Yellowtail Dam Water Supply and Projected Operations

BUREAU OF RECLAMATION

November 2022

Bighorn River Basin Map Source: DEMIS Mapserver

November Operating Range			
Forecast	**Minimum**	**Median**	**Maximum**
Monthly Average Inflow (cfs)	1,865	1,980	2,095
Monthly Average River Release (cfs)	2,435	2,435	2,435
End of November Elevation (feet)	3631.2	3631.9	3632.5

November 2022 Inflow Forecast (kaf)		
November Volume		118
Percent of Average		95
Water Year	**Historic Inflow**	**Rank**
2022	117	41
2021	111	44
2020	173	12
2019	154	20
30 Year Average	124	

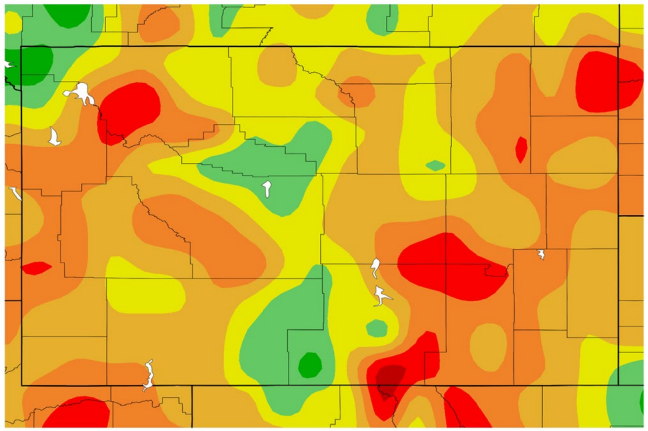
CLIMATE SUMMARY

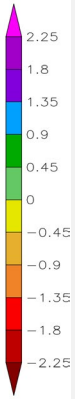
Climate Departure from Normal

October 1 through October 31, 2022

Precipitation

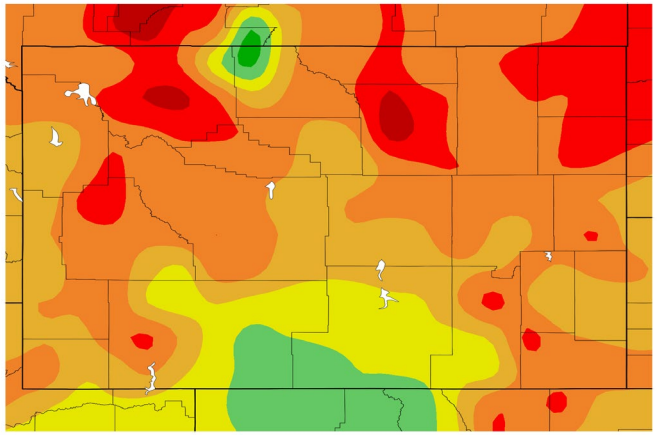
Departure from Normal (inches)





Temperature

Departure from Normal (°F)



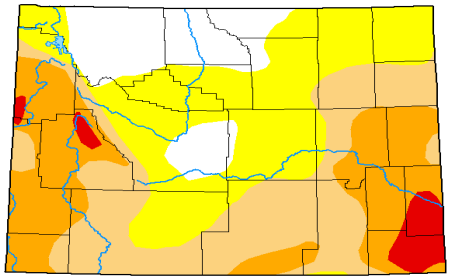
HPRCC using provisional data from NOAA Regional Climate Centers

Precipitation was near average in the Bighorn basin during October. Temperatures were above average. Abnormally dry conditions persist in some areas of the basin.

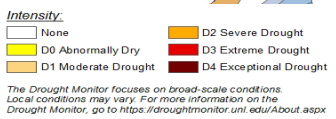
The Bighorn River Basin has a 33-50 percent chance that precipitation will be average during November. There an equal chance that temperatures will be below, near, or above average.

