

The Colorado River Compacts, Continuing Drought, & Potential Impacts to Wyoming

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Presentation Outline

- The Colorado River Compacts (Law of the River)
 - 1922 Compact
 - 1944 Mexico Treaty
 - 1948 Compact
 - 1956 CRSPA
- Continuing Drought
 - Drought Response Actions
 - Federal 2 to 4 million acre-foot announcement
 - Upper Basin Plan, Drought Funding, and Potential Future Actions
- Potential Impacts to Wyoming
 - Wyoming Water Uses
 - Curtailment Discussion Presentation

Colorado River System:

- Entire CO River Basin covers nearly 250,000 Square Miles.
- Provides water to seven U.S. States and two Mexican States.
- Supplies water to 40 million people and 5.5 million acres of irrigated lands.
- Served area has economic value of approx. \$1.4 trillion annually.
- Capacity to store four years of average annual flow.



The Colorado River Basin includes areas outside of the Basin beneficially served by System water: Cheyenne, Salt Lake City, Denver & Colorado Springs, Albuquerque and NM Rio Grande valley, Los Angeles & San Diego, Imperial & Coachella Valleys etc.



Interstate Water Allocation

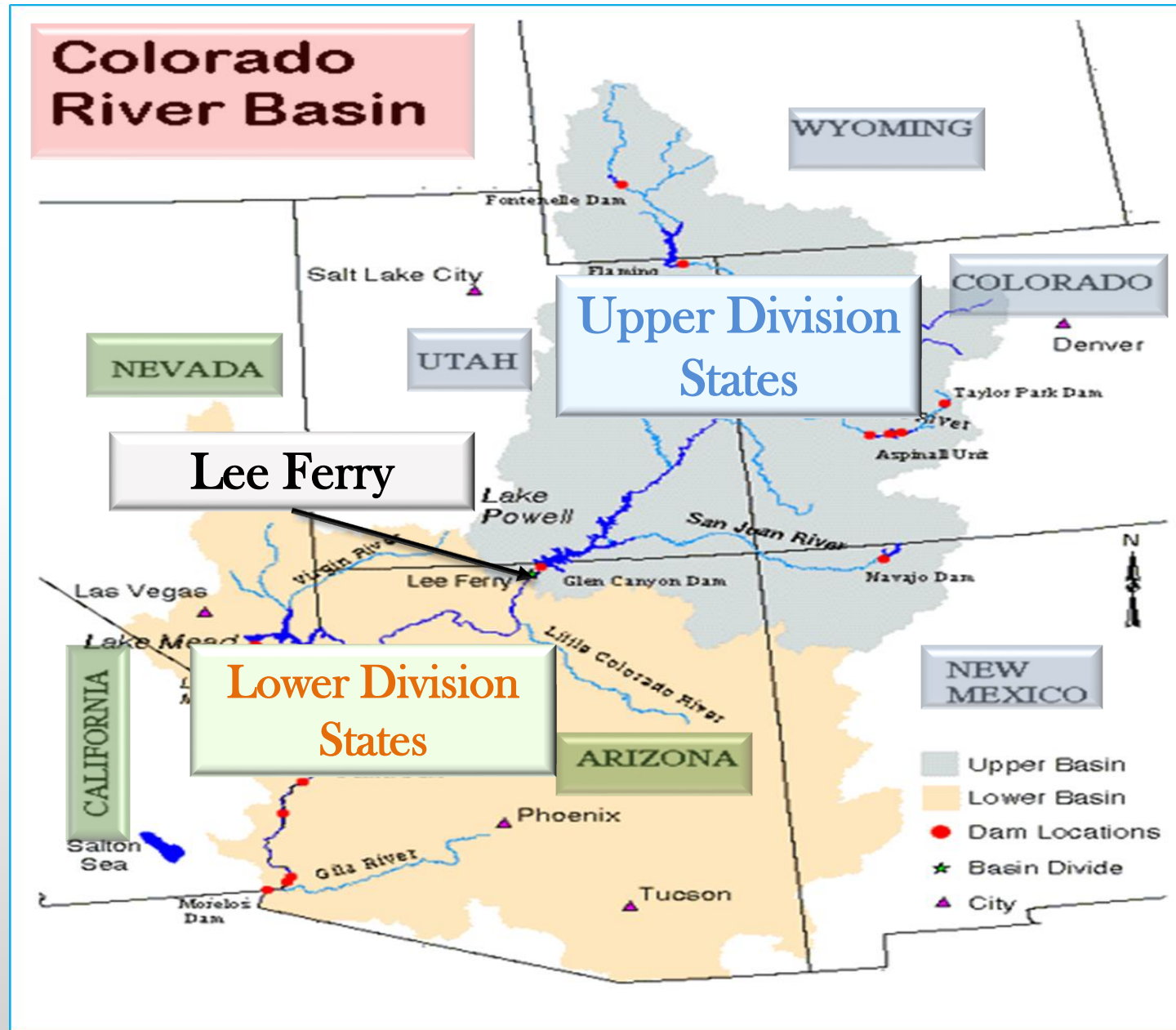
- Three mechanisms available for allocating interstate streams between states:
 - **U.S. Supreme Court Decisions** – A court decree allocating water between states based upon equitable considerations—equitable apportionment (Article III, § 2).
 - **Interstate Compacts** – An agreement between two or more states allocating use of water from interstate streams with the consent and approval of Congress (Article I, § 10).
 - **Congressional Action** – Congressional apportionment of water between states (Boulder Canyon Project Act of 1928).

Water Allocation: The Law of the River

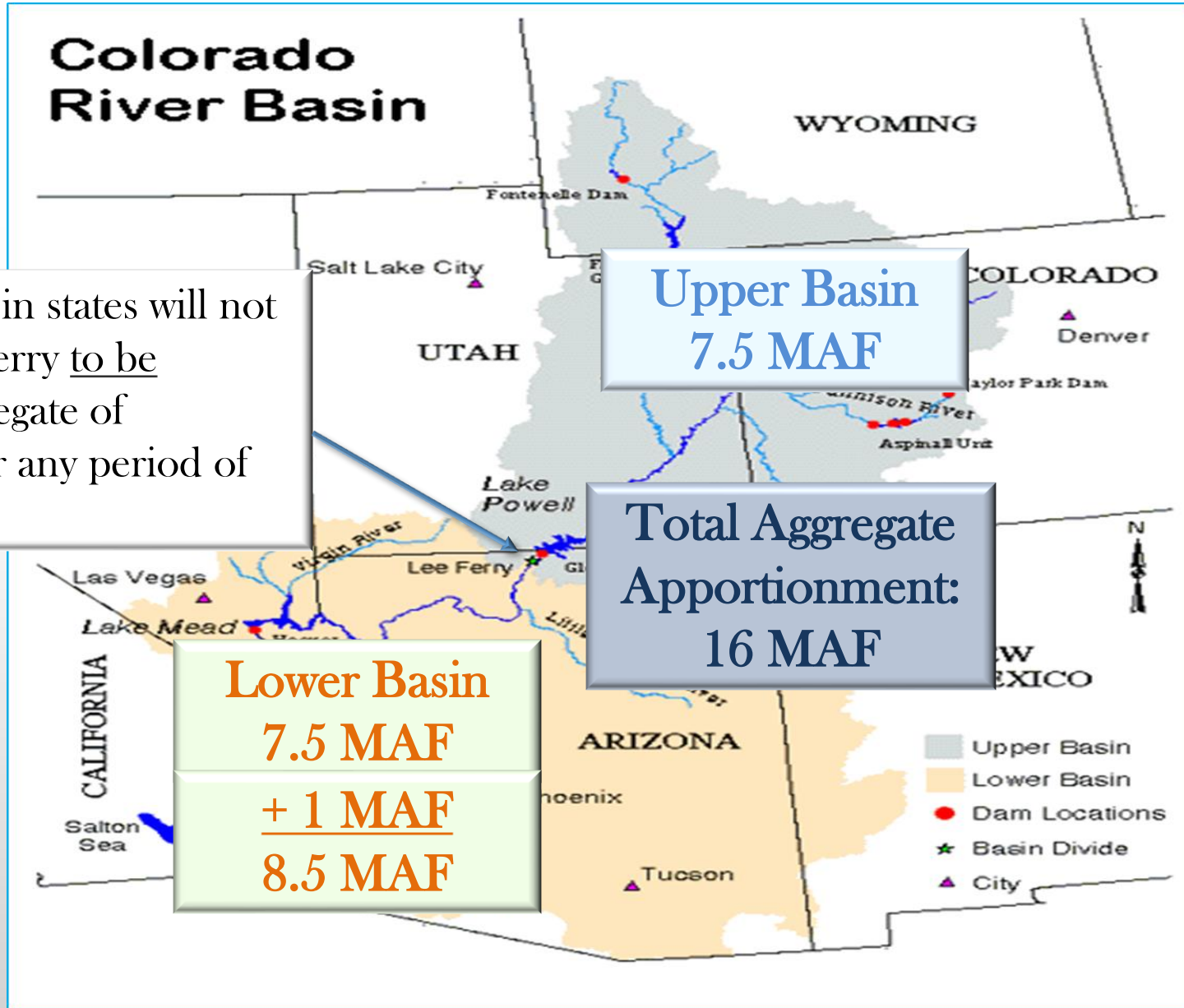
The Big Three

- Colorado River Compact, 1922
 - ✓ Apportions beneficial consumptive use between the Upper Basin and the Lower Basin.
- Mexican Water Treaty, 1944
 - ✓ Allocates Mexico a “*guaranteed annual quantity*” of 1.5 MAF
- The Upper Colorado River Basin Compact, 1948
 - ✓ Apportions beneficial consumptive use among the Upper Division States.

1922 Compact Divides the River



The 1922 Compact does not apportion water, it apportions the “exclusive beneficial consumptive use” of water.



Art. III (d) - Upper Basin states will not cause the flow at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years.

