



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

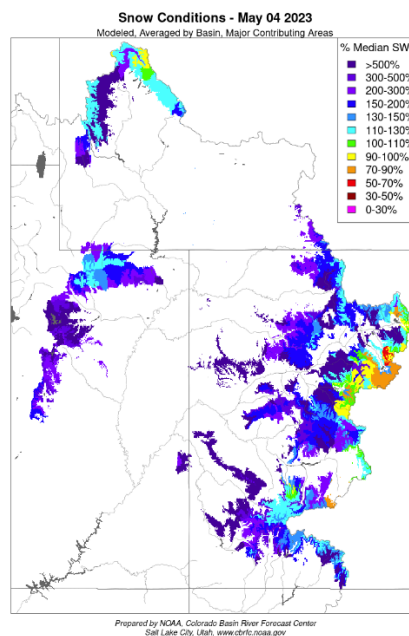
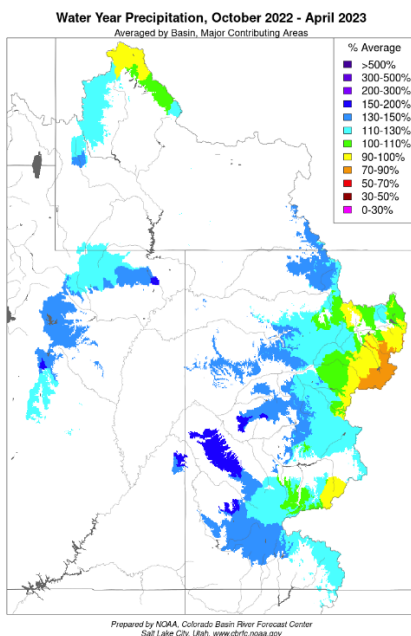
DATE: May 17, 2023

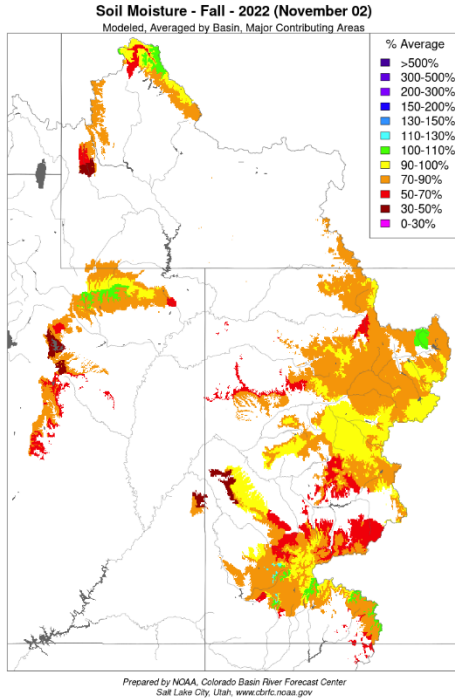
SUBJECT: Agenda Item 15: Colorado River Hydrology and Other Updates

This is an informational item with no board action requested.

1. Hydrology and operations update

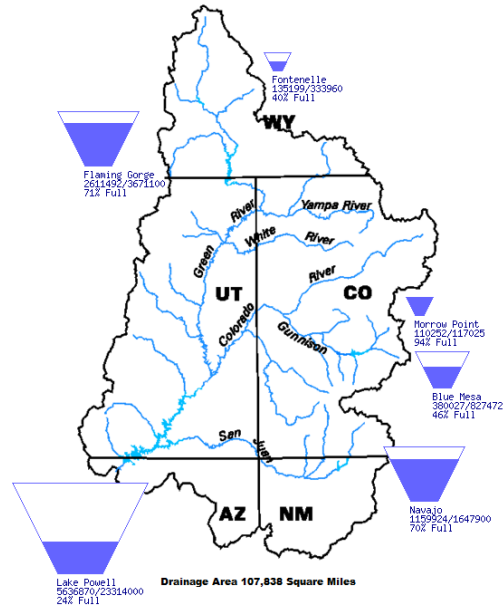
Streamflow for Water Years 2021 and 2022 was well below average throughout the basin, placing significant strain on basin storage and Upper Basin water users. WY 2023 precipitation has been above average, with extremely wet conditions in late December, January and March. Temperatures were generally cooler than average through March. Snowpack peaked above to well above average throughout most of the Upper Basin and areas of the Lower Basin. Streamflow was approximately average from October through early April. Spring runoff has started and is projected to be above to well above average. Forecasts for inflow into Lake Powell increased significantly after the March precipitation. Drought conditions improved across most of the basin. Longer-term impacts from dry soils and depleted storage may continue, as indicated in current forecasts for runoff and reservoir operations.



