

# 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

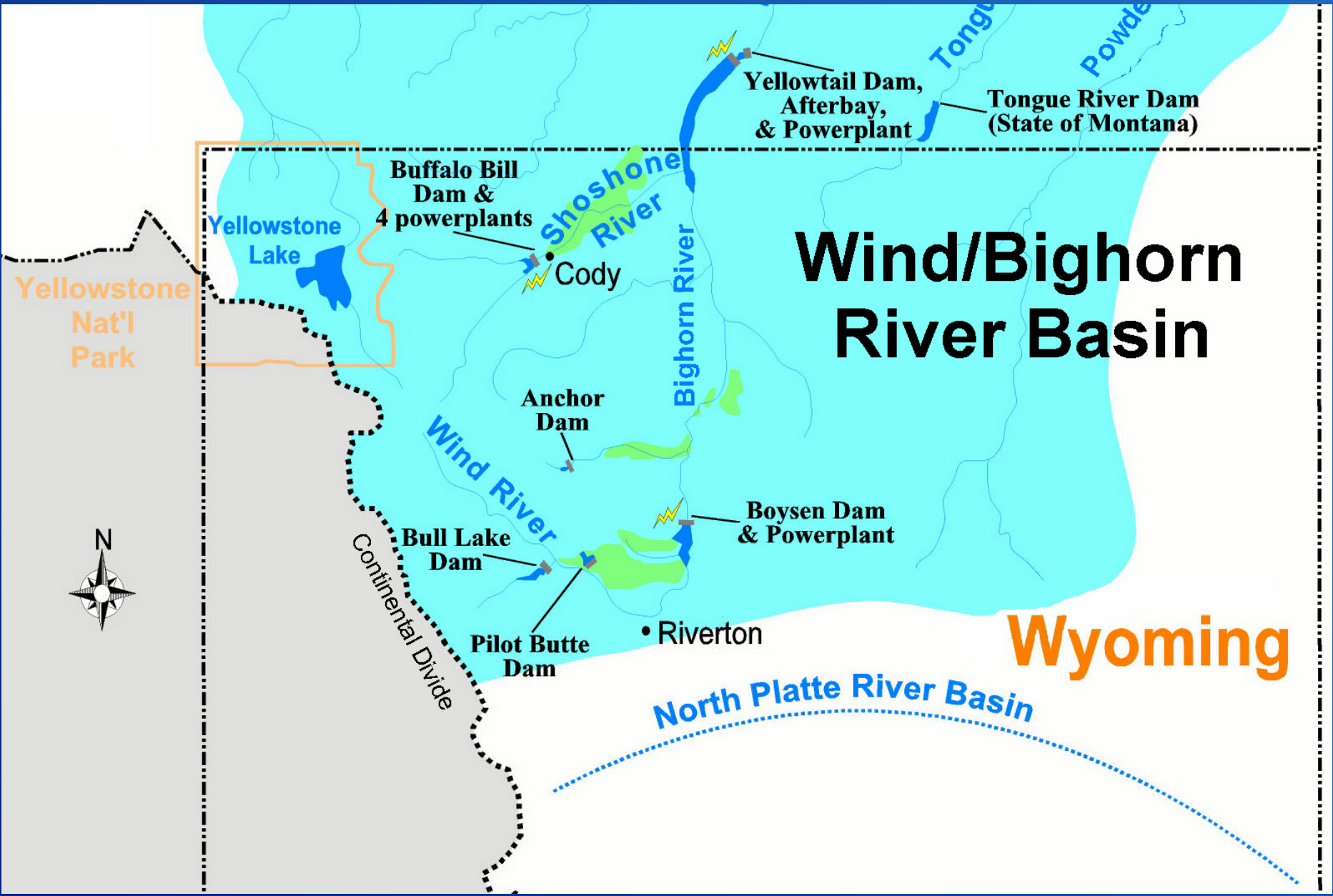
Sediment Control Project

Crow Tribe Water Rights Settlement

Yellowstone River Conservation District Council

Operating Criteria

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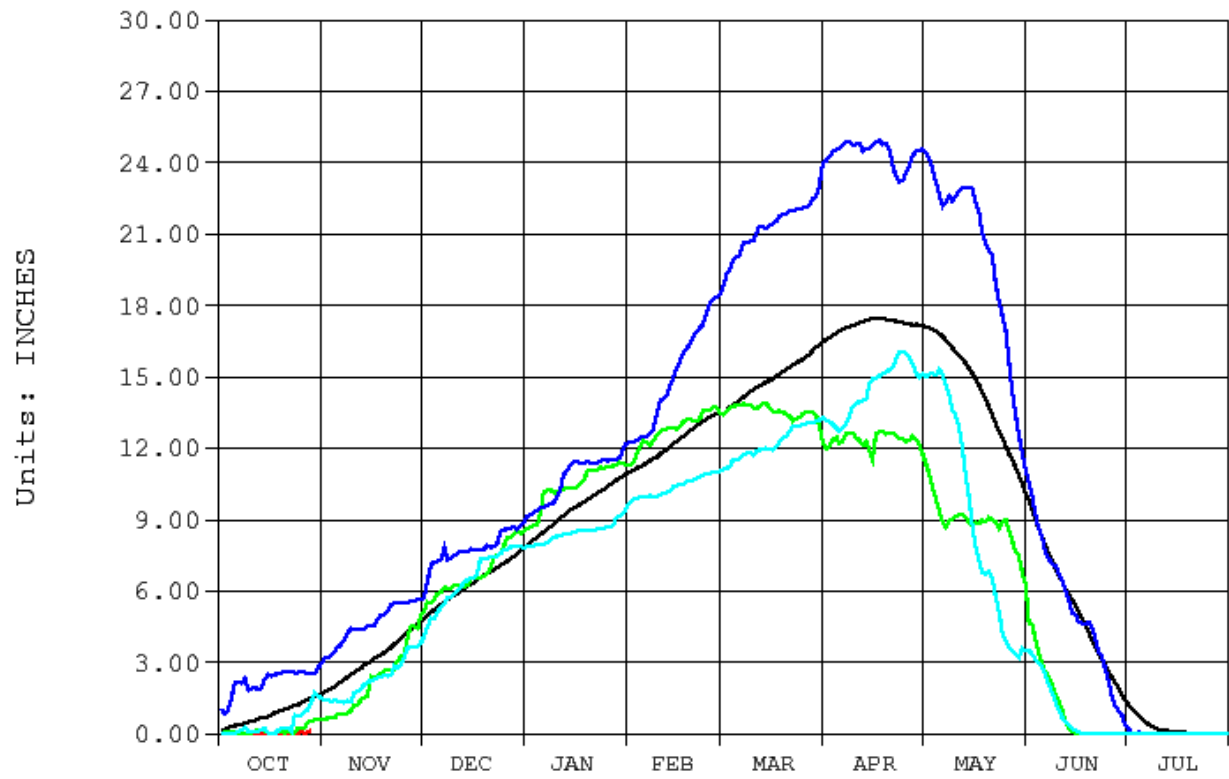


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# Basin above Buffalo Bill Reservoir

## Snow Water Equivalent

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

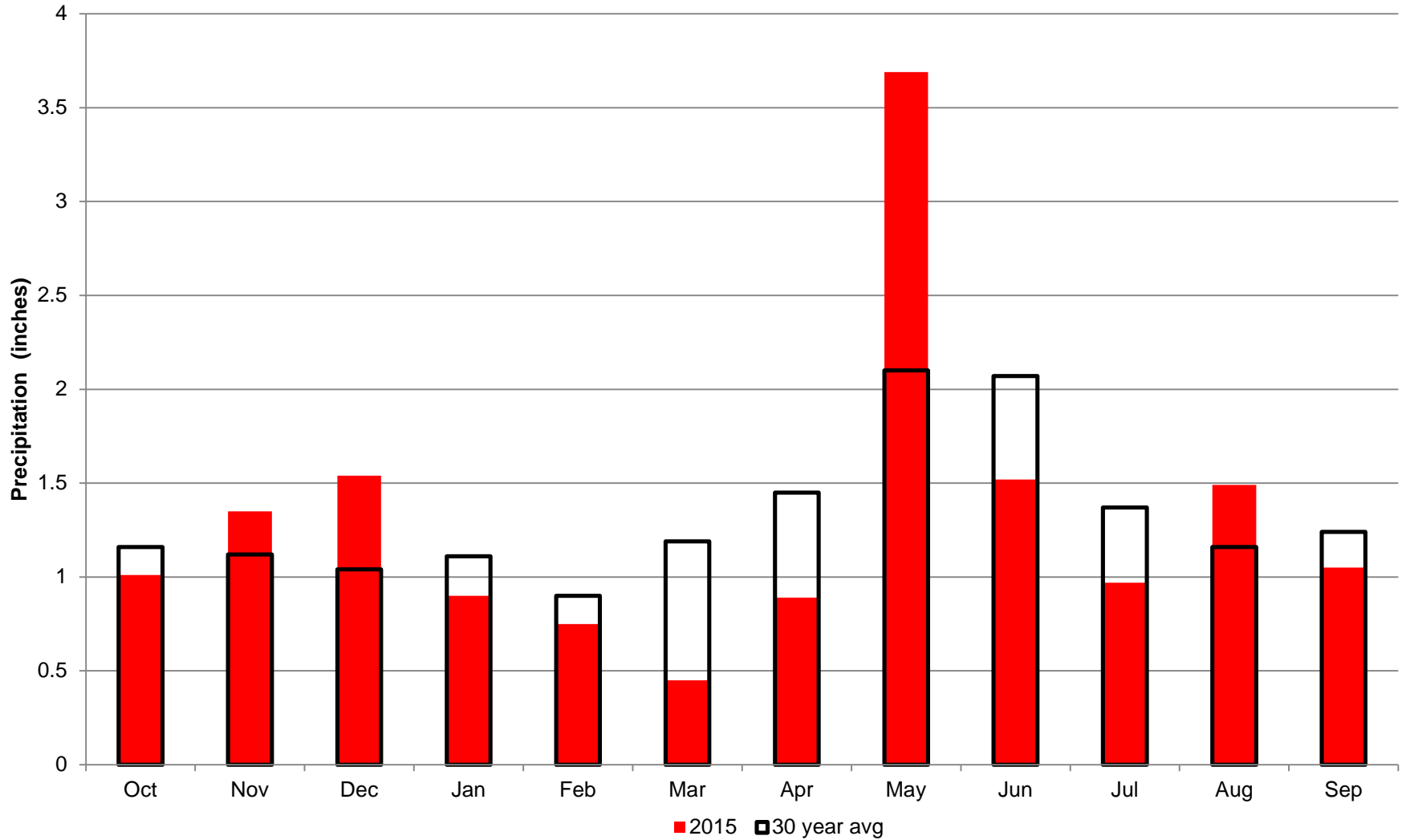


BBR Buffalo Bill Reservoir, Shoshone River near Cody, WY  
 SE\_AVG Snow Water Equivalent Average (inches)  
 SE Snow Water Equivalent (inches)  
 2016  
 2016 2015 2014  
 2013

