

Montana Water Supply Outlook Report March 1, 2014



**Picture: Twin Lakes SNOTEL
Lost Horse Creek, Bitterroot Range, Montana**

Taken: 2/13/2014 Lucas Zukiewicz, Hydrologist, USDA NRCS Montana Snow Surveys

Water Supply Outlook Report and Federal - State - Private Cooperative Snow Surveys

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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 March 1, 2014

Stellar is a perfect word to describe February's snowpack, precipitation accumulation, and the streamflow forecasts for March 1. Over the course of February the Judith Basin was the only watershed in the state of Montana which saw a decrease in snowpack of all basins analyzed. Statewide snowpack increased 20 percent according to SNOTEL and snow course observation sites. Precipitation saw nearly the same increments. Both precipitation and in situ snowpack are the two major drivers of streamflow forecasts. Despite a few sub-basins showing deficient water supply forecasts, nearly all forecast points showed improvement since last month's projections. Reservoir levels changed little, showing only a two percent increase across the state which is normal this time of year. The coming months will allow dam operators to adjust for anticipated runoff of snowpack and other changes in weather. Surface Water Supply Indices in most locations are looking more like those in 2011 as the state recovers from the last few dry years.

Snowpack

To say that Mother Nature took great strides to improve Montana's snowpack would be an understatement in most areas. February turned out to be one of the most plentiful snow accumulation months on record. Of the two basins that had below median snowpack last month, all now possess average or above average snowpack, and only one sub-basin remains below median on March 1, 2014 that being the Kootenai Mainstem currently at 92 percent. The mountainous areas between Toston, MT and Great Falls, MT known as Missouri Mainstem basin received the greatest boost in the state with a 38 percent increase to record snowpack levels of 163 percent of median.

Daily SNOTEL data is showing that more than half of the watersheds have already reached normal snowpack peak levels typically achieved between mid-April and mid-May. Provided warm temperatures do not melt mountain snow during the following two months, below normal snowpack accumulation would likely still yield near normal peak snowpack in most basins. Currently snowpack is better than 2011 levels in 8 of 14 basins. Keep in mind, with one-fifth of the snowpack accumulation season remaining, deviation from current percentages is probable. In perspective to the last two years in Montana, and the current conditions in the far south & western United States, Montana is in excellent standing for spring and summer runoff.

River Basin	% of Median	% of Last Year
Columbia	124	135
Kootenai	102	106
Flathead	116	126
Upper Clark Fork	140	155
Bitterroot	146	174
Lower Clark Fork	118	125
Missouri	131	136
Missouri Headwaters	124	130
Jefferson	136	141
Madison	112	121
Gallatin	121	122
Missouri below Toston	146	148
Missouri Mainstem	163	163
Smith-Judith Musselshell	147	149
Sun-Teton-Marias	133	143
Milk	151	128
St. Mary	112	108
St. Mary & Milk	125	115
Yellowstone	141	156
Upper Yellowstone	143	156
Lower Yellowstone	140	157
Statewide	130	140

Precipitation

Only one basin across the state managed to skirt the well above average precipitation totals of February, that being the Milk River basin at 91 percent. Otherwise, the state as a whole averaged 177 percent of the February normal, a big improvement above last month which was near normal. A whopping six of the 14 major basins in the state received better than 200 percent of normal precipitation this month. With the three wettest months of the year yet to come, February may have come as a blessing if insufficient precipitation plays out in the next three months as has been the case in some basins in southwest Montana over the last two years.

River Basin	Monthly % of Average	Water Year % of Average
Columbia	178	98
Kootenai	138	82
Flathead	135	96
Upper Clark Fork	218	110
Bitterroot	240	113
Lower Clark Fork	182	90
Missouri	173	109
Jefferson	210	110
Madison	150	101
Gallatin	152	112
Missouri Mainstem	247	120
Smith-Judith Musselshell	159	124
Sun-Teton-Marias	172	103
Milk	91	99
St. Mary	123	87
St. Mary & Milk	112	92
Yellowstone	212	133
Upper Yellowstone	216	131
Lower Yellowstone	205	136
Statewide	177	108

Reservoirs

State-wide reservoir storage was 109 percent of average and 103 percent of last year. Reservoir storage west of the divide was 135 percent of average and 111 percent of last year. East of the Divide, reservoir storage was 100 percent of average and 100 percent of last year.

River Basin	% of Average	Current as % of Last Year
Columbia	135	111
Kootenai	168	132
Flathead	112	94
Upper Clark Fork	101	98
Bitterroot	126	91
Lower Clark Fork	99	101
Missouri	99	100
Missouri Headwaters	98	95
Jefferson	80	77
Madison	110	106
Gallatin	89	96
Missouri below Toston	99	100
Missouri Mainstem	99	100
Smith-Judith Musselshell	107	91
Sun-Teton-Marias	94	96
Milk	145	119
St. Mary	100	56
St. Mary & Milk	132	95
Yellowstone	111	101
Upper Yellowstone	103	105
Lower Yellowstone	112	101
Statewide	109	103

Streamflow

Nearly all streamflow predictions for this spring & summer are vastly improved since February 1 thanks in large part to the snowpack received this February. While most areas of the state made game changing improvements in snowpack there are a few minor watersheds that still maintain below average snowpacks. These two areas are the Red Rocks and Ruby (above the reservoir) Rivers in the upper Jefferson who's current snowpacks will likely lead to below normal streamflow prospects without above average snow accumulation in the coming months.

State-wide, streamflows are forecast to be 117 percent of average. West of the divide streamflows are forecast to be 112 percent of average and east of the divide are forecast to be 123 percent of average.

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.

April-July Streamflow Forecast Period		
River Basin	Forecast as % of Normal	This Year Forecast as % of Last Year Streamflow
Columbia	112	114
Kootenai	90	75
Flathead	104	94
Upper Clark Fork	148	183
Bitterroot	145	189
Lower Clark Fork	123	132
Missouri	121	169
Missouri below Toston	114	203
Jefferson	122	272
Madison	98	136
Gallatin	110	154
Missouri Mainstem	122	161
Missouri Mainstem	122	164
Smith-Judith Musselshell	173	327
Sun-Teton-Marias	111	121
Milk	114	Incomplete
St. Mary	97	90
St. Mary & Milk	99	90
Yellowstone	127	168
Upper Yellowstone	118	150
Lower Yellowstone	134	183
Statewide	117	133

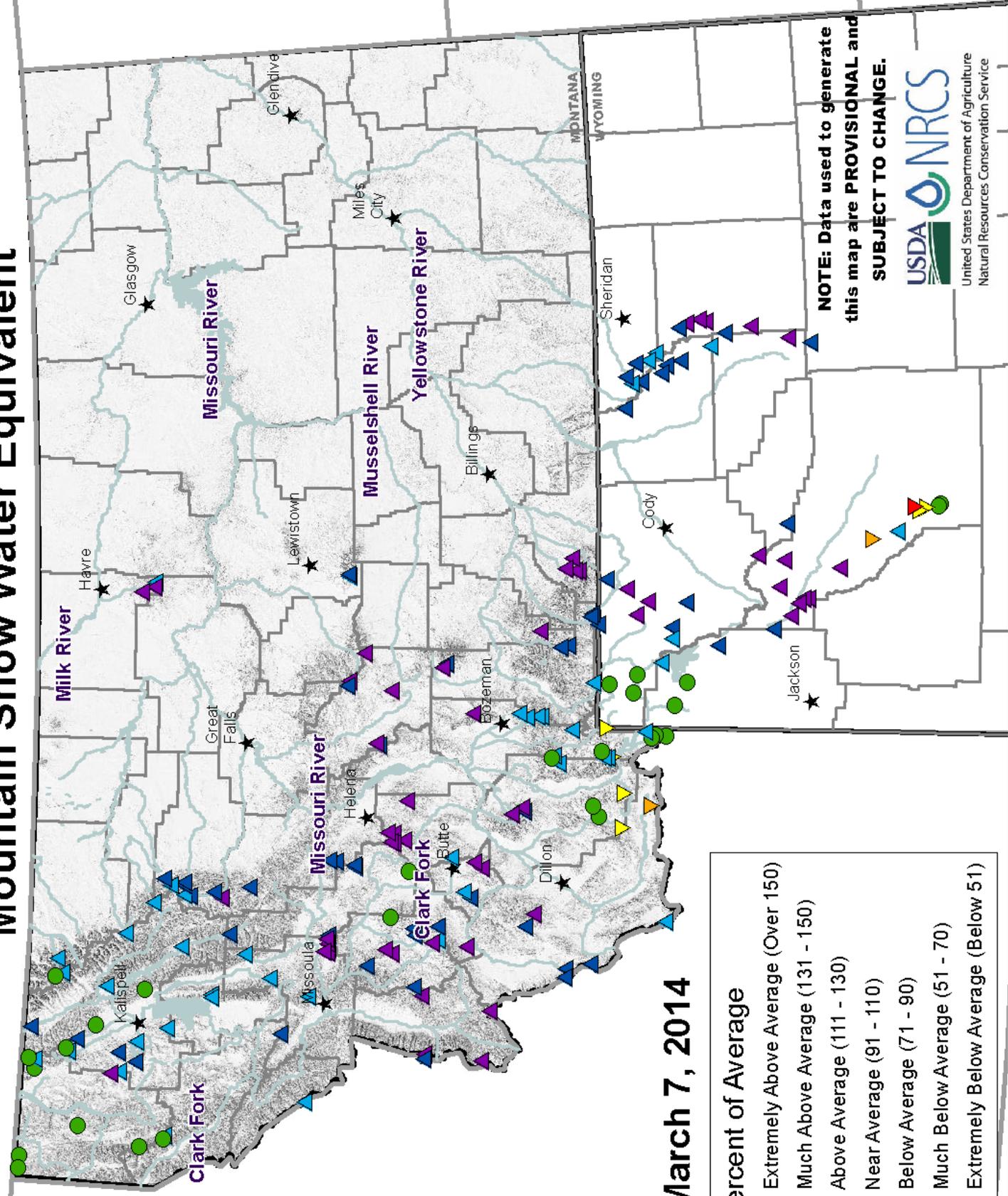
Surface Water Supply Index

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.

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

This Year's SWSI	Last Year's SWSI	Watershed
-0.8	-0.3	Tobacco River
-1.0	+0.1	Kootenai Ft. Steele to Libby Dam
+2.3	+1.5	Kootenai River below Libby Dam
+0.2	-1.1	Fisher River
-0.6	+1.2	Yaak River
-1.2	+0.4	North Fork Flathead River
+0.3	+0.6	Middle Fork Flathead River
+3.1	+3.5	South Fork Flathead River
+0.8	+0.9	Flathead River at Columbia Falls
+2.3	-0.6	Swan River
+0.3	+0.7	Flathead River at Polson
-1.0	-2.8	Mission Valley
+0.6	-2.4	Little Bitterroot River
+2.6	-0.7	Clark Fork River above Milltown
+2.9	-1.7	Clark Fork River above Missoula
+2.4	-2.2	Blackfoot River
+2.4	-1.8	Bitterroot River
+2.8	-1.7	Clark Fork River below Bitterroot River
+1.2	-0.2	Clark Fork River below Flathead River
-2.1	-0.3	Beaverhead River
-0.7	-0.7	Ruby River
+1.5	-1.0	Big Hole River
+1.8	-0.9	Boulder River (Jefferson)
+1.9	+0.3	Jefferson River
0.0	-1.4	Madison River
+0.7	-0.8	Gallatin River
+0.6	0.0	Missouri River above Canyon Ferry
+0.5	+0.1	Missouri River below Canyon Ferry
+2.9	+1.6	Smith River
+0.4	-1.0	Sun River
+1.1	+0.3	Teton River
-2.1	-2.5	Birch/Dupuyer Creeks
+3.4	-0.2	Upper Judith River
-1.2	-1.9	Marias River above Tiber
+0.6	+0.1	Marias River below Tiber
+2.3	-0.1	Musselshell River
+0.7	+0.6	Missouri River above Ft. Peck
-0.9	-1.5	Missouri River below Ft. Peck
+0.1	+1.2	St. Mary River
+1.4	+1.0	Milk River
+0.1	-1.1	Dearborn River near Craig
+1.1	-1.2	Yellowstone River above Livingston
+2.4	-1.8	Shields River
+2.2	-0.8	Boulder River (Yellowstone)
+0.6	-2.0	Stillwater River
+1.4	-1.3	Rock/Red Lodge Creeks
+2.3	-1.3	Clarks Fork River
+1.1	-1.3	Yellowstone River above Bighorn River
+3.2	-1.0	Bighorn River below Bighorn Lake
+1.5	-2.2	Little Bighorn River
+2.0	-0.7	Yellowstone River below Bighorn River
+2.5	-1.2	Tongue River
+2.4	-0.3	Powder River

