



COLORADO

Colorado Water Conservation Board

Department of Natural Resources

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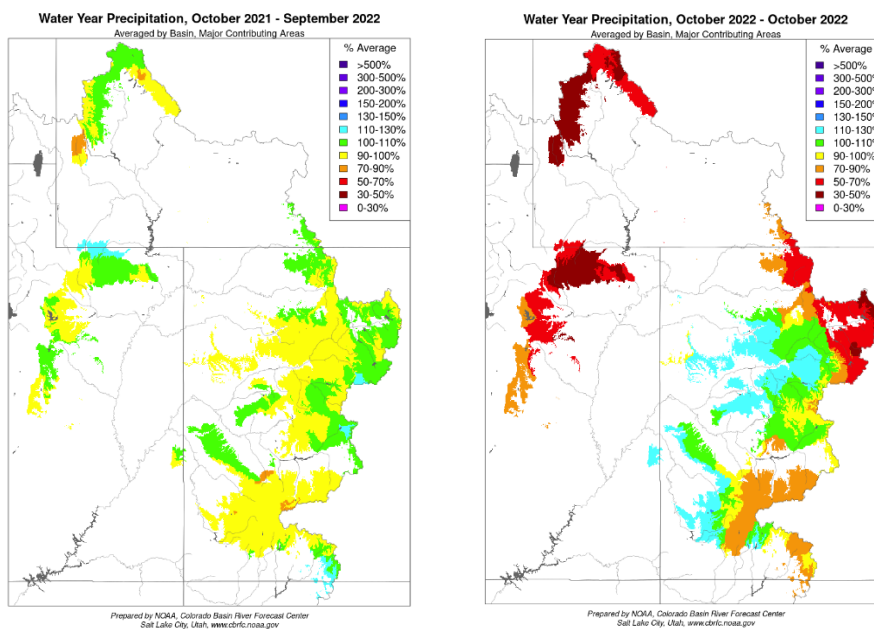
Rebecca Mitchell, CWCB Director

TO: Colorado Water Conservation Board Members
FROM: Amy Ostdiek and Michelle Garrison
DATE: November 16, 2022
SUBJECT: Agenda Item 7: Hydrology Update Colorado River Basin

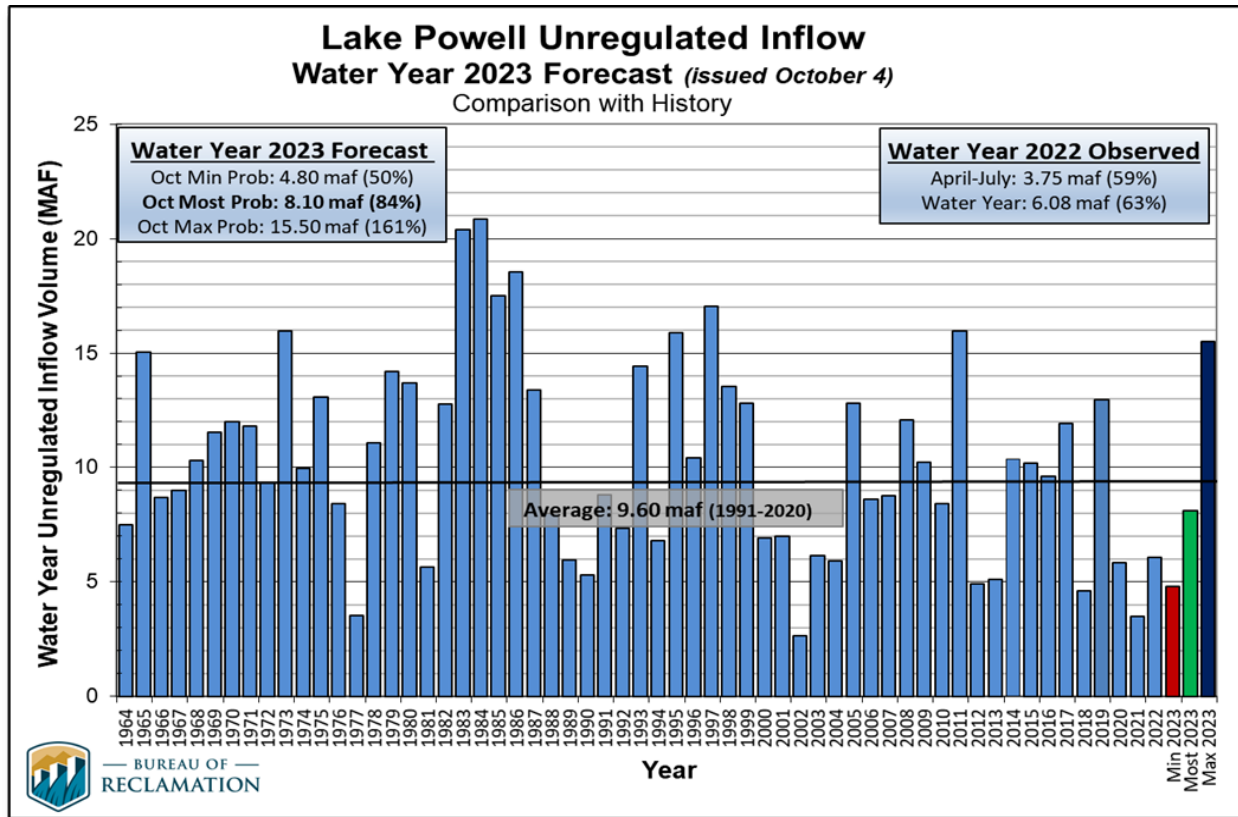
This is an informational item with no board action requested.

