

# Blackfoot Water Supply Report

## March 7, 2017

Montana Water Supply Report as of March 1<sup>st</sup>, 2017 (from NRCS):

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/mt/snow/waterproducts/basin/>

### Overview

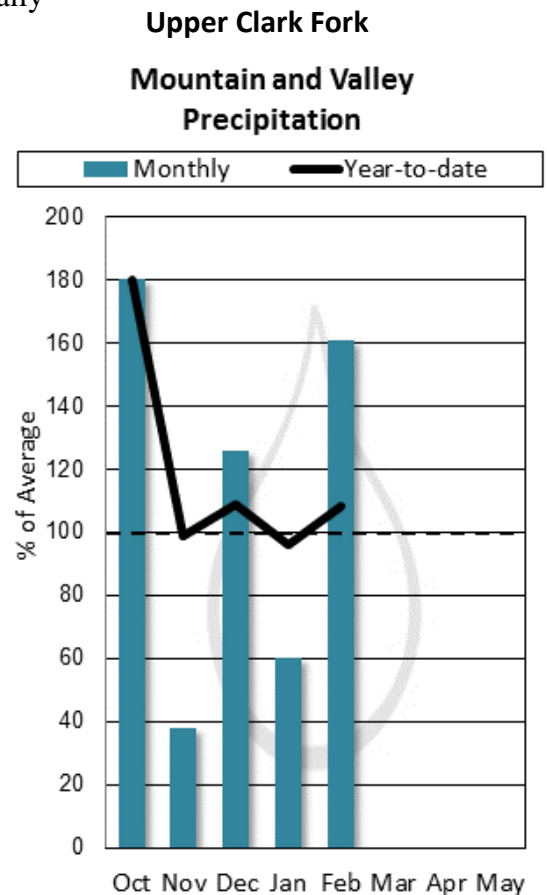
February brought a notable change to the weather patterns that were experienced during the month of January. Record breaking snowfall for the month of February was experienced in northern and southern river basins of the state during the first two weeks of the month. Snow blanketed the Rocky Mountain Front at the beginning of the month, with low elevations and valleys receiving over 3 feet of snow. Flattop Mountain SNOTEL in Glacier National Park set a new record for February snowfall and received 12.5” of snow water during the month, well above the 30 year normal of 5.3” for February. Further south, Cooke City received copious amounts of snow, prompting the first ever “Extreme” avalanche warning for the area when Fisher Creek SNOTEL received 10.9” of SWE between 1/31 and 2/11. State-wide, 12 SNOTEL sites set new records for February totals, and 6 sites were second highest.

All basins experienced substantial improvements over the month, many are now near to above normal for March 1st, and most basins are also near to above last year at this time. There are some sub-basins that remain below normal for this date due to the late onset of snowpack this year and sub-par November and January snowfall. February typically isn’t one of the “big” snow months for Montana, but this year proved otherwise. As we make the transition into spring, precipitation is favored along and east of the Continental Divide. Near normal conditions on this date is great news, but there is still a month to a month and a half before snowpack generally peaks in the mountains of Montana. The next month and a half will play a critical role in the timing and magnitudes of water in the rivers this coming spring and summer.