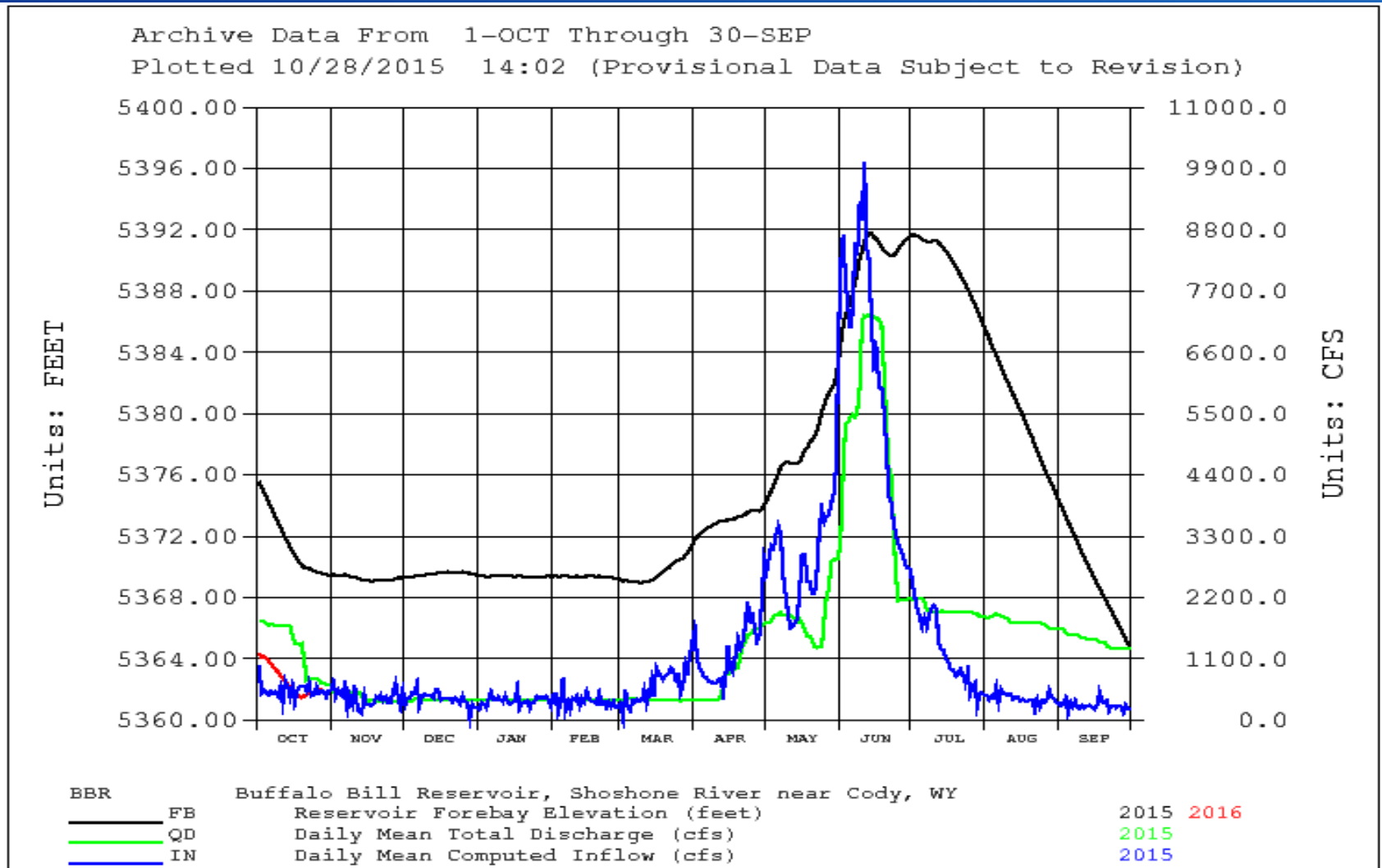
Water Year	April-July Inflow (acre-feet)
2013	576,500
2014	1,062,400
2015	696,400 (103% of avg)
2016	???
Average = 677,800	

# 2015 Monthly Precipitation above Buffalo Bill Reservoir

## Shoshone River Basin Precipitation

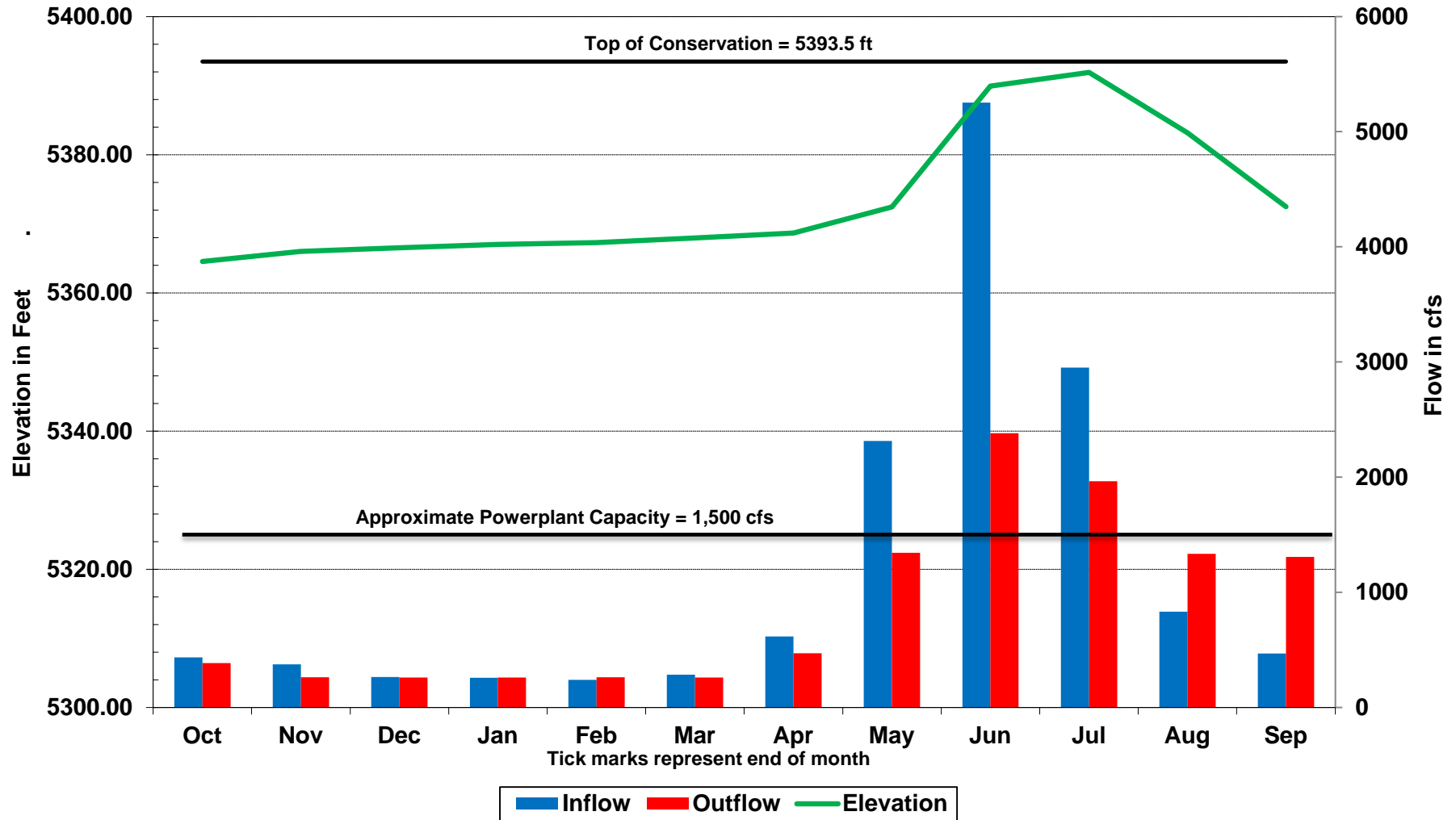


# Buffalo Bill Reservoir 2015 Operations



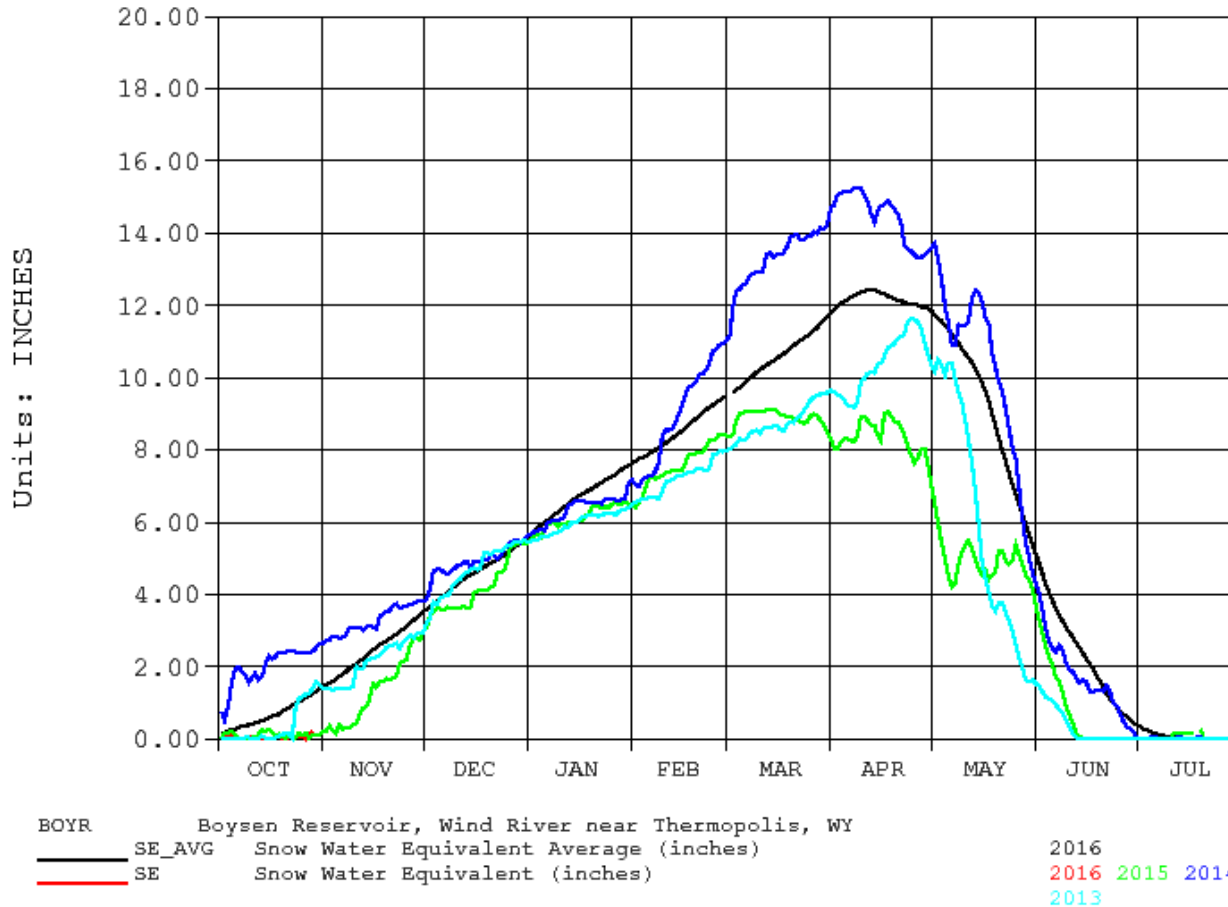
# 2016 Buffalo Bill Reservoir Operations

