

RECLAMATION

Managing Water in the West

Colorado River Basin: System Status Update and Drought Response Activities

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Colorado River Citizens Forum in Yuma, Arizona

January 25, 2017



**U.S. Department of the Interior
Bureau of Reclamation**

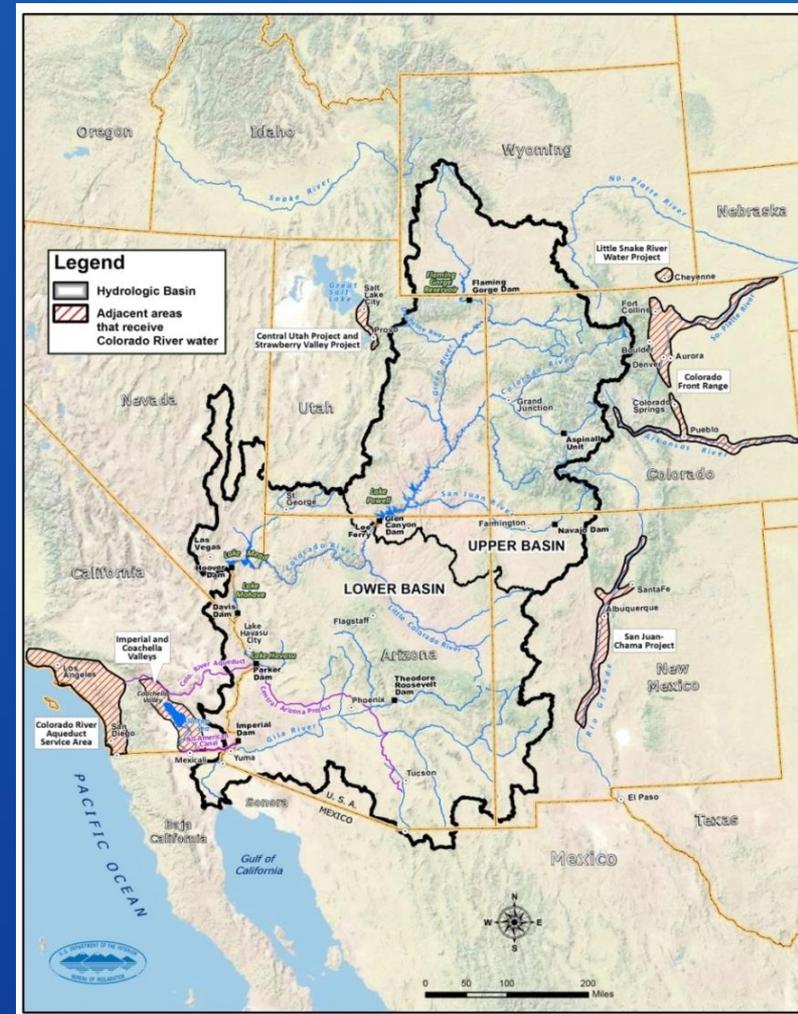


Topics

- Overview of the Colorado River Basin
- Colorado River Drought
- Drought Response Activities
- Projected Conditions
- Summary

Overview of the Colorado River System

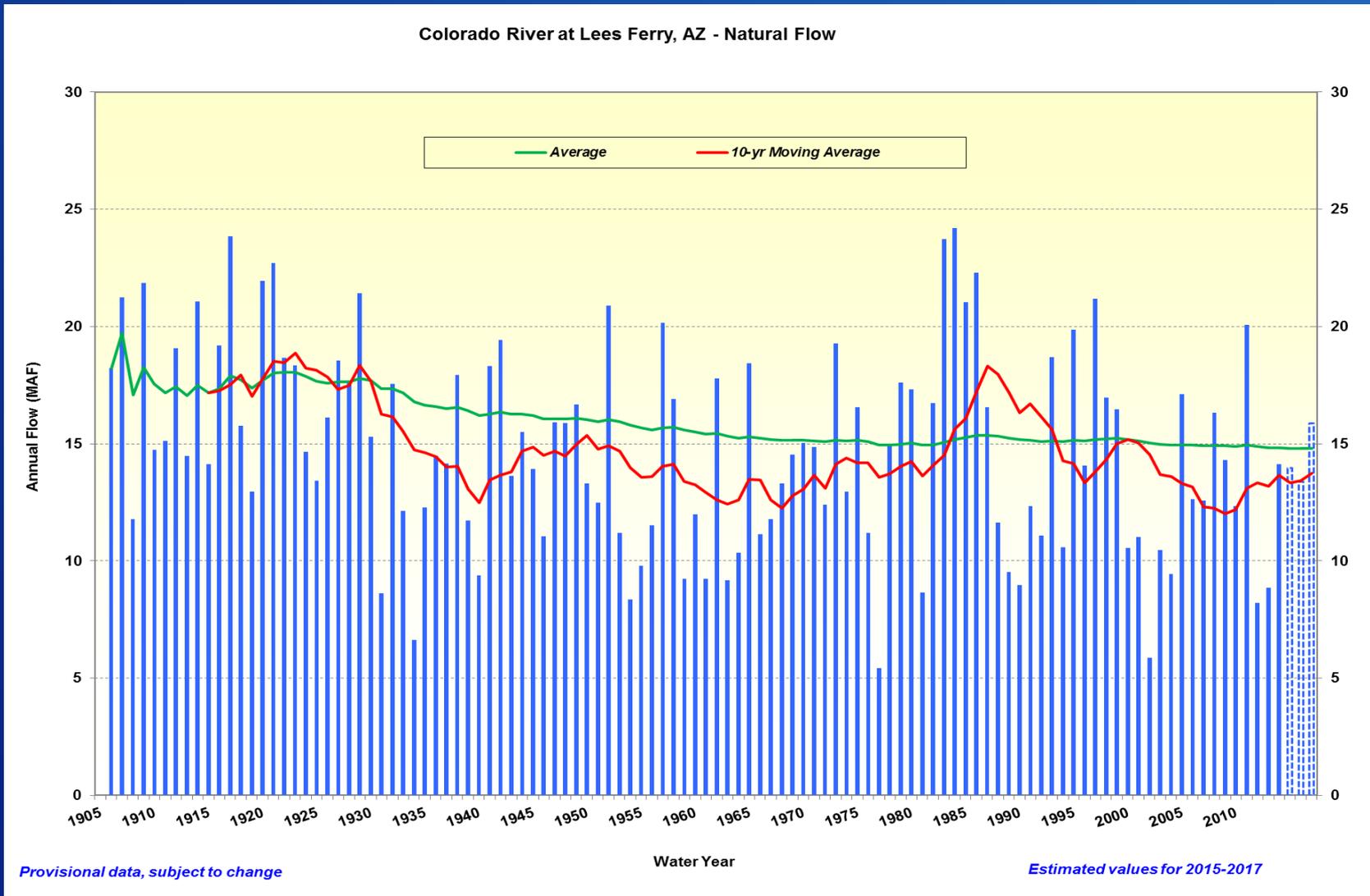
- 16.5 million acre-feet (maf) allocated annually
 - 7.5 maf each to Upper and Lower Basins
 - 1.5 maf to Mexico
- About 16 maf average annual “natural flow” (based on historical record)
 - 14.8 maf in the Upper Basin and 1.3 maf in the Lower Basin
- Inflows are highly variable year to year
- 60 maf of storage (nearly 4-times the annual inflow)
- Operations and water deliveries governed by the “Law of the River”



