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Managing Water in the West

Overview of Colorado River Reservoir Management

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U.S. Department of the Interior
Bureau of Reclamation



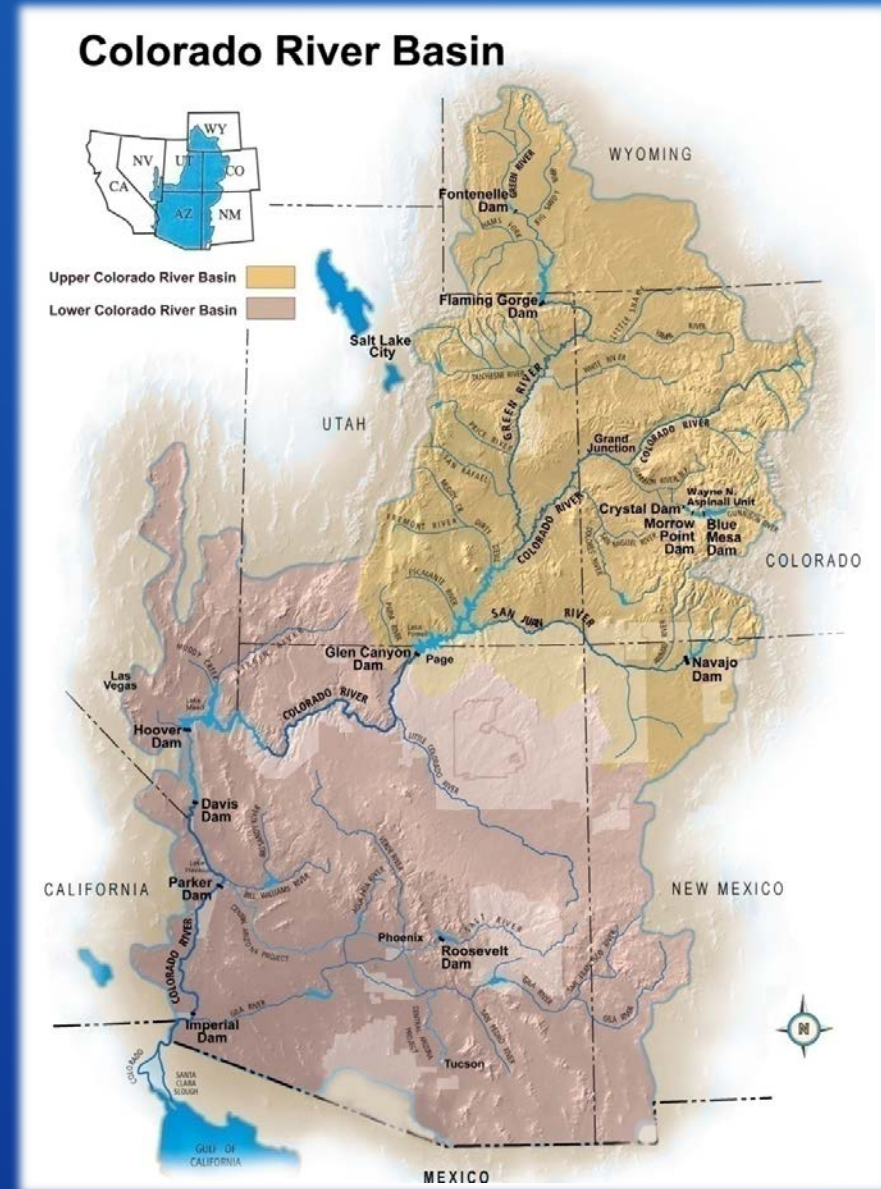
Topics

- Colorado River Basin Overview
- Lower Colorado River Water Master Role
- Drought and Drought Impacts
- Drought Response Activities
- Summary

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Overview of the Colorado River Basin

- 16.5 million acre-feet (maf) allocated annually
- 13 to 14.5 maf of consumptive use annually
- 60 maf of storage
- 14.8 maf average annual “natural” inflow into Lake Powell over past 110 years
- Inflows are highly variable year-to-year

