

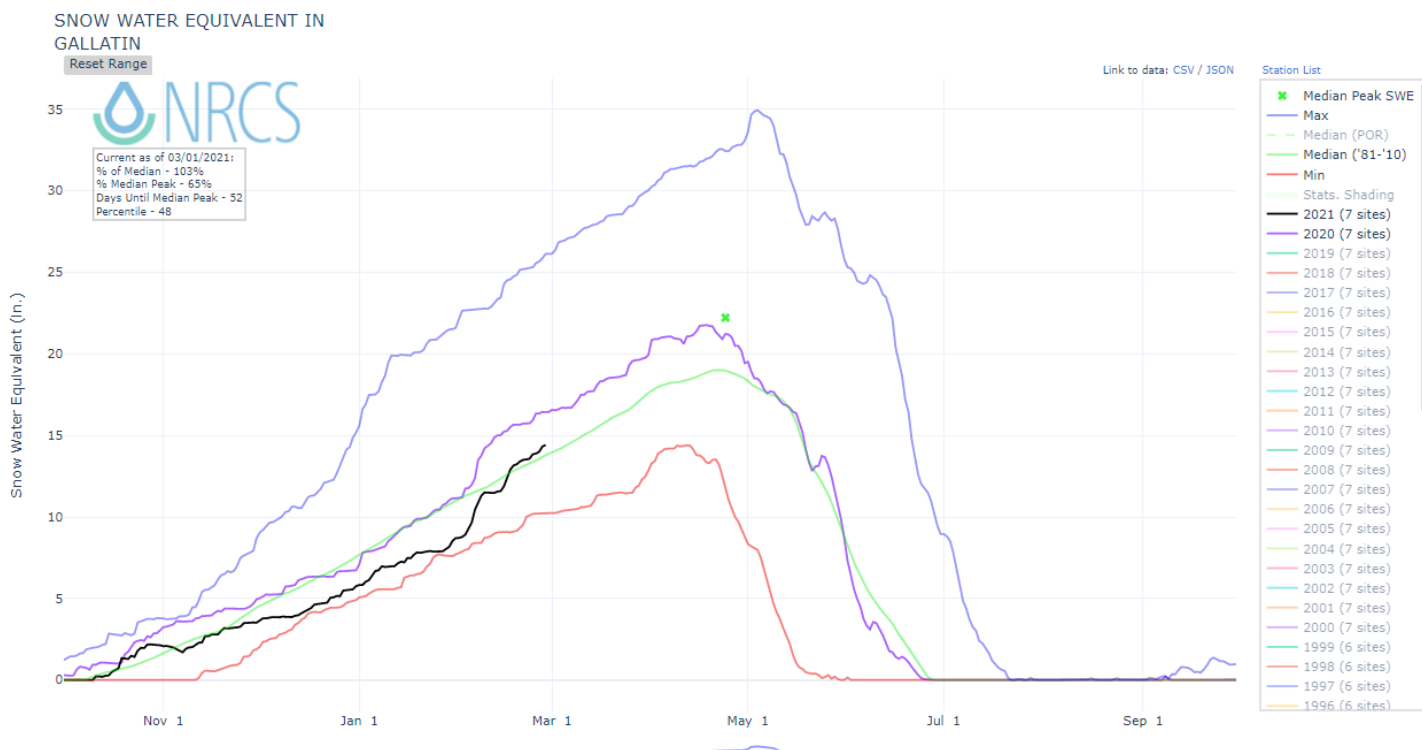
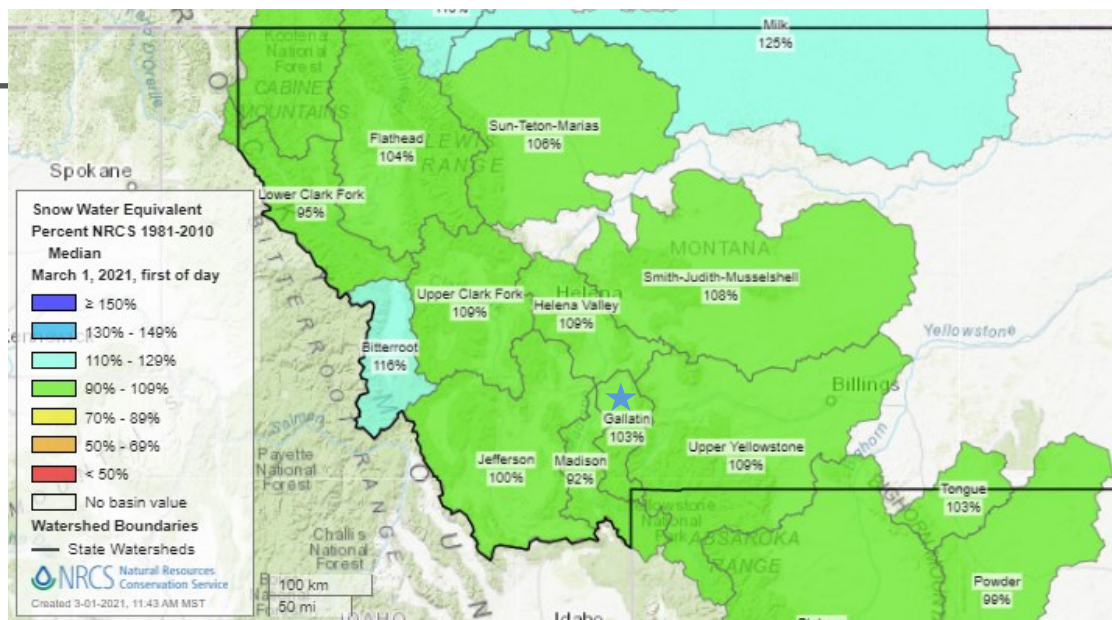
Gallatin County Water Supply Outlook

February 2021

Snowpack Data

Gallatin River Basin

★ = Gallatin River Basin



SNOWPACK SUMMARY (Water Year (WY) = October 1st—September 30)

*Data current as of February 28th

We are currently in Water Year 2021 (black line). The Snow Water Equivalent (SWE) was above normal (median) within the Gallatin River Basin on February 28th, 2021 at 14.4 inches (a 5.7 inch increase since last month). The SWE on February 28th, 2020 (central purple line) was at 16.4 inches. The Gallatin River Basin is currently at 103% of the normal SWE from 1981-2010. Detailed end-of-month SNOTEL site information follows.

