

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



## Explanation of Hydrologic Scenarios

In addition to the August 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 additional model runs in August to determine a possible range of reservoir elevations under Probable Minimum and Probable Maximum inflow scenarios. The 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 maf in water year 2022<sup>1</sup>. This action was undertaken in conjunction with the 2022 Drought Response Operations Plan<sup>2</sup> 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 reduction of releases from Lake Powell from 7.48 maf to 7.00 maf in water year 2022 will result 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 water year 2022 (resulting in increased storage in Lake Powell) will not affect future operating determinations and will be accounted for "as if" this volume of water had been delivered to Lake Mead. The August 2022 24-Month Studies modeled 2023 and 2024 operations at Lakes Powell and Mead as if the 0.480 maf had been delivered to Lake Mead for operating tier/condition purposes both for the U.S. Lower Basin and for Mexico.

The most probable water year 2022 unregulated inflow forecast for Lake Powell, issued by the Colorado Basin River Forecast Center on August 2, 2022, is 5.96 maf or 62% of average. Using the approach described above, the August Most Probable 24-Month Study projects Lake Powell to end the calendar year below elevation 3,525 feet. Consistent with Section 6.D.1 of the Interim Guidelines, the operational tier for Lake Powell in water year 2023 will be the Lower Elevation Balancing Tier with an initial projected water year release volume of 7.00 maf.

With intervening flows between Lake Powell and Lake Mead of 0.620 maf in calendar year 2022, the August Most Probable 24-Month Study projects the Lake Mead elevation, determined as if the 0.48 maf had been delivered to Lake Mead in water year 2022, to be below 1,050 feet and above 1,045 feet. Consistent with Section 2.D.1 of the Interim Guidelines, a Shortage Condition consistent with Section 2.D.1.b will govern the operation of Lake Mead for calendar year 2023. In addition, Section III.B of Exhibit 1 to the Lower Basin Drought Contingency Plan (DCP) Agreement will also govern the operation of Lake Mead for calendar year 2023.

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

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

### **August 2022 Probable Minimum 24-Month Study**

The water year 2023 unregulated inflow into Lake Powell in the Probable Minimum inflow scenario is 4.70 maf, or 49% of average. The August Probable Minimum 24-Month Study includes a release volume from Glen Canyon Dam of 7.00 maf in water year 2022 and 7.00 maf in water year 2023. Under the Probable Minimum scenario, Lake Powell's physical elevation is projected to be 3,484.06 feet on December 31, 2023. With intervening flows between Lake Powell and Lake Mead of 0.634 maf in calendar year 2023, Lake Mead's physical elevation is projected to be 1,010.95 feet on December 31, 2023.

### **August 2022 Most Probable 24-Month Study**

The water year 2023 unregulated inflow into Lake Powell in the Most Probable inflow scenario is 8.30 maf, or 86% of average. The August Most Probable 24-Month Study includes a release volume from Glen Canyon Dam of 7.00 maf in water year 2022 and 7.00 maf in water year 2023. Under the Most Probable scenario, Lake Powell's physical elevation is projected to be 3,525.07 feet on December 31, 2023. With intervening flows between Lake Powell and Lake Mead of 0.809 maf in calendar year 2023, Lake Mead's physical elevation is projected to be 1,021.39 feet on December 31, 2023.

### **August 2022 Probable Maximum 24-Month Study**

The water year 2023 unregulated inflow into Lake Powell in the Probable Maximum inflow scenario is 15.70 maf, or 164% of average. The August Probable Maximum 24-Month Study includes a release volume from Glen Canyon Dam of 7.00 maf in water year 2022 and 9.50 maf in water year 2023. Under the Probable Maximum scenario, Lake Powell's physical elevation is projected to be 3,586.78 feet on December 31, 2023. With intervening flows between Lake Powell and Lake Mead of 0.970 maf in calendar year 2023, Lake Mead's physical elevation is projected to be 1,058.63 feet on December 31, 2023.

The 2022 AOP is available online at:

<https://www.usbr.gov/lc/region/g4000/aop/AOP22.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](https://www.usbr.gov/lc/region/g4000/2021_MOU.pdf).

