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Managing Water in the West

2015 Colorado River Annual Operating Plan

Colorado River Management Work Group
First Consultation
May 28, 2014

U.S. Department of the Interior
Bureau of Reclamation

2015 Colorado River AOP
First Consultation Meeting

- Welcome and Introductions – *Malcolm Wilson / Chris Cutler*
- Upper Basin Hydrology and Operations – *Katrina Grantz*
- Lower Basin Hydrology and Operations – *Dan Bunk*
- 2015 AOP Review Process –*Malcolm Wilson / Chris Cutler*
- Review of Draft 2015 AOP - CRMWG
- Conclusion, Wrap-up, Future Meeting Dates

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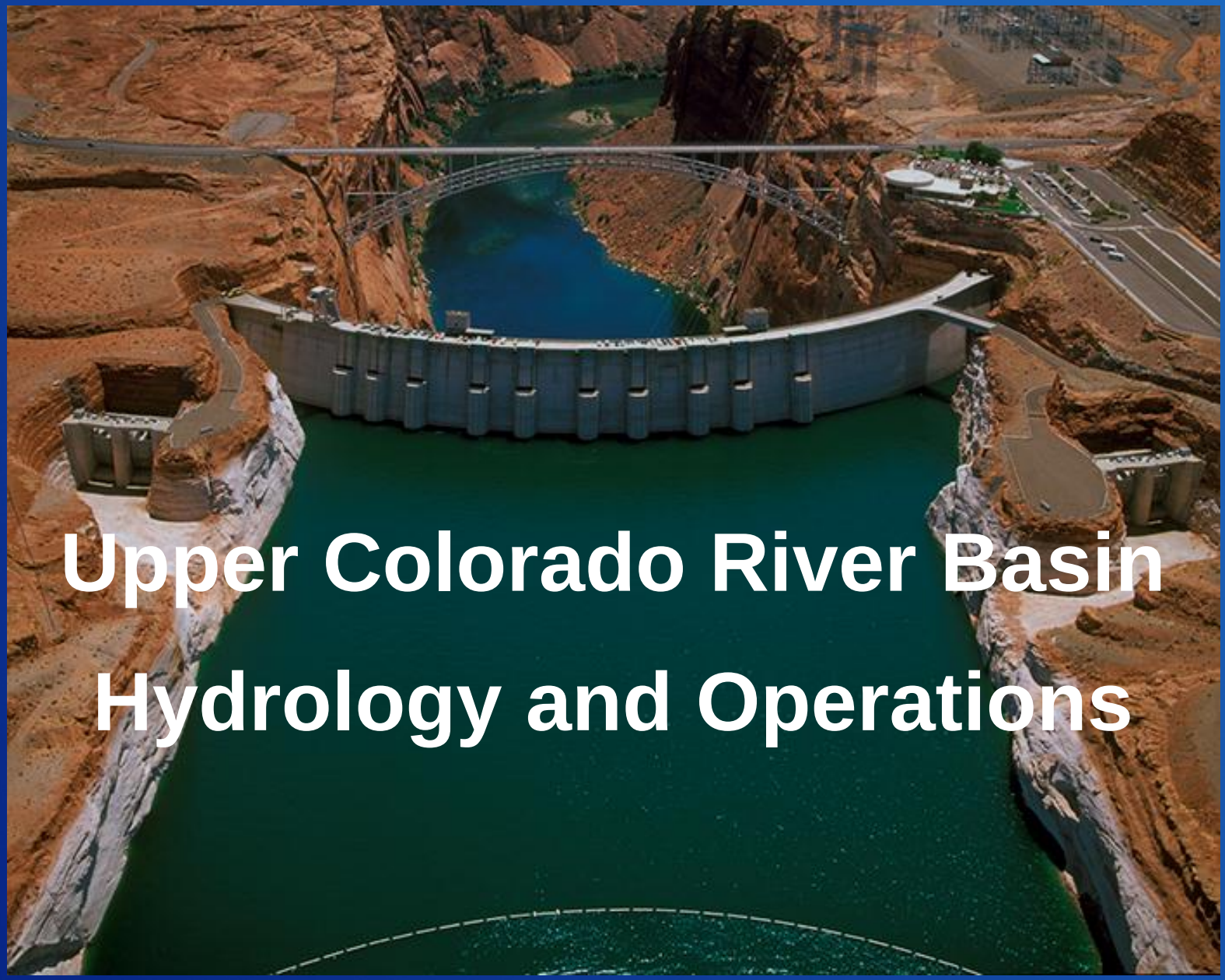

Upper Colorado River Basin Hydrology and Operations

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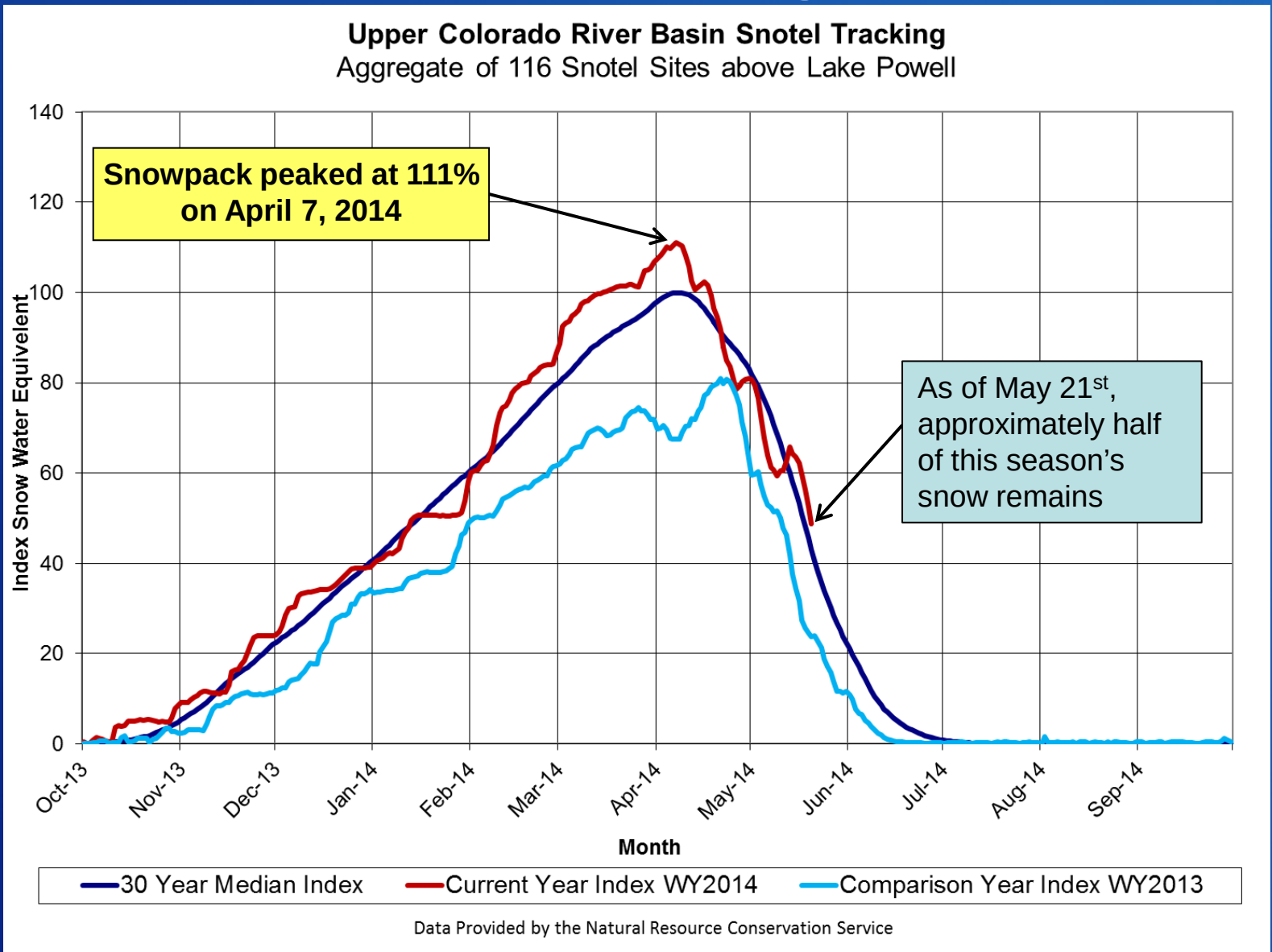
Upper Basin Hydrology