Snowpack Data

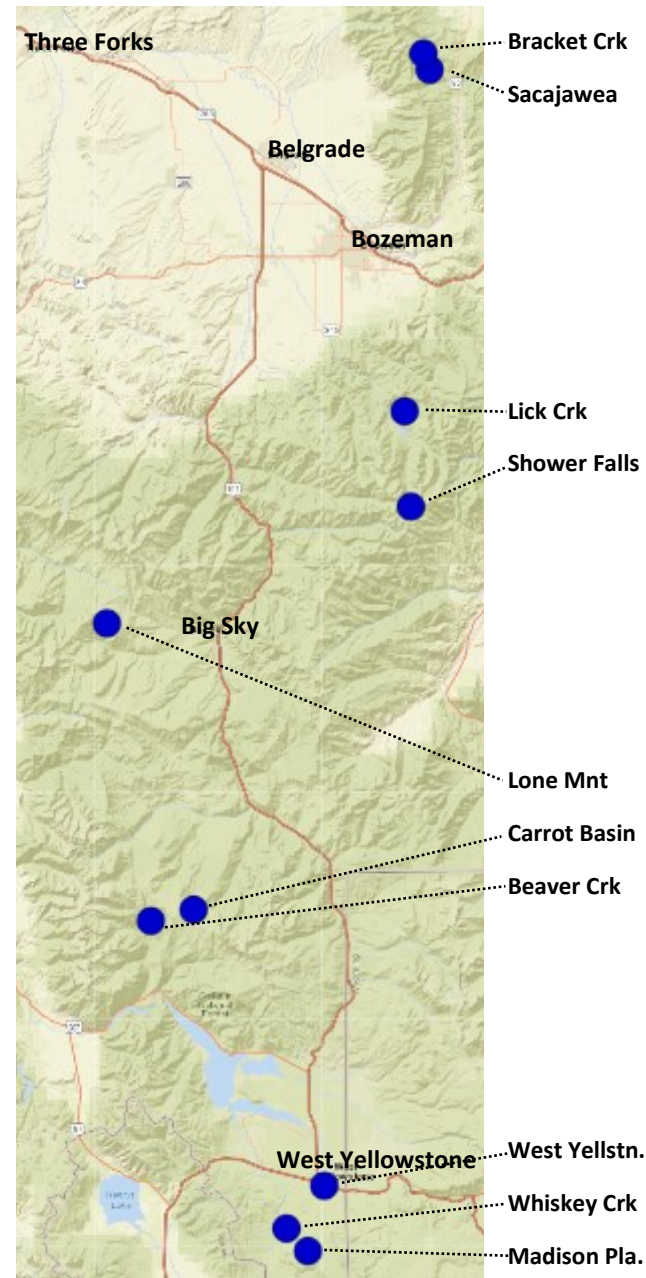
Gallatin River Basin—February 2021

Gallatin Valley Region (Bozeman-Belgrade-Four Corners)					
Station Name	Date	Snow Depth (in)	SWE (in)	SWE % Normal	Normal SWE 1971-2000 (in)
Brackett Creek	February 2020	60	19.0	112	17.0
	February 2021	64	17.1	101	
Sacajawea	February 2020	50	14.1	118	12.0
	February 2021	47	11.8	98	

Hyalite Region (Gallatin Gateway)					
Station Name	Date	Snow Depth (in)	SWE (in)	SWE % Normal	Normal SWE 1971-2000 (in)
Lick Creek	February 2020	43	10.5	111	9.5
	February 2021	38	9.2	97	
Shower Falls	February 2020	84	22.6	130	17.4
	February 2021	73	18.9	109	

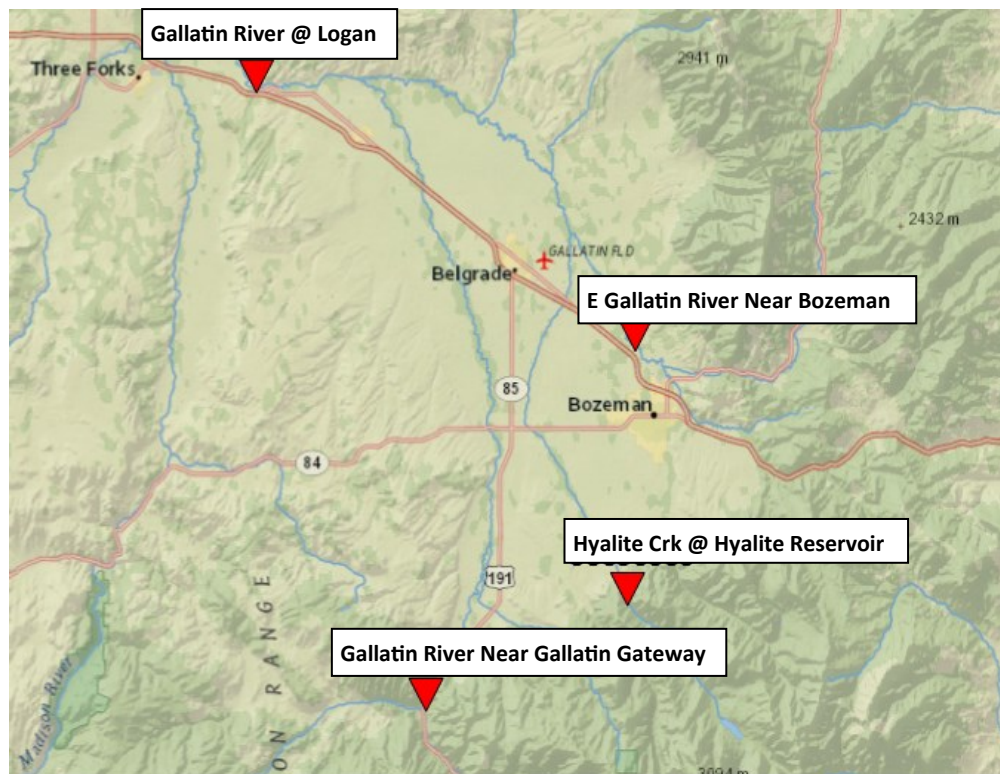
Lee Metcalf Wilderness Region (Big Sky)					
Station Name	Date	Snow Depth (in)	SWE (in)	SWE % Normal	Normal SWE 1971-2000 (in)
Beaver Creek	February 2020	50	13.8	95	14.5
	February 2021	41	11.3	78	
Carrot Basin	February 2020	64	19.1	85	22.6
	February 2021	71	18.6	82	
Lone Mountain	February 2020	60	16.9	113	15.0
	February 2021	52	14.1	94	

West Yellowstone Region					
Station Name	Date	Snow Depth (in)	SWE (in)	SWE % Normal	Normal SWE 1971-2000 (in)
Madison Plateau	February 2020	56	16.4	78	20.9
	February 2021	63	16.2	78	
West Yellowstone	February 2020	32	8.8	79	11.2
	February 2021	36	8.8	79	
Whiskey Creek	February 2020	42	11.8	82	14.4
	February 2021	48	11.4	79	



