

Blackfoot Water Supply Report April 8, 2015

Montana Water Supply Outlook Report as of April 1, 2014 (from NRCS):

http://www.nrcs.usda.gov/wps/portal/nrcs/detail/mt/snow/?cid=nrcs144p2_057799

Overview

Three straight months of below normal snowfall and well above average to record-breaking temperatures has taken its toll on Montana's snowpack. All basins in the state saw decreases in snowpack percentages this month with only minimal snow falling in the mountains of Montana. A combination of low-elevation melt and no additional snow for the snowpack has caused these drops, for the most part. Higher elevations which have so far been spared from the bulk of the melt are still near their seasonal peak snow water equivalent and have held on through the warmer temperatures. In fact, many sites that were well above normal beginning the month have been able to stay near to slightly above normal on April 1st.

The lower elevations were not so lucky. Many sites experienced significant melt during the month with 18 SNOTEL sites completely melted out on April 1st. The melt and lack of snowfall at low to mid elevations left 47 measurement locations (SNOTEL and snowcourse) with new record low snow water equivalent for April 1st. This substantial melt will have an impact on our water yield this summer as this snow water has already made its way into the soil and our river systems.

Snowpack in the state typically peaks during the month of April to early May depending on the part of the state. Unless a major pattern change occurs, snowpack could peak earlier than normal in mid-to-late March, and this peak would be well below normal. East of the Continental Divide many basins are favored for spring precipitation and snowfall, and a pattern change would be more than welcome at this point.

April 1, 2015, Snow Water Equivalent		
<i>River Basin</i>	April 1 % of Median	Monthly Change
Columbia	67	-19%
Kootenai	49	-11%
Flathead	72	-16%
Upper Clark Fork	77	-29%
Bitterroot	78	-20%
Lower Clark Fork	49	-16%
East of Divide	72	-26%
West of Divide	67	-19%
Statewide	68	--23%

Upper Clark Fork River Basin

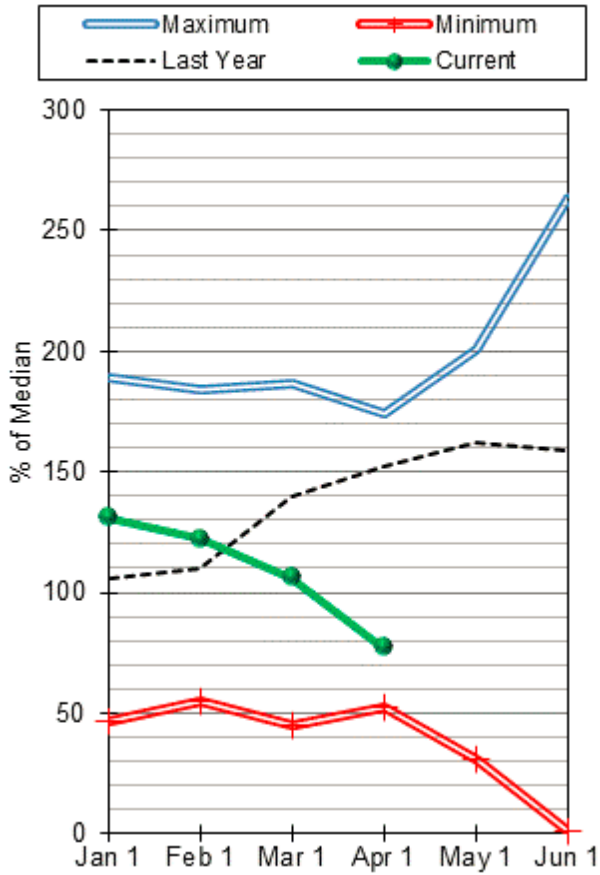
The mid-March major storm that hit the northwest part of Montana didn't make it into the Upper Clark Fork except for sites in the very northern reaches of the basin. Even those sites received mostly rain and very little snow accumulations. A storm system towards the end of March brought some snowpack accumulations and a little more rain to the majority of sites in the basin.

April 1 snowpack ranges from 73 percent of normal in the Flint Creek Drainage to 82 percent of normal in the Rock Creek Drainage. This basin started out on January 1 with 131 percent of normal snowpack. However, like all other basins Montana, it was not immune to the continual decrease in snowpack percentages. Currently the basin is 77 percent of normal on April 1st, and 51 percent of last year at this time.

