

# Yellowtail Dam Water Supply and Projected Operations



— BUREAU OF —  
RECLAMATION

December 2020



Bighorn River Basin Map Source: DEMIS Mapserver

December Operating Range			
Forecast	Minimum	Median	Maximum
Monthly Average Inflow (cfs)	1,245	1,340	1,435
Monthly Average River Release (cfs)	2,115	2,115	2,115
End of December Elevation (feet)	3627.3	3627.9	3628.6
December 2020 Inflow Forecast (kaf)			
December Volume			82
Percent of Average			77
Water Year	Historic Inflow	Rank	
2020	134	21	
2019	133	24	
2018	177	9	
2017	109	36	
30 Year Average	107		

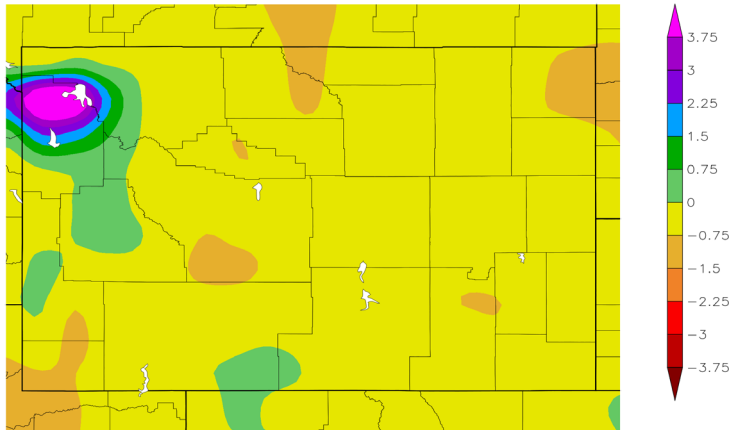


## Climate Departure from Normal

November 1 through November 30, 2020

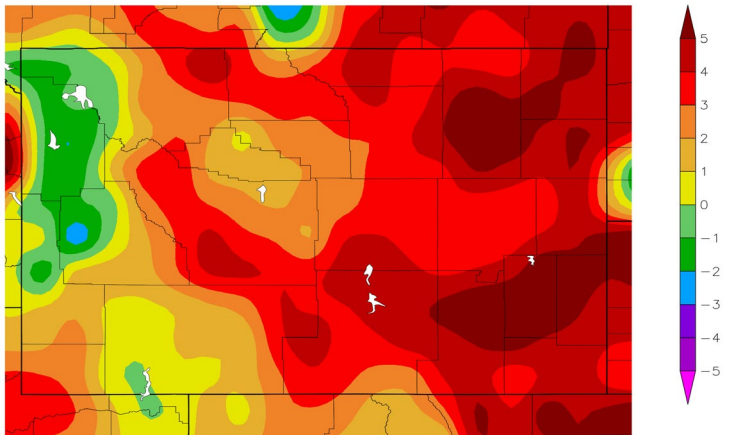
### Precipitation

Departure from Normal (inches)



### Temperature

Departure from Normal (°F)



HPRCC using provisional data from NOAA Regional Climate Centers

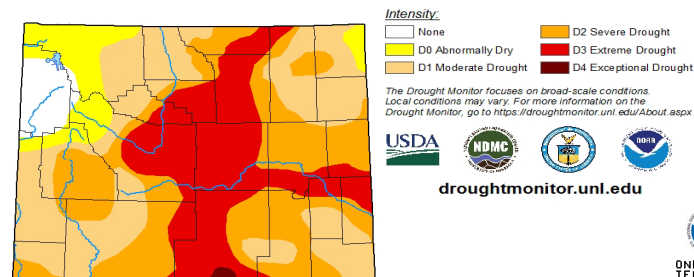
## CLIMATE SUMMARY

The climate in the Bighorn Basin above Yellowtail Dam was drier and warmer than average during November.

