RECLAMATION

Managing Water in the West

2013 Colorado River Annual Operating Plan

Colorado River Management Work Group
First Consultation
May 31, 2012

U.S. Department of the Interior
Bureau of Reclamation

2013 Colorado River AOP
First Consultation Meeting

- Welcome and Introductions – *Dave Trueman / Steve Hvinden*
- Upper Basin Hydrology and Operations – *Rick Clayton*
- Lower Basin Hydrology and Operations – *Dan Bunk / Ed Virden*
- 2013 AOP Review Process –*Dave Trueman / Steve Hvinden*
- Review of Draft 2013 AOP - CRMWG
- Conclusion, Wrap-up, Future Meeting Dates

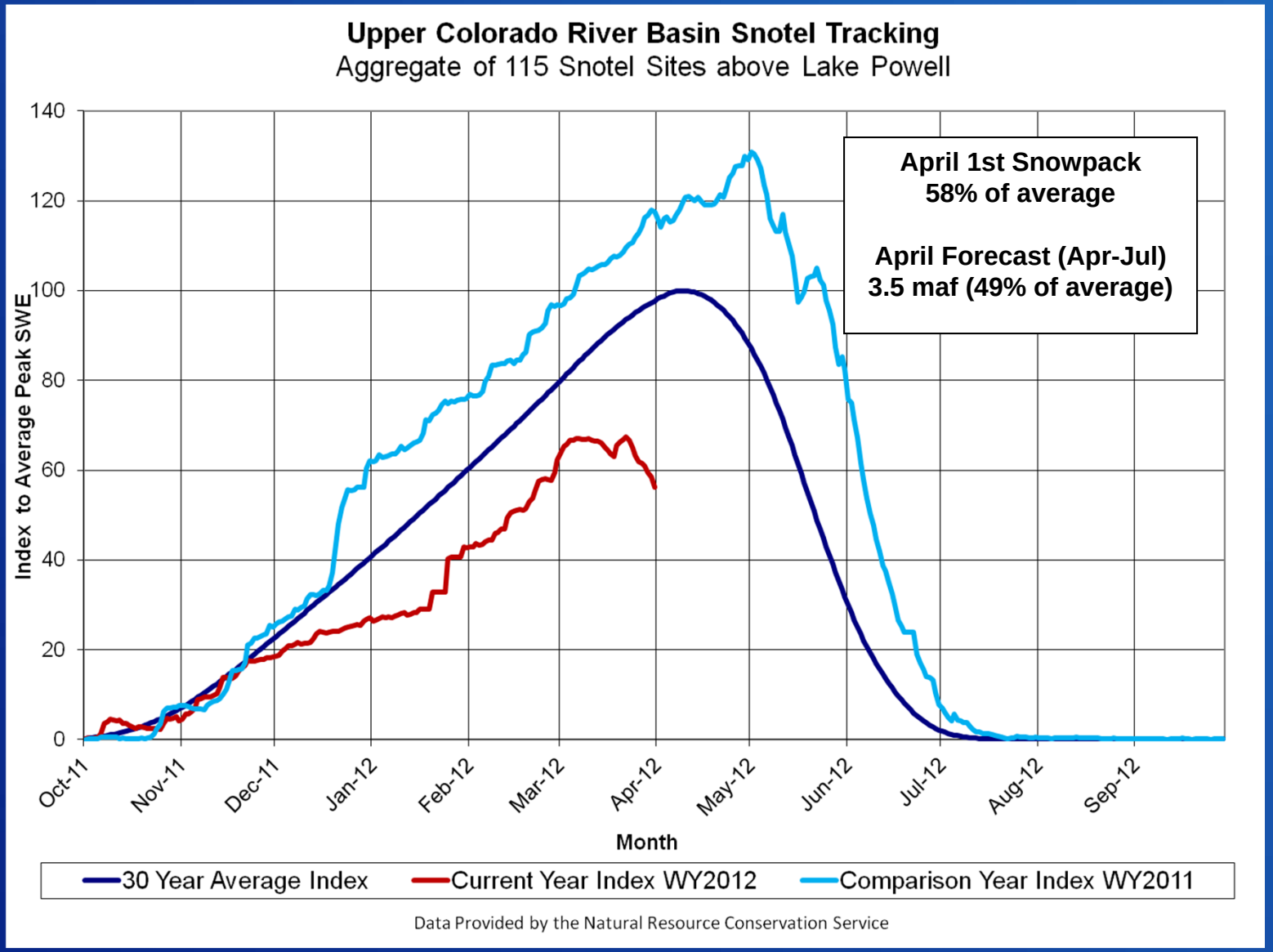
RECLAMATION

