COLORADO
Colorado Water Conservation Board
Department of Natural Resources

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TO: Colorado Water Conservation Board Members

FROM: Amy Ostdiek and Michelle Garrison

DATE: March 15, 2023

SUBJECT: Agenda Item 13: Colorado River Updates

This is an informational item with no board action requested.

1. Hydrology and operations update

Streamflow for Water Years 2021 and 2022 was well below average throughout the basin, placing significant and strain on basin storage. WY 2023 precipitation has been above average due to a series of strong storms in late December and January. Snowpack is currently above to well above average throughout most of the Upper Basin and areas of the Lower Basin. Streamflow has been approximately average with above average spring runoff projected. Drought conditions have improved across most of the basin. However, long-term impacts from dry soils and depleted storage are expected to continue, as indicated in current forecasts for runoff and reservoir operations.

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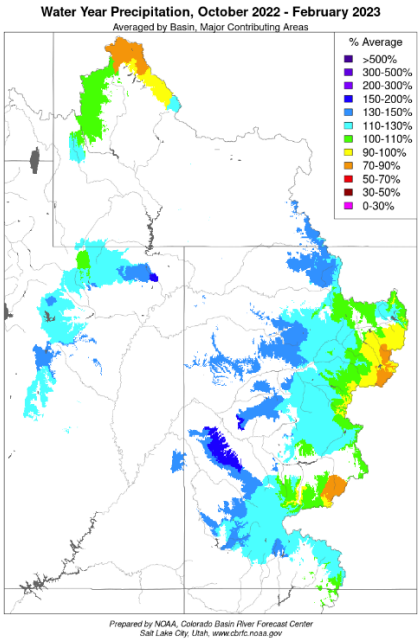
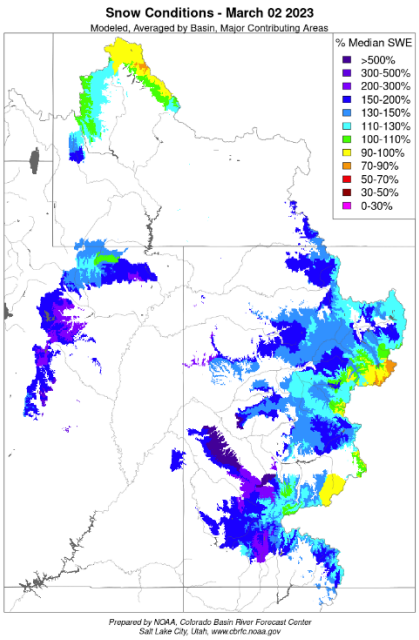
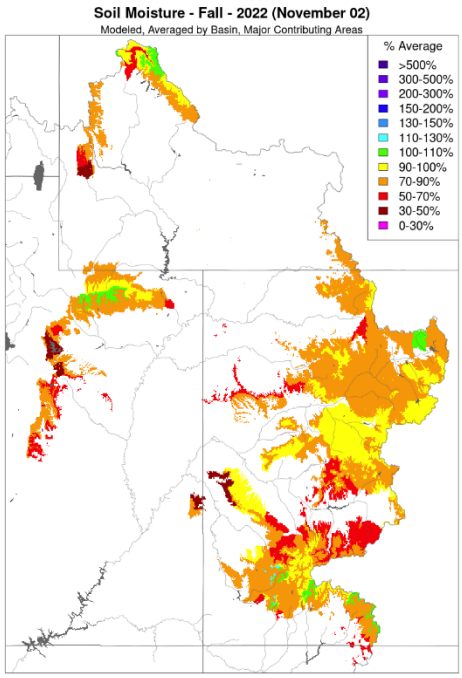
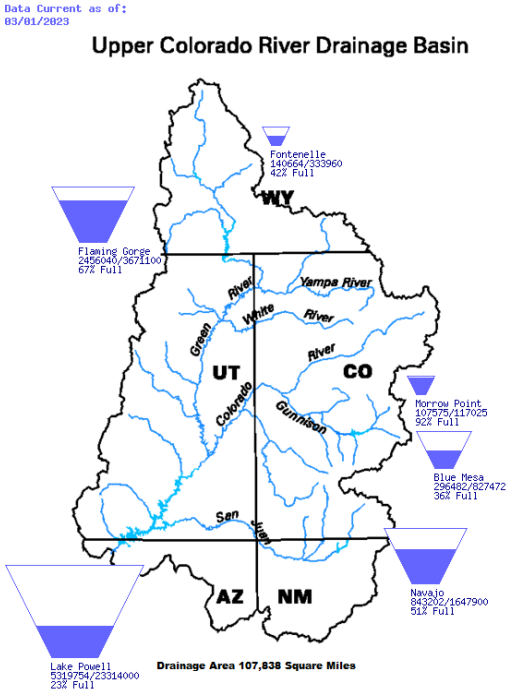
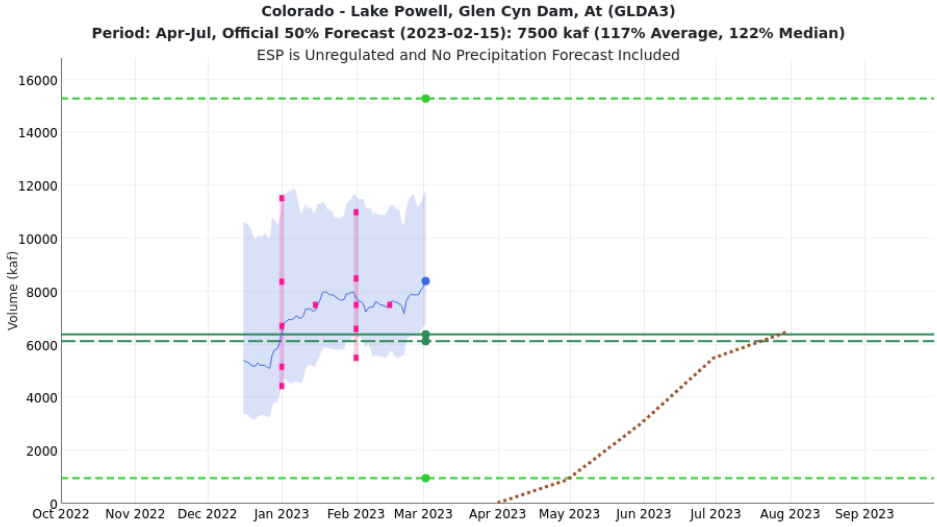