http://www.usbr.gov/uc/water/notice/Graphs/Upper_Colorado.html

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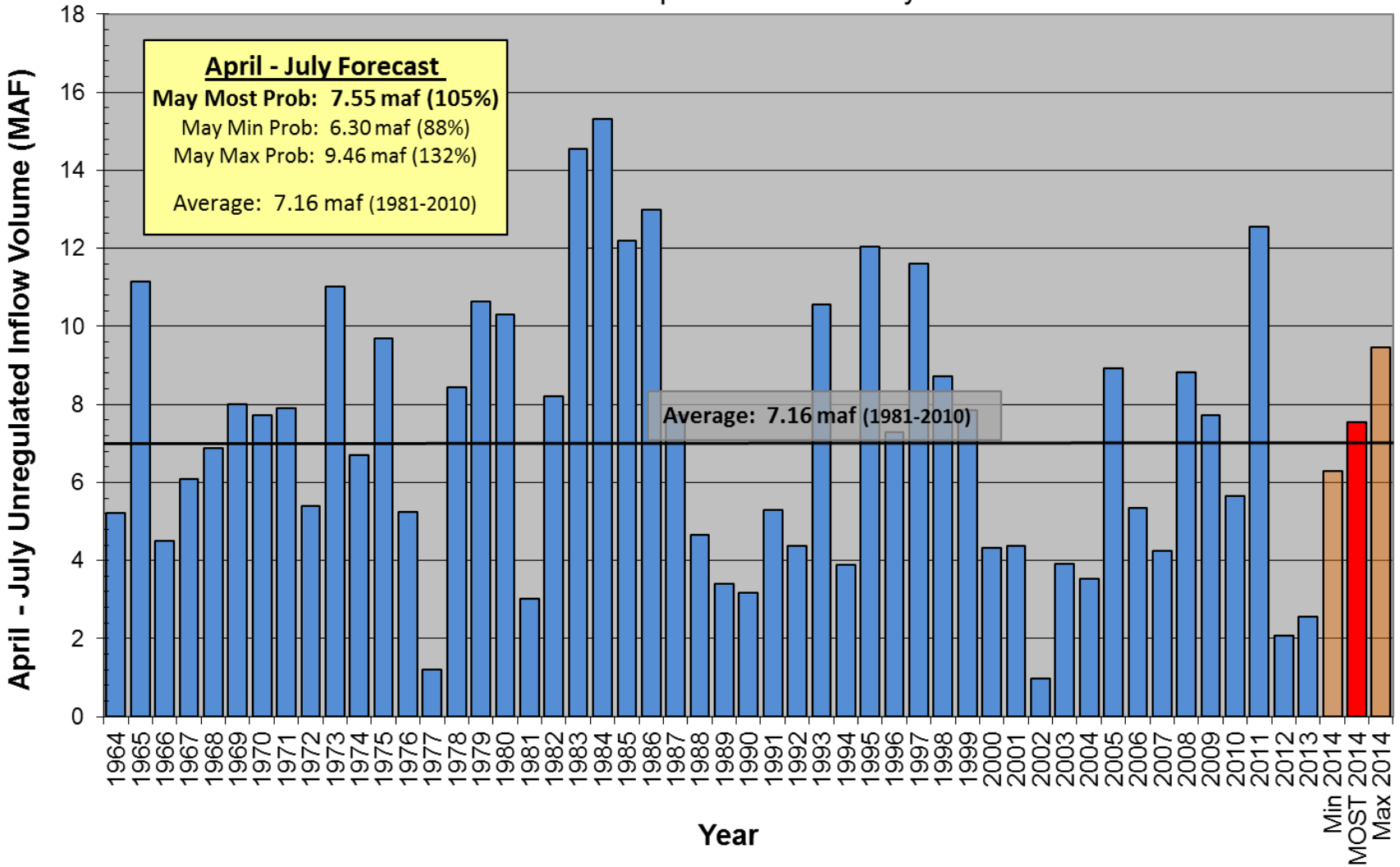
Lake Powell Unregulated Inflow
Apr - Jul 2014 Forecast *(issued May 2)*
Comparison with History



