

December 2022 24-Month Study Projections Lake Powell and Lake Mead: End of Month Elevation Charts



Explanation of Hydrologic Scenarios

In addition to the December 2022 24-Month Study based on the Most Probable inflow scenario, and in accordance with the Upper Basin Drought Response Operations Agreement (DROA), Reclamation has conducted an additional model run in December to determine a possible range of reservoir elevations. The October 2022 24-Month Study Probable Maximum inflow, along with the December 2022 24-Month Study Probable Minimum inflow, was used to determine the range of probable outcomes. Probable minimum and probable maximum model runs are conducted in January, April, August, and October, or when necessary to incorporate changing conditions. The Probable Minimum inflow scenario reflects a dry hydrologic condition which statistically would be exceeded 90% of the time. The Most Probable inflow scenario reflects a median hydrologic condition which statistically would be exceeded 50% of the time. The Probable Maximum inflow scenario reflects a wet hydrologic condition which statistically would be exceeded 10% of the time. There is approximately an 80% probability that a future elevation will fall inside the range of the minimum and maximum inflow scenarios. Additionally, there are possible inflow scenarios that would result in reservoir elevations falling outside the ranges indicated in these reports.

In light of the prolonged drought, low runoff conditions, and depleted storage at Lake Powell, the Department of the Interior implemented an action under Sections 6 and 7.D of the 2007 Interim Guidelines specifically reducing the Glen Canyon Dam annual releases to 7.00 million acre feet (maf) in water year (WY) 2022.¹ This action was undertaken in conjunction with the 2022 Drought Response Operations Plan² actions which together are anticipated to add approximately one million additional acre-feet of storage to Lake Powell by April 2023. The Department of Interior and Reclamation will work to determine the manner in which to operate Glen Canyon Dam to ensure the benefits of these actions are preserved.

The 2022 Plan provisions to protect a target elevation at Lake Powell of 3,525 feet through adjusting Glen Canyon Dam monthly volume releases have been incorporated into the December 2022 24-Month Study and include an adjusted monthly release volume pattern for Glen Canyon Dam that will hold back a total of 0.523 maf in Lake Powell from December 2022 through April 2023. There are continued discussions when and how that same amount of water (0.523 maf) will be released later in the water year. The annual release volume from Lake Powell for WY 2023 will continue to be 7.00 maf, or higher, according to the provisions outlined below. If future projections indicate the monthly adjustments are insufficient to protect Powell's elevation, Reclamation will again consider additional water releases from the upstream initial units of the Colorado River Storage Project according to the provisions of the 2022 Plan.

The reduction of releases from Lake Powell from 7.48 maf to 7.00 maf in WY 2022 resulted in a reduced release volume of 0.480 maf that normally would have been released from Glen Canyon Dam to Lake Mead as part of the 7.48 maf annual release volume, consistent with routine operations under the 2007 Interim Guidelines. The reduction of releases from Glen Canyon Dam in WY 2022 (resulting in increased storage in Lake Powell) did not affect the operating determinations for 2023 and was accounted for "as if" this volume of water had been delivered to Lake Mead. The 24-Month Study will continue to model 2023 and 2024 operations at lakes Powell and Mead as if the 0.480 maf had been delivered to Lake Mead for operating condition purposes both for the U.S. Lower Basin and for Mexico unless otherwise determined through additional consultation and communication as described below. The elevations listed in this report reflect the projected physical elevations at each reservoir after implementing operations as described.

December 2022 Probable Minimum 24-Month Study

The WY 2023 unregulated inflow into Lake Powell in the December Probable Minimum inflow scenario is 4.89 maf, or 51% of average. The Probable Minimum 24-Month Study includes a release volume from Glen Canyon Dam of 7.00 maf in WY 2023 and 7.00 maf in WY 2024. Under the Probable Minimum scenario, Lake Powell's physical elevation is projected to be 3,489.18 feet on December 31, 2023. With intervening flows between Lake Powell and Lake Mead of 0.634 maf in calendar year (CY) 2023, Lake Mead's physical elevation is projected to be 1,016.18 feet on December 31, 2023.

¹ For more information: <https://www.usbr.gov/uc/DocLibrary/Plans/20220503-2022DROA-GlenCanyonDamOperationsDecisionLetter-508-DOI.pdf>.

² For more information: <https://www.usbr.gov/uc/DocLibrary/Plans/20220429-2022DroughtResponseOperationsPlan-ApprovalMemo-508-DOI.pdf>.

December 2022 Most Probable 24-Month Study

The WY 2023 unregulated inflow into Lake Powell in the December Most Probable inflow scenario is 7.70 maf, or 80% of average. The Most Probable 24-Month Study includes a release volume from Glen Canyon Dam of 7.00 maf in WY 2023 and 8.01 maf in WY 2024. Under the Most Probable scenario, Lake Powell's physical elevation is projected to be 3,527.00 feet on December 31, 2023. With intervening flows between Lake Powell and Lake Mead of 0.809 maf in CY 2023, Lake Mead's physical elevation is projected to be 1,021.05 feet on December 31, 2023.

