

# Agenda

- Opening remarks
  - *Deputy Commissioner Touton (USBR)*
- Hydrology and Risk Overview
  - *Alan Butler (USBR)*
- Technical Background on Lower Division States' Approach to Responsive Actions
  - *Colby Pellegrino (SNWA)*
- Overview of Lower Division States' Approach to Responsive Actions
  - *Tom Buschatzke (ADWR)*
- Closing Remarks
  - *Deputy Commissioner Touton (USBR)*
- Q & A





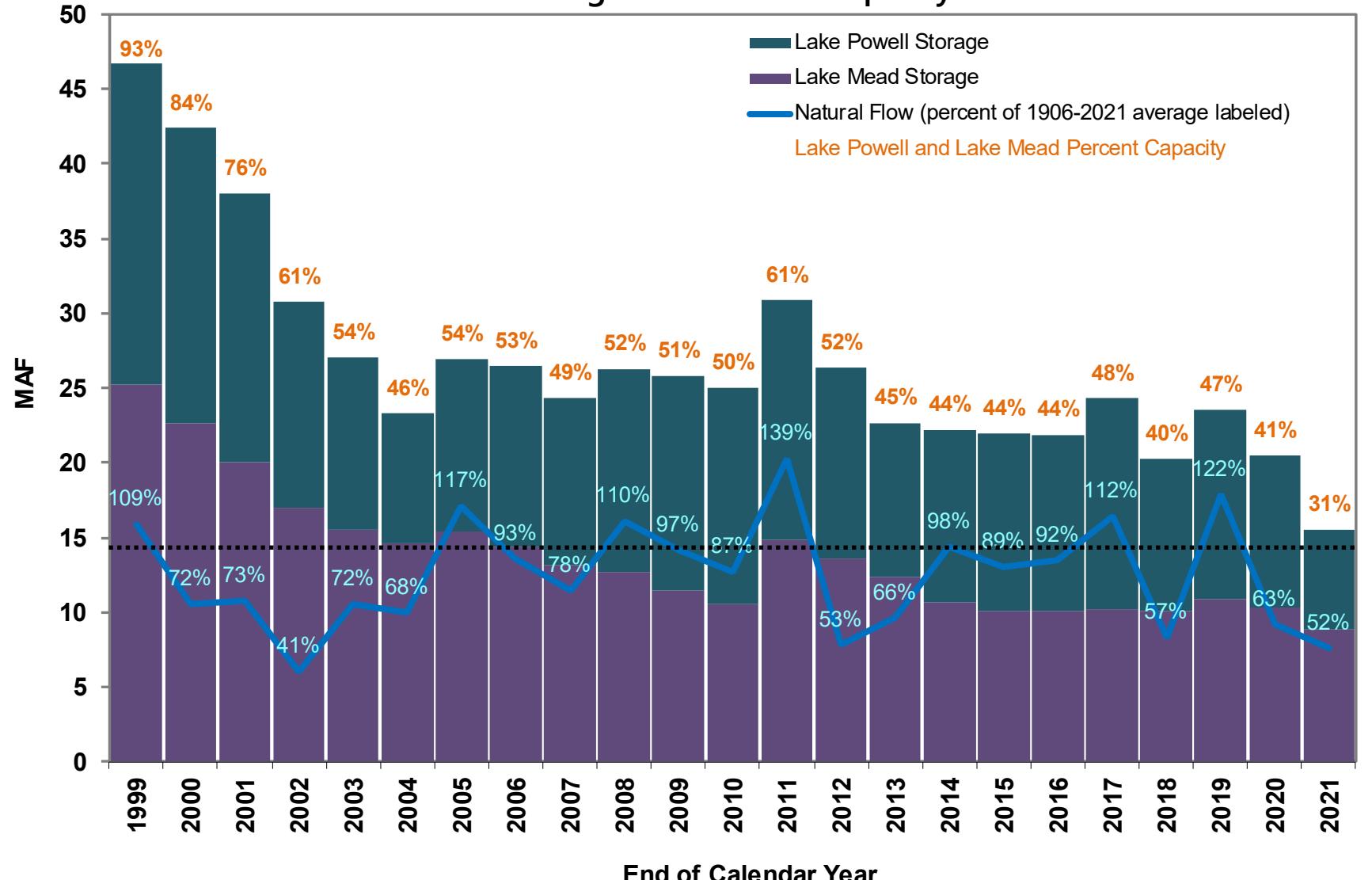
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RECLAMATION

# 21<sup>st</sup> Century Colorado River: Hydrology and Risk of Lake Mead Reaching Critically Low Elevations

Stakeholder Webinar  
November 5, 2021

# State of the System 1999-2021

## Lees Ferry Natural Flow and Lake Powell and Lake Mead Storage and Percent Capacity

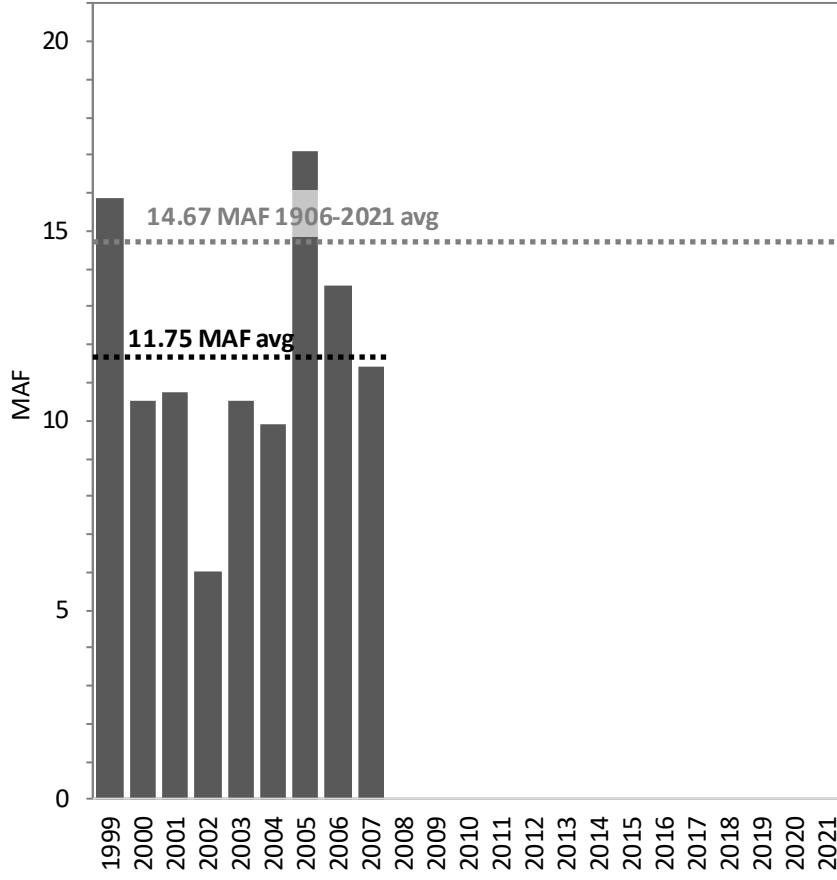


\*Values for Calendar Year 2021 are projected



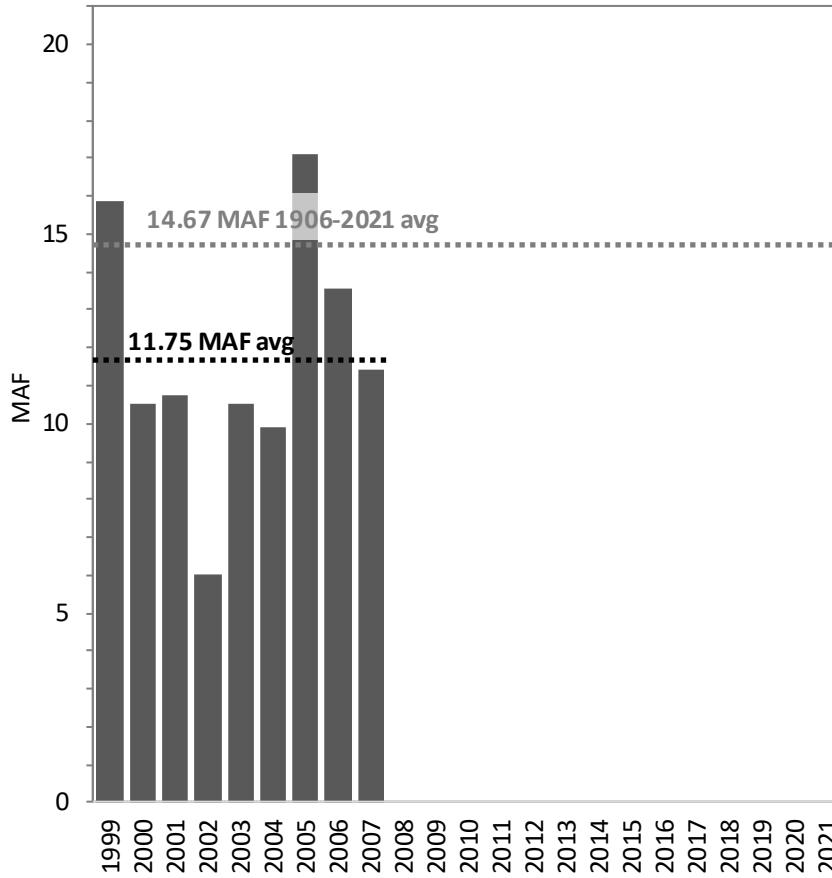
# Changing Hydrology, Storage, and Risk

Lees Ferry Natural Flow

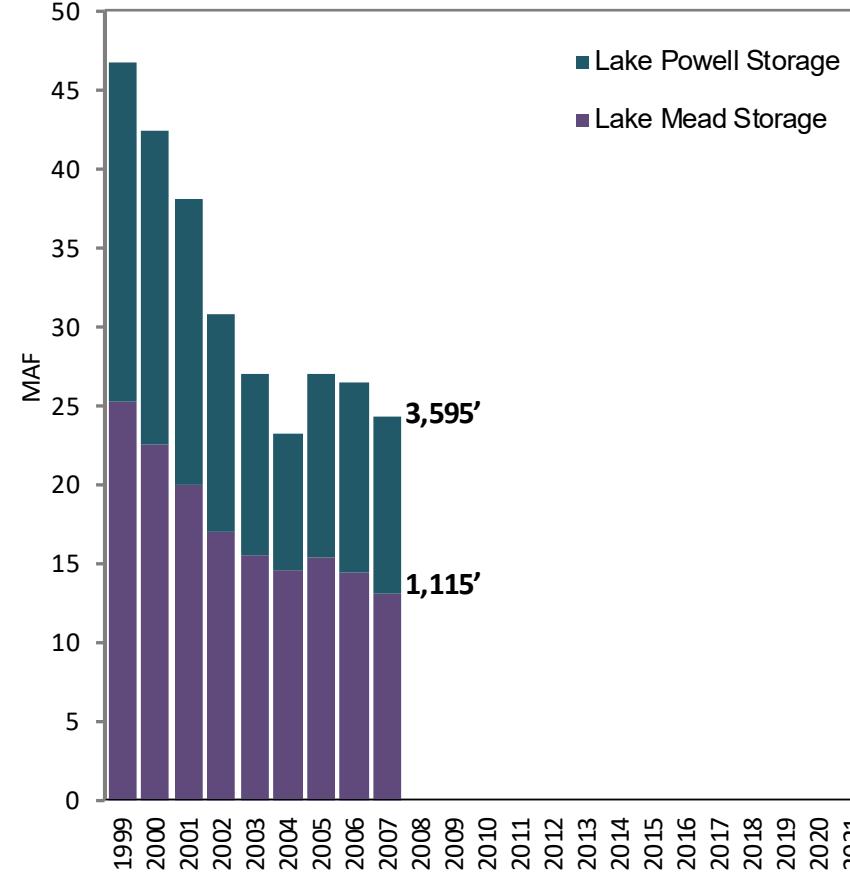


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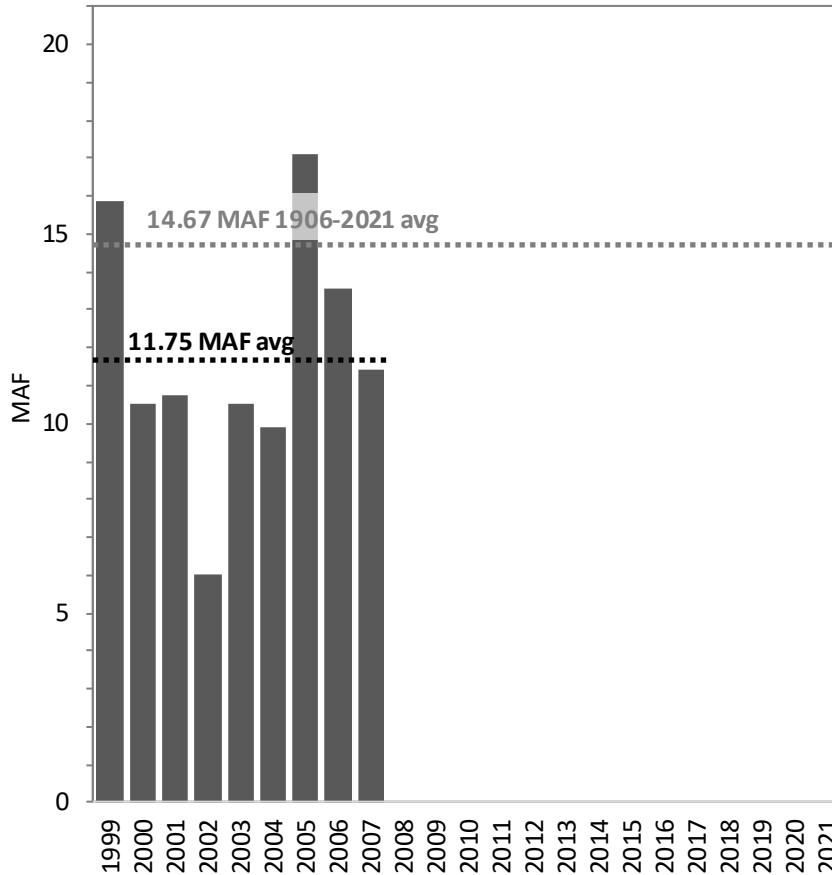


