RECLAMATION

Managing Water in the West

2013 Colorado River Annual Operating Plan

Colorado River Management Work Group
Second Consultation
July 26, 2012

U.S. Department of the Interior
Bureau of Reclamation

2013 Colorado River AOP
Second Consultation Meeting

- Welcome and Introductions – *Malcolm Wilson / Steve Hvinden*
- Upper Basin Hydrology and Operations – *Rick Clayton*
- Lower Basin Hydrology and Operations – *Dan Bunk*
- 2013 AOP Review Process – *Malcolm Wilson / Steve Hvinden*
- Review of Draft 2013 AOP - CRMWG
- Conclusion, Wrap-up, Future Meeting Date
  - Final Consultation – Wednesday, September 12, 2012

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Upper Colorado River Basin

Hydrology and Operations

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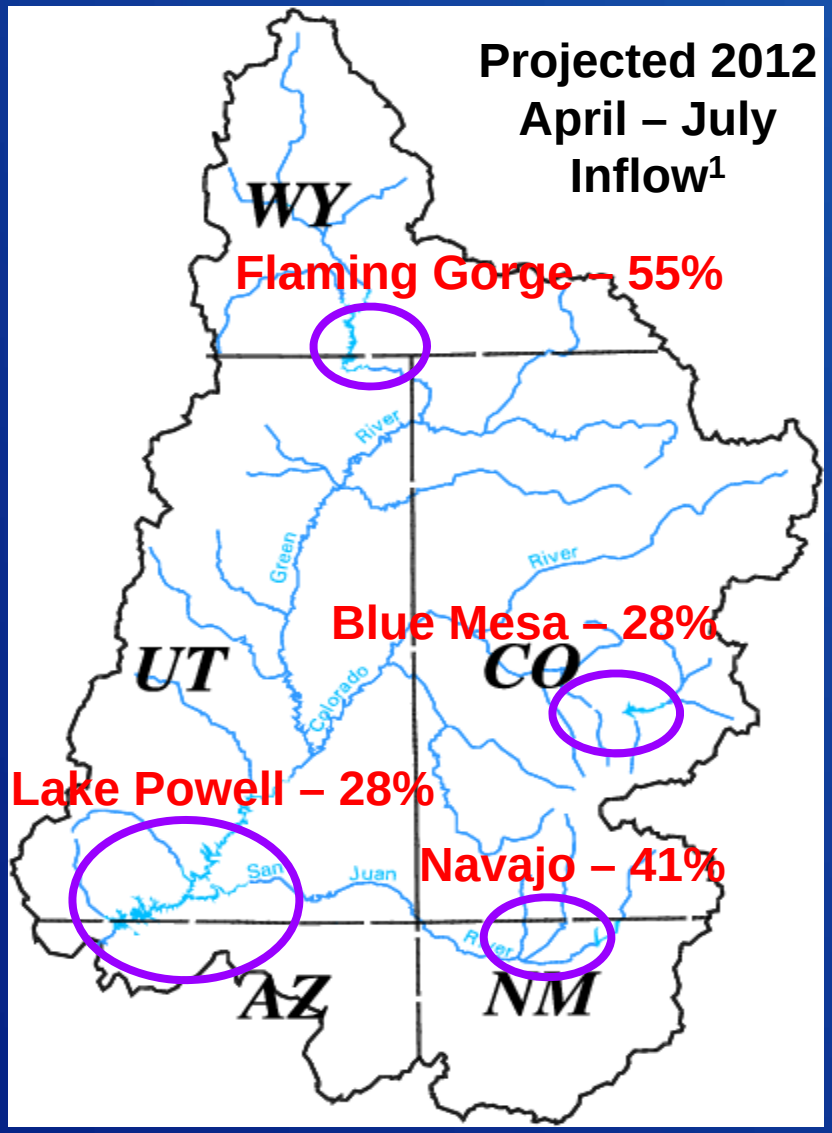
CBRFC Unregulated Inflow Forecasts
dated July 2, 2012 (July Official)



Lake Powell Apr-Jul Unreg Inflow

Period in 2012	Inflow (KAF)	Percent of Average[1]
April (observed)	764	72
May (observed)	792	34
June (observed)	353	13
July (forecasted)	100	9
April – July	2,010	28
Water Year Projection	4,999	46

[1] Percentages and percent of average based on period of record from 1981-2010.

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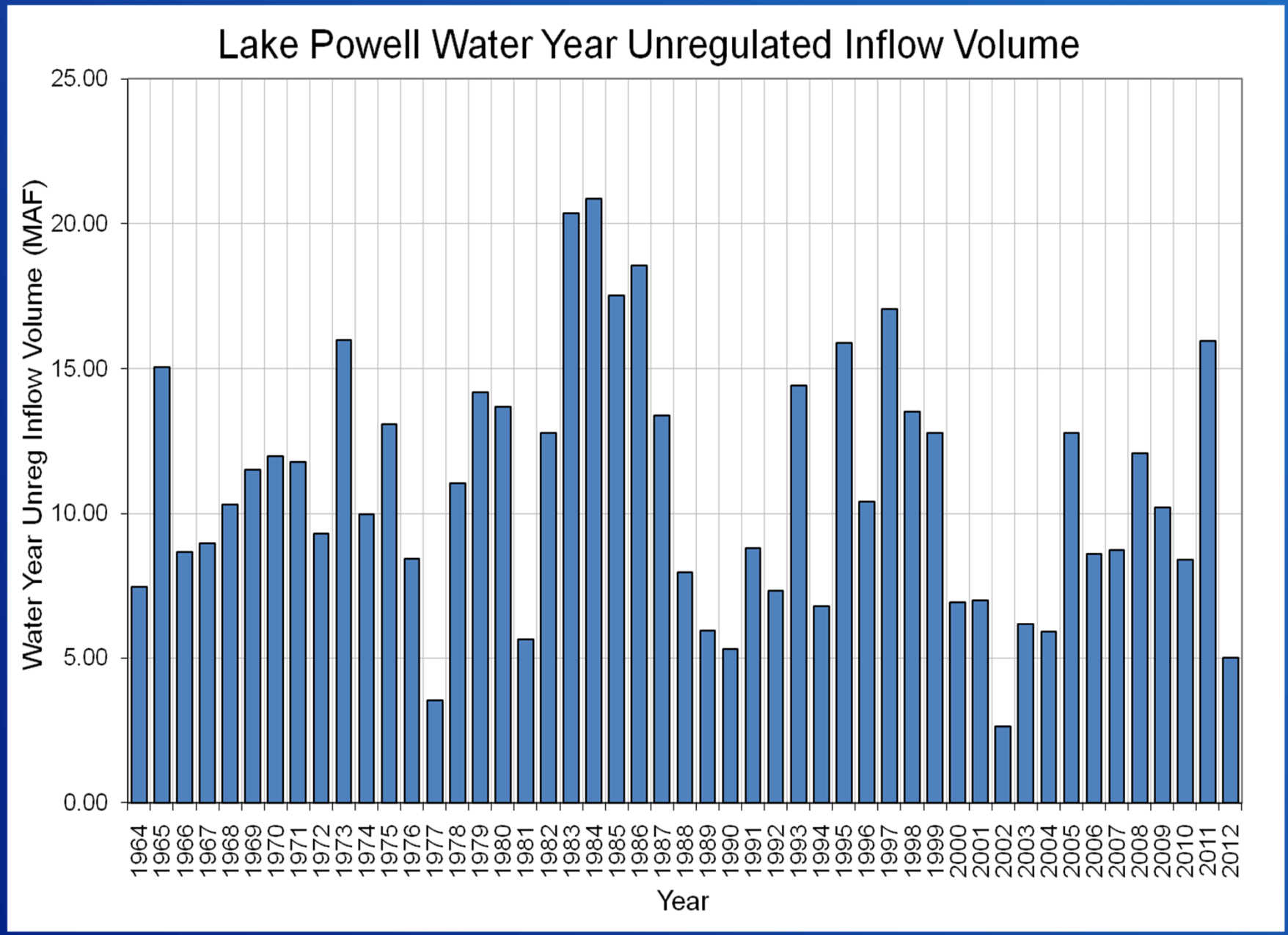

