THE LAW OF THE RIVER – A CENTURY IN THE MAKING

Colorado River Forum – CSG West

October 18, 2022

Anne Castle

COLORADO RIVER BASIN

AREAS SERVED OUTSIDE THE BASIN

SOUND BITES

- Serves 40 million people in US and MX
- Irrigates 5 million acres
- 30 Native American tribes
- 11 National Parks
- Supports $1.4 trillion economy, including $26+ billion recreational industry

THE BASIC MATH

COLORADO RIVER COMPACT 1922

- River divided equally, sort of
- Lower Basin gets 7.5 MAF + 1.0
- Upper Basin gets 7.5 MAF, but . . .
- If deliveries to Mexico in future, split equally between Upper and Lower Basin

No. 6227

United States of America

DEPARTMENT OF STATE

To whom these presents shall come, Greeting:

I Certify That the document annexed is a true copy of the "Colorado River Compact," signed 24th November, 1922, at the City of Santa Fe, New Mexico, the original of which is on file in this Department.

In testimony whereof I, Charles E. Hughes, Secretary of State, have hereunto caused the Seal of the Department of State to be affixed and my name subscribed by the Chief Clerk of the said Department, at the City of Washington, this twenty-second day of December, 1928.

Charles E. Hughes
Secretary of State.

By Wm. Phillips
Chief Clerk.

COMPACT LANGUAGE

There is hereby apportioned to the Upper Basin and the Lower Basin, respectively, the exclusive use of 7,500,000 acre-feet of water per annum

The Lower Basin is given the right to increase its use by one million acre-feet per annum

The Upper Basin will not cause the flow of the river at Lee Ferry to be depleted below 75,000,000 acre feet over any period of ten consecutive years

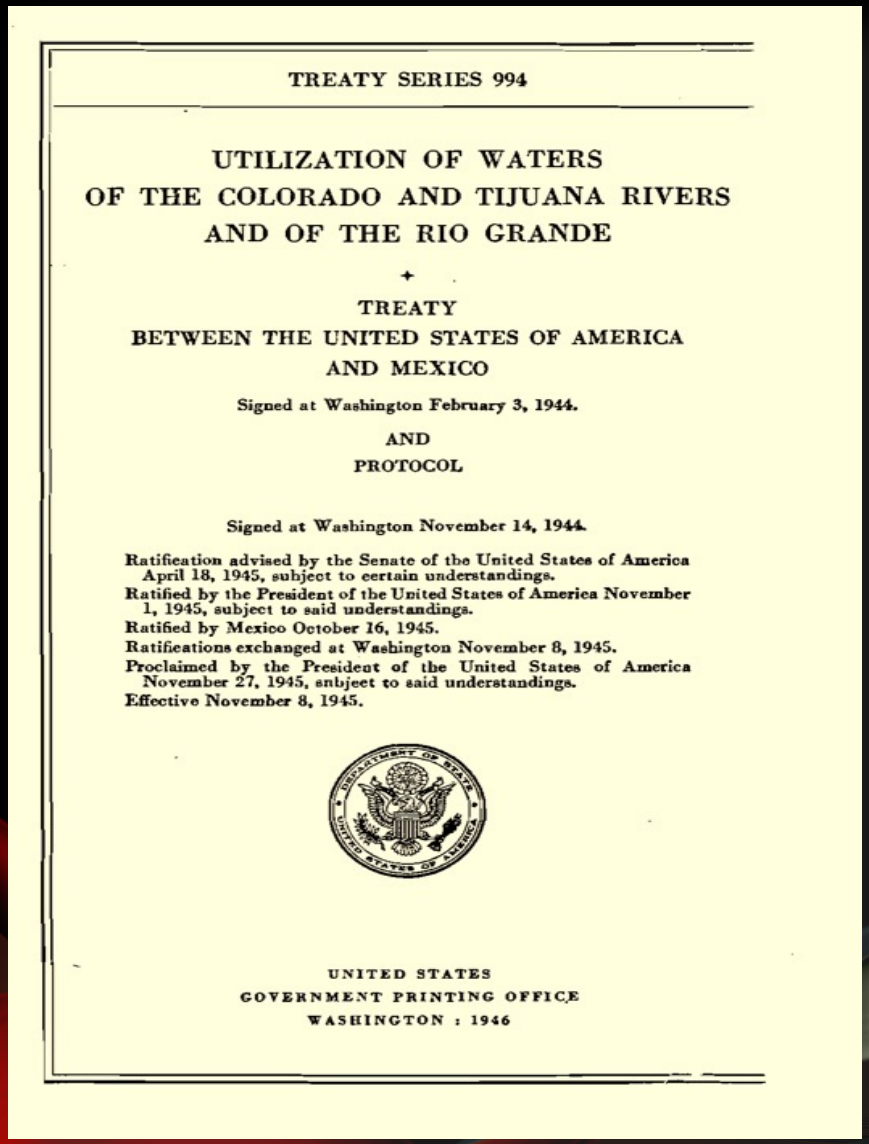
Present perfected rights to the beneficial use of waters of the Colorado River System are unimpaired by this compact.

