BUREAU OF RECLAMATION

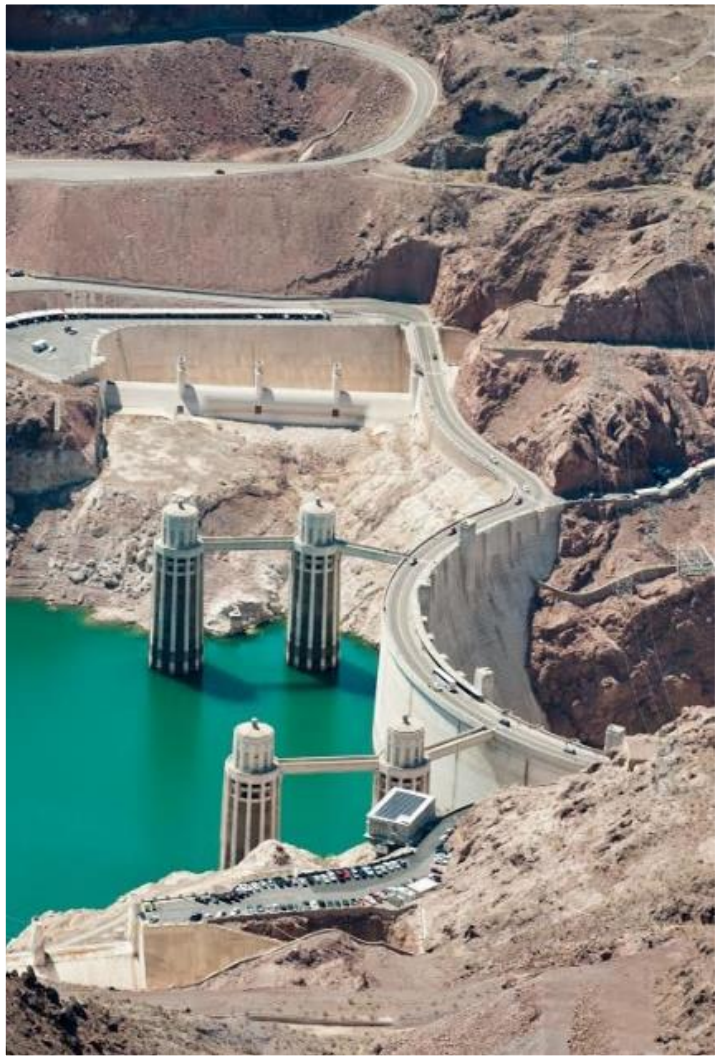
Colorado River Basin Update

Colorado River Authority of Utah

August 30, 2021

Colorado River Drought

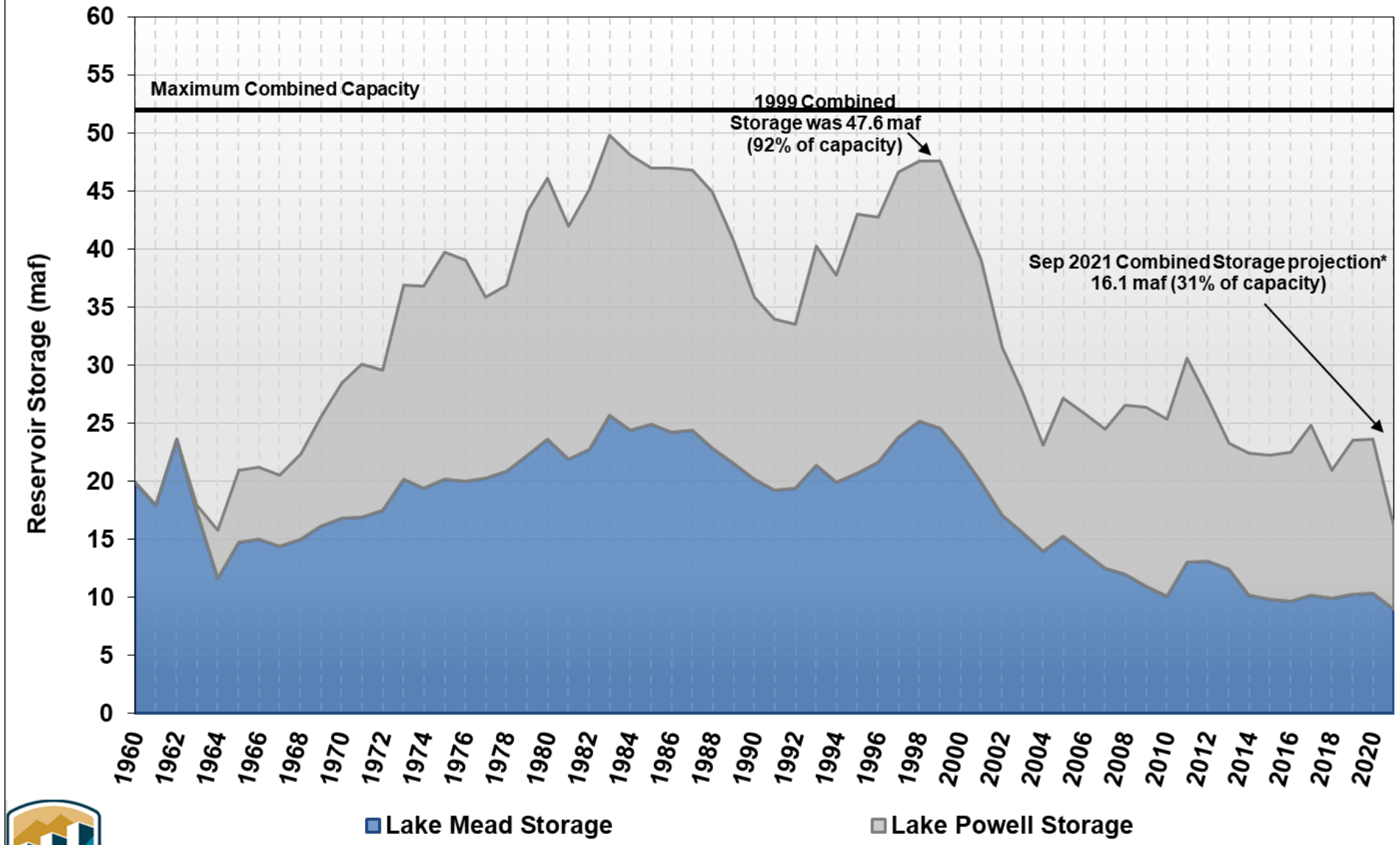
Lake Powell near Glen Canyon Dam



Lake Mead near Hoover Dam

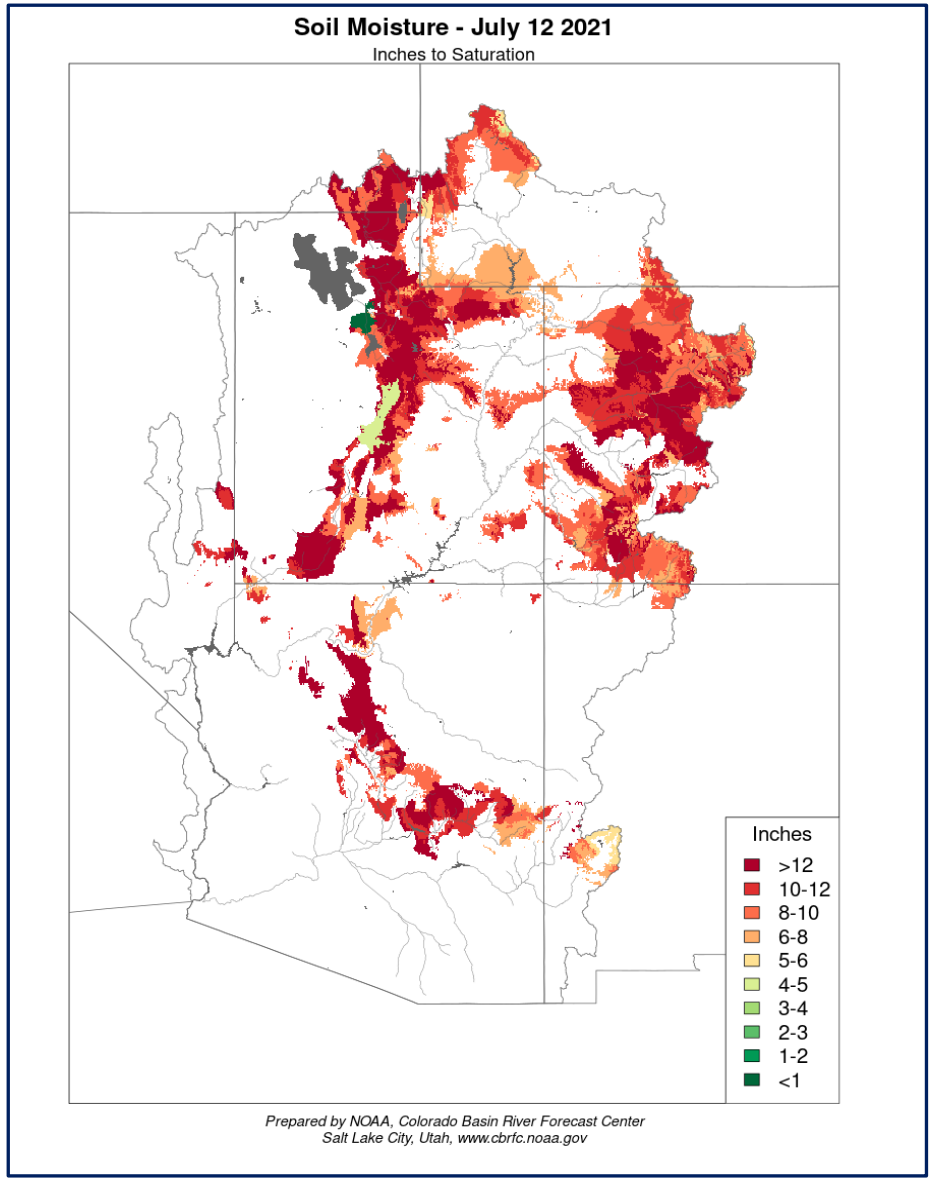
- Driest 22-year period (2000–2021) on record
- Water Year 2021 – second driest Lake Powell inflow since 1964
- Lake Powell – historical low level reached on July 24
  - Current elevation is 3,550 feet, or 31% of capacity
- Lake Mead – historical low level reached on June 8
  - Current elevation is 1,068 feet, or 35% of capacity