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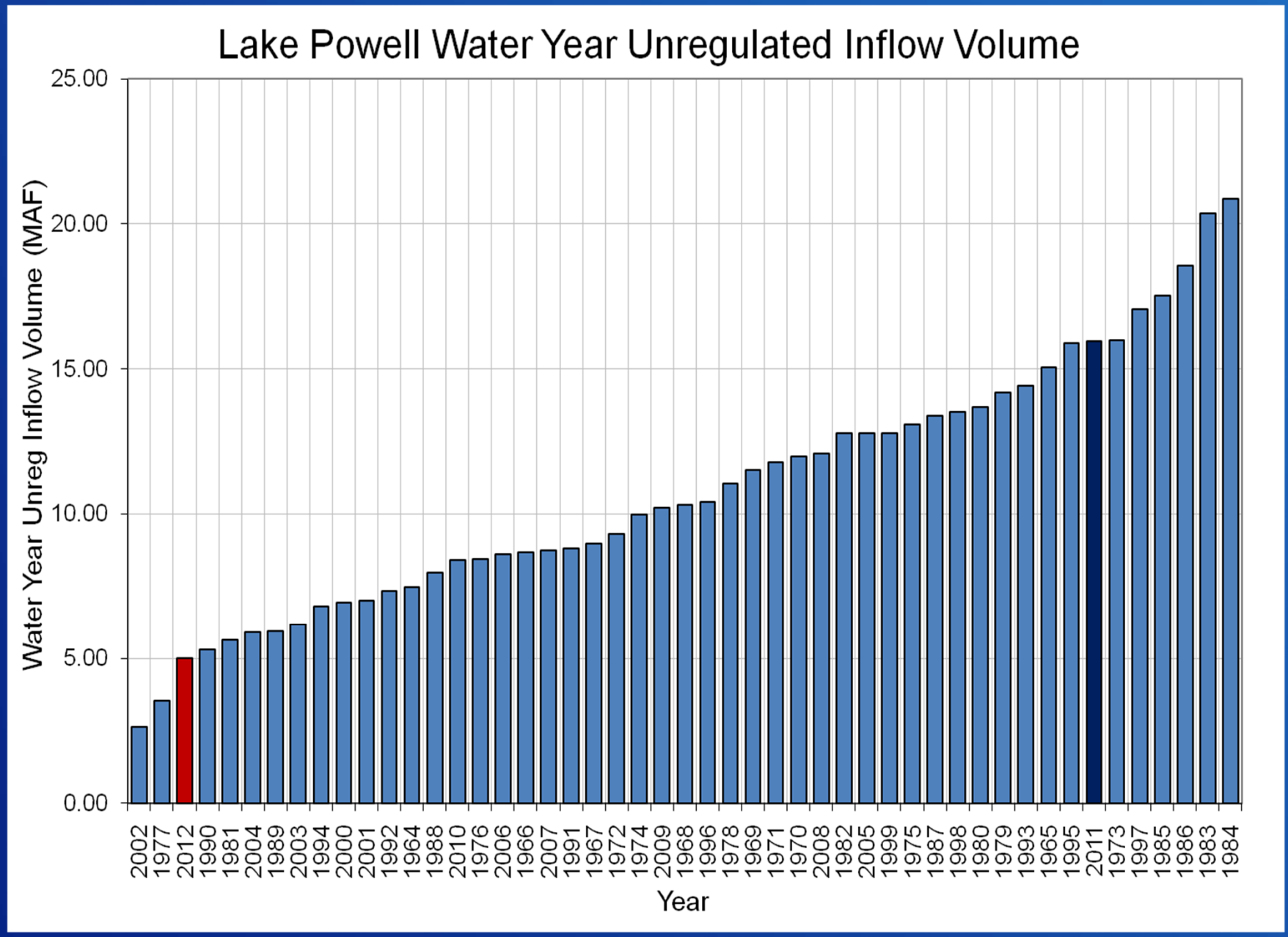

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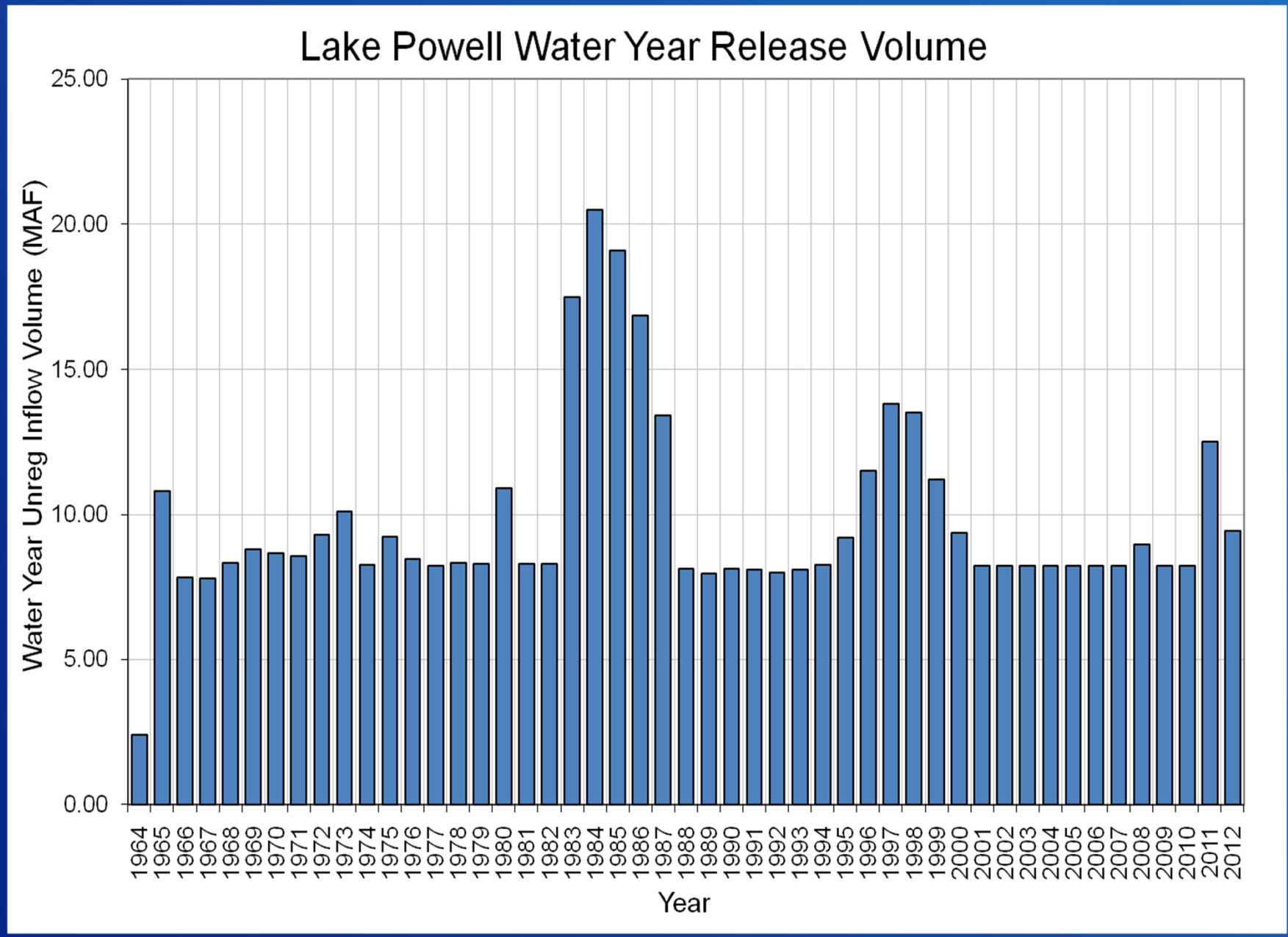