## 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)

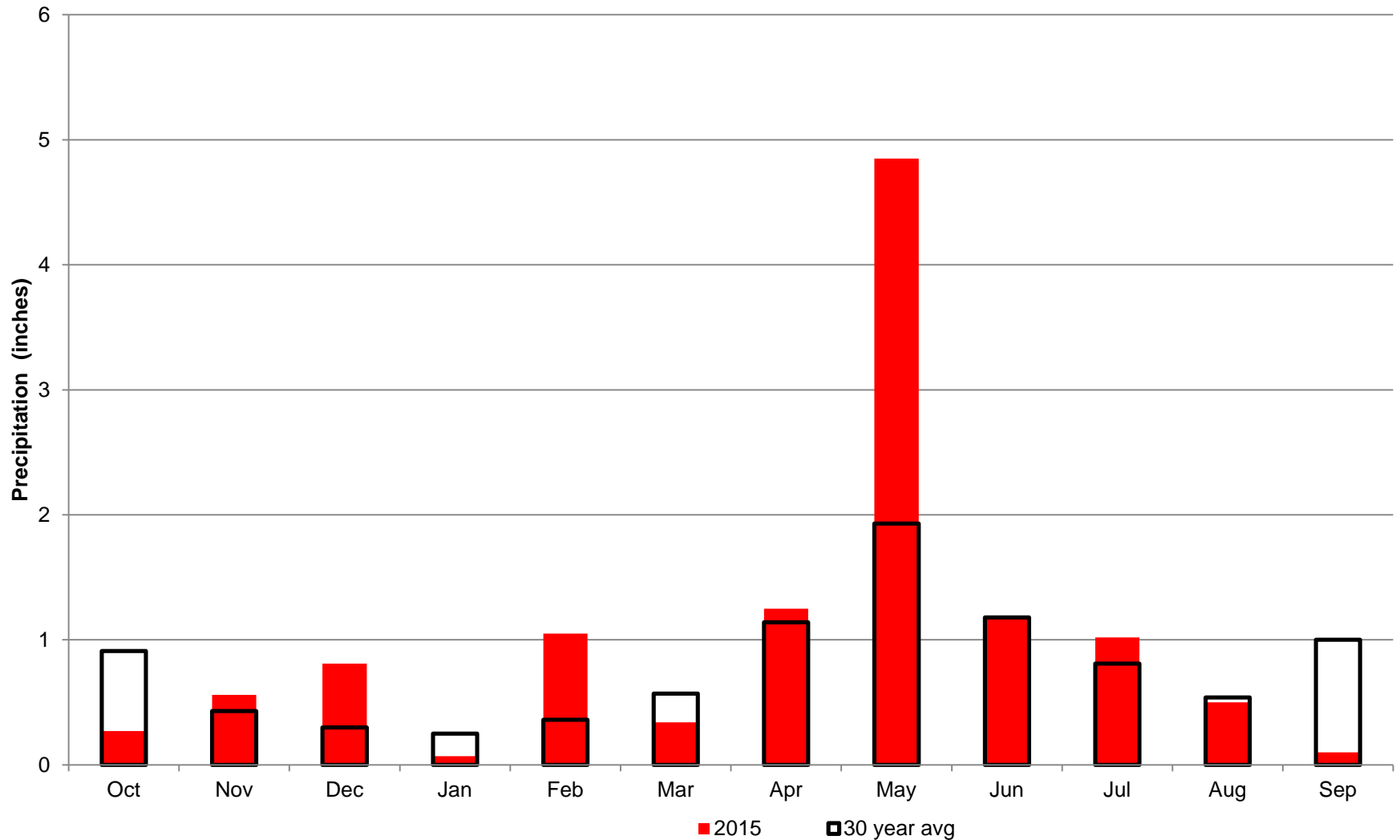


Water Year	April-July Inflow (acre-feet)
2013	216,300
2014	694,500
2015	749,700 (140% of avg)
2016	???
<b>Average = 533,800</b>	



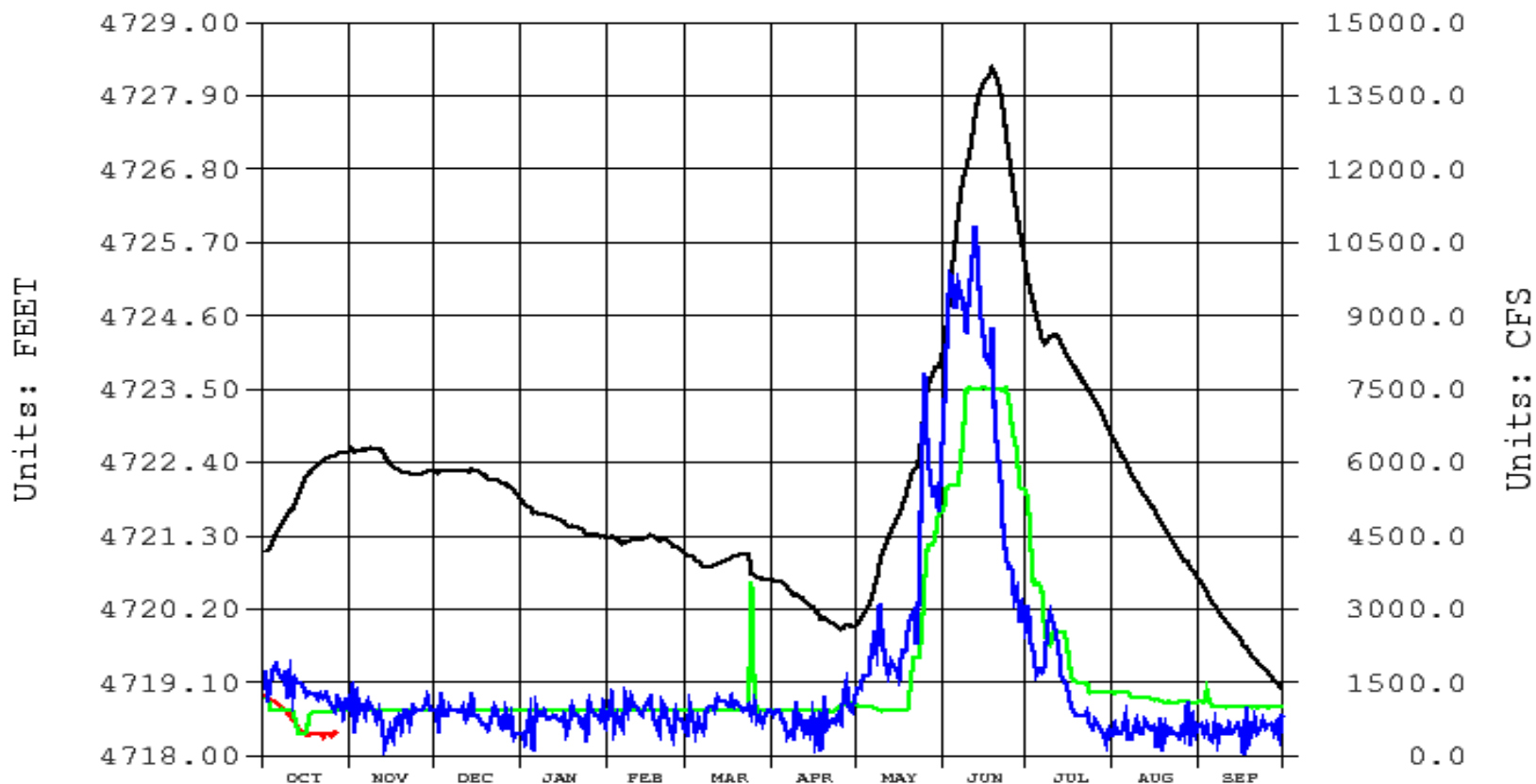
# 2015 Monthly Precipitation above Boysen Reservoir

## 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)

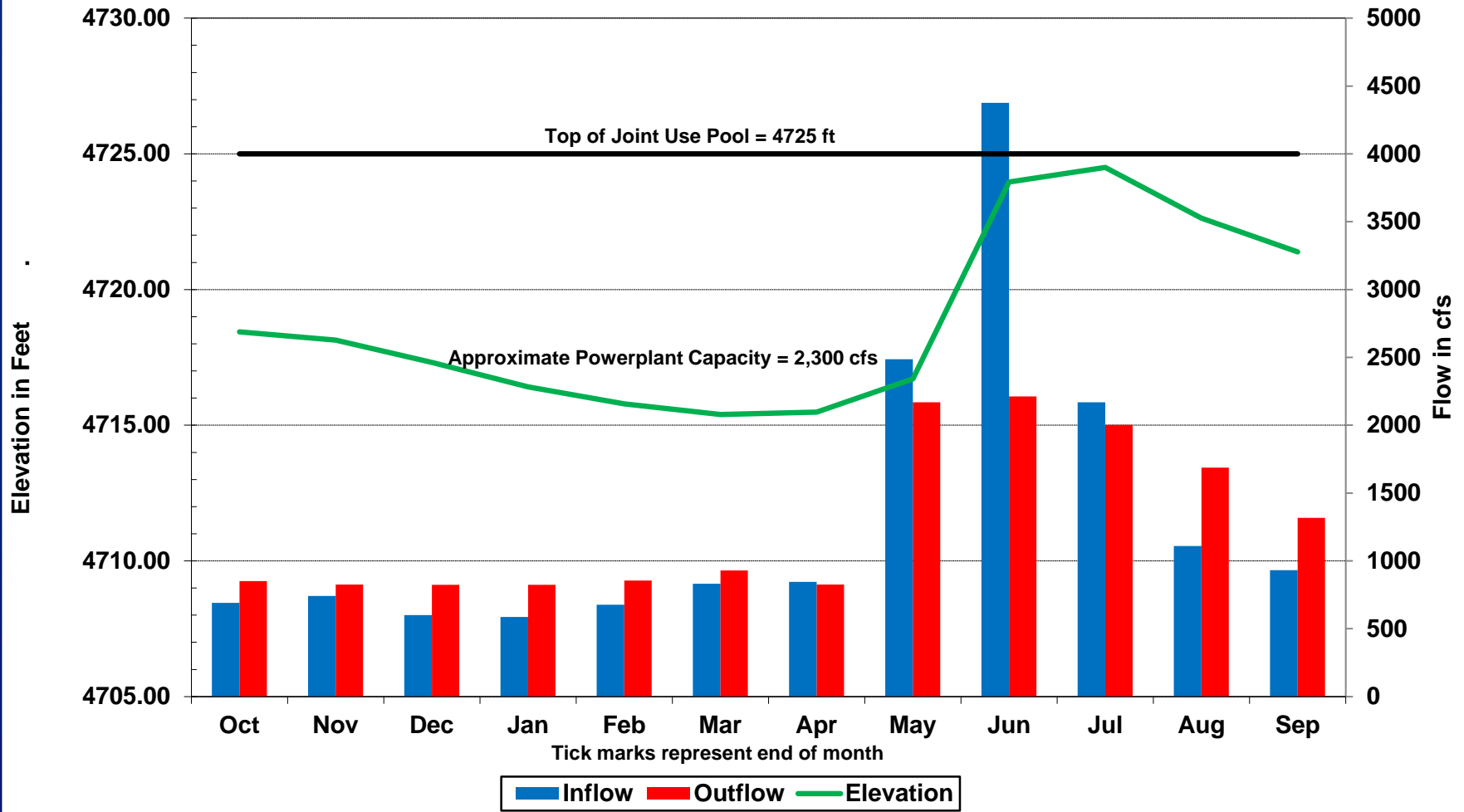


BOYR Boysen Reservoir, Wind River near Thermopolis, WY

—	FB	Reservoir Forebay Elevation (feet)	2015	2016
—	QD	Daily Mean Total Discharge (cfs)	2015	
—	IN	Daily Mean Computed Inflow (cfs)	2015	