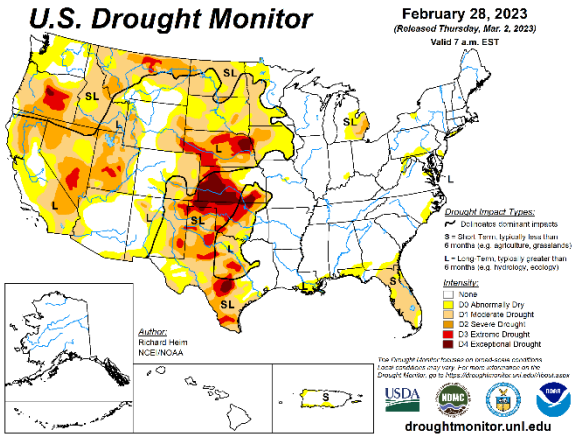


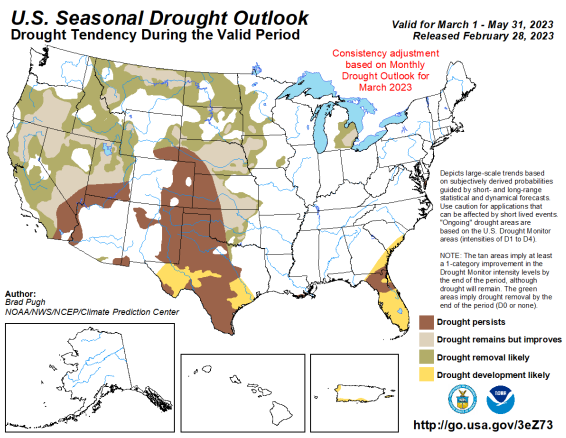


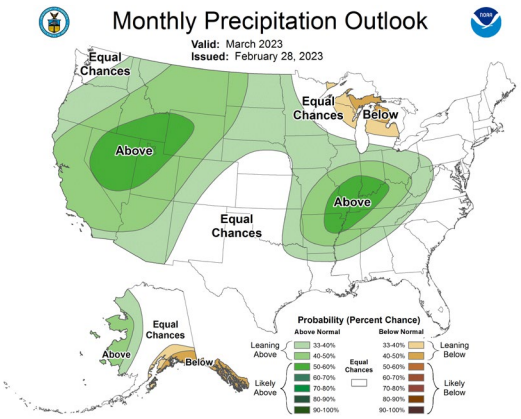


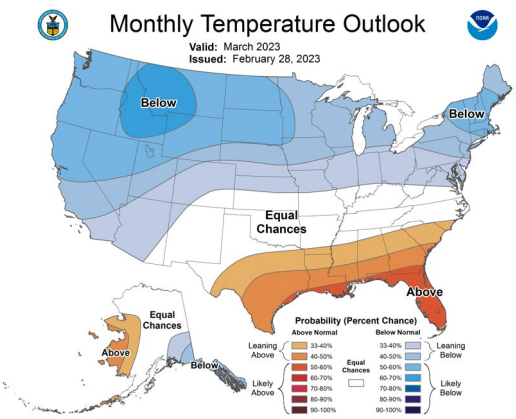


2023/03/02:
Max 1984: 15285.64
Min 2002: 963.96
Average: 6390
Median: 6130
ESP: 8400

