

RECLAMATION

Managing Water in the West

CRFS Technical Committee Fall Meeting LC Operations Update

October 27, 2016



U.S. Department of the Interior
Bureau of Reclamation

Topics

- LC Current Conditions Update
- LC Operations Update

Current Conditions

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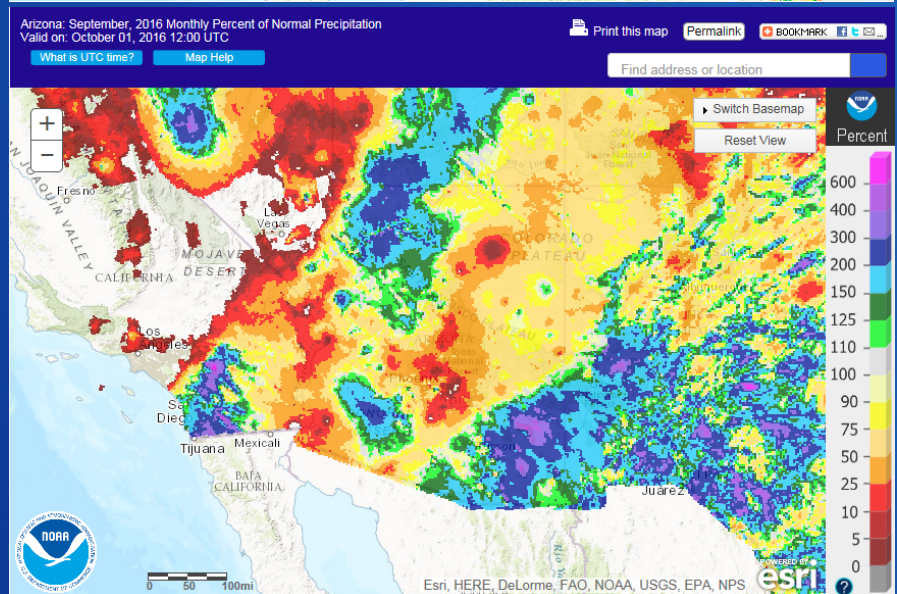
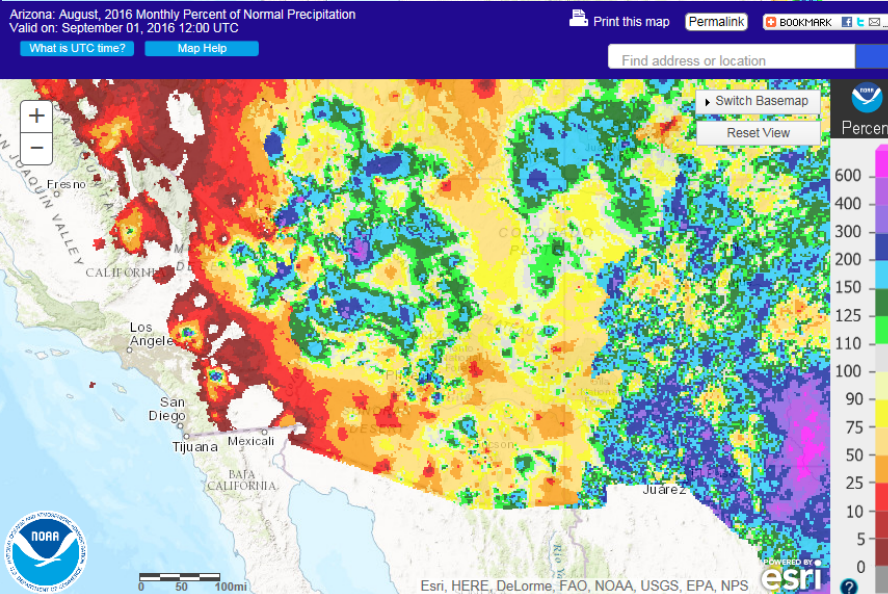
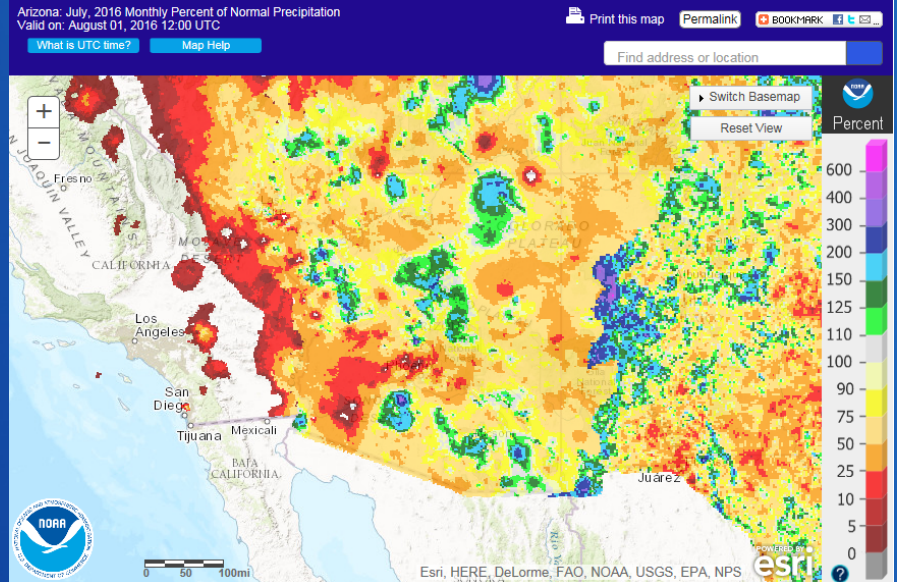
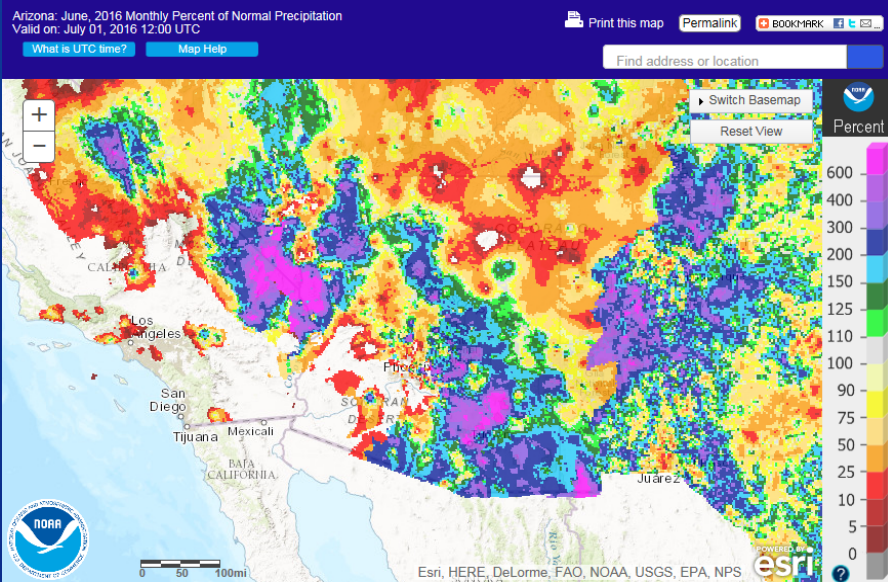
Colorado River Basin Storage

