

Blackfoot Water Supply Report

February 4th, 2016

Montana Water Supply Report as of February 1st, 2016 (from NRCS):

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

Overview

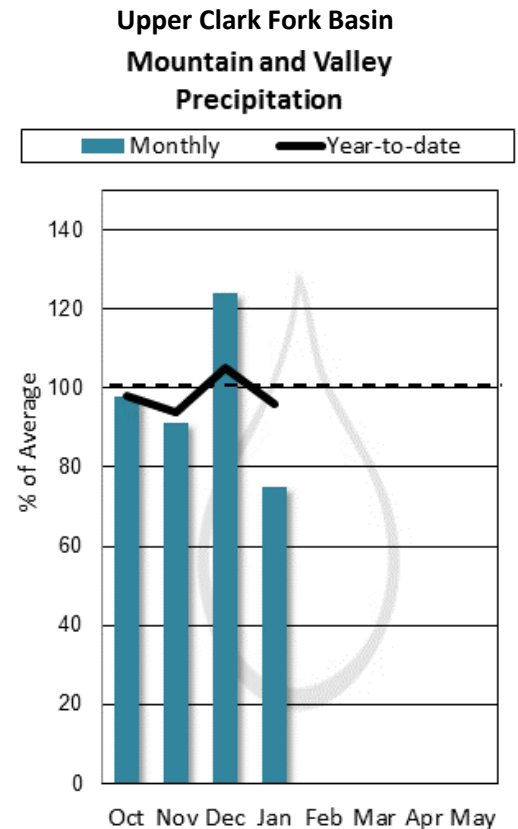
Old Man Winter took a hiatus snowfall wise across the state right just before entering the new calendar year, likely too stuffed full of holiday goodies to make much happen. During this time the river basins across the state received little in the way of snowfall leaving skiers, snowmobilers and water managers wondering if this year would be a repeat of the last. Like the previous month of December snowfall came rolling in during the middle of the month, dropping up to 7.5" of snow water equivalent (SWE) at SNOTEL sites in the Kootenai and Flathead River basins in northwest Montana over 7 days, helping to stop the decline in basin percentages that was occurring during the dry spell. East of the Divide in the southern half of the state this storm also helped to stop the slow decline within the basins although the storm didn't pack as big of a punch dropping 2 to 3" of SWE during the same period. As this storm passed a few smaller systems dropped snowfall in the state favoring areas west of the Divide and in the southern half of the state east of the Divide.

Almost all of the river basins saw declines in snowpack percentages over the last 30 days due to the slow start to snowfall during the first two weeks. The Flathead River basin was the only basin to see an increase due to the sheer volume of moisture that fell at some SNOTEL sites in the basin during the third week. However, the Flathead and other northwest basins, as well as the north central basins are still below average to well below average for this date.

Early winter snowfall patterns tend to favor the basins along and west of the Continental Divide, late winter and spring tends to favor the basins along and east of the Divide. February will start to tell the story of our potential peak snowpack in the west this year, and this spring will indicate whether the east facing basins can recover from the lack of early winter snowfall.

Upper Clark Fork River Basin Overview

The Upper Clark Fork River Basin entered 2016 with near normal snowpack conditions and due to slightly below normal January snowfall entered February close to the same. The basin typically receives about 3.3 inches of snow water at mountain SNOTEL locations, this January the basin received 2.7 inches. Much like the rest of Montana most of the snow accumulation in the Upper Clark Fork River basin occurred after around January 12th following the high and dry conditions during the first week of the month. Much of the January moisture favored the region from Butte to Phillipsburg. On February 1st that region had 3 of the top 5 highest SNOTEL snow water equivalent percentages in Montana, with Basin Creek (158%) and Peterson Meadows (135%) ranking 1st and 2nd.