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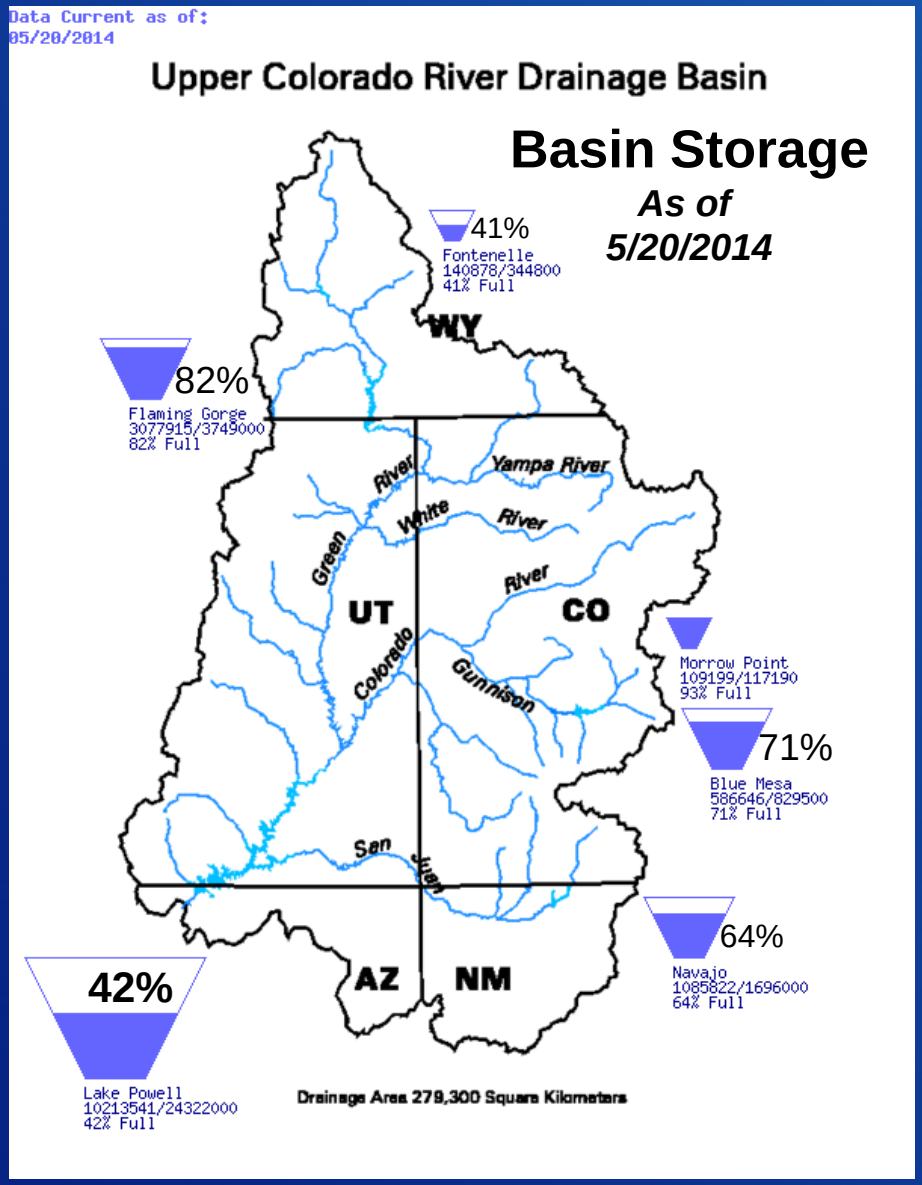
Upper Basin Storage



http://www.usbr.gov/uc/water/basin/tc_cr.html

April to July Unregulated Inflow Forecasts *(Issued May 2)*

Reservoir	A-J Inflow Forecast (KAF)	Percent of Average[1]
Fontenelle	1,130	156%
Flaming Gorge	1,320	135%
Blue Mesa	850	126%
Navajo	460	63%
Powell	7,550	105%

[1] 1981-2010 period

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Projected Operations
Water Years 2014 and 2015

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Lake Powell & Lake Mead Operational Table

Operational Tiers for Water Year/Calendar Year 2014

Lake Powell

Elevation (feet)	Operation According to the Interim Guidelines	Live Storage (maf)[1]
3,700	**Equalization Tier** Equalize, avoid spills or release 8.23 maf	24.3
3,636 - 3,666 (2008-2026)		15.5 - 19.3 (2008-2026)
	Upper Elevation Balancing Tier[3] Release 8.23 maf; if Lake Mead < 1,075 feet, balance contents with a min/max release of 7.0 and 9.0 maf	
3,575		9.5
	Mid-Elevation Release Tier Release 7.48 maf; if Lake Mead < 1,025 feet, release 8.23 maf	
3,525		5.9
	Lower Elevation Balancing Tier Balance contents with a min/max release of 7.0 and 9.5 maf	
3,490		4.0
3,370		0

Lake Mead

Elevation (feet)	Operation According to the Interim Guidelines	Live Storage (maf)[1]
1,220	**Flood Control Surplus or Quantified Surplus Condition** Deliver > 7.5 maf	25.9
1,200 (approx.)[2]		22.9 (approx.)[2]
	Domestic Surplus or ICS Surplus Condition Deliver > 7.5 maf	
1,145		15.9
1,105	**Normal or ICS Surplus Condition** Deliver ≥ 7.5 maf	11.9
1,075		9.4
	Shortage Condition Deliver 7.167[4] maf	
1,050		7.5
	Shortage Condition Deliver 7.083[5] maf	
1,025		5.8
	Shortage Condition Deliver 7.0[6] maf Further measures may be undertaken[7]	
1,000		4.3
895		0

Diagram not to scale

[1] Acronym for million acre-feet

[2] This elevation is shown as approximate as it is determined each year by considering several factors including Lake Powell and Lake Mead storage, projected Upper Basin and Lower Basin demands, and an assumed inflow.

[3] Subject to April adjustments which may result in a release according to the Equalization Tier

[4] Of which 2.48 maf is apportioned to Arizona, 4.4 maf to California, and 0.287 maf to Nevada

[5] Of which 2.40 maf is apportioned to Arizona, 4.4 maf to California, and 0.283 maf to Nevada

[6] Of which 2.32 maf is apportioned to Arizona, 4.4 maf to California, and 0.280 maf to Nevada

[7] Whenever Lake Mead is below elevation 1,025 feet, the Secretary shall consider whether hydrologic conditions together with anticipated deliveries to the Lower Division States and Mexico is likely to cause the elevation at Lake Mead to fall below 1,000 feet. Such consideration, in consultation with the Basin States, may result in the undertaking of further measures, consistent with applicable Federal law.

[1] Lake Powell and Lake Mead operational tier determinations were based on August 2014 24-Month Study projections and documented in the 2014 AOP.