Wyoming Drought Monitor Map

October 25, 2022



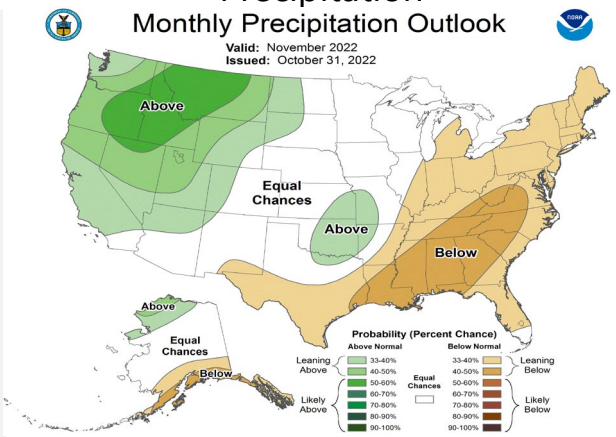
droughtmonitor.unl.edu



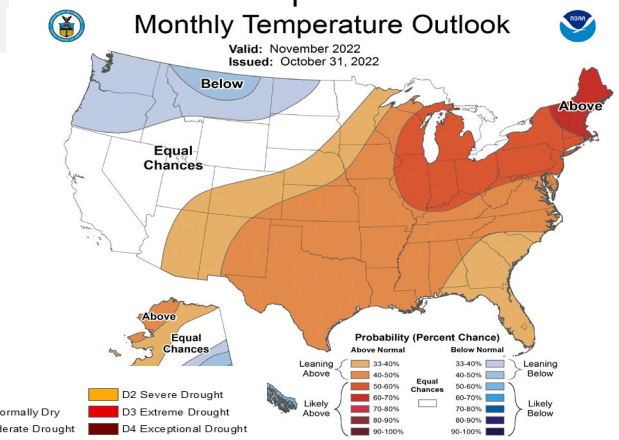
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