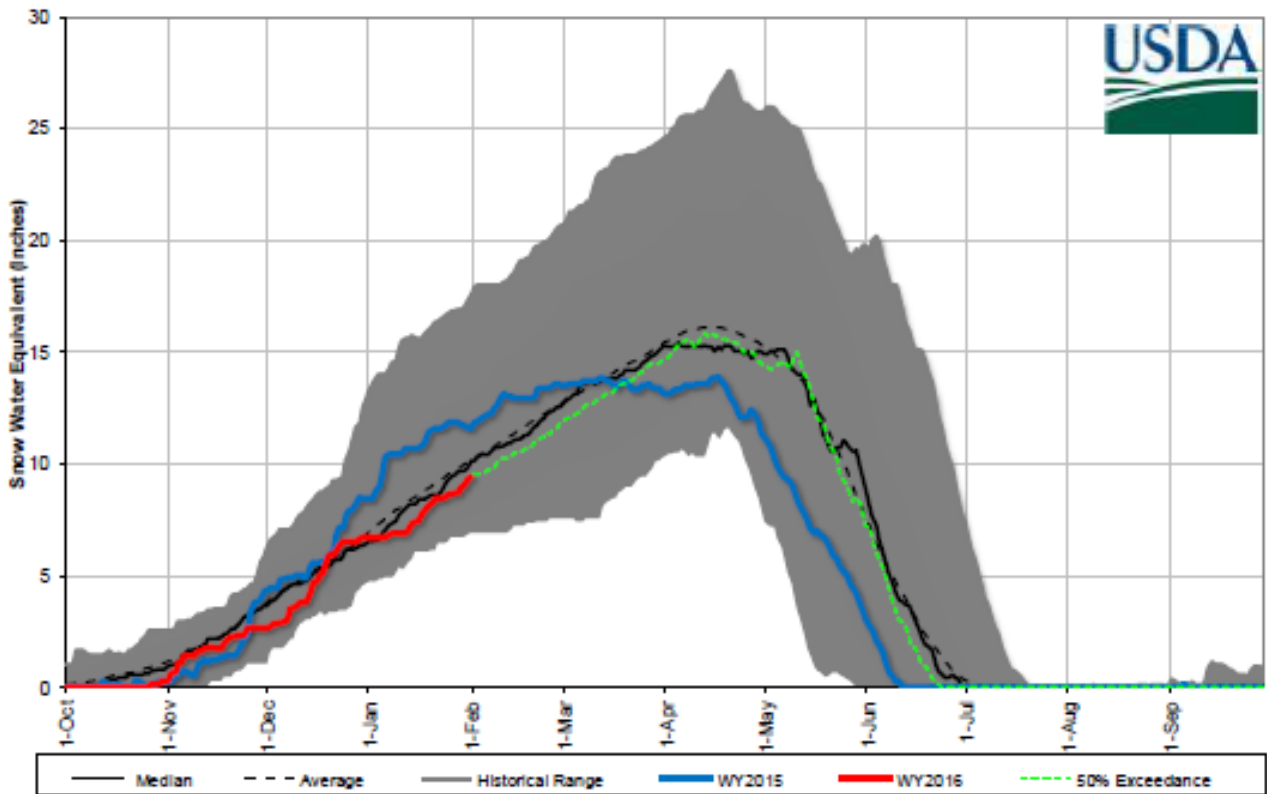


The Upper Clark Fork River basin stayed slightly cooler than much of the other lower elevation watersheds west of the divide. Mixed rain and snow events did not appear to have happened in the basin throughout the month. In January mountain SNOTEL sites received 73% of their average precipitation, while valley weather stations received 149% of average precipitation in the Flathead River basin.

Streamflow forecasts for February 1st should be used knowing 50 to 65% of our annual snowpack has accumulated and conditions can change before runoff occurs. The 50% exceedance forecast assumes normal conditions will occur from this point and through snowmelt.

