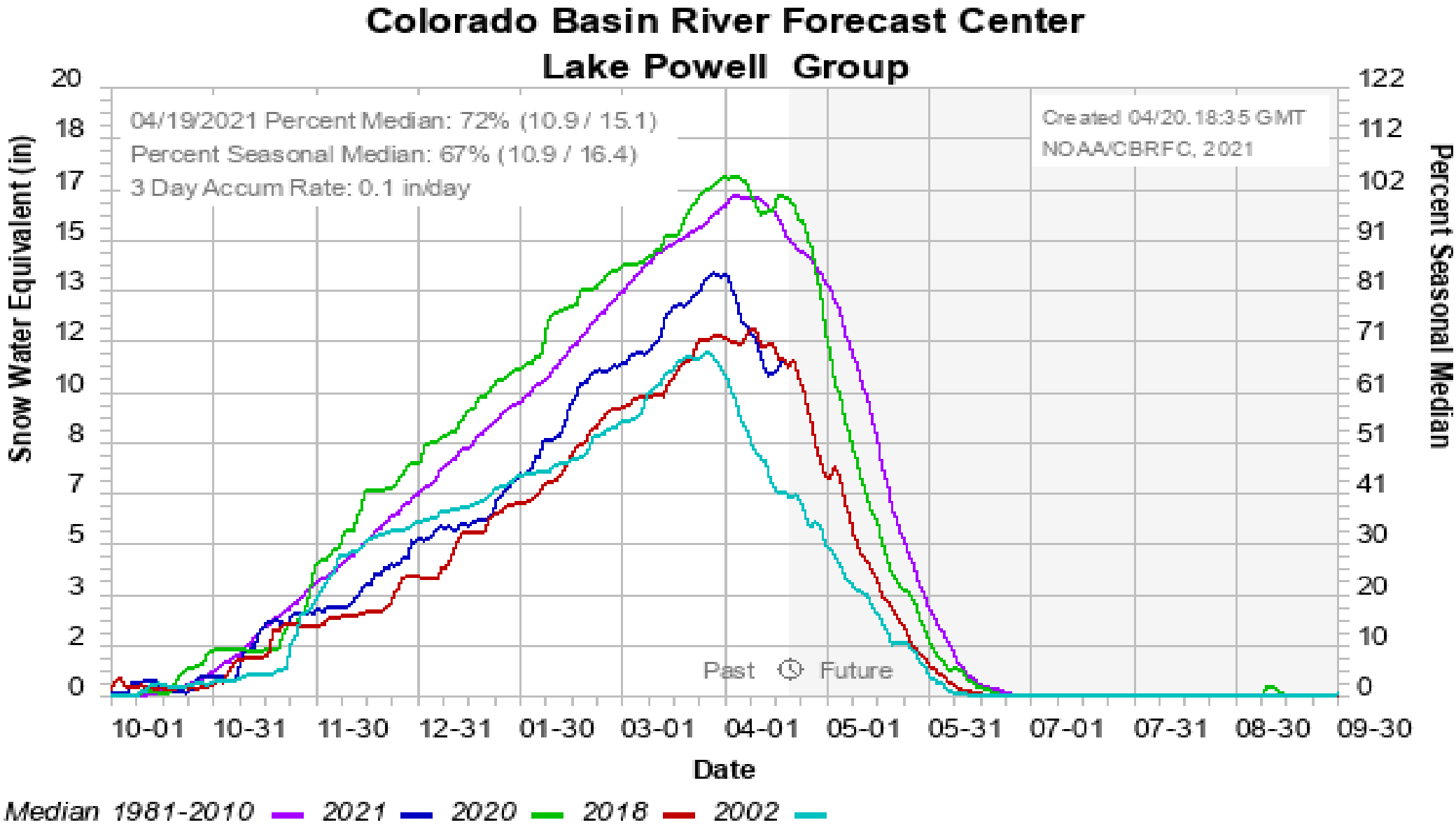
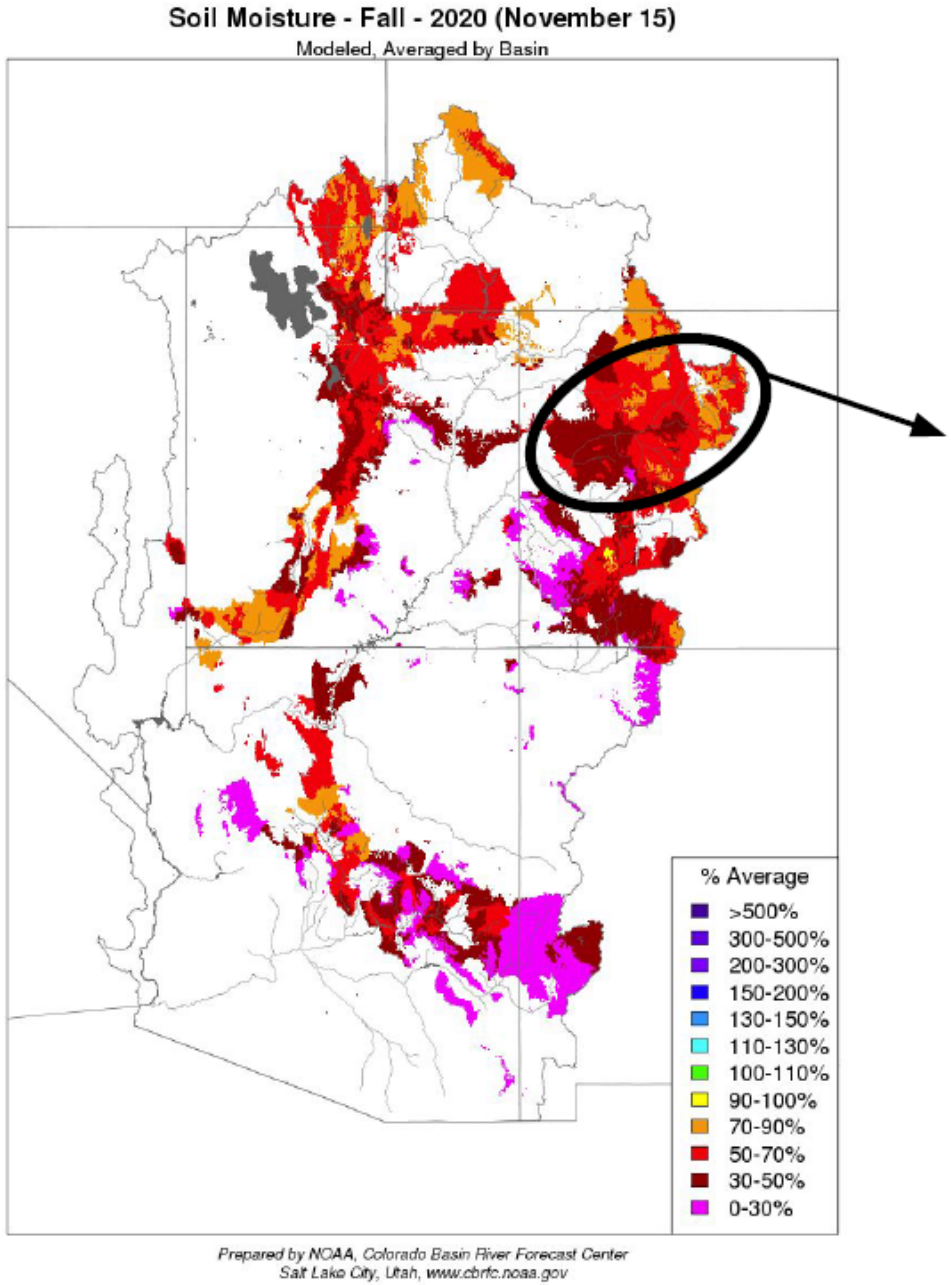
SWBRT CR Issues Subcommittee

