Colorado River Briefing

August 22, 2016

Colorado River Shortage Update

PROTECT LAKE MEAD

Ted Cooke
CAP General Manager

August 22, 2016

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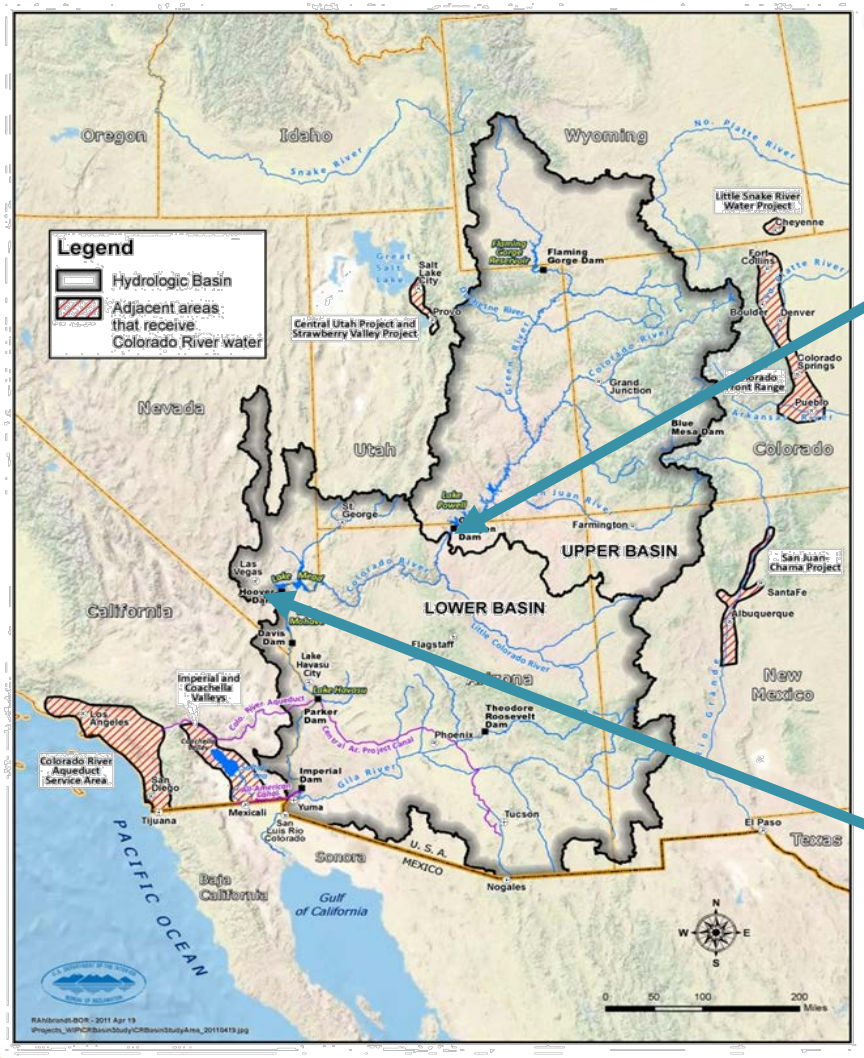
Lake Mead & Powell Status



1/1/2000 87% Full
(21.3 MAF)

8/15/2016
3616.43'
55% Full
(13.4 MAF)

Lake Powell

1/1/2000 91% Full
(25 MAF)

8/15/2016
1073.96'
37% Full
(9.5 MAF)

Lake Mead

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2007 Guidelines Shortage Sharing

- Based on Reclamation's August 24 Month Projection of Jan 1, Lake Mead elevation,
- Arizona and Nevada share Lower Basin shortages under the 2007 Guidelines
- Mexico voluntarily agreed in Minute 319 to accept reductions in its deliveries at the same elevations

Lake Mead Elevation	Arizona Reduction	Nevada Reduction	Mexico Reduction
1075'	320,000 AF	13,000 AF	50,000 AF
1050'	400,000 AF	17,000 AF	70,000 AF
1025'	480,000 AF	20,000 AF	125,000 AF