# 2016 Boysen Reservoir Reservoir Operations

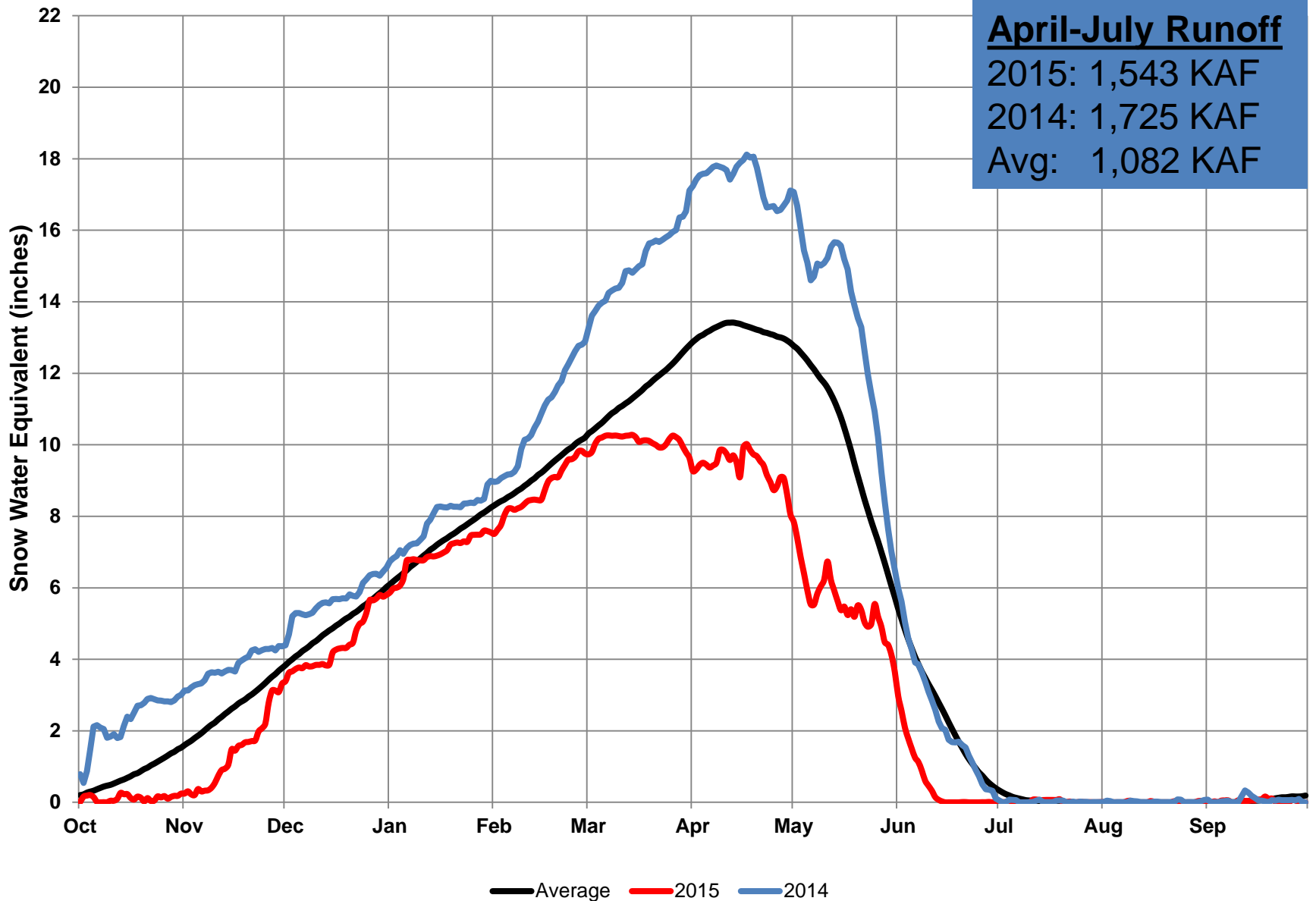
## BOYSEN RESERVOIR OPERATIONS Water Year 2016 Projection



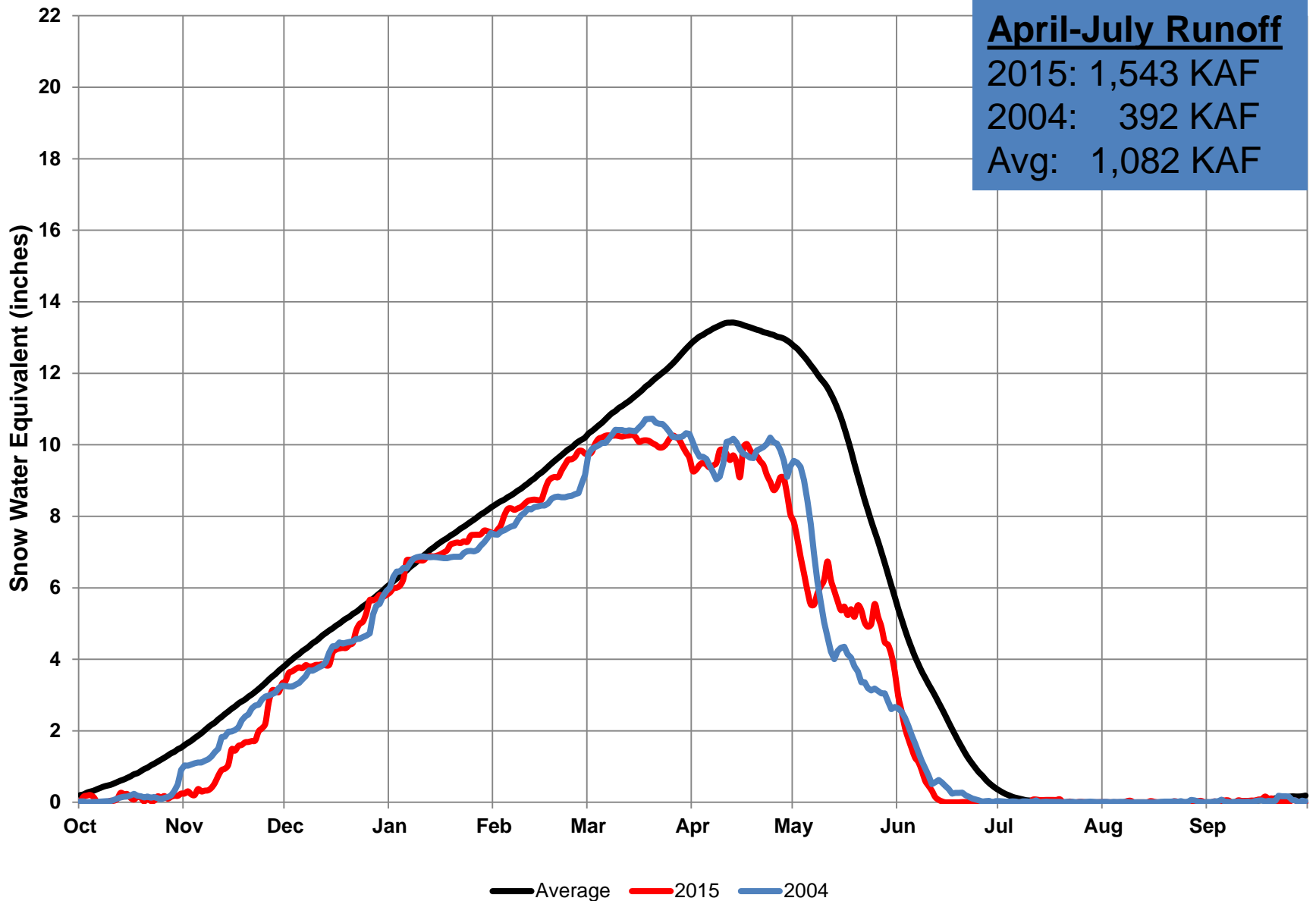
**Water Year 2015 Review  
for  
Yellowtail Dam/Bighorn  
Lake**