Upper Clark Fork Basin

Upper Clark Fork River Basin Snowpack with Non-Exceedance Projections
Based on provisional SNOTEL daily data as of 2/1/2016



Snowpack Analysis

Watershed Snowpack Analysis February 1, 2016	# of Sites	% Median	Last Year % Median
CLARK FORK ab FLINT CREEK	9	109%	120%
FLINT CREEK	5	110%	132%
ROCK CREEK	3	103%	119%
CLARK FORK ab BLACKFOOT	15	106%	121%
BLACKFOOT	12	89%	118%
<u>UPPER CLARK FORK RIVER BASIN</u>	<u>25</u>	<u>98%</u>	<u>120%</u>

Reservoir Storage

All reservoirs in the basin currently have above average storage. Nevada Creek Reservoir is the highest at 150% of average.

Reservoir Storage End of January 2016	Current (KAF)	Last Year	Average (KAF)	Capacity (KAF)
East Fork Rock Creek Res	7.6	10.1	15.6	15.6
Georgetown Lake	28.4	28.8	31.0	31.0
Lower Willow Creek Reservoir		3.6	4.9	4.9
Nevada Creek Res	7.5	7.5	12.6	12.6
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Basin-wide Total	43.5	46.4	59.2	59.2
# of reservoirs	3	3	3	3

Streamflow Forecast

Streamflow forecasts for February 1st should be used knowing 50 to 65% of our annual snowpack has accumulated and conditions can change before runoff occurs. The 50% exceedance forecast assumes normal conditions will occur from this point and through snowmelt. Current basin-wide streamflow forecasts for the 50% exceedance are 97% of average for the April-July time period.

UPPER CLARK FORK RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Little Blackfoot nr Garrison	APR-JUL	44	61	73	104%	85	103	70
	APR-SEP	48	77	80	104%	93	112	77
Clark Fork R ab Milltown	APR-JUL	315	460	560	106%	660	805	530
	APR-SEP	380	540	650	106%	760	925	615
Nevada Ck nr Helmville	APR-MAY	2.7	5.9	8.2	98%	10.4	15.3	8.4
	APR-JUL	4.8	10.2	13.8	97%	17.4	26	14.2
Blackfoot R nr Bonner	APR-JUL	430	545	630	88%	710	830	720
	APR-SEP	490	615	700	88%	790	915	800
Clark Fork R ab Missoula	APR-JUL	780	1030	1200	96%	1370	1630	1250
	APR-SEP	910	1180	1360	96%	1540	1810	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