November Climate Outlook

Precipitation



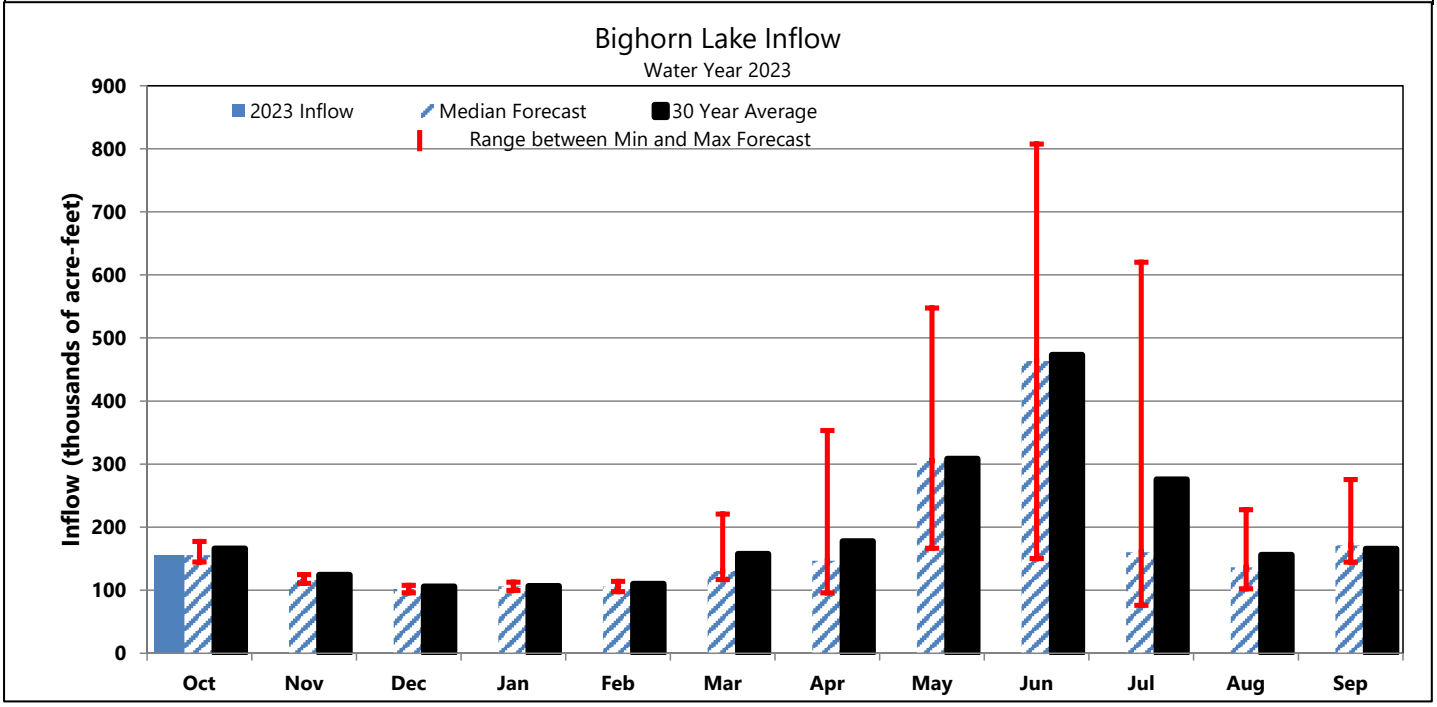
Temperature



FORECAST SUMMARY

Streamflow data and planned releases from Boysen and Buffalo Bill Reservoirs are used to compute an inflow forecast for Bighorn Lake. Actual October inflow was almost equal to the median inflow forecast.

October Forecast Review	Median Forecast (kaf)	Actual (kaf)	Difference (kaf)	Actual (% of Avg)
October Inflow	155.4	155.2	(0.2)	94

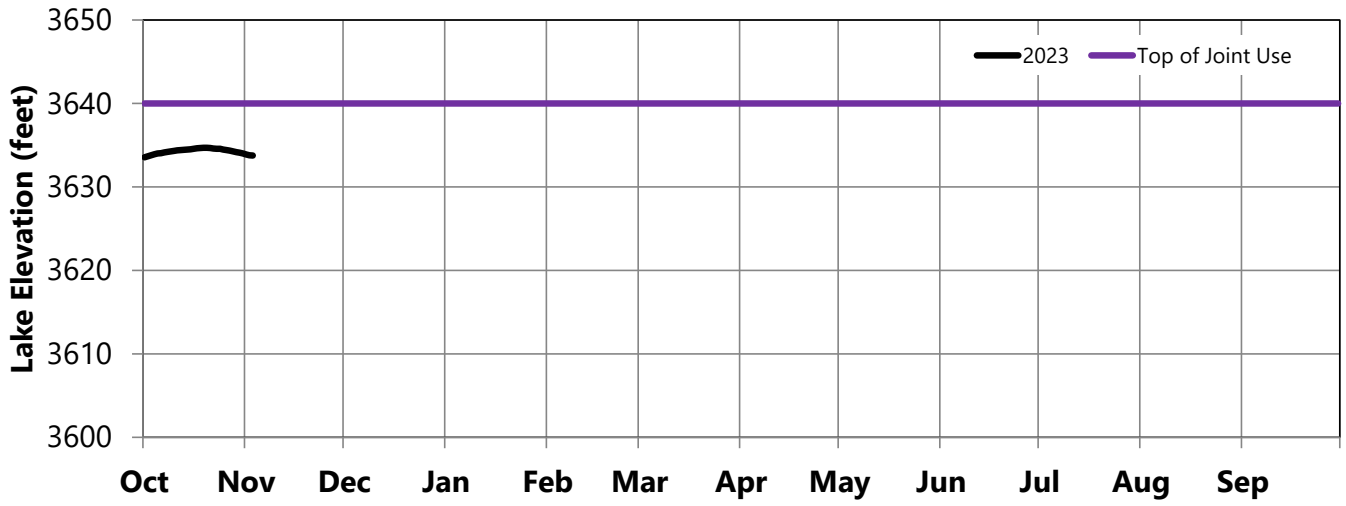


OPERATIONS REVIEW (October 1, 2022 through October 31, 2022)

