, two major river basins made small gains in snowpack over the past month. The combined Yampa-White-Little Snake and Laramie-North Platte river basins are currently at 88 and 100 percent, respectively. The remaining major river basins across the state, however, did not fare as well. The South Platte, Colorado Headwaters, and Gunnison river basins saw decreases from last month's values of 92, 94, and 100 percent of median to their current values of 90, 85, and 79 percent of median. On the lower end of the spectrum, the combined San Miguel-Dolores-Animas-San Juan, Upper Rio Grande, Arkansas river basins saw even more dramatic decreases to 51, 43, and 66 percent of median from 92, 101, and 98, respectively. With the ablation season well upon us, it is unlikely that we will see any more major gains in this season's snowpack. Hopefully, the recent snow showers and cooler temperature in the mountains can provide a temporary reprieve from the rapid snowmelt we have observed over the past month.

Precipitation



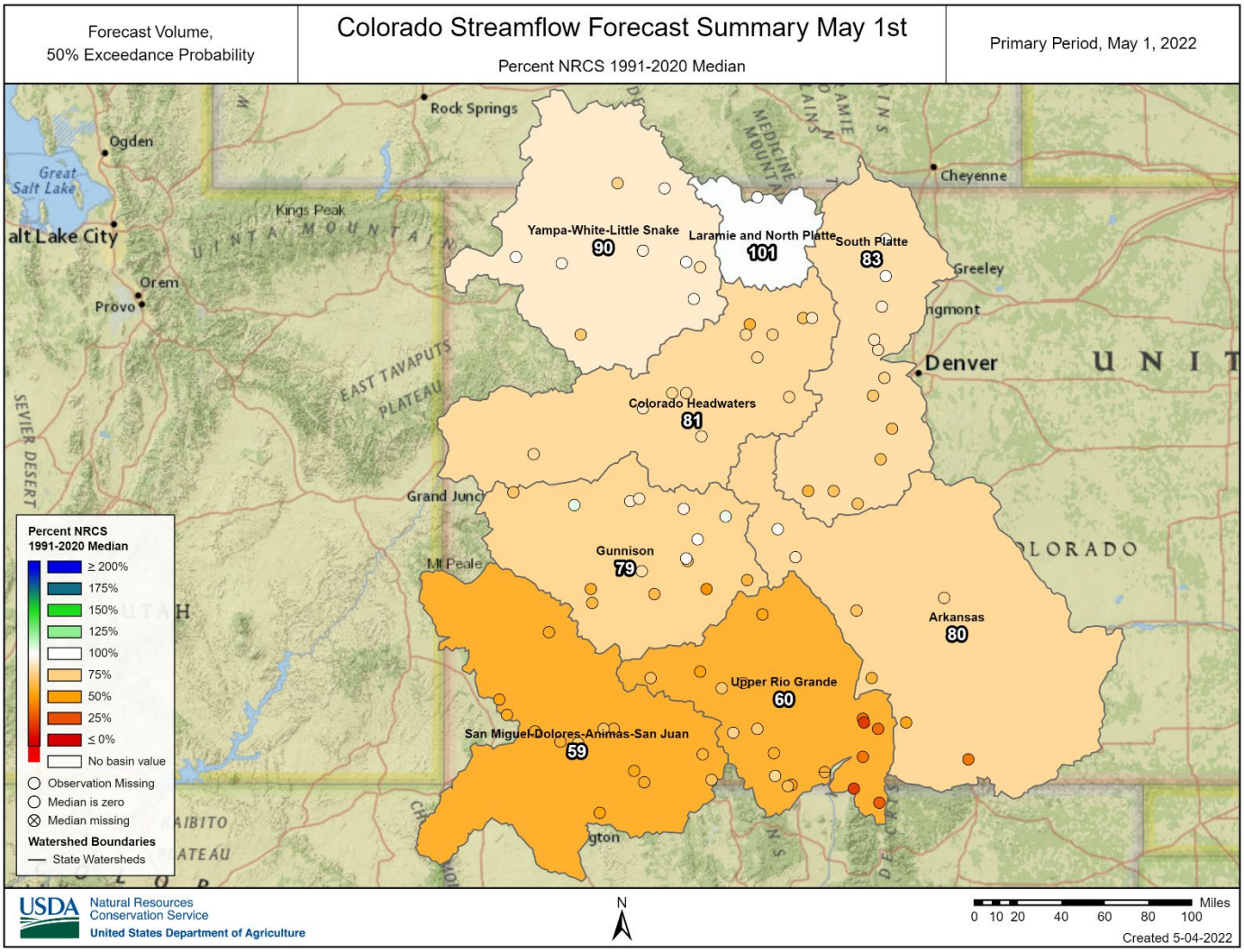
The month of April saw a reversal in precipitation trends from March with the northern-most basins receiving the bulk of the moisture this time around. NOAA's Regional Climate Center Departure from Normal Precipitation plot for April highlights these patterns. The statewide precipitation for the month of April was below normal at 79 percent of median. In the north, the combined Yampa-White-Little Snake and Laramie-North Platte river basins amounts increased from 93 and 90 percent of median monthly precipitation to 100 and 114 percent, respectively. The South Platte river basin also saw a modest increase of 77 to 87 percent of median precipitation. Warm and windy conditions combined with unproductive storms over the past month have resulted in precipitation amounts far below normal for the Central and Southern portions of the state. The Colorado Headwaters river basin saw a decrease in precipitation from last month of 95 to 75 percent of median. The Gunnison, combined San Miguel-Dolores-Animas-San Juan, Upper Rio Grande, and Arkansas basins are currently at 52, 47, 48 and 57 percent of median, respectively. This is a stark change from last month's precipitation totals for these basins that were all well above normal. The current U.S. Drought Monitor Map for Colorado shows little change from the previous month with much of the state still experiencing moderate drought. It appears that the dry trend will continue based on the most recent Climate Prediction Center's Monthly Precipitation Outlook that predicts below average precipitation for the upcoming month.

Reservoir Storage



Reservoir storage has not fluctuated much during the 2021-2022 winter season in Colorado; with most major river basins only changing reservoir storage by a couple precent. Statewide reservoir storage has remained below median this water year; the end of April statewide reservoir storage was 77 percent of median, one percent higher than March. This water year, only the South Platte river basin has had above median reservoir storage and is at 102 percent of median for April. The Upper Rio Grande and Arkansas river basins have close to median reservoir storage at 92 percent of median. The Colorado river basin ended April with 88 percent of median reservoir storage. Reservoir storage in the Gunnison and combined San Miguel-Dolores-Animas-San Juan river basins remained below median at 65 and 66 percent of median, respectively. The combined Yampa-White-Little Snake river basin is at 77 percent of median storage. Overall, most river basins show below median reservoir storage, and many have less acre-feet of stored water than this time last year. Several reservoirs throughout the state are alongside Lake Meade and Powell, holding some of the lowest water levels for their period of record. Without increased precipitation and runoff, some of these already historic low levels are expected to decline further.

Streamflow

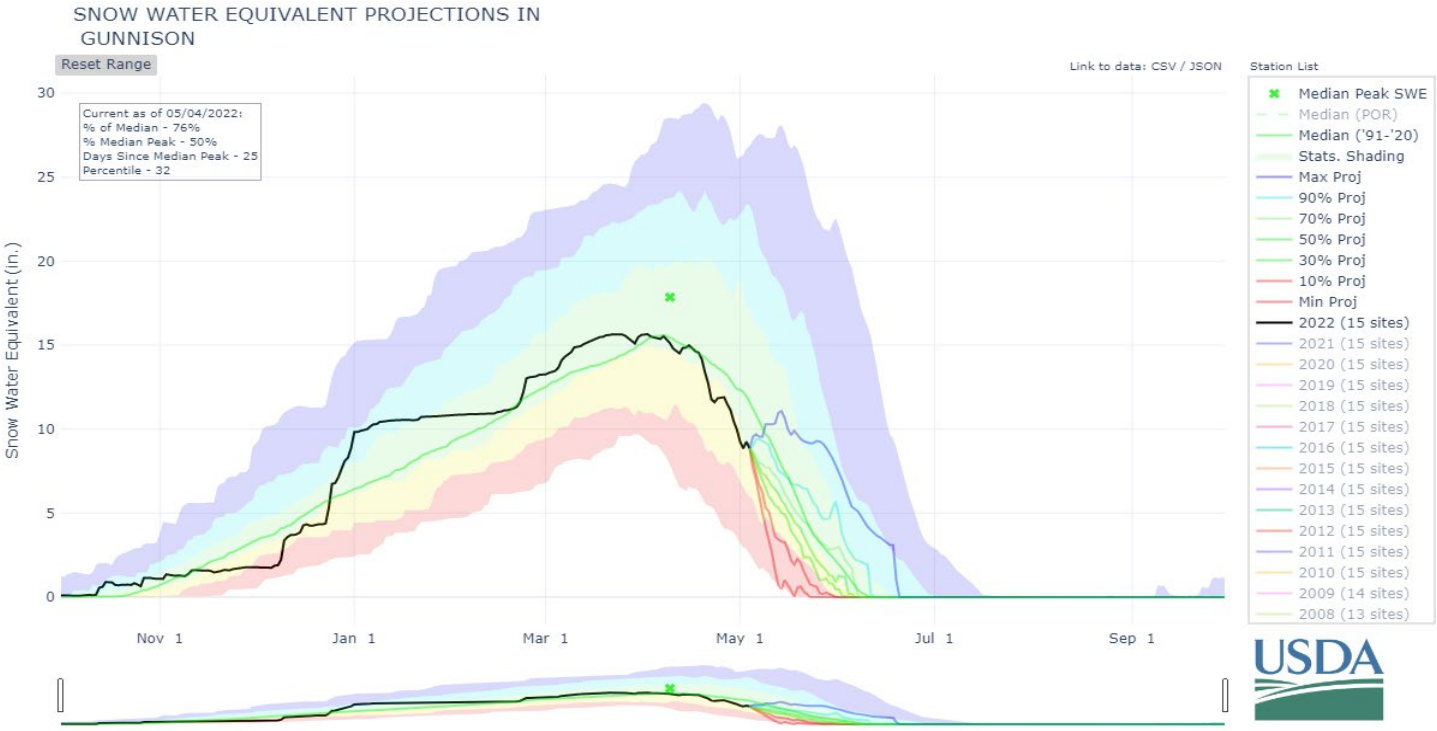


Streamflow forecasts remain below median and have decreased from April forecasts for most of the state. Contributing factors like below median precipitation, high wind, early warm temperatures and dust accumulation on snow are causing an early and rapid melt of mountain snowpack especially in the south-western parts of Colorado. The early and fast snowmelt bolstered runoff during April, but lowered runoff volume projections later in the year. Statewide, streamflow forecasts are 77 percent of median, dropping from 86 percent of median in April. The forecasts for all basins range from 59 percent of median in the combined San Miguel-Dolores-Animas-San Juan river basins to 101 percent of median in the Laramie-North Platte river basin. The combined Yampa-White-Little Snake river basin is currently 90 percent of median. The Colorado Headwaters and Gunnison River basins are 81 percent and 79 percent of median, respectively. The Upper Rio Grande is at 60 percent of median compared to 82 percent in April. The South Platte and Arkansas river basin decreased to 83 and 80 percent of median, respectively. Although a couple small portions of the state are forecast to have near-median streamflow this year, most of the state is forecasted to have well-below median streamflow volumes. Despite near median snowpacks for much of the winter, runoff during the spring and summer months will likely be shorter and less than anticipated without significantly increased precipitation in the coming weeks. Please refer to individual basin sections in this report for more details on individual forecast points.

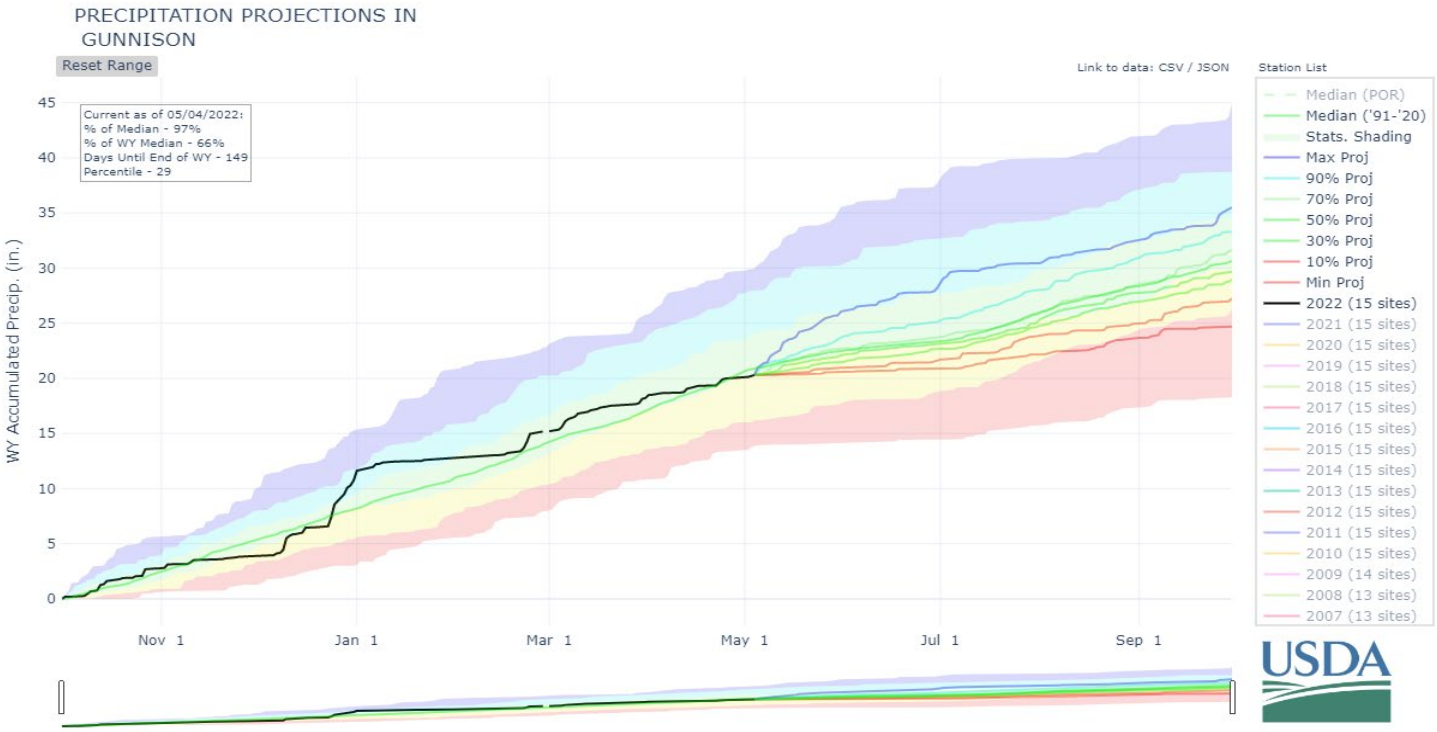
GUNNISON RIVER BASIN

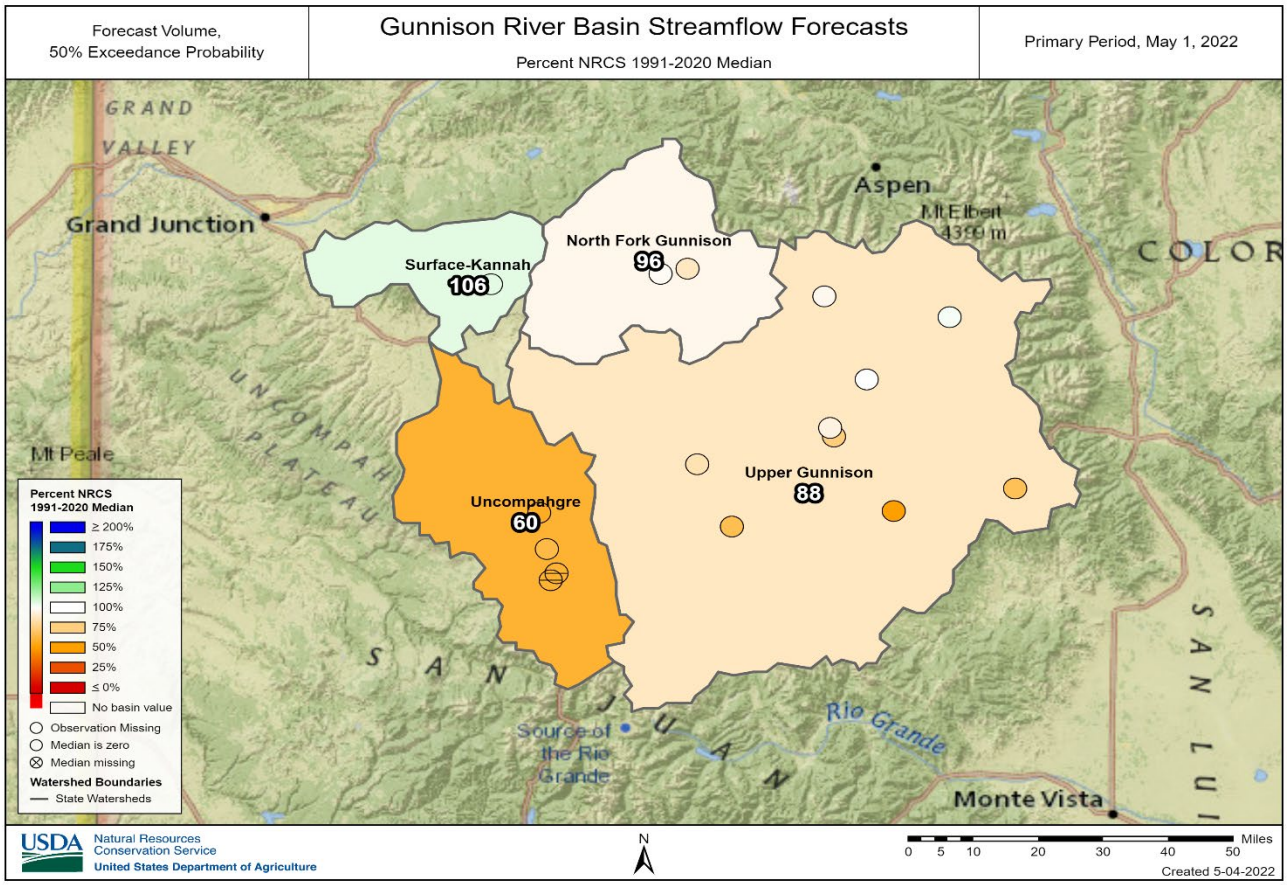
May 1st, 2022

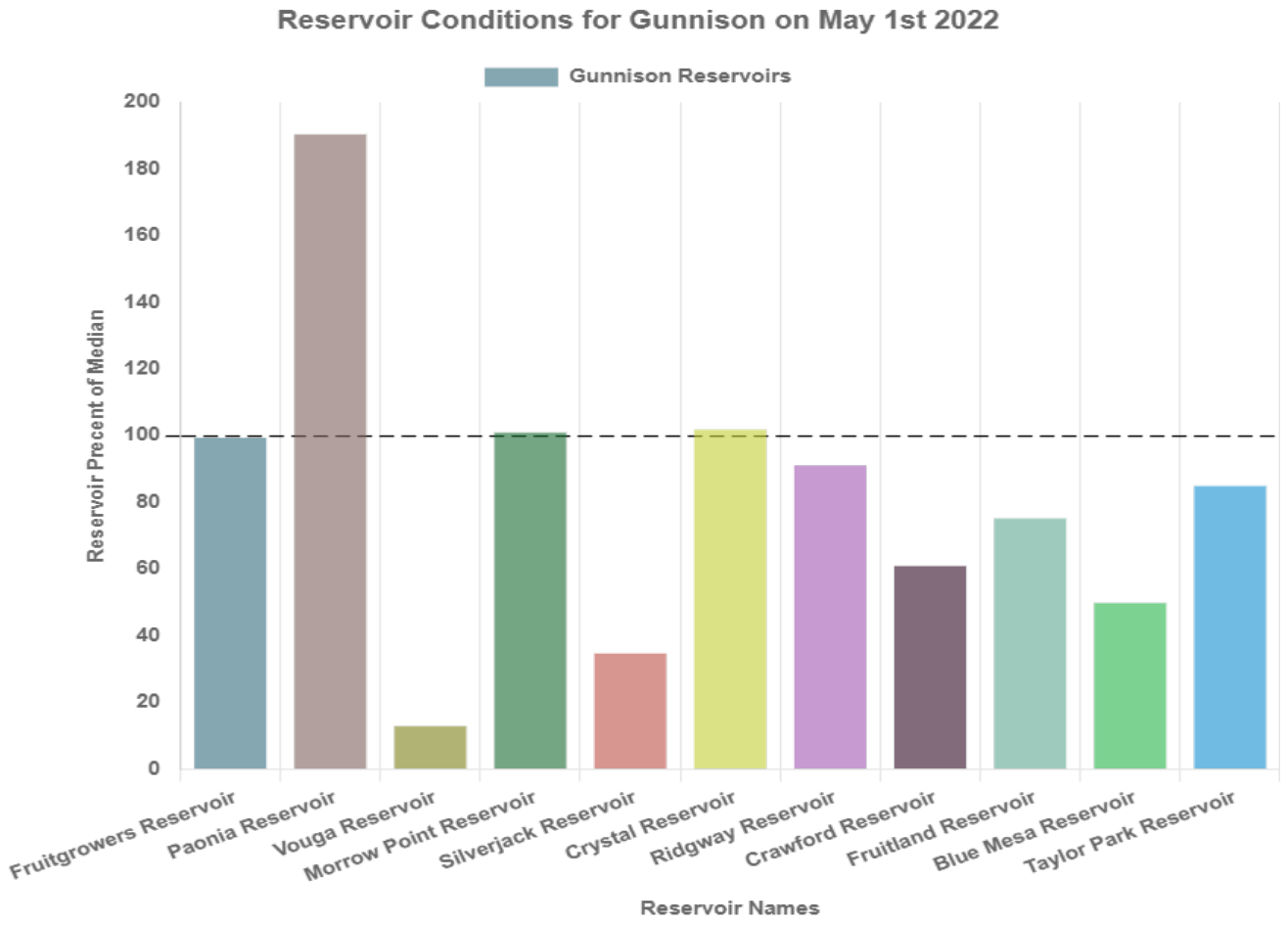
Snowpack in the Gunnison River basin is below normal at 79% of median. Precipitation for April was 52% of median which brings water year-to-date precipitation to 97% of median. Reservoir storage at the end of April was 65% of median compared to 78% last year. Current May – July streamflow forecasts range from 46% of median at Cochetopa Creek near Parlin to 106% of median at Surface Creek at Cedaredge.



*Snow water equivalent (SWE) values are calculated using daily SNOTEL data only for the above graph. In the paragraph SWE is calculated for the first of the month using both SNOTEL and Snow Course data.