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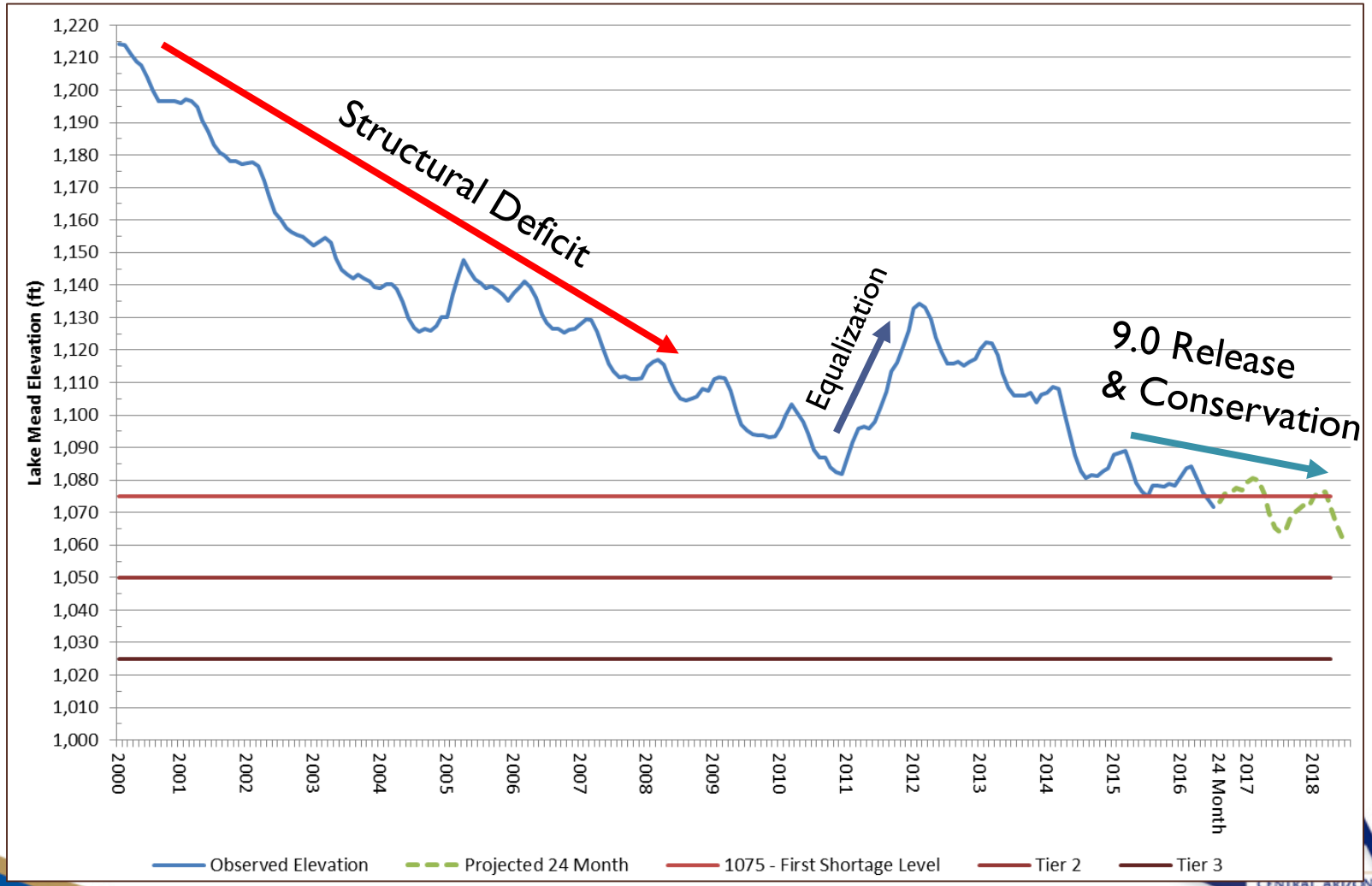
Lake Mead Elevations