River releases were maintained at 2,500 cfs based on actual inflow, forecasted inflow, and storage in Bighorn Lake. Storage in Bighorn Lake was relatively stable during the month of October.

November 1 Storage Conditions

	Elevation feet	Storage acre-feet	Percent of Average	Percent Full
Bighorn Lake	3634.0	937,240	106	93
Buffalo Bill	5367.8	452,122	107	70
Boysen	4719.6	640,968	115	86

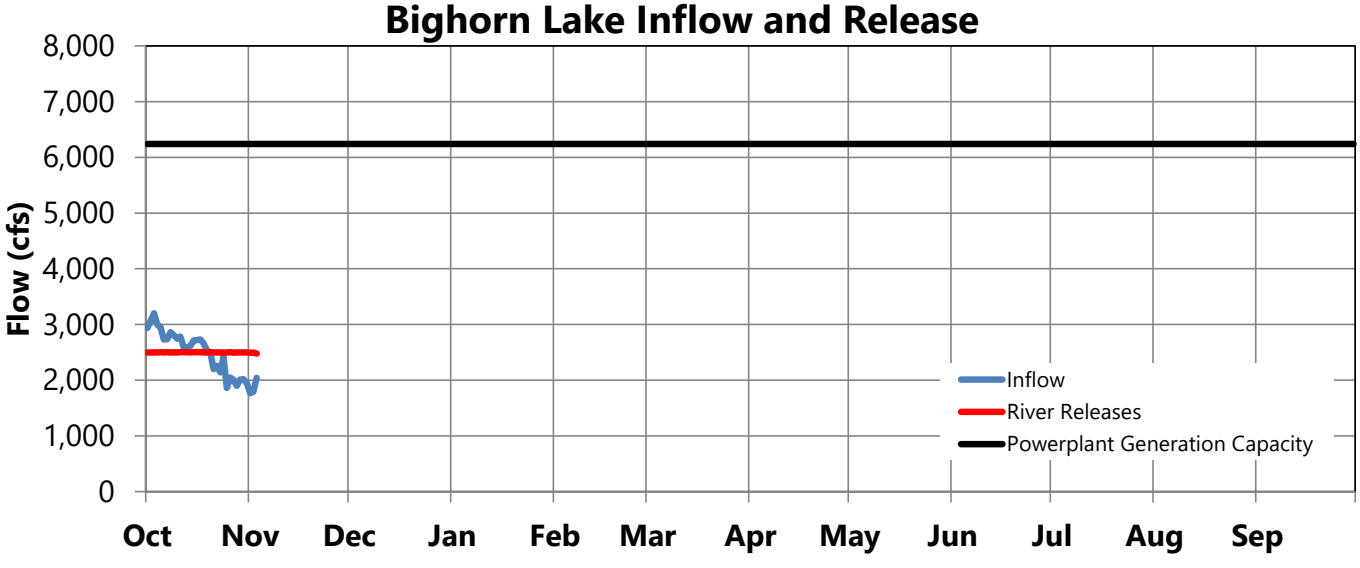


Average October Inflow

	Monthly Avg cfs	Percent of Average
Bighorn Lake	2,525	94
Buffalo Bill	500	106
Boysen	865	96

Average October Release

	Monthly Avg cfs	Percent of Average
Bighorn River	2,500	96
Buffalo Bill Total Release	820	117
Boysen Release	900	105



OPERATIONS OUTLOOK (November 1, 2022 through March 31, 2023)

Releases to the Bighorn River will will be reduced to the winter release rate of 2,410 cfs on November 8. The winter release is based on forecasted inflows and end of March storage target of 3617.0 feet. Releases will be adjusted during the winter depending on actual inflows. Forecasted end of March elevations depend on April through July inflows forecasted for 2023.