PRECIPITATION PROJECTIONS IN GUNNISON
Reset Range
Link to data: CSV / JSON
Station List
Current as of 05/04/2022:
% of Median - 97%
% of WY Median - 66%
Days Until End of WY - 149
Percentile - 29
WY Accumulated Precip. (in.)
0
5
10
15
20
25
30
35
40
45
Nov 1
Jan 1
Mar 1
May 1
Jul 1
Sep 1
Median (POR)
Median ('91-'20)
Stats. Shading
Max Proj
90% Proj
70% Proj
50% Proj
30% Proj
10% Proj
Min Proj
2022 (15 sites)
2021 (15 sites)
2020 (15 sites)
2019 (15 sites)
2018 (15 sites)
2017 (15 sites)
2016 (15 sites)
2015 (15 sites)
2014 (15 sites)
2013 (15 sites)
2012 (15 sites)
2011 (15 sites)
2010 (15 sites)
2009 (14 sites)
2008 (13 sites)
2007 (13 sites)
USDA


Forecast Volume, 50% Exceedance Probability
Gunnison River Basin Streamflow Forecasts
Percent NRCS 1991-2020 Median
Primary Period, May 1, 2022
GRAND VALLEY
Grand Junction
Aspen
Mt Elbert
North Fork Gunnison
96
Surface-Kannah
106
COLOR
UNCOMPAHGRE PLATEAU
Mt Peale
Upper Gunnison
88
Uncompahgre
60
SAN JUAN
Source of the Rio Grande
Rio Grande
Monte Vista
SAN LUI
Percent NRCS 1991-2020 Median
≥ 200%
175%
150%
125%
100%
75%
50%
25%
≤ 0%
No basin value
Observation Missing
Median is zero
Median missing
Watershed Boundaries
State Watersheds
USDA Natural Resources Conservation Service
United States Department of Agriculture
N
Miles
0 5 10 20 30 40 50
Created 5-04-2022



Watershed Snowpack Analysis May 1st, 2022

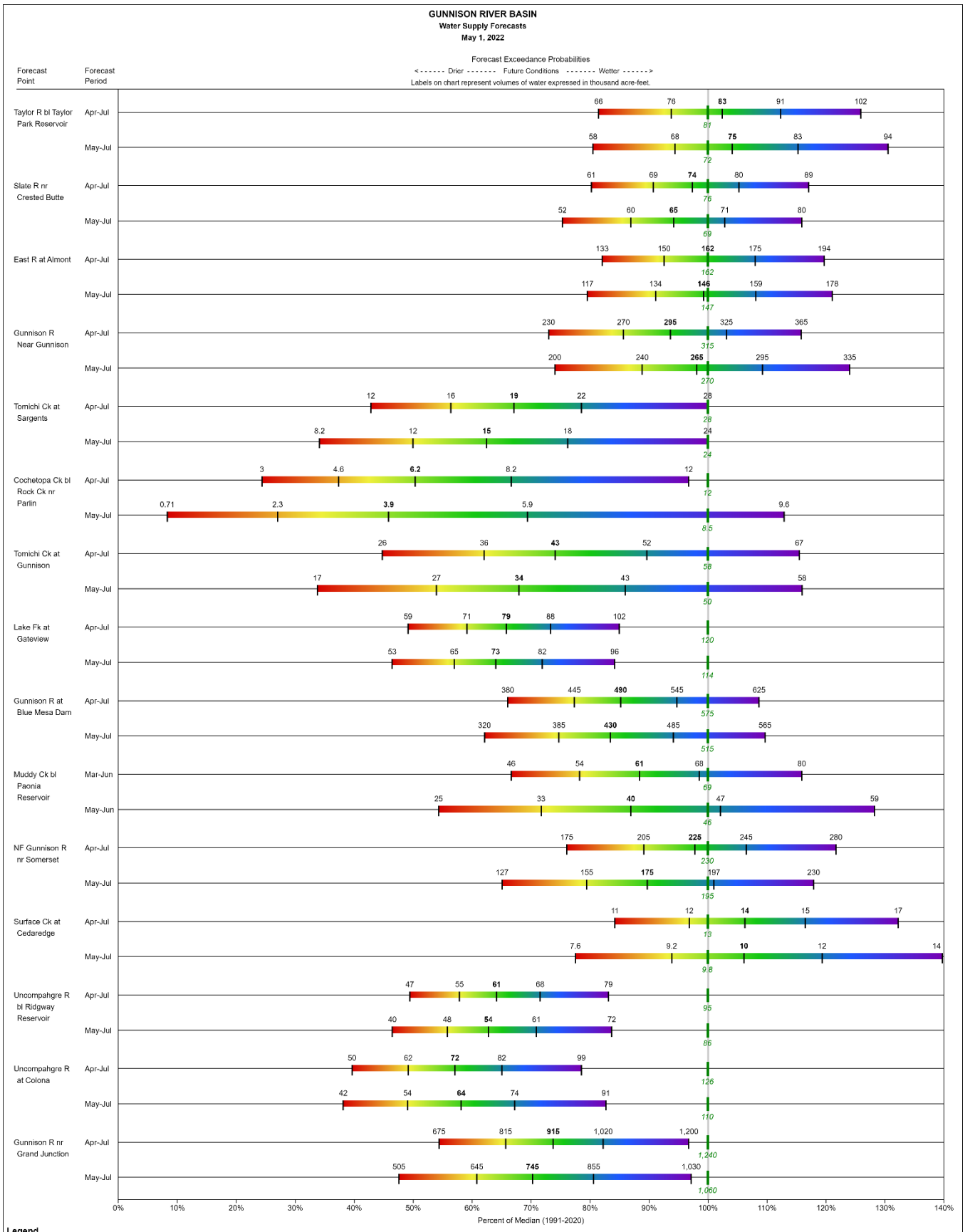
Gunnison Sub-Basin Snow Data

	# of Sites	% Median	Last Year % Median
Upper Gunnison	15.0	78.6	63.5
North Fork Gunnison	3.0	87.6	46.6
Uncompahgre Plateau	1.0	0.0	9.1
Uncompahgre	3.0	60.5	61.8
Surface-Kannah	3.0	102.5	49.5

Reservoir Storage End of April 2022

Gunnison Reservoir Data

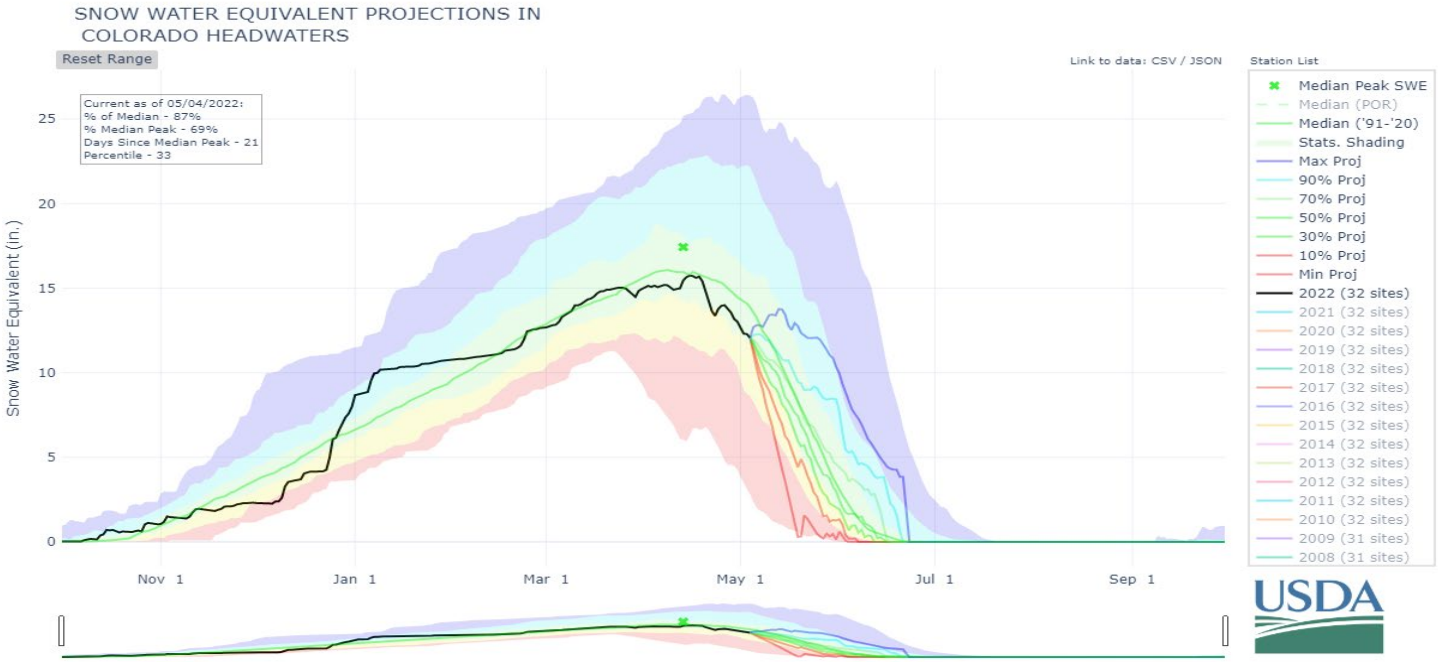
	Current Storage (KAF)	LY Storage (KAF)	Median (KAF)	Percent of Median
Crawford Reservoir	6.89	5.26	11.3	61.0
Fruitgrowers Reservoir	3.48	1.57	3.5	99.4
Taylor Park Reservoir	59.28	63.63	69.8	84.9
Ridgway Reservoir	61.49	57.76	67.5	91.1
Morrow Point Reservoir	111.67	102.62	110.6	101.0
Silverjack Reservoir	2.5	2.35	7.2	34.7
Blue Mesa Reservoir	252.32	365.22	506.3	49.8
Crystal Reservoir	9.06	9.16	8.9	101.8
Paonia Reservoir	7.61	10.15	4.0	190.2
Fruitland Reservoir	4.06	2.58	5.4	75.2
Vouga Reservoir	0.12	0.6	0.9	13.3


GUNNISON RIVER BASIN
Water Supply Forecasts
May 1, 2022
Forecast Exceedance Probabilities
< - - - - - - Drier - - - - - - - Future Conditions - - - - - - - Wetter - - - - - - >
Labels on chart represent volumes of water expressed in thousand acre-feet.
Forecast Point
Forecast Period
Taylor R bl Taylor Park Reservoir
Apr-Jul
66 76 83 91 102
81
May-Jul
58 68 75 83 94
72
Slate R nr Crested Butte
Apr-Jul
61 69 74 80 89
76
May-Jul
52 60 65 71 80
69
East R at Almont
Apr-Jul
133 150 162 175 194
162
May-Jul
117 134 146 159 178
147
Gunnison R Near Gunnison
Apr-Jul
230 270 295 325 365
315
May-Jul
200 240 265 295 335
270
Tomichi Ck at Sargents
Apr-Jul
12 16 19 22 28
28
May-Jul
8.2 12 15 18 24
24
Cochetopa Ck bl Rock Ck nr Parlin
Apr-Jul
3 4.6 6.2 8.2 12
12
May-Jul
0.71 2.3 3.9 5.9 9.6
8.5
Tomichi Ck at Gunnison
Apr-Jul
26 36 43 52 67
58
May-Jul
17 27 34 43 58
50
Lake Fk at Gateview
Apr-Jul
59 71 79 88 102
120
May-Jul
53 65 73 82 96
114
Gunnison R at Blue Mesa Dam
Apr-Jul
380 445 490 545 625
575
May-Jul
320 385 430 485 565
515
Muddy Ck bl Paonia Reservoir
Mar-Jun
46 54 61 68 80
69
May-Jun
25 33 40 47 59
46
NF Gunnison R nr Somerset
Apr-Jul
175 205 225 245 280
230
May-Jul
127 155 175 197 230
195
Surface Ck at Cedaredge
Apr-Jul
11 12 14 15 17
13
May-Jul
7.6 9.2 10 12 14
9.8
Uncompahgre R bl Ridgway Reservoir
Apr-Jul
47 55 61 68 79
95
May-Jul
40 48 54 61 72
86
Uncompahgre R at Colona
Apr-Jul
50 62 72 82 99
126
May-Jul
42 54 64 74 91
110
Gunnison R nr Grand Junction
Apr-Jul
675 815 915 1,020 1,200
1,240
May-Jul
505 645 745 855 1,030
1,060
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100% 110% 120% 130% 140%
Percent of Median (1991-2020)
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)
1991-2020 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.

COLORADO HEADWATERS RIVER BASIN

May 1st, 2022

Snowpack in the Colorado River basin is below normal at 85% of the median. Precipitation for April was 75% of median which brings water year-to-date precipitation to 95% of median. Reservoir storage at the end of April was 88% of median compared to 94% last year. Current streamflow forecasts range from 60% of median at Muddy Creek below Wolford Mtn Reservoir to 88% of median at Colorado River below Lake Granby.



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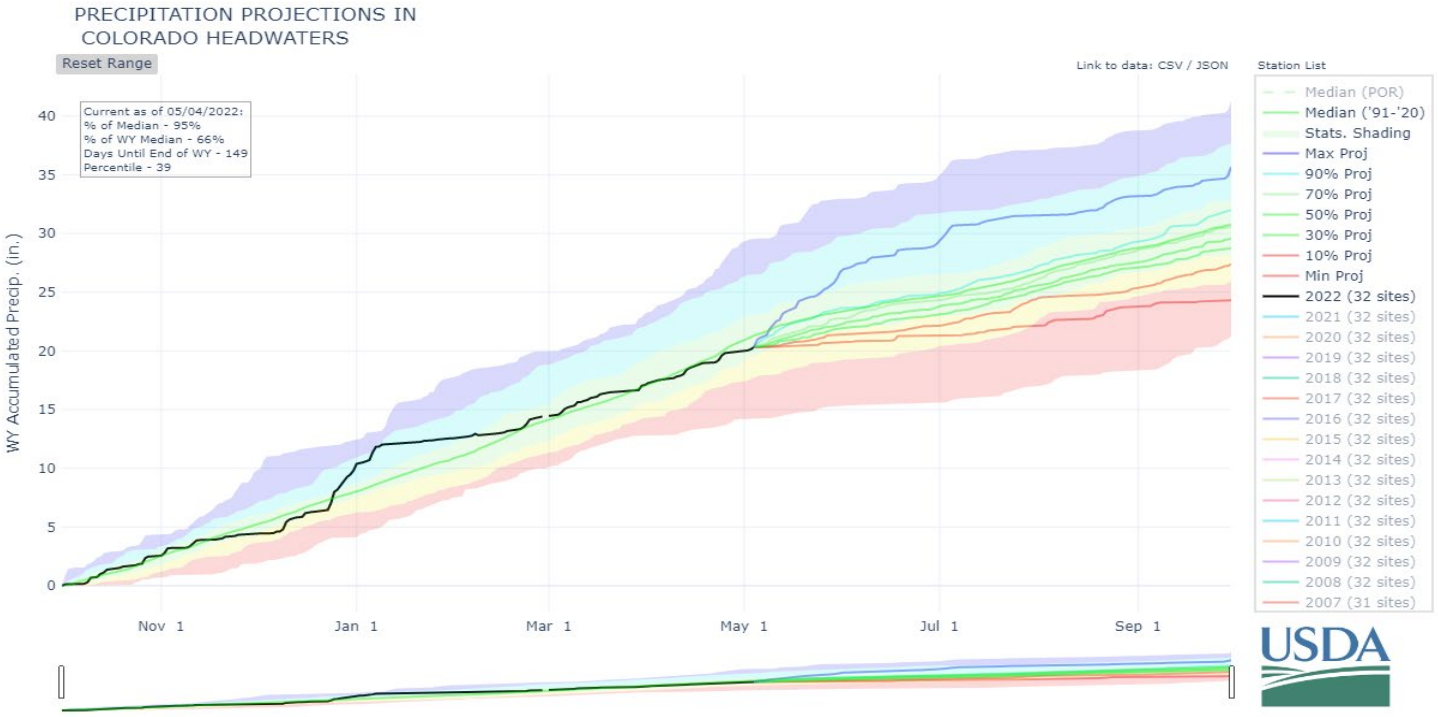
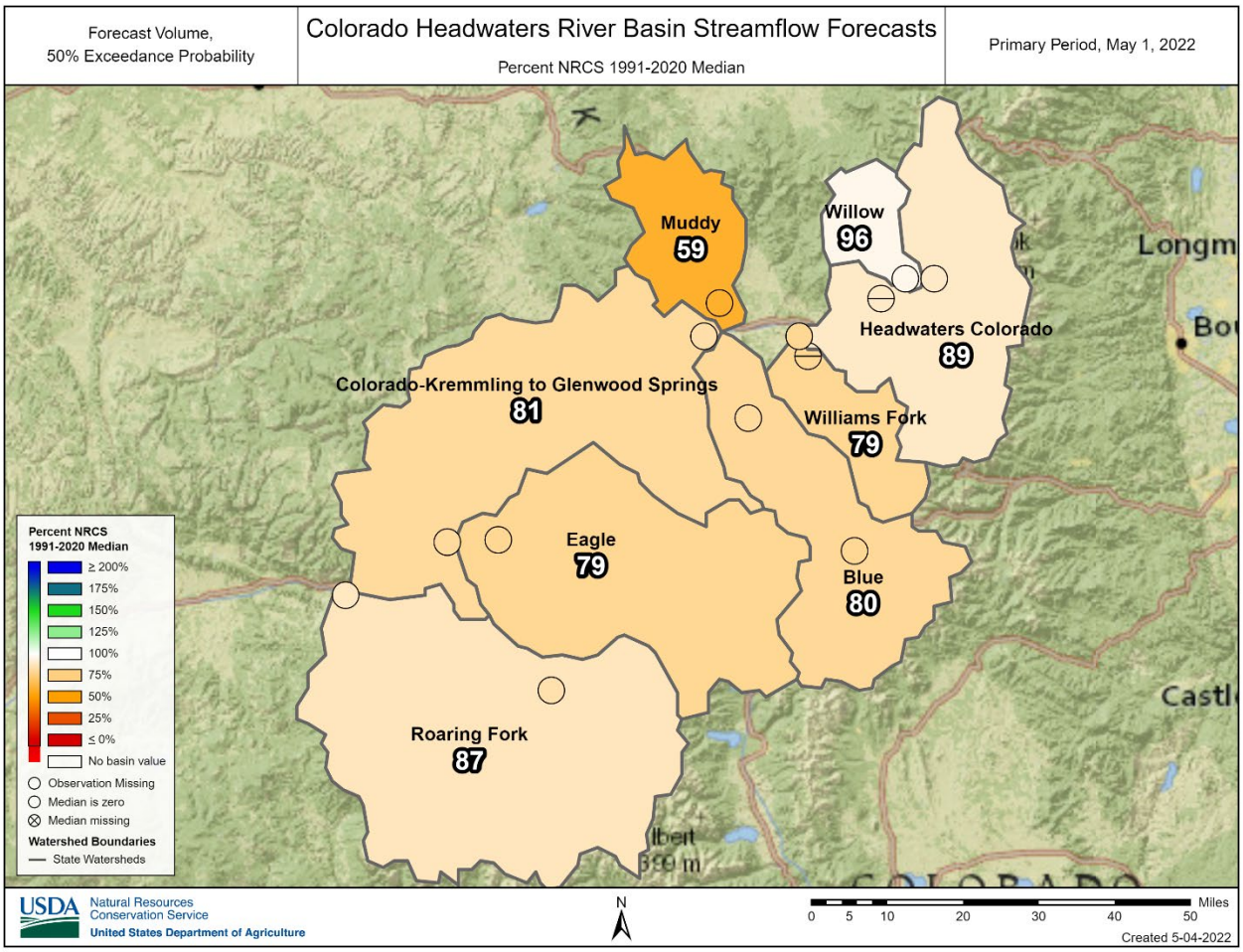
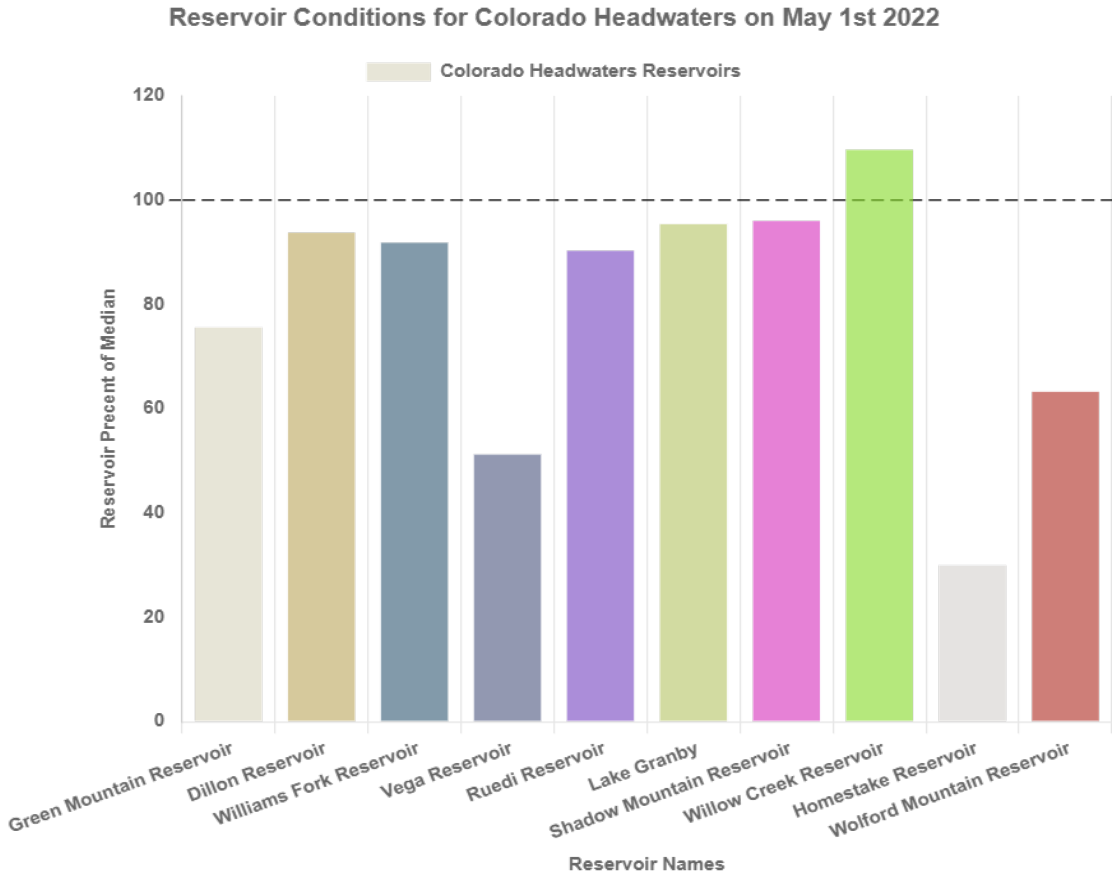