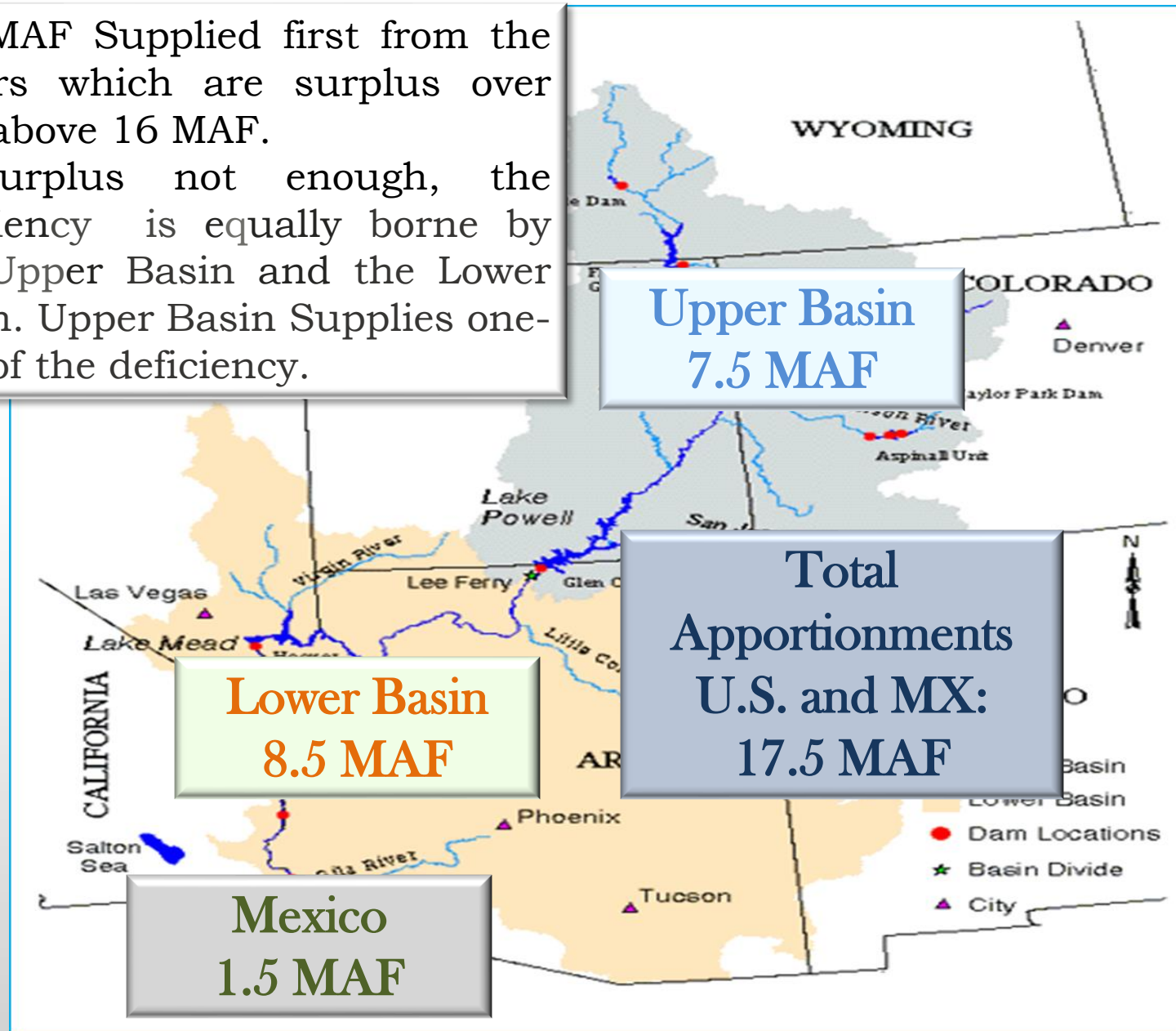
Upper Basin
7.5 MAF

Total Aggregate Apportionment:
16 MAF

Lower Basin
7.5 MAF
+ 1 MAF
8.5 MAF

Treaty with Mexico, 1944

- ✓ 1.5 MAF Supplied first from the waters which are surplus over and above 16 MAF.
- ✓ If surplus not enough, the deficiency is equally borne by the Upper Basin and the Lower Basin. Upper Basin Supplies one-half of the deficiency.

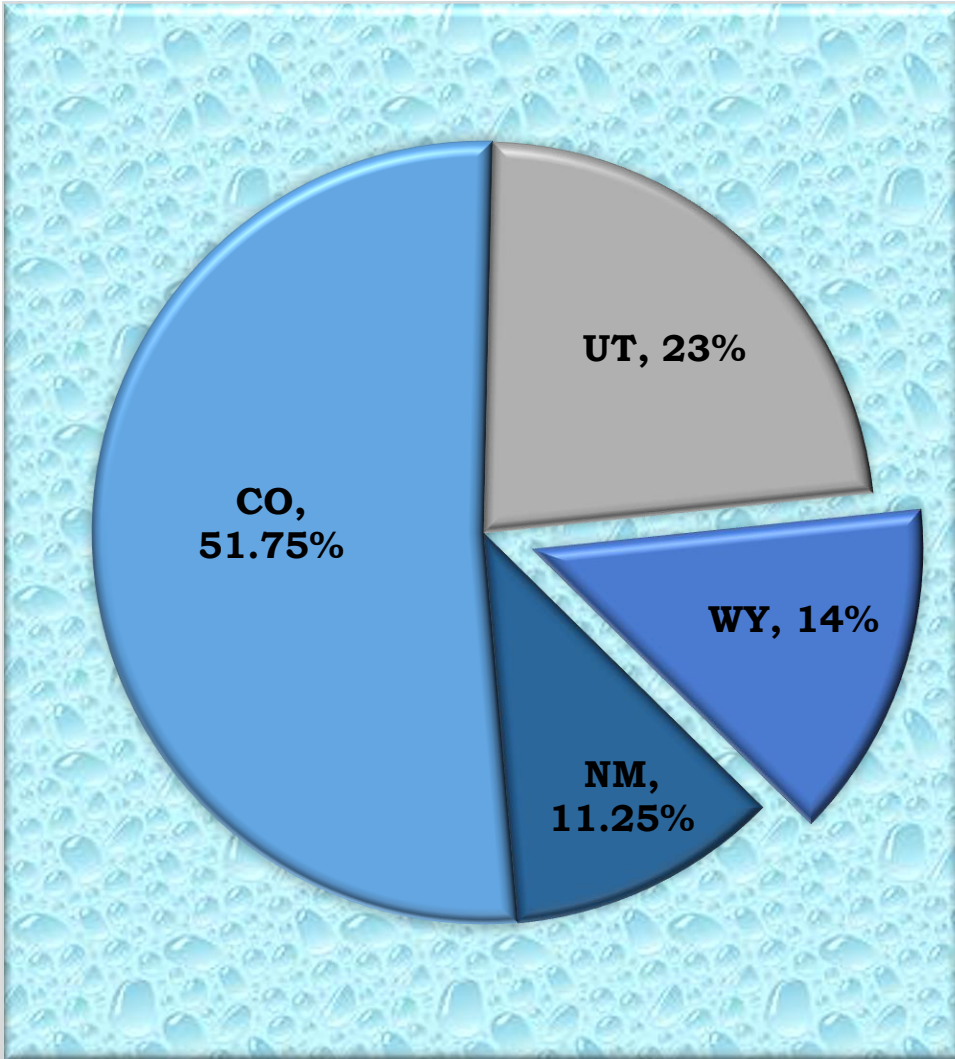


Upper Colorado River Basin Compact of 1948

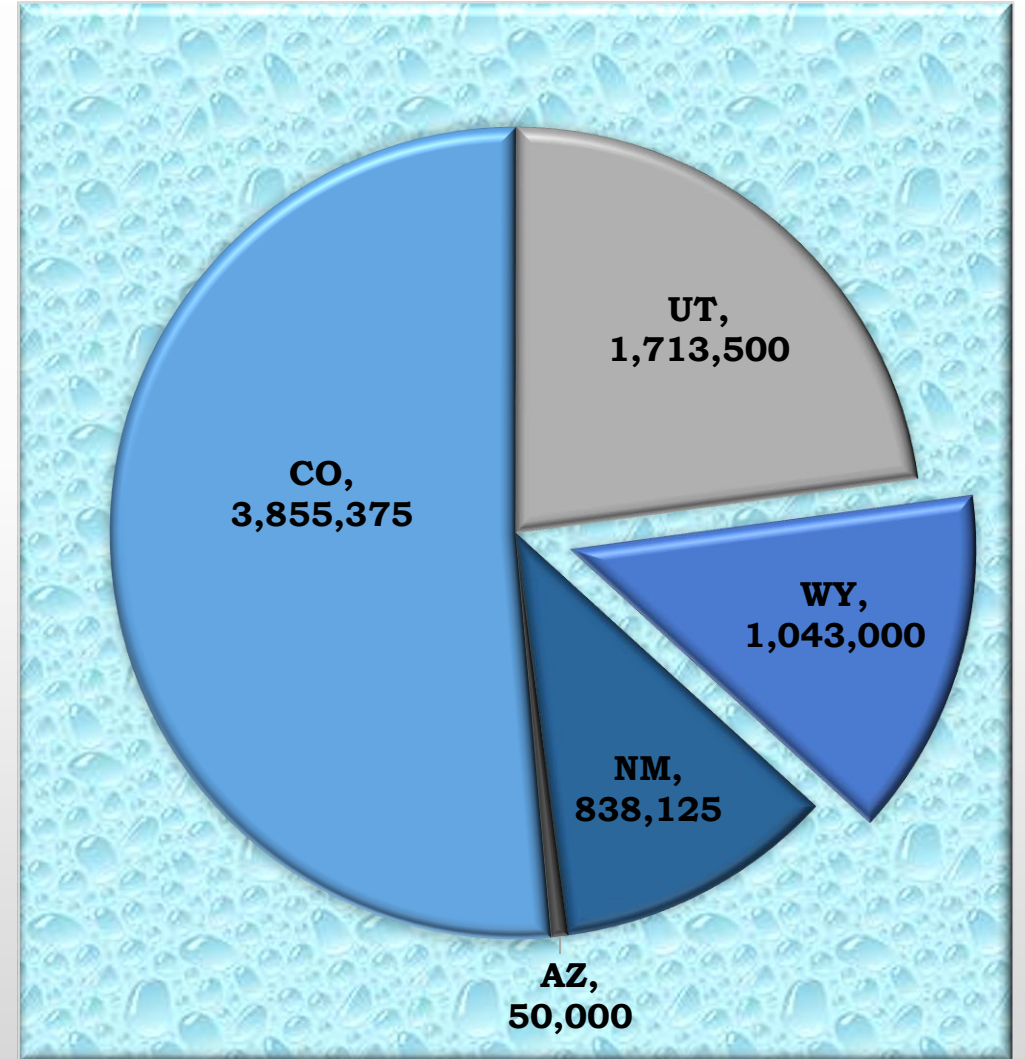


- Divides the Upper Basin's allocation between Arizona, Colorado, Utah, New Mexico, and Wyoming.
 - ✓ Apportions beneficial consumptive use of water.
- Establishes the *Upper Colorado River Commission* ("UCRC"). One commissioner from each of the Upper Division States and one commissioner representing the United States. Arizona is not represented.
- Contains provisions for possible curtailment of Colorado River water use.
 - ✓ "the extent of curtailment by each state shall be determined in such amounts and at such times as determined by the UCRC." (1948 Compact, Article IV).
 - ✓ Rights perfected prior to the 1922 Colorado River Compact are excluded.
- UCRC does NOT have authority to determine how curtailment of use will be implemented within an individual state. The State Engineer is responsible for implementing curtailment within Wyoming to maintain compact compliance: Priority regulation.