1928 BOULDER CANYON PROJECT ACT

- Approved 1922 Compact
- Lower Basin authorized allocations

California:	4.4 MAF
Arizona:	2.8 MAF
Nevada:	0.3 MAF
	7.5 MAF

1944 TREATY - MEXICO'S ALLOCATION



TREATY SERIES 994

UTILIZATION OF WATERS
OF THE COLORADO AND TIJUANA RIVERS
AND OF THE RIO GRANDE

+

TREATY
BETWEEN THE UNITED STATES OF AMERICA
AND MEXICO

Signed at Washington February 3, 1944.

AND
PROTOCOL

Signed at Washington November 14, 1944.

Ratification advised by the Senate of the United States of America April 18, 1945, subject to certain understandings.
Ratified by the President of the United States of America November 1, 1945, subject to said understandings.
Ratified by Mexico October 16, 1945.
Ratifications exchanged at Washington November 8, 1945.
Proclaimed by the President of the United States of America November 27, 1945, subject to said understandings.
Effective November 8, 1945.

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1946

- 1.5 MAF/year
- Reductions in event of extraordinary drought

1948 UPPER BASIN COMPACT

Upper Basin allocations

Colorado:	51.75%
New Mexico:	11.25%
Utah:	23%
Wyoming:	14%

Establishes Upper Colorado River Commission, with 1 commissioner from each state and 1 federal

ARIZONA V. CALIFORNIA

- Arizona sues in 1952, requesting interpretation of the 1922 Compact
  - Who gets extra 1.0 MAF in Lower Basin
  - How is “beneficial use” measured?
  - How should evaporation be accounted for?
- SCOTUS decision addressed none of these issues

ARIZONA V. CALIFORNIA
1963 DECISION

- Interpreted 1928 Boulder Canyon Project Act, not the Compact
- Affirmed allocations to Lower Basin states from the 1928 Act
- 1928 Act deals only with water in the mainstem of the River, not the tributaries

NEXT . . .

- 1956 - Colorado River Storage Project Act
  - Authorized Upper Basin reservoirs
- 1968 - Colorado River Basin Project Act
  - Authorized Central Arizona Project
  - Subordinated CAP to California and Nevada allocations

21st Century "Drought"