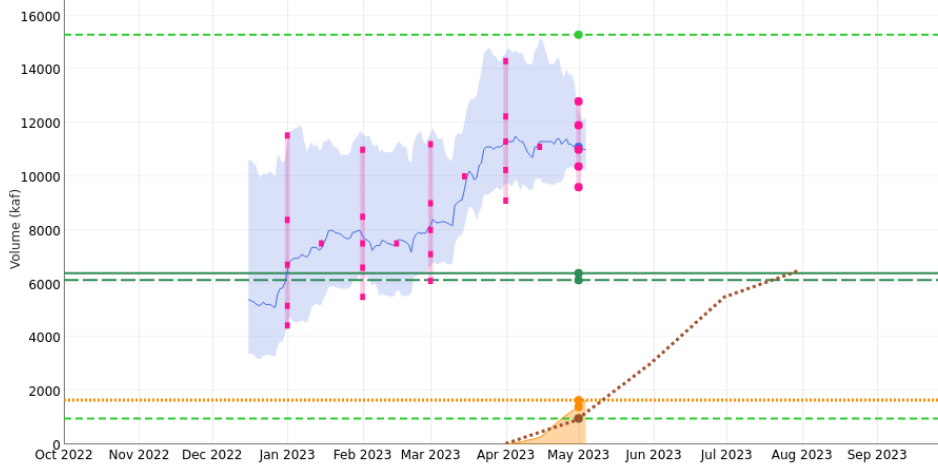


Data Current as of:
05/03/2023

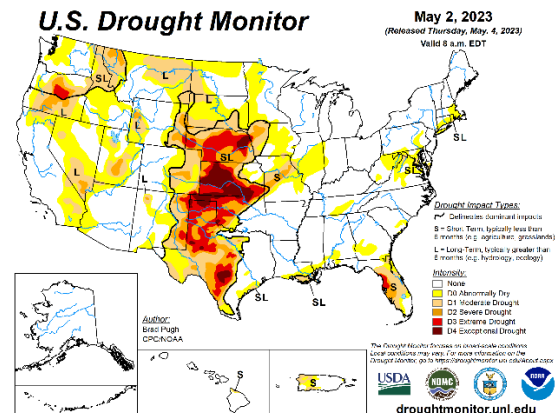
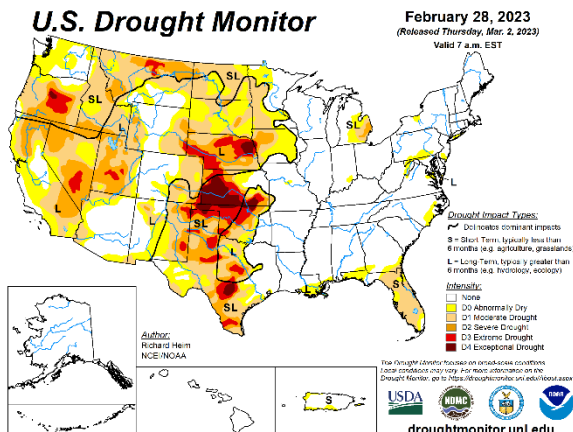
Upper Colorado River Drainage Basin