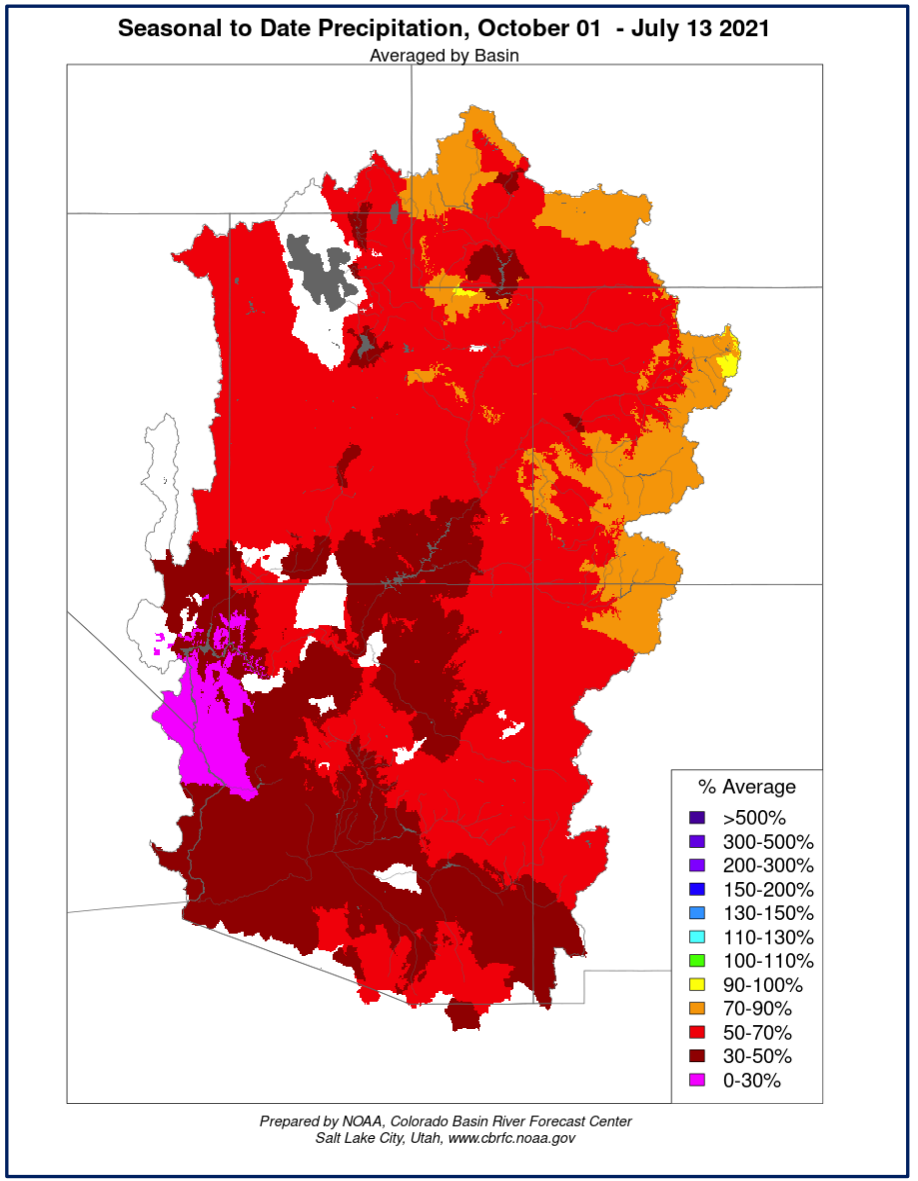
Lake Powell and Lake Mead End of Water Year Storage