1948 Compact Percentage
Apportionment of Water Available for
Consumptive Use. (AZ: 50 kaf)



1948 Compact Apportionment of **Full Supply** of 7.5 Million Acre-feet

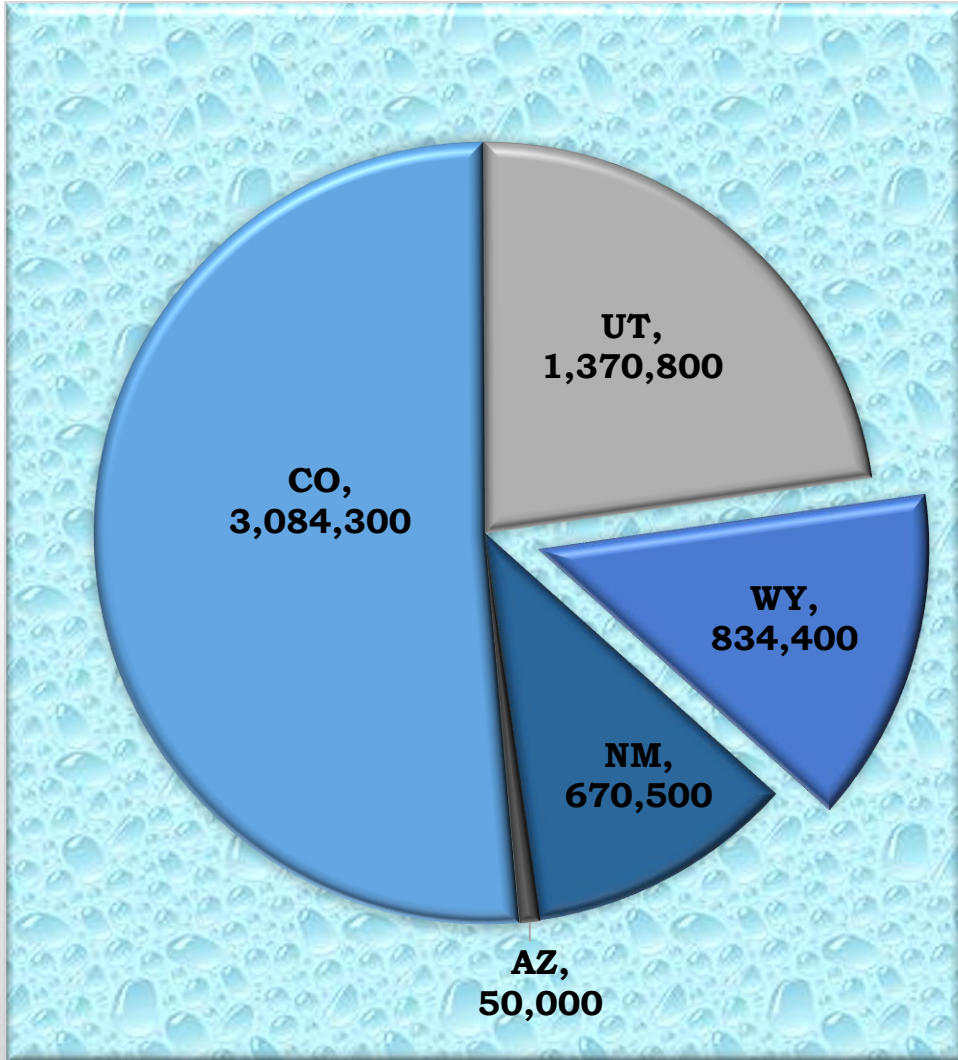


Current
Estimates:

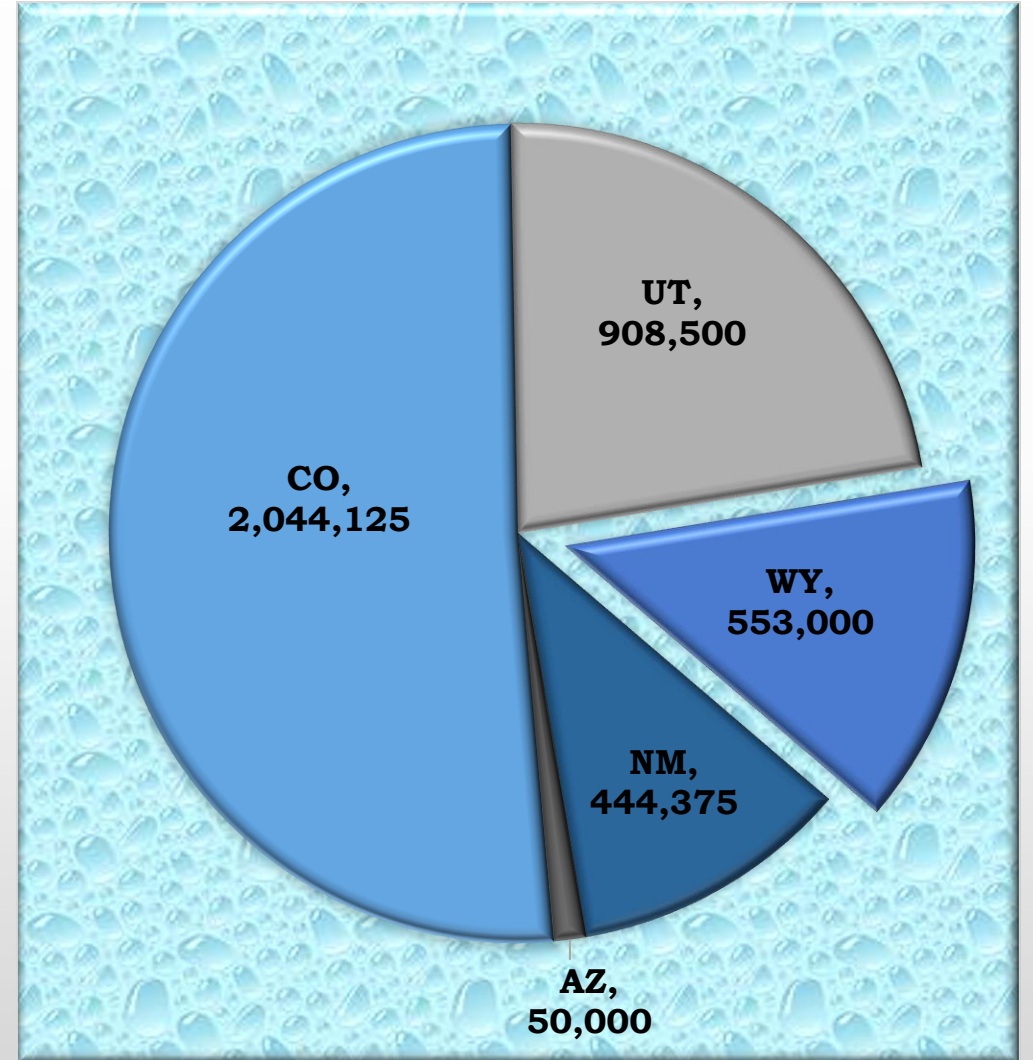
CO: 2,859,000
UT: 1,036,000
WY: 688,000
NM: 600,000

For consistency, current estimates are based upon the June 14, 2022, Updated 2016 Current and Future Depletion Demand Schedule.

1948 Compact Apportionment of **Less Supply** - 6.01 Million Acre-feet Available Supply



1948 Compact Apportionment of **Still Less Supply** - 4 Million Acre-feet Available Supply



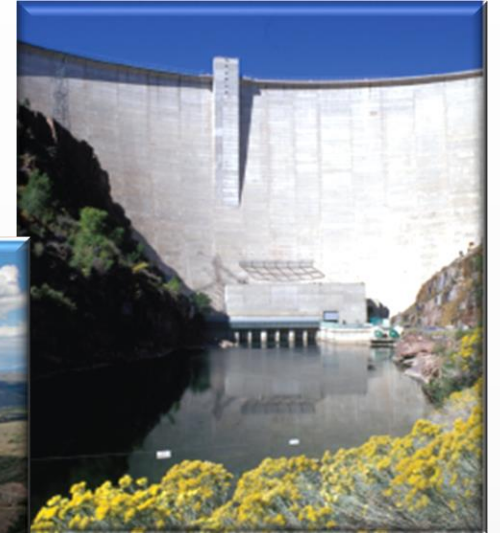
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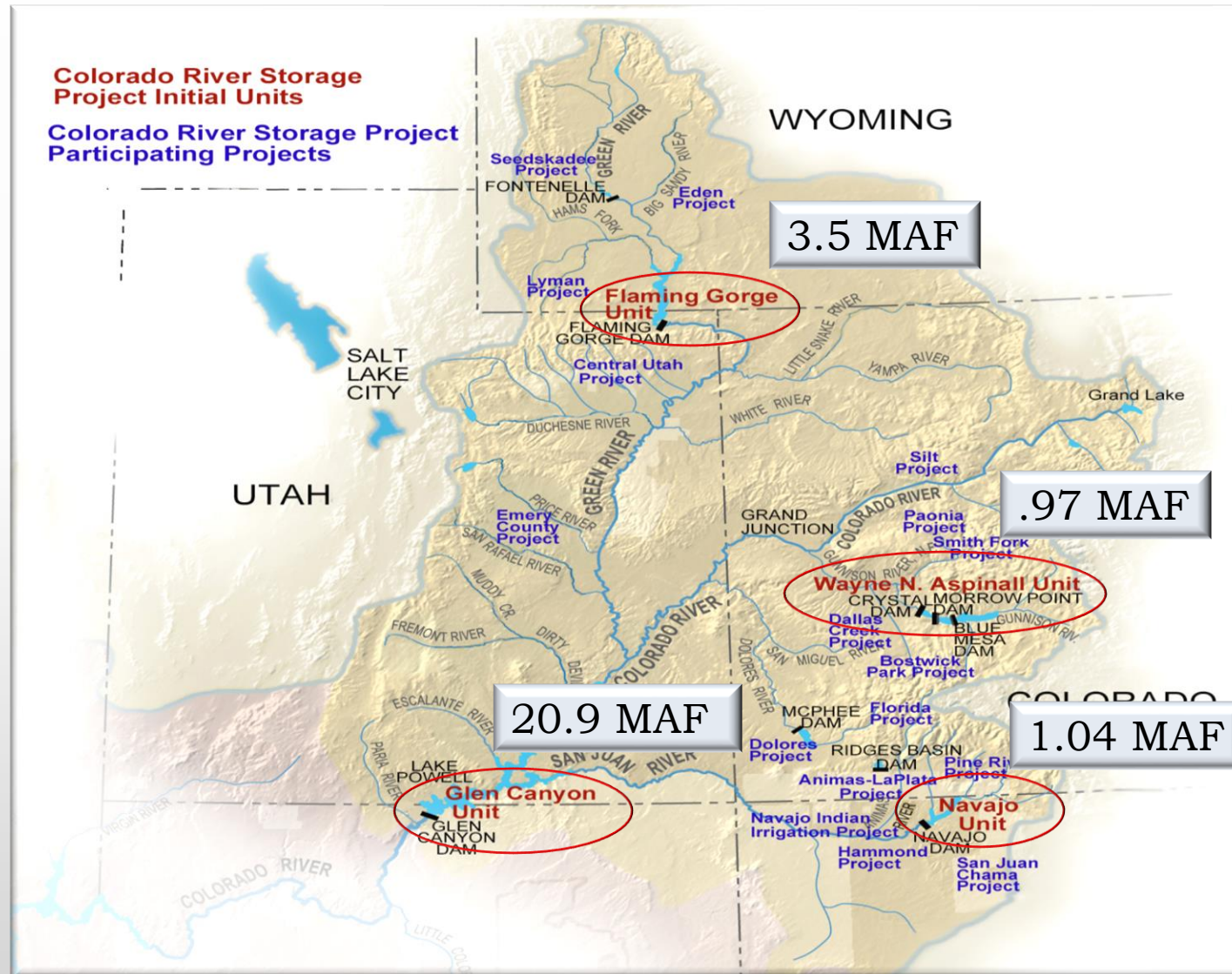
For consistency, current estimates are based upon the June 14, 2022, Updated 2016 Current and Future Depletion Demand Schedule.

