

# Montana Water Supply Outlook Report January 1<sup>st</sup>, 2015



First snowfall of the year on Pilot Peak, WY in the Beartooth Range.

*Photo: Lucas Zukiewicz*

# Water Supply Outlook Report

## and

### Federal - State - Private

### Cooperative Snow Surveys

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*For more water supply and resource management information, contact:*

**Lucas Zukiewicz**  
***Water Supply Specialist***  
**Federal Building**  
**10 East Babcock, Room 443**  
**Bozeman, MT 59715**  
**Phone 406-587-6843**  
**lucas.zukiewicz@mt.usda.gov**  
**<http://www.nrcs.usda.gov/wps/portal/nrcs/main/mt/snow/>**

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### ***How forecasts are made***

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Natural Resources Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

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# Montana Water Supply Outlook Report as of January 1<sup>st</sup>, 2015

The snowpack in Montana began accumulating in the mountains a few weeks later than normal this water year, but since the end of November has made dramatic improvements across most of the state. The two storms that occurred near both of the holidays in the end of November and December raised most basins in the state from well below normal snowpack conditions in mid-November, to above normal on January 1<sup>st</sup>.

Across the state most basins are near normal to well above normal for January 1<sup>st</sup>. Two basins west of the Divide were below normal on January 1<sup>st</sup>, the Kootenai River basin and Lower Clark Fork River basin. East of the Divide the Madison River basin and St Mary-Milk basin were below normal at this time. Statewide, snowpack is currently 109 percent of normal for January 1<sup>st</sup>, and 99 percent of last year at this time.

Normally at this time of year we have accumulated 40 to 45 percent of our annual snowpack for the year. With so much of the winter left to come streamflow prospects in the spring will be influenced by the weather and snowfall over the next five months.

## Snowpack

Both east and west of the Continental Divide in Montana snow water equivalent (SWE) is above normal on January 1<sup>st</sup> in most basins. A basin of note in Montana is the upper reaches of the Beaverhead River above Lima Reservoir in the Red Rocks valley. This area has experienced persistently dry conditions since last year, and is well below normal again this year on January 1<sup>st</sup>. Some neighboring headwaters basins in the Madison River drainage are also experiencing below normal snowpack so far, but not to the same extent. There is still a lot of snowfall yet to come to Montana, so a close eye will be kept on these basins as the winter develops.

January 1 Snow Water Equivalent		
River Basin	Jan 1 % of Normal	% of Last Year
Columbia	109	104
Kootenai	80	82
Flathead	110	94
Upper Clark Fork	131	125
Bitterroot	125	127
Lower Clark Fork	90	102
Missouri	109	94
Missouri Headwaters	105	95
Jefferson	114	98
Madison	87	85
Gallatin	101	85
Missouri Mainstem	120	93
Headwaters Mainstem	126	103
Smith-Judith Musselshell	112	76
Sun-Teton-Marias	113	103
Milk	155	74
St. Mary	86	81
St. Mary & Milk	91	80
Yellowstone	110	90
Upper Yellowstone	116	96
Lower Yellowstone	103	85
<b>Statewide</b>	<b>109</b>	<b>99</b>

## Precipitation

Water year-to-date precipitation is currently above normal for the state at 112 percent of average with only October precipitation below the average mark at 83 percent. The Bitterroot received the most precipitation this year so far with 130 percent of average measured on January 1<sup>st</sup>. At 89 and 98 percent of average respectively, the Madison and Lower Yellowstone are the only two basins currently below average. Compared to below average precipitation at this point a year ago, Montana has received more precipitation during the fall and early winter than the previous water year with 132 percent of last year's precipitation at this time.

<b>Jan 1 Precipitation</b>		
<b>River Basin</b>	<b>December % of Average</b>	<b>water year % of Average</b>
Columbia	102	117
Kootenai	85	108
Flathead	111	120
Upper Clark Fork	118	122
Bitterroot	99	130
Lower Clark Fork	87	112
Missouri	103	107
Jefferson	118	107
Madison	95	89
Gallatin	110	103
Missouri Mainstem	118	116
Smith-Judith Musselshell	120	116
Sun-Teton-Marias	91	124
St. Mary & Milk	67	111
Yellowstone	110	102
Upper Yellowstone	108	105
Lower Yellowstone	112	98
<b>Statewide</b>	<b>104</b>	<b>112</b>

## Reservoirs

Reservoir storage west of the divide is currently 113 percent of average for January 1<sup>st</sup> and 96 percent of last year at this time. East of the divide reservoir storage is currently 112 percent of average and 114 percent of last year at this time.

<b>Jan 1 Reservoir Storage</b>		
<b>River Basin</b>	<b>Jan 1 % of Average</b>	<b>Jan 1 % Last Year</b>
Columbia	113	96
Kootenai	110	86
Flathead	117	105
Upper Clark Fork	106	109
Bitterroot	161	122
Lower Clark Fork	101	102
Missouri	112	115
Missouri Headwaters	109	110
Jefferson	92	122
Madison	118	106
Gallatin	108	98
Missouri below Toston	112	115
Missouri Mainstem	112	115
Smith-Judith Musselshell	180	169
Sun-Teton-Marias	108	112
Milk	152	104
St. Mary	197	183
St. Mary & Milk	163	119
Yellowstone	108	97
Upper Yellowstone	129	109
Lower Yellowstone	107	96
<b>Statewide</b>	<b>112</b>	<b>108</b>

## Streamflow

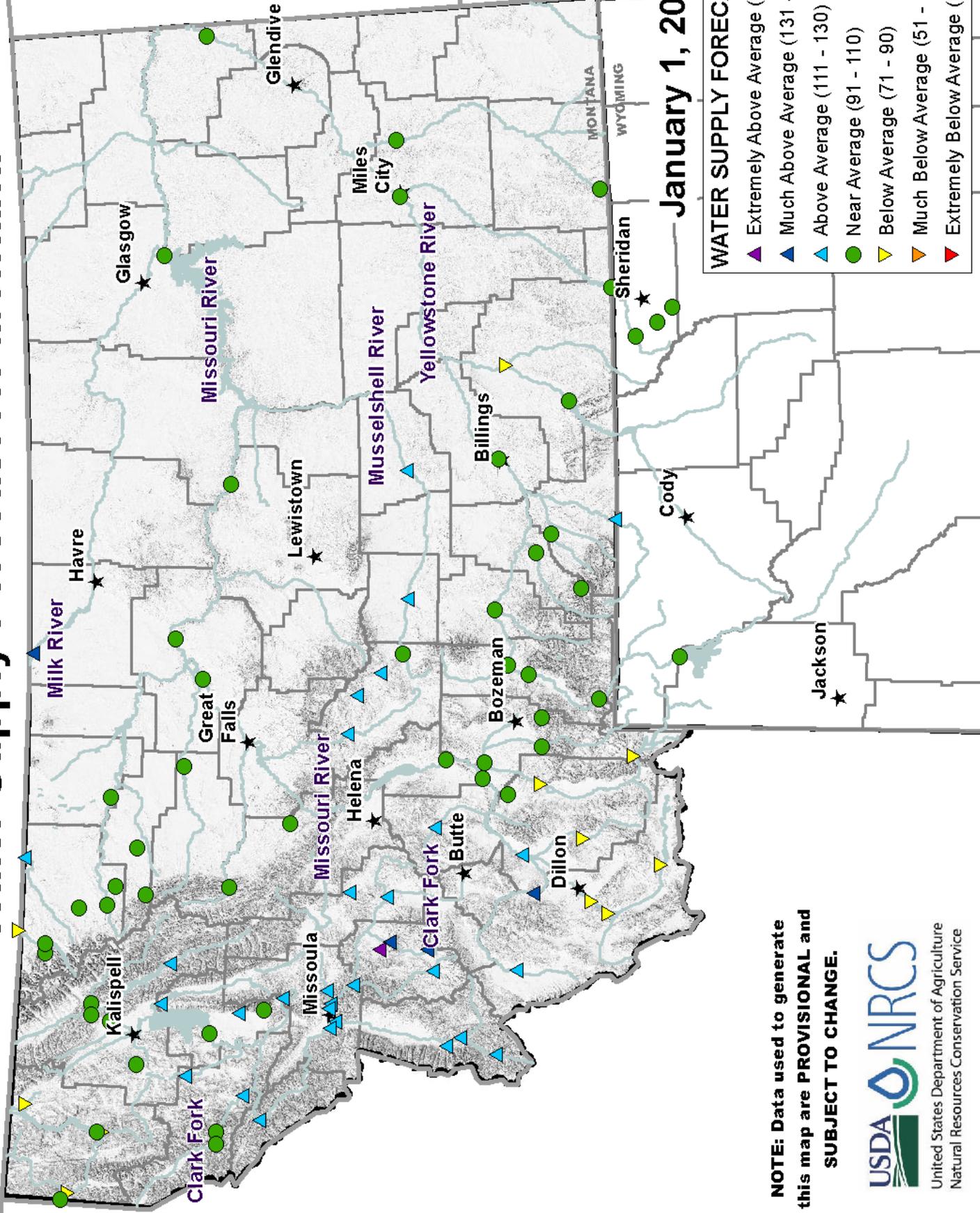
Streamflow forecasts on January 1<sup>st</sup> should be used knowing there is generally less skill at this time than forecasts later in the season as we reach peak accumulation of the snowpack. At this point the basins have normally received 40 to 45 percent of their seasonal snowpack, and future conditions will dictate the timing and volume of runoff this spring. Current data from SNOTEL sites and snowcourses on January 1<sup>st</sup> indicate statewide streamflows are forecasted to be 107 percent of average, and 78 percent of what occurred last year during the April 1-July 31 time frame.

Following are streamflow forecasts for the period April 1 through July 31. **THE FIGURES IN THE TABLE BELOW ARE AN AVERAGE OF ALL FORECASTS WITHIN THE PARTICULAR BASIN AT THE 50 PERCENT EXCEEDANCE ONLY. ALL 50 PERCENT EXCEEDANCE FORECASTS ASSUME NEAR NORMAL WEATHER THROUGH THE END OF THE FORECAST PERIOD.**

FOR FORECASTS ABOVE AND BELOW THE 50 PERCENT EXCEEDANCE, LOOK TO THE SPECIFIC BASIN REPORTS.

<b>April-July Streamflow Forecast Period</b>		
<b>River Basin</b>	<b>Forecast as % of Average</b>	<b>This Year Forecast as % of Last Year Streamflow</b>
Columbia	110	81
Kootenai	97	83
Flathead	111	80
Upper Clark Fork	123	87
Bitterroot	114	68
Lower Clark Fork	90	65
Missouri	101	83
Missouri Headwaters	103	93
Jefferson	112	98
Madison	88	90
Gallatin	94	83
Missouri Mainstem	101	81
Headwaters Mainstem	101	81
Smith-Judith Musselshell	117	80
Sun-Teton-Marias	106	78
St. Mary	90	65
Milk (Mar-Sept % median)	131	
Yellowstone	105	69
Upper Yellowstone	106	73
Lower Yellowstone	105	66
<b>Statewide</b>	<b>107</b>	<b>78</b>

# Water Supply Forecast for Montana



January 1, 2015

**NOTE: Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.**



## Surface Water Supply Index

The Surface Water Supply Index (SWSI) is a measure of available surface water availability for the spring and summer months. Water users that rely on mountain precipitation can use the index to evaluate seasonal surface water supplies. The SWSI accounts for mountain snowpack, mountain precipitation, streamflow, reservoir storage, and soil moisture.

Watershed	This month's SWSI	Last Year's SWSI
Marias above Tiber Reservoir	0.4	-1.2
Tobacco	-1.6	-1.3
Kootenai Ft. Steele to Libby Dam	-0.4	-1
Kootenai below Libby Dam	0.6	0.9
Fisher	-1.3	-0.7
Yaak	-2.2	-2.2
North Fk. Flathead	0.2	-0.7
Middle Fk. Flathead	0.2	-0.1
South Fk. Flathead	2.7	2.7
Flathead at Columbia Falls	1.5	0.4
Swan	1.8	1.2
Flathead at Polson	0.7	0.5
Mission Valley	1.2	-0.1
Little Bitterroot	1.7	1.8
Clark Fork above Milltown	1.1	-0.1
Blackfoot	0.4	0
Clark Fork above Missoula	1.1	0.1
Bitterroot	0.2	0
Clark Fork River below Bitterroot	0.8	0.1
Clark Fork River below Flathead	0.8	0.4
Beaverhead	-1.1	-2
Ruby	-0.4	-0.7
Big Hole	1.1	-0.1
Boulder (Jefferson)	0.5	-0.4
Jefferson	0.4	0.7
Madison	-0.4	-0.5
Gallatin	-0.7	-0.4
Missouri above Canyon Ferry	-0.2	0.2
Missouri below Canyon Ferry	-0.2	0
Smith	2.1	2.8
Sun	0.0	-2.2
Teton	0.8	-0.2
Birch/Dupuyer Creeks	0.2	-2.5
Marias	2.2	-0.3
Musselshell	1.3	1.4
Missouri above Fort Peck	0.7	-0.7
Missouri below Fort Peck	0.0	-1.4
Milk	2.5	1.4
Dearborn near Craig	-0.2	-1.4
Yellowstone above Livingston	0.7	0.2
Shields	0.0	2.2
Boulder (Yellowstone)	-0.5	0.3
Stillwater	0.2	-0.8
Rock/Red Lodge Creeks	-0.2	-0.1
Clarks Fork Yellowstone	0.7	0.5
Yellowstone above Bighorn River	0.6	0.1
Bighorn below Bighorn Lake	0.4	0.2
Little Bighorn	0.2	-0.3
Yellowstone below Bighorn	0.4	0.2
Tongue	-0.2	1.7
Powder	0.2	1.7
Upper Judith	1.8	3.8
Saint Mary	-0.7	-0.5