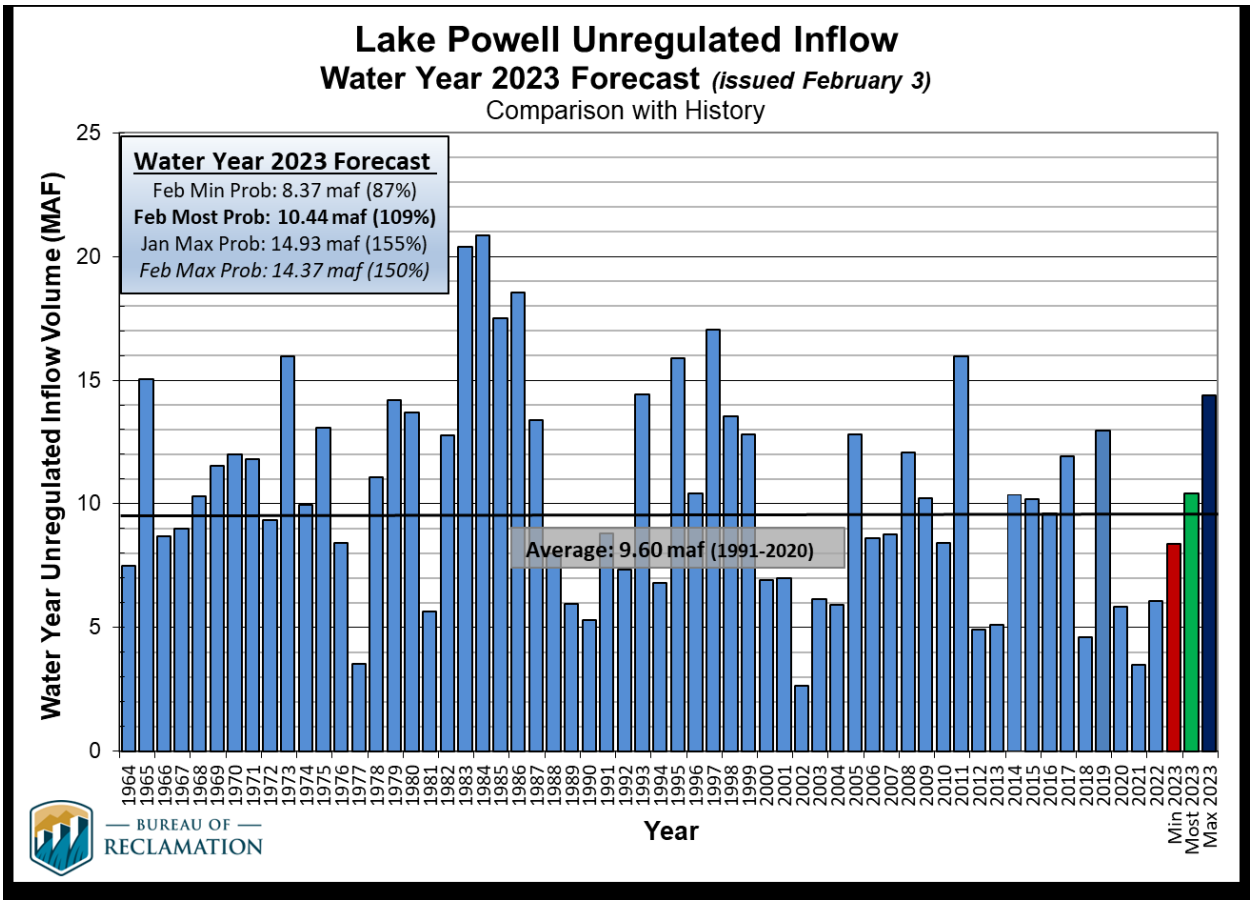








Lake Powell was scheduled to release 7.48 MAF in WY 2022, as determined by Reclamation's August 2021 24-Month Study. Projected Lake Powell elevations triggered planning activities pursuant to the Upper Basin Drought Contingency Plan (DCP). The Drought Response Operations Plan for May 2022 through April 2023 described a planned release of an additional 500,000 acre-feet of water from Flaming Gorge reservoir to help protect critical infrastructure at Lake Powell. In May 2022 Reclamation announced a 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 fell below that threshold elevation in December 2022. Due to improved hydrologic conditions, Lake Powell elevations are now projected to rise significantly above 3525' in spring 2023 and remain above that threshold through 2024, indicating DROA releases to help maintain Lake Powell elevations are no longer needed. 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, thereby reducing protection of elevations at Lake Mead.

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 - 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***

2022 Operations → 1,090 - 1,075 through 1,075 - 1050

2023 Operations → 1,050 - 1,045 through <1,025

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" may 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	19,604	-18,400
GRIC System Conservation	40,000	50,937	0
GRIC ICS creation	0	78,585	0
CRIT System Conservation (in lieu of ICS)	4,685	4,685	0
CAWCD System Conservation	0	35,506	0
YMIDD System Conservation	0	8,544	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**	**268,655**	**-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. Six-State Consensus-Based Modeling Approach

On January 30, 2023, the states of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming jointly submitted the Consensus-Based Modeling Alternative (CBMA) to the Bureau of Reclamation. This alternative was in response to the Bureau's Supplemental Environmental Impact Statement (SEIS) to revise the 2007 Interim Operating Guidelines for Glen Canyon Dam at Lake Powell and Hoover Dam at Lake Mead. While the CBMA is not a formal agreement between the Colorado River Basin States, it serves as an alternative framework for Reclamation to analyze in its SEIS process. It provides an approach to help protect Glen Canyon Dam and Hoover Dam infrastructure, water deliveries, and power production to mitigate the risk of either Lake Powell or Lake Mead reaching critical elevations.

Key components of the CBMA include:

- Assessment of evaporation and transit losses in the Lower Basin States in the amount of 1.5 million acre-feet.
- Additional shortages at higher Mead elevations for Lower Basin States.
- Upper Basin contributions include recognition of hydrologic shortages that our water users routinely face, and additional voluntary conservation measures as possible, subject to approval by the Upper Division States and fully voluntary participation by water users.

