

RECLAMATION

Managing Water in the West

Bighorn Lake/Yellowtail Dam Operations

November 5, 2015



U.S. Department of the Interior
Bureau of Reclamation

BIGHORN BASIN WATER SUPPLY & RESERVOIR OPERATIONS MEETING

Billings, Montana
November 5, 2015

Introduction and Purpose of Meeting

Tom Sawatzke, Acting Area Manager, Montana Area Office

Water Supply Outlook & Reservoir Operations

WYAO - Boysen & Buffalo Bill Operations

MTAO - Yellowtail Operations

Agency Reports

Bighorn River System Issues Group Meeting

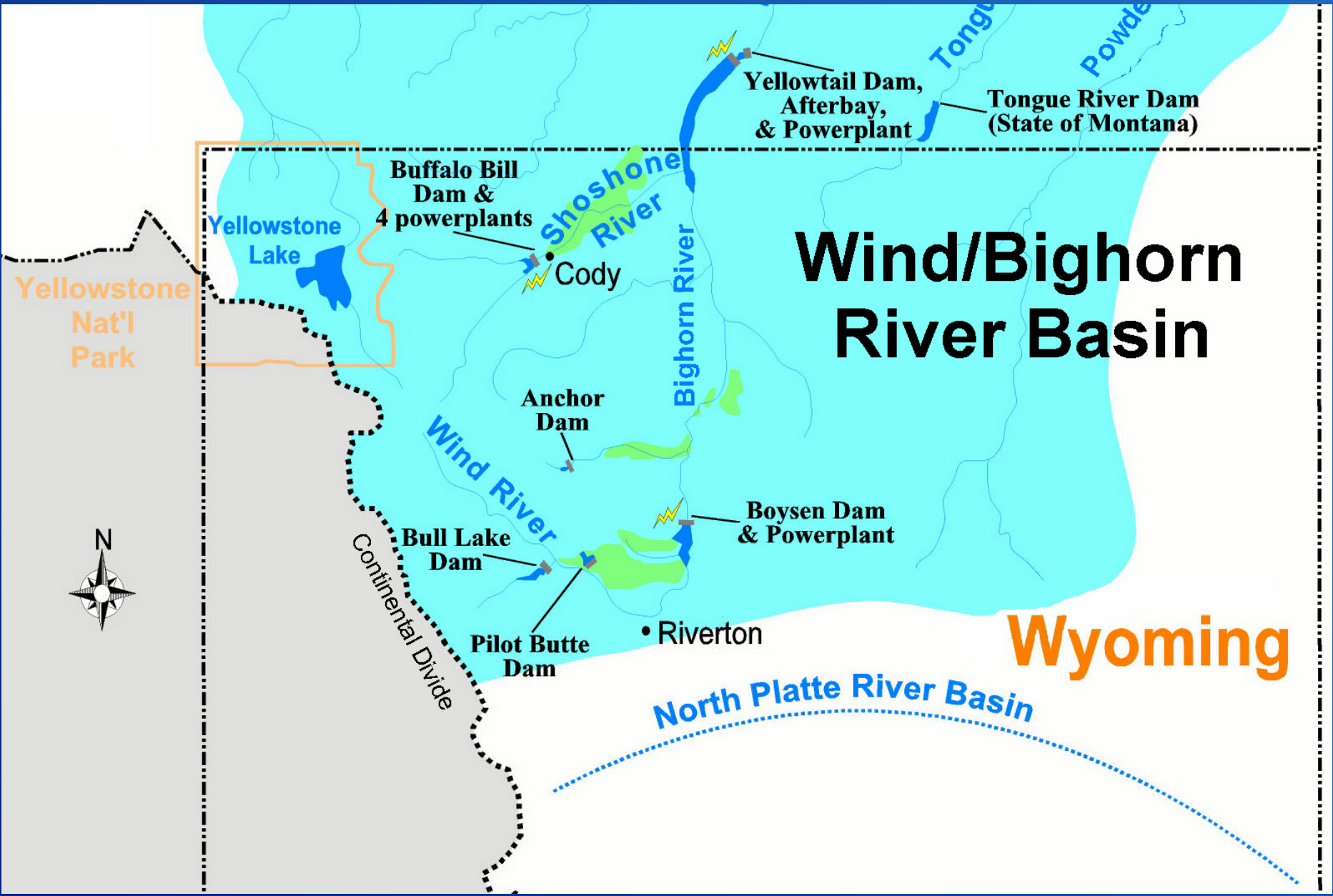
Sediment Control Project

Crow Tribe Water Rights Settlement

Yellowstone River Conservation District Council

Operating Criteria

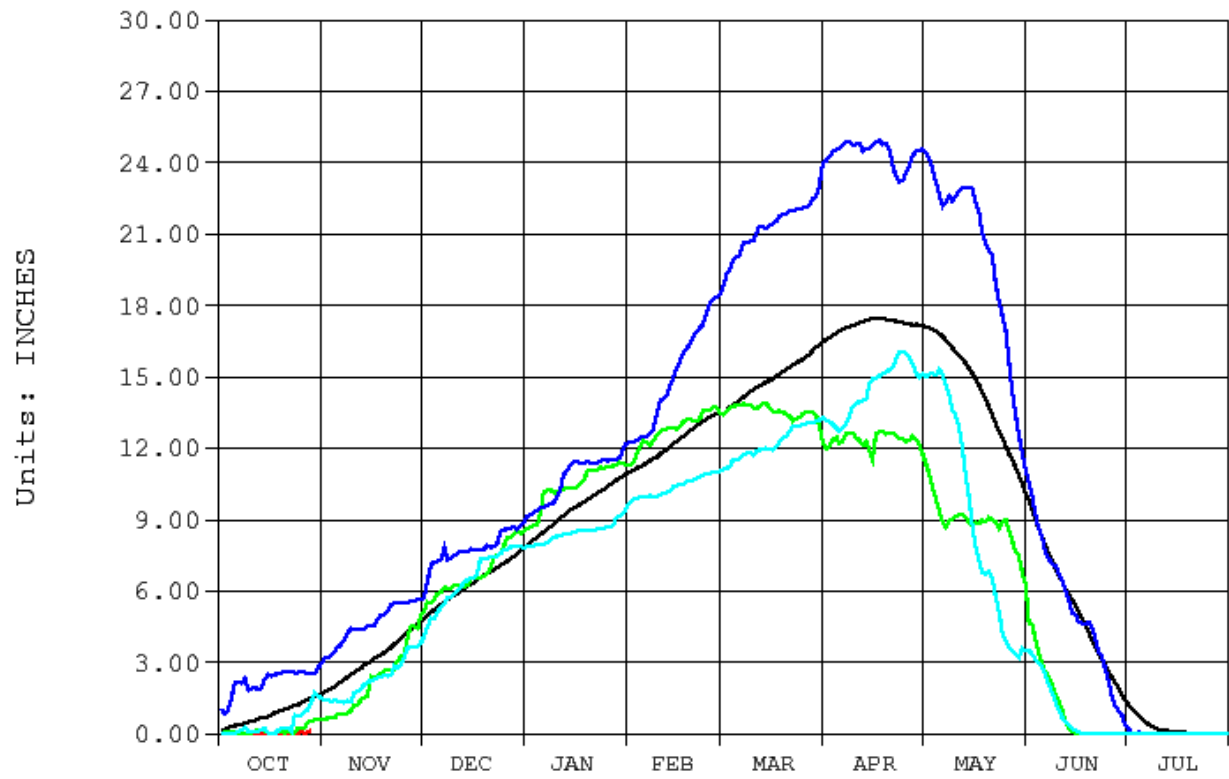
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Basin above Buffalo Bill Reservoir

Snow Water Equivalent

Archive Data From 1-OCT Through 31-JUL
 Plotted 10/28/2015 13:34 (Provisional Data Subject to Revision)

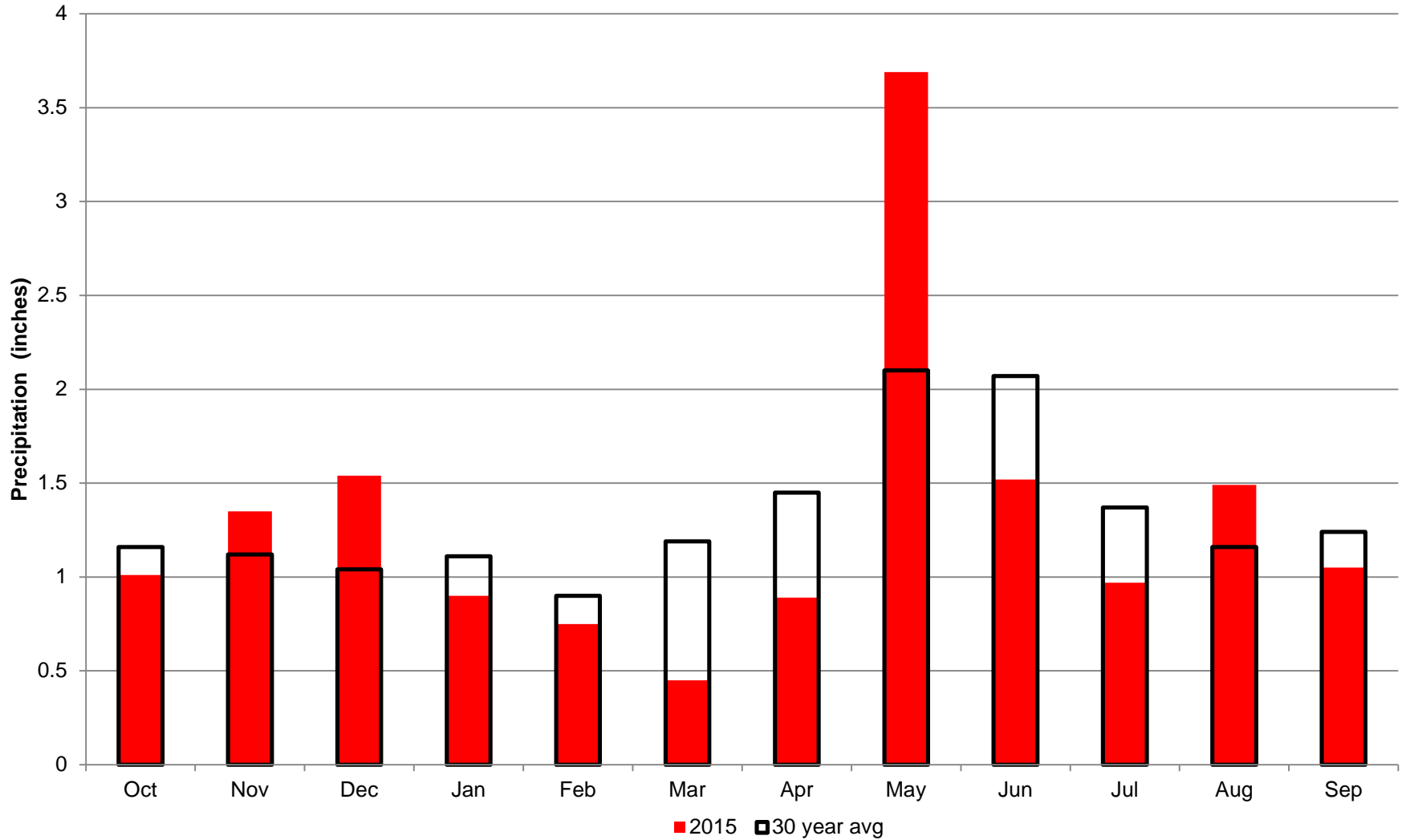


BBR Buffalo Bill Reservoir, Shoshone River near Cody, WY
 SE_AVG Snow Water Equivalent Average (inches)
 SE Snow Water Equivalent (inches)
 2016
 2016 2015 2014
 2013

