

**Glen Canyon Dam Adaptive Management Work Group**  
**Agenda Item Information**  
**August 29-30, 2012**

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Agenda Item

Basin Hydrology and Operations

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Action Requested

✓ Information item only.

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Presenter

Katrina Grantz, Hydraulic Engineer, Bureau of Reclamation, Upper Colorado Region

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Previous Action Taken

N/A

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Relevant Science

N/A

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Background Information

The presentation is intended to provide pertinent information to AMWG members on current water supply and forecasted hydrologic conditions within the Upper Colorado River Basin. The presentation will focus on projected reservoir conditions and operations at Lake Powell/Glen Canyon Dam for the remainder of water year 2012 and provide a general outlook for 2013.

The presentation will cover the implementation of the *Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations of Lake Powell and Lake Mead* and the potential for equalization releases from Lake Powell in water year 2013. Such information is provided to assist the AMWG in developing recommendations to the Secretary on the operation of Glen Canyon Dam for water year 2013.

# RECLAMATION

*Managing Water in the West*

## Upper Basin Hydrology and Projected Operations Water Year 2013

Adaptive Management Work Group  
August 29-30, 2012



U.S. Department of the Interior  
Bureau of Reclamation

Katrina Grantz

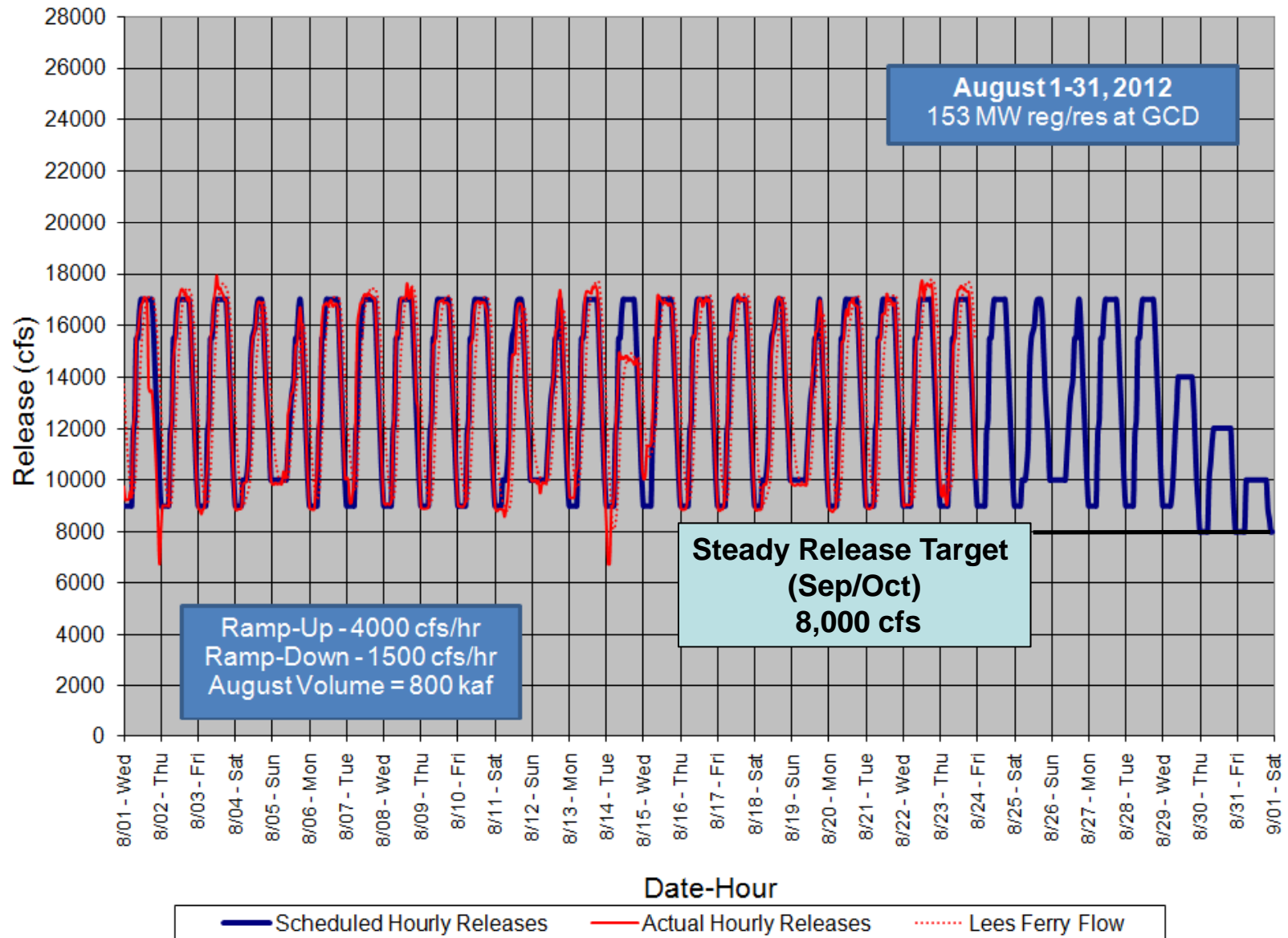
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Hydraulic Engineer/Glen Canyon  
Reclamation/UC Region  
Resource Management Division  
Water Resources Group