Mountain Snow Water Equivalent



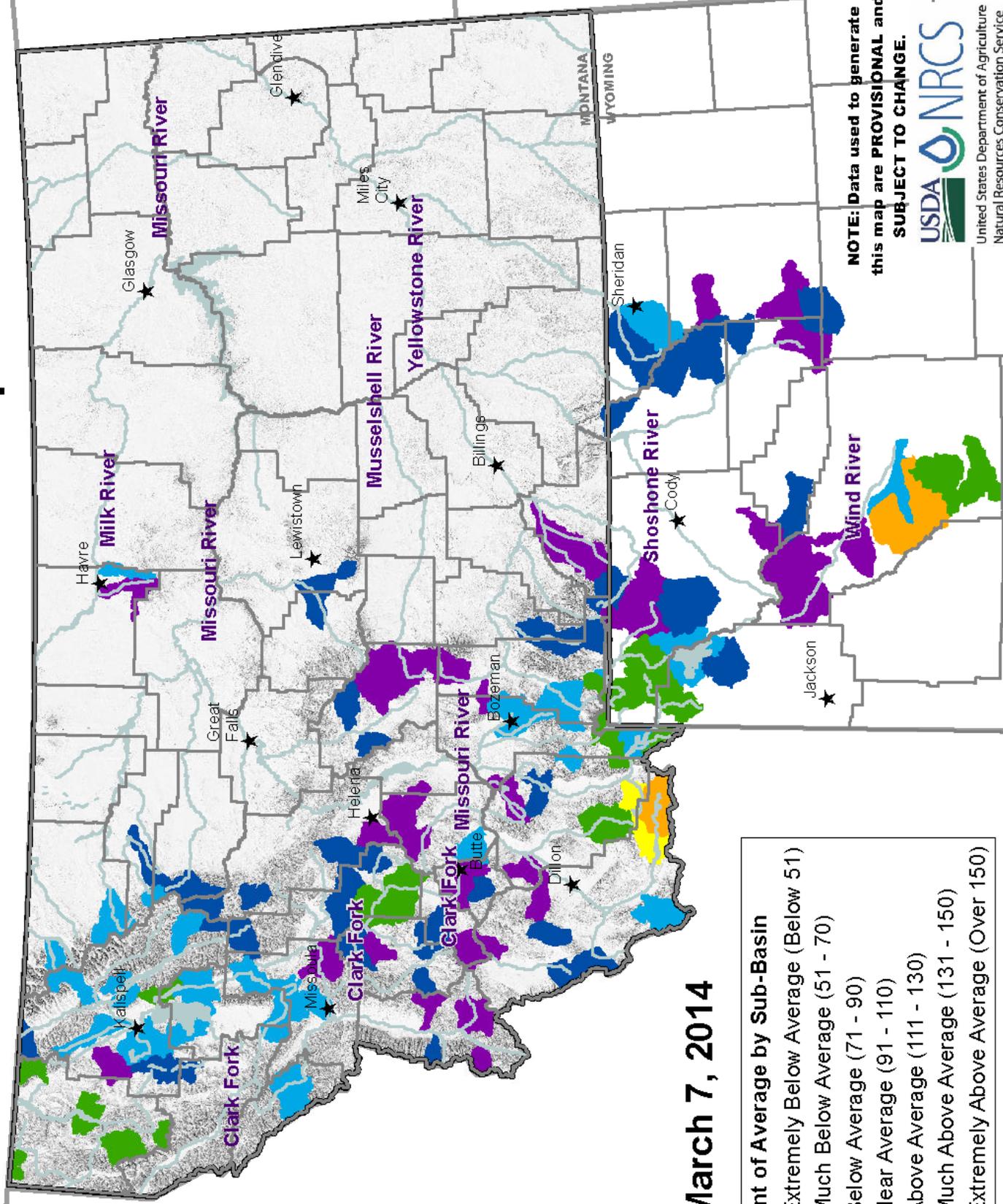
March 7, 2014

- Percent of Average**
- ▲ Extremely Above Average (Over 150)
 - ▲ Much Above Average (131 - 150)
 - ▲ Above Average (111 - 130)
 - Near Average (91 - 110)
 - ▲ Below Average (71 - 90)
 - ▲ Much Below Average (51 - 70)
 - ▲ Extremely Below Average (Below 51)

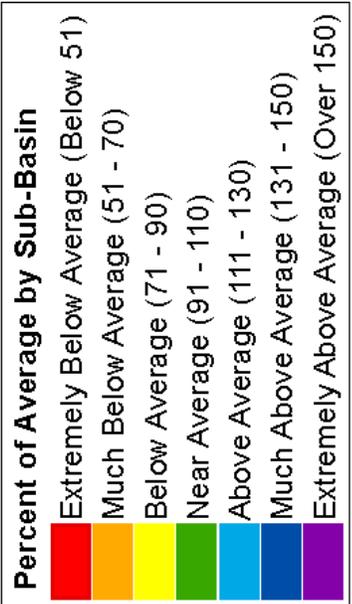
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Mountain Snow Water Equivalent



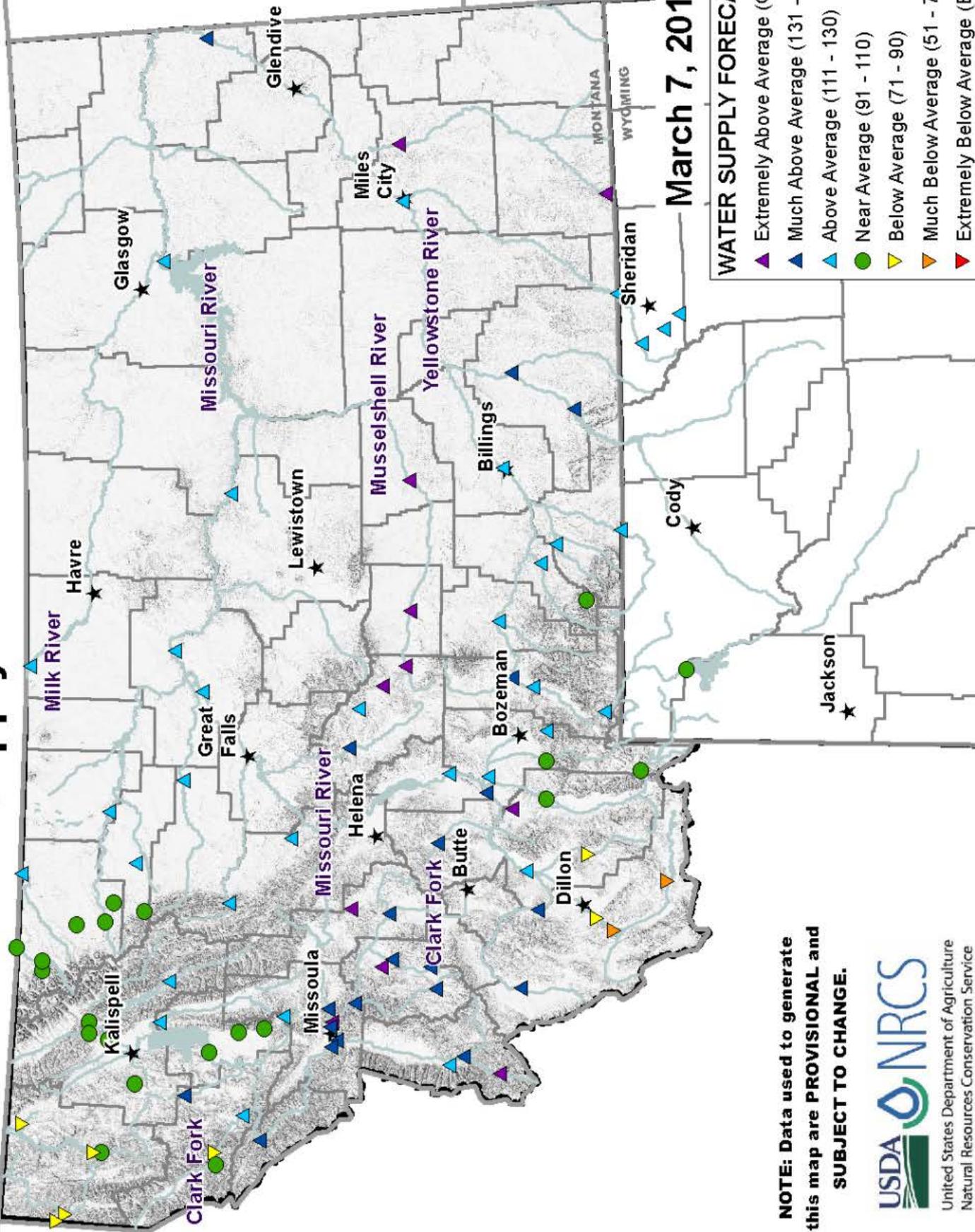
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Water Supply Forecast for Montana



March 7, 2014

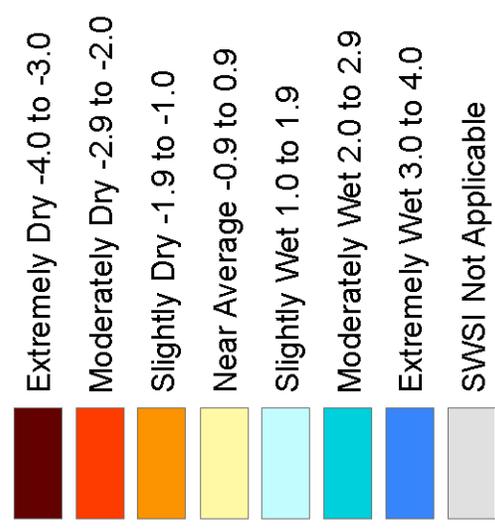
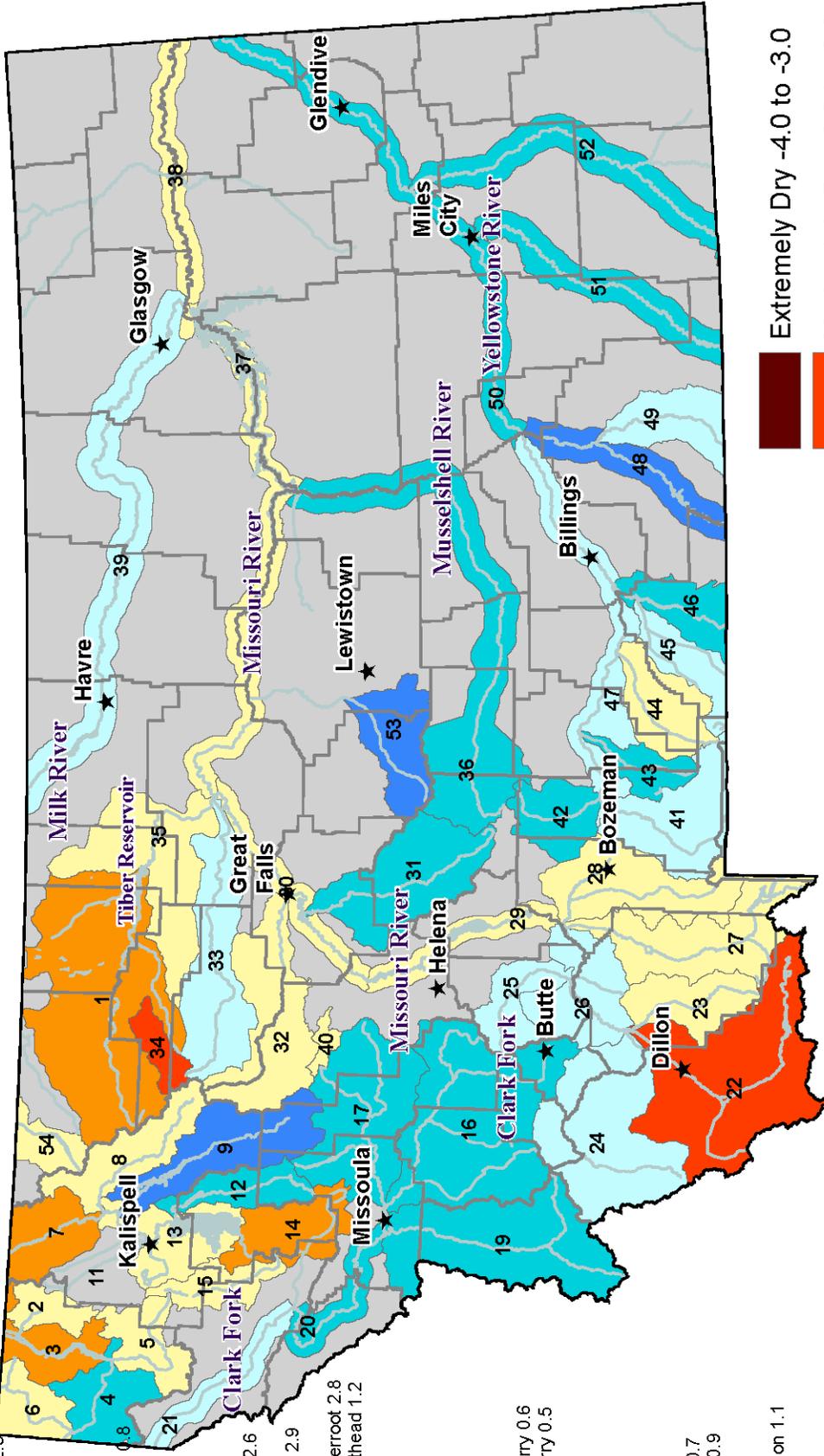
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Surface Water Supply Index (SWSI) Values