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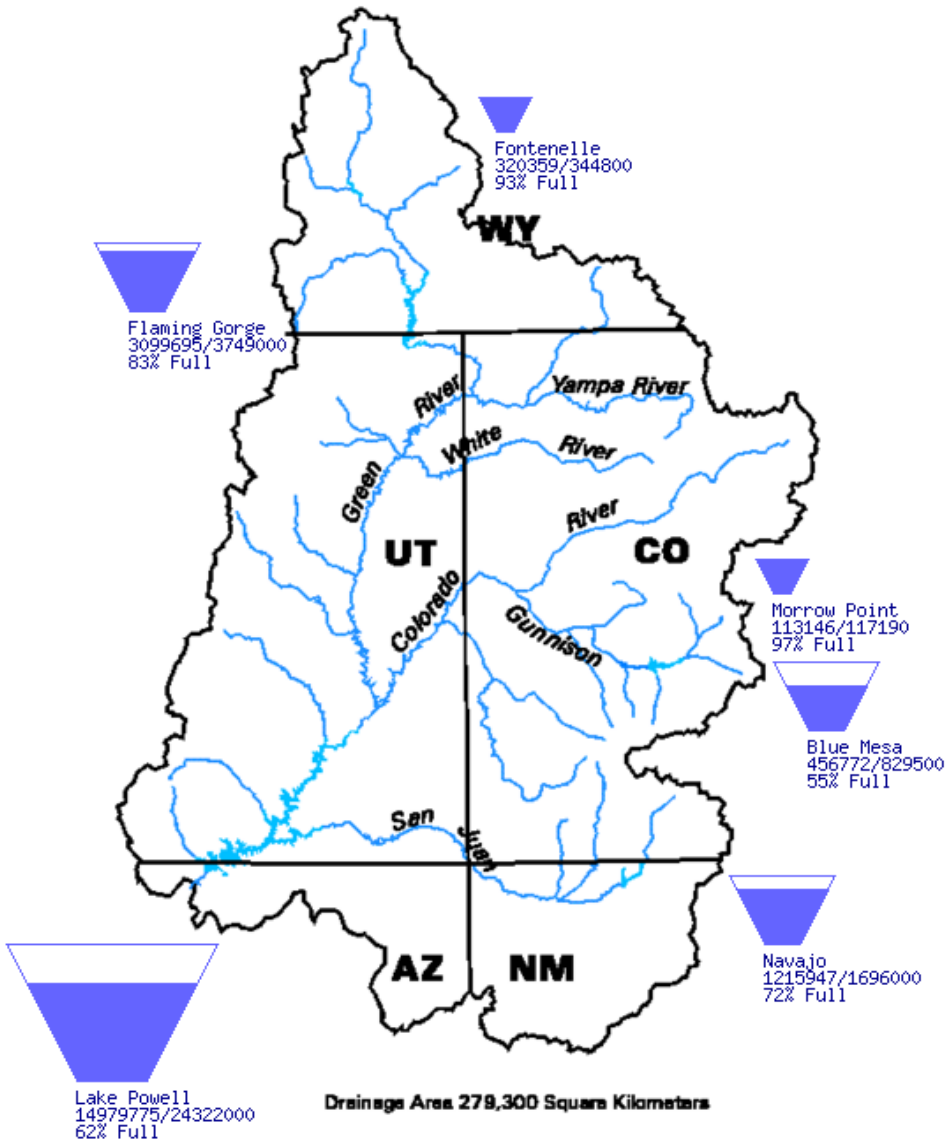
Data Current as of:
07/15/2012

Upper Colorado River Drainage Basin



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Projected Operations for the Remainder of WY 2012

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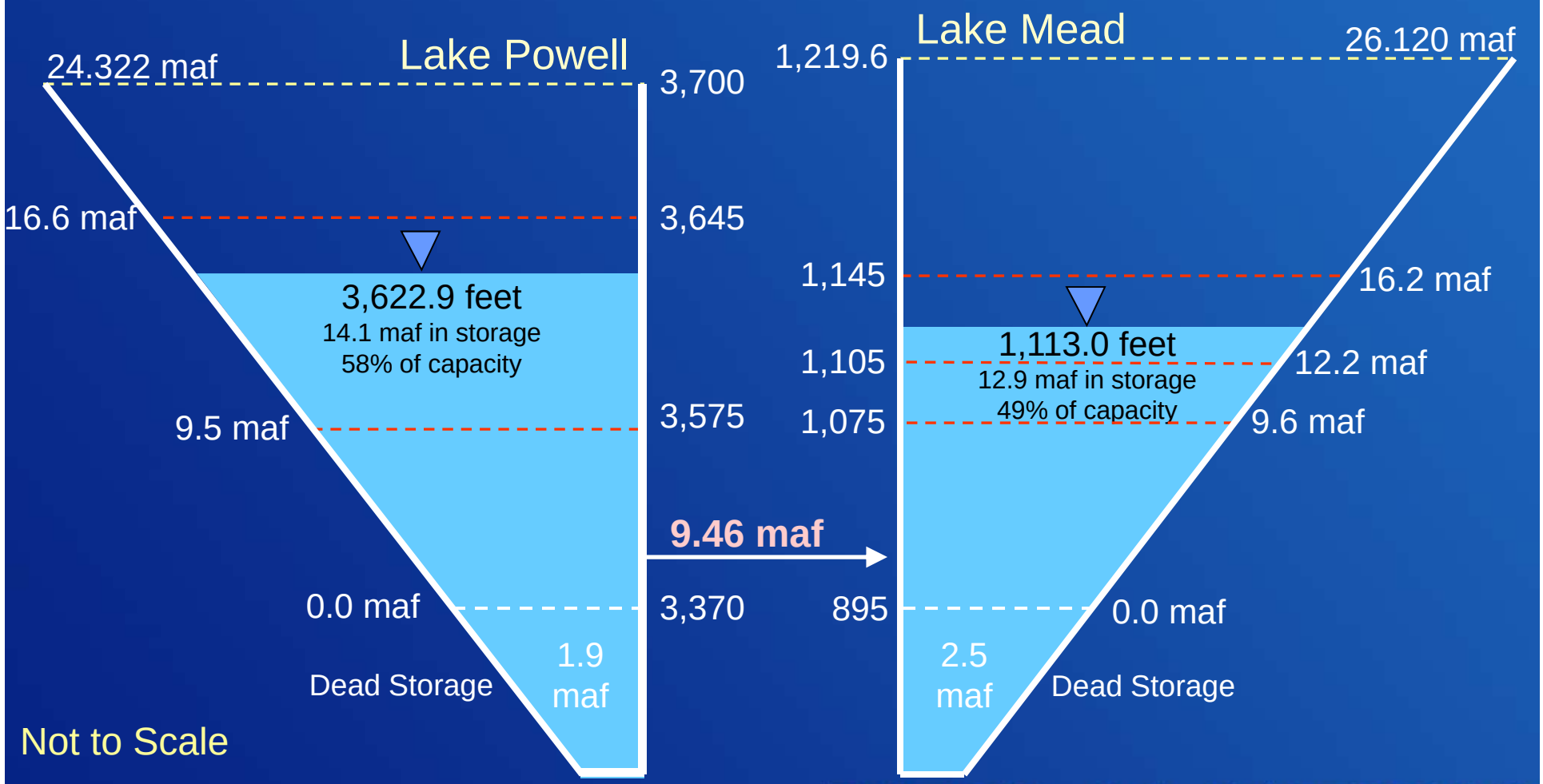
Water Year 2012 Projections

July 2012 24-Month Study Most Probable Inflow Scenario

Projected Unregulated Inflow into Powell[1] = 5.00 maf (46% of average)



[1] WY 2012 unregulated inflow volume is based on the CBRFC forecast dated 7/2/2012. Percent of average inflow is based on the 30-year period of record from 1981-2010.

