

Gibson Dam

Water Supply and Projected Operation

May 2023



— BUREAU OF —
RECLAMATION



Gibson Dam

May Operating Range			
Forecast	Minimum	Median	Maximum
Monthly Inflow (kaf)	110.0	130.0	200.0
Monthly Average Release (cfs)	1,000	1,080	1,320
Monthly Average Release Over Diversion Dam (cfs)	75	300	1,250
End of Month Content (kaf)	74.2	63.7	83.2



Watershed above Gibson Dam

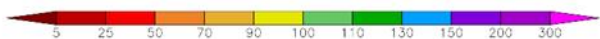
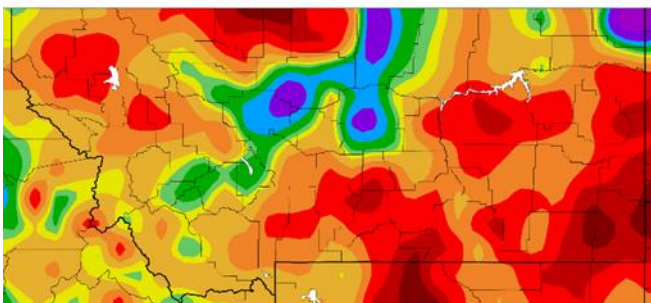
May through July Inflow Forecast	
May – July Volume (kaf)	293.0
Percent of Average (%)	82
Water Year	Historic Inflow (kaf)
2022	351.1
2021	350.2
2020	408.1
2019	304.9
30 Year Average	358.2

CLIMATE SUMMARY

Western Regional Climate Center

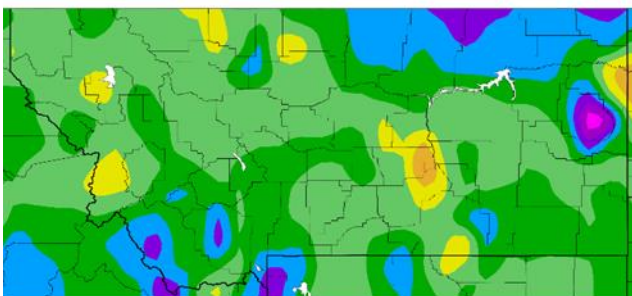
April 1- 30 Climate

Percent of Normal Precipitation



Departure from Normal Temperature

(F)



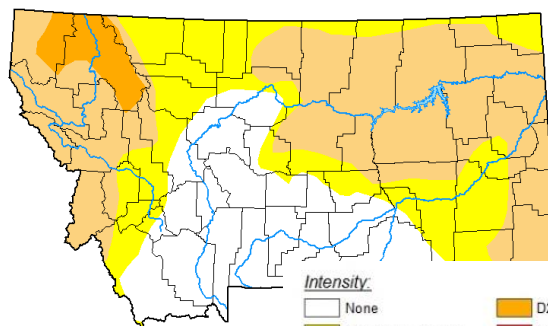
April temperatures were colder than normal in the Sun River while a mix of moisture fell in the basin surrounding Gibson Reservoir.

The one-month outlook forecast, dated April 30, is for equal chance of above, below, or normal precipitation and a 50-60% chance of above normal temperatures during May.

Drought conditions are still present in the Sun River basin.