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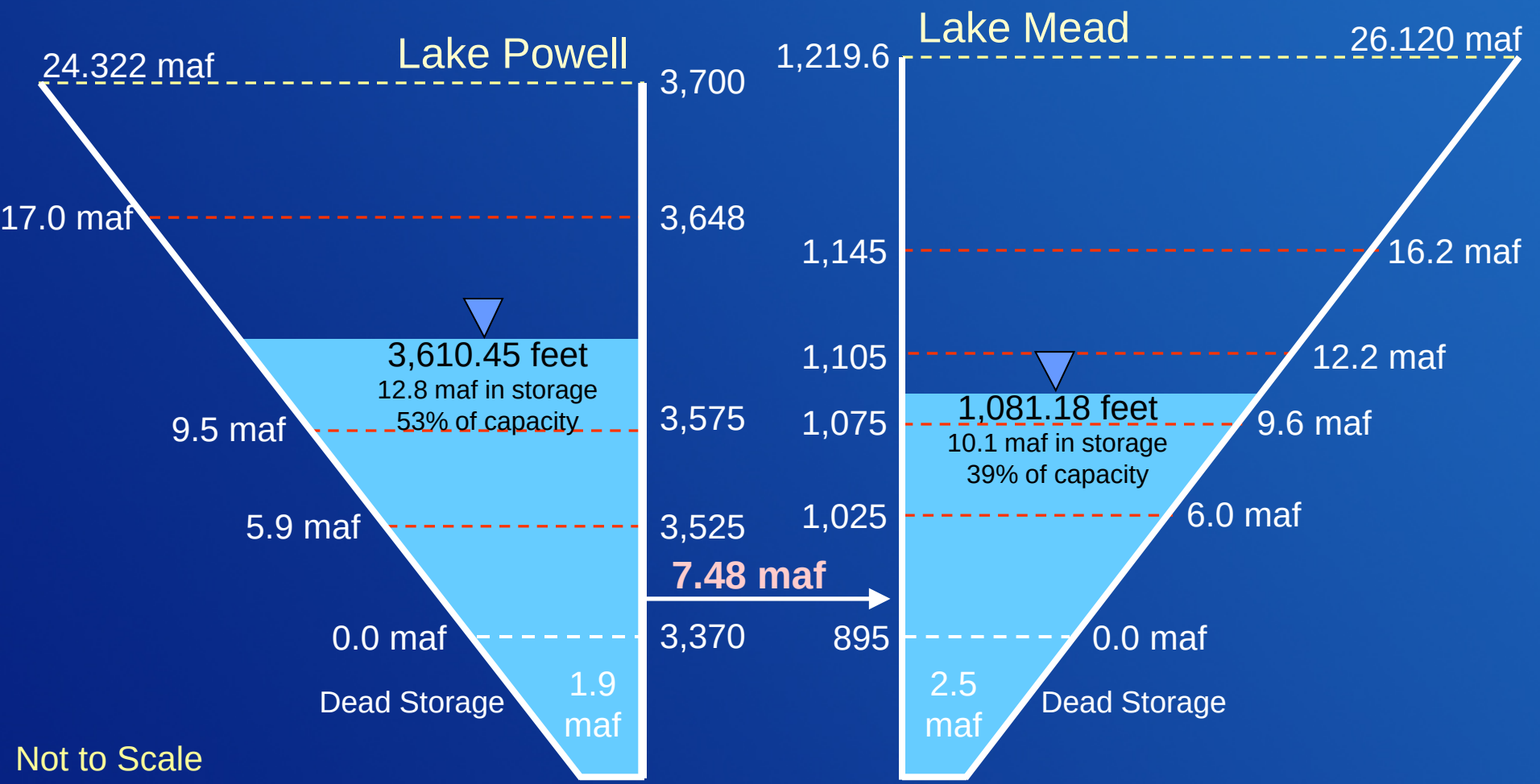
End of Water Year 2014 Projections

May 2014 24-Month Study Most Probable Inflow Scenario[1]

Projected WY Unregulated Inflow into Powell = 10.83 maf (100% of average)



[1] WY 2014 unregulated inflow into Lake Powell is based on the CBRFC outlook dated 5/2/14.

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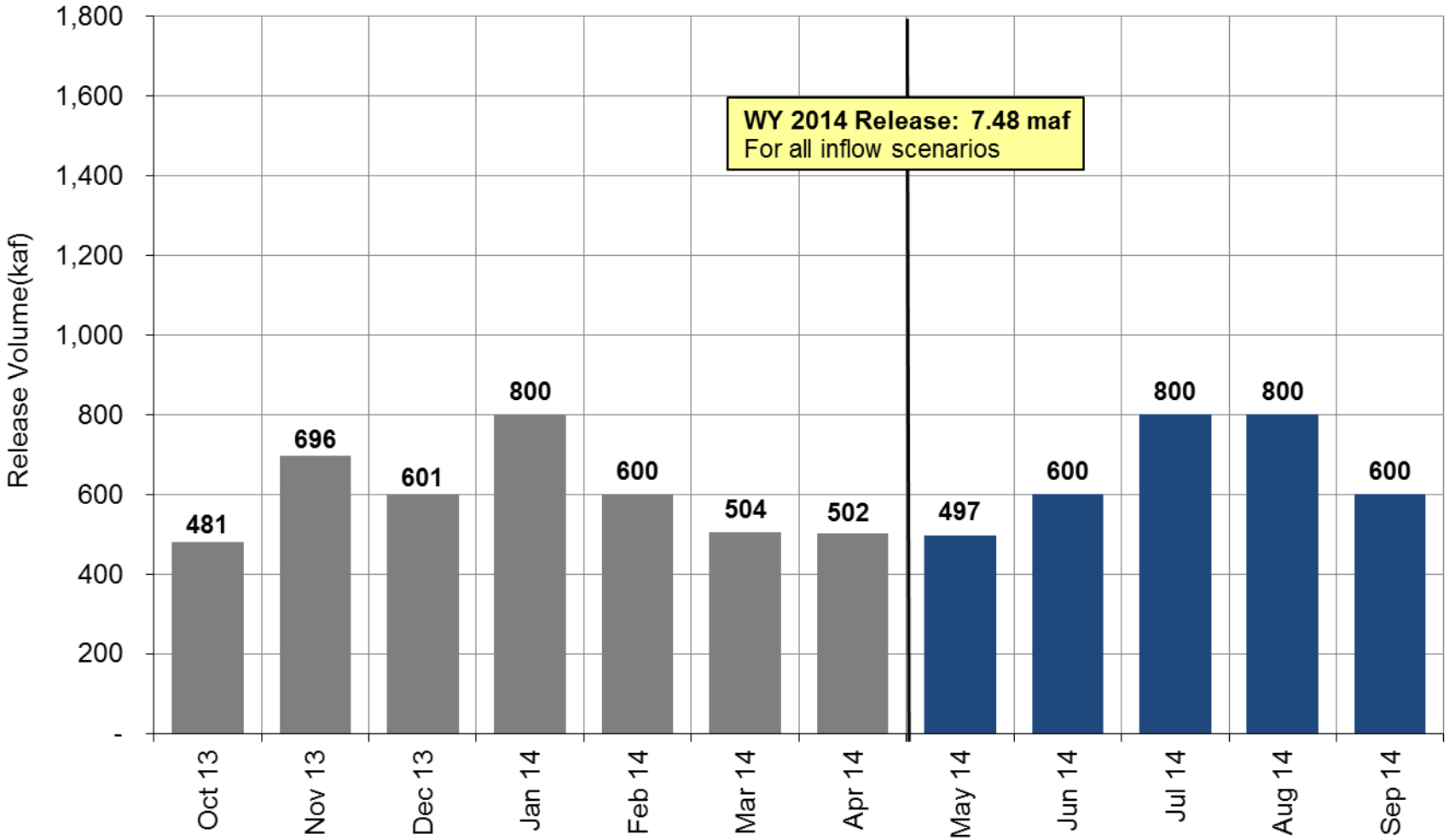
Projected Lake Powell Monthly Release Volume Distribution