Historic Levels, with August 2016 to August 2018 Projection



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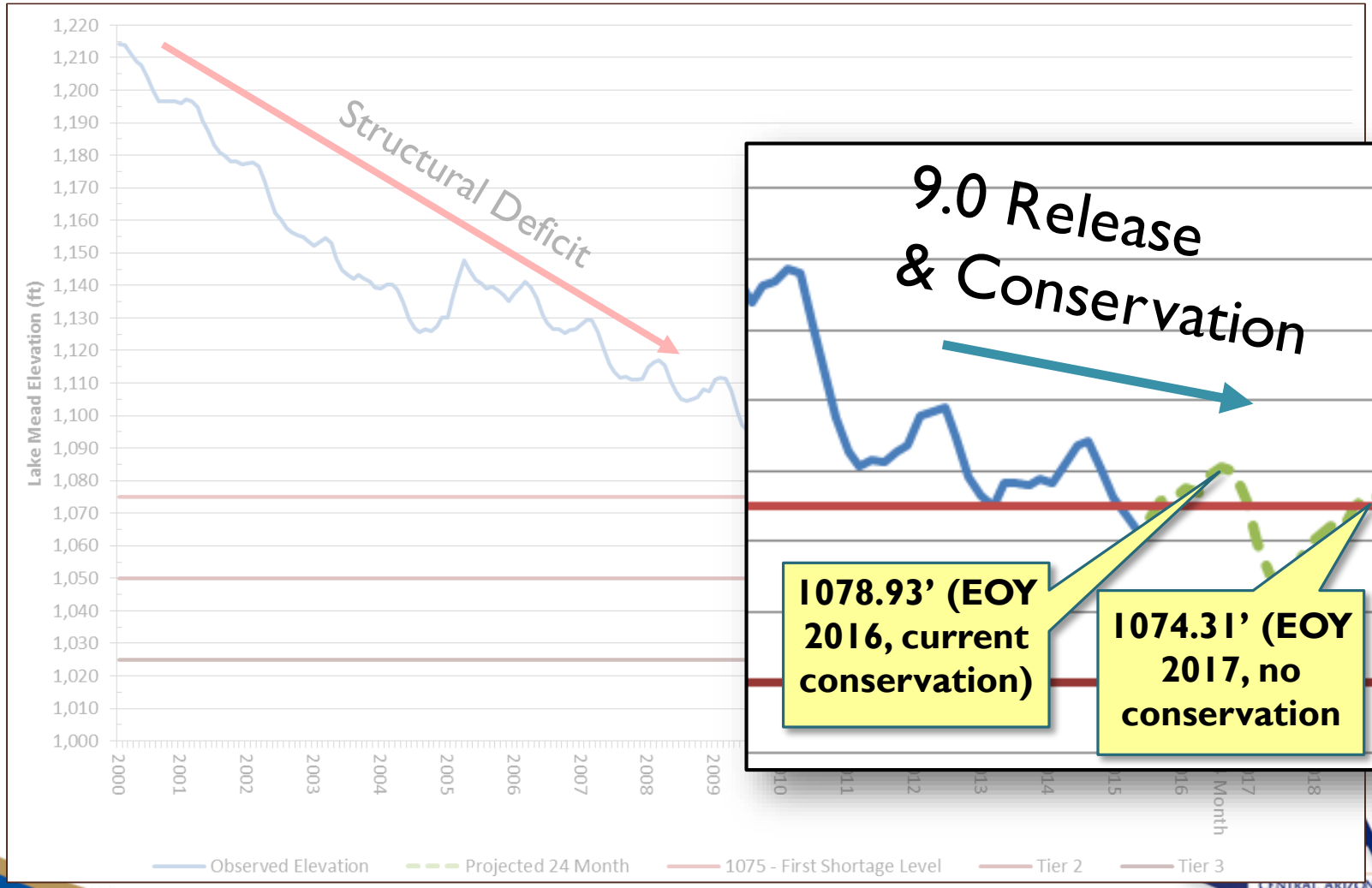
Lake Mead Elevations

