

Blackfoot Water Supply Report

April 7, 2019

Montana Water Supply Report as of April 1st, 2019 (from NRCS):

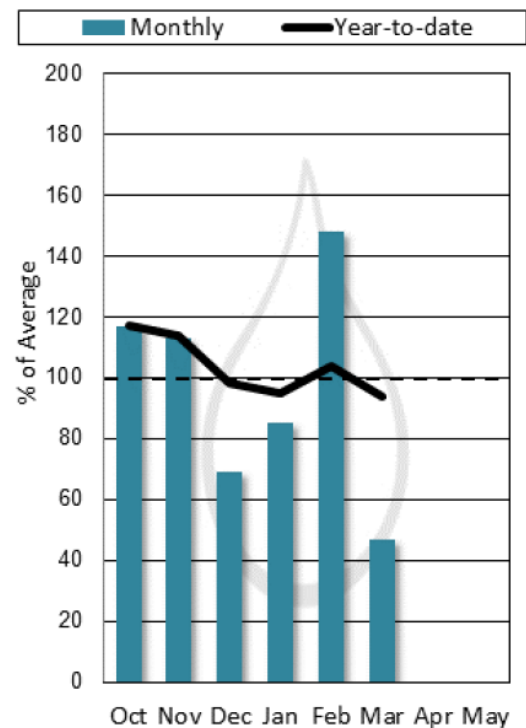
<https://www.nrcs.usda.gov/wps/portal/nrcs/mt/snow/waterproducts/basin/>

Overview

Just when it looked like the cold and snowy patterns of February would stay in place through the first week of March, the weather changed rapidly. The first week of the month ushered in record low temperatures across the state, but little precipitation fell during this brutal cold snap. As the high pressure located over the Gulf of Alaska broke down, moving the cold arctic air out, the jet stream and storm patterns across Montana changed for the remainder of the month of March. The good news is that temperatures became more moderate and closer to seasonal averages, which was a relief to many in the ag community who were hit hard during calving season. The bad news is that snowfall totals for the month of March were well below normal across the state. This might have been both a benefit and a curse. As the month progressed, the abundant valley snowpack began to melt, resulting in lowland flooding across the state where melt water could not infiltrate the still frozen soil. Impacts across the eastern half of Montana were widespread, though streams began to recede by the end of the month. Not to downplay the significant impacts of these flood events, but the flooding could have been far worse if snowfall had continued and the plains snowmelt had coupled with mountain runoff or a large-scale precipitation event later in the spring. Mountain snowpack totals are down from March 1 as a result of the well below normal snowfall for the month. The snowpack feeding the northern river basins (Kootenai, Flathead, Sun-Teton-Marias) is below normal on April 1, but snowpack conditions improve as you move from north to south. Central river basins remain near normal, and basins along the southern border of the state have above normal snowpack for April 1.

As of April 1, we have a decent idea of what the snowpack component of runoff will produce this year, especially in basins west of the Divide where precipitation totals typically taper off through spring into summer. In the northern regions we have a snowpack in place that is below normal. Low-elevation melt has begun during the last half of the month at SNOTEL sites west of the Divide, priming those elevations for runoff should weather patterns allow. Snowpack east of the Divide still has another month or so before high elevation snowpack typically peaks, and low elevation sites have not begun their seasonal melt. Fortunately, early season and February snowfall helped to insulate many of these basins from the dry weather of March. The coming month will dictate how much snow we have for runoff this season and how reliant we may be on spring and summer precipitation should deficits in some areas persist.