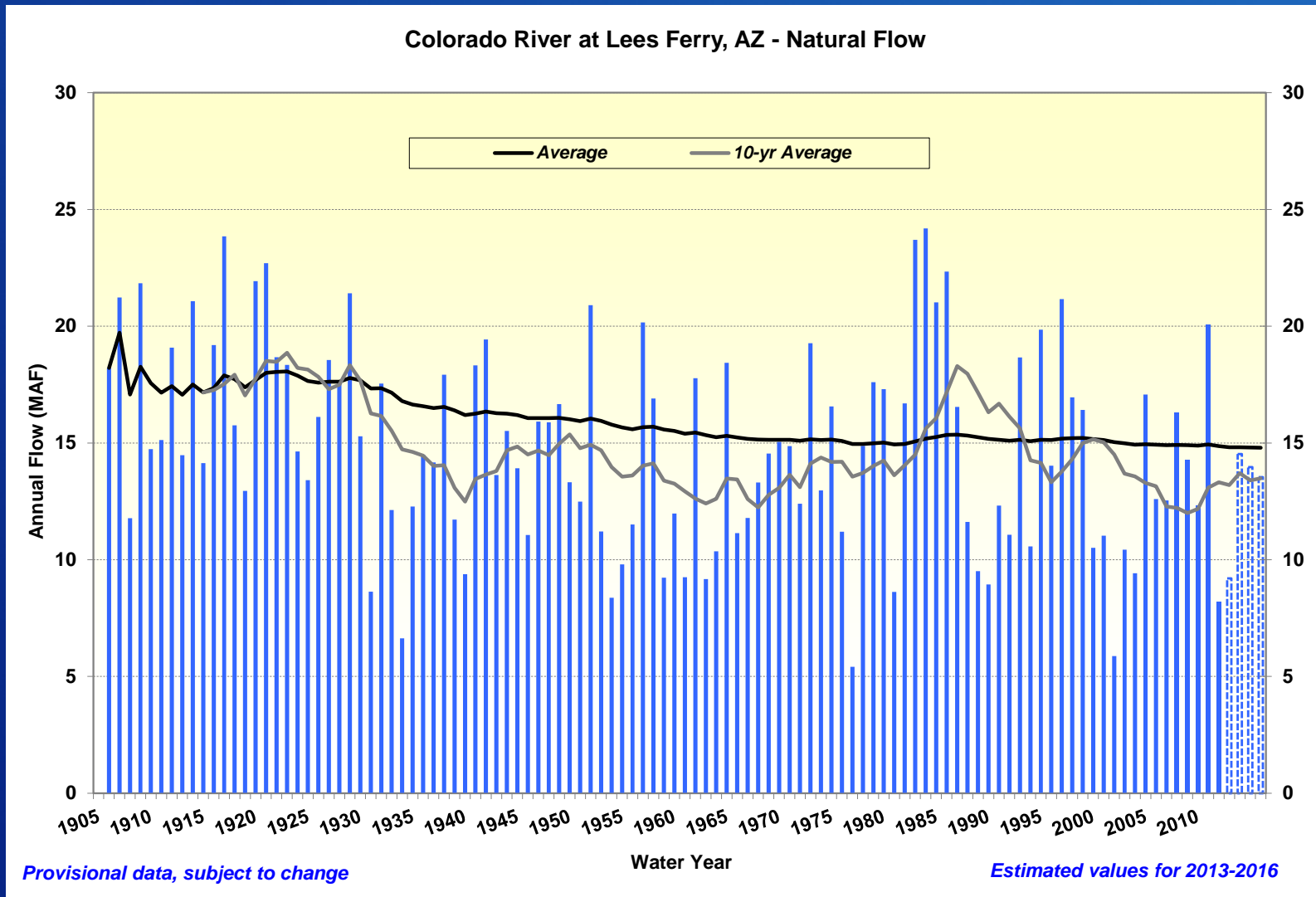


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Natural Flow

Colorado River at Lees Ferry Gaging Station, Arizona

Water Year 1906 to 2016



Lower Colorado River Water Master Role

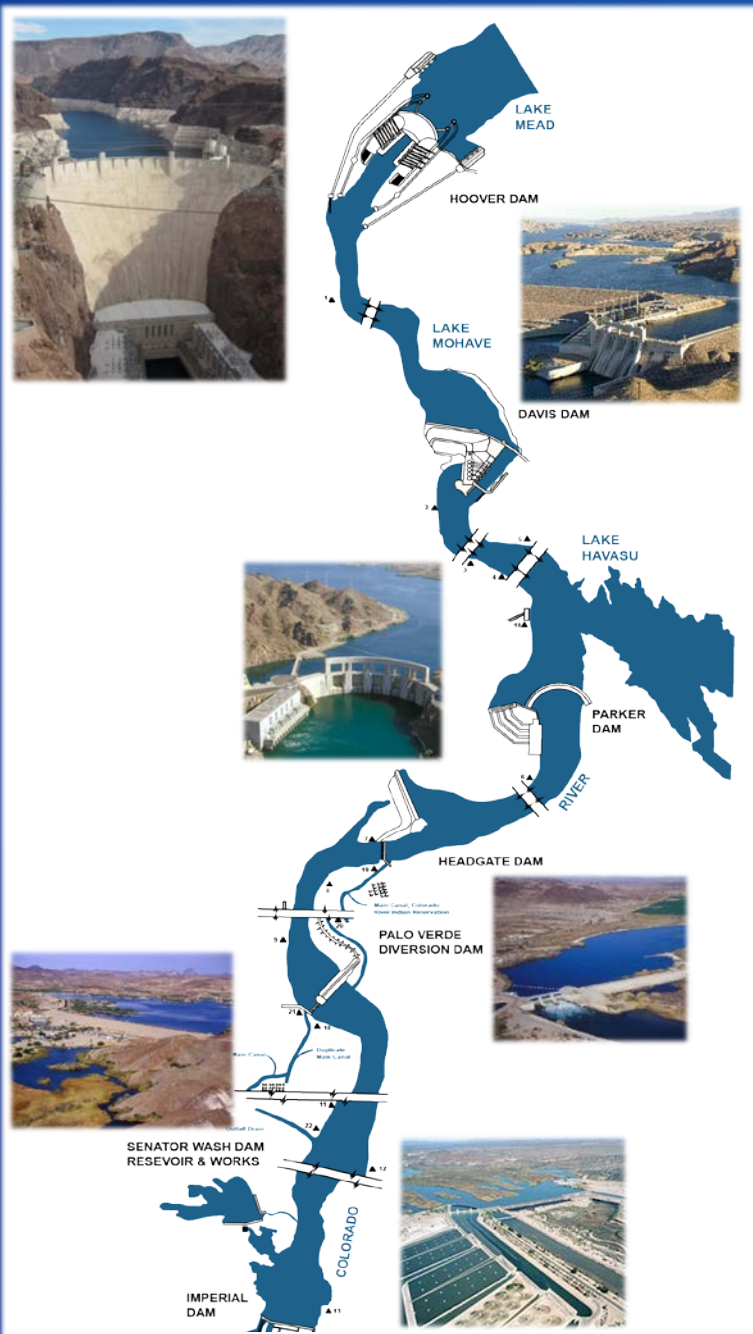
- Boulder Canyon Project Act of 1928 established the Secretary of the Interior as Water Master of the Lower Colorado River
 - Develop Annual Operating Plan for Colorado River Reservoirs
 - Administer water contracts
 - Approve U.S. water orders
 - Schedule water releases from Hoover, Davis, and Parker Dams
 - Account for all water use



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Lower Colorado River Management Objectives