(as of October 25, 2016)

Reservoir	Percent Full	Storage (MAF)	Elevation (Feet)
Lake Powell	52	12.71	3,609.8
Lake Mead	37	9.68	1,076.0
Lake Mohave	82	1.48	635.0
Lake Havasu	93	0.57	447.7
Total System Storage	50	29.91	N/A

***Total system storage was 30.22 maf or 51% this time last year**

Observed Precipitation



Source: <http://water.weather.gov/precip/>

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Lower Basin Side Inflows – WY/CY 2016^{1,2}

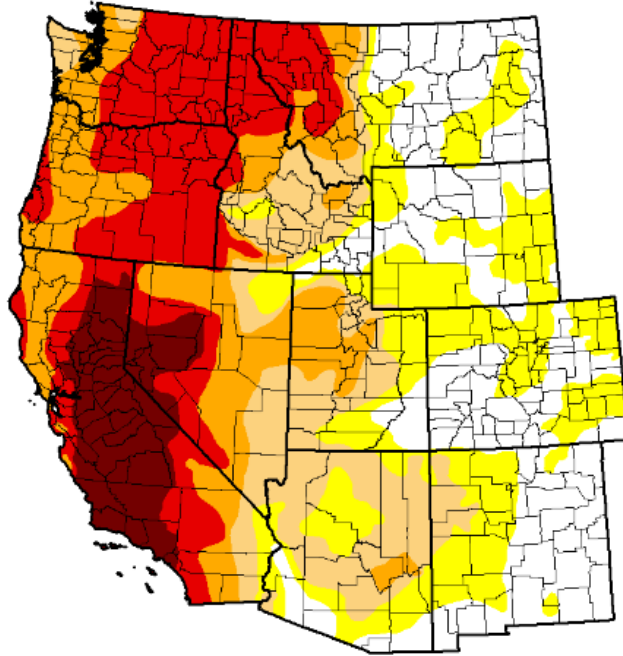
Intervening Flow from Glen Canyon to Hoover Dam