3) Median value used in place of average

Snow Water Equivalent: February 5, 2016

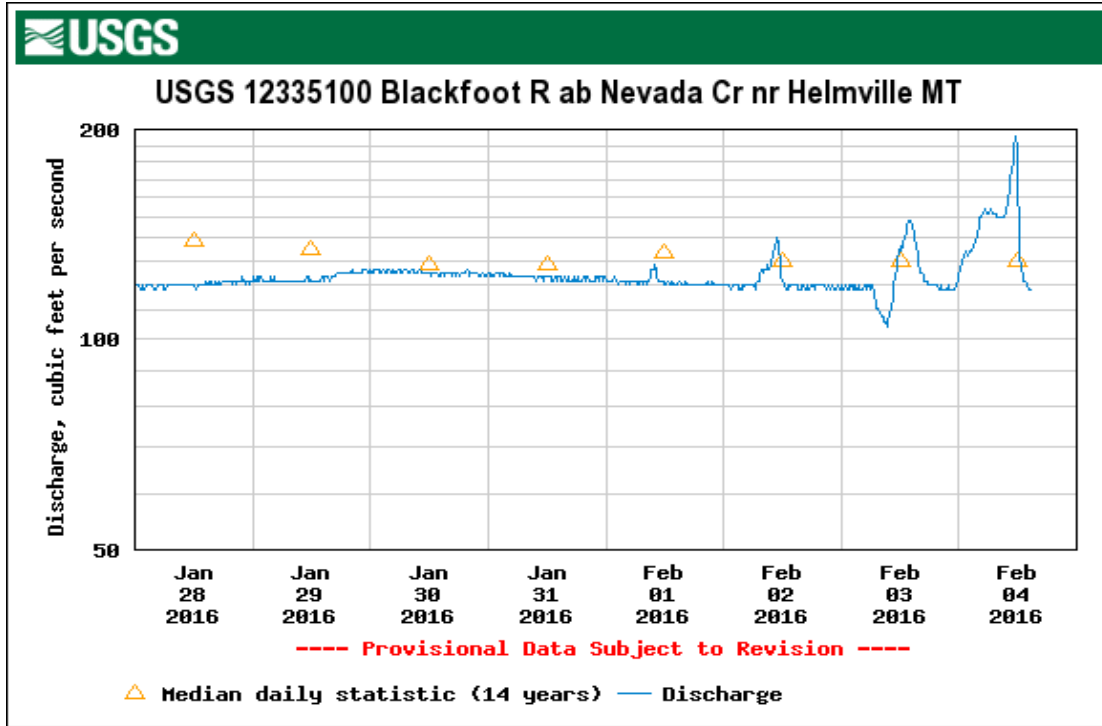
Columbia River Basin SNOTEL Snow/Precipitation Update Report							
Based on Mountain Data from NRCS SNOTEL Sites							
Provisional data, subject to revision							
Data based on the first reading of the day (typically 00:00) for February 5th, 2016							
Basin Site Name	Elev (ft)	Snow Water Equivalent			Water Year-to-Date Precipitation		
		Current (in)	Median (in)	Pct of Median	Current (in)	Average (in)	Pct of Average
UPPER CLARK FORK RIVER BASIN							
Barker Lakes	8250	10.0	8.2	122	10.7	10.1	106
Basin Creek	7180	7.2	4.6	157	9.7	5.9	164
Black Pine	7210	6.2	6.4	97	9.0	8.8	102
Combination	5600	3.5	3.2	109	7.7	6.4	120
Copper Bottom	5200	3.3	N/A	*	9.7	11.2	87
Copper Camp	6950	16.9	N/A	*	15.7	22.1	71
Lubrecht Flume	4680	3.7	3.9	95	8.7	7.1	123
Nevada Ridge	7020	8.2	9.1	90	9.5	11.1	86
N Fk Elk Creek	6250	6.3	6.9	91	8.7	9.2	95
North Fork Jocko	6330	22.9	27.7	83	31.1	34.2	91
Peterson Meadows	7200	7.6	5.7	133	9.8	7.2	136
Rocker Peak	8000	8.6	8.4	102	7.5	8.8	85
Skalkaho Summit	7250	12.7	14.4	88	13.9	15.3	91
Stuart Mountain	7400	18.9	21.2	89	20.8	21.8	95
Warm Springs	7800	12.2	12.7	96	13.0	14.7	88
Basin Index (%)		97			96		