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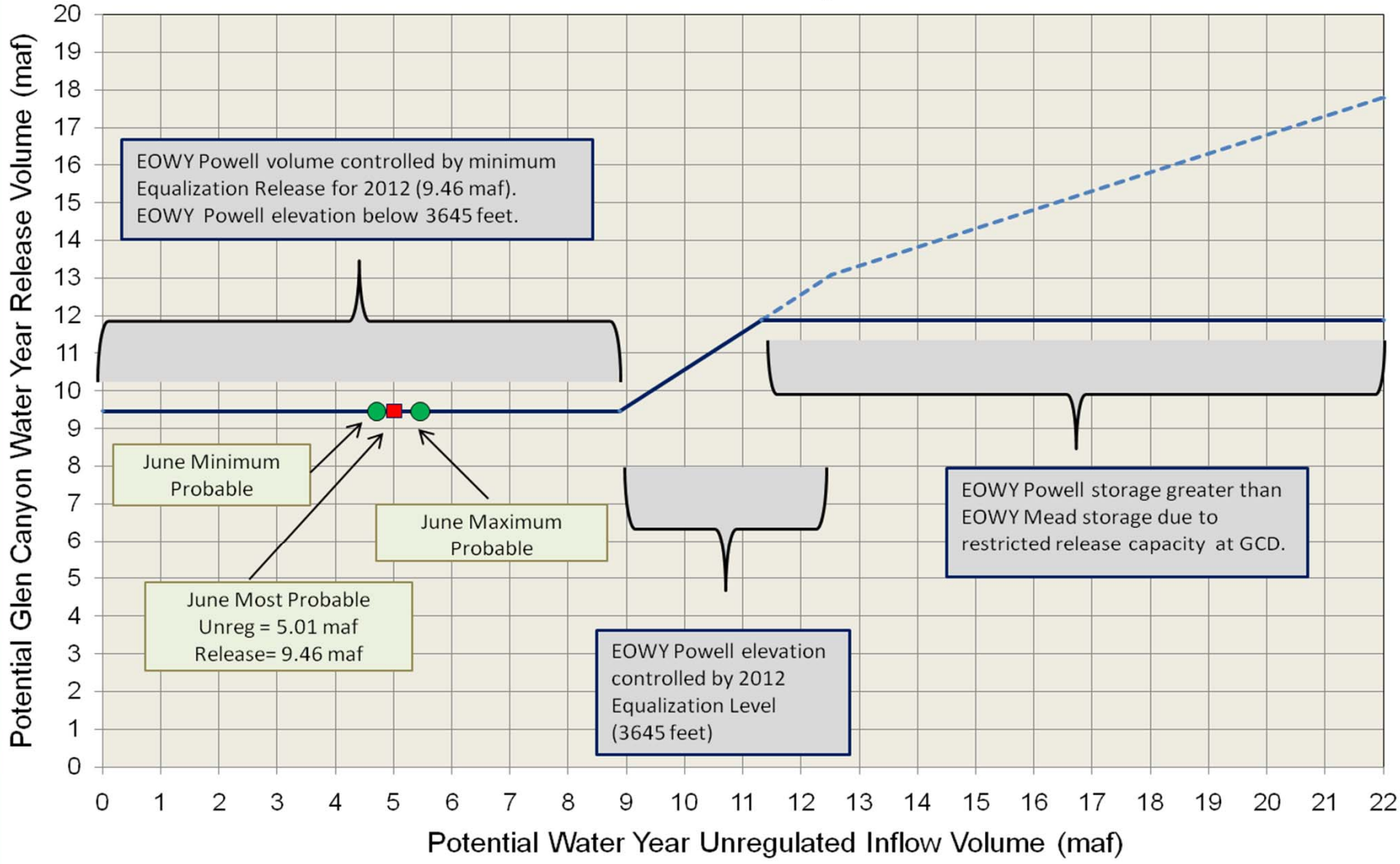
Coordinated Operations of Lake Powell and Lake Mead

Water Year 2012 ReleaseVolume as a Function of Unregulated Inflow Volume based on June 24-Month Study Conditions



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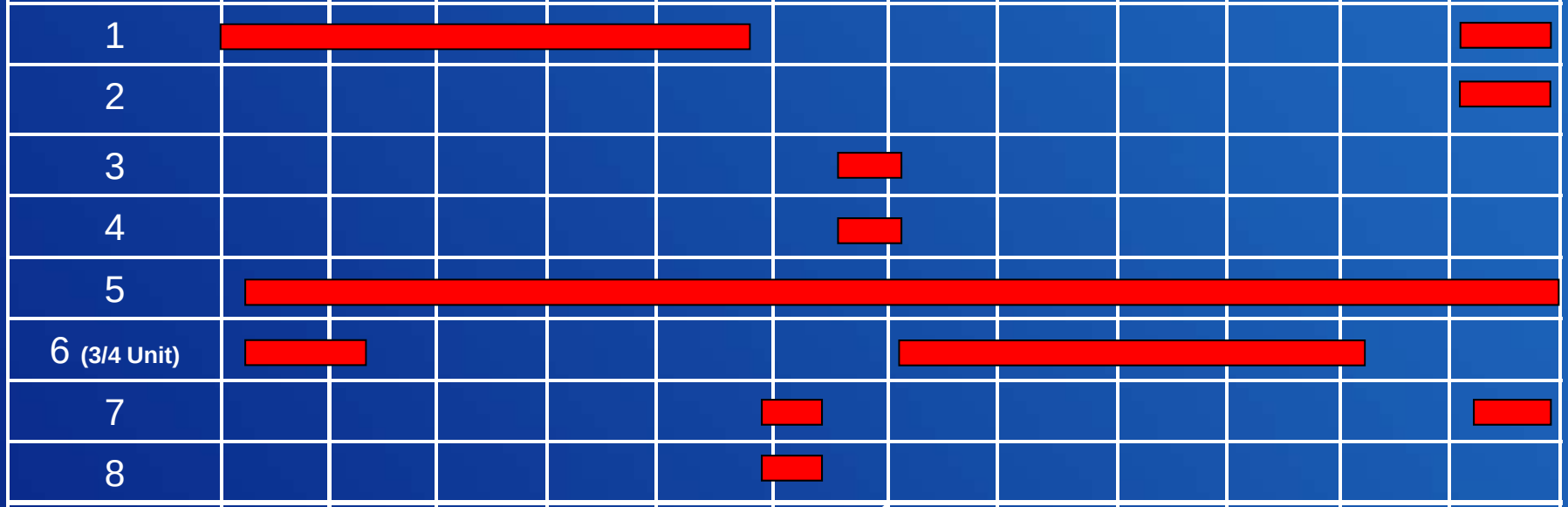
Glen Canyon Power Plant Planned Unit Outage Schedule for Water Year 2012
(updated 7-13-2012)



Unit Number	Oct 2011	Nov 2011	Dec 2011	Jan 2012	Feb 2012	Mar 2012	Apr 2012	May 2012	Jun 2012	Jul 2012	Aug 2012	Sep 2012
1												
2												
3												
4												
5												
6 (3/4 Unit)												
7												
8												
Units Available	5	6	6	7	5	5 / 7	6	6	6	6	7	4
Capacity (cfs)	15,500	20,750	20,750	20,750	14,400	14,200 / 18,800	18,800	18,800	18,800	22,000	22,000	11,300
Capacity (kaf/month)	1030	1099	1223	1130	950	940	1050	1150	1130	1340	1310	780
Max (kaf)	956	1099	1223	852	650	600	600	600	709	888	800	476
Most (kaf)	956	1099	1223	852	650	600	600	600	709	888	800	476
Min (kaf)	956	1099	1223	852	650	600	600	600	709	888	800	476