RIVER INDEX & SWSI VALUES

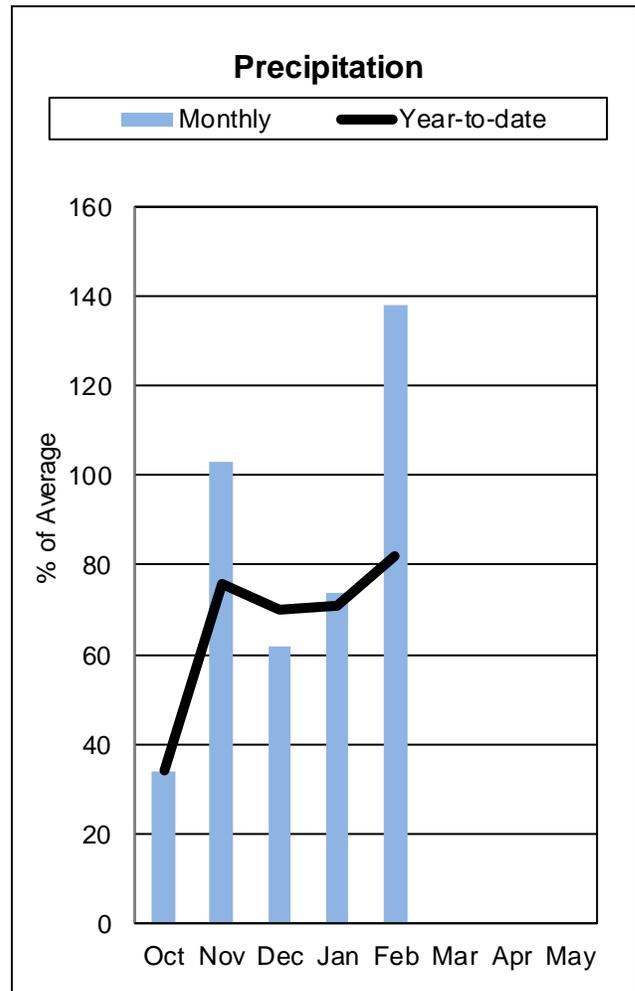
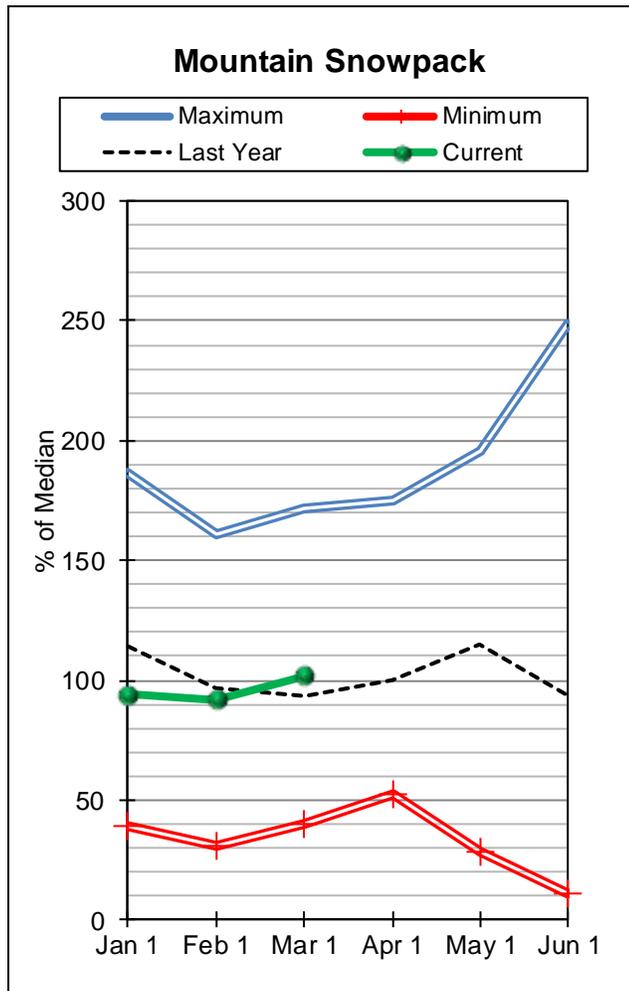
- 1 Marias above Tiber Reservoir -1.2
- 2 Tobacco -0.8
- 3 Kootenai Ft. Steele to Libby Dam -1
- 4 Kootenai below Libby Dam 2.3
- 5 Fisher 0.2
- 6 Yaak -0.6
- 7 North Fk. Flathead -1.2
- 8 Middle Fk. Flathead 0.3
- 9 South Fk. Flathead 3.1
- 10 Flathead at Columbia Falls 0.8
- 11 Stillwater/Whitefish Rivers
- 12 Swan 2.3
- 13 Flathead at Polson 0.3
- 14 Mission Valley -1
- 15 Little Bitterroot 0.6
- 16 Clark Fork above Milltown 2.6
- 17 Blackfoot 2.4
- 18 Clark Fork above Missoula 2.9
- 19 Bitterroot 2.4
- 20 Clark Fork River below Bitterroot 2.8
- 21 Clark Fork River below Flathead 1.2
- 22 Beaverhead -2.1
- 23 Ruby -0.7
- 24 Big Hole 1.5
- 25 Boulder (Jefferson) 1.8
- 26 Jefferson 1.9
- 27 Madison 0
- 28 Gallatin 0.7
- 29 Missouri above Canyon Ferry 0.6
- 30 Missouri below Canyon Ferry 0.5
- 31 Smith 2.9
- 32 Sun 0.4
- 33 Teton 1.1
- 34 Birch/Dupuyer Creeks -2.1
- 35 Marias 0.6
- 36 Musselshell 2.3
- 37 Missouri above Fort Peck 0.7
- 38 Missouri below Fort Peck -0.9
- 39 Milk 1.4
- 40 Dearborn near Craig 0.1
- 41 Yellowstone above Livingston 1.1
- 42 Shields 2.4
- 43 Boulder (Yellowstone) 2.2
- 44 Stillwater 0.6
- 45 Rock/Red Lodge Creeks 1.4
- 46 Clark's Fork Yellowstone 2.3
- 47 Yellowstone above Bighorn River 1.1
- 48 Bighorn below Bighorn Lake 3.2
- 49 Little Bighorn 1.5
- 50 Yellowstone below Bighorn 2
- 51 Tongue 2.5
- 52 Powder 2.4
- 53 Upper Judith 3.4
- 54 Saint Mary 0.1



March 7, 2014

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

Kootenai River Basin in Montana



February started off cold and somewhat dry. The majority of the basin’s SNOTEL sites showed very little increase in snow water equivalent (SWE) and a couple of the lower elevation sites actual decreased a little in SWE.

Towards mid-month a steady stream of moisture laden storms made their way into northwest Montana. From February 10 through March 1, the basin SNOTEL sites received 218 percent of normal snow water equivalent (SWE) which saved a rather slow start in accumulation. Manual snowcourses in Canada saw well above average snow accumulation at 208 percent of normal. The overall snowpack including data from Montana SNOTEL sites and manual snow courses in both Montana and Canada rounded out the month of February at 104 percent of normal.

Mountain and valley precipitation rebounded this month to well above average at 132 percent and 183 percent of last year. However, year to date precipitation is only 81 percent of average and is a 10 percent increase over last month.

Reservoir storage in Lake Koocanusa is 168 percent of average and 132 percent of last year.

Assuming average precipitation for April through July, streamflows are forecast to be 90 percent of average and 75 percent of last year.

Kootenai River Basin In Montana Streamflow Forecasts - March 1, 2014

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	73	94	109	87%	124	145	126
	APR-SEP	81	105	122	87%	139	163	140
Libby Reservoir Inflow ¹	APR-JUL	3970	4550	4810	90%	5070	5650	5340
	APR-SEP	4820	5380	5640	90%	5900	6460	6250
Fisher R nr Libby	APR-JUL	154	190	215	105%	240	275	205
	APR-SEP	163	200	225	102%	250	285	220
Yaak R nr Troy	APR-JUL	245	320	370	88%	420	495	420
	APR-SEP	260	335	390	89%	445	520	440
Kootenai R at Leonia ^{1,2}	APR-JUL	4800	5540	5880	89%	6220	6960	6600
	APR-SEP	5710	6450	6780	89%	7110	7850	7590