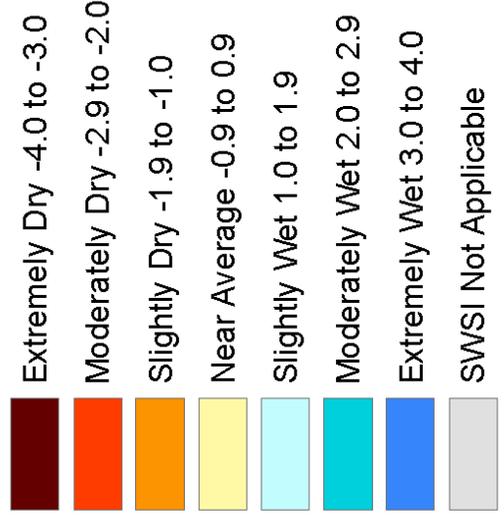
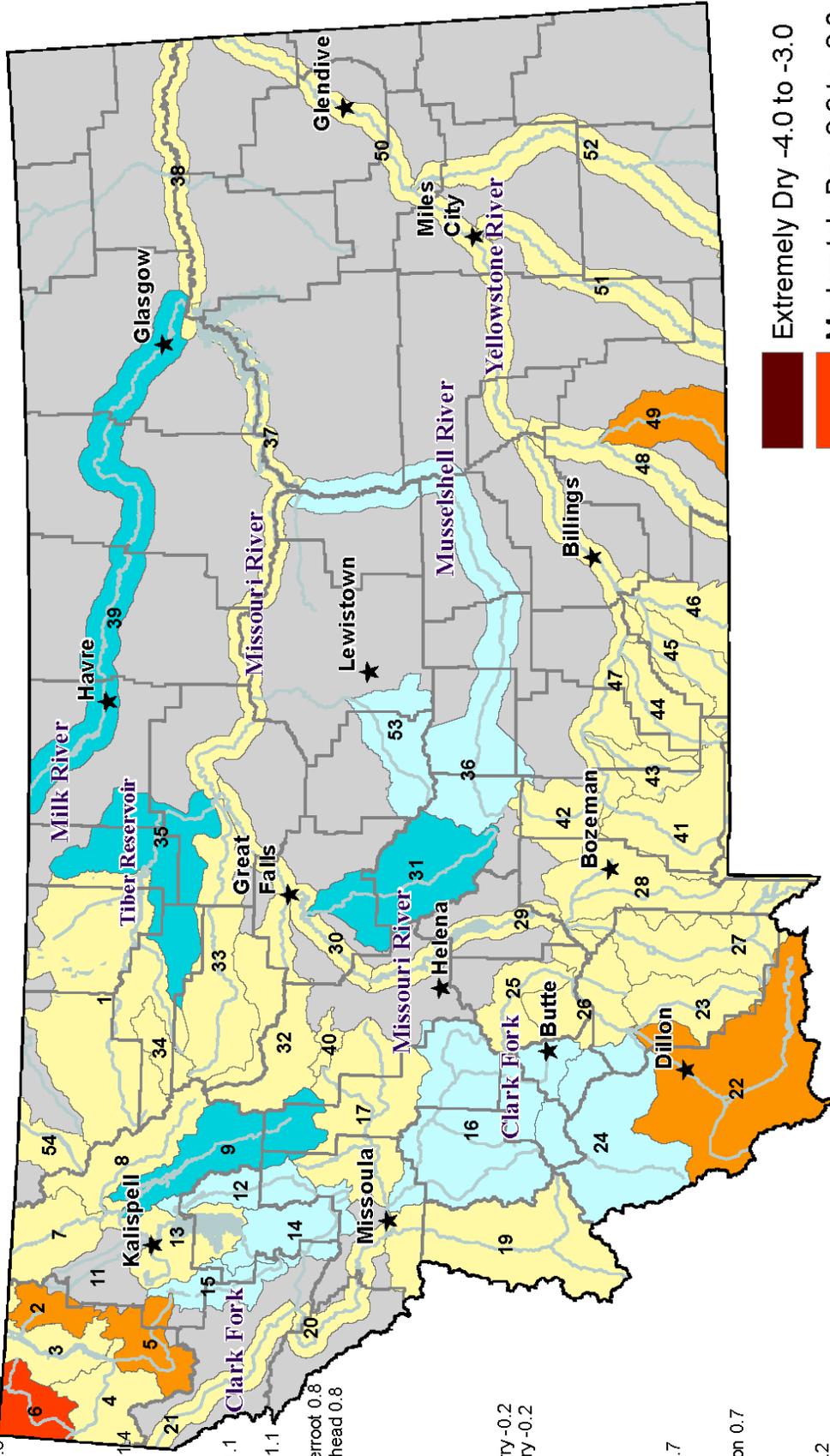
### SWSI Scale

+3.0 to +4.0	Extremely Wet
+2.0 to +2.9	Moderately Wet
+1.0 to +1.9	Slightly Wet
+0.9 to -0.9	Near Average
-1.0 to -1.9	Slightly Dry
-2.0 to -2.9	Moderately Dry
-3.0 to -4.0	Extremely Dry

# Surface Water Supply Index (SWSI) Values

## RIVER INDEX & SWSI VALUES

- 1 Marias above Tiber Reservoir 0.4
- 2 Tobacco -1.6
- 3 Kootenai Ft. Steele to Libby Dam -0.4
- 4 Kootenai below Libby Dam 0.6
- 5 Fisher -1.3
- 6 Yaak -2.2
- 7 North Fk. Flathead 0.2
- 8 Middle Fk. Flathead 0.2
- 9 South Fk. Flathead 2.7
- 10 Flathead at Columbia Falls 1.4
- 11 Swan 1.8
- 12 Flathead at Polson 0.7
- 13 Mission Valley 1.2
- 14 Little Bitterroot 1.7
- 15 Clark Fork above Milltown 1.1
- 16 Blackfoot 0.4
- 17 Clark Fork above Missoula 1.1
- 18 Clark Fork below Bitterroot 0.8
- 19 Clark Fork River below Flathead 0.8
- 20 Beaverhead -1.1
- 21 Ruby -0.4
- 22 Big Hole 1.1
- 23 Boulder (Jefferson) 0.5
- 24 Jefferson 0.4
- 25 Madison -0.4
- 26 Gallatin -0.7
- 27 Missouri above Canyon Ferry -0.2
- 28 Missouri below Canyon Ferry -0.2
- 29 Smith 2.1
- 30 Sun 0
- 31 Teton 0.8
- 32 Birch/Dupuyer Creeks 0.2
- 33 Marias 2.2
- 34 Musselshell 1.3
- 35 Missouri above Fort Peck 0.7
- 36 Missouri below Fort Peck 0
- 37 Dearborn near Craig -0.2
- 38 Yellowstone above Livingston 0.7
- 39 Shields 0
- 40 Boulder (Yellowstone) -0.5
- 41 Stillwater 0.2
- 42 Rock/Red Lodge Creeks -0.2
- 43 Clark's Fork Yellowstone 0.7
- 44 Yellowstone above Bighorn River 0.6
- 45 Bighorn below Bighorn Lake 0.2
- 46 Little Bighorn -1.1
- 47 Yellowstone below Bighorn 0.4
- 48 Tongue -0.2
- 49 Powder 0.2
- 50 Upper Judith 1.8
- 51 Saint Mary -0.7

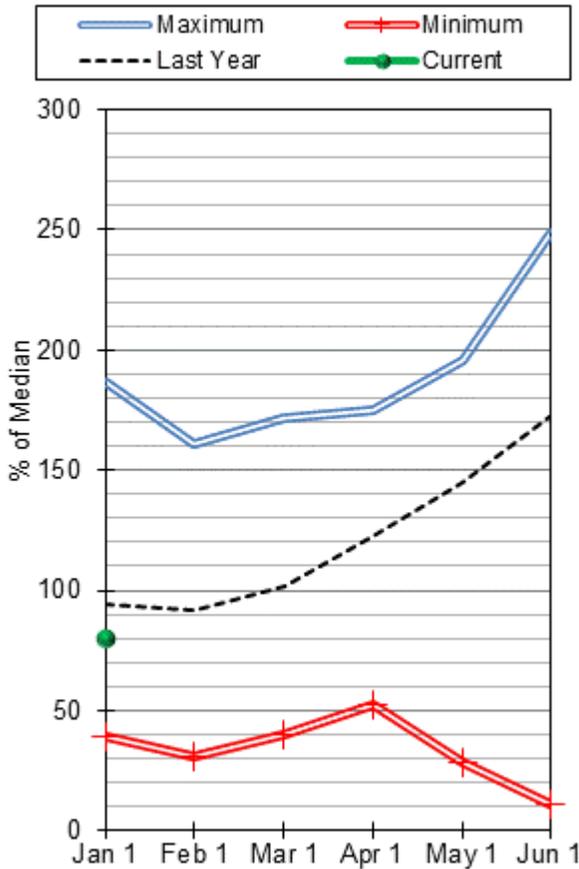


January 1, 2015

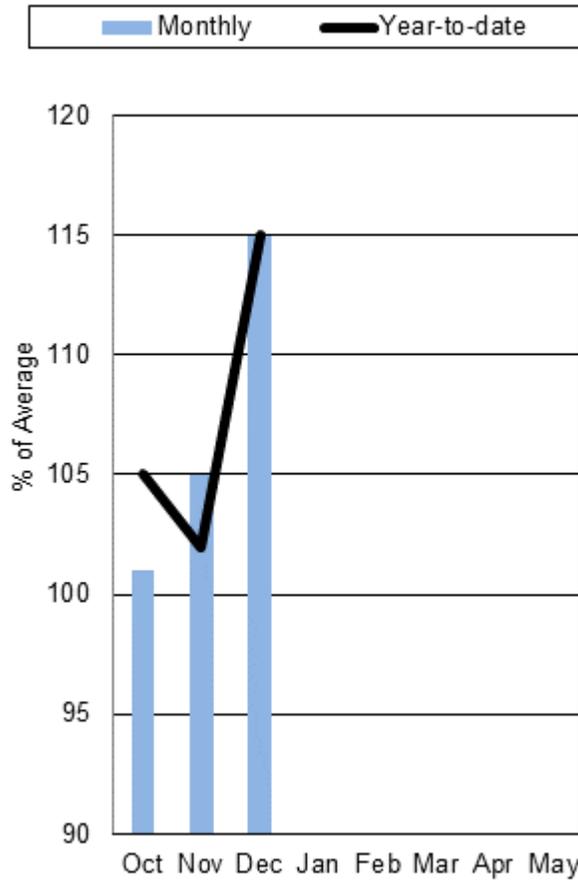
NOTE: Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.

# Kootenai River Basin in Montana

## Mountain Snowpack



## Precipitation



Winter started off slowly in the Kootenai River Basin with well below normal snowfall from October 1<sup>st</sup> through the first three weeks of November. In fact, the basin-wide SWE was ranked 3<sup>rd</sup> lowest in the last 35 years in November 20<sup>th</sup>, 2014. Near the end of the month the basin received one major storm near Thanksgiving, which helped the basin to rebound from well below normal to near normal conditions.

The first half of December saw a return to drier conditions in the basin, allowing the basin to again drop in percentage of normal. Favorable storms since mid-December have helped the basin to improve, but the slow start to the snow season and lack of early December precipitation has left the basin the lowest in state in regards to percentage of normal. Currently the basin is 80 percent of normal for January 1<sup>st</sup>, and is 82 percent of what we had received last year on this date.

Fall precipitation since October 1<sup>st</sup> has been near average throughout the basin, receiving close to average precipitation through the end of November. The two major storms to impact the basin in late November and December have boosted the basin to above average on January 1<sup>st</sup> for water year-to-date percentage of average. Currently the basin is 108 percent of average on January 1<sup>st</sup>, and 153 percent of last year at this time.

Reservoir storage in Lake Koocanusa is 110 percent of average and 86 percent of last year at this time.

The basin-wide April-July average streamflow forecast for the Kootenai River is currently 97 percent of average and 83 percent of last year.

# Kootenai River Basin In Montana Streamflow Forecasts - January 1, 2015

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

KOOTENAI RIVER BASIN in MONTANA	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Tobacco R nr Eureka	APR-JUL	62	85	101	80%	117	140	126
	APR-SEP	70	95	113	81%	130	155	140
Libby Reservoir Inflow <sup>1</sup>	APR-JUL	4010	4850	5230	98%	5610	6450	5340
	APR-SEP	4780	5630	6010	96%	6400	7240	6250
Fisher R nr Libby	APR-JUL	87	140	176	86%	210	265	205
	APR-SEP	96	151	188	85%	225	280	220
Yaak R nr Troy	APR-JUL	170	260	325	77%	385	480	420
	APR-SEP	184	280	340	77%	405	500	440
Kootenai R at Leonia <sup>1,2</sup>	APR-JUL	4900	5960	6440	98%	6920	7980	6600
	APR-SEP	5700	6770	7260	96%	7750	8820	7590

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

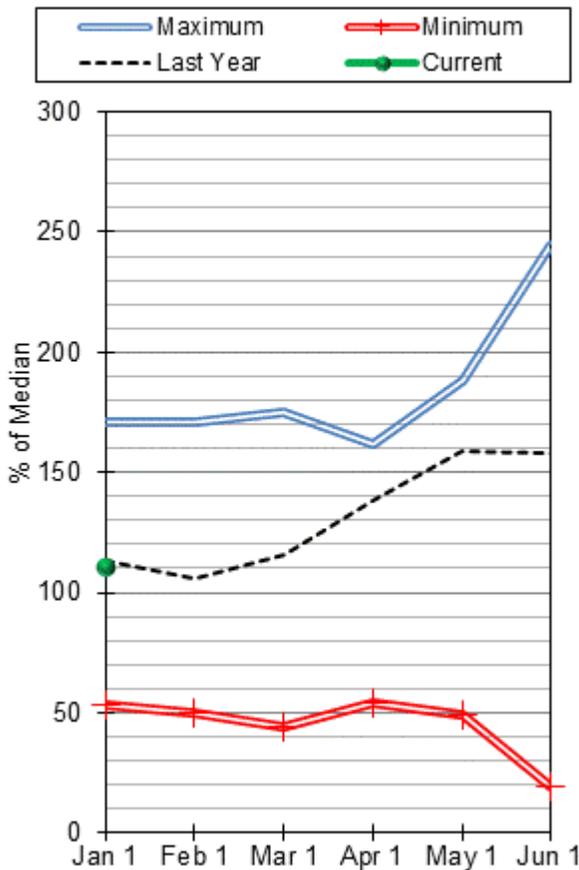
3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Lake Koocanusa	3747.5	4334.7	3417.0	5748.0
Basin-wide Total	3747.5	4334.7	3417.0	5748.0
# of reservoirs	1	1	1	1

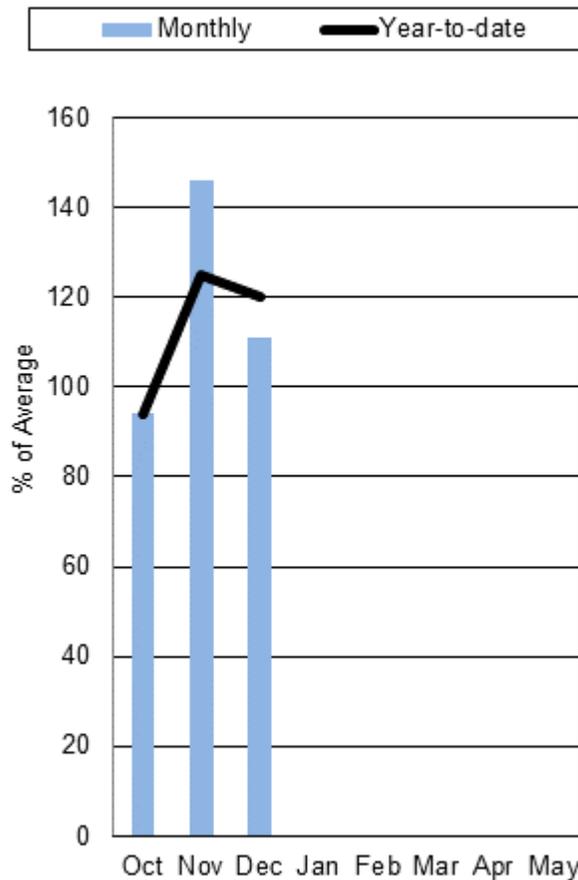
Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
KOOTENAY in CANADA	8	93%	97%
KOOTENAI MAINSTEM	3	62%	91%
TOBACCO	3	98%	110%
FISHER	1	100%	131%
YAAK	2	83%	77%
KOOTENAI RIVER BASIN in MONTANA	9	80%	98%
KOOTENAI ab BONNERS FERRY	16	90%	100%

# Flathead River Basin

## Mountain Snowpack



## Precipitation



Snowpack in the Flathead River basin began around November 1<sup>st</sup> of this year, a month after the new water year began. At the end of November one large storm dropped significant snowfall across the basin, and brought the percentage above normal for the first time this year. Early December had some small events occur at the beginning of the month, before larger events towards the end of the month dropped significant snowfall. During the last week of December between the 24<sup>th</sup> and the 31<sup>st</sup> SNOTEL sites in the Mission Range, Flathead Range and Swan Ranges received between 2.2" and 4.6" of SWE. Currently the basin is well above average at 110 percent of normal and 94 percent of last year at this time.

Mountain and valley was slightly below to near average from the beginning of the water year on October 1<sup>st</sup> until late November. Continued precipitation since then raised the water year percentage of average to above normal at 120 percent of normal, and 140 percent of last year at this time.

Basin-wide reservoir storages are 117 percent of average and 105 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Flathead River is currently at 111 percent of average and 80 percent of last year.