Natural Flow

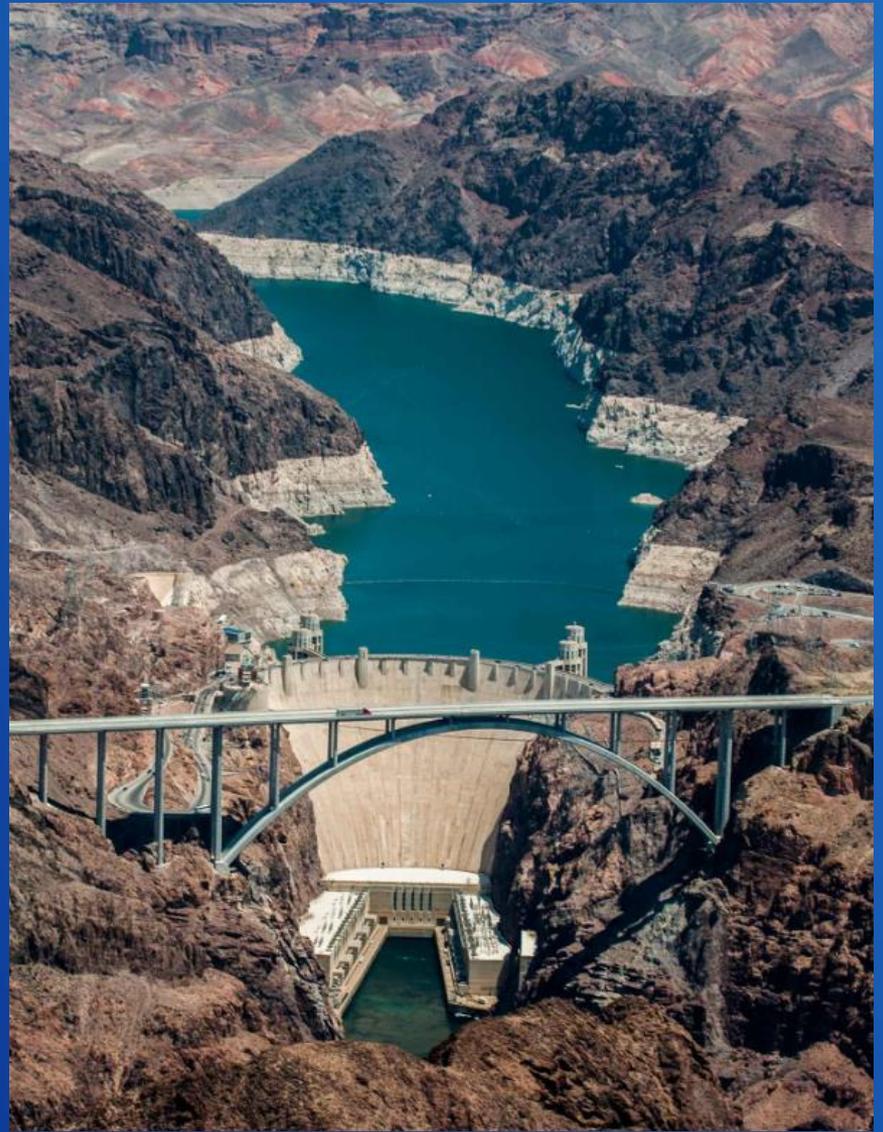
Colorado River at Lees Ferry Gaging Station, Arizona