Upper Colorado River Basin

Hydrology and Operations

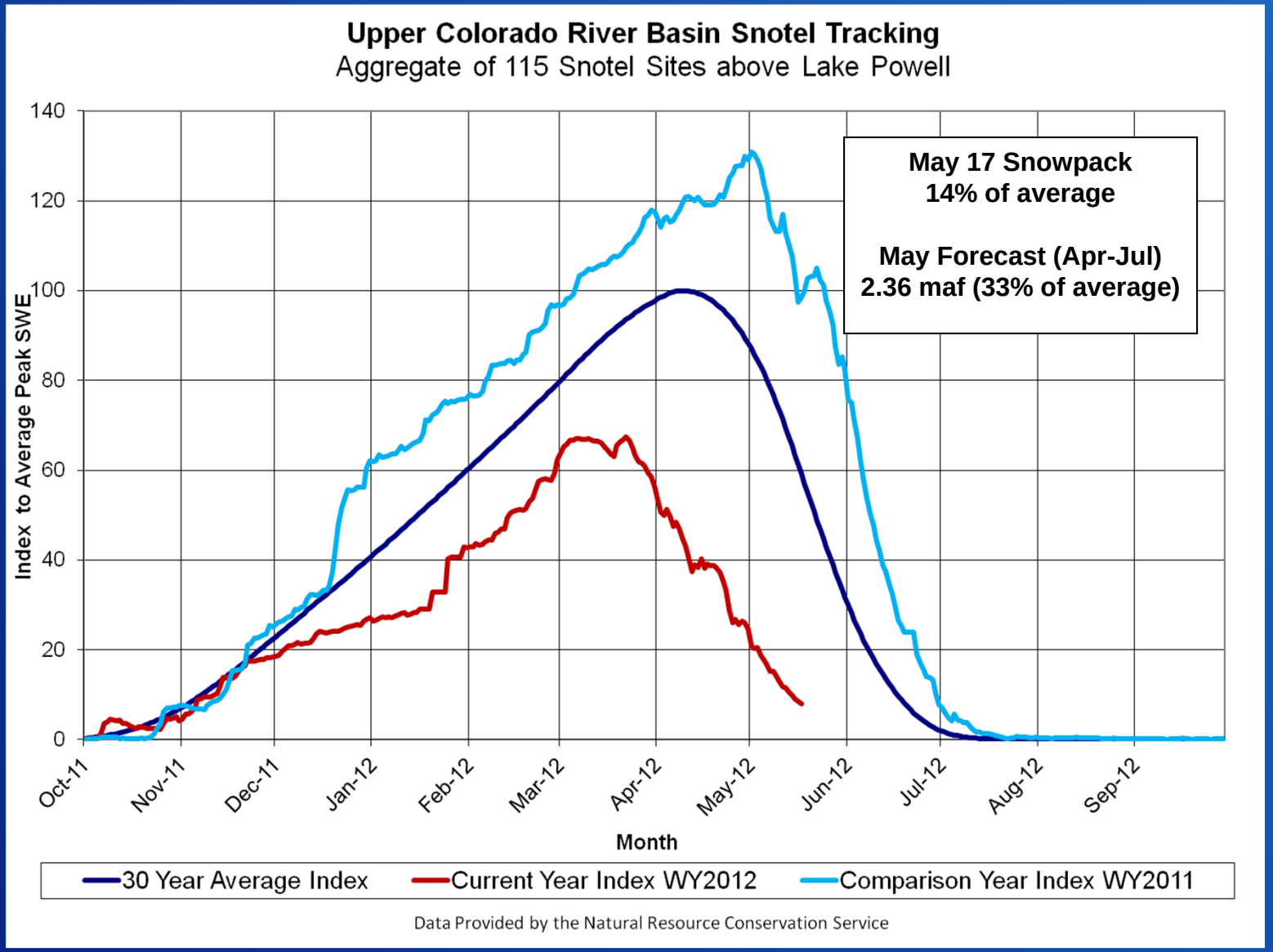
RECLAMATION

Upper Basin Hydrology Update



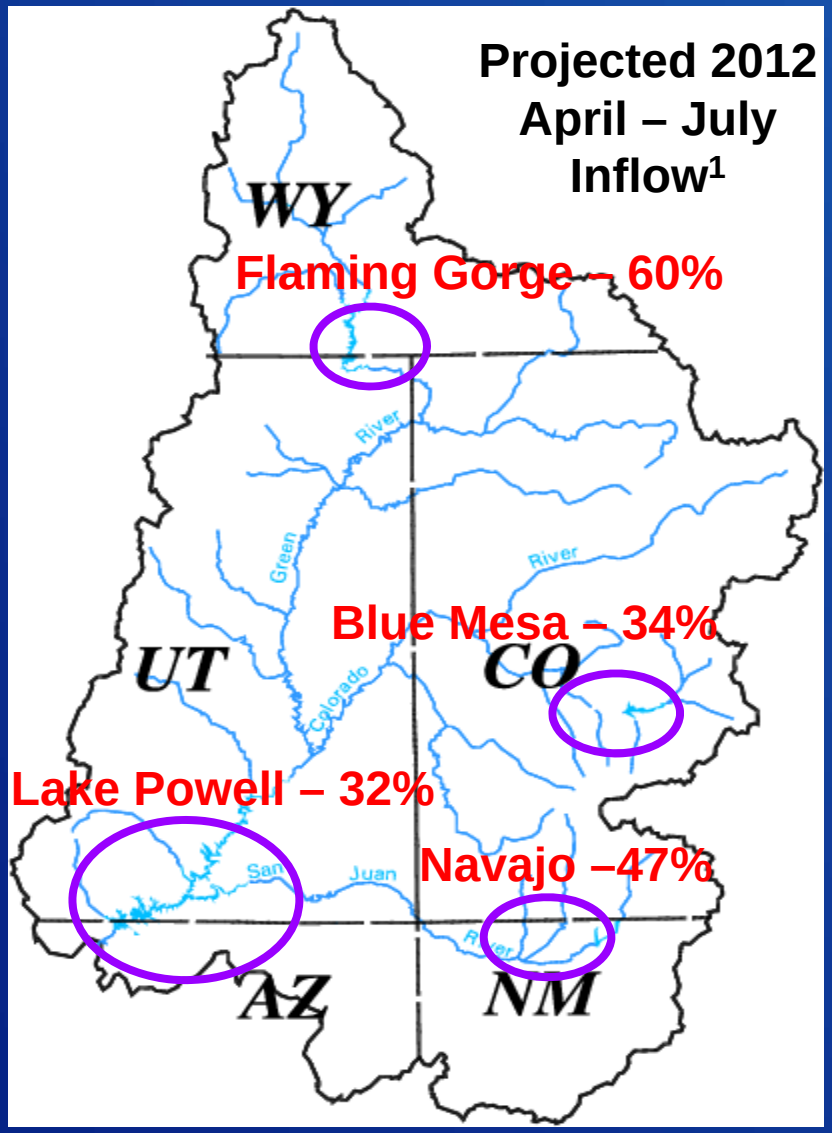
RECLAMATION

Upper Basin Hydrology Update



RECLAMATION

CBRFC Unregulated Inflow Forecasts
dated May 16, 2012 (May Mid Month)



Period in 2012	Inflow (KAF)	Percent of Average[1]
April (observed)	764	72
May	780	33
June	500	19
July	220	20
April – July	2260	32
Water Year Projection	5470	51

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

RECLAMATION

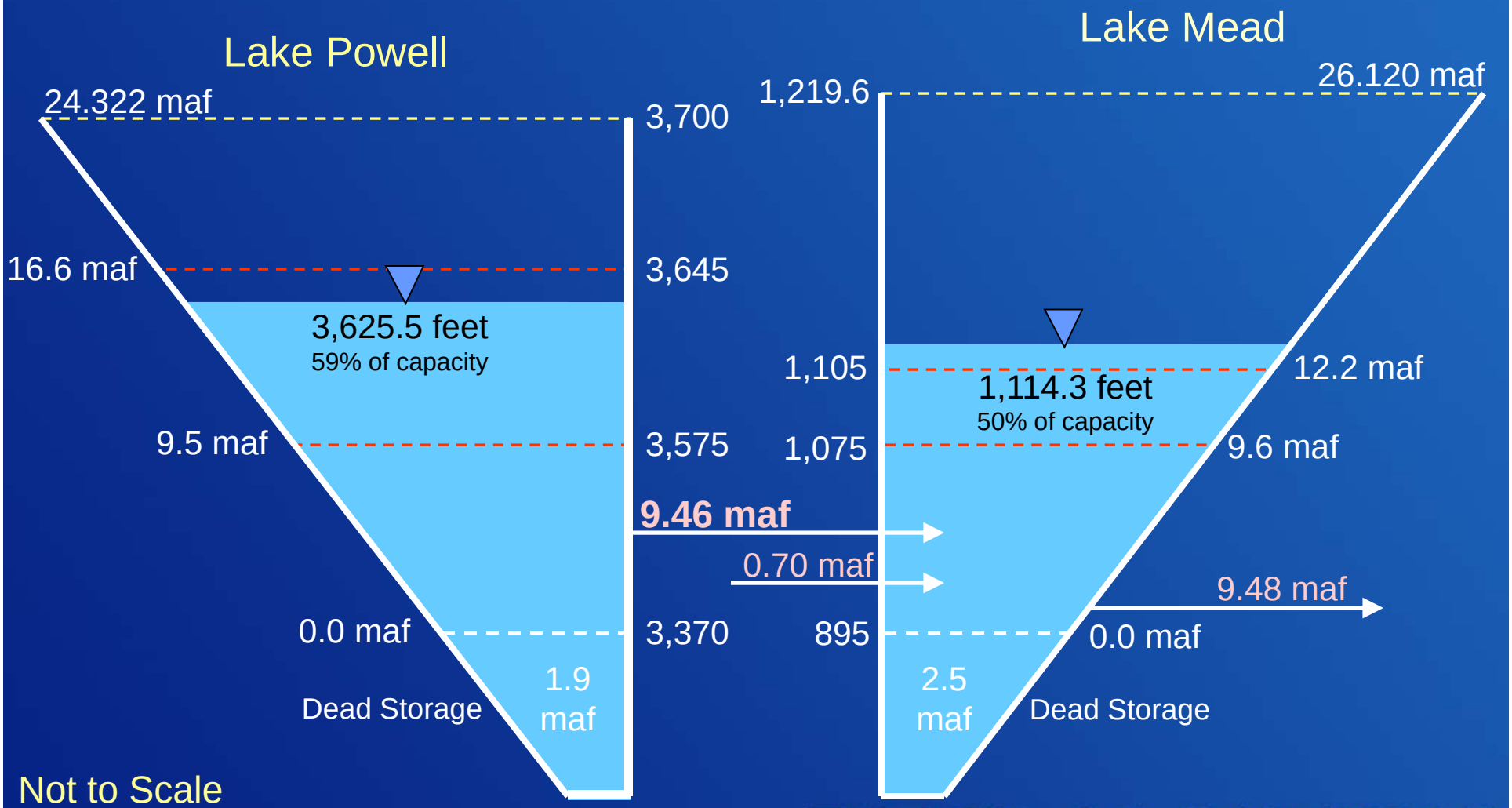
Projected Operations for the Remainder of WY 2012