May 2014 Release Projections

Water Year 2014



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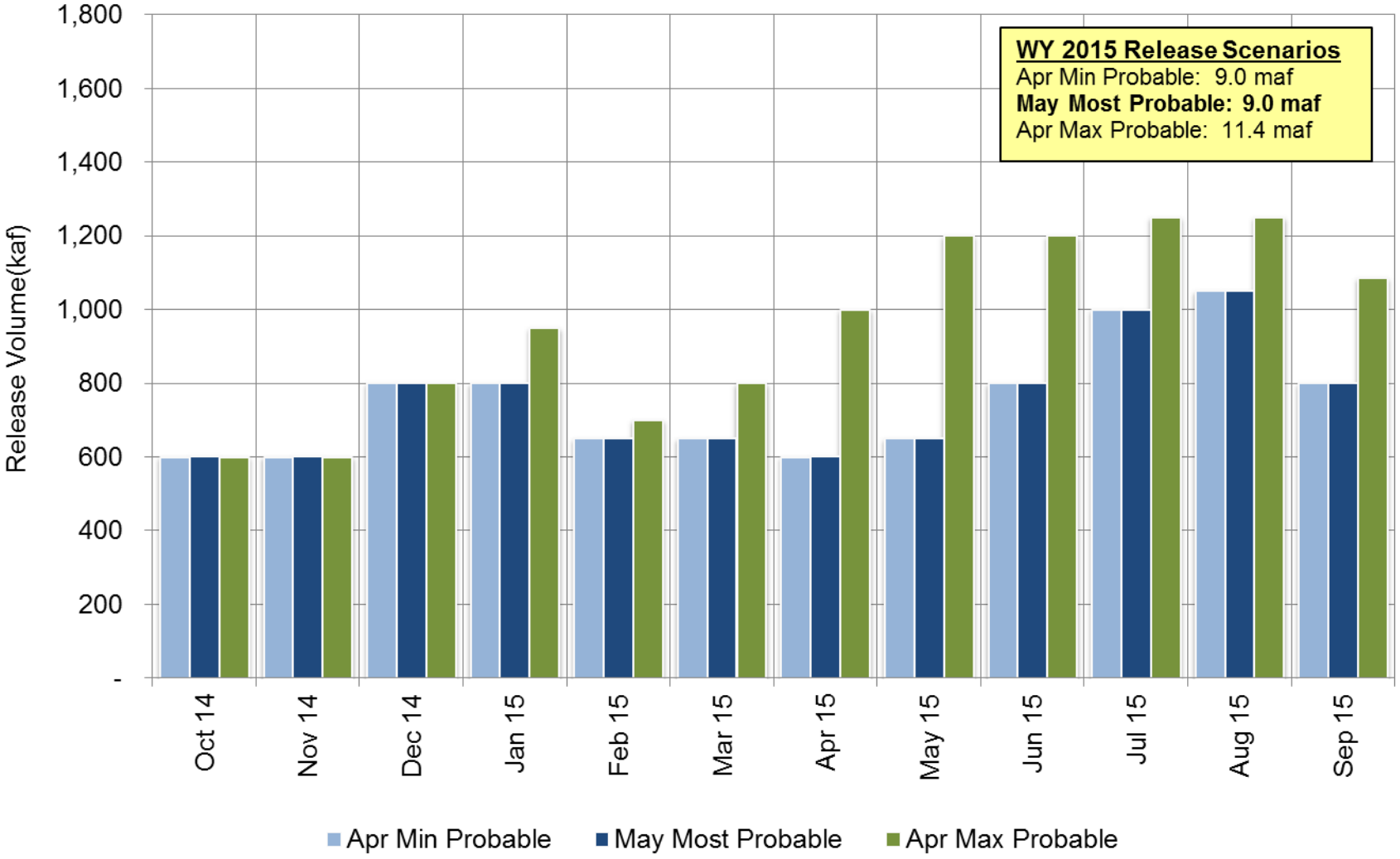
Projected Lake Powell Monthly Release Volume Distribution