Historic Levels, with July 2016 to July 2018 Projection



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Continue
Lake Mead Protection Actions

2 Programs to Protect Lake Mead Elevations:

- Lower Basin Pilot Drought Response Actions MOU
- Pilot System Conservation Agreement

LB MOU 2014-17:
CAP = 345 KAF
MWD = 300 KAF
USBR = 50 KAF
SNWA = 45 KAF

+9'

PSCA Phase 1 2015-16:
Total funding = $11 M

PSCA Phase 2 2016-17:
Total funding = $7.5 M

+1'

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CAP Cooperative Programs

12 Ag Participants

Tonopah IDD
Roosevelt WCD
Queen Creek IDD
New Magma IDD
Hohokam IDD
Maricopa-Stanfield IDD
Central Arizona IDD
Kai Farms
BKW Farms
Salt River Project
YMIDD (on-River)

4 Cities

Glendale
Scottsdale
Phoenix
Peoria

3 Tribes

Tohono O'odham
Gila River (pending)
Colorado River Indian Tribes ((pending)

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Shortage Risks Through 2021

Percent of Traces with Event or System Condition
Results from August 2016 CRSS[1,2,3] (values in percent)

	Event or System Condition	2017	2018	2019	2020	2021
Upper Basin – Lake Powell	**Equalization Tier**	7	21	21	28	31
	Equalization – annual release > 8.23 maf	7	21	21	27	30
	Equalization – annual release = 8.23 maf	0	0	0	1	1
	Upper Elevation Balancing Tier	93	57	57	53	45
	Upper Elevation Balancing – annual release > 8.23 maf	89	49	43	41	35
	Upper Elevation Balancing – annual release = 8.23 maf	4	8	13	10	10
	Upper Elevation Balancing – annual release < 8.23 maf	0	1	1	2	0
	Mid-Elevation Release Tier	0	21	20	10	16
	Mid-Elevation Release – annual release = 8.23 maf	0	0	0	1	1
	Mid-Elevation Release – annual release = 7.48 maf	0	21	20	9	15
	Lower Elevation Balancing Tier	0	0	2	9	8
Lower Basin – Lake Mead	**Shortage Condition – any amount (Mead ≤ 1,075 ft)**	0	48	60	60	66
	Shortage – 1st level (Mead ≤ 1,075 and ≥ 1,050)	0	48	50	41	33
	Shortage – 2nd level (Mead < 1,050 and ≥ 1,025)	0	0	10	18	16
	Shortage – 3rd level (Mead < 1,025)	0	0	0	3	7
	Surplus Condition – any amount (Mead ≥ 1,145 ft)	0	0	5	8	14
	Surplus – Flood Control	0	0	0	1	2
	Normal or ICS Surplus Condition	100	52	35	32	30

[1] Reservoir initial conditions based on December 31, 2016 conditions from the August 2016 24-Month Study.
[2] Percentages computed from 107 hydrologic inflow sequences based on resampling of the observed natural flow record from 1906-2012 for a total of 107 traces analyzed.
[3] Percentages shown may not be representative of the full range of future possibilities that could occur with different modeling assumptions.

RECLAMATION

Colorado River System Status:

- No shortage in 2017
- ~ 50% risk of shortage in 2018
- CAP is committing to continue conservation programs to significantly reduce the risks of shortage for 2018
- Risks of shortage continue to increase for 2019 - 2021
- Additional measures are needed to address the increasing risks of shortage and declines in Lake Mead