Water Year 1906 to 2017





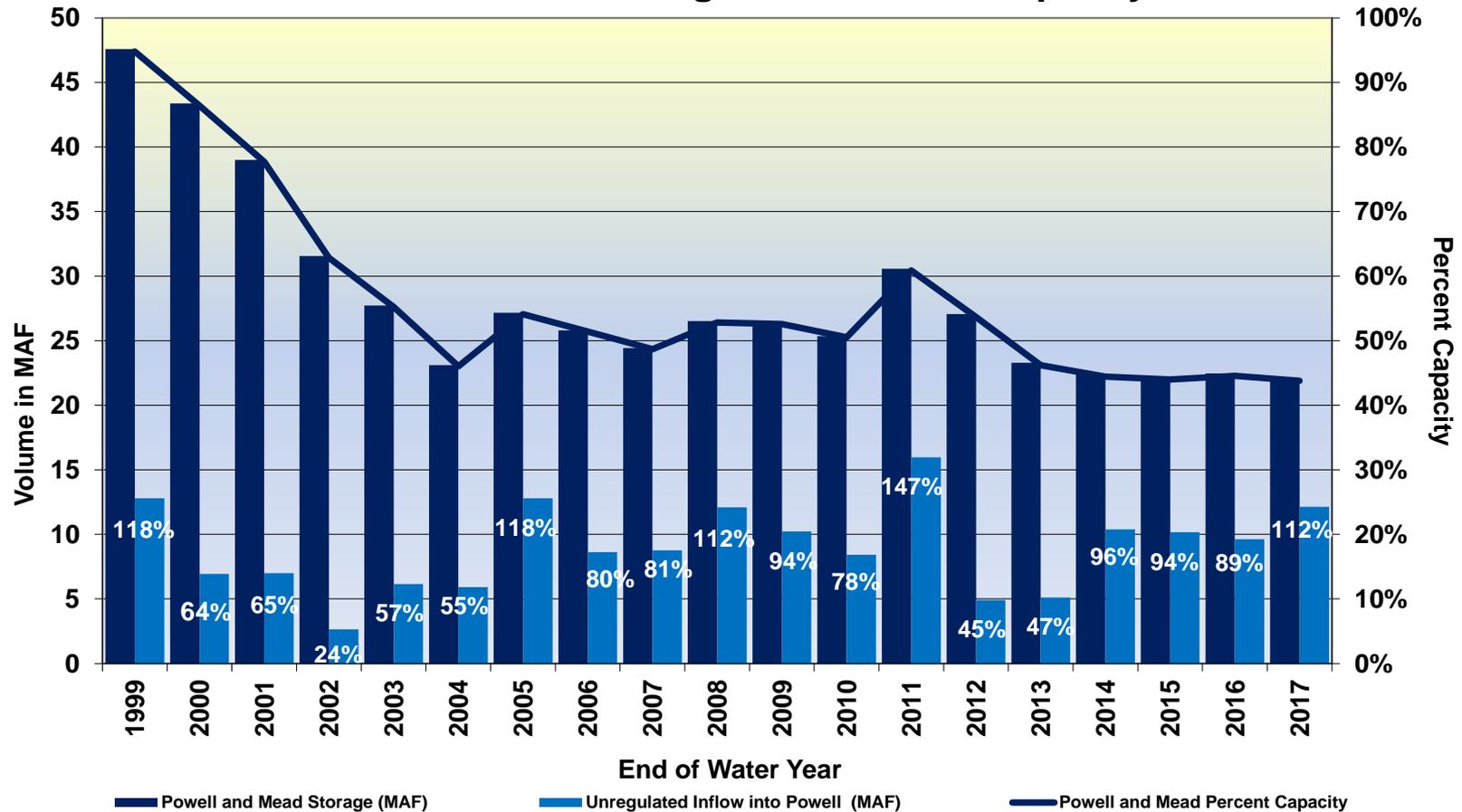
Lake Mead near Hoover Dam in 2000



Lake Mead near Hoover Dam in 2016

State of the System (Water Years 1999-2017)^{1,2}

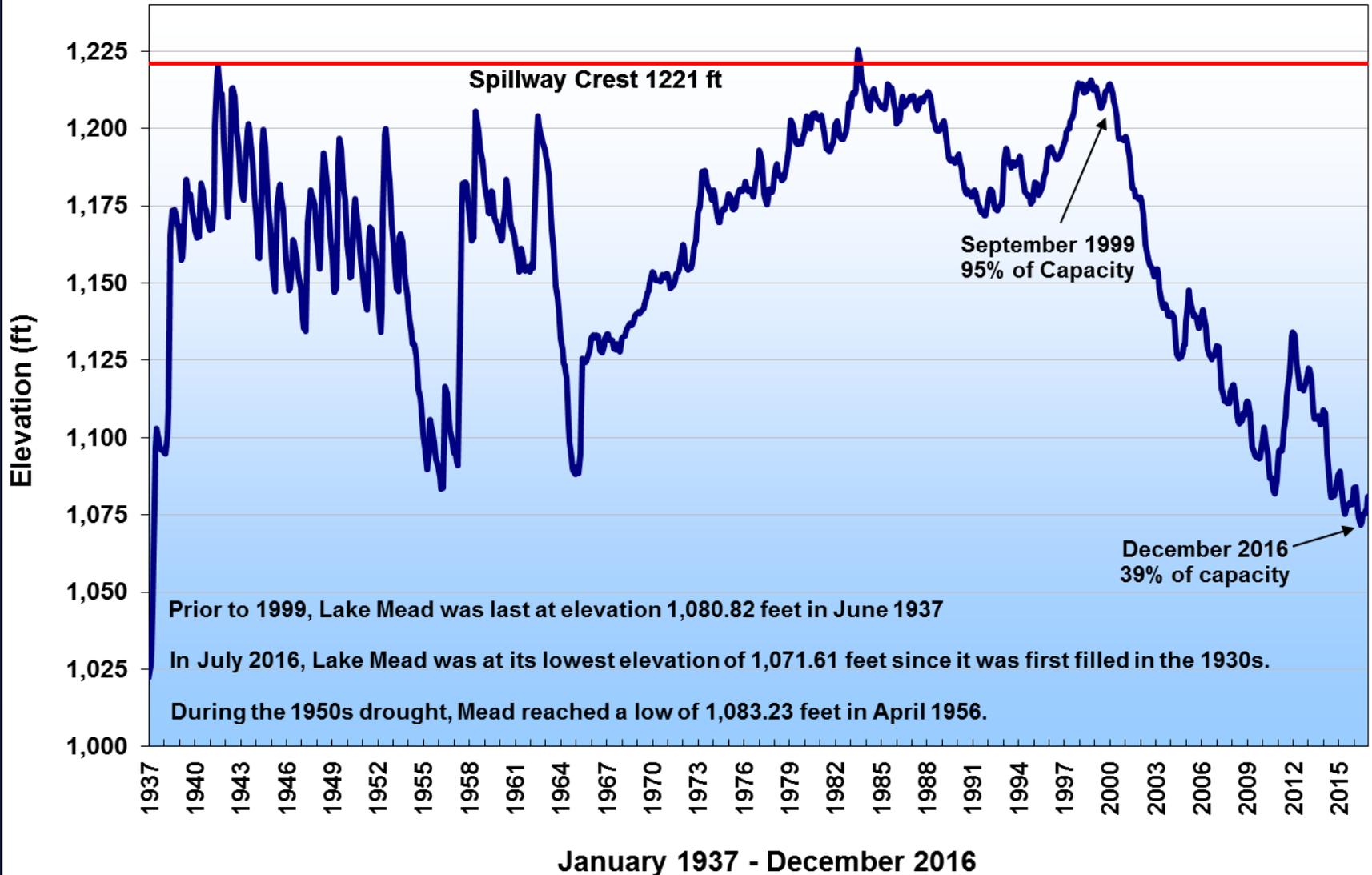
Unregulated Inflow into Lake Powell Powell-Mead Storage and Percent Capacity