The December climate outlook shows there is an equal chance precipitation will be either average, above average, or below average. There is a 33-40 percent chance temperatures will be above average.

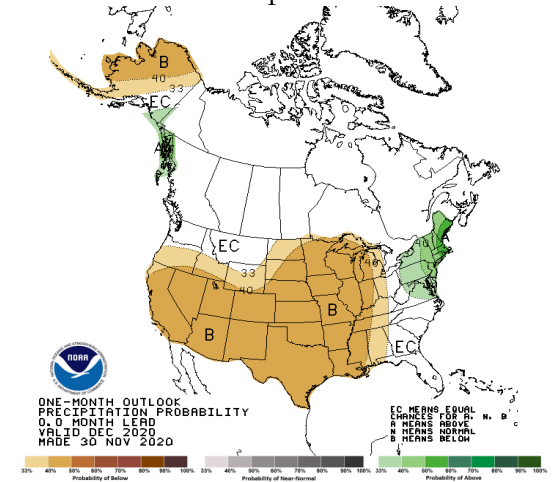
## Wyoming Drought Monitor Map

November 24, 2020

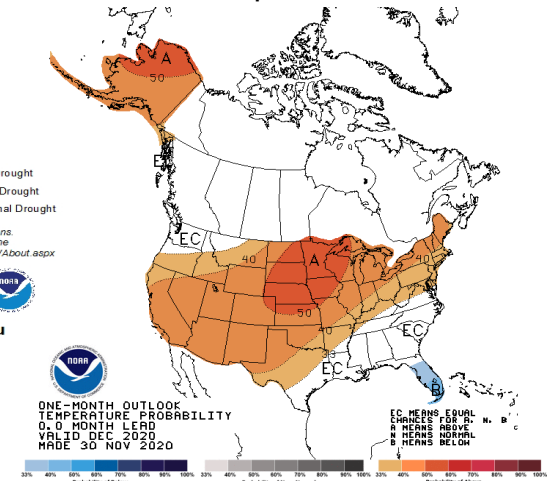