MT Drought Monitor Map

May 2, 2023



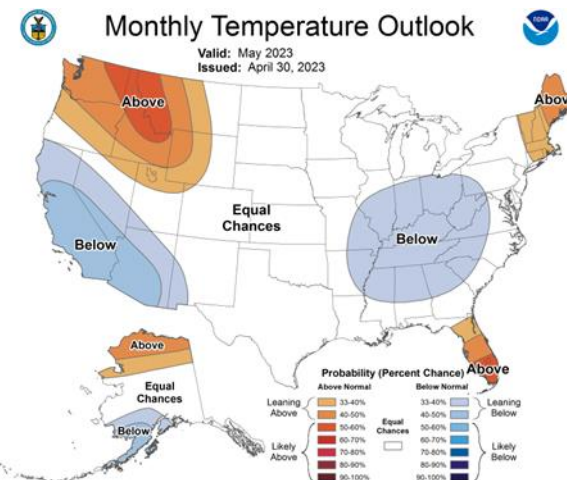
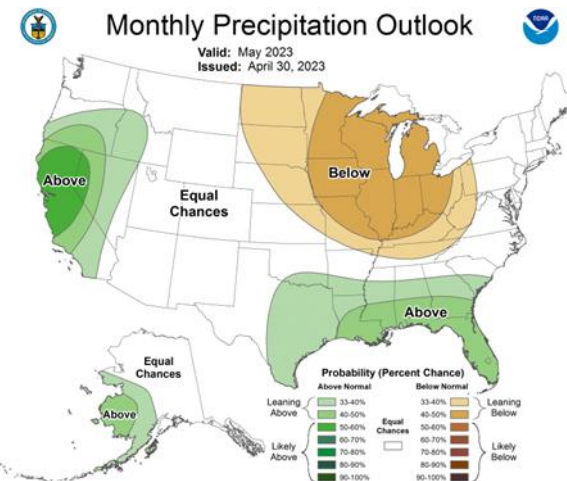
Intensity

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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>