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# Glen Canyon Dam Hourly Release Pattern AUG 2012



# Annual Operating Plan

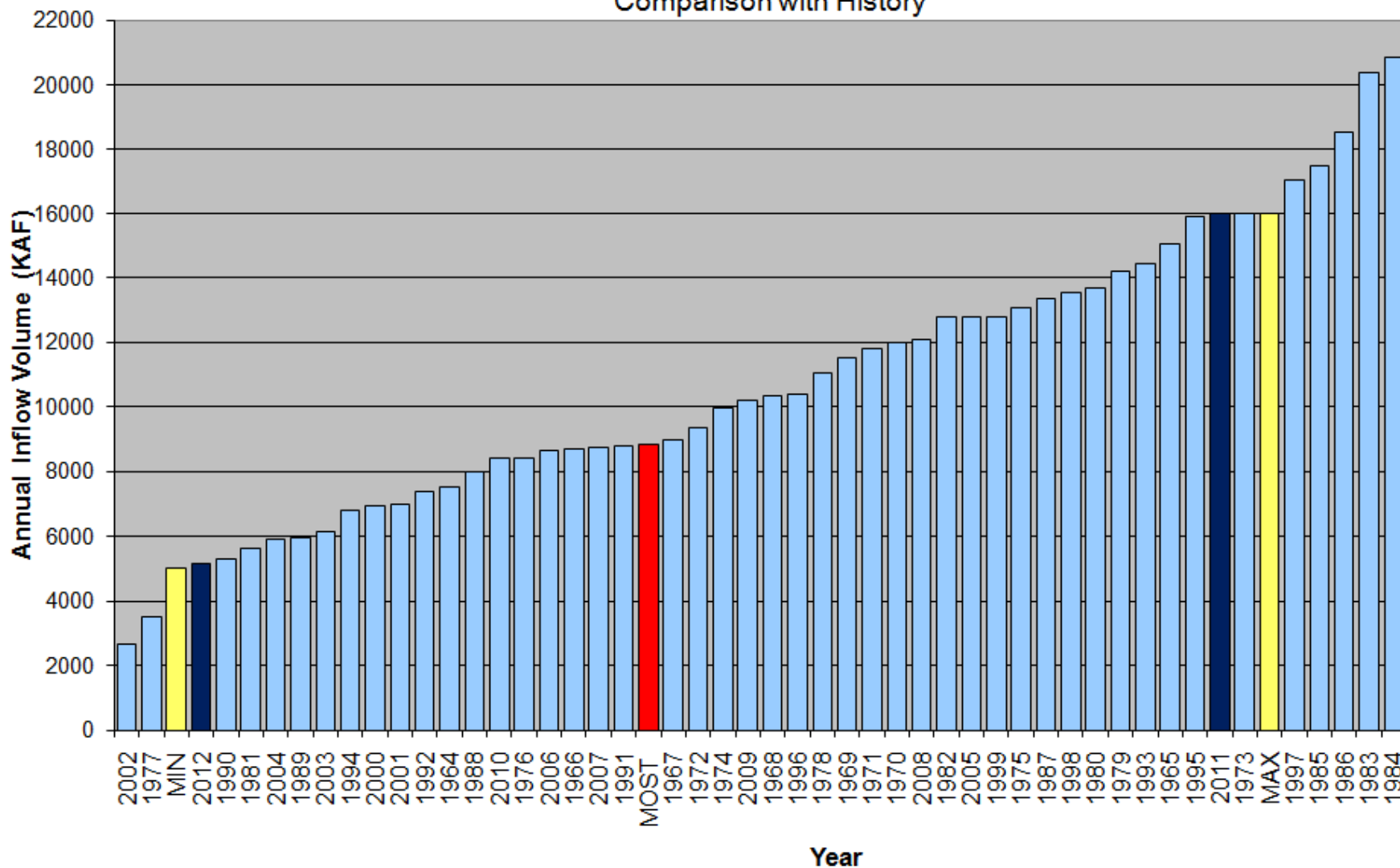
## Lake Powell Unregulated Inflow Scenarios