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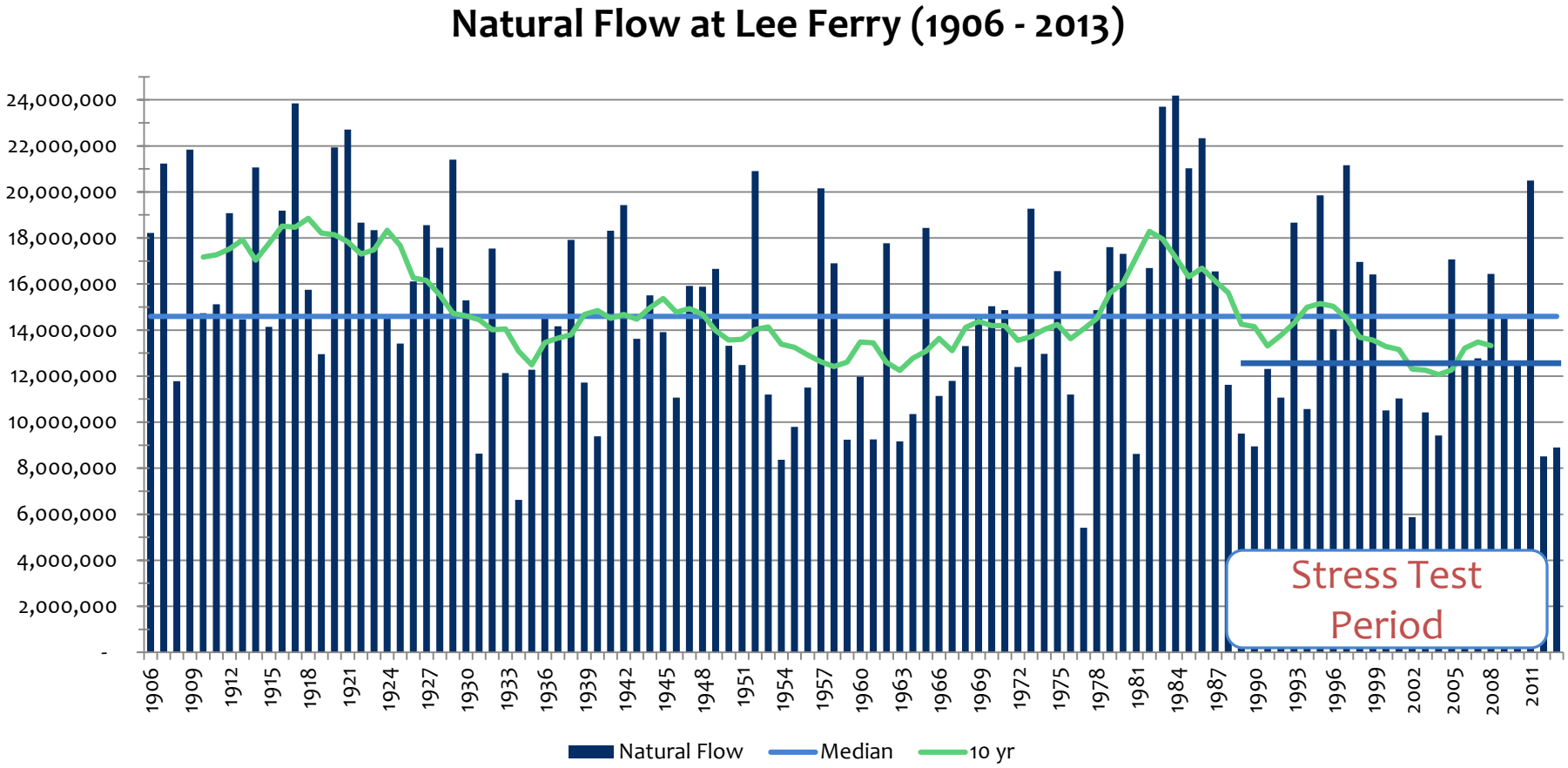
Colorado River Drought Contingency Proposal

Colorado River Briefing

Thomas Buschatzke
Director
Arizona Department of Water Resources
August 22, 2016

Observed Hydrology & "Stress Test"



