

# **Blackfoot Water Supply Report**

## **May 12, 2014**

### **Montana Water Supply Outlook Report as of May 1, 2014 (from NRCS):**

[http://www.nrcs.usda.gov/wps/portal/nrcs/detail/mt/snow/?cid=nrcs144p2\\_057799](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/mt/snow/?cid=nrcs144p2_057799)

#### **Overview**

Data from the USDA Natural Resources Conservation Service (NRCS) SNOTEL sites show Montana's April snowfall did not match the well above average precipitation experienced during February and March, but because Montana has not yet seen a major shift in weather patterns, snowmelt has been delayed and basin percentages of normal remain high.

Data shows most basins in the state exhibited peak snow water equivalent during the beginning and middle part of April, while some basins in southwest Montana and along the Continental Divide exhibited peaks at the end of the month. According to Lucas Zukiewicz, NRCS hydrologist, some snowmelt has occurred at lower to mid elevations, but higher elevations in the basins have seen little melt during the month, delaying when the bulk of snowmelt runoff enters river systems. "Assuming normal climatic conditions in the upcoming weeks, more advanced melt rates should begin to occur as days get longer with more solar influence and temperatures get warmer," Zukiewicz said.

Statewide SNOTEL and snow course data reported 155 percent of normal for May 1 and 149 percent of last year at this time. The Bitterroot River Basin currently has the highest basin percentage of normal in the state, indicating 188 percent of normal for May 1 and 199 percent of last year at this time. "Worth noting this month are the Missouri Mainstem, Tongue, and Powder River basins which reported the highest daily snow water equivalent values (SWE) since 1981," Zukiewicz said. "However, the 2014 peak snow water equivalent did not surpass those recorded 1997 and 2011."

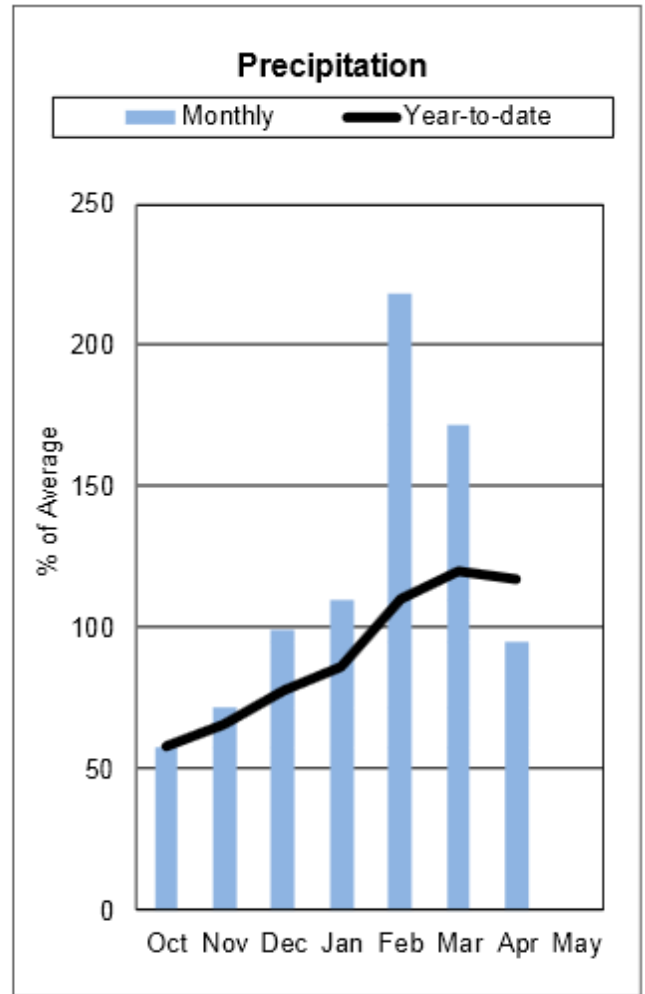
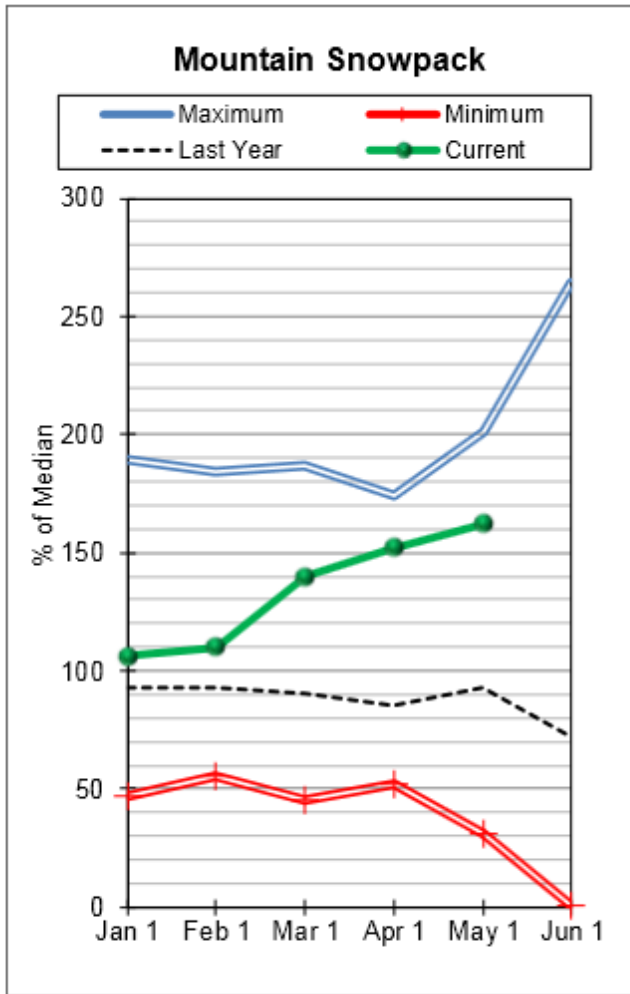
#### **Upper Clark Fork River Basin**