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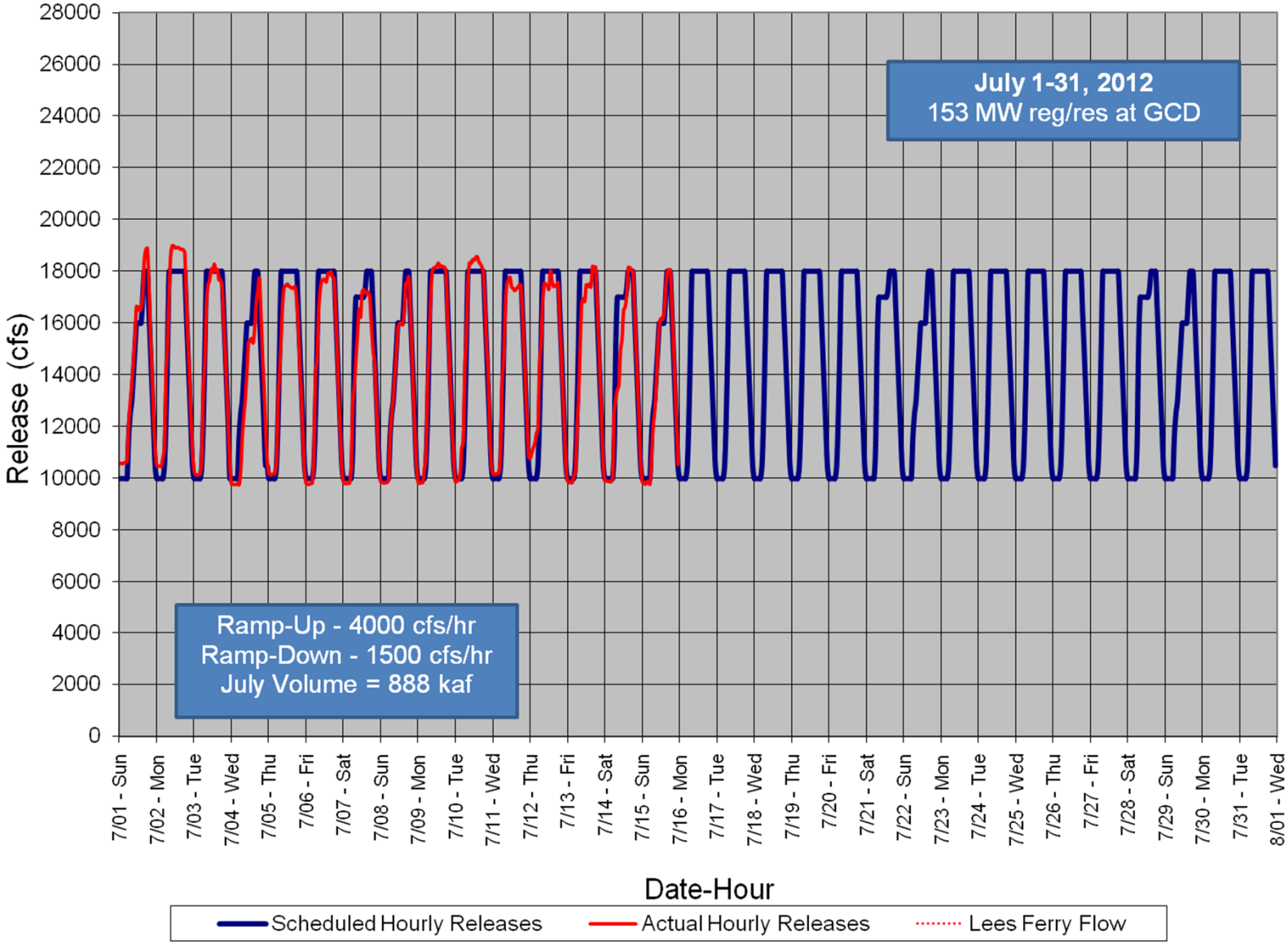
Glen Canyon Dam Hourly Release Pattern JUL 2012



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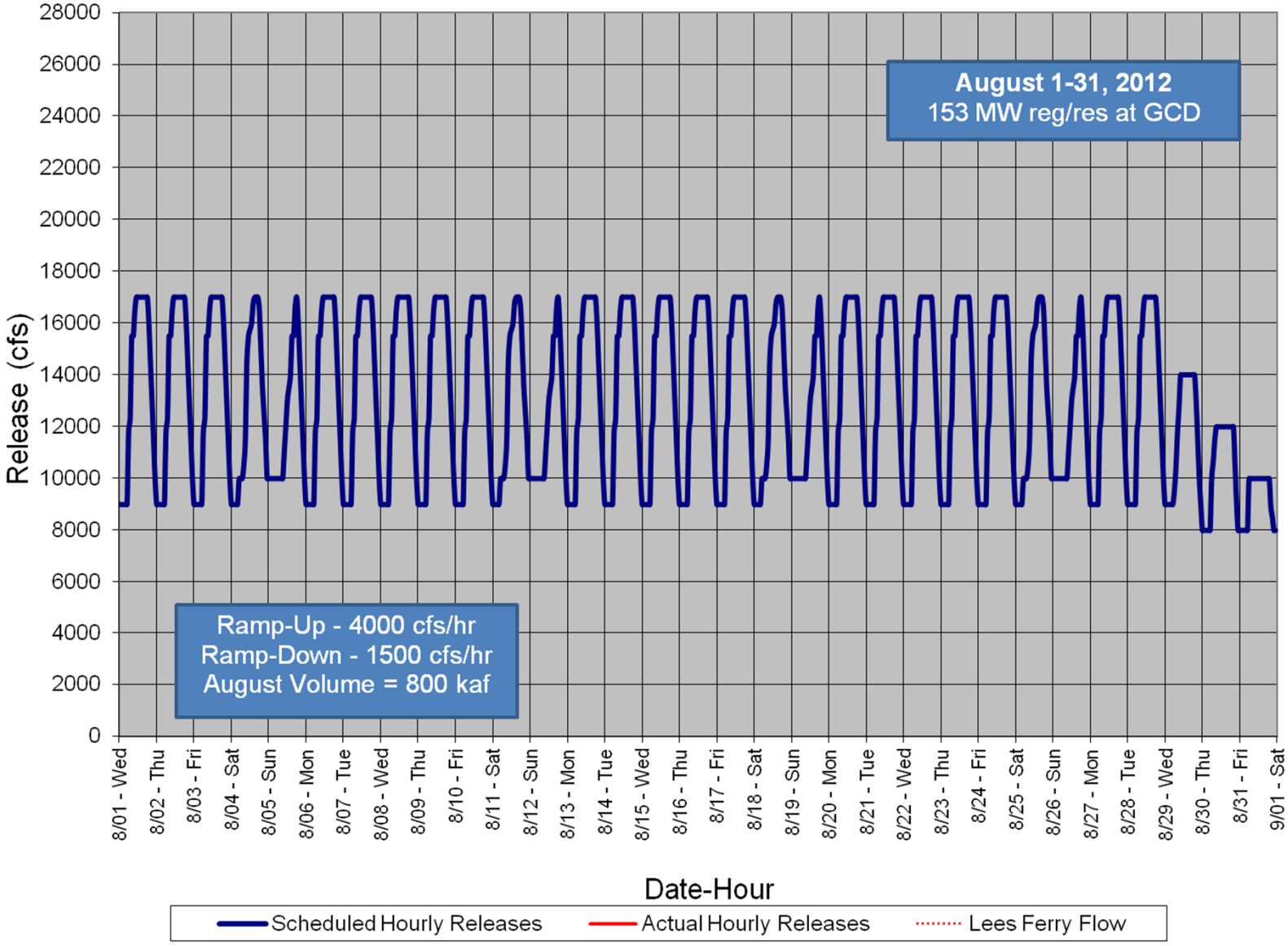
Glen Canyon Dam Hourly Release Pattern AUG 2012