Forecast Volume,
50% Exceedance Probability
Colorado Headwaters River Basin Streamflow Forecasts
Percent NRCS 1991-2020 Median
Primary Period, May 1, 2022
Muddy
59
Willow
96
Headwaters Colorado
89
Colorado-Kremmling to Glenwood Springs
81
Williams Fork
79
Eagle
79
Blue
80
Roaring Fork
87
Percent NRCS
1991-2020 Median
≥ 200%
175%
150%
125%
100%
75%
50%
25%
≤ 0%
No basin value
Observation Missing
Median is zero
Median missing
Watershed Boundaries
State Watersheds
USDA
Natural Resources
Conservation Service
United States Department of Agriculture
N
Miles
0 5 10 20 30 40 50
Created 5-04-2022


Reservoir Conditions for Colorado Headwaters on May 1st 2022
Colorado Headwaters Reservoirs
Reservoir Precent of Median
0
20
40
60
80
100
120
Green Mountain Reservoir
Dillon Reservoir
Williams Fork Reservoir
Vega Reservoir
Ruedi Reservoir
Lake Granby
Shadow Mountain Reservoir
Willow Creek Reservoir
Homestake Reservoir
Wolford Mountain Reservoir
Reservoir Names

Watershed Snowpack Analysis May 1st, 2022

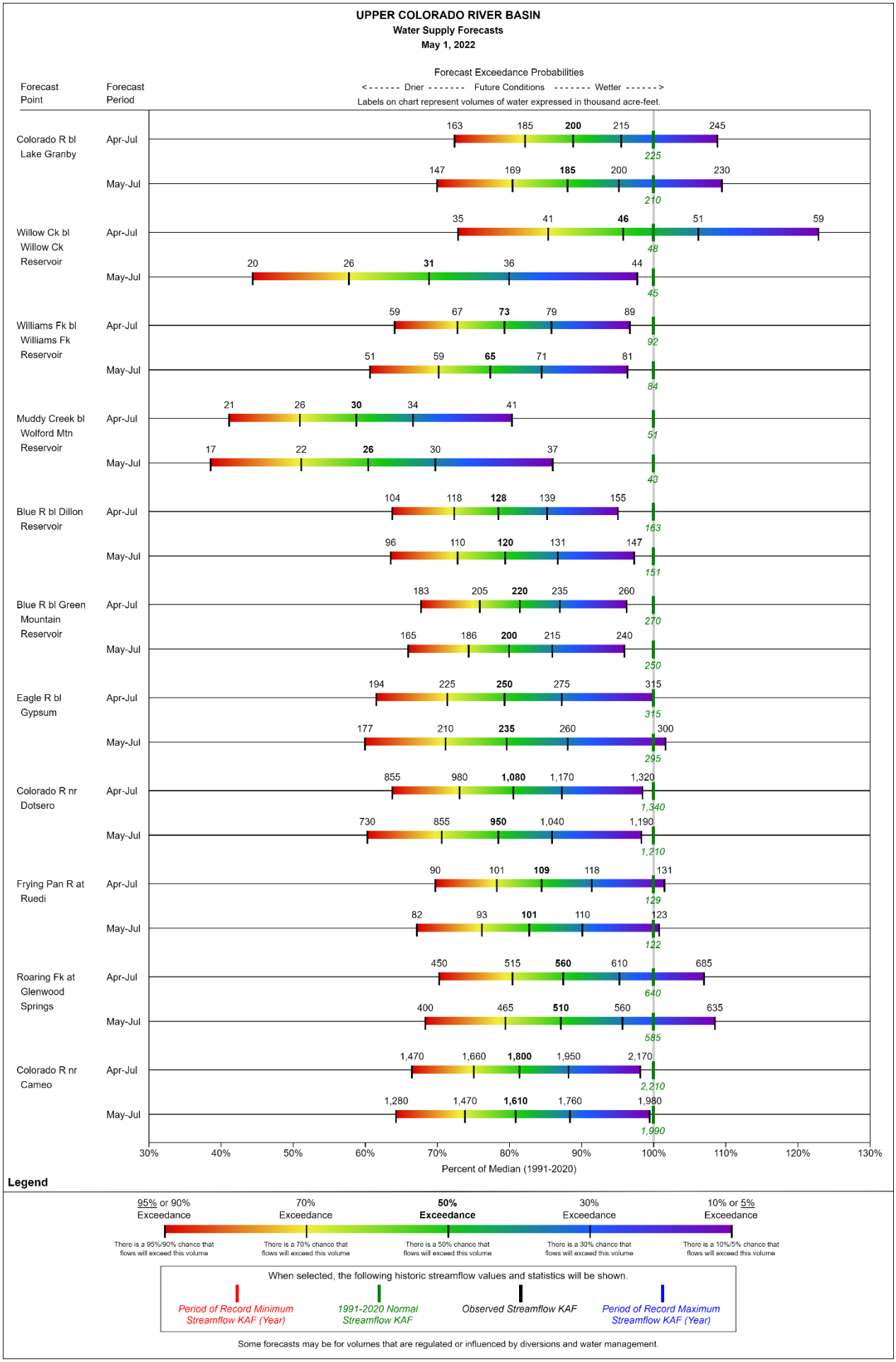
Colorado Headwaters Sub-Basin Snow Data

	# of Sites	% Median	Last Year % Median
Headwaters Colorado	10.0	76.6	86.2
Roaring Fork	11.0	84.7	62.5
Colorado-Kremmling to Glenwood Springs	5.0	81.0	79.6
Eagle	6.0	89.3	60.7
Blue	9.0	87.5	77.4
Plateau	4.0	101.1	45.9
Williams Fork	4.0	73.0	49.8
Muddy	4.0	112.5	79.9
Willow	3.0	89.0	70.4
Troublesome	1.0	89.2	90.1

Reservoir Storage End of April 2022

Colorado Headwaters Reservoir Data

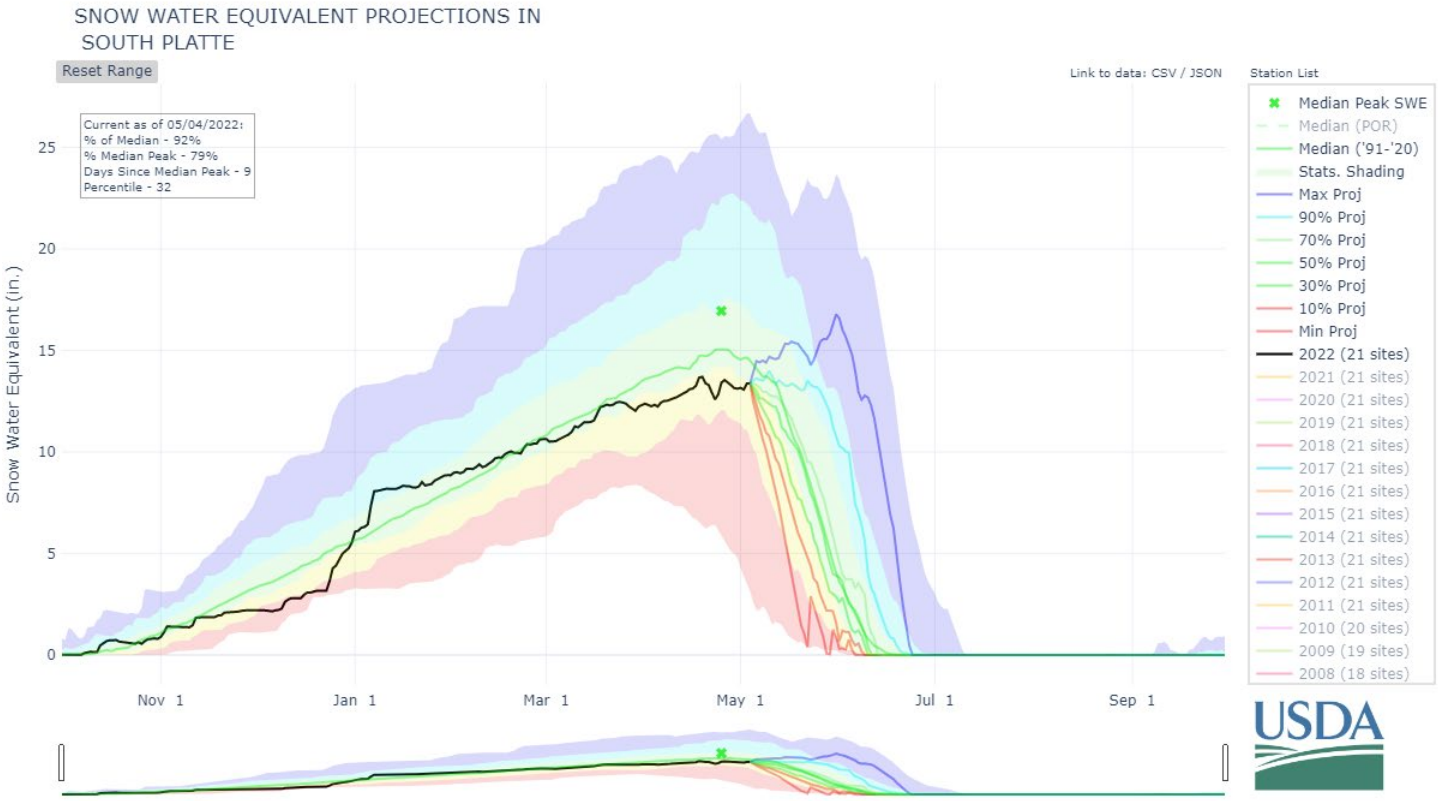
	Current Storage (KAF)	LY Storage (KAF)	Median (KAF)	Percent of Median
Homestake Reservoir	5.3	12.09	17.7	29.9
Green Mountain Reservoir	45.79	47.28	60.6	75.6
Ruedi Reservoir	59.24	59.31	65.6	90.3
Willow Creek Reservoir	7.02	5.52	6.4	109.7
Williams Fork Reservoir	63.19	61.0	68.8	91.8
Wolford Mountain Reservoir	32.13	52.87	50.8	63.2
Lake Granby	257.1	275.2	269.5	95.4
Dillon Reservoir	192.76	197.9	205.6	93.8
Vega Reservoir	8.96	7.31	17.5	51.2
Shadow Mountain Reservoir	16.51	17.33	17.2	96.0


UPPER COLORADO RIVER BASIN
Water Supply Forecasts
May 1, 2022
Forecast Exceedance Probabilities
< ------ Drier ------- Future Conditions ------- Wetter ------ >
Labels on chart represent volumes of water expressed in thousand acre-feet.
Forecast Point
Forecast Period
Colorado R bl Lake Granby
Apr-Jul
163 185 200 215 245
225
May-Jul
147 169 185 200 230
210
Willow Ck bl Willow Ck Reservoir
Apr-Jul
35 41 46 51 59
48
May-Jul
20 26 31 36 44
45
Williams Fk bl Williams Fk Reservoir
Apr-Jul
59 67 73 79 89
92
May-Jul
51 59 65 71 81
84
Muddy Creek bl Wolford Mtn Reservoir
Apr-Jul
21 26 30 34 41
51
May-Jul
17 22 26 30 37
43
Blue R bl Dillon Reservoir
Apr-Jul
104 118 128 139 155
163
May-Jul
96 110 120 131 147
151
Blue R bl Green Mountain Reservoir
Apr-Jul
183 205 220 235 260
270
May-Jul
165 186 200 215 240
250
Eagle R bl Gypsum
Apr-Jul
194 225 250 275 315
315
May-Jul
177 210 235 260 300
295
Colorado R nr Dotsero
Apr-Jul
855 980 1,080 1,170 1,320
1,340
May-Jul
730 855 950 1,040 1,190
1,210
Frying Pan R at Ruedi
Apr-Jul
90 101 109 118 131
129
May-Jul
82 93 101 110 123
122
Roaring Fk at Glenwood Springs
Apr-Jul
450 515 560 610 685
640
May-Jul
400 465 510 560 635
585
Colorado R nr Cameo
Apr-Jul
1,470 1,660 1,800 1,950 2,170
2,210
May-Jul
1,280 1,470 1,610 1,760 1,980
1,990
30% 40% 50% 60% 70% 80% 90% 100% 110% 120% 130%
Percent of Median (1991-2020)
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)
1991-2020 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.

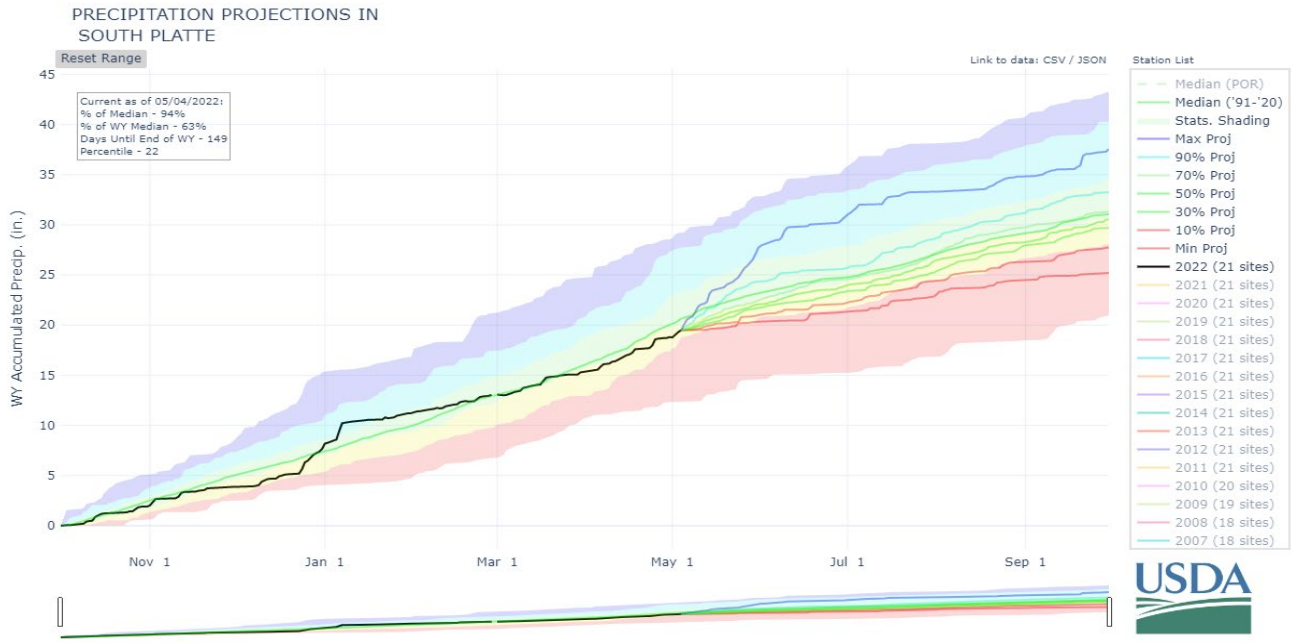
SOUTH PLATTE RIVER BASIN

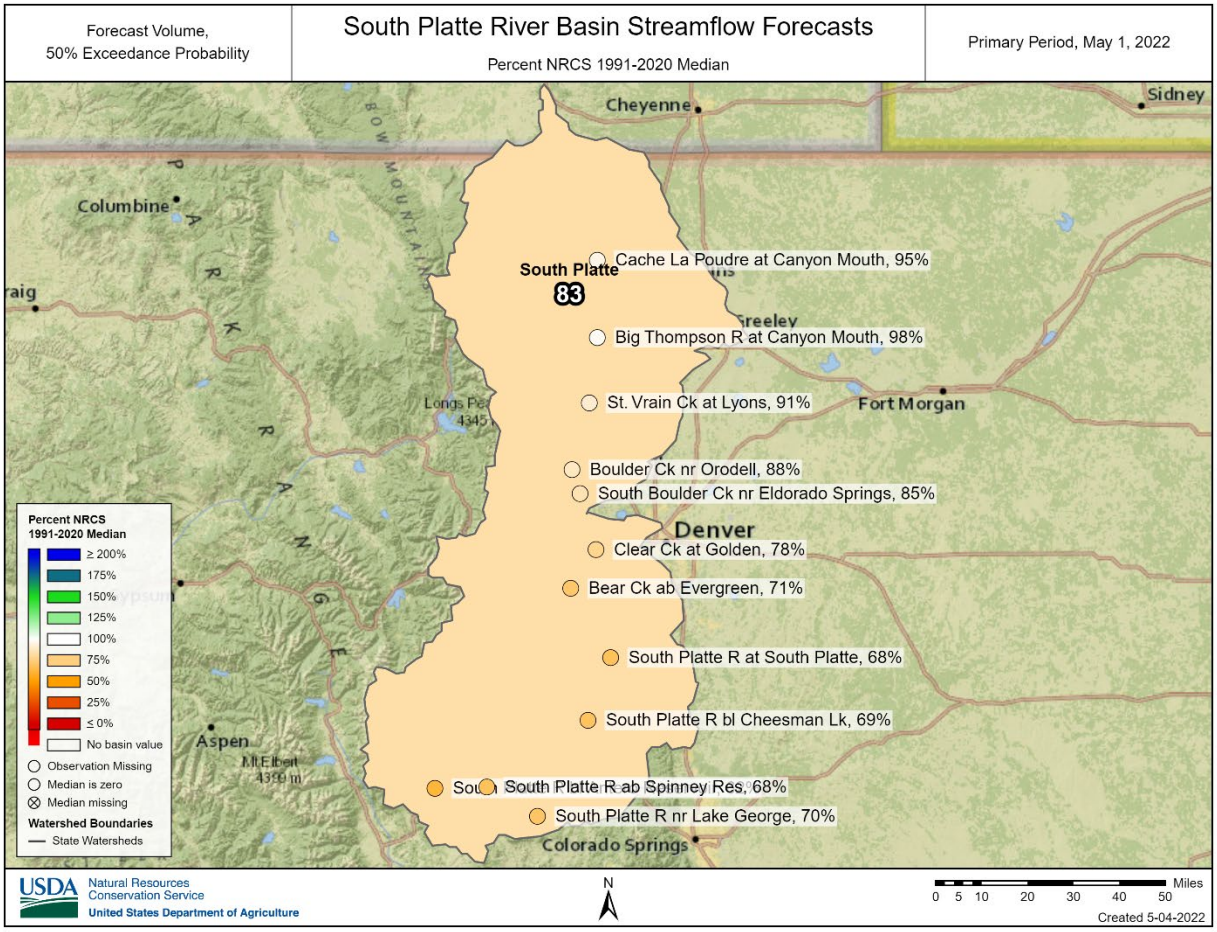
May 1st, 2022

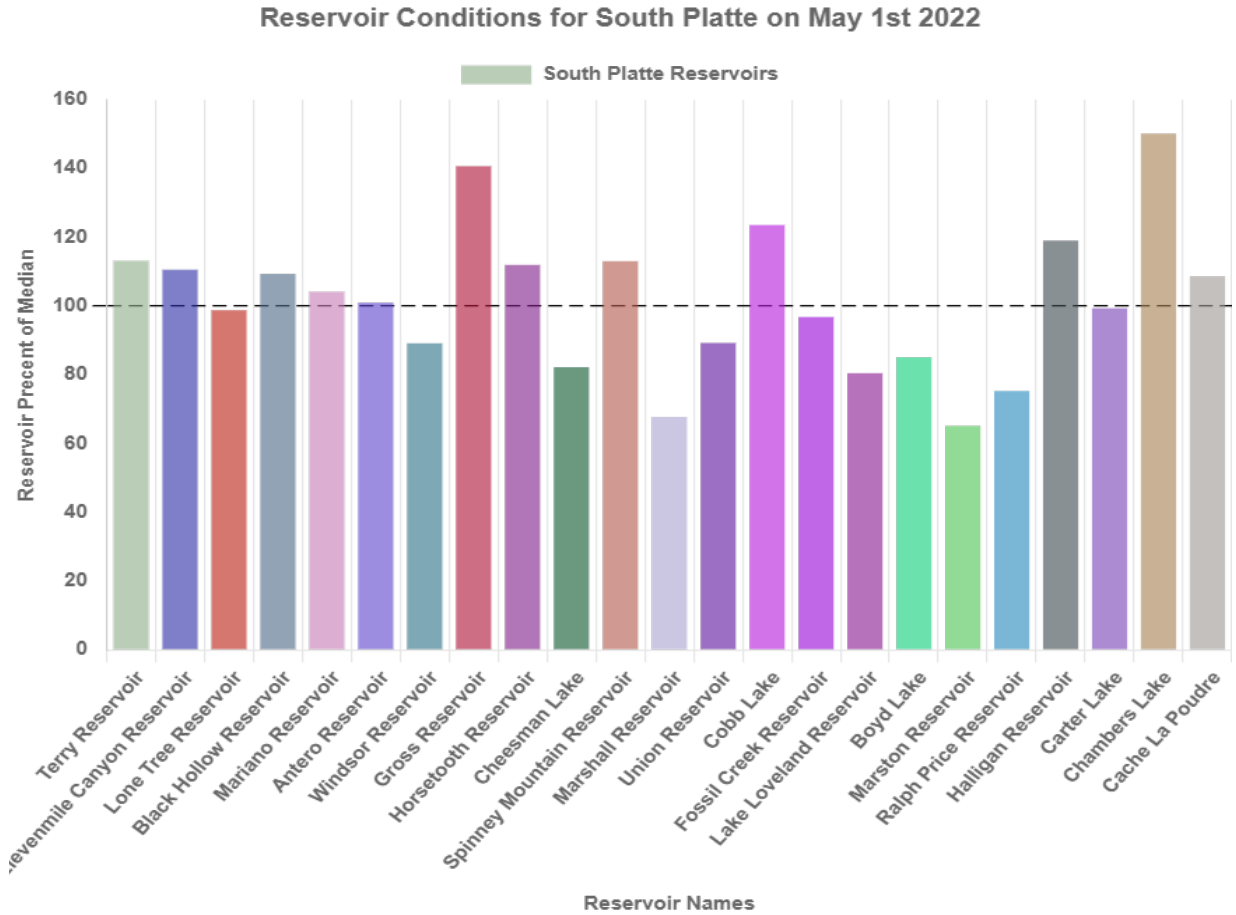
Snowpack in the South Platte River basin is below normal at 90% of median. Precipitation for April was 87% of median which brings water year-to-date precipitation to 93% of median. Reservoir storage at the end of March was 105% of median compared to 92% last year. Current streamflow forecasts range from 60% of median at Antero Reservoir inflow to 102% of median at St. Vrain Creek at Lyons.



*Snow water equivalent (SWE) values are calculated using daily SNOTEL data only for the above graph. In the paragraph SWE is calculated for the first of the month using both SNOTEL and Snow Course data.