Scenario	2012 AOP WY 2012	2013 AOP WY 2013 Developed August 2012
Minimum Probable	7.00 maf (65 %*)	5.00 maf (46 %)
Most Probable	12.60 maf (116 %)	8.85 maf (82 %)
Maximum Probable	19.50 maf (180 %)	16.00 maf (148 %)

\* Percent of average water year unregulated inflow 1981-2012 (10.83 MAF)

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## Lake Powell Unregulated Inflow Water Year 2012 Forecast Comparison with History



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# Lake Powell & Lake Mead Operational Diagrams for 2013

Lake Powell			Lake Mead		
Elevation (feet)	Operations According to Interim Guidelines	Live Storage (MAF)	Elevation (feet)	Operations According to Interim Guidelines	Live Storage (MAF)
3,700	Equalization Tier Equalize, Avoid Spills or Release 8.23 MAF	24.3	1,220	Flood Control, 70R or ICS Surplus	25.9
3,636 - 3,666 (2008-2026)		15.5 - 19.3 (2008-2026)	1,200		22.9
<b>3,615</b> <b>1/1/13</b> <b>Projection</b>	<b>Upper Elevation</b> <b>Balancing Tier<sup>1</sup></b> Release 8.23 MAF; if Lake Mead < 1,075 feet, balance contents with a min/max release of 7.0 and 9.0 MAF	<b>13.2</b> <b>1/1/13</b> <b>Projection</b>	1,145	Domestic or ICS Surplus	15.9
3,575		9.5	<b>1,119</b> <b>1/1/13</b> <b>Projection</b>		<b>13.5</b> <b>1/1/13</b> <b>Projection</b>
3,525	<b>Mid-Elevation Release Tier</b> Release 7.48 MAF; if Lake Mead < 1,025 feet, Release 8.23 MAF;	5.9	1,075	Shortage 333 KAF <sup>2</sup>	9.4
3,490	<b>Lower Elevation Balancing Tier</b> Balance contents with a min/max release of 7.0 and 9.5 MAF	4.0	1,050		Shortage 417 KAF <sup>2</sup>
3,370		0	1,025	Shortage 500 KAF <sup>2</sup> and Consultation <sup>3</sup>	5.8
			1,000		4.3
			895		0

<sup>1</sup> Subject to April adjustments that may result in balancing releases or releases according to the Equalization Tier.

<sup>2</sup> These are amounts of shortage (i.e., reduced deliveries in the United States).

<sup>3</sup> If Lake Mead falls below elevation 1,025 ft, the Department will initiate efforts to develop additional guidelines for shortages at lower Lake Mead elevations.