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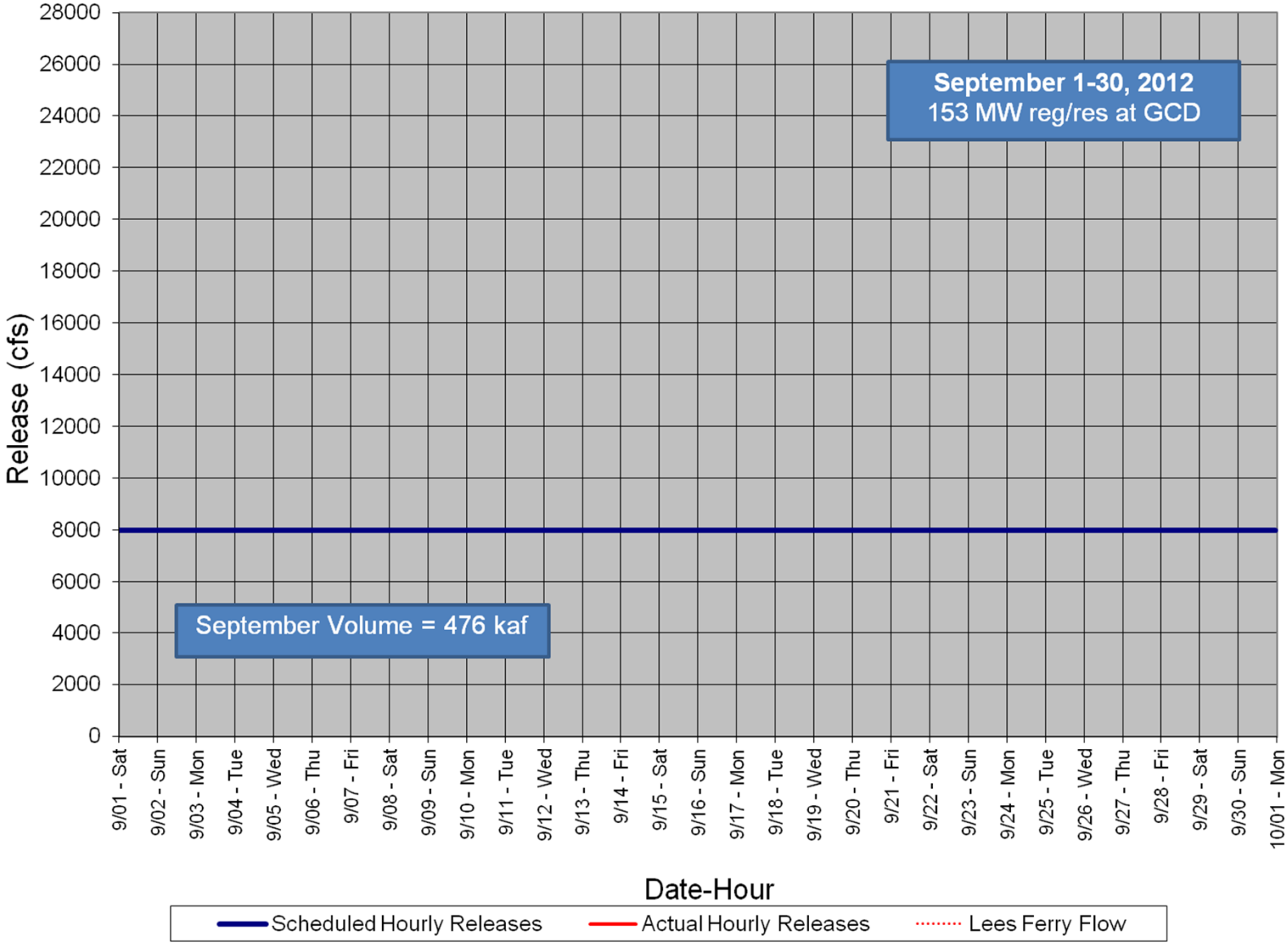
Glen Canyon Dam Hourly Release Pattern SEP 2012



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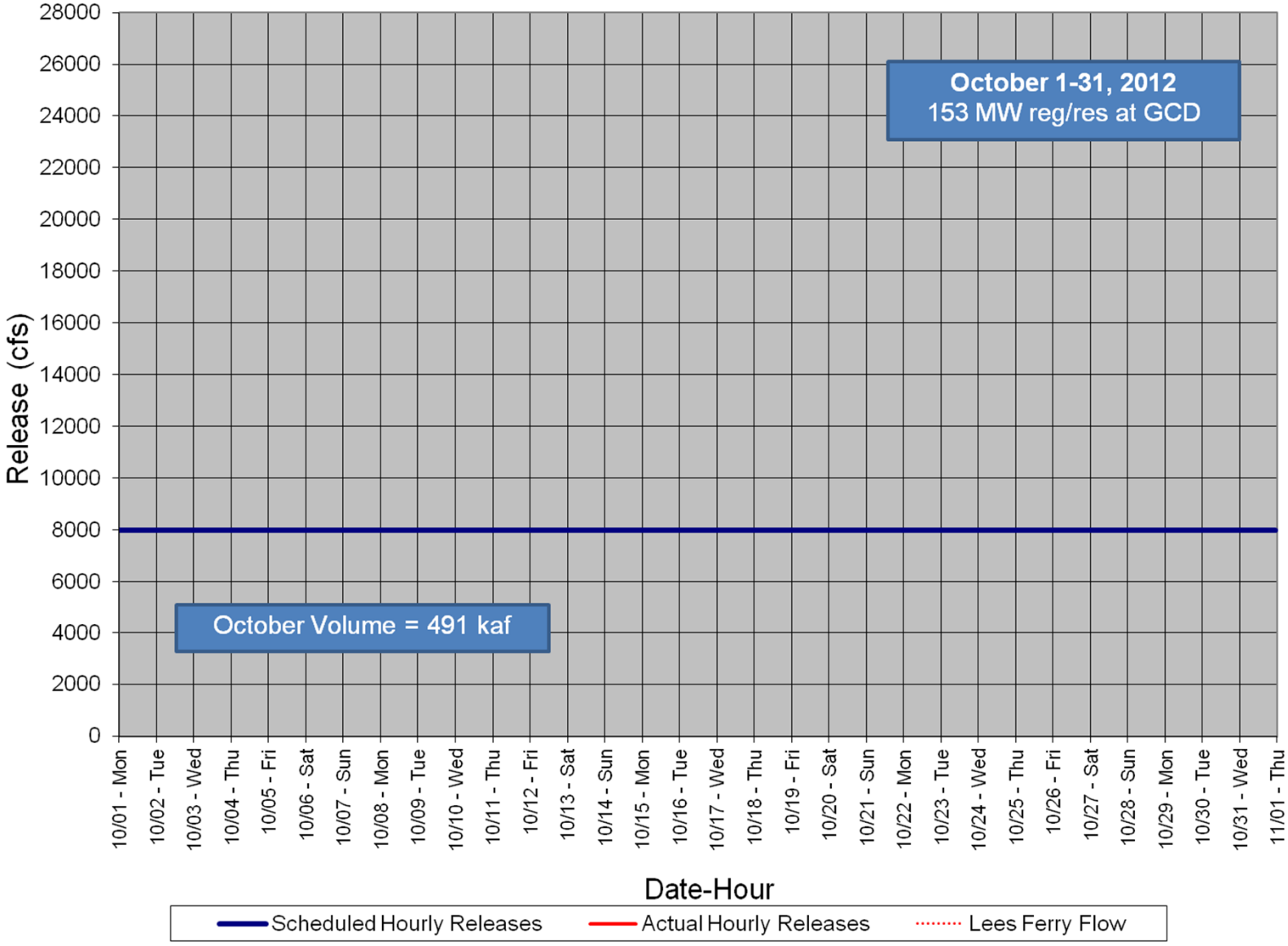
Glen Canyon Dam Hourly Release Pattern OCT 2012