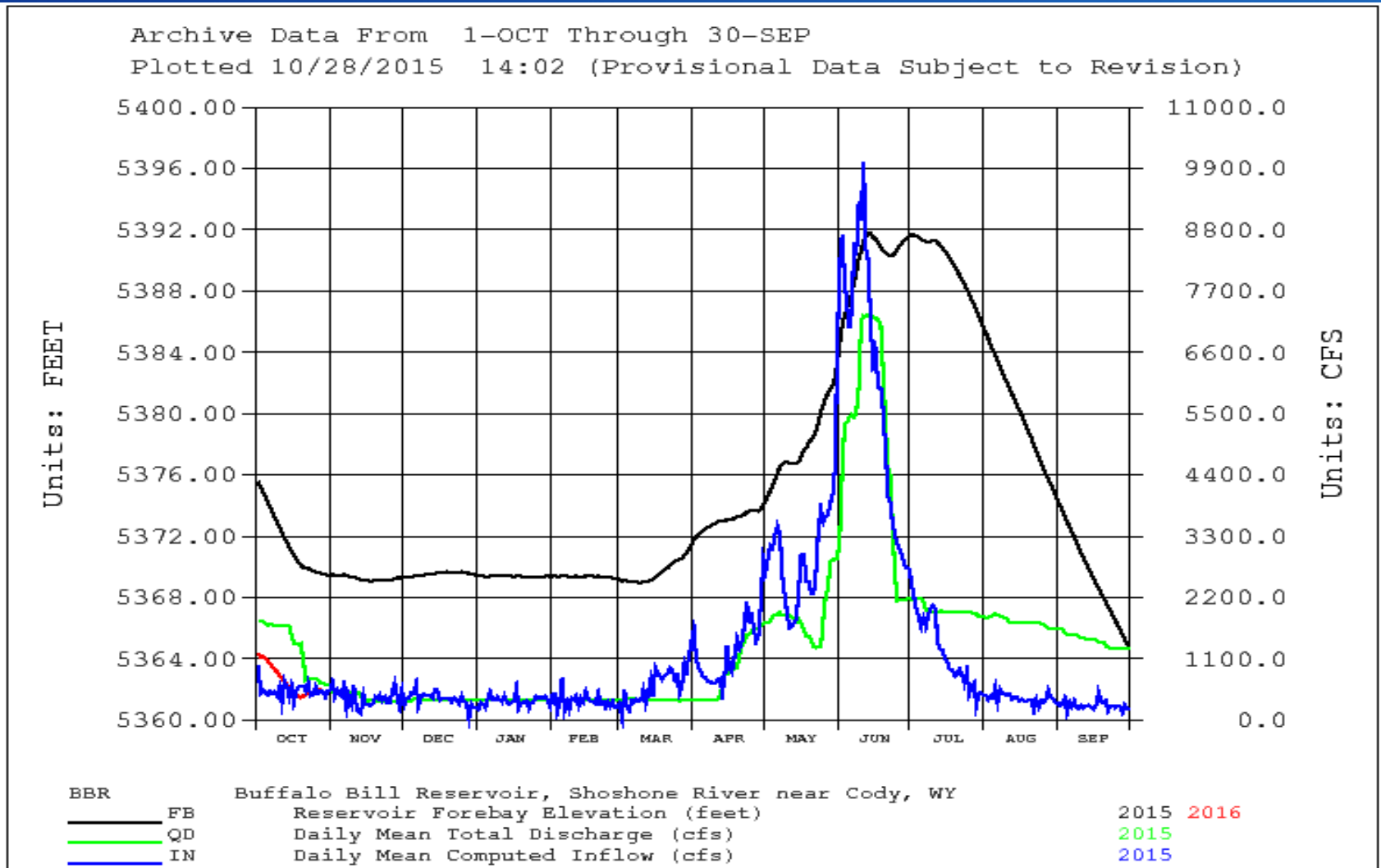
Water Year	April-July Inflow (acre-feet)
2013	576,500
2014	1,062,400
2015	696,400 (103% of avg)
2016	???
Average = 677,800	

2015 Monthly Precipitation above Buffalo Bill Reservoir

Shoshone River Basin Precipitation

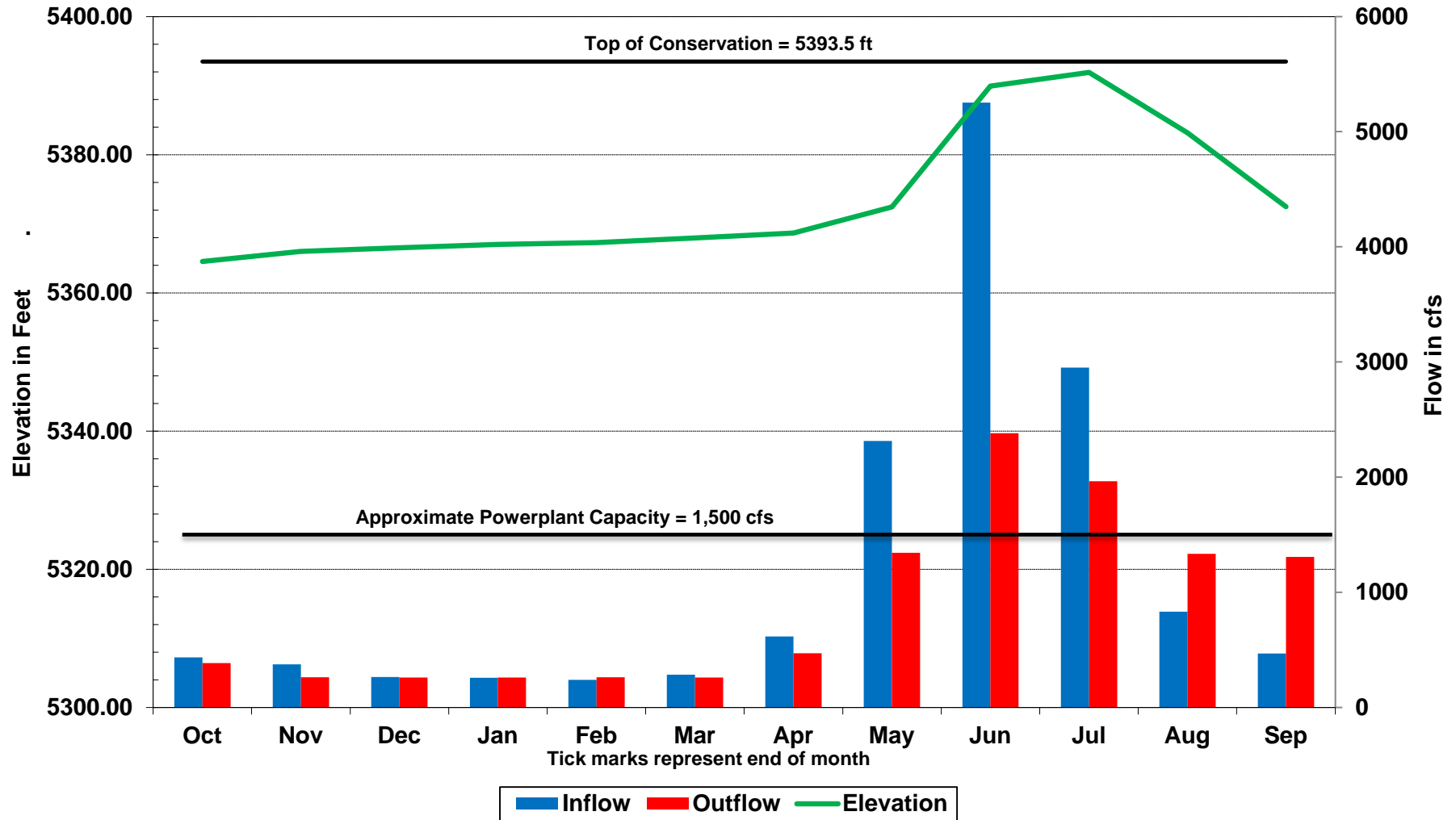


Buffalo Bill Reservoir 2015 Operations



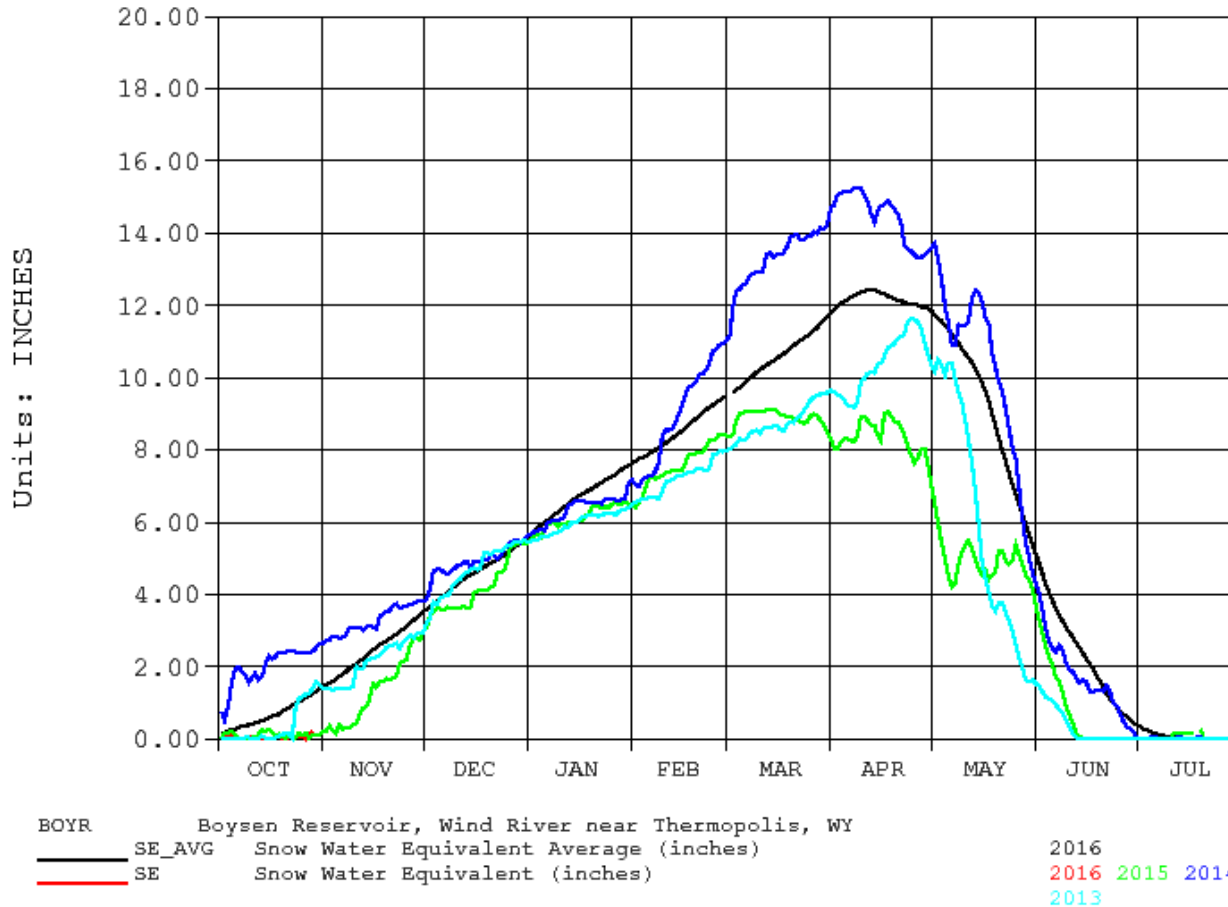
2016 Buffalo Bill Reservoir Operations

BUFFALO BILL RESERVOIR OPERATIONS Water Year 2016 Projection (October actuals)