On January 31, California provided to the Bureau of Reclamation an alternative proposal in response to the SEIS. California's proposal differs from the six-state CBMA in several ways and calls for higher reservoir releases and much lower levels of conservation, to be achieved on a priority basis.

2. Drought Response Operations Agreement Updates - Amendment to 2022 Plan

On February 27, the Upper Colorado River Commission voted to suspend releases currently scheduled from Flaming Gorge Reservoir beginning March 1 through April 30, 2023, as part of the Drought Response Operations Agreement 2022 Plan. This amendment was adopted due to significant improvement in hydrologic conditions and projected 2023 Lake Powell elevations since Reclamation's April 2022 24-Month Study was used to develop the 2002 DROA Plan. The 2022 DROA Plan was implemented May 1, 2022, and helped achieve the intended purpose of keeping Lake Powell above critical elevations. Maintaining water higher in the Colorado River System provides the advantages of reduced evaporation and increased flexibility and security for potential future operations.

In addition to the 161,000 acre-feet released from Blue Mesa Reservoir and Flaming Gorge Reservoir in 2021, Flaming Gorge has released over 450,000 acre-feet as part of the 2022 DROA Plan.

3. Demand Management Feasibility Investigation

The Upper Colorado River Commission is continuing its investigation into the feasibility of a potential Demand Management program. All Upper Division States are currently analyzing next steps considering the UCRC's December 2022 reports summarizing interstate work completed to date. Pursuant to the Board's direction at the January 2023 meeting, state staff is working to initiate discussions with other Upper Division State staff regarding the

components of feasibility that would require agreement before a program may be established pursuant to the Demand Management Storage Agreement, including:

- Verification and accounting for the actual volume of conserved consumptive use
- Conveyance of the conserved consumptive use to appropriate destinations and accounting for associated conveyance losses
- Providing for storage at and release from the CRSPA Initial Units of any conserved consumptive use
- Administration of a potential program
- Funding for a potential program
- Compliance with federal and state laws within each Upper Division State

In addition, staff is considering potential data and information gaps based on Colorado's feasibility investigation to date and will advise the board on potential demonstration projects that may help inform these at future board meetings. Staff will also provide updates on discussions with Upper Division State staff as this progress.