RECLAMATION

Managing Water in the West

Flaming Gorge Working Group

August 27, 2015

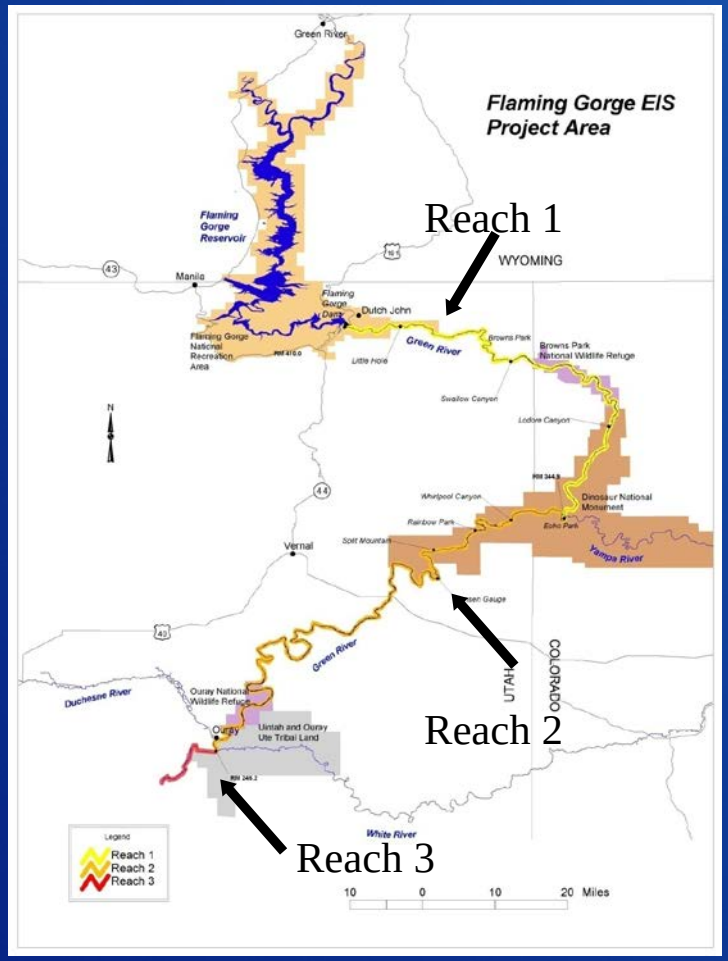
U.S. Department of the Interior
Bureau of Reclamation

Flaming Gorge Working Group Meeting August 2015

- 2006 Record of Decision Operating Criteria
- 2015 Adaptive Management Operating Criteria
- Spring and Summer Operations
- Current and Projected Hydrology and Operations

RECLAMATION

2006 Record of Decision Geographic Scope



- Reach 1
  - Flaming Gorge Dam to Yampa River Confluence
- Reach 2
  - Green River Confluence with Duchesne and White Rivers
- Reach 3
  - Green River Confluence with Colorado River

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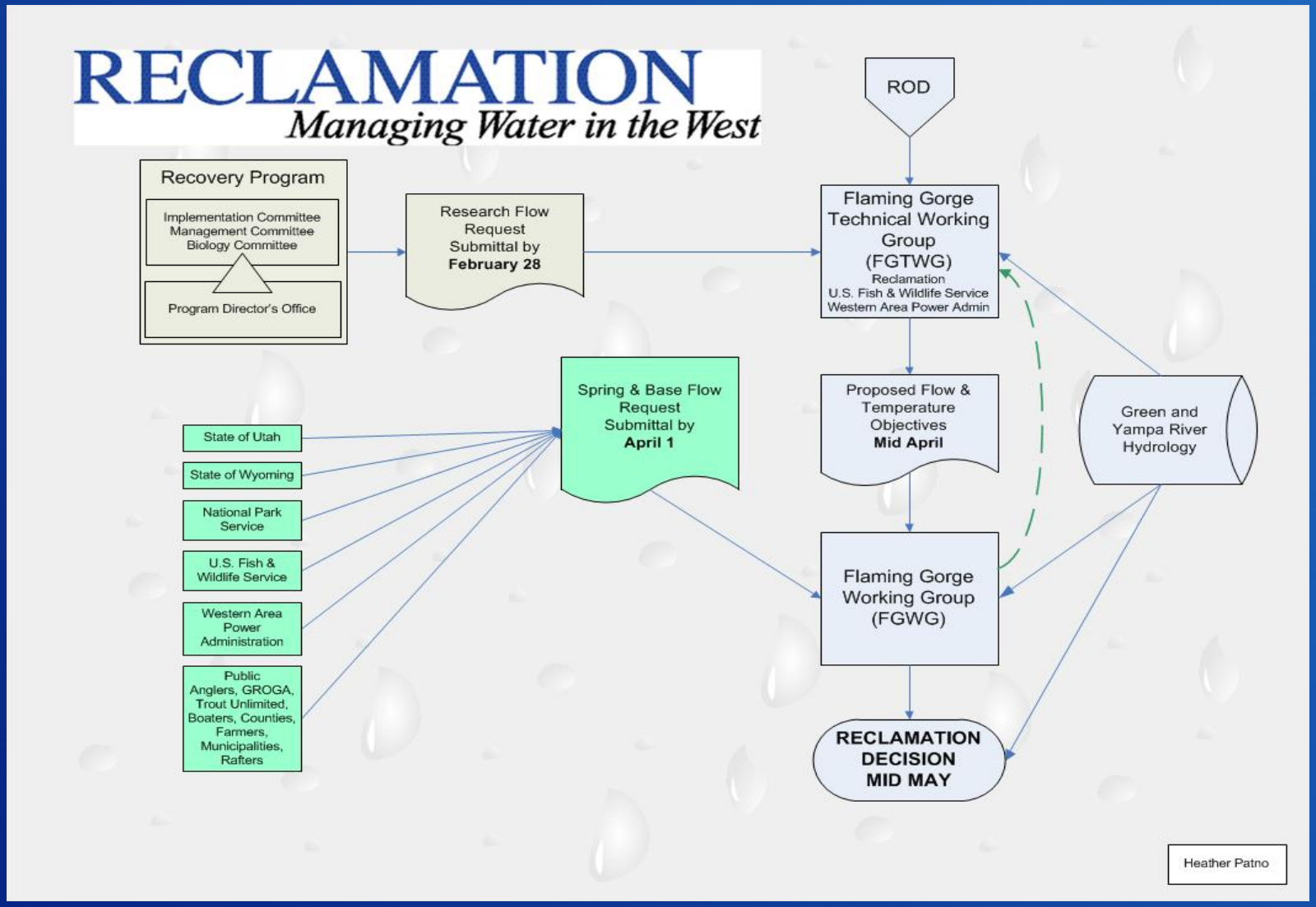
ROD Process


RECLAMATION
Managing Water in the West
ROD
Recovery Program
Implementation Committee
Management Committee
Biology Committee
Program Director's Office
Research Flow Request Submittal by February 28
Flaming Gorge Technical Working Group (FGTWG)
Reclamation
U.S. Fish & Wildlife Service
Western Area Power Admin
Spring & Base Flow Request Submittal by April 1
Proposed Flow & Temperature Objectives Mid April
Green and Yampa River Hydrology
State of Utah
State of Wyoming
National Park Service
U.S. Fish & Wildlife Service
Western Area Power Administration
Public Anglers, GROGA, Trout Unlimited, Boaters, Counties, Farmers, Municipalities, Rafters
Flaming Gorge Working Group (FGWG)
RECLAMATION DECISION MID MAY
Heather Patno

Larval Trigger Study Plan

- Time Reach 1 flows with the initial appearance of larval suckers
- Design Matrix
  - Three years of flows < 18,600 cfs
  - Three years of flows > 18,600 cfs
  - Connecting flows of at least seven days duration

STUDY PLAN TO EXAMINE THE EFFECTS OF USING
LARVAL RAZORBACK SUCKER OCCURRENCE IN THE GREEN
RIVER AS A TRIGGER FOR FLAMING GORGE DAM PEAK RELEASES

Prepared by the Larval Trigger Study Plan Ad Hoc Committee

Kirk LaGory, Argonne National Laboratory
Tom Chart, Upper Colorado River Endangered Fish Recovery Program
Kevin Bestgen, Colorado State University, Larval Fish Laboratory
Jerry Wilhite, Western Area Power Administration
Shane Capron, Western Area Power Administration
David Speas, Bureau of Reclamation
Heather Hermansen, Bureau of Reclamation
Kevin McAbee, U.S. Fish and Wildlife Service
Jana Mohrman, U.S. Fish and Wildlife Service
Melissa Trammell, National Park Service
Brandon Albrecht, Environmental Group Representative

Coordinated by

The Upper Colorado River Endangered Fish Recovery Program

Final Report March 2012

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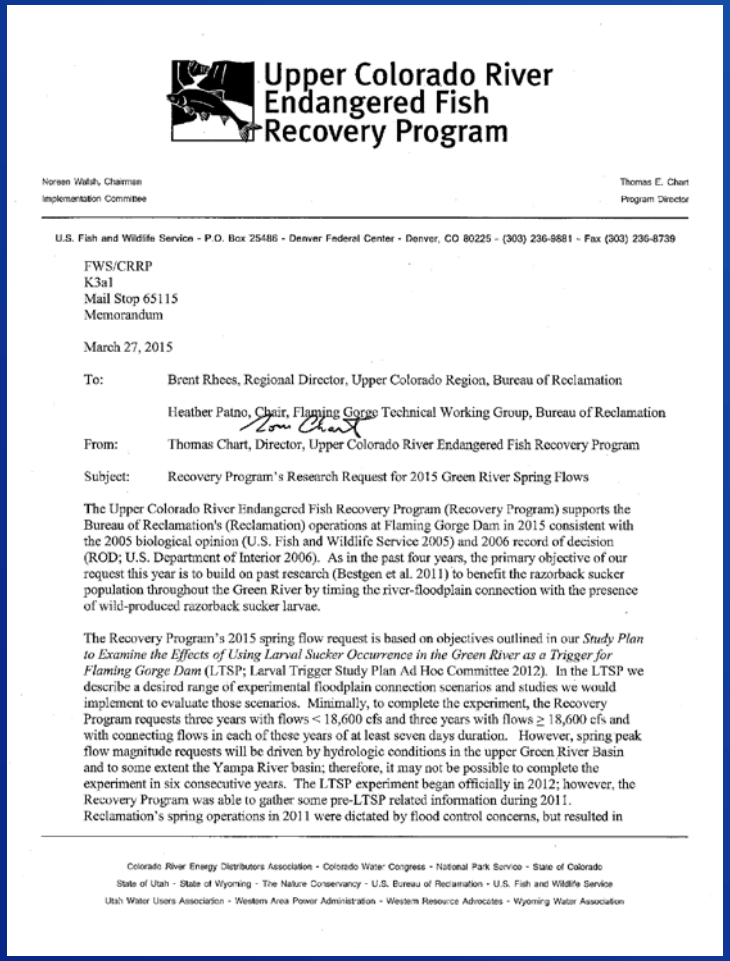
Research Requests