# WY2013 Operations under Interim Guidelines

as projected in August 2012 24-Month Study

Scenario	Initial Operational Tier	Projected Annual Release Volume
Minimum Probable	Upper Elevation Balancing	8.23 maf
Most Probable	Upper Elevation Balancing	8.23 maf
Maximum Probable	Upper Elevation Balancing*	11.21 maf

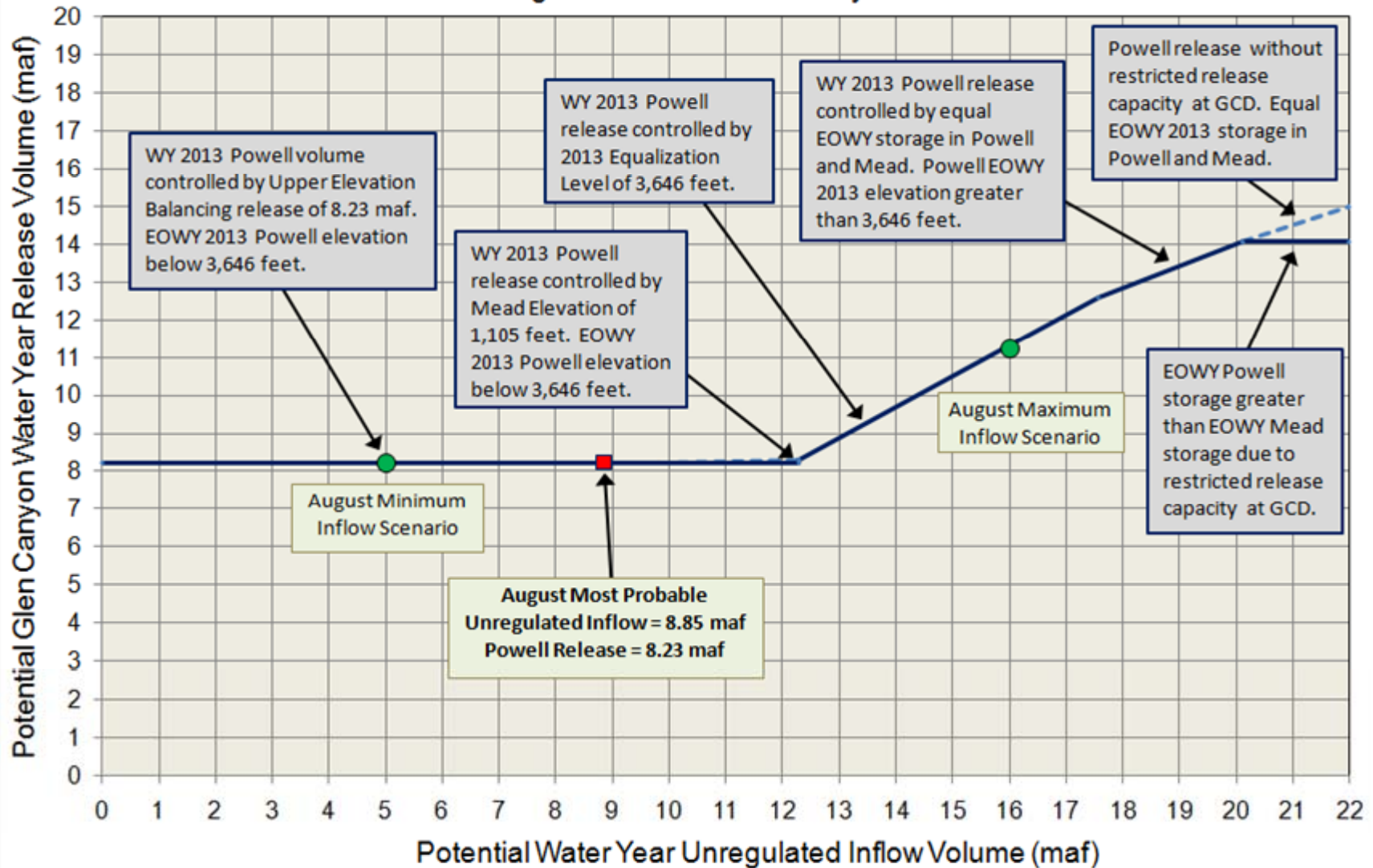
\* Upper Elevation Balancing with a projected April adjustment to equalization with Lake Powell September 30, 2013 elevation governing.