October 2022 Probable Maximum 24-Month Study

The WY 2023 unregulated inflow into Lake Powell in the October Probable Maximum inflow scenario is 15.50 maf, or 161% of average. The Probable Maximum 24-Month Study includes a release volume from Glen Canyon Dam of 9.50 maf in WY 2023 and 9.00 maf in WY 2024. Under the Probable Maximum scenario, Lake Powell's physical elevation is projected to be 3,581.67 feet on December 31, 2023. With intervening flows between Lake Powell and Lake Mead of 0.970 maf in CY 2023, Lake Mead's physical elevation is projected to be 1,062.28 feet on December 31, 2023.

The 2022 AOP is available online at:

<https://www.usbr.gov/lc/region/g4000/aop/AOP22.pdf>.

The Draft 2023 AOP is available online at:

https://www.usbr.gov/uc/water/rsvrs/ops/aop/AOP23_draft.pdf.

The Interim Guidelines are available online at:

<https://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf>.

The Colorado River DCPs are available online at:

<https://www.usbr.gov/dcp/finaldocs.html>.

The 2021 Lower Basin MOU is available online at:

https://www.usbr.gov/lc/region/g4000/2021_MOU.pdf.

The Upper Basin DROA is online at:

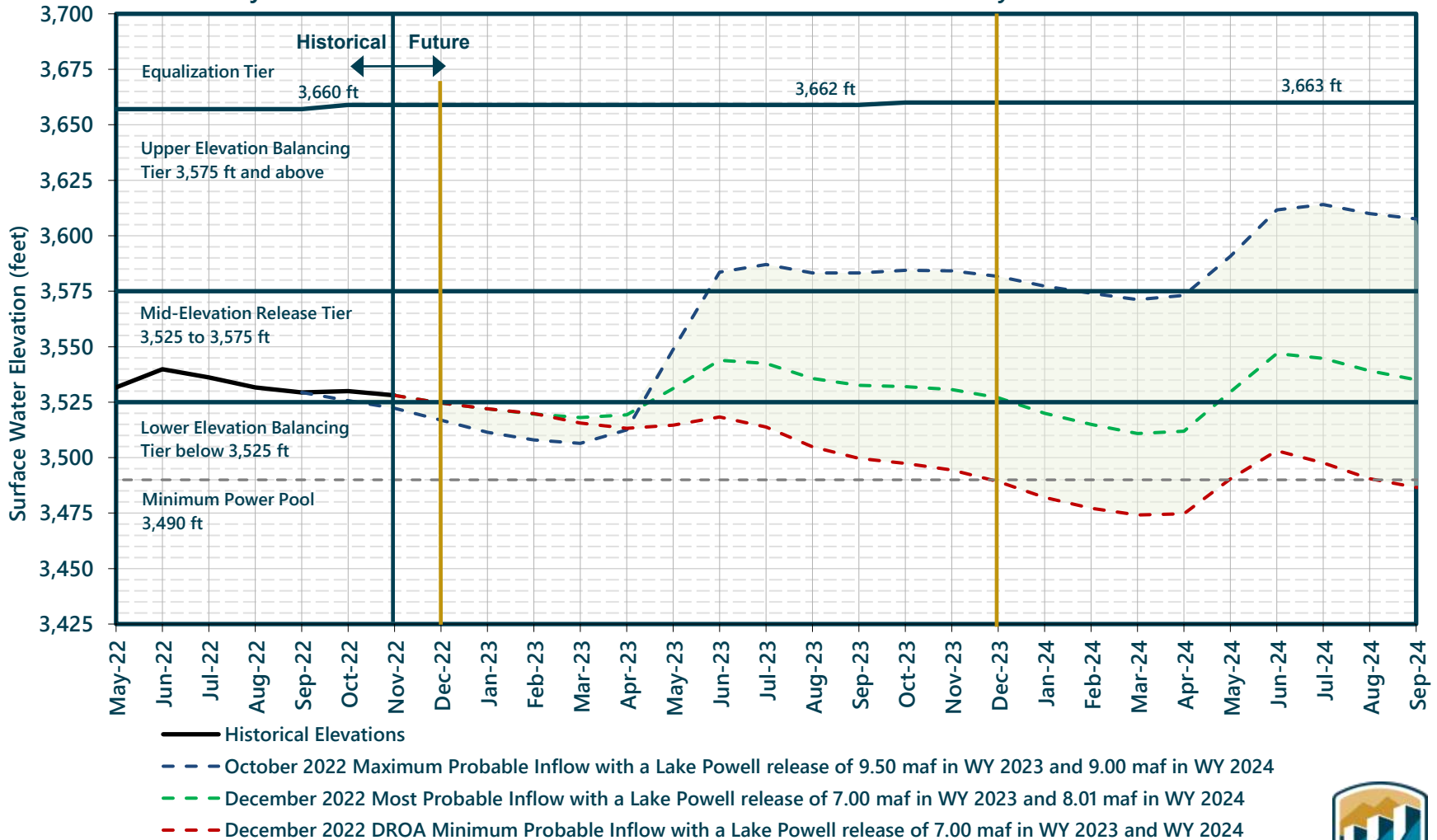
<https://www.usbr.gov/dcp/droa.html>.