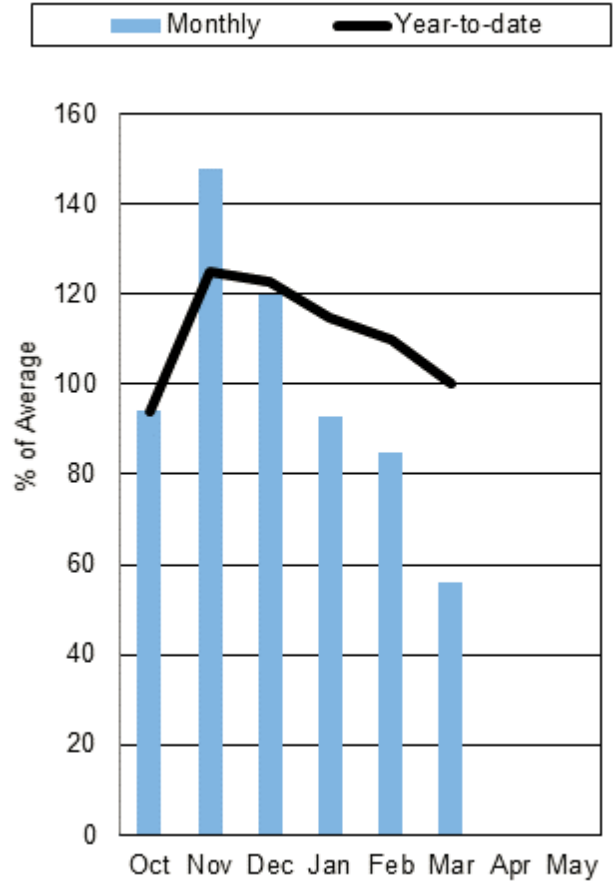
March precipitation was pretty dismal for this basin and ranged from 38 percent of average in the Clark Fork above Flint Creek Drainage to 68 percent of average in the Blackfoot Drainage. Overall the Upper Clark Fork River Basin is currently 100 percent of the water year-to-date average, and is only 84 percent of last year at this time.

Upper Clark Fork River Basin

Mountain Snowpack



Precipitation



Snowpack Analysis

Watershed Snowpack Analysis April 1, 2015	# of Sites	% Median	Last Year % Median
CLARK FORK ab FLINT CREEK	14	74%	148%
FLINT CREEK	5	73%	155%
ROCK CREEK	5	82%	146%
CLARK FORK ab BLACKFOOT	22	76%	150%
BLACKFOOT	12	77%	155%
UPPER CLARK FORK RIVER BASIN	32	77%	151%

Reservoir Storage

Basinwide reservoir storage for the end of March is 114 percent of average and is 115 percent of last year.

Reservoir Storage End of March, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
East Fork Rock Creek Res	11.0	9.7	9.1	15.6
Georgetown Lake	28.8	28.0	27.8	31.0
Lwr Willow Crk Res		2.9	3.0	4.9
Nevada Creek Res	10.9	6.5	7.7	12.6
Basinwide Total	50.7	44.2	44.6	59.2
# of reservoirs	3	3	3	3

Streamflow Forecast

April-July streamflow forecast for the Upper Clark Fork River is 86 percent of average and 55 percent of last year, assuming average precipitation for the rest of the year.

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	22	38	49	70%	60	77	70
	APR-SEP	25	43	55	71%	67	85	77
Flint Ck nr Southern Cross	APR-JUL	4.4	8.1	10.6	85%	13.1	16.8	12.4
	APR-SEP	4.6	9.2	12.4	85%	15.5	20	14.6
Flint Ck bl Boulder Ck	APR-JUL	22	36	45	87%	55	69	52
	APR-SEP	30	47	58	88%	70	87	66
Lower Willow Ck Reservoir Inflow ²	APR-MAY	1.12	3.2	4.7	64%	6.1	8.2	7.3
	APR-JUL	1.23	4.6	6.9	65%	9.1	12.5	10.6
MF Rock Ck nr Philipsburg	APR-JUL	34	44	50	86%	57	66	58
	APR-SEP	39	50	57	88%	64	75	65
Rock Ck nr Clinton	APR-JUL	134	179	210	84%	240	285	250
	APR-SEP	159	210	245	88%	275	330	280
Clark Fork R ab Milltown	APR-JUL	189	325	415	78%	510	645	530
	APR-SEP	230	380	480	78%	580	730	615
Nevada Ck nr Helmville	APR-MAY	0.89	3.1	4.6	55%	6.1	8.3	8.4
	APR-JUL	3.2	6.8	9.2	65%	11.6	15.2	14.2
Blackfoot R nr Bonner	APR-JUL	370	475	545	76%	615	720	720
	APR-SEP	425	540	615	77%	690	805	800
Clark Fork R ab Missoula	APR-JUL	600	820	970	78%	1120	1340	1250
	APR-SEP	705	945	1110	78%	1270	1510	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