National Weather Service

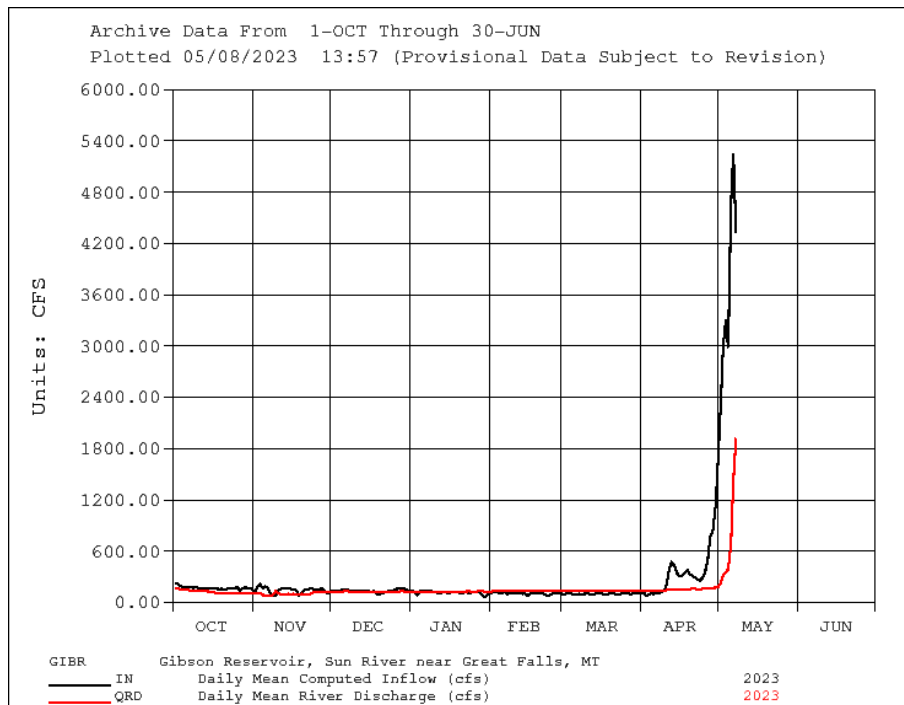
May Weather Outlook



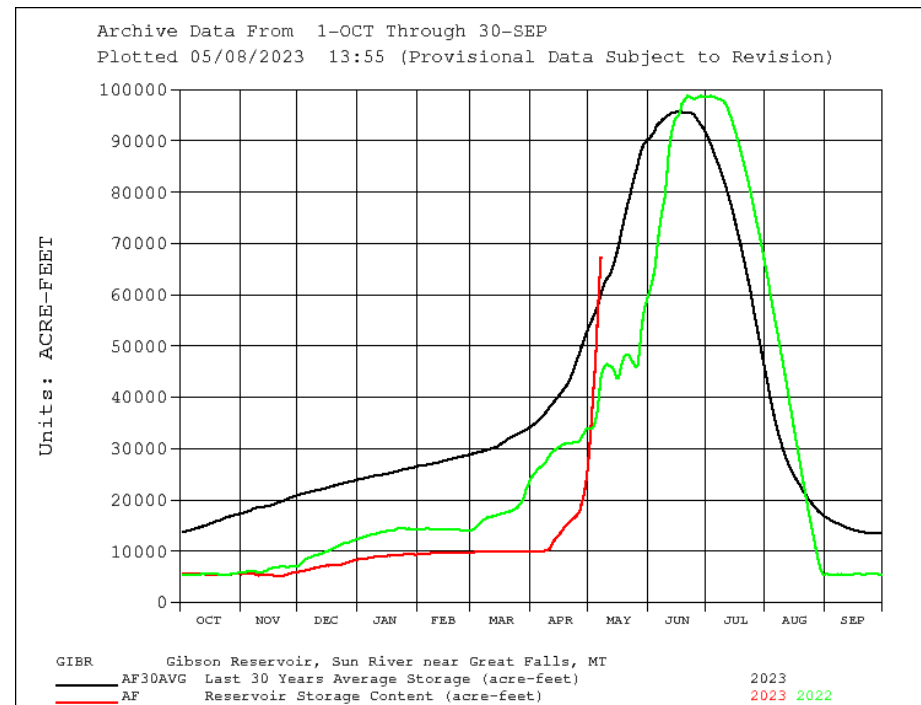
Operations Review

April inflows totaled 22.3 kaf or 52 percent of average, while river release below the Sun River below Diversion Dam averaged near 155 cfs. On May 1, 2023 Gibson Dam elevation was 4,650.85 feet or 25,925 acre-feet. Hot temperatures started the snowmelt runoff early in May causing Gibson Reservoir to fill quickly. The below graphs summarize the inflows, releases, and storage content throughout water year 2023.

Gibson Dam Inflow & Releases over Diversion Dam (cfs)