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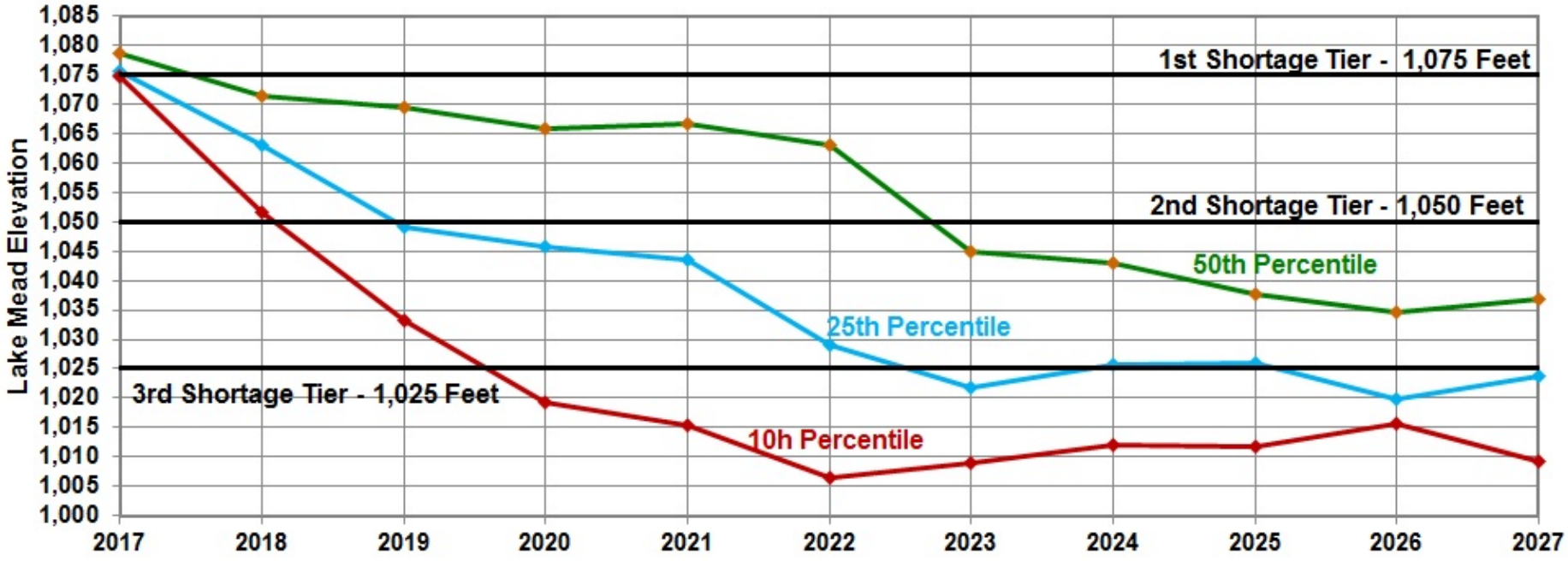
Protection Volume Analysis

Volumes needed to *absolutely protect* Lake Mead's elevations 1,025 ft and 1,000 ft through 2026

Hydrology	Lake Mead Elevation: **1,025 ft.**			Lake Mead Elevation: **1,000 ft.**		
	Maximum in any year (MAF)	First Year that Maximum Occurs	Average through 2026 (MAF)	Maximum in any year (MAF)	First Year that Maximum Occurs	Average through 2026 (MAF)
Observed	3.0	2023	0.97	1.5	2023	0.56
Climate Change	6.0	2021	2.8	4.5	2021	2.4
Combined	6.0	2021	2.3	4.5	2021	2.2

Lake Mead – Selected Percentile Elevations
Stress Test Hydrology – "No Action"



Lower Basin Drought Contingency Plan
Current Concepts

- The Upper Basin States and Lower Basin States have each undertaken actions to guard against potential adverse consequences associated with critically dry conditions.
- The goal of the ongoing discussions is to develop additional tools for the Lower Basin States to utilize through at least December 31, 2025, to address potentially critical elevation declines in Lake Mead.
- Any new agreement would further the implementation of the 2007 Interim Guidelines.