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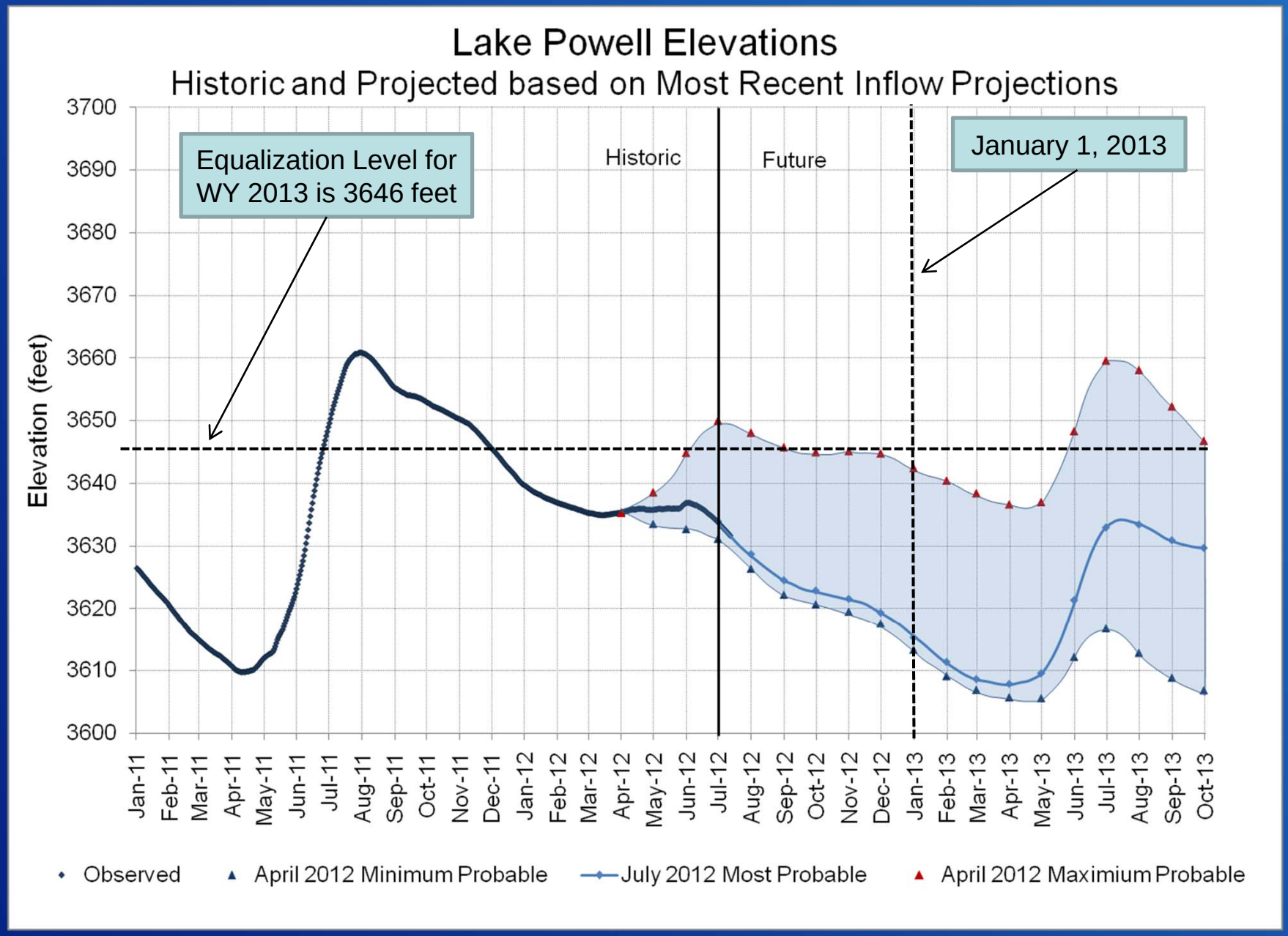
(updated 7-13-2012)

Unit Number	Oct 2012	Nov 2012	Dec 2012	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013
1												
2												
3												
4												
5												
6 (3/4 Unit)												
7												
8												
Units Available	5	7	7	7	5	5 / 7	7	7	7	7	7	4
Capacity (cfs)	18,800	21,900	21,900	21,900	14,800	18,100 / 21,900	21,900	21,900	21,900	21,900	21,900	11,100
Capacity (kaf/month)	1250	1300	1350	1350	920	1230	1300	1350	1300	1350	1350	780
Max (kaf)	---	---	---	---	---	---	---	---	---	---	---	---
Most (kaf)	491	600	800	800	675	600	600	600	800	840	824	600
Min (kaf)	---	---	---	---	---	---	---	---	---	---	---	---

RECLAMATION



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Annual Operating Plan

Lake Powell Unregulated Inflow WY2012

Scenario	2012 AOP WY 2012 Developed Aug 2011	Current Most Probable WY 2012 Developed July 2012
Minimum Probable	7.00 maf (65 %)	5.00 maf (46 %)
Most Probable	12.60 maf (116 %)	
Maximum Probable	19.50 maf (180 %)	

[1] Percentages and percent of average based on period of record from 1981-2010.

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Annual Operating Plan

Lake Powell Unregulated Inflow WY2013

Scenario	2012 AOP WY 2012 Developed Aug 2011	2013 AOP WY 2013 1981-2010 Statistics
Minimum Probable	7.00 maf (65 %)	4.94 maf (46 %)
Most Probable	12.60 maf (116 %)	10.83 maf (100 %)
Maximum Probable	19.50 maf (180 %)	17.24 maf (159 %)

[1] Percentages and percent of average based on period of record from 1981-2010.

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Annual Operating Plan

Lake Powell Unregulated Inflow WY2013

Scenario	2012 AOP WY 2012 Developed Aug 2011	2013 AOP WY 2013 Outlook from CBRFC
Minimum Probable	7.00 maf (65 %)	?
Most Probable	12.60 maf (116 %)	?
Maximum Probable	19.50 maf (180 %)	?

[1] Percentages and percent of average based on period of record from 1981-2010.

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Lower Colorado River Basin

Hydrology and Operations

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Colorado River Basin Storage
(as of July 22, 2012)

Current Storage	Percent Full	MAF	Elevation (Feet)
Lake Powell	61%	14.85	3,630
Lake Mead	50%	13.15	1,115
Total System Storage*	60%	35.54	NA

*Total system storage was 39.01 maf or 66% this time last year

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Lake Powell & Lake Mead
Operational Diagrams and Current Conditions

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
3,630		14.85
7/22/12	**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	7/22/12
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
1,115	**Normal or ICS Surplus Condition** Deliver ≥ 7.5 maf	13.15
7/22/12		7/22/12
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.

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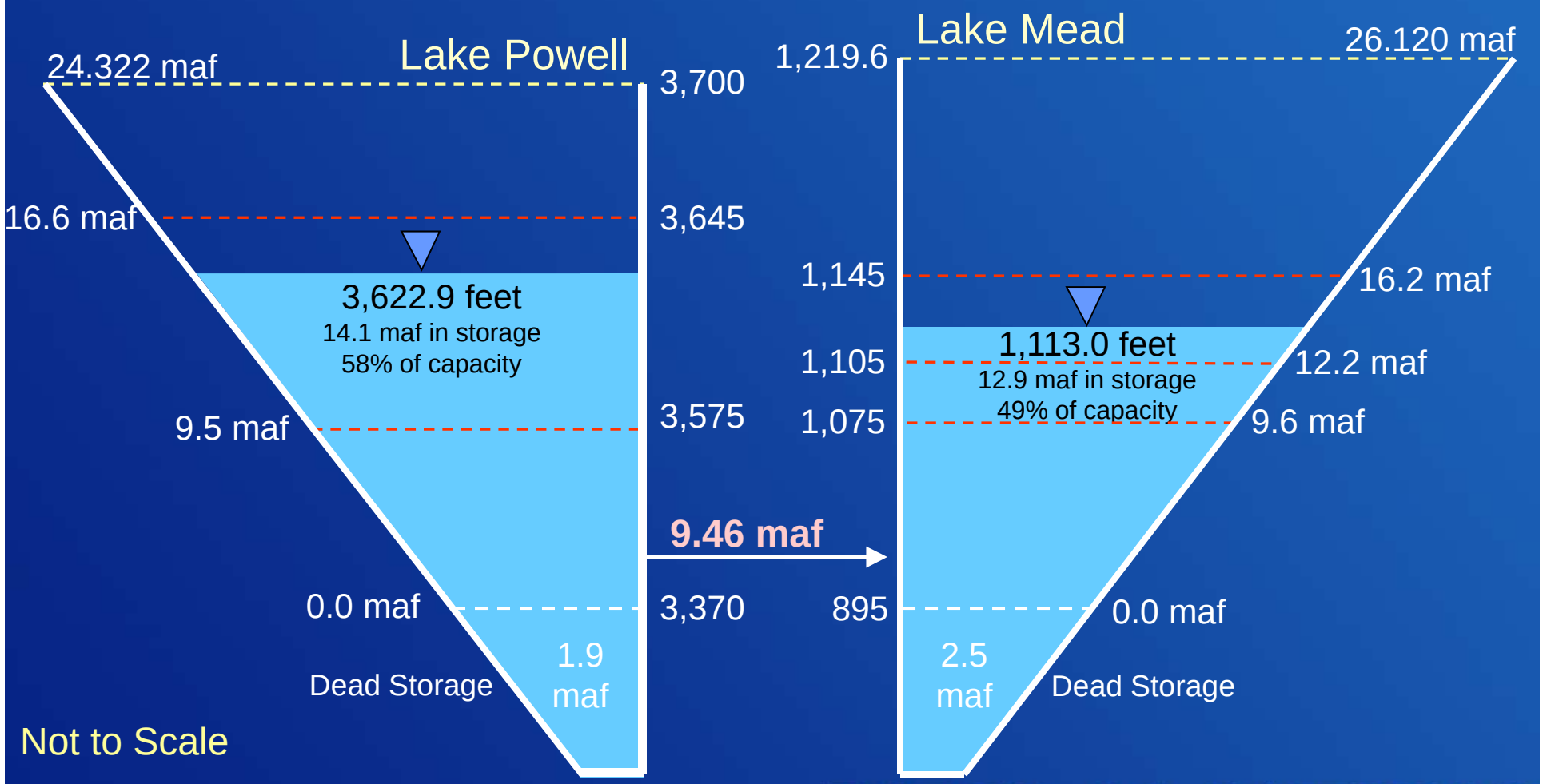
Water Year 2012 Projections