Basin above Boysen Reservoir Snow Water Equivalent

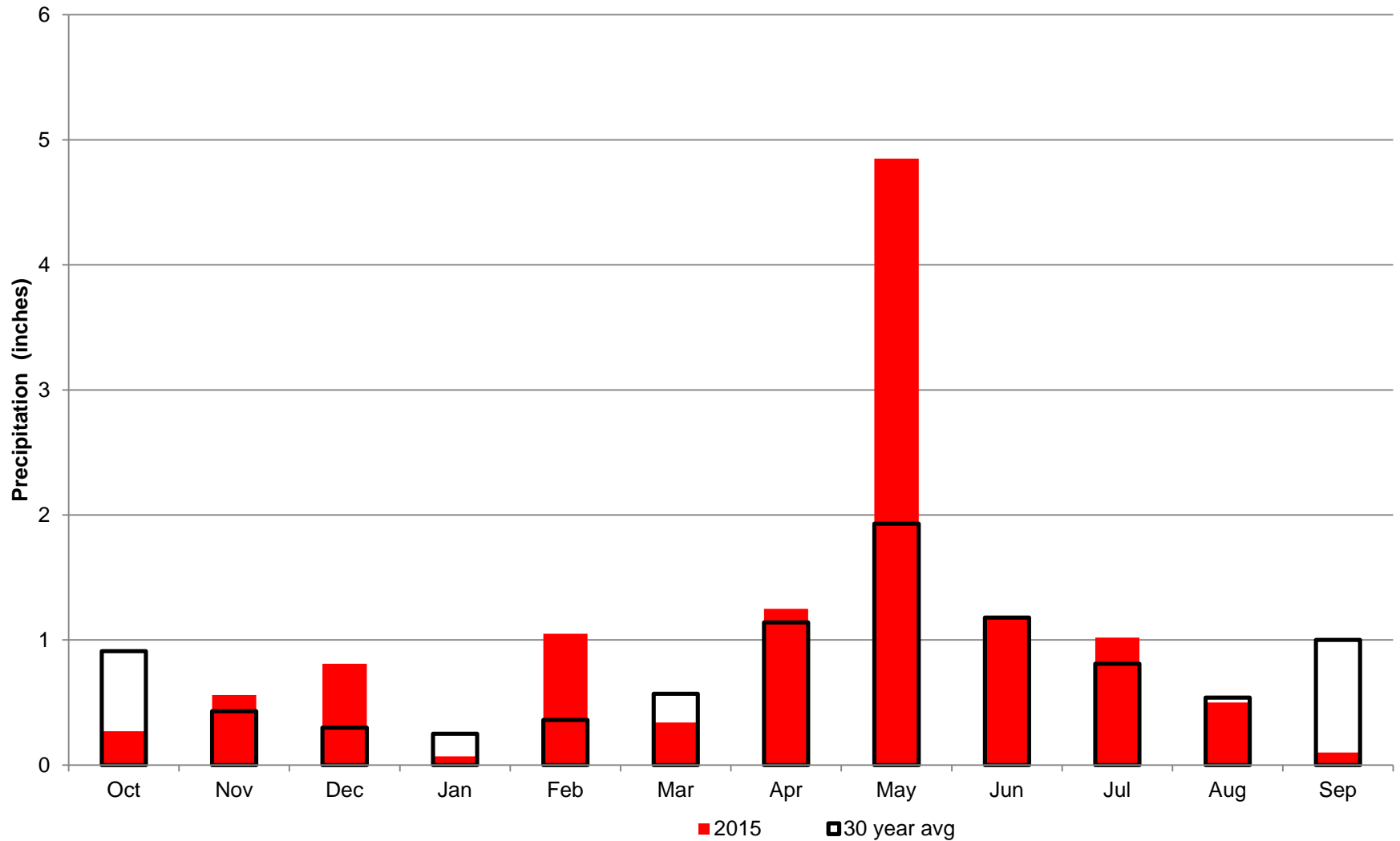
Archive Data From 1-OCT Through 31-JUL
Plotted 10/28/2015 13:36 (Provisional Data Subject to Revision)



Water Year	April-July Inflow (acre-feet)
2013	216,300
2014	694,500
2015	749,700 (140% of avg)
2016	???
Average = 533,800	

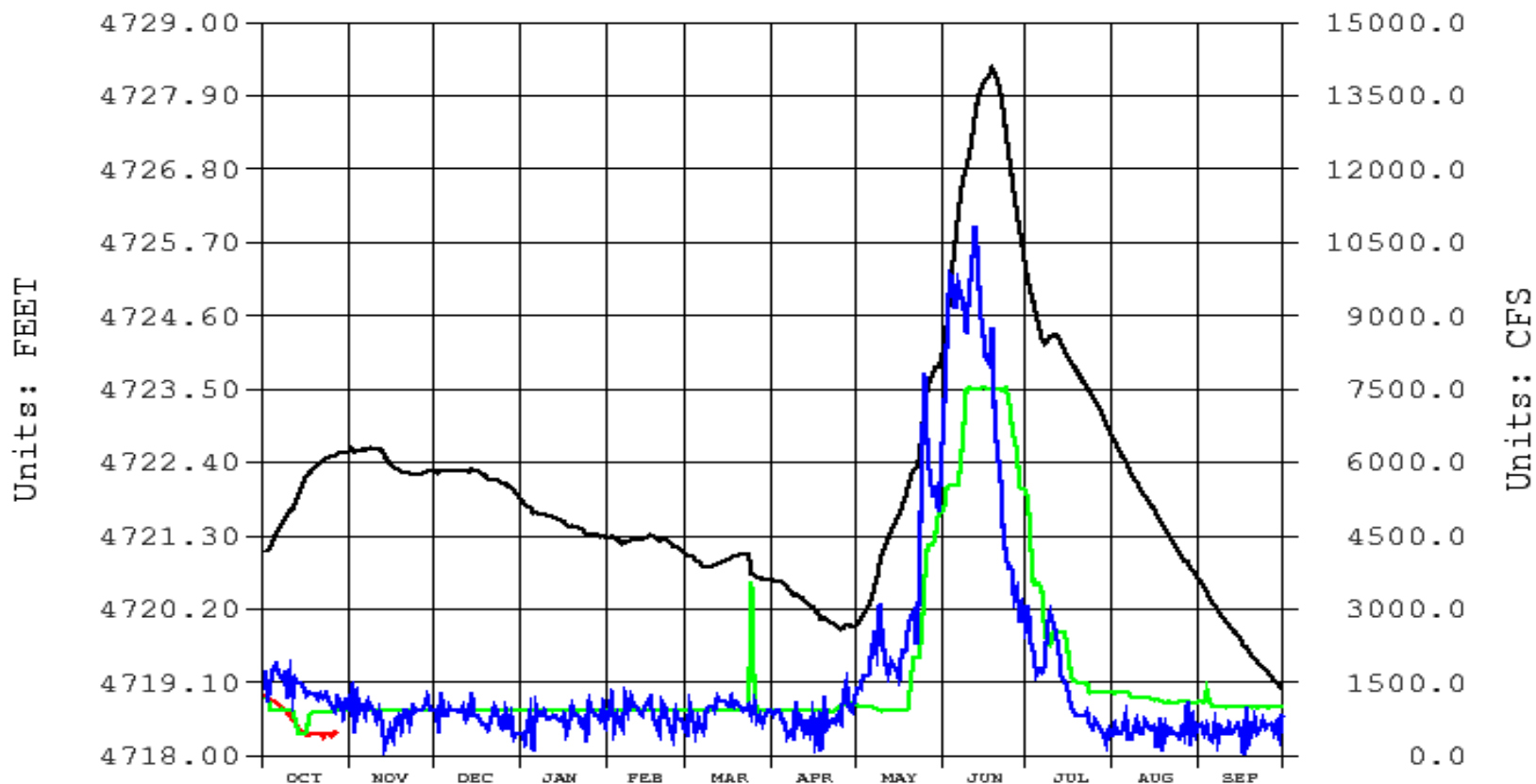
2015 Monthly Precipitation above Boysen Reservoir

Wind River Basin Precipitation



Boysen Reservoir 2015 Operation

Archive Data From 1-OCT Through 30-SEP
 Plotted 10/28/2015 14:00 (Provisional Data Subject to Revision)

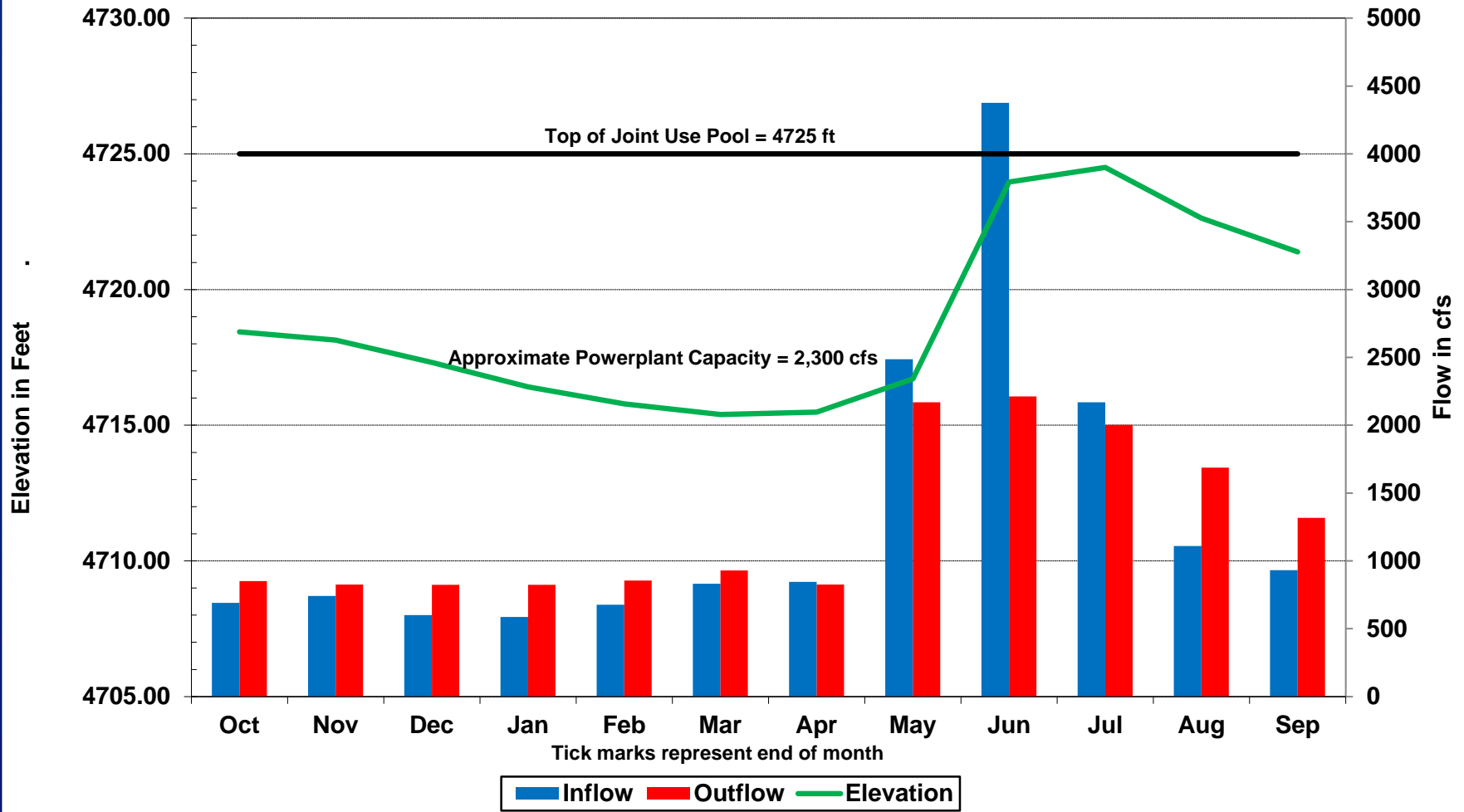


BOYR Boysen Reservoir, Wind River near Thermopolis, WY
 FB Reservoir Forebay Elevation (feet)
 QD Daily Mean Total Discharge (cfs)
 IN Daily Mean Computed Inflow (cfs)