Upper Colorado River Endangered Fish Recovery Program

Noreen Walsh, Chairman
Implementation Committee

Thomas E. Chart
Program Director

U.S. Fish and Wildlife Service - P.O. Box 25486 - Denver Federal Center - Denver, CO 80225 - (303) 236-8881 - Fax (303) 236-8739

FWS/CRRP
K3a1
Mail Stop 65115
Memorandum

March 27, 2015

To: Brent Rhees, Regional Director, Upper Colorado Region, Bureau of Reclamation

Heather Patno, Chair, Flaming Gorge Technical Working Group, Bureau of Reclamation

From: Thomas Chart, Director, Upper Colorado River Endangered Fish Recovery Program

Subject: Recovery Program's Research Request for 2015 Green River Spring Flows

The Upper Colorado River Endangered Fish Recovery Program (Recovery Program) supports the Bureau of Reclamation's (Reclamation) operations at Flaming Gorge Dam in 2015 consistent with the 2005 biological opinion (U.S. Fish and Wildlife Service 2005) and 2006 record of decision (ROD; U.S. Department of Interior 2006). As in the past four years, the primary objective of our request this year is to build on past research (Bestgen et al. 2011) to benefit the razorback sucker population throughout the Green River by timing the river-floodplain connection with the presence of wild-produced razorback sucker larvae.

The Recovery Program's 2015 spring flow request is based on objectives outlined in our *Study Plan to Examine the Effects of Using Larval Sucker Occurrence in the Green River as a Trigger for Flaming Gorge Dam* (LTSP; Larval Trigger Study Plan Ad Hoc Committee 2012). In the LTSP we describe a desired range of experimental floodplain connection scenarios and studies we would implement to evaluate those scenarios. Minimally, to complete the experiment, the Recovery Program requests three years with flows < 18,600 cfs and three years with flows ≥ 18,600 cfs and with connecting flows in each of these years of at least seven days duration. However, spring peak flow magnitude requests will be driven by hydrologic conditions in the upper Green River Basin and to some extent the Yampa River basin; therefore, it may not be possible to complete the experiment in six consecutive years. The LTSP experiment began officially in 2012; however, the Recovery Program was able to gather some pre-LTSP related information during 2011. Reclamation's spring operations in 2011 were dictated by flood control concerns, but resulted in

Colorado River Energy Distributors Association - Colorado Water Congress - National Park Service - State of Colorado
State of Utah - State of Wyoming - The Nature Conservancy - U.S. Bureau of Reclamation - U.S. Fish and Wildlife Service
Utah Water Users Association - Western Area Power Administration - Western Resource Advocates - Wyoming Water Association

- LTSP
- Research results to date – Wildly Successful!
- Spillway

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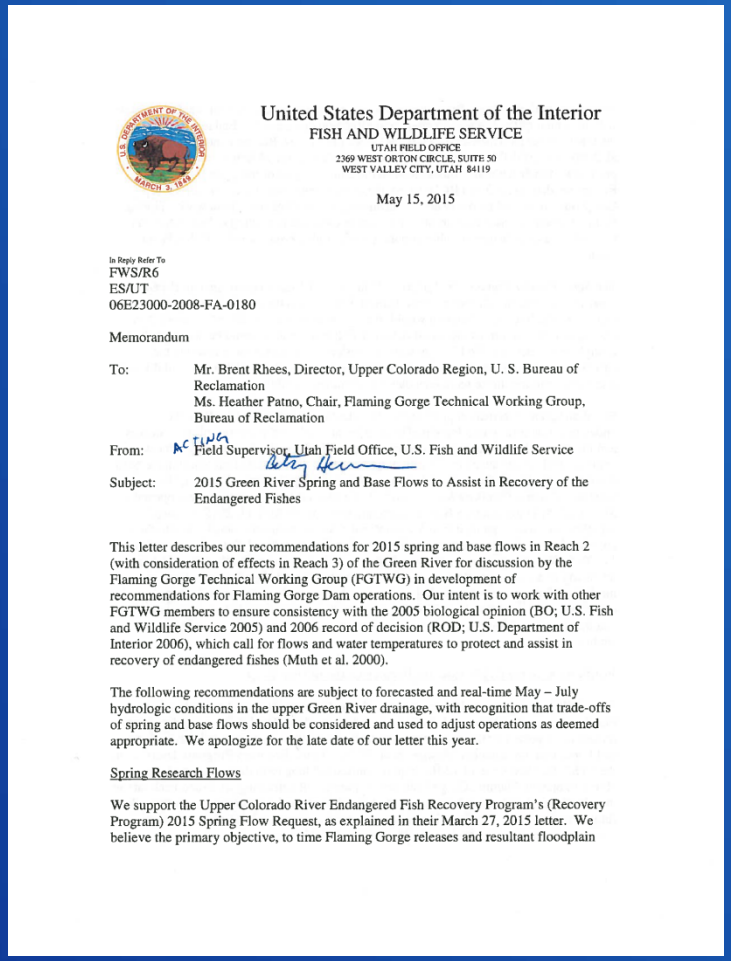
Research Requests

- Support spring research
- Bestgen draft backwater synthesis report
- Reach 2 request
- Reach 3 request
- Clarification email



United States Department of the Interior
FISH AND WILDLIFE SERVICE
UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

May 15, 2015

In Reply Refer To
FWS/R6
ES/UT
06E23000-2008-FA-0180

Memorandum

To: Mr. Brent Rhees, Director, Upper Colorado Region, U. S. Bureau of Reclamation
Ms. Heather Patno, Chair, Flaming Gorge Technical Working Group, Bureau of Reclamation

From: ACTING Field Supervisor, Utah Field Office, U.S. Fish and Wildlife Service

Subject: 2015 Green River Spring and Base Flows to Assist in Recovery of the Endangered Fishes

This letter describes our recommendations for 2015 spring and base flows in Reach 2 (with consideration of effects in Reach 3) of the Green River for discussion by the Flaming Gorge Technical Working Group (FGTWG) in development of recommendations for Flaming Gorge Dam operations. Our intent is to work with other FGTWG members to ensure consistency with the 2005 biological opinion (BO; U.S. Fish and Wildlife Service 2005) and 2006 record of decision (ROD; U.S. Department of Interior 2006), which call for flows and water temperatures to protect and assist in recovery of endangered fishes (Muth et al. 2000).

The following recommendations are subject to forecasted and real-time May – July hydrologic conditions in the upper Green River drainage, with recognition that trade-offs of spring and base flows should be considered and used to adjust operations as deemed appropriate. We apologize for the late date of our letter this year.

Spring Research Flows

We support the Upper Colorado River Endangered Fish Recovery Program's (Recovery Program) 2015 Spring Flow Request, as explained in their March 27, 2015 letter. We believe the primary objective, to time Flaming Gorge releases and resultant floodplain

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Flaming Gorge Working Group Meeting August 2015

Spring and Summer Operations

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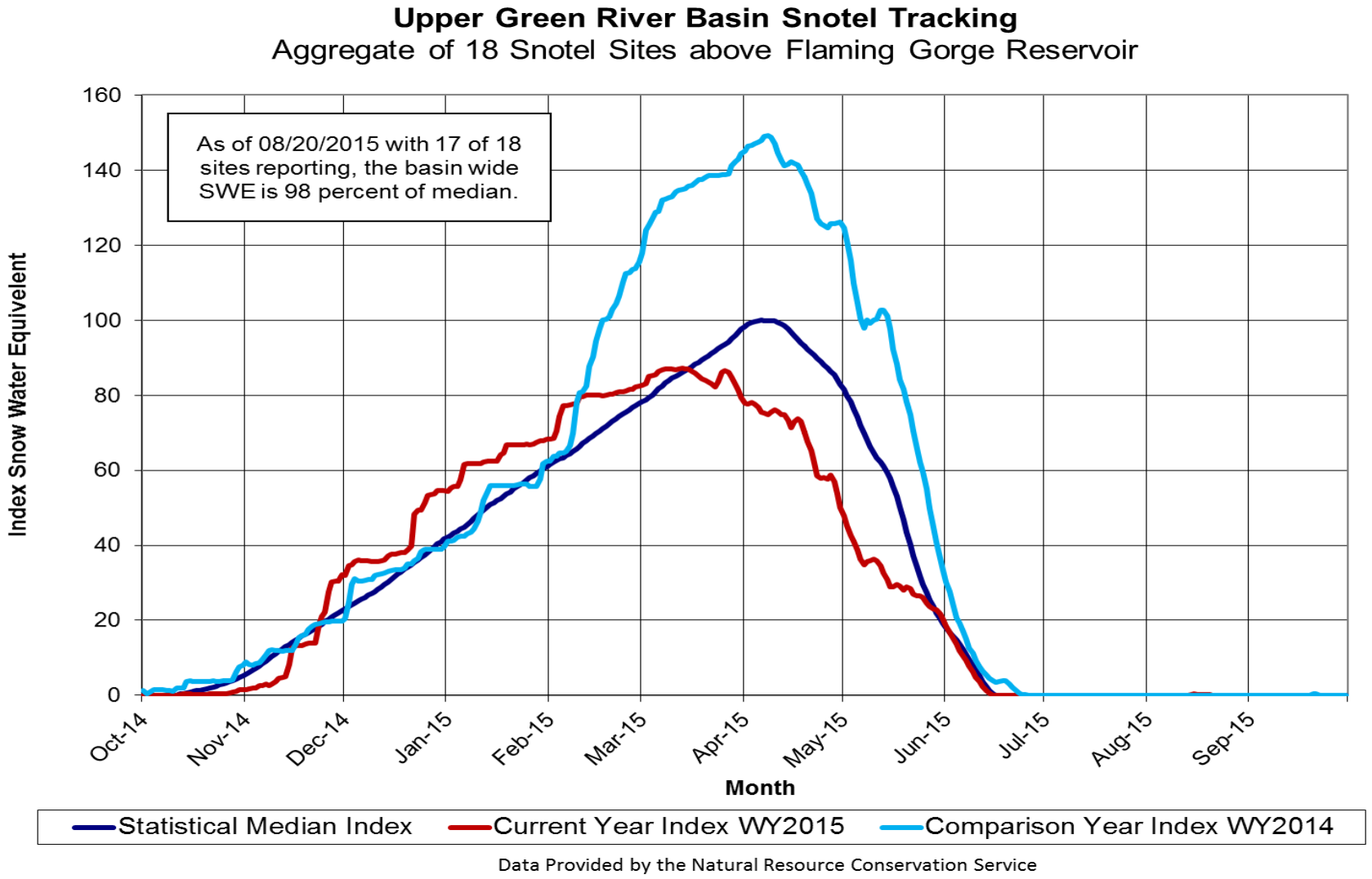
Flaming Gorge 2015 SWE