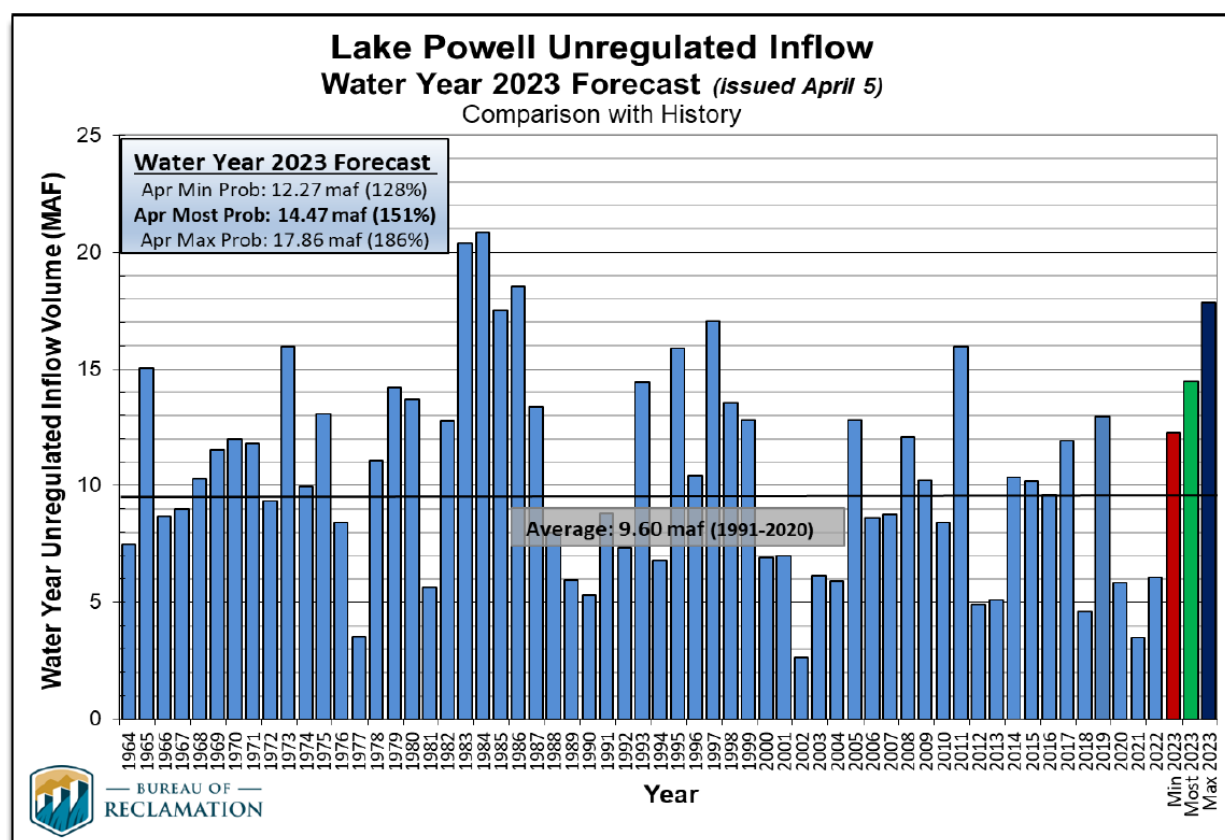
Colorado - Lake Powell, Glen Cyn Dam, At (GLDA3)
Period: Apr-Jul, Official 50% Forecast (2023-05-01): 11000 kaf (172% Average, 179% Median)
ESP is Unregulated and No Precipitation Forecast Included



2023/05/01:
Max 1984: 15285.64
Min 2002: 963.96
Average: 6390
Median: 6130
Observed Accumulation: 1400
Observed Total: 1650
Normal Accumulation: 971
ESP: 11100
Official 10: 12800
Official 30: 11910
Official 50: 11000
Official 70: 10370
Official 90: 9600



