

## Snowpack – Overview

Only two meaningful storms impacted most of the state during the month of January, the remaining periods were dominated by high pressure with well below average temperatures. So far this winter there has been a lot of national talk about the “Atmospheric River”, which has been a direct stream of moisture that has been focused on the states south of us. The high pressure which has steered this river left the northern and central basins “high and dry”, while southern basins along the edge of the systems have seen some increase in basin percentages over the month. Northern basins east and west of the divide saw significant decreases in snowpack percentages from January 1<sup>st</sup> due to the lack of snowfall during January.

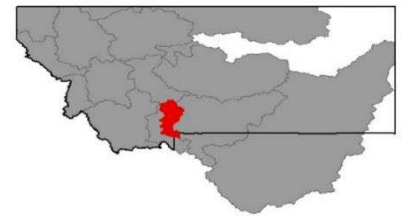
The southern basins (Upper Yellowstone, Lower Yellowstone) are near to above normal for this date, due to the favored location along the southern border. All other basins in the state are well below normal for snowpack on Feb 1<sup>st</sup>. Compared to last year the southern basins are well above Feb 1 totals, while the remaining basins are below last year at this time. The one exception is the Sun-Teton-Marias River basin which is above last year (record low Feb 1 totals in 2016), but still well below normal for this date.

On Feb 1<sup>st</sup> typically 55 to 65% of our peak seasonal snowpack has accumulated in the mountains of Montana. While this leaves some room for improvement, and a major change will need to occur and yield above average snowfall for the remainder of winter, and through the spring months.

### Snow Water Equivalent

<b>2/1/2017</b>	<b>% Normal</b>	<b>% Last Year</b>
Columbia River Basin	76	85
Kootenai in Montana	71	84
Flathead in Montana	77	92
Upper Clark Fork	77	79
Bitterroot	78	85
Lower Clark Fork	64	73
Missouri River Basin	80	81
Jefferson	79	71
Madison	87	92
Gallatin	78	80
Headwaters Mainstem	85	77
Smith-Judith-Musselshell	62	59
Sun-Teton-Marias	82	132
St. Mary-Milk	73	106
Yellowstone River Basin	115	149
Upper Yellowstone	104	116
Lower Yellowstone	125	184
West of Divide	76	85
East of Divide	97	111
Montana State-Wide	80	87

## Gallatin River Basin



Due to the warm temperatures and dry conditions of November, snowpack got off to a very slow start in the Gallatin River basin, and the basin has been behind with regards to snowpack ever since. While there was some marginal improvement during the month of January, the mostly cold and dry conditions experienced during the month left the snowpack below normal for Feb 1<sup>st</sup>. Basin-wide snowpack, which looks at the combined Upper Gallatin, Hyalite and Bridger Range has been close to the lowest on record through this winter, and was approaching the lowest on record at mountain SNOTEL sites on Feb 1<sup>st</sup>. The reprieve from the dry conditions at the end of the month was enough to keep this from happening at most sites. The bad news is, the snowpack in the Hyalite Creek Basin which supplies irrigators and part of the city of Bozeman’s water supply is well below normal for this date. Lick Creek SNOTEL (71%) is currently the second lowest on record, and Shower Falls SNOTEL (79%) is the tied for the lowest on Feb 1<sup>st</sup> SWE with 1981. It speaks volumes that even though they are ranked low, percentage wise they aren’t that far off, and that speaks to the snowfall consistency in the basin.

There is a lot of time to make up ground this spring when the basin is favored for snow and precipitation, but above average snowfall will be needed to make up some of these deficits in snowpack. Even though snowpack is disappointing, the consolation prize is that due to early season October moisture and above normal December snowfall water year-to-date precipitation is still near to above average across the basin.

### Gallatin River Basin Data Summary

<b>Snowpack</b>	<b>Percent of 1981-2010 Normal (Median)</b>	<b>Last Year Percentage of Normal (Median)</b>
UPPER GALLATIN	79%	94%
HYALITE	76%	93%
BRIDGER	77%	110%
<b>Basin-Wide</b>	<b>78%</b>	<b>97%</b>

<b>Precipitation</b>	<b>Monthly Percentage of Average</b>	<b>WYTD Percentage of 1981-2010 Average*</b>	<b>WYTD Last Year Percentage of Average</b>
Mountain Precipitation	80%	121%	106%
Valley Precipitation	79%	136%	117%
<b>Basin-Wide Precipitation</b>	<b>80%</b>	<b>122%</b>	<b>107%</b>