April and May 2014 Projected Release Scenarios

Water Year 2015



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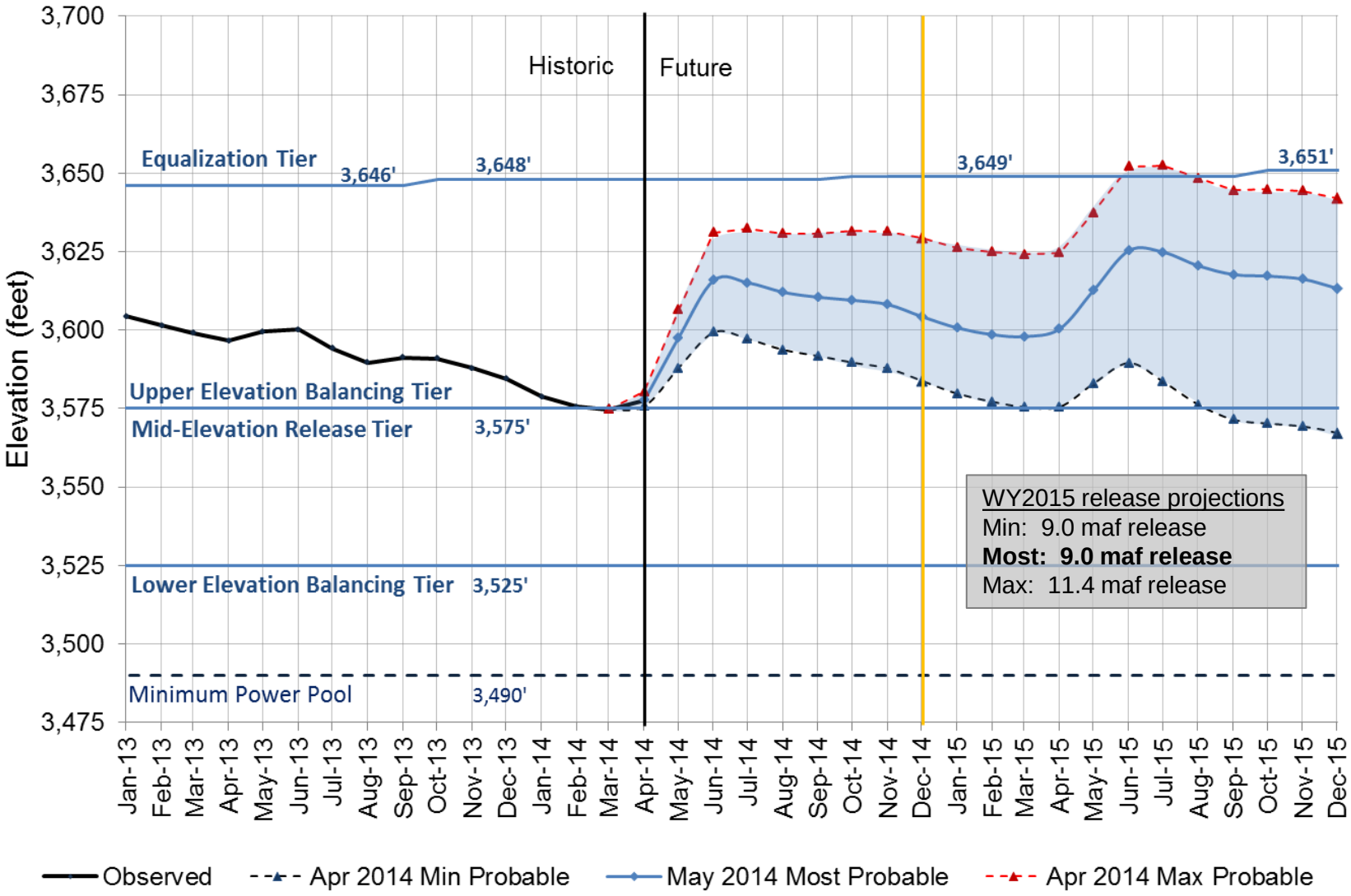
Lake Powell End of Month Elevations

Historic and projected based on April and May modeling



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Colorado River Basin Storage
(as of May 26, 2014)

Current Storage	Percent Full	MAF	Elevation (Feet)
Lake Powell	43%	10.43	3,586
Lake Mead	41%	10.76	1,089
Total System Storage*	48%	28.64	NA

*Total system storage was 31.15 maf or 52% this time last year

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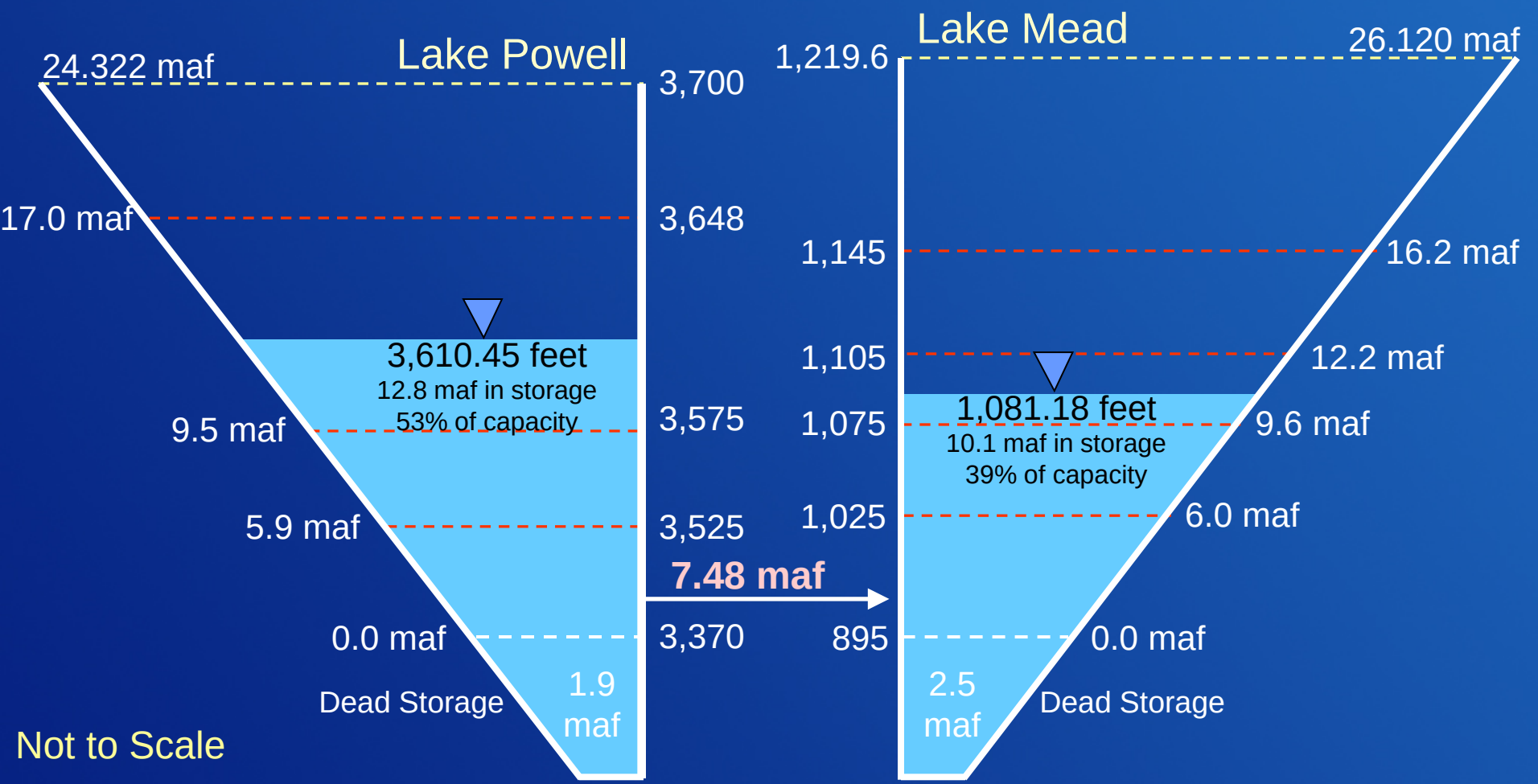