Colorado River Storage Project Act of 1956 (CRSP)

- Provides storage to the Upper Basin and promotes Upper Basin development of its Colorado River allocation. Insurance for compact compliance reduces risk of curtailment.
- Authorized construction of the Initial Units: Glen Canyon Dam, which created Lake Powell, and Aspinall, Flaming Gorge, and Navajo.
- Authorized a number of other participating projects but not all were built. In Wyoming, Fontenelle (Seedskaadee), Eden and Lyman projects built.



CRSP Initial Units



Volumes are Active Capacity

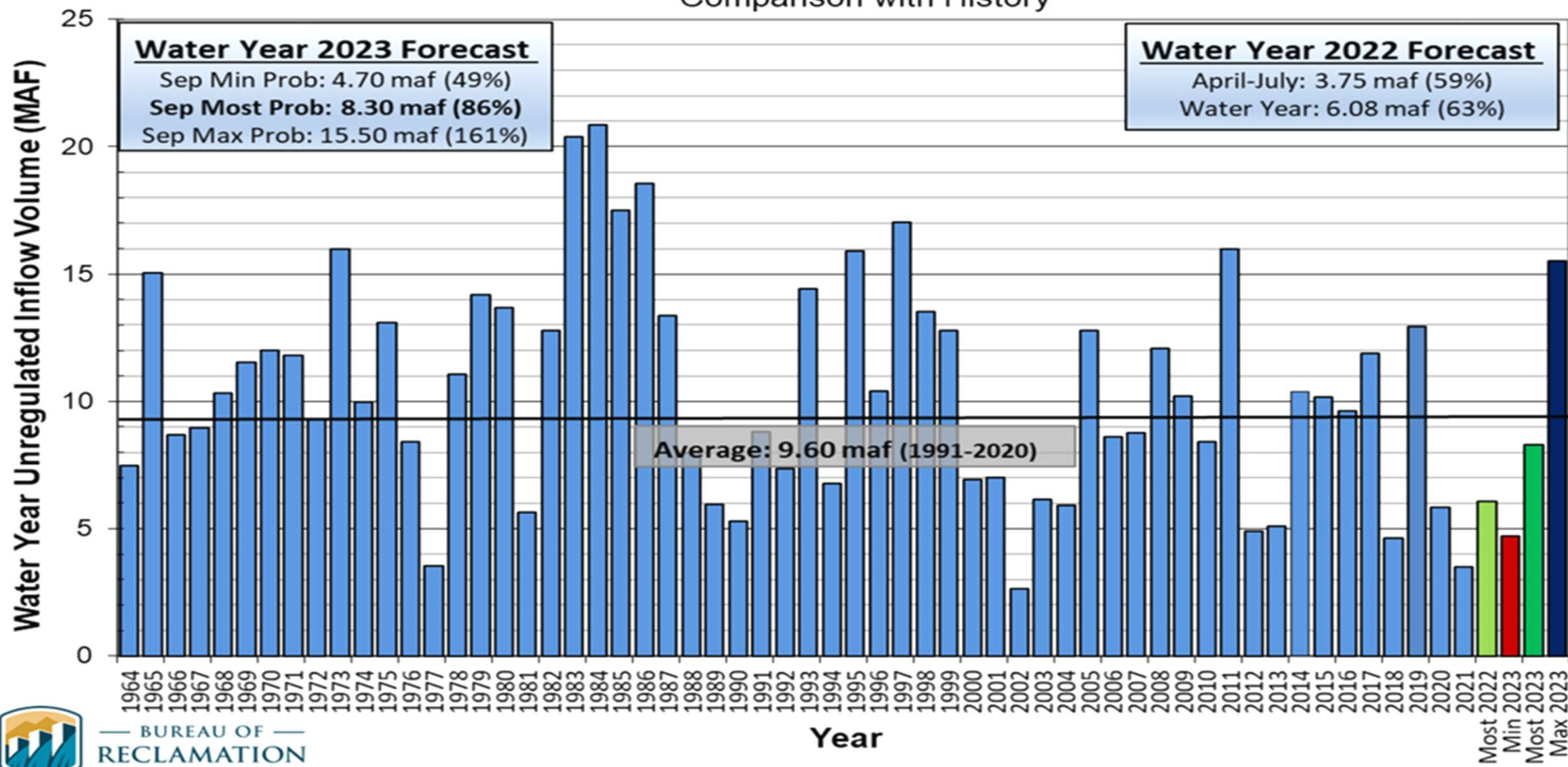
BOR Participating Projects in WY's Green River Basin

- Fontenelle Reservoir - 1/22/1962 Total 345,397 AF
- Meeks Cabin - 3/26/1935 Total 33,571 AF
- Stateline - 9/24/1962 Total 14,020 AF
- Eden No. 1 - 12/30/1905 Total 18,489 AF
- Big Sandy - 11/9/1906 Total 39,700 AF