Following well above average snow accumulation in February and March, April in the Upper Clark Fork Basin experienced warmer temperatures, yet provided enough snowfall to maintain an above average basin-wide snow water equivalent.

Having ranked 3<sup>rd</sup> in March, the basin now ranks 4<sup>th</sup> for basin-wide snow water equivalent given 30 years of record. Currently the Upper Clark Fork basin-wide snow water equivalent is up 10 percent from April 1<sup>st</sup> and is currently at 162 percent of normal and 170 percent of last year. Assuming normal conditions in May, the Upper Clark Fork River Basin may have reached its peak snow water equivalent on April 28th at 22.8".

Well above average precipitation in February and March in the Upper Clark Fork Basin experienced a substantial decrease to near normal precipitation in April. April precipitation was 94 percent of average and 102 percent of last year. Water year to date averages are down from April 1<sup>st</sup> and are currently at 117 percent of average and 127 percent of last year.

**Upper Clark Fork River Basin**



## Snowpack Analysis

<b>Watershed Snowpack Analysis May 1, 2014</b>	<b># of Sites</b>	<b>% Median</b>	<b>Last Year % Median</b>
CLARK FORK ab FLINT CREEK	12	168%	85%
FLINT CREEK	12	168%	85%
ROCK CREEK	5	144%	84%
CLARK FORK ab BLACKFOOT	20	162%	84%
BLACKFOOT	20	162%	84%
UPPER CLARK FORK RIVER BASIN	31	162%	91%

## Reservoir Storage

Reservoir storage is currently 100 percent of average and 102 percent of last year.