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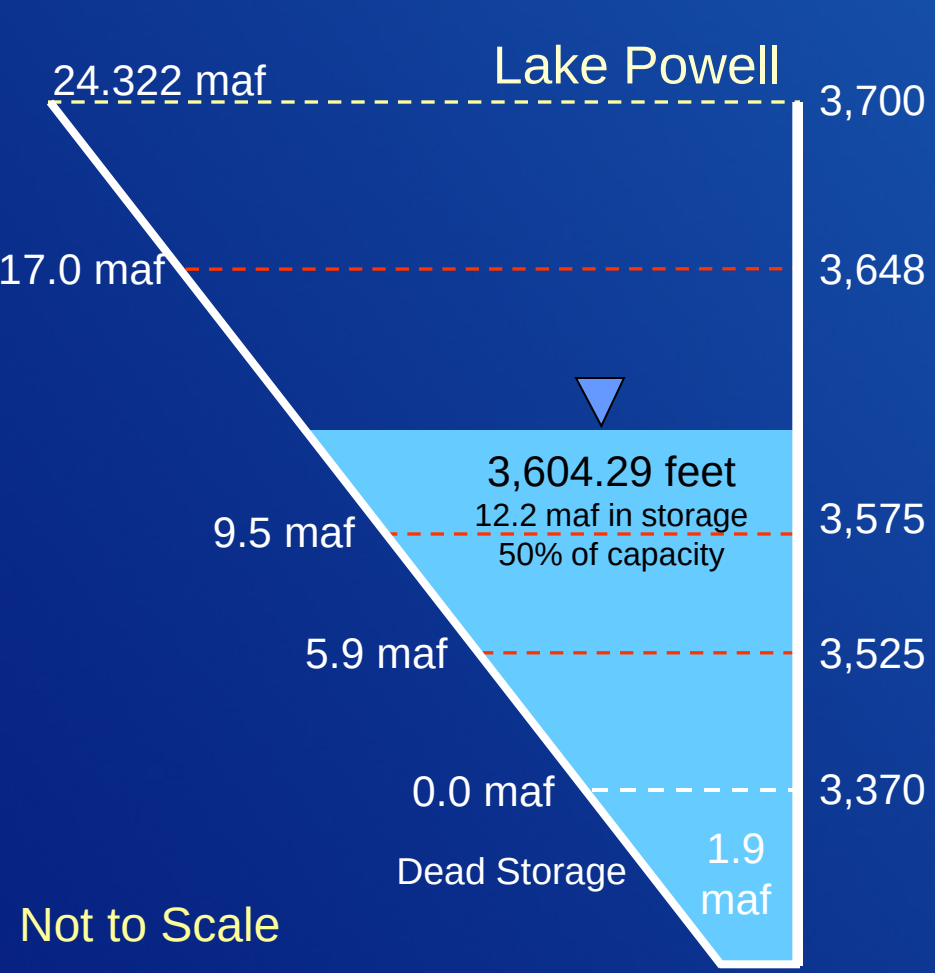
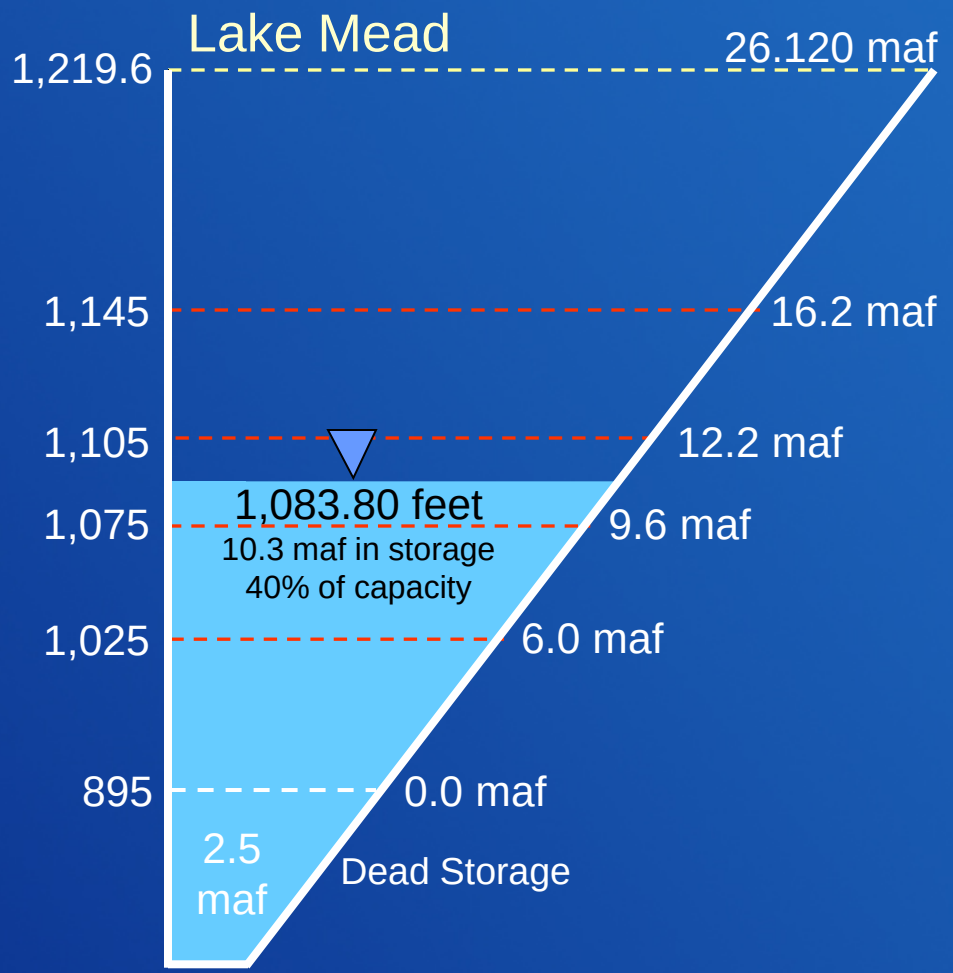
End of Calendar Year 2014 Projections

May 2014 24-Month Study Most Probable Inflow Scenario[1]