### Upper Clark Fork River Basin Overview

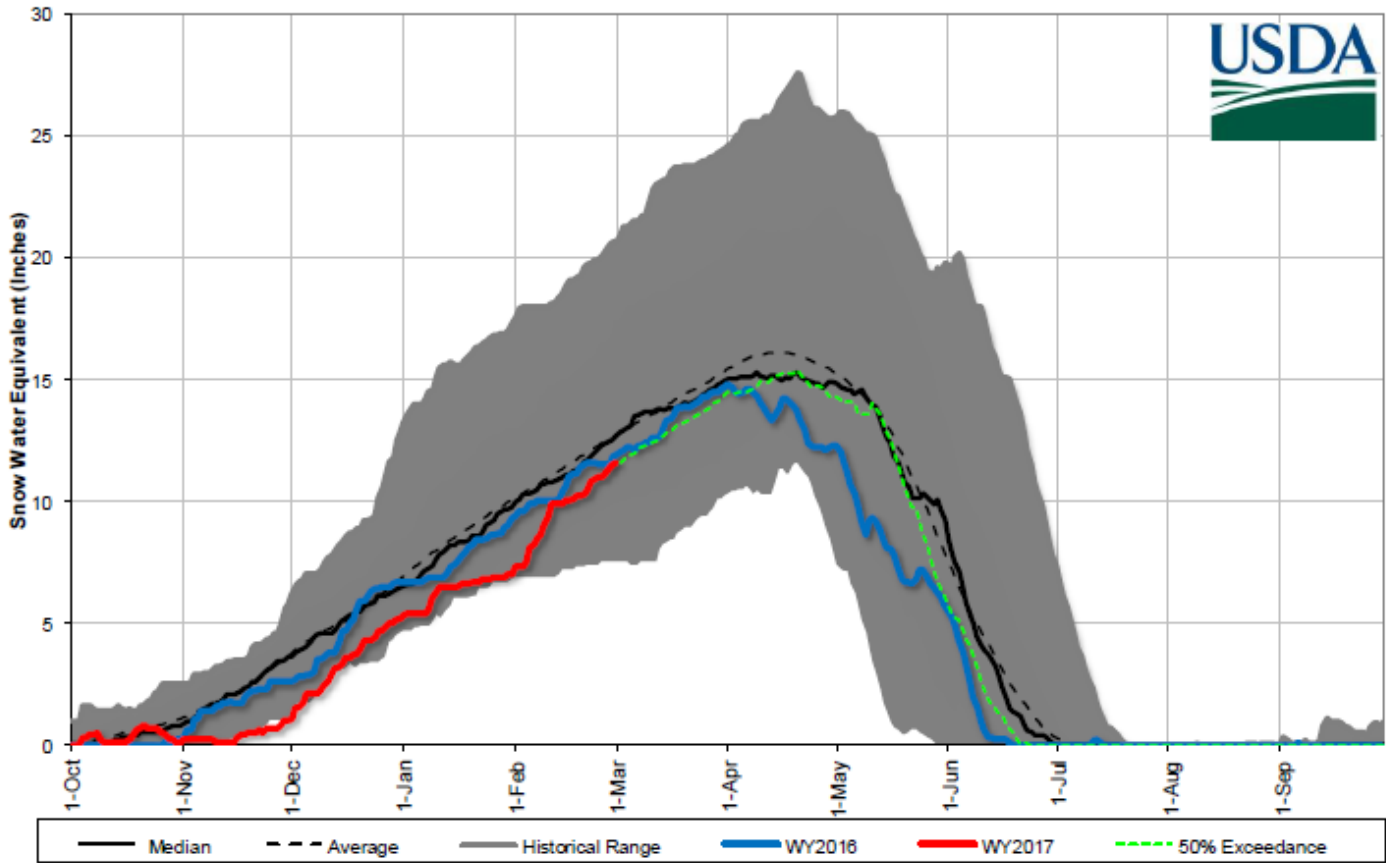
After the prolonged dry spells of January, February came on strong with a series of heavy storms. Both mountain and valley locations received well above average precipitation. The Philipsburg Ranger Station received nearly 300% of its monthly average. Nevada Ridge SNOTEL recorded its second wettest February on record. Water-year totals began the month just below average but by March 1st, totals sat at almost ten percent above normal.

Cold temperatures at the beginning of the month translated all that precipitation into significant snowfall. By the 10th, the basin had already received its entire monthly average of SWE. A respite from the deluge came the following week with warmer and dryer conditions. Precipitation and colder



temperatures returned for the last week and a half of the month and added another 1.5 inches. This brought total snow water accumulations to over four inches. Water-year total SWE recovered significantly from the beginning of the month and as of March 1st was only slightly below normal.

**Upper Clark Fork River Basin Snowpack with Non-Exceedence Projections**  
*Based on provisional SNOTEL daily data as of 3/1/2017*



**Snowpack Analysis**

In February, both mountain and valley locations received well above average precipitation. Water-year totals began the month just below average but by March 1st, totals sat at almost ten percent above normal. Cold temperatures at the beginning of the month translated all that precipitation into significant snowfall. By the 10th, the basin had already received its entire monthly average of SWE. A respite from the deluge came the following week with warmer and dryer conditions. Precipitation and colder temperatures during the last week and a half of the month added another 1.5 inches.