* End of Water Year 2021 storage projections based on August 2021 24-Month Study

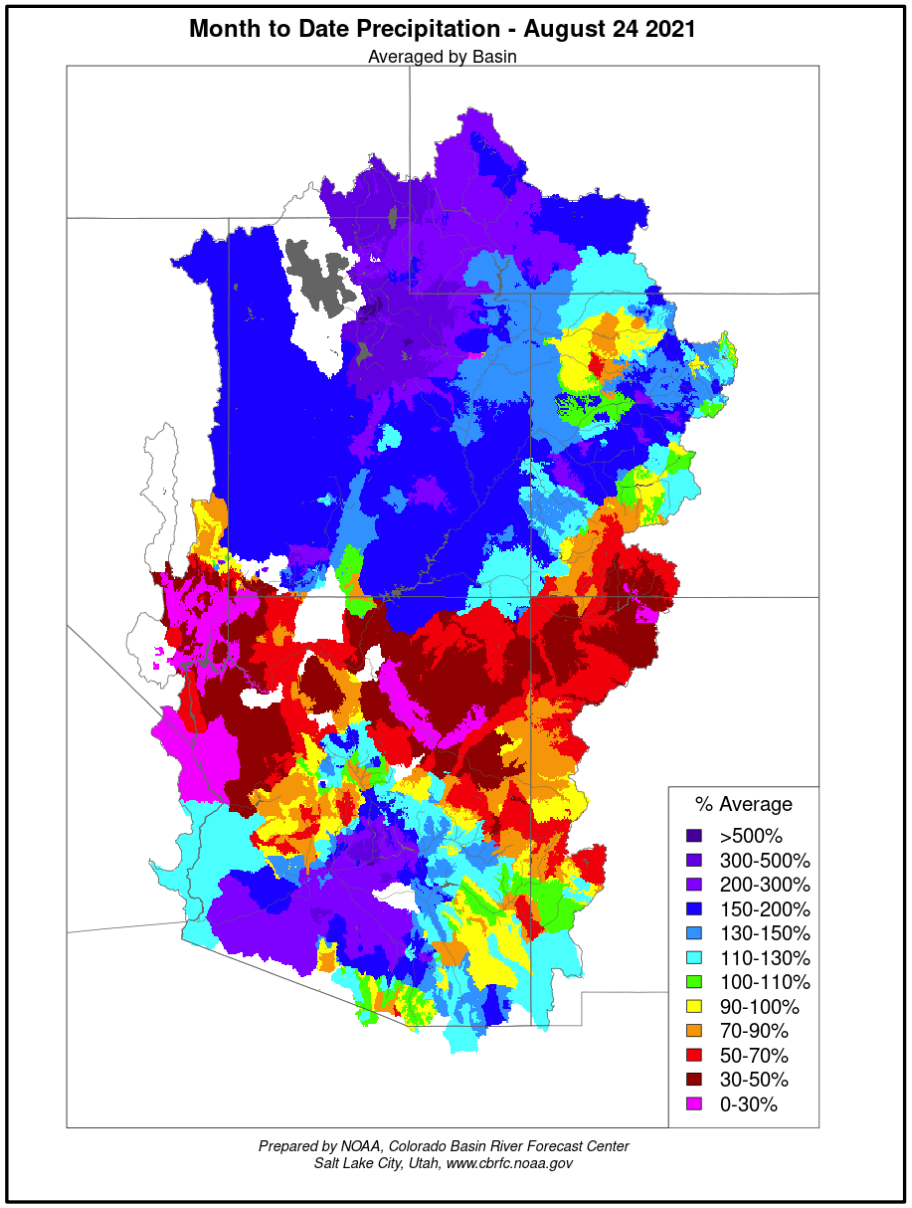
Soil Moisture and Precipitation