<b>Reservoir Storage End of April, 2014</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Capacity (KAF)</b>
EAST FORK ROCK CREEK RES	10.2	10.7	9.2	15.6
GEORGETOWN LAKE	26.8	28.2	28.2	31.0
LOWER WILLOW CREEK RESERVOIR		3.5	4.1	4.9
NEVADA CREEK RES	10.4	7.4	9.9	12.6
Basin-wide Total	47.5	49.8	51.4	64.1
# of reservoirs	3	4	4	4

**Streamflow Forecast**

Current streamflow forecasts indicate 160 percent of average, down 4 percent from last month on March 1<sup>st</sup> and 203 percent of last year. Nevada Creek is the highest at 227 percent of average.

**Upper Clark Fork River Basin  
Streamflow Forecasts - May 1, 2014**

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

UPPER CLARK FORK RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Nevada Ck nr Helmville	MAY	8.9	11.2	12.7	244%	14.2	16.5	5.2
	MAY-JUL	17.8	22	25	227%	28	32	11
Blackfoot R nr Bonner	MAY-JUL	800	885	940	159%	995	1080	590
	MAY-SEP	910	1000	1060	157%	1120	1210	675
Clark Fork R ab Missoula	MAY-JUL	1320	1530	1670	162%	1810	2020	1030
	MAY-SEP	1530	1760	1910	159%	2060	2290	1200

- 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
- 3) Median value used in place of average

## Snow Water Equivalent: May 12, 2014

### Montana SNOTEL Snow/Precipitation Update Report

Based on Mountain Data from NRCS SNOTEL Sites

\*\*Provisional data, subject to revision\*\*

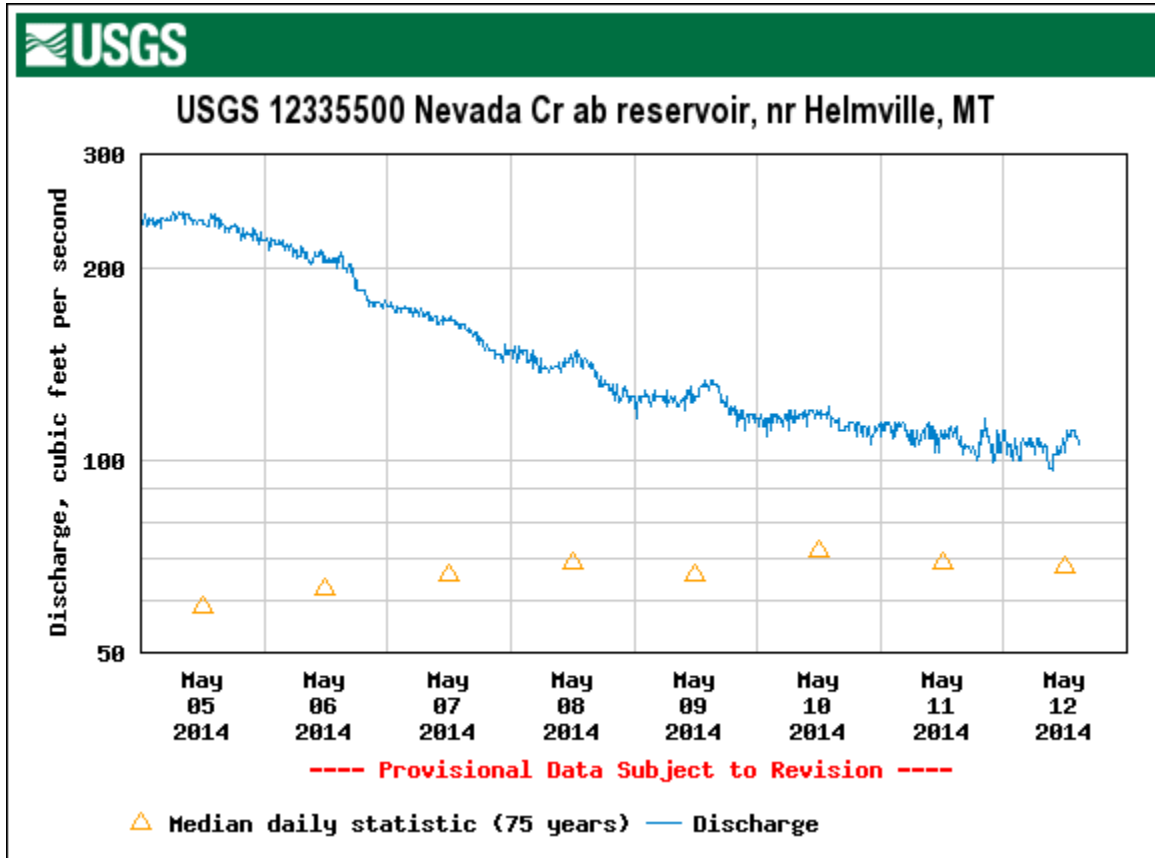
Data based on the first reading of the day (typically 00:00) for Monday, May 12, 2014