Lake Powell and Lake Mead Storage & Elevation

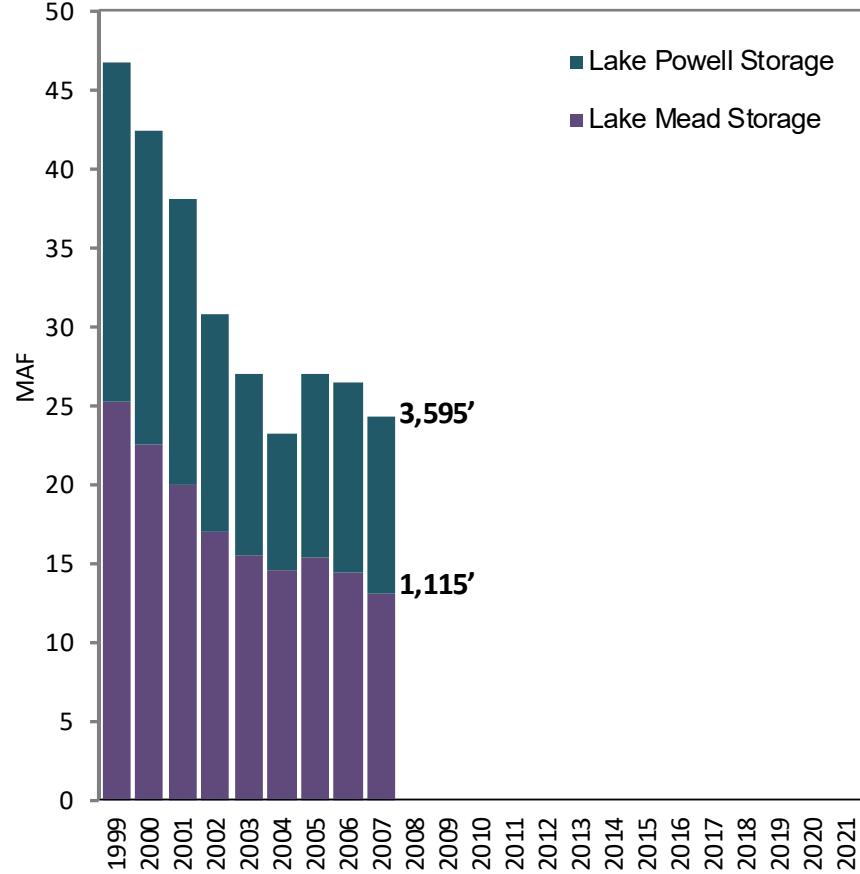


# Changing Hydrology, Storage, and Risk

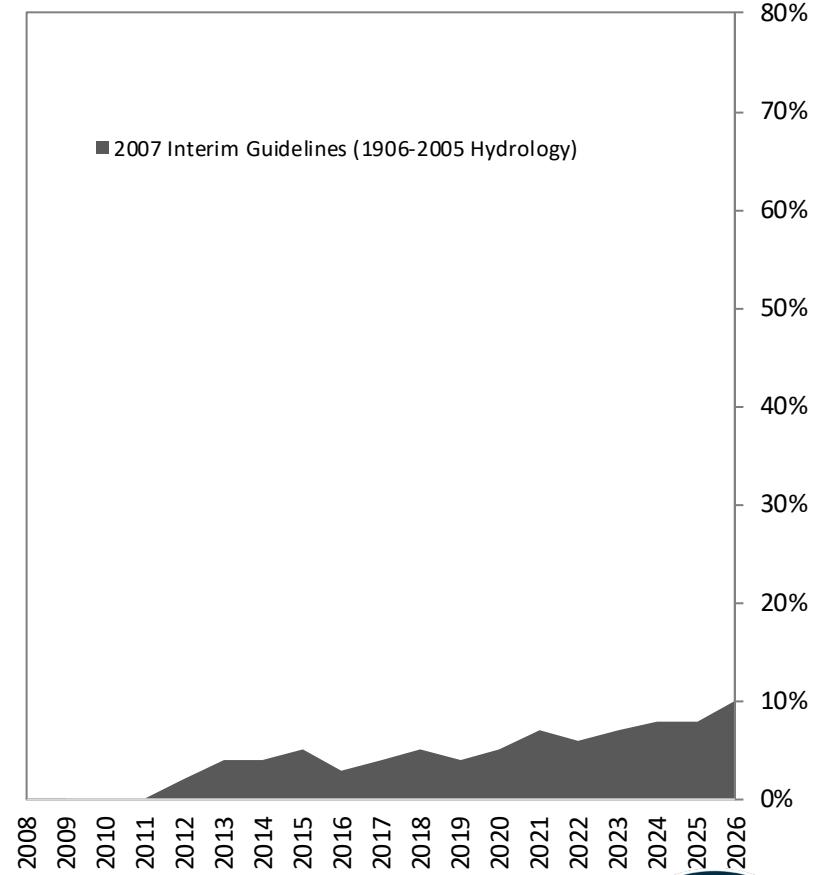
Lees Ferry Natural Flow



Lake Powell and Lake Mead Storage & Elevation

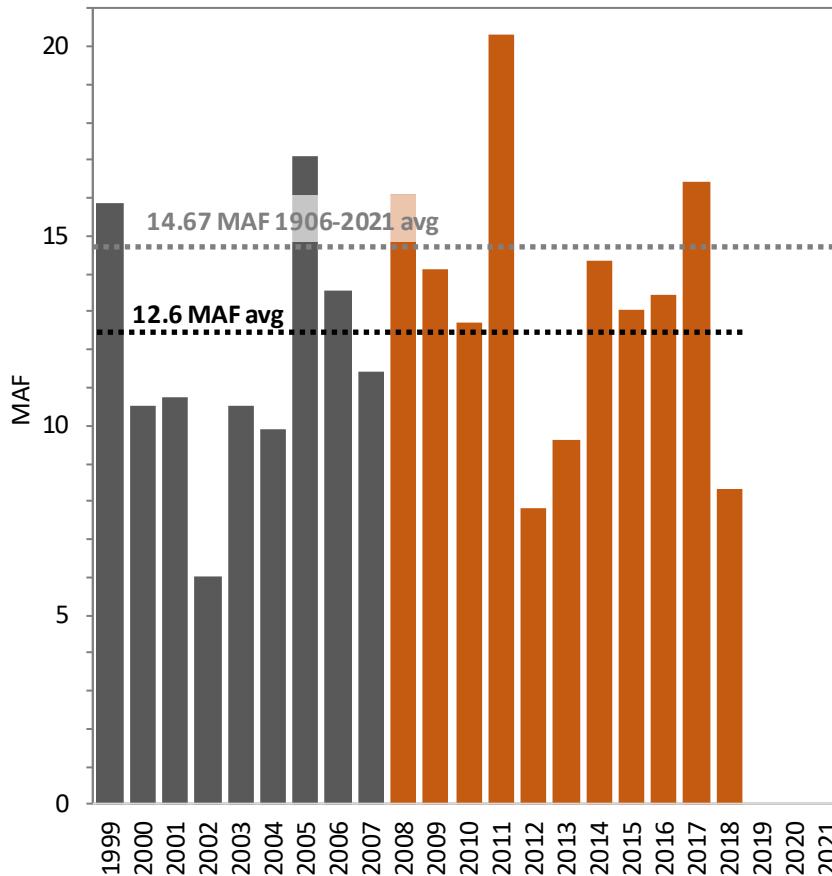


Risk of Lake Mead < 1,020' in Any Month

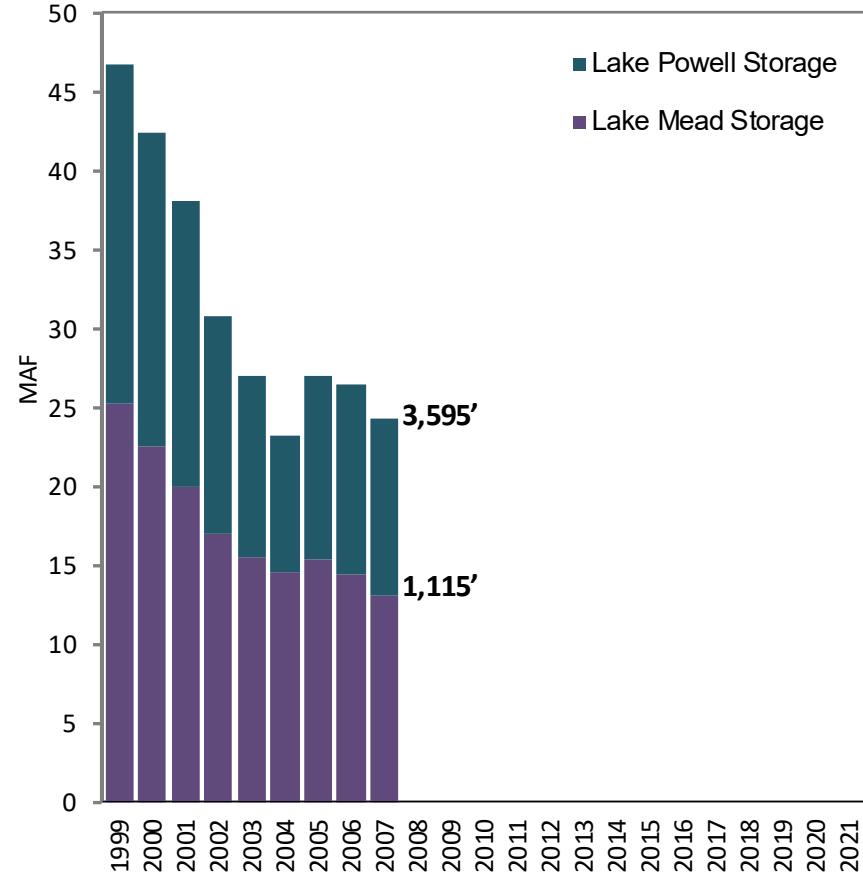


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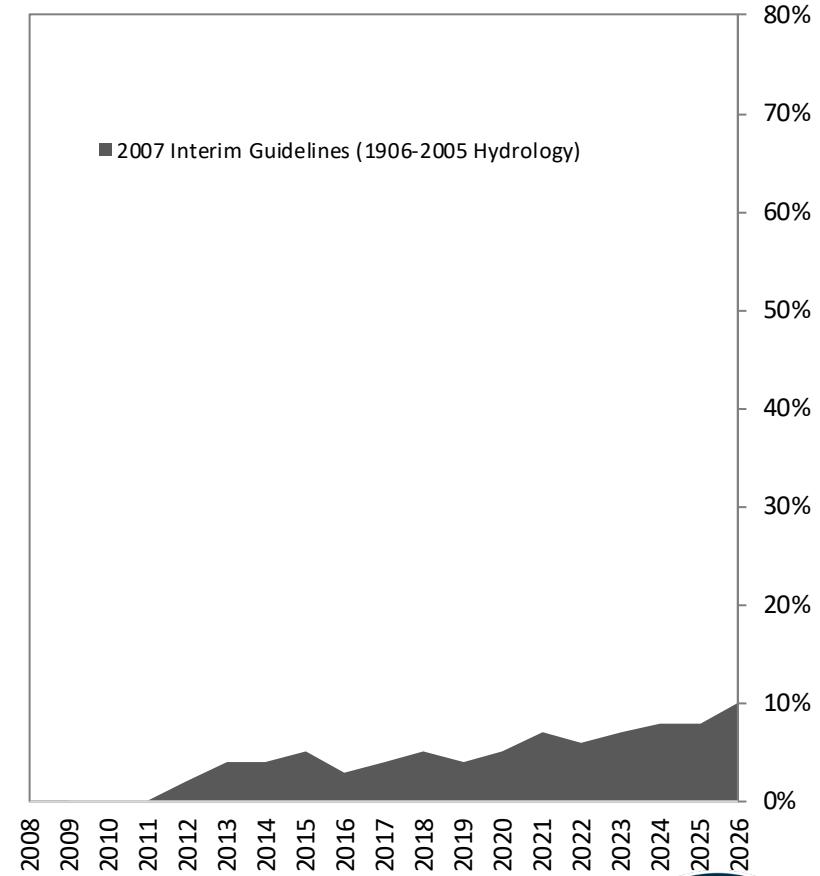
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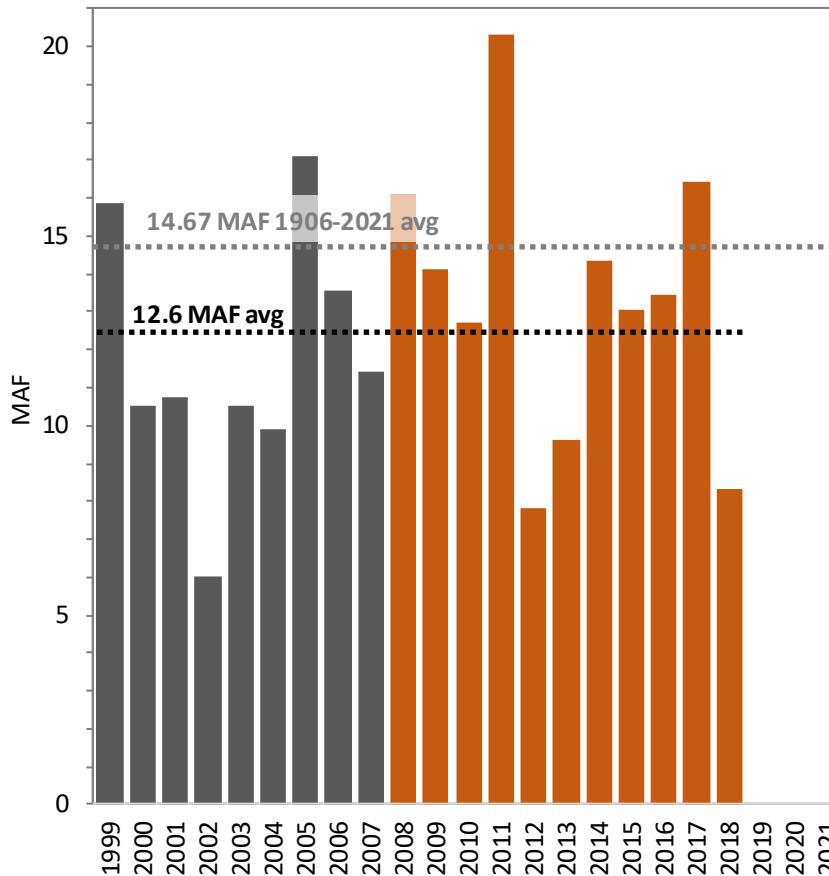