## December Climate Outlook

### Precipitation

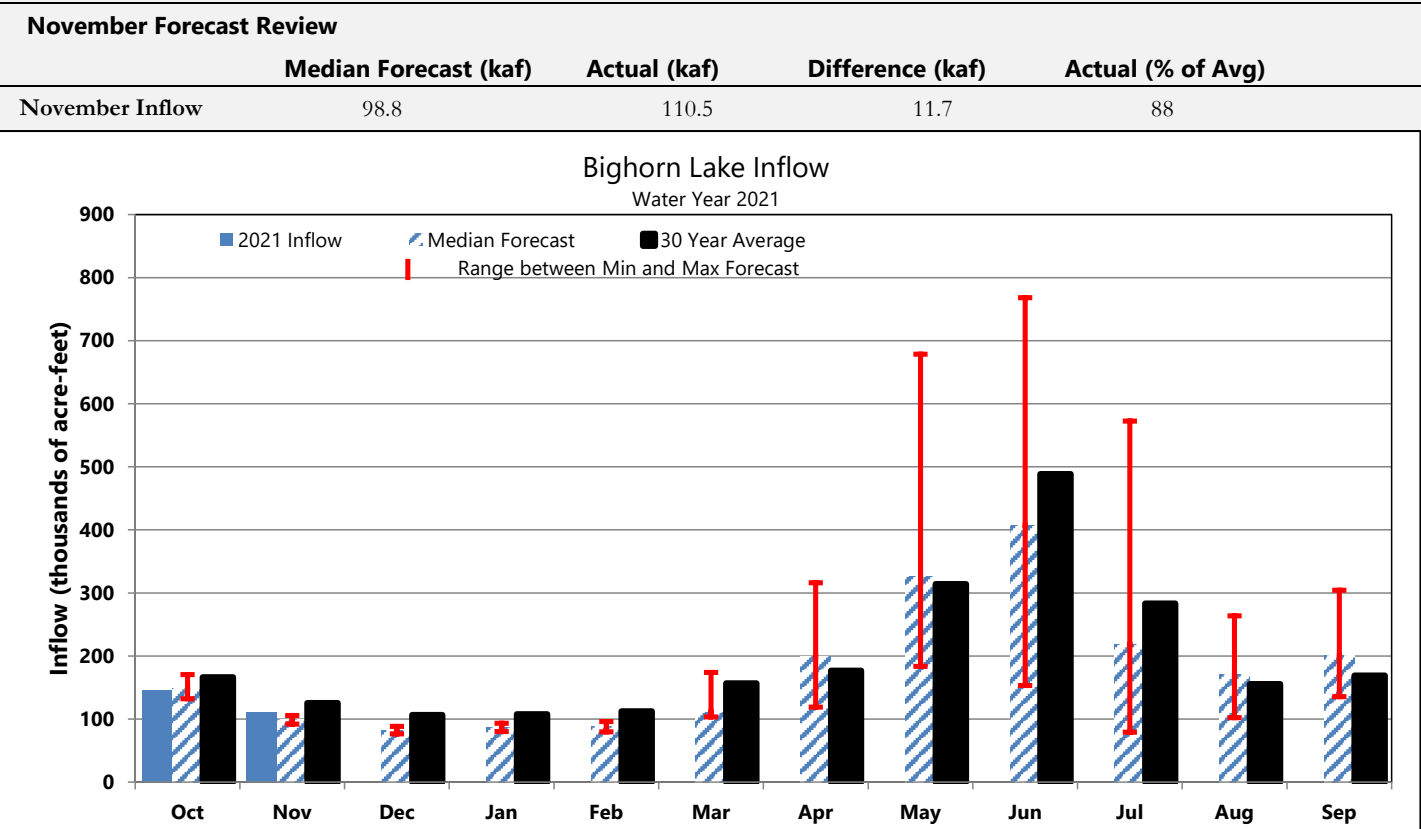


### Temperature



# FORECAST SUMMARY

SNOTEL data, streamflow data and planned releases from Boysen and Buffalo Bill Reservoirs are used to compute an inflow forecast for Bighorn Lake.



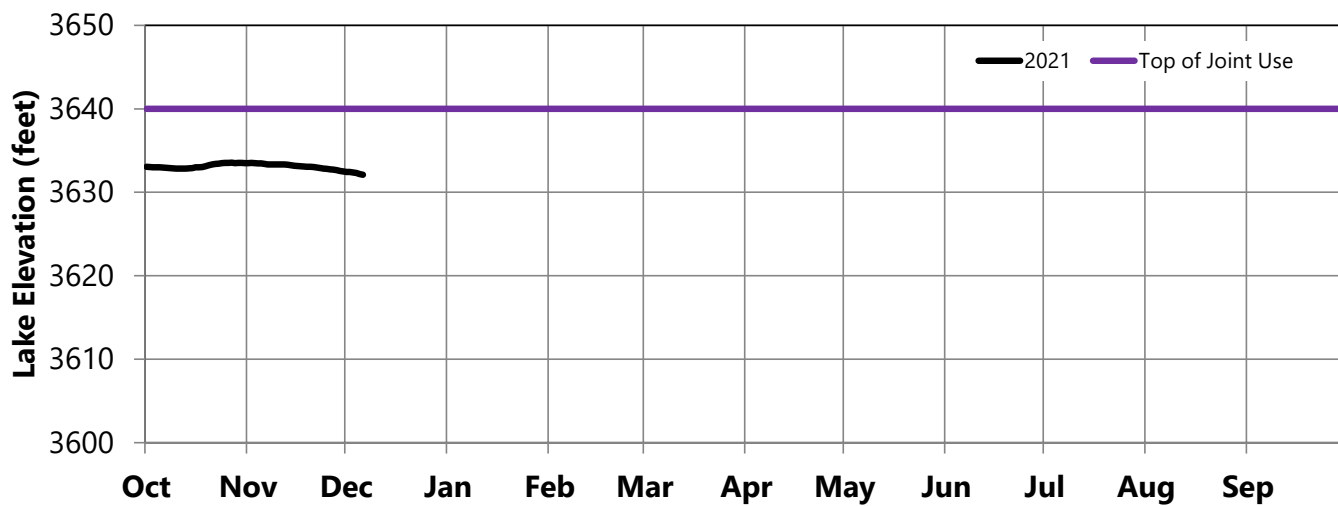
# OPERATIONS REVIEW (October 1, 2020 through November 30, 2020)