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	22.2	15.5	143	21.1	21.5	98
BASIN CREEK	7180	12.4	8.3	149	14.4	13.7	105
BLACK PINE	7210	13.7	6.4	214	21.3	16.5	129
COMBINATION	5600	0.0	0.0	*	13.2	11.5	115
COPPER BOTTOM	5200	0.0	N/A	*	20.9	17.7	118
COPPER CAMP	6950	46.2	N/A	*	31.3	35.4	88
LUBRECHT FLUME	4680	0.0	0.0	*	14.2	12.1	117
NEVADA RIDGE	7020	20.9	10.6 <sub>C</sub>	197	22.9	19.0 <sub>C</sub>	121
N FK ELK CREEK	6250	11.4	2.8	407	18.6	16.9	110
NORTH FORK JOCKO	6330	53.2	36.5	146	61.5	52.4	117
PETERSON MEADOWS	7200	15.1	9.9	153	19.0	16.0 <sub>C</sub>	119
ROCKER PEAK	8000	23.6	15.2	155	21.2	17.8	119
SKALKAHO SUMMIT	7250	25.8	20.3	127	30.5	26.0	117
STUART MOUNTAIN	7400	43.0	30.7 <sub>C</sub>	140	41.4	35.3 <sub>C</sub>	117
WARM SPRINGS	7800	35.0	21.7	161	32.8	27.1	121
<b>Basin Index (%)</b>		<b>155</b>			<b>113</b>		