3) Median value used in place of average

Snow Water Equivalent: April 8, 2015

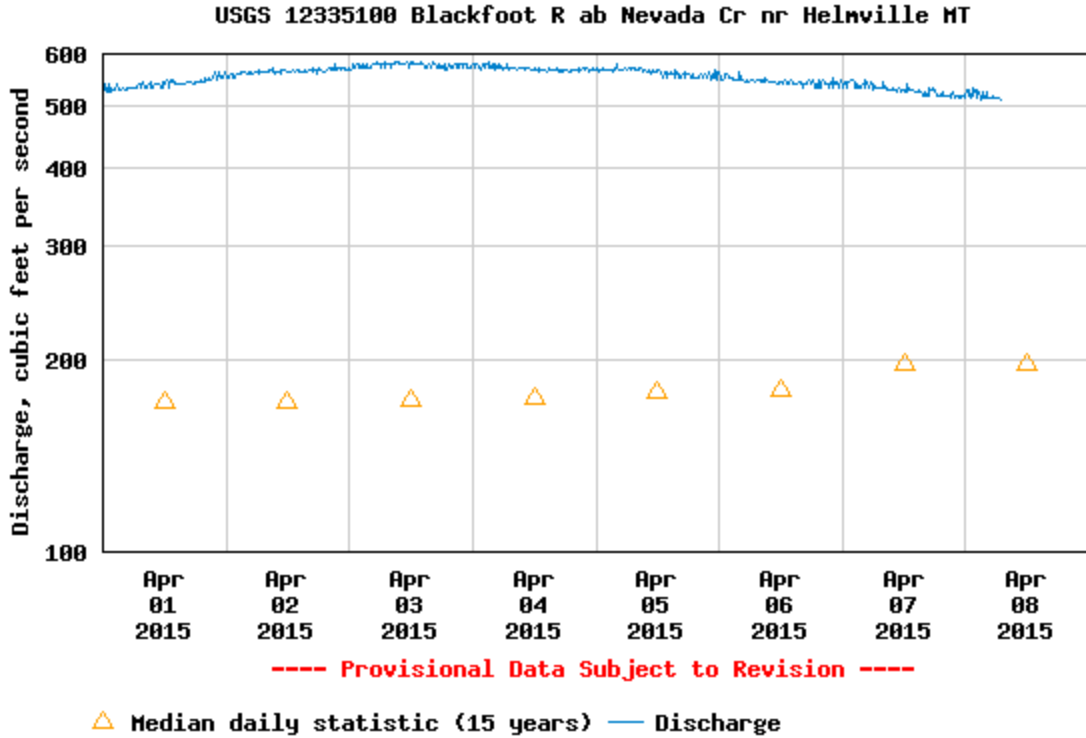
Columbia River Basin SNOTEL Snow/Precipitation Update Report							
Based on Mountain Data from NRCS SNOTEL Sites							
Provisional data, subject to revision							
Data based on the first reading of the day (typically 00:00) for Wednesday, April 08, 2015							
Basin Site Name	Elev (ft)	Snow Water 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	12.2	14.7	83	15.7	16.5	95
Basin Creek	7180	6.7	8.1	83	6.7	10.0	67
Black Pine	7210	7.1	9.9	72	14.4	13.6	106
Combination	5600	0.0	3.9	0	9.5	9.1	104
Copper Bottom	5200	0.0	N/A	*	14.2	15.7	90
Copper Camp	6950	28.7	N/A	*	24.5	31.6	78
Lubrecht Flume	4680	0.0	0.5	0	11.3	10.2	111
Nevada Ridge	7020	12.5	14.2 _c	88	15.7	16.0 _c	98
N Fk Elk Creek	6250	7.9	10.7	74	12.5	14.0	89
North Fork Jocko	6330	34.8	42.2	82	51.0	47.1	108
Peterson Meadows	7200	8.0	10.3	78	12.9	12.1 _c	107
Rocker Peak	8000	13.8	13.2	105	13.7	14.1	97
Skalkaho Summit	7250	17.8	22.2	80	22.4	22.4	100
Stuart Mountain	7400	32.7	31.1 _c	105	33.7	31.1 _c	108
Warm Springs	7800	21.7	20.0	108	23.6	22.5	105
Basin Index (%)		87			99		