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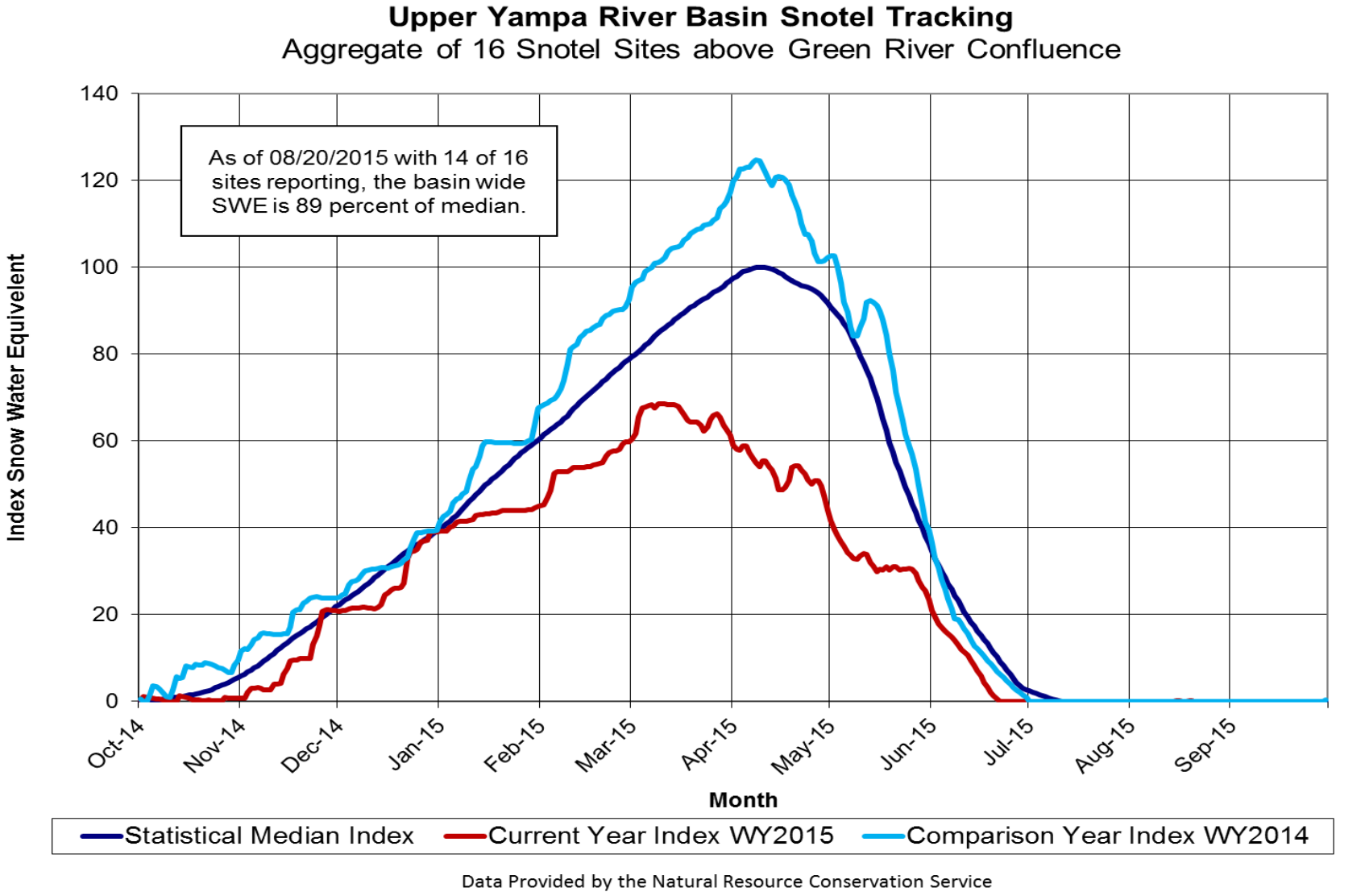
Yampa 2015 SWE



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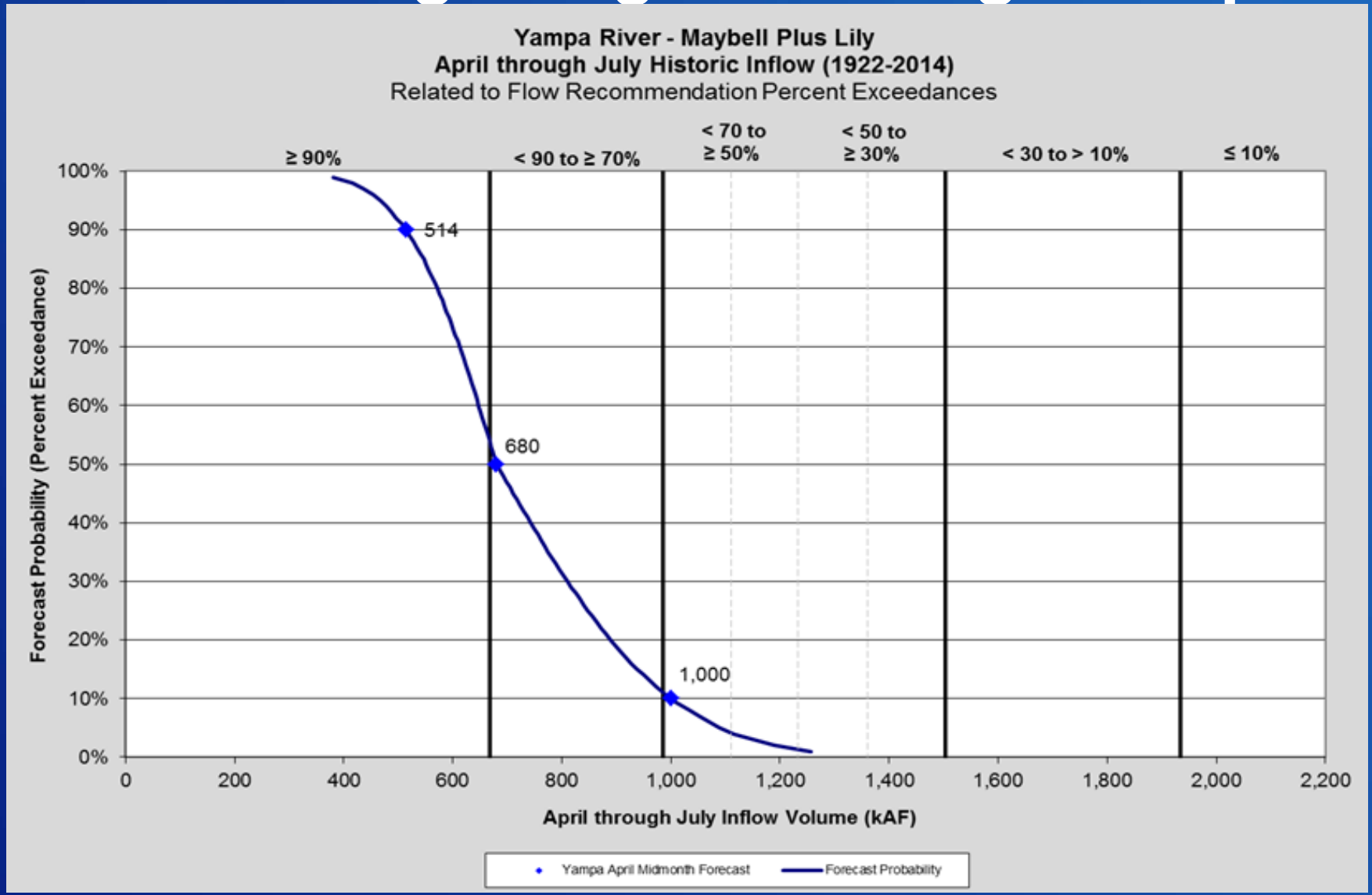
Flaming Gorge Working Group