Forecast Volume,
50% Exceedance Probability
South Platte River Basin Streamflow Forecasts
Percent NRCS 1991-2020 Median
Primary Period, May 1, 2022
Cheyenne
Sidney
Columbine
South Platte
83
Cache La Poudre at Canyon Mouth, 95%
Big Thompson R at Canyon Mouth, 98%
St. Vrain Ck at Lyons, 91%
Fort Morgan
Boulder Ck nr Orodell, 88%
South Boulder Ck nr Eldorado Springs, 85%
Denver
Clear Ck at Golden, 78%
Bear Ck ab Evergreen, 71%
South Platte R at South Platte, 68%
South Platte R bl Cheesman Lk, 69%
South Platte R ab Spinney Res, 68%
South Platte R nr Lake George, 70%
Colorado Springs
Aspen
Percent NRCS
1991-2020 Median
≥ 200%
175%
150%
125%
100%
75%
50%
25%
≤ 0%
No basin value
Observation Missing
Median is zero
Median missing
Watershed Boundaries
State Watersheds
USDA
Natural Resources
Conservation Service
United States Department of Agriculture
N
Miles
0 5 10 20 30 40 50
Created 5-04-2022


Reservoir Conditions for South Platte on May 1st 2022
South Platte Reservoirs
Reservoir Precent of Median
0
20
40
60
80
100
120
140
160
Terry Reservoir
Sevenmile Canyon Reservoir
Lone Tree Reservoir
Black Hollow Reservoir
Mariano Reservoir
Antero Reservoir
Windsor Reservoir
Gross Reservoir
Horsetooth Reservoir
Cheesman Lake
Spinney Mountain Reservoir
Marshall Reservoir
Union Reservoir
Cobb Lake
Fossil Creek Reservoir
Lake Loveland Reservoir
Boyd Lake
Marston Reservoir
Ralph Price Reservoir
Halligan Reservoir
Carter Lake
Chambers Lake
Cache La Poudre
Reservoir Names

Watershed Snowpack Analysis May 1st, 2022

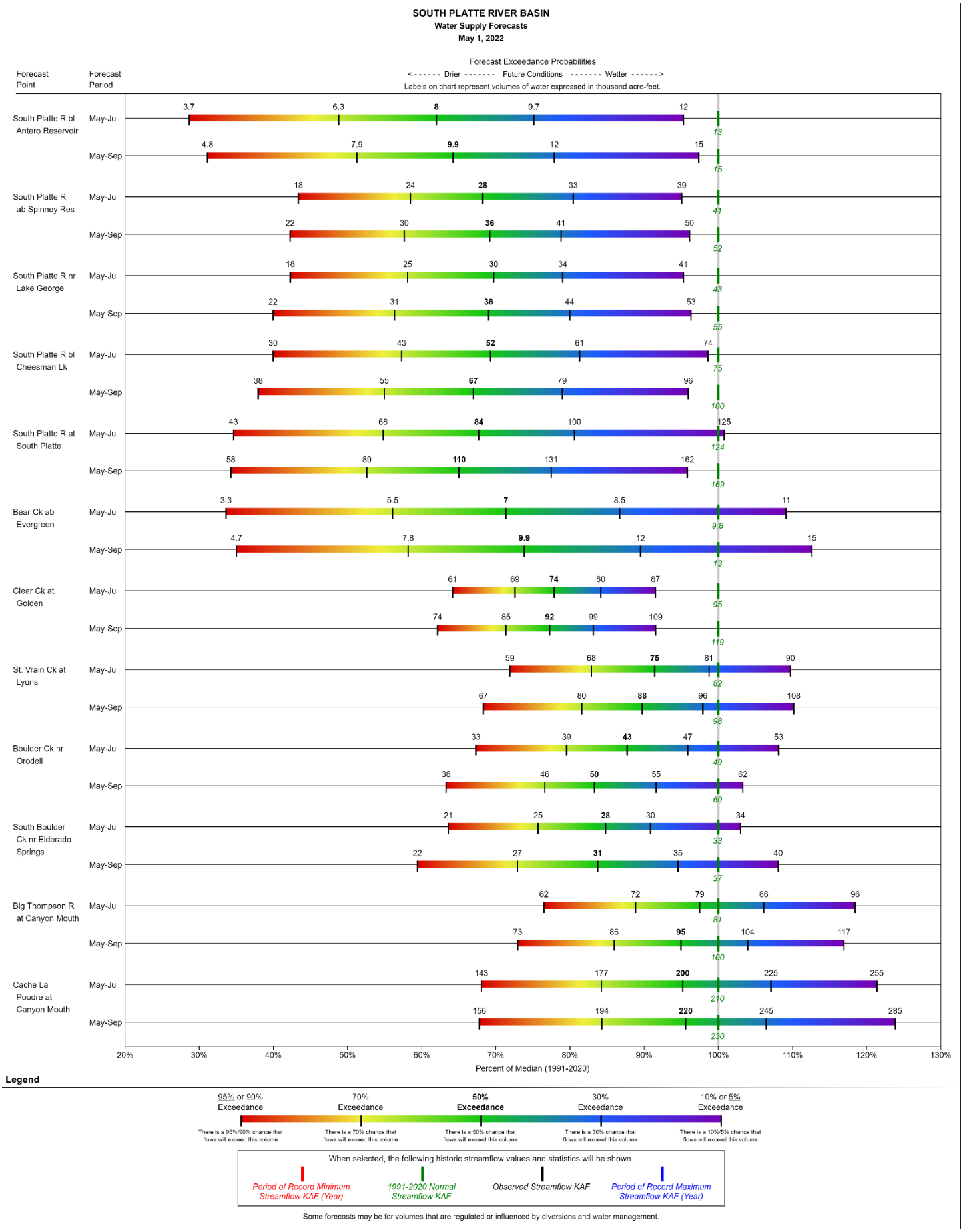
South Platte Sub-Basin Snow Data

	# of Sites	% Median	Last Year % Median
Upper South Platte	14.0	75.0	96.6
North Fork Cache La Poudre	4.0	104.5	118.1
Cache La Poudre	12.0	92.8	106.6
Big Thompson	7.0	97.4	107.4
Clear	5.0	76.8	93.7
Boulder	6.0	87.6	112.6
Saint Vrain	6.0	103.2	124.3

Reservoir Storage End of April 2022

South Platte Reservoir Data

	Current Storage (KAF)	LY Storage (KAF)	Median (KAF)	Percent of Median
Windsor Reservoir	12.4	12.1	13.9	89.2
Marshall Reservoir	6.1	7.12	9.0	67.8
Mariano Reservoir	5.0	3.1	4.8	104.2
Spinney Mountain Reservoir	34.14	26.7	30.2	113.0
Cheesman Lake	56.34	54.98	68.5	82.2
Cobb Lake	17.55	15.9	14.2	123.6
Antero Reservoir	19.79	19.88	19.6	101.0
Horsetooth Reservoir	140.64	132.9	125.6	112.0
Gross Reservoir	15.05	6.78	10.7	140.7
Carter Lake	101.64	98.77	102.3	99.4
Halligan Reservoir	6.43	6.4	5.4	119.1
Cache La Poudre	10.43	9.2	9.6	108.6
Chambers Lake	5.4	4.7	3.6	150.0
Marston Reservoir	5.54	9.08	8.5	65.2
Elevenmile Canyon Reservoir	110.14	97.17	99.6	110.6
Black Hollow Reservoir	3.17	3.8	2.9	109.3
Terry Reservoir	6.68	7.3	5.9	113.2
Union Reservoir	10.54	8.03	11.8	89.3
Lake Loveland Reservoir	6.6	5.0	8.2	80.5
Boyd Lake	26.3	29.6	30.9	85.1
Ralph Price Reservoir	9.71	14.4	12.9	75.3
Fossil Creek Reservoir	9.39	9.3	9.7	96.8
Lone Tree Reservoir	8.2	6.2	8.3	98.8

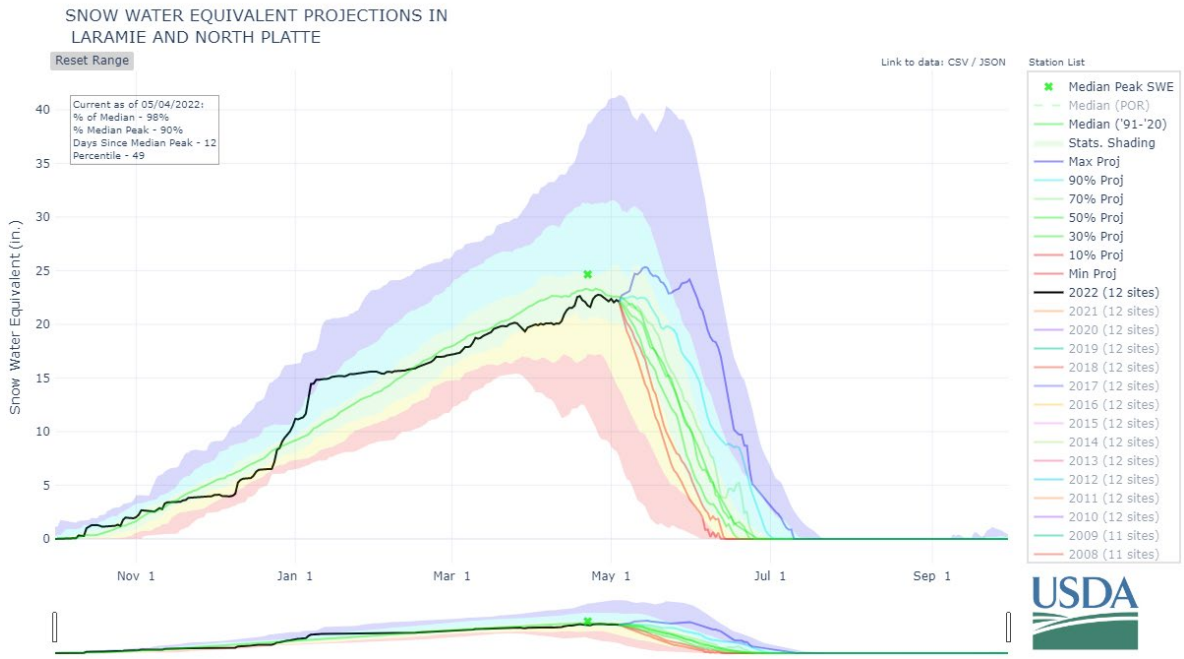

SOUTH PLATTE RIVER BASIN
Water Supply Forecasts
May 1, 2022
Forecast Exceedance Probabilities
< ------- Drier ------- Future Conditions ------- Wetter ------- >
Labels on chart represent volumes of water expressed in thousand acre-feet.
Forecast Point
Forecast Period
South Platte R bl Antero Reservoir
May-Jul
3.7 6.3 8 9.7 12
13
May-Sep
4.8 7.9 9.9 12 15
15
South Platte R ab Spinney Res
May-Jul
18 24 28 33 39
41
May-Sep
22 30 36 41 50
52
South Platte R nr Lake George
May-Jul
18 25 30 34 41
43
May-Sep
22 31 38 44 53
55
South Platte R bl Cheesman Lk
May-Jul
30 43 52 61 74
75
May-Sep
38 55 67 79 96
100
South Platte R at South Platte
May-Jul
43 68 84 100 125
124
May-Sep
58 89 110 131 162
169
Bear Ck ab Evergreen
May-Jul
3.3 5.5 7 8.5 11
9.8
May-Sep
4.7 7.8 9.9 12 15
13
Clear Ck at Golden
May-Jul
61 69 74 80 87
95
May-Sep
74 85 92 99 109
119
St. Vrain Ck at Lyons
May-Jul
59 68 75 81 90
82
May-Sep
67 80 88 96 108
96
Boulder Ck nr Orodell
May-Jul
33 39 43 47 53
49
May-Sep
38 46 50 55 62
60
South Boulder Ck nr Eldorado Springs
May-Jul
21 25 28 30 34
33
May-Sep
22 27 31 35 40
37
Big Thompson R at Canyon Mouth
May-Jul
62 72 79 86 96
81
May-Sep
73 86 95 104 117
100
Cache La Poudre at Canyon Mouth
May-Jul
143 177 200 225 255
210
May-Sep
156 194 220 245 285
230
20% 30% 40% 50% 60% 70% 80% 90% 100% 110% 120% 130%
Percent of Median (1991-2020)
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)
1991-2020 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.

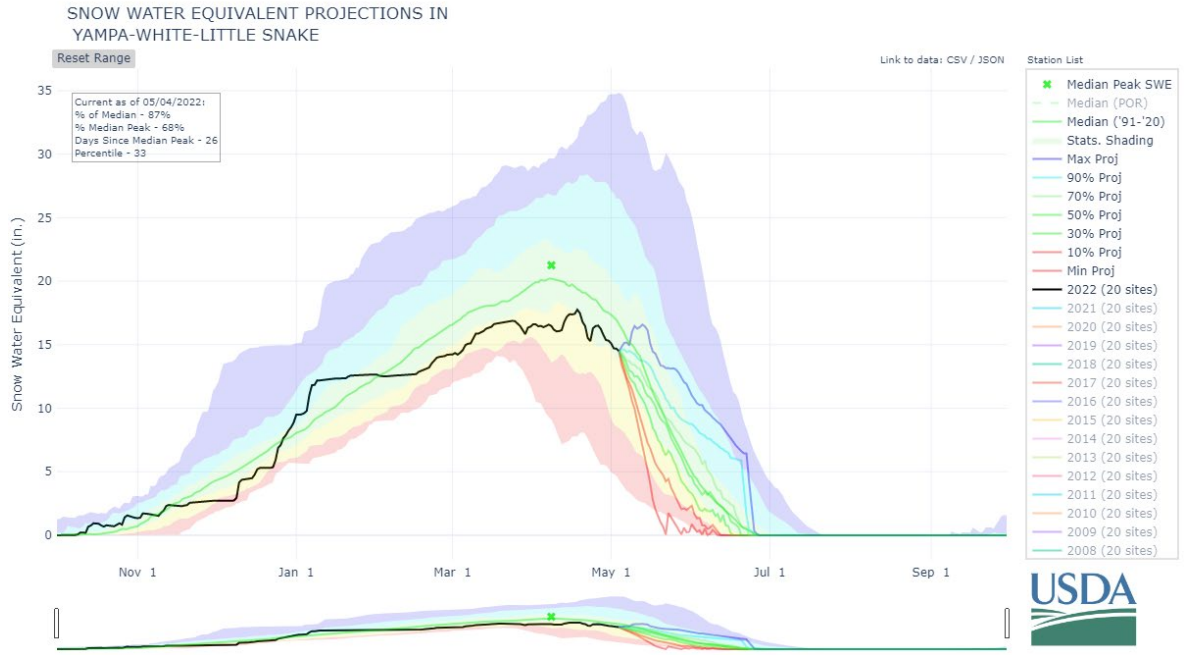
YAMPA-WHITE-LITTLE SNAKE AND LARAMIE-NORTH PLATTE RIVER BASINS

May 1st, 2022

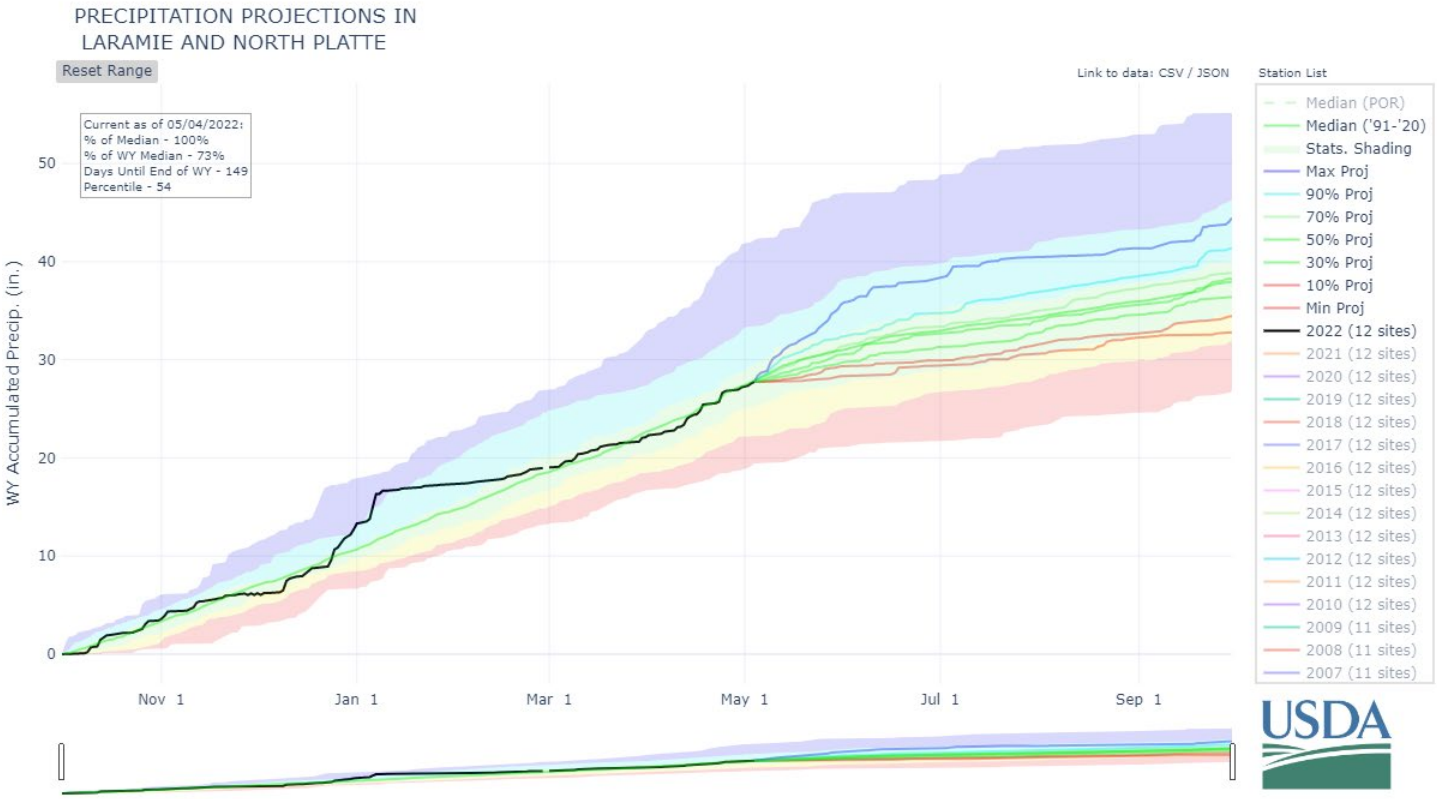
Snowpack in the Yampa-White-Little Snake and the Laramie-North Platte River basins were variable at 88% and 100% of the median. Precipitation for April was 100% and 114% of median and water year-to-date precipitation is 95% and 99% of median, respectively. Reservoir storage at the end of April for the Yampa-White-Little Snake was 77% of median compared to 89% last year. Current streamflow forecasts range from 77% of median at Yampa River at Steamboat Springs to 95% of median at North Platte River near Northgate.

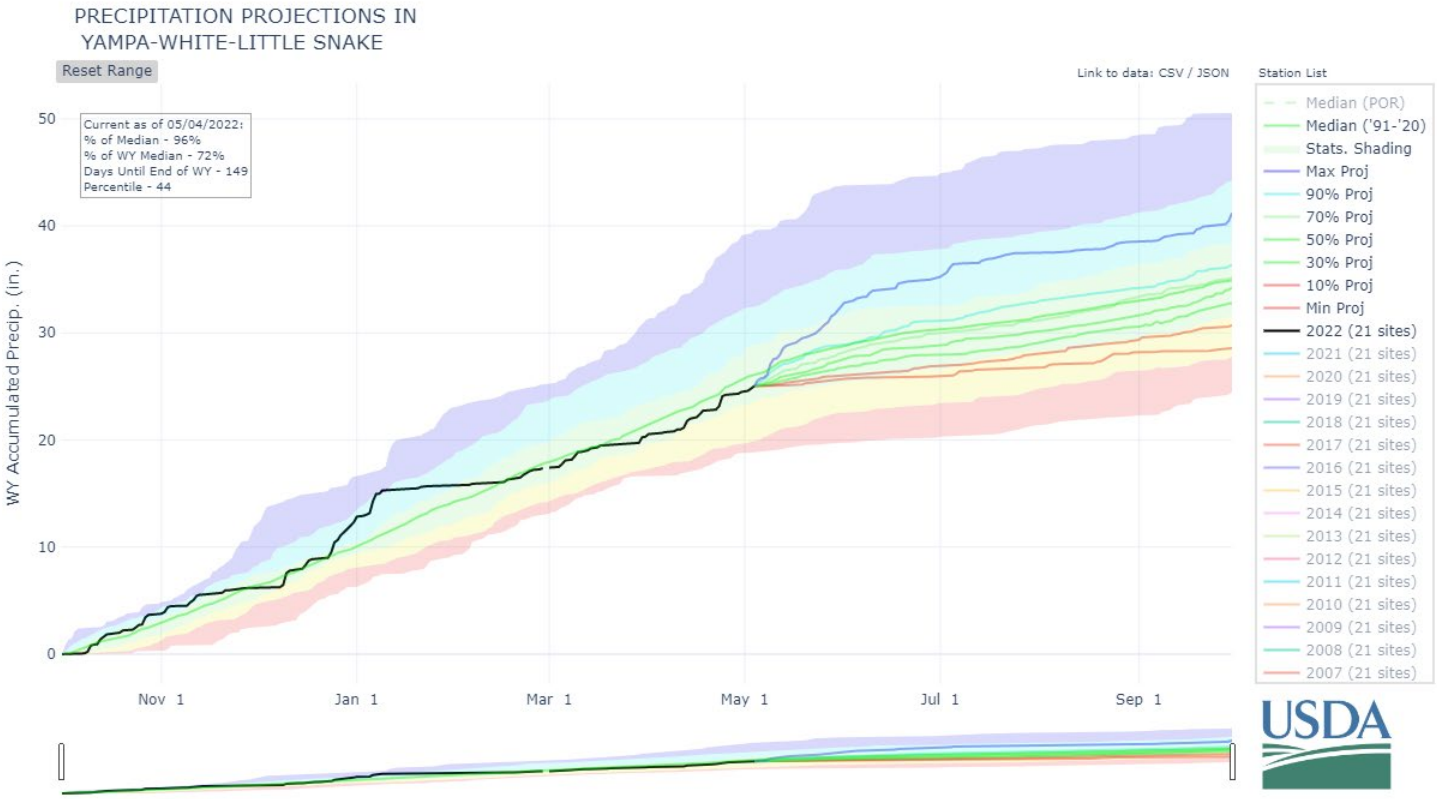
*SWE values calculated using daily SNOTEL data only