Month in WY/CY 2015		5-Year Average Intervening Flow (KAF)	Observed Intervening Flow (KAF)	Observed Intervening Flow (% of Average)	Difference From 5-Year Average (KAF)
HISTORICAL	October 2015	69	118	171%	49
	November 2015	56	41	73%	-15
	December 2015	54	43	79%	-12
	January 2016	62	89	145%	28
	February 2016	73	81	111%	8
	March 2016	55	31	56%	-24
	April 2016	53	68	127%	14
	May 2016	37	50	134%	13
	June 2016	21	14	68%	-7
	July 2016	78	70	90%	-8
	August 2016	124	107	86%	-18
	September 2016	112	88	79%	-24
FUTURE	October 2016	69			
	November 2016	56			
	December 2016	54			
WY 2016 Totals		795	799	101%	4
CY 2016 Totals		795	777	98%	-18

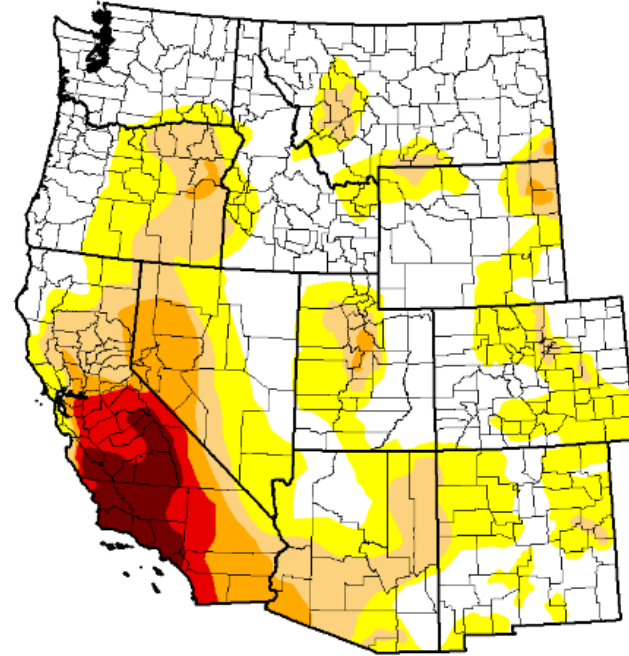
¹ Values were computed with the LC's gain-loss model for the most recent 24-month study.

² Percents of average are based on the 5-year mean from 2011-2015.