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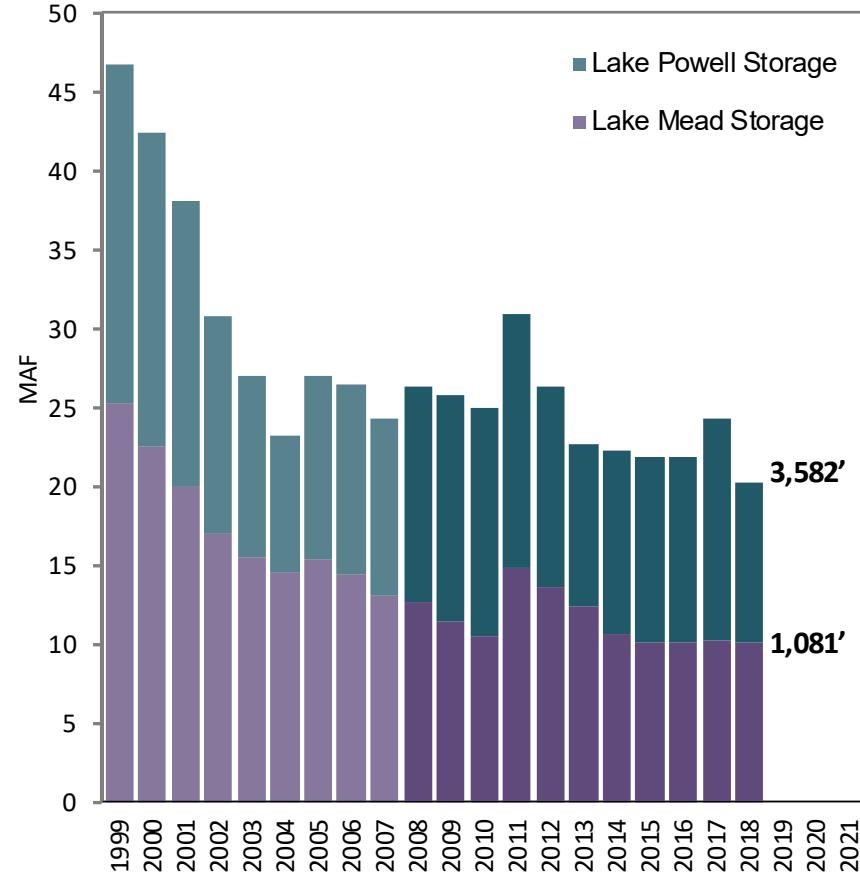


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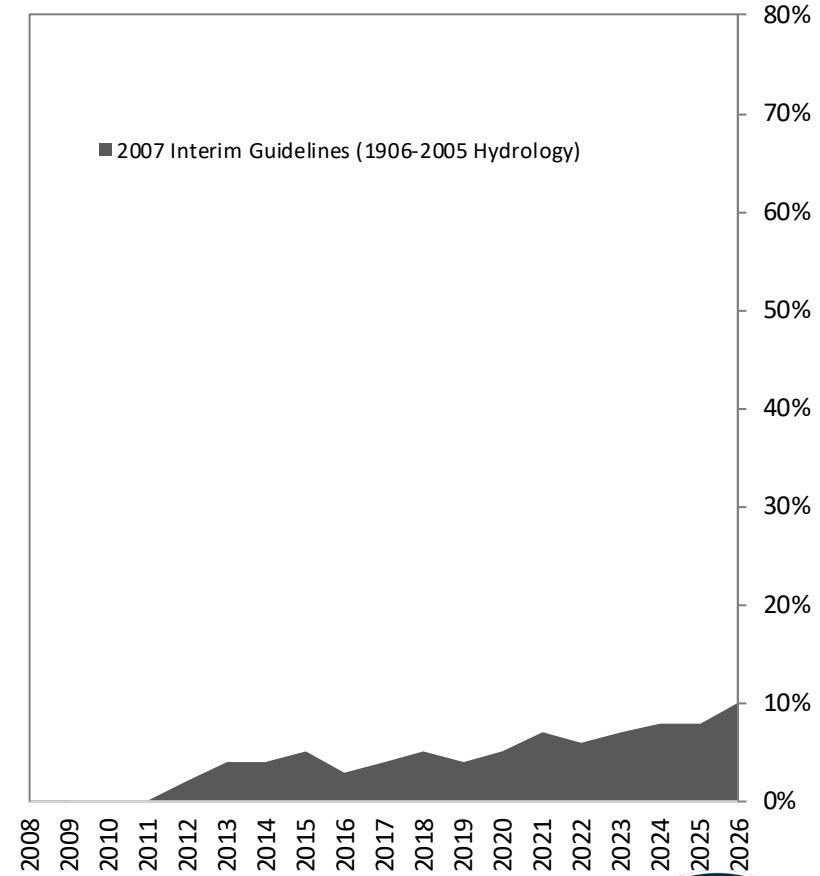
Lees Ferry Natural Flow



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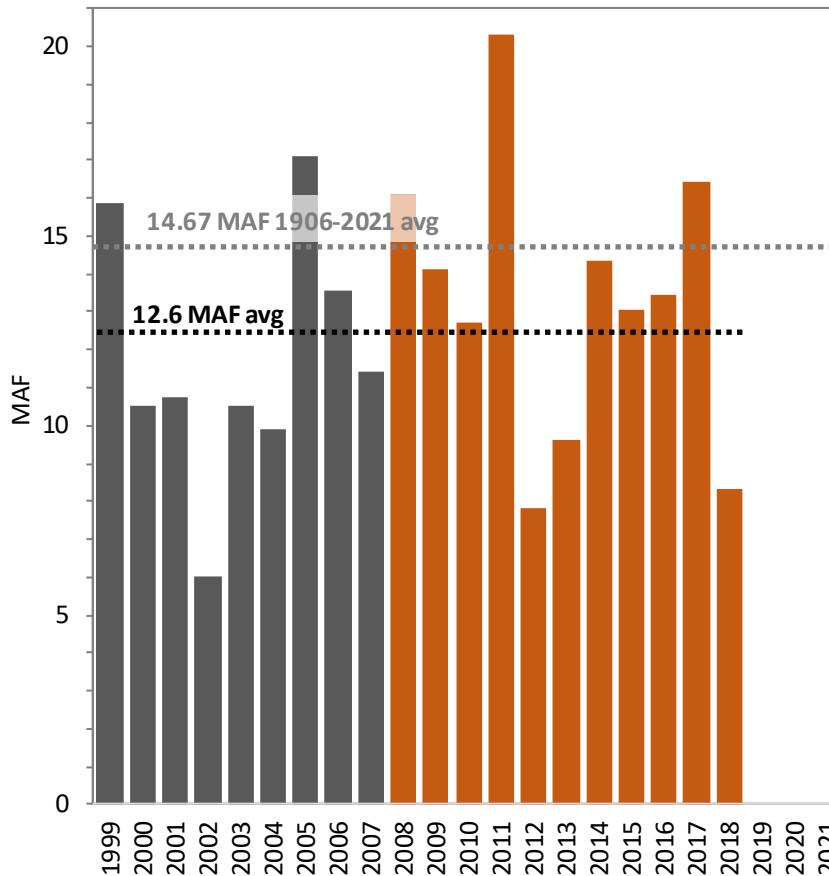


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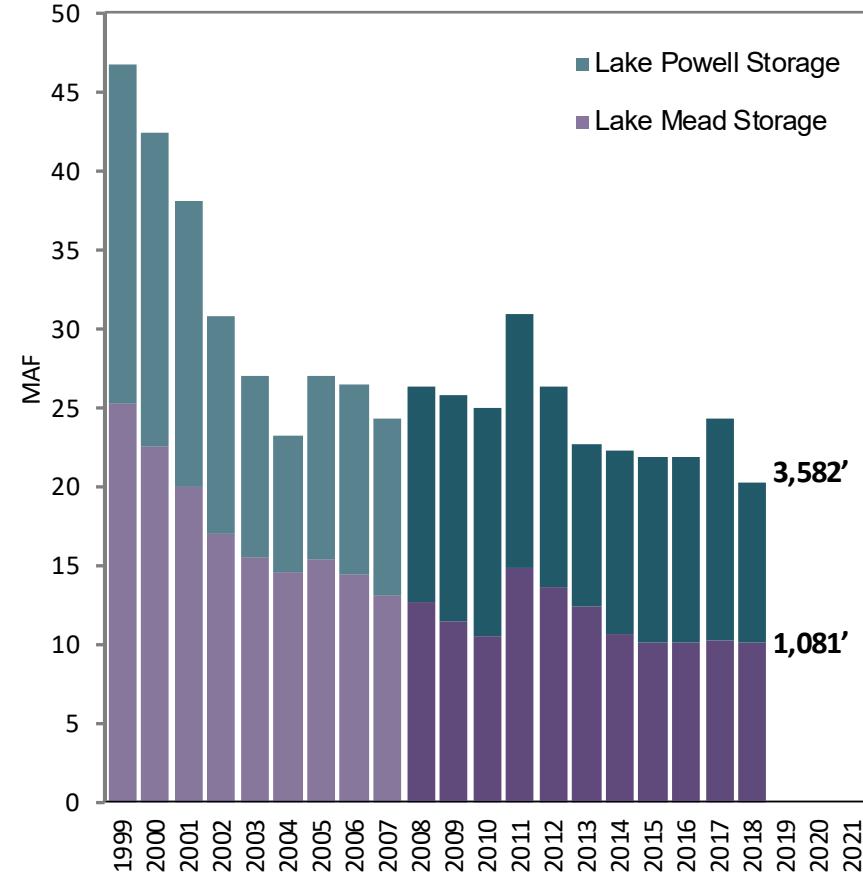