2015 2016
 2015
 2015

2016 Boysen Reservoir Reservoir Operations

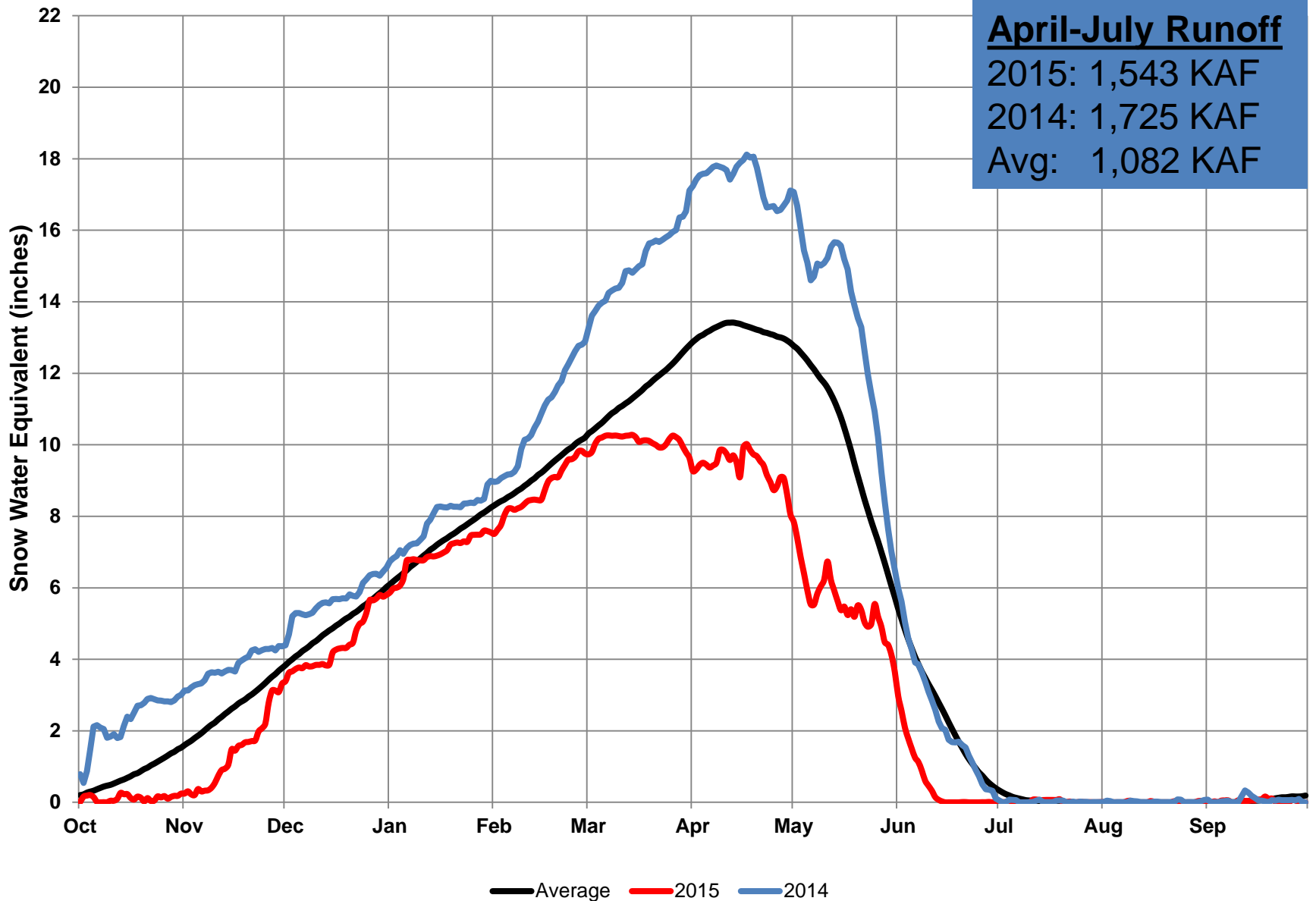
BOYSEN RESERVOIR OPERATIONS Water Year 2016 Projection



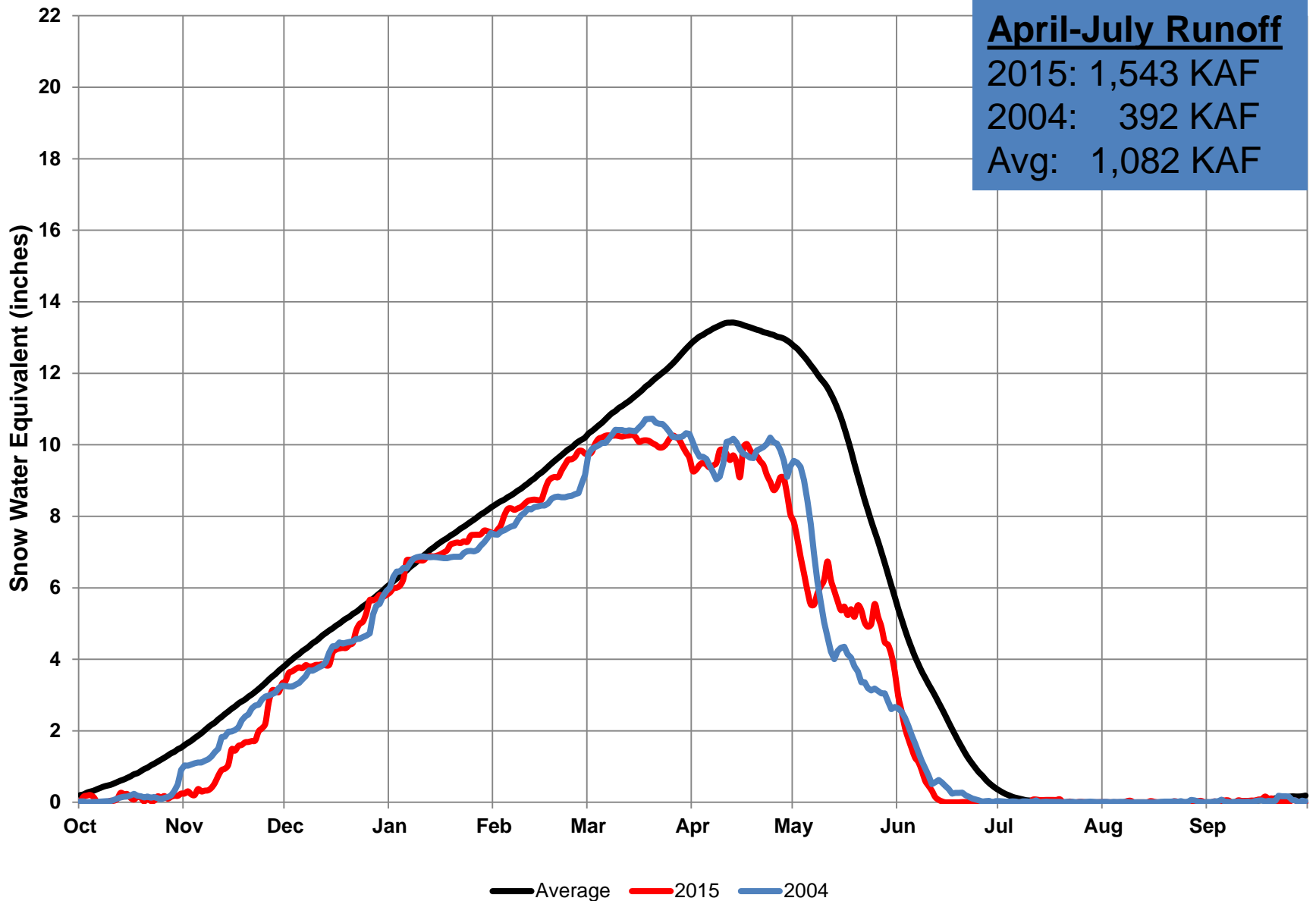
**Water Year 2015 Review
for
Yellowtail Dam/Bighorn
Lake**