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## Coordinated Operations of Lake Powell and Lake Mead

### Water Year 2013 Release Volume as a Function of Unregulated Inflow Volume based on August 2012 24-Month Study Conditions



**Glen Canyon Power Plant Planned Unit Outage Schedule for Water Year 2013  
(updated 8-20-2012)**

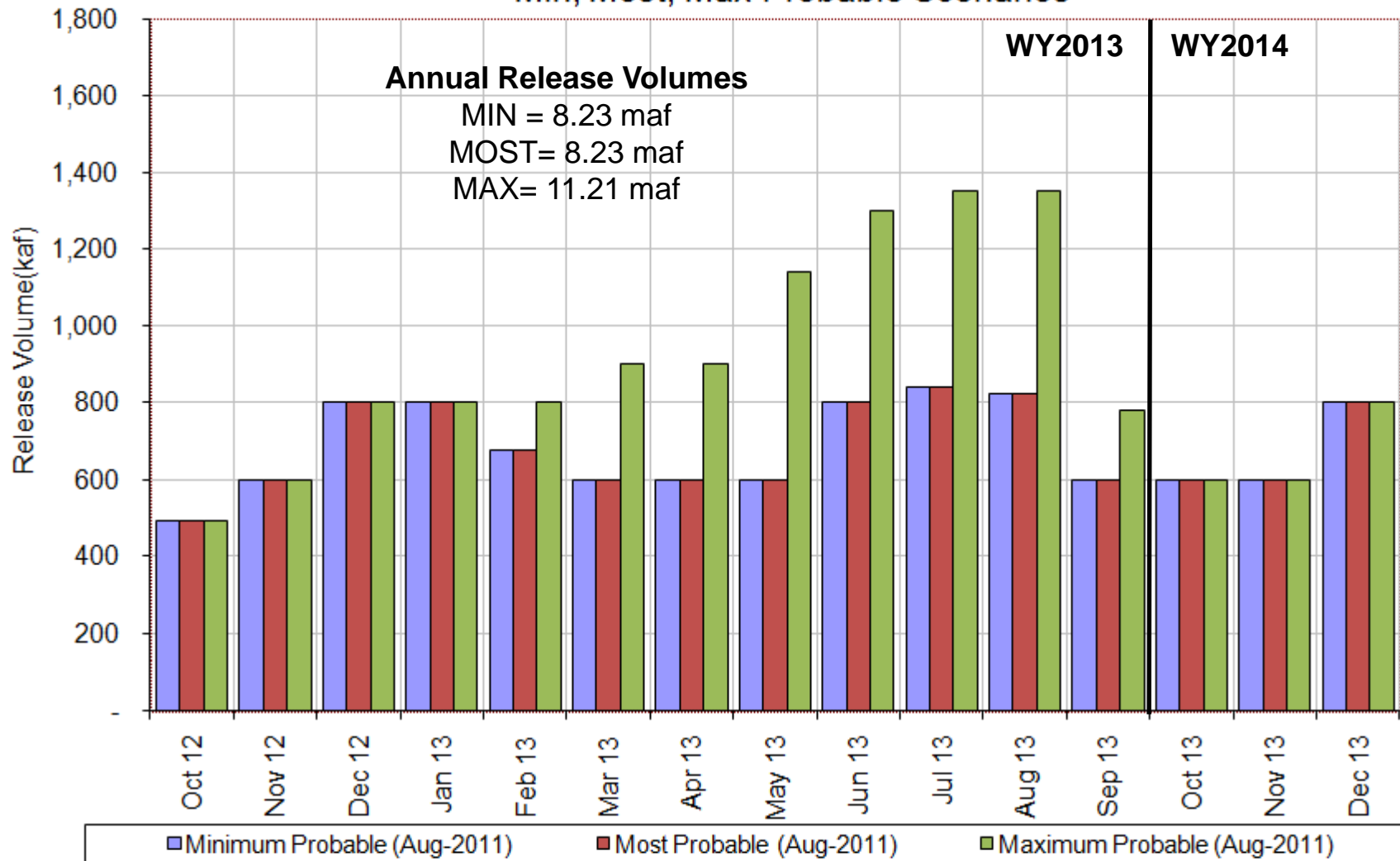
Unit Number	Oct 2012	Nov 2012	Dec 2012	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013
1												
2												
3												
4												
5												
6 (3/4 Unit)												
7												
8												
Units Available	5	7	7	7	5	5 7	7	7	7	7	7	4
Capacity (cfs)	18,800	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)	491	600	800	800	800	900	900	1142	1300	1350	1350	780
Most (kaf)	491	600	800	800	675	600	600	600	800	840	824	600
Min (kaf)	491	600	800	800	675	600	600	600	800	840	824	600