# Flathead River Basin Streamflow Forecasts - January 1, 2015

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

FLATHEAD RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
NF Flathead R nr Columbia Falls	APR-JUL	1250	1460	1600	104%	1750	1960	1540
	APR-SEP	1390	1620	1770	104%	1920	2150	1700
MF Flathead R nr West Glacier	APR-JUL	1230	1460	1610	107%	1760	1980	1500
	APR-SEP	1350	1590	1750	107%	1910	2140	1630
Sf Flathead R nr Hungry Horse	APR-JUL	1070	1250	1380	117%	1500	1680	1180
	APR-SEP	1140	1330	1460	116%	1590	1780	1260
Hungry Horse Reservoir Inflow <sup>1,2</sup>	APR-JUL	1610	2010	2200	118%	2380	2780	1860
	APR-SEP	1720	2130	2320	117%	2510	2920	1980
Flathead R at Columbia Falls <sup>2</sup>	APR-JUL	4370	5050	5510	110%	5980	6660	5020
	APR-SEP	4770	5480	5970	110%	6450	7160	5450
Ashley Ck nr Marion <sup>2</sup>	MAR	0.27	0.76	1.09	92%	1.42	1.91	1.19
	APR-JUL	4.3	5.9	7	108%	8.1	9.7	6.5
Swan R nr Bigfork	APR-JUL	480	560	615	118%	665	745	520
	APR-SEP	550	635	695	117%	755	845	595
Flathead Lake Inflow <sup>1,2</sup>	APR-JUL	4620	5830	6380	110%	6930	8140	5810
	APR-SEP	5020	6300	6880	110%	7470	8750	6270
Mill Ck ab Bassoo ck nr Niarada	APR-JUL	2.3	3.6	4.5	113%	5.4	6.7	4
	APR-SEP	2.5	3.9	4.8	109%	5.8	7.1	4.4
South Crow Ck nr Ronan	APR-JUL	8.9	10.4	11.4	113%	12.4	13.9	10.1
	APR-SEP	10.3	11.9	13.1	113%	14.2	15.8	11.6
Mission Ck nr St. Ignatius	APR-JUL	23	25	27	108%	29	31	25
	APR-SEP	28	31	33	110%	35	38	30
SF Jocko R nr Arlee	APR-JUL	32	37	41	124%	45	51	33
	APR-SEP	36	42	46	124%	50	56	37
NF Jocko R bl Tabor Feeder Canal	APR-JUL	29	33	36	116%	38	42	31
	APR-SEP	31	35	38	115%	41	44	33

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

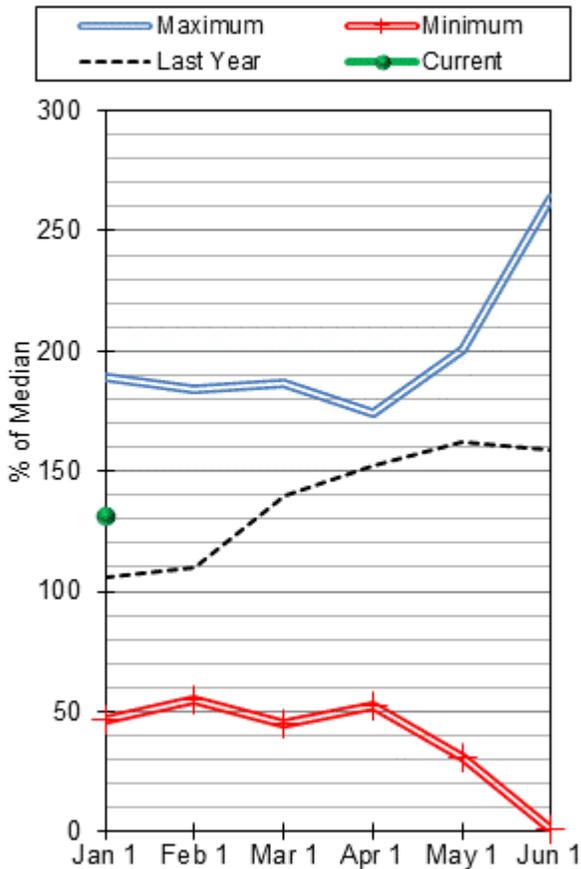
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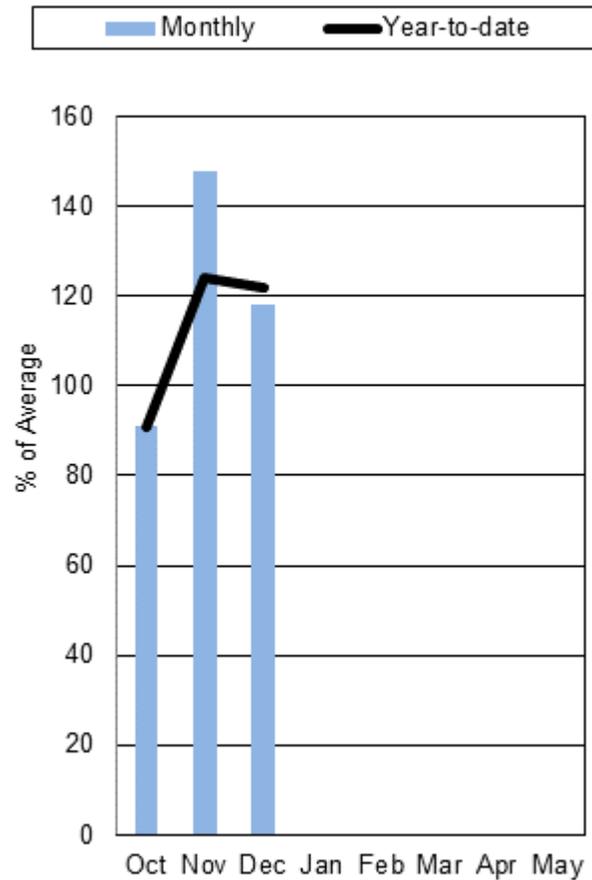
Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Camas (4)	27.3	22.6	17.4	45.2
Lower Jocko Lake	0.0	0.0	0.0	6.4
Mission Valley (8)	31.6	25.0	30.0	100.0
Hungry Horse Lake	3152.7	2959.6	2537.0	3451.0
Flathead Lake	1185.4	1180.5	1158.0	1791.0
Basin-wide Total	4397.1	4187.8	3742.4	5393.6
# of reservoirs	5	5	5	5
Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median	
NF FLATHEAD in CANADA	2	81%	83%	
NF FLATHEAD in MONTANA	6	97%	113%	
MIDDLE FORK FLATHEAD	4	105%	115%	
SOUTH FORK FLATHEAD	6	114%	120%	
STILLWATER-WHITEFISH	2	113%	133%	
SWAN	5	117%	121%	
MISSION VALLEY	2	148%	126%	
JOCKO	3	112%	104%	
FLATHEAD in MONTANA	6	97%	113%	
FLATHEAD RIVER BASIN	21	108%	114%	

# Upper Clark Fork River Basin

## Mountain Snowpack



## Precipitation



The Upper Clark Fork River basin currently has the highest basin-wide percentage of normal snowpack across the state of Montana. The seasonal snowpack in the basin began to accumulate around the beginning of November, but didn't really see substantial increases until near the end of the month. The late November storm dropped a basin-wide average of 3.1" of SWE at SNOTEL sites during a 5 day period. After a short lull during the first half of December the storm patterns again favored the basin dropping as much as 3.8" of SWE during the latter half of the month, raising the basin to well above normal on January 1<sup>st</sup>. Currently the basin is 131 percent of average, and 125 percent of last year at this time.

Starting on October 1<sup>st</sup>, the basin saw slightly below normal precipitation during October, near normal precipitation during the first two thirds of November, and well above average precipitation through the end of the year. Currently on January 1<sup>st</sup>, the Upper Clark Fork River basin is 122 percent of average, and 158 percent of last year on this date.

Basin-wide reservoir storage is currently 106 percent of average and 109 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Upper Clark Fork River is currently at 123 percent of average and 87 percent of last year.

# Upper Clark Fork River Basin Streamflow Forecasts - January 1, 2015

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)
Little Blackfoot nr Garrison	APR-JUL	47	71	87	124%	103	127	70
	APR-SEP	52	77	95	123%	112	137	77
Flint Ck nr Southern Cross	APR-JUL	10.6	14.7	17.5	141%	20	24	12.4
	APR-SEP	12.1	17.3	21	144%	24	29	14.6
Flint Ck bl Boulder Ck	APR-JUL	45	61	72	138%	83	99	52
	APR-SEP	58	77	90	136%	103	122	66
Lower Willow Ck Reservoir Inflow <sup>2</sup>	APR-MAY	7	9.7	11.5	158%	13.4	16.1	7.3
	APR-JUL	8.8	13.4	16.5	156%	19.7	24	10.6
MF Rock Ck nr Philipsburg	APR-JUL	52	63	71	122%	79	90	58
	APR-SEP	59	71	79	122%	88	100	65
Rock Ck nr Clinton	APR-JUL	215	275	315	126%	360	420	250
	APR-SEP	245	310	355	127%	400	465	280
Clark Fork R ab Milltown	APR-JUL	405	575	690	130%	805	970	530
	APR-SEP	485	670	795	129%	920	1100	615
Nevada Ck nr Helmville	APR-MAY	4.8	8	10.3	123%	12.5	15.8	8.4
	APR-JUL	8.5	13.9	17.5	123%	21	26	14.2
Blackfoot R nr Bonner	APR-JUL	525	700	820	114%	940	1120	720
	APR-SEP	590	780	910	114%	1040	1230	800
Clark Fork R ab Missoula	APR-JUL	1020	1320	1530	122%	1730	2040	1250
	APR-SEP	1180	1500	1720	121%	1940	2260	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

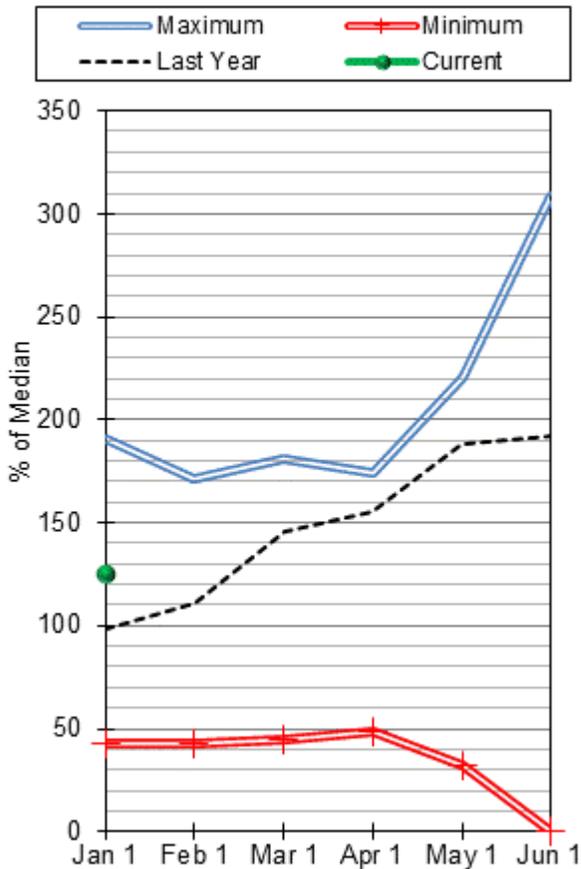
3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
East Fork Rock Creek Res	9.5	8.1	7.0	15.6
Georgetown Lake	25.9	26.6	27.8	31.0
Lower Willow Creek Reservoir		0.8	1.7	4.9
Nevada Creek Res	6.3	3.5	4.7	12.6
Basin-wide Total	41.7	38.2	39.5	59.2
# of reservoirs	3	3	3	3

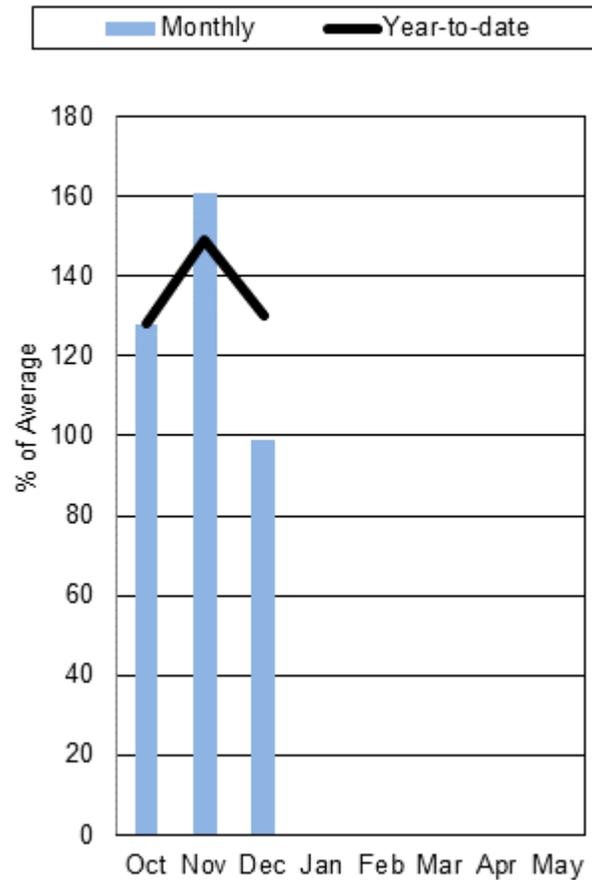
Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
CLARK FORK ab FLINT CREEK	9	129%	116%
FLINT CREEK	9	129%	116%
ROCK CREEK	3	142%	103%
CLARK FORK ab BLACKFOOT	15	136%	109%
BLACKFOOT	15	136%	109%
UPPER CLARK FORK RIVER BASIN	25	131%	105%

# Bitterroot River Basin

## Mountain Snowpack



## Precipitation



Basin-wide seasonal snowpack began to accumulate in the Bitterroot River basin near the end of October to early November. The first few weeks were mostly dry across the basin with warmer than average temperatures, but things changed quickly during the end of November when a significant event near Thanksgiving dropped 3 to 4" of SWE at higher elevations. Another period with some small snow events transpired during the first two weeks in December, before the faucet turned back on in the Bitterroot Range. Data from SNOTEL sites indicate that an average of 4.1" of SWE was received during this period, with the high elevation site Twin Lakes SNOTEL in the Lost Horse drainage receiving 8.2" of SWE. The two events during late November and late December boosted the snowpack percentages of normal, which is currently 125 percent of normal on Jan 1<sup>st</sup>, and 127 percent of last year at this time.

Precipitation in the basin was near normal from Oct 1<sup>st</sup> until the end of November, but well above normal since the then. Currently the basin is 130 percent of the water year-to-date average for Jan 1<sup>st</sup>, and 180 percent of last year at this time.

Painted Rocks Lake is currently at 128 percent of average and Lake Como is currently at 183 percent of average. Basin-wide reservoir storage is at 161 percent of average and 122 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Bitterroot River is currently at 114 percent of average and 68 percent of last year.