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Mountain Snowpack

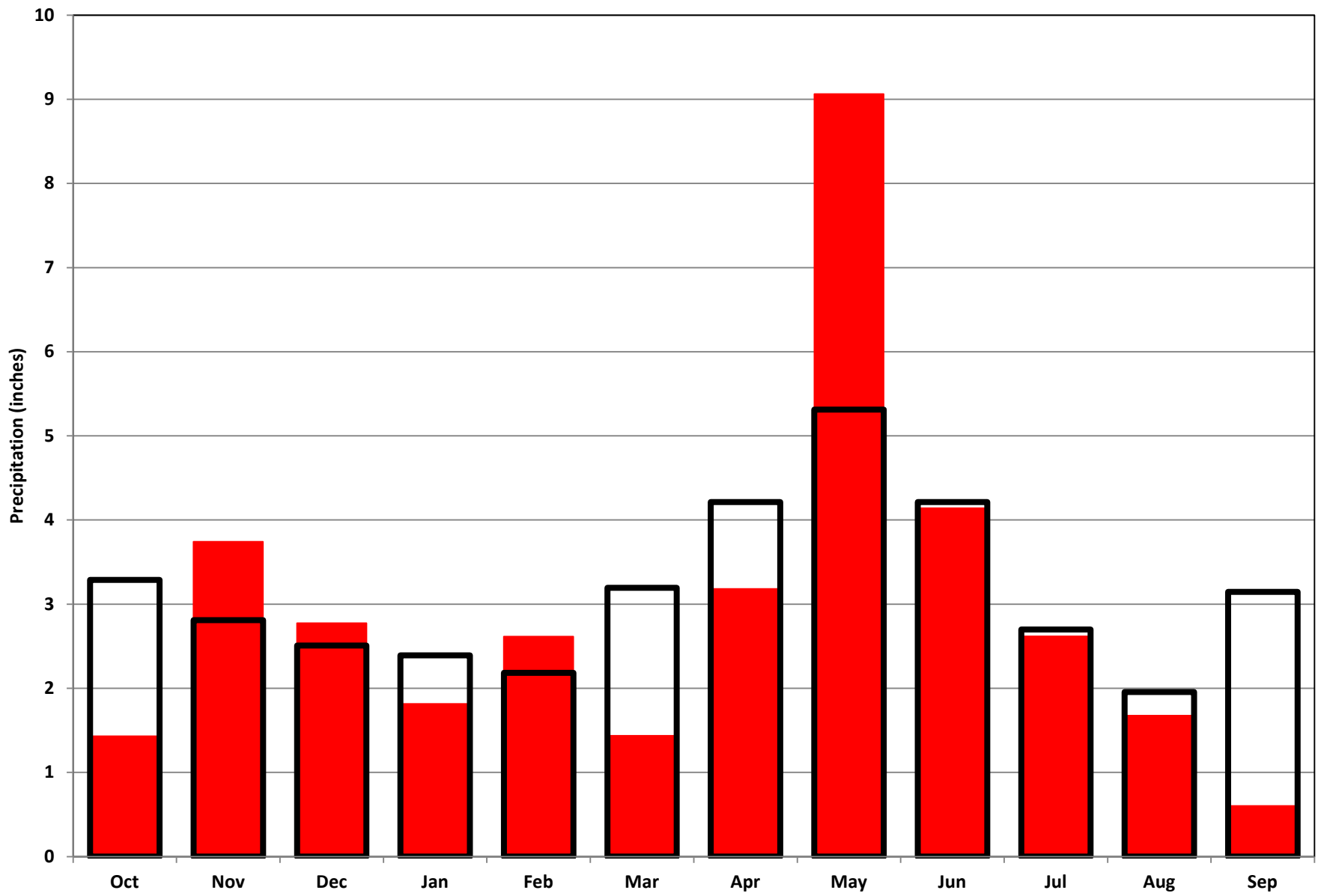


Mountain Snowpack

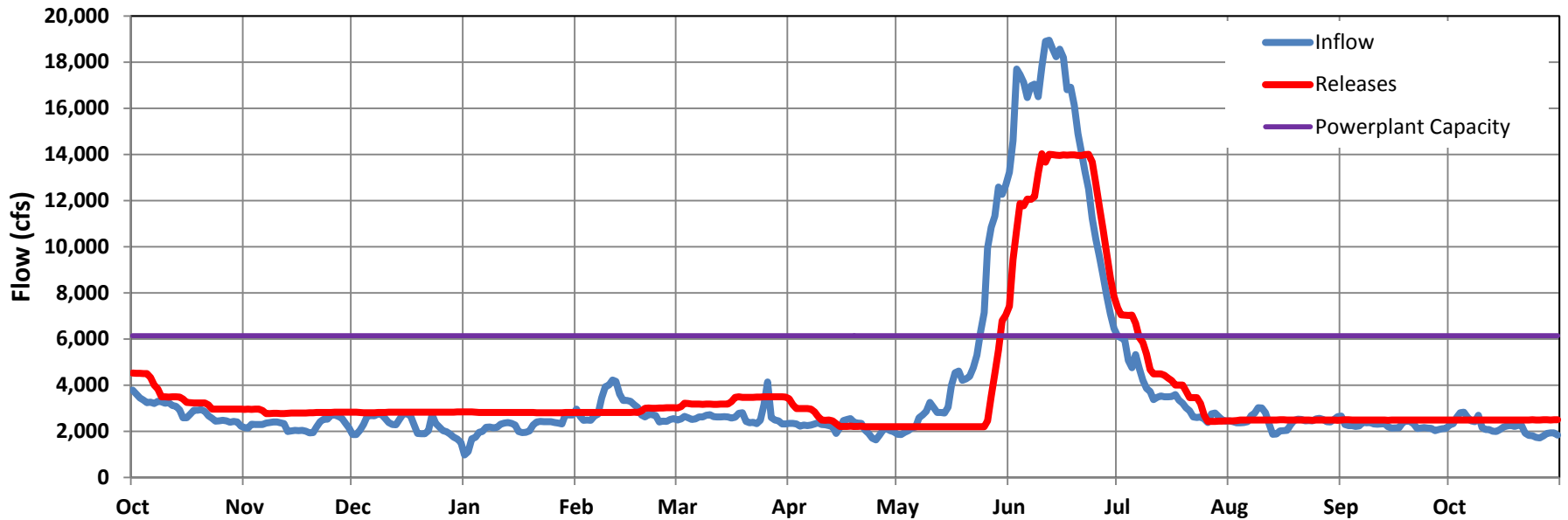
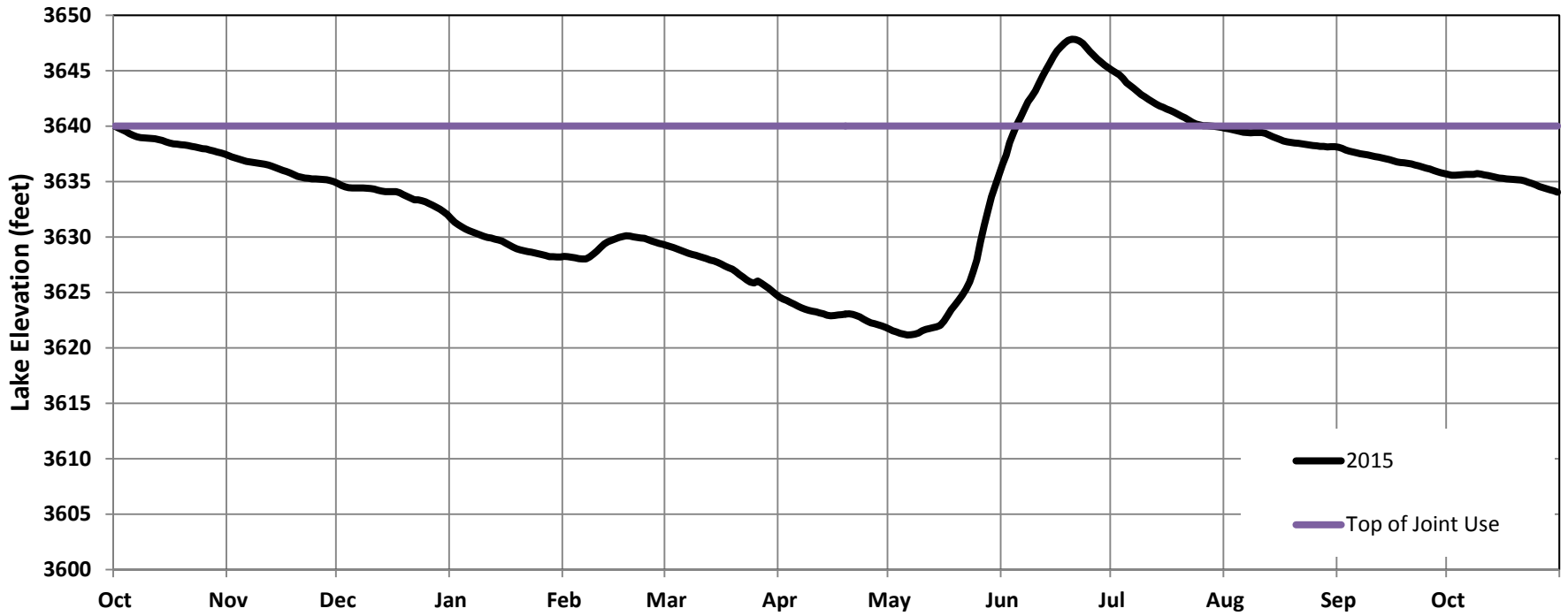


April-July Runoff
2015: 1,543 KAF
2004: 392 KAF
Avg: 1,082 KAF

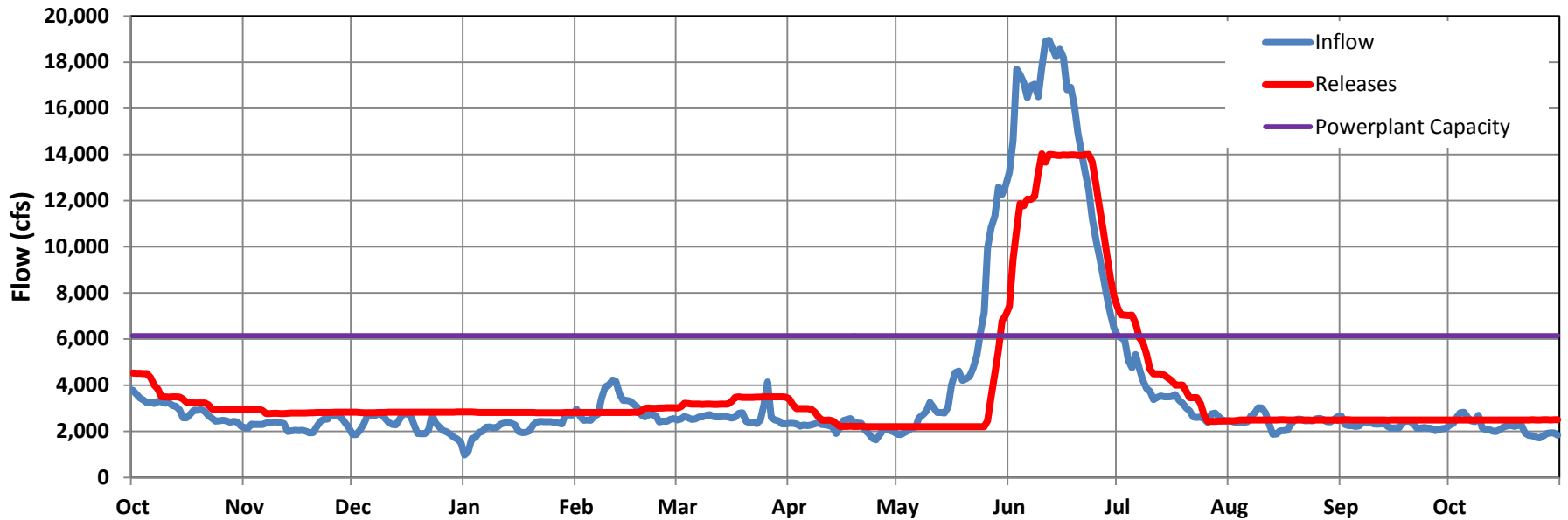
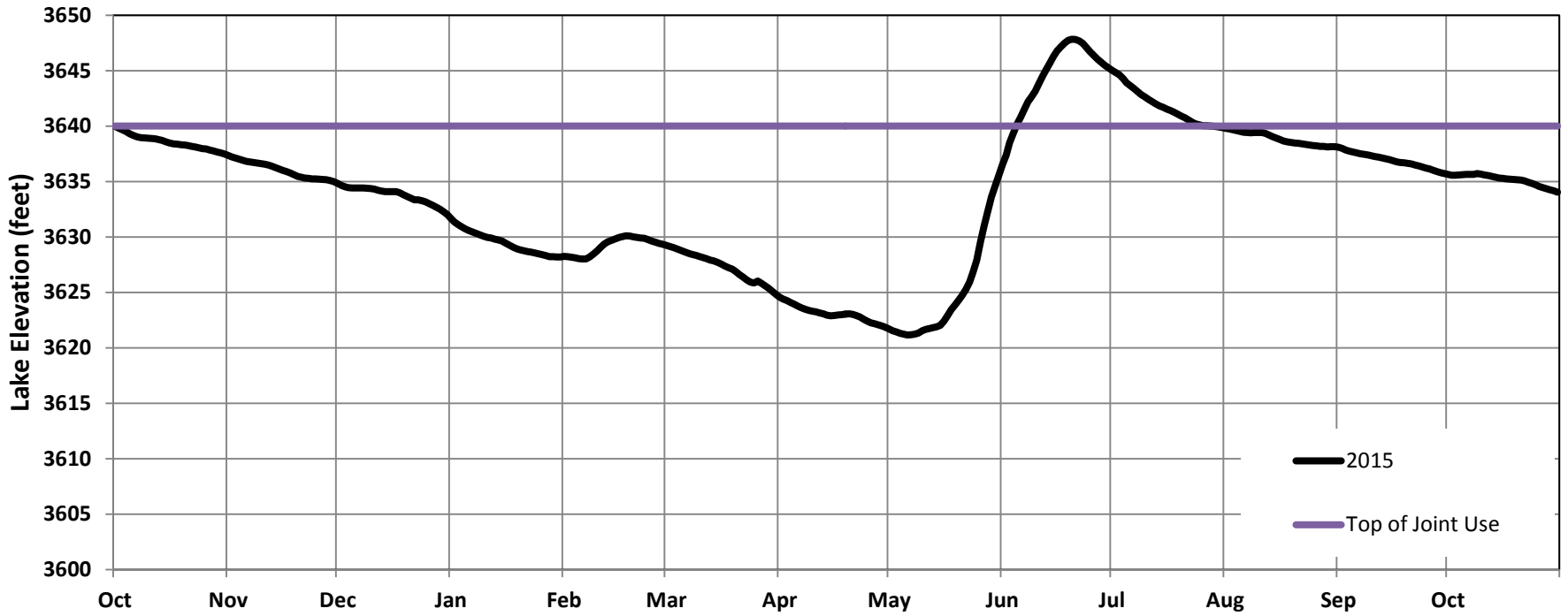
Bighorn River Basin Precipitation