April 22, 2021 Meeting Hydrology Update

John Currier, PE


Colorado Basin River Forecast Center
Lake Powell Group
04/19/2021 Percent Median: 72% (10.9 / 15.1)
Percent Seasonal Median: 67% (10.9 / 16.4)
3 Day Accum Rate: 0.1 in/day
Created 04/20.18:35 GMT
NOAA/CBRFC, 2021
Snow Water Equivalent (in)
Percent Seasonal Median
20
18
17
15
13
12
10
8
7
5
3
2
0
122
112
102
91
81
71
61
51
41
30
20
10
0
Past
Future
10-01
10-31
11-30
12-31
01-30
03-01
04-01
05-01
05-31
07-01
07-31
08-30
09-30
Date
Median 1981-2010
2021
2020
2018
2002

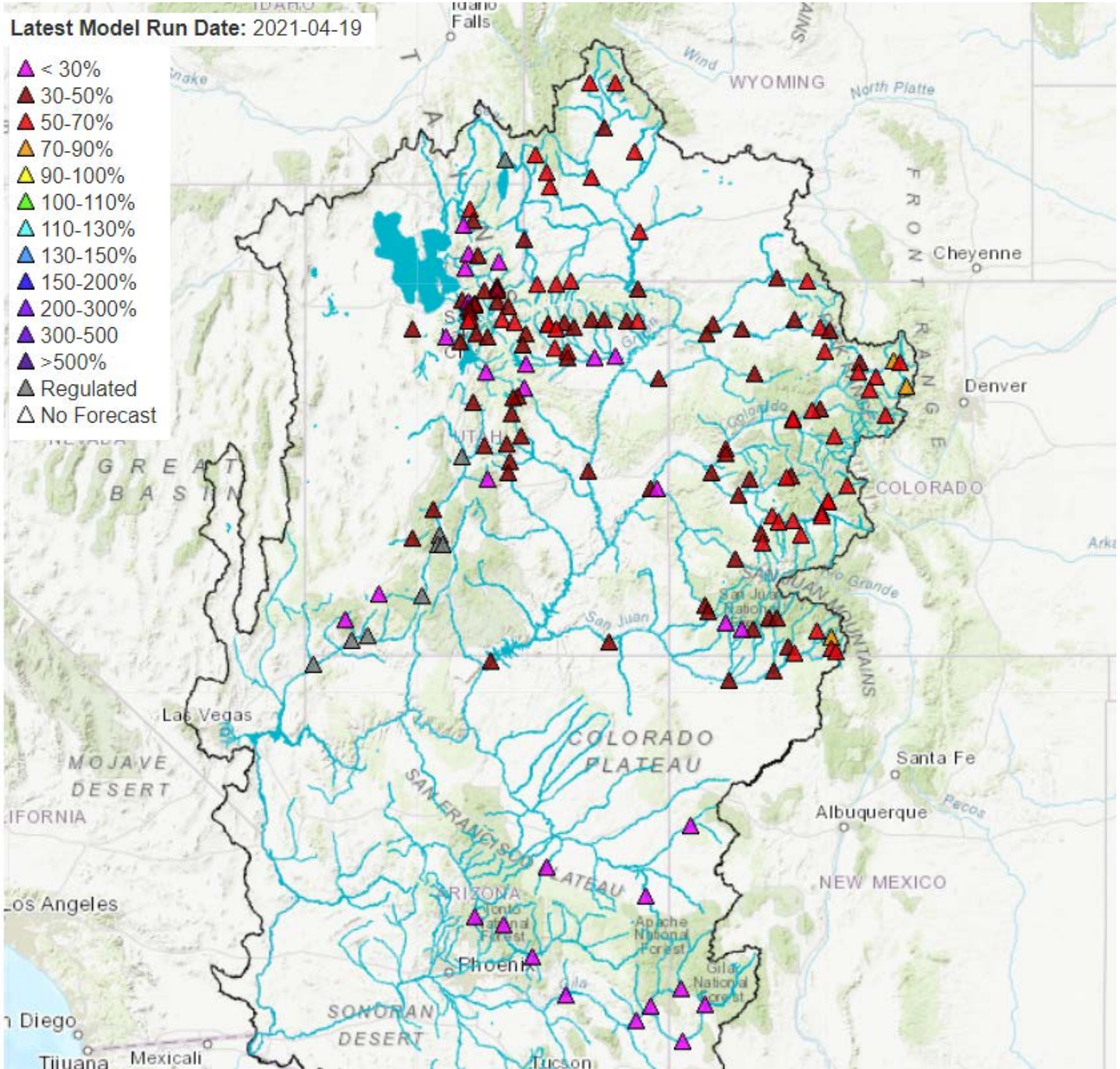
2020 Fall Model Soil Moisture Conditions



Fall soil moisture conditions entering the snow accumulation/runoff season are worse off than they were a year ago due to near record low April-October 2020 precipitation across the region.