¹Values for Water Year 2017 are projected. Unregulated inflow is based on the latest CBRFC forecast dated January 17, 2017. Storage and percent capacity are based on the January 2017 24-Month Study.

²Percentages 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

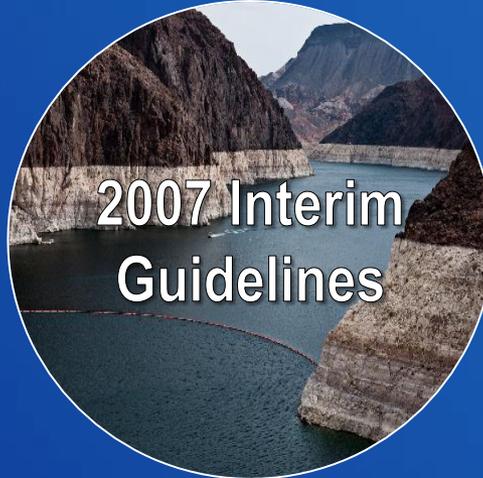


Water Budget at Lake Mead

Given current water demands in the Lower Basin and Mexico, and a minimum objective release from Lake Powell (8.23 maf), Lake Mead storage declines by about 1.2 maf annually (equivalent to about 12 feet in elevation).

Inflow (Powell release + side inflows above Mead)	9.0 maf
Outflow (Lower Division State apportionments and Mexico Treaty allocation, plus balance of downstream regulation, gains, and losses)	-9.6 maf
Mead evaporation loss	-0.6 maf
Balance	-1.2 maf





Drought Response Activities



2007 Interim Guidelines



- In place for an interim period (2007 through 2026)
- Provide for coordinated operations of Lake Powell and Lake Mead to minimize Lower Basin shortages and Upper Basin curtailments
- Encourage efficient use and management of Colorado River water through the Intentionally Create Surplus (ICS) mechanism
- Establish guidelines for determining shortages in the Lower Basin
- Does not include provisions for Mexico

1944 U.S.-Mexico Water Treaty

- IBWC Minute 319 – November 2012
 - Cooperative 5-year agreement
 - In place for an interim period from 2013 to 2017
 - Provides for storage of Mexican conserved water in Lake Mead
 - Shortage and surplus sharing with U.S. water users at high and low reservoir conditions
 - Improved infrastructure for conservation
 - Environmental projects including riparian restoration sites in the Colorado River Delta
 - A new agreement is being discussed