# Changing Hydrology, Storage, and Risk

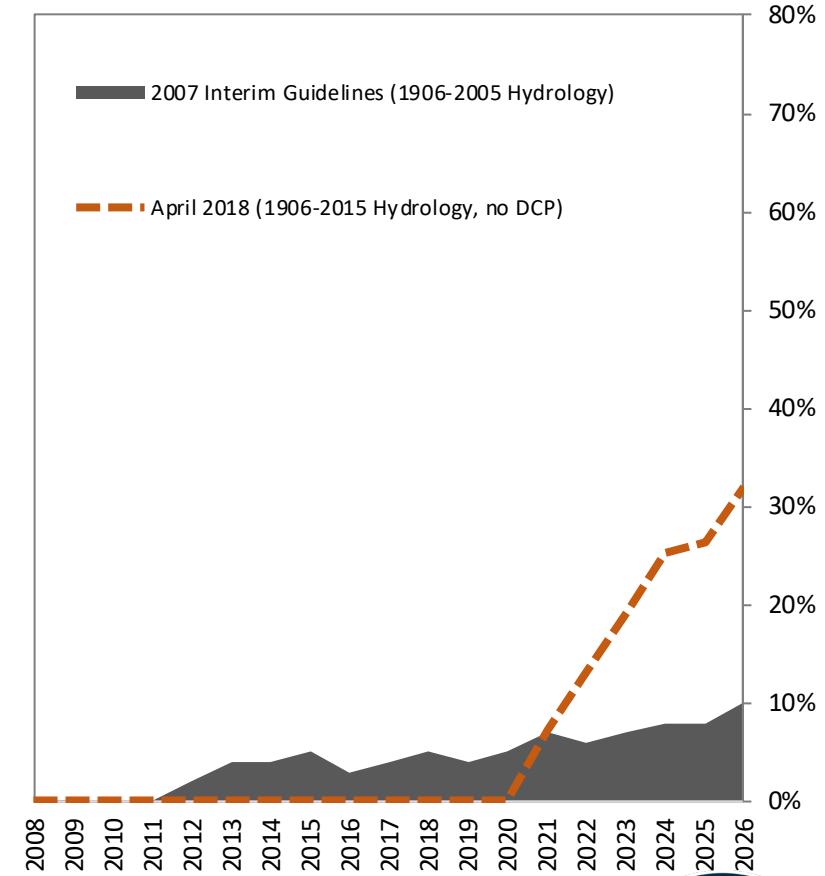
Lees Ferry Natural Flow



Lake Powell and Lake Mead Storage & Elevation

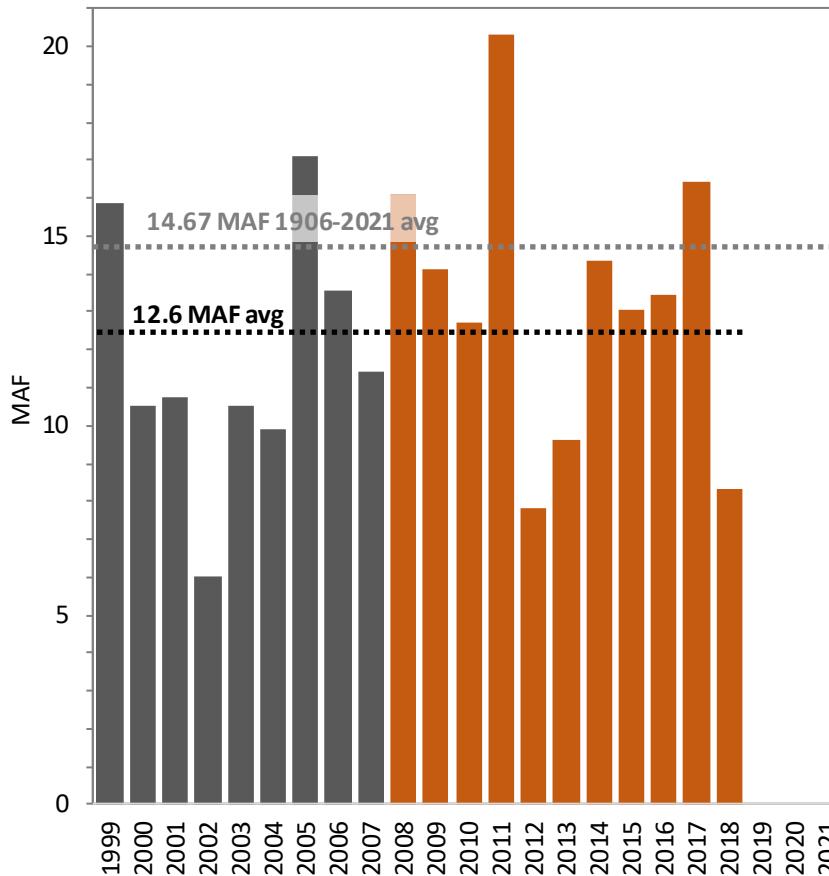


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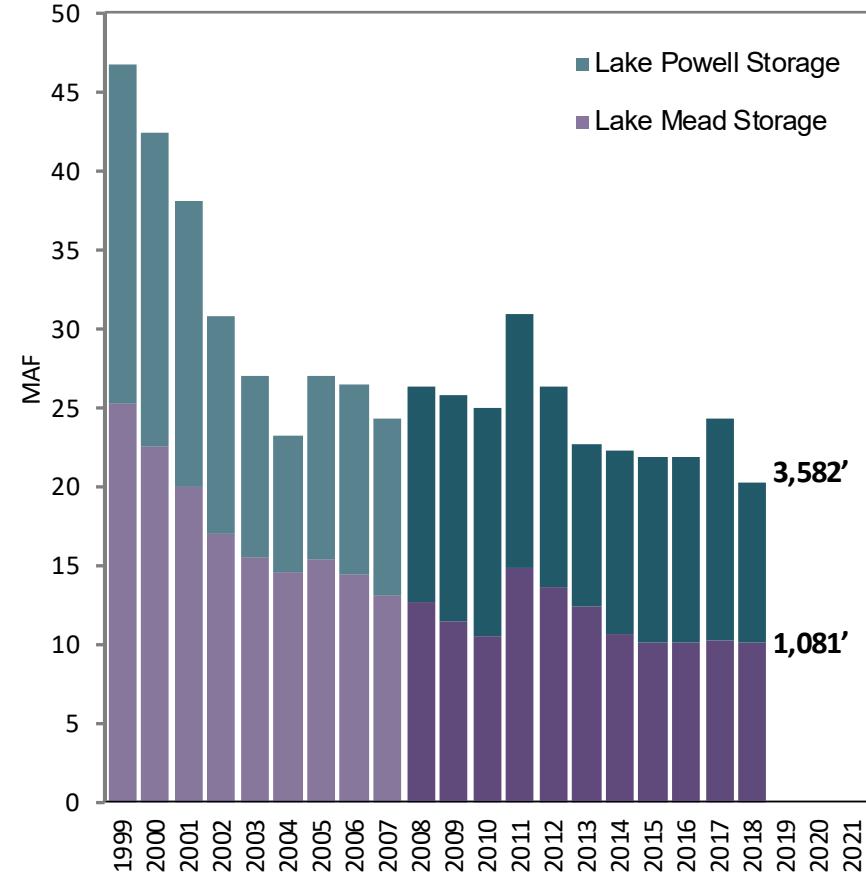