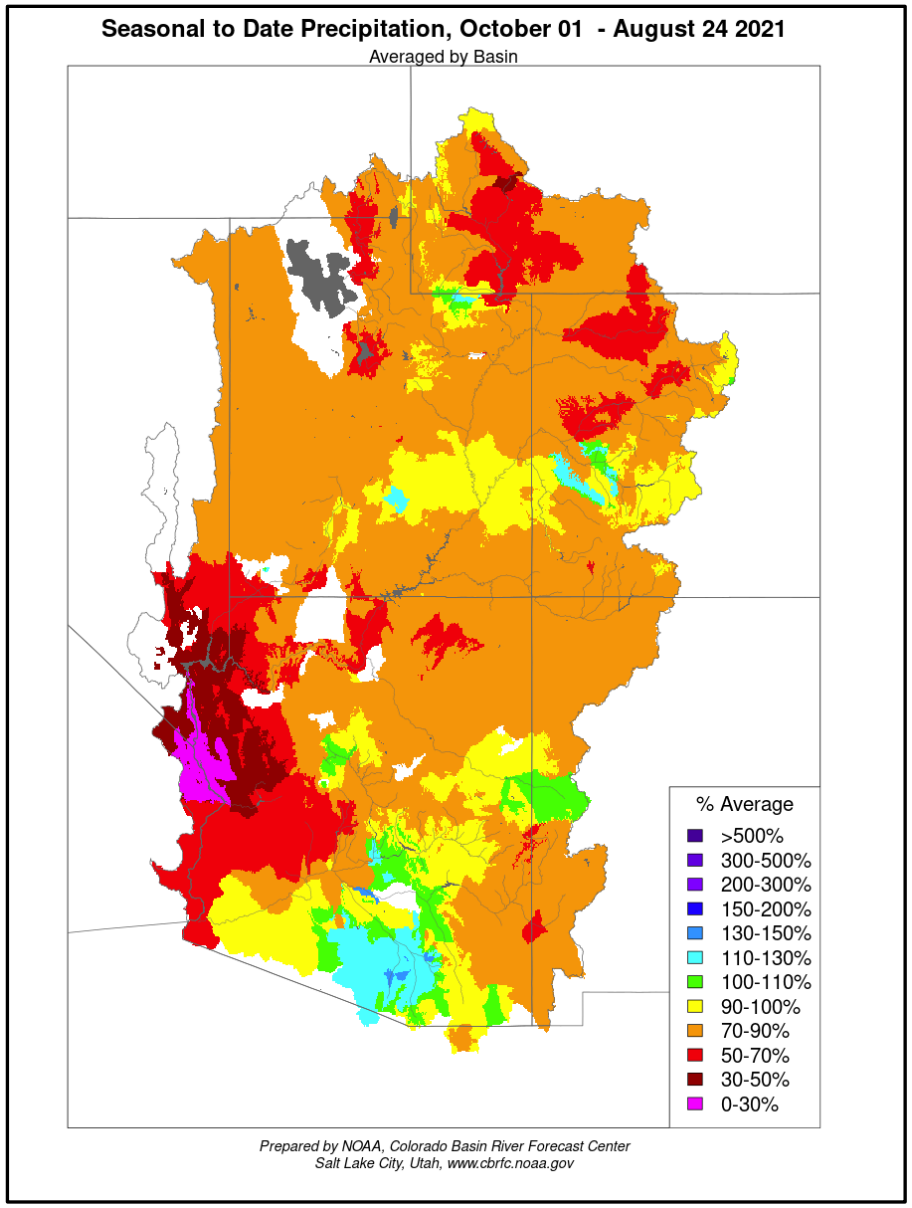




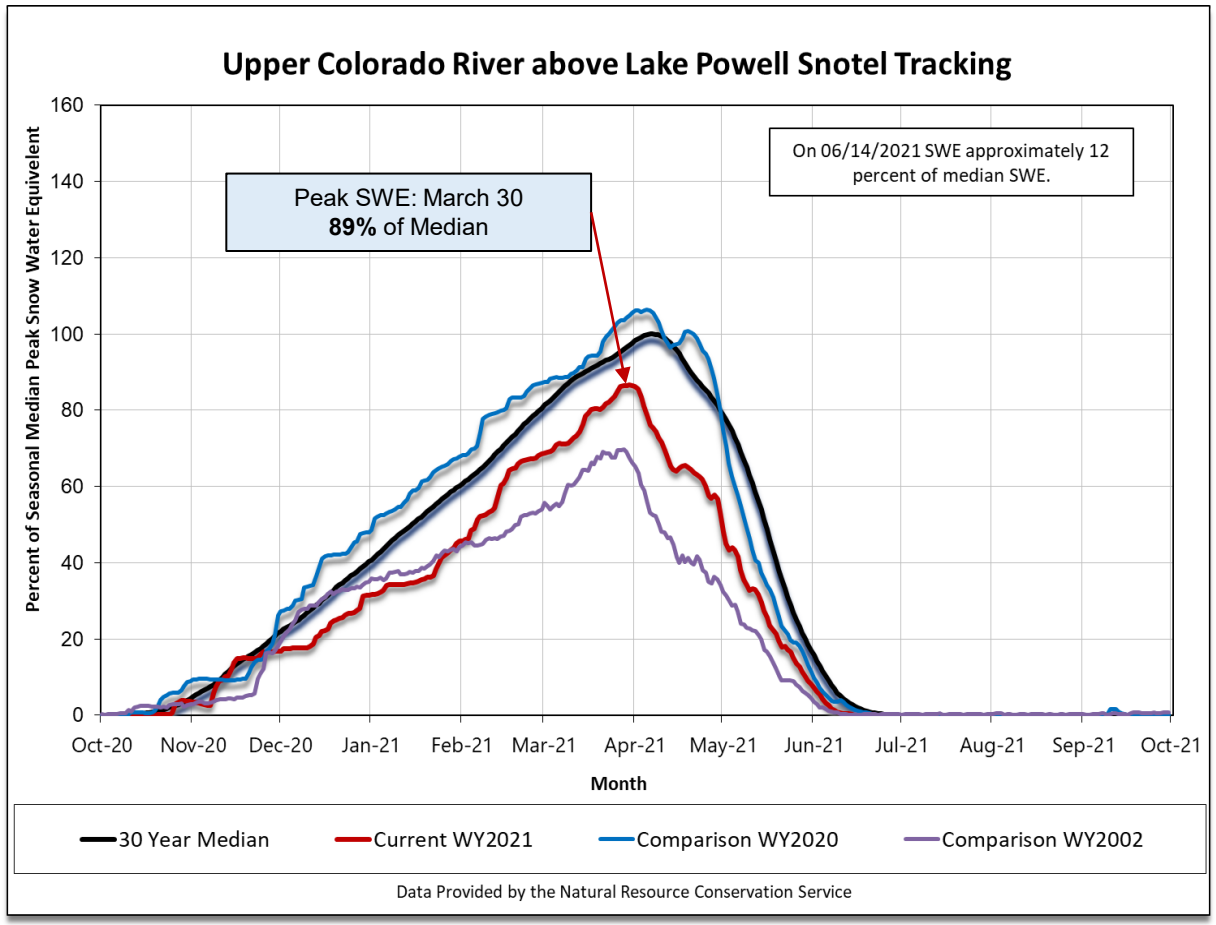
https://www.cbrfc.noaa.gov/rmap/grid800/index.php?type=todate