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

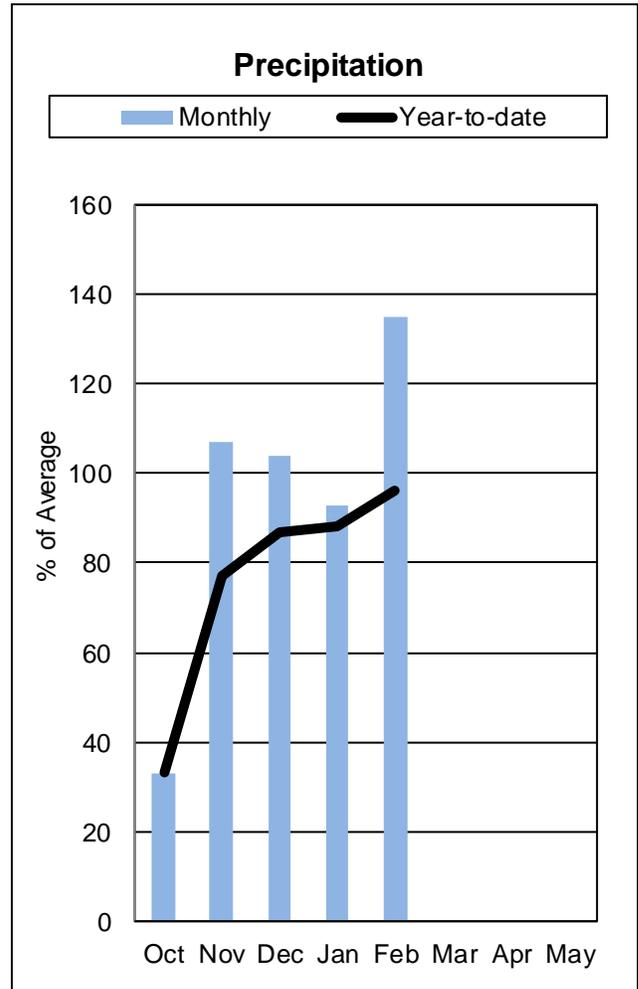
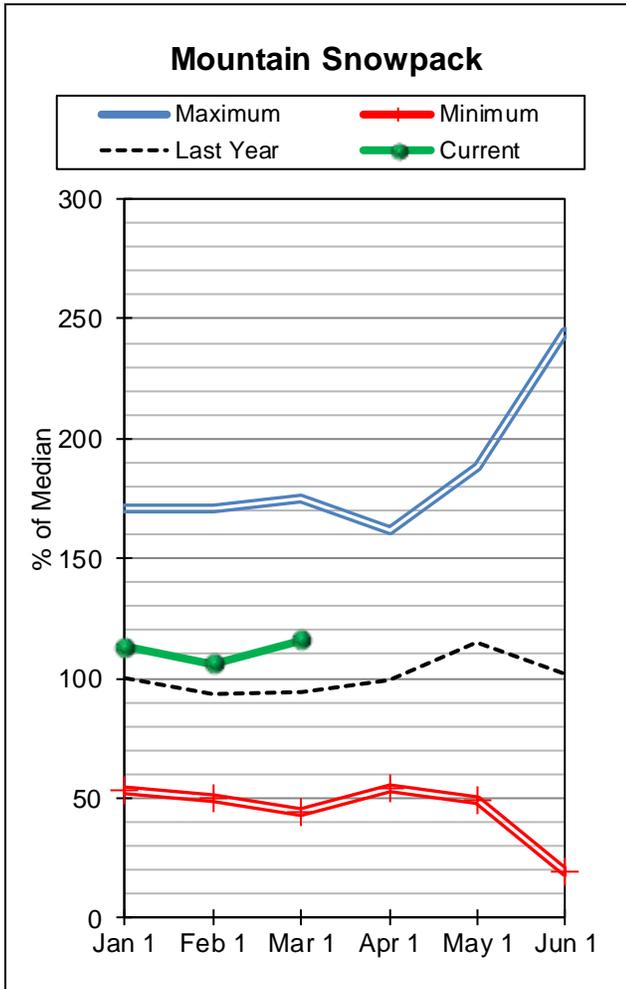
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of February, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
LAKE KOOCANUSA	4197.0	3171.4	2501.0	5748.0
Basin-wide Total	4197.0	3171.4	2501.0	5748.0
# of reservoirs	1	1	1	1

Watershed Snowpack Analysis March 1, 2014	# of Sites	% Median	Last Year % Median
KOOTENAY in CANADA	15	105%	103%
KOOTENAI MAINSTEM	3	92%	91%
TOBACCO	3	100%	88%
FISHER	4	133%	94%
YAAK	2	102%	110%
KOOTENAI RIVER BASIN in MONTANA	12	104%	93%
KOOTENAI ab BONNERS FERRY	26	107%	98%

Flathead River Basin



February started off with colder temperatures and very little snowfall. Some low elevation and more exposed SNOTEL sites showed a decrease in snow water equivalent. However the “faucet” was turned on mid-month with a 219 percent of average increase in snowfall basin wide. February went out like a roaring lion with blizzard and avalanche warnings throughout area. The majority of sub-basins within the Flathead are showing near to a little above average snowpacks. The overall snow water equivalent (SWE) for the entire Flathead River Basin is 118 percent of average and 129 percent of last year.

February mountain precipitation was well above average while the valley stations were near normal. The majority of precipitation fell in the form of snow this last month. Year to date precipitation increased from 88 percent of average in January to 96 percent of average for February.

Reservoir storages are 112 percent of average and 94 percent of last year.

Streamflows are forecast to be 104 percent of average and 94 percent of last year. This is assuming average precipitation for the April through July period.

Flathead River Basin Streamflow Forecasts - March 1, 2014

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	1200	1320	1410	92%	1500	1620	1540
	APR-SEP	1330	1470	1560	92%	1650	1790	1700
MF Flathead R nr West Glacier	APR-JUL	1300	1450	1550	103%	1650	1800	1500
	APR-SEP	1430	1580	1690	104%	1800	1950	1630
Sf Flathead R nr Hungry Horse	APR-JUL	1130	1240	1310	111%	1380	1490	1180
	APR-SEP	1200	1310	1390	110%	1470	1580	1260
Hungry Horse Reservoir Inflow ^{1,2}	APR-JUL	1730	1980	2090	112%	2200	2450	1860
	APR-SEP	1830	2100	2220	112%	2340	2610	1980
Flathead R at Columbia Falls ²	APR-JUL	4450	4870	5150	103%	5430	5850	5020
	APR-SEP	4830	5280	5590	103%	5900	6350	5450
Ashley Ck nr Marion ²	APR-JUL	3.6	5	6	92%	7	8.4	6.5
	MAR	0.71475	1.1823	1.5	126%	1.8177	2.3	1.19
Swan R nr Bigfork	APR-JUL	530	580	615	118%	650	700	520
	APR-SEP	600	660	700	118%	740	800	595
Flathead Lake Inflow ^{1,2}	APR-JUL	4820	5600	5950	102%	6300	7080	5810
	APR-SEP	5190	6040	6430	103%	6820	7670	6270
Mill Ck ab Bassoo ck nr Niarada	APR-JUL	4.5	5.4	6	150%	6.6	7.5	4
	APR-SEP	5	6	6.6	150%	7.2	8.2	4.4
South Crow Ck nr Ronan	APR-JUL	8.3	9.9	10.9	108%	11.9	13.5	10.1
	APR-SEP	9.5	11.2	12.4	107%	13.6	15.3	11.6
Mission Ck nr St. Ignatius	APR-JUL	22	24	26	104%	28	30	25
	APR-SEP	26	29	31	103%	33	36	30
SF Jocko R nr Arlee	APR-JUL	35	40	43	130%	46	51	33
	APR-SEP	39	44	48	130%	52	57	37
NF Jocko R bl Tabor Feeder Canal	APR-JUL	34	37	39	126%	41	44	31
	APR-SEP	36	39	41	124%	43	46	33

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

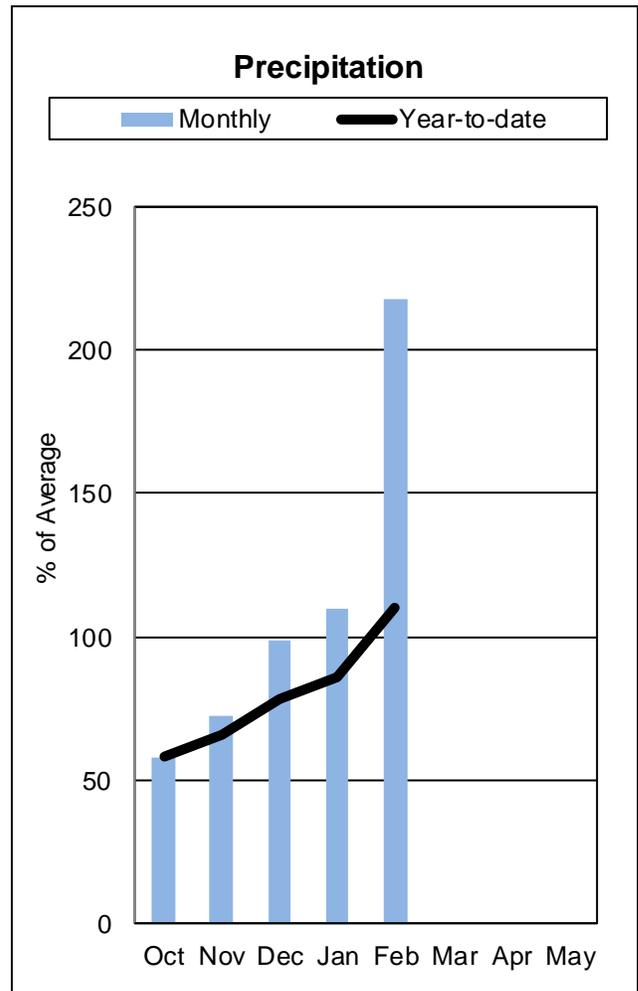
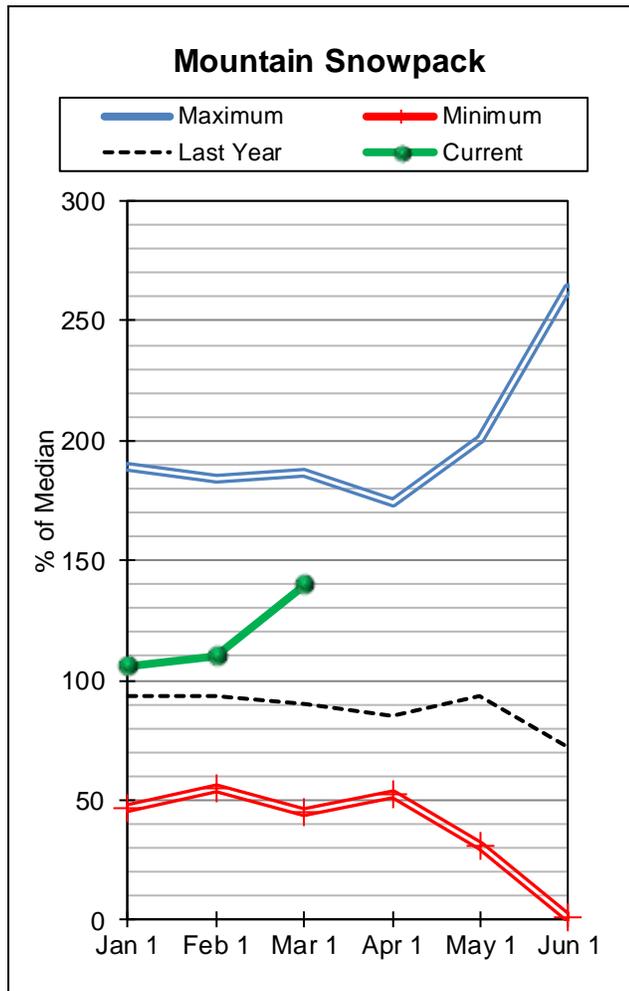
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of February, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
CAMAS (4)	23.0	29.0	19.5	45.2
LOWER JOCKO LAKE	0.0	0.0	0.0	6.4
MISSION VALLEY (8)	25.0	22.5	32.0	100.0
HUNGRY HORSE LAKE	2726.0	2888.9	2209.0	3451.0
FLATHEAD LAKE	668.2	725.3	812.8	1791.0
Basin-wide Total	3442.2	3665.8	3073.3	5393.6
# of reservoirs	5	5	5	5

Watershed Snowpack Analysis March 1, 2014	# of Sites	% Median	Last Year % Median
NF FLATHEAD in CANADA	3	100%	89%
NF FLATHEAD in MONTANA	9	107%	91%
MIDDLE FORK FLATHEAD	4	118%	109%
SOUTH FORK FLATHEAD	4	117%	95%
STILLWATER-WHITEFISH	9	126%	88%
SWAN	3	114%	100%
MISSION VALLEY	3	119%	87%
LITTLE BITTERROOT-ASHLEY	3	122%	70%
JOCKO	3	114%	100%
FLATHEAD in MONTANA	9	107%	91%
FLATHEAD RIVER BASIN	30	116%	92%

Upper Clark Fork River Basin



Most of the moisture that fell during the month of February seemed to be squarely aimed at the Upper Clark Fork and Bitterroot River basins. February saw a 30 percent increase in the basin total, rising from 110 percent on February 1st to 140 percent on March 1st. Basin wide, the month was 287 percent of the normal February snowfall, and at select SNOTEL sites the accumulations were substantially above the basin average. Low elevations saw substantial snowfall mixed with some rain leaving areas with substantial valley snowpacks ending the month. Lubrecht Flume SNOTEL, a lower elevation site in the Blackfoot River basin saw over 500 percent of the normal February snowfall and is currently 172 percent of average. While low elevations do not typically dominate the volume of snow melt driven flows in the river systems, it should be noted that this low elevation and valley snowcover will certainly play a part in the early flows experienced in the creeks river as snowmelt begins. The Upper Clark Fork River basin on March 1st ranked 3rd for snowpack totals since 1981, and is 155 percent of last year at this time.