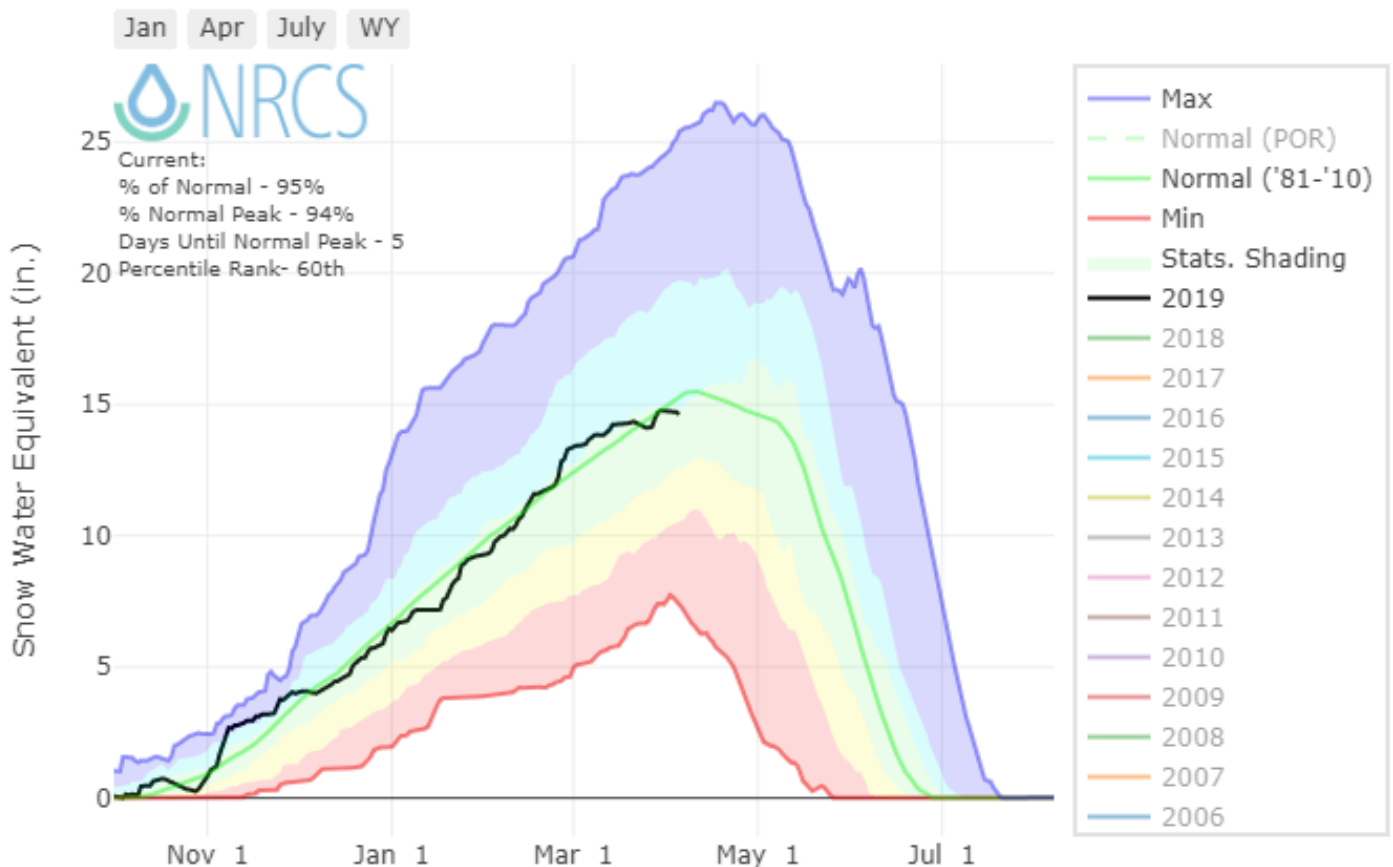
Upper Clark Fork Basin
Mountain and Valley
Precipitation