April 8, 2015 USGS Real Time Flow Conditions

BLACKFOOT RIVER ABOVE NEVADA CREEK NEAR HELMVILLE

Discharge, cubic feet per second

Most recent instantaneous value: 509 04-08-2015 06:45 MDT



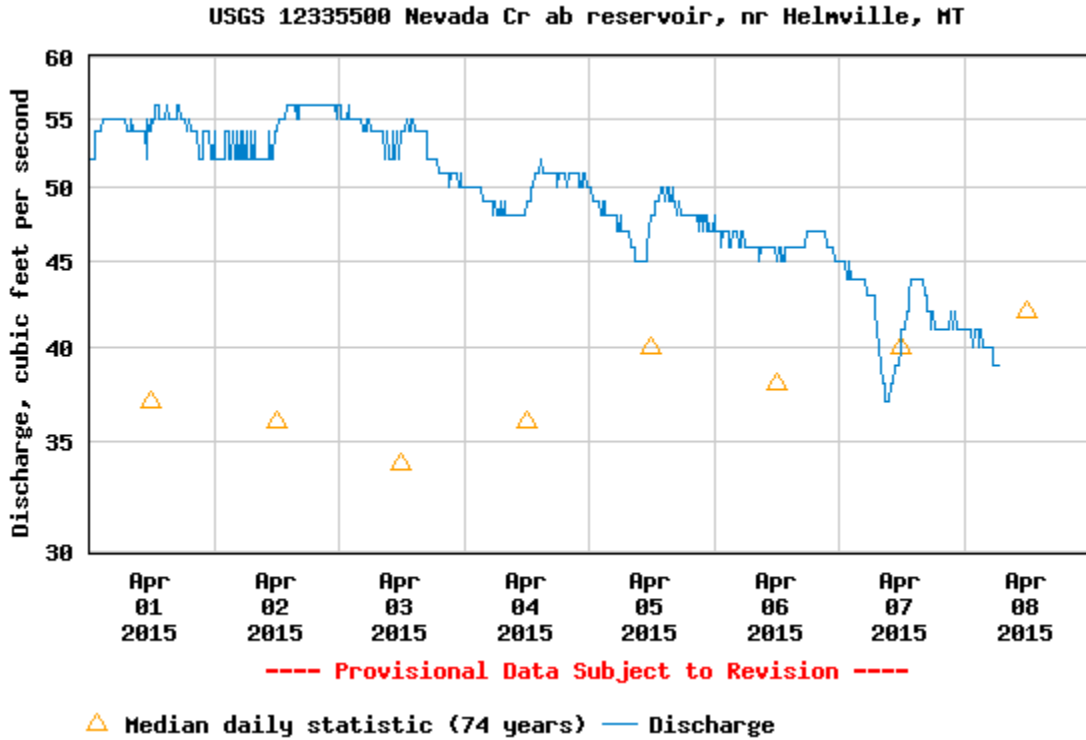
Daily discharge, cubic feet per second -- statistics for Apr 8 based on 15 years of record [more](#)

Min (2008)	25th percentile	Median	Mean	75th percentile	Max (2012)	Most Recent Instantaneous Value Apr 8
117	146	196	214	286	351	509

NEVADA CREEK (above reservoir)