The Upper Basin Drought Response Operations Agreement is online at:

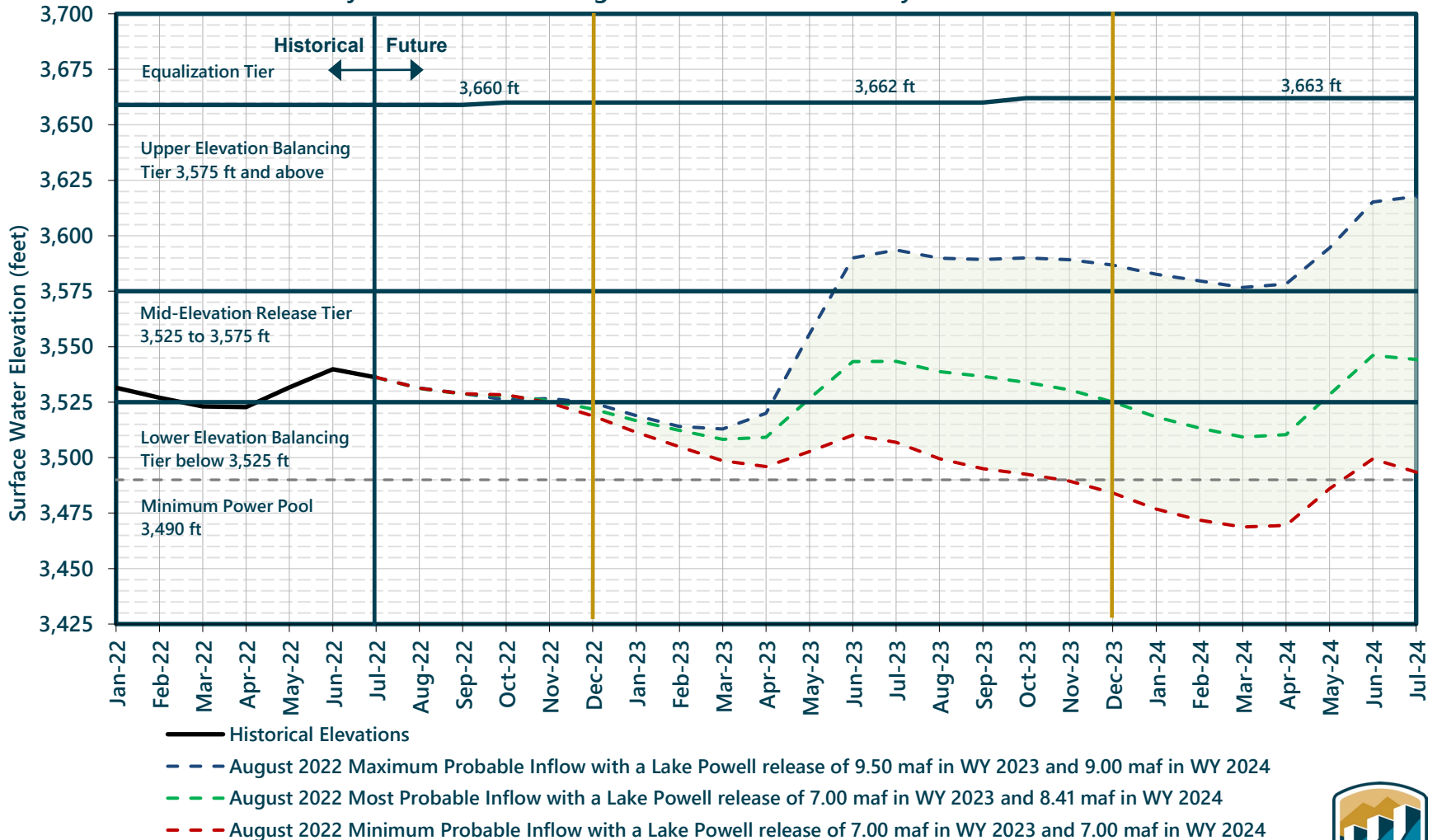
<https://www.usbr.gov/dcp/droa.html>.

The Upper Basin Hydrology Summary is available online at:

[https://www.usbr.gov/uc/water/crsp/studies/24Month\\_08\\_ucb.pdf](https://www.usbr.gov/uc/water/crsp/studies/24Month_08_ucb.pdf).