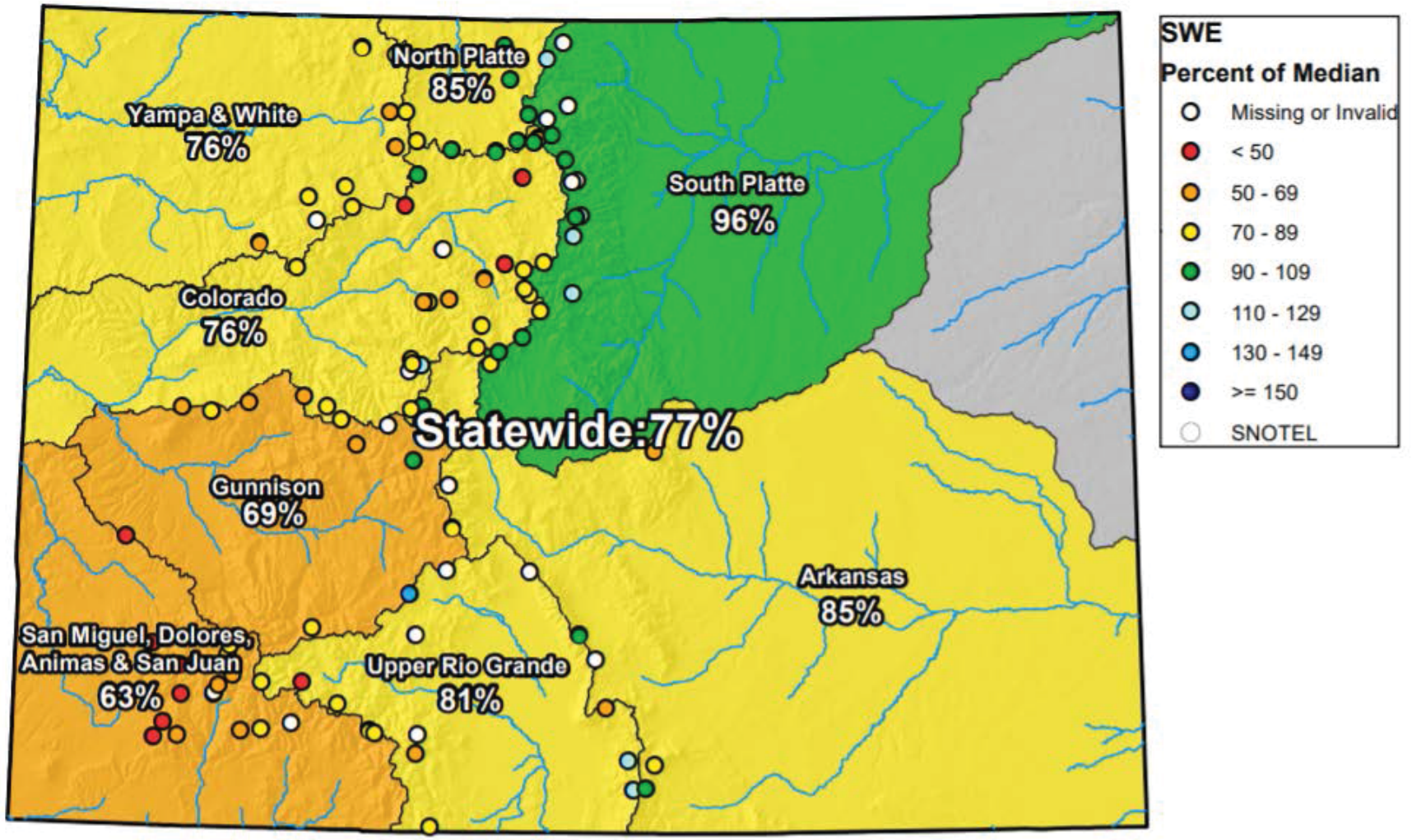
Model soil moisture is generally in the bottom 5 across the Upper Colorado over the 1981-2020 40-year period.