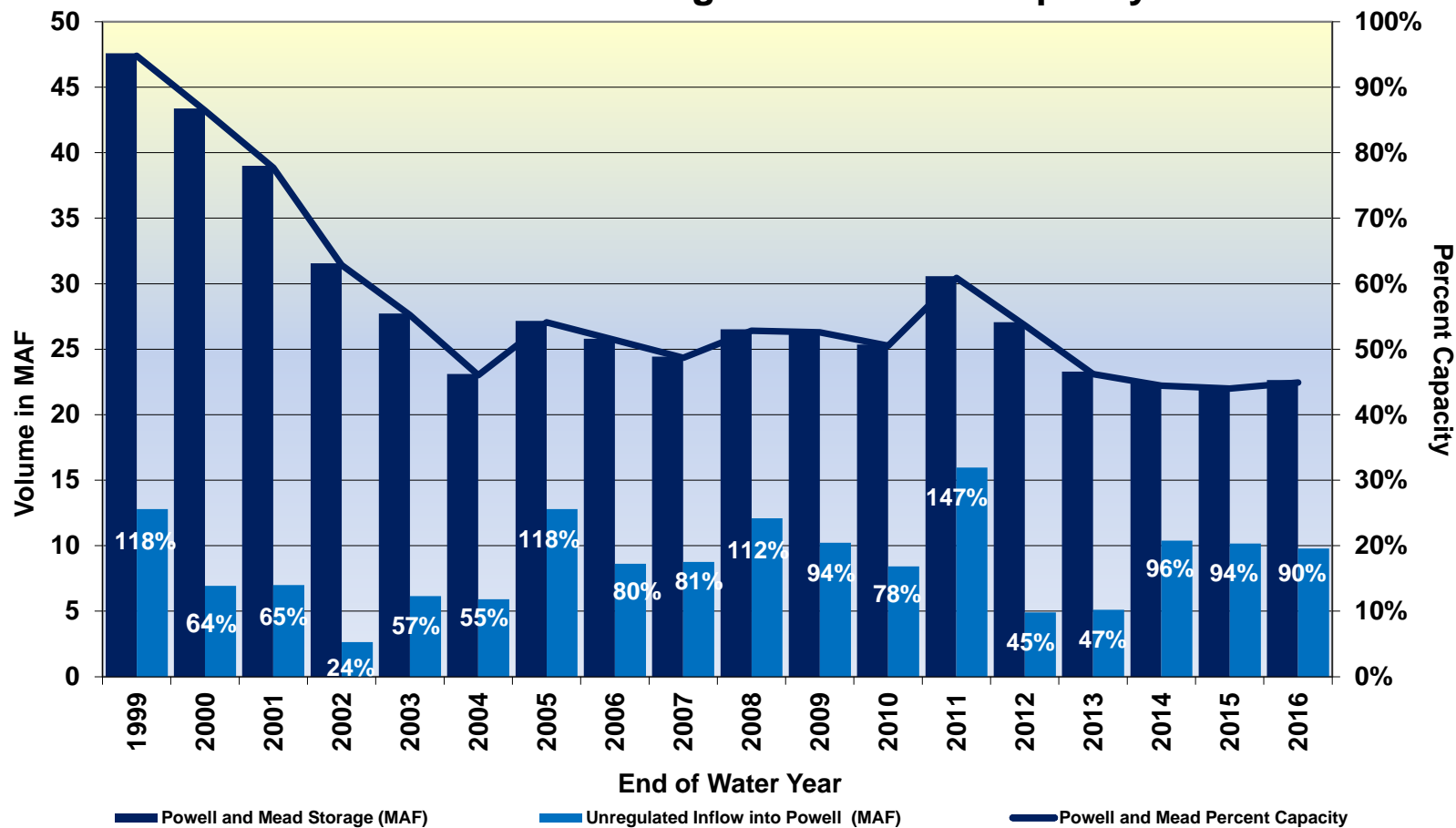
- Provide flood control and river regulation
- Meet water orders
- Generate hydropower
- Implement LCR Multi-Species Conservation Program
- Support recreational opportunities



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State of the System (Water Years 1999-2016)^{1,2}