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# Lake Powell Monthly Release Volume Distribution

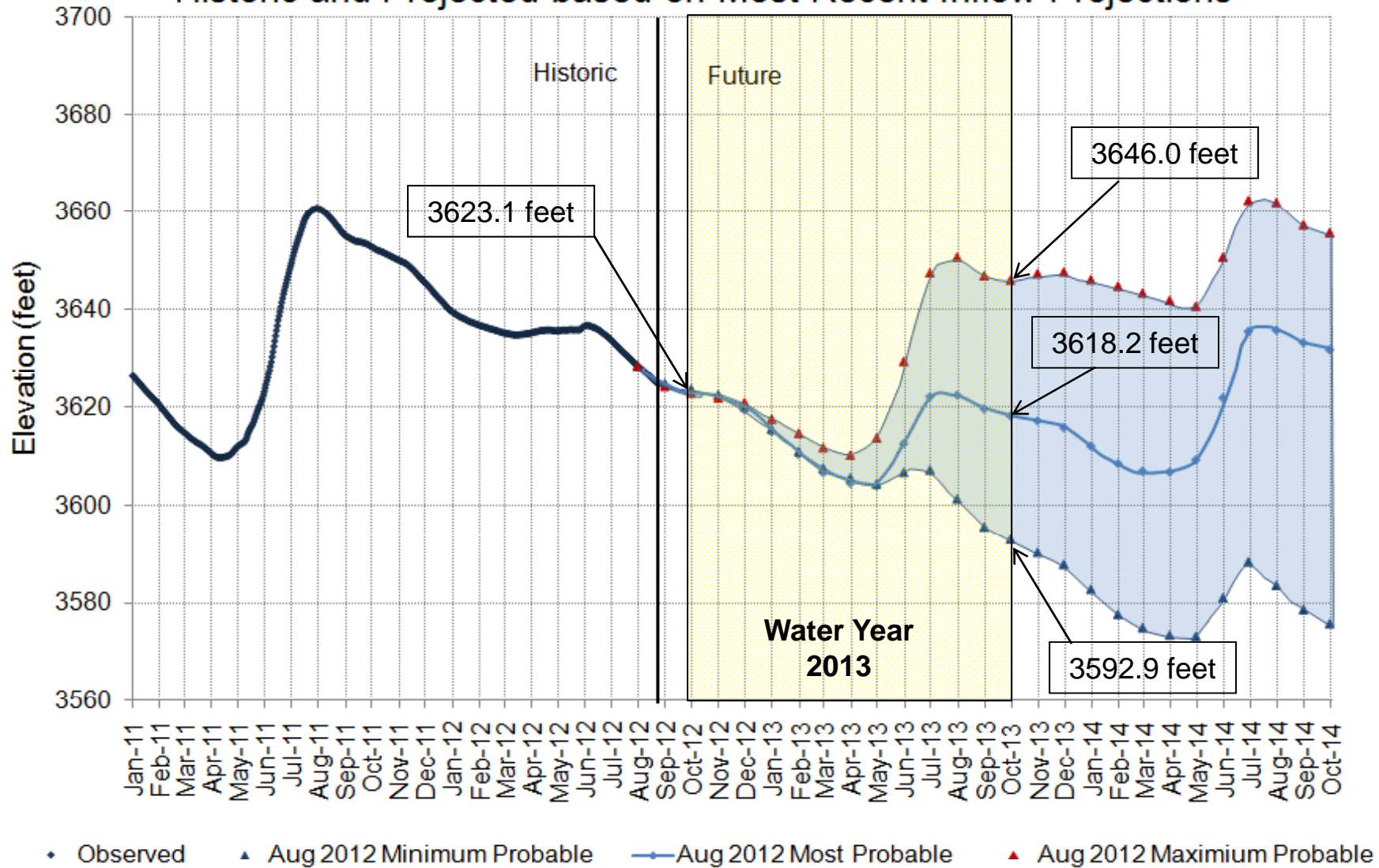
August 2012 24-Month Study

Min, Most, Max Probable Scenarios



# Lake Powell Elevations

## Historic and Projected based on Most Recent Inflow Projections





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