American Rivers
RIVERS CONNECT US®

Climate change is punishing the Colorado River, July 17, 2022

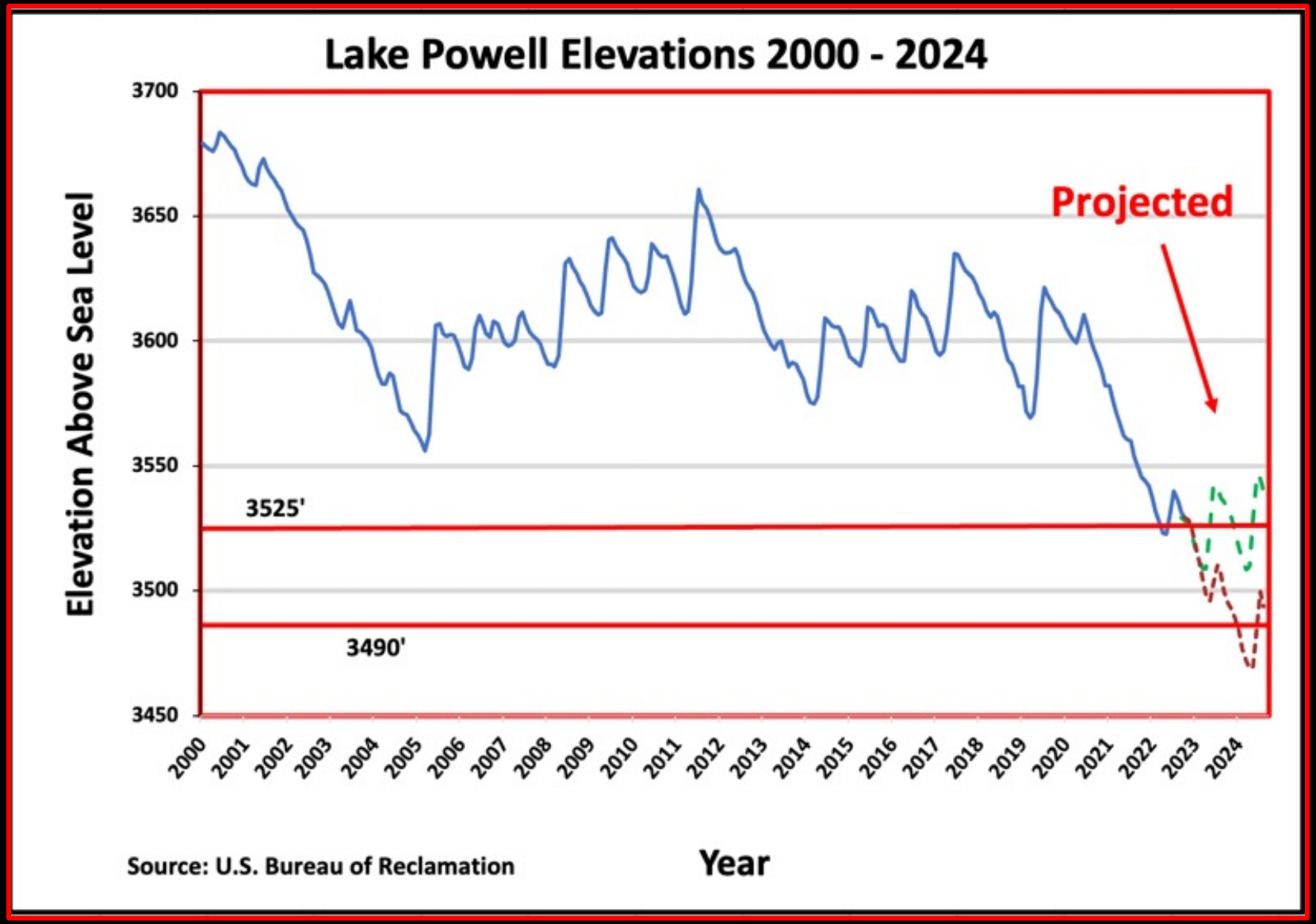
The Gazette

Study finds Western megadrought is the worst in 1,200 years, Feb. 14, 2022

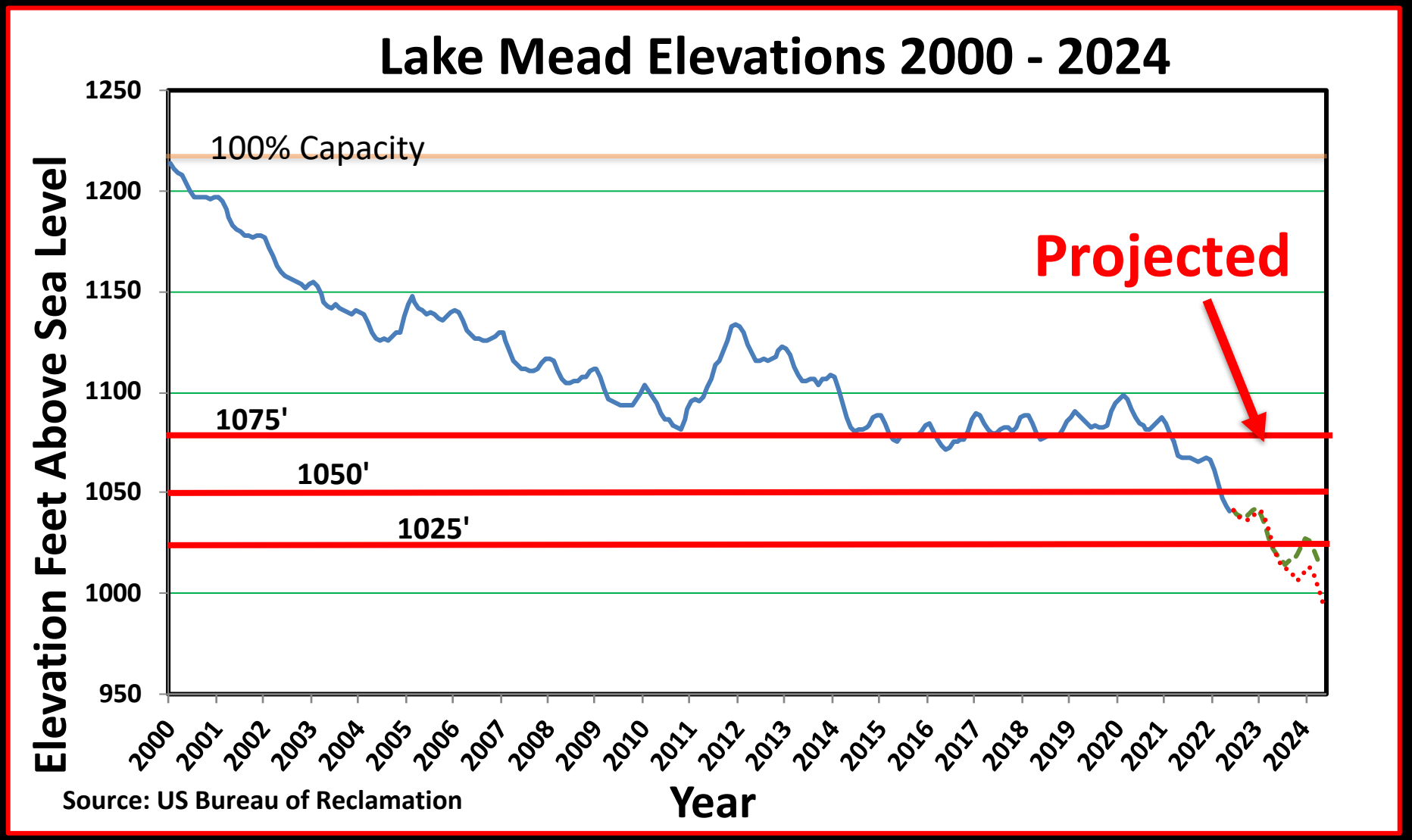
npr

Colorado River is at a "tipping point", Commr. of Reclamation, June 14, 2022

LAKE POWELL LEVELS



LAKE MEAD LEVELS



21st Century Efforts to Address the Problem

2007 INTERIM GUIDELINES

- Sharing of shortage and surplus
- Banking of water - Intentionally Created Surplus
- Balancing of contents of Mead and Powell
- Effective through 2025

Lake Powell

Lake Mead

2007 INTERIM GUIDELINES

Lower Basin Delivery Reductions (in acre feet)

Lake Mead Elevation	California (4.4 MAF)	Arizona (2.8 MAF)	Nevada (0.3 MAF)
1075’ – 1050’ Tier 1	0	320,000	13,000
1050’ – 1025’ Tier 2	0	400,000	17,000
Below 1025’ Tier 3	0	480,000	20,000

AGREEMENTS WITH MEXICO

- Minutes 319 and 323
- Mexico shares shortages
- Mexico can store water in US reservoirs
- Joint environmental efforts

DROUGHT CONTINGENCY PLANS

- Additional actions necessary to reduce risk of critical levels in Mead and Powell
- Separate plans for Upper and Lower Basins
- Executed in 2019, effective through 2026