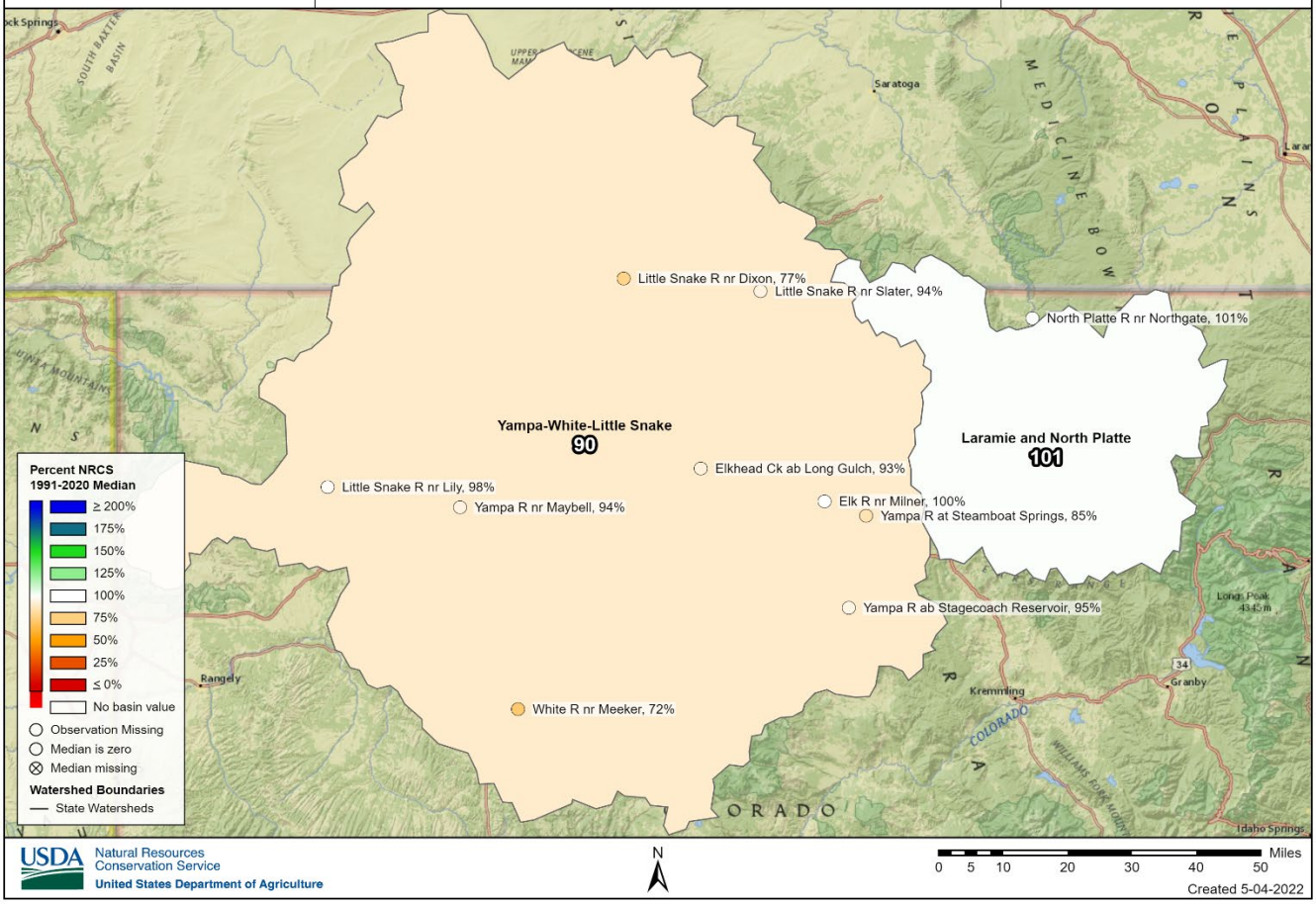


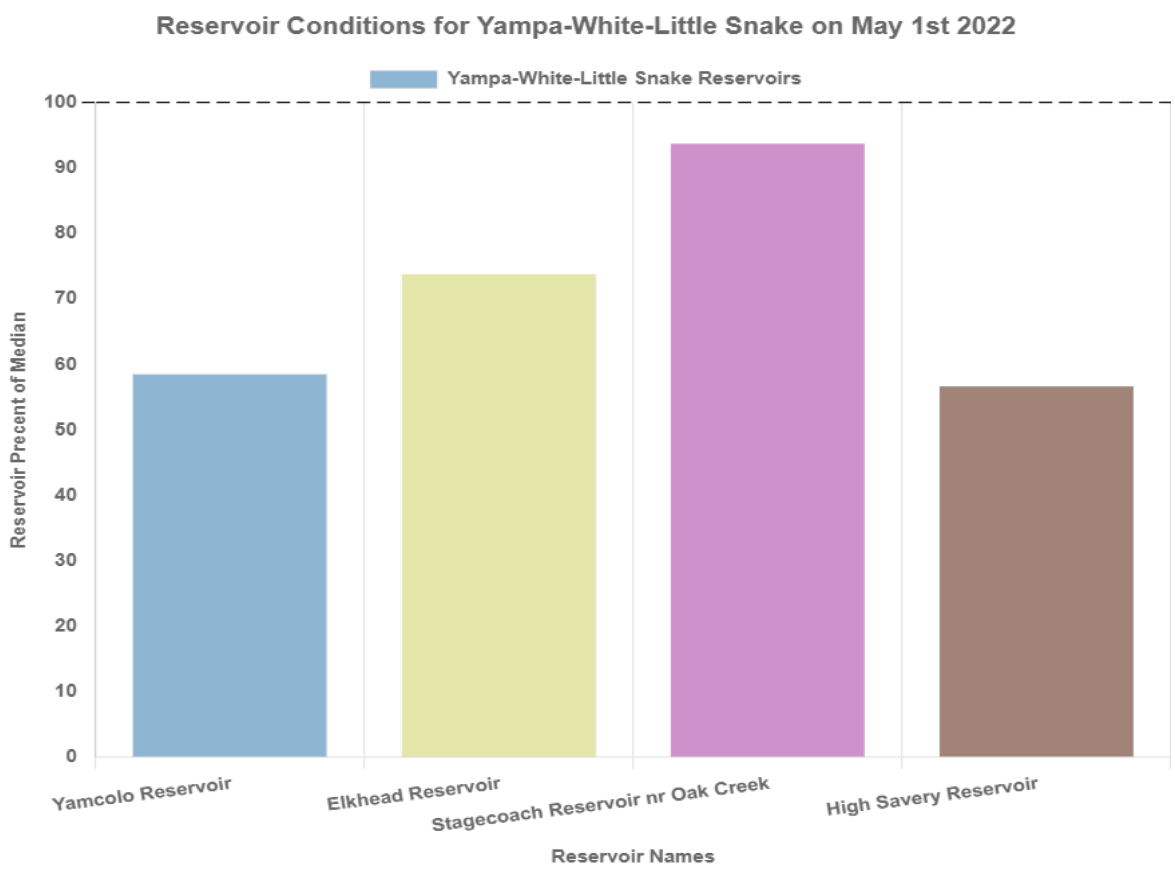
*Snow water equivalent (SWE) values are calculated using daily SNOTEL data only. In the paragraph SWE is calculated for the first of the month using both SNOTEL and Snow Course data.


PRECIPITATION PROJECTIONS IN
LARAMIE AND NORTH PLATTE
Reset Range
Link to data: CSV / JSON
Station List
Current as of 05/04/2022:
% of Median - 100%
% of WY Median - 73%
Days Until End of WY - 149
Percentile - 54
WY Accumulated Precip. (in.)
0
10
20
30
40
50
Nov 1
Jan 1
Mar 1
May 1
Jul 1
Sep 1
Median (POR)
Median ('91-'20)
Stats. Shading
Max Proj
90% Proj
70% Proj
50% Proj
30% Proj
10% Proj
Min Proj
2022 (12 sites)
2021 (12 sites)
2020 (12 sites)
2019 (12 sites)
2018 (12 sites)
2017 (12 sites)
2016 (12 sites)
2015 (12 sites)
2014 (12 sites)
2013 (12 sites)
2012 (12 sites)
2011 (12 sites)
2010 (12 sites)
2009 (11 sites)
2008 (11 sites)
2007 (11 sites)
USDA


PRECIPITATION PROJECTIONS IN
YAMPA-WHITE-LITTLE SNAKE
Reset Range
Link to data: CSV / JSON
Station List
Current as of 05/04/2022:
% of Median - 96%
% of WY Median - 72%
Days Until End of WY - 149
Percentile - 44
WY Accumulated Precip. (in.)
0
10
20
30
40
50
Nov 1
Jan 1
Mar 1
May 1
Jul 1
Sep 1
Median (POR)
Median ('91-'20)
Stats. Shading
Max Proj
90% Proj
70% Proj
50% Proj
30% Proj
10% Proj
Min Proj
2022 (21 sites)
2021 (21 sites)
2020 (21 sites)
2019 (21 sites)
2018 (21 sites)
2017 (21 sites)
2016 (21 sites)
2015 (21 sites)
2014 (21 sites)
2013 (21 sites)
2012 (21 sites)
2011 (21 sites)
2010 (21 sites)
2009 (21 sites)
2008 (21 sites)
2007 (21 sites)
USDA

Forecast Volume, 50% Exceedance Probability	Yampa-White-Little Snake and Laramie-North Platte River Basins Streamflow Forecasts Percent NRCS 1991-2020 Median	Primary Period, May 1, 2022





*No reservoirs are currently monitored in the Laramie-North Platte combined basin.

Watershed Snowpack Analysis May 1st, 2022

Laramie and North Platte Sub-Basin Snow Data

	# of Sites	% Median	Last Year % Median
North Platte Headwaters	14.0	97.8	79.6
Laramie	6.0	110.6	100.2

Yampa-White-Little Snake Sub-Basin Snow Data

	# of Sites	% Median	Last Year % Median
Yampa	10.0	94.1	63.6
Little Snake	10.0	90.2	73.3
White	4.0	68.4	66.2
Williams Fork of the Yampa	1.0	85.6	70.4
Elk	2.0	93.0	64.1

Reservoir Storage End of April 2022

Yampa-White-Little Snake Reservoir Data

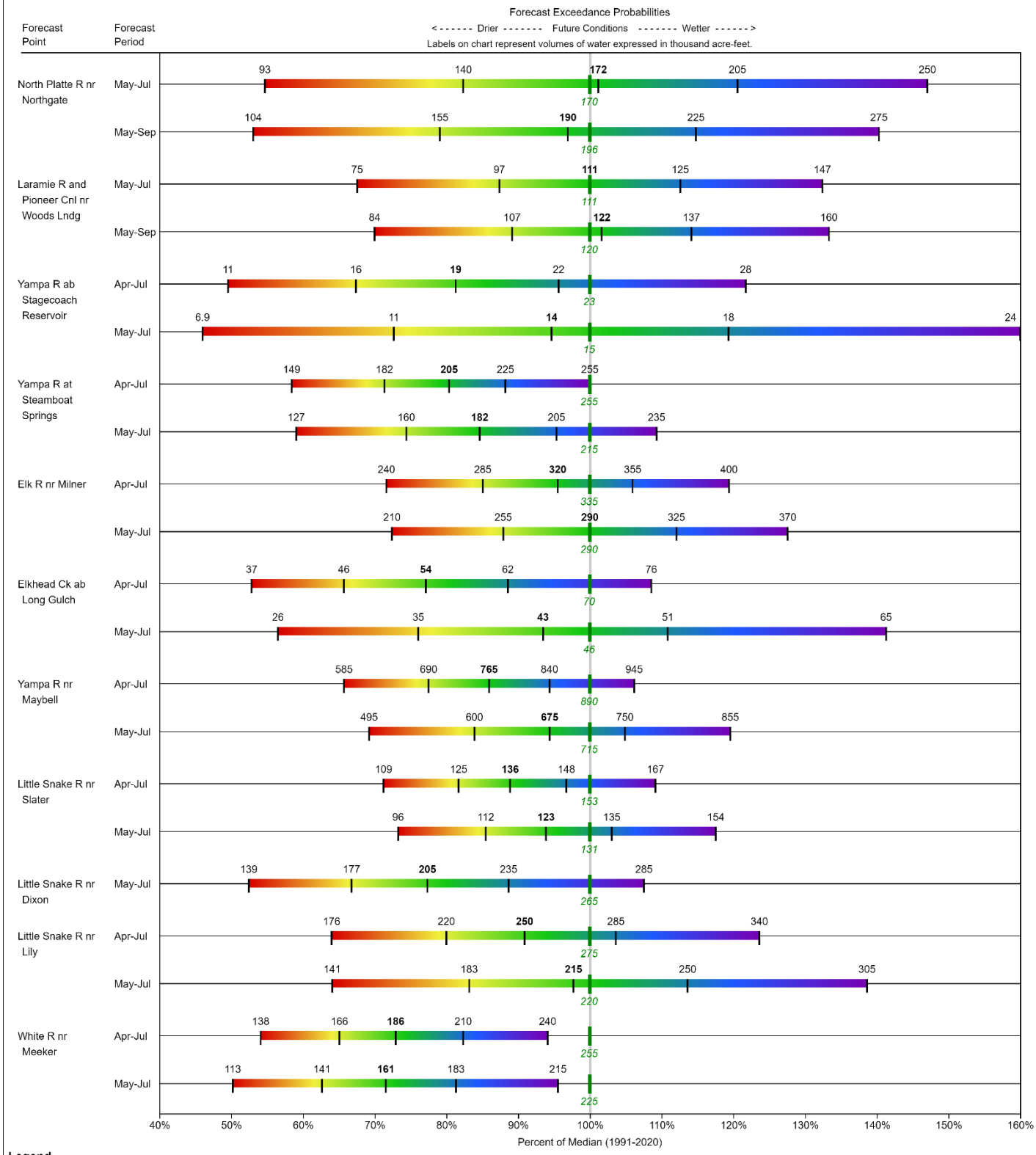
	Current Storage (KAF)	LY Storage (KAF)	Median (KAF)	Percent of Median
Yamcolo Reservoir	4.8	4.76	8.2	58.5
Elkhead Reservoir	18.08	21.09	24.5	73.8
High Savery Reservoir	8.5	11.31	15.0	56.7
Stagecoach Reservoir nr Oak Creek	29.9	34.03	31.9	93.7

*No reservoirs are currently monitored in the Laramie-North Platte combined basin.

YAMPA-WHITE-NORTH PLATTE RIVER BASINS

Water Supply Forecasts

May 1, 2022



Legend

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

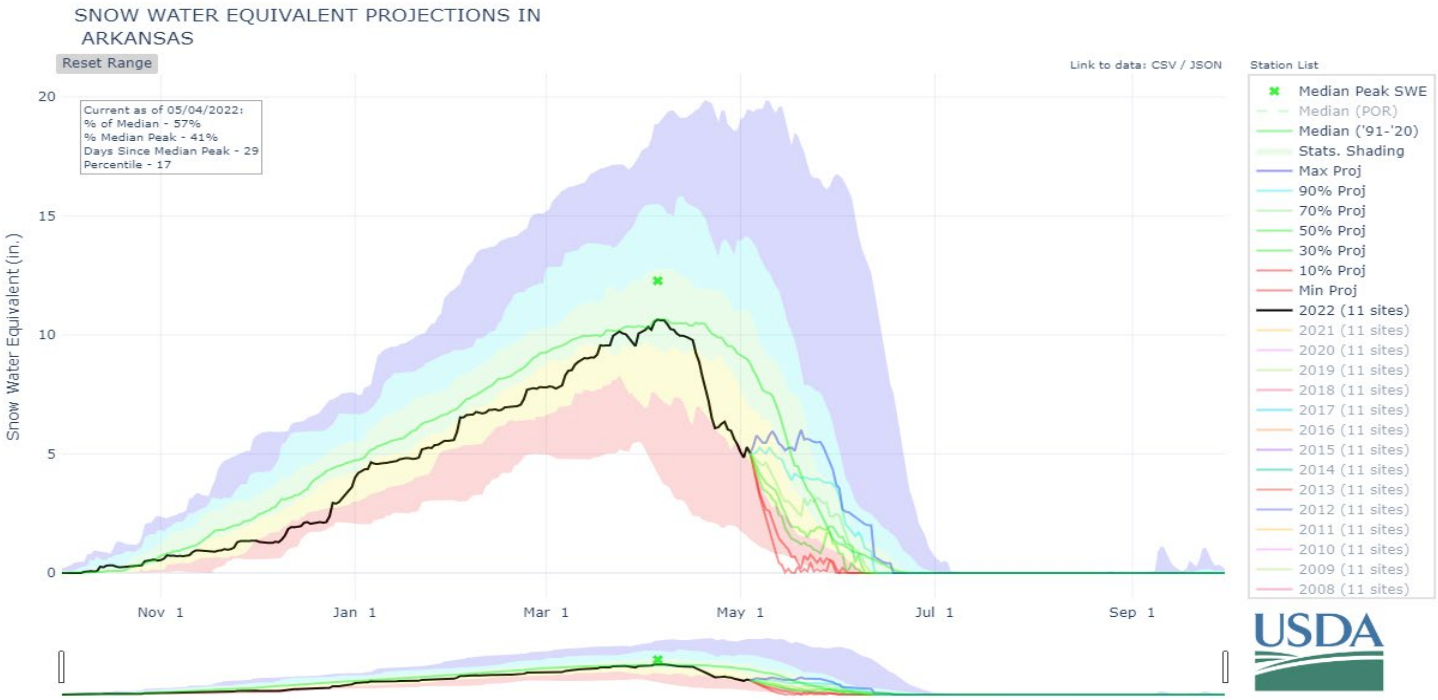
Period of Record Minimum Streamflow KAF (Year) | *1991-2020 Normal Streamflow KAF* | *Observed Streamflow KAF* | *Period of Record Maximum Streamflow KAF (Year)*