February 4 2016, USGS Real Time Flow Conditions

USGS Blackfoot River above Nevada Creek Near Helmville

Gage height, feet

Most recent instantaneous value: 3.57



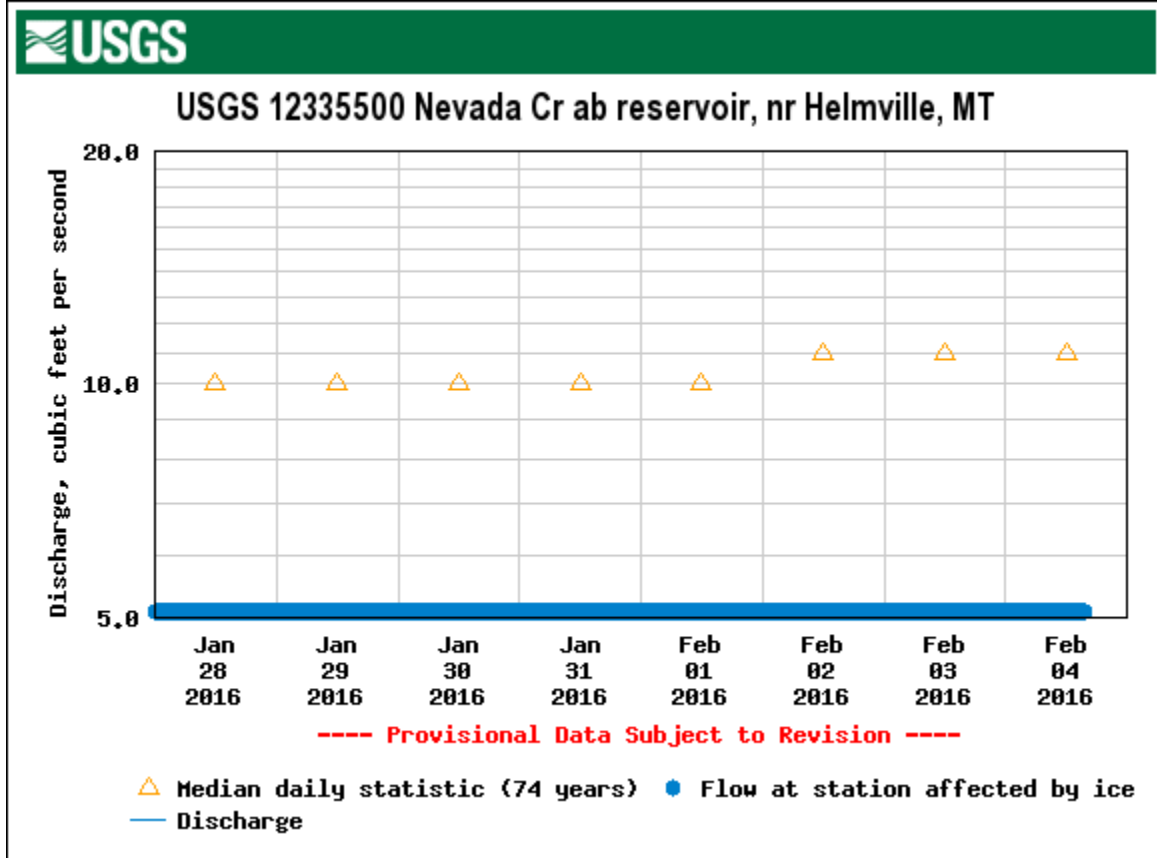
Daily discharge, cubic feet per second -- statistics for Feb 4 based on 14 years of record.

Min (2008)	25th percentile	Most Recent Instantaneous Value Feb 4	Mean	Median	75th percentile	Max (2003)
105	113	118	130	130	139	183