# Bitterroot River Basin Streamflow Forecasts - January 1, 2015

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

<b>BITTERROOT RIVER BASIN</b>	<b>Forecast Period</b>	<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	<b>30yr Avg (KAF)</b>
WF Bitterroot R Nr Conner <sup>2</sup>	APR-JUL	81	119	144	113%	170	210	128
	APR-SEP	87	129	157	113%	186	225	139
Bitterroot R Nr Darby	APR-JUL	265	380	455	111%	535	645	410
	APR-SEP	325	440	520	111%	595	710	470
Como Reservoir Inflow <sup>2</sup>	APR-JUL	66	78	86	113%	93	105	76
	APR-SEP	70	82	90	114%	98	110	79
Bitterroot R nr Missoula	APR-JUL	855	1130	1320	115%	1510	1790	1150
	APR-SEP	945	1240	1440	115%	1640	1930	1250

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

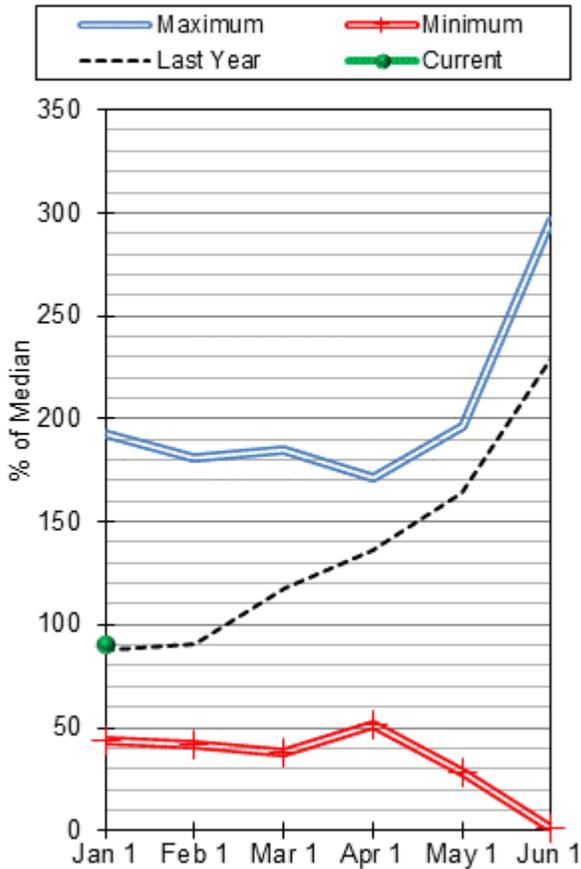
3) Median value used in place of average

<b>Reservoir Storage End of December, 2014</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Capacity (KAF)</b>
Painted Rocks Lake	7.9	11.5	6.2	31.7
Lake Como	17.2	9.0	9.4	34.9
Basin-wide Total	25.1	20.6	15.6	66.6
# of reservoirs	2	2	2	2

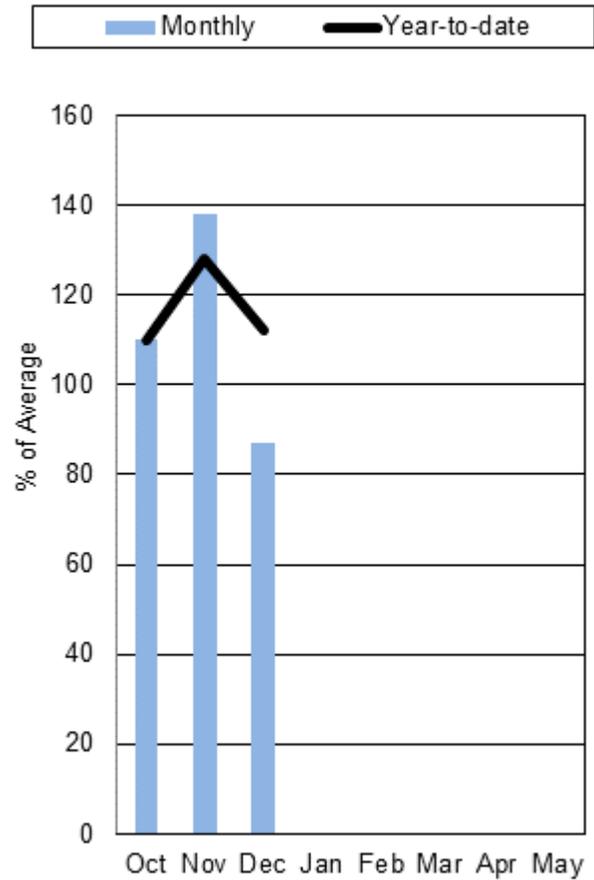
<b>Watershed Snowpack Analysis January 1, 2015</b>	<b># of Sites</b>	<b>% Median</b>	<b>Last Year % Median</b>
WEST FORK BITTERROOT	2	125%	115%
EAST SIDE BITTERROOT	3	134%	106%
WEST SIDE BITTERROOT	3	120%	93%
BITTERROOT RIVER BASIN	7	125%	98%

# Lower Clark Fork River Basin

## Mountain Snowpack



## Precipitation



Snowfall in the Lower Clark Fork basin has trended with its northern neighbor the Kootenai, and has not received the abundance of moisture basins to the east have seen. Seasonal snowpack began basin-wide near the beginning of November, and has been near normal to slightly below normal since. The latter half of December did see good snow increments at SNOTEL sites in the basin which has helped the basin to stay slightly below normal ending the year. Currently the basin is 90 percent of normal regarding SWE for January 1<sup>st</sup>, and 102 percent of last year

Precipitation across the basin was consistent during the fall which has helped to stay above average for water year-to-date precipitation. Currently the basin is 112 percent of Average for January 1<sup>st</sup>, and 176 percent of last year at this time.

Reservoir storage in Noxon Rapids is currently at 101 percent of average and 102 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Lower Clark Fork River is currently at 114 percent of average and 82 percent of last year.

# Lower Clark Fork River Basin Streamflow Forecasts - January 1, 2015

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

<b>LOWER CLARK FORK RIVER BASIN</b>	<b>Forecast Period</b>	<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	<b>30yr Avg (KAF)</b>
Clark Fork R bl Missoula	APR-JUL	1940	2460	2820	118%	3180	3710	2400
	APR-SEP	2200	2760	3140	118%	3510	4070	2670
Clark Fork R at St. Regis <sup>1</sup>	APR-JUL	2310	3280	3720	118%	4160	5130	3160
	APR-SEP	2660	3680	4140	118%	4600	5610	3510
Clark Fork R nr Plains <sup>1,2</sup>	APR-JUL	7500	9500	10400	113%	11300	13300	9200
	APR-SEP	8340	10400	11400	113%	12400	14500	10100
Thompson nr Thompson Falls	APR-JUL	103	150	182	101%	215	260	181
	APR-SEP	121	171	205	100%	240	290	205
Prospect Ck at Thompson Falls	APR-JUL	67	91	107	105%	123	147	102
	APR-SEP	74	98	115	105%	131	156	110
Clark Fork R at Whitehorse Rapids <sup>1,2</sup>	APR-JUL	8470	10700	11800	112%	12800	15000	10500
	APR-SEP	9450	11800	12900	112%	14000	16400	11500

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

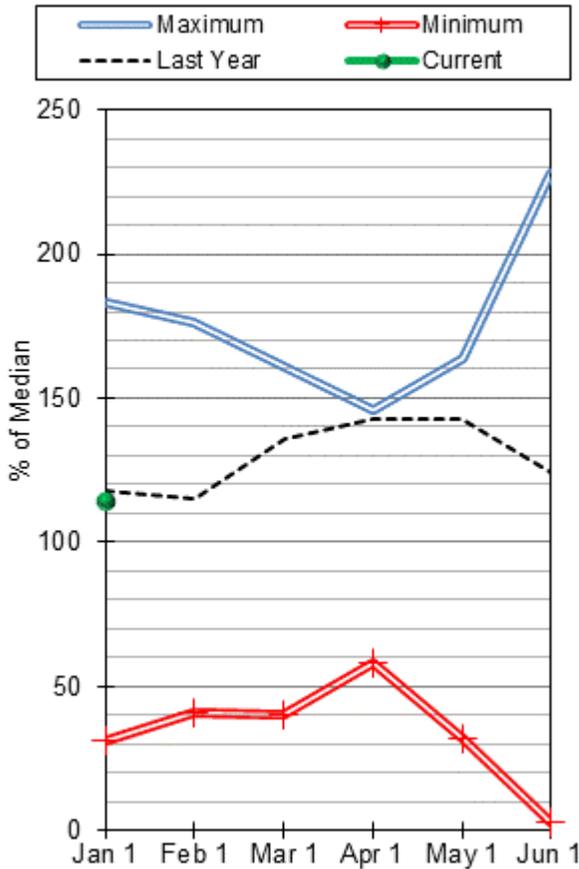
<b>Reservoir Storage End of December, 2014</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Capacity (KAF)</b>
Noxon Rapids Reservoir	319.9	312.9	317.9	335.0
Basin-wide Total	319.9	312.9	317.9	335.0
# of reservoirs	1	1	1	1

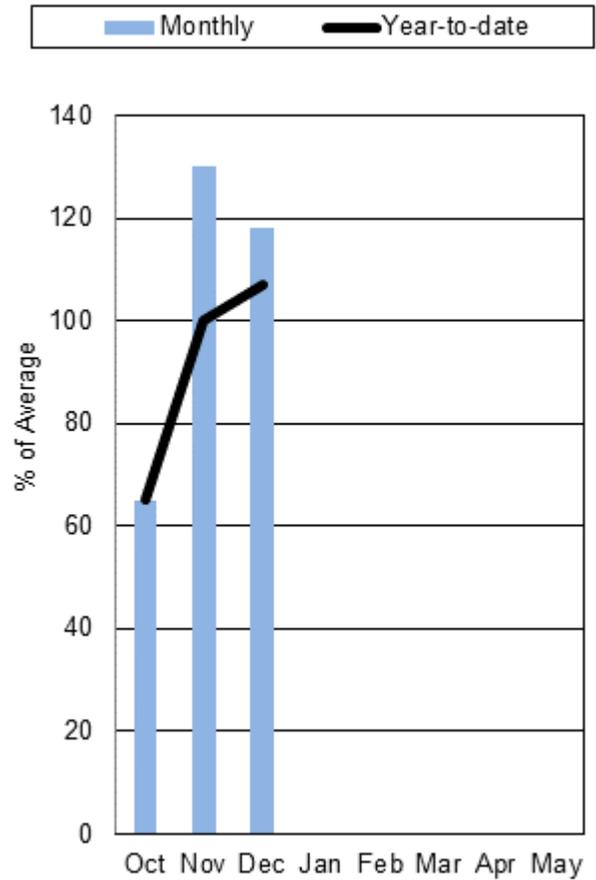
<b>Watershed Snowpack Analysis January 1, 2015</b>	<b># of Sites</b>	<b>% Median</b>	<b>Last Year % Median</b>
LOWER CLARK FORK RIVER BASIN	7	90%	88%

# Jefferson River Basin

## Mountain Snowpack



## Precipitation



The Jefferson River basin started accumulating its seasonal snowpack slightly earlier than its Southwest Montana neighbors, but still later than normal. Due to a late start and a relatively dry mid-November the snowpack remained below normal until a large storm system arrived around the end of November. Storms during the early weeks in December kept the many parts of the basin near normal, until a late December storm system increased snowpack to above normal in many parts of the basin. Some areas in the headwaters of the Beaverhead River basin have persisted with dry conditions since last year. The Red Rocks area above Lima Reservoir and Ruby River basin are well below normal for January 1<sup>st</sup>. Basin-wide snow pack is currently 114 percent of normal and 98 percent of last year at this time.

The Jefferson River Basin experienced a slow to start in terms of precipitation this water year. On October 21<sup>st</sup> basin-wide precipitation was about 30% of average. The end of November storm pushed basin-wide precipitation to a near average level. Near average precipitation in the first part of December combined with the end of the year storm brought basin-wide precipitation values to above average. As of January 1<sup>st</sup> the Jefferson River Basin was at 107 percent of average and 124 of last year.

Clark Canyon Reservoir is currently at 77 percent of average and Ruby Reservoir is currently at 149 percent of average. Basin-wide reservoir storage is at 92 percent of average and 122 percent of last year of last year at this time.

The basin-wide average April-July streamflow forecast for the Jefferson River is currently at 112 percent of average and 98 percent of last year.

# Jefferson River Basin Streamflow Forecasts - January 1, 2015

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

JEFFERSON RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Lima Reservoir Inflow <sup>2</sup>	APR-JUL	29	50	65	79%	80	101	82
	APR-SEP	28	52	69	78%	86	110	89
Clark Canyon Inflow <sup>2</sup>	APR-JUL	-15	39	79	78%	119	178	101
	APR-SEP	-4	52	96	80%	140	205	120
Beaverhead R at Barretts <sup>2</sup>	APR-JUL	25	59	110	85%	161	235	129
	APR-SEP	35	74	134	86%	193	280	156
Ruby R Reservoir Inflow <sup>2</sup>	APR-JUL	26	46	59	77%	72	92	77
	APR-SEP	34	56	72	79%	87	110	91
Big Hole R at Wisdom	APR-JUL	46	97	132	129%	167	220	102
	APR-SEP	49	103	140	130%	177	230	108
Big Hole R nr Melrose	APR-JUL	445	595	700	136%	805	955	515
	APR-SEP	475	640	750	134%	865	1030	560
Jefferson R nr Twin Bridges <sup>2</sup>	APR-JUL	380	630	800	116%	970	1220	690
	APR-SEP	395	675	865	118%	1050	1330	730
Boulder R nr Boulder	APR-JUL	50	68	80	116%	92	110	69
	APR-SEP	54	73	86	116%	99	118	74
Willow Ck Reservoir Inflow <sup>2</sup>	APR-JUL	4.6	11.6	16.4	98%	21	28	16.8
	APR-SEP	7.3	14.9	20	104%	25	33	19.3
Jefferson R nr Three Forks <sup>2</sup>	APR-JUL	315	590	775	105%	960	1240	740
	APR-SEP	335	640	845	106%	1050	1360	800

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

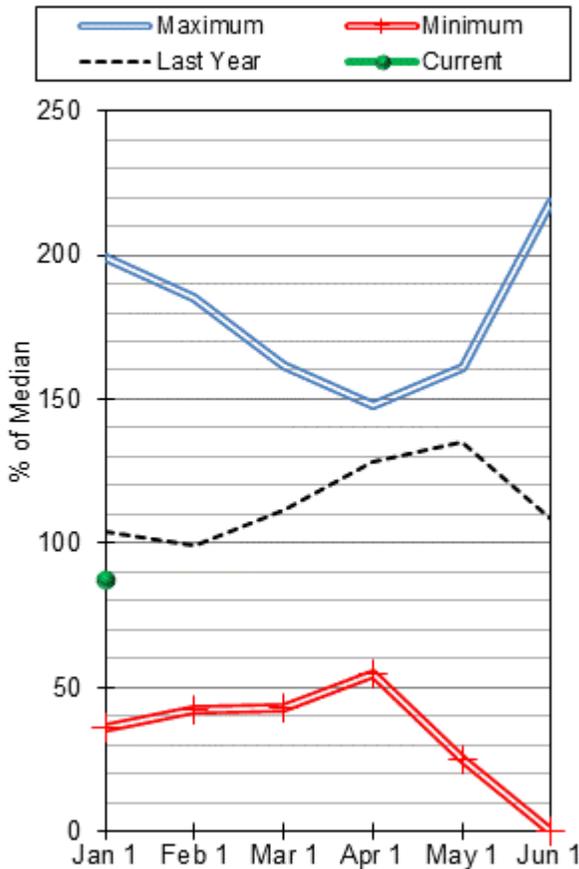
3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Lima Reservoir	31.4	21.8	27.4	84.0
Clark Canyon Res	89.5	76.1	116.7	255.6
Ruby River Reservoir	29.9	26.2	20.1	38.8
Basin-wide Total	150.8	124.1	164.2	378.4
# of reservoirs	3	3	3	3

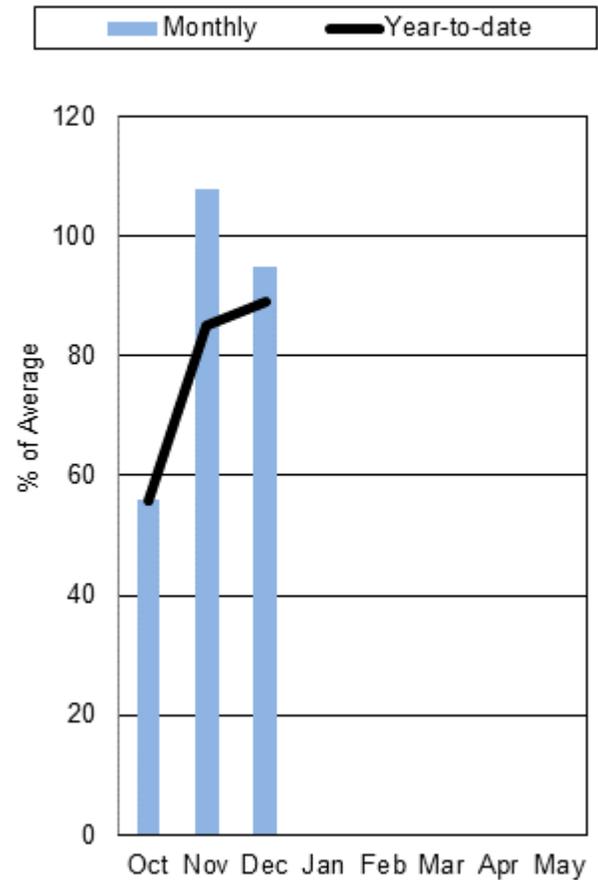
Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
BEAVERHEAD	8	111%	105%
RUBY	5	82%	124%
BIGHOLE	9	132%	121%
BOULDER	4	135%	132%
JEFFERSON RIVER BASIN	21	114%	116%

# Madison River Basin

## Mountain Snowpack



## Precipitation



Similar to the rest of Southwest Montana the mountains in the Madison River basin saw minor snow accumulations in mid-October which melted due to unseasonably warm temperatures. The seasonal snowpack began accumulating during the last week of October at higher elevations, and first week of November at lower elevations. Throughout November the snowpack remained well below normal until a blast of snow at the end of the month yielded some recovery. Two dry weeks during the first two weeks of December further decreased the basin percentages of normal, but storms at the end of the month did yield some improvement. Basin-wide the snowpack on January 1<sup>st</sup> was at below normal at 87 percent and 85 percent of last year at this time.