The Upper Basin Hydrology Summary is available online at:

https://www.usbr.gov/uc/water/crsp/studies/24Month_12_ucb.pdf.

Lake Powell End of Month Elevations¹

Projections from the October and December 2022 24-Month Study Inflow Scenarios

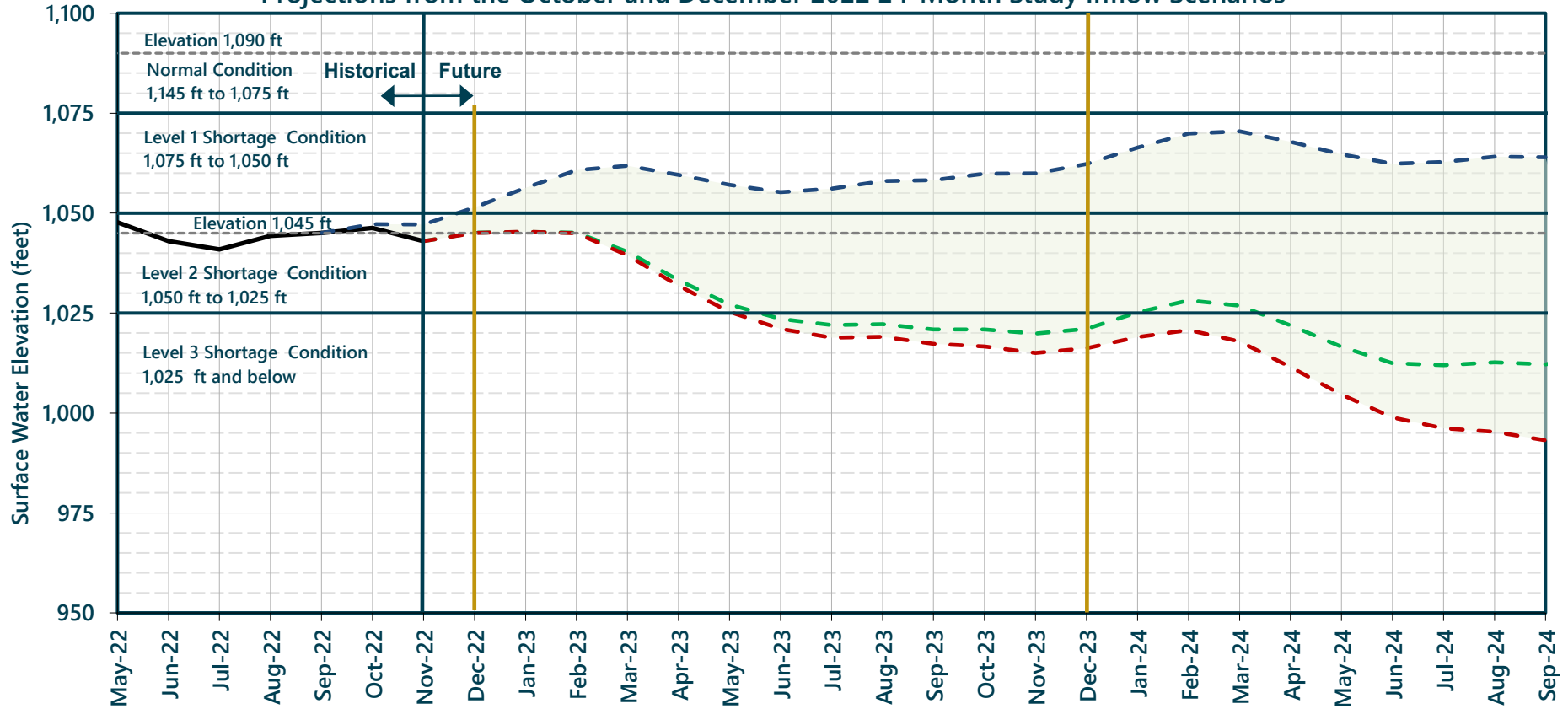


¹ Projected Lake Powell end of month physical elevations from the latest 24-Month Study inflow scenarios. The Drought Response Operations Agreement (DROA) is available online at: <https://www.usbr.gov/dcp/finaldocs.html>.



Lake Mead End of Month Elevations¹

Projections from the October and December 2022 24-Month Study Inflow Scenarios



- Historical Elevations
- - - October 2022 Maximum Probable Inflow with a Lake Powell release of 9.50 maf in WY 2023 and 9.00 maf in WY 2024
- - - December 2022 Most Probable Inflow with a Lake Powell release of 7.00 maf in WY 2023 and 8.01 maf in WY 2024
- - - December 2022 DROA Minimum Probable Inflow with a Lake Powell release of 7.00 maf in WY 2023 and WY 2024

¹ Projected Lake Mead end of month physical elevations from the latest 24-Month Study inflow scenarios.
 The Drought Response Operations Agreement (DROA) is available online at: <https://www.usbr.gov/dcp/finaldocs.html>.