Upper Clark Fork River Basin Overview

Even though 7 SNOTEL sites just recorded the driest March on record (30 to 40 years) in the Upper Clark Fork River basin, snowpack remains near to above-average in most regions. Boosted by early season and well above normal February snowfall, the mountains feeding Rock Creek, Flint Creek and the Upper Clark Fork have ample snowpack for April 1st. Ranges in the Lower Blackfoot are the only areas where below normal snowpack exists (76% to 86% of normal), but the Upper Blackfoot has snowpack which is near to above normal. Winter is almost over, but historically many locations in the basin continue to receive late season snowfall. Most low-elevation snowpack monitoring locations peak in early April, while higher elevations peak in the middle to latter part of the month. Many sites in the Upper Clark above the Blackfoot have already reached or exceeded the average seasonal peak snowpack, so the snowmelt component of water supply is in good shape in these locations. In areas feeding the Blackfoot, this year's peak is still below average. Spring can yield significant precipitation, so hopefully the pattern breaks and we can reach a normal peak in all areas before runoff begins. Streamflow forecasts for the April 1 – July 31 time-period are near to slightly above average across the basin but vary depending on the river of interest. Spring can make or break it in the Upper Clark, and the next month should determine the extent of our water resources in the coming months.

Snow Water Equivalent in UPPER CLARK FORK RIVER BASIN



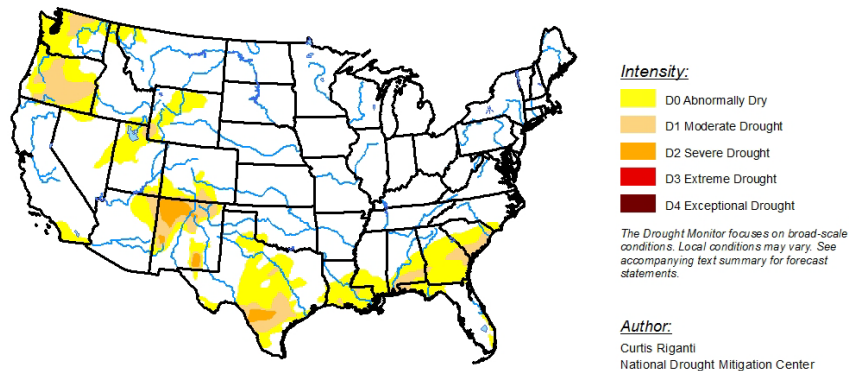
Reservoir Storage

It's getting to be that time of the year when water managers across the Montana start to fill the irrigator controlled and federally managed reservoirs, and this year some federal water managers will have their hands full. Record flooding along the Missouri River in the Midwest means that water managers in Montana are trying to hold back water. Carryover storage from last year's ample runoff, combined with ample snowpack, looks to deliver full storage in many areas. However, some areas remain below normal for snowpack and water year precipitation and have storage that is below average for April 1, but only at isolated locations. Overall, reservoir storage is above average in the state of Montana for April 1.

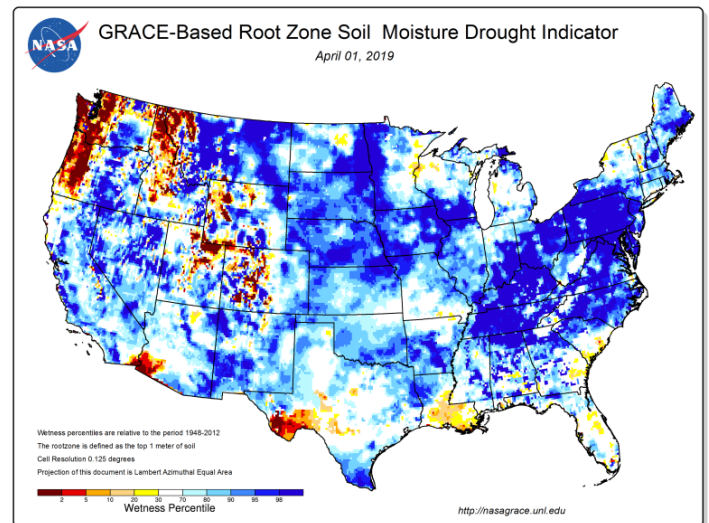
Reservoir Storage

4/1/2019	% Average	% Capacity	% Last Year
Columbia River Basin	130	64	131
Kootenai in Montana	148	62	163
Flathead in Montana	118	64	112
Upper Clark Fork	102	77	102
Bitterroot	94	34	65
Lower Clark Fork	104	97	104