Drought Monitor



October 20, 2015

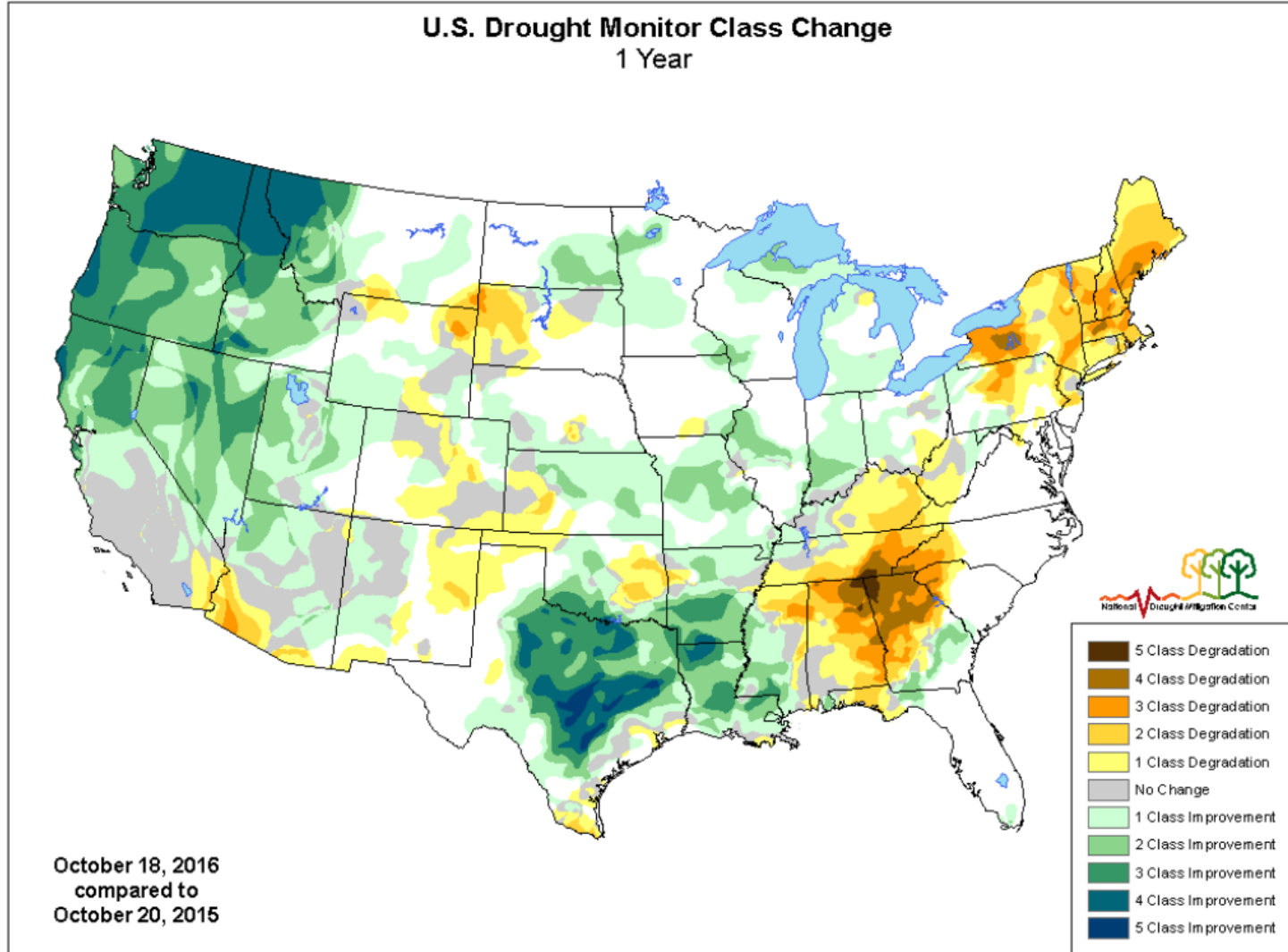


October 18, 2016

Statistics Comparison

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2015-10-20	22.91	77.09	56.07	41.32	26.23	7.62
2016-10-18	47.36	52.64	24.76	11.24	5.73	2.81