The relatively dry fall in the Madison River Basin resulted in below average precipitation numbers. The large storm systems at the end of the November and December brought basin-wide precipitation closer to average. As of January 1<sup>st</sup> the basin was at 89 percent of average and 96 percent of last year.

Hebgen Lake is currently at 120 percent and Ennis Lake is currently at 95 percent of average. Basin-wide reservoir storage is at 118 percent of average and 106 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Madison River is currently at 88 percent of average and 90 percent of last year.

# Madison River Basin Streamflow Forecasts - January 1, 2015

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

<b>MADISON RIVER BASIN</b>	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Hebgen Reservoir Inflow <sup>2</sup>	APR-JUL	245	295	330	89%	365	415	370
	APR-SEP	320	380	425	90%	465	525	470
Ennis Reservoir Inflow <sup>2</sup>	APR-JUL	390	480	545	87%	610	700	625
	APR-SEP	505	615	690	89%	760	870	775

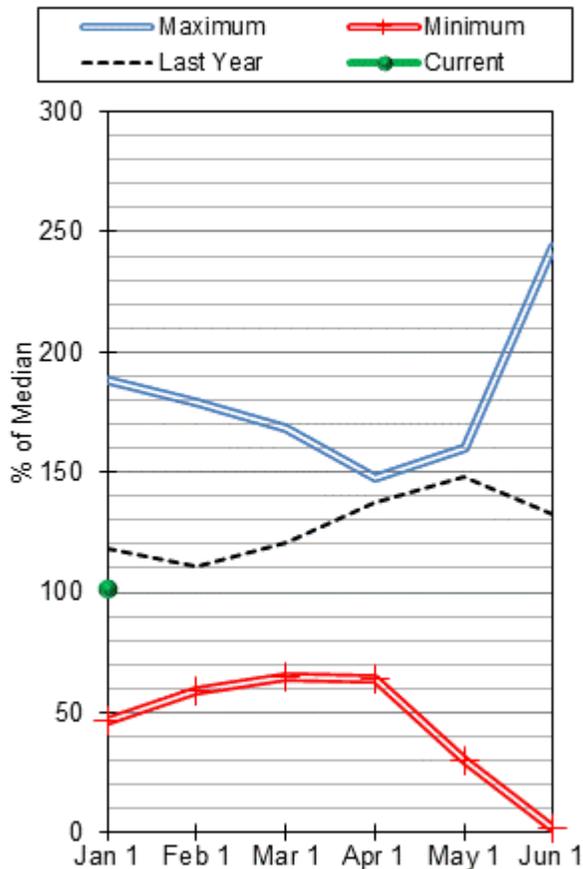
- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

<b>Reservoir Storage End of December, 2014</b>	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Ennis Lake	28.5	29.2	30.0	41.0
Hebgen Lake	340.2	318.1	283.2	377.5
Basin-wide Total	368.7	347.4	313.2	418.5
# of reservoirs	2	2	2	2

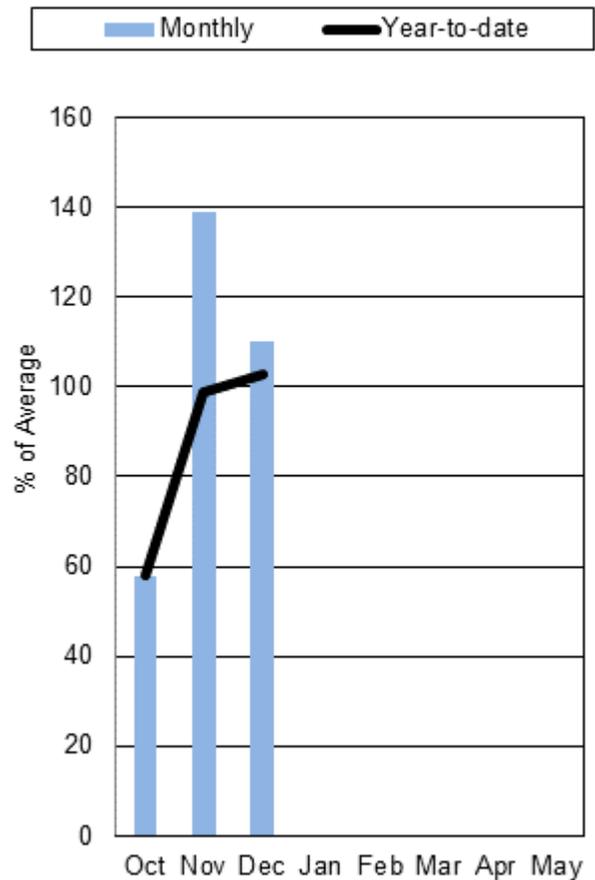
<b>Watershed Snowpack Analysis January 1, 2015</b>	# of Sites	% Median	Last Year % Median
MADISON abv HEBGEN LAKE	6	90%	96%
MADISON blw HEBGEN LAKE	8	85%	110%
MADISON RIVER BASIN	14	87%	104%

# Gallatin River Basin

## Mountain Snowpack



## Precipitation



The Gallatin River Basin received several snow storms with minor accumulations during the month of October. These storms were followed by unseasonably warm temperatures which melted the majority of the snowpack at SNOTEL sites. Basin-wide snowpack began its seasonal accumulation in during the first week of November. Gradual accumulations during mid-November were overshadowed by a large storm system near the end of the month. The mountains around Bozeman saw approximately a 150% increase in snow water equivalent Thanksgiving week. Relatively dry conditions in early December left many Gallatin Valley snow enthusiasts wondering if they made the right decision to stay home and ski for Christmas. To their benefit a storm cycle arrived around December 20<sup>th</sup> and persisted through the end of the year. Northwest flow patterns this winter have favored snowfall in the northern end of the Gallatin River basin, the Bridger Range is currently well above average, while southern basins in the headwaters of the Gallatin are below normal. Basin-wide snowpack is currently 101% of normal for January 1<sup>st</sup>, and 85% of last year at this time.

October in the Gallatin River Basin started out dry. Mid-October through mid-November delivered enough precipitation to hold the current water year precipitation at just below average. The large storm in late November brought the basin-wide precipitation to near average conditions and the storm in late December pushed the basin to above average conditions. On January 1<sup>st</sup> the basin was at 103 percent of average and 99 percent of last year.

Middle Creek Reservoir is currently at 108 percent of average and 98 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Gallatin River is currently at 94 percent of average and 83 percent of last year.

# Gallatin River Basin Streamflow Forecasts - January 1, 2015

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

GALLATIN RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Gallatin R nr Gateway	APR-JUL	260	325	370	93%	415	480	400
	APR-SEP	305	380	430	91%	480	555	470
Hyalite Reservoir Inflow <sup>2</sup>	APR-JUL	15.9	18.3	20	100%	22	24	20
	APR-SEP	18.4	21	23	100%	25	27	23
Gallatin R at Logan	APR-JUL	235	345	420	95%	495	605	440
	APR-SEP	280	400	485	96%	570	690	505

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

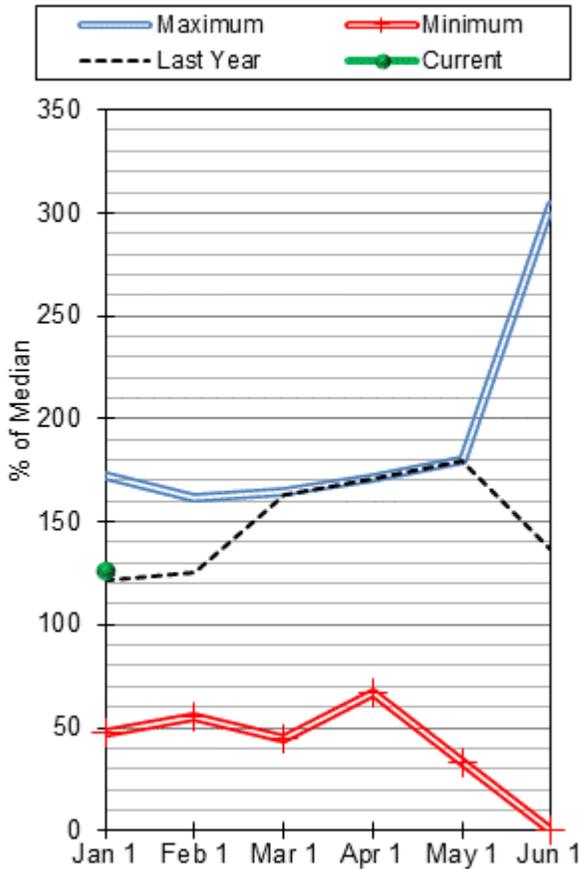
3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Middle Creek Res	5.5	5.6	5.1	10.2
Basin-wide Total	5.5	5.6	5.1	10.2
# of reservoirs	1	1	1	1

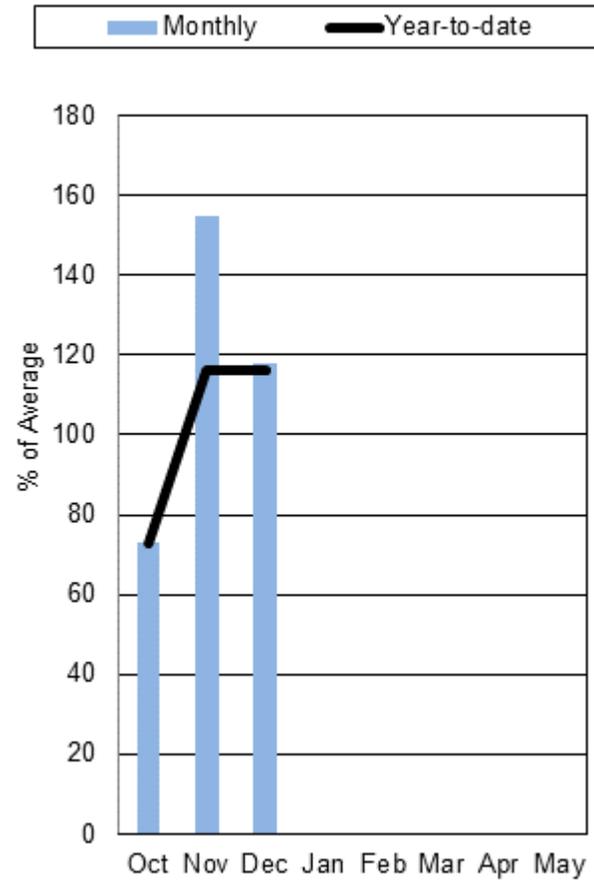
Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
UPPER GALLATIN	4	82%	97%
HYALITE	2	100%	116%
BRIDGER	2	150%	180%
GALLATIN RIVER BASIN	8	101%	118%

# Missouri Mainstem River Basin

## Mountain Snowpack



## Precipitation



Fall was relatively dry in the Missouri Mainstem River basin with seasonal snowpack beginning during the end of October and first week November. Above average temperatures were experienced during the first week, which melted the snow at many low-elevation locations. Following this disappointing weather pattern was a substantial snow event which raised the basin from well below average on Nov 23<sup>rd</sup> to near average on December 1. Snowfall during December and another major storm raised the basin from near average to above average on January 1<sup>st</sup>. Currently the basin is 120 percent of normal for January 1<sup>st</sup>, and 93 percent of last year at this time.

After a relatively dry start to the water year during October, November and December brought well above average precipitation to the basin. Ending the month of October the basin was at 73 percent of average, and has climbed to 116 percent of average on January 1<sup>st</sup>, and 127 percent of last year at this time.

Fort Peck Lake is currently at 113 percent of average and Lake Helena is currently at 91 percent of average. Basin-wide reservoir storage is at 112 percent of average and 115 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Missouri Mainstem River is currently at 101 percent of average and 81 percent of last year.

# Missouri Mainstem Basin Streamflow Forecasts - January 1, 2015

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

MISSOURI MAINSTEM BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Missouri R at Toston <sup>2</sup>	APR-JUL	965	1420	1730	97%	2040	2500	1790
	APR-SEP	1120	1650	2010	97%	2370	2900	2070
Dearborn R nr Craig	APR-JUL	48	75	92	103%	110	137	89
	APR-SEP	54	81	100	105%	119	146	95
Missouri R at Fort Benton <sup>2</sup>	APR-JUL	1570	2170	2570	98%	2970	3560	2610
	APR-SEP	1900	2600	3070	99%	3540	4240	3110
Missouri R nr Virgelle <sup>2</sup>	APR-JUL	1860	2520	2970	99%	3420	4080	3000
	APR-SEP	2170	2950	3480	99%	4000	4780	3520
Missouri R nr Landusky <sup>2</sup>	APR-JUL	2010	2700	3160	100%	3630	4320	3160
	APR-SEP	2350	3160	3710	100%	4270	5080	3720
Missouri R bl Fort Peck Dam <sup>2</sup>	APR-JUL	2080	2780	3260	101%	3730	4440	3240
	APR-SEP	2170	3080	3700	100%	4310	5220	3700
Lake Sakakawea Inflow <sup>2</sup>	APR-JUL	5920	7530	8630	104%	9730	11300	8310
	APR-SEP	6370	8380	9750	104%	11100	13100	9400

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

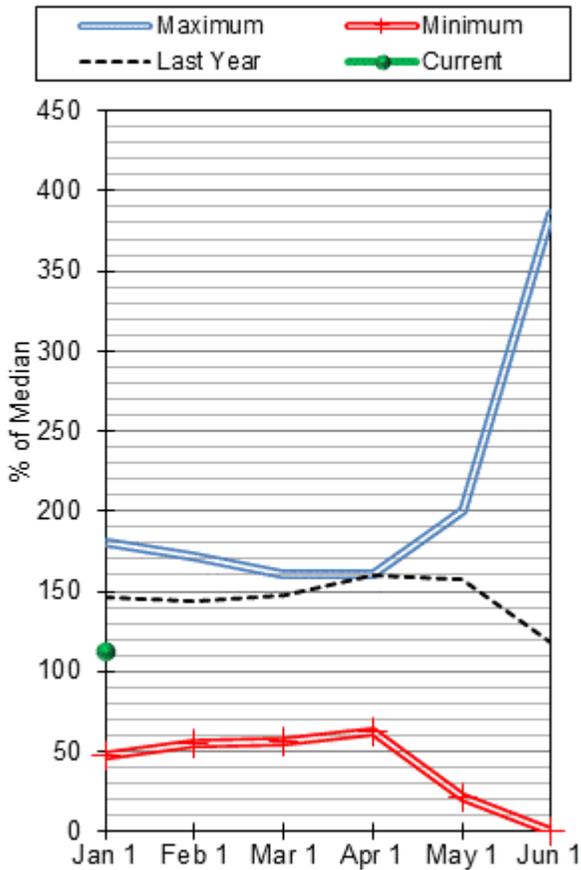
3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Canyon Ferry Lake	1610.1	1470.1	1598.0	2043.0
Helena Valley Reservoir	5.5	6.4	5.1	9.2
Lake Helena	9.9	9.8	10.9	12.7
Hauser Lake & Lake Helena	70.3	69.8	73.8	74.6
Holter Lake	80.8	81.4	80.5	81.9
Fort Peck Lake	14896.7	12845.4	13143.0	18910.0
Basin-wide Total	16673.4	14483.0	14911.3	21131.4
# of reservoirs	6	6	6	6