Lake Powell Unregulated Inflow

Water Year 2022 and 2023 Forecast *(issued September 1)*

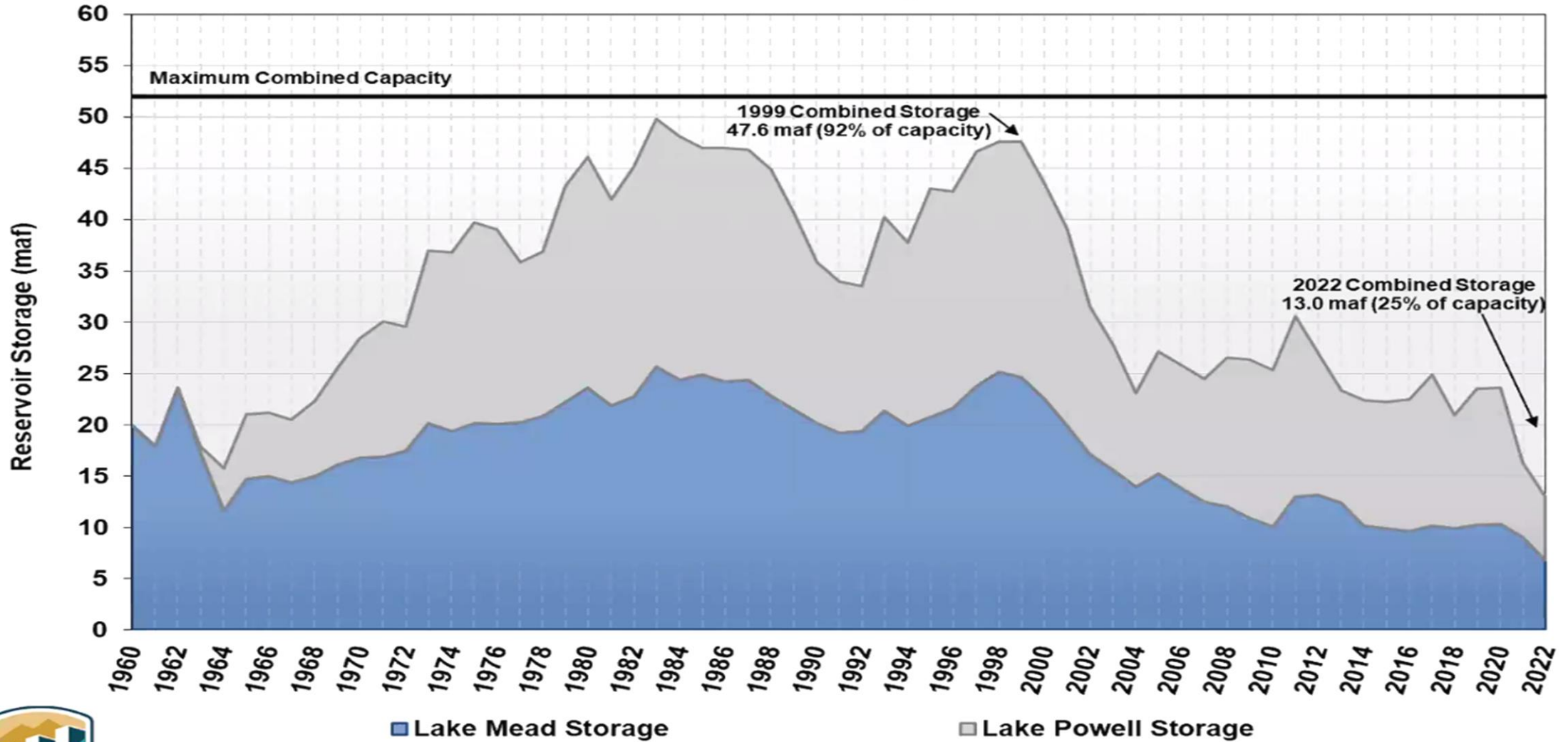
Comparison with History



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RECLAMATION

Lake Powell and Lake Mead End of Water Year Storage

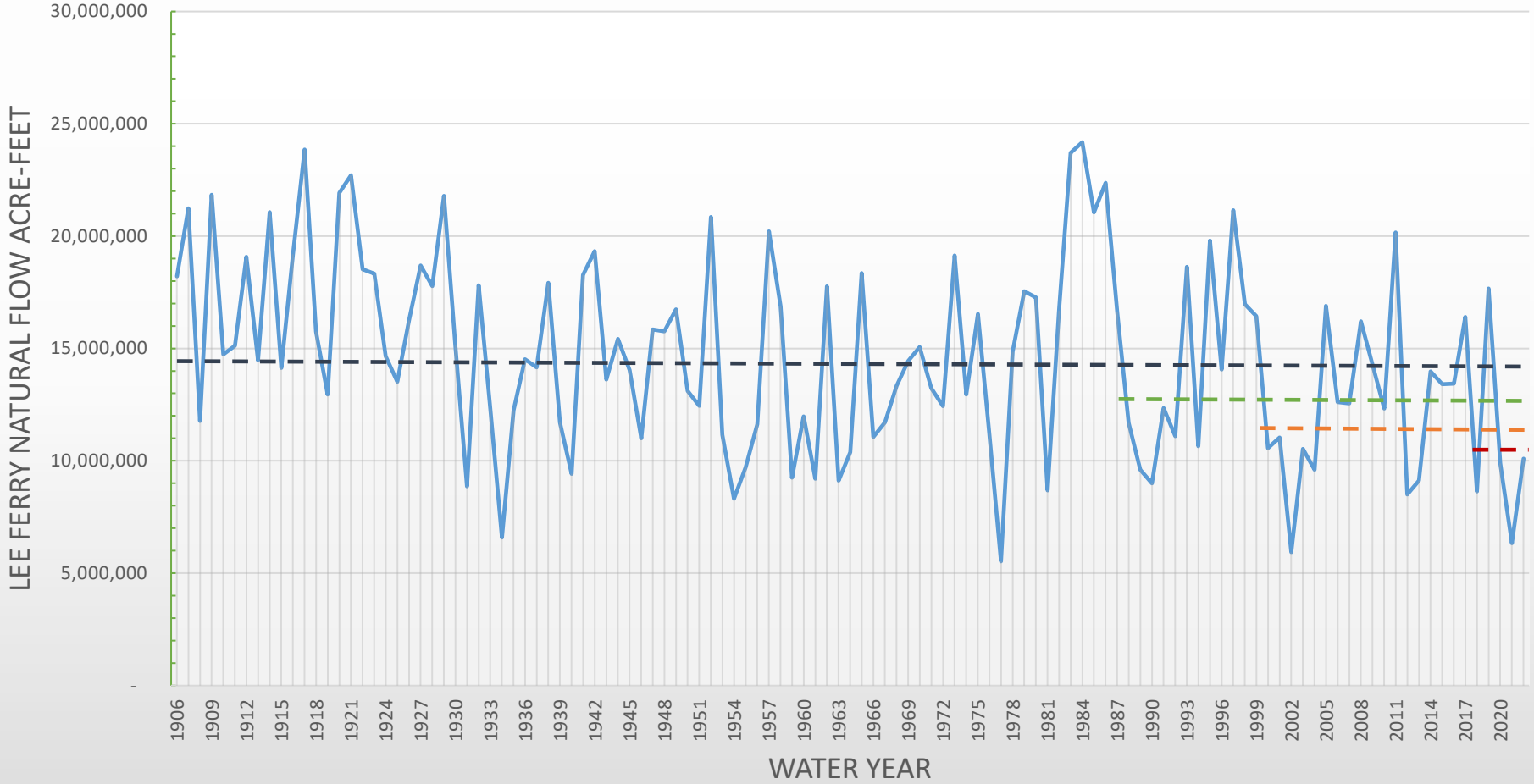
Water Years 1960 through 2022



* Projected end of water year 2022 storage based on the May 2022 24-Month Study



Lee Ferry Natural Flow



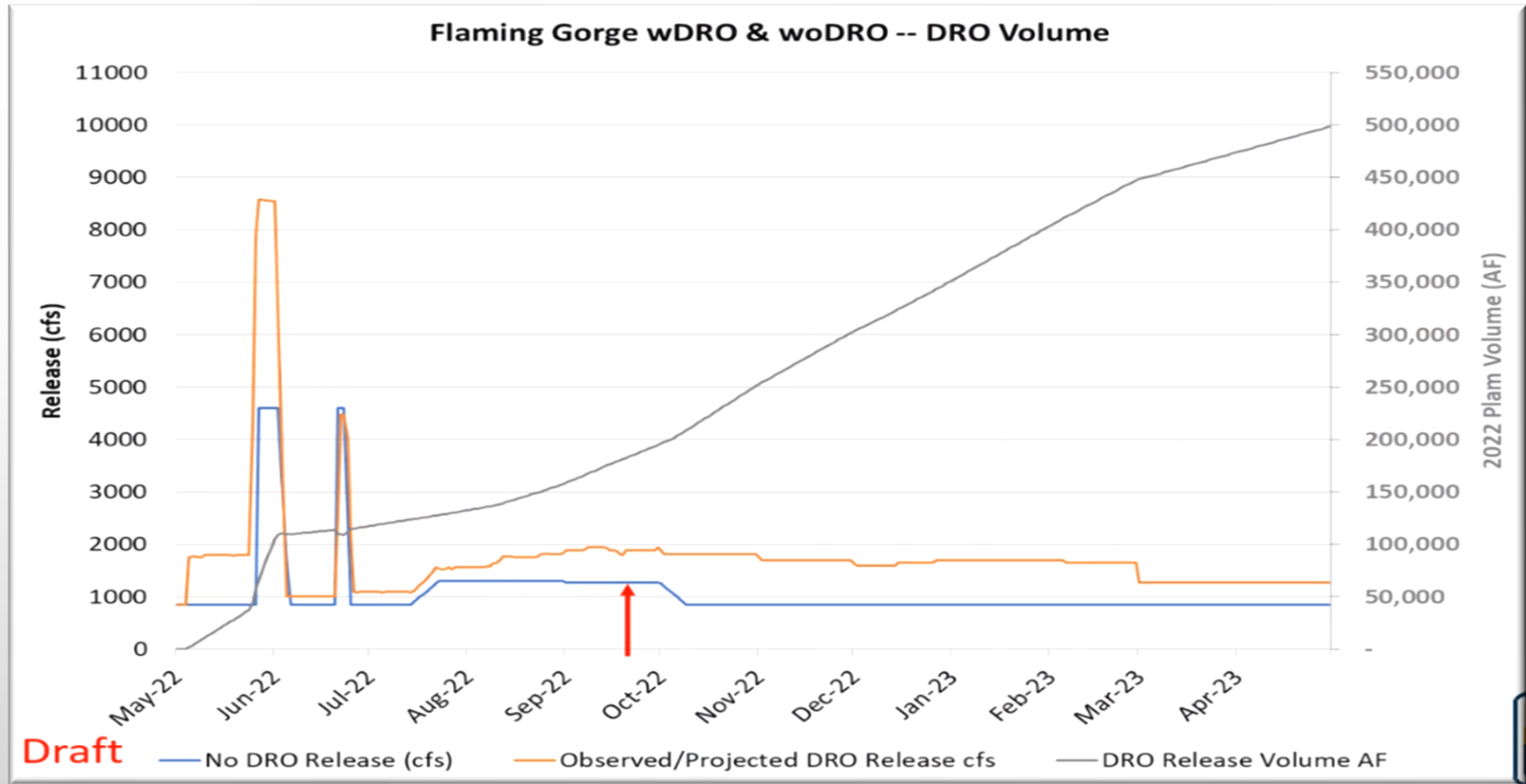
Upper Basin 2022 Drought Response Actions

- The Bureau of Reclamation announced on May 3, 2022, two separate urgent drought response actions to help prop up Lake Powell by nearly 1 million acre-feet (maf) of water from May 2022 through April 2023. To protect Lake Powell, more water will flow into Lake Powell from Flaming Gorge and less water will be released downstream:
 - ✓ Under a Drought Response Operations Plan adopted in 2022, approximately 500 thousand acre-feet (kaf) of water will come from Flaming Gorge Reservoir, located approximately 455 river miles upstream of Lake Powell.
 - ✓ Another 480 kaf was left in Lake Powell by reducing Glen Canyon Dam's annual release volume from 7.48 maf to 7.00 maf, in accordance with Sections 6 and 7.D of the 2007 Interim Guidelines.
 - 2022 inflows were only 6.08 maf

Drought Response Operations Agreement (DROA)

- Part of the 2019 Upper Basin Drought Contingency Plan
- Goals are to minimize the risk of Lake Powell falling below the target elevation of 3,525' and thereby:
 - Help ensure Compact compliance and continued Upper Basin water use and development
 - Maintain ability to generate hydropower at Glen Canyon Dam
 - Minimize adverse effects to resources and infrastructure in the Upper Basin
- Provides a process to develop Drought Response Operations Plans to make operational adjustments at Lake Powell or releases from upstream CRSP Initial Unit reservoirs to protect the target elevation