Nevada Creek

Discharge, cubic feet per second

Most recent instantaneous value: Ice 02-04-2016



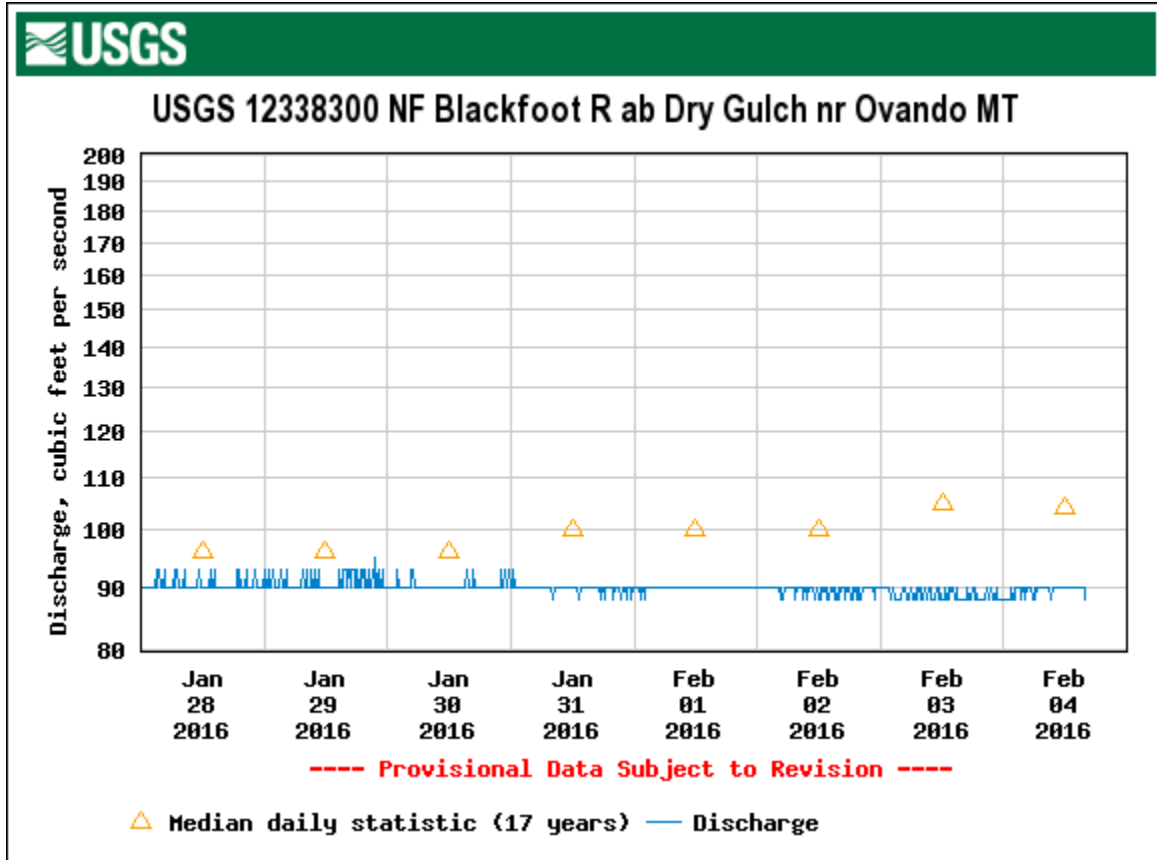
Daily discharge, cubic feet per second -- statistics for Feb 4 based on 74 years of record [more](#)

Most Recent Instantaneous Value Feb 4	Min (1957)	25th percentile	Median	75th percentile	Mean	Max (1963)
Ice	3.0	7.8	11	14	16	400

North Fork Blackfoot

Discharge, cubic feet per second

Most recent instantaneous value: 88 02-04-2016



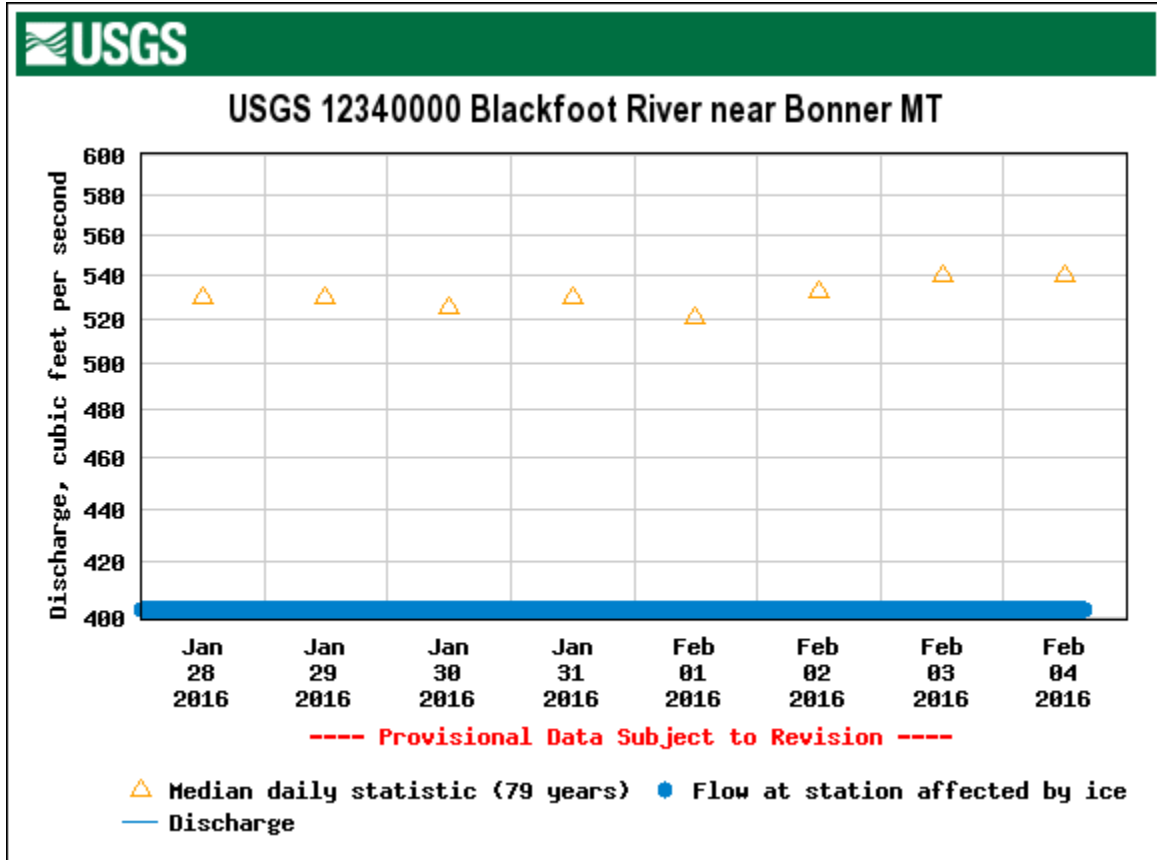
Daily discharge, cubic feet per second -- statistics for Feb 4 based on 17 years of record