Streamflow Data

Gallatin River Basin—February 2021



March 1st Gallatin Watershed Streamflow					
Station Name	2021 Discharge (cfs)	% Normal	Normal Discharge (cfs)	2020 Discharge (cfs)	Period Of Record (Yrs)
Gall At Logan	Ice	N/A	696	699	104
E Gall near Bozeman	Ice	N/A	59	55.9	6
Hyalite Cr	Ice	N/A	17	22.6	66
Near Gallatin Gateway	258	89	289	303	90

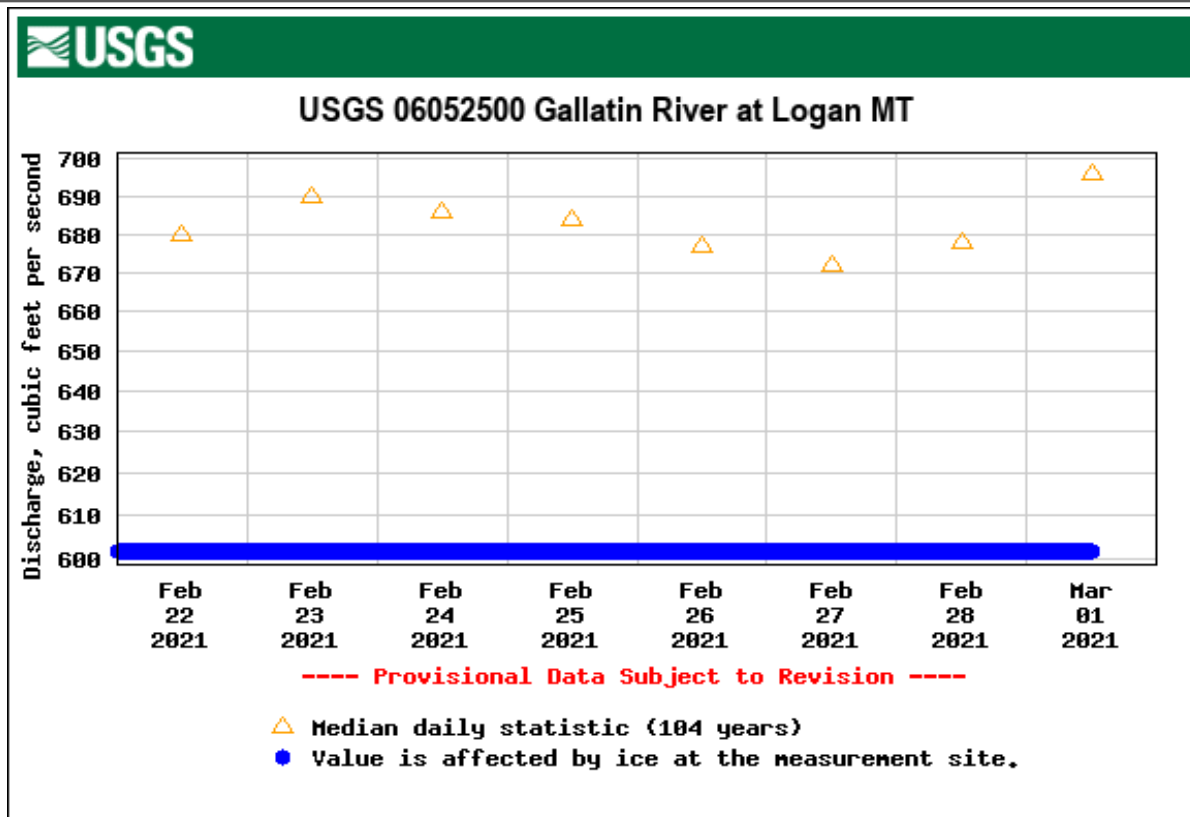
STREAMFLOW SUMMARY

*Data current as of March 1st

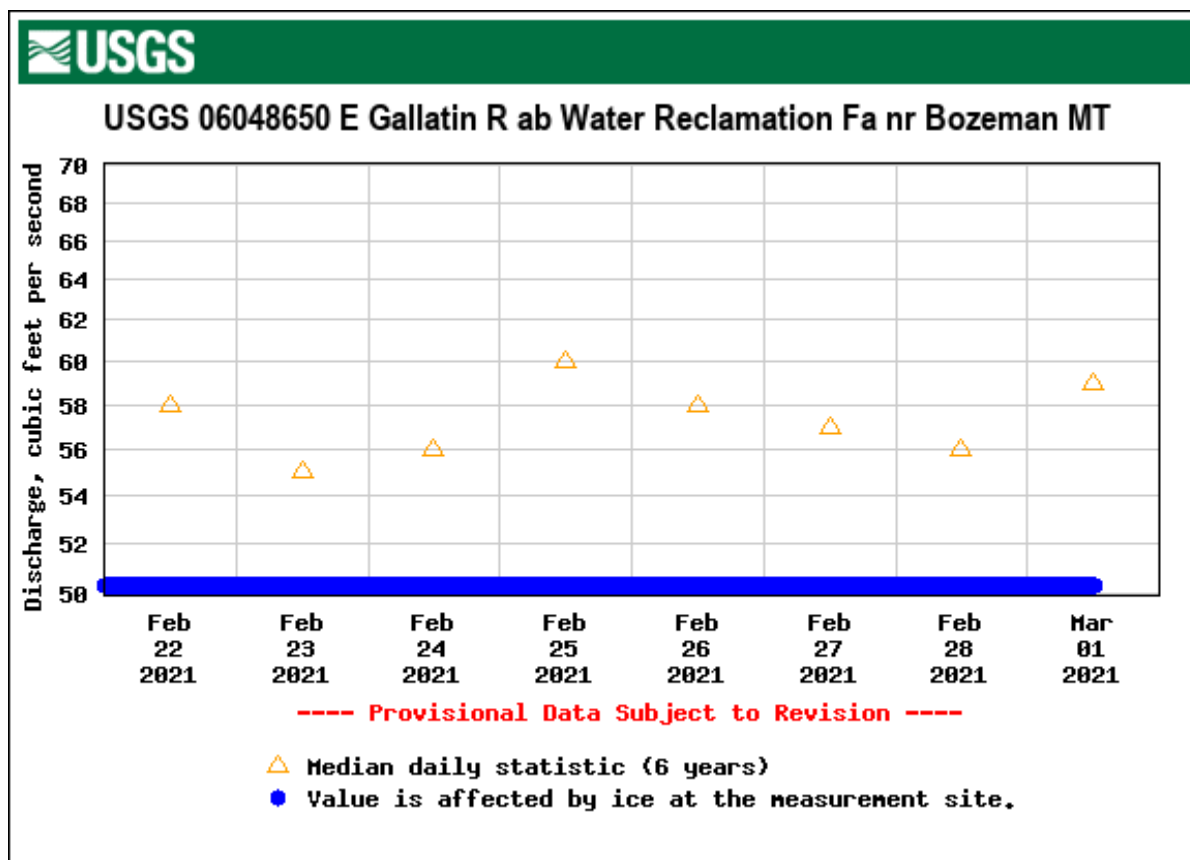
Discharge values were affected by ice for three of the four sites. The streamflow for the Gallatin River near Gallatin Gateway was below normal (89%). Streamflow graphs for each site follows.