Flaming Gorge Releases and Projections



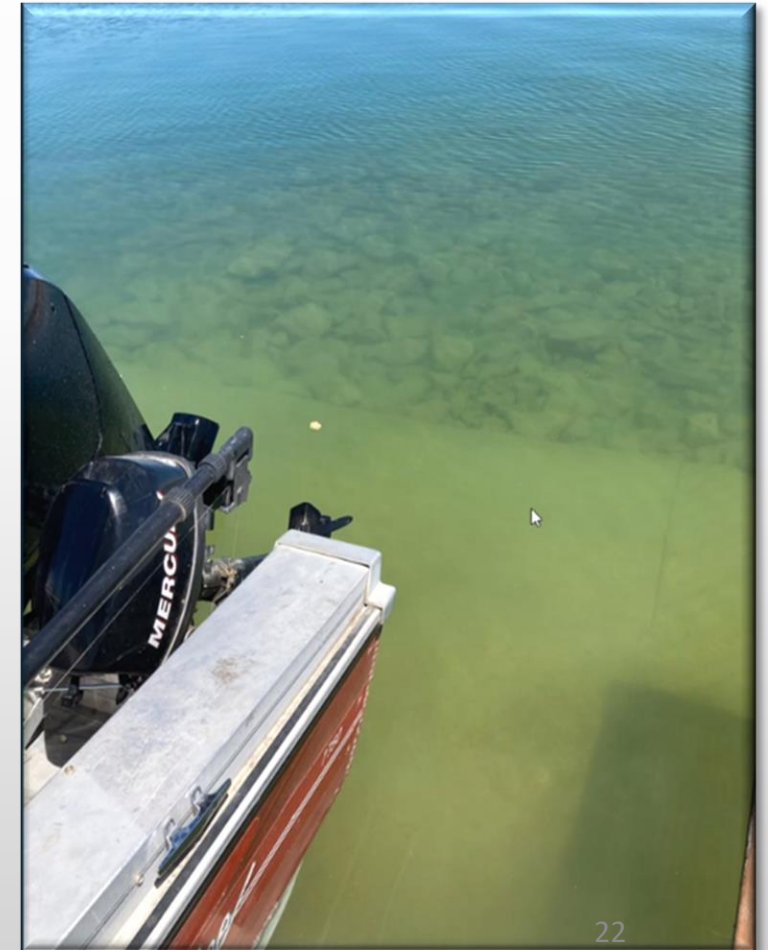
Flaming Gorge Elevations: Sept. Projections

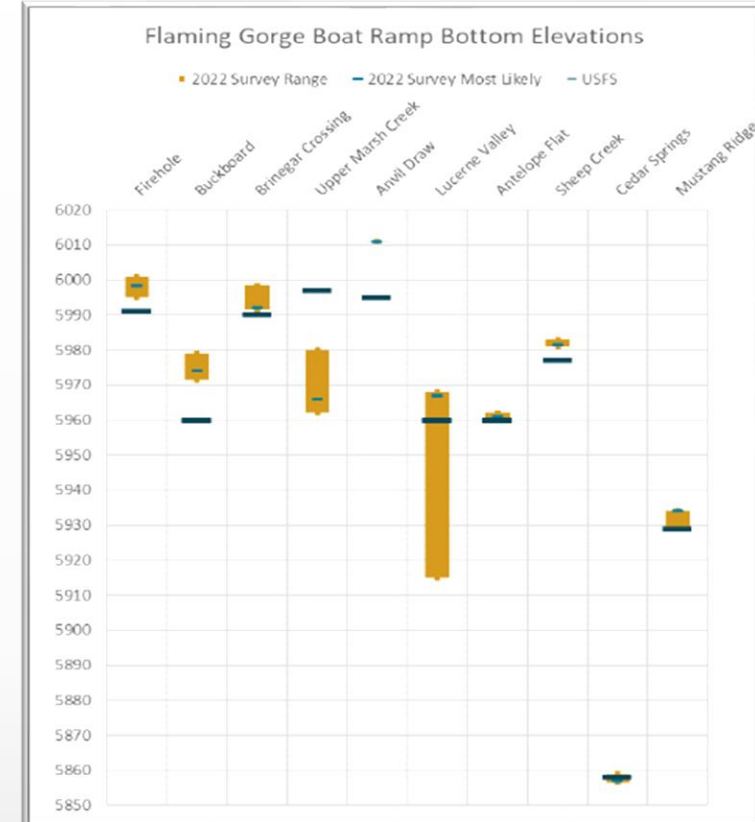
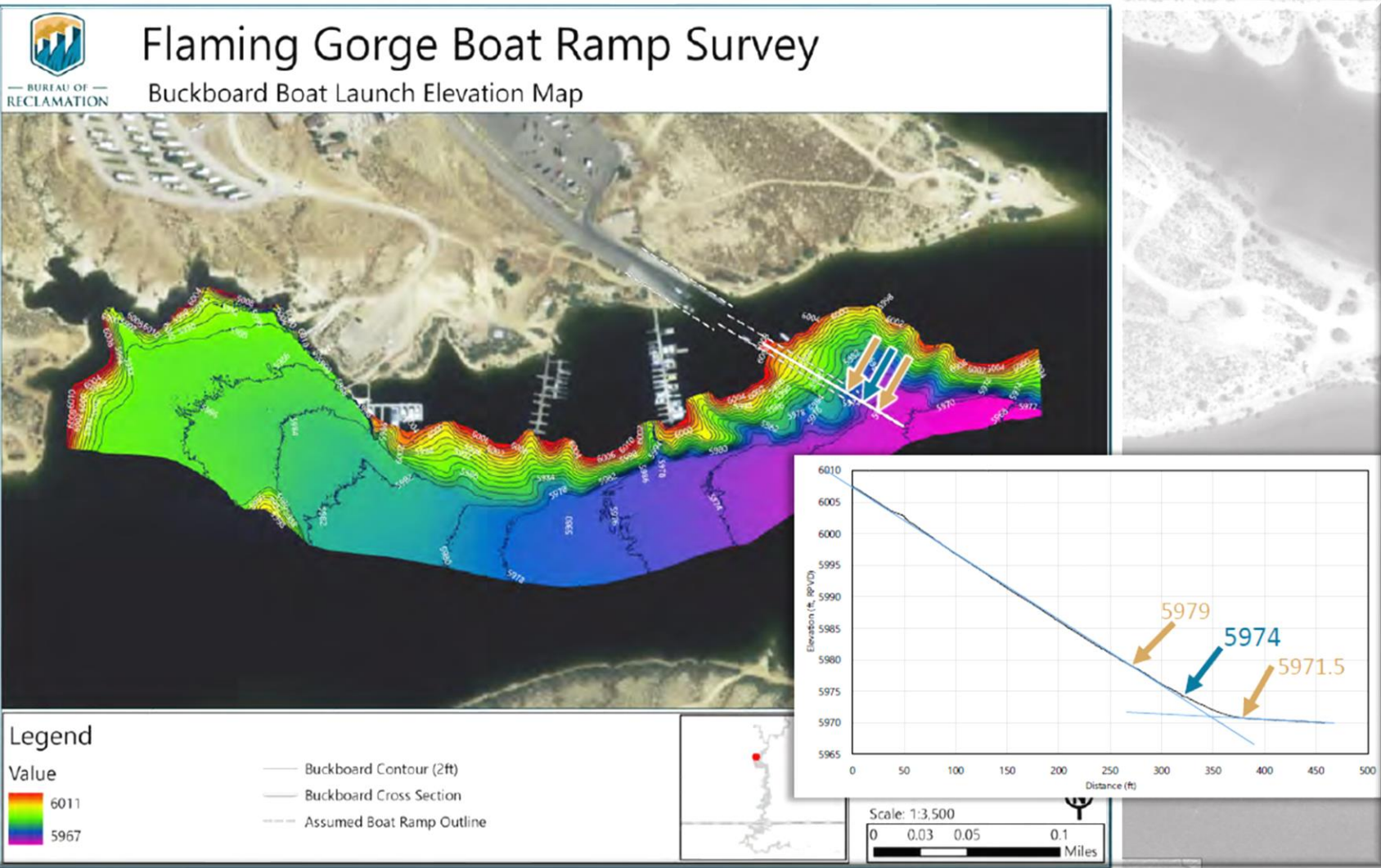
BOR has secured funding for a Bathymetric Survey to determine elevations of recreational facilities.

- Study was conducted late-June through early-July
- Final results anticipated in October, 2022

	Flaming Gorge Elevation Without DRO From 2022 DRO Plan	Flaming Gorge Elevation With DRO From 2022 DRO Plan	Flaming Gorge Elevation With DRO From Sept. 2022 (Most Probable)
May-22	6019.69	6017.23	6015.77
Jun-22	6020.03	6015.53	6015.25
Jul-22	6020.12	6015.10	6016.09
Aug-22	6020.22	6013.69	6014.73
Sep-22	6020.06	6012.07	6012.90
Oct-22	6020.11	6010.94	6011.43
Nov-22	6020.53	6010.28	6010.29
Dec-22	6020.85	6009.44	6009.03
Jan-23	6021.40	6008.73	6007.79
Feb-23	6022.05	6008.22	6006.89
Mar-23	6023.33	6008.32	6007.60
Apr-23	6024.77	6009.33	6008.31
April 2023 Minimum Probable: 6004.85]			

Anvil Draw Boat Ramp: WY
June 7, 2022
Historic Data Indicated 5,995'





Boat Ramp	USFS Elevation (ft, RPVD)	2022 Survey (ft, RPVD)		
		Low	High	Likely
Firehole	5991	5995.0	6001.0	5998.5
Buckboard	5960	5971.5	5979.0	5974.0
Brinegar Crossing	5990	5991.5	5998.5	5992.0
Upper Marsh Creek	5997	5962.0	5980.0	5966.0
Anvil Draw	5995	6011.0	6011.0	6011.0
Lucerne Valley	5960	5915.0	5968.0	5967.0
Antelope Flat	5960	5960.0	5962.0	5961.0
Sheep Creek	5977	5981.0	5983.0	5981.5
Cedar Springs	5858	5856.5	5859.0	5857.0
Mustang Ridge	5929	5929.5	5934.0	5934.0

9.25.2022 Flaming Gorge Elevation ~ 6,013' or ~ 2,688,600 AF
Elevation 5,974' equals ~ 1,637,000 AF

BOR Commissioner Touton

Senate ENR Committee, June 14th

- Between 2 and 4 million acre-feet of additional conservation is needed just to protect critical levels in 2023
- More conservation and demand management are needed in addition to the actions already underway
 - In addition to 2022 DROA, LBDCP, LB 07 GL Shortages, LB 500+
- BOR is pursuing a path of partnership, but BOR asserted it has the authority to act unilaterally to protect the system
- BOR wanted an agreed upon plan in place before the August 24-month Study (August 16th)
- Assistant Secretary Trujillo on June 16th: We need to be taking action in all states, in all sectors, in all available ways. It's up to states to decide how to make the water cuts and she said Interior didn't have a formula for appropriate conservation measures

Upper Basin 5-Point Plan: July 18

1. Seek reauthorization of the federal System Conservation Pilot Project legislation and seek funding to support the program in the Upper Basin.
 - Intent is to reactivate the program in the Upper Basin in 2023.
2. Commence early development of a 2023 Drought Response Operations Plan in August 2022 with finalization in April 2023.
 - A 2023 Plan must be effective, and benefits provided to Glen Canyon Dam facilities and operations must be preserved.
3. Consider an Upper Basin Demand Management program as interstate and intrastate investigations are completed.
4. Implement the Bipartisan Infrastructure Law for Upper Basin Drought Contingency Plan funding to accelerate enhanced measurement, monitoring, and reporting infrastructure to improve water management tools across Upper Division States.
5. Continue aggressive water management and administration within the available annual water supply in the Upper Division States.