Drought Conditions

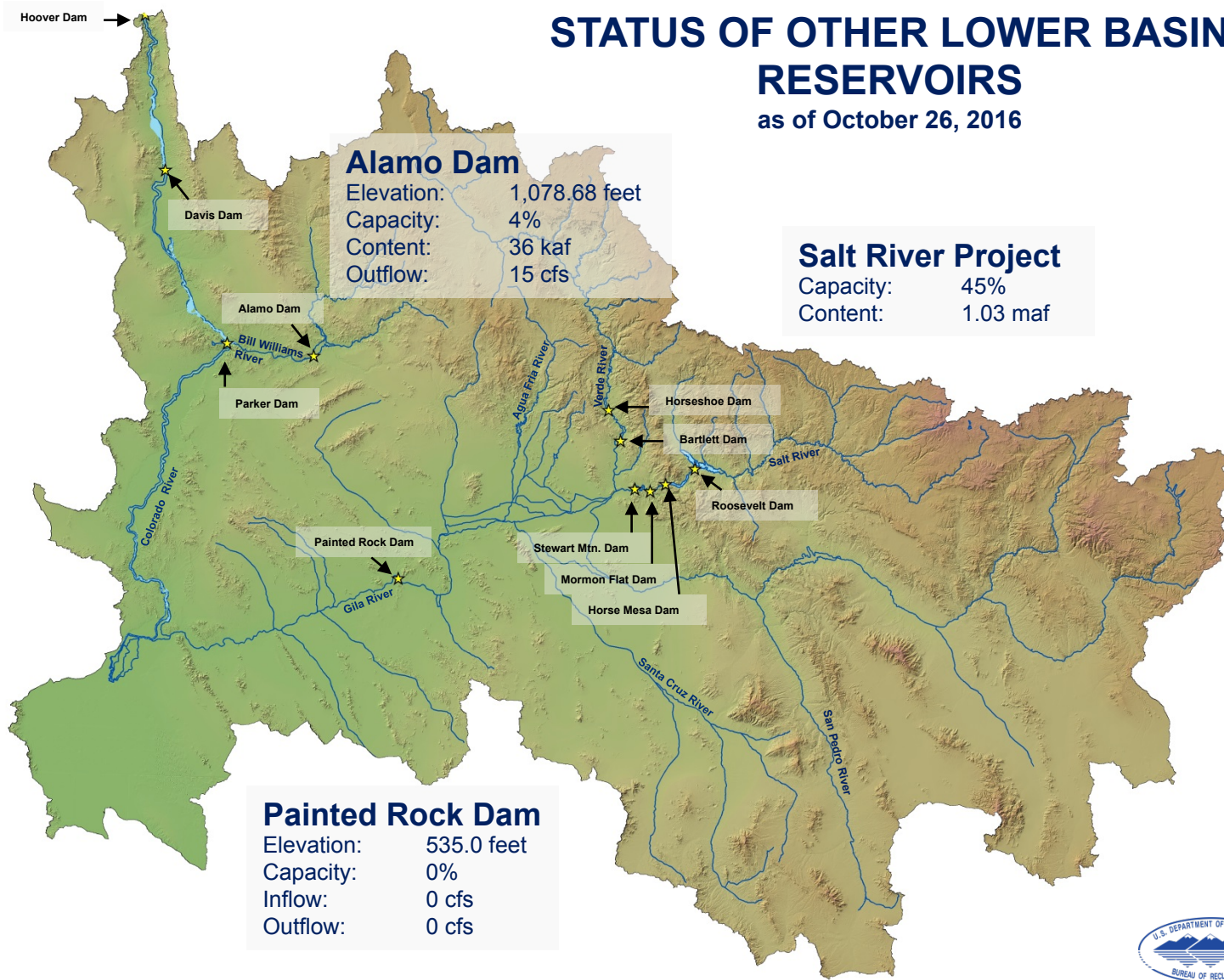


<http://droughtmonitor.unl.edu>

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STATUS OF OTHER LOWER BASIN RESERVOIRS

as of October 26, 2016



Additional Operational Data

(provisional year-to-date values)

Mexico Excess Flows (af)	Brock Reservoir Stored (af)	Senator Wash Stored (af)
2,988	122,553	60,841
Through 10/25/16	Through 10/21/16	Through 10/21/16



Morelos Dam Pictured Above – April 2014
Alexander Stephens (USBR)

LC Operations Update

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Lower Basin Operations Calendar Year 2017