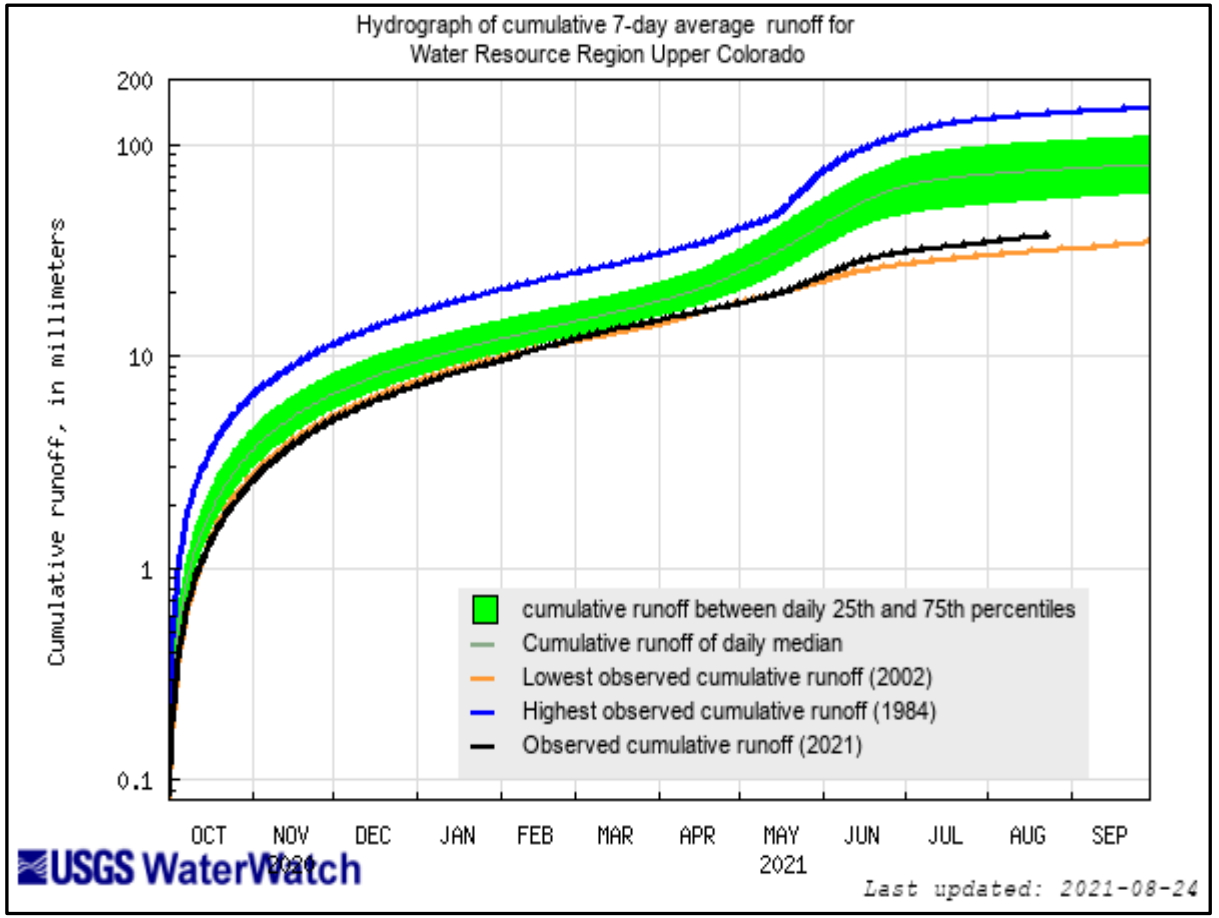
Precipitation: August and Seasonal





Current SWE and Observed UC Runoff





Available online at: https://waterwatch.usgs.gov/index.php?id=wwdur_cumrunoff

Most Probable August Forecast Water Year 2021

April – July 2021 Observed Unregulated Inflow

as of August 2, 2021

Reservoir	Unregulated Inflow (kaf)	Percent of Average[1]
Fontenelle	318	44
Flaming Gorge	380	39
Blue Mesa	317	47
Navajo	378	51
Powell	1,850	26