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

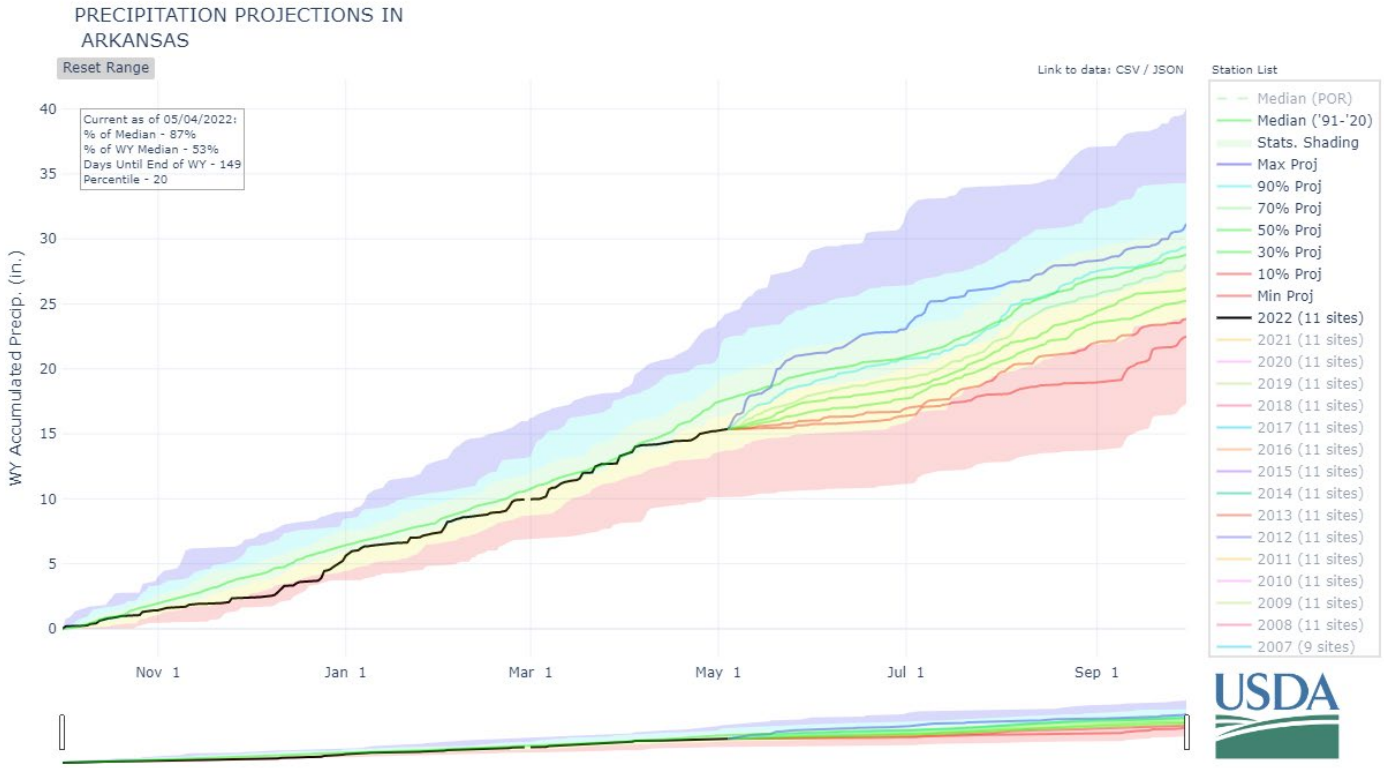
ARKANSAS RIVER BASIN

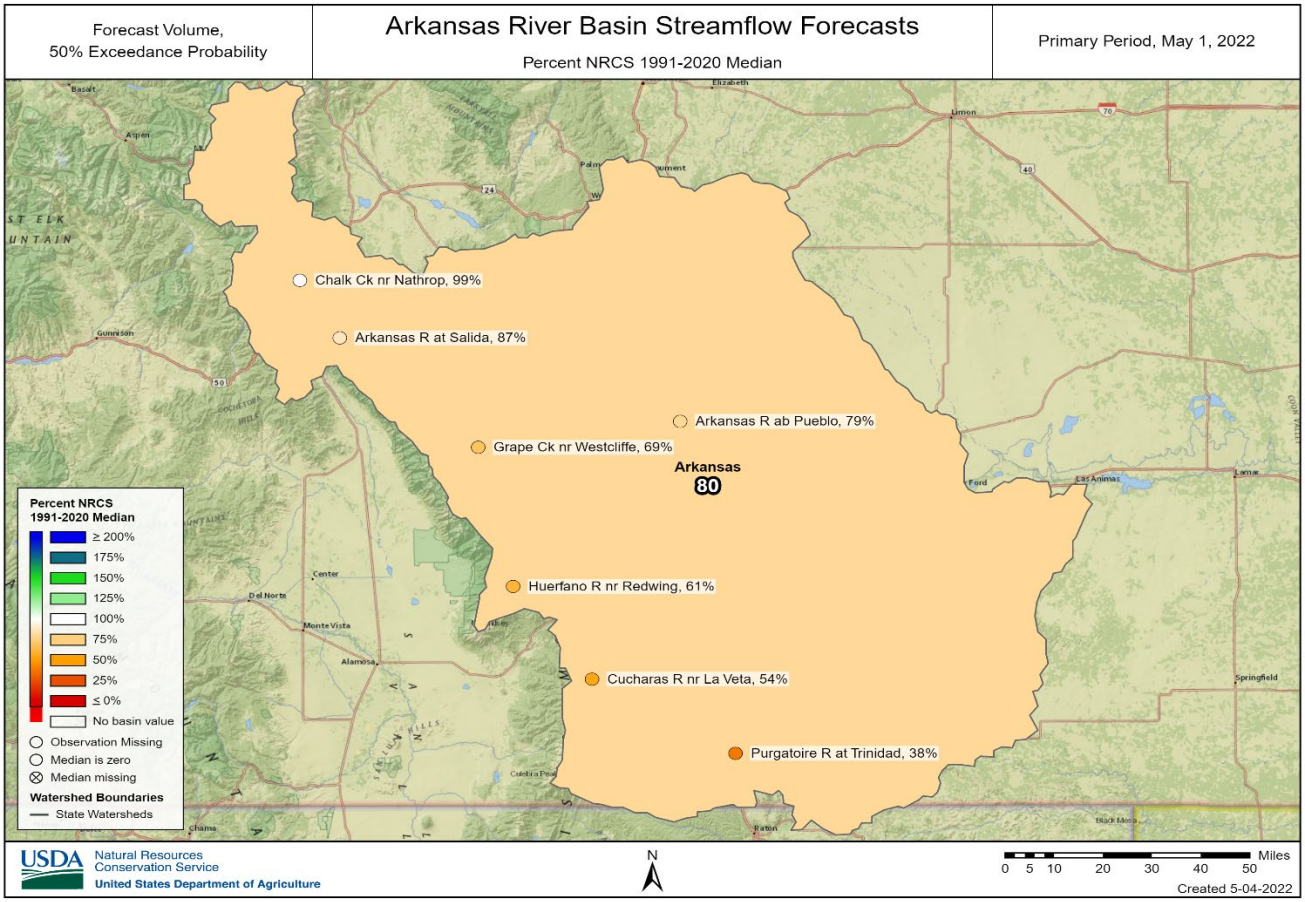
May 1st, 2022

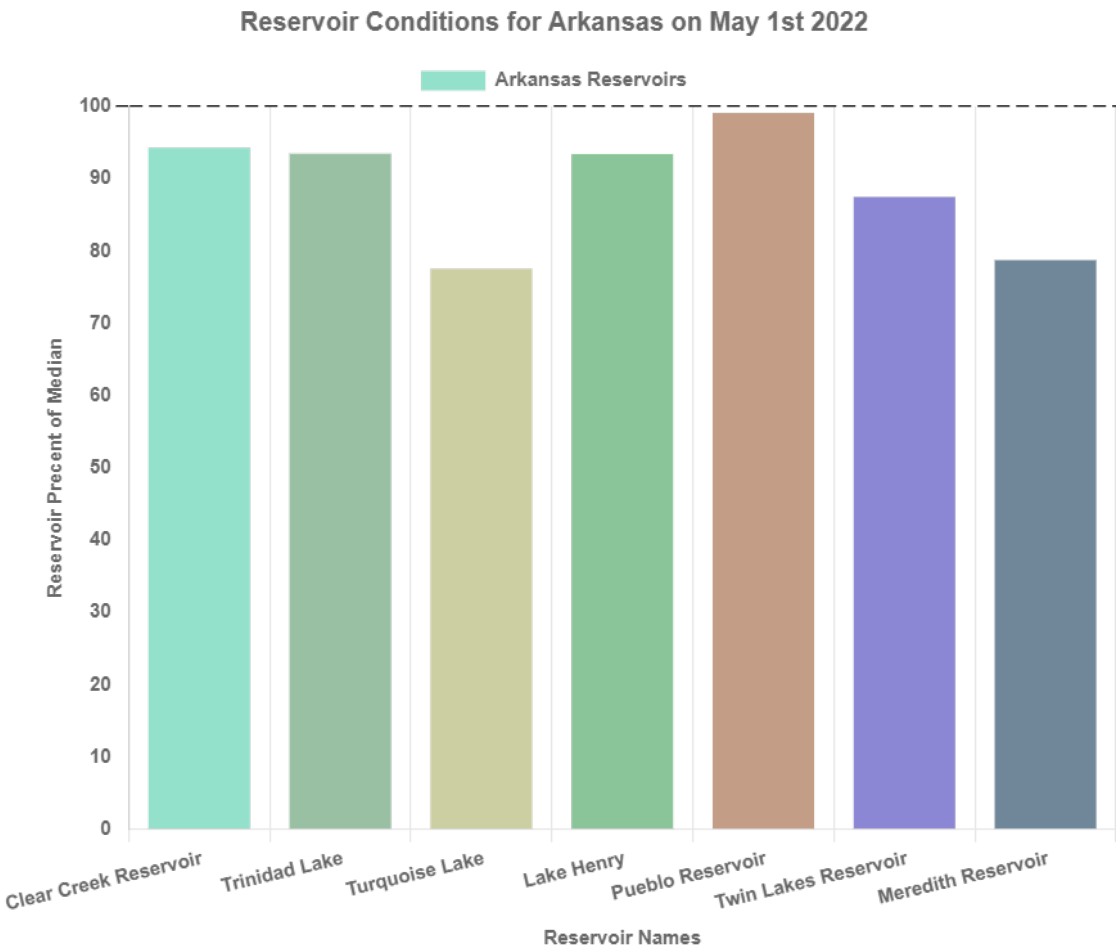
Snowpack in the Arkansas River basin is below normal at 66% of median. Precipitation for April was 57% of median which brings water year-to-date precipitation to 87% of median. Reservoir storage at the end of April was 92% of median compared to 89% last year. Current streamflow forecasts range from 46% of median at Trinidad Lake inflow to 110% of median at Chalk Creek near Nathrop.



*Snow water equivalent (SWE) values are calculated using daily SNOTEL data only for the above graph. In the paragraph SWE is calculated for the first of the month using both SNOTEL and Snow Course data.




Forecast Volume,
50% Exceedance Probability
Arkansas River Basin Streamflow Forecasts
Percent NRCS 1991-2020 Median
Primary Period, May 1, 2022
Chalk Ck nr Nathrop, 99%
Arkansas R at Salida, 87%
Arkansas R ab Pueblo, 79%
Grape Ck nr Westcliffe, 69%
Huerfano R nr Redwing, 61%
Cucharas R nr La Veta, 54%
Purgatoire R at Trinidad, 38%
Arkansas
80
Percent NRCS
1991-2020 Median
≥ 200%
175%
150%
125%
100%
75%
50%
25%
≤ 0%
No basin value
Observation Missing
Median is zero
Median missing
Watershed Boundaries
State Watersheds
USDA
Natural Resources
Conservation Service
United States Department of Agriculture
N
Miles
0 5 10 20 30 40 50
Created 5-04-2022


Reservoir Conditions for Arkansas on May 1st 2022
Arkansas Reservoirs
Reservoir Precent of Median
100
90
80
70
60
50
40
30
20
10
0
Clear Creek Reservoir
Trinidad Lake
Turquoise Lake
Lake Henry
Pueblo Reservoir
Twin Lakes Reservoir
Meredith Reservoir
Reservoir Names

Watershed Snowpack Analysis May 1st, 2022

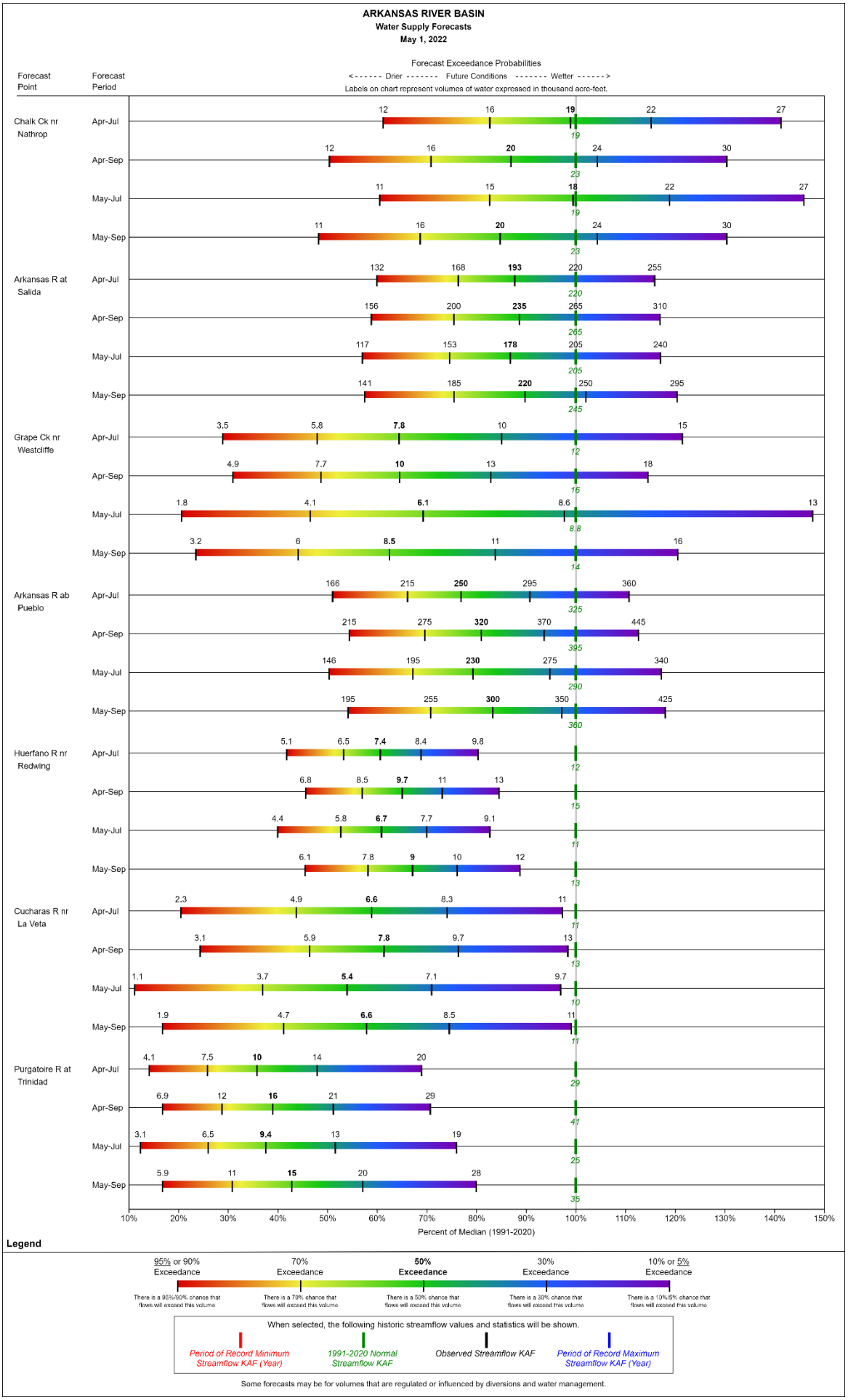
Arkansas Sub-Basin Snow Data

	# of Sites	% Median	Last Year % Median
Cucharas & Huerfano	4.0	29.3	71.7
Upper Arkansas Headwaters	9.0	81.6	75.0
Lower Arkansas Headwaters	3.0	43.0	87.7
Purgatoire	3.0	40.7	102.8
Apishapa	2.0	72.4	106.9

Reservoir Storage End of April 2022

Arkansas Reservoir Data

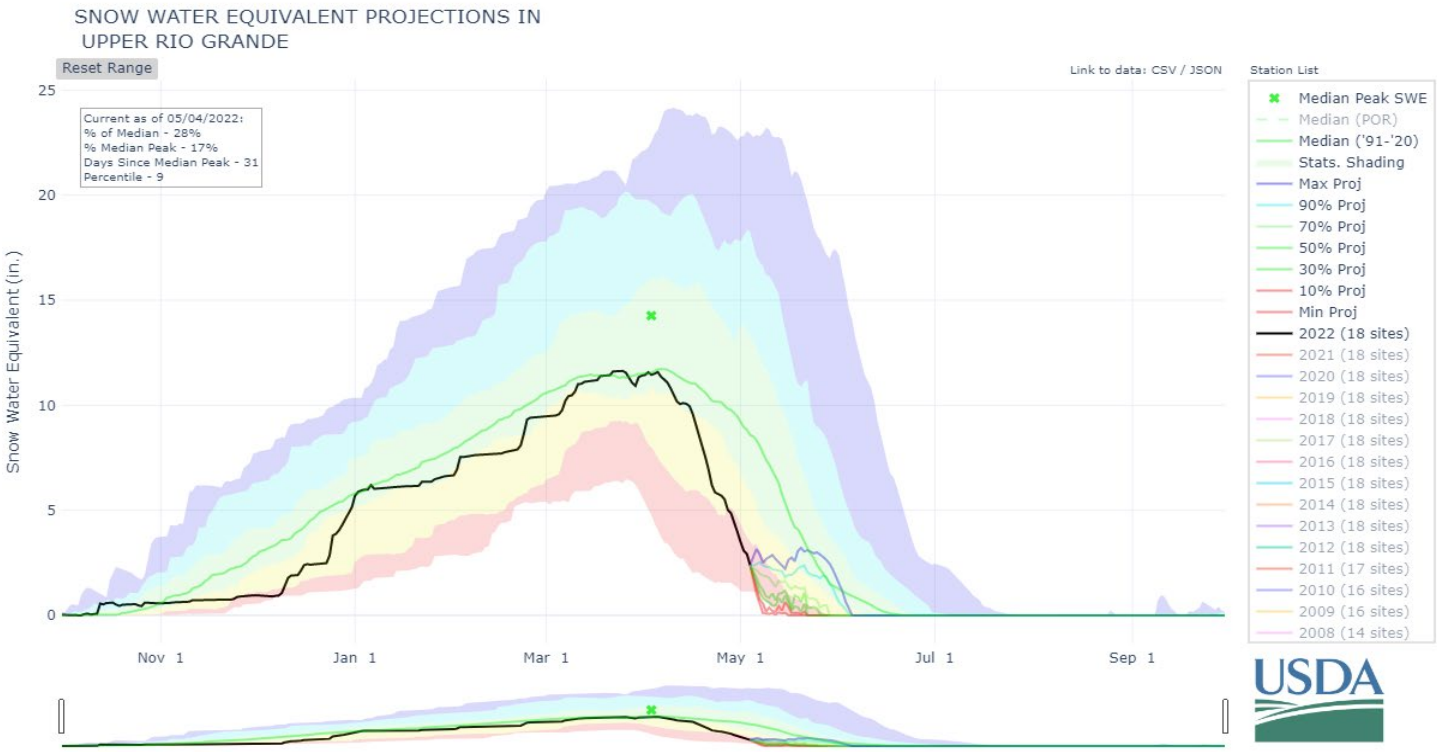
	Current Storage (KAF)	LY Storage (KAF)	Median (KAF)	Percent of Median
Turquoise Lake	46.6	59.72	60.1	77.5
Pueblo Reservoir	217.22	207.15	219.2	99.1
Meredith Reservoir	24.8	20.27	31.5	78.7
Clear Creek Reservoir	7.54	6.37	8.0	94.2
Twin Lakes Reservoir	30.27	26.74	34.6	87.5
Trinidad Lake	23.93	18.22	25.6	93.5
Lake Henry	6.82	6.98	7.3	93.4


ARKANSAS RIVER BASIN
Water Supply Forecasts
May 1, 2022
Forecast Exceedance Probabilities
<------ Drier ------- Future Conditions ------- Wetter ------>
Labels on chart represent volumes of water expressed in thousand acre-feet.
Forecast Point
Forecast Period
Chalk Ck nr Nathrop
Apr-Jul 12 16 19 22 27 19
Apr-Sep 12 16 20 24 30 23
May-Jul 11 15 18 22 27 19
May-Sep 11 16 20 24 30 23
Arkansas R at Salida
Apr-Jul 132 168 193 220 255 220
Apr-Sep 156 200 235 265 310 265
May-Jul 117 153 178 205 240 205
May-Sep 141 185 220 250 295 245
Grape Ck nr Westcliffe
Apr-Jul 3.5 5.8 7.8 10 15 12
Apr-Sep 4.9 7.7 10 13 18 16
May-Jul 1.8 4.1 6.1 8.6 13 8.8
May-Sep 3.2 6 8.5 11 16 14
Arkansas R ab Pueblo
Apr-Jul 166 215 250 295 360 325
Apr-Sep 215 275 320 370 445 395
May-Jul 146 195 230 275 340 290
May-Sep 195 255 300 350 425 360
Huerfano R nr Redwing
Apr-Jul 5.1 6.5 7.4 8.4 9.8 12
Apr-Sep 6.8 8.5 9.7 11 13 15
May-Jul 4.4 5.8 6.7 7.7 9.1 11
May-Sep 6.1 7.8 9 10 12 13
Cucharas R nr La Veta
Apr-Jul 2.3 4.9 6.6 8.3 11 11
Apr-Sep 3.1 5.9 7.8 9.7 13 13
May-Jul 1.1 3.7 5.4 7.1 9.7 10
May-Sep 1.9 4.7 6.6 8.5 11 11
Purgatoire R at Trinidad
Apr-Jul 4.1 7.5 10 14 20 29
Apr-Sep 6.9 12 16 21 29 41
May-Jul 3.1 6.5 9.4 13 19 25
May-Sep 5.9 11 15 20 28 35
10% 20% 30% 40% 50% 60% 70% 80% 90% 100% 110% 120% 130% 140% 150%
Percent of Median (1991-2020)
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)
1991-2020 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.