Median Inflow Conditions

	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	900	900	900	900	900
Buffalo Bill Release (cfs)	205	205	205	205	205
Tributary Gain (cfs)	874	551	623	799	1,020
Monthly Inflow (cfs)	1,979	1,656	1,728	1,904	2,125
Monthly Inflow (kaf)	117.8	101.8	106.2	105.8	130.6
Monthly Release (kaf)	144.7	148.3	148.3	134.0	160.2
Afterbay Release (cfs)	2,433	2,412	2,412	2,412	2,606
River Release (cfs)	2,433	2,412	2,412	2,412	2,606
End-of-Month Content (kaf)	914.4	872.3	834.5	810.2	784.9
End-of-Month Elevation (feet)	3631.9	3627.3	3622.5	3619.0	3615.1

Minimum Inflow Conditions

	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	900	900	900	900	800
Buffalo Bill Release (cfs)	205	205	205	205	205
Tributary Gain (cfs)	758	455	517	654	896
Monthly Inflow (cfs)	1,863	1,560	1,622	1,759	1,901
Monthly Inflow (kaf)	110.9	95.9	99.7	97.7	116.9
Monthly Release (kaf)	144.7	144.8	141.1	124.1	123.0
Afterbay Release (cfs)	2,433	2,355	2,295	2,235	2,000
River Release (cfs)	2,433	2,355	2,295	2,235	2,000
End-of-Month Content (kaf)	907.5	863.0	825.9	803.3	801.5
End-of-Month Elevation (feet)	3631.2	3626.2	3621.3	3618.0	3617.7

Maximum Inflow Conditions

	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	900	900	900	900	1,251
Buffalo Bill Release (cfs)	207	205	205	205	1,195
Tributary Gain (cfs)	988	647	729	947	1,143
Monthly Inflow (cfs)	2,095	1,752	1,834	2,052	3,589
Monthly Inflow (kaf)	124.7	107.7	112.7	114.0	220.7
Monthly Release (kaf)	144.7	152.2	155.9	166.6	276.7
Afterbay Release (cfs)	2,433	2,475	2,535	3,000	4,500
River Release (cfs)	2,433	2,475	2,535	3,000	4,500
End-of-Month Content (kaf)	921.3	881.2	842.4	793.6	741.9
End-of-Month Elevation (feet)	3632.5	3628.3	3623.6	3616.5	3607.5

OPERATIONS OUTLOOK (November 1, 2022 through March 31, 2023)

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.

Irrigation Demands Outlook

Bighorn Canal (cfs)

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

Power Generation Outlook

Current Number of Units Available: 4 of 4
Approximate Yellowtail Powerplant Turbine Capacity: 8,200 cfs
Approximate Yellowtail Powerplant Scheduled Generation Limit: 6,240 cfs

Yellowtail Powerplant Release (cfs)