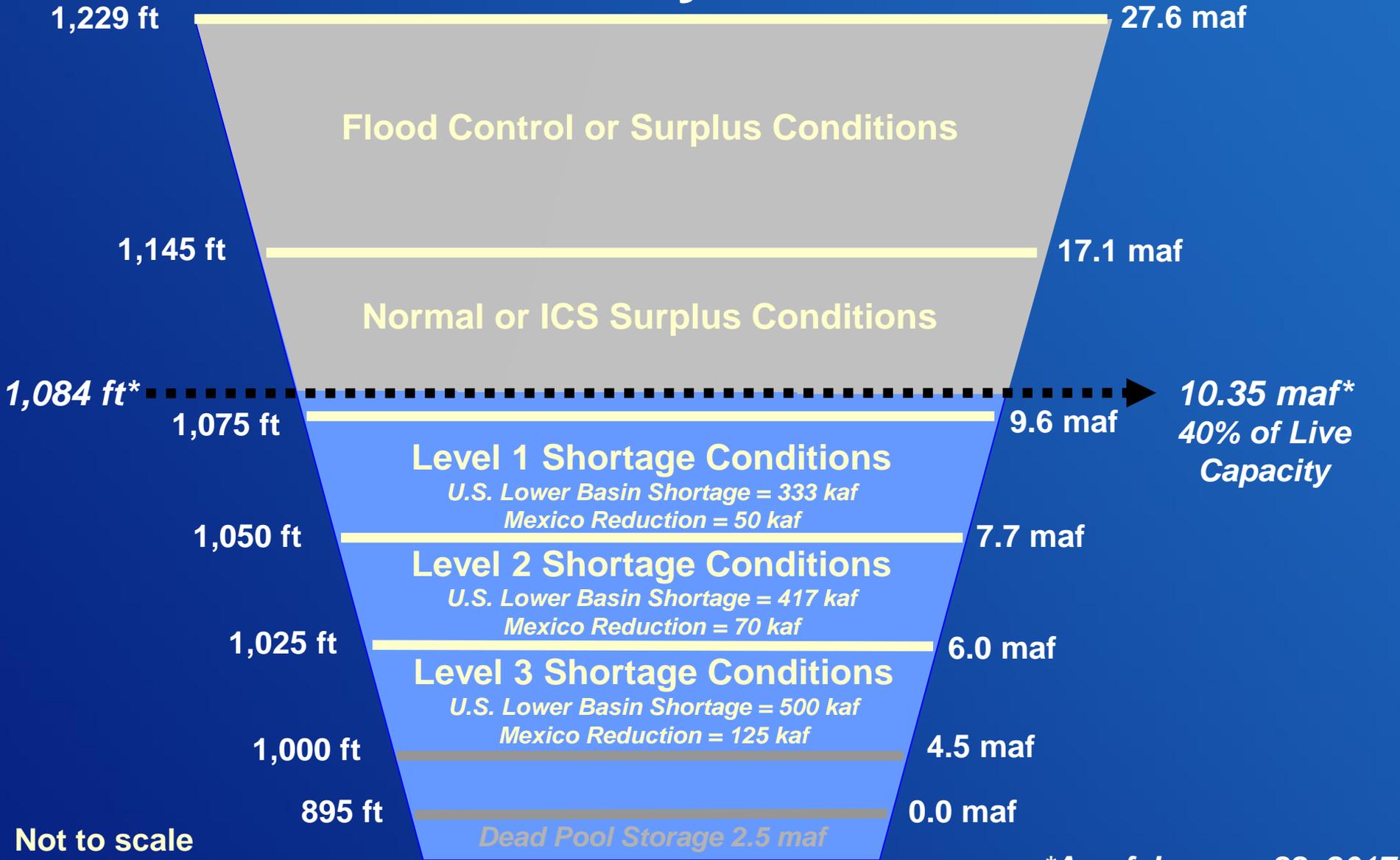


Damage to canal in Mexico from earthquake, April 2010



View of riparian area in Colorado River Delta

Lake Mead – Key Elevations^{1,2}



Not to scale

*As of January 22, 2017

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).

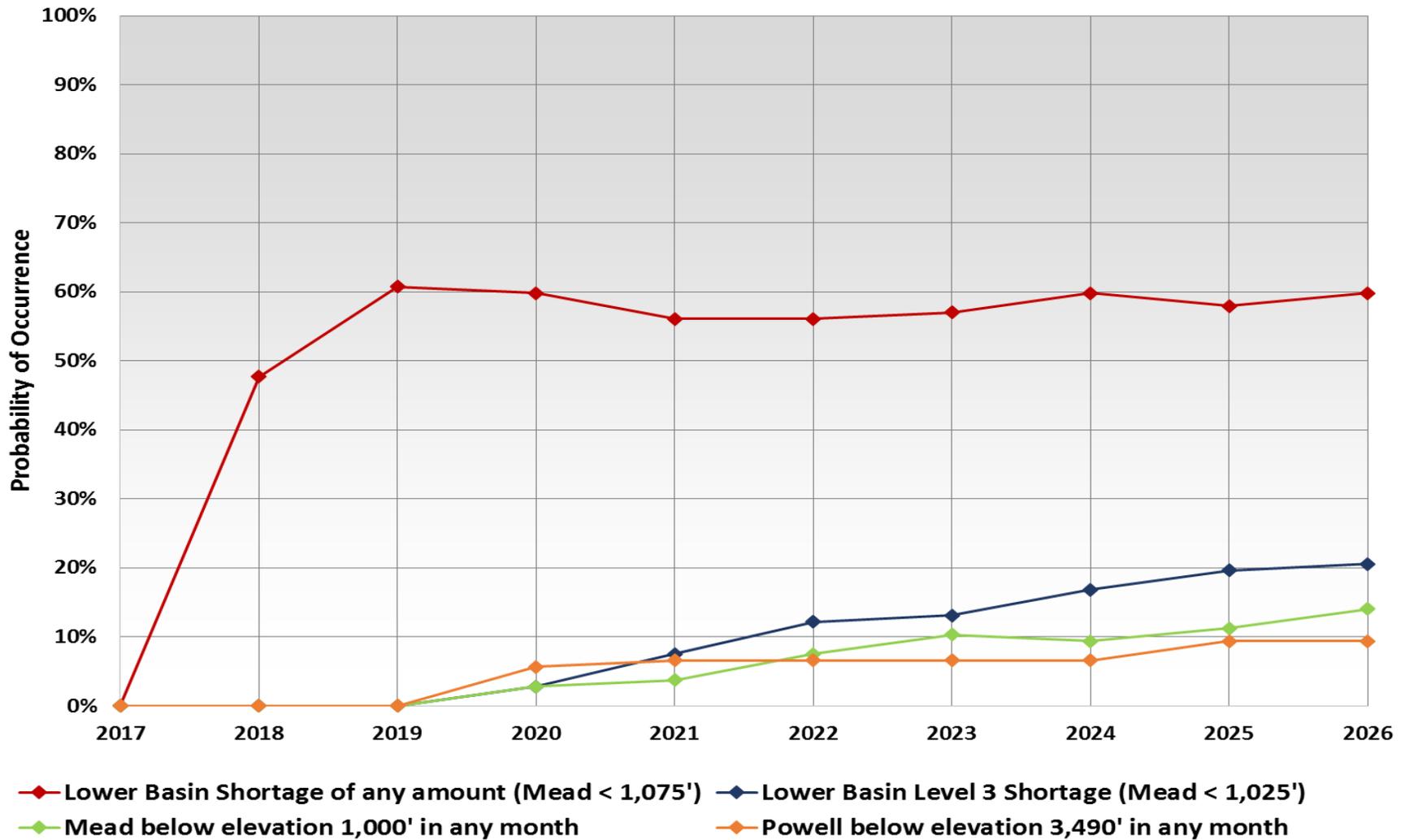
Drought Response Activities

- Four conservation programs have resulted in an additional 12 feet in Lake Mead elevation through 2016
 - U.S. Intentionally Created Surplus
 - Mexican water deferred under IBWC Minute 319
 - Pilot System Conservation Program
 - Lower Basin Drought MOU voluntary protection volumes
- Additional Lower Basin drought response discussions are on-going
 - Goal is to reduce the risk of reaching critically low Lake Mead elevations through voluntary actions