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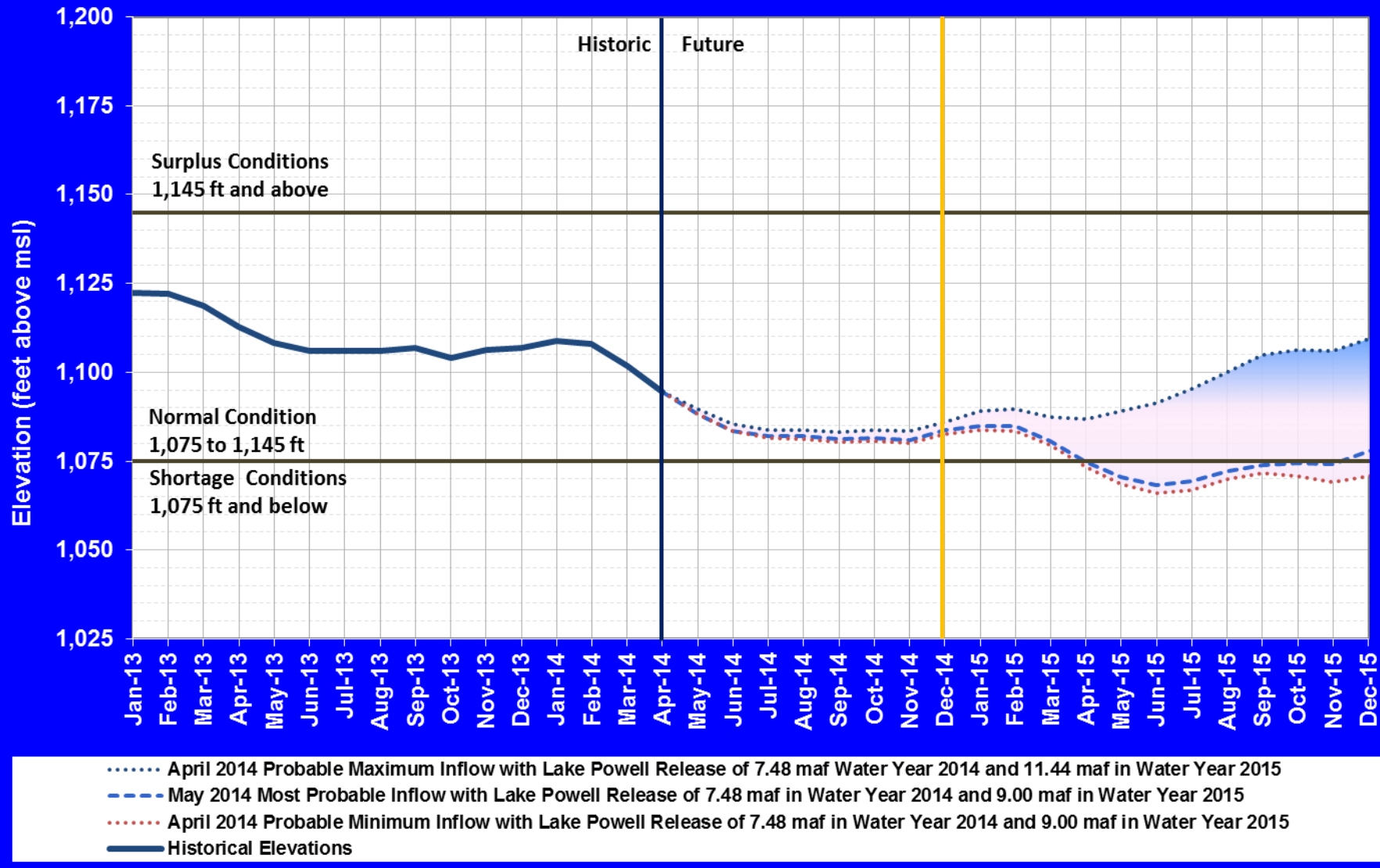
Lake Mead End of Month Elevations

Projections from April and May 2014 24-Month Study Inflow Scenarios



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Lower Basin Side Inflows – WY/CY 2014[1,2]

Intervening Flow from Glen Canyon to Hoover Dam

	Month in WY/CY 2014	5-Year Average Intervening Flow (KAF)	Observed Intervening Flow (KAF)	Observed Intervening Flow (% of Average)	Difference From 5-Year Average (KAF)
HISTORICAL	October 2013	52	38	73%	-14
	November 2013	52	101	194%	49
	December 2013	95	43	45%	-52
	January 2014	75	45	60%	-30
	February 2014	78	76	97%	-2
	March 2014	68	29	43%	-39
	April 2014	80	17	21%	-63
FUTURE	May 2014	60			
	June 2014	23			
	July 2014	64			
	August 2014	116			
	September 2014	97			
	October 2014	52			
	November 2014	52			
	December 2014	95			
WY 2014 Totals		**860**	**709**	**82%**	**-151**
CY 2014 Totals		**860**	**726**	**84%**	**-134**

[1] Values were computed with the LC's gain-loss model for the most recent 24-month study.

[2] Percents of average are based on the 5-year mean from 2009-2013.

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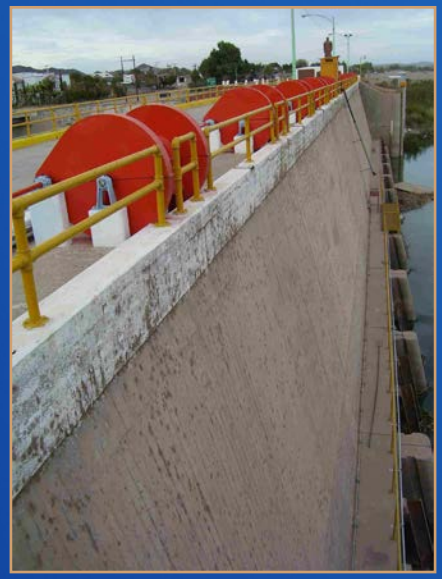
YAO Operations Update

- Brock Reservoir and Senator Wash 2014 YTD accumulated storage[1]
  - Brock 63,750 AF
  - Senator Wash 40,152 AF

- Excess Flows to Mexico

  2014 YTD total[2] 8,629 AF



[1] **Provisional year-to-date totals through May 22, 2014**

[2] **Provisional year-to-date total through May 26, 2014**

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YAO Operations Update

- Pumped drainage return flows from the Wellton-Mohawk Irrigation and Drainage District
  - Flow at station 0+00 on the Main Outlet Drain from January through March 2014 was 26,150 AF at 2,680 ppm
- Provisional drainage flows to the Colorado River
  - From the South Gila Drainage Wells January through April 30, 2014 was 9,000 AF at 1,690 ppm
  - From the Yuma Mesa Conduit January through April 30, 2014 was 3,480 AF at 1,400 ppm

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