Streamflow Data

Gallatin River Basin—February 2021



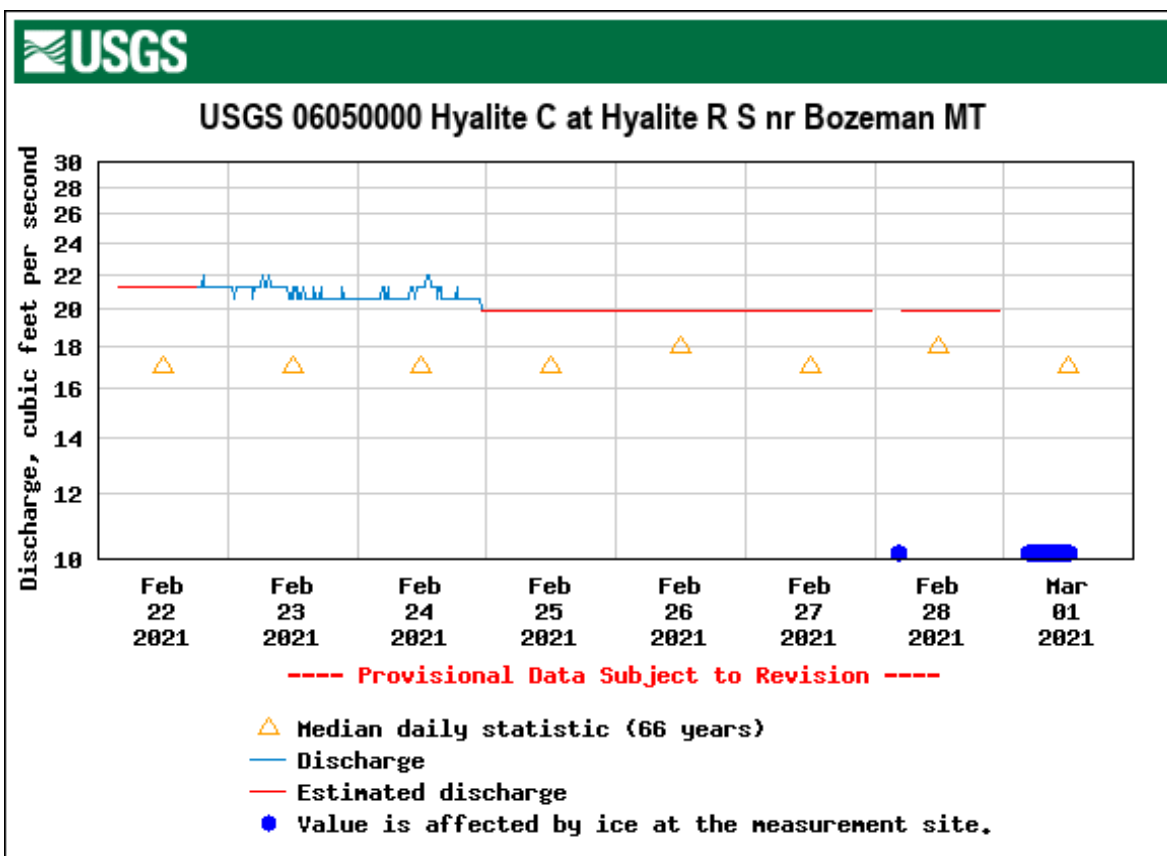
March 1st, 12:00:00—Discharge value affected by ice.



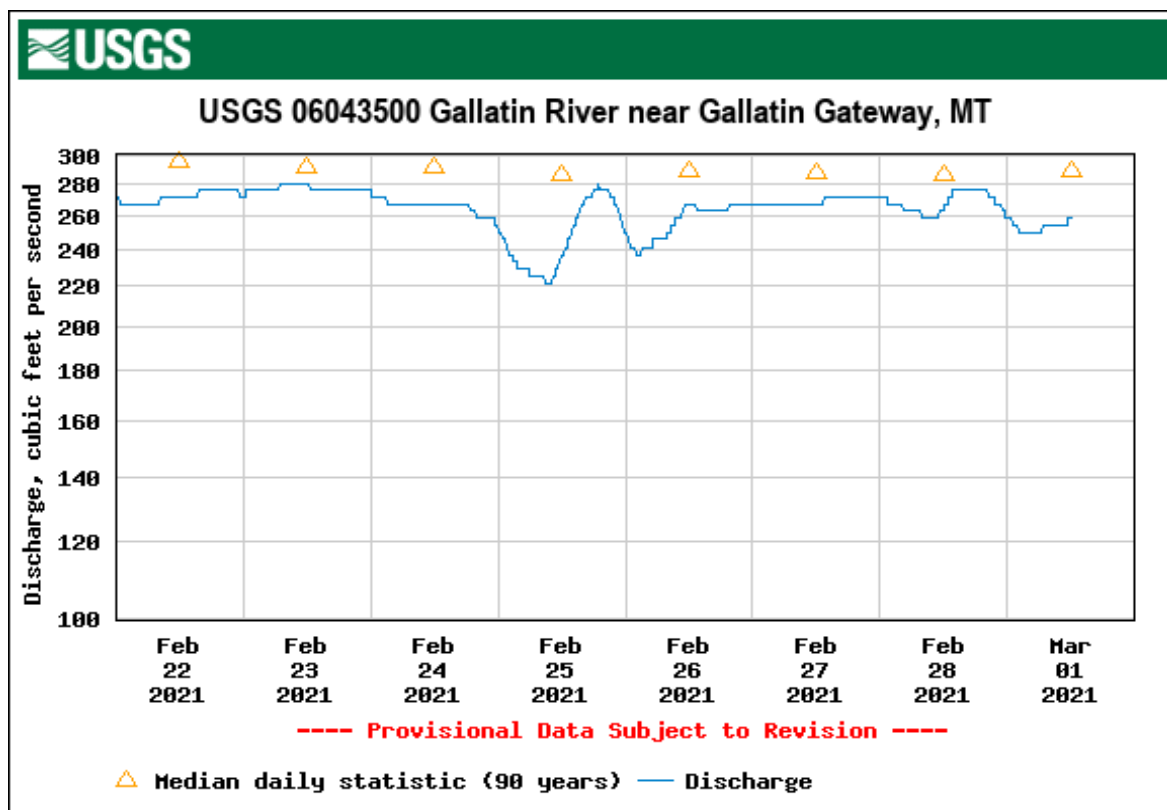
March 1st, 12:30:00—Discharge value affected by ice.