RECLAMATION

End of Water Year 2012 Projections

May 2012 Most Probable Inflow Scenario

Projected Unregulated Inflow into Powell[1] = 5.57 maf (51% of average)

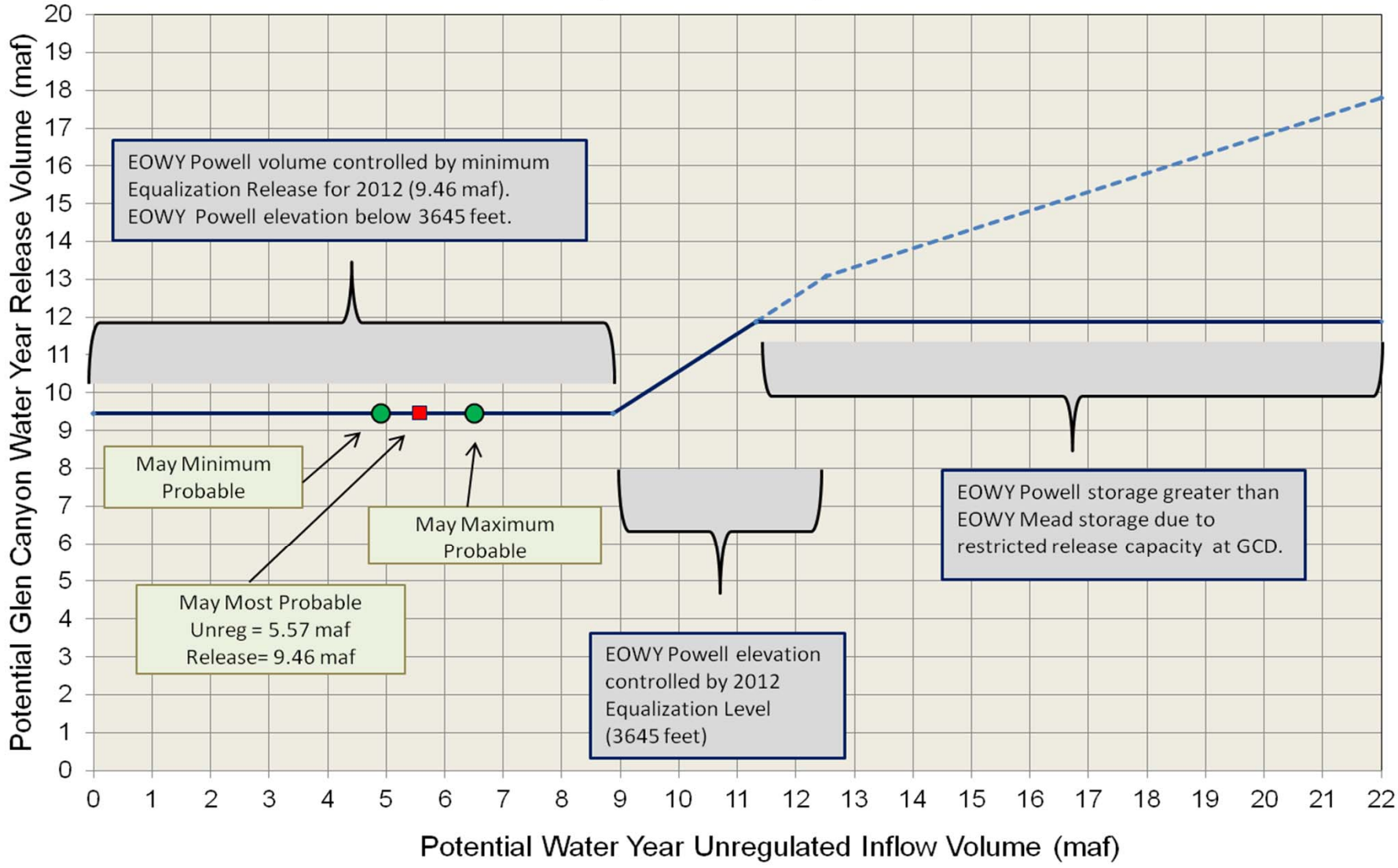


[1] Projected elevations from the May 2012 24-Month Study which is based on the CBRFC inflow forecast dated May 3, 2012