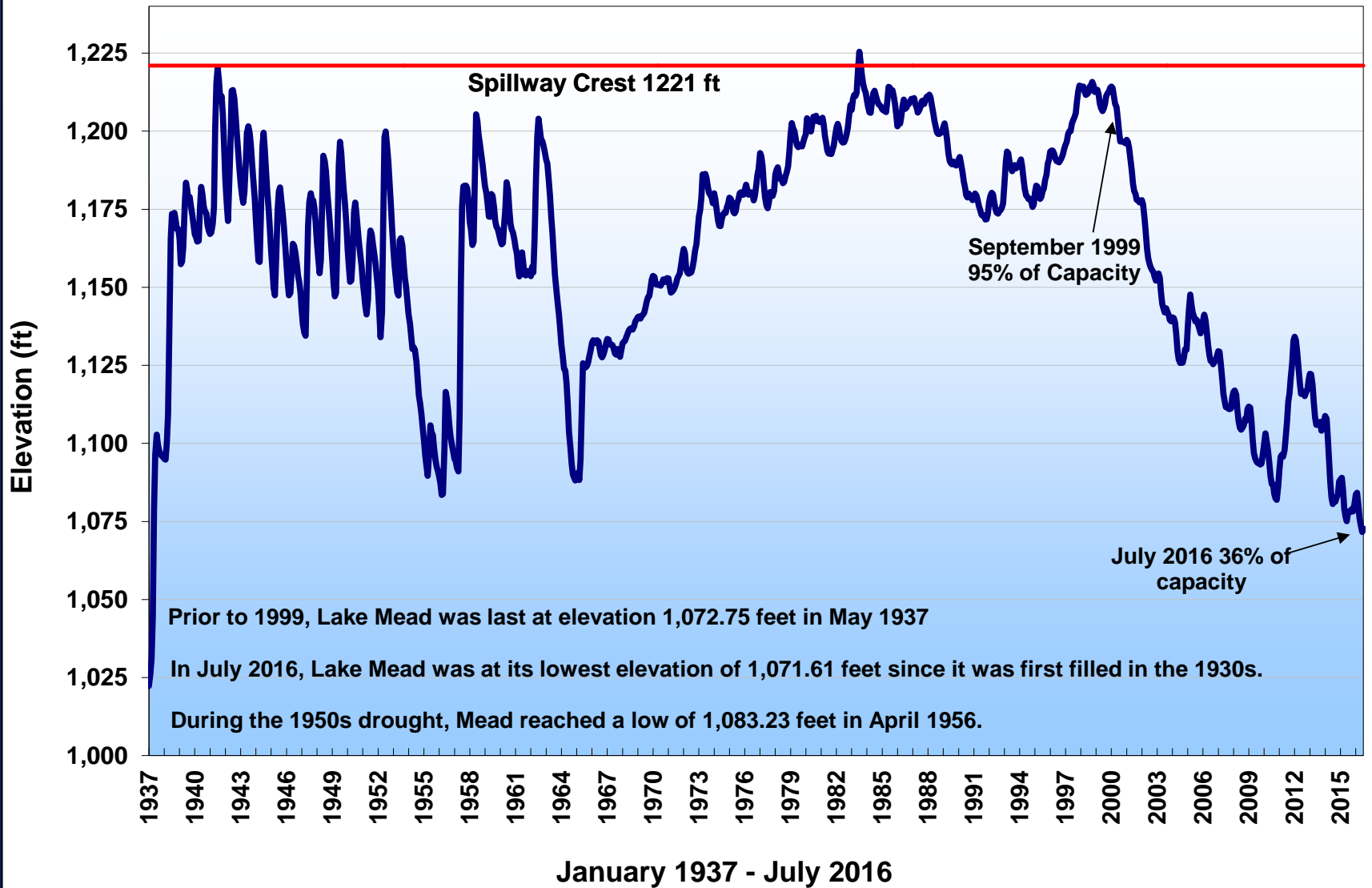
Unregulated Inflow into Lake Powell Powell-Mead Storage and Percent Capacity



¹Values for Water Year 2016 are projected. Unregulated inflow is based on the latest CBRFC forecast dated August 1, 2016. Storage and percent capacity are based on the July 2016 24-Month Study.

² Percentages at the top of the light blue bars represent percent of average unregulated inflow into Lake Powell for a given water year. The percent of average is based on the period of record from 1981-2010.