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# Mountain Snowpack



# Mountain Snowpack



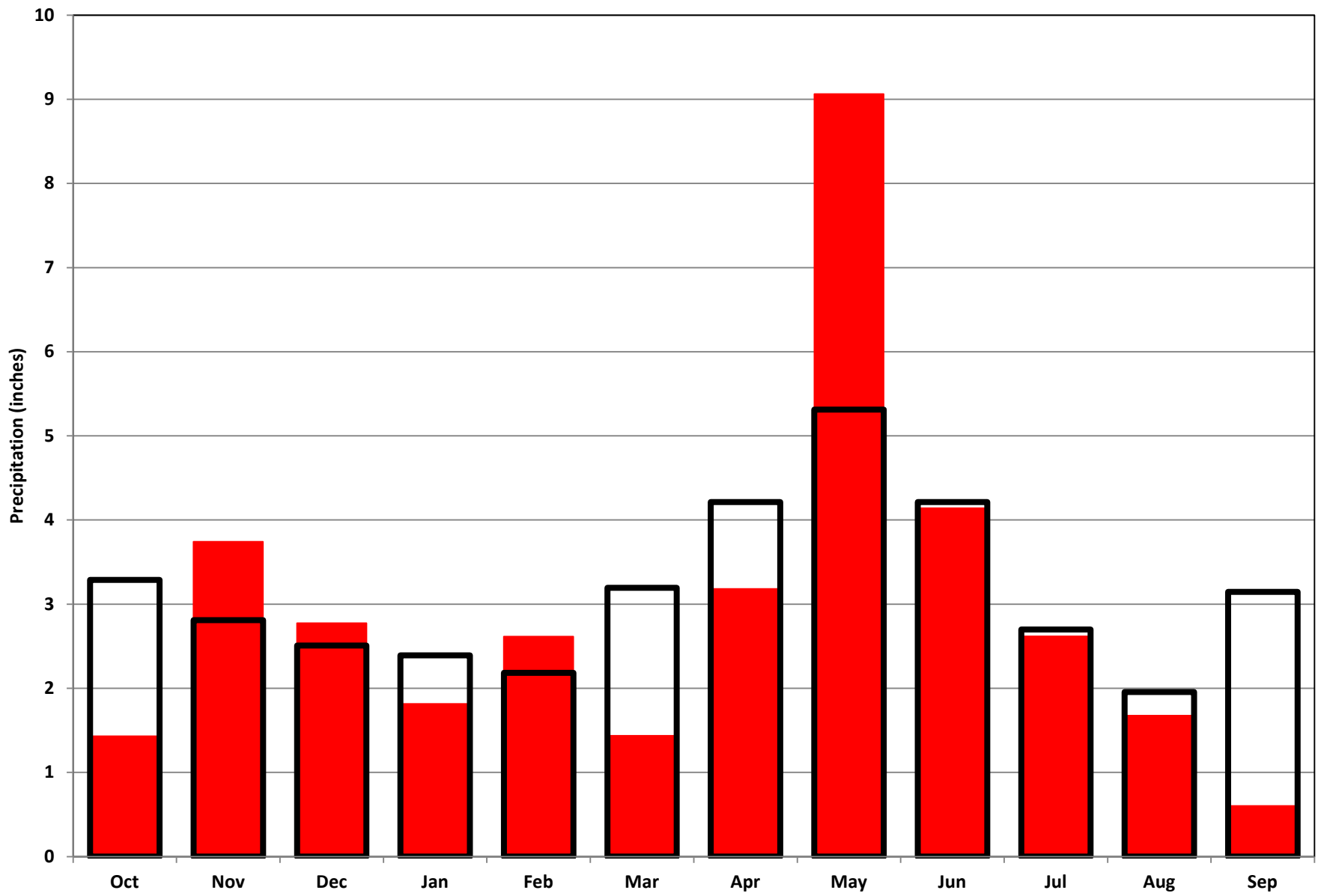
## April-July Runoff

2015: 1,543 KAF

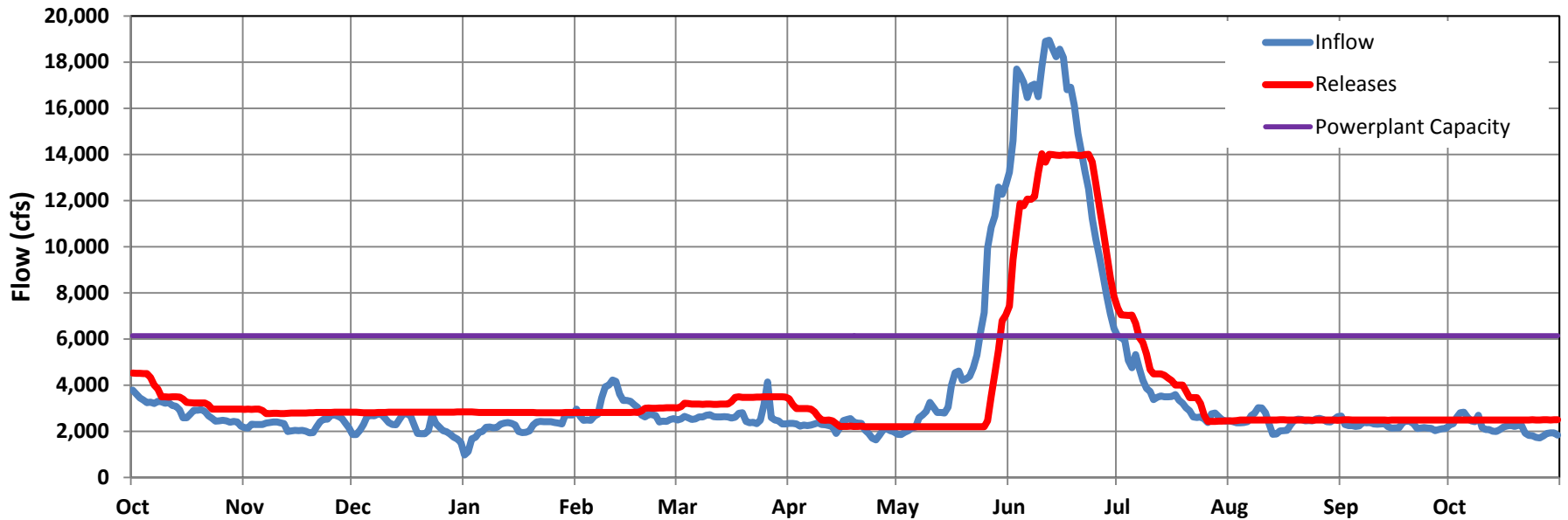
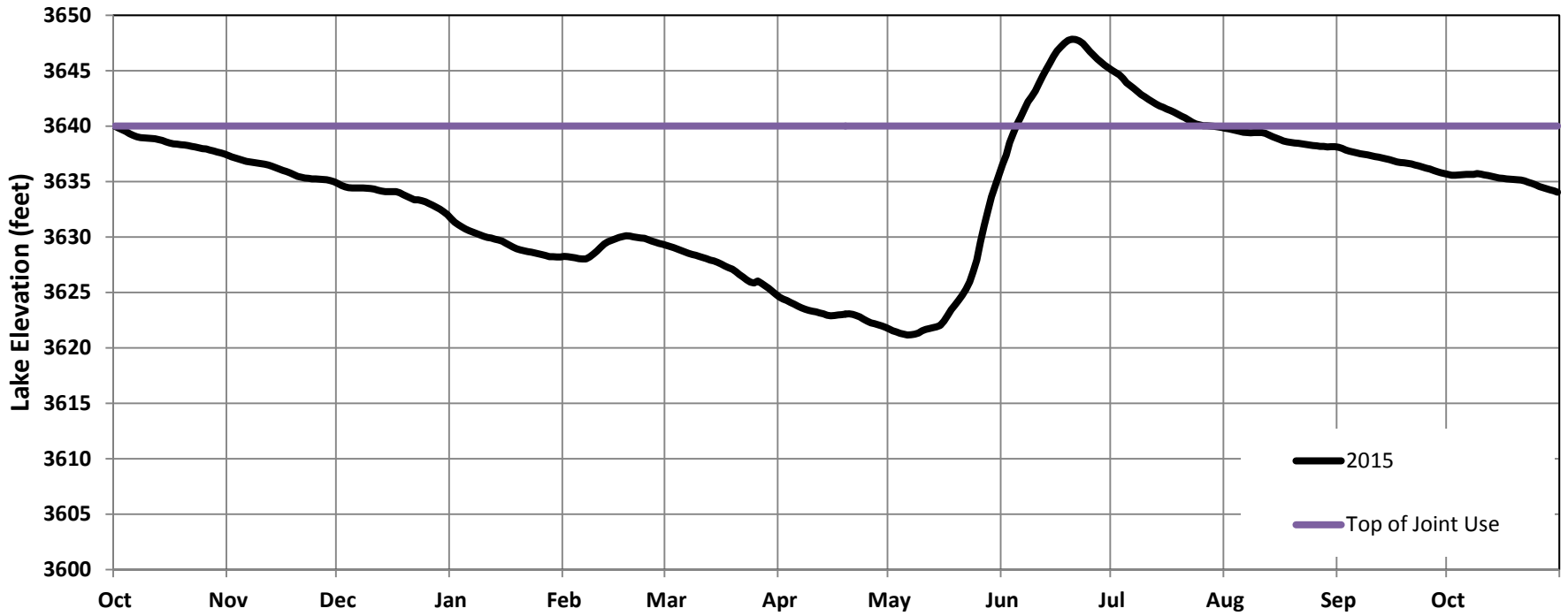
2004: 392 KAF

Avg: 1,082 KAF

# Bighorn River Basin Precipitation

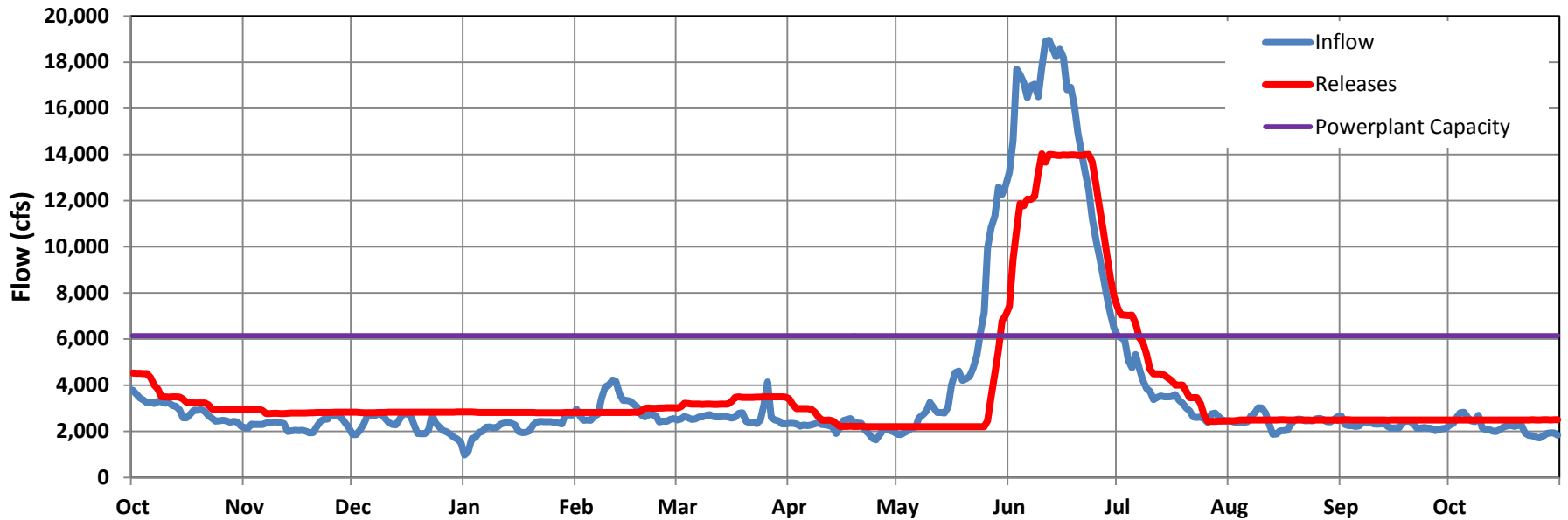
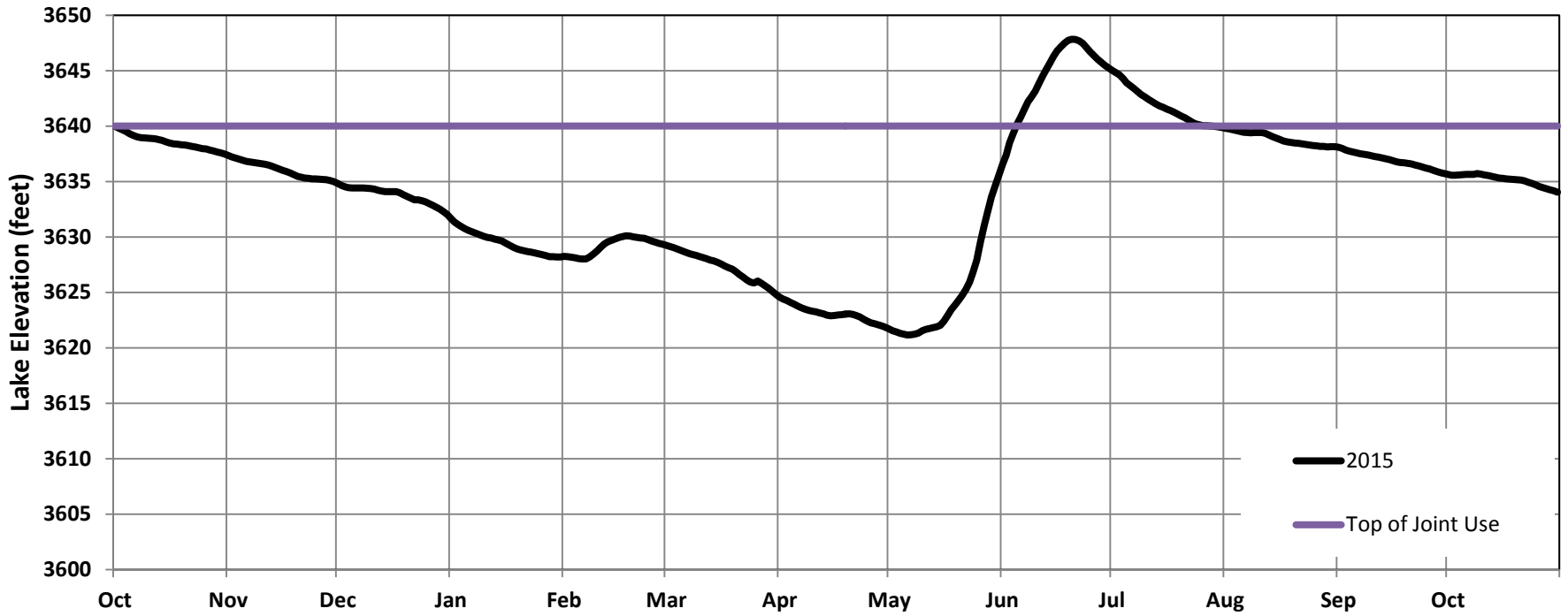