Streamflow Data

Gallatin River Basin—February 2021



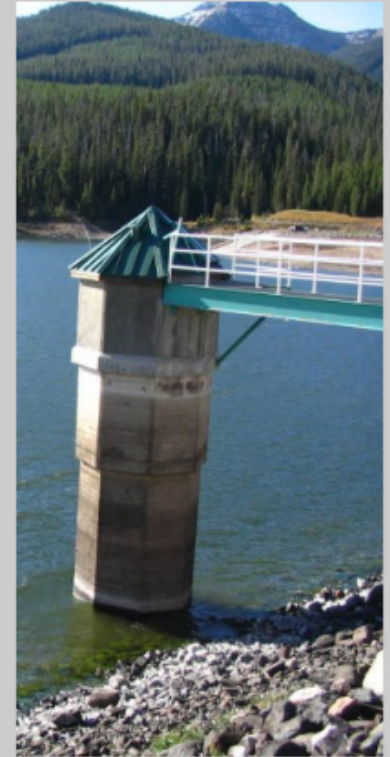
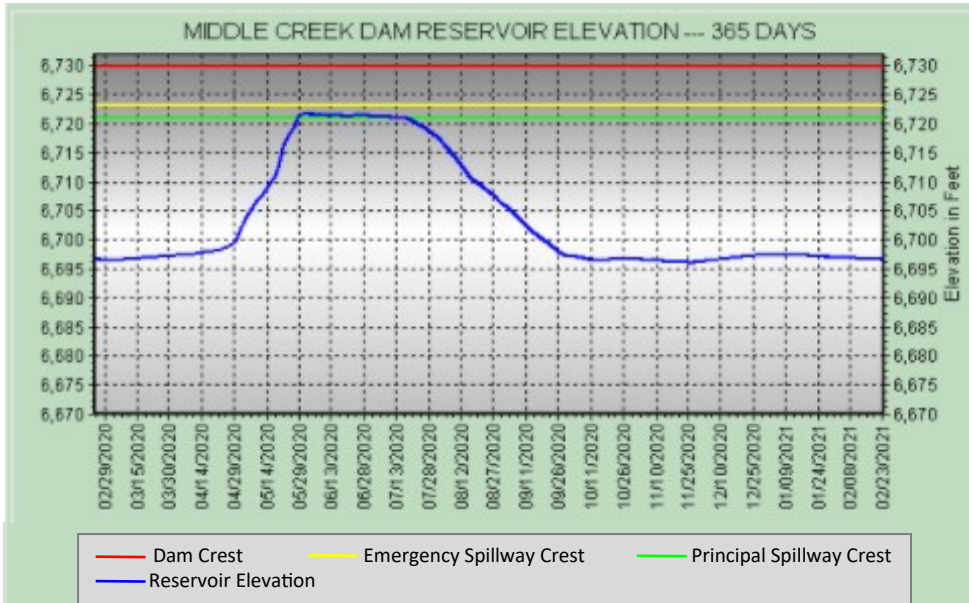
March 1st, 12:30:00—Discharge value affected by ice.



March 1st, 12:00:00—Discharge is below normal.

Water Storage Data

Middle Creek Dam, Hyalite Reservoir — February 2021



TIME OF LAST READING	2/23/2021 1:00 PM	REFERENCE INFORMATION	FT (MSL)	AC-FT
RESERVOIR ELEVATION	6,696.6 FT	DAM CREST	6730	12,790
RESERVOIR VOLUME	5,398 AF	EMERGENCY SPILLWAY CREST	6723	10,707
		PRINCIPAL SPILLWAY CREST	6721	10,184
		LOWEST USEABLE ELEVATION	6637	0

STATION LOCATION	TIME OF LAST READING	STAGE (FT)	DISCHARGE (CFS)
EAST FORK OF HYALITE ABOVE RESERVOIR	3/1/2021 5:15 AM	1.0 FT	3.7 CFS
WEST FORK OF HYALITE ABOVE RESERVOIR	10/24/2020 11:15 PM	0.9 FT	7.4 CFS
MIDDLE CREEK BELOW RESERVOIR	3/1/2021 5:45 AM	0.7 FT	18.4 CFS