Lake Powell and Lake Mead Projections^{1,2}

August 2016 CRSS run for period from 2017 to 2026

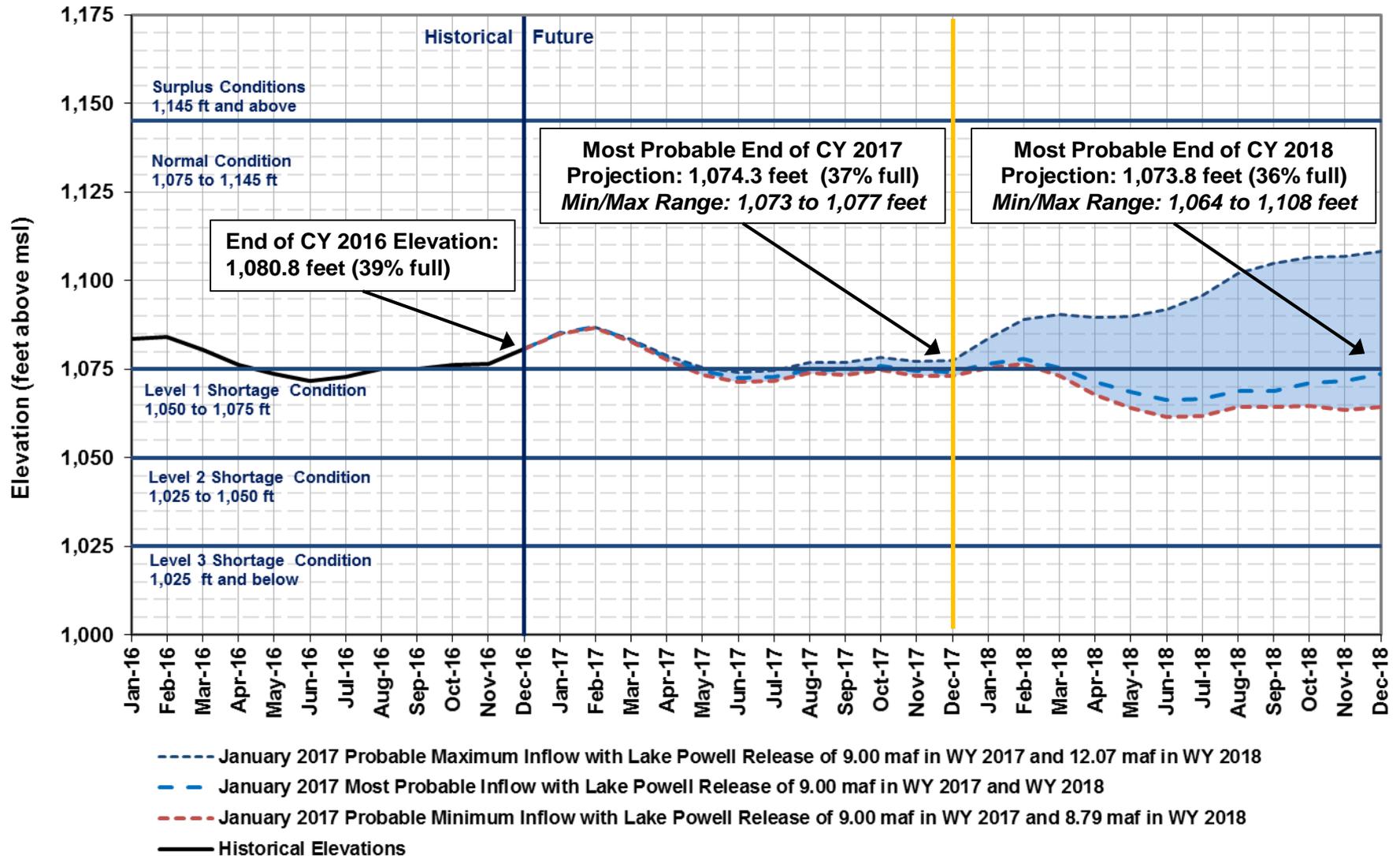


¹ Reservoir initial conditions based on projected December 31, 2016 conditions from the August 2016 24-Month Study.

² Hydrologic inflow traces based on resampling of the observed natural flow record from 1906-2012.