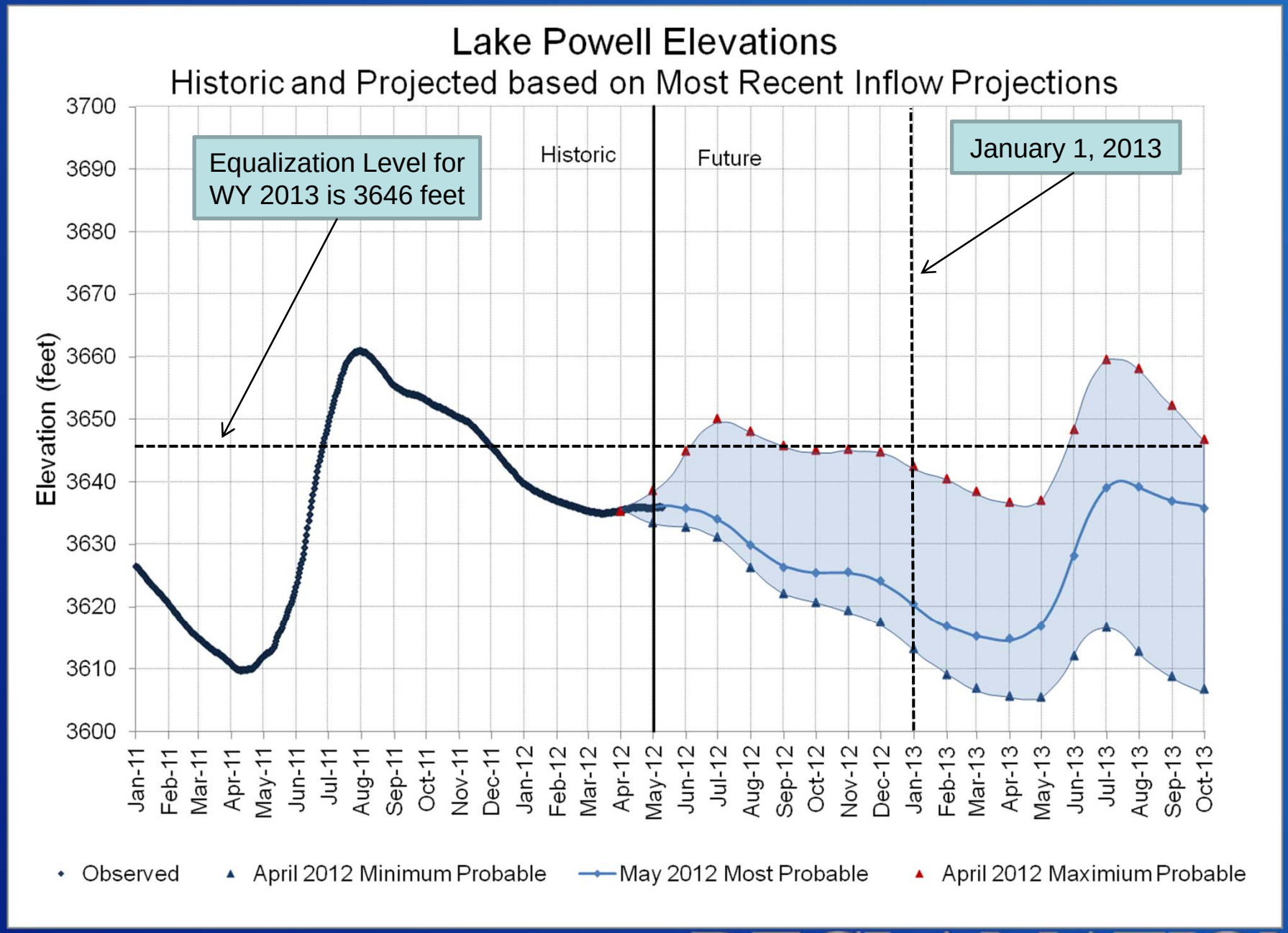
RECLAMATION

Coordinated Operations of Lake Powell and Lake Mead

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

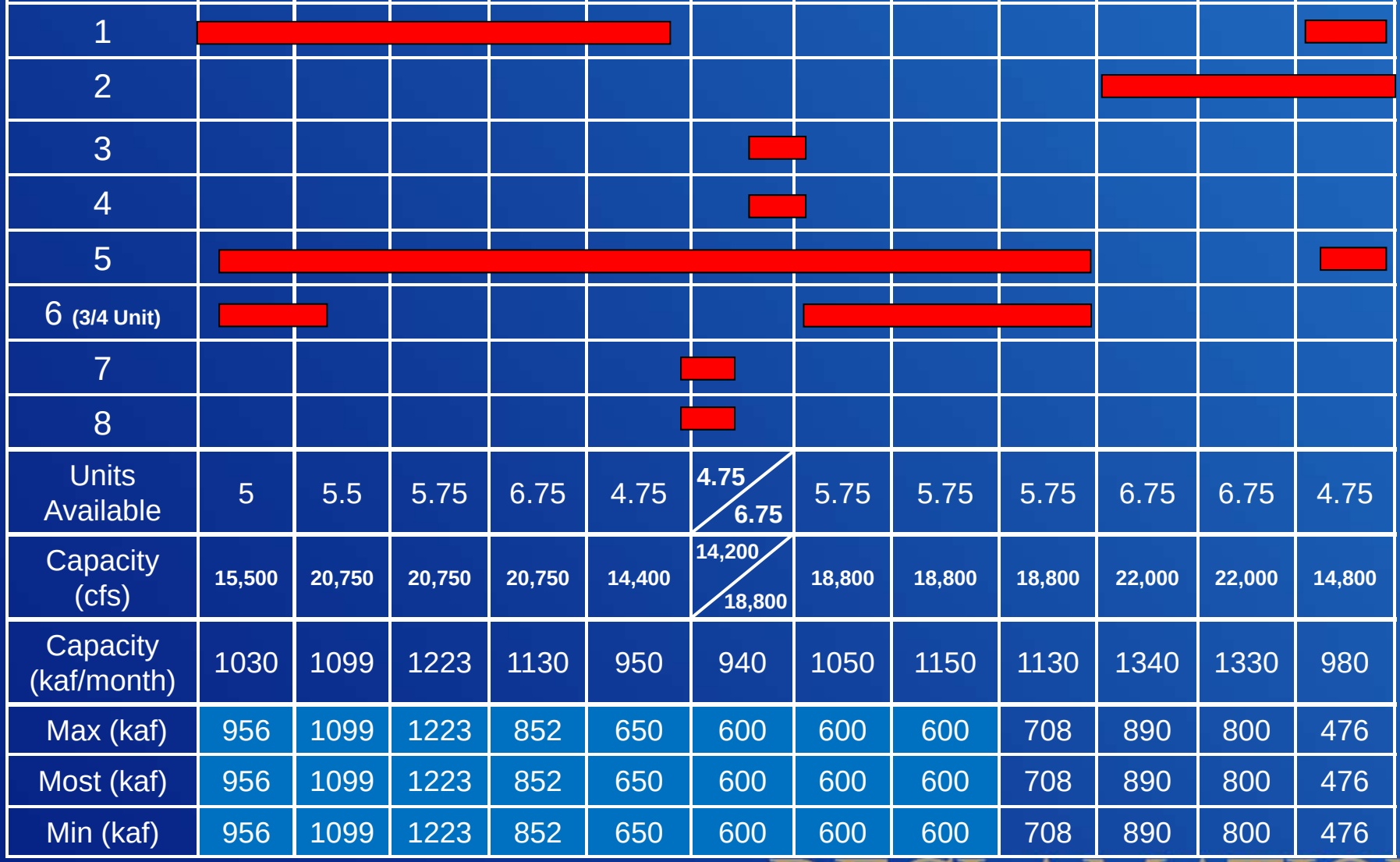


RECLAMATION



RECLAMATION

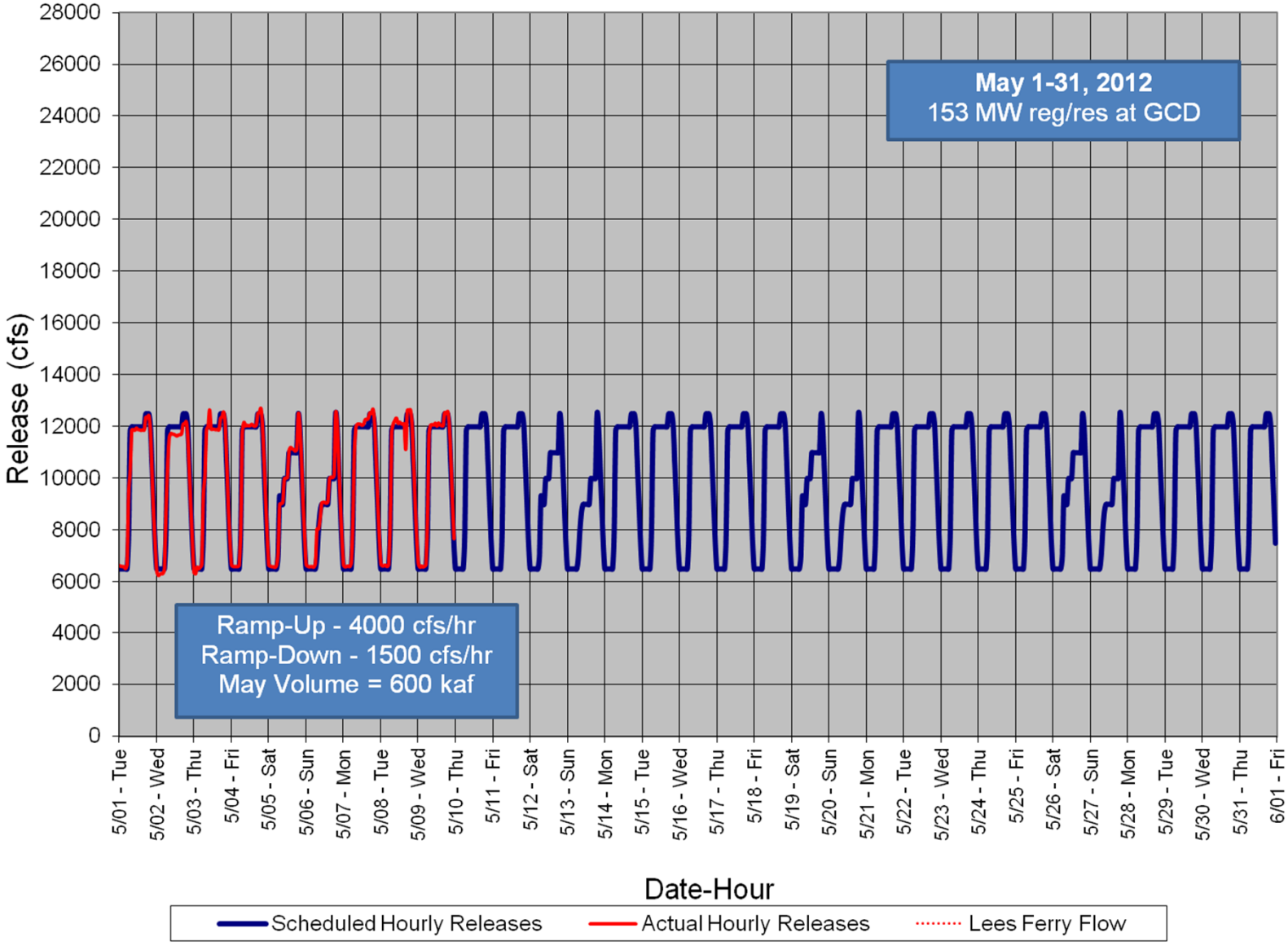
Glen Canyon Power Plant Planned Unit Outage Schedule for Water Year 2012
(updated 5-9-2012)