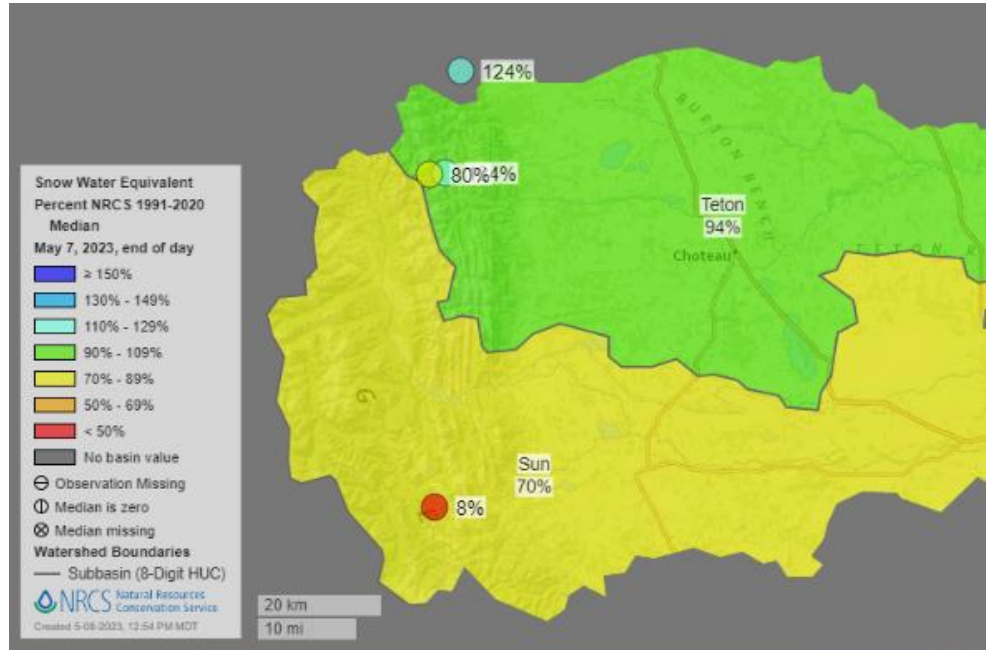
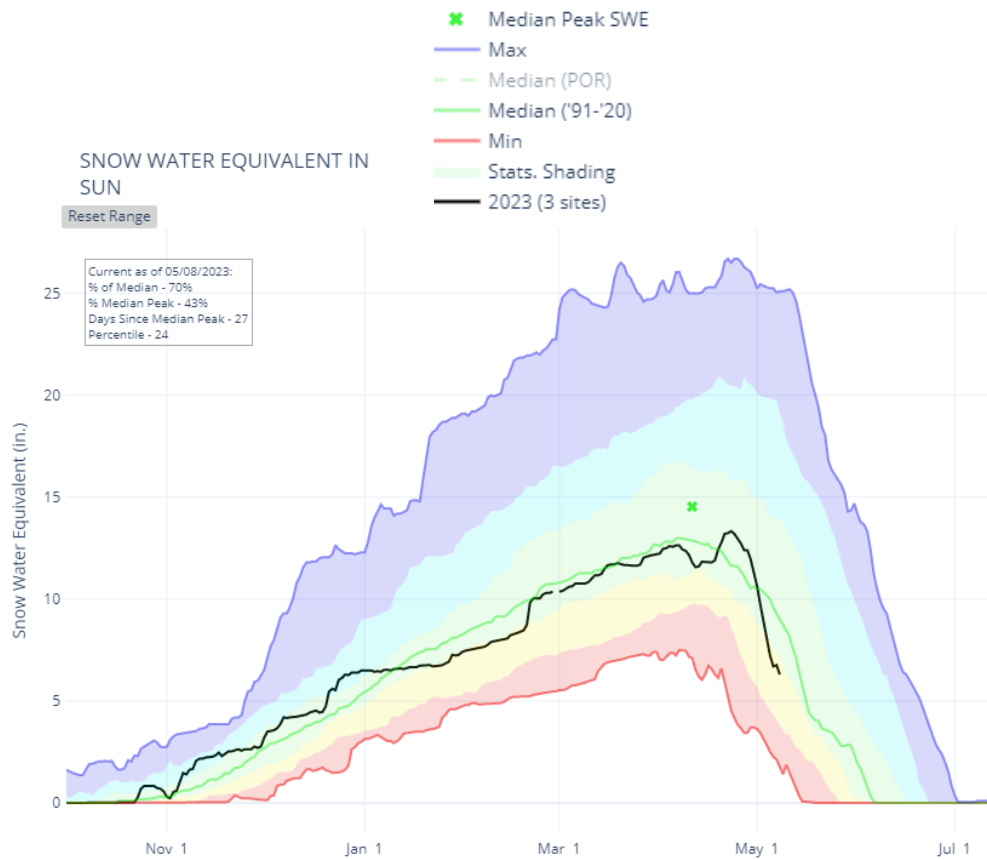


Gibson Dam Storage (af)