Lake Mead End of Month Elevations

Projections from January 2017 24-Month Study Inflow Scenarios

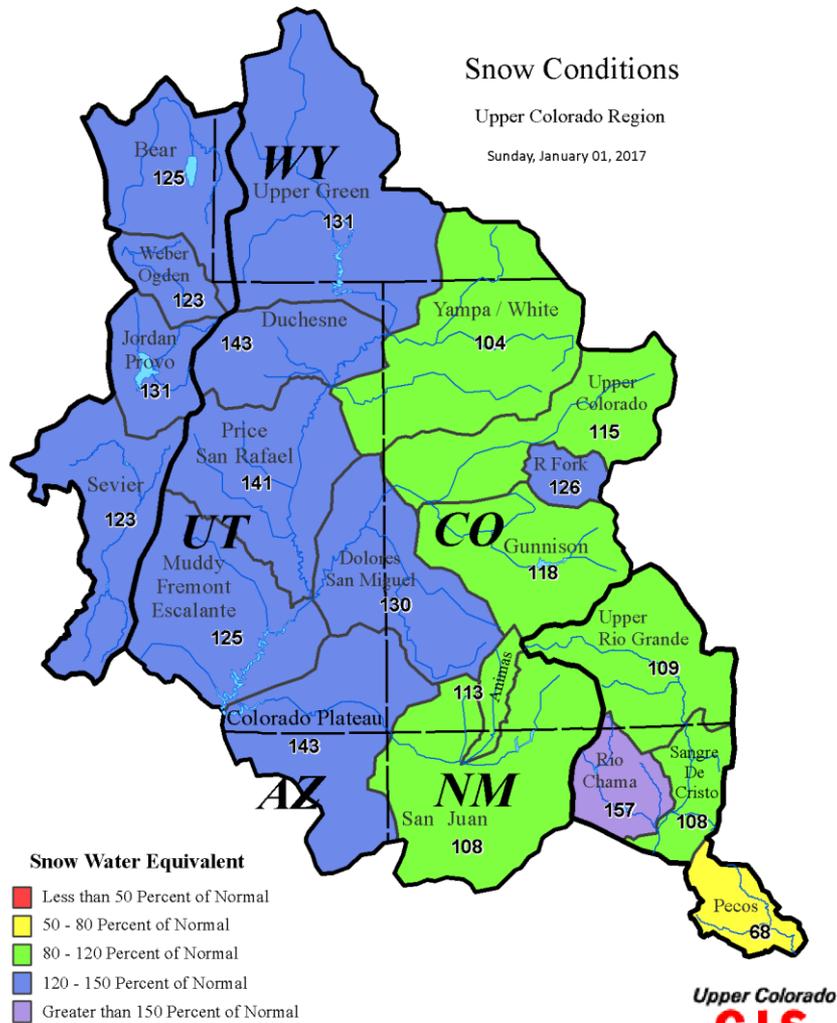


Upper Basin Snow Conditions

Snow Conditions

Upper Colorado Region

Sunday, January 01, 2017

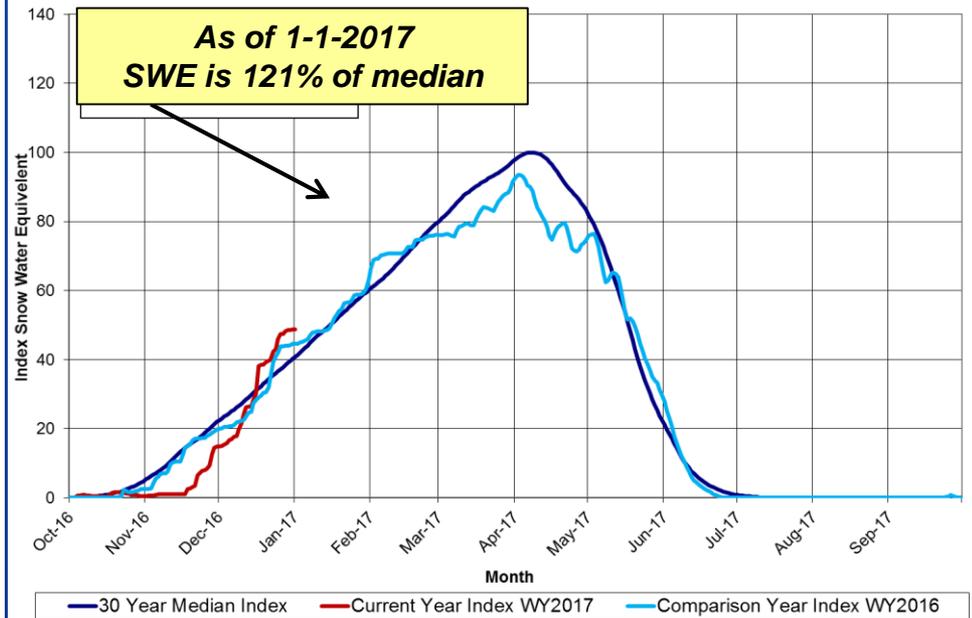


Upper Colorado
GIS
Region

Data Provided by the Natural Resource Conservation Service

49% of total average seasonal accumulation

Upper Colorado River Basin Snotel Tracking
Aggregate of 116 Snotel Sites above Lake Powell



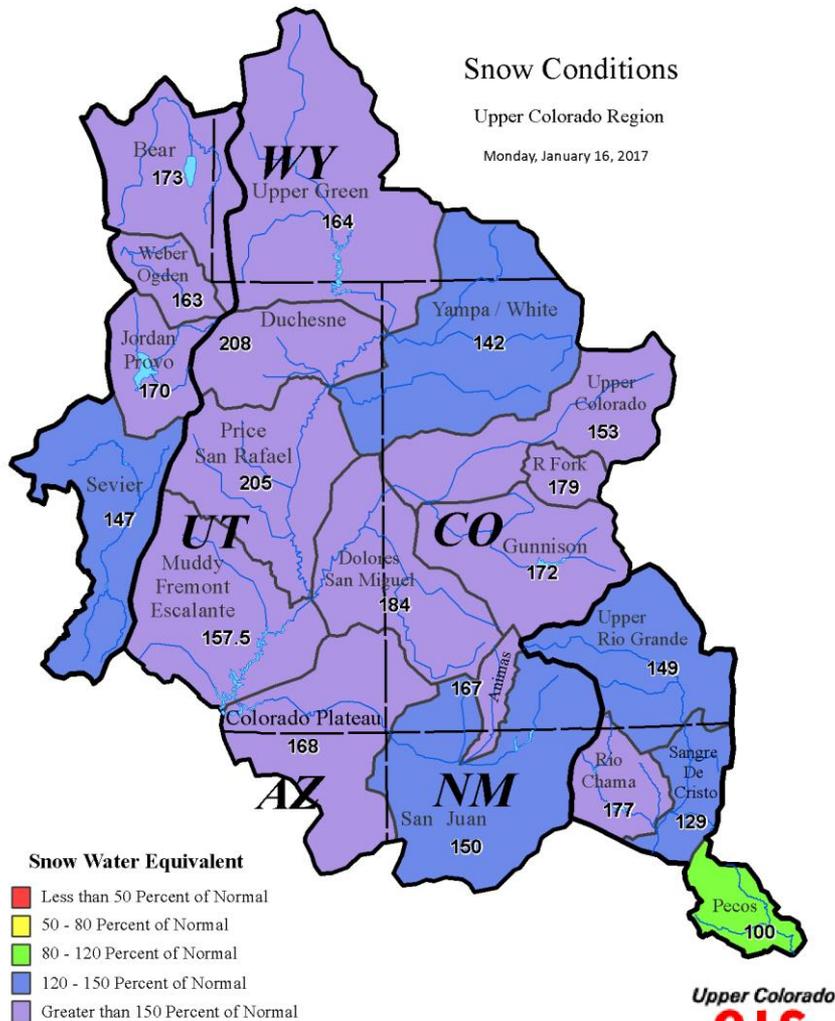
Data Provided by the Natural Resource Conservation Service