Like it's downstream neighbor, the Upper Clark Fork Basin saw substantial improvement in the Water Year to date Precipitation due to the abundance of moisture in the mountains and valleys. Starting the month, the river basin was below average at 87 percent, but saw a 22 percent increase rising to 109 percent of average on March 1st.

Streamflow prospects are well above average for the April-July period with a basin average of 147 percent. This is an increase of 39 percent from February 1st.

Reservoir storage is at or slightly above average for March 1st, with the exception being Nevada Creek Reservoir, which is 73 percent of average.

Upper Clark Fork River Basin Streamflow Forecasts - March 1, 2014

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

UPPER CLARK FORK RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Little Blackfoot nr Garrison	APR-JUL	73	92	105	150%	118	137	70
	APR-SEP	80	101	115	149%	129	150	77
Flint Ck nr Southern Cross	APR-JUL	12.2	16	18.5	149%	21	25	12.4
	APR-SEP	14.1	18.8	22	151%	25	30	14.6
Flint Ck bl Boulder Ck	APR-JUL	51	66	76	146%	86	101	52
	APR-SEP	64	82	94	142%	106	124	66
Lower Willow Ck Reservoir Inflow ²	APR-MAY	7.8	10.3	11.9	163%	13.5	16	7.3
	APR-JUL	11.4	15.3	17.9	169%	21	24	10.6
MF Rock Ck nr Philipsburg	APR-JUL	67	76	83	143%	90	99	58
	APR-SEP	73	84	91	140%	98	109	65
Rock Ck nr Clinton	APR-JUL	285	340	375	150%	410	465	250
	APR-SEP	320	375	415	148%	455	510	280
Clark Fork R ab Milltown	APR-JUL	585	735	840	158%	945	1090	530
	APR-SEP	675	840	955	155%	1070	1240	615
Nevada Ck nr Helmville	APR-MAY	10.6	13.8	16	190%	18.2	21	8.4
	APR-JUL	17.7	23	27	190%	31	36	14.2
Blackfoot R nr Bonner	APR-JUL	790	905	985	137%	1060	1180	720
	APR-SEP	870	995	1080	135%	1160	1290	800
Clark Fork R ab Missoula	APR-JUL	1400	1670	1850	148%	2030	2300	1250
	APR-SEP							1420

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

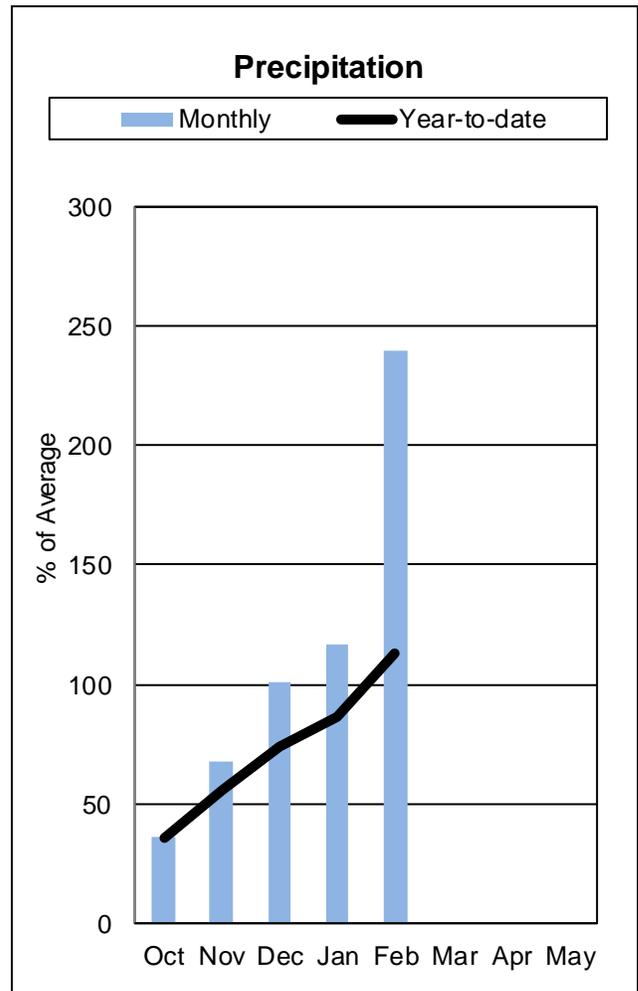
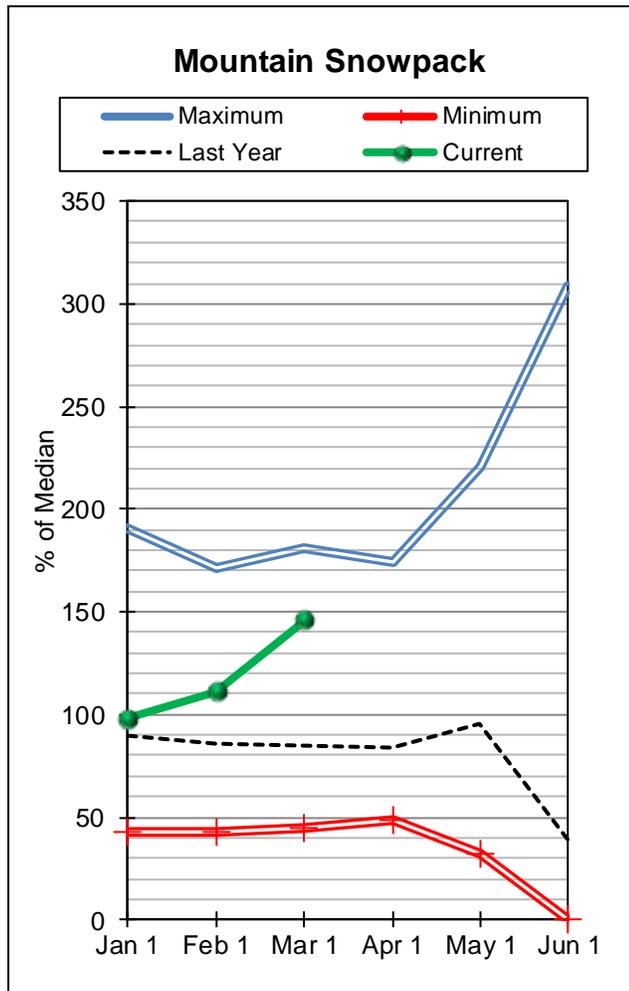
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of February, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
EAST FORK ROCK CREEK RES	9.3	9.7	8.3	15.6
GEORGETOWN LAKE	28.4	27.9	27.6	31.0
LOWER WILLOW CREEK RESERVOIR		1.6	2.2	4.9
NEVADA CREEK RES	4.1	5.2	5.6	12.6
Basin-wide Total	41.8	44.4	43.7	64.1
# of reservoirs	3	4	4	4

Watershed Snowpack Analysis March 1, 2014	# of Sites	% Median	Last Year % Median
CLARK FORK ab FLINT CREEK	12	142%	87%
FLINT CREEK	12	142%	87%
ROCK CREEK	4	138%	97%
CLARK FORK ab BLACKFOOT	19	143%	90%
BLACKFOOT	19	143%	90%
UPPER CLARK FORK RIVER BASIN	29	140%	88%

Bitterroot River Basin



Apparently the residents of the Bitterroot valley all did quite the snow dance on New Year's Eve. Since January 1st we have seen an incredible amount of snow and valley precipitation. On January 1st the Bitterroot was below normal at 91 percent, increased to 111 percent on Feb 1st, and increased an astounding 35 percent to 146 percent on March 1st. Moist West and Northwest flow has dropped a substantial amount of moisture in the mountains and valleys, with the Twelvemile SNOTEL site at mid-elevation in Lost Horse Canyon reporting 360 percent of the normal February snowfall. Basin wide, the Bitterroot Basin saw 265 percent of the normal February snowfall, and the largest increase in SWE percent of normal in the state. The sheer volume of snowfall this year has helped to increase the streamflow prospects and has also brought the Water Year to date precipitation to above average for the year for the first time since Oct 1st, 2013. The Bitterroot River basin on March 1st ranked 4th for snowpack totals since 1981, and is 174 percent of last year at this time.

What fell as snow in the mountains under moist northwest flow also fell occasionally as rain and snow in the Bitterroot valley. Starting the month of February the Water Year to Date Precipitation was 83 percent of average, and increased 27 percent during the month to end at 113 percent on March 1st. The fall was particularly dry in the basin, so this increase to above average should be welcomed by water users in the valley.

Streamflow prospects are well above average for the April-July period with a basin average of 145 percent. This is an increase of 45 percent from February 1st.

Reservoir storage in the Bitterroot River Basin is above average this year, with the average of the 2 reservoirs storage being 126 percent, and 91 percent of last year.

Bitterroot River Basin Streamflow Forecasts - March 1, 2014

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

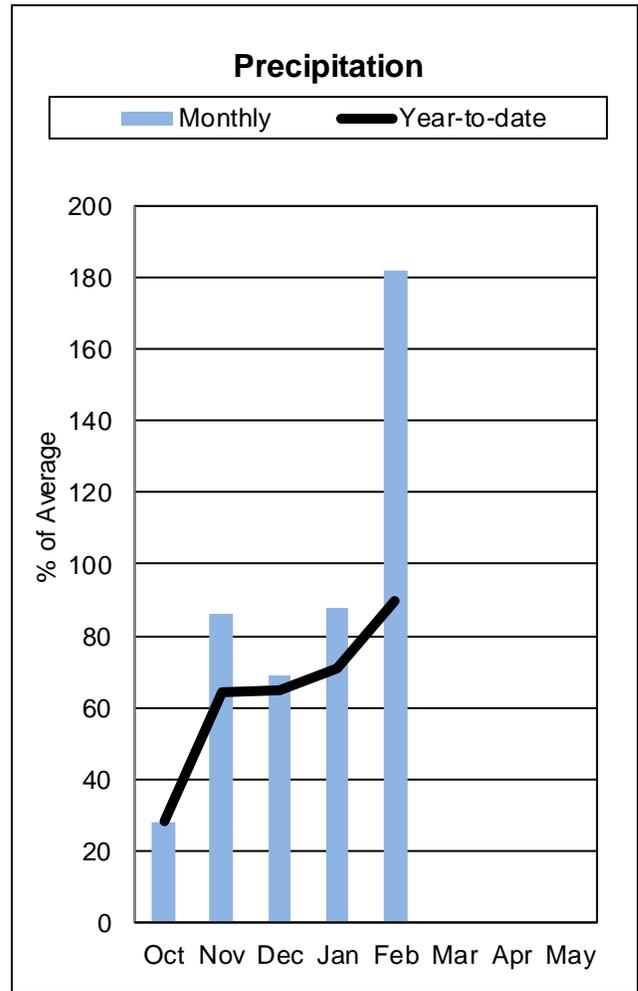
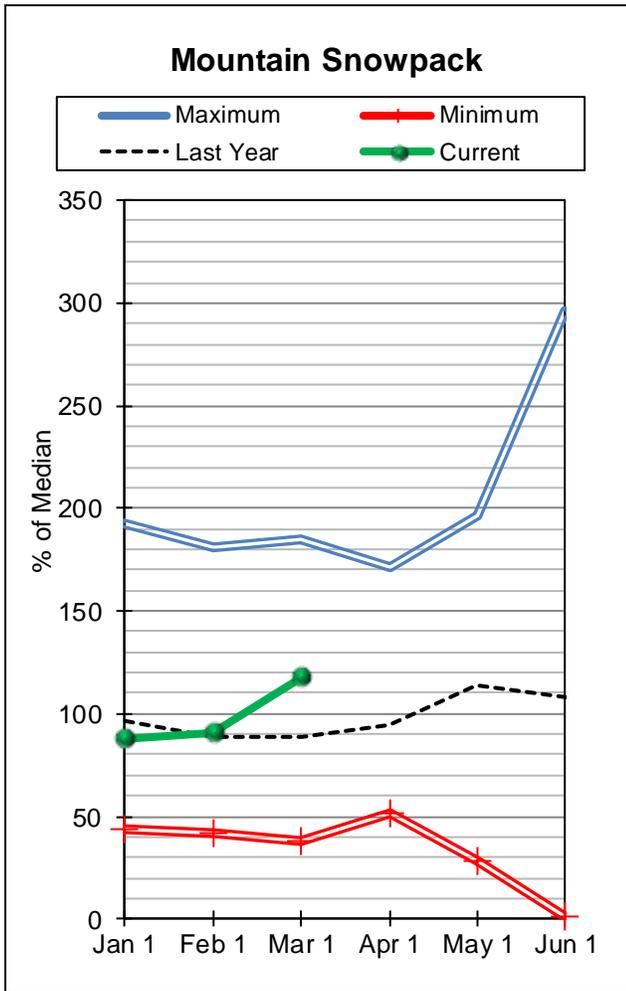
BITTERROOT RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
WF Bitterroot R Nr Conner ²								
	APR-JUL	151	179	198	155%	215	245	128
	APR-SEP	157	189	210	151%	230	265	139
Bitterroot R Nr Darby								
	APR-JUL	475	560	615	150%	670	755	410
	APR-SEP	545	625	680	145%	735	815	470
Como Reservoir Inflow ²								
	APR-JUL	79	86	91	120%	96	103	76
	APR-SEP	82	90	95	120%	100	108	79
Bitterroot R nr Missoula								
	APR-JUL	1360	1530	1650	143%	1770	1940	1150
	APR-SEP	1430	1610	1740	139%	1870	2050	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