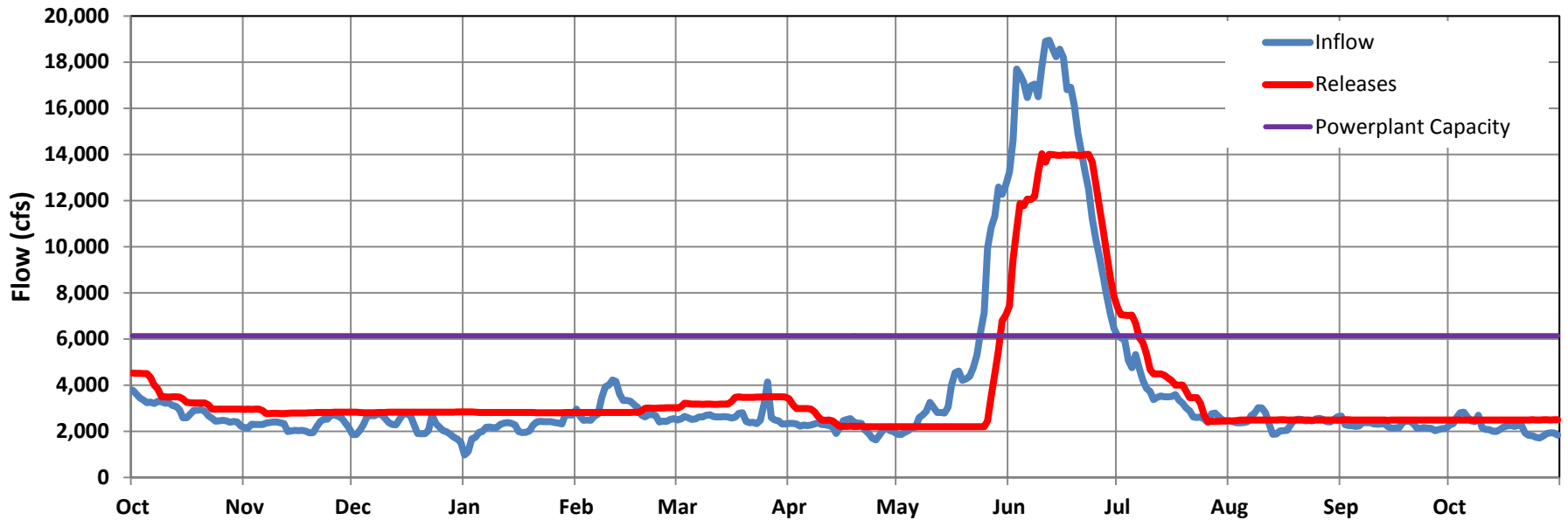
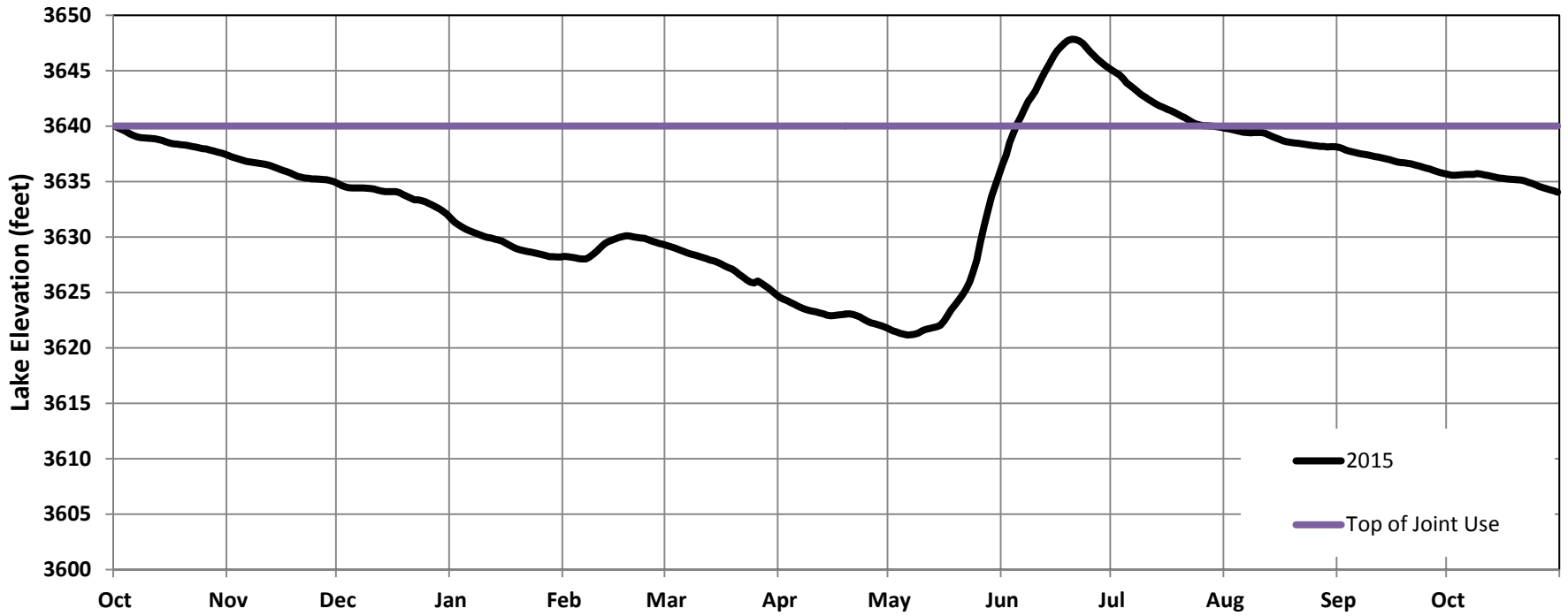
Bighorn Lake Operations 2015



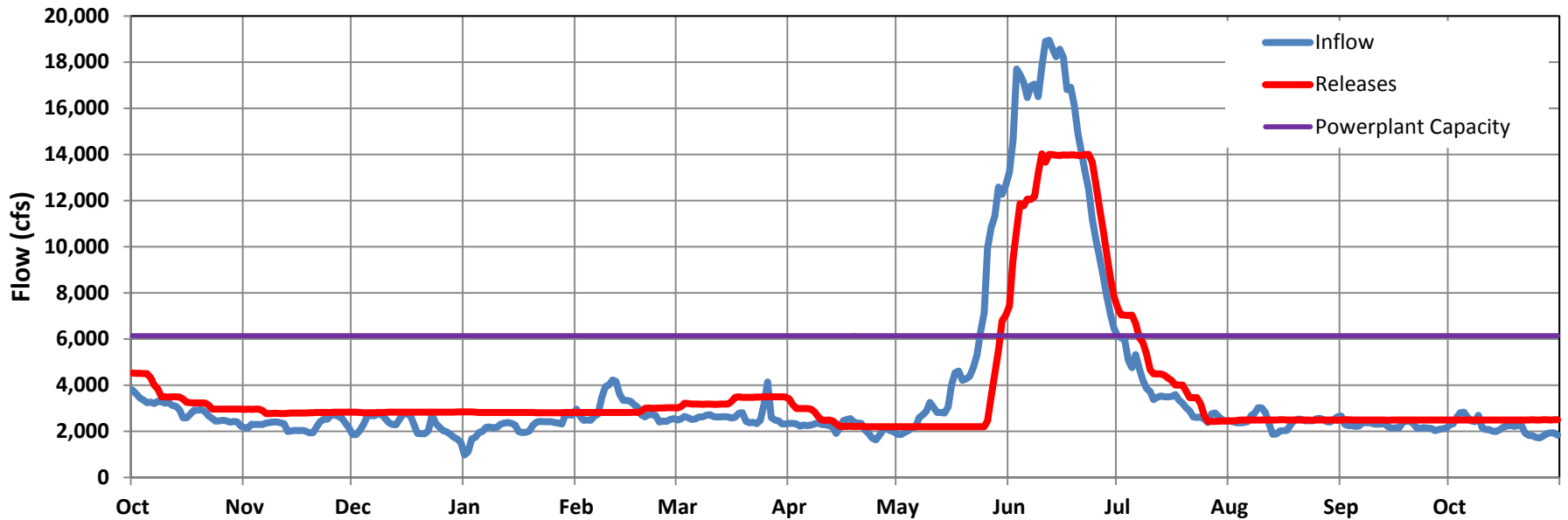
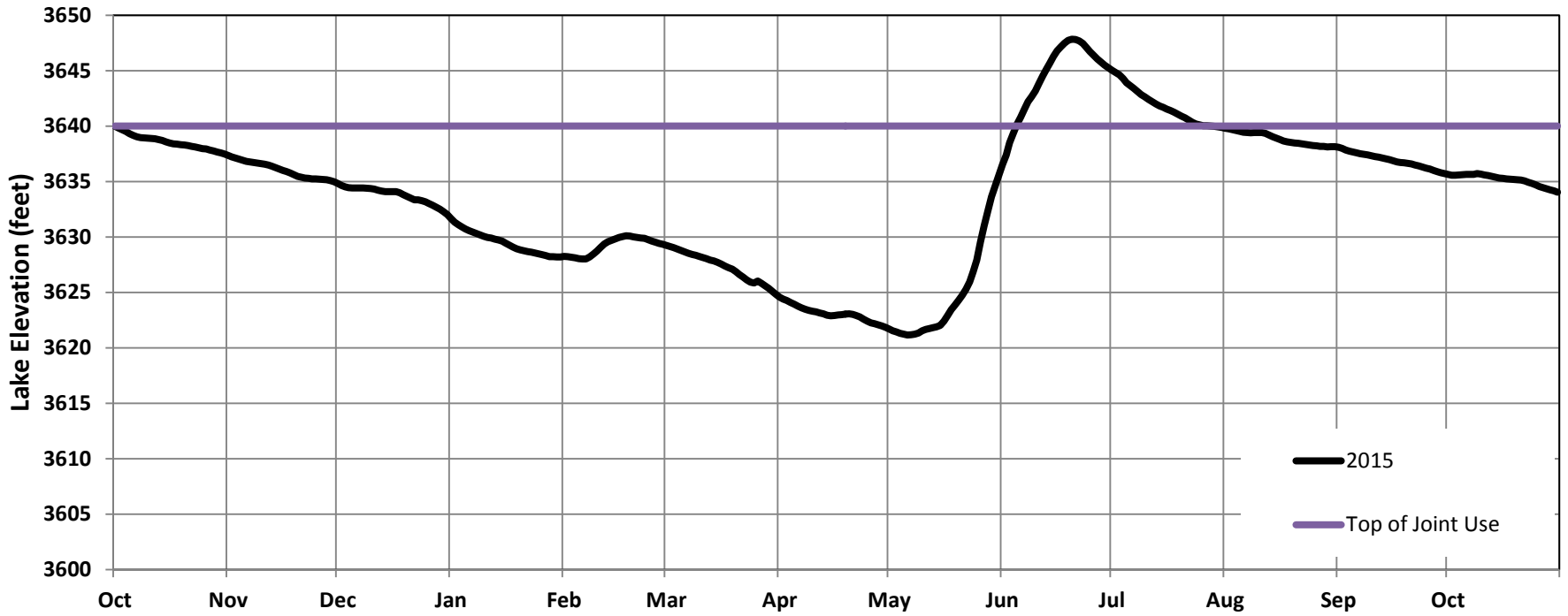
Bighorn Lake Operations 2015