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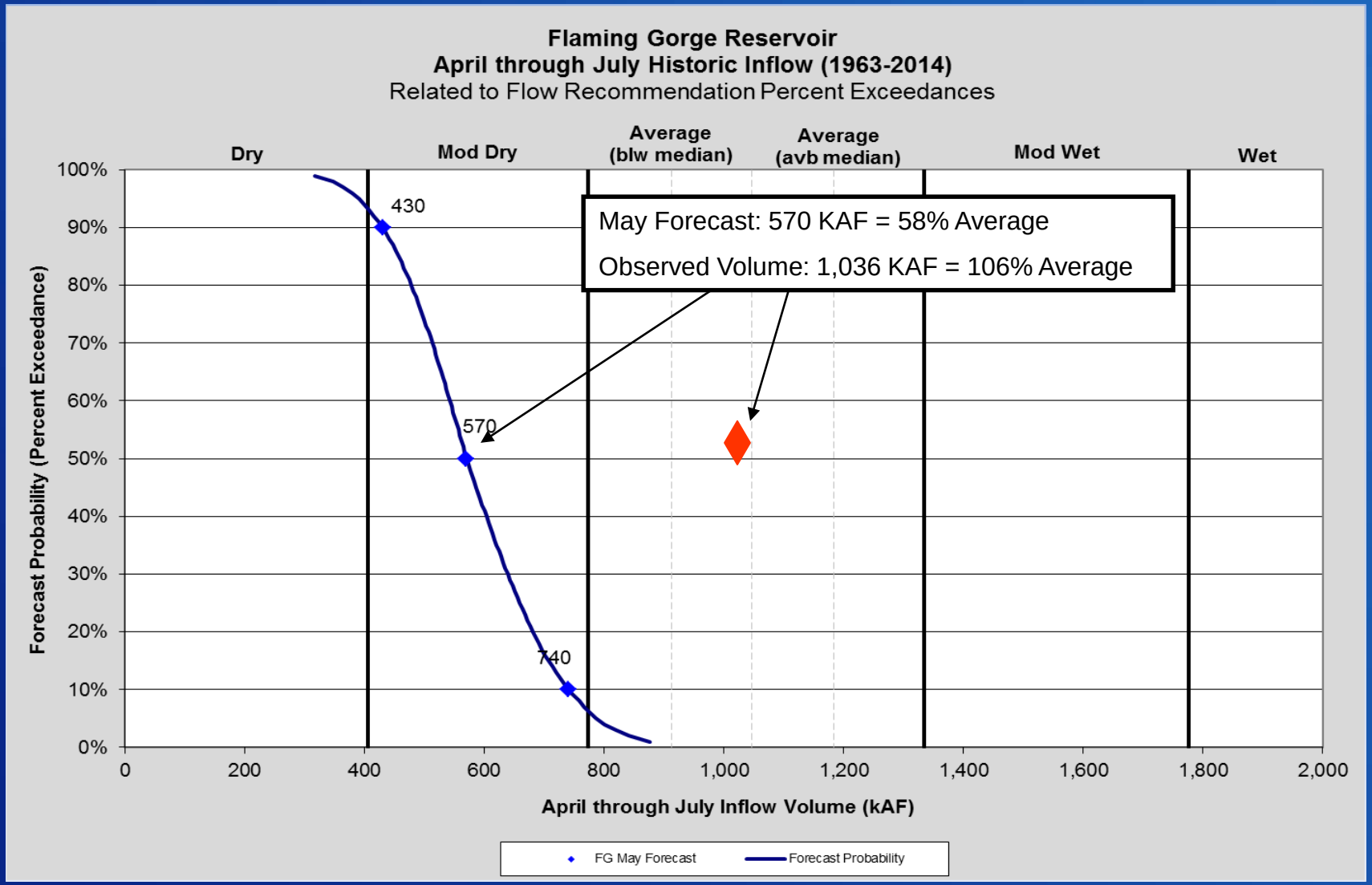
FG May and Observed Classifications



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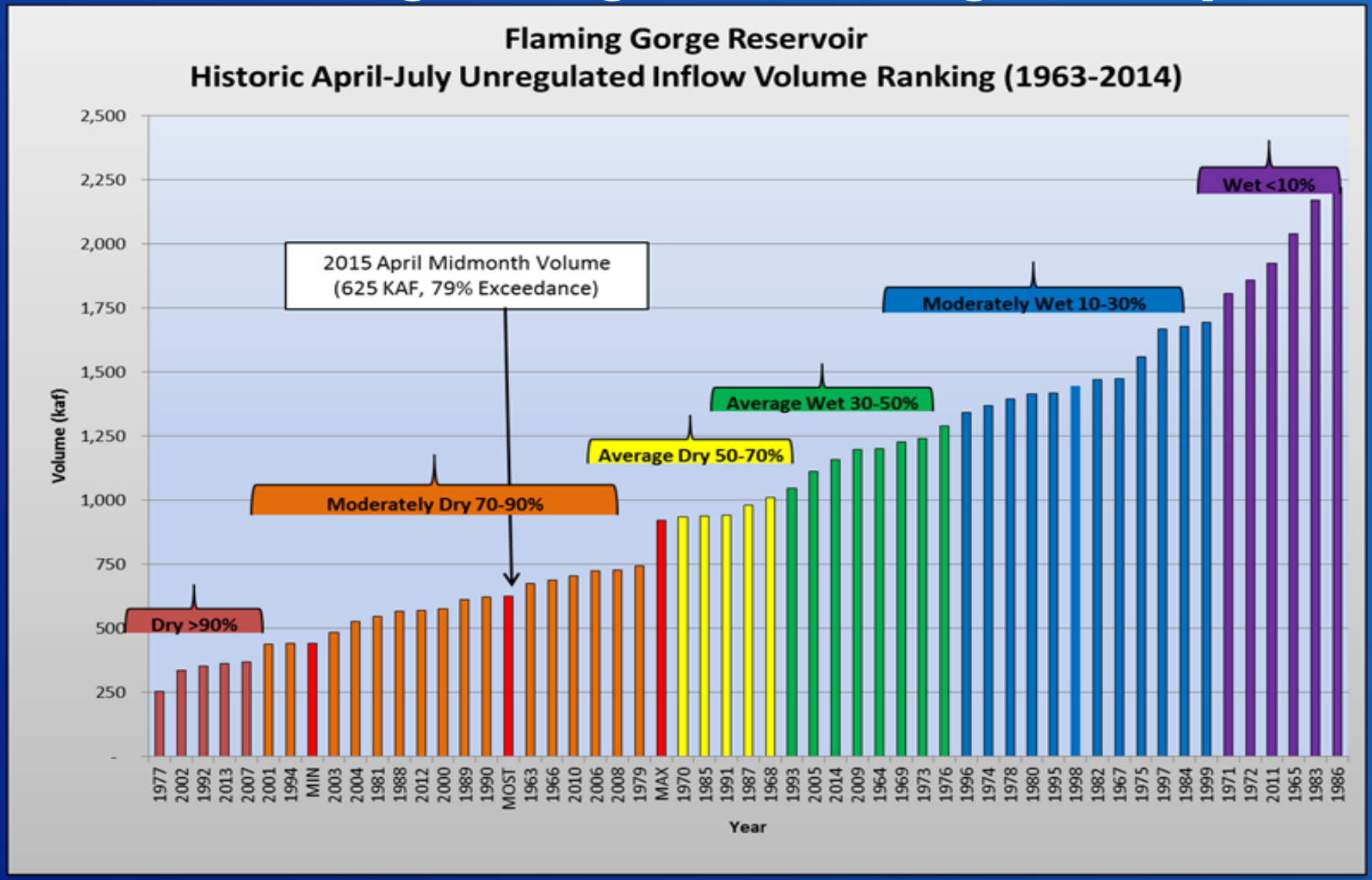

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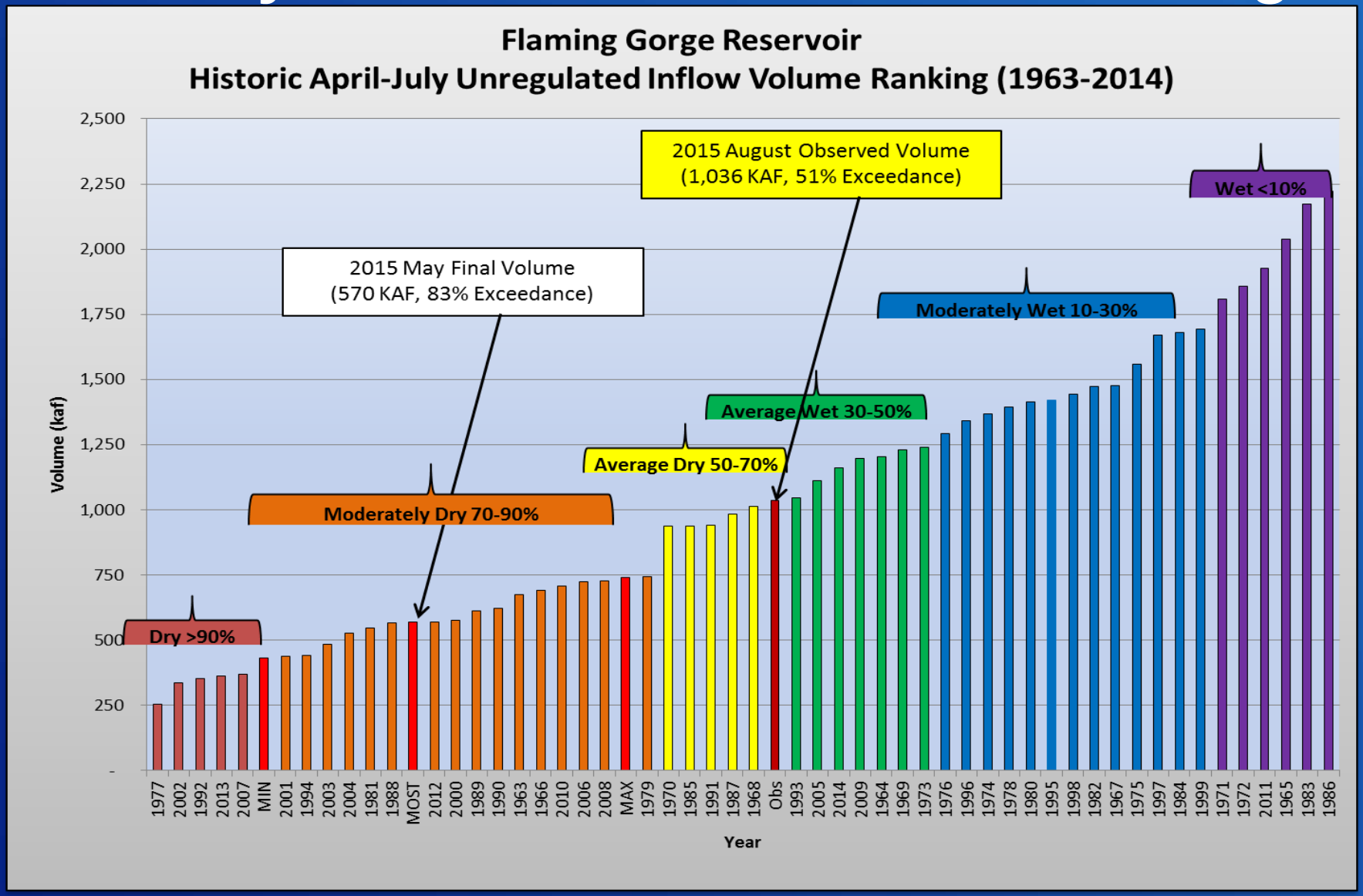
FG May and Observed Historic Ranking