# Lake Powell End of Month Elevations<sup>1</sup>

Projections from the August 2022 24-Month Study Inflow Scenarios

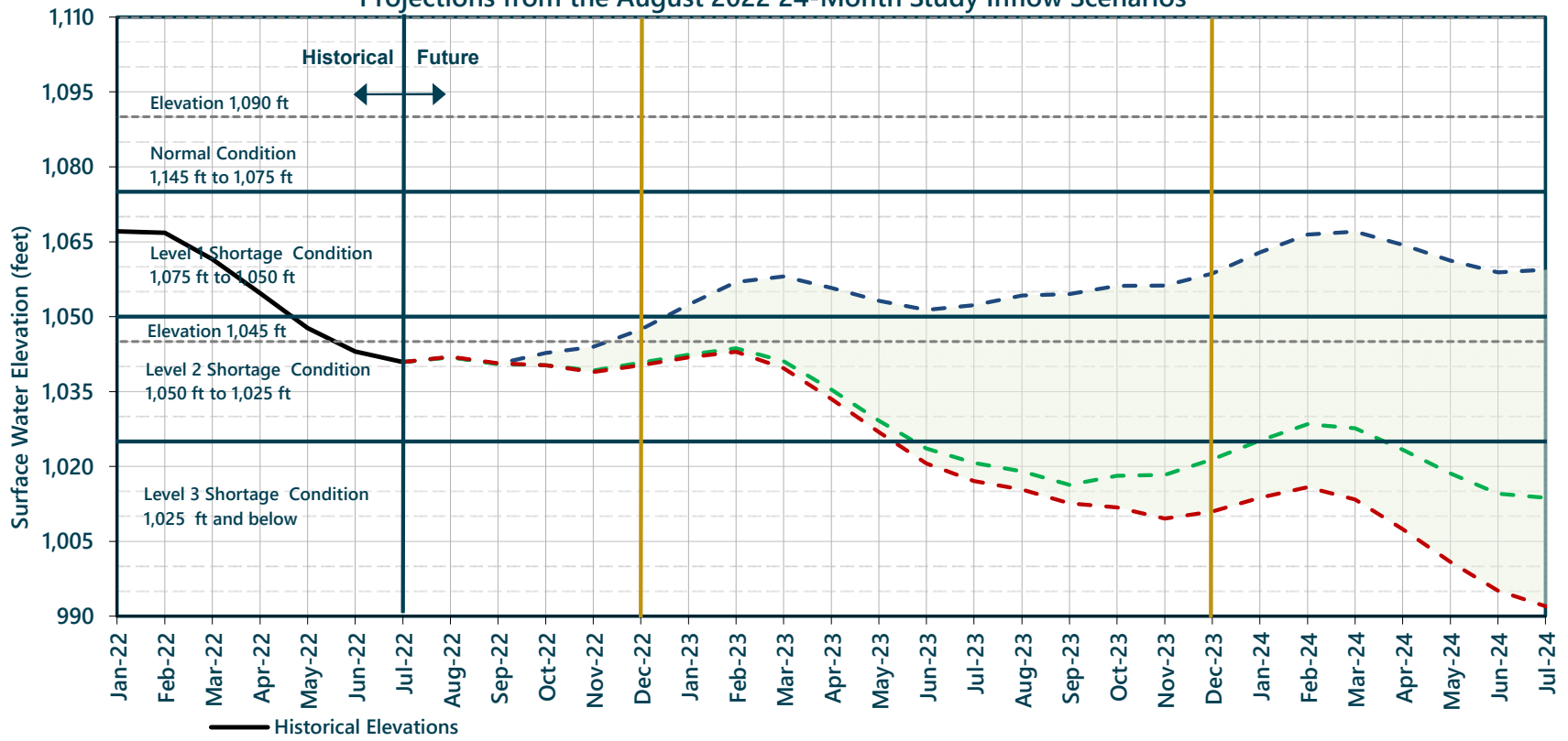


<sup>1</sup> Projected Lake Powell end of month physical elevations from the latest 24-Month Study inflow scenarios. The Drought Response Operations Agreement (DROA) is available online at: <https://www.usbr.gov/dcp/finaldocs.html>.



# Lake Mead End of Month Elevations<sup>1</sup>

Projections from the August 2022 24-Month Study Inflow Scenarios



- Historical Elevations
- - - August 2022 Maximum Probable Inflow with a Lake Powell release of 9.50 maf in WY 2023 and 9.00 maf in WY 2024
- - - August 2022 Most Probable Inflow with a Lake Powell release of 7.00 maf in WY 2023 and 8.41 maf in WY 2024
- - - August 2022 Minimum Probable Inflow with a Lake Powell release of 7.00 maf in WY 2023 and 7.00 maf in WY 2024

<sup>1</sup> 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>.