# Bighorn Lake Operations 2015

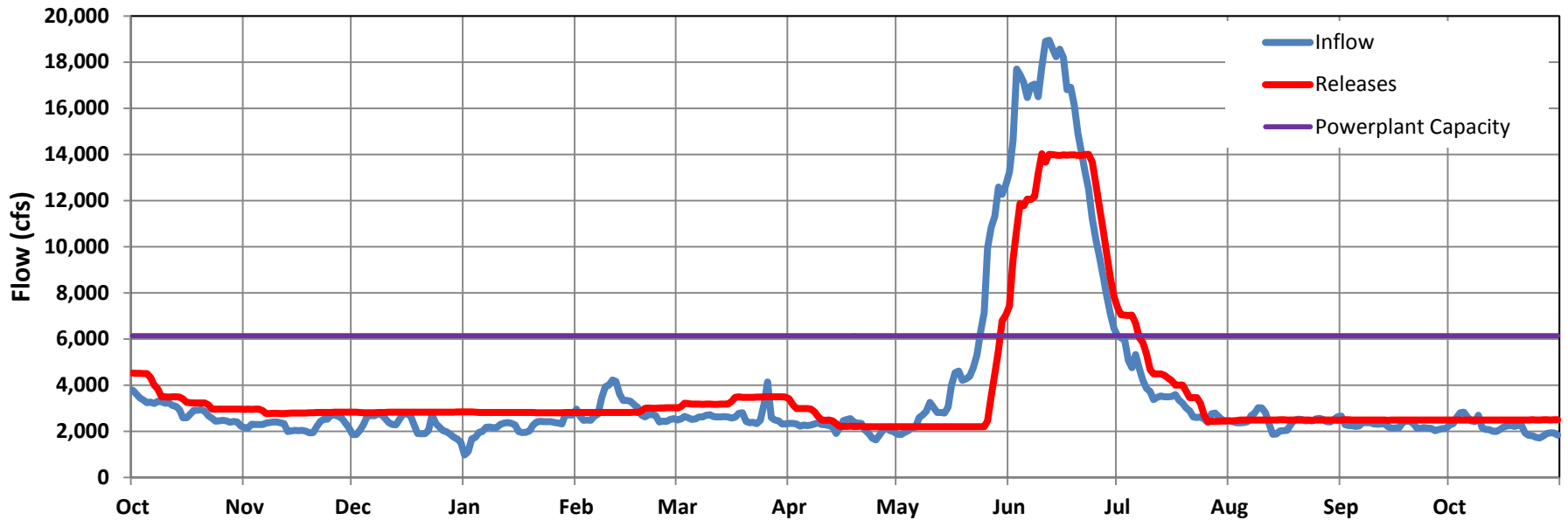
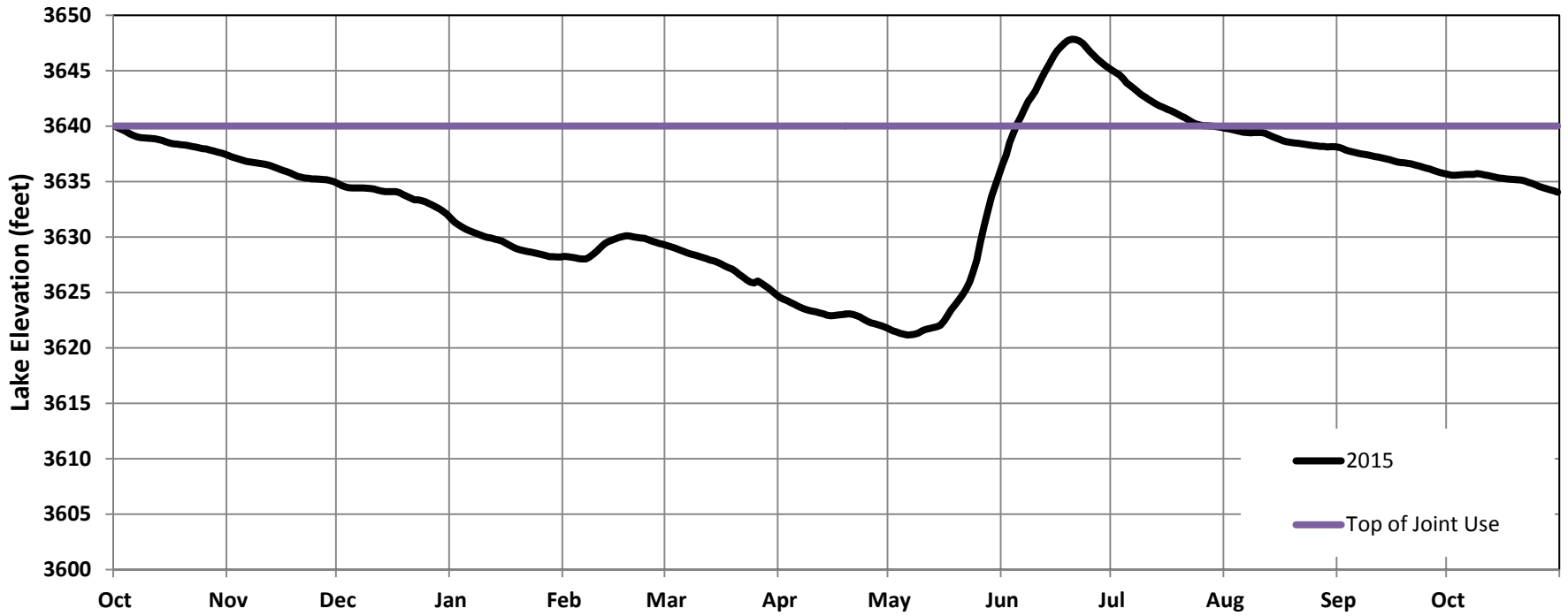




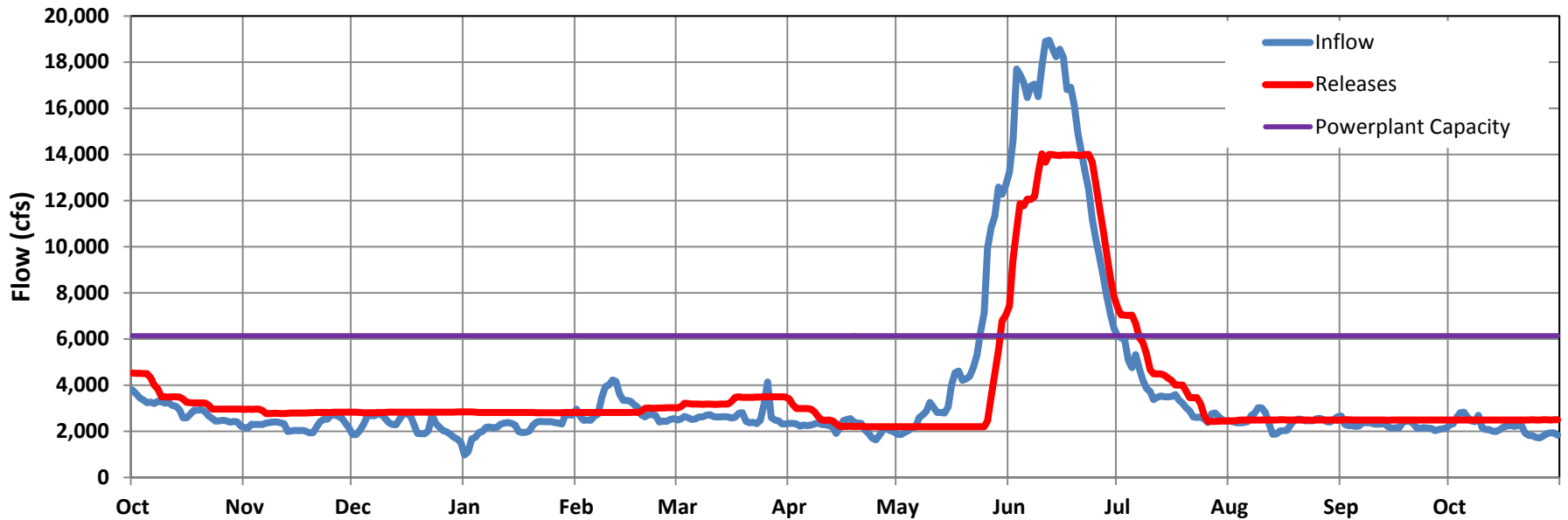
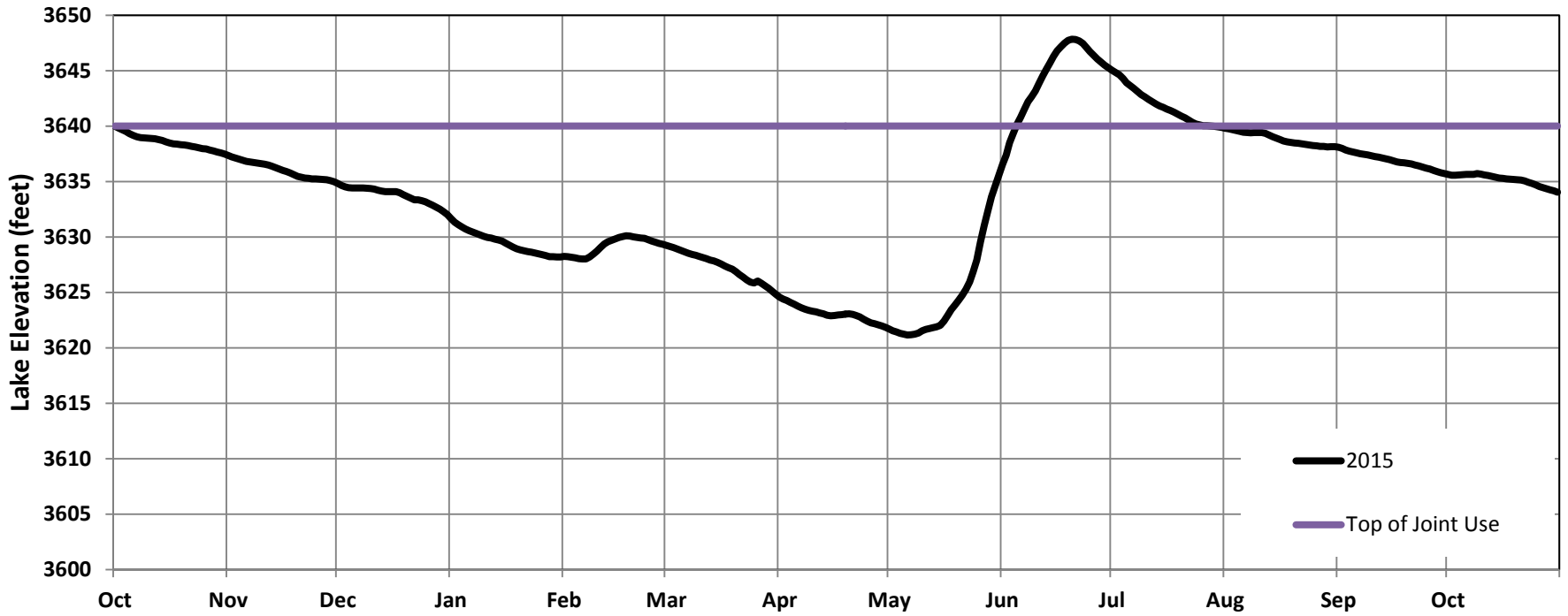
# Bighorn Lake Operations 2015