Lake Mead End of Month Elevation

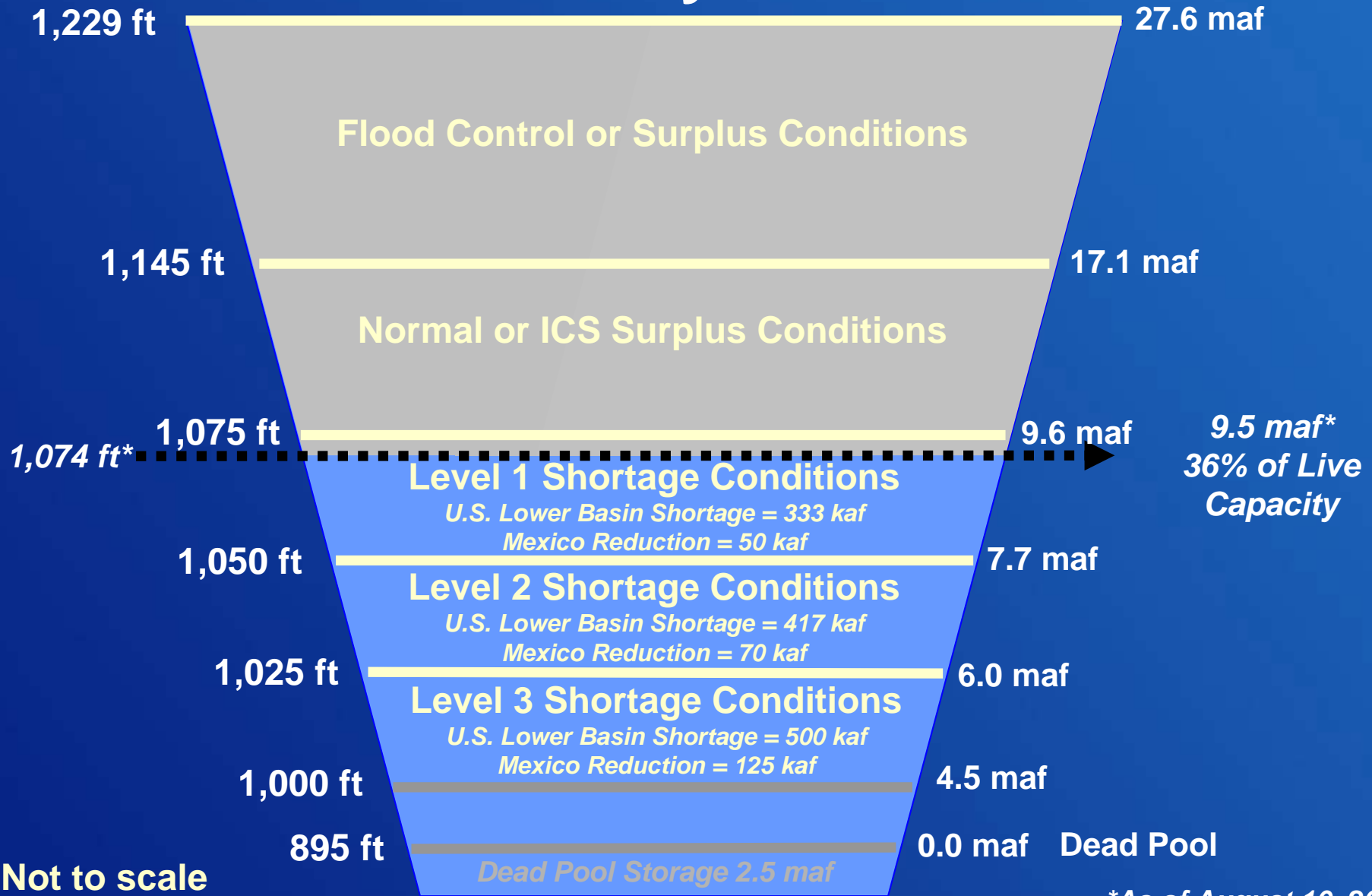




Drought Response Activities



Lake Mead – Key Elevations^{1,2}



Not to scale

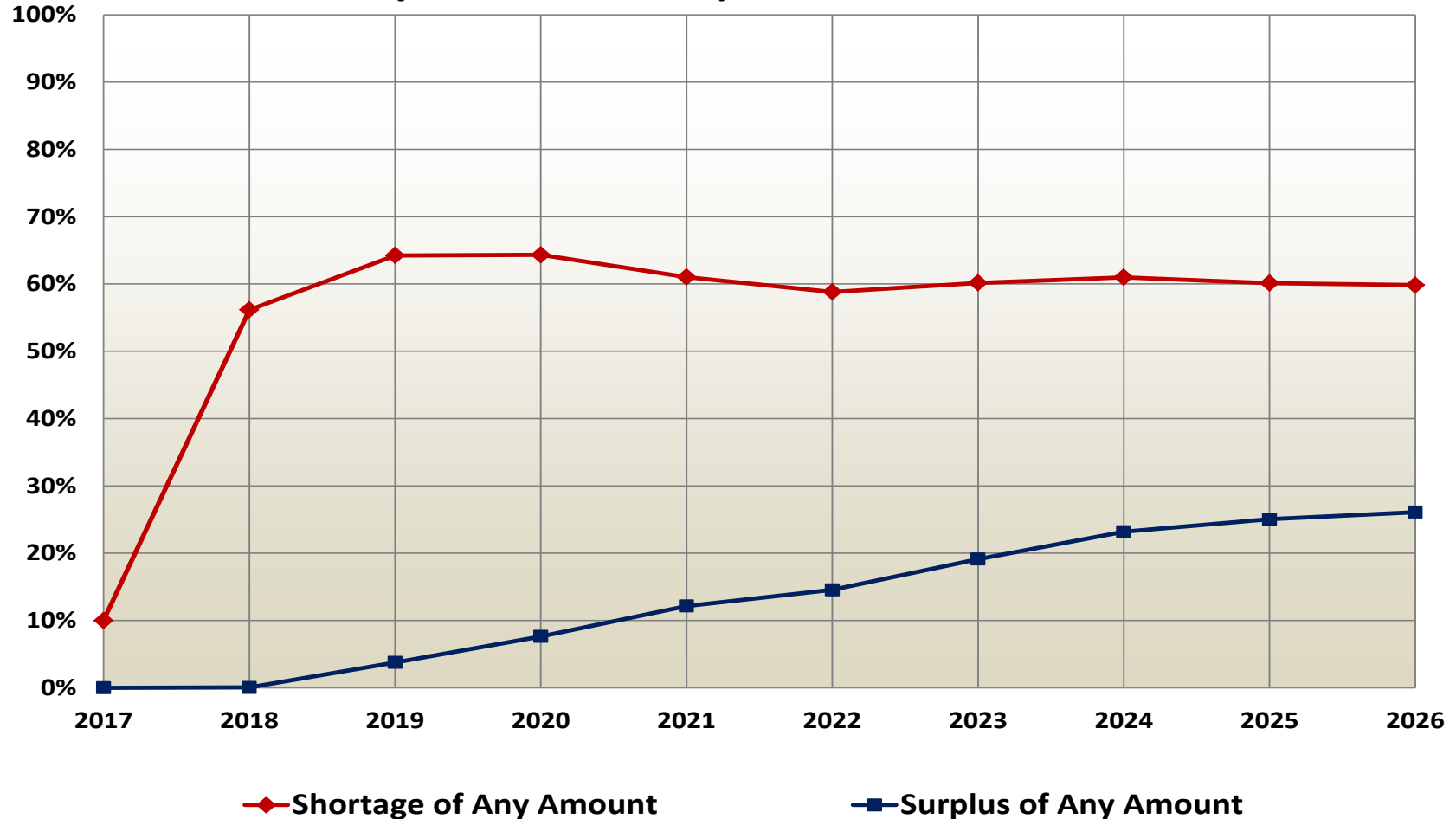
**As of August 10, 2016*

¹ U.S. Lower Basin shortage volumes based on the 2007 Interim Guidelines (in place 2007-2026).

² Mexico reductions based on Minute 319 (in place 2013-2017).

Lower Basin Surplus & Shortage through 2026

Percent of Traces with Lower Basin Surplus or Shortage
Projections from the April 2016 CRSS/MTOM Run^{1,2}



¹ The projections for 2017 are based on 30 simulations of December 31, 2016 conditions from the Mid-term Probabilistic Operations Model (MTOM).
² For the period from 2018-2026, each of the 30 projected initial conditions from MTOM were coupled with 107 hydrologic inflow sequences, based on resampling of the observed natural flow record from 1906-2012, for a total of 3,210 traces analyzed in the Colorado River Simulation System (CRSS).