July 2012 24-Month Study Most Probable Inflow Scenario

Projected Unregulated Inflow into Powell[1] = 5.00 maf (46% of average)



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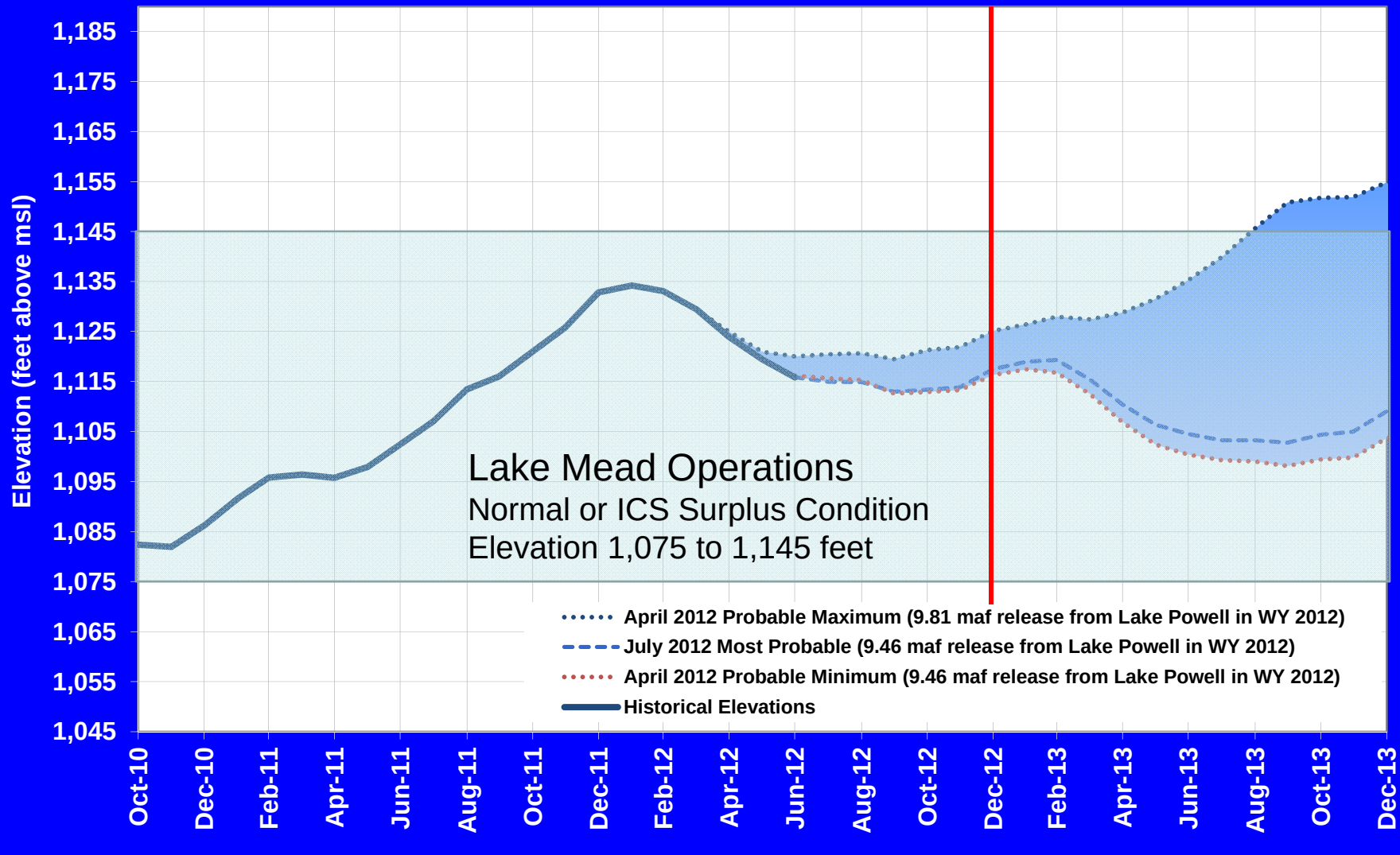
Lake Mead End of Month Elevation

Projections from 24-Month Study Inflow Scenarios



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Lower Basin Side Inflows
Glen Canyon to Hoover in WY/CY 2012[1,2]

	Month in WY/CY 2012	Intervening Flow Glen Canyon to Hoover (KAF)	Intervening Flow Glen Canyon to Hoover (% of Average)	Difference From 5-Year Average (KAF)
OBSERVED	October 2011	66	135%	+17
	November 2011	36	78%	-10
	December 2011	84	78%	-24
	January 2012	55	70%	-23
	February 2012	44	45%	-54
	March 2012	43	56%	-35
	April 2012	46	61%	-30
	May 2012	14	23%	-50
	June 2012	8	24%	-25
PROJECTED	July 2012	54		
	August 2012	103		
	September 2012	74		
	October 2012	49		
	November 2012	46		
	December 2012	108		
	WY 2012 Totals	**627**	**73%**	**-234**
	CY 2012 Totals	**644**	**75%**	**-217**

[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 2007-2011.

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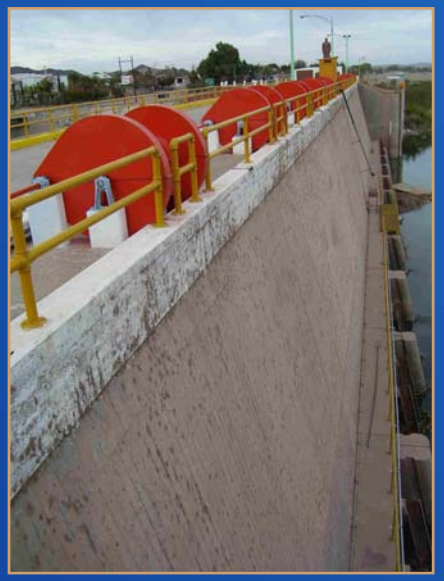
YAO Operations Update

- Brock and Senator Wash storage year-to-date[1]
  - Brock 73,600 AF
  - Senator Wash 52,800 AF
- Excess Flows to Mexico year-to-date[2] 29,900 AF
- Excess flows from January 1 thru July 12 were 8,170 AF. An unusual storm event on July 13th brought 2 to 5 inches of rain from Parker Dam to NIB.



[1] Provisional values through July 22, 2012

[2] Provisional value through July 22, 2012

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 May 2012 was 46,840 AF at 2,750 ppm
- Provisional drainage Flows to the Colorado River
  - From the South Gila Drainage Wells January through May 2012 was 26,100 AF at 1,700 ppm
  - From the Yuma Mesa Conduit January through May 2012 was 9,460 AF at 1,630 ppm

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