**May 12, 2014 USGS Real Time Flow Conditions**

**Nevada Creek  
Discharge, cubic feet per second**

Most recent instantaneous value: 106 05-12-2014 14:45 MDT

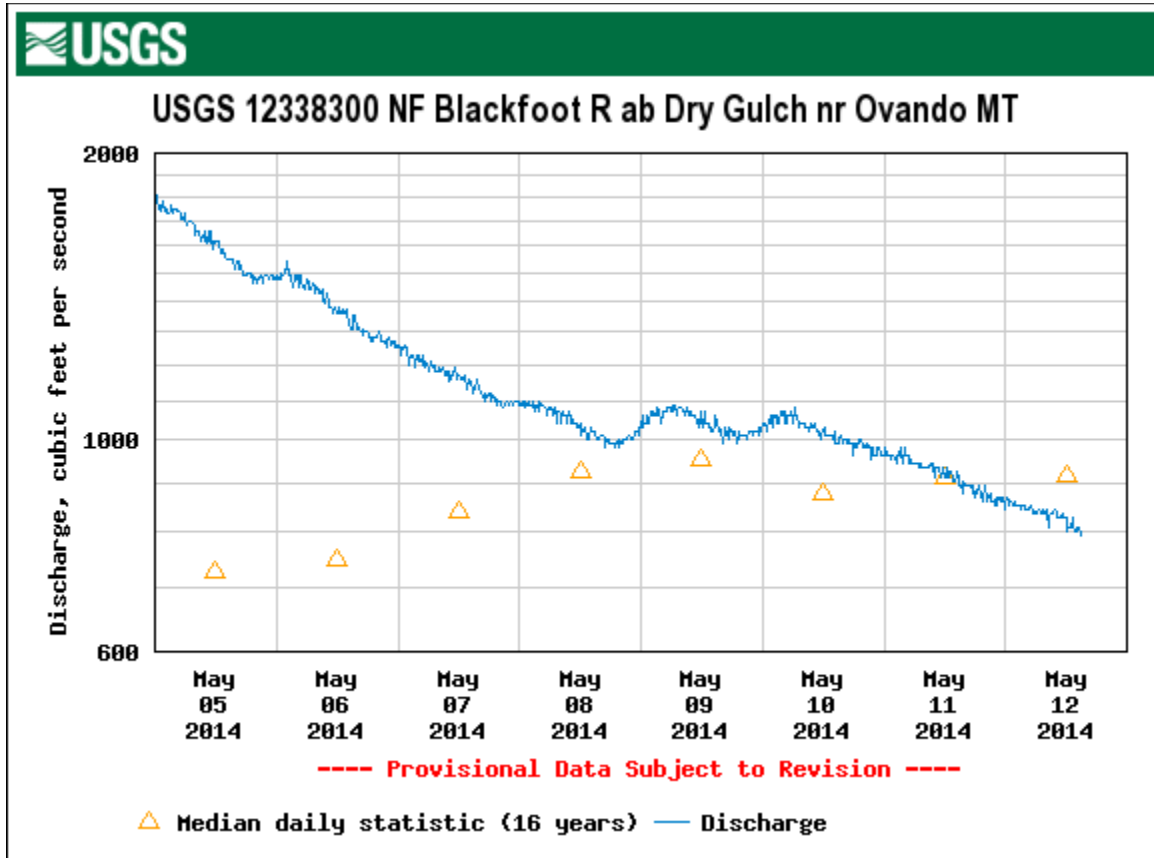


Daily discharge, cubic feet per second -- statistics for May 12 based on 75 years of record [more](#)

Min (1973)	25th percentile	Median	Mean	Most Recent Instantaneous Value May 12	75th percentile	Max (1976)
12	47	68	97	106	127	517