Water Year 2021 Forecasted Unregulated Inflow

as of August 2, 2021

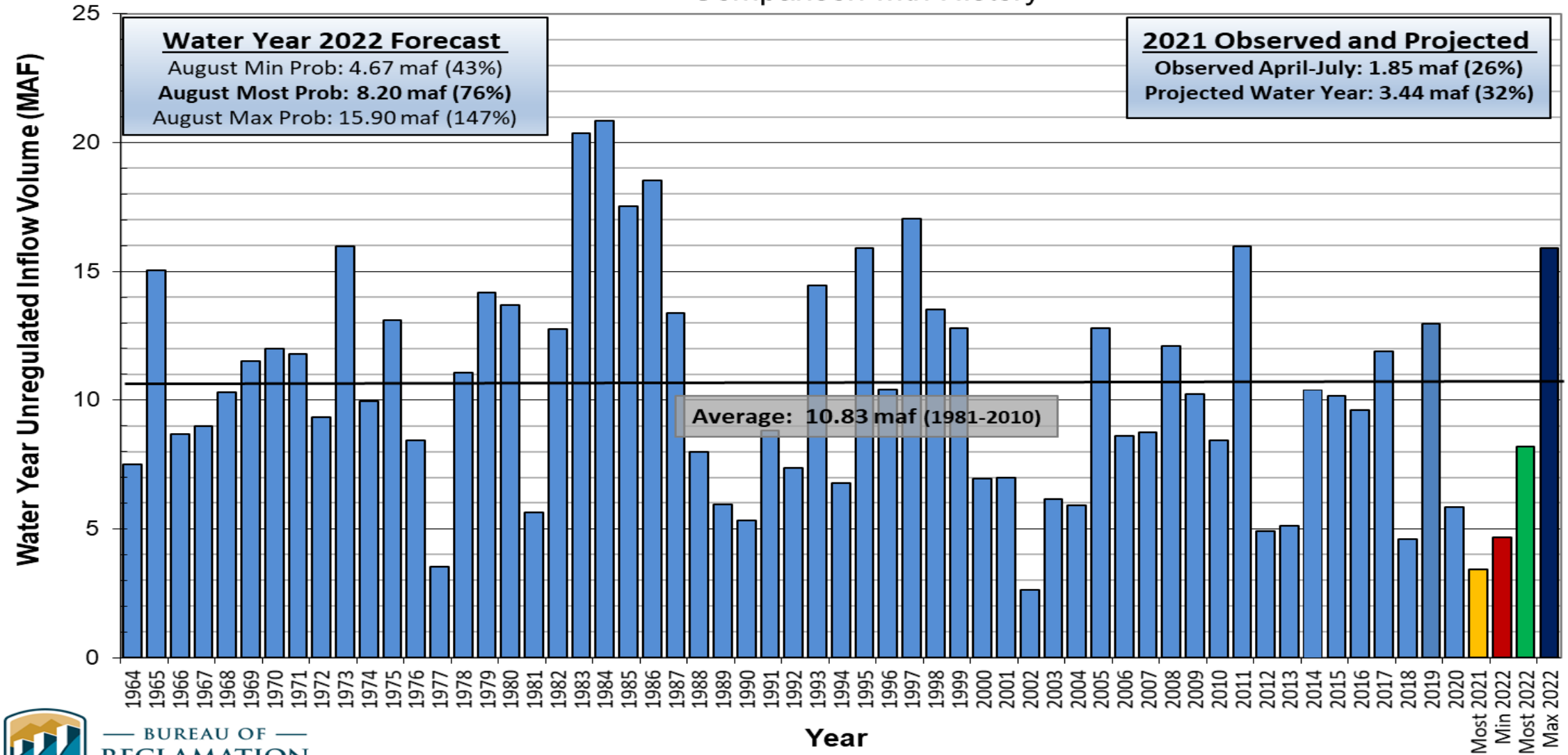
Reservoir	Unregulated Inflow (kaf)	Percent of Average[1]
Fontenelle	552	51
Flaming Gorge	649	45
Blue Mesa	519	54
Navajo	504	47
Powell	3,437	32

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

Lake Powell Unregulated Inflow

Water Year 2021 and 2022 Forecast *(issued August 2)*

Comparison with History



BUREAU OF RECLAMATION

Lake Powell & Lake Mead Operational Table

Operating Determinations for Water Year/Calendar Year 2022

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)		15.5 - 19.3 (2008-2026)
	Upper Elevation Balancing Tier[3] Release 8.23 maf; if Lake Mead < 1,075 feet, balance contents with a min/max release of 7.0 and 9.0 maf	
3,575		9.5
	Mid-Elevation Release Tier Release 7.48 maf; if Lake Mead < 1,025 feet, release 8.23 maf	
	3,535.40 ft Jan 1, 2022 Projection	
3,525		5.9
	Lower Elevation Balancing Tier Balance contents with a min/max release of 7.0 and 9.5 maf	
3,490		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]		22.9 (approx.)[2]
	Domestic Surplus or ICS Surplus Condition Deliver > 7.5 maf	
1,145		15.9
1,105	**Normal or ICS Surplus Condition** Deliver ≥ 7.5 maf	11.9
1,075	***1,065.85 ft Jan 1, 2022 Projection***	9.4
	Shortage Condition Deliver 7.167[4] maf	
1,050		7.5
	Shortage Condition Deliver 7.083[5] maf	
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.