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. 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 2025, indicating DROA releases to help maintain Lake Powell elevations are no longer needed. DROA releases ceased on March 7, 2023. The high inflow forecasts for Lake Powell trigger balancing releases under the 2007 Interim Guidelines for WY 2023, which can range from 7 MAF to 9.5 MAF. Releases from Lake Powell will be adjusted monthly from April through September for reservoir balancing, with a current forecasted WY 2023 release up to the maximum of 9.5 MAF. The 480 KAF withheld in Lake Powell in WY 2022 is being included within the balancing calculations and releases for WY 2023.



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 partially 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 - 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 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 conservation pursuant to the “500+ Plan” is updated in the August and April 24-Month Studies. The April 2023 24-Month Study increased modeled 500+ Plan conservation from August 2022, indicative of the improved hydrology in the Lower Basin.

Additional Water Modeled Under 500 Plus Plan
(as anticipated to be modeled in the April 2023 Most Probable 24-Month Study)

Conservation Activity (volumes in AF)	2021	2022 (Provisional)	2023 (Projected)
CAP ICS delivery offset	6,147	15,876	-10,900
GRIC System Conservation	40,000	58,837	125,000
GRIC ICS creation	0	78,565	0
CRIT System Conservation	4,685	4,685	0
CAWCD System Conservation	0	87,794	0
YMIDD System Conservation	0	8,523	13,670
MVIDD System Conservation	0	9,531	12,819
FMYN System Conservation	0	0	13,933
MWD ICS delivery offset and/or creation	58,134	58,211	107,347
PVID System Conservation	12,305	52,789	58,400
CVWD System Conservation	0	9,083	0
SNWA ICS creation	12,832	28,330	44,000
Annual Total (Non-Shortage/DCP)	134,103	412,224	364,269
Cumulative Total	134,103	546,327	910,596

- 2023 volumes reflect executed agreements under the 500+ Plan and LC Conservation Program and 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 planning and modeling.



2. Drought Response Operations Updates and 2023 Agreement

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.

The Upper Division States are currently working on a 2023 Drought Response Operations Plan. This Plan will focus on recovery of water previously released and will not include any additional releases.

3. System Conservation Pilot Program Implementation

In June 2022, the Commissioner of the Bureau of Reclamation called on the Colorado River Basin States to create a plan to conserve an additional 2-4 million acre-feet of water above efforts already underway, in an effort to protect critical infrastructure at Lake Powell and Lake Mead. In July 2022, the Upper Division States responded with a Five-Point Plan, while recognizing that we were not the cause of the crisis and had limited options to respond due to ongoing and deep hydrologic and legal water shortages, coupled with depleted storage.

One component of this plan is reauthorization of the System Conservation Pilot Program (SCPP). This program entails temporary, voluntary, and compensated reductions in consumptive use across the Upper Basin for the purpose of mitigating the impacts of drought in the Upper Colorado River Basin. The SCPP was reauthorized by Congress, and a Request for Proposals was released in December 2022. Applications were accepted through March 1, 2023.

The SCPP is administered by the Upper Colorado River Commission (UCRC) pursuant to a funding agreement executed on January 6, 2023, between the UCRC and the Department of the Interior through the Bureau of Reclamation. Part of the agreement includes a "Facilitation Exhibit" which describes how the UCRC will implement the funding agreement with Reclamation. The funding agreement requires that the proposed projects are to be selected based on criteria that shall be set by the UCRC. The criteria for the selection of pilot projects are set forth in the Facilitation Exhibit.

Pursuant to these agreements, the UCRC held a special meeting on April 17, 2023, and voted to authorize UCRC to develop and enter into contracts with 72 project proponents across the Upper Basin. Of these, 29 projects are in Colorado, totaling roughly 3,500 acre-feet of estimated conserved consumptive use. Below is a table showing projects by state across the Upper Basin.