Discharge, cubic feet per second

Most recent instantaneous value: 39 04-08-2015 06:45 MDT



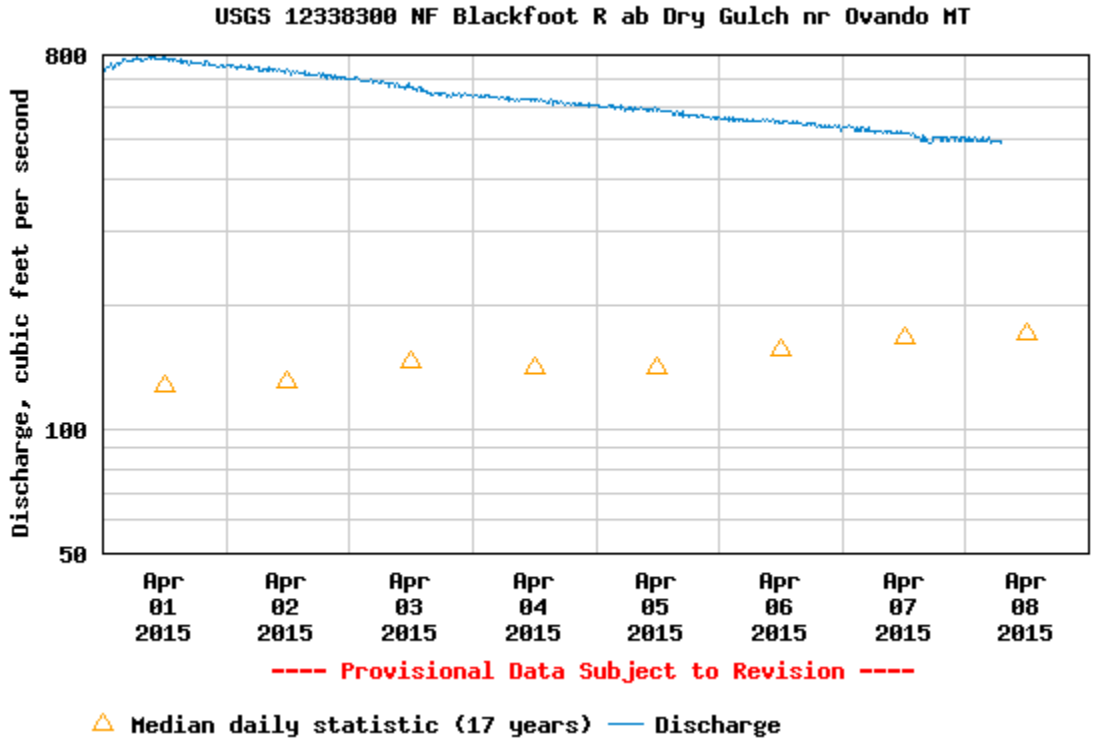
Daily discharge, cubic feet per second -- statistics for Apr 8 based on 75 years of record [more](#)

Min (1941)	25th percentile	Most Recent Instantaneous Value Apr 8	Median	Mean	75th percentile	Max (1949)
10	23	39	42	67	84	406

NORTH FORK BLACKFOOT (above Dry Gulch near Ovando)