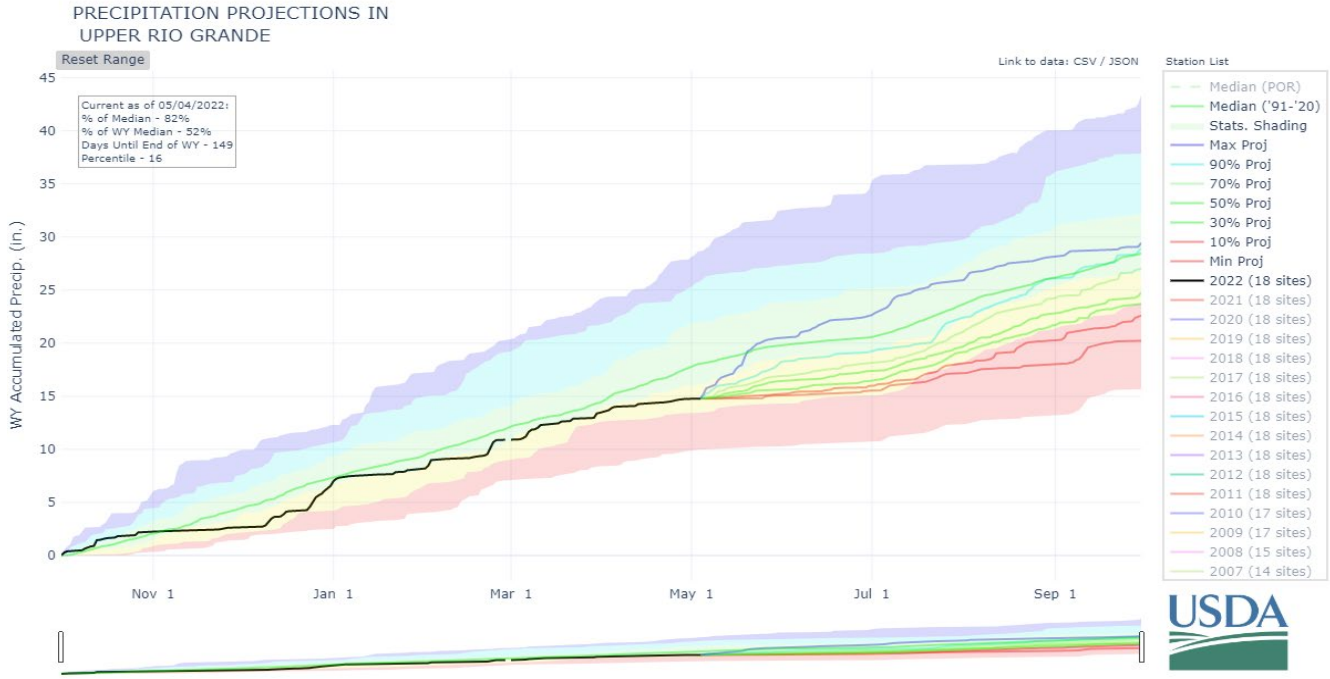
UPPER RIO GRANDE RIVER BASIN

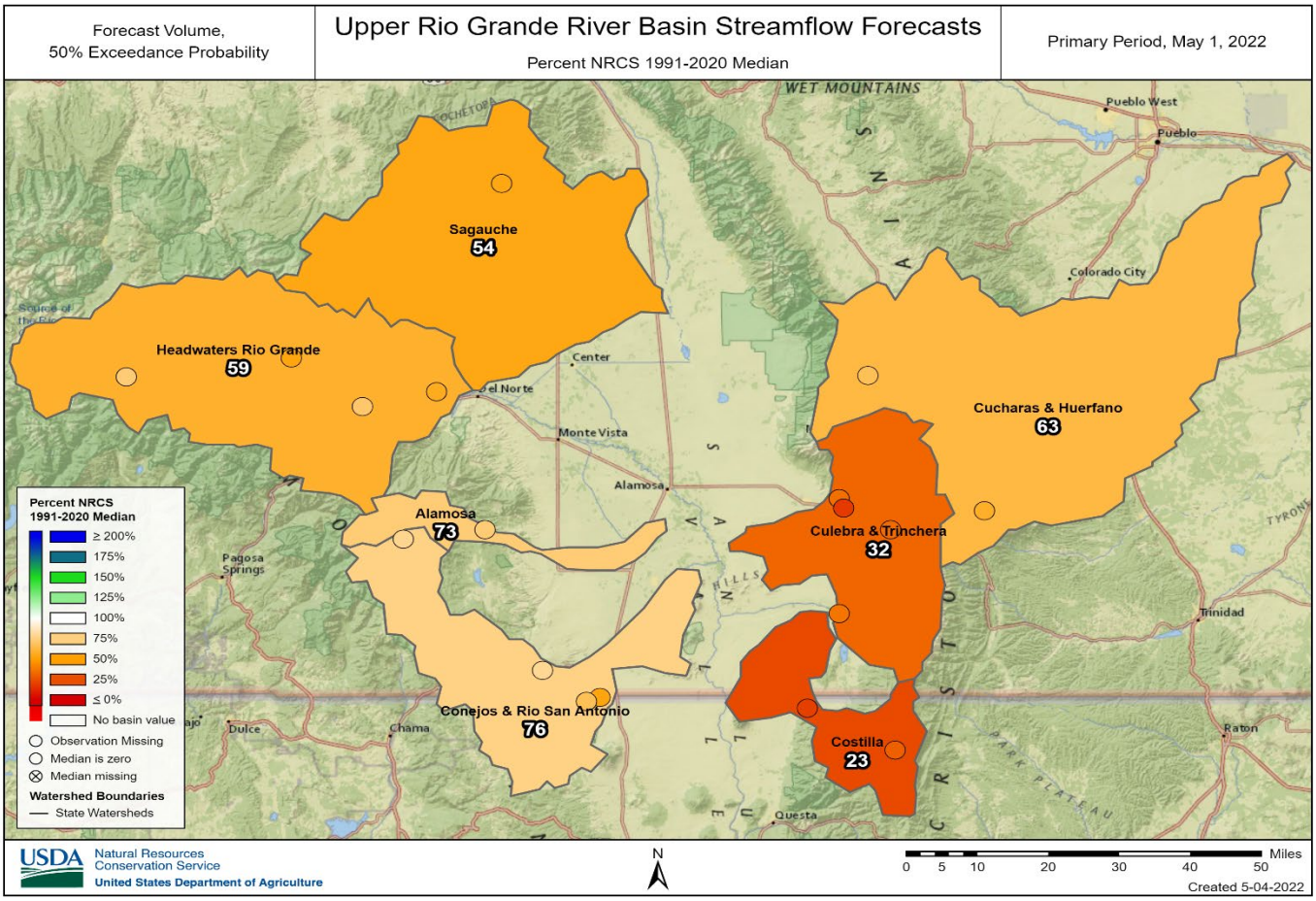
May 1st, 2022

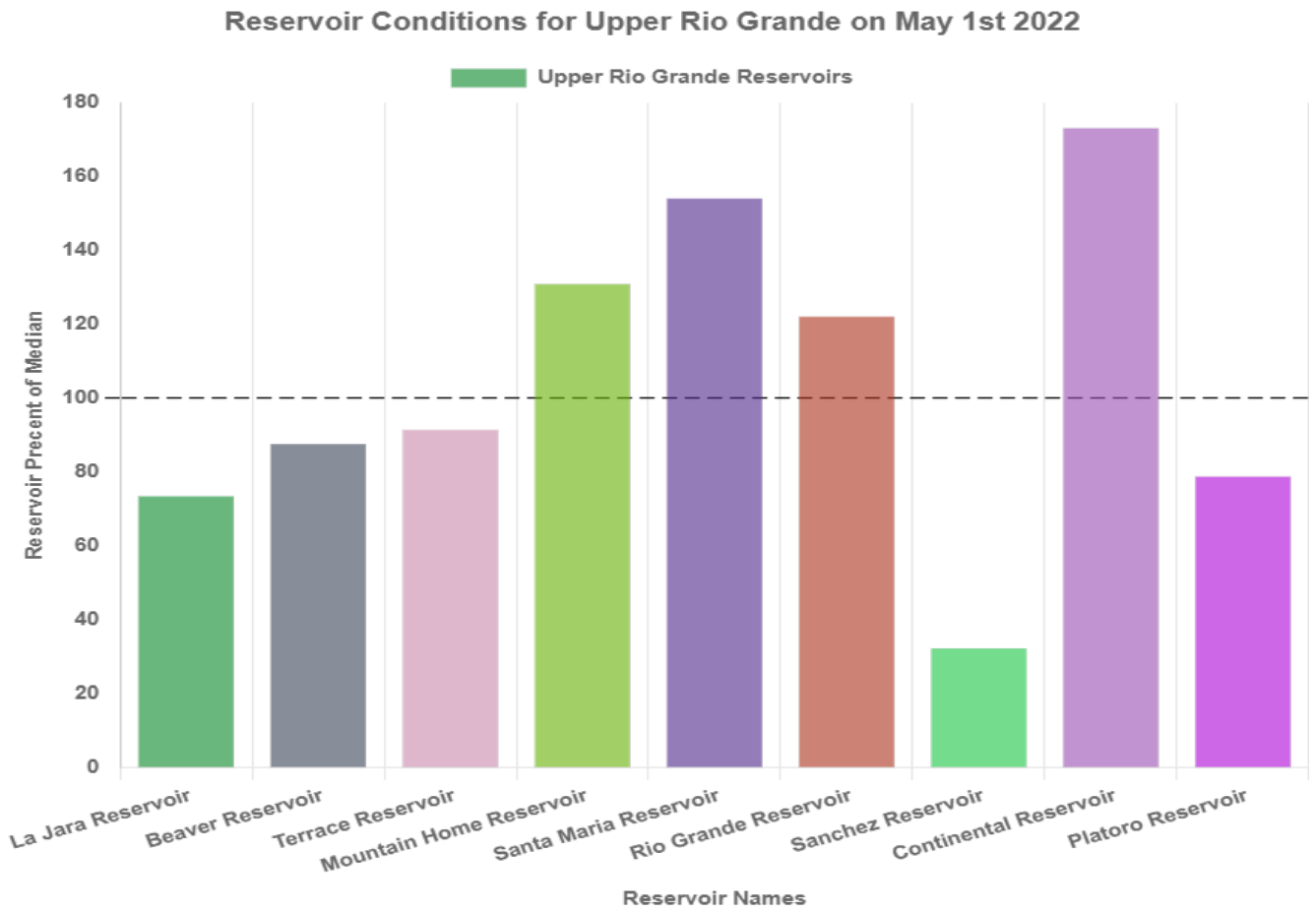
Snowpack in the Upper Rio Grande River basin is below normal at 43% of median. Precipitation for April was 48% of median which brings water year-to-date precipitation to 83% of median. Reservoir storage at the end of April was 92% of median compared to 87% last year. Current streamflow forecasts range from 44% of median at Culebra Creek at San Luis to 96% of median at Conejos River near Mogote.



*Snow water equivalent (SWE) values are calculated using daily SNOTEL data only for the above graph. In the paragraph SWE is calculated for the first of the month using both SNOTEL and Snow Course data.




Forecast Volume,
50% Exceedance Probability
Upper Rio Grande River Basin Streamflow Forecasts
Percent NRCS 1991-2020 Median
Primary Period, May 1, 2022
Sagauche
54
Headwaters Rio Grande
59
Cucharas & Huerfano
63
Alamosa
73
Culebra & Trinchera
32
Conejos & Rio San Antonio
76
Costilla
23
Percent NRCS
1991-2020 Median
≥ 200%
175%
150%
125%
100%
75%
50%
25%
≤ 0%
No basin value
Observation Missing
Median is zero
Median missing
Watershed Boundaries
State Watersheds
USDA
Natural Resources
Conservation Service
United States Department of Agriculture
N
Miles
0 5 10 20 30 40 50
Created 5-04-2022


Reservoir Conditions for Upper Rio Grande on May 1st 2022
Upper Rio Grande Reservoirs
Reservoir Precent of Median
0
20
40
60
80
100
120
140
160
180
La Jara Reservoir
Beaver Reservoir
Terrace Reservoir
Mountain Home Reservoir
Santa Maria Reservoir
Rio Grande Reservoir
Sanchez Reservoir
Continental Reservoir
Platoro Reservoir
Reservoir Names

Watershed Snowpack Analysis May 1st, 2022

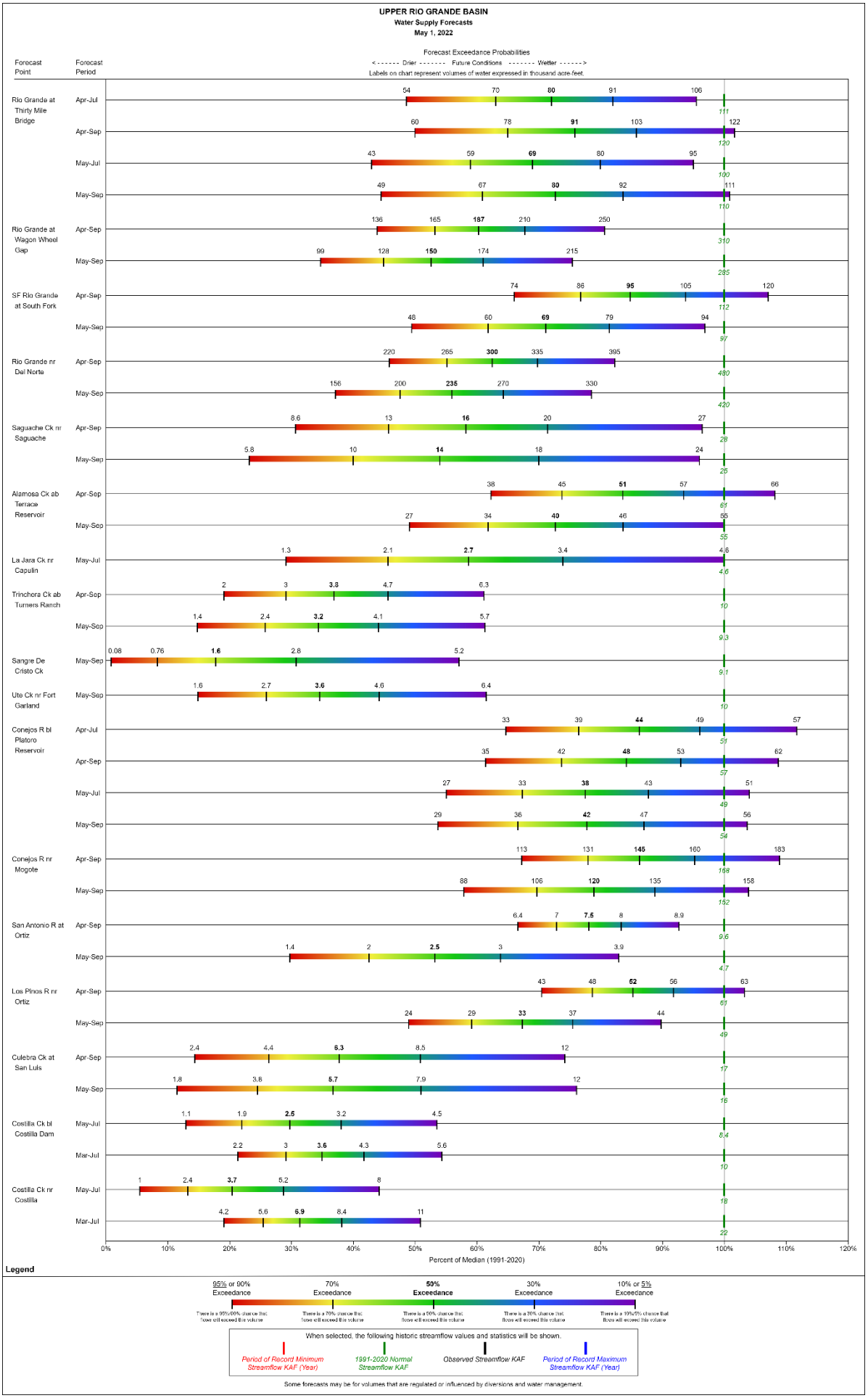
Upper Rio Grande Sub-Basin Snow Data

	# of Sites	% Median	Last Year % Median
Sagauche	4.0	5.1	111.8
Costilla	2.0	0.0	0.0
Headwaters Rio Grande	5.0	54.3	76.6
Northern San Luis Valley	2.0	12.0	81.2
Conejos & Rio San Antonio	5.0	57.4	63.5
Culebra & Trinchera	3.0	1.0	71.6
Alamosa	2.0	31.1	66.1

Reservoir Storage End of April 2022

Upper Rio Grande Reservoir Data

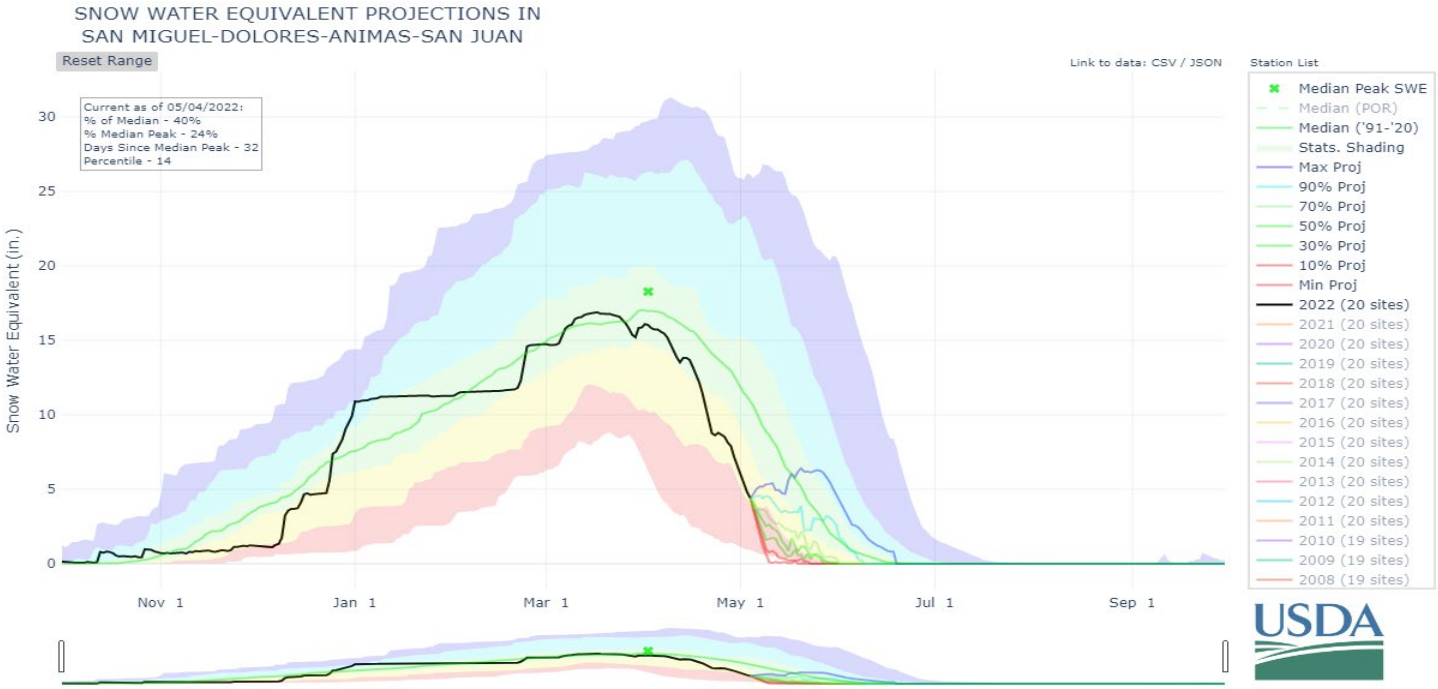
	Current Storage (KAF)	LY Storage (KAF)	Median (KAF)	Percent of Median
Rio Grande Reservoir	23.81	21.54	19.5	122.1
Continental Reservoir	12.12	11.16	7.0	173.1
La Jara Reservoir	1.69	2.21	2.3	73.5
Costilla Reservoir	5.24	4.58	8.3	63.1
Sanchez Reservoir	6.65	5.48	20.6	32.3
Platoro Reservoir	14.42	14.49	18.3	78.8
Beaver Reservoir	3.86	3.67	4.4	87.7
Terrace Reservoir	7.41	7.41	8.1	91.5
Santa Maria Reservoir	11.56	13.05	7.5	154.1
Mountain Home Reservoir	4.71	2.98	3.6	130.8


UPPER RIO GRANDE BASIN
Water Supply Forecasts
May 1, 2022
Forecast Exceedance Probabilities
< ------ Drier ------- Future Conditions ------- Wetter ------ >
Labels on chart represent volumes of water expressed in thousand acre-feet.
Forecast Point
Forecast Period
Rio Grande at Thirty Mile Bridge
Apr-Jul 54 70 80 91 106 111
Apr-Sep 60 78 91 103 122 120
May-Jul 43 59 69 80 95 100
May-Sep 49 67 80 92 111 110
Rio Grande at Wagon Wheel Gap
Apr-Sep 136 165 187 210 250 310
May-Sep 99 128 150 174 215 285
SF Rio Grande at South Fork
Apr-Sep 74 86 95 105 120 112
May-Sep 48 60 69 79 94 97
Rio Grande nr Del Norte
Apr-Sep 220 265 300 335 395 480
May-Sep 156 200 235 270 330 420
Saguache Ck nr Saguache
Apr-Sep 8.6 13 16 20 27 28
May-Sep 5.8 10 14 18 24 25
Alamosa Ck ab Terrace Reservoir
Apr-Sep 38 45 51 57 66 61
May-Sep 27 34 40 46 55 55
La Jara Ck nr Capulin
May-Jul 1.3 2.1 2.7 3.4 4.6 4.6
Trinchera Ck ab Turners Ranch
Apr-Sep 2 3 3.8 4.7 6.3 10
May-Sep 1.4 2.4 3.2 4.1 5.7 9.3
Sangre De Cristo Ck
May-Sep 0.08 0.76 1.6 2.8 5.2 9.1
Ute Ck nr Fort Garland
May-Sep 1.6 2.7 3.6 4.6 6.4 10
Conejos R bl Platoro Reservoir
Apr-Jul 33 39 44 49 57 51
Apr-Sep 35 42 48 53 62 57
May-Jul 27 33 38 43 51 49
May-Sep 29 36 42 47 56 54
Conejos R nr Mogote
Apr-Sep 113 131 145 160 183 168
May-Sep 88 106 120 135 158 152
San Antonio R at Ortiz
Apr-Sep 6.4 7 7.5 8 8.9 9.6
May-Sep 1.4 2 2.5 3 3.9 4.7
Los Pinos R nr Ortiz
Apr-Sep 43 48 52 56 63 61
May-Sep 24 29 33 37 44 49
Culebra Ck at San Luis
Apr-Sep 2.4 4.4 6.3 8.5 12 17
May-Sep 1.8 3.8 5.7 7.9 12 16
Costilla Ck bl Costilla Dam
May-Jul 1.1 1.9 2.5 3.2 4.5 8.4
Mar-Jul 2.2 3 3.6 4.3 5.6 10
Costilla Ck nr Costilla
May-Jul 1 2.4 3.7 5.2 8 18
Mar-Jul 4.2 5.6 6.9 8.4 11 22
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100% 110% 120%
Percent of Median (1991-2020)
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)
1991-2020 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.

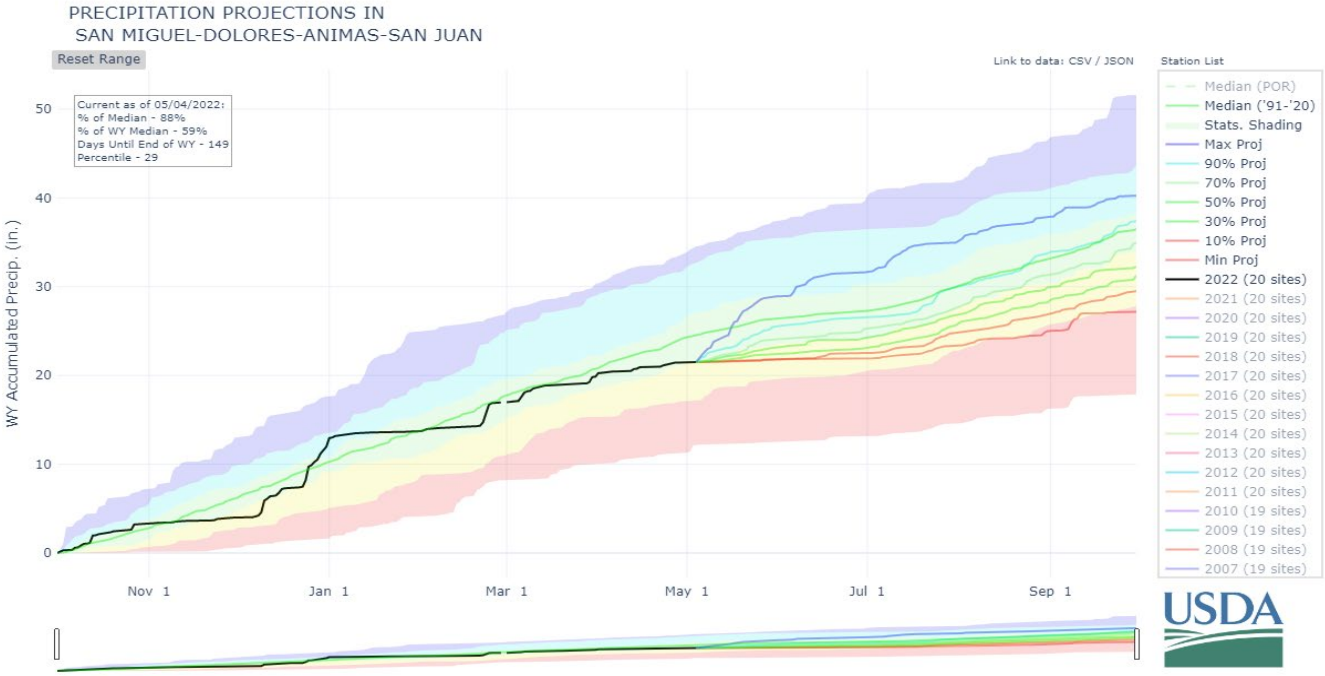
SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN COMBINED RIVER BASIN