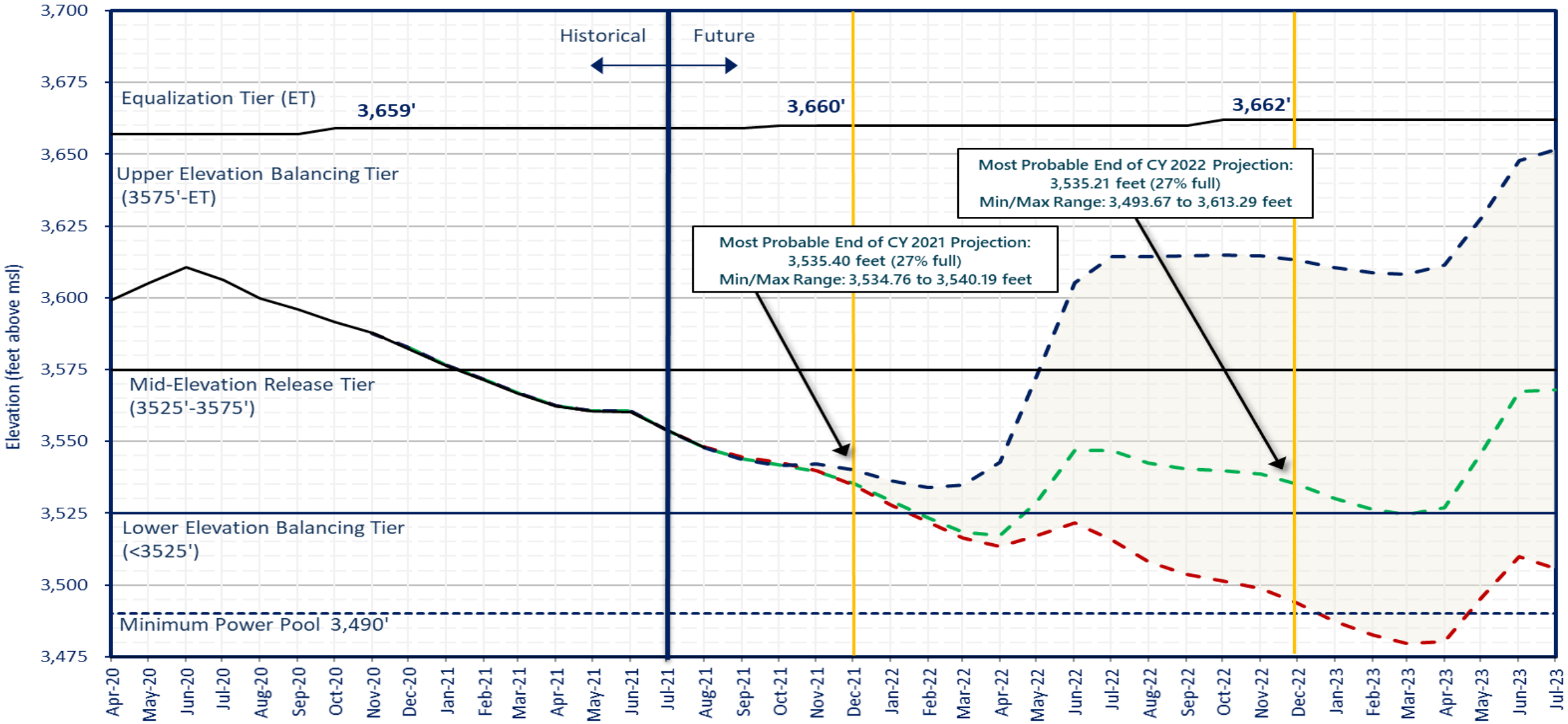
[1] **Lake Powell and Lake Mead operating determinations are based on August 2021 24-Month Study projections consistent with the 2007 Interim Guidelines and 2019 Drought Contingency Plans. These determinations will be documented in the 2022 Annual Operating Plan for Colorado River Reservoirs.**

2021 DROA Timeline of Events

- January 2021: Minimum Probable 24 Month Study run projected Powell below 3,525’
  - Formal notification to parties
  - Enhanced monitoring and coordination
  - Monthly analysis of min/most/max
- May 2021: Most Probable 24 Month Study run projected Powell within inches of 3,525’
  - DROA planning formally initiated
- July 2021: Continued declining hydrology and declining Powell
  - Consultation and initiation of DROA releases under emergency provision of agreement

Lake Powell End of Month Elevations

Projections from the August 2021 24-Month Study Inflow Scenarios



— BUREAU OF —
RECLAMATION

- August 2021 Most Probable - Lake Powell release of 8.23 maf in WY2021 and 7.48 maf in WY2022
- August 2021 Minimum Probable - Lake Powell release of 8.23 maf in WY2021 and 7.48 maf in WY2022
- August 2021 Maximum Probable - Lake Powell release of 8.23 maf in WY2021 and 7.48 maf in WY2022
- Historical Elevations

Lake Powell & Lake Mead Operational Table

Operating Determinations for Water Year/Calendar Year 2022

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)	**Upper Elevation Balancing Tier[3]** Release 8.23 maf; if Lake Mead < 1,075 feet, balance contents with a min/max release of 7.0 and 9.0 maf	15.5 - 19.3 (2008-2026)
3,575	**Mid-Elevation Release Tier** Release 7.48 maf; if Lake Mead < 1,025 feet, release 8.23 maf	9.5
3,535.40 ft Jan 1, 2022 Projection		
3,525	**Lower Elevation Balancing Tier** Balance contents with a min/max release of 7.0 and 9.5 maf	5.9
3,490		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	**Normal or ICS Surplus Condition** Deliver ≥ 7.5 maf	15.9
1,105		11.9
1,075		9.4
1,065.85 ft Jan 1, 2022 Projection		
1,050	**Shortage Condition** Deliver 7.167[4] maf	7.5
1,025	**Shortage Condition** Deliver 7.083[5] maf	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 operating determinations are based on August 2021 24-Month Study projections consistent with the 2007 Interim Guidelines and 2019 Drought Contingency Plans. These determinations will be documented in the 2022 Annual Operating Plan for Colorado River Reservoirs.**

Shortage Reductions and Water Savings Contributions
Under the 2007 Interim Guidelines, Minute 323, Lower Basin Drought Contingency Plan (DCP)*, and Binational Water Scarcity Contingency Plan
(Volumes in thousand acre-feet)