Bighorn Lake Operations 2015



Bighorn Lake Operations 2015

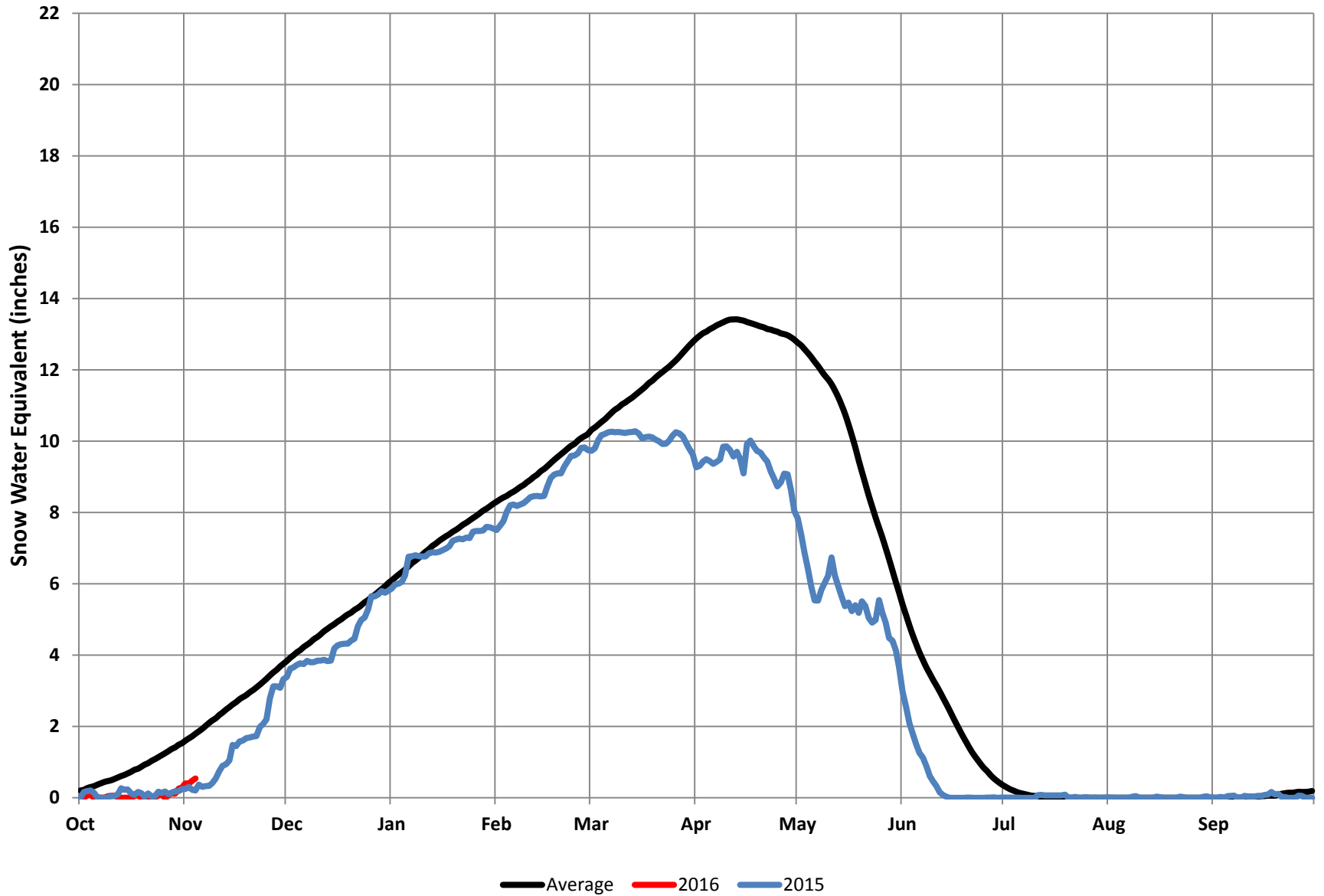


Water Year 2016 Fall and Winter Outlook

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Mountain Snowpack



Conditions on November 1, 2015

Elevation	3634.0 - 6.0 feet below full pool 3.5 feet lower than last year
Storage	951,353 acre-feet: 107% of average 93% full
Inflows	1,840 cfs
Outflow	2,500 cfs

November through March Gains and Release

April-October Gain = 239,300 acre-feet

Calculated November-March Gain = 258,200 acre-feet

Upstream Reservoir Fall & Winter Releases =

Boysen = 850 cfs

Buffalo Bill = 205 cfs

End-of-October Storage = 952,900 acre-feet

Projected End-of-March Target Elevation = 3617 (807,900
acre-feet)

Calculated Fall & Winter Release for Yellowtail:

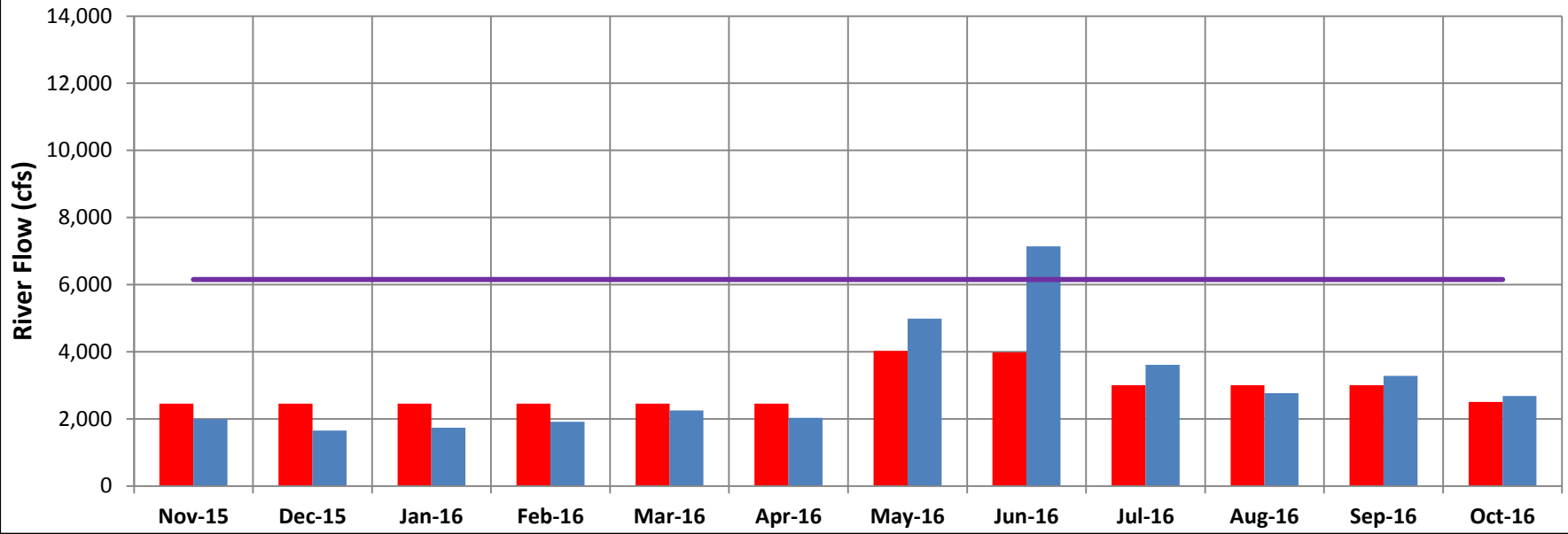
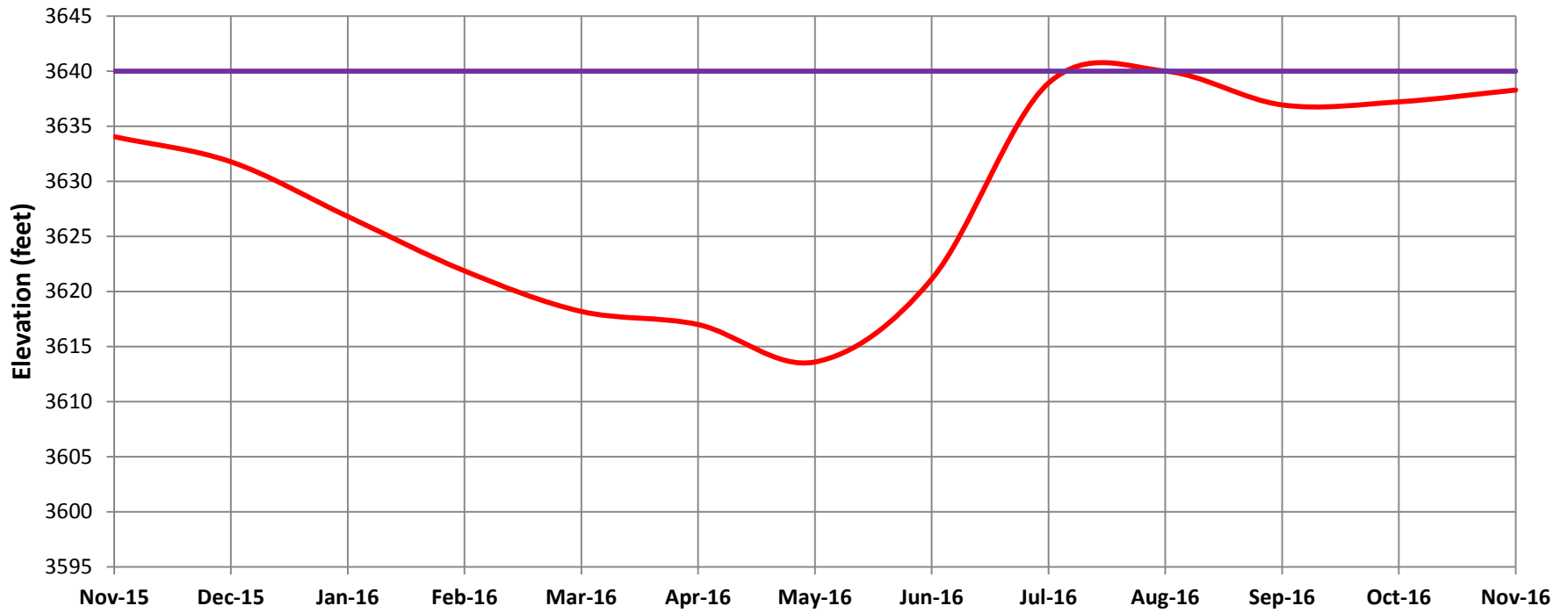
River = 2,450 cfs