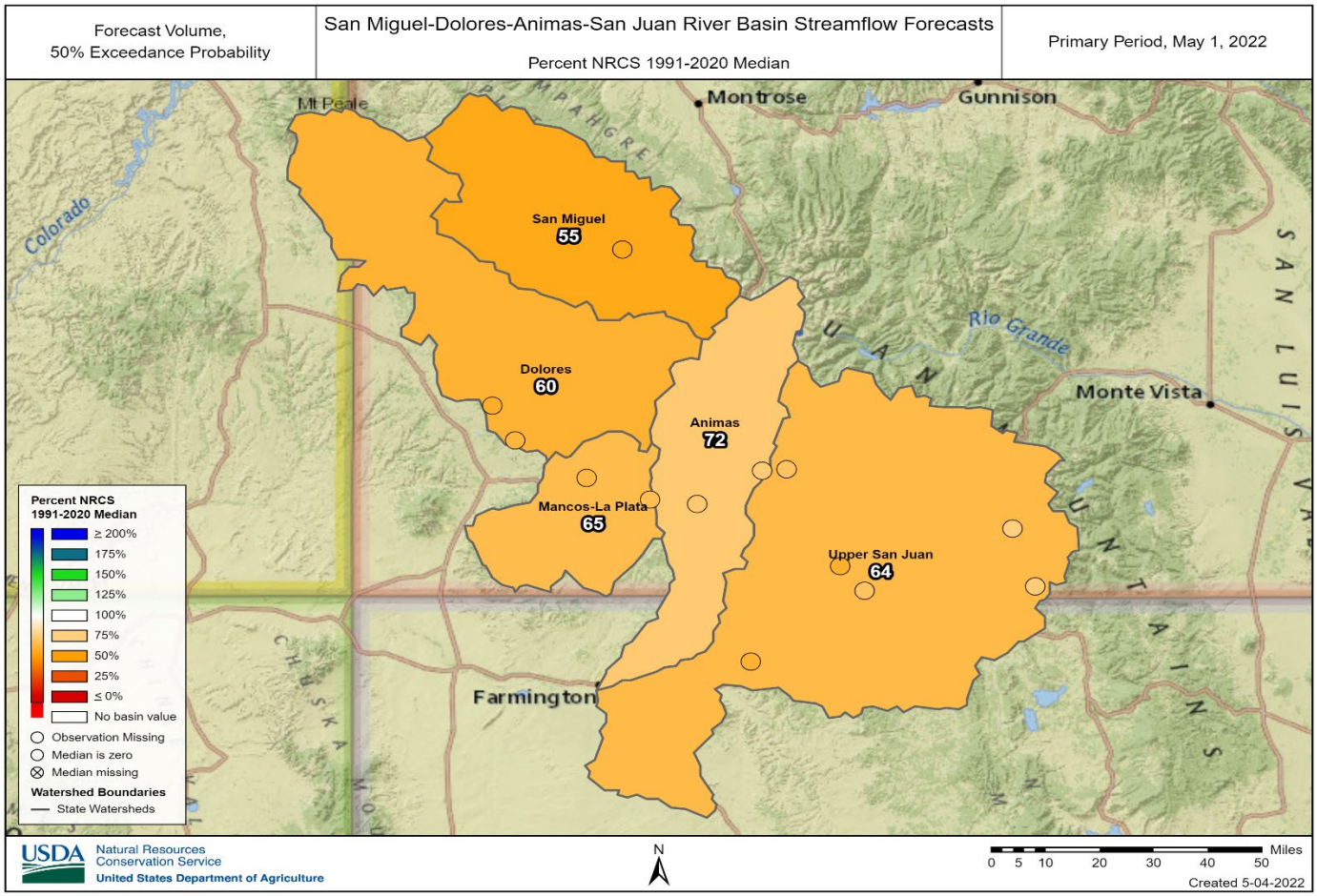
May 1st, 2022

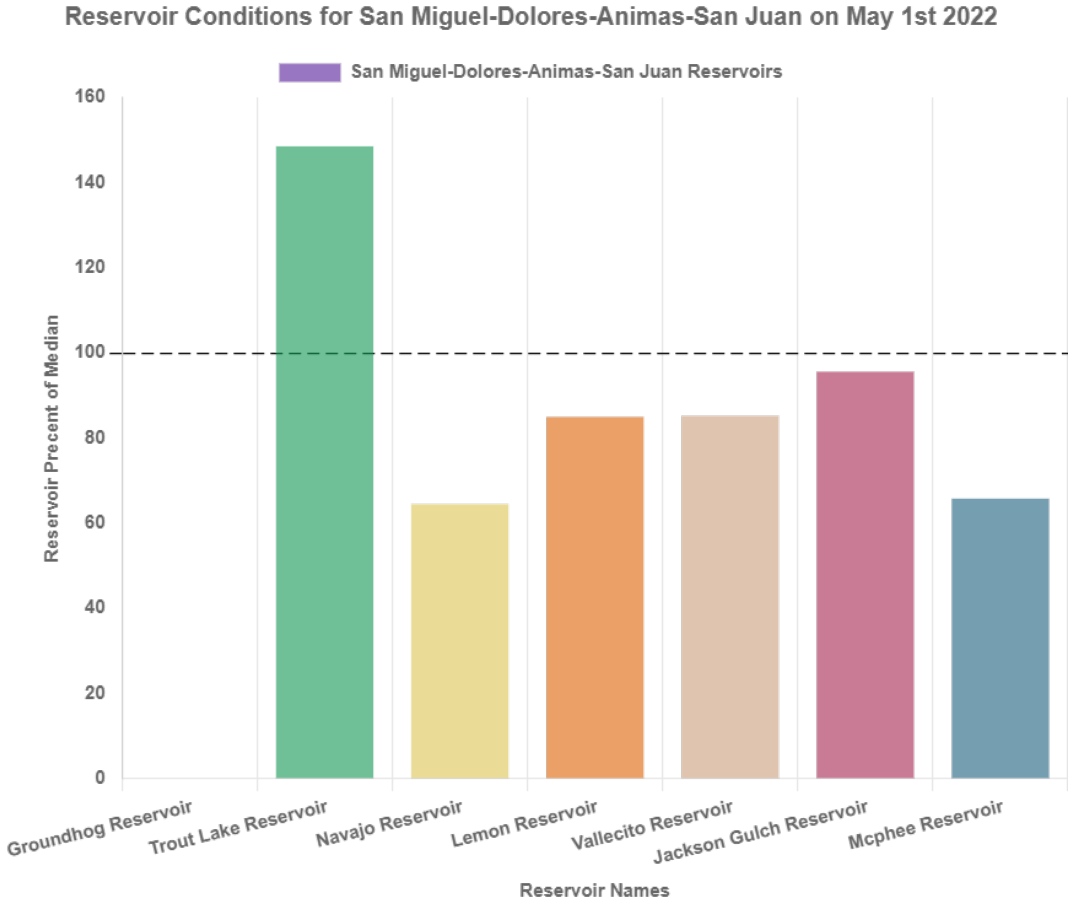
Snowpack in the combined southwest river basins is below normal at 51% of median. Precipitation for April was 47% of median which brings water year-to-date precipitation to 88% of median. Reservoir storage at the end of April was 66% of median compared to 70% last year. Current streamflow forecasts range from 67% of median at San Miguel River near Placerville to 86% of median at Navajo River below Oso Diversion Dam near Chromo.



*Snow water equivalent (SWE) values are calculated using daily SNOTEL data only for the above graph. In the paragraph SWE is calculated for the first of the month using both SNOTEL and Snow Course data.




Forecast Volume,
50% Exceedance Probability
San Miguel-Dolores-Animas-San Juan River Basin Streamflow Forecasts
Percent NRCS 1991-2020 Median
Primary Period, May 1, 2022
Mt Peale
Montrose
Gunnison
Colorado
San Miguel
55
Dolores
60
Animas
72
Mancos-La Plata
65
Upper San Juan
64
Rio Grande
Monte Vista
Farmington
Percent NRCS
1991-2020 Median
≥ 200%
175%
150%
125%
100%
75%
50%
25%
≤ 0%
No basin value
Observation Missing
Median is zero
Median missing
Watershed Boundaries
State Watersheds
USDA
Natural Resources
Conservation Service
United States Department of Agriculture
N
Miles
0 5 10 20 30 40 50
Created 5-04-2022


Reservoir Conditions for San Miguel-Dolores-Animas-San Juan on May 1st 2022
San Miguel-Dolores-Animas-San Juan Reservoirs
Reservoir Precent of Median
0
20
40
60
80
100
120
140
160
Groundhog Reservoir
Trout Lake Reservoir
Navajo Reservoir
Lemon Reservoir
Vallecito Reservoir
Jackson Gulch Reservoir
Mcphee Reservoir
Reservoir Names

Watershed Snowpack Analysis May 1st, 2022

San Miguel-Dolores-Animas-San Juan Sub-Basin Snow Data

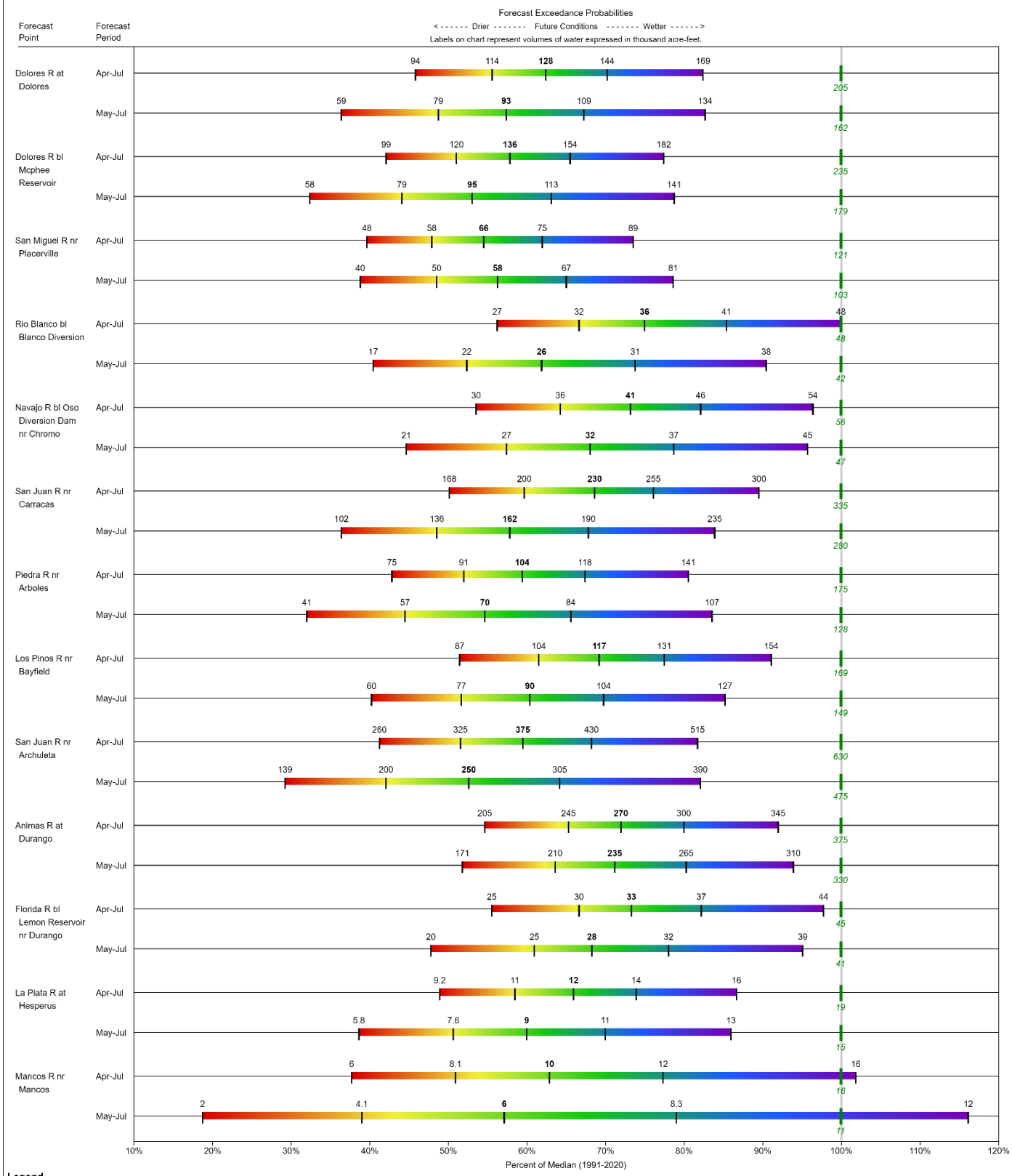
	# of Sites	% Median	Last Year % Median
Animas	10.0	55.1	63.4
Upper San Juan	7.0	49.1	73.2
San Miguel	6.0	55.5	45.1
Dolores	4.0	37.7	25.9
Mancos-La Plata	3.0	72.1	46.9

Reservoir Storage End of April 2022

San Miguel-Dolores-Animas-San Juan Reservoir Data

	Current Storage (KAF)	LY Storage (KAF)	Median (KAF)	Percent of Median
Trout Lake Reservoir	2.27	1.77	1.53	148.4
Mcphee Reservoir	213.35	176.39	324.3	65.8
Vallecito Reservoir	73.04	56.6	85.7	85.2
Groundhog Reservoir	nan	5.6	16.4	nan
Jackson Gulch Reservoir	7.26	3.7	7.6	95.5
Navajo Reservoir	898.25	1044.6	1393.0	64.5
Lemon Reservoir	19.03	13.24	22.4	85.0

SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVER BASINS
Water Supply Forecasts
May 1, 2022



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)	*1991-2020 Normal Streamflow KAF*	*Observed Streamflow KAF*	*Period of Record Maximum Streamflow KAF (Year)*

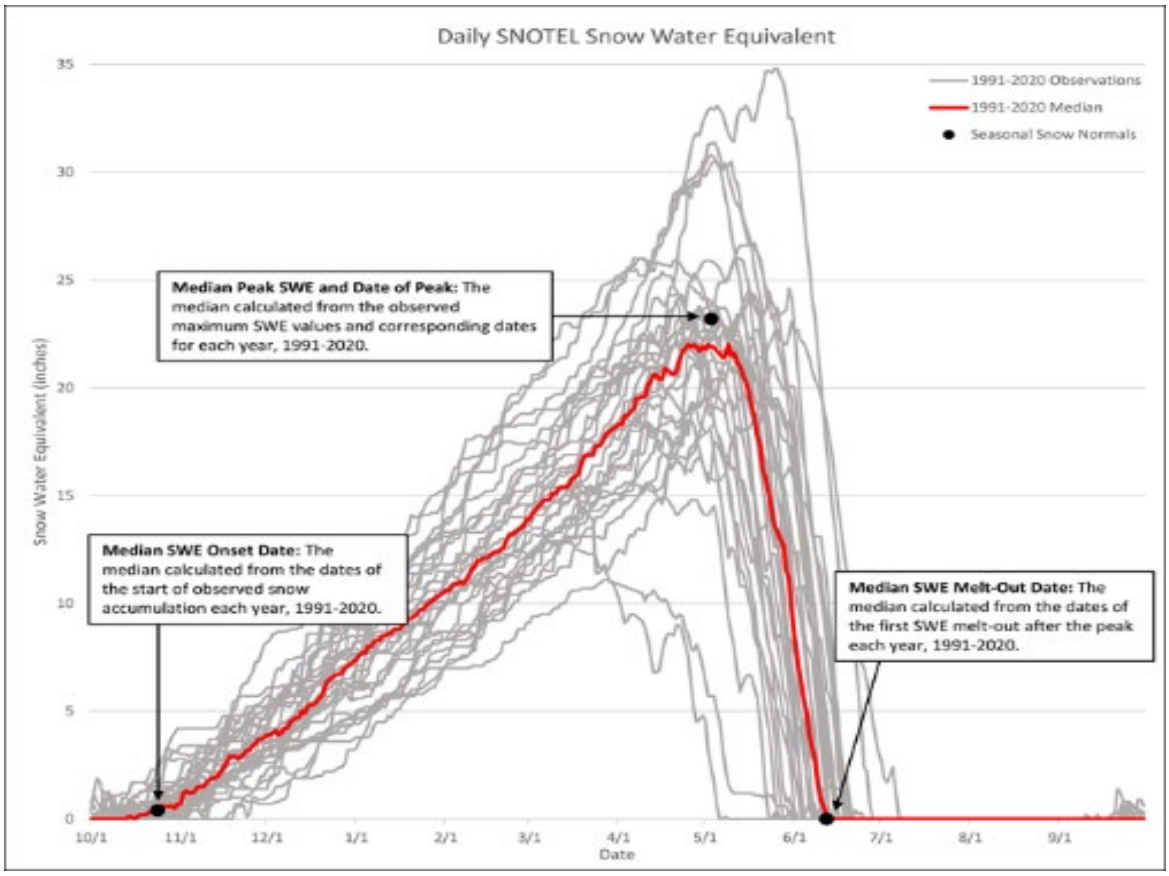
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

New 1991-2020 Statistical Normals

The NRCS Snow Survey and Water Supply Forecasting (SSWSF) Program recently published new statistical normals (medians or averages) to describe the central tendency of a data record over a 30-year period. Data normals are key in helping water users compare current conditions to past conditions using the metric "% of normal." Every 10 years, the SSWSF Program updates the 30-year normals reference period to stay consistent with World Meteorological Organization standards that account for changing climatic conditions over time. As such, this year the SSWSF Program transitioned from using 1981-2010 data normals to using 1991-2020 data normals.

For the 1991-2020 reference period, the median is the official NRCS normal when conveying information about current snowpack, precipitation, and water supply conditions. The median was previously used as the official 1981-2010 normal for SWE and some streamflow forecast points, but the average was used for other data types. Setting the official normal to the median provides consistency across data types and stations. Viewing the 30-year average may be preferable over the median in some instances, therefore, both the average and the median are available in most NRCS reports and products. See Median vs. Average for more information about the median.

A new suite of statistics for automated snow monitoring stations are available to provide information about normal seasonal snowpack characteristics. These new seasonal statistics include medians and averages for the SWE onset date and melt-out date, as well as the median and average maximum seasonal SWE value (Peak SWE) and date of Peak SWE. More detailed information on the updated normals can be found on the Water and Climate Center's 30-year normals page.



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.

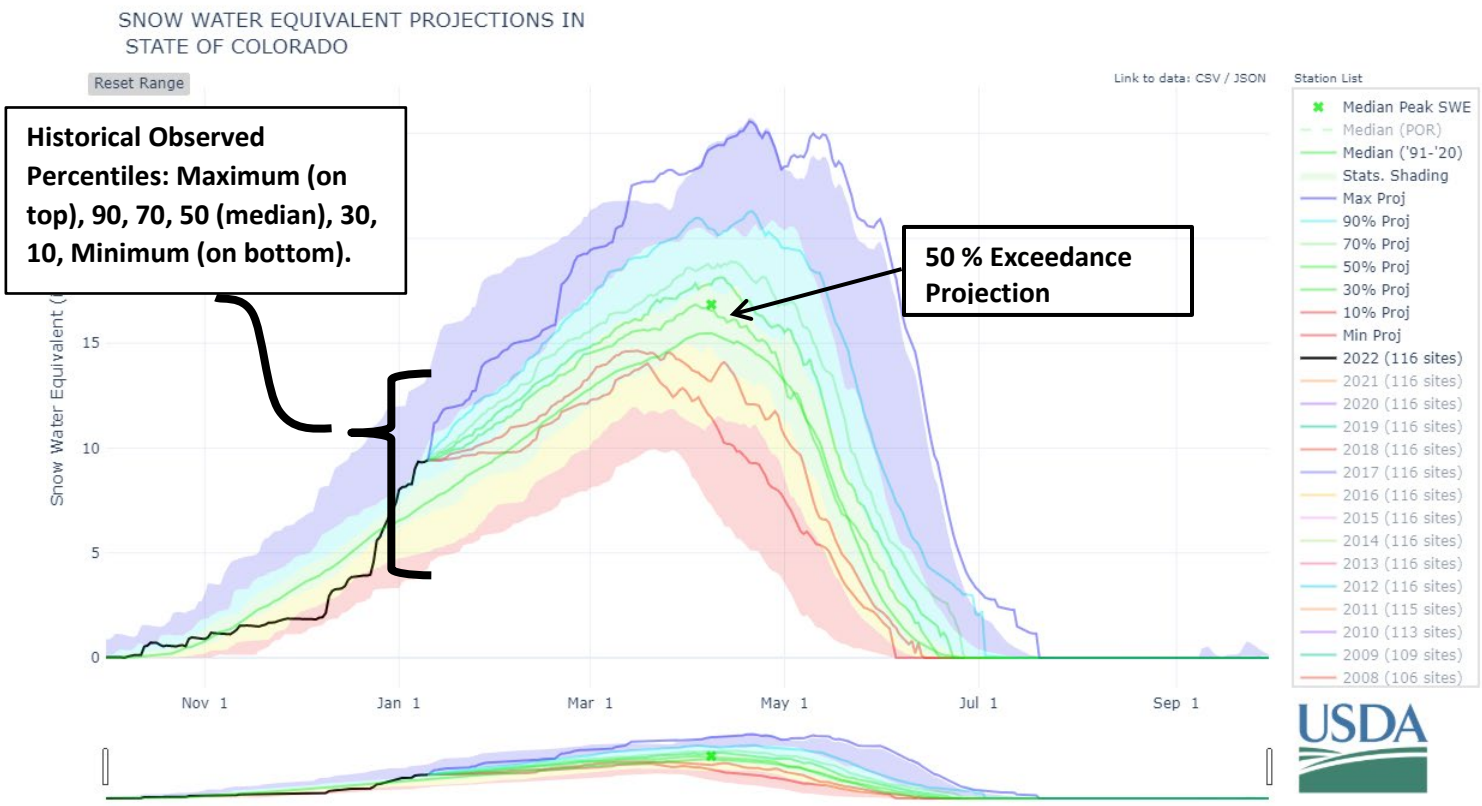
Current water year is represented by the heavy red line terminating on the last day the graphic was updated.

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 % Exceedance 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:

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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/

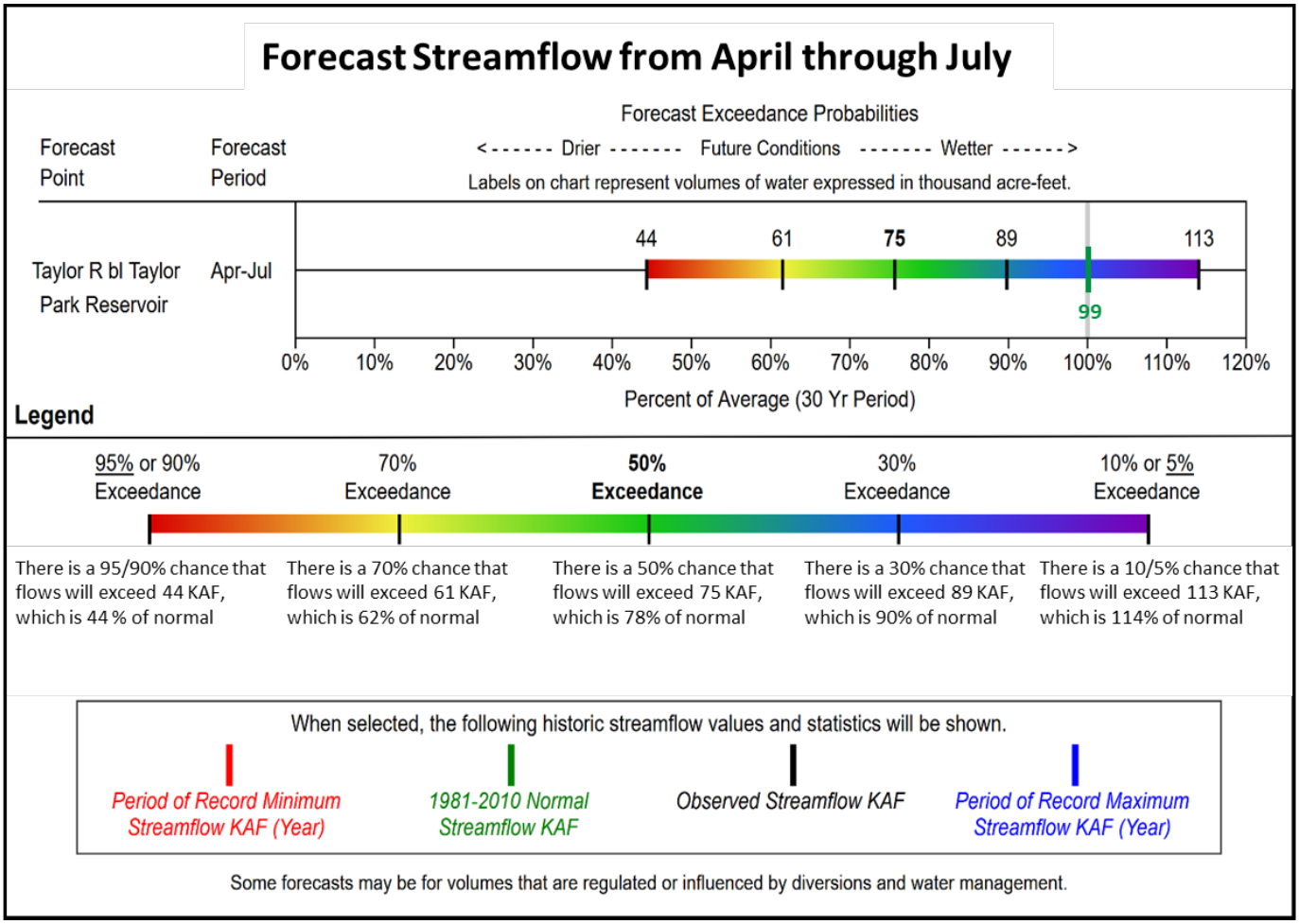
Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual 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 median represented by each forecast and the gray line centered above 100% represents the 1981-2010 historical median 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 median streamflow volumes during the provided forecast period. Conversely, if the majority of the color bar is to the left of the median mark, below median 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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Denver, CO 80225-0426

In addition to the water supply outlook reports, water supply forecast information for the Western United States is available from the Natural Resources Conservation Service and the National Weather Service monthly, February 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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Issued by

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Chief, Natural Resources Conservation Service
Farm Production and Conservation Mission Area
U.S. Department of Agriculture

Released by

Clint Evans
State Conservationist
Natural Resources Conservation Service
Lakewood, Colorado

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