Snowpack & Spring Runoff Forecast

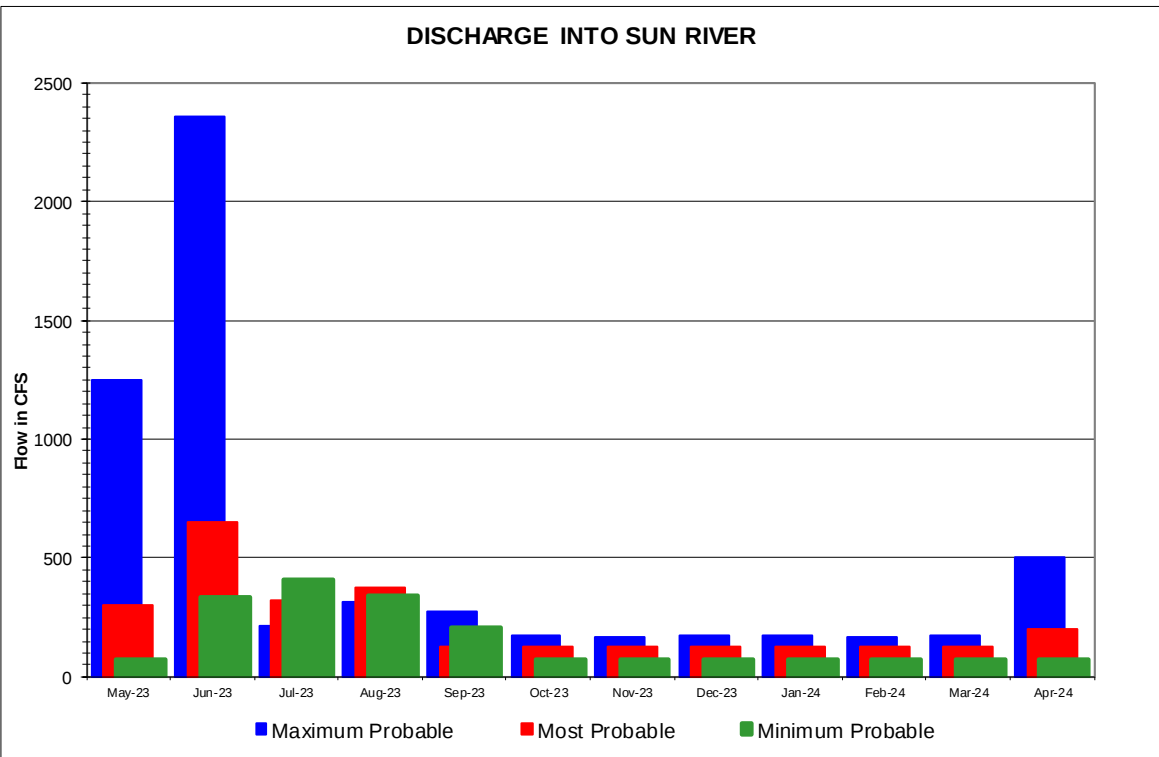
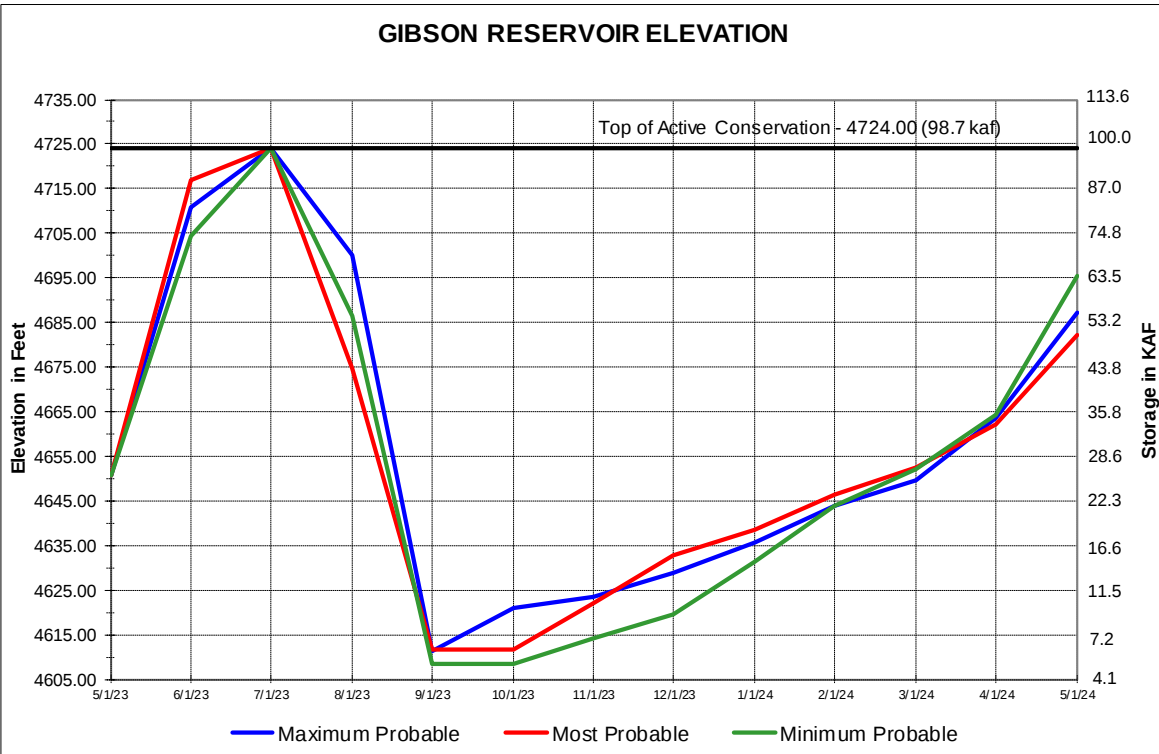
The below Snow Water Equivalent graph is a composite of SNOTEL sites within the Sun River Basin that is managed by the Department of Natural Resource and Conservation Service (NRCS). As of May 8, 2023, the snowpack is 70 percent of median. The May 1st SNOTEL data along with streamflow data was used to compute a May through July runoff inflow forecast volume into Gibson Reservoir of 293,000 acre-feet, or 82 percent of average.