***Upper Clark Fork River Basin Data Summary***

<i>Snowpack</i>	<b>Percent of 1981-2010 Normal (Median)</b>	<b>Last Year Percentage of Normal (Median)</b>
<i>CLARK FORK ab FLINT CREEK</i>	93%	101%
<i>FLINT CREEK</i>	104%	99%
<i>ROCK CREEK</i>	95%	103%
<i>CLARK FORK ab BLACKFOOT</i>	95%	100%
<i>BLACKFOOT</i>	96%	86%
<b>Basin-Wide</b>	<b>95%</b>	<b>94%</b>

<i>Precipitation</i>	<b>Monthly Percentage of Average</b>	<b>WYTD Percentage of 1981- 2010 Average*</b>	<b>WYTD Last Year Percentage of Average</b>
Mountain Precipitation	160%	107%	95%
Valley Precipitation	211%	140%	125%
<b>Basin-Wide Precipitation</b>	<b>161%</b>	<b>108%</b>	<b>96%</b>

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

**Reservoir Storage**

Most reservoirs across the state are near or slightly above average for March 1.

<i>End of Month Storage</i>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Capacity (KAF)</b>	<b>% Average</b>	<b>% Capacity</b>
East Fork Rock Creek Res	8.7	8.1	8.3	15.6	104%	104%
Georgetown Lake	28.6	28.7	27.6	31.0	104%	104%
Lower Willow Creek Reservoir			2.2	4.9		
Nevada Creek Res	4.7	5.1	5.6	12.6	85%	85%

## Streamflow Forecast

### Upper Clark Fork River Basin

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume						30yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
<i>Little Blackfoot nr Garrison</i>	APR-JUL	40	59	72	103%	85	104	70
	APR-SEP	45	65	79	103%	93	114	77
<i>Flint Ck nr Southern Cross</i>	APR-JUL	6.9	10.6	13.1	106%	15.7	19.4	12.4
	APR-SEP	7.6	12.3	15.5	106%	18.7	23	14.6
<i>Flint Ck bl Boulder Ck</i>	APR-JUL	30	45	55	106%	65	80	52
	APR-SEP	40	58	70	106%	82	99	66
<i>Lower Willow Ck Reservoir Inflow<sup>2</sup></i>	APR-MAY	4.3	6.8	8.4	115%	10	12.5	7.3
	APR-JUL	5.9	9.8	12.4	117%	15	18.9	10.6
<i>MF Rock Ck nr Philipsburg</i>	APR-JUL	44	53	60	103%	67	76	58
	APR-SEP	49	60	67	103%	74	85	65
<i>Rock Ck nr Clinton</i>	APR-JUL	171	225	260	104%	295	350	250
	APR-SEP	198	255	295	105%	335	390	280
<i>Clark Fork R ab Milltown</i>	APR-JUL	300	450	555	105%	660	810	530
	APR-SEP	370	535	650	106%	765	930	615
<i>Nevada Ck nr Helmville</i>	APR-MAY	3.8	7	9.2	110%	11.4	14.6	8.4
	APR-JUL	5.9	11.4	15.2	107%	19	25	14.2
<i>Blackfoot R nr Bonner</i>	APR-JUL	525	640	720	100%	800	915	720
	APR-SEP	590	715	800	100%	885	1010	800
<i>Clark Fork R ab Missoula</i>	APR-JUL	840	1110	1290	103%	1470	1740	1250
	APR-SEP	975	1260	1460	103%	1660	1940	1420

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

## Snow Water Equivalent: March 7, 2017

### Montana SNOTEL Snow/Precipitation Update Report

Data based on the first reading of the day (typically 00:00) for Tuesday, March 07, 2017