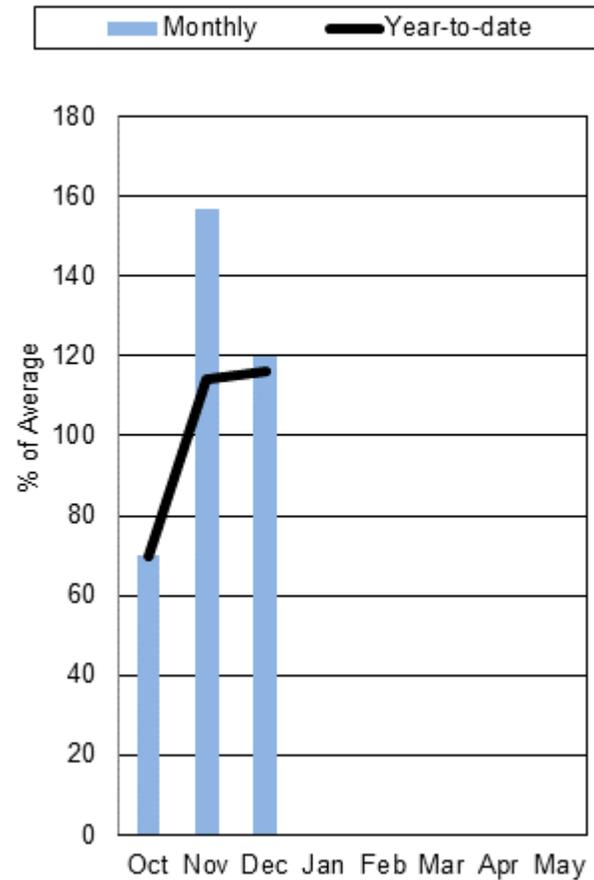
Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
HEADWATERS MAINSTEM	8	126%	122%
SMITH-JUDITH-MUSSELSHELL	10	116%	146%
SUN-TETON-MARIAS	6	113%	105%
MAINSTEM ab FT PECK RES	23	121%	126%
MILK RIVER BASIN	1	155%	210%
MISSOURI MAINSTEM BASIN	24	121%	127%

# Smith-Judith-Musselshell River Basins

## Mountain Snowpack



## Precipitation



Like many of the basins in Southwest and Central Montana the Smith-Judith-Musselshell River basins did not start to accumulate snow basin-wide until early to mid-November. After warm weather during the beginning of the month melted lower elevation snow cover, a change in weather patterns brought a substantial snow event at the end of the month dramatically improved the basin, bringing the basin-wide percent of average up 64 percent to 102 percent on November 28<sup>th</sup>. Since then favorable storm patterns have allowed most parts of the basin to see snowfall through the end of the year, and most SNOTEL sites are near to above average on January 1<sup>st</sup>. One outlier in the basin in the Big Snowy Range where Crystal Lake SNOTEL site is reporting 80 percent of normal SWE on January 1<sup>st</sup>. Currently the combined basins are 112 percent of normal, and 76 percent of last year at this time.

Central basins did not see an abundance of precipitation during the month of October, but did receive precipitation the form of snowfall during the months of November and December. Currently the basin is 116 percent for January 1<sup>st</sup>, and 96 percent of last year at this time.

Basin-wide reservoir storage is at 180 percent of average and 169 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Smith-Judith-Musselshell Rivers is currently at 117 percent of average and 80 percent of last year.

# Smith-Judith-Musselshell Streamflow Forecasts - January 1, 2015

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

SMITH-JUDITH-MUSSELSHELL	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Sheep Ck nr White Sulphur Springs	APR-JUL	13	16.4	18.8	121%	21	25	15.5
	APR-SEP	15.5	19.4	22	120%	25	29	18.4
Smith R bl Eagle Ck <sup>2</sup>	APR-JUL	73	106	128	121%	150	183	106
	APR-SEP	82	120	145	125%	171	210	116
NF Musselshell R nr Delpine	APR-JUL	1.17	2.8	3.9	115%	5.1	6.7	3.4
	APR-SEP	1.45	3.3	4.6	115%	5.9	7.8	4
SF Musselshell R ab Martinsdale	APR-JUL	1	22	37	106%	52	74	35
	APR-SEP	1	23	39	103%	55	78	38
Musselshell R at Harlowton <sup>2</sup>	APR-JUL	2.8	40	66	116%	91	128	57
	APR-SEP	0.73	41	68	115%	95	135	59
Musselshell R nr Roundup <sup>2</sup>	APR-JUL	-23	24	79	118%	135	215	67
	APR-SEP	-26	23	79	120%	135	215	66

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

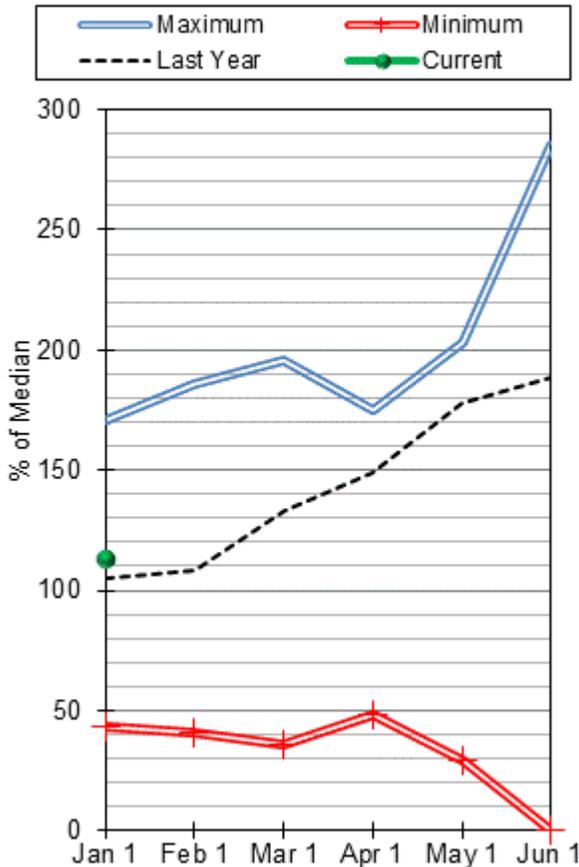
3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Smith River Res	8.6	6.5	5.0	10.6
Ackley Lake	3.9	3.6	2.5	7.0
Bair Res	5.3	3.2	2.7	7.0
Martinsdale Res	17.6	5.5	7.7	23.1
Deadman's Basin Res	63.4	39.5	37.0	72.2
Basin-wide Total	98.6	58.3	54.9	119.9
# of reservoirs	5	5	5	5

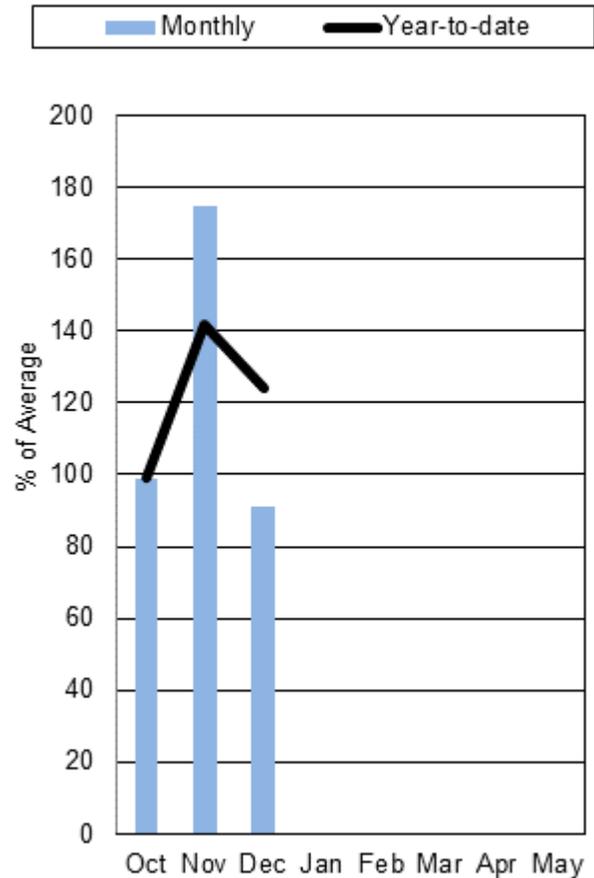
Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
SMITH	6	117%	146%
HIGHWOOD	0		
JUDITH	4	113%	152%
MUSSELSHELL	3	131%	147%
SMITH-JUDITH-MUSSELSHELL	10	116%	146%

# Sun-Teton-Marias River Basins

## Mountain Snowpack



## Precipitation



The Front Range of the Rocky Mountains has seen a variety of conditions during the late fall and early winter months, experiencing well above average temperatures and extremely cold temperatures. Seasonal snowpack began accumulating in the basin during the first week of November, but did not see substantial increases until late in the month. Since the end of November the basin has been slightly above to near average, but did not receive as much snowfall during the end of December as other basins east of the Divide. All SNOTEL sites but one in the basin are above normal regarding SWE for January 1<sup>st</sup>, Dupuyer Creek SNOTEL is currently below normal at 82 percent. As a whole, the basin is currently 113 percent of normal for January 1<sup>st</sup>, and 103 percent of last year at this time.

While the basin has not experienced as much precipitation during December as many of the other basins, it did see close to average conditions during October, and well above average precipitation during the month of November. Most of this fell during the last week of the month. Currently the basin is 124 percent of average for water year-to-date precipitation, and 160 percent of last year at this time.

Lower Two Medicine Lake is currently at 127 percent of average and Gibson Reservoir is currently at 57 percent of average. Basin-wide reservoir storage is at 108 percent of average and 112 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Sun-Teton-Marias Rivers is currently at 106 percent of average and 78 percent of last year.

# Sun-Teton-Marias Streamflow Forecasts - January 1, 2015

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

SUN-TETON-MARIAS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Gibson Reservoir Inflow	APR-JUL	305	375	425	108%	475	545	395
	APR-SEP	345	420	470	107%	520	595	440
Two Medicine R nr Browning <sup>2</sup>	APR-JUL	135	165	185	101%	205	235	183
	APR-SEP	145	175	195	101%	215	245	194
Badger Ck nr Browning	APR-JUL	56	76	90	102%	104	124	88
	APR-SEP	68	89	104	101%	119	140	103
Swift Reservoir Inflow <sup>2</sup>	APR-JUL	36	48	57	100%	66	78	57
	APR-SEP	44	58	67	100%	76	90	67
Dupuyer Ck nr Valier	APR-JUL	1.5	6.8	11.7	105%	16.6	24	11.1
	APR-SEP	1.8	7.5	12.9	102%	18.3	26	12.7
Cut Bank Ck nr Browning	APR-JUL	44	60	71	103%	82	98	69
	APR-SEP	49	66	78	104%	90	107	75
Marias R nr Shelby <sup>2</sup>	APR-JUL	181	300	380	110%	460	580	345
	APR-SEP	185	305	390	108%	475	595	360
Teton R nr Dutton	APR-JUL	2	26	45	107%	64	92	42
	APR-SEP	2.4	32	52	108%	72	102	48

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

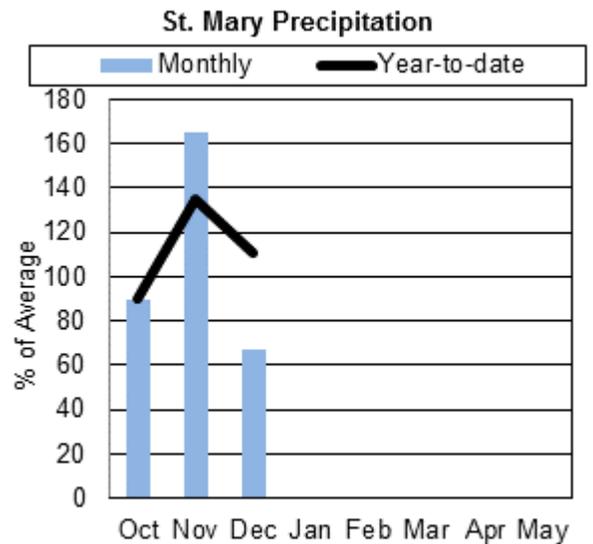
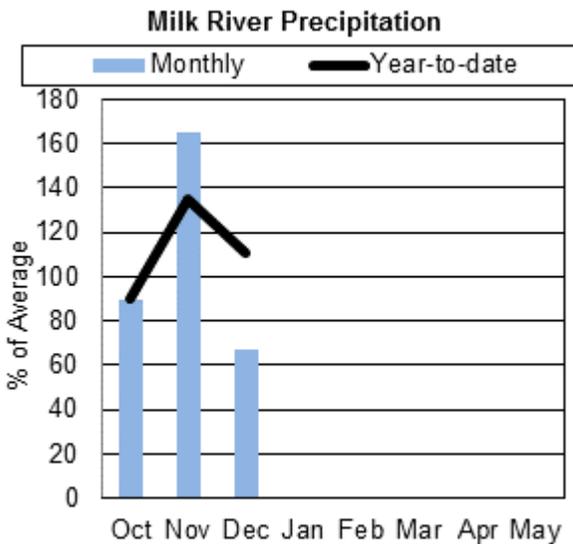
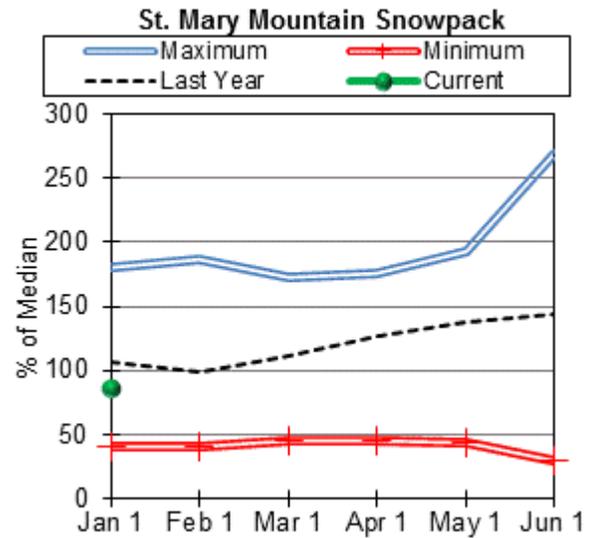
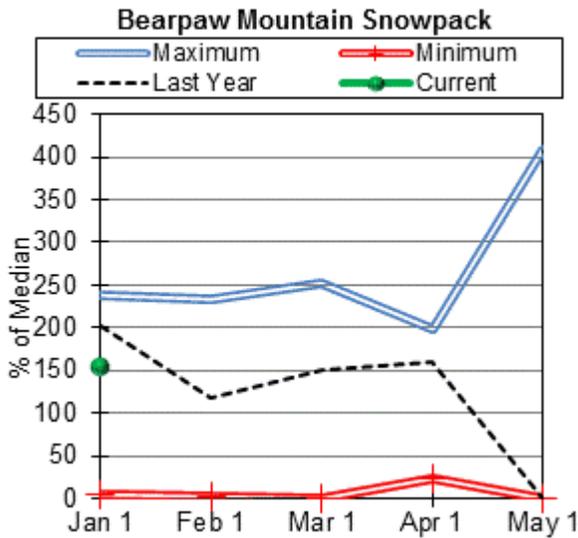
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Gibson Res	20.6	10.2	36.4	99.1
Pishkun Res	19.7	6.1	17.7	32.0
Willow Creek Res - Augusta	29.1	27.8	22.5	32.2
Lower Two Medicine Lake	10.3	6.3	8.1	11.9
Four Horns Lake	9.9	11.2	10.4	19.2
Swift Res	13.8	10.8	13.8	30.0
Lake Frances	69.3	34.9	57.6	112.0
Lake Elwell (Tiber)	778.8	743.8	715.9	1347.0
Basin-wide Total	951.4	851.1	882.4	1683.4
# of reservoirs	8	8	8	8

Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
SUN	2	126%	99%
TETON	3	107%	97%
MARIAS	3	107%	108%
SUN-TETON-MARIAS	6	113%	105%

# St. Mary and Milk River Basins



Seasonal snowpack started relatively late in the St Mary-Milk river basin. Flattop Mountain SNOTEL, a high-elevation site in Glacier National Park, started accumulating snow on November 1<sup>st</sup> which is two weeks later than normal. A major storm impacted the basin during the second week of November and brought the basin from below normal to above normal for a brief period. During the second week of December the low elevation SNOTEL site in Glacier National Park and Rocky Boy SNOTEL site in the Bearpaw Mountains experienced melt from above average temperatures, lowering the basin percentage of normal. After mid-December a return to a more favorable storm pattern brought snow back to the basin, though not the substantial amount received in many of the Montana basins. Currently the basin is below average at 91 percent of normal for January 1<sup>st</sup>, and 80 percent of last year at this time.