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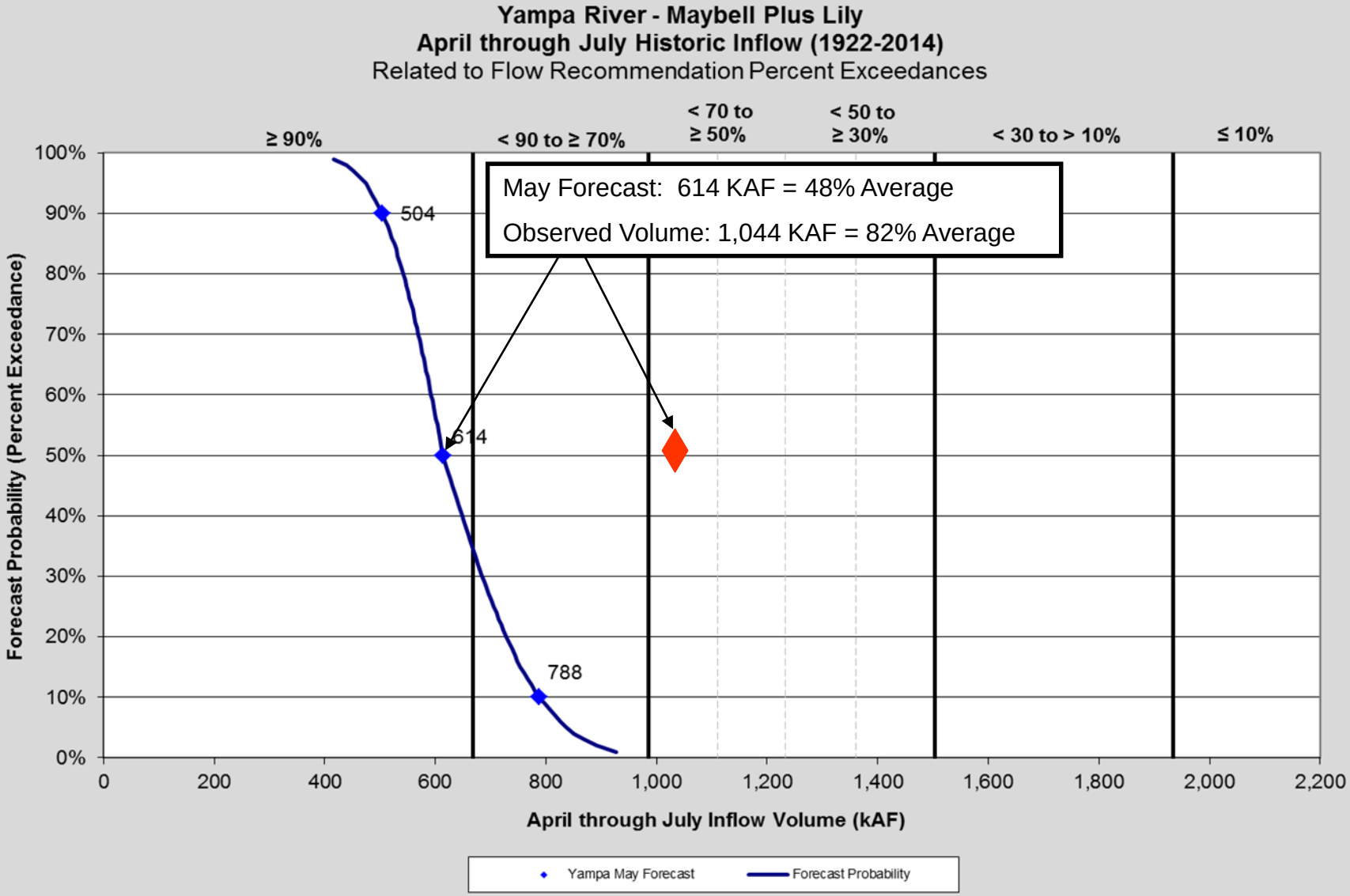
Yampa May and Observed Classifications



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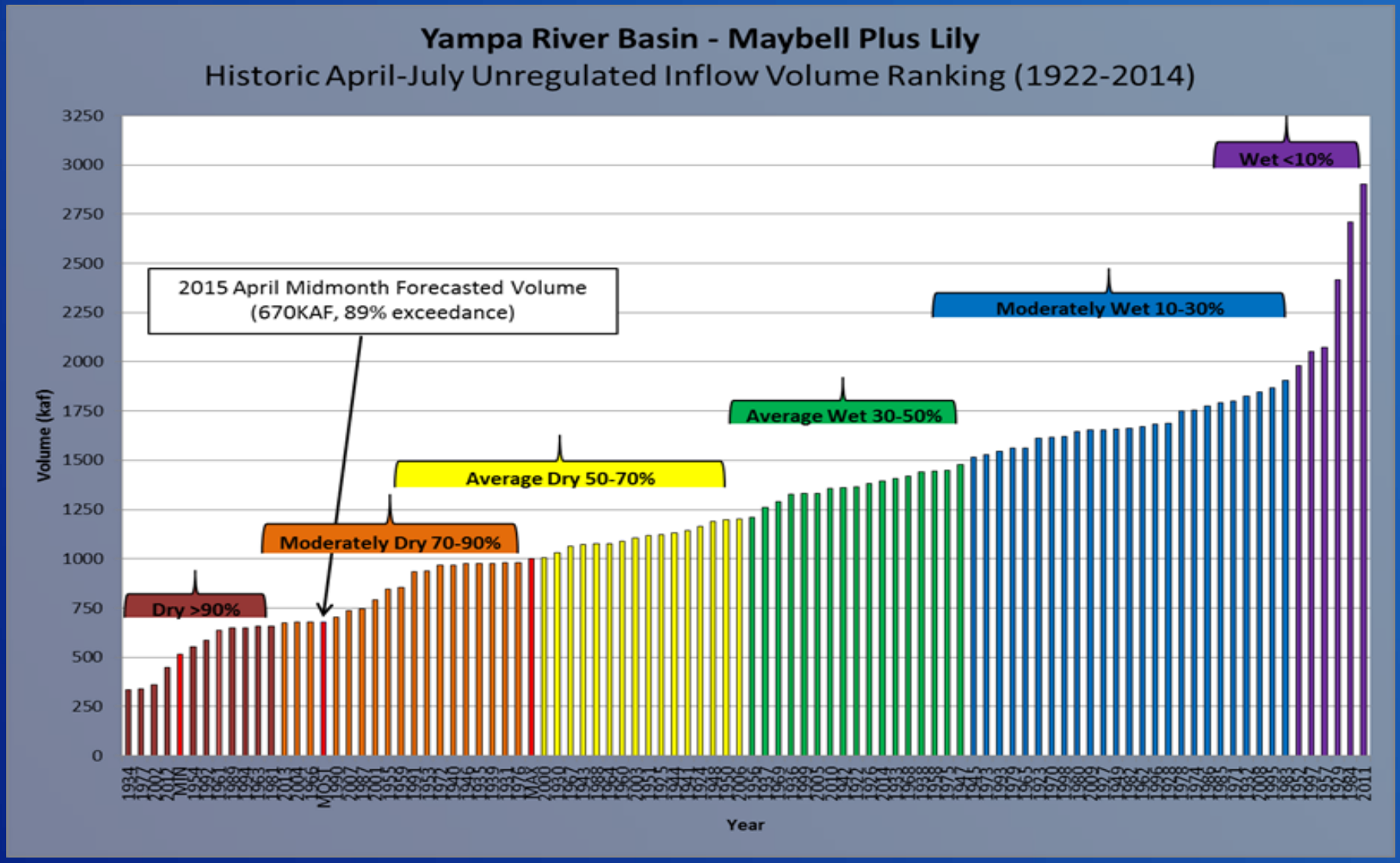