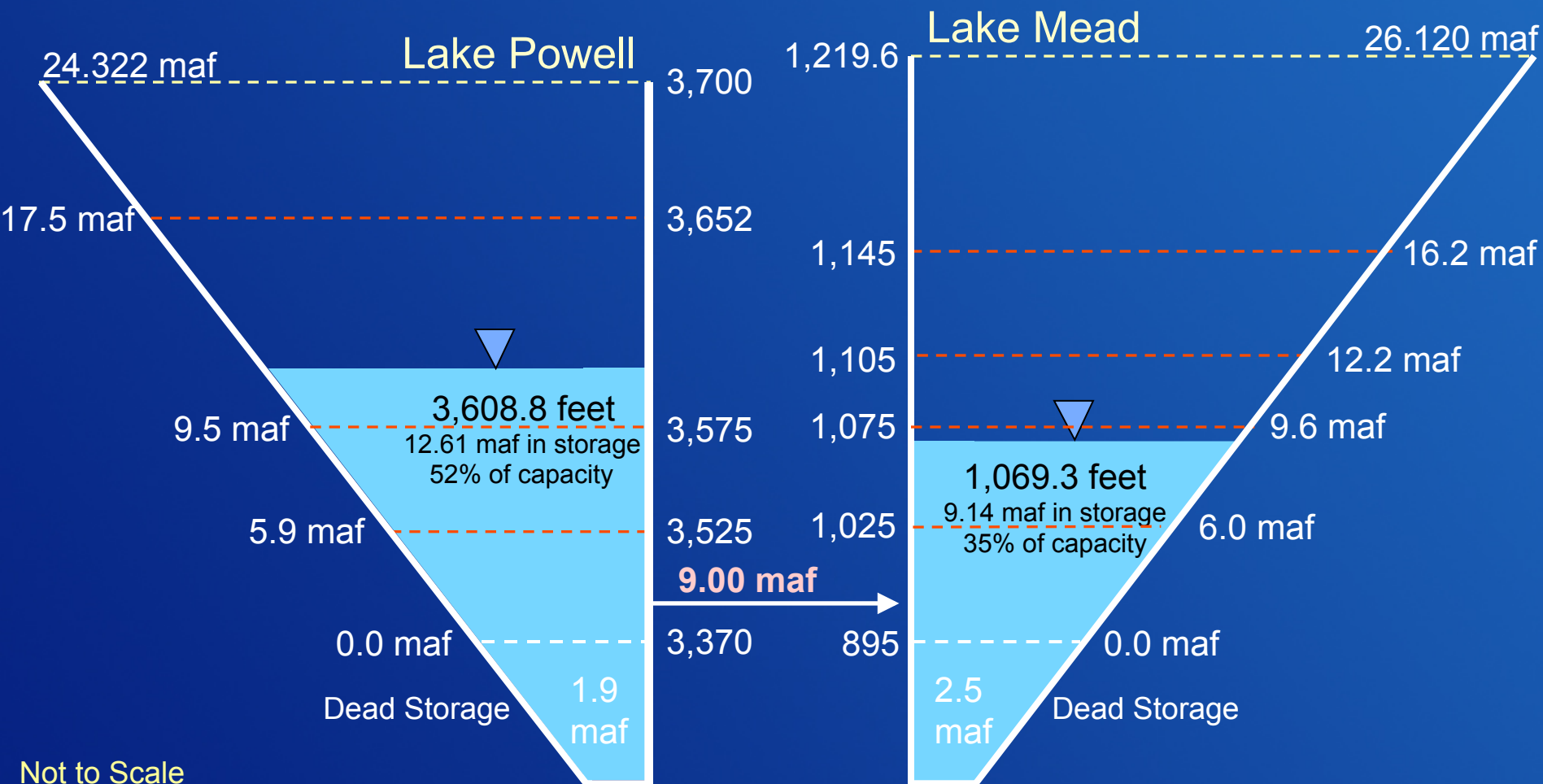
Lake Mead Operating Conditions

- Operating under the Normal/ICS Surplus Condition
 - Lower Basin projected water use of 7.5 maf +/- ICS created or delivered
 - Mexico projected to take delivery of 1.5 maf +/- any water deferred or delivered

End of Water Year 2017 Projections

October 2016 24-Month Study Most Probable Inflow Scenario¹

Projected Unregulated Inflow into Powell¹ = 9.24 maf (85% of average)