# Changing Hydrology, Storage, and Risk

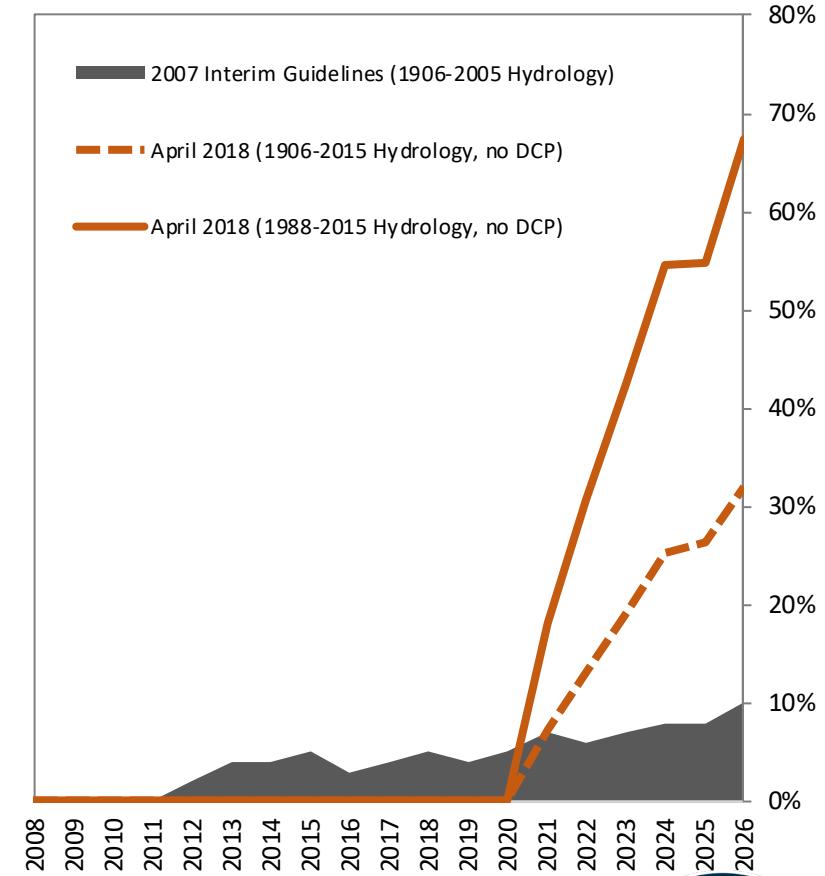
Lees Ferry Natural Flow



Lake Powell and Lake Mead Storage & Elevation

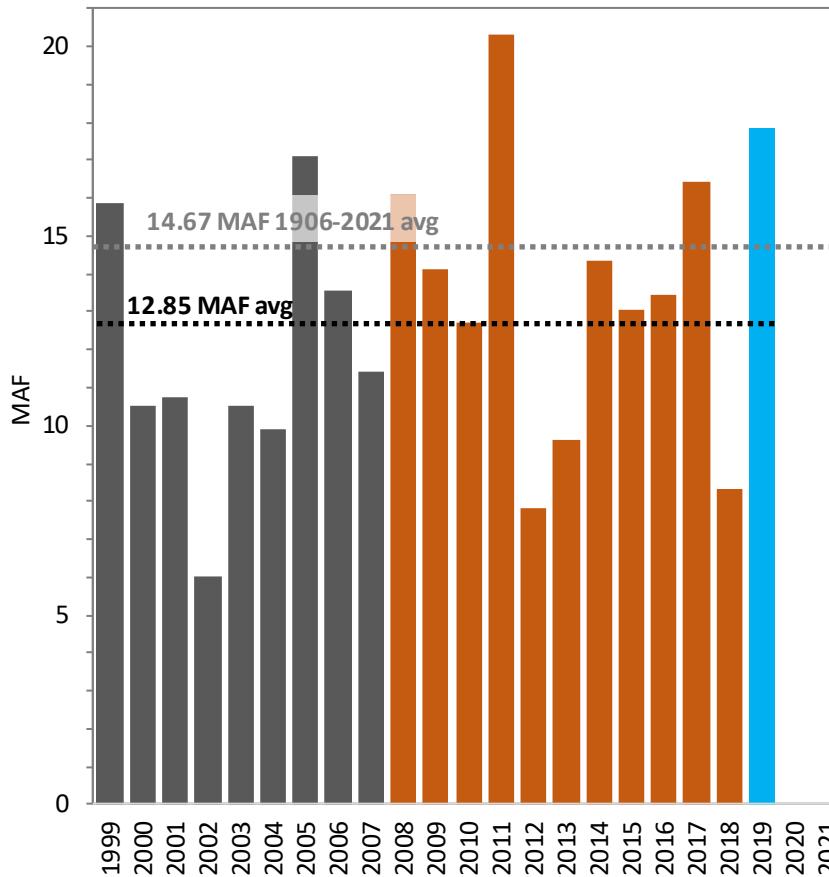


Risk of Lake Mead < 1,020' in Any Month

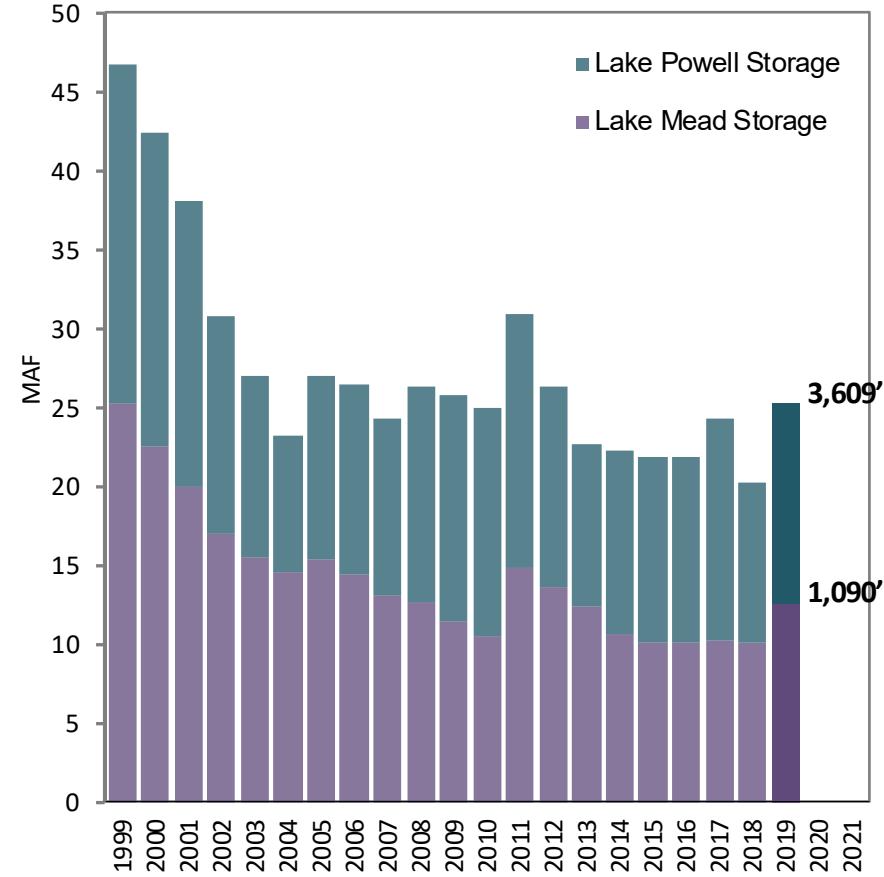


# Changing Hydrology, Storage, and Risk

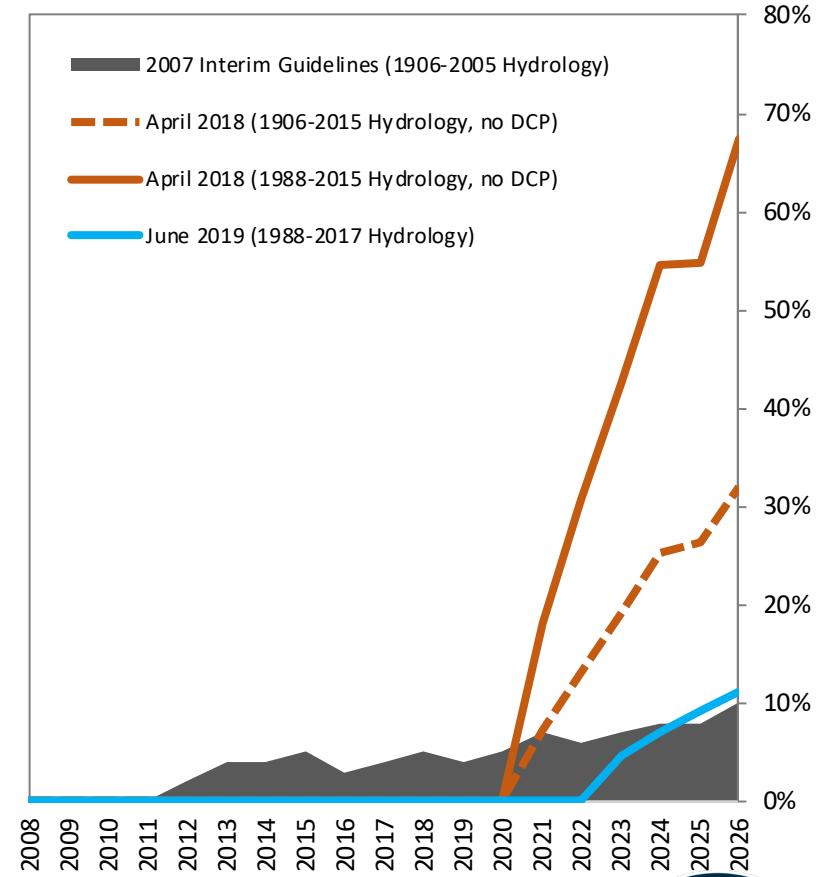
Lees Ferry Natural Flow



Lake Powell and Lake Mead Storage & Elevation

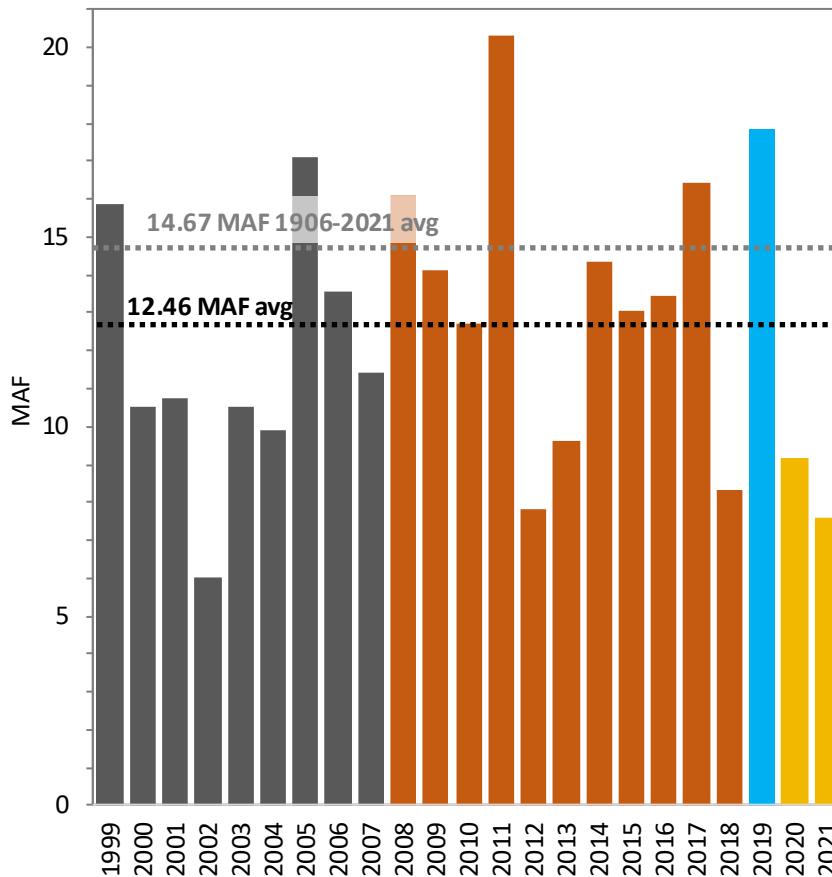


Risk of Lake Mead < 1,020' in Any Month

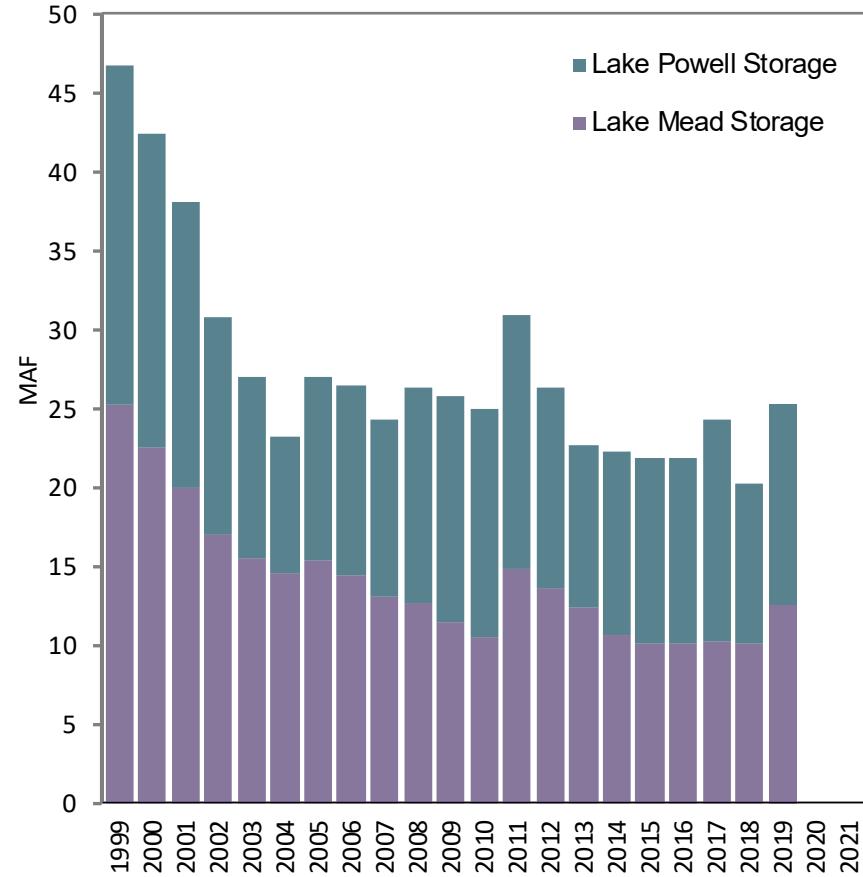


# Changing Hydrology, Storage, and Risk

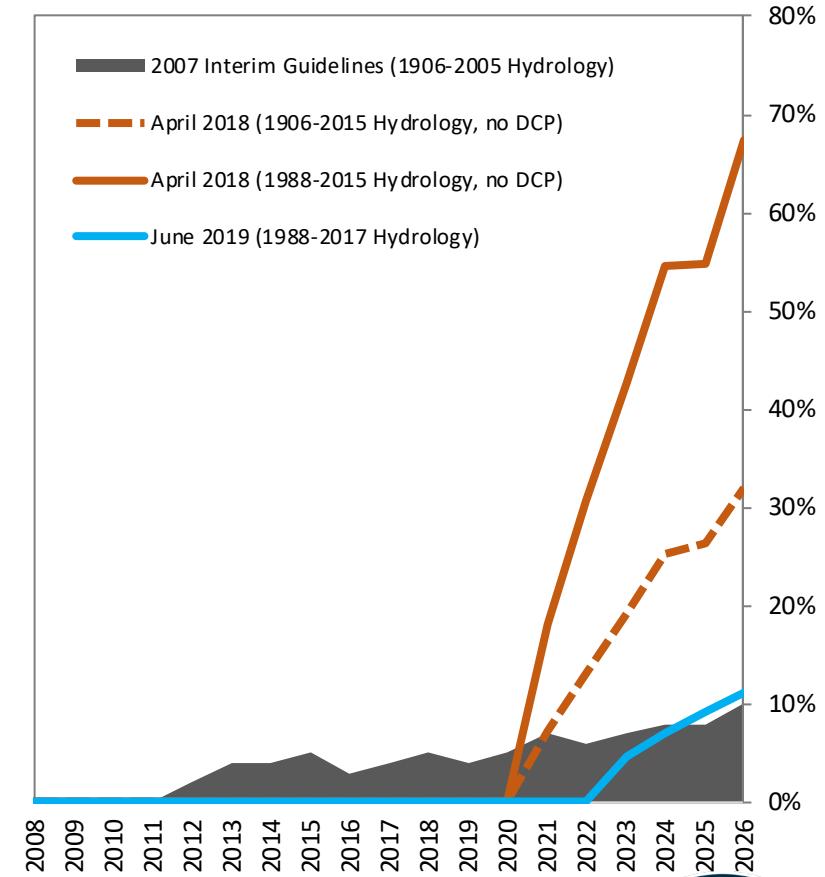
**Lees Ferry Natural Flow**



**Lake Powell and Lake Mead Storage & Elevation**

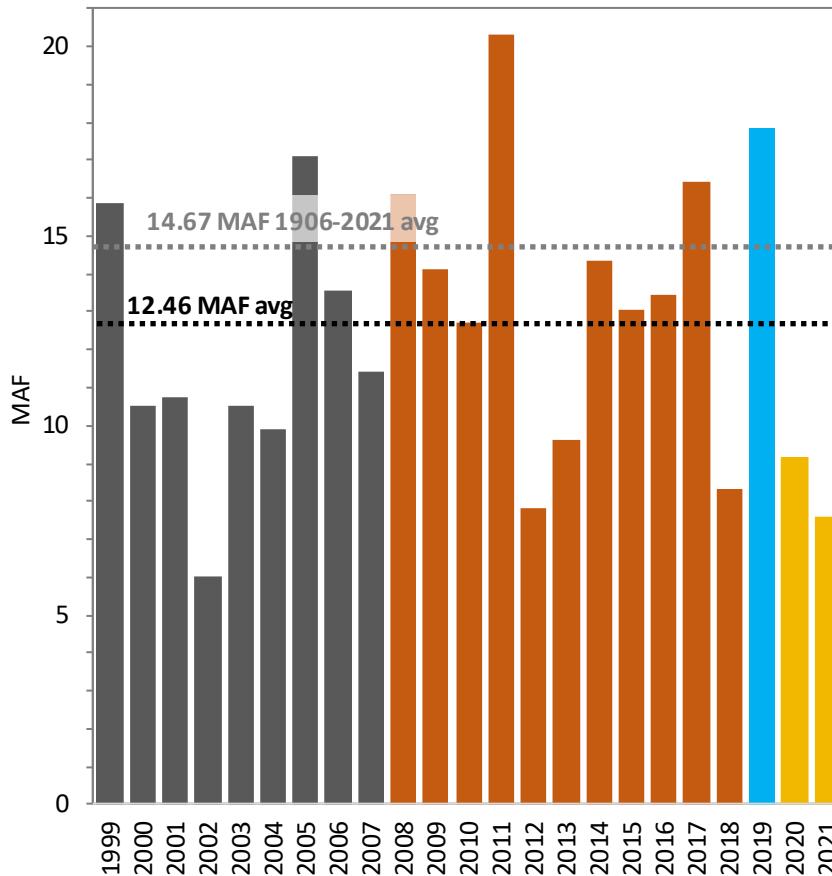


**Risk of Lake Mead < 1,020' in Any Month**

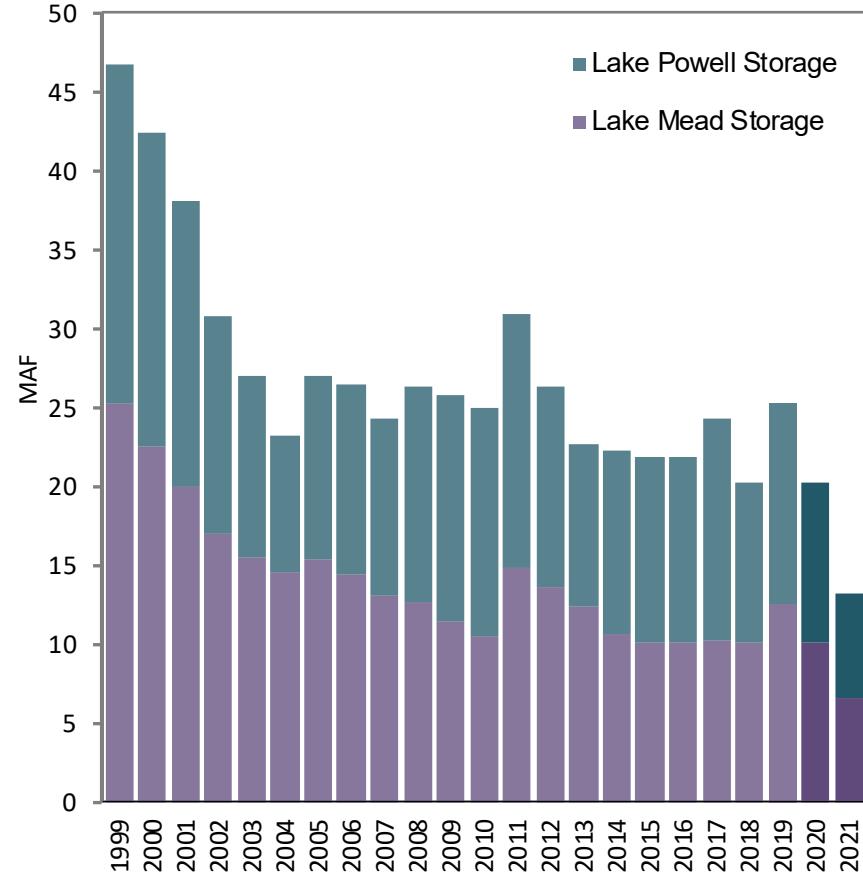


# Changing Hydrology, Storage, and Risk

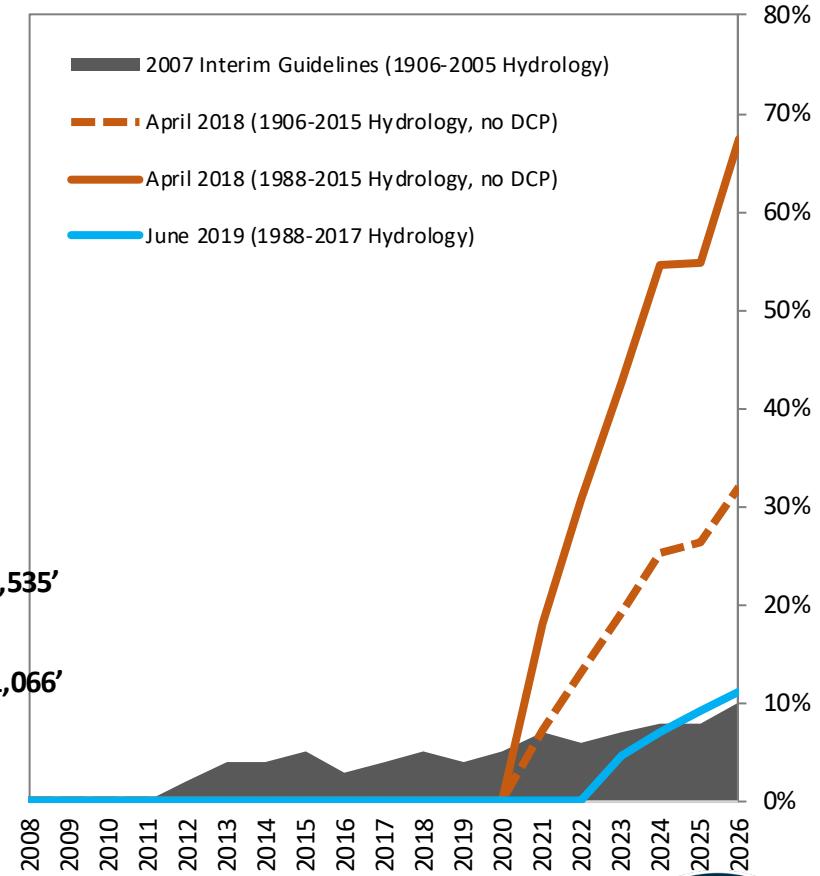
Lees Ferry Natural Flow