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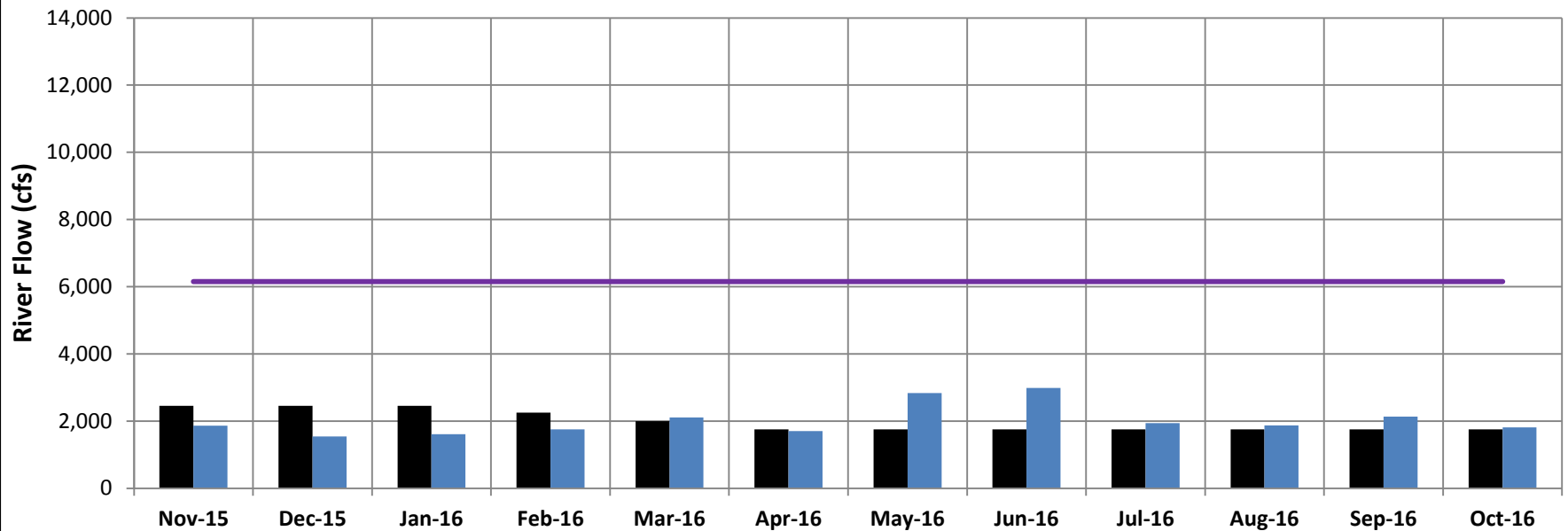
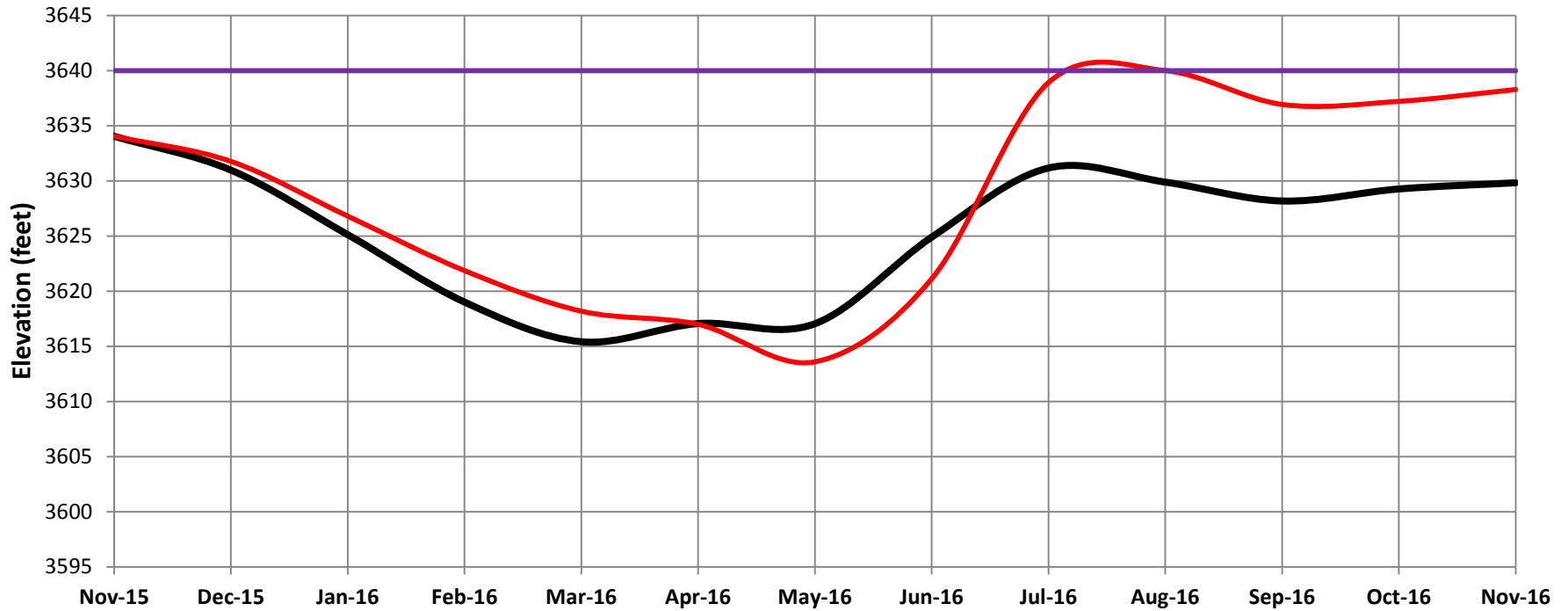
November Monthly Operating Plans

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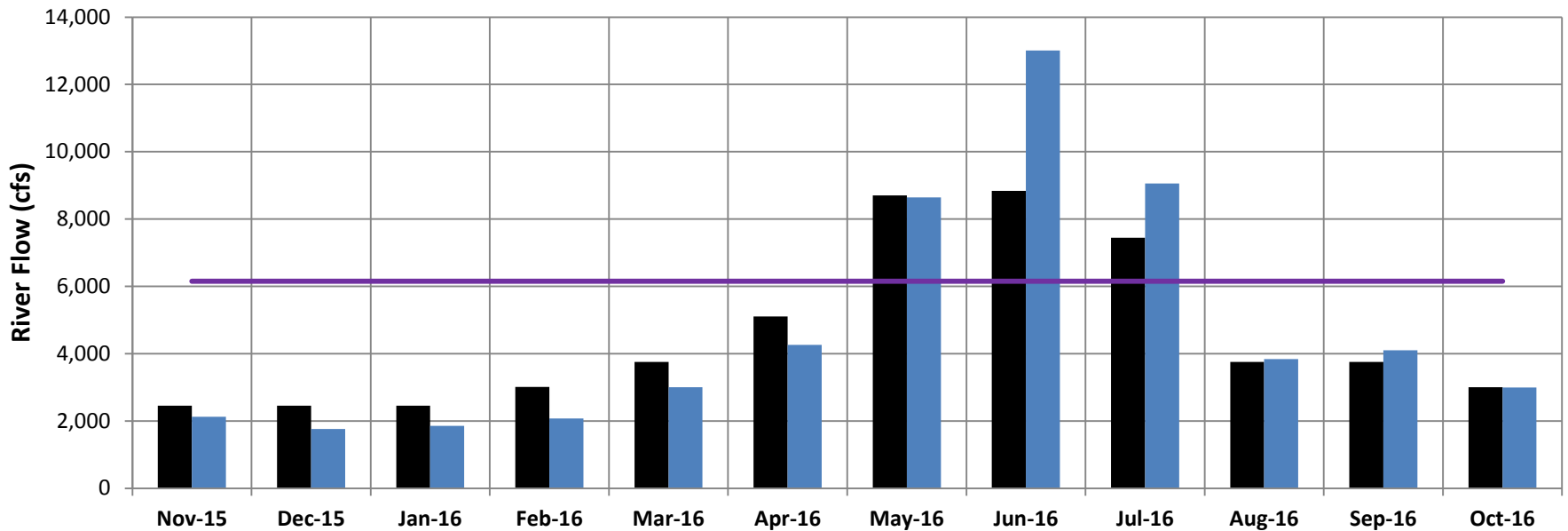
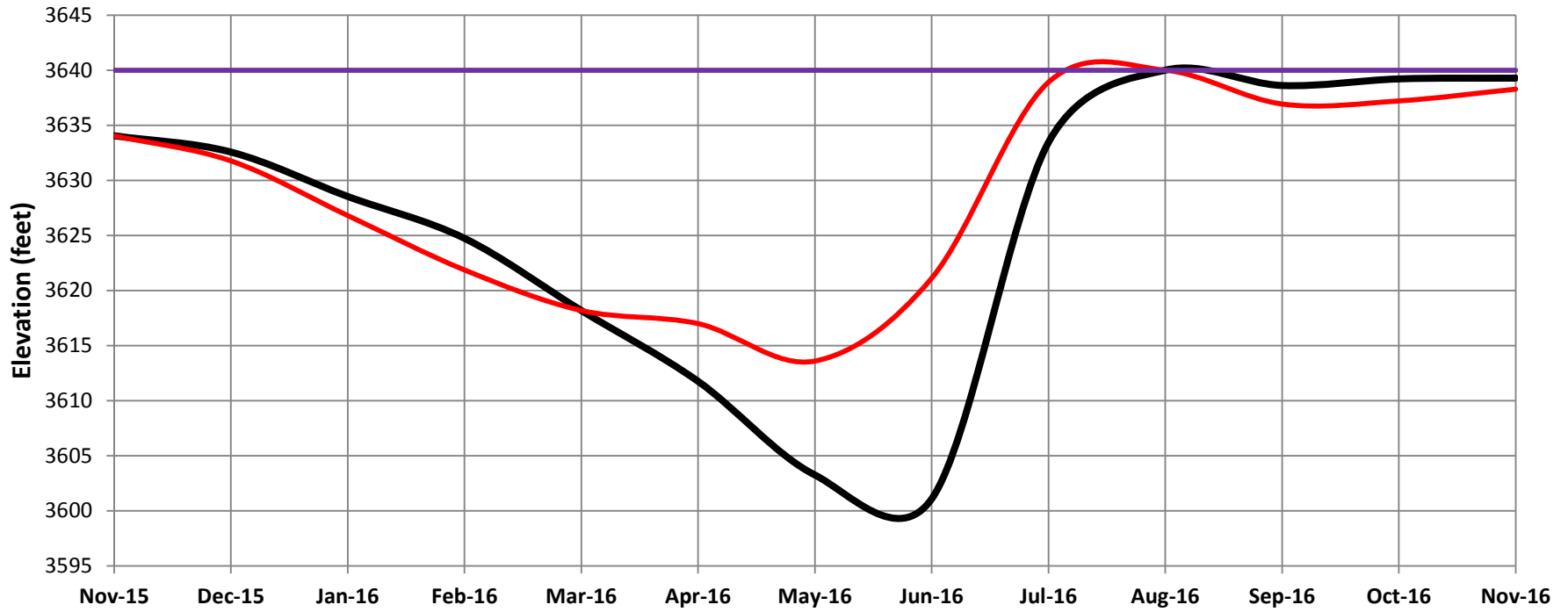
Most Probable Inflow Operations



Most and Minimum Probable Inflow Operations



Most and Maximum Probable Inflow Operations



Questions and Comments

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Reclamation's Internet Website

www.usbr.gov/gp/lakes_reservoirs/wareprts/main_menu.html

- near real-time data available through the HYDROMET data system
- summaries and plots of historical data
- annual reservoir operating plan publication
- monthly water supply reports
- project data
- snow plots
- links to related internet sites

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