Gibson Dam Operating Outlook

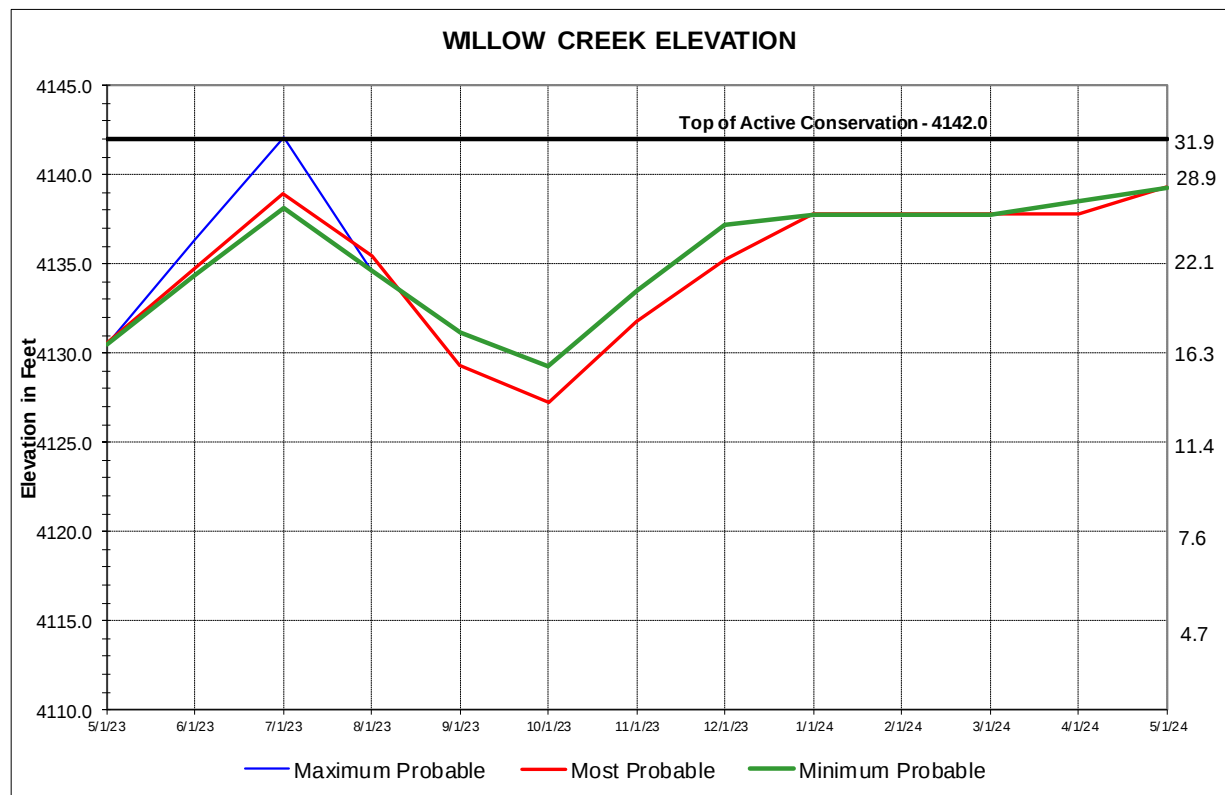
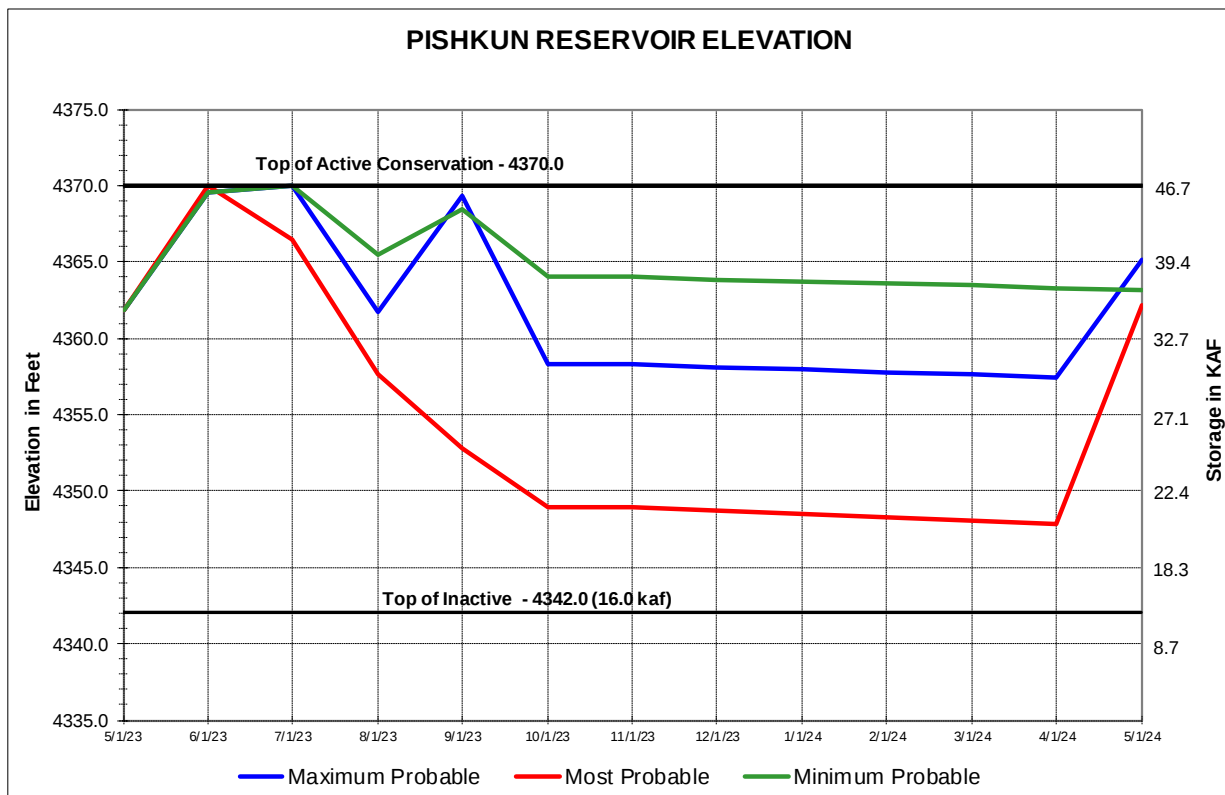
The graphs below depict a range of possible reservoir elevations at Gibson Dam and monthly average river releases below Diversion Dam over time. The most probable plan is based upon the May through July forecast volume. The maximum and minimum plans are based upon ranges of possible inflow volumes due to basin variabilities and forecast uncertainties.