CBRFC Water Supply Forecasts



Colorado SNOTEL Snow Water Equivalent (SWE) Update Map with Site Data

Current as of Apr 19, 2021

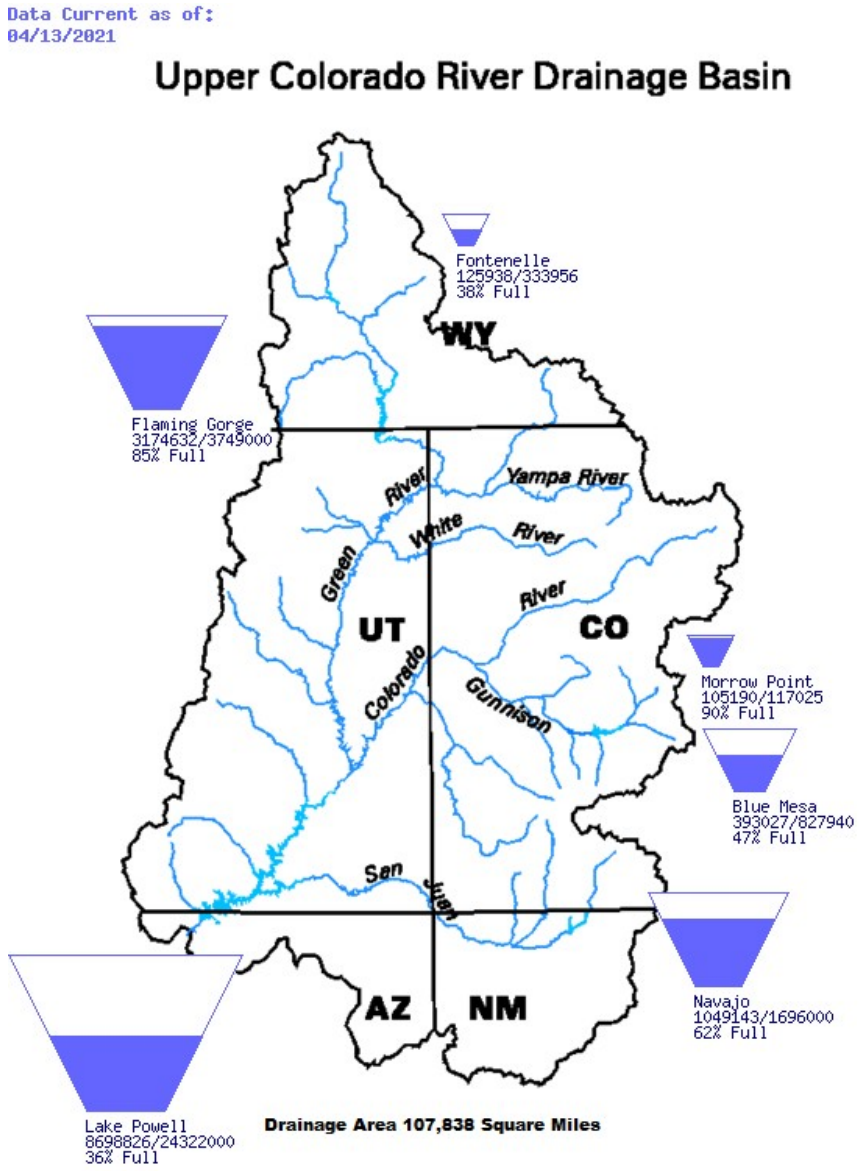


USDA United States Department of Agriculture

Natural Resources Conservation Service

Upper Basin Storage (as of April 13, 2021)

Reservoir	Percent Current Live Storage	Current Live Storage (maf)	Live Storage Capacity (maf)	Elevation (feet)
Fontenelle	38	0.13	0.33	6,473.20