Montana Drought Monitor – April 2, 2019



National Root Zone Soil Moisture – April 1, 2019



Montana SNOTEL Snow Water Equivalent: April 8, 2019

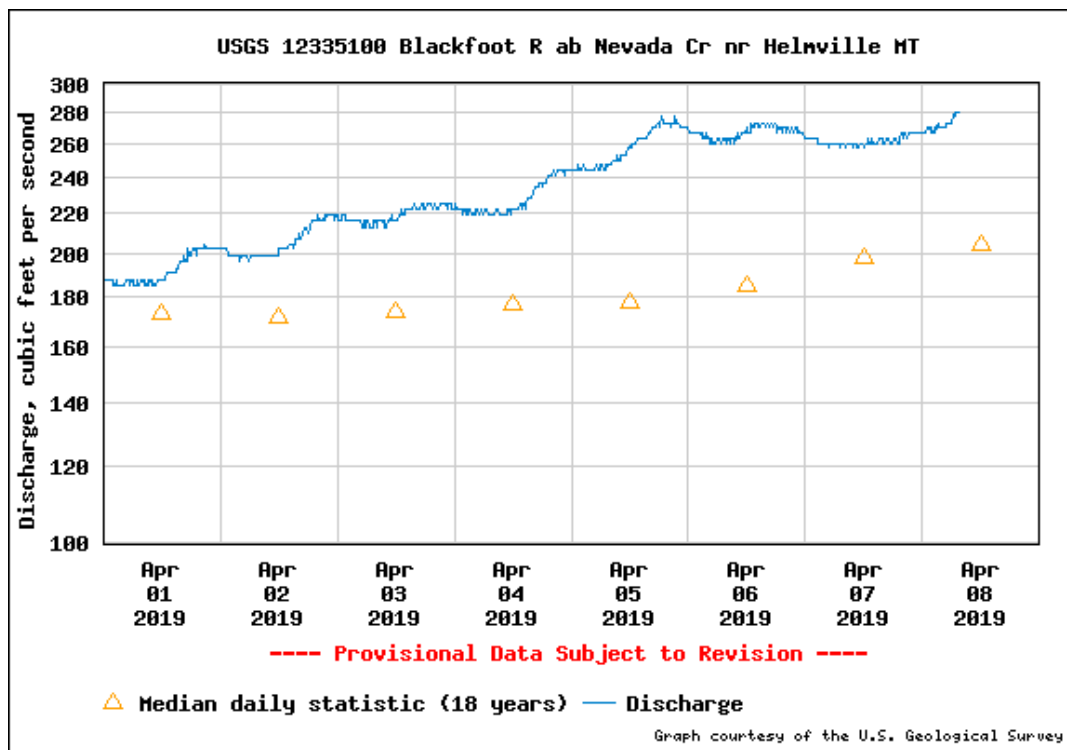
Montana SNOTEL Snow/Precipitation Update Report							
Based on Mountain Data from NRCS SNOTEL Sites							
Provisional data, subject to revision							
Data based on the first reading of the day (typically 00:00) for Monday, April 08, 2019							
Basin Site Name	Elev (ft)	Snow Water Equivalent			Water 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	13.8	14.7	94	13.8	16.5	84
Basin Creek	7180	8.2	8.1	101	10.5	10.0	105
Black Pine	7210	12.7	9.9	128	16.1	13.6	118
Combination	5600	6.8	3.9	174	10.6	9.1	116
Copper Bottom	5200	5.6	N/A	*	-M	15.7	*
Copper Camp	6950	22.2	N/A	*	-M	31.6	*
Lubrecht Flume	4680	1.5	0.5	300	11.9	10.2	117
Nevada Ridge	7020	13.8	14.2 _c	97	16.2	16.0 _c	101
N Fk Elk Creek	6250	10.6	10.7	99	14.8	14.0	106
North Fork Jocko	6330	31.5	42.2	75	42.7	47.1	91
Peterson Meadows	7200	11.0	10.3	107	11.5	12.1 _c	95
Rocker Peak	8000	16.0	13.2	121	15.4	14.1	109
Skalkaho Summit	7250	20.7	22.2	93	21.3	22.4	95
Stuart Mountain	7400	-M	31.1 _c	*	29.4	31.1 _c	95
Warm Springs	7800	21.6	20.0	108	22.3	22.5	99
Basin Index (%)		99			99		