LOWER BASIN DCP

New shortage sharing schedule

More flexibility in storage of surplus

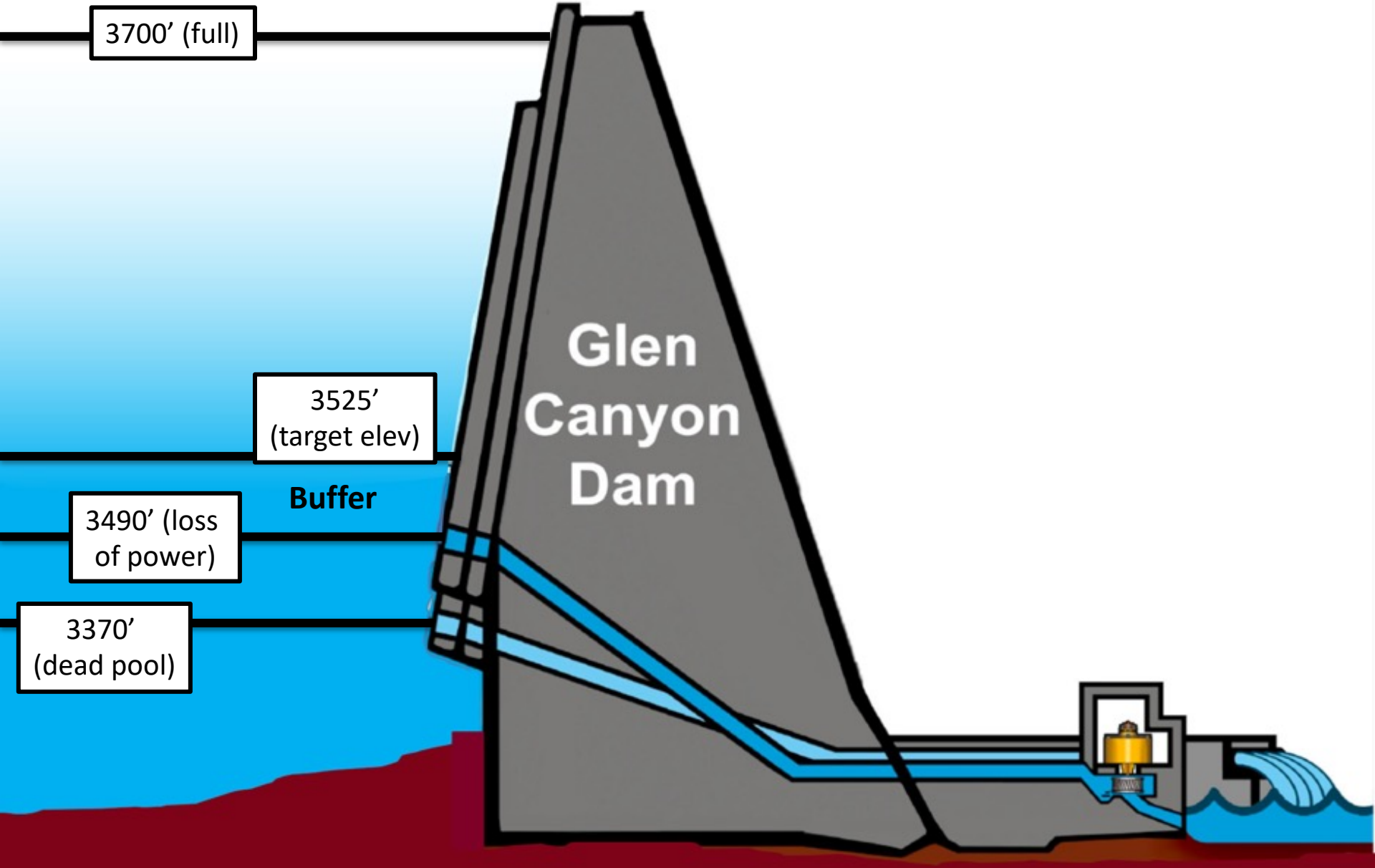
DCP + Min 323 + 2007 Guidelines

Lake Mead Elevation	California	Arizona	Nevada	USBR	Mexico	Total (AF)
1090' – 1075'	0	192,000	8,000	100,000	41,000	341,000
1075' – 1050'	0	512,000	21,000	100,000	80,000	713,000
1050' – 1045'	0	592,000	25,000	100,000	104,000	821,000
1045' – 1040'	200,000	640,000	27,000	100,000	146,000	1,113,000
1040' – 1035'	250,000	640,000	27,000	100,000	154,000	1,171,000
1035' – 1030'	300,000	640,000	27,000	100,000	162,000	1,229,000
1030' – 1025'	350,000	640,000	27,000	100,000	171,000	1,288,000
Below 1025'	350,000	720,000	30,000	100,000	275,000	1,475,000