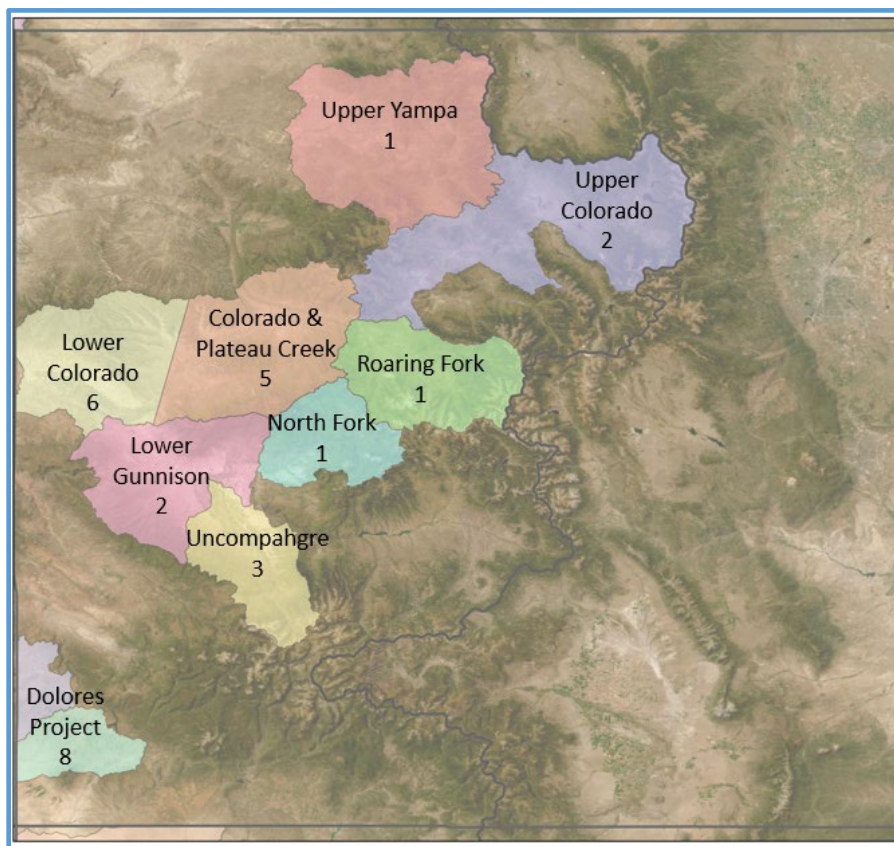


State	Estimated Conserved CU*	Number of Projects
Colorado	3,532	29
New Mexico	4,633	1
Utah	14,877	20
Wyoming	15,756	22
Total	38,798	72

*Total CCU estimate reflects the potential maximum amount of conservation if all projects move forward, are executed, and implemented and currently contemplated.

Below is a summary of projects within Colorado and map showing locations.

Project Type	Number of Projects	Total CCU
Fallow Grass Hay - Commodity	3	230
Fallow Grass Hay - Cow-Calf Operation	8	1,163
Fallow Alfalfa - Commodity	7	1,029
Fallow Corn - Commodity	2	214
Storage Conservation	1	105
Crop Switching	8	791
Total	29	3,532



The UCRC is currently working with project proponents to develop and finalize System Conservation Implementation Agreements and Verification Plans for each project. The water rights associated with projects within Colorado will receive protection from abandonment and in change cases due to the Board's approval of SCPP as a state-approved conservation program at the March 2023 meeting.

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

Recent efforts and events may help inform the Demand Management Feasibility Investigation and, including lessons learned in the implementation of the System Conservation Pilot Program as well as Senate Bill 295, which as drafted would create a state task force to consider recommendations for state legislation that would provide additional tools to address drought in the Colorado River Basin.