****PROVISIONAL DATA SUBJECT TO REVISION****

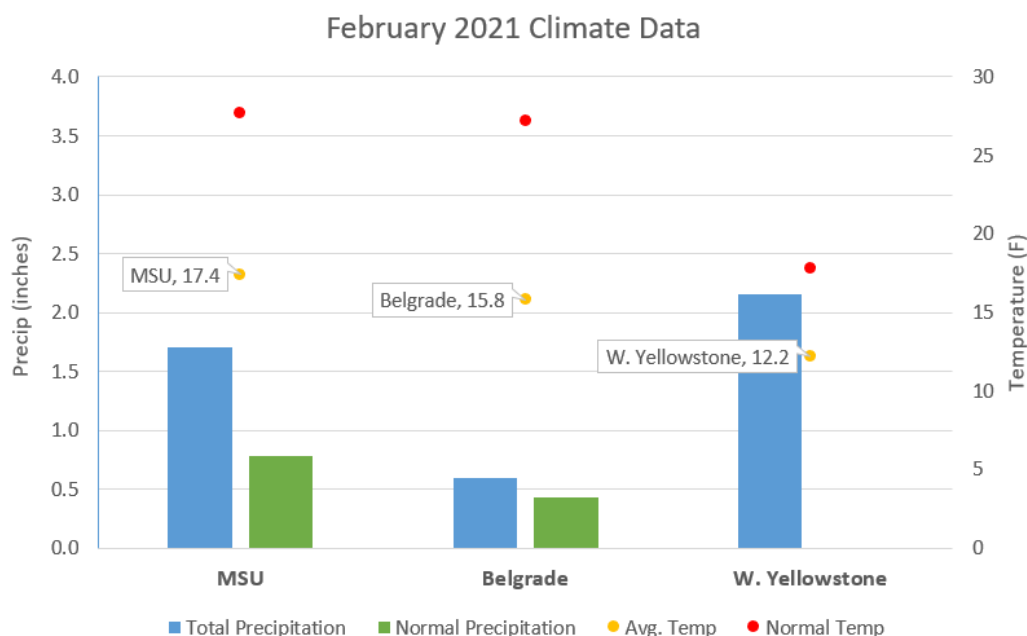
RESERVOIR SUMMARY

*Data current as of March 1st

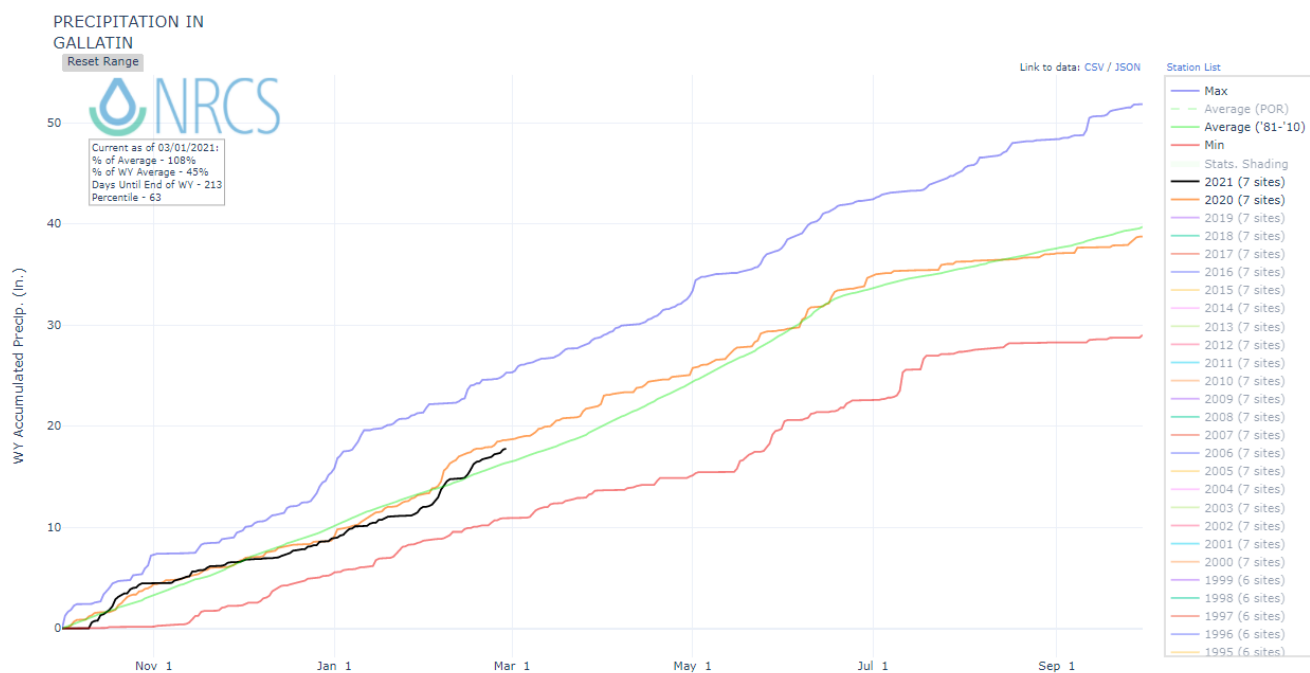
Middle Creek Dam Reservoir elevation is 6,696.6 ft which is under the principal spillway crest (6,721 ft.). The reservoir elevation has decreased by 0.4 ft since February 1st (date of last WSO report). Reservoir volume is 5,398 acre-ft.; which is 58 acre-ft. less than February 1st.

Climate Data

Gallatin County—February 2021



Above graph depicting ACIS climate data representing the entire month of February.



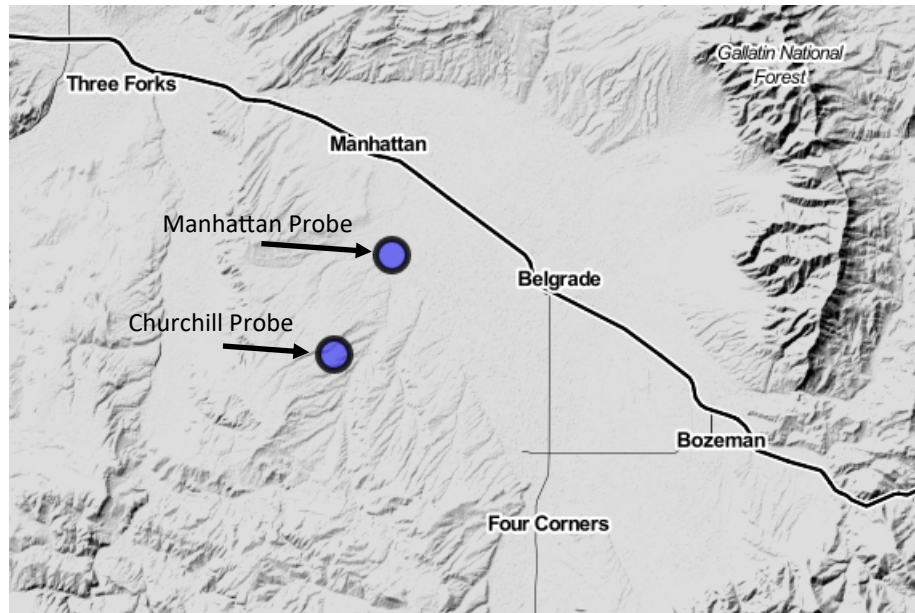
PRECIP & TEMP SUMMARY (Water Year (WY) = October 1st—September 30)