Precipitation in the basin was below average for October, well above average for November, and well below average for the month of December. Currently the basin is 111 percent of the water year-to-date average for January 1<sup>st</sup>, and 140 percent of last year at this time. The bulk of the precipitation received was from one storm in late November.

Basin-wide reservoir storage is currently at 163 percent of average and 119 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the St. Mary-Milk River is currently at 94 percent of average and 72 percent of last year.

# St. Mary & Milk Basins Streamflow Forecasts - January 1, 2015

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

ST. MARY & MILK BASINS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Lake Sherburne Inflow	APR-JUL	70	82	90	93%	98	110	97
	APR-SEP	84	96	105	94%	113	125	112
St. Mary R nr Babb <sup>2</sup>	APR-JUL	255	300	335	91%	370	420	370
	APR-SEP	305	355	390	92%	425	475	425
St. Mary R at Intl Boundary <sup>2</sup>	APR-JUL	270	340	385	89%	435	505	435
	APR-SEP	330	400	450	89%	500	570	505
Milk R at Western Crossing of Intl Bndry, AB	MAR-SEP	20	27	35	107%	46	61	32.77
Milk R at Eastern Crossing of Intl Bndry	MAR-SEP	44	63	84	103%	105	155	81.6

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

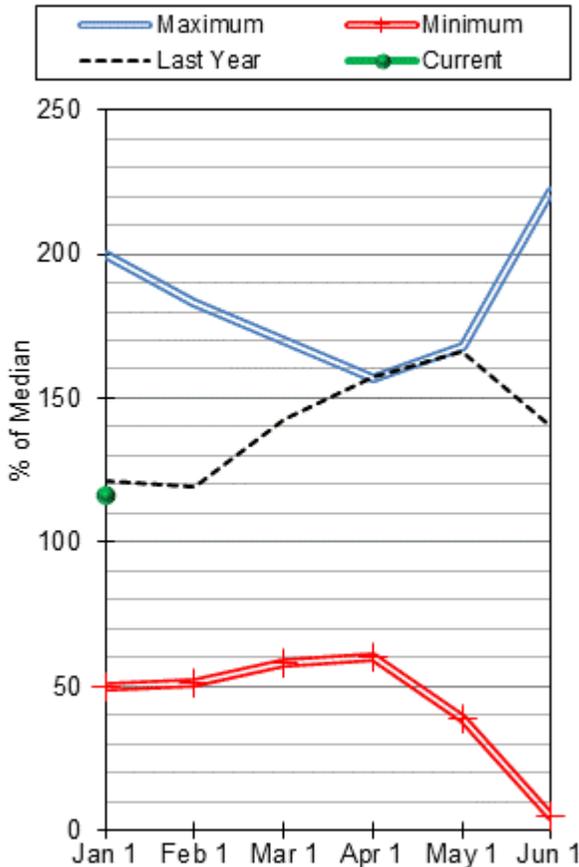
3) Median value used in place of average

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Lake Sherburne	50.2	27.5	25.5	64.3
Fresno Res	68.6	58.1	43.2	127.0
Nelson Res	47.2	53.4	33.0	66.8
Basin-wide Total	165.9	138.9	101.7	258.1
# of reservoirs	3	3	3	3

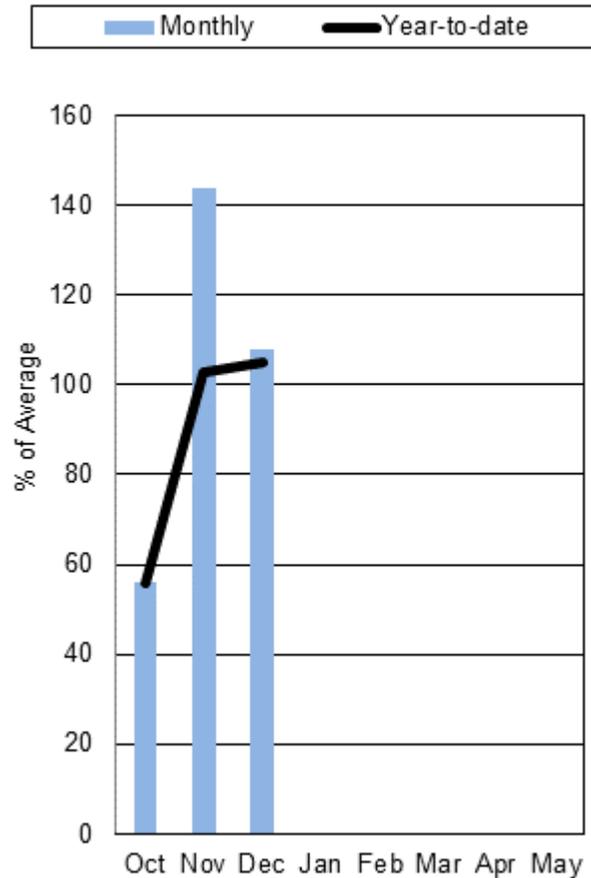
Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
ST. MARY	2	86%	106%
BEARPAW MOUNTAINS	1	155%	210%
CYPRESS HILLS, CANADA	0		
MILK RIVER BASIN	1	155%	210%
ST. MARY & MILK BASINS	3	91%	114%

# Upper Yellowstone River Basin

## Mountain Snowpack



## Precipitation



Similar to the rest of the region the Upper Yellowstone River Basin started to accumulate seasonal snowpack later than normal. A snow storm during the last week of October started this water year’s snowpack at below normal conditions. Minor snow accumulation during the first part of November maintained the basin-wide snowpack at roughly 60-70 percent below normal conditions. A large storm system arrived around November 22<sup>nd</sup> which delivered enough snow to push the snowpack to near normal conditions before the end of the month. Early December snowfall attributed to above normal basin-wide snowpack conditions for the first part of the month. Drier mid-month weather dropped the snowpack back to near normal condition before a large storm system arrived just before Christmas. This storm increased the basin-wide snow water equivalent by approximately 130 percent before the end of the month. On January 1<sup>st</sup> the Upper Yellowstone River Basin snowpack is currently 116 percent of normal and 96 percent of last year at this time.

The Upper Yellowstone River Basin followed the trend of its neighboring basins and rebounded from below average precipitation values due to the late November storm. Precipitation on November 22<sup>nd</sup> basin was at about 70 percent of average and on December 1<sup>st</sup> was at about 100 percent of average. Precipitation slowly dropped to below average over the first half of December. The late December storms brought the basin to above average precipitation. As of January 1<sup>st</sup> basin-wide precipitation was at 105 percent of normal and 98 percent of last year at this time.

Basin-wide reservoir storage is currently at 129 percent of average and 109 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Upper Yellowstone River is currently at 106 percent of average and 73 percent of last year.

# Upper Yellowstone River Basin Streamflow Forecasts - January 1, 2015

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

UPPER YELLOWSTONE RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Yellowstone R at Yellowstone Lake Outlet								
	APR-JUL	430	515	570	99%	625	710	575
	APR-SEP	570	675	750	97%	825	930	770
Yellowstone R at Corwin Springs								
	APR-JUL	1360	1560	1700	107%	1840	2040	1590
	APR-SEP	1600	1840	2000	106%	2160	2400	1880
Yellowstone R at Livingston								
	APR-JUL	1540	1780	1940	108%	2100	2340	1800
	APR-SEP	1820	2100	2290	107%	2470	2750	2140
Shields R nr Livingston								
	APR-JUL	25	85	126	98%	167	225	129
	APR-SEP	26	92	137	96%	182	250	143
Boulder R at Big Timber								
	APR-JUL	196	245	275	98%	305	355	280
	APR-SEP	205	260	295	98%	330	385	300
Mystic Lake Inflow <sup>2</sup>								
	APR-JUL	51	57	61	103%	65	71	59
	APR-SEP	65	73	78	105%	83	91	74
Stillwater R nr Absarokee <sup>2</sup>								
	APR-JUL	350	415	455	102%	500	565	445
	APR-SEP	415	490	540	104%	590	665	520
Clarks Fk Yellowstone R nr Belfry								
	APR-JUL	460	525	570	112%	615	680	510
	APR-SEP	495	565	615	112%	665	735	550
Cooney Reservoir Inflow								
	APR-JUL	13.4	26	35	92%	44	57	38
	APR-SEP	20	34	44	92%	54	68	48
Yellowstone R at Billings								
	APR-JUL	2640	3140	3470	107%	3810	4310	3230
	APR-SEP	3030	3620	4020	108%	4420	5020	3730

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

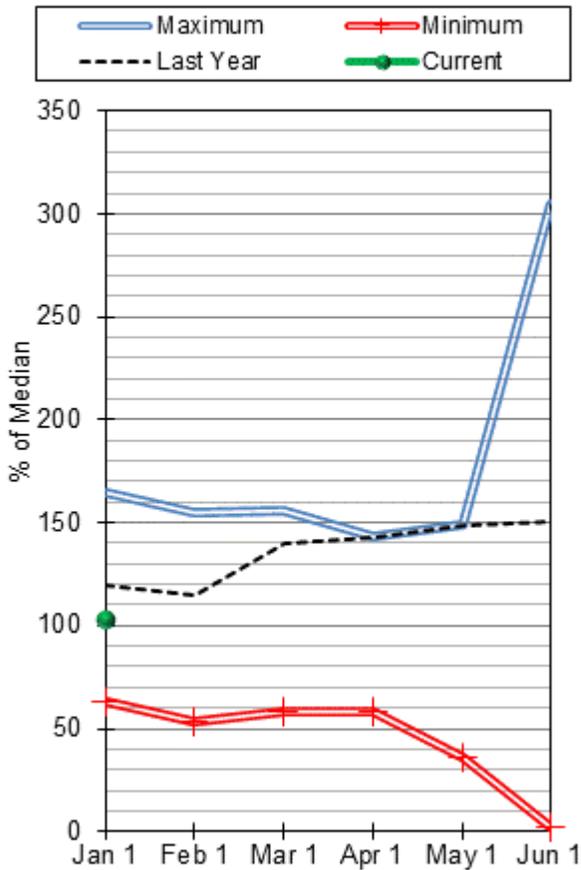
Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Mystic Lake	12.4	12.1	7.9	21.0
Cooney Res	19.2	17.0	16.6	27.4
Basin-wide Total	31.6	29.1	24.5	48.4
# of reservoirs	2	2	2	2

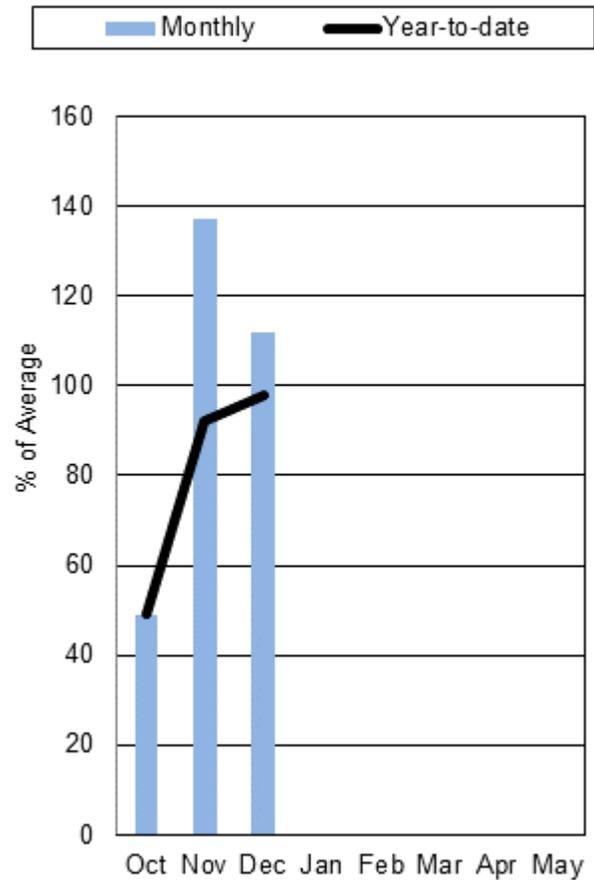
Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median
YELLOWSTONE ab LIVINGSTON	12	112%	108%
SHIELDS	4	129%	171%
BOULDER-STILLWATER	3	104%	121%
RED LODGE-ROCK CREEK	2	127%	153%
CLARK'S FORK	7	122%	118%
UPPER YELLOWSTONE RIVER BASIN	25	116%	121%

# Lower Yellowstone River Basin

## Mountain Snowpack



## Precipitation



The majority of the Lower Yellowstone River Basin started its seasonal snowpack around the last week of October, with the exception of the Powder River Basin which started accumulating snow early November. Due to the late start, basin-wide seasonal snowpack accumulation was below normal for the majority of November.

On December 1<sup>st</sup> the Lower Yellowstone River Basin snowpack was near normal as a result of the storm during the last week of November. Snowpack levels dropped slightly during the first weeks of December, but were then increased back to normal due to a large storm system that arrived a few days before Christmas. On January 1<sup>st</sup> the majority of the basin had slightly above normal snowpack conditions with the exception of the Little Bighorn River Basin and Tongue River Basin which were 96 and 92 percent of normal respectively. Basin-wide the Lower Yellowstone River basin is currently 103 percent of normal for January 1<sup>st</sup> and 85 percent of last year at this time.

The Lower Yellowstone River Basin started the water year with near average precipitation. Relatively dry conditions until the end of November decreased the conditions to below average. Storms in late November and at the end of December helped the basin percentages climb to near average. As of January 1<sup>st</sup> the Lower Yellowstone River Basin is currently 98 percent of average and 89 percent of last year at this time.

Tongue River Reservoir is currently at 194 percent of average and Bighorn Lake is currently at 105 percent of average. Basin-wide reservoir storage is at 107 percent of average and 96 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Lower Yellowstone River is currently at 105 percent of average and 66 percent of last year.