Lake Powell and Lake Mead Storage & Elevation

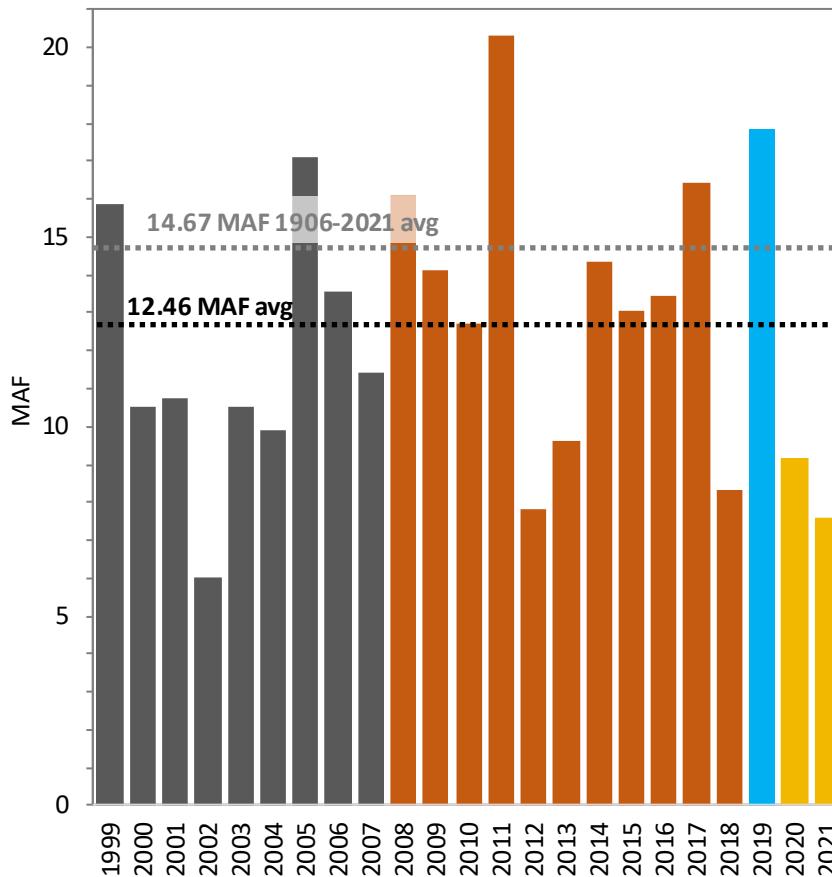


Risk of Lake Mead < 1,020' in Any Month

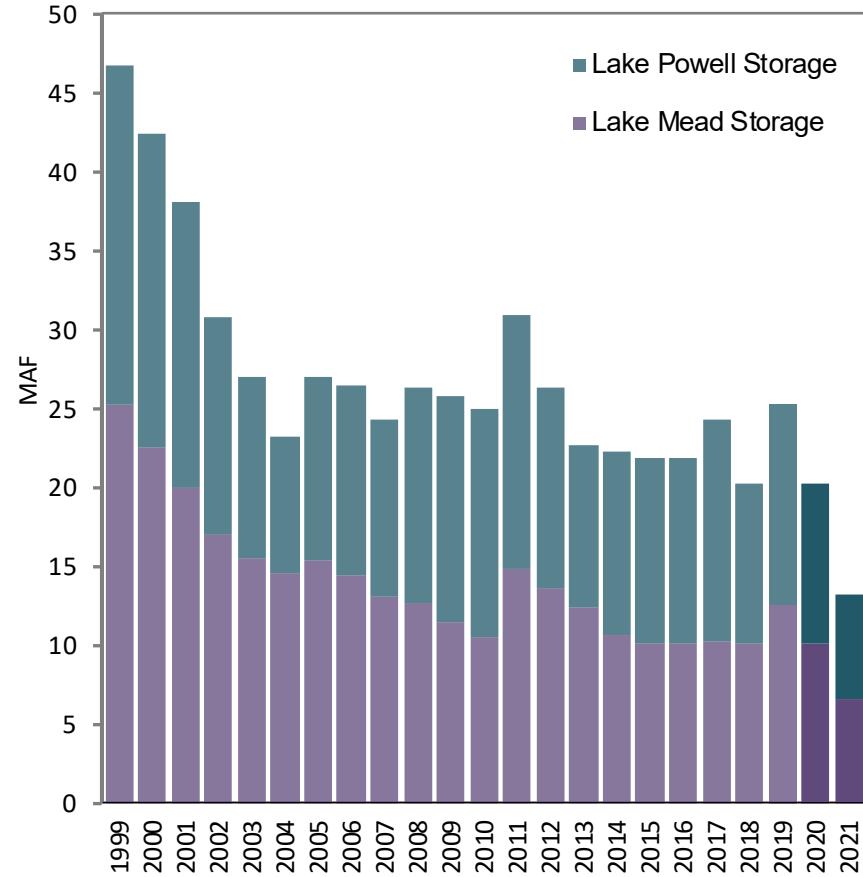


# Changing Hydrology, Storage, and Risk

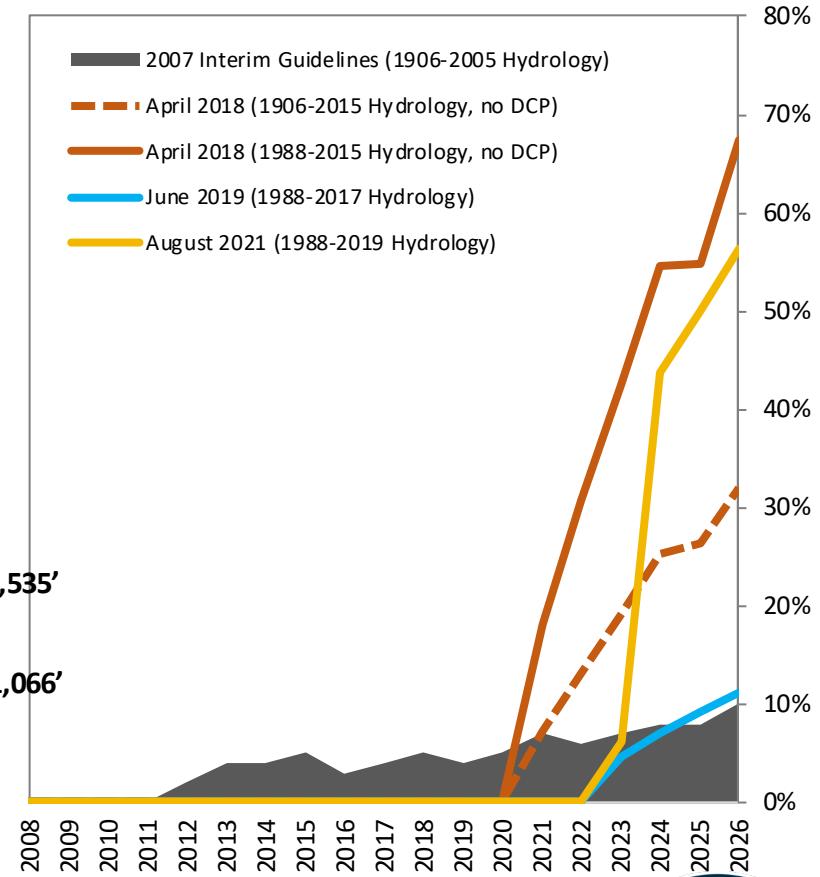
Lees Ferry Natural Flow



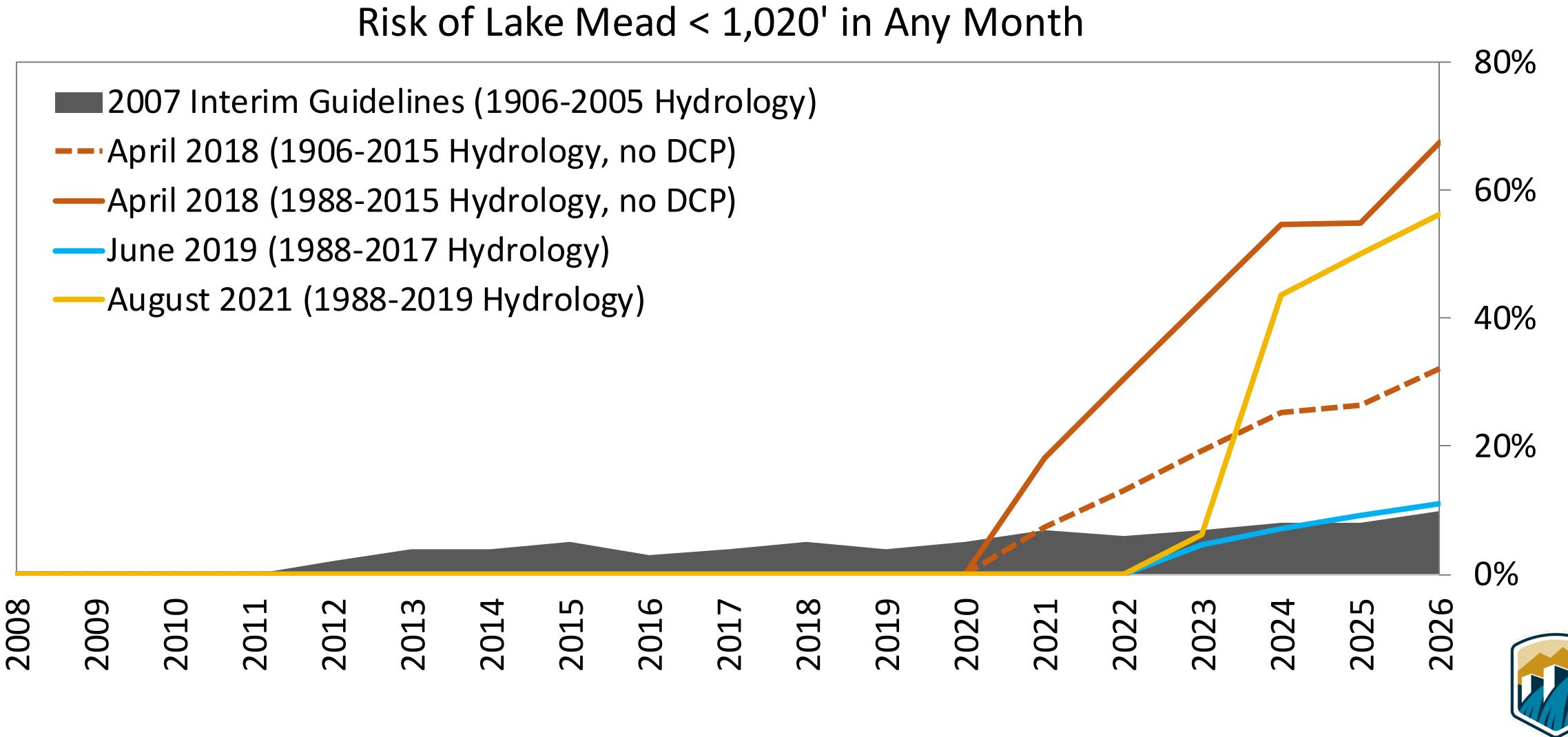
Lake Powell and Lake Mead Storage & Elevation



Risk of Lake Mead < 1,020' in Any Month

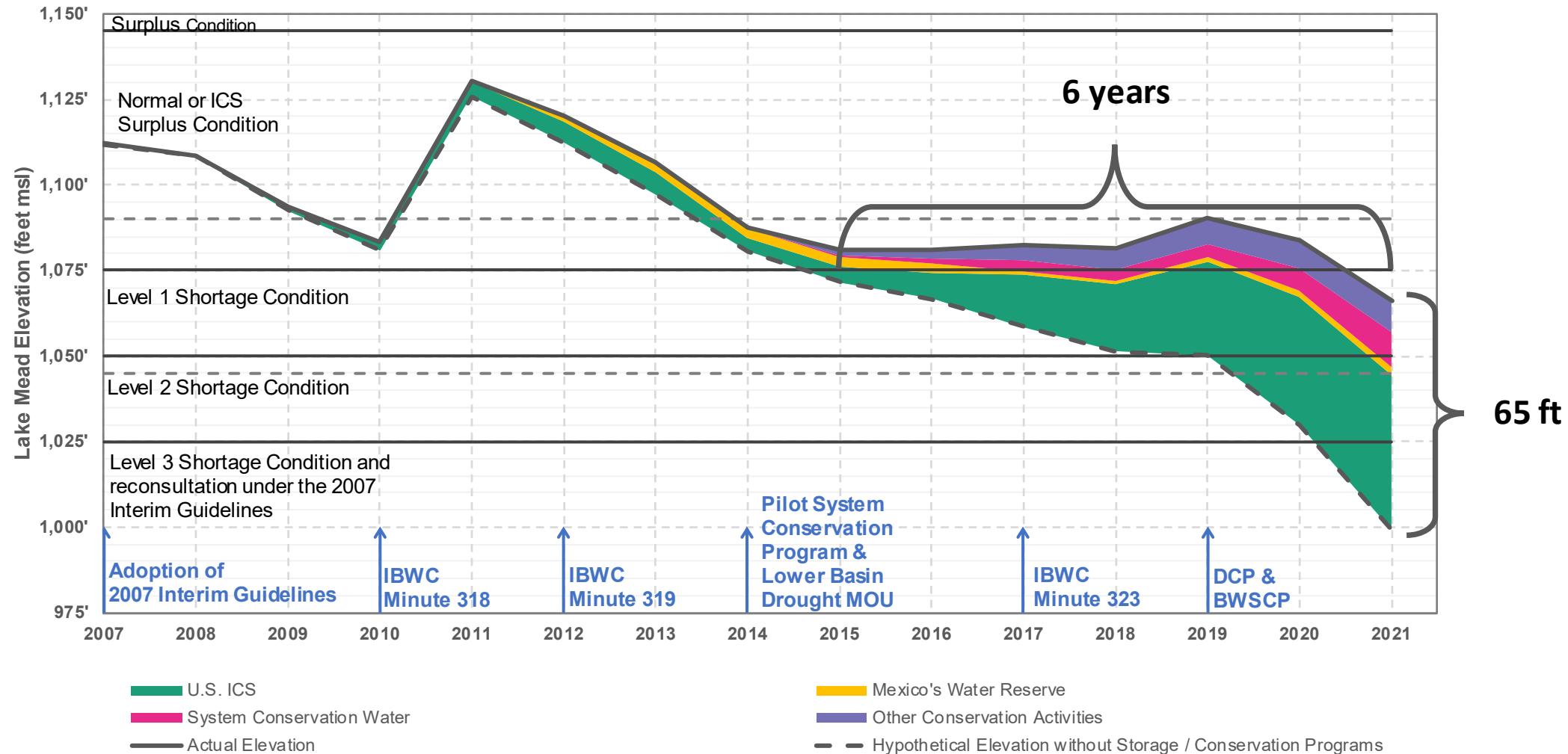


# Changing Risk



# Lake Mead Storage and Conservation

Lake Powell WY Release (MAF)	8.98	8.24	8.23	12.52	9.47	8.23	7.48	9.00	9.00	9.00	9.00	8.23	8.23
Lower Basin & Mexico CY Delivery (MAF)	9.02	8.94	8.88	8.77	8.81	8.85	9.20	8.95	8.73	8.28	8.64	8.03	8.22



\*End of calendar year 2021 balances of U.S. ICS and Mexico's Water Reserve, system conservation water, and other voluntary contributions to Lake Mead are based on projections from the October 2021 24-Month Study and are subject to change.