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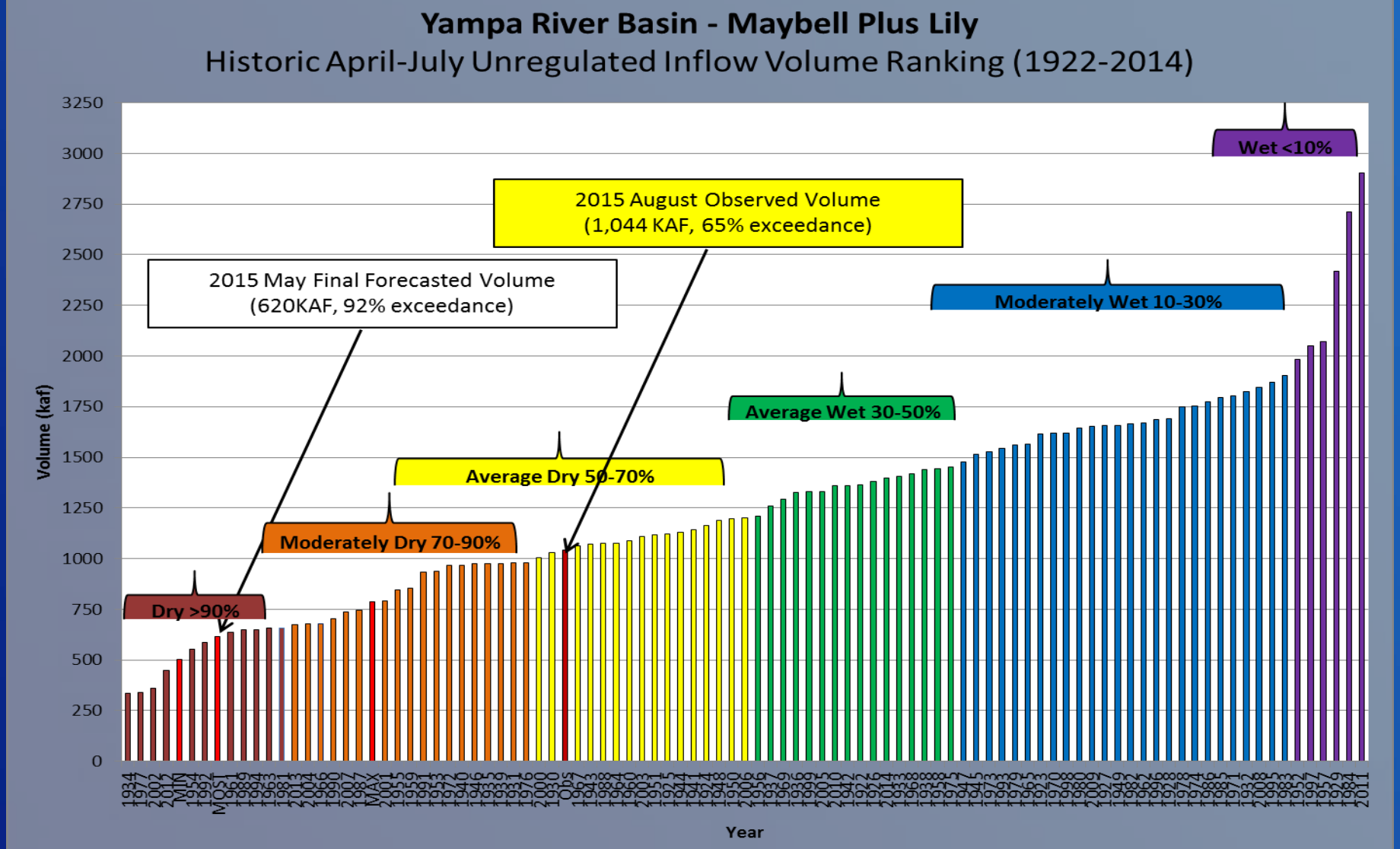
Yampa May and Observed Historic Ranking



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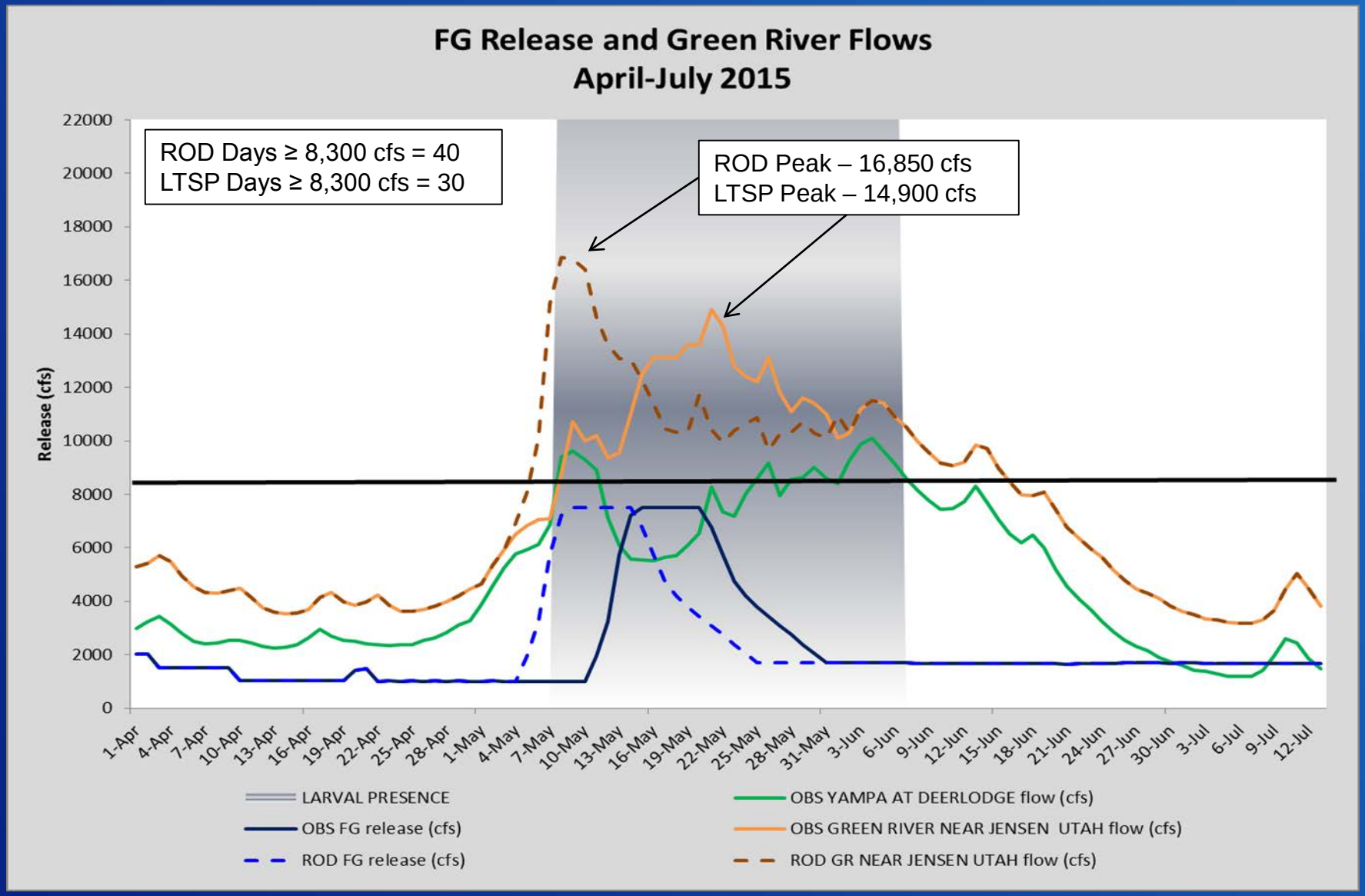
Flaming Gorge Spring Operations



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Flaming Gorge Working Group Meeting August 2015

Current and Projected Hydrology and Operations

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Current Conditions

Live Capacity	3.752	MAF
Capacity on 8/25/15	3.514	MAF
Available Space	.238	MAF
Percentage of Full	94	%

Reservoir Elev. (Min Power)	5908.00	feet
Elevation on 8/25/15	6034.21	feet
Elevation above (Min)	126.21	feet

Average Inflow	1,430	cfs
Average Release	1,700	cfs

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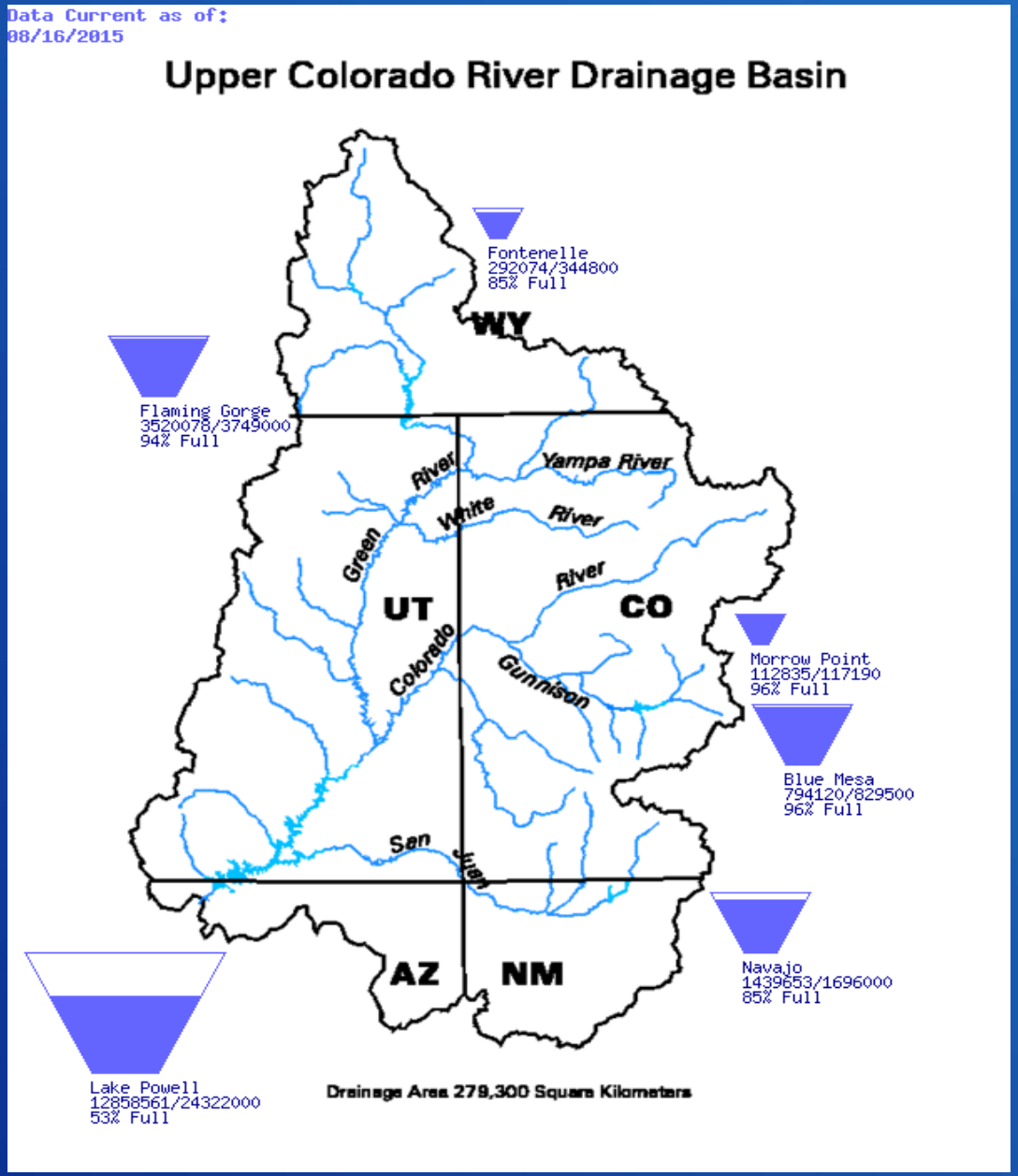
CRSP System Storage 2015