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	5.5	5.75	6.75	4.75	4.75 / 6.75	5.75	5.75	5.75	6.75	6.75	4.75
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	14,800
Capacity (kaf/month)	1030	1099	1223	1130	950	940	1050	1150	1130	1340	1330	980
Max (kaf)	956	1099	1223	852	650	600	600	600	708	890	800	476
Most (kaf)	956	1099	1223	852	650	600	600	600	708	890	800	476
Min (kaf)	956	1099	1223	852	650	600	600	600	708	890	800	476

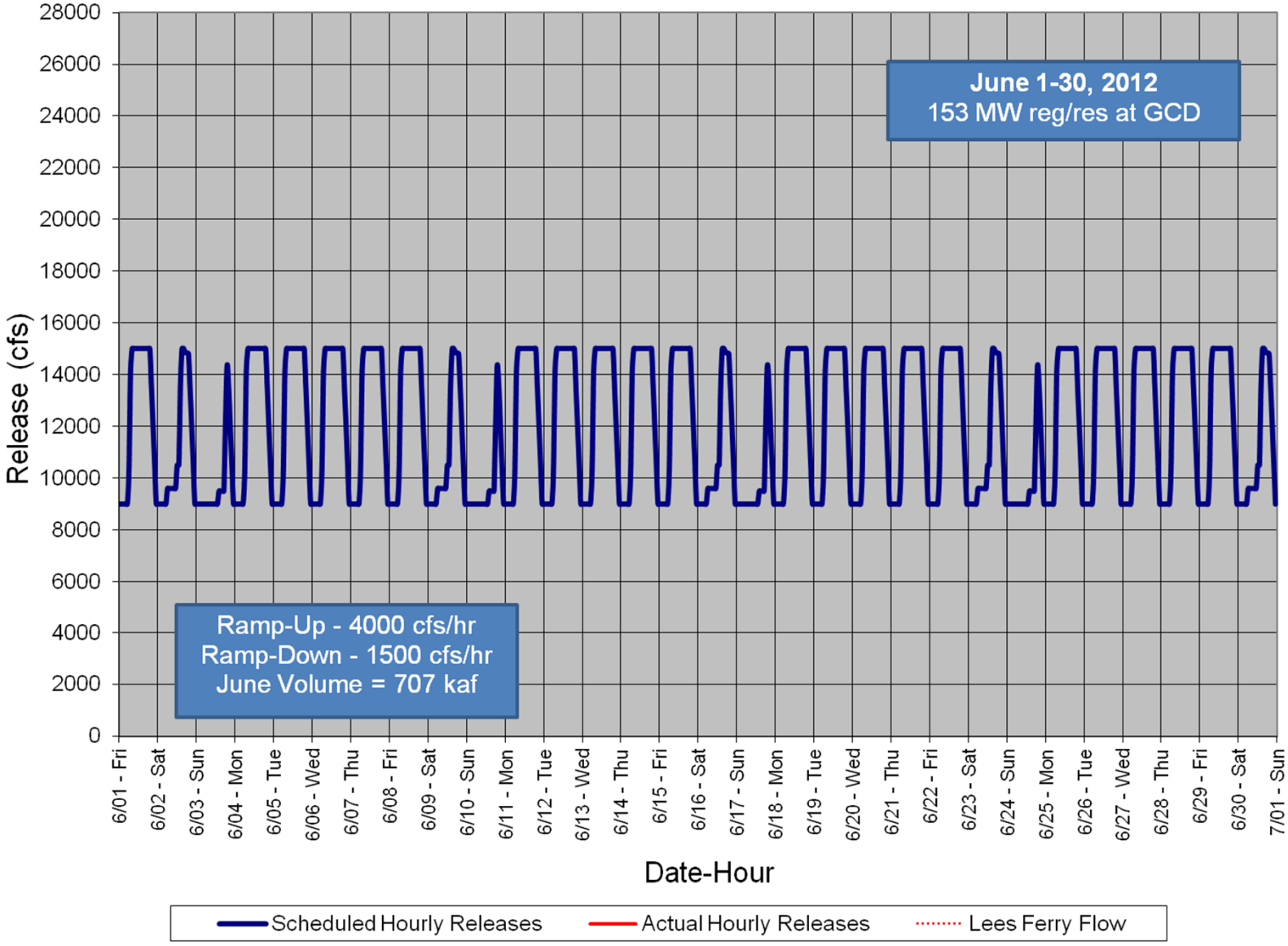
RECLAMATION

Glen Canyon Dam Hourly Release Pattern MAY 2012



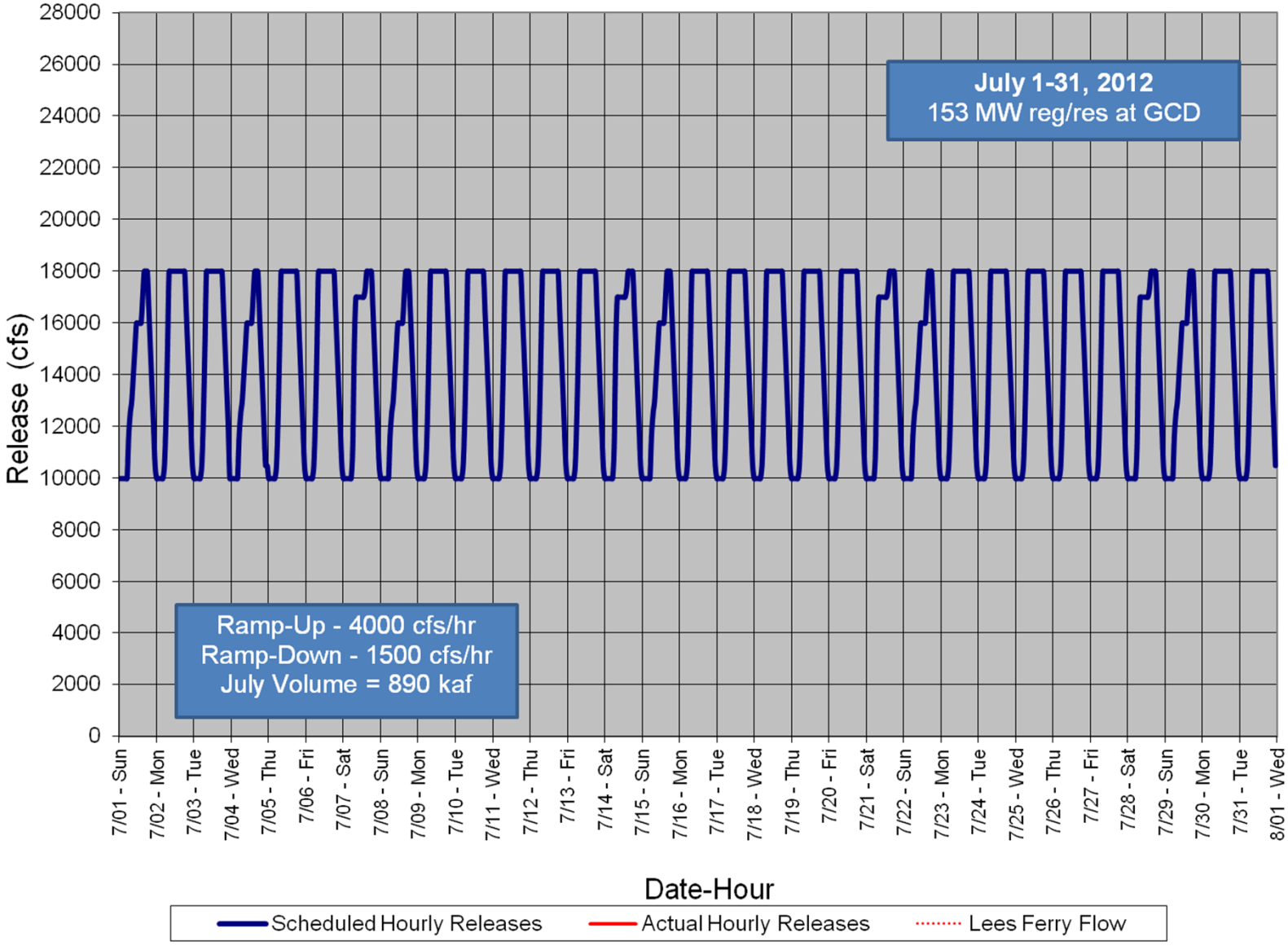
RECLAMATION

Glen Canyon Dam Hourly Release Pattern JUN 2012



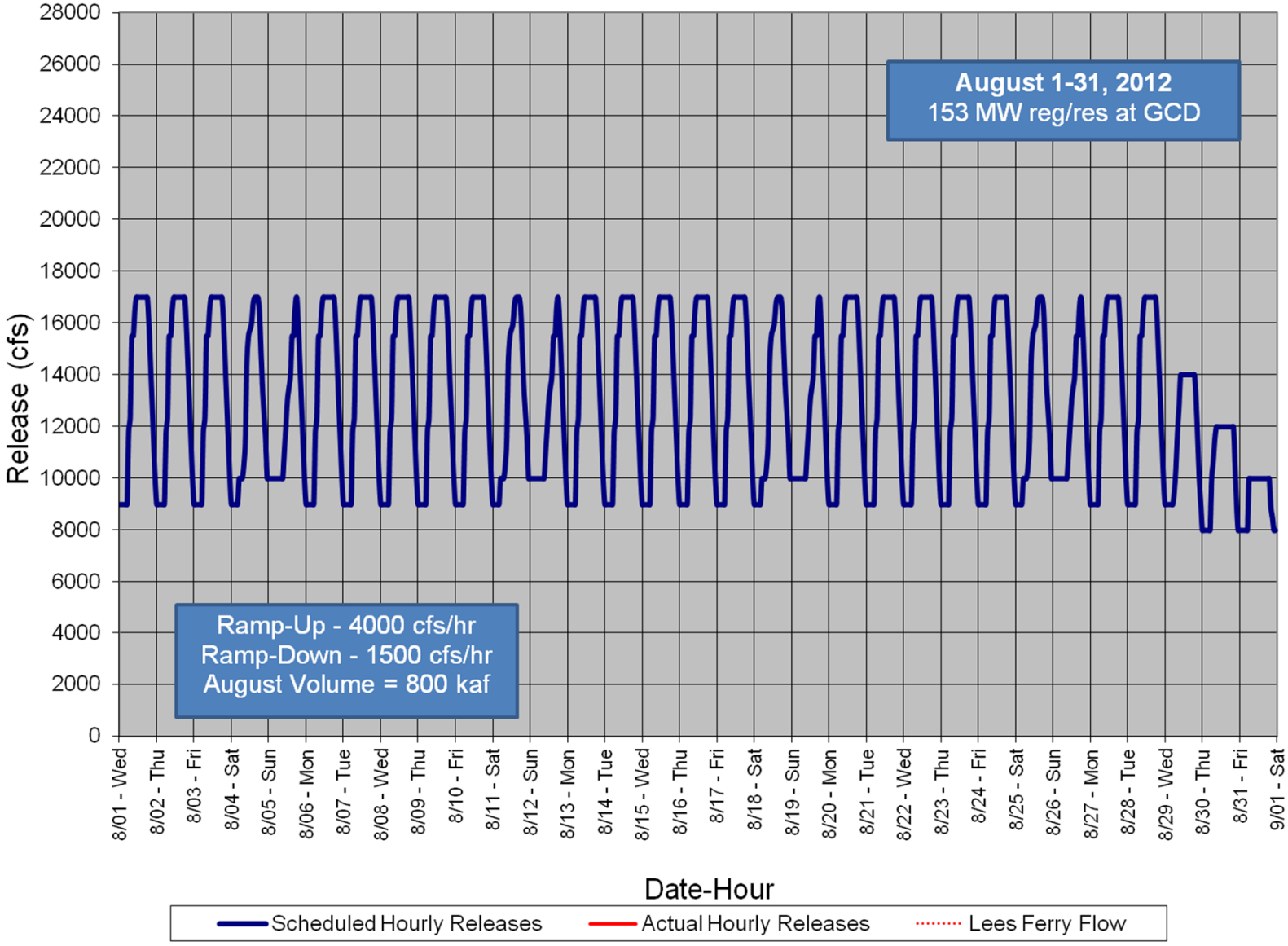
RECLAMATION

Glen Canyon Dam Hourly Release Pattern JUL 2012



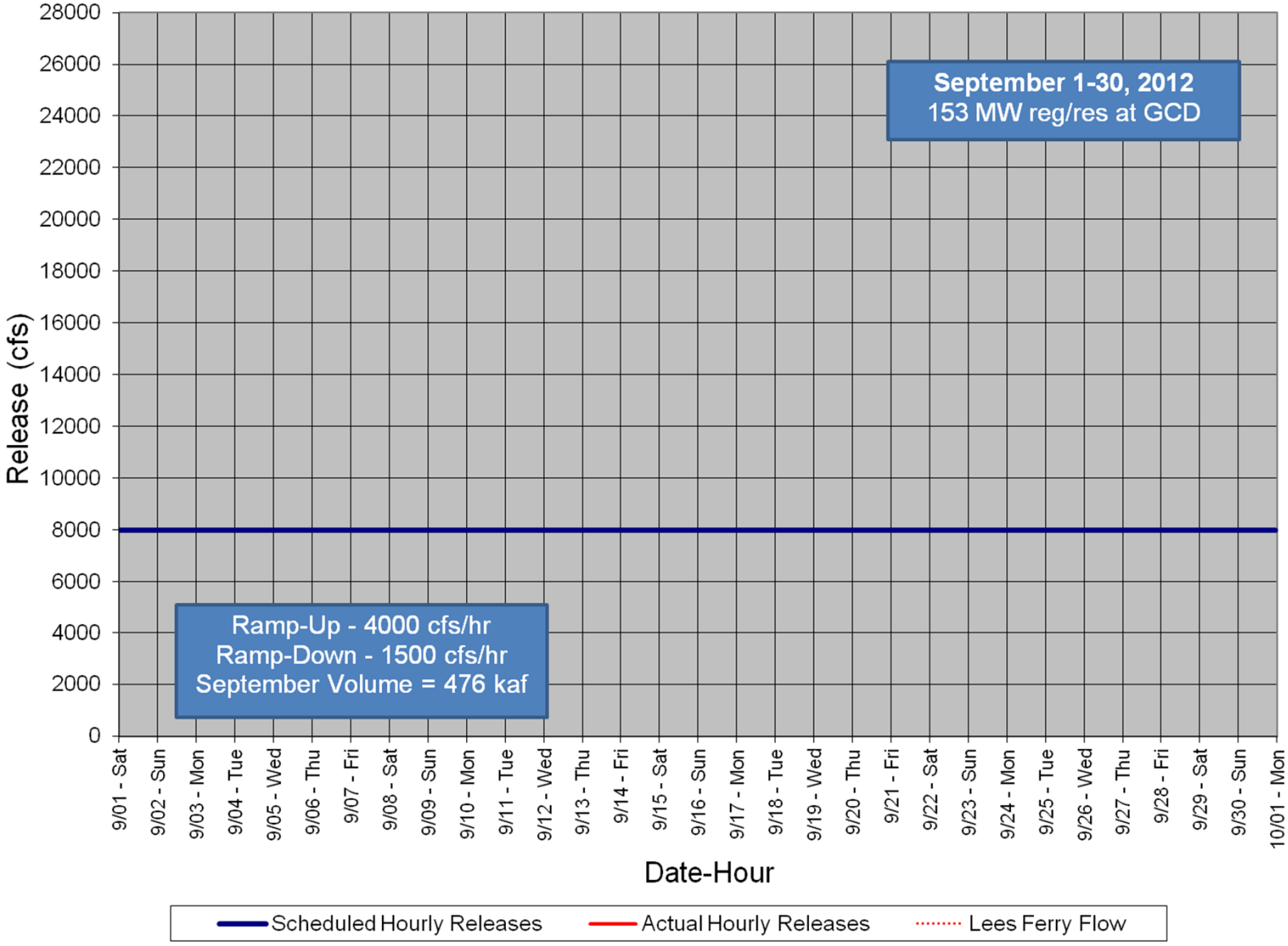
RECLAMATION

Glen Canyon Dam Hourly Release Pattern AUG 2012