River releases were decreased to 2,080 cfs during November based on the end of October storage in Bighorn Lake, forecasted November through March inflows, and a March 31, 2021 elevation target of 3617 feet. The elevation of Bighorn Lake decreased by 1.1 feet during November.

## December 1 Storage Conditions

	Elevation feet	Storage acre-feet	Percent of Average	Percent Full
Bighorn Lake	3632.5	921,070	105	91
Buffalo Bill	5366.3	442,217	101	68
Boysen	4714.8	562,614	96	76

## Bighorn Lake Operations Water Year 2020



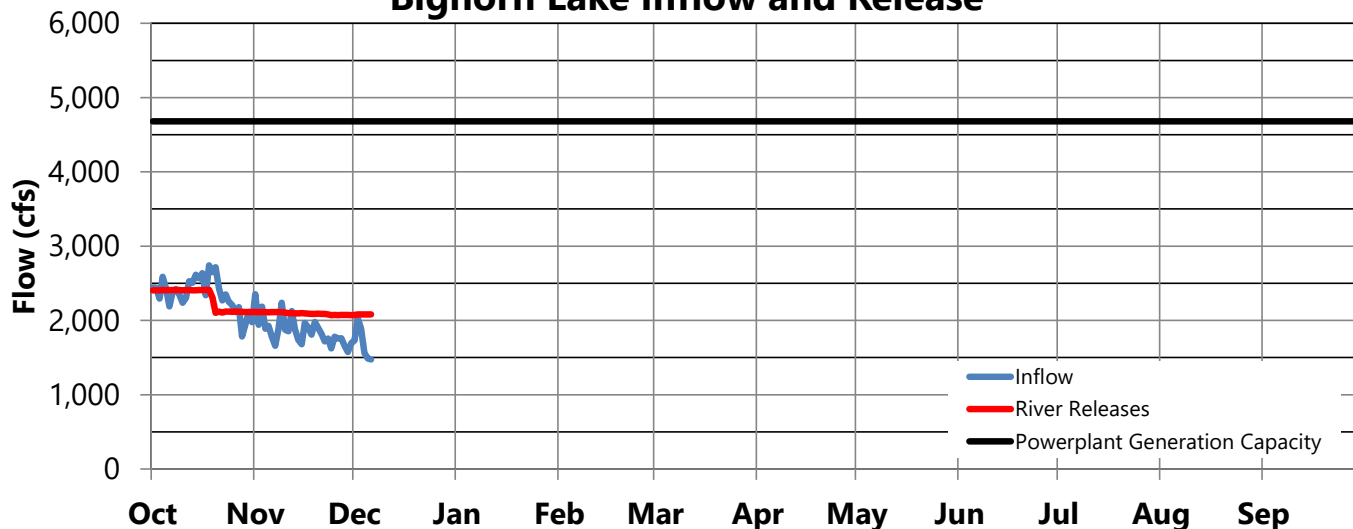
## Average November Inflow

	Monthly Avg cfs	Percent of Average
Bighorn Lake	1,860	88
Buffalo Bill	470	117
Boysen	735	88