Colorado River Drought Funding: BIL

1. Bipartisan Infrastructure Law (BIL): \$8.3 billion to address western water and drought challenges (17 western states).
 - \$50 Million is dedicated to the Upper Basin DCP. Current funding sought for:
 - Field scale water budget studies (potentially 3 in Wyoming)
 - Stream gages
 - Diversion measurement/reporting
 - Eddy Covariance Tower and weather station installation and operation to support consumptive use estimates
 - The goal is to begin deploying new infrastructure and standing up appropriate studies in April 2023.

Colorado River Drought Funding: IRA

2. Inflation Reduction Act (IRA): \$4 Billion total with priority given to the Colorado River Basin and other basins experiencing comparable levels of long-term drought.
 - Compensation for a temporary or multiyear voluntary reduction in diversion of water or consumptive water use.
 - Voluntary system conservation projects that achieve verifiable reductions in use of or demand for water supplies or provide environmental benefits in the Lower Basin or Upper Basin of the Colorado River.
 - Ecosystem and habitat restoration projects to address issues directly caused by drought in a river basin or inland water body.

Interior/Bureau of Reclamation Actions

- Interior continues to seek consensus for voluntary measures and to ensure all communities that rely on the Colorado River will provide contributions toward the solutions.
 - Ensure Lower Basin states continue to work on developing voluntary measures and agreements to conserve water and finalizing those agreements as soon as possible.
 - Working with the Upper Basin states to support their five-point plan.
 - Making investments in drought resilience and water management from federal funding:
 - ✓ Focus on investments needed to improve the efficiency of water delivery systems that result in conservation and, ultimately, in reduced demands on the Colorado River.
 - ✓ Interior will establish a two-step process to solicit: 1) short-term conservation contributions and 2) longer-term durable system efficiency projects.
 - Longer-term projects could include: canal lining, re-regulating reservoirs, ornamental and non-functional turf removal, salinity projects and other infrastructure or “on the ground” activities, aquatic ecosystem restoration and impacts mitigation, crop water efficiency, rotational fallowing, and marginal land idling.
- Listening Session for Stakeholders regarding IRA: Friday, September 30, at 11:00 am Mountain Time.
<https://www.usbr.gov/inflation-reduction-act/> or join by phone: 1-202-640-1187 passcode, 421 272 164 #

Interior/Bureau of Reclamation Actions

- Interior is also preparing for administrative actions to reduce water consumption across the Basin:
 - Initiating an administrative process to address operational realities under the current 2007 Interim Guidelines.
 - Administrative actions needed to authorize a reduction of Glen Canyon Dam releases below seven million acre-feet per year, if needed, to protect critical infrastructure at Glen Canyon Dam.
 - Preparing to manage elevations in Lake Powell by implementing emergency drought operations.
 - Preparing to make additional reductions in 2023, as needed, through an administrative process to evaluate and adjust triggering elevations and/or increase reduction volumes identified in the 2007 Interim Guidelines.
 - Accelerating ongoing maintenance actions and studies of the bypass tubes at Glen Canyon Dam to analyze the feasibility of possible modifications to increase water delivery capacity during low reservoir levels.
 - Ensuring that water use determinations for the Lower Basin satisfy appropriate beneficial use standards during this time of historically low reservoirs, including taking into consideration fundamental human health and safety requirements.
 - Assessing how to account for and allocate system losses due to evaporation, seepage, and other losses.
- Begin developing new guidelines for Colorado River System operations, focusing on alternatives that can sustain the System and provide reliable, sustainable and equitable water and power supplies in the future.

2007 Interim Guidelines, Minute 323, Lower Basin Drought Contingency Plan, and Binational Water Scarcity Contingency Plan

Total Volumes (kaf)

Lake Mead Elevation (feet msl)	2007 Interim Guidelines Shortages		Minute 323 Delivery Reductions	Total Combined Reductions	DCP Water Savings Contributions			Binational Water Scarcity Contingency Plan Savings	Combined Volumes by Country <i>US: (2007 Interim Guidelines Shortages + DCP Contributions)</i> <i>Mexico: (Minute 323 Delivery Reductions + Binational Water Scarcity Contingency Plan Savings)</i>					Total Combined Volumes
	AZ	NV	Mexico	<i>Lower Basin States + Mexico</i>	AZ	NV	CA	Mexico	<i>AZ Total</i>	<i>NV Total</i>	<i>CA Total</i>	<i>Lower Basin States Total</i>	<i>Mexico Total</i>	<i>Lower Basin States + Mexico</i>
1,090 - 1,075	0	0	0	0	192	8	0	41	192	8	0	200	41	241
1,075 - 1050	320	13	50	383	192	8	0	30	512	21	0	533	80	613
1,050 - 1,045	400	17	70	487	192	8	0	34	592	25	0	617	104	721
1,045 - 1,040	400	17	70	487	240	10	200	76	640	27	200	867	146	1,013
1,040 - 1,035	400	17	70	487	240	10	250	84	640	27	250	917	154	1,071
1,035 - 1,030	400	17	70	487	240	10	300	92	640	27	300	967	162	1,129
1,030 - 1,025	400	17	70	487	240	10	350	101	640	27	350	1,017	171	1,188
<1,025	480	20	125	625	240	10	350	150	720	30	350	1,100	275	1,375

➔
2022 Reductions + Contributions

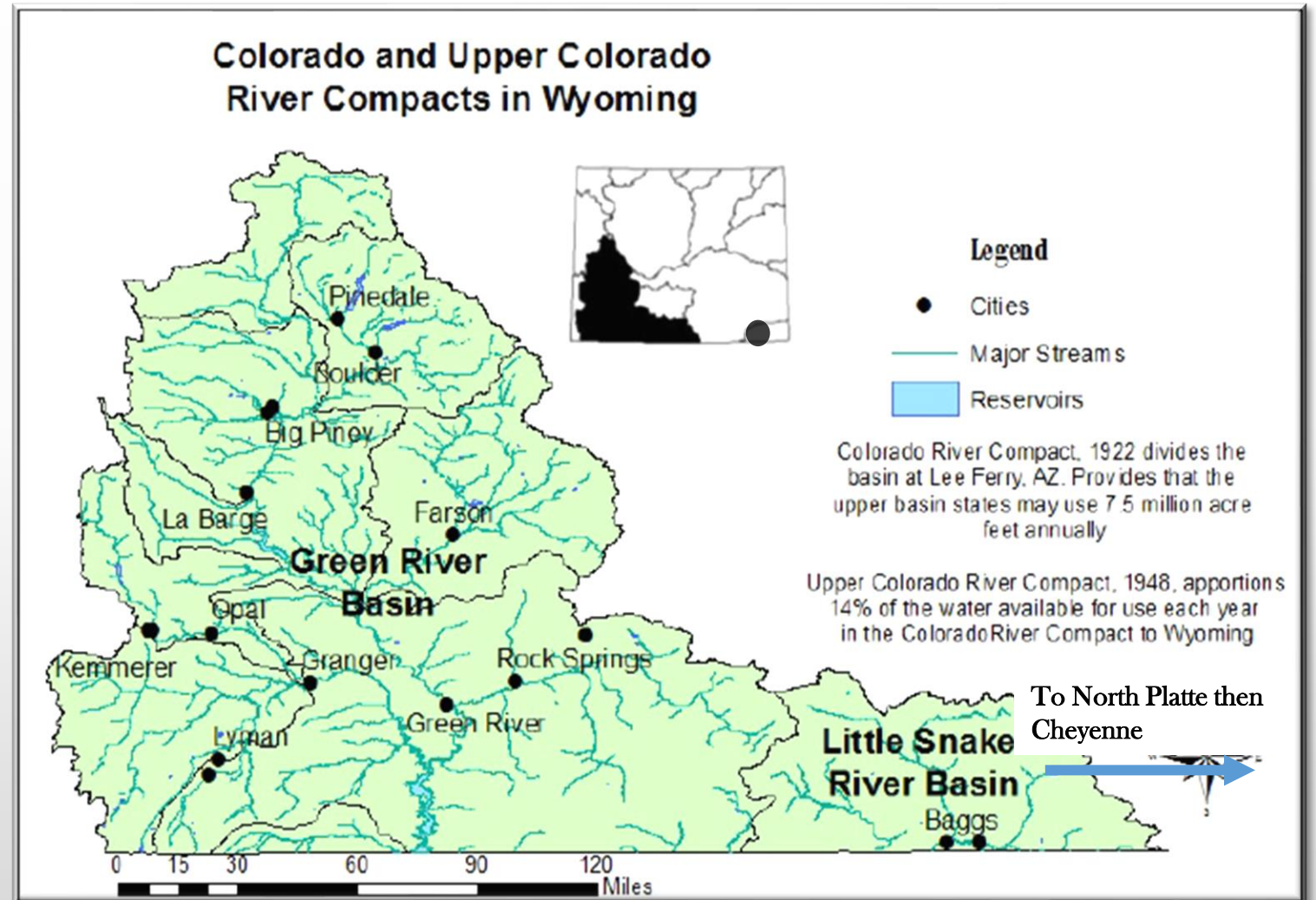
←
2022 Reductions + Contributions

The Secretary of the Interior will take affirmative actions to implement programs designed to create or conserve 100,000 acre-ft per annum or more of Colorado River System water to contribute to conservation of water supplies in Lake Mead and other Colorado River reservoirs in the lower basin. All actions taken by the United States shall be subject to applicable law, including availability of appropriations.