Basin Site Name	Elev (ft)	Snow Water Equivalent			Water Year-to-Date Precipitation		
		Current (in)	Median (in)	Pct of Median	Current (in)	Average (in)	Pct of Average
<b>UPPER CLARK FORK RIVER BASIN</b>							
Barker Lakes	8250	10.4	11.0	95	11.8	12.6	94
Basin Creek	7180	4.7	5.8	81	6.7	7.3	92
Black Pine	7210	9.7	8.6	113	11.5	10.9	106
Combination	5600	5.0	4.2	119	8.1	7.7	105
Copper Bottom	5200	7.1	N/A	*	17.9	13.7	131
Copper Camp	6950	33.0	N/A	*	25.2	27.0	93
Lubrecht Flume	4680	5.2	4.8	108	10.6	8.5	125
Nevada Ridge	7020	13.1	11.8 <sub>C</sub>	111	15.5	13.4 <sub>C</sub>	116
N Fk Elk Creek	6250	8.0	9.3	86	12.3	11.3	109
N Fork Jocko	6330	28.4	34.8	82	44.6	41.0	109
Peterson Mdws	7200	8.2	7.5	109	11.0	9.1 <sub>C</sub>	121
Rocker Peak	8000	9.4	10.4	90	9.9	10.9	91
Skalkaho Smt	7250	17.4	18.2	96	20.8	18.9	110
Stuart Mountain	7400	27.4	26.3 <sub>C</sub>	104	32.4	26.4 <sub>C</sub>	123
Warm Springs	7800	14.6	15.7	93	18.0	18.2	99
Basin Index (%)		96			108		