*Data is current as of February 28th

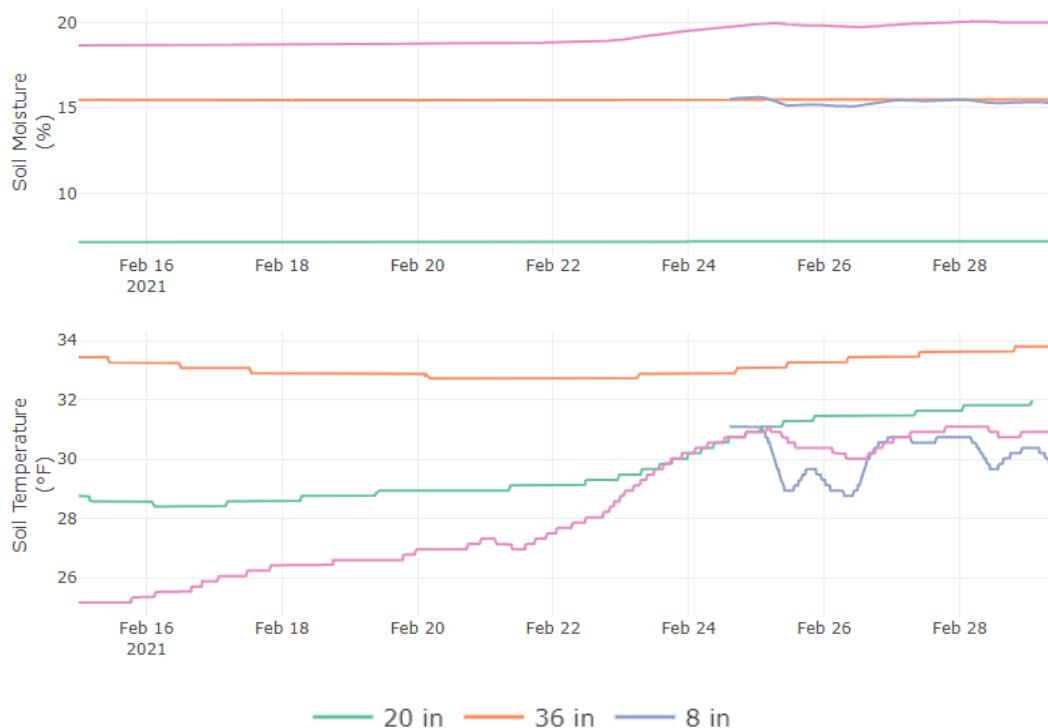
We are currently in Water Year 2021 (black line). The total accrued precipitation for the Gallatin River Basin as of February 28th, 2021 was above average (median) at 17.8 inches (NRCS graph). The total accrued precipitation for WY 2020 on February 28th, 2020 was 18.6 inches (NRCS graph orange line). Average temperatures have decreased at all sites since January 2021 (ACIS graph). Precipitation levels for the sites included in the ACIS graph are currently showing above normal precipitation for the month of February due to the amount of snowfall that occurred this month. West Yellowstone collected a total of 2.16 inches of precipitation in February which was actually 0.37 inches less than January.

Soil Moisture Data

Mesonet Stations—February 2021



Manhattan Soil Probe Depth (in)	Soil Temp (°F)	Soil Water Content (%)
4" - Surface	29.66	15.26
8" - Shallow rooting	30.92	15.50
20" - Deep Rooting	31.82	7.18

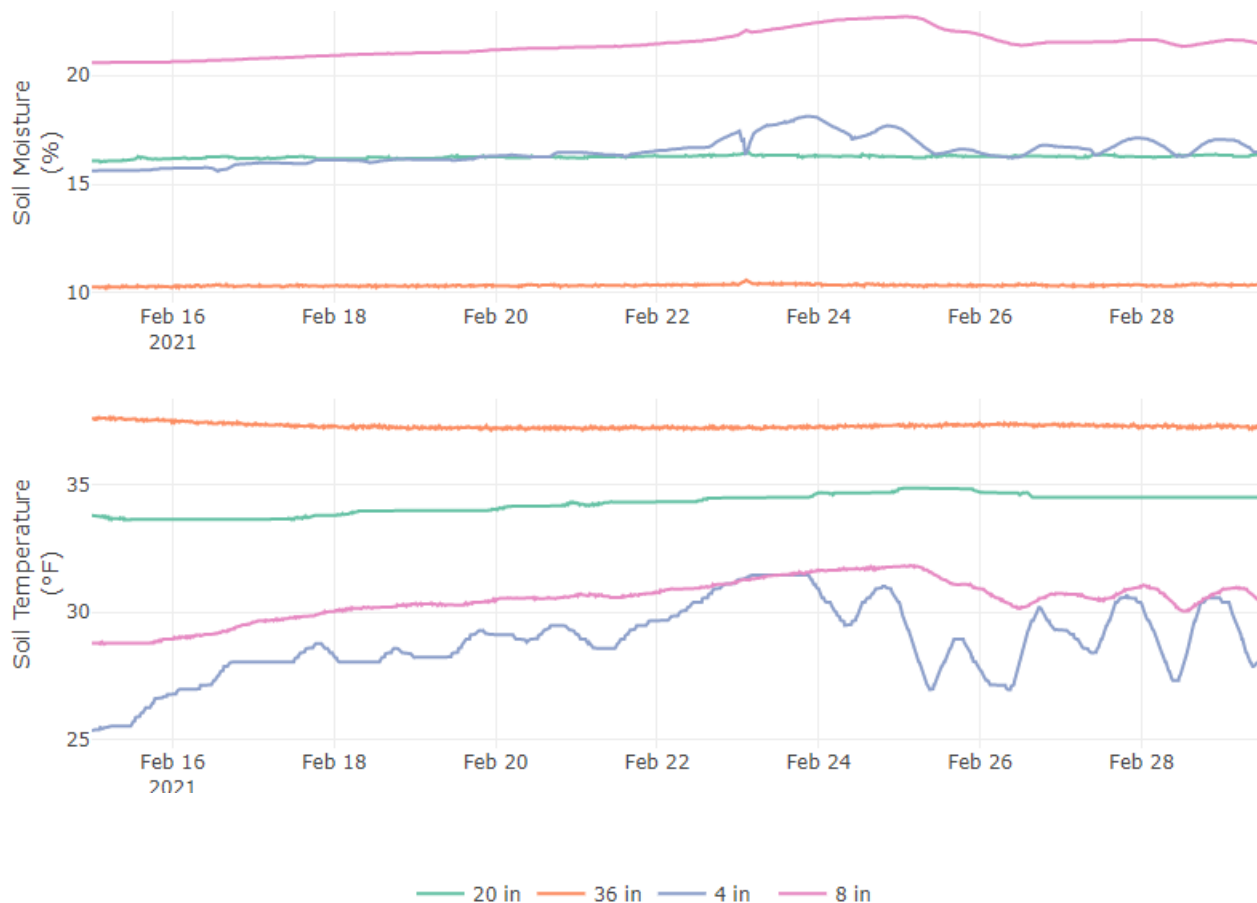


Soil moisture and temperature data for the Manhattan probe on January 31st, 2021 is shown in the above table and graphs. See next page for the Churchill probe information for January 31st, 2021 and soil moisture summary data.