## Average November Release

	Monthly Avg cfs	Percent of Average
Bighorn River	2,095	84
Buffalo Bill Total Release	210	61
Boysen Release	700	88

## Bighorn Lake Inflow and Release





# OPERATIONS OUTLOOK (December 1, 2020 through March 31, 2021)

River releases are increasing to 2,125 cfs during December due to actual November inflows being higher than the median inflow forecast. In accordance with the operating criteria, releases from Yellowtail Dam are adjusted to stay on track with the March 31 storage target of 3617 feet. As actual inflows vary from the median inflow forecast, releases to the Bighorn River will be adjusted. Releases during March are based on the April through July inflow forecast and the April 30 storage target.

## Median Inflow Conditions

	Dec	Jan	Feb	Mar
Boysen Release (cfs)	600	600	600	600
Buffalo Bill Release (cfs)	205	205	205	205
Tributary Gain (cfs)	535	607	776	1,000
Monthly Inflow (cfs)	1,340	1,412	1,581	1,805
Monthly Inflow (kaf)	82.4	86.8	87.8	111.0
Monthly Release (kaf)	129.9	130.5	117.9	154.2
Afterbay Release (cfs)	2,113	2,123	2,123	2,507
River Release (cfs)	2,113	2,123	2,123	2,507
End-of-Month Content (kaf)	877.7	838.3	812.1	773.2
End-of-Month Elevation (feet)	3627.9	3623.0	3619.3	3613.1

## Minimum Inflow Conditions

	Dec	Jan	Feb	Mar
Boysen Release (cfs)	600	600	600	600
Buffalo Bill Release (cfs)	205	205	205	205
Tributary Gain (cfs)	439	499	630	877
Monthly Inflow (cfs)	1,244	1,304	1,435	1,682
Monthly Inflow (kaf)	76.5	80.2	79.7	103.4
Monthly Release (kaf)	129.9	120.8	109.1	120.8
Afterbay Release (cfs)	2,113	1,965	1,965	1,965
River Release (cfs)	2,113	1,965	1,965	1,965
End-of-Month Content (kaf)	871.8	835.5	810.0	796.8
End-of-Month Elevation (feet)	3627.3	3622.7	3619.0	3617.0

## Maximum Inflow Conditions

	Dec	Jan	Feb	Mar
Boysen Release (cfs)	600	600	600	1,499
Buffalo Bill Release (cfs)	205	205	205	205
Tributary Gain (cfs)	631	712	924	1,124
Monthly Inflow (cfs)	1,436	1,517	1,729	2,828
Monthly Inflow (kaf)	88.3	93.3	96.0	173.9
Monthly Release (kaf)	129.9	155.0	140.0	215.2
Afterbay Release (cfs)	2,113	2,521	2,521	3,500
River Release (cfs)	2,113	2,521	2,521	3,500
End-of-Month Content (kaf)	883.6	826.2	786.1	749.0
End-of-Month Elevation (feet)	3628.6	3621.4	3615.3	3608.8

# OPERATIONS OUTLOOK (December 1, 2020 through March 31, 2021)

There is approximately 70 cfs of gain between Yellowtail Dam and Yellowtail Afterbay Dam from springs flowing into Yellowtail Afterbay. Total release from Yellowtail Dam is 70 cfs less than total release from Yellowtail Afterbay Dam. Yellowtail Powerplant is limited to 3 units due to on-going refurbishment project.