Observed April-July Inflow Percent of Average Volume

- Fontenelle – 106%
- Flaming Gorge – 106%
- Blue Mesa – 105%
- Navajo – 84%
- Glen Canyon – 94%



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Base Flow Flexibility

- Beginning about June-August and continuing through November
  - Variation of ±40% around the annual mean base flow
- December through February
  - Variation of ±25% around the annual mean base flow
- Consecutive daily change limited to 3%
- Hydropower generation at Flaming Gorge limited to produce no more than 0.1 meter daily stage change at Jensen, Utah

Flow Recommendation Flexibility

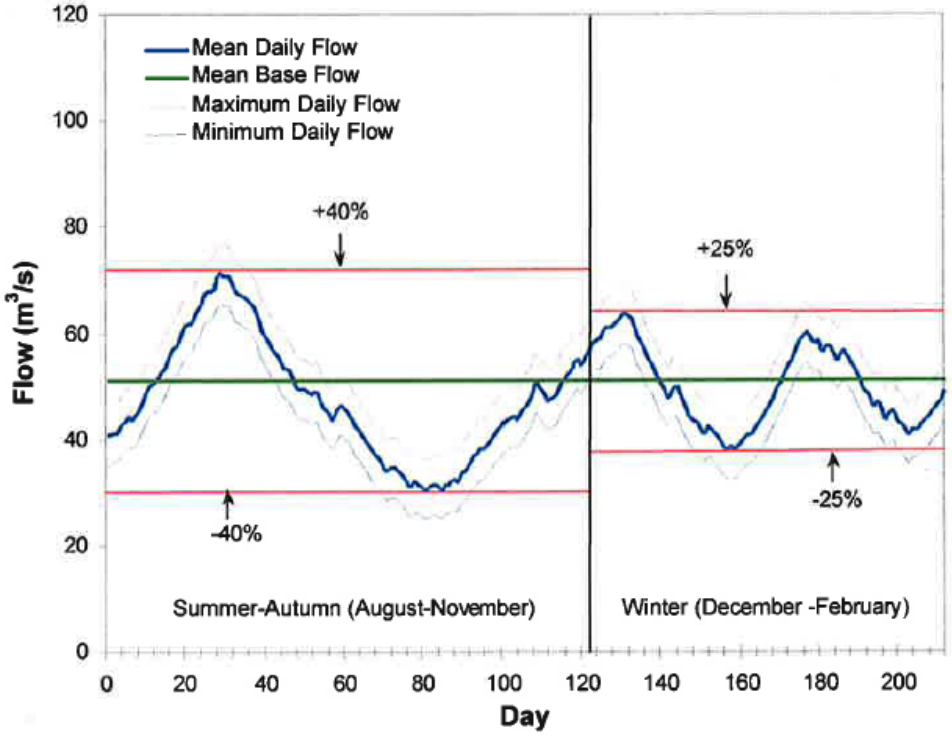
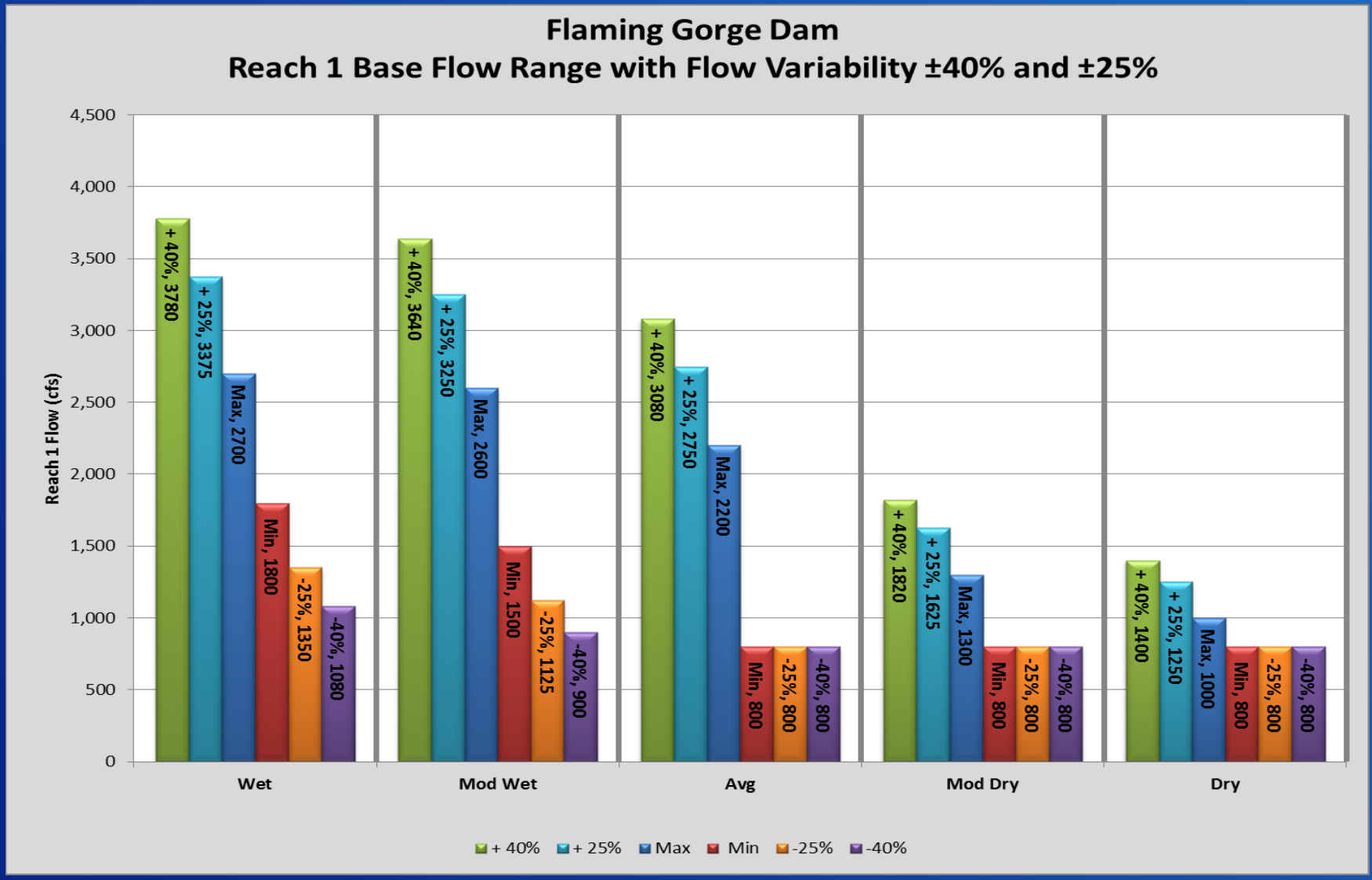


Figure 5.2.—Representation of recommendations for flow variability during the summer through winter base flow period in Reach 2. (In summer and autumn, mean daily flow should be within 40% of the mean annual base flow; in winter, mean daily flow should be within 25% of the mean annual base flow. The rate of change in mean daily flow should be 3% or less between consecutive days. Fluctuation between maximum and minimum daily flows should produce no more than a 0.1-m change in stage at the USGS stream gage near Jensen, Utah.)