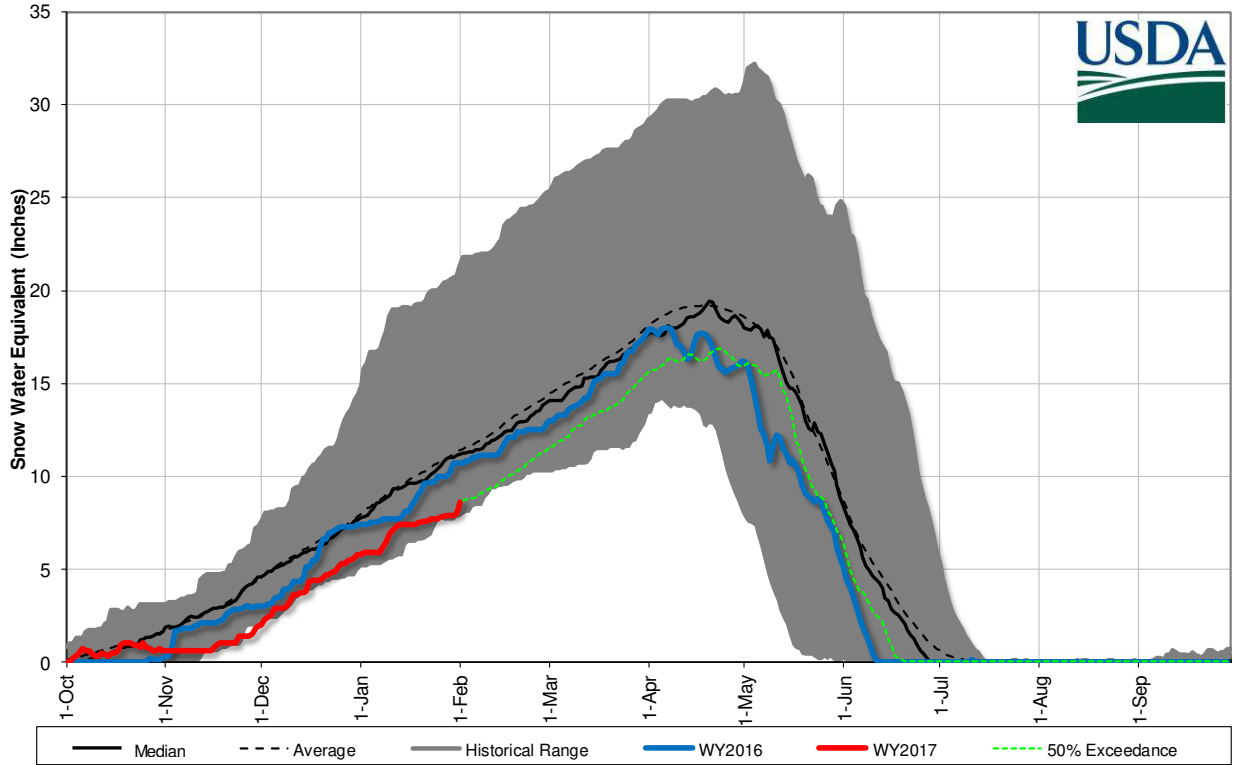
\*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

<b>Reservoir Storage</b>	<b>Percentage of Average</b>	<b>Percentage of Capacity (Total)</b>	<b>Last Year Percentage of Average</b>
<b>Basin-Wide Storage</b>	<b>100%</b>	<b>52%</b>	<b>105%</b>

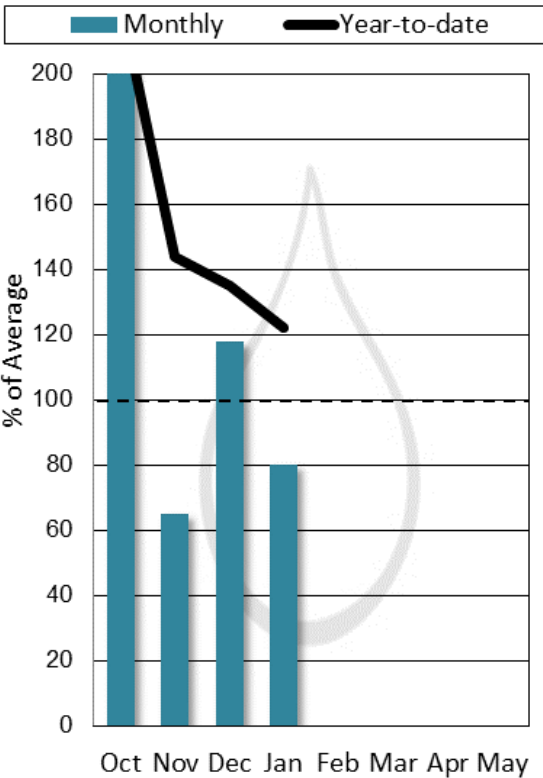
\*See Reservoir Storage Table for storage in individual reservoirs

Middle Creek Res	5.3	5.5	5.3	10.2	<b>100%</b>	<b>52%</b>
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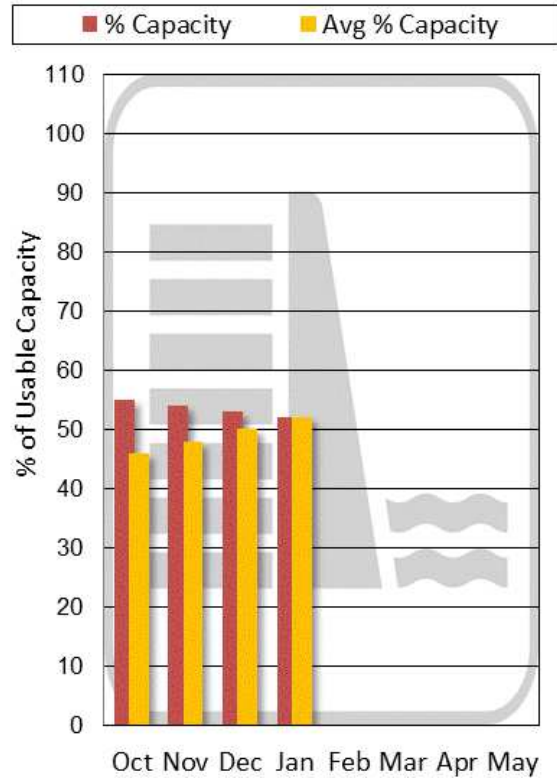
**Gallatin River Basin Snowpack with Non-Exceedence Projections**  
*Based on provisional SNOTEL daily data as of 2/1/2017*



**Mountain and Valley Precipitation**



**End of Month Reservoir Storage**



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.