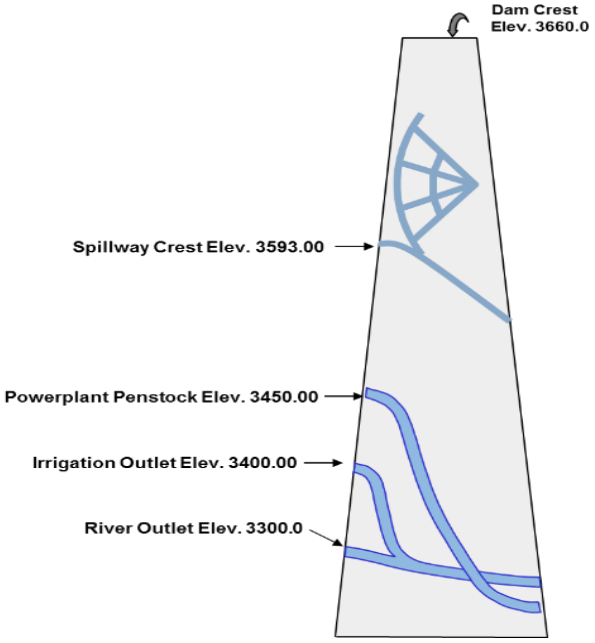
	Nov	Dec	Jan	Feb	Mar
Median Forecast	2,363	2,342	2,342	2,342	2,536
Minimum Forecast	2,363	2,285	2,225	2,165	1,930
Maximum Forecast	2,363	2,405	2,465	2,930	4,430

Yellowtail Powerplant Generation (gwh)

	Nov	Dec	Jan	Feb	Mar
Median Forecast	56.4	57.4	56.9	50.9	61.2
Minimum Forecast	56.4	55.7	53.5	46.4	45.7
Maximum Forecast	56.4	59.2	60.4	64.4	102.8

Yellowtail Spill (cfs)