GIBSON RESERVOIR



Pishkun Dam & Willow Creek Dam Operating Outlook

The graphs below depict a range of possible reservoir elevations at Pishkun Dam and Willow Creek Dam. The elevations are determined by the available water supply and irrigation demands in the Sun River Basin.



SUN RIVER MONTHLY OPERATIONS – Maximum Probable Plan

Gibson Reservoir		Initial Cont			25.9 kaf		Maximum Cont			98.7 kaf		Minimum Cont			5.0 kaf	
		Elev			4650.81 ft		Elev			4724.01 ft		Elev			4608.47 ft	
	2023	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total		
Monthly Inflow	kaf	200.0	230.0	65.0	27.0	19.0	15.0	16.0	13.0	13.5	12.0	18.0	59.0	687.5		
Total Release	cfs	2321	3605	1571	1449	255	226	225	153	145	146	137	644			
End-Month Content	kaf	83.2	98.7	67.1	5.0	8.8	9.9	12.5	16.1	20.7	24.3	33.9	54.6			
End-Month Elevation	ft	4711.96	4724.01	4698.26	4608.47	4618.84	4621.39	4626.98	4634.03	4642.27	4648.27	4662.48	4686.39			
Sun River Div Dam		2023	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total	
Gain Below Gibson	cfs	184	215	78	29	22	20	20	24	26	24	34	57			
Rels to WFC	cfs	75	76	0	0	0	75	76	7	0	0	0	0			
Rels to PSC	cfs	1179	1346	1400	1163	0	0	0	0	0	0	0	200			
Total Diversion	cfs	1254	1422	1400	1163	0	75	76	7	0	0	0	200			
Flow Over Div Dam	cfs	1251	2398	249	316	277	171	170	171	171	170	171	501			
Willow Crk Operations		Initial Cont			17.3 kaf		Maximum Cont			33.9 kaf		Minimum Cont			0.1 kaf	
		Elev			4130.52 ft		Elev			4143.40 ft		Elev			4092.69 ft	
	2023	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total		
Native Inflow	kaf	3.0	4.0	2.0	1.0	0.8	0.8	0.7	0.5	0.5	0.5	1.0	1.4	16.2		
Total Inflow	kaf	6.9	7.8	2.0	1.0	0.8	4.7	4.5	0.8	0.5	0.5	1.0	1.4	31.9		
WCR Dam Rels	kaf	0.0	0.0	12.0	5.0	2.8	0.0	0.0	0.0	0.5	0.5	0.0	0.4	21.2		
End-Month Content	kaf	24.2	32.0	22.0	18.0	16.0	20.7	25.2	26.0	26.0	26.0	27.0	28.0			
End-Month Elevation	ft	4136.38	4142.10	4134.61	4131.17	4129.29	4133.53	4137.16	4137.77	4137.77	4137.77	4138.52	4139.26			
Pishkun Operations		Initial Cont			35.0 kaf		Maximum Cont			46.8 kaf		Minimum Cont			16.0 kaf	
		Elev			4361.78 ft		Elev			4370.07 ft		Elev			4341.99 ft	
	2023	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total		
Rels to PSC	kaf	72.5	80.1	86.1	71.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	322.1		
Total Inflow	kaf	58.0	65.7	73.2	60.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.1	267.8		
PSH Dam Rels	kaf	47.0	65.0	85.0	50.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	262.0		
End-Month Content	kaf	46.0	46.7	34.9	45.7	30.7	30.7	30.5	30.3	30.1	29.9	29.7	39.6			
End-Month Elevation	ft	4369.54	4370.00	4361.71	4369.34	4358.29	4358.29	4358.12	4357.95	4357.77	4357.59	4357.41	4365.15			
Greenfields Irrig		2023	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total	
GID Delivery	kaf	47.0	65.0	85.0	50.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	262.0		

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http://www.usbr.gov/gp/lakes_reservoir/wareprts/main_menu.html
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