Drought Response Activities

Basin-wide Pilot System Conservation Program

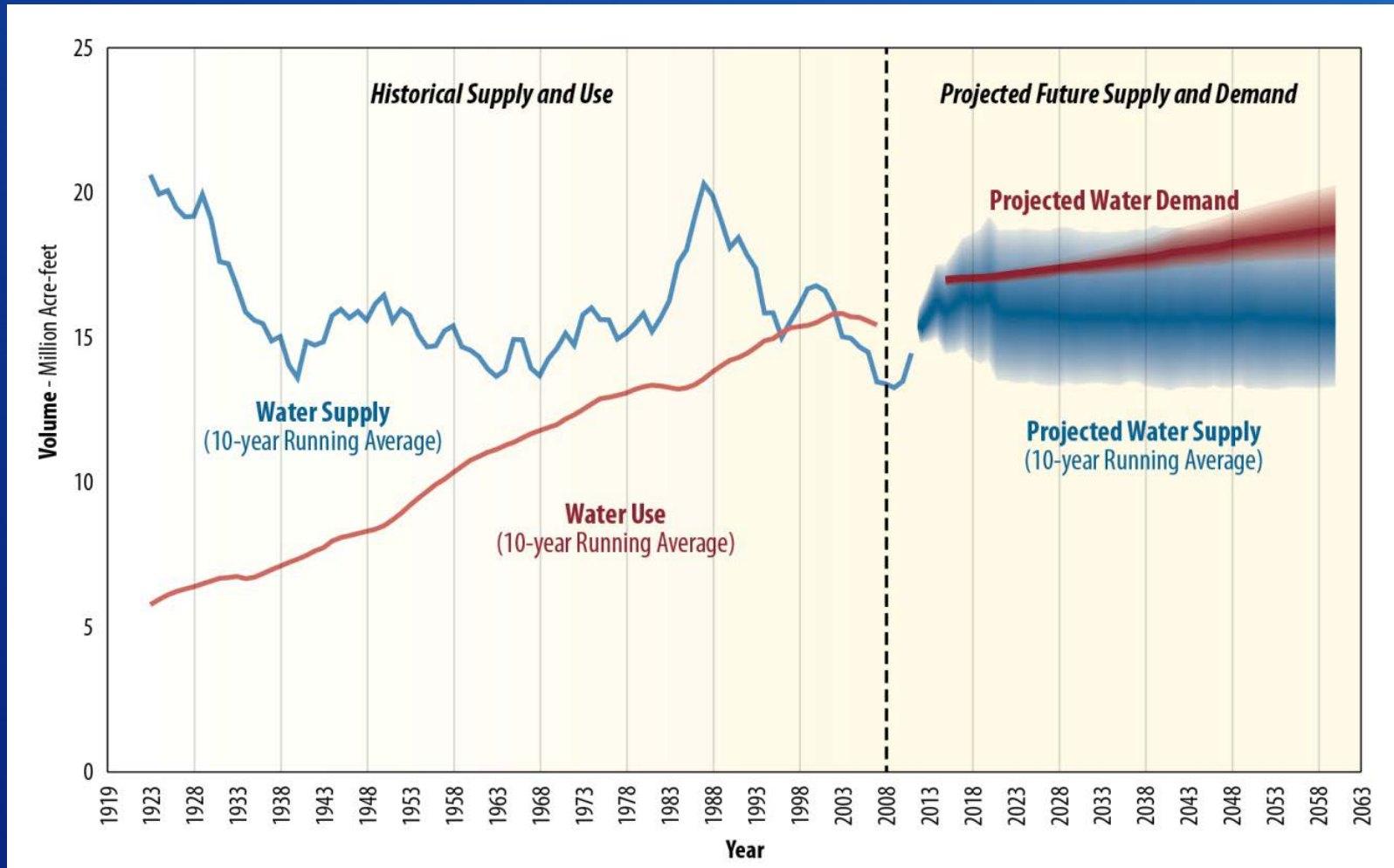
- Funders:
 - Reclamation, CAWCD, SNWA, MWD, and Denver Water
- Initial phase provided \$11 million for voluntary pilot projects that create system water
- System conservation agreements were implemented in both basins
- Approximately 65 kaf of water will be conserved under the initial phase of the program
- The program has been extended in 2016

Drought Response Activities

Lower Basin MOU for Pilot Drought Response Actions

- Participants:
CAWCD, MWD, SNWA, Lower Basin States, and Reclamation
- 2014-2017 Goal:
Generate 740,000 acre-feet of water to benefit Lake Mead elevation
- 2014-2019 Goal:
Generate 1.5 to 3.0 maf of water to benefit Lake Mead elevation

Projected Future Colorado River Basin Water Supply and Demand



Summary

- The Colorado River Basin is experiencing an unprecedented drought
- The chance of reaching critical reservoir elevations at Lake Mead continues to increase
- Safeguarding our shared water supply is critical to all of us
- Cooperation and collaboration will be the key to finding sustainable solutions and addressing current and future challenges



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For further information:

**www.usbr.gov/lc/riverops.html
BCOOWaterOps@usbr.gov**



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