Elements of Lower Basin Drought Contingency Plan – *Current Concepts*

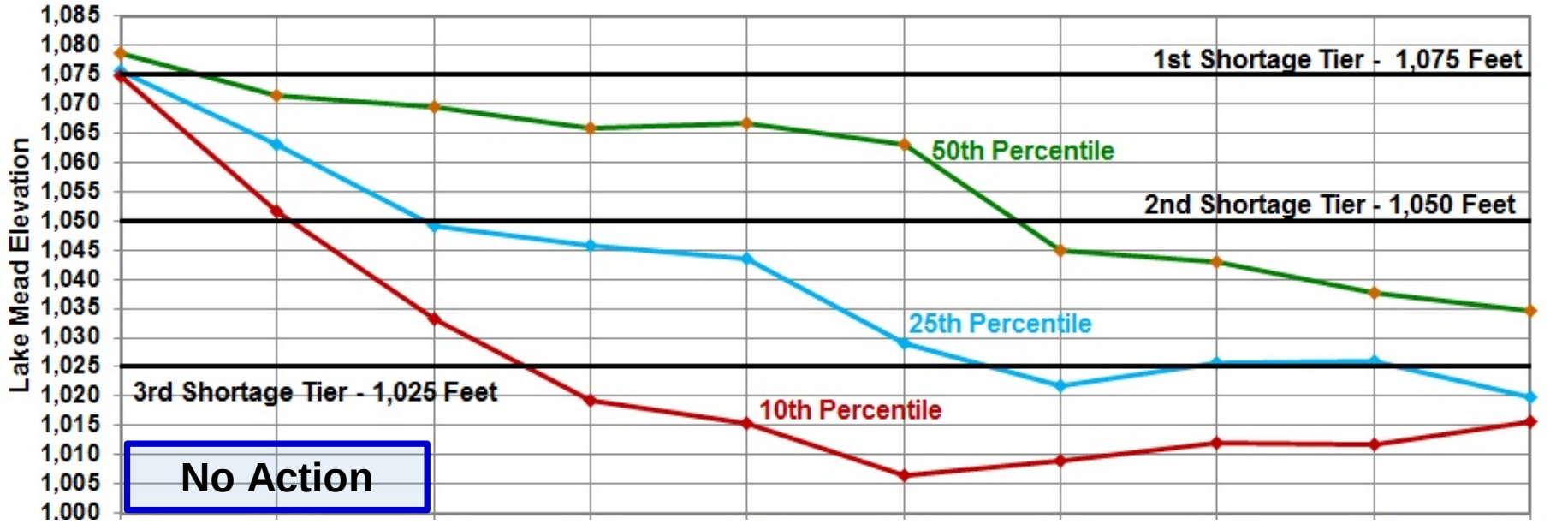
- Avoid and protect against the potential for the elevation of Lake Mead to decline to elevations below 1,020 feet Reductions of water use beyond the level of reductions required by the 2007 Interim Guidelines
  - Includes a commitment by the U.S. to work to create or conserve Colorado River system water
- Recovery of additional reduction volumes would be allowed under certain conditions
- Incentivize ICS creation/storage
  - Agree that ICS may be withdrawn at lower Lake Mead elevations, similar to ICMA arrangements under Minute 319
  - Modification of the evaporative losses currently applied to ICS