Base Flow Ranges



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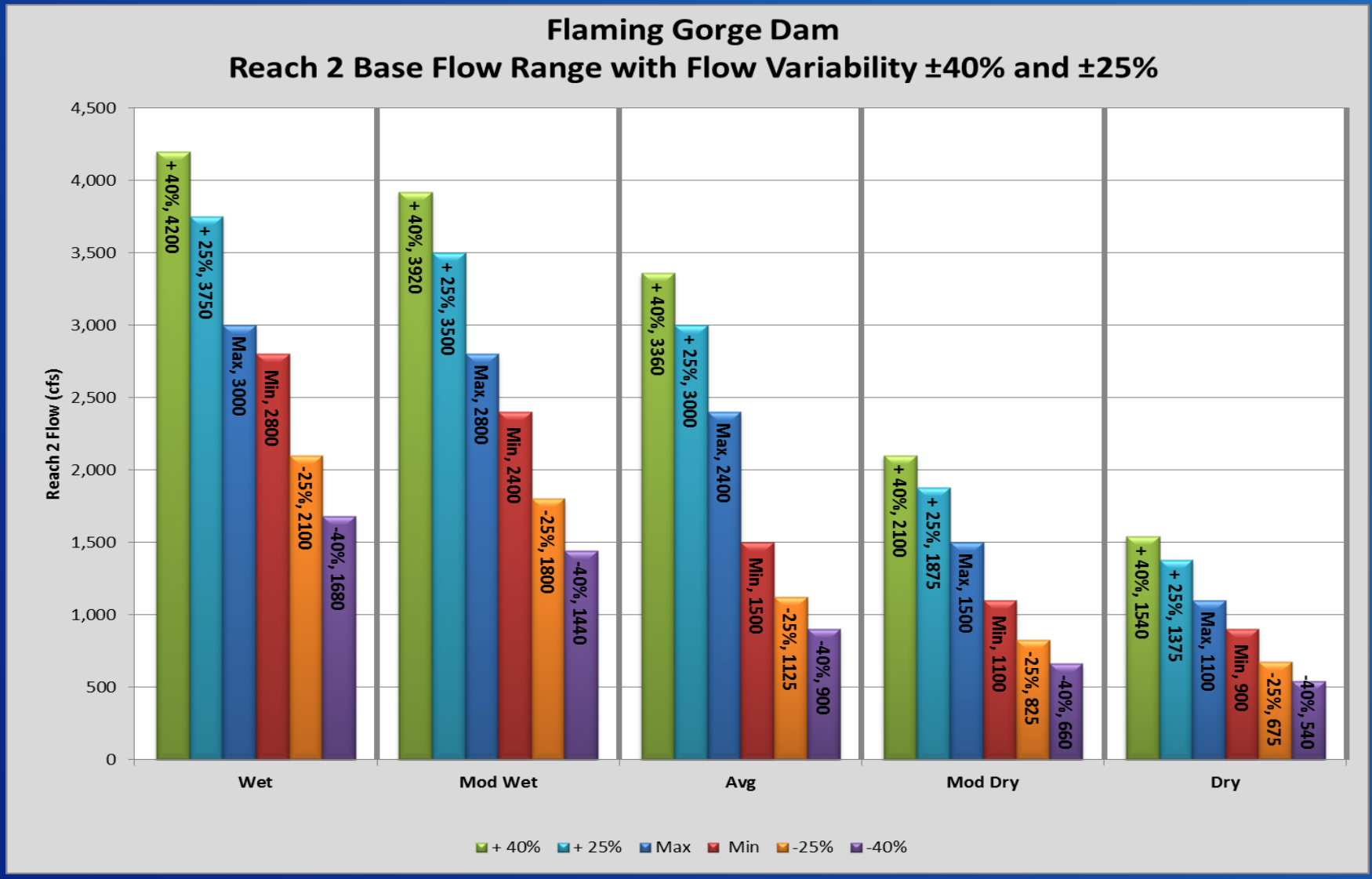
Base Flow Ranges



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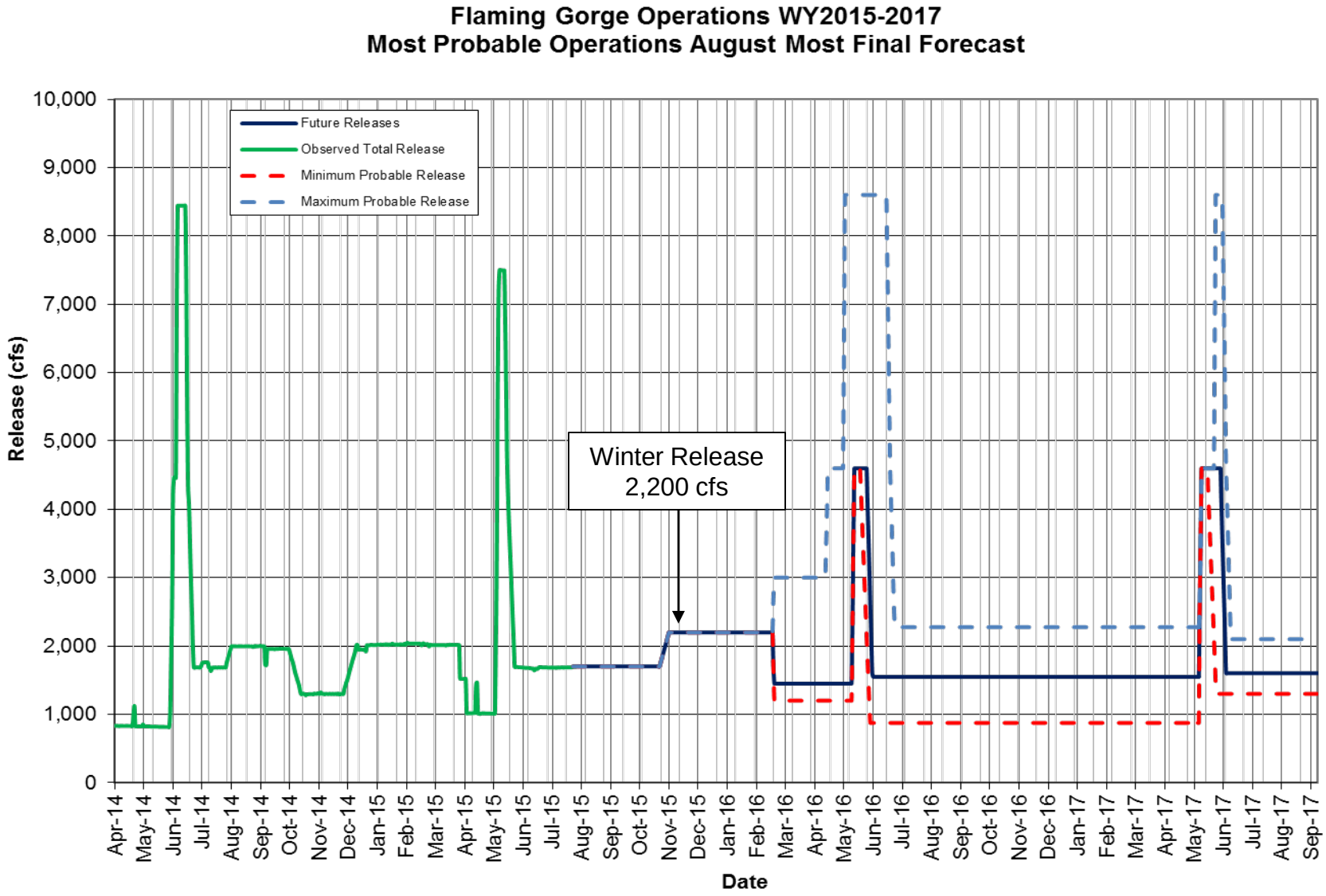
Release Scenarios



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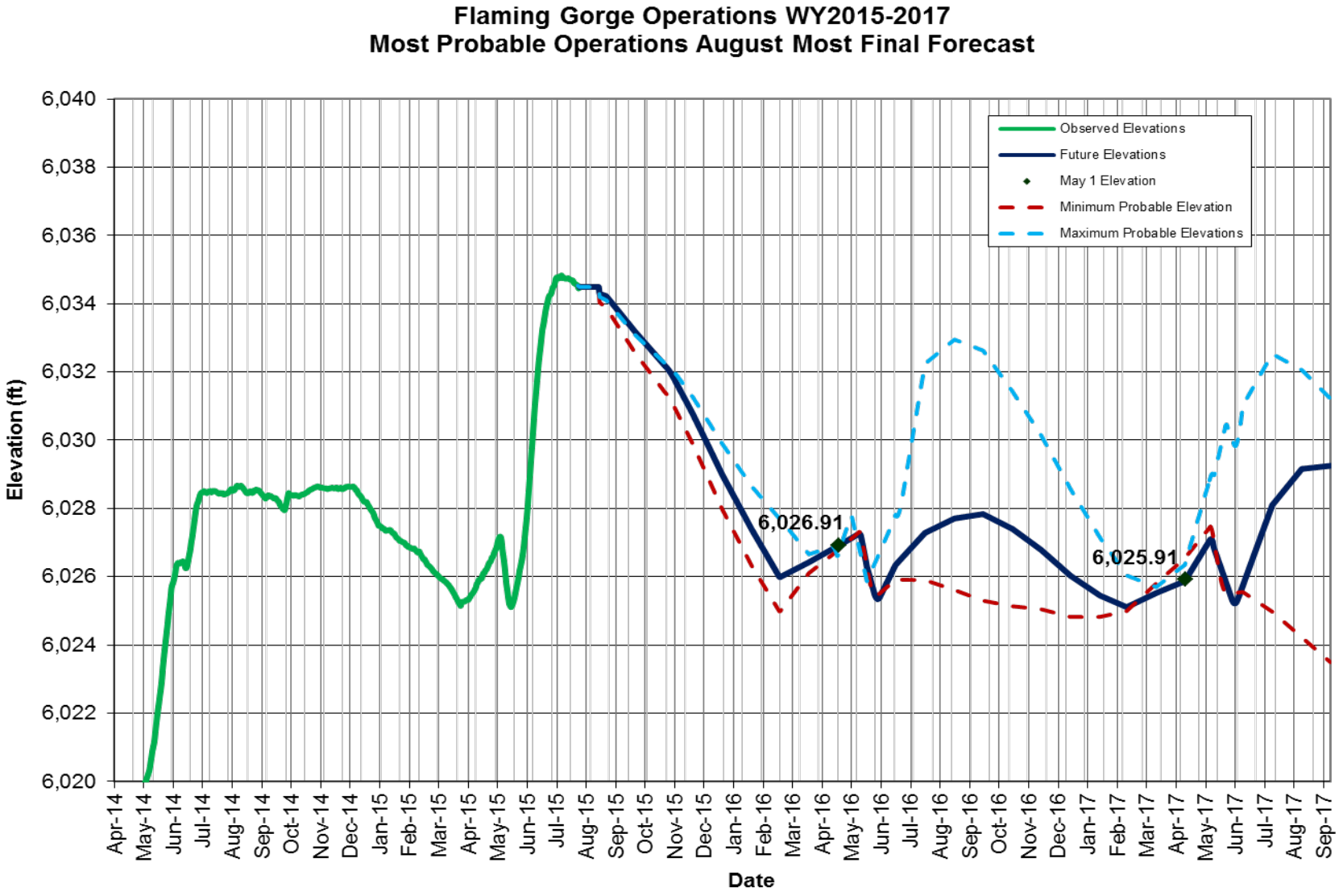
Release Scenarios



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Flaming Gorge Working Group
August 2015

- Questions?

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