Min (2014)	25th percentile	Most Recent Instantaneous Value Feb 4	Mean	Median	75th percentile	Max (2005)
81	87	88	103	104	110	170

Blackfoot River at Bonner

Discharge, cubic feet per second

Most recent instantaneous value: Ice 02-04-2016



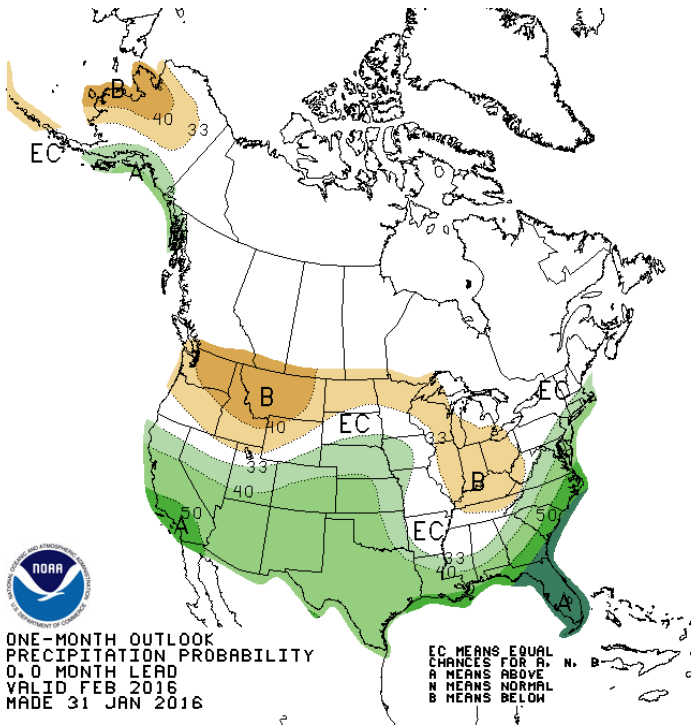
Daily discharge, cubic feet per second -- statistics for Feb 4 based on 79 years of records

Most Recent Instantaneous Value Feb 4	Min (1989)	25th percentile	Median	Mean	75th percentile	Max (1971)
Ice	250	430	540	571	648	2500

One Month Outlook February 4th, 2016

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

High chance to experience below normal precipitation in February.



High chance to experience above normal temperatures in February.