Reservoir Storage End of February, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
PAINTED ROCKS LAKE	10.8	10.9	5.7	31.7
LAKE COMO	12.6	14.8	12.9	34.9
Basin-wide Total	23.4	25.7	18.6	66.6
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis March 1, 2014	# of Sites	% Median	Last Year % Median
WEST FORK BITTERROOT	2	158%	90%
EAST SIDE BITTERROOT	3	147%	89%
WEST SIDE BITTERROOT	3	142%	79%
BITTERROOT RIVER BASIN	7	146%	84%

Lower Clark Fork River Basin



It's no news to the people in the Lower Clark Fork Basin that February was a very snowy month. Missoula experienced the second snowiest February on record second to only 1936, and set a new record for one day snowfall on Feb 24th, breaking the record set in 1939. The snow certainly treated the mountains similarly in the basin, where 210 percent of the normal February snowfall fell at SNOTEL sites. This year, the Lower Clark Fork Basin has consistently been the lowest for basin snowpack totals in the state since October 1st, but the above average snowfall this month has helped it to recover. Starting the month the basin was below normal at 91 percent, but saw a 27 percent increase to 118 percent of normal on March 1st. Southern areas along the Idaho border in the Bitterroot Range were favored in the basin during the storms, and have helped to increase the basin streamflow forecast. The Lower Clark Fork River basin on March 1st ranked 6th for snowpack totals since 1981, and is 125 percent of last year at this time.

Due to the relatively dry fall the Lower Clark Fork Basin has been well below average for Water Year to date precipitation, but the moisture in the mountains and valleys has helped the basin to continue its recovery. On Feb 1st the basin was well below average at 71 percent, but the well above average mountain and valley precipitation has aided in the recovery. Valley locations saw a needed 194 percent of the average precipitation during the month of February, and as a whole the Lower Clark Fork River basin saw 177% of the February average.

Streamflow prospects in the basin are well above average for the April-July time period with the basin average at 123 percent. This is an increase of 23 percent from February 1st.

Reservoir storage in the Lower Clark Fork Basin is 99 percent of average for March 1st, and 101 percent of last year.

Lower Clark Fork River Basin Streamflow Forecasts - March 1, 2014

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

LOWER CLARK FORK RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Clark Fork R bl Missoula	APR-JUL	2790	3200	3480	145%	3760	4170	2400
	APR-SEP	3030	3480	3780	142%	4080	4530	2670
Clark Fork R at St. Regis ¹	APR-JUL	3520	4250	4580	145%	4910	5640	3160
	APR-SEP	3840	4620	4970	142%	5320	6100	3510
Clark Fork R nr Plains ^{1,2}	APR-JUL	8590	10100	10800	117%	11500	13000	9200
	APR-SEP	9380	11000	11800	117%	12600	14200	10100
Thompson nr Thompson Falls	APR-JUL	101	138	163	90%	188	225	181
	APR-SEP	117	157	184	90%	210	250	205
Prospect Ck at Thompson Falls	APR-JUL	70	87	98	96%	109	126	102
	APR-SEP	76	92	104	95%	116	132	110
Clark Fork R at Whitehorse Rapids ^{1,2}	APR-JUL	9780	11400	12200	116%	13000	14600	10500
	APR-SEP	10700	12600	13400	117%	14200	16100	11500

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

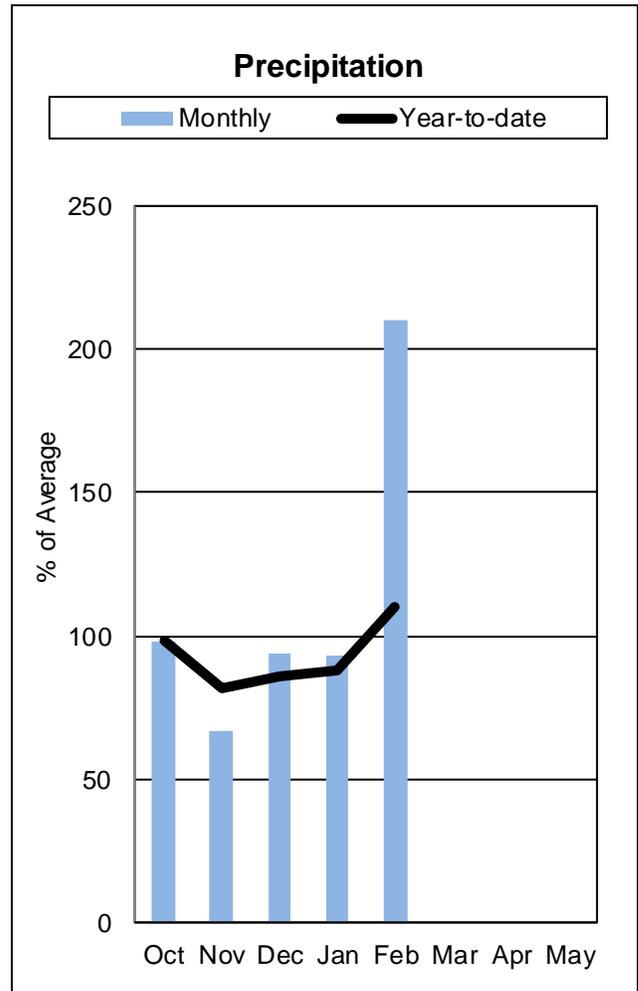
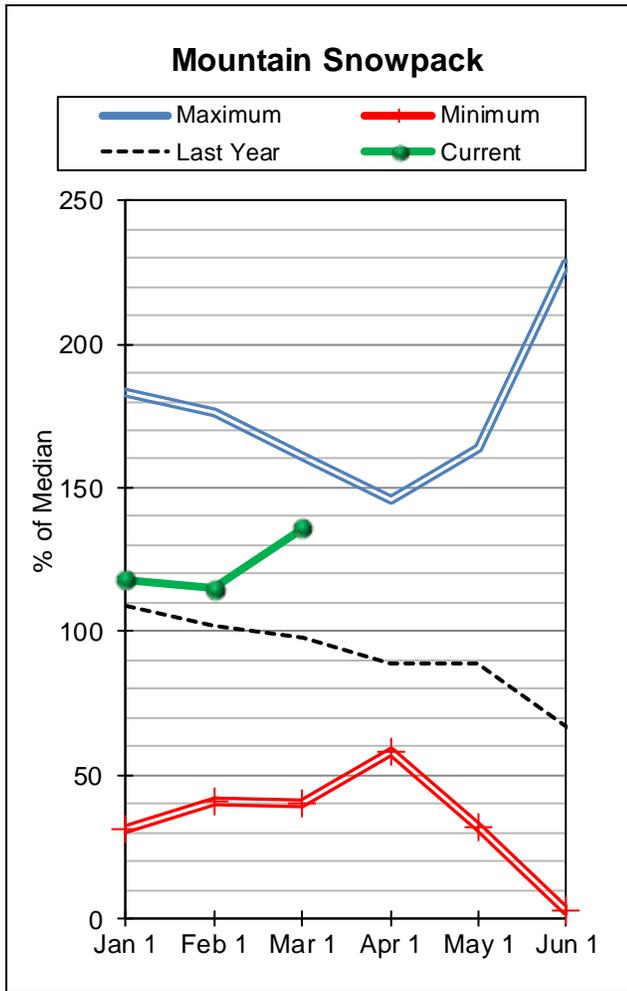
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of February, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
NOXON RAPIDS RES	311.8	308.9	313.9	335.0
Basin-wide Total	311.8	308.9	313.9	335.0
# of reservoirs	1	1	1	1

Watershed Snowpack Analysis March 1, 2014	# of Sites	% Median	Last Year % Median
LOWER CLARK FORK RIVER BASIN	10	118%	89%

Jefferson River Basin



Continued improvement was more than welcome in the Jefferson River basin, improvements were seen in all parts of the basin, with around 225 percent of the normal February snowfall building the snowpack. Overall, the Jefferson River Basin is 136 percent of normal on March 1st, up 21 percent from 115 percent on Feb 1st. The Boulder River saw the most abundant snowfall during the month, with Frohner Meadows SNOTEL receiving 408 percent of the normal February total. An area of concern this year has been in the uppermost headwaters of the Ruby River and Centennial Valley in the headwaters of the Beaverhead River where below normal snowfall 1 resulted in basins well below normal snowpack on February 1st. Near to above average snowfall during February has helped to improve the snowpack conditions, but continued storms and above average snowfall will be needed to raise these headwaters areas to normal before spring runoff occurs. Lower in the Beaverhead and Ruby basins the snowpack continues to be above average to well above average, helping the streamflow prospects this spring. The Bighole River saw substantial snowfall during the month of February, especially along the Divide, ending the month at 146 percent of average, up 22 percent from February 1st. The Jefferson River basin on March 1st ranked 4th for snowpack totals since 1981, and is 141 percent of last year at this time.

The Jefferson River Basin as a whole also saw an excellent gain in Water Year Precipitation since Feb 1st, climbing from a below average 88 percent up to 110 percent on Mar 1st. However, areas that continue to be overlooked snowpack wise in the southernmost drainages will still need to see continued precipitation through the spring to climb out of the hole experienced earlier this year.

Reservoir Storage in the Jefferson River basin is below average at Lima reservoir, which is reporting 77 percent of average on March 1st, and 57 percent of last year. Clark Canyon is also below average, reporting 73 percent of average and 74 percent of last year. The only reservoir above average is Ruby Reservoir which is 119 percent of average, and 113 percent of last year.

Streamflow prospects are above average for the April-July period with a basin average of 113 percent. Flows in the headwaters of the Ruby River above the reservoir and in the Red Rocks Lake area are well below average ranging from 53 to 62 percent. This is an increase of 24 percent from February 1st.