## Irrigation Demands Outlook

### Bighorn Canal (cfs)

	Dec	Jan	Feb	Mar
Median Forecast	0	0	0	0
Minimum Forecast	0	0	0	0
Maximum Forecast	0	0	0	0

## Power Generation Outlook

Current Number of Units Available: 3 of 4

Approximate Yellowtail Powerplant Turbine Capacity: 6,150 cfs

Approximate Yellowtail Powerplant Generation Limit: 4,615 cfs

### Yellowtail Powerplant Release (cfs)

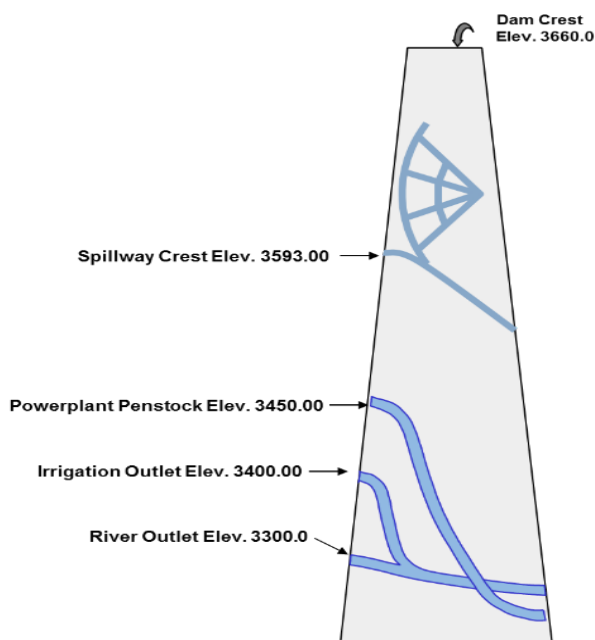
	Dec	Jan	Feb	Mar
Median Forecast	2,043	2,053	2,053	2,437
Minimum Forecast	2,043	1,895	1,895	1,895
Maximum Forecast	2,043	2,451	2,451	3,430

### Yellowtail Powerplant Generation (gwh)

	Dec	Jan	Feb	Mar
Median Forecast	49.7	49.4	44.2	58.4
Minimum Forecast	49.7	45.9	40.9	45.0
Maximum Forecast	49.8	59.9	53.3	80.5

### Yellowtail Spill (cfs)

	Dec	Jan	Feb	Mar
Median Forecast	0	0	0	0
Minimum Forecast	0	0	0	0
Maximum Forecast	0	0	0	0