RECLAMATION

Glen Canyon Dam Hourly Release Pattern SEP 2012



RECLAMATION

Glen Canyon Power Plant Planned Unit Outage Schedule for Water Year 2013
(updated 5-9-2012)

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)	15,400	22,000	22,000	22,000	14,600	14,600 / 22,000	22,300	22,300	22,300	22,300	22,300	11,300
Capacity (kaf/month)	1110	1310	1360	1360	900	1140	1310	1370	1330	1370	1370	780
Max (kaf)	---	---	---	---	---	---	---	---	---	---	---	---
Most (kaf)	491	600	800	800	600	600	600	600	825	890	824	600
Min (kaf)	---	---	---	---	---	---	---	---	---	---	---	---

RECLAMATION

Lower Colorado River Basin

Hydrology and Operations

RECLAMATION

Colorado River Basin Storage
(as of May 29, 2012)

Current Storage	Percent Full	MAF	Elevation (Feet)
Lake Powell	64%	15.60	3,636.5
Lake Mead	52%	13.58	1,119.8
Total System Storage*	62%	36.77	NA

*Total system storage was 32.83 maf or 55% this time last year

RECLAMATION

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
3,636.5		15.60
5/29/12	**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	5/29/12
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
1,119.8	**Normal or**	13.58
5/29/12	**ICS Surplus Condition** Deliver ≥ 7.5 maf	5/29/12
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

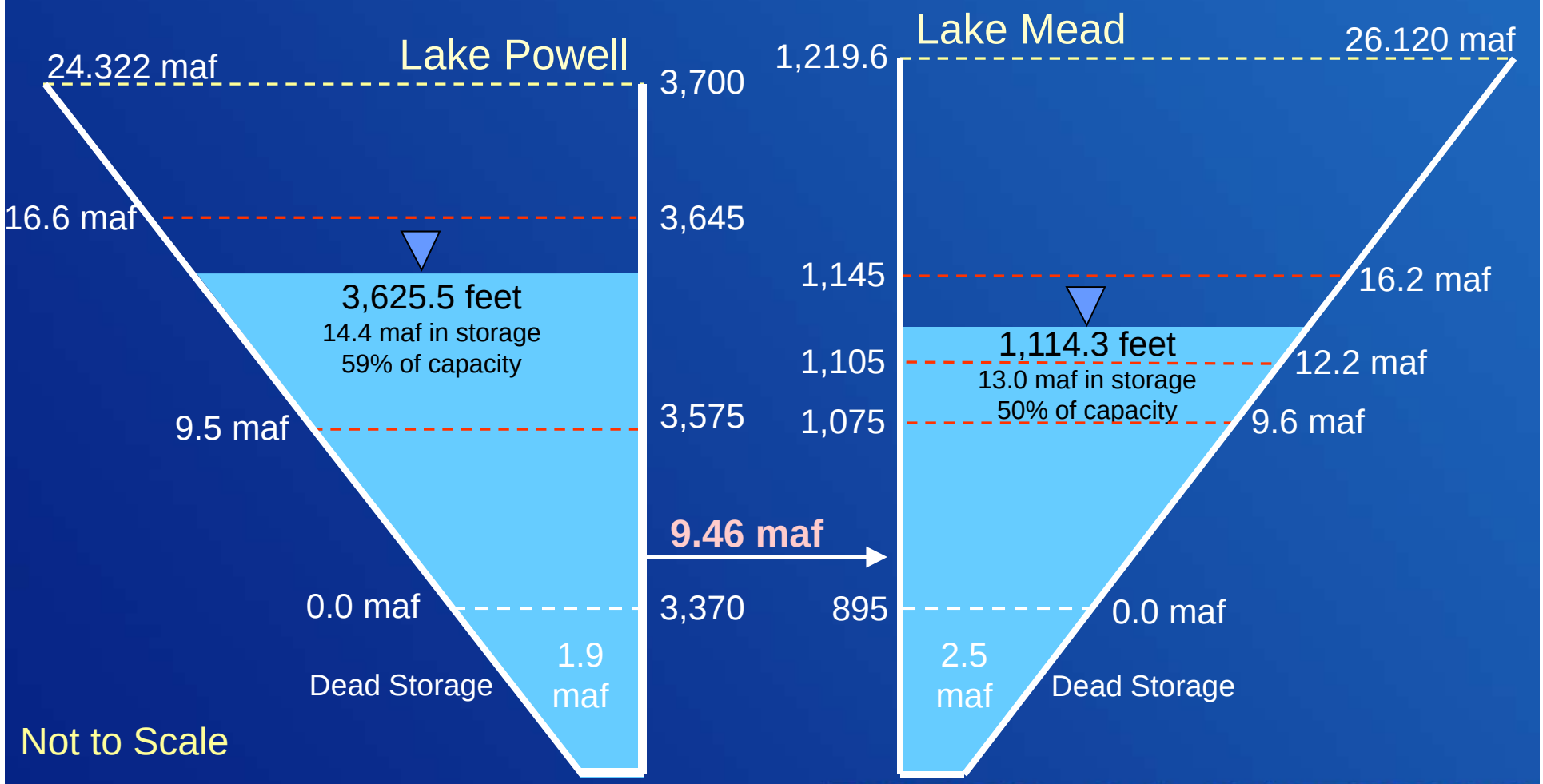
[7] Whenever Lake Mead is below elevation 1,025 feet, the Secretary shall consider whether hydrologic conditions together with anticipated deliveries to the Lower Division States and Mexico is likely to cause the elevation at Lake Mead to fall below 1,000 feet. Such consideration, in consultation with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