Flaming Gorge	85	3.17	3.75	6,025.39
Blue Mesa	47	0.39	0.83	7,464.14
Navajo	62	1.05	1.70	6,033.98
Lake Powell	36	8.70	24.32	3,564.87
UC System Storage	44	13.59	31.09	



Most Probable Spring and WY 2021 Forecast

April – July 2021 Forecasted Unregulated Inflow

as of April 2, 2021

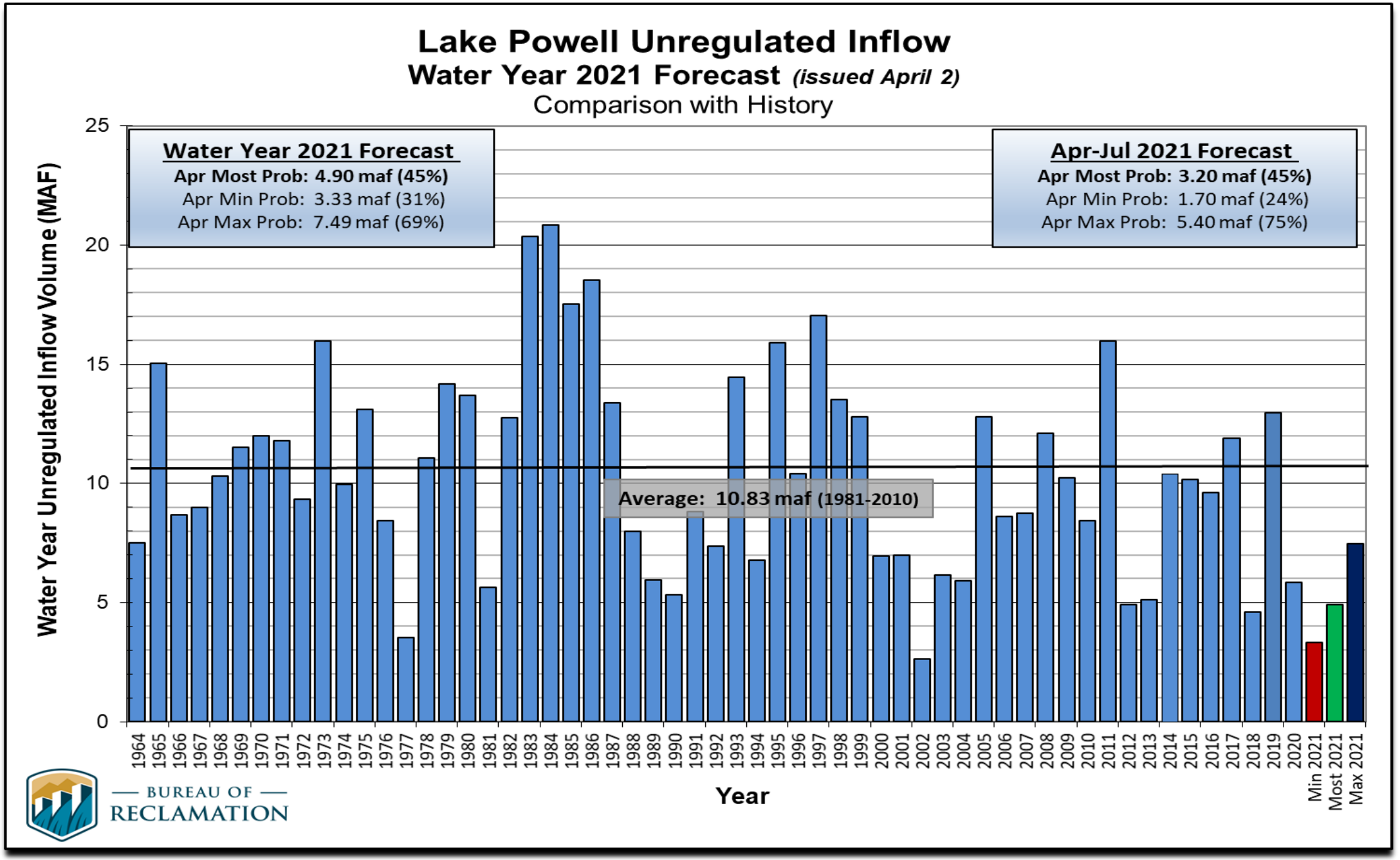
Reservoir	Unregulated Inflow (kaf)	Percent of Average[1]
Fontenelle	430	59
Flaming Gorge	430	54
Blue Mesa	440	65
Navajo	395	54
Powell	3,200	45