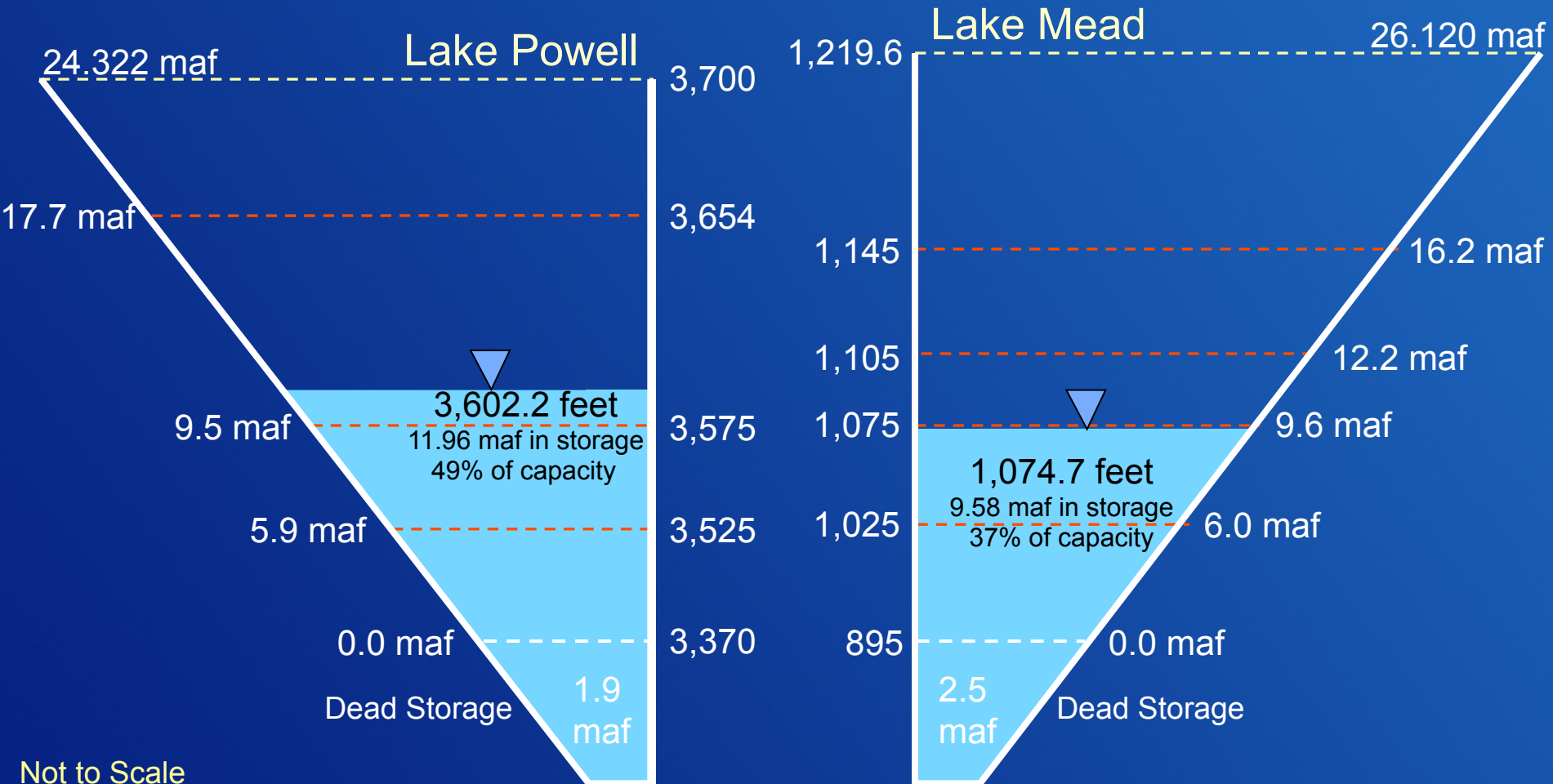
Not to Scale

¹ WY 2016 unregulated inflow into Lake Powell is based on the CBRFC forecast dated 10/3/16.