Upper Basin Snow Conditions

Snow Conditions

Upper Colorado Region

Monday, January 16, 2017

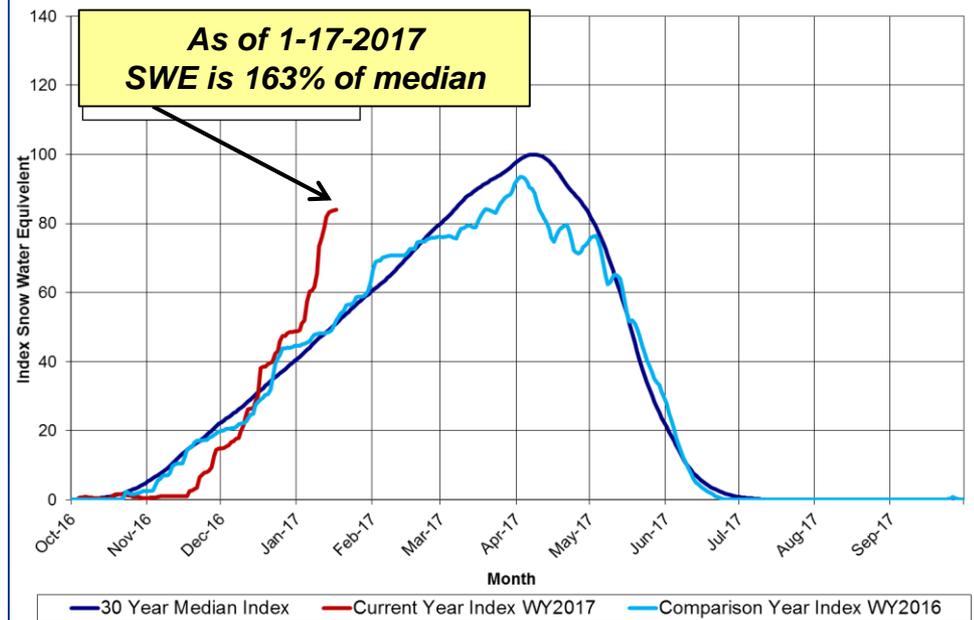


Upper Colorado
GIS
Region

Data Provided by the Natural Resource Conservation Service

84% of total average seasonal accumulation

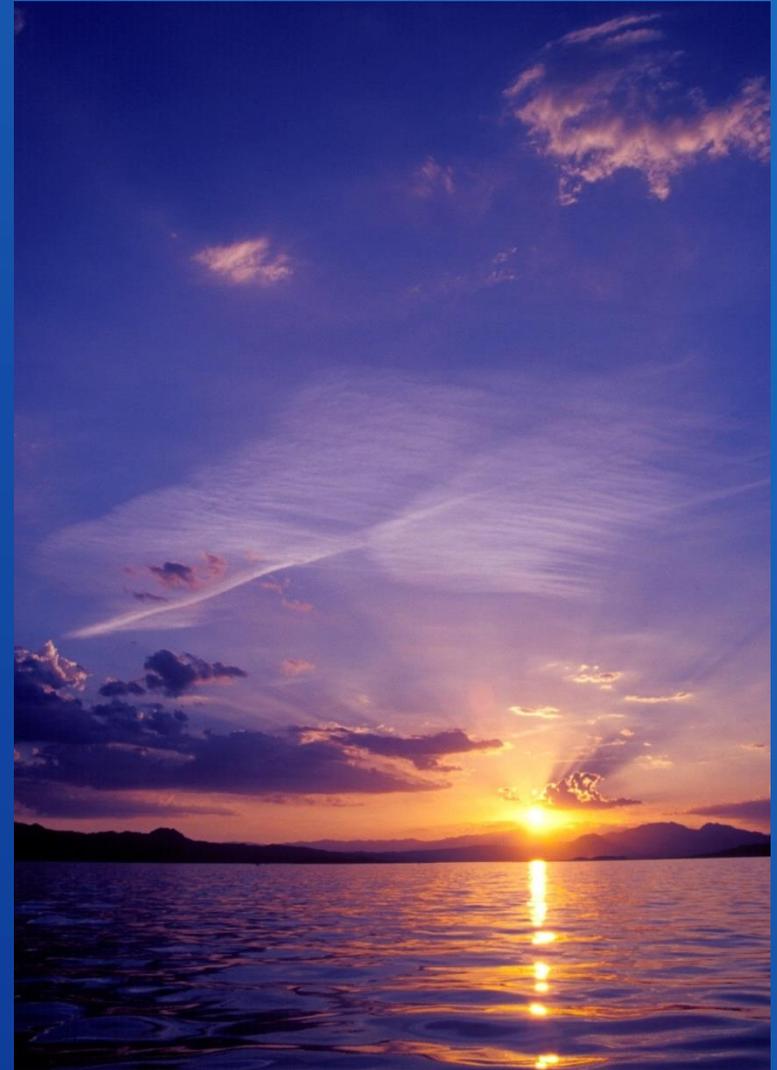
Upper Colorado River Basin Snotel Tracking
Aggregate of 116 Snotel Sites above Lake Powell



Data Provided by the Natural Resource Conservation Service

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



For more information:

<https://www.usbr.gov/uc/water/index.html>

<https://www.usbr.gov/lc/riverops.html>