Soil Moisture Data

Mesonet Stations—February 2021

Churchill Soil Probe Depth (in)	Soil Temp (°F)	Soil Water Content (%)
4" - Surface	27.86	16.27
8" - Shallow rooting	30.02	21.32
20" - Deep Rooting	34.52	16.27



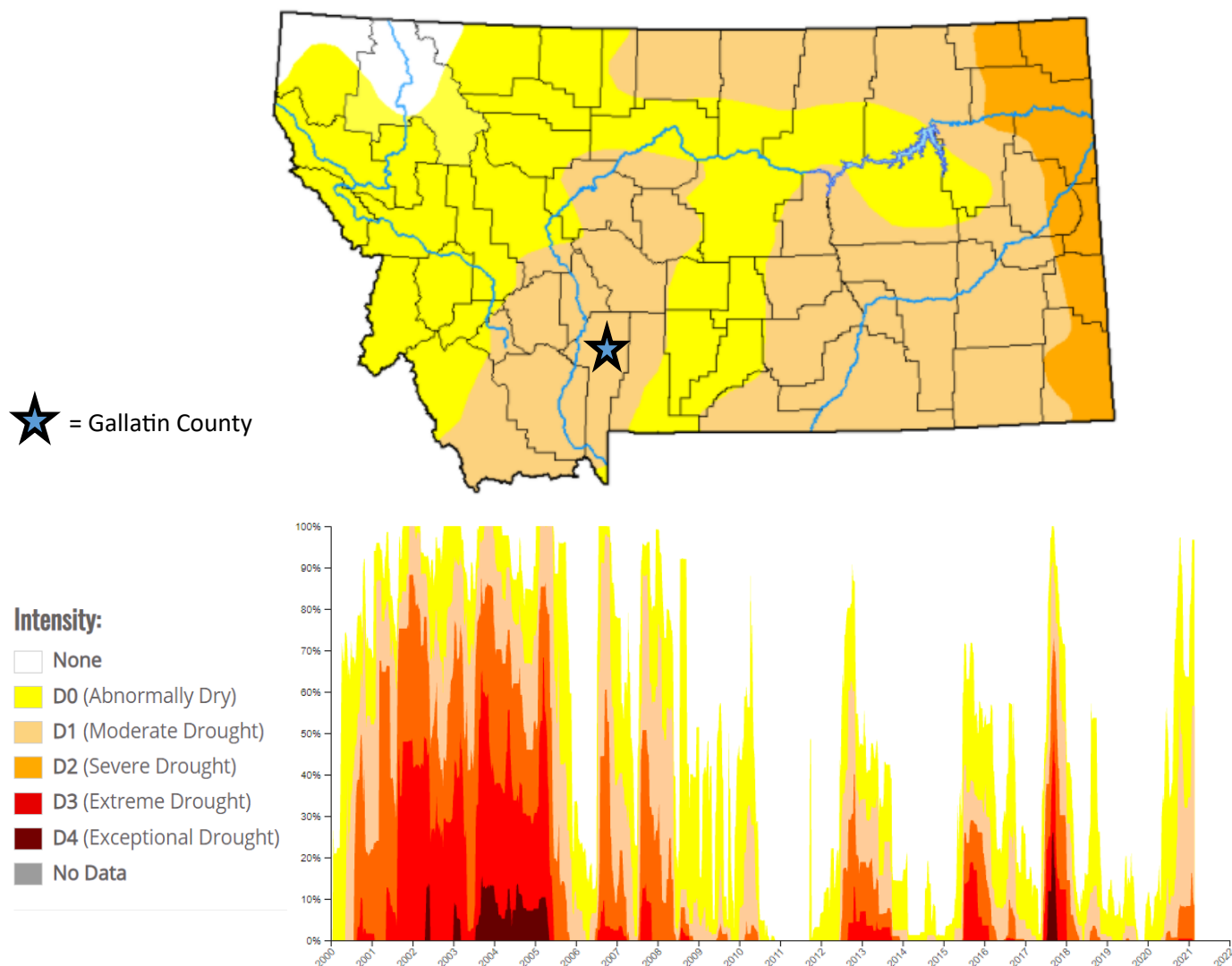
SOIL MOISTURE SUMMARY

*Data current as of February 28th

Despite the extreme weather we've had this last month, the soil moisture and temperatures have stayed fairly similar to last month's readings at most depths. The biggest differences can be seen at the Manhattan site. The soil temperatures at the 8" and 20" rooting depths were actually higher than last month. The soil moisture at the 8" depth lowered from last month but the 20" depth stayed basically the same. We also were able to get a reading at the 4" surface depth for the first time in a few months. The soil readings at the Churchill site stayed pretty much the same except for decreases in moisture and temp at the 4" surface depth.

Drought Index Data

Gallatin River Watershed—February 2021



DROUGHT INDEX SUMMARY:

*Data is current as of February 23rd

40.12 % of Montana is experiencing abnormally dry conditions at this time. Impacts include low soil moisture, poor dryland crop germination, dry pastures, and increase in fire danger, and low streamflows which can affect recreational fishing.

47.99 % of Montana is experiencing moderate drought conditions. Impacts include some damage to crops and pastures, some water shortages developing, and voluntary water-use restrictions requested.

8.55 % of Montana is experiencing severe drought conditions. Impacts include some damage to crops and pastures, water shortages becoming common, and water restrictions imposed.

Gallatin County is experiencing mostly moderate drought conditions besides the very southern tip of the county which is experiencing abnormally dry conditions. Overall drought intensity throughout the state has decreased since last month due to the February snow storms.

Gallatin County Water Supply Outlook

Source Information & Helpful Links

Gallatin Conservation District:

- [Archive of Reports](#)
- [Understanding the Gallatin Water Supply Outlook Report Guide](#)

Snowpack:

- [USDA / NRCS Interactive Map](#)
- [Montana Snow Survey Homepage](#)
- [NRCS / NWCC National Water & Climate Center](#)

Streamflow:

- [USGS Real Time Streamflow](#)
- [State of Montana Gaging Stations](#)
- [DNRC Water Right Query System](#)

Water Storage:

- [DNRC Water Projects—Middle Creek Real Time Data](#)
- [Middle Creek Early Warning System](#)
- [BOR—Montana Lakes and Reservoirs](#)
- [DNRC State Water Projects—Reservoir Storage Data](#)

Climate:

- [ACIS Database](#)
- [NRCS Montana Basin-Wide Products](#)
- [Montana Snow Survey Homepage](#)
- [US Climate Data](#)

Soil Moisture:

- [Montana Mesonet](#)
- [DNRC Drought Status by County](#)

Drought:

- [US Drought Portal](#)
- [US Drought Monitor](#)

Helpful Partner Websites:

- [Association of Gallatin Agricultural Irrigators](#)
- [Department of Natural Resources & Conservation](#)
- [Gallatin County MSU Extension Office](#)
- [Gallatin Local Water Quality District](#)
- [Gallatin River Task Force](#)
- [Gallatin Watershed Council](#)
- [Montana Fish, Wildlife, & Parks](#)
- [Natural Resource Conservation Services](#)
- [One Montana](#)