Water Year 2021 Forecasted Unregulated Inflow

as of April 5, 2021

Reservoir	Unregulated Inflow (kaf)	Percent of Average[1]
Fontenelle	691	64
Flaming Gorge	833	57
Blue Mesa	645	68
Navajo	538	50
Powell	4,897	45

[1] Percent of average based on the period of record from 1981-2010.


Lake Powell Unregulated Inflow
Water Year 2021 Forecast (issued April 2)
Comparison with History
Water Year 2021 Forecast
Apr Most Prob: 4.90 maf (45%)
Apr Min Prob: 3.33 maf (31%)
Apr Max Prob: 7.49 maf (69%)
Apr-Jul 2021 Forecast
Apr Most Prob: 3.20 maf (45%)
Apr Min Prob: 1.70 maf (24%)
Apr Max Prob: 5.40 maf (75%)
Average: 10.83 maf (1981-2010)
Water Year Unregulated Inflow Volume (MAF)
0
5
10
15
20
25
1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 Min 2021 Most 2021 Max 2021
Year
BUREAU OF RECLAMATION

Lake Powell & Lake Mead Operational Table

Operational Tiers for Water/Calendar Year 2021[1]

Lake Powell

Elevation (feet)	Operation According to the Interim Guidelines	Live Storage (maf)[1]
3,700	**Equalization Tier** Equalize, avoid spills or release 8.23 maf	24.3
3,636 - 3,666 (2008-2026)	***3,591.60 ft***	15.5 - 19.3 (2008-2026)
	Jan 1, 2021 projection	
3,575	**Mid-Elevation Release Tier** Release 7.48 maf; if Lake Mead < 1,025 feet, release 8.23 maf	9.5
3,525		5.9
3,490	**Lower Elevation Balancing Tier** Balance contents with a min/max release of 7.0 and 9.5 maf	4.0
3,370		0

Lake Mead

Elevation (feet)	Operation According to the Interim Guidelines	Live Storage (maf)[1]
1,220	**Flood Control Surplus or Quantified Surplus Condition** Deliver > 7.5 maf	25.9
1,200 (approx.)[2]	**Domestic Surplus or ICS Surplus Condition** Deliver > 7.5 maf	22.9 (approx.)[2]
1,145		15.9
1,105	***1,085.28 ft***	11.9
	Jan 1, 2021 projection	
1,075	**Shortage Condition** Deliver 7.167[4] maf	9.4
1,050	**Shortage Condition** Deliver 7.083[5] maf	7.5
1,025		5.8
1,000	**Shortage Condition** Deliver 7.0[6] maf Further measures may be undertaken[7]	4.3
895		0

Diagram not to scale

[1] Acronym for million acre-feet

[2] This elevation is shown as approximate as it is determined each year by considering several factors including Lake Powell and Lake Mead storage, projected Upper Basin and Lower Basin demands, and an assumed inflow.