**North Fork Blackfoot**  
**Discharge, cubic feet per second**

Most recent instantaneous value: 793 05-12-2014 15:00 MDT

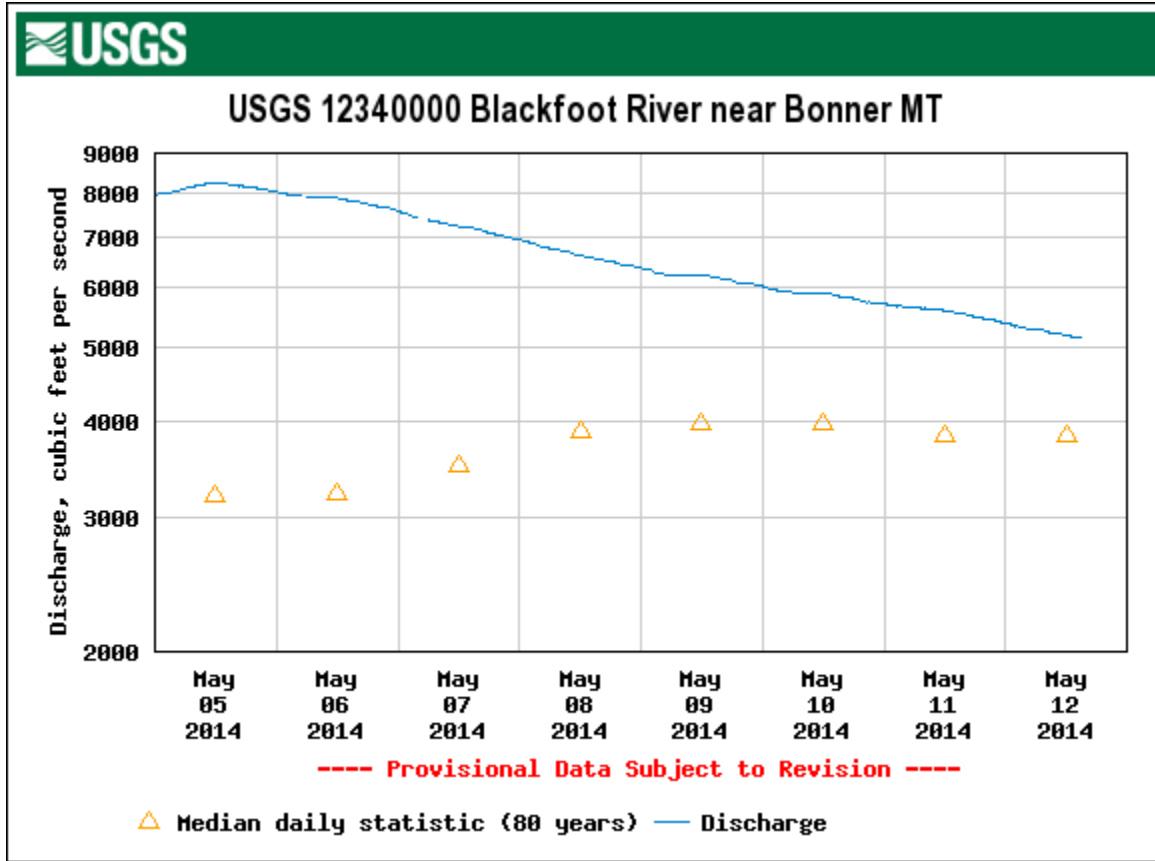


Daily discharge, cubic feet per second -- statistics for May 12 based on 16 years of record [more](#)

Min (2010)	25th percentile	Most Recent Instantaneous Value May 12	Median	Mean	75th percentile	Max (2013)
277	634	793	917	987	1220	2250

**Blackfoot River at Bonner**  
Discharge, cubic feet per second

Most recent instantaneous value: 5,160 05-12-2014 14:45 MDT



Daily discharge, cubic feet per second -- statistics for May 12 based on 80 years of record [more](#)

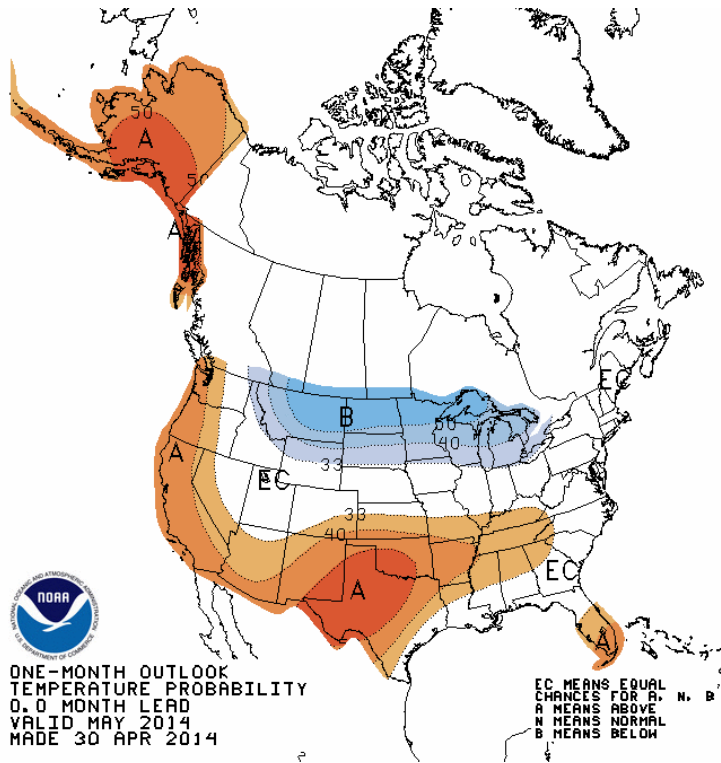
Min (1941)	25th percentile	Median	Mean	Most Recent Instantaneous Value May 12	75th percentile	Max (1976)
925	2960	3840	4520	5160	5490	13300



# One-Month Outlook May 12, 2014

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

Higher chance for below normal temperatures



Higher chance for wetter conditions