# Explanation of Model Runs

## All runs performed in the Colorado River Simulation System (CRSS)

- 2007 Interim Guidelines
  - Hydrology: resampled 1906-2005
  - Demands: Upper Basin from 1999 UCRC demand schedules; Lower Basin from 2007 FEIS demand schedules
  - Policy: Interim Guidelines
  - Initial conditions: projected December 31, 2007, conditions from 2007 most probable August 24-Month Study
- April 2018 (1906-2015 hydrology, no DCP)
  - Hydrology: resampled 1906-2015
  - Demands: Upper Basin from 2007 UCRC demand schedules; Lower Basin from 2007 FEIS demand schedules
  - Policy: Interim Guidelines
  - Initial conditions: 35 different December 31, 2018 initial conditions as projected by April 2018 MTOM
- April 2018 (1988-2015 hydrology, no DCP)
  - Hydrology: resampled 1988-2015
  - Demands: Upper Basin from 2007 UCRC demand schedules; Lower Basin from 2007 FEIS demand schedules
  - Policy: Interim Guidelines, Minute 323
  - Initial conditions: 35 different December 31, 2018 initial conditions as projected by April 2018 MTOM
- June 2019 (1988-2017 hydrology)
  - Hydrology: resampled 1988-2017
  - Demands: Upper Basin from 2007 UCRC demand schedules; Lower Basin from 2007 FEIS demand schedules
  - Policy: Interim Guidelines, Lower Basin Drought Contingency Plan, Minute 323 including Binational Water Scarcity Contingency Plan, and Upper Basin Drought Response Operations
  - Initial conditions: 35 different December 31, 2019 initial conditions as projected by June 2019 MTOM
- August 2019 (1988-2019 hydrology)
  - Hydrology: resampled 1988-2019
  - Demands: Upper Basin from 2016 UCRC demand schedules; Lower Basin from 2007 FEIS demand schedules
  - Policy: Interim Guidelines, Lower Basin Drought Contingency Plan, Minute 323 including Binational Water Scarcity Contingency Plan
  - Initial conditions: projected December 31, 2021 conditions from 2021 most probable August 24-Month Study

Visit <https://www.usbr.gov/lc/region/g4000/riverops/coriver-projections.html> for additional information



# Risk of Lake Mead Reaching Critically Low Elevations and Lower Division States' Approach to Responsive Actions

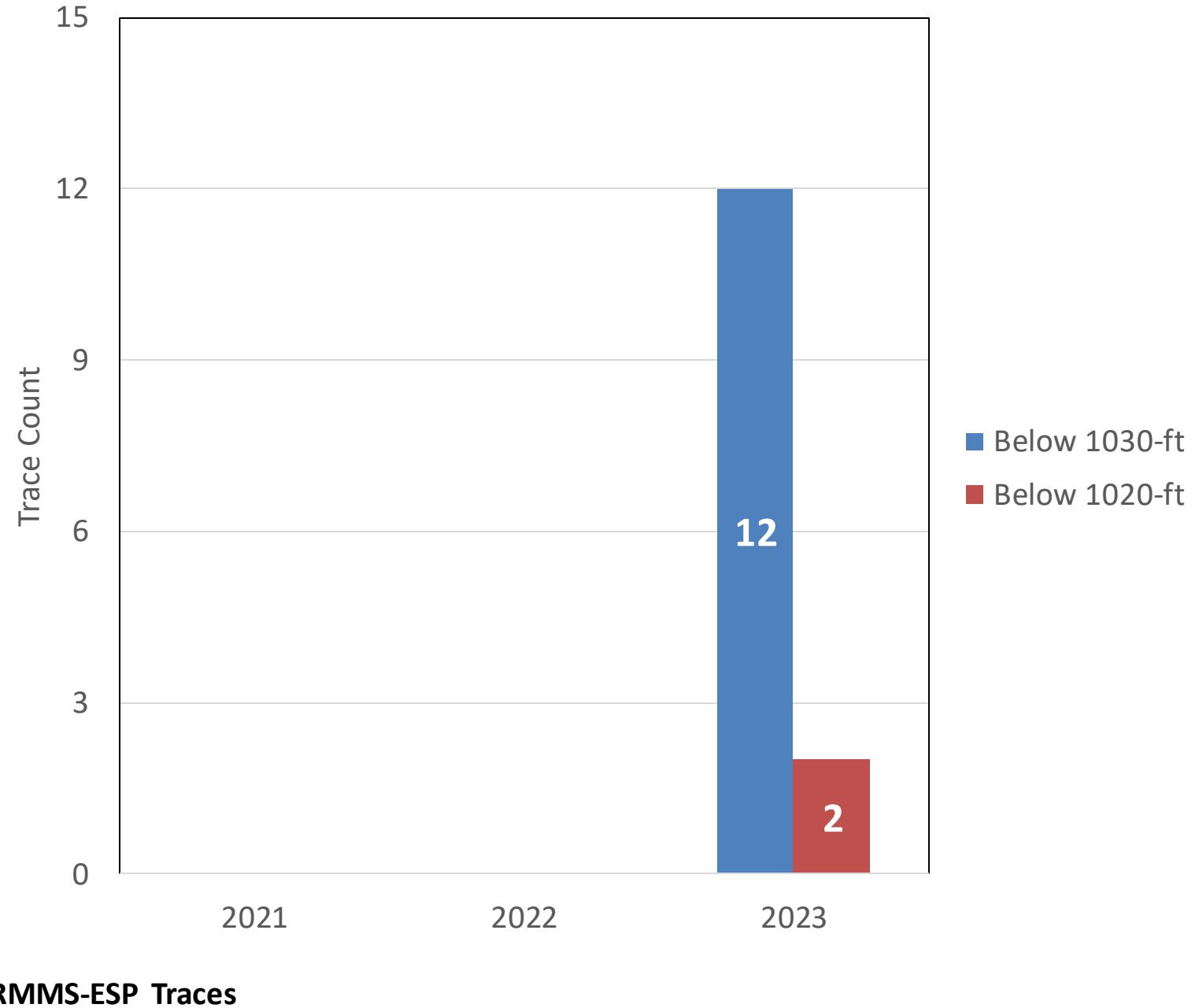
November 5, 2021

# CRMMS-ESP

(June 2021)

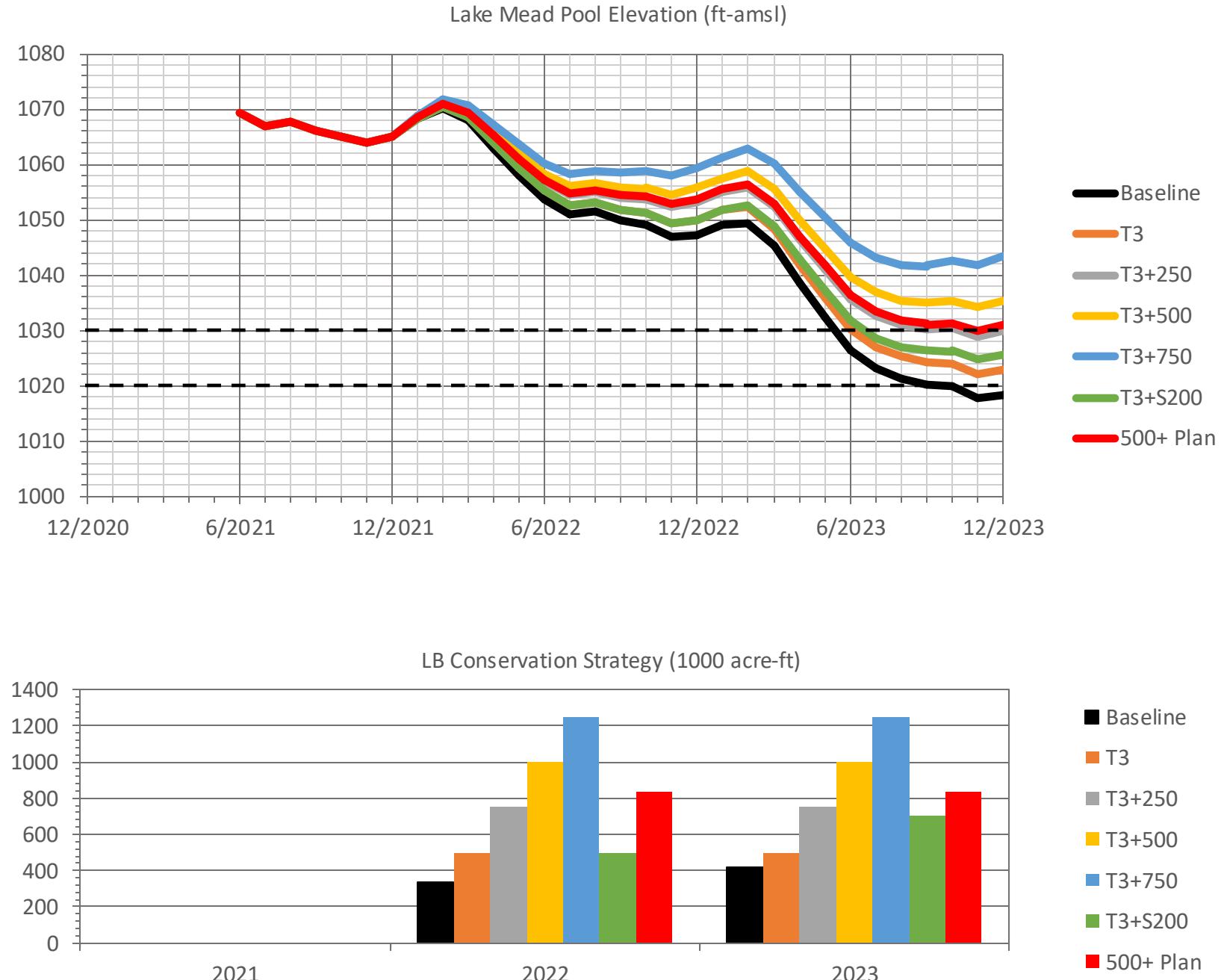
Vulnerability of  
Lake Mead  
Below Elevations  
1030-ft and 1020-ft  
By 2023