Jefferson River Basin Streamflow Forecasts - March 1, 2014

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 ²	APR-JUL	18.6	39	53	65%	67	87	82
	APR-SEP	14.4	39	55	62%	71	96	89
Clark Canyon Inflow ²	APR-JUL	-15	28	62	61%	97	147	101
	APR-SEP	-4	38	75	63%	113	168	120
Beaverhead R at Barretts ²	APR-JUL	26	41	91	71%	141	215	129
	APR-SEP	34	52	111	71%	169	255	156
Ruby R Reservoir Inflow ²	APR-JUL	34	51	62	81%	74	91	77
	APR-SEP	43	62	75	82%	88	108	91
Big Hole R at Wisdom	APR-JUL	77	121	151	148%	181	225	102
	APR-SEP	79	127	160	148%	193	240	108
Big Hole R nr Melrose	APR-JUL	530	650	735	143%	820	940	515
	APR-SEP	565	700	790	141%	880	1020	560
Jefferson R nr Twin Bridges ²	APR-JUL	445	670	820	119%	975	1200	690
	APR-SEP	465	715	890	122%	1060	1310	730
Boulder R nr Boulder	APR-JUL	64	81	92	133%	103	120	69
	APR-SEP	68	86	99	134%	111	129	74
Willow Ck Reservoir Inflow ²	APR-JUL	18.7	25	29	173%	33	39	16.8
	APR-SEP	24	31	35	181%	39	46	19.3
Jefferson R nr Three Forks ²	APR-JUL	545	800	970	131%	1140	1400	740
	APR-SEP	590	870	1060	133%	1250	1530	800

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

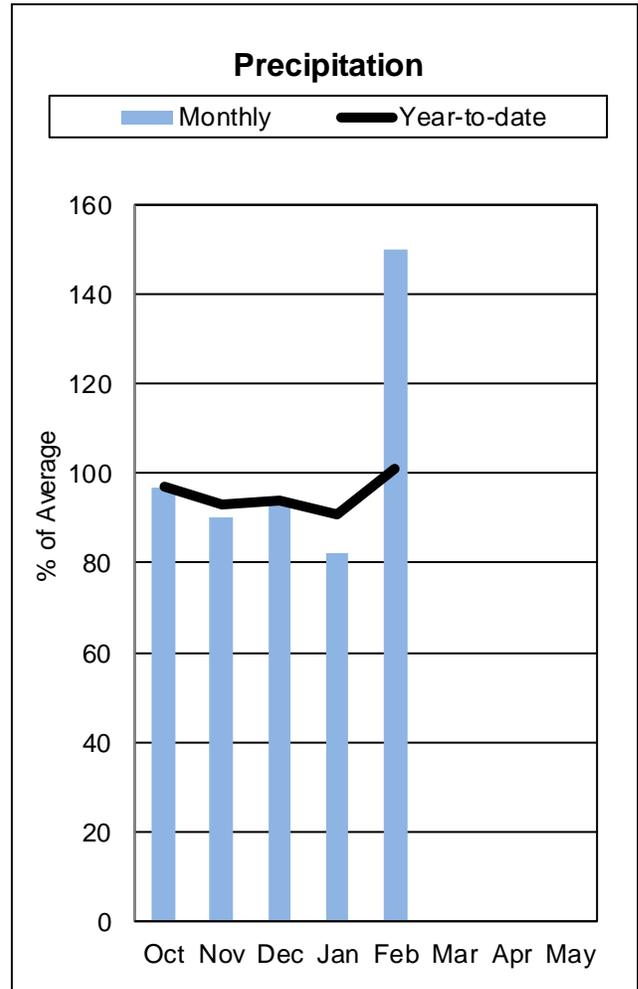
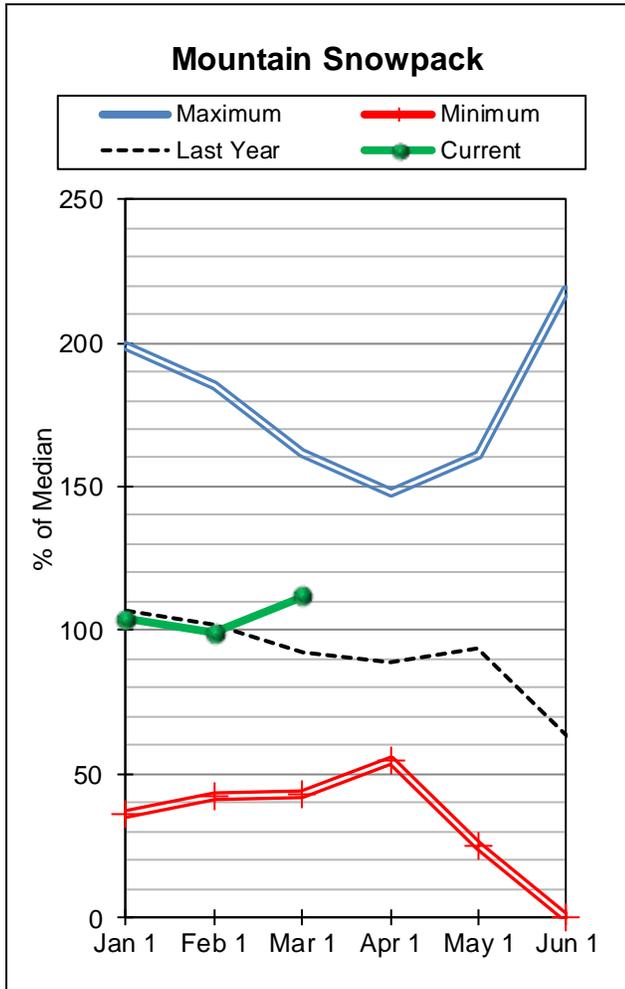
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of February, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
LIMA RESERVOIR	23.8	40.3	31.1	84.0
CLARK CANYON RES	92.3	124.1	126.4	255.6
RUBY RIVER RESERVOIR	32.3	28.5	27.2	38.8
Basin-wide Total	148.4	192.8	184.7	378.4
# of reservoirs	3	3	3	3

Watershed Snowpack Analysis March 1, 2014	# of Sites	% Median	Last Year % Median
BEAVERHEAD	9	122%	102%
RUBY	5	125%	94%
BIGHOLE	12	146%	95%
BOULDER	6	163%	95%
JEFFERSON RIVER BASIN	26	136%	96%

Madison River Basin



Compared to the rest of Southwest Montana, the Madison River Basin had the lowest snowpack entering the month of February at 99 percent of normal. The above average snowfall during the month however helped the Madison to climb from near normal to above normal at 112 percent on March 1st. Snowfall during the month was more widespread across the basin, helping the upper reaches of the Madison above Hebgen Dam to climb from 91 percent of normal on Feb 1st to 102 percent of normal on March 1st. This coupled with another above average month in the Tobacco Root Range lower in the basin has helped to increase the basin wide snowpack total and streamflow prospects this spring. The Madison River basin on March 1st ranked 13th for snowpack totals since 1981, and is 121 percent of last year at this time.

Like many areas across the state, the Madison continues to recover from below average fall precipitation. February was kind to the mountain and valley locations and has helped to bring the Water Year to Date total in the Madison up from 91 percent on Feb 1st to 101 percent of average on March 1st.

Reservoir storage is near to above average in the Madison River Basin, reporting an average of 110 percent and 106 percent of last year. This is an increase of 5 percent from February 1st.

Streamflow prospects are slightly below average for the April-July period with a basin average of 98 percent. This is an increase of 15 percent from February 1st.

Madison River Basin Streamflow Forecasts - March 1, 2014

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

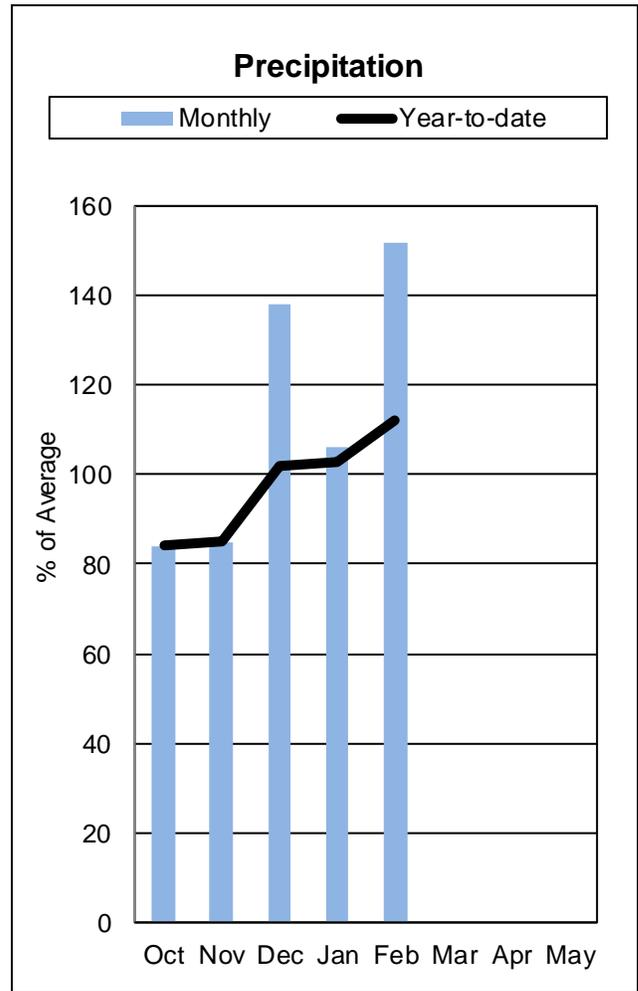
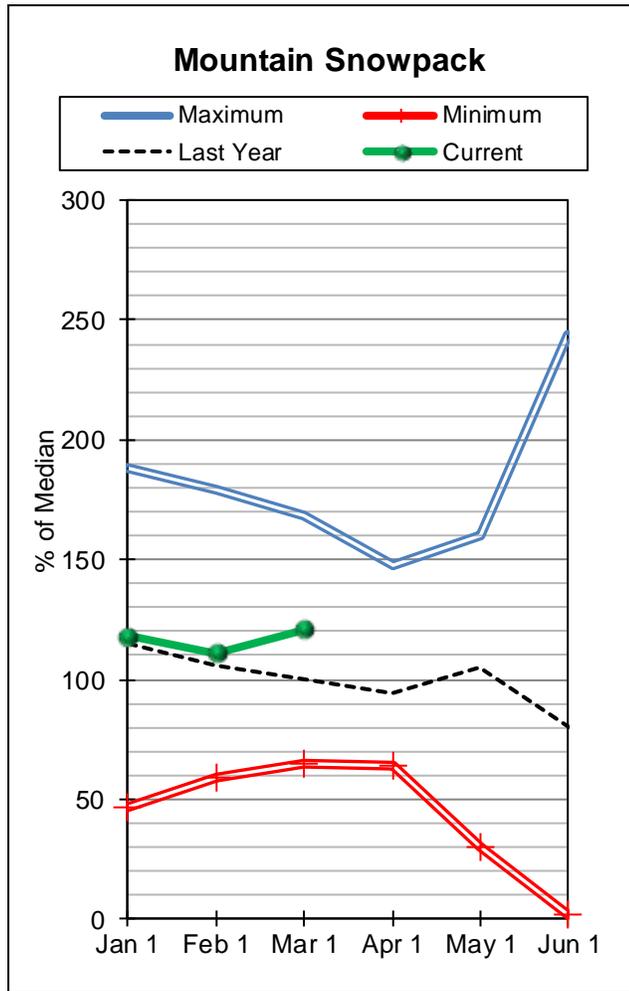
MADISON RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Hebgen Reservoir Inflow ²								
	APR-JUL	295	335	360	97%	385	425	370
	APR-SEP	375	425	455	97%	485	535	470
Ennis Reservoir Inflow ²								
	APR-JUL	475	560	615	98%	670	755	625
	APR-SEP	595	695	760	98%	825	925	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

Reservoir Storage End of February, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
ENNIS LAKE - LOWER MADISON RES	28.2	27.8	29.8	41.0
HEBGEN LAKE	305.5	287.8	274.6	377.5
Basin-wide Total	333.7	315.6	304.4	418.5
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis March 1, 2014	# of Sites	% Median	Last Year % Median
MADISON abv HEBGEN LAKE	6	102%	89%
MADISON blw HEBGEN LAKE	10	118%	95%
MADISON RIVER BASIN	16	112%	92%

Gallatin River Basin



Well below normal temperatures beginning and ending the month, and favorable moist Northwest flow storm patterns have helped to increase the snowpack in the Gallatin River basin yet again. The nearly continuous snowfall in the basin after the first week in February added substantial snow water to the mountain snowpack and left the valleys blanketed with snow ending the month. Entering the month of February the Gallatin River Basin was already doing well snowpack-wise this year at 111 percent of normal of February 1st, and saw another gain during the month to 122 percent of normal on March 1st. This increase can be attested to the above normal snowfall experienced across the basin, where 150 percent of the normal February total fell at SNOTEL sites. The Hyalite and Bridger Ranges again saw excellent snowfall during the month, and unlike the past two months, the upper reaches of the Gallatin saw above normal snowfall during February. The Gallatin River basin on March 1st ranked 5th for snowpack totals since 1981, and is 122 percent of last year at this time.