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

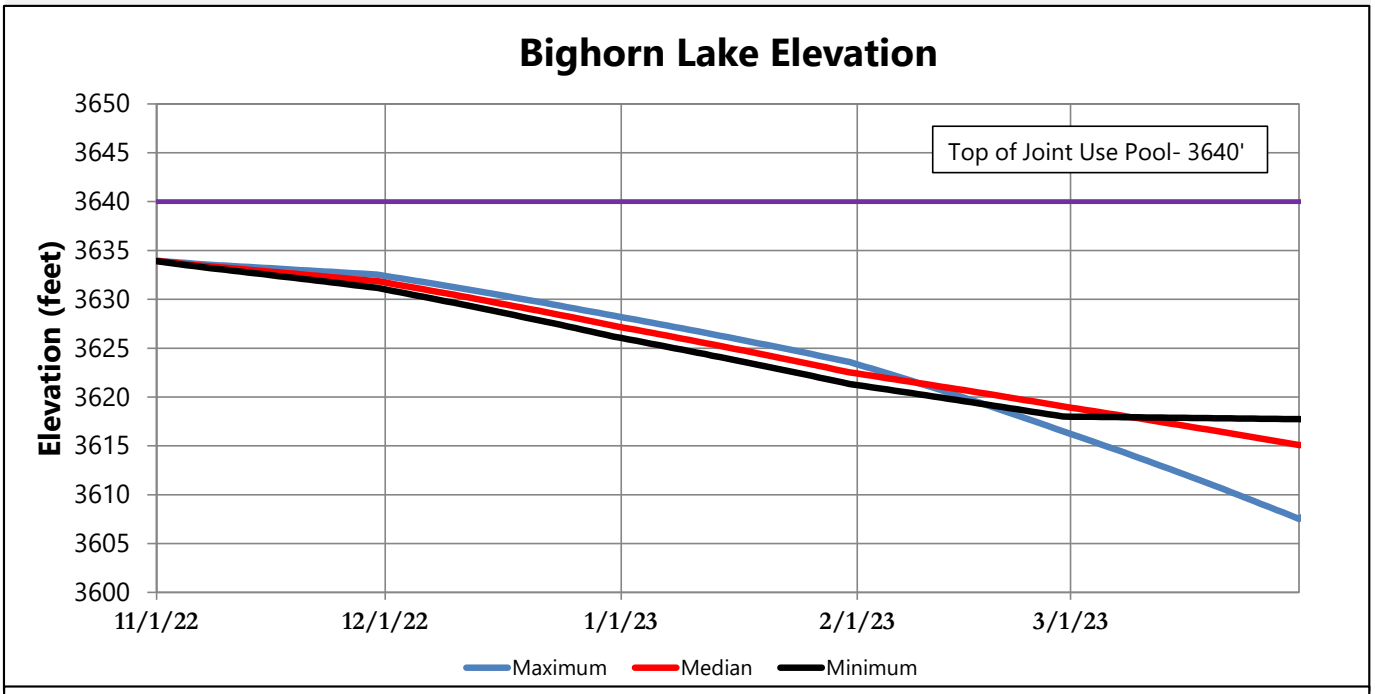


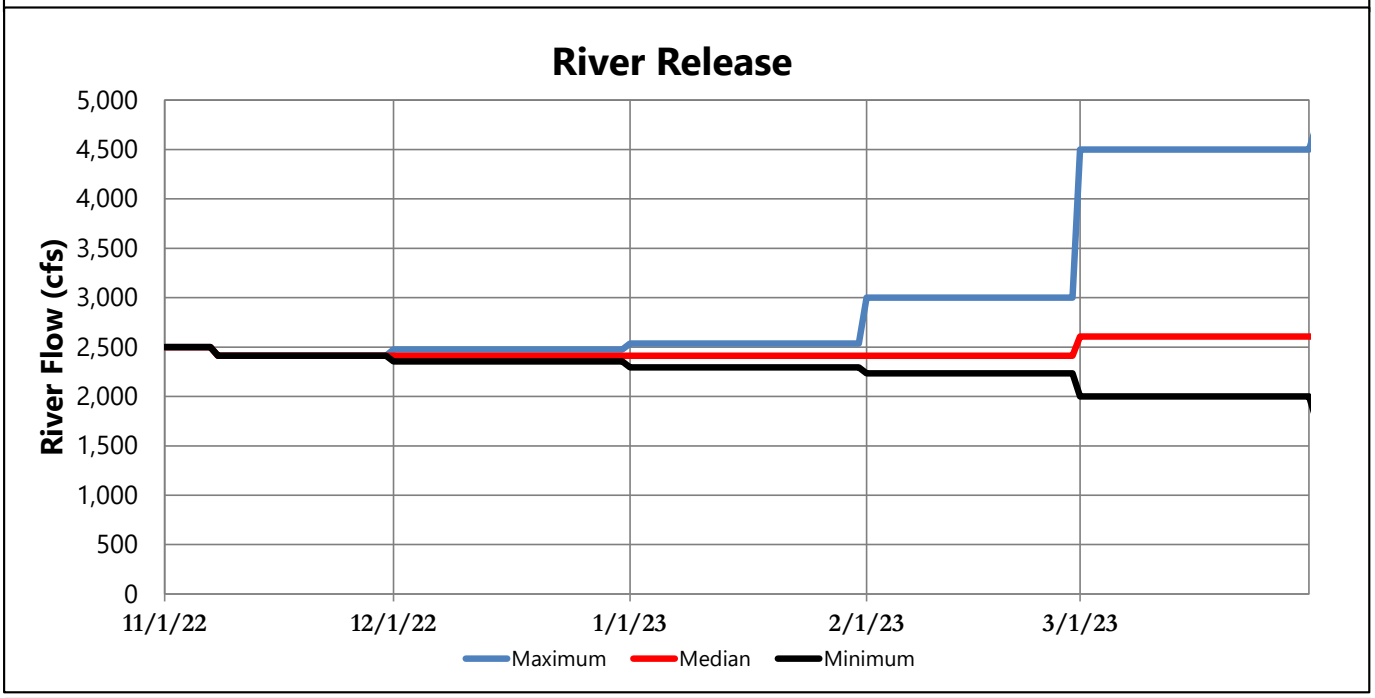
Release Outlook by Outlet

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

OPERATIONS OUTLOOK (November 1, 2022 through March 31, 2023)

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.





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Monthly Operating Plans, Current Conditions, Snowpack and Other Water Management Information
https://www.usbr.gov/gp/lakes_reservoirs/wareprts/main_menu.html