Discharge, cubic feet per second

Most recent instantaneous value: 492 04-08-2015 07:00 MDT



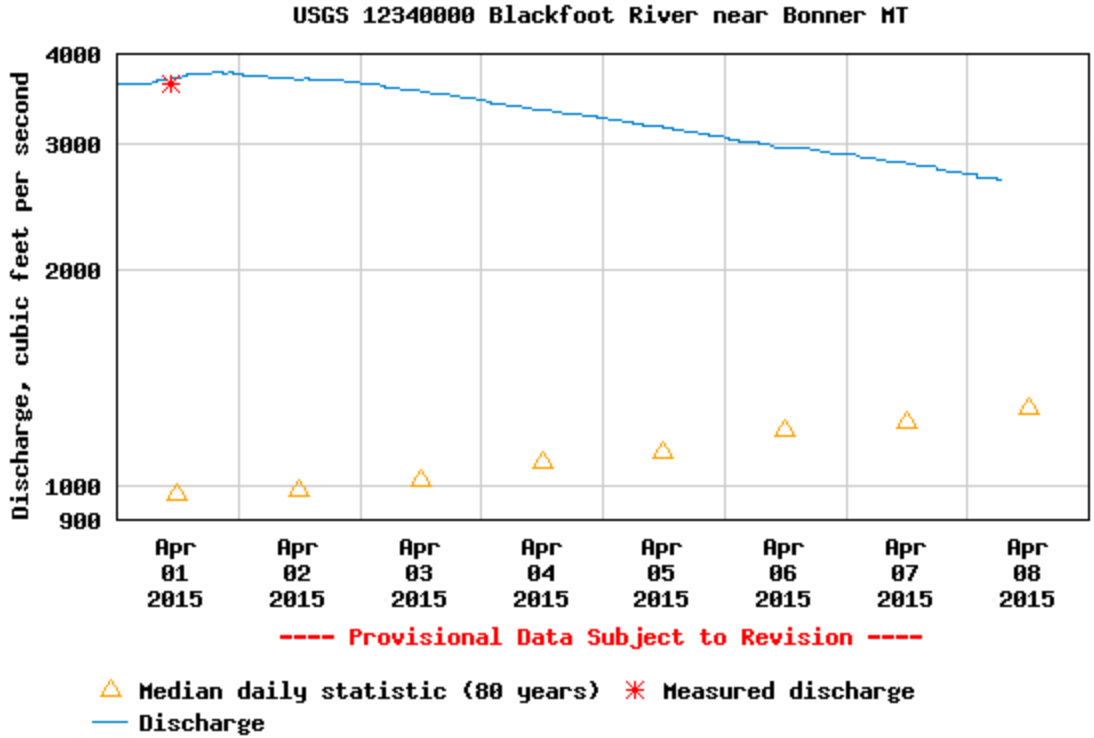
Daily discharge, cubic feet per second -- statistics for Apr 8 based on 17 years of record [more](#)

Min (2008)	25th percentile	Median	Mean	75th percentile	Most Recent Instantaneous Value Apr 8	Max (2004)
81	116	171	188	214	492	504

BLACKFOOT RIVER AT BONNER

Discharge, cubic feet per second

Most recent instantaneous value: 2,680 04-08-2015 06:45 MDT



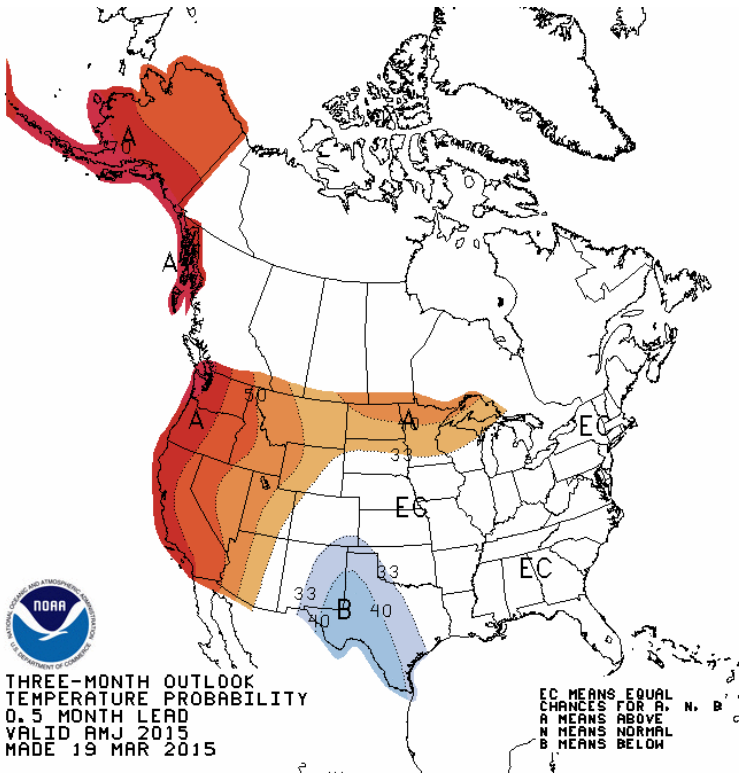
Daily discharge, cubic feet per second -- statistics for Apr 8 based on 80 years of record [more](#)

Min (1905)	25th percentile	Median	Mean	75th percentile	Most Recent Instantaneous Value Apr 8	Max (1960)
415	873	1290	1540	2040	2680	3840

Three-Month Outlook March 9, 2015

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

Higher chance for above normal temps
over the next 3 months



Equal chance for normal, above or below
normal precipitation over next 3 months