[3] Subject to April adjustments which may result in a release according to the Equalization Tier

[4] Of which 2.48 maf is apportioned to Arizona, 4.4 maf to California, and 0.287 maf to Nevada

[5] Of which 2.40 maf is apportioned to Arizona, 4.4 maf to California, and 0.283 maf to Nevada

[6] Of which 2.32 maf is apportioned to Arizona, 4.4 maf to California, and 0.280 maf to Nevada

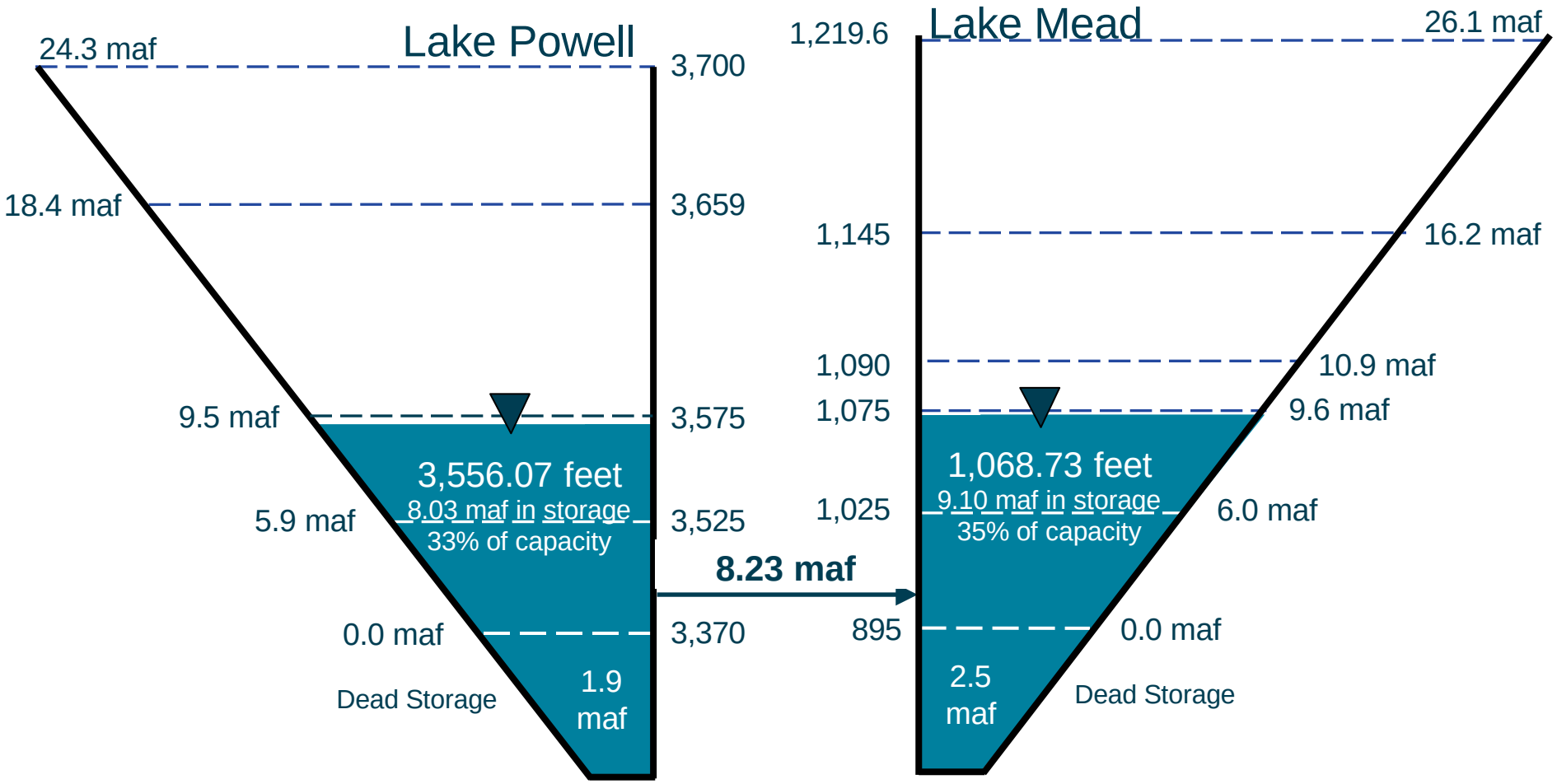
[7] Whenever Lake Mead is below elevation 1,025 feet, the Secretary shall consider whether hydrologic conditions together with anticipated deliveries to the Lower Division States and Mexico is likely to cause the elevation at Lake Mead to fall below 1,000 feet. Such consideration, in consultation with the Basin States, may result in the undertaking of further measures, consistent with applicable Federal law.

[1] Lake Powell and Lake Mead operational tier determinations were based on August 2020 24-Month Study projections and are documented in the 2021 AOP.