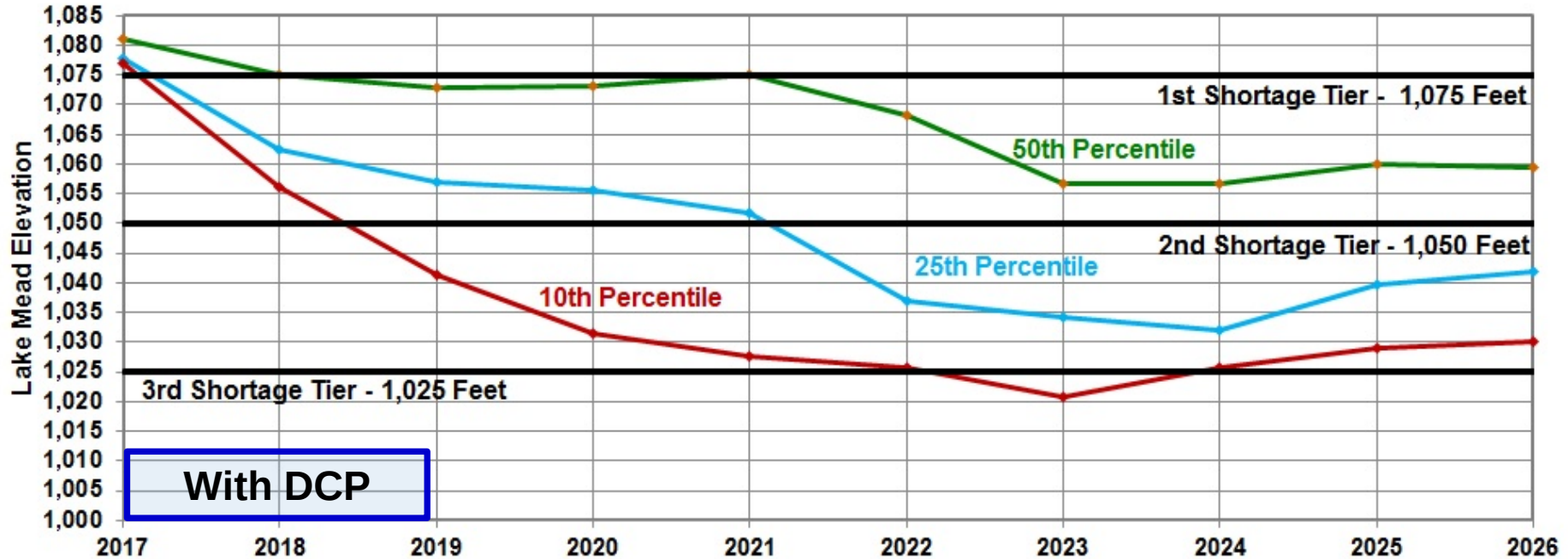
LBDCP Water Use Reductions

Lake Mead Elevation	AZ [2007]	AZ [Plan]	AZ TOTAL	NV [2007]	NV [Plan]	NV TOTAL	CA [2007]	CA [Plan]	CA TOTAL	BOR	TOTAL
1090-1075	0	192K	192K	0	8K	8K	0	0	0	100k	300k
1075-1050	320K	192K	512K	13K	8K	21K	0	0	0	100k	633k
1050-1045	400K	192K	592K	17K	8K	25K	0	0	0	100k	717k
1045-1040	400K	240K	640K	17K	10K	27K	0	200K	200K	100k	967k
1040-1035	400K	240K	640K	17K	10K	27K	0	250K	250K	100k	1,017k
1035-1030	400K	240K	640K	17K	10K	27K	0	300K	300K	100k	1,067k
1030-1025	400K	240K	640K	17K	10K	27K	0	350K	350K	100k	1,117k
<1025	480K	240K	720K	20K	10K	30K	0	350K	350K	100k	1,200k

Revised on 11/18/15 to include US and TOTAL reductions

Lake Mead – Selected Percentile Elevations
Stress Test Hydrology – "No Action" and With DCP





Lower Colorado River Basin Drought Contingency Discussions Next Steps

- Continue to assess demand, hydrology and distribution scenario modeling to frame range of impacts.
  - NIA Pool, tribal entities, agricultural pool, other excess water users
  - On-River participation decreases impacts
- Discussion regarding the voluntary reductions in Arizona and development of Arizona consensus
- Communication & messaging (ongoing)
- Finalize DCP among Lower Basins States (Arizona, California & Nevada) & Reclamation
  - Include board actions
  - Fall time frame
- Arizona Legislature
- Federal legislation

Up-to-Date Arizona Information Sources

- ADWR's website: azwater.gov
- CAP's website: cap-az.com
- Central Arizona Water Conservation Board Meetings
- Arizona Water Banking Authority Commission Meetings
- Groundwater Users Advisory Council Meetings

Please send follow up questions to:

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