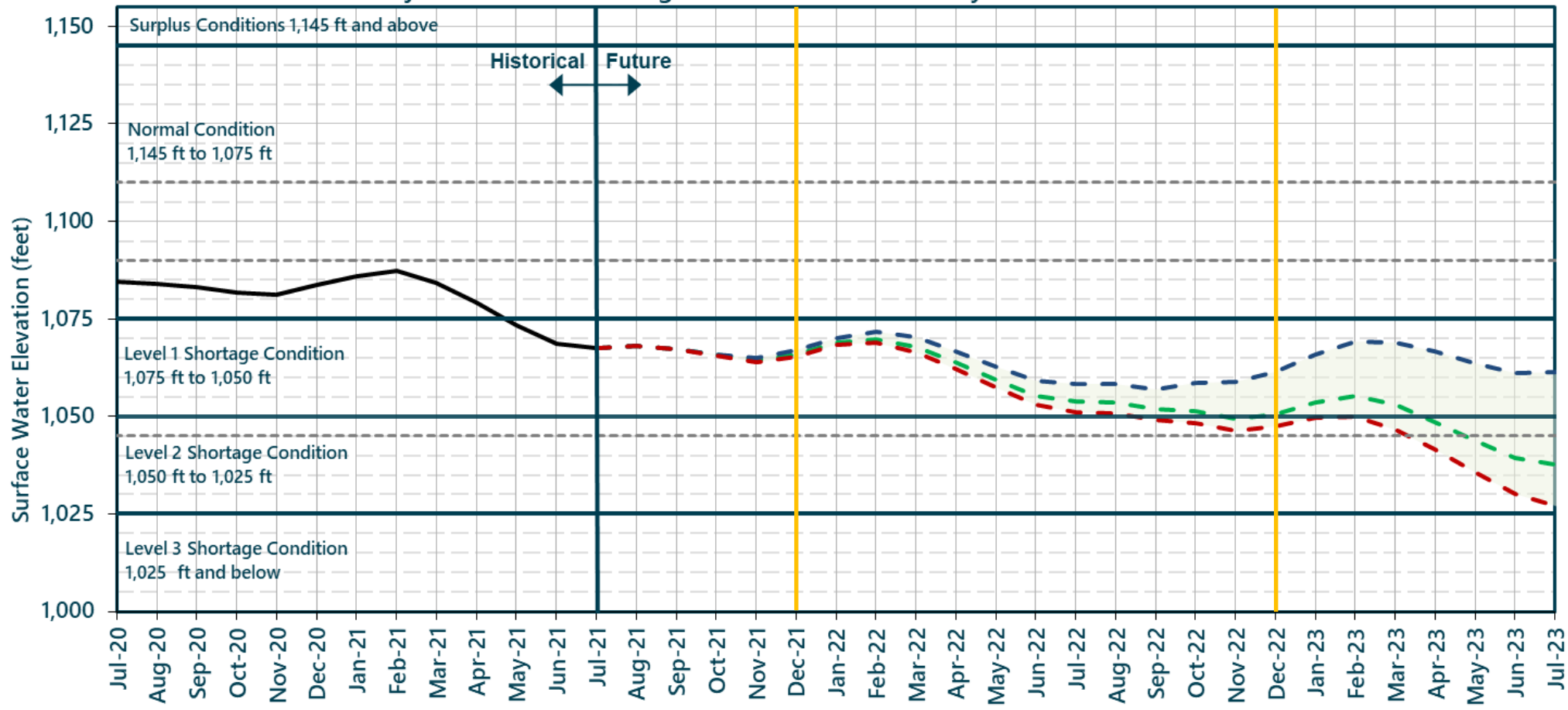
Lake Mead
2022 Operating Condition

Lake Mead Elevations (in feet)	2007 Interim Guidelines Shortage Reductions (U.S.)		Minute 323 Delivery Reductions (Mexico)	Total Combined Shortage Reductions (U.S. and Mexico)	DCP Water Savings Contributions (U.S.)			Binational Water Scarcity Contingency Plan Water Savings (Mexico)	Combined Volumes of Shortage Reductions and Water Savings Contributions by Lower Basin State and by Country (U.S. and Mexico)					Total Combined Volumes (U.S. and Mexico)
	AZ	NV	Mexico	***Lower Basin States + Mexico***	AZ	NV	CA	Mexico	*AZ Total*	*NV Total*	*CA Total*	*Lower Basin States Total*	*Mexico Total*	***Lower Basin States + Mexico***
1,090 - >1,075	0	0	0	***0***	192	8	0	41	192	8	0	*200*	*41*	***241***
1,075 - >1050	320	13	50	***383***	192	8	0	30	512	21	0	*533*	*80*	***613***
1,050 - >1,045	400	17	70	***487***	192	8	0	34	592	25	0	*617*	*104*	***721***
1,045 - >1,040	400	17	70	***487***	240	10	200	76	640	27	200	*867*	*146*	***1,013***
1,040 - >1,035	400	17	70	***487***	240	10	250	84	640	27	250	*917*	*154*	***1,071***
1,035 - >1,030	400	17	70	***487***	240	10	300	92	640	27	300	*967*	*162*	***1,129***
1,030 – 1,025	400	17	70	***487***	240	10	350	101	640	27	350	*1,017*	*171*	***1,188***
<1,025	480	20	125	***625***	240	10	350	150	720	30	350	*1,100*	*275*	***1,375***

*Under the Lower Basin DCP, the United States will take affirmative actions to create or conserve 100,000 acre-feet or more of Colorado River system water on an annual basis to contribute to conservation of water supplies in Lake Mead and other Colorado River reservoirs in the Lower Basin. All actions taken by the United States shall be subject to applicable federal law, including availability of appropriations.

Lake Mead End of Month Elevations

Projections from the August 2021 24-Month Study Inflow Scenarios



Historical Elevations

August 2021 Most Probable Inflow with a Lake Powell release of 7.48 maf in WY 2022 and WY 2023

August 2021 Maximum Probable Inflow with a Lake Powell release of 7.48 maf in WY 2022 and 9.00 maf in WY 2023

August 2021 Minimum Probable Inflow with a Lake Powell release of 7.48 maf in WY 2022 and 7.00 maf in WY 2023

The Drought Response Operations Agreement (DROA) is available online at: https://www.usbr.gov/dcp/finaldocs.html.

Upcoming Activities

- 2022 Annual Operating Plan – Final Consultation
  - August 31, 2021 from 11:00 am to 2:00 pm PDT via webinar
- Updated 5-Year Outlook of Colorado River System Conditions
  - Available in early September
  - A website with a new visualization tool is being developed

Discussion

BUREAU OF RECLAMATION