1. Hydrology and operations update

Water Year 2022 precipitation was approximately average with long periods of dry conditions punctuated by a few strong winter storms and summer monsoonal rainfall. Due to continued dry soil moisture conditions, streamflow for WY 2022 was well below average throughout the basin, placing additional strain on basin storage. Precipitation in October 2022 was below average for the basin. Forecasts project warm and dry conditions for the first few months of WY 2023 for the southern portion of the basin. Drought impacts are expected to continue to be experienced across the basin due to continued warm and dry conditions and low storage volumes.



reduction in the WY 2022 Lake Powell release to 7.0 MAF as an additional infrastructure protection measure. The 480,000 acre-feet withheld in Lake Powell will be treated as if it had been released to Lake Mead for determination of WY 2023 reservoir operations. Lake Powell rose above elevation 3525' in May 2022 and is expected to fall below that threshold elevation in December 2022. Discussions regarding preservation of benefits of water released under the Drought Response Operations Agreement and necessary protections for Lake Powell for WY 2023 are ongoing.



Projected Lake Mead elevations from Reclamation’s August 2022 24-Month Study triggered a 2023 Tier 2a shortage condition for the Lower Basin and reduced deliveries to Mexico pursuant to Minute 323, totaling 721,000 acre-feet as shown in the table below. Water conservation measures under the Lower Basin Drought Contingency Plan and Binational Water Scarcity Plan are also required in 2023.

The Lower Division States operated in a Tier 1 shortage condition in 2022. The planned reduction in water deliveries under the declared Tier 1 shortage condition was offset by releases of Intentionally Created Surplus water previously stored in Lake Mead to some entities.



**2007 Interim Guidelines, Minute 323, Lower Basin Drought Contingency Plan,
and Binational Water Scarcity Contingency Plan**
Total Volumes (kaf)

Lake Mead Elevation (feet msl)	2007 Interim Guidelines Shortages		Minute 323 Delivery Reductions	Total Combined Reductions	DCP Water Savings Contributions			Binational Water Scarcity Contingency Plan Savings	Combined Volumes by Country US: (2007 Interim Guidelines Shortages + DCP Contributions) Mexico: (Minute 323 Delivery Reductions + Binational Water Scarcity Contingency Plan Savings)					Total Combined Volumes
	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 - 1,050	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

The Secretary of the Interior will take affirmative actions to implement programs designed to create or conserve 100,000 acre-ft per annum or more of Colorado River System water 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 law, including availability of appropriations.



In addition to the shortages agreed to pursuant to the 2007 Guidelines and 2019 Drought Contingency Plans, in December 2021 the Lower Division States also committed to creating an additional 500,000 acre-feet of water per year in 2021-2022, and 2023 of conserved water to remain in Lake Mead, on a voluntary basis. The amount of water modeled for each year pursuant to the “500+ Plan” is included in the table below. Notably, similar to shortage conditions, the amount of water conserved in Lake Mead under the “500+ Plan” will be partially offset by other withdrawals.

Additional Water Modeled Under 500 Plus Plan
(as modeled in the August 2022 Most Probable 24-Month Study)

Conservation Activity (volumes in AF)	2021	2022 (Projected)	2023 (Projected)
CAP ICS delivery offset	6,147	19,804	-18,400
GRIC System Conservation	40,000	50,937	0
GRIC ICS creation	0	78,506	0
CRIT System Conservation (in lieu of ICS)	4,685	4,685	0
CAWCD System Conservation	0	35,506	0
YMIDD System Conservation	0	6,544	13,670
MVIDD System Conservation	0	9,592	9,592
MWD ICS delivery offset and/or creation	58,134	-4,578	-161,978
PVID System Conservation	12,305	50,800	58,000
SNWA ICS creation	12,832	15,000	15,000
Annual Total (Non-Shortage/DCP)	134,103	288,655	-84,116
Cumulative Total	134,103	402,758	318,642

- 2022 and 2023 volumes reflect executed agreements and/or current operational projections and are subject to change.
- Additional conservation activities are being considered. After new agreements are finalized and executed, these additional activities will be included in Reclamation’s operational modeling.



2. Additional Actions to Protect Critical Infrastructure

In June 2022, the Commissioner of the Bureau of Reclamation testified that an additional 2-4 million acre-feet of conservation would be required to protect critical infrastructure at Lake Powell and Lake Mead, in addition to the previously-agreed upon measures described above. She gave the states 60 days to develop a plan and indicated that she may consider unilateral action if the Basin States were unable to develop a plan.