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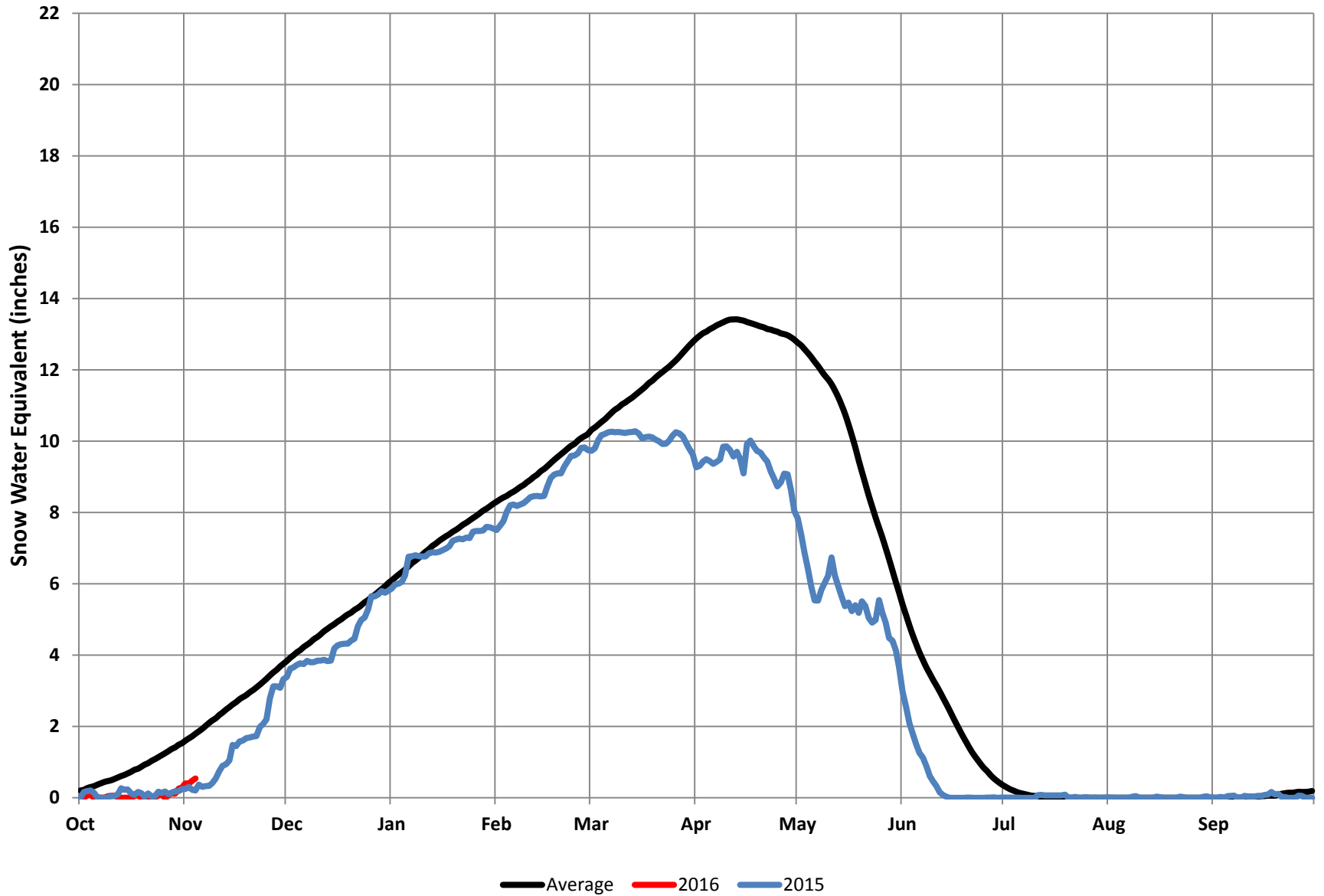


# **Water Year 2016 Fall and Winter Outlook**

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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

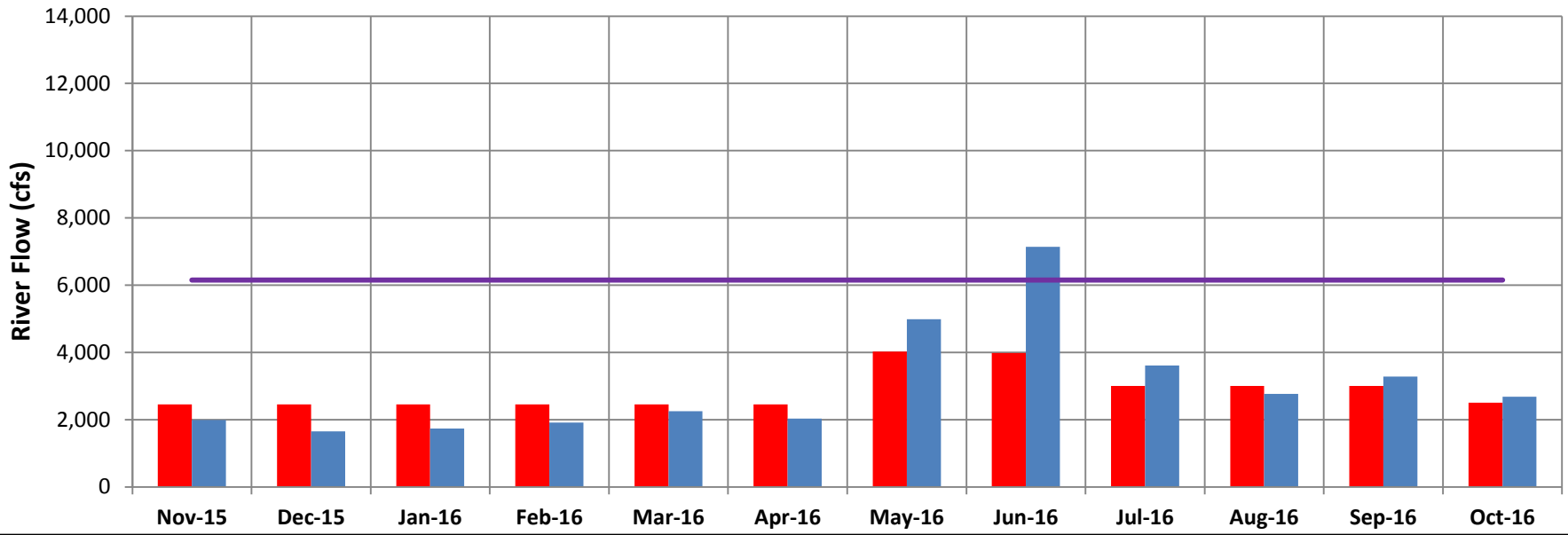
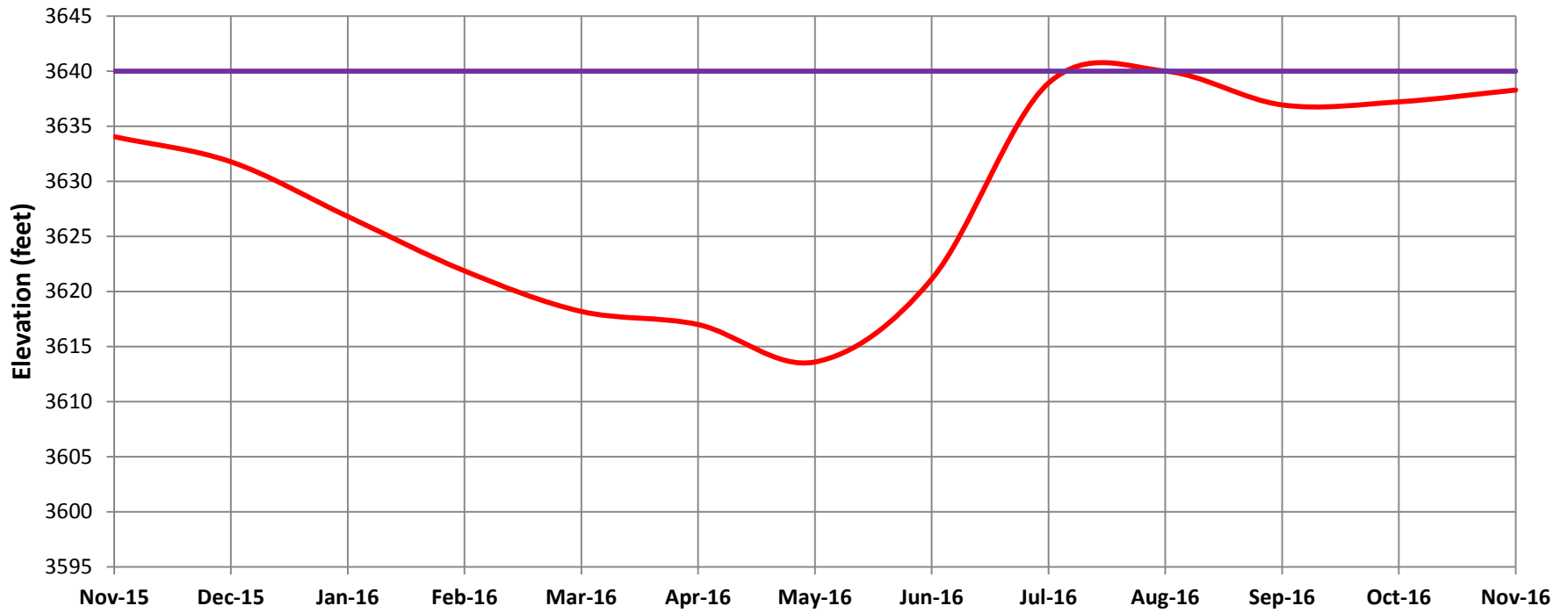
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# November Monthly Operating Plans