UPPER BASIN DCP

- Continued weather modification (cloud seeding)
- Drought response operation of Upper Basin reservoirs
- Demand management investigation

Lake Powell



Adapted from Bureau of Reclamation

DROUGHT RESPONSE OPS

- Releases from upper reservoirs
- Maintain target elevation of 3,525 feet at Powell
- Maintain hydropower generation and meet Compact obligations

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ACTUAL DROUGHT RESPONSE OPS

- **2021** – Release of 161,000 acre feet
  - Emergency authority of Secretary of Interior
  - Flaming Gorge Res – 125,000 af
  - Blue Mesa – 36,000 af
- **2022** – Release of 500,000 acre feet
  - Agreement among the states and Interior
  - All from Flaming Gorge
- **2023** – More releases likely

DEMAND MANAGEMENT STORAGE

- Authorizes use of unfilled capacity in UB reservoirs
  - No charge
  - Not subject to balancing
  - 500,000 af max
- Provides for exploring DM program - doesn't create one

500+ PLAN FOR 2022 & 2023

- Parties: Interior, Arizona, CAWCD, Nevada, SNWA, Metropolitan WD
- Commitment to conserve 500,000 af/year
- Cost - $200 million
- Uncertain results

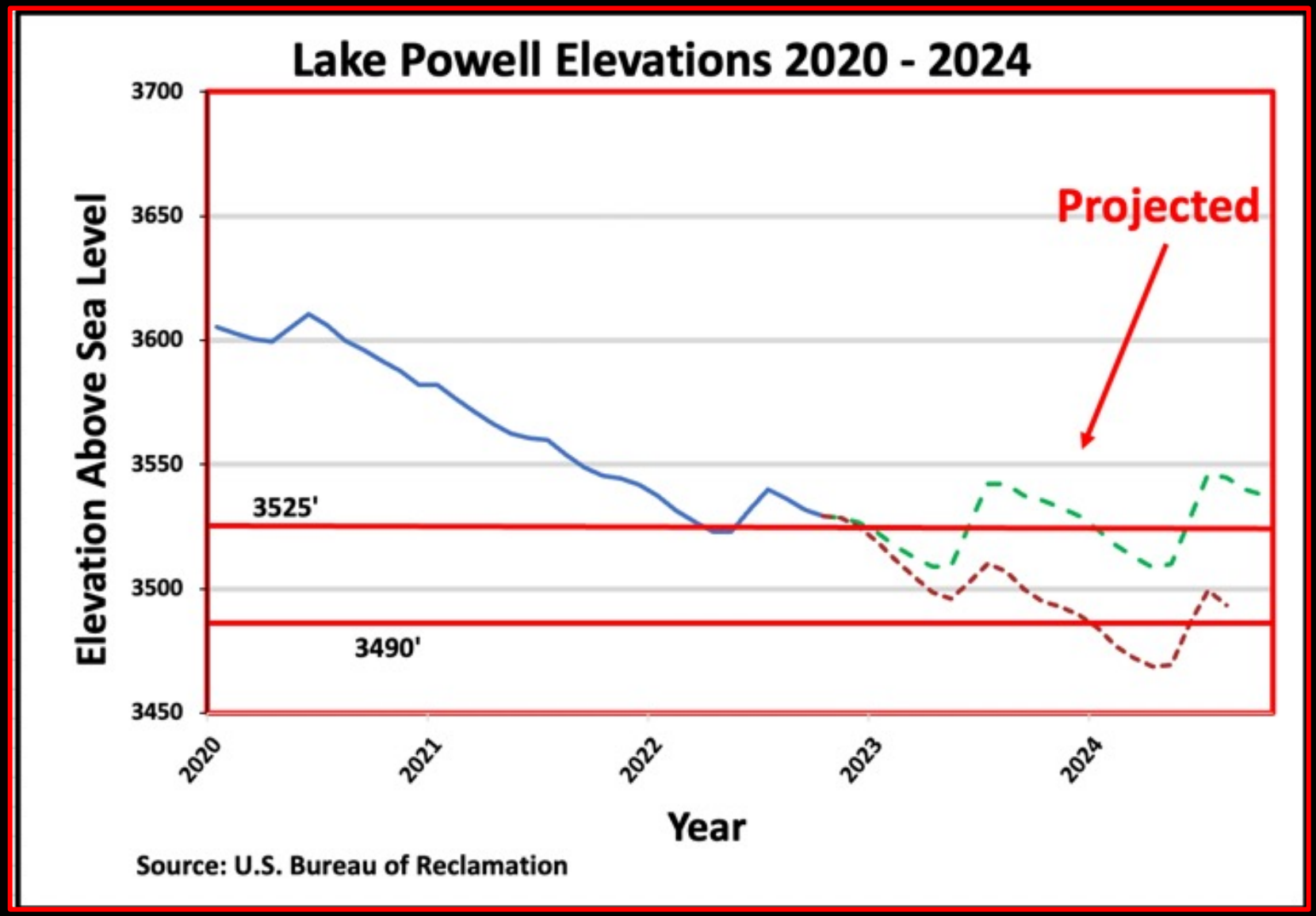
Law v. Nature

Natural Flow (2000-2021)		12.2 MAF
Outflows		14.2-16.0 MAF
UB use	3.5-4.0 MAF	
LB mainstem	7.0-7.5	
LB tributary uses	1.0-2.0	
LB evap & losses	1.2	
Mexico	1.5	
Deficit Balance		-2.0 - 3.8 MAF

TREACHEROUS WATERS AHEAD

- Despite all current actions, Lake Powell projected to drop further
- Math problem – demand exceeds supply
- Problem - how to allocate the reduction?

LAKE POWELL PROJECTED LEVELS



HYDROPOWER GENERATION

- Significant role in reducing fossil fuel reliance
- Backs up wind and solar power

- Power production has declined precipitously
  - Hoover Dam – down by 25%
  - Glen Canyon Dam – down by 47%

COMMISSIONER'S DIRECTIVE

- June 14, 2022 – Hearing of Senate Energy and Natural Resource Committee