April 8, 2019, USGS Real Time Flow Conditions

Blackfoot River Above Nevada Creek

Daily discharge, cubic feet per second -- statistics for Apr 8 based on 18 years of record [more](#)

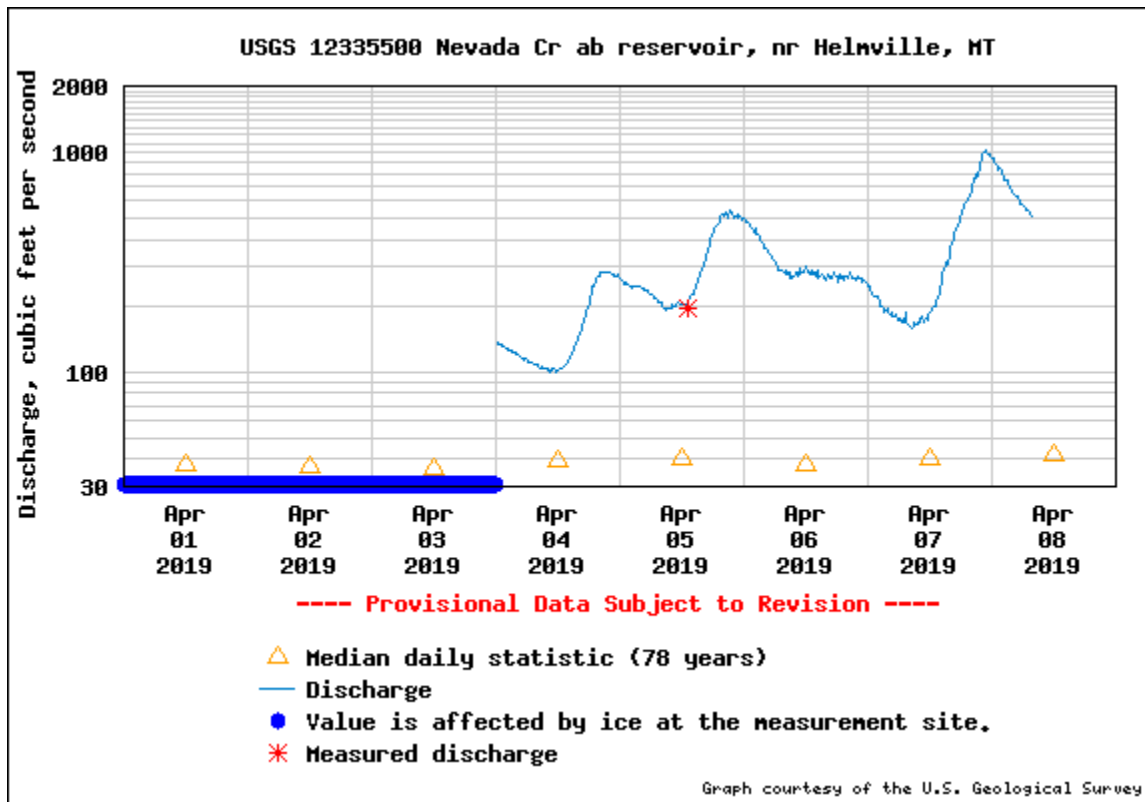
Min (2008)	25th percentile	Median	Mean	Most Recent Instantaneous Value Apr 8	75th percentile	Max (2017)
117	149	204	248	280	327	594