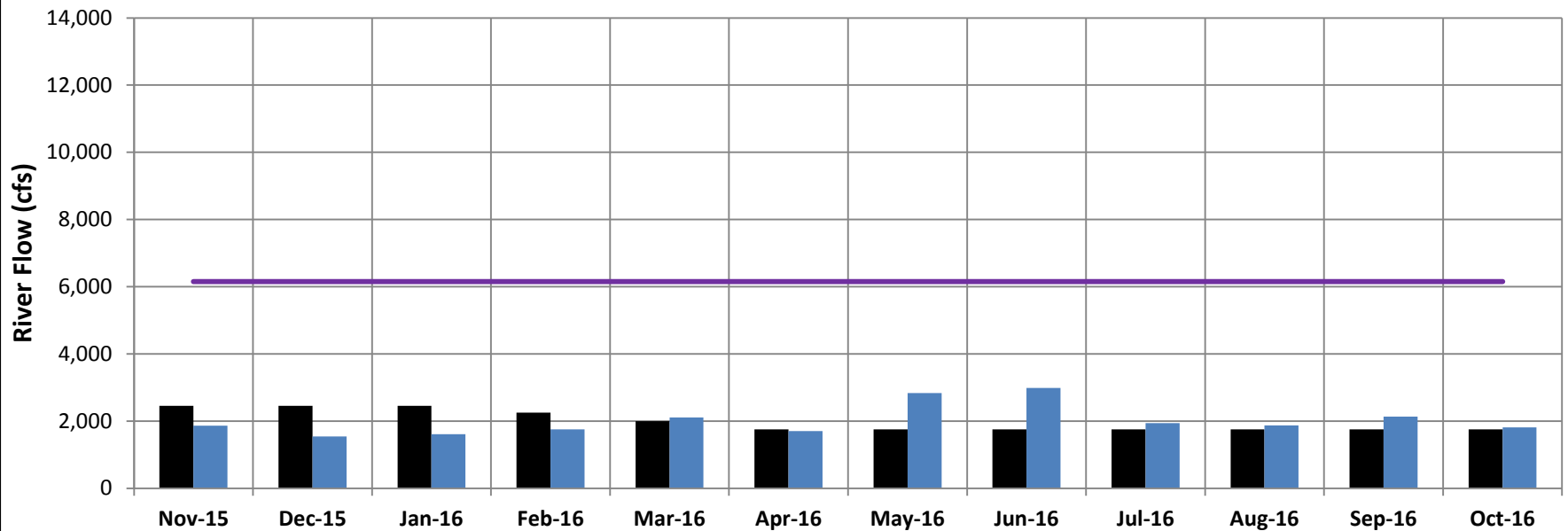
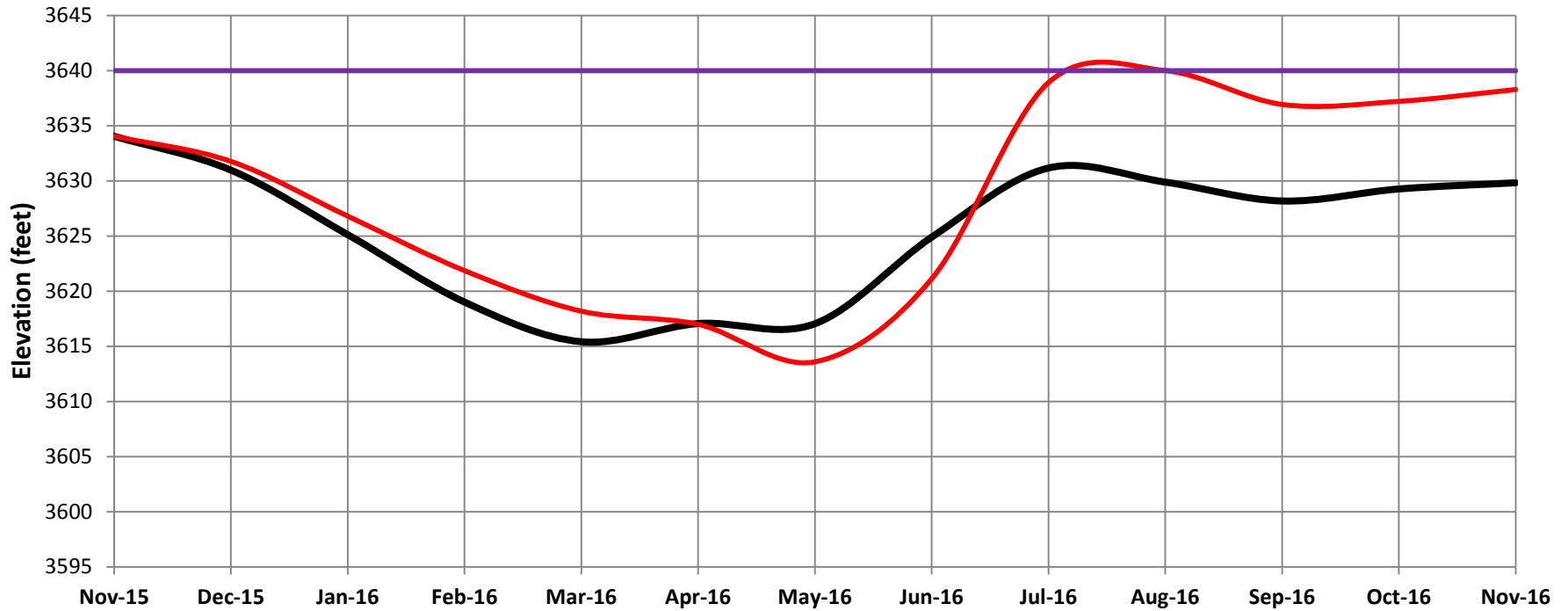
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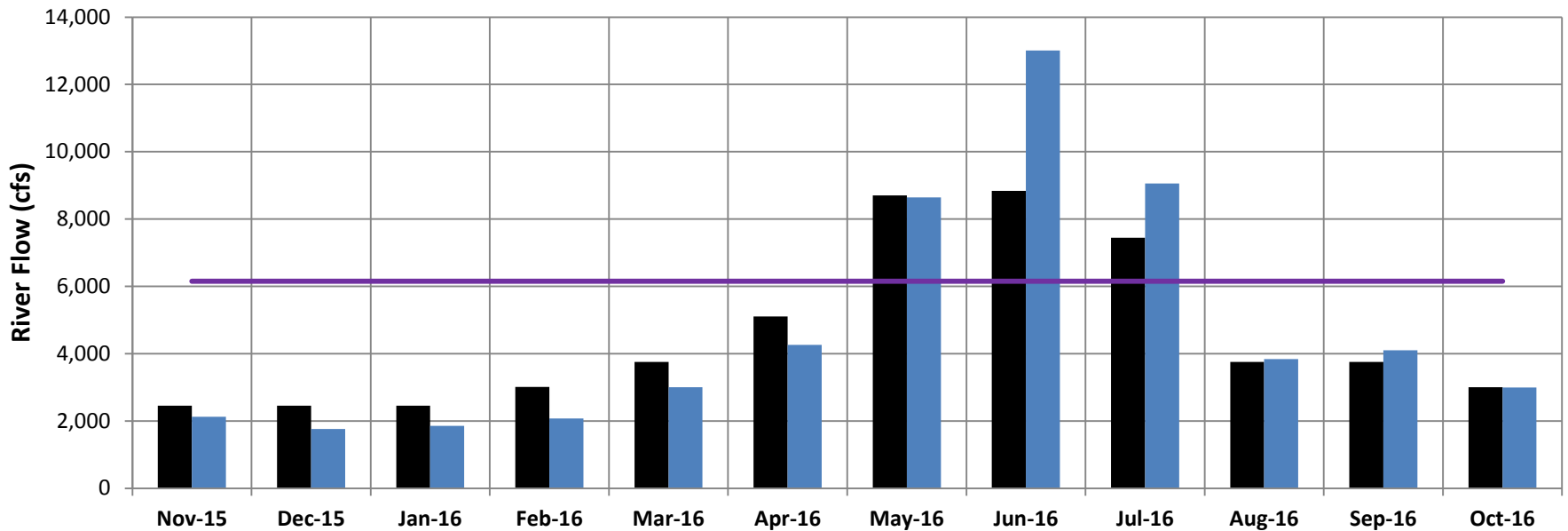
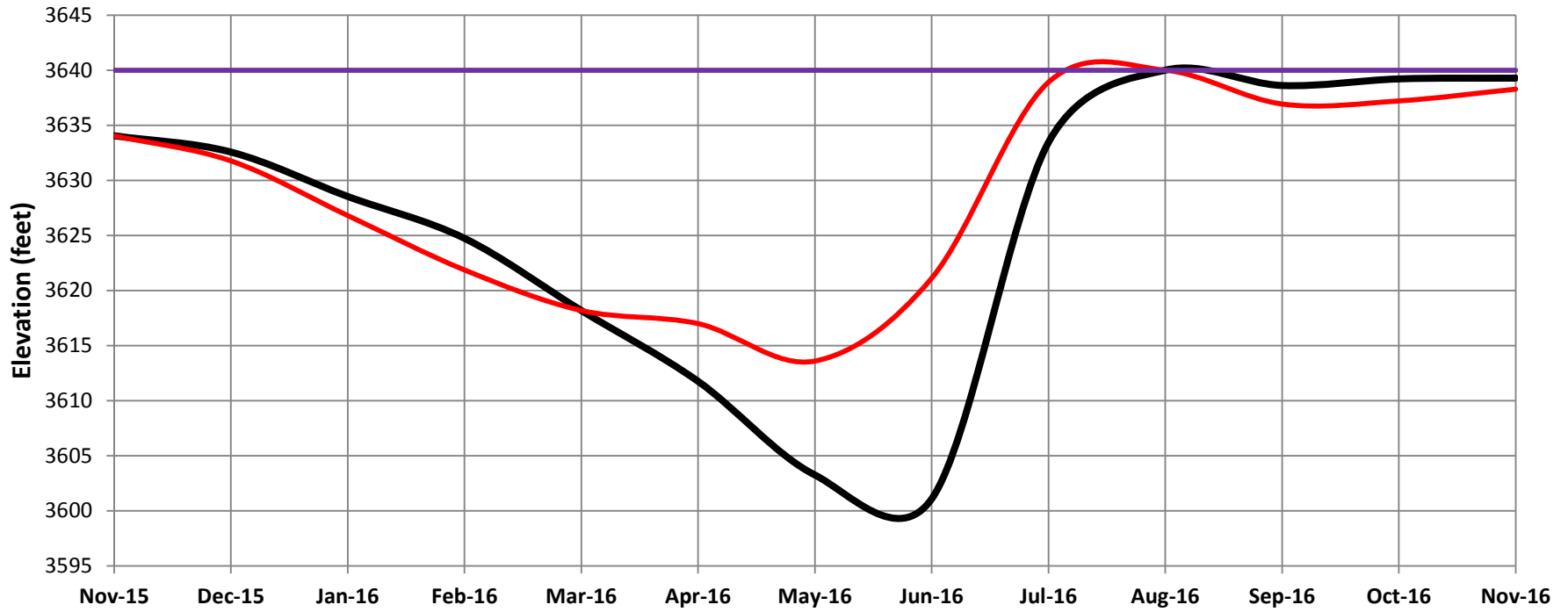
# Most Probable Inflow Operations



# 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](http://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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