**March 7, 2017, USGS Real Time Flow Conditions**

**Blackfoot River above Nevada Creek Near Helmville**

**Discharge, cubic feet per second**

NO READINGS DUE TO ICE

**Nevada Creek above Reservoir**

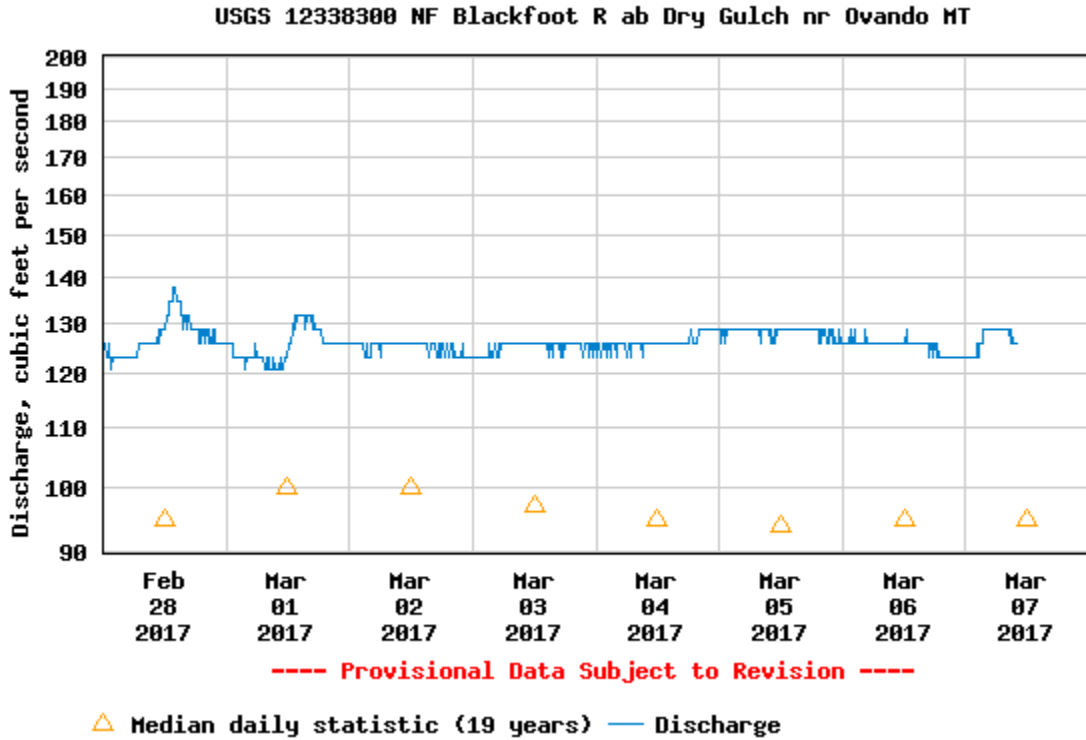
**Discharge, cubic feet per second**

NO READINGS DUE TO ICE

## North Fork Blackfoot

### Discharge, cubic feet per second

Most recent instantaneous value: 126 03-07-2017 10:00 MST



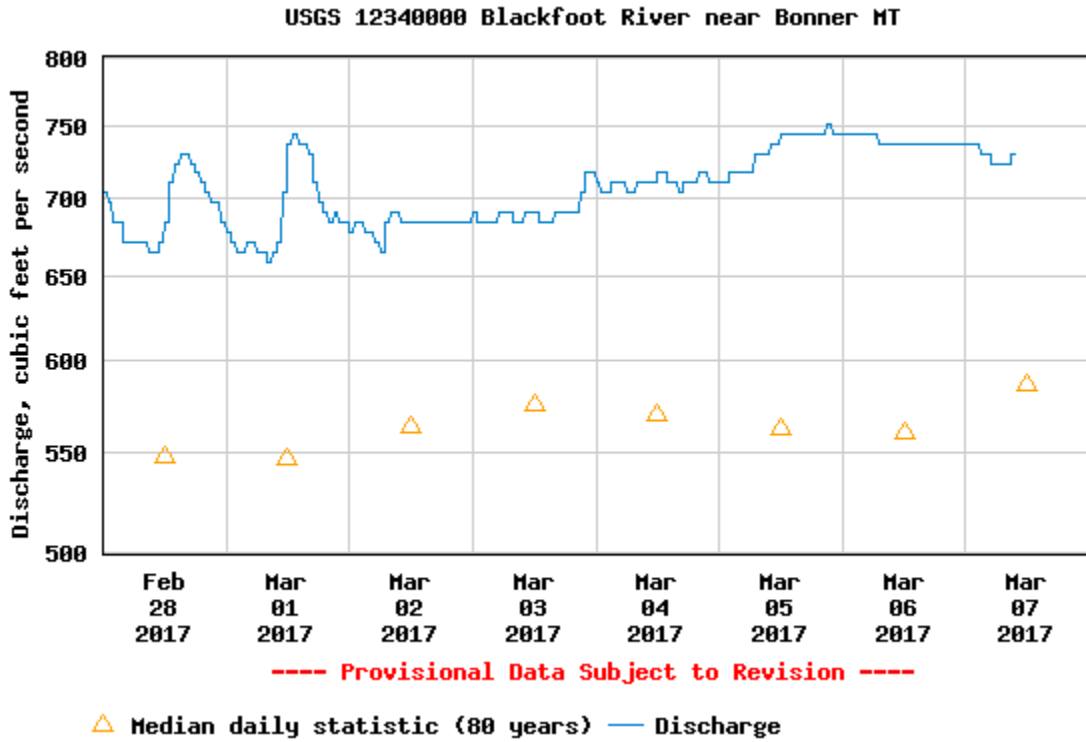
Daily discharge, cubic feet per second -- statistics for Mar 7 based on 19 years of record [more](#)

Min (2001)	25th percentile	Median	Mean	75th percentile	Most Recent Instantaneous Value Mar 7	Max (2015)
73	80	95	99	108	126	159

## Blackfoot River at Bonner

### Discharge, cubic feet per second

Most recent instantaneous value: 731 03-07-2017 09:45 MST



Daily discharge, cubic feet per second -- statistics for Mar 7 based on 82 years of record [more](#)

Min (1945)	25th percentile	Median	Mean	75th percentile	Most Recent Instantaneous Value Mar 7	Max (1986)
360	491	587	639	714	731	2580



# Three-Month Outlook March 7, 2017

From  
National Weather Service Climate Prediction Center  
<http://www.cpc.ncep.noaa.gov/>

Higher chance for above average precipitation  
for March through May.

Equal chances for above, below or normal  
temperatures from March through May.