Nevada Creek Above Reservoir

Daily discharge, cubic feet per second -- statistics for Apr 8 based on 79 years of record [more](#)

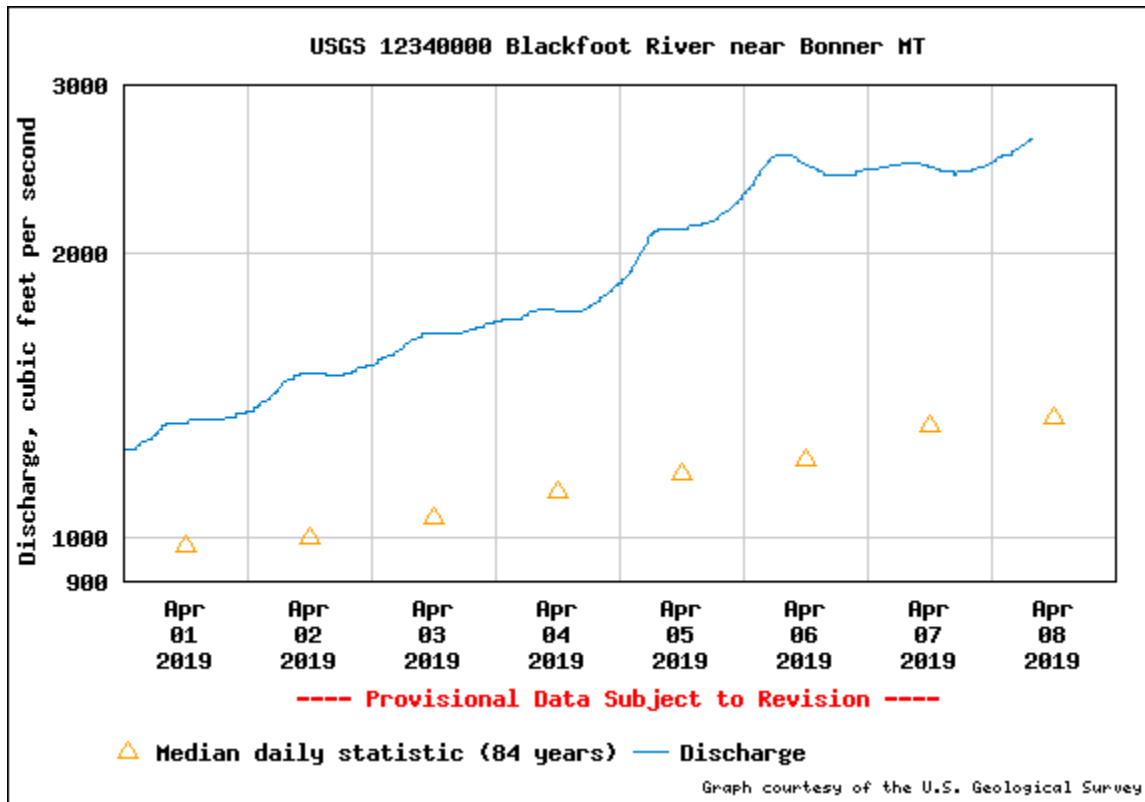
Min (1941)	25th percentile	Median	Mean	75th percentile	Max (1949)	Most Recent Instantaneous Value Apr 8
10.0	23	42	66	74	406	508



Blackfoot River at Bonner

Daily discharge, cubic feet per second -- statistics for Apr 8 based on 84 years of record [more](#)

Min (1905)	25th percentile	Median	Mean	75th percentile	Most Recent Instantaneous Value Apr 8	Max (1960)
415	891	1340	1570	2150	2640	3840



Three-Month Outlook April 5, 2019

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

Equal chances for average, above and below average precipitation for April through June.

Higher chance to experience above normal temperatures from April through June.