Upper Division States' Five-Point Plan

In July 2022, the Upper Division States responded to the Commissioner's call with a Five-Point Plan. Below is an update on implementation of each component of the plan.

1. *Reauthorization of the System Conservation Pilot Program*

The Upper Division States support reauthorization of the System Conservation Pilot Program (SCPP), which will entail voluntary, temporary, and compensated reductions in consumptive use across the Upper Basin. While similar in nature to Demand Management, water created in an SCPP program would become system water and would not be tracked to or stored in Lake Powell. This program was previously operational from 2014-2018 and in that time, is estimated to have conserved roughly 40,000 acre-feet of water across the four Upper Division States.

Reauthorization for this program through 2025 was included in the Hickenlooper-Barrasso Colorado River Basin Conservation Act, which passed out of the Senate Energy and Natural Resources Committee in July. It has not yet passed the full Senate or the House. The Upper Division States are currently considering the appropriate structure for such a program and potential federal funding sources, subject to federal reauthorization.

2. *An expedited planning process pursuant to the Drought Response Operations Agreement*

The Upper Division States have begun coordinating and planning for a potential 2023 Drought Response Operations Plan. Any such Drought Response Operations Plan will be developed and vetted through the appropriate stakeholder and other outreach processes, and the Plan will be finalized in April 2023. This Plan will be dependent upon the preservation of benefits at Glen Canyon Dam. Importantly, any such plan must be responsive to current hydrologic conditions at each reservoir, and this information will not become available until snowpack conditions are known.

Through April 2023, Upper Basin reservoirs will have provided 661,000 acre-feet of water to protect critical elevations at Lake Powell. Any water identified in a 2023 Plan will be in addition to this.

3. *Continuation of the Demand Management Feasibility Investigation*

The Upper Division States continue the Demand Management Feasibility Investigation, with each Upper Division State independently conducting their own respective investigations and



the Upper Colorado River Commission coordinating interstate work. The Upper Division States commit to consider information that will become available as the UCRC investigation concludes in Fall-Winter 2022, and to diligently continue their respective investigations in light of this information. Staff will provide additional updates to the Board in the coming months and assist in determining the appropriate path forward based on information gained from the UCRC investigation.

4. Use Federal Infrastructure Bill funds to enhance measurement and monitoring efforts across the Upper Basin

The Upper Division States are working with Reclamation to put Federal Infrastructure funds to use to support measurement and monitoring efforts across the Upper Basin. These funds will be released in stages. Priorities for the first-year tranche of funds will include Eddy-Covariance Towers, weather stations, stream gages, technical considerations relating to conservation pilot projects, and continuation of a remote sensing program. Upper Division State technical staff are in ongoing discussions about siting and budgeting considerations. Additional projects in subsequent years may include SNOTEL, soil moisture sensing, airborne snow observatory monitoring, and cloud seeding.

5. Strict administration of water rights in the Upper Division States and increased voluntary conservation efforts on an intra-state level

The Upper Division States will continue the strict administration of water rights within each state's respective boundaries. The strict administration of water rights coupled with lack of physical availability of water resulted in a reduction of 1 million acre-feet of consumptive use across the Upper Basin in 2021 from 2020.

In addition, each state will promote intra-state conservation activities. In Colorado, this work aligns with the goals of the Colorado Water Plan Update. In addition, in August, multiple municipalities across the Upper Basin executed a municipal conservation Memorandum of Understanding outlining additional conservation activities under consideration.

The Lower Division States have not yet provided a joint or comprehensive plan in response to the Commissioner's call for conservation. However, in recent letters, Nevada and Arizona have offered support for enhanced tracking and accounting for all depletions across the Lower Basin, including for evaporation and transit losses, among other things. The Commissioner of Reclamation has also indicated she is considering additional measures to address evaporation and transit losses in the Lower Basin. The Basin States, Bureau of Reclamation, and Department of Interior remain in close communication about additional potential tools to protect critical infrastructure. California water agencies recently submitted a letter offering up to 400,000 AF in temporary water use reductions, contingent upon federal funding for those reductions as well as federal assistance with Salton Sea issues.

Reclamation Notice of Intent for Revision of the 2007 Interim Guidelines ROD

On October 28, 2022, Reclamation published a Notice of Intent to prepare a Supplemental Environmental Impact Statement, which will include proposed alternatives to revise the December 2007 Record of Decision associated with the Colorado River Interim Guidelines. The NOI outlines that Reclamation may need to reduce Glen Canyon Dam downstream releases and, in order to protect Hoover Dam operations, may also need to reduce Hoover Dam



downstream releases. The three alternatives posed in the NOI include:

1. Framework Agreement Alternative: a consensus-based set of actions that build on the existing framework for Colorado River Operations.
2. Reservoir Operations Modification Alternative: unilateral action developed by Reclamation pursuant to Secretarial authority under applicable federal law.
3. No Action Alternative.

Reclamation has stated they intend to finalize a decision by mid-summer 2023, ahead of the August 2023 24-Month Study. Comments are due on December 20.