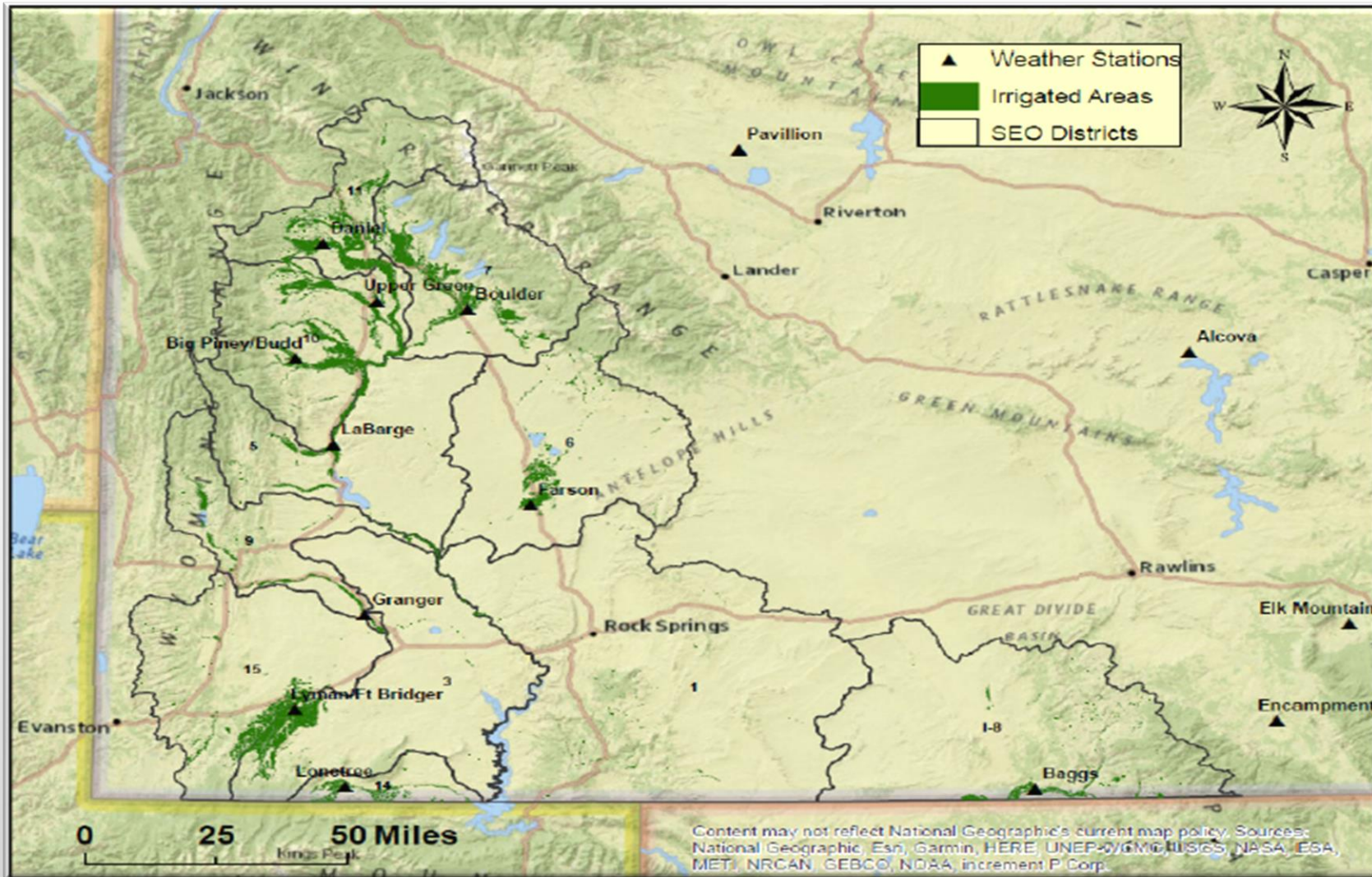


Colorado River Basin in Wyoming

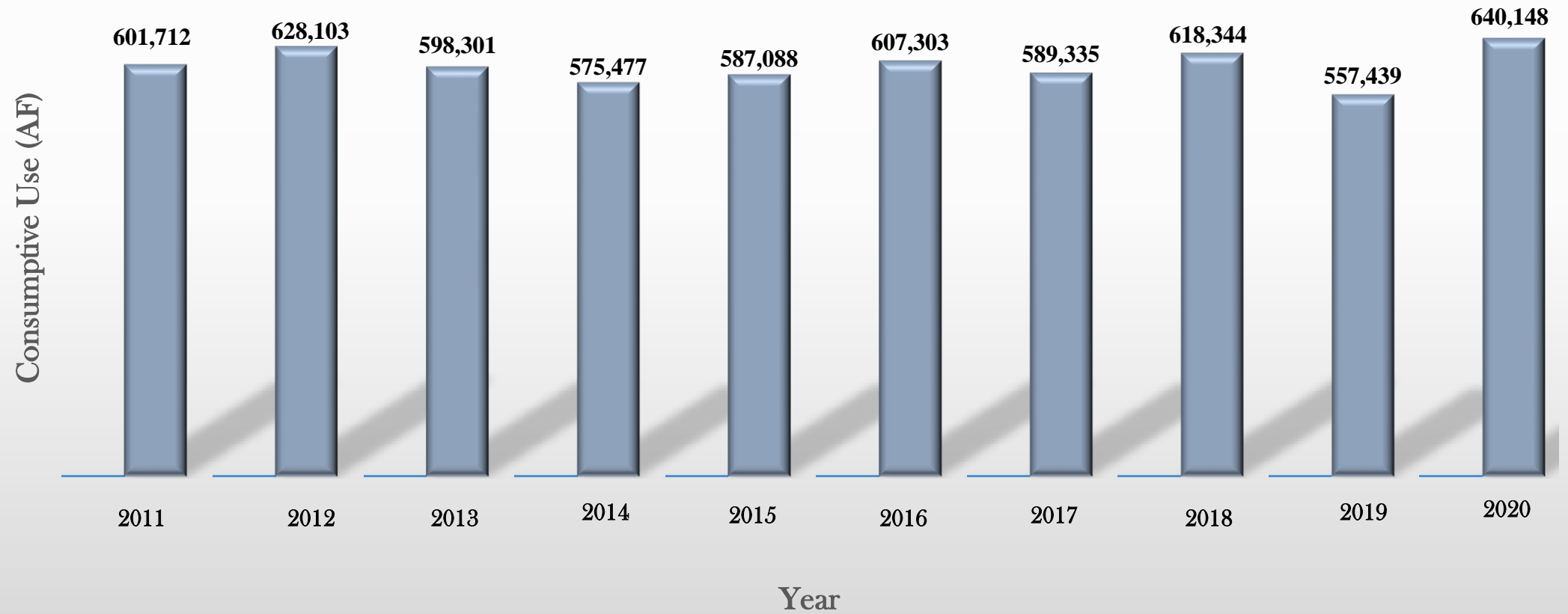
In Wyoming, the Colorado River Basin covers about 17,000 square miles, including the areas drained by the Little Snake and Green Rivers, and supplies water to the City of Cheyenne by a trans-basin diversion from the Little Snake Basin.



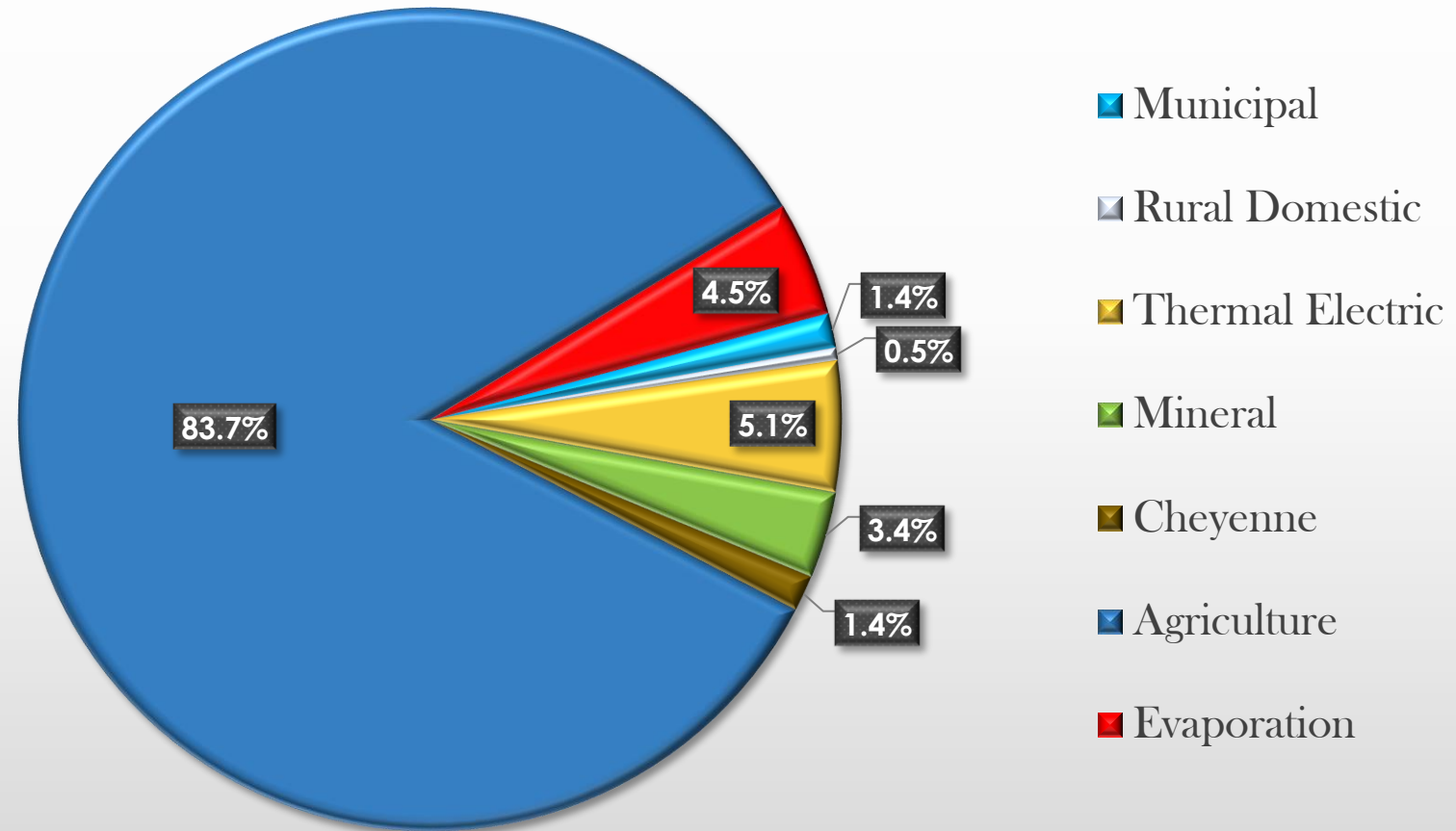
WY Green River Basin Irrigated Acres



Wyoming GRB Consumptive Use Estimates (AF)



Wyoming's average annual beneficial consumptive use, Green and Little Snake Basins: 600,325 AF (2011-2020)



Questions?