Number of Vulnerable Traces



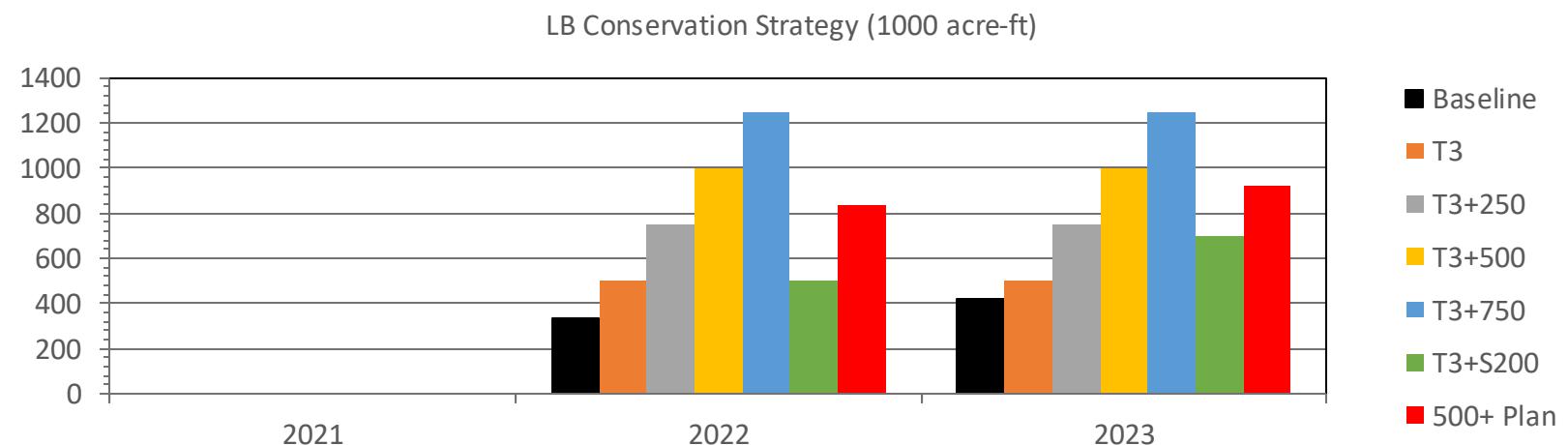
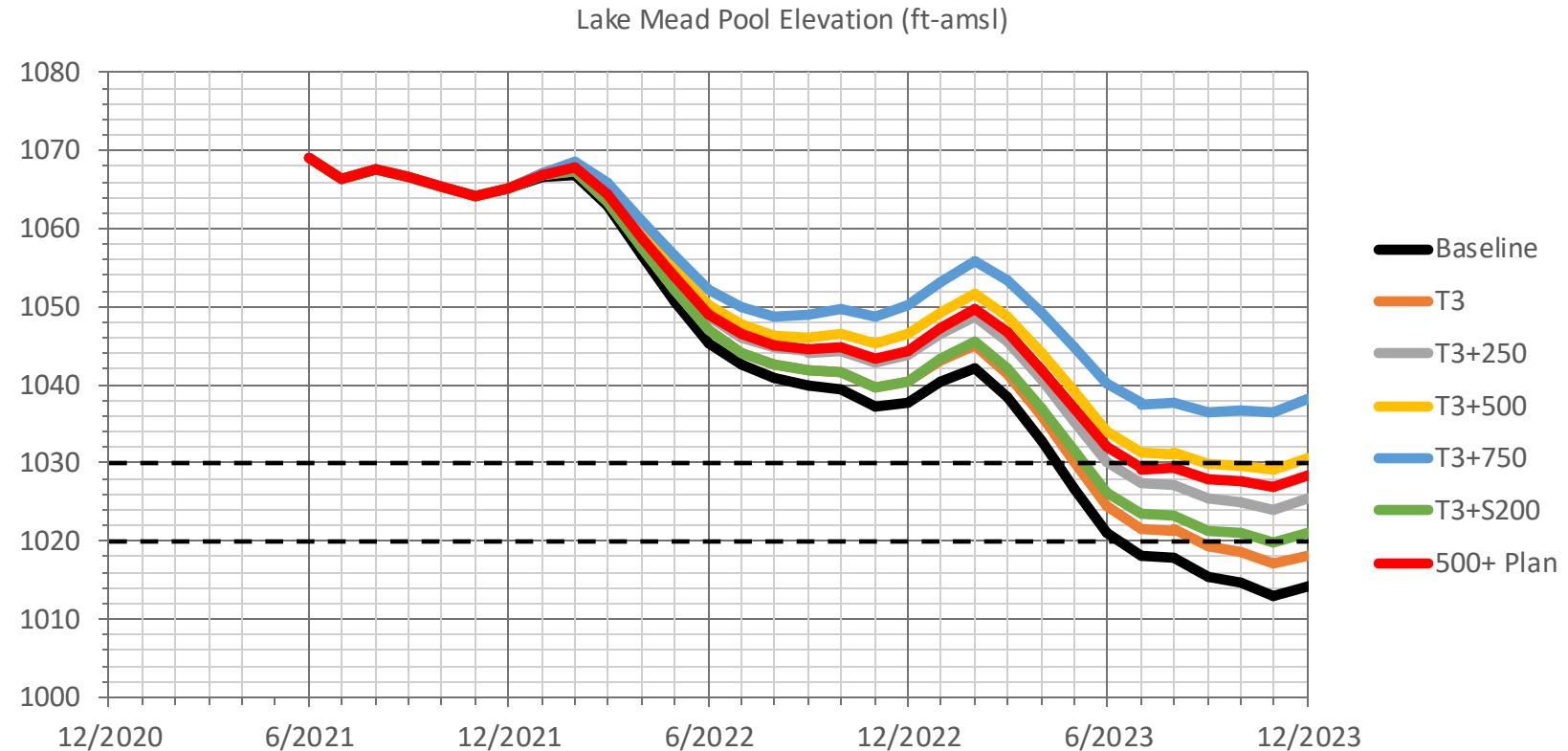
# Lake Mead Elevation and Lower Basin Conservation Strategies

Run 22  
Jun 2000 – Dec 2002



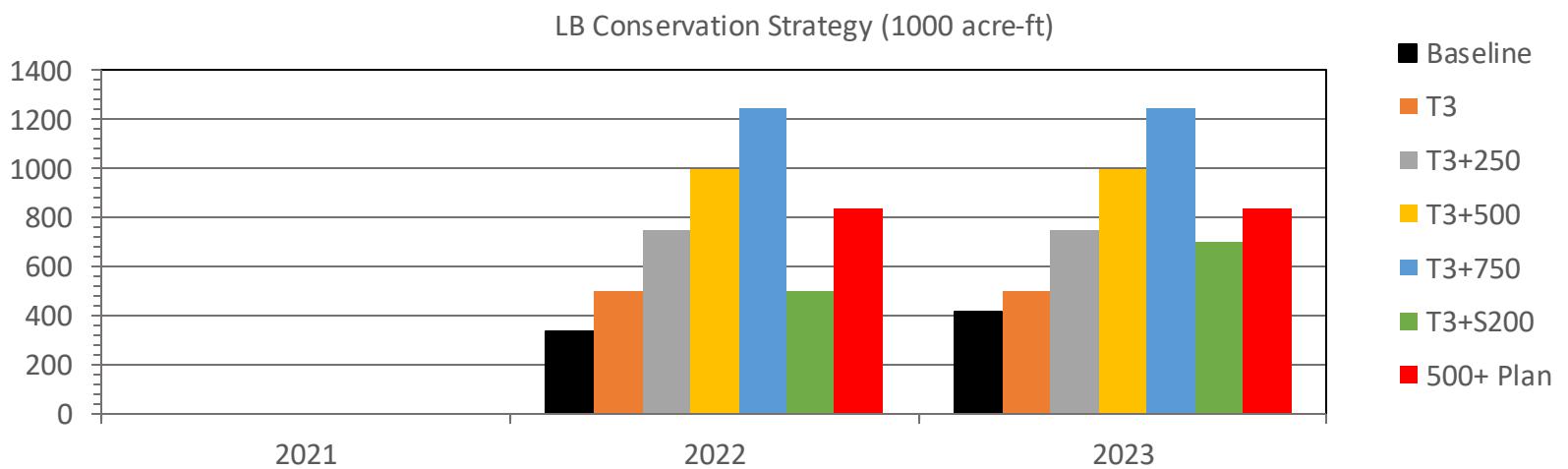
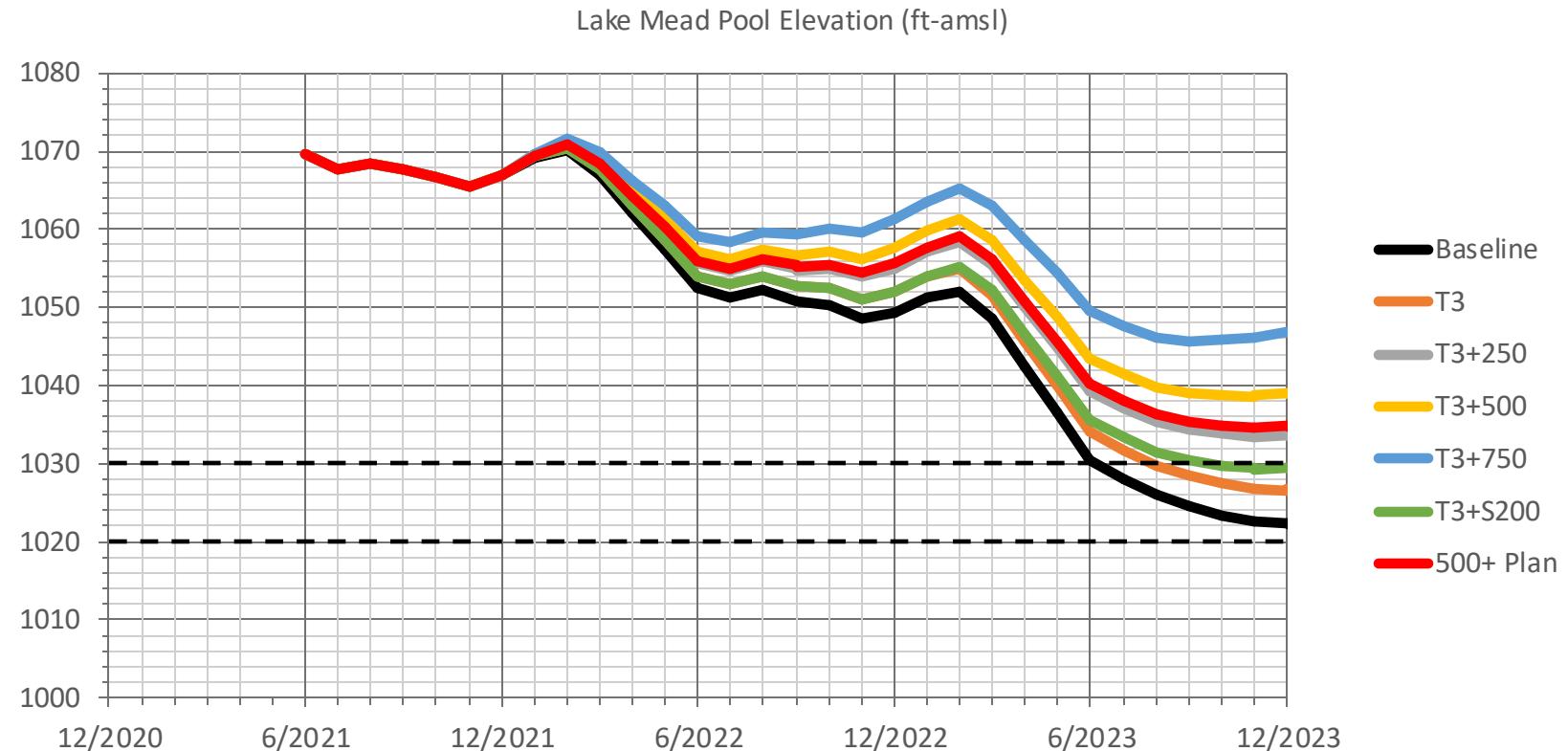
# Lake Mead Elevation and Lower Basin Conservation Strategies

**Run 23**  
**Jun 2001 – Dec 2003**



# Lake Mead Elevation and Lower Basin Conservation Strategies

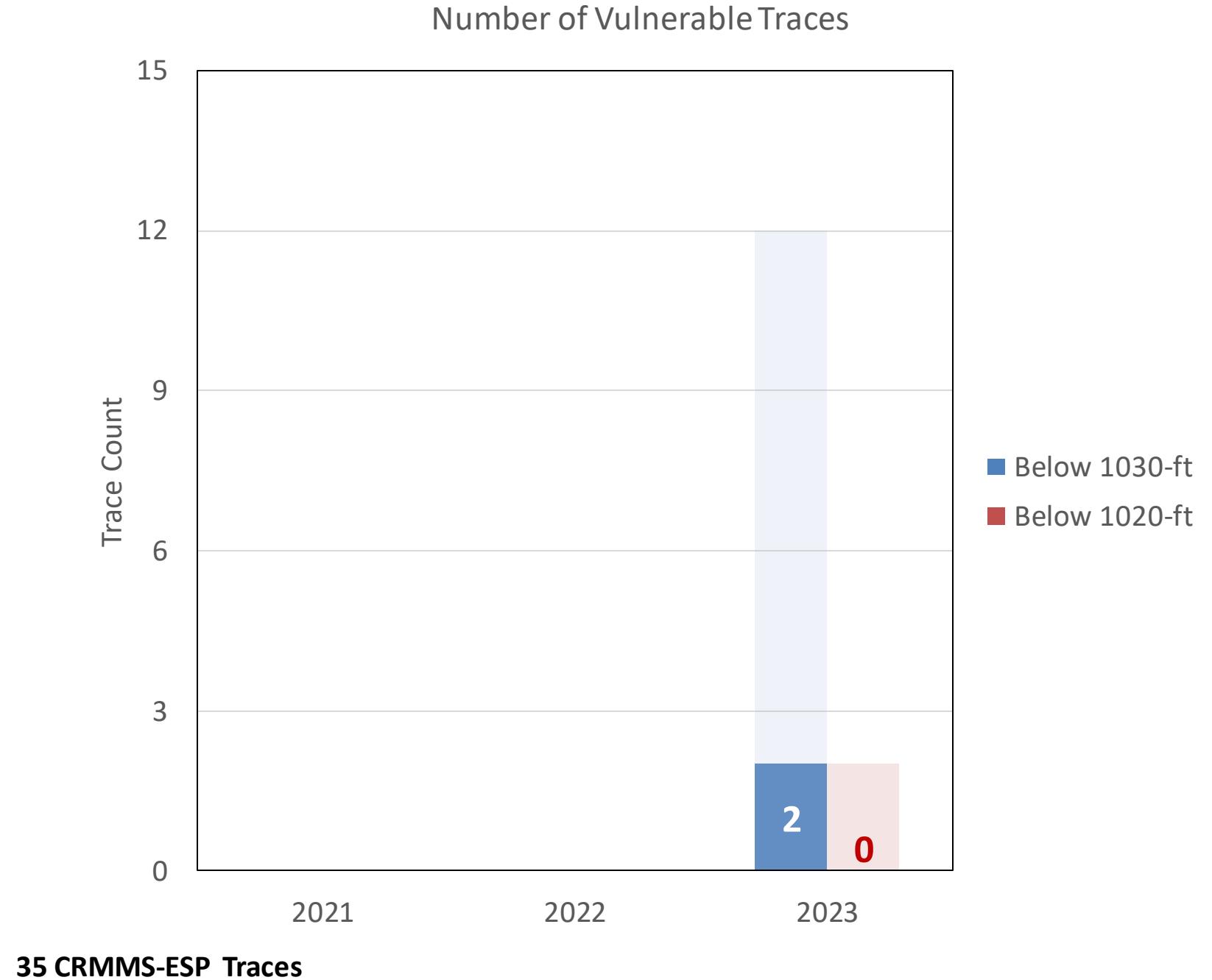
**Run 33**  
**Jun 2011 – Dec 2013**



# CRMMS-ESP with 500+ Plan

(June 2021)

Vulnerability of  
Lake Mead  
Below Elevations  
1030-ft and 1020-ft  
By 2023



# Questions?



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