# Lower Yellowstone River Basin (Wyoming) Streamflow Forecasts - January 1, 2015

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

LOWER YELLOWSTONE RIVER BASIN (Wyoming)	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Bighorn R nr St. Xavier <sup>2</sup>	APR-JUL	825	1160	1400	101%	1630	1970	1380
	APR-SEP	835	1220	1480	101%	1740	2130	1460
Little Bighorn R nr Hardin	APR-JUL	36	67	88	90%	109	140	98
	APR-SEP	43	77	100	90%	123	157	111
Tongue R nr Dayton <sup>2</sup>	APR-JUL	45	66	80	93%	93	114	86
	APR-SEP	54	76	91	93%	106	128	98
Big Goose Ck nr Sheridan	APR-JUL	24	36	44	96%	52	64	46
	APR-SEP	31	44	52	96%	60	73	54
Little Goose Ck nr Bighorn	APR-JUL	17	25	30	97%	35	43	31
	APR-SEP	24	32	38	97%	44	52	39
Tongue River Reservoir Inflow <sup>2</sup>	APR-JUL	65	132	178	92%	225	290	193
	APR-SEP	81	151	199	93%	245	315	215
Yellowstone R at Miles City <sup>2</sup>	APR-JUL	3600	4450	5020	105%	5600	6450	4780
	APR-SEP	4060	5060	5730	105%	6410	7410	5450
Powder R at Moorehead	APR-JUL	73	142	189	107%	235	305	177
	APR-SEP	88	160	210	107%	260	330	196
Powder R nr Locate	APR-JUL	74	157	215	108%	270	355	199
	APR-SEP	86	176	235	107%	300	390	220
Yellowstone R nr Sidney <sup>2</sup>	APR-JUL	3490	4450	5110	106%	5770	6740	4830
	APR-SEP	3830	4970	5750	106%	6520	7670	5430

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

Reservoir Storage End of December, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Bighorn Lake	912.9	951.1	871.2	1356.0
Tongue River Res	51.2	49.9	26.4	79.1
Basin-wide Total	964.1	1001.0	897.6	1435.1
# of reservoirs	2	2	2	2
Watershed Snowpack Analysis January 1, 2015	# of Sites	% Median	Last Year % Median	
WIND RIVER (Wyoming)	10	100%	109%	
SHOSHONE RIVER (Wyoming)	4	108%	119%	
BIGHORN RIVER (Wyoming)	14	106%	129%	
LITTLE BIGHORN (Wyoming)	2	96%	132%	
TONGUE RIVER (Wyoming)	6	90%	110%	
POWDER RIVER (Wyoming)	6	112%	143%	
LOWER YELLOWSTONE RIVER BASIN (Wyoming)	29	102%	120%	

## Montana Site Report

MONTANA	Network	Elevation (ft)	Depth (in)	SWE (in)	Median (in)	% Median	Last Year SWE (in)	Last Year % Median
Albro Lake	SNOTEL	8300	35	7.9	7.8	101%	14.4	185%
Ambrose	SC	6480						
Arch Falls	SC	7350						
Ashley Divide	SC	4820			2.6		3.4	131%
Badger Pass	SNOTEL	6900	52	15.2	12.5	122%	13.9	111%
Banfield Mountain	SNOTEL	5600	25	5.7	7.8	73%	6.7	86%
Baree Creek	SC	5500						
Baree Midway	SC	4600						
Baree Trail	SC	3800						
Barker Lakes	SNOTEL	8250	30	7.0	5.9	119%	7.9	134%
Basin Creek	SNOTEL	7180	25	4.9	3.6	136%	6.0	167%
Bassoo Peak	SC	5150						
Beagle Springs	SNOTEL	8850	21	4.2	3.8	111%	4.2	111%
Bear Basin	SC	8150						
Bear Mountain	SNOTEL	5400	46	12.4	22.9	54%	19.0	83%
Beartooth Lake	SNOTEL	9360	45	11.5	10.0	115%	10.8	108%
Beaver Creek	SNOTEL	7850	30	6.7	7.8	86%	8.3	106%
Big Snowy	SC	7150						
Bisson Creek	SNOTEL	4920	29	5.8	3.9	149%	4.6	118%
Black Bear	SNOTEL	8170	66	15.1	17.8	85%	16.8	94%
Black Mountain	SC	7750						
Black Pine	SNOTEL	7210	32	6.8	4.2	162%	4.2	100%
Blacktail	SC	5650			5.4		4.4	81%
Blacktail Mtn	SNOTEL	5650	25	5.0			5.6	
Bloody Dick	SNOTEL	7600	30	6.5	5.0	130%	6.1	122%
Bots Sots	SC	7750						
Boulder Mountain	SNOTEL	7950	37	8.1	9.3	87%	12.7	137%
Box Canyon	SNOTEL	6670	21	4.9	3.7	132%	4.0	108%
Boxelder Creek	SC	5100			2.5		3.9	156%
Brackett Creek	SNOTEL	7320	48	11.0	7.0	157%	13.3	190%
Bristow Creek	SC	3900						
Brush Creek Timber	SC	5000						
Bull Mountain	SC	6600						
Burnt Mtn	SNOTEL	5880	22	4.0	1.8	222%	3.9	217%
Cabin Creek	SC	5200						
Calvert Creek	SNOTEL	6430	27	5.4	3.4	159%	3.3	97%
Camp Senia	SC	7890						
Canyon	SNOTEL	7870	28	6.5	5.5	118%	5.3	96%
Carrot Basin	SNOTEL	9000	43	10.4	12.3	85%	11.5	93%
Carrot Basin	SC	9000						
Chessman Reservoir	SC	6200	15	3.0	1.4	214%	1.2	86%
Chicago Ridge	SC	5800						
Chicken Creek	SC	4060						
Clover Meadow	SNOTEL	8600	27	6.1	7.8	78%	6.6	85%
Cole Creek	SNOTEL	7850	30	6.3	6.3	100%	8.5	135%
Combination	SNOTEL	5600	14	2.7	2.0	135%	1.3	65%
Copper Bottom	SNOTEL	5200	18	4.1			2.8	
Copper Camp	SNOTEL	6950	68	21.6			14.9	
Copper Camp	SC	6950						
Copper Mountain	SC	7700						
Cottonwood Creek	SC	6400						
Coyote Hill	SC	4200	26	4.9	3.2	153%	4.1	128%

Crevice Mountain	SC	8400							
Crystal Lake	SNOTEL	6050	21	4.3	5.1	84%	7.5	147%	
Dad Creek Lake	SC	8800							
Daisy Peak	SNOTEL	7600	21	4.6	4.1	112%	5.9	144%	
Daly Creek	SNOTEL	5780	29	6.4	4.5	142%	4.2	93%	
Darkhorse Lake	SNOTEL	8600	63	16.6	12.9	129%	16.3	126%	
Deadman Creek	SNOTEL	6450	27	5.9	4.0	148%	6.6	165%	
Desert Mountain	SC	5600							
Discovery Basin	SC	7050	34	6.6	3.8	174%	3.2	84%	
Divide	SNOTEL	7800	20	3.6	4.4	82%	3.8	86%	
Dix Hill	SC	6400	23	4.9	3.9	126%	2.4	62%	
Dupuyer Creek	SNOTEL	5750	14	2.8	3.4	82%	2.7	79%	
Eagle Creek	SC	7000							
East Boulder Mine	SNOTEL	6335	12	2.7			2.5		
El Dorado Mine	SC	7800							
Elk Horn Springs	SC	7800							
Elk Peak	SNOTEL	7600	27	7.3			14.1		
Elk Peak	SC	8000							
Emery Creek	SNOTEL	4350	30	7.4	5.9	125%	8.7	147%	
Emery Creek	SC	4350							
Fatty Creek	SC	5500							
Fish Creek	SC	8000			3.6		8.2	228%	
Fisher Creek	SNOTEL	9100	55	15.7	14.7	107%	15.9	108%	
Flattop Mtn.	SNOTEL	6300	68	17.2	18.5	93%	19.4	105%	
Fleecer Ridge	SC	7500							
Forest Lake	SC	6400							
Four Mile	SC	6900							
Freight Creek	SC	6000							
Frohner Meadow	SNOTEL	6480	23	5.0	3.1	161%	3.3	106%	
Garver Creek	SNOTEL	4250	15	3.5	4.7	74%	3.3	70%	
Gibbons Pass	SC	7100							
Goat Mountain	SC	7000							
Government Saddle	SC	5270							
Grave Creek	SNOTEL	4300	35	7.4	6.6	112%	8.9	135%	
Griffin Creek Divide	SC	5150							
Hand Creek	SNOTEL	5035	22	4.2	4.2	100%	5.5	131%	
Hawkins Lake	SNOTEL	6450	32	9.1	10.5	87%	8.4	80%	
Haymaker	SC	8050							
Hebgen Dam	SC	6550	22	3.8	4.0	95%	3.4	85%	
Hell Roaring Divide	SC	5770	50	13.0	11.0	118%	14.7	134%	
Herrig Junction	SC	4850							
Highwood Divide	SC	5650							
Highwood Station	SC	4600							
Holbrook	SC	4530	18	3.0	3.2	94%	2.8	88%	
Hoodoo Basin	SNOTEL	6050	56	14.0	16.6	84%	13.3	80%	
Humboldt Gulch	SNOTEL	4250	21	4.8	5.7	84%	5.1	89%	
Jakes Canyon	SC	9040							
Johnson Park	SC	6450	21	4.0	2.0	200%	2.5	125%	
Kishenehn	SC	3890							
Kraft Creek	SNOTEL	4750	28	5.2			7.8		
Lake Camp	SC	7780	20	4.4	4.0	110%	3.6	90%	
Lake Creek	SC	6100							
Lakeview Canyon	SC	6930							
Lakeview Ridge	SNOTEL	7400	17	2.8	4.9	57%	2.5	51%	
Lemhi Ridge	SNOTEL	8100	27	6.0	4.5	133%	6.5	144%	
Lick Creek	SNOTEL	6860	24	4.8	4.4	109%	5.0	114%	
Little Park	SC	7400							
Logan Creek	SC	4300							
Lolo Pass	SNOTEL	5240	50	11.1	11.0	101%	9.9	90%	

Lone Mountain	SNOTEL	8880	27	6.5	7.7	84%	8.6	112%
Lookout	SNOTEL	5140	31	6.9	11.9	58%	7.7	65%
Lower Twin	SNOTEL	7900	37	5.4	8.2	66%	11.2	137%
Lubrecht Flume	SNOTEL	4680	19	4.0	2.4	167%	1.6	67%
Lubrecht Forest No 3	SC	5450	14	3.0	2.2	136%	1.9	86%
Lubrecht Forest No 4	SC	4650	9	1.6	1.2	133%	0.6	50%
Lubrecht Forest No 6	SC	4040	18	3.2	1.3	246%	1.0	77%
Lubrecht Hydroplot	SC	4200	16	3.1	2.0	155%	1.5	75%
Lupine Creek	SC	7380	22	4.2	3.4	124%	2.2	65%
Madison Plateau	SNOTEL	7750	39	9.5	10.3	92%	9.0	87%
Many Glacier	SNOTEL	4900	14	3.1	5.2	60%	5.7	110%
Marias Pass	SC	5250	25	5.2	5.8	90%	6.9	119%
Mineral Creek	SC	4000						
Monument Peak	SNOTEL	8850	38	9.3	8.8	106%	10.9	124%
Moss Peak	SNOTEL	6780	81	21.1	14.3	148%	18.3	128%
Moulton Reservoir	SC	6850			2.8		2.7	96%
Mount Allen No 7	SC	5700						
Mount Lockhart	SNOTEL	6400	35	9.3	8.0	116%	8.2	103%
Mudd Lake	SC	7650						
Mule Creek	SNOTEL	8300	36	8.4	6.3	133%	7.7	122%
N Fk Elk Creek	SNOTEL	6250	29	6.1	4.5	136%	5.1	113%
Nevada Ridge	SNOTEL	7020	34	7.6	5.6	136%	5.7	102%
New World	SC	6900						
Nez Perce Camp	SNOTEL	5650	31	6.5	5.8	112%	5.8	100%
Noisy Basin	SNOTEL	6040	75	19.9	16.1	124%	21.2	132%
Norris Basin	SC	7550	21	4.7	4.3	109%	4.0	93%
North Fork Jocko	SNOTEL	6330	72	17.6	17.6	100%	20.6	117%
Northeast Entrance	SNOTEL	7350	25	6.0	4.1	146%	4.5	110%
Onion Park	SNOTEL	7410	34	7.1	5.4	131%	7.2	133%
Ophir Park	SC	7150	29	6.0	5.7	105%	5.0	88%
Parker Peak	SNOTEL	9400	48	11.8	9.9	119%	12.3	124%
Peterson Meadows	SNOTEL	7200	29	6.4	4.0	160%	4.8	120%
Pickfoot Creek	SNOTEL	6650	26	5.3	4.7	113%	6.3	134%
Pike Creek	SNOTEL	5930	6	1.8			3.7	
Pipestone Pass	SC	7200			1.6			
Placer Basin	SNOTEL	8830	34	7.4	8.2	90%	10.2	124%
Poorman Creek	SNOTEL	5100	41	8.7	12.6	69%	13.8	110%
Porcupine	SNOTEL	6500	12	2.3	2.2	105%	3.8	173%
Potomageton Park	SC	7150						
Revais	SC	4800						
Rock Creek Mdws	SC	3400						
Rocker Peak	SNOTEL	8000	31	7.4	6.0	123%	7.3	122%
Rocky Boy	SNOTEL	4700	14	3.1	2.0	155%	4.2	210%
Roland Summit	SC	5120						
S Fork Shields	SNOTEL	8100	29	6.3	6.5	97%	10.0	154%
Sacajawea	SNOTEL	6550	36	7.8	5.5	142%	9.2	167%
Saddle Mtn.	SNOTEL	7940	58	13.8	10.5	131%	13.0	124%
Short Creek	SNOTEL	7000	11	2.1	2.5	84%	2.1	84%
Shower Falls	SNOTEL	8100	39	8.6	9.0	96%	10.5	117%
Skalkaho Summit	SNOTEL	7250	49	11.5	8.7	132%	7.9	91%
Sleeping Woman	SNOTEL	6150	35	7.5	6.1	123%	5.5	90%
Slide Rock Mountain	SC	7100						
Spotted Bear Mountain	SC	7000		5.6	5.3	106%	5.3	100%
Spur Park	SNOTEL	8100	43	10.3	9.0	114%	13.7	152%
Stahl Peak	SNOTEL	6030	56	15.1	15.1	100%	15.4	102%
Stahl Peak	SC	6030	61	16.4				
Stemple Pass	SC	6600						
Storm Lake	SC	7780	34	7.4	5.1	145%	5.6	110%

Stringer Creek	SNOTEL	6550	29	5.8	4.0	145%	6.5	163%
Stryker Basin	SC	6180						
Stuart Mountain	SNOTEL	7400	63	16.4	13.4	122%	12.6	94%
Taylor Road	SC	4080			1.0		3.0	300%
Ten Mile Lower	SC	6600	29	4.9	2.7	181%	4.2	156%
Ten Mile Middle	SC	6800	30	5.7	4.3	133%	5.8	135%
Tepee Creek	SNOTEL	8000	28	5.9	6.2	95%	4.0	65%
Timberline Creek	SC	8850						
Tizer Basin	SNOTEL	6880	23	5.2	4.7	111%	5.2	111%
Trinkus Lake	SC	6100	77	18.7	16.9	111%	19.7	117%
Truman Creek	SC	4060			1.9		1.0	53%
Twelvemile Creek	SNOTEL	5600	36	8.0	6.6	121%	4.8	73%
Twenty-One Mile	SC	7150	27	4.2	5.9	71%	4.2	71%
Twin Lakes	SNOTEL	6400	67	21.4	16.1	133%	16.6	103%
Upper Holland Lake	SC	6200	58	14.2	13.0	109%	14.8	114%
Waldron	SNOTEL	5600	19	4.5	4.1	110%	4.2	102%
Warm Springs	SNOTEL	7800	50	11.1	8.6	129%	9.2	107%
Weasel Divide	SC	5450	51	11.1	12.6	88%	13.6	108%
West Yellowstone	SNOTEL	6700	22	4.2	4.7	89%	4.8	102%
Whiskey Creek	SNOTEL	6800	28	6.0	6.7	90%	6.3	94%
White Elephant	SNOTEL	7710	43	10.8	11.5	94%	9.0	78%
White Mill	SNOTEL	8700	43	13.0	9.9	131%	11.9	120%
Wolverine	SNOTEL	7650	27	7.8	4.8	163%	6.2	129%
Wood Creek	SNOTEL	5960	24	4.9	3.3	148%	3.0	91%
Wrong Creek	SC	5700						
Wrong Ridge	SC	6800						
Younts Peak	SNOTEL	8350			7.0			

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**Basin Index**

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*Issued by:*

**Jason Weller  
Chief  
Natural Resources Conservation Service  
U.S. Department of Agriculture**

*Released by:*

**Ray Dotson  
State Conservationist (Acting)  
Natural Resources Conservation Service  
Bozeman, Montana**



Federal Building, Room 443  
10 E. Babcock  
Bozeman, MT 59715



**Montana**  
**Water Supply Outlook**  
**Report**  
Natural Resources Conservation Service