End of Calendar Year 2017 Projections

October 2016 24-Month Study Most Probable Inflow Scenario¹

Based on a 9.00 maf release pattern from Lake Powell in Water Year 2018

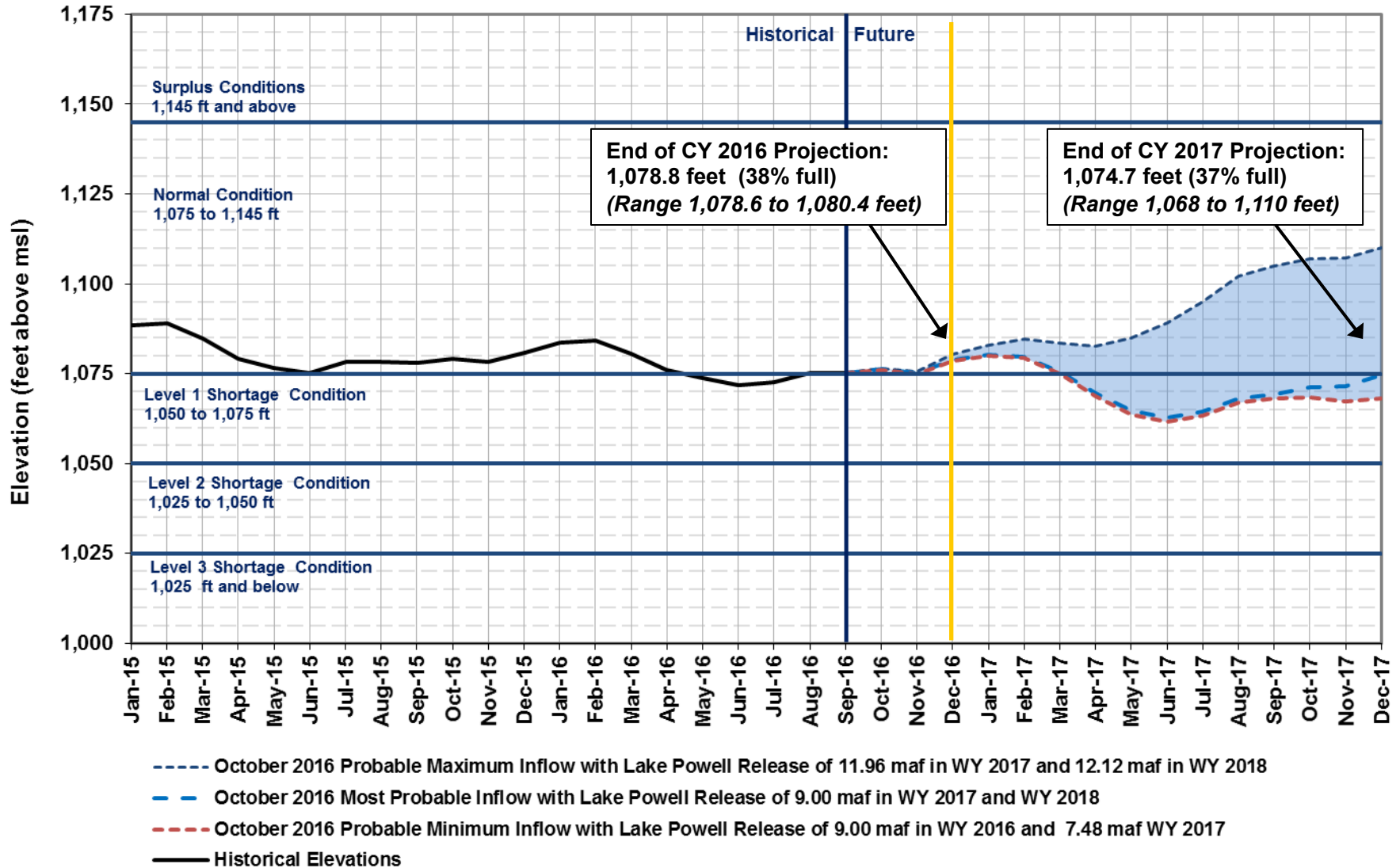


Not to Scale

¹ WY 2016 unregulated inflow into Lake Powell is based on the CBRFC forecast dated 10/3/16.

Lake Mead End of Month Elevations

Projections from October 2016 24-Month Study Inflow Scenarios



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
	<i>Equalization – annual release > 8.23 maf</i>	7	21	21	27	30
	<i>Equalization – annual release = 8.23 maf</i>	0	0	0	1	1
	Upper Elevation Balancing Tier	93	57	57	53	45
	<i>Upper Elevation Balancing – annual release > 8.23 maf</i>	89	48	43	41	35
	<i>Upper Elevation Balancing – annual release = 8.23 maf</i>	4	8	13	10	10
	<i>Upper Elevation Balancing – annual release < 8.23 maf</i>	0	1	1	2	0
	Mid-Elevation Release Tier	0	21	20	10	16
	<i>Mid-Elevation Release – annual release = 8.23 maf</i>	0	0	0	1	1
	<i>Mid-Elevation Release – annual release = 7.48 maf</i>	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	56
	<i>Shortage – 1st level (Mead ≤ 1,075 and ≥ 1,050)</i>	0	48	50	41	33
	<i>Shortage – 2nd level (Mead < 1,050 and ≥ 1,025)</i>	0	0	10	16	16
	<i>Shortage – 3rd level (Mead < 1,025)</i>	0	0	0	3	7
	Surplus Condition – any amount (Mead ≥ 1,145 ft)	0	0	5	8	14
	<i>Surplus – Flood Control</i>	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.

An aerial photograph of a large concrete dam and a multi-lane bridge spanning a deep river canyon. The dam is a curved structure with two towers. The bridge is a long, multi-lane concrete structure supported by several tall piers. The surrounding landscape is rugged and rocky, with some winding roads and power lines visible. The sky is clear and blue.

Lower Colorado River Operations

For further information: [http://www.usbr.gov/lc/
region](http://www.usbr.gov/lc/region)

Email at:
bcoowaterops@usbr.gov

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