End of Water Year 2021 Projections

April 2021 24-Month Study Most Probable Inflow Scenario[1]

Based on a Lake Powell Unregulated Inflow Forecast of 4.90 maf (45% of average)

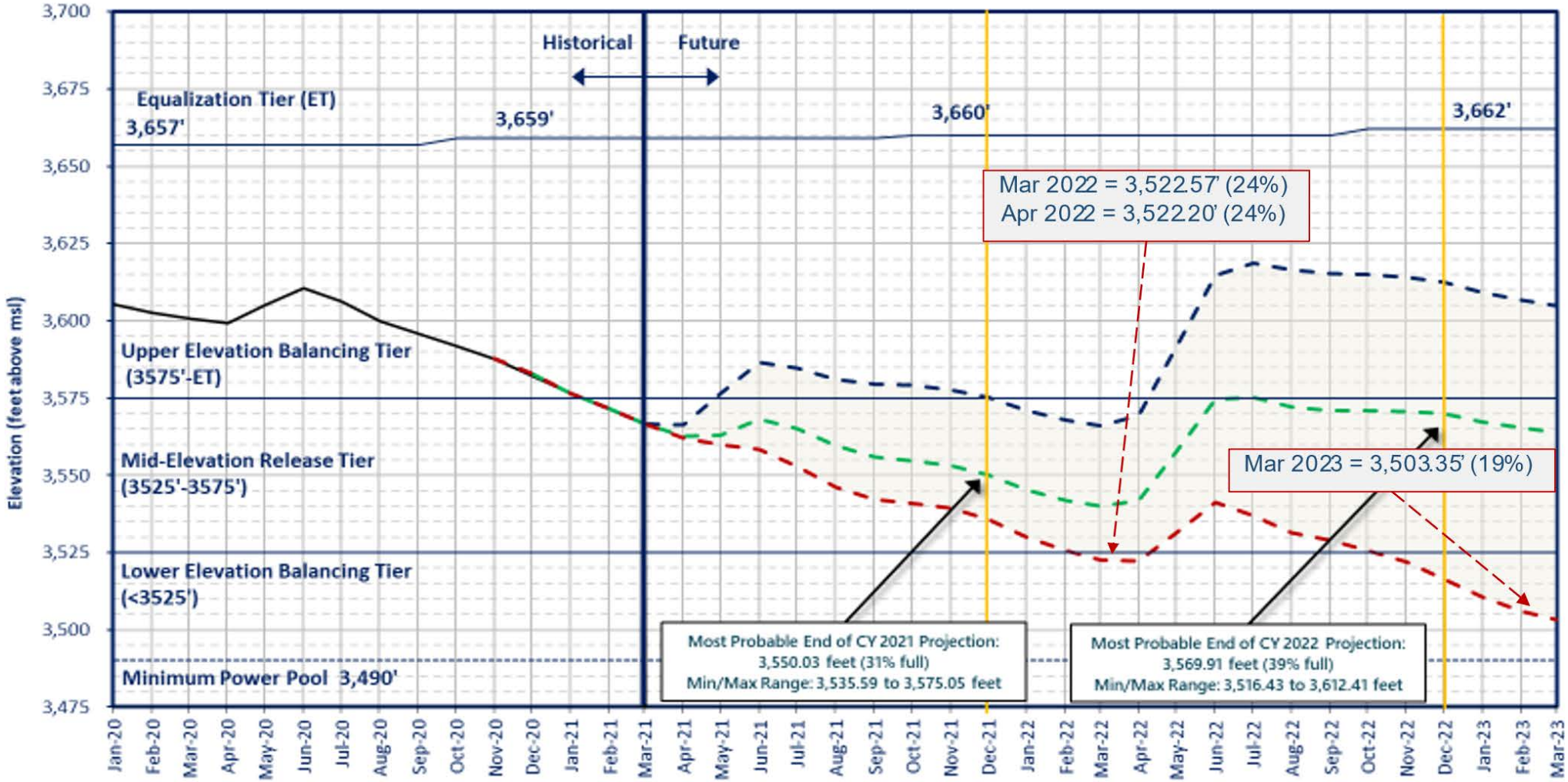


Not to Scale

[1] *WY 2021 unregulated inflow into Lake Powell is based on the CBRFC forecast dated 4/2/21.*

Lake Powell End of Month Elevations

Historical and Projected based on April 2021 24-Month Study Inflow Scenarios



BUREAU OF RECLAMATION

Historical Elevations

Apr 2021 Most Probable - Lake Powell release of 8.23 maf in WY2021 and 7.48 maf in WY2022

Apr 2021 Max Probable - Lake Powell release of 8.23 maf in WY2021 and 9.0 maf in WY2022

Apr 2021 Min Probable - Lake Powell release of 8.23 maf in WY2021 and 7.48 maf in WY2022

Lake Mead End of Month Elevations

Projections from the April 2021 24-Month Study Inflow Scenarios