- Basin states need to cut 2 – 4 million acre feet of water usage in 2023
- Interior has authority to act unilaterally to protect the system

STATUS TODAY

Lake Powell - 3530 ft

Lake Mead - 1045 ft

- Reclamation's projections for 2024
  - Lake Powell < 3470 ft
  - Lake Mead < 1000 ft

ACTION ??

- No 7-state agreement
- No plan from Lower Basin
  - But Lower Basin states agree they bear the bulk of the responsibility
  - California proposal to cut 400,000 af
- Upper Basin 5-point plan
  - No additional conservation committed
  - Difficult without knowing Lower Basin plans
- Municipal conservation commitments
- No mandates from Interior

INTERIOR CONSIDERING – UPPER BASIN

- Reduction of release from Glen Canyon below 7.0 MAF
- Physical modification to Glen Canyon Dam to allow releases below dead pool
- More drought response operations
- Investments in system conservation and voluntary agreements

INTERIOR CONSIDERING – LOWER BASIN

- RFP for voluntary conservation
- Address evaporation, seepage & other losses
- Define Mead operations below 1025 ft
- Ensure maximum beneficial use
- Physical modification to Hoover Dam to allow releases below dead pool

WHAT HAPPENS NOW?

- Further state agreement and actions?
- Possible federal actions
- Lots of suggestions

EQUITABLY ALLOCATING THE BURDEN OF REDUCED USE

- Compact allocations
- Municipal and ag
- Existing uses and economies
- Tribal rights, values, and access
- Environment

Challenges

- No one basin, state, or sector can full address the deficit
- We don’t have much time
- Reservoirs provide a buffer against volatility – but not if they’re empty!

Significant Positive Trends

- Recognition of limits and climate change
- Voluntary reductions in demand, reacting to hydrology
- Evolution from zero tribal involvement to substantial inclusion

Last Takeaways

- We don’t need to amend the Compact
- A basin-wide agreement is critical
- Everyone needs to claim victory