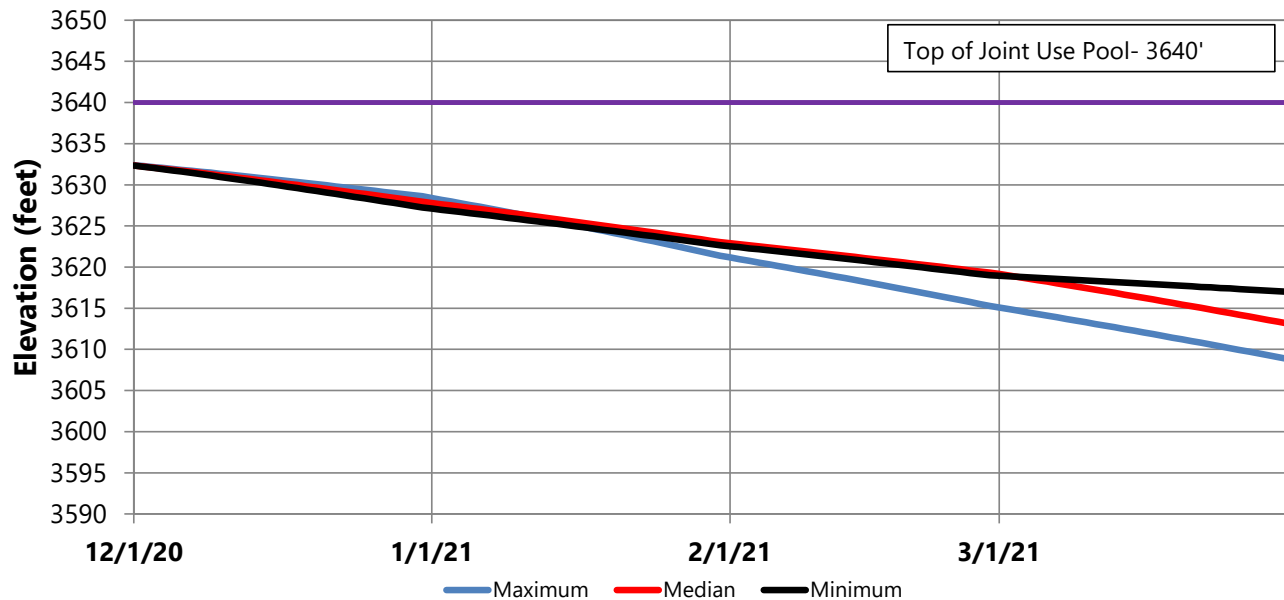
## Release Outlook by Outlet

All releases are currently going through the powerplant and are expected to go through the powerplant through the end of March.

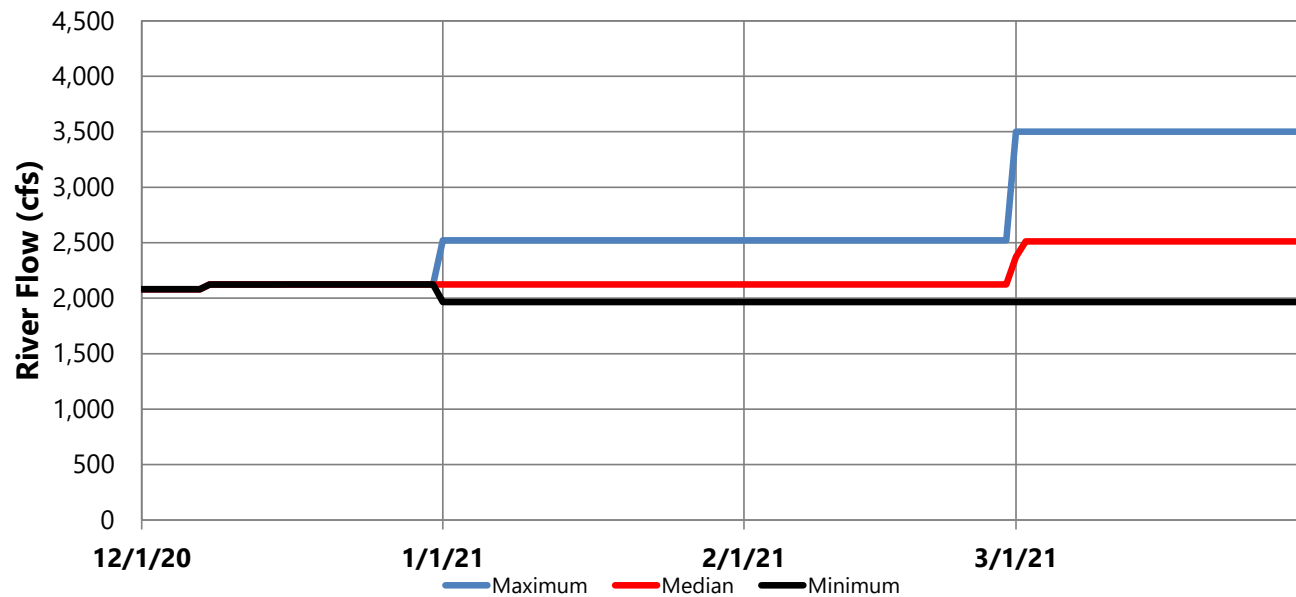
# OPERATIONS OUTLOOK (December 1, 2020 through March 31, 2021)

Projected elevations and the range of river releases are based on the median, minimum, and maximum inflow forecasts. End-of-month elevations and river releases vary based on the difference between forecasted inflow scenarios.

## Bighorn Lake Elevation



## River Release



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Monthly Operating Plans, Current Conditions, Snowpack and Other Water Management Information  
<https://www.usbr.gov/en/lakes/reservoirs/warents/mainmenu.html>