RECLAMATION

Water Year 2012 Projections

May 2012 24-Month Study Most Probable Inflow Scenario

Projected Unregulated Inflow into Powell[1] = 5.57 maf (51% of average)

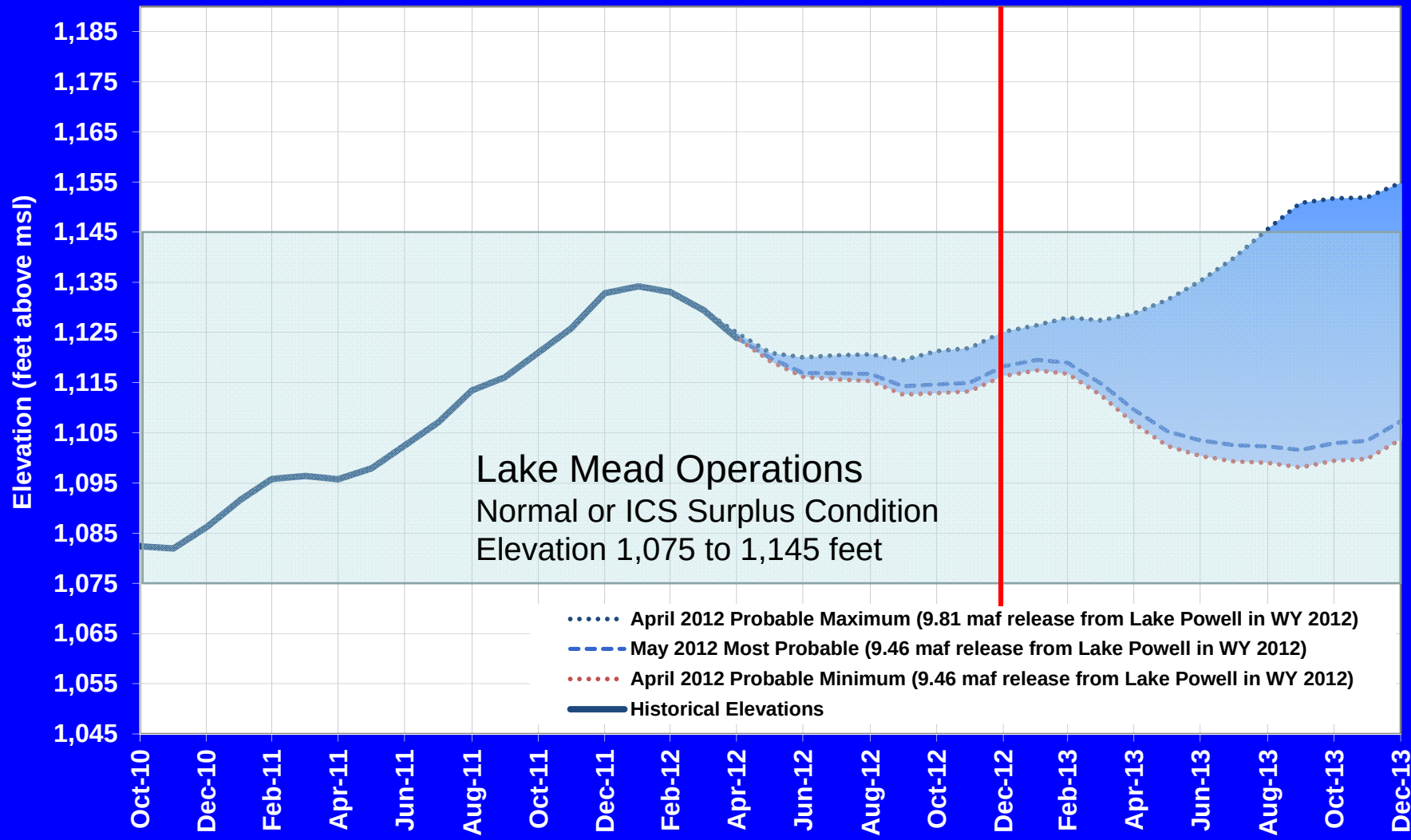


[1] WY 2012 unregulated inflow volume is based on the CBRFC forecast dated 5/3/2012. Percent of average inflow is based on the 30-year period of record from 1981-2010.

RECLAMATION

Lake Mead End of Month Elevation

Projections from 24-Month Study Inflow Scenarios



RECLAMATION

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	71%	-23
	February 2012	44	45%	-54
	March 2012	43	55%	-35
	April 2012	46	61%	-30
PROJECTED	May 2012	64		
	June 2012	33		
	July 2012	54		
	August 2012	103		
	September 2012	74		
	October 2012	49		
	November 2012	46		
	December 2012	108		
	WY 2012 Totals	**702**	**82%**	**-159**
	CY 2012 Totals	**719**	**84%**	**-142**

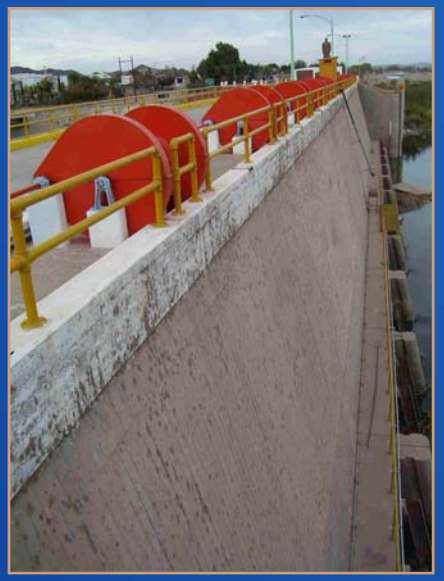
[1] Values were computed with the LC's gain-loss model for the most recent 24-month study.

[2] Percents of average are based on the 5-year mean from 2007-2011.

RECLAMATION

YAO Operations Update

- Brock and Senator Wash conservation year-to-date[1]
  - Brock 59,100 AF
  - Senator Wash 34,600 AF
- Excess Flows to Mexico year-to-date[2] 8,320 AF



[1] Provisional values through May 28, 2012

[2] Provisional value through May 29, 2012

RECLAMATION

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 2012 was 28,380 AF at 2,790 ppm
- Provisional drainage Flows to the Colorado River
  - From the South Gila Drainage Wells January through May 25th 2012 was 25,053 AF at 1,730 ppm
  - From the Yuma Mesa Conduit January through May 25th was 9,222 AF at 1,580 ppm

RECLAMATION

2013 Colorado River Annual Operating Plan

Colorado River Management Work Group

First Consultation

May 31, 2012

RECLAMATION