The cold temperatures helped to retain the snowcover in the valleys starting the month, and the storms continued to bring an abundance of moisture to valley and mountain locations. Water Year Precipitation in the Gallatin continues to be above average since Oct 1st, rising from 103 percent on Feb 1st to 112 percent on March 1st.

Reservoir storage is slightly below average at this time, with Middle Creek Reservoir reporting 89 percent of average, and 96 percent of last year.

Streamflow prospects are above average for the Gallatin River and are 110% of average for the April-July time period. This is an increase of 5 percent from February 1st.

Gallatin River Basin Streamflow Forecasts - March 1, 2014

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	335	395	435	109%	475	535	400
	APR-SEP	390	460	510	109%	555	625	470
Hyalite Reservoir Inflow ²	APR-JUL	19.1	21	23	115%	24	27	20
	APR-SEP	22	25	26	113%	28	30	23
Gallatin R at Logan	APR-JUL	320	420	490	111%	560	665	440
	APR-SEP	375	495	570	113%	650	770	505

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

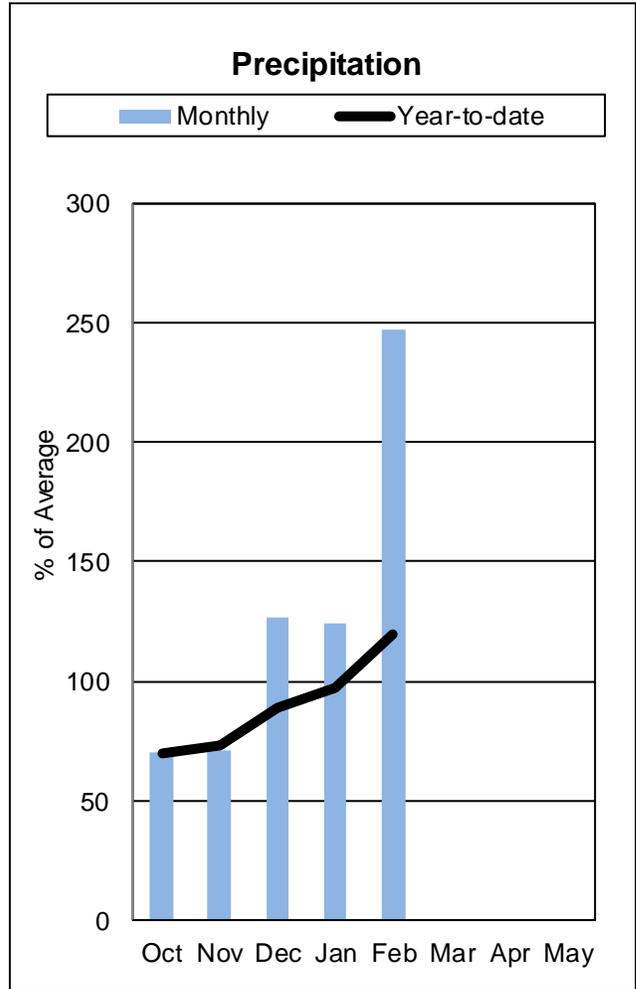
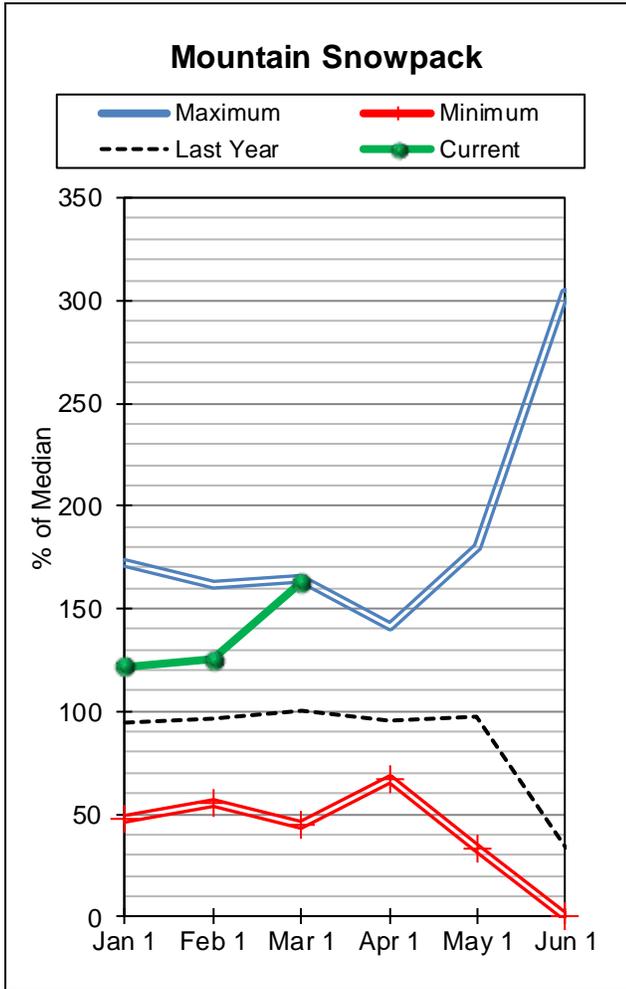
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of February, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
MIDDLE CREEK RES	4.8	5.0	5.4	10.2
Basin-wide Total	4.8	5.0	5.4	10.2
# of reservoirs	1	1	1	1

Watershed Snowpack Analysis March 1, 2014	# of Sites	% Median	Last Year % Median
UPPER GALLATIN	5	111%	107%
HYALITE	4	122%	91%
BRIDGER	2	148%	96%
GALLATIN RIVER BASIN	11	121%	100%

Missouri Mainstem River Basin



Despite the slow start during the first part of February, the SNOTEL sites within the Missouri Mainstem area have well above average snowpacks for March 1. The continual stream of storms which began mid-month blanketed this area of the Missouri basin with 274 percent of normal snowfall. The March 1 basin wide snowpack is 146 percent of normal and 149 percent of last year. This is a 22 percent increase from the February 1 snowpack reading.

The mountain and valley precipitation for February was 121 percent of average and 105 percent of last year. This is a 25 percent increase from January.

Reservoir storages are 99 percent of average and 100 percent of last year.

Depending on average precipitation for the April through July period, the streamflows are forecast to be 122 percent of average and 164 percent of last year.

Missouri Mainstem Basin Streamflow Forecasts - March 1, 2014

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 ²	APR-JUL	1380	1790	2070	116%	2350	2770	1790
	APR-SEP	1590	2070	2400	116%	2730	3220	2070
Dearborn R nr Craig	APR-JUL	52	80	100	112%	119	148	89
	APR-SEP	57	87	108	114%	128	159	95
Missouri R at Fort Benton ²	APR-JUL	2040	2640	3060	117%	3470	4070	2610
	APR-SEP	2410	3130	3620	116%	4120	4840	3110
Missouri R nr Virgelle ²	APR-JUL	2300	3000	3470	116%	3950	4650	3000
	APR-SEP	2640	3480	4050	115%	4610	5450	3520
Missouri R nr Landusky ²	APR-JUL	2510	3230	3730	118%	4220	4950	3160
	APR-SEP	2890	3760	4350	117%	4940	5810	3720
Missouri R bl Fort Peck Dam ²	APR-JUL	2580	3380	3920	121%	4460	5260	3240
	APR-SEP	2770	3770	4440	120%	5120	6120	3700
Lake Sakakawea Inflow ²	APR-JUL	7590	9430	10700	129%	11900	13800	8310
	APR-SEP	8200	10500	12000	128%	13600	15900	9400

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

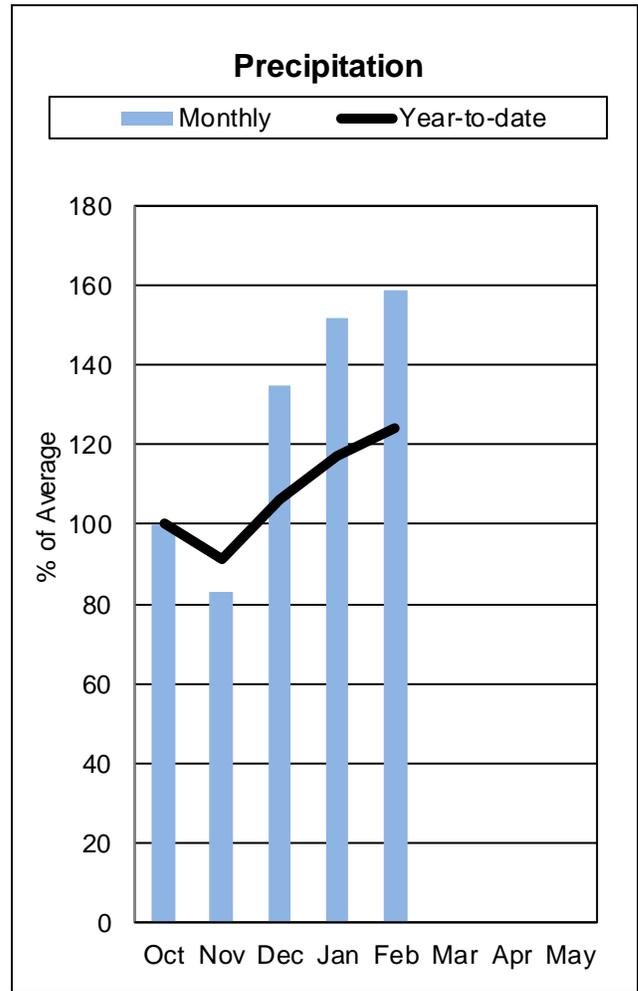
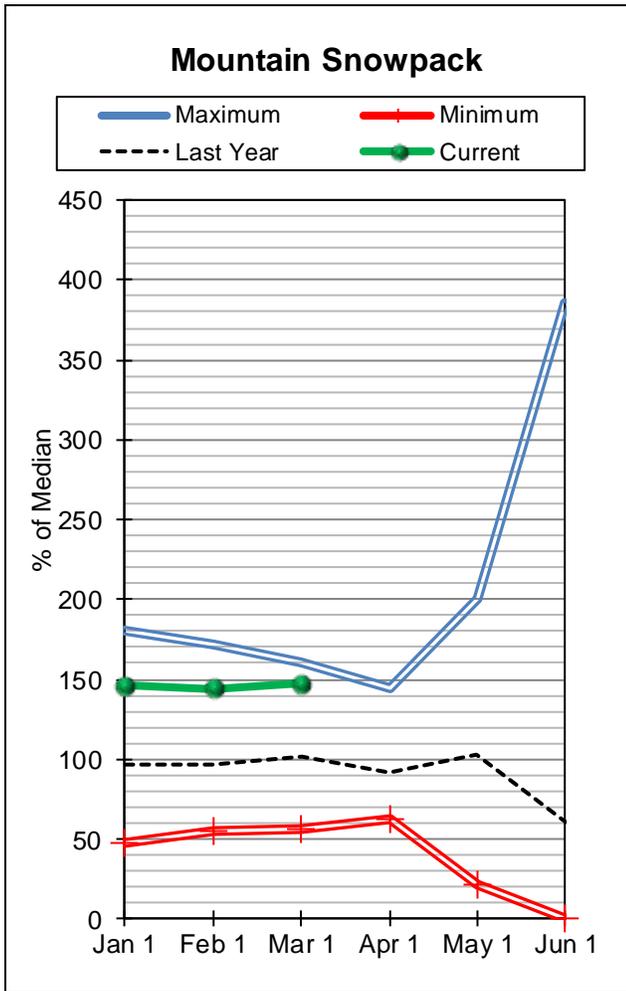
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of February, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
CANYON FERRY LAKE	1453.0	1499.6	1482.0	2043.0
HELENA VALLEY RESERVOIR	6.0	5.4	4.4	9.2
LAKE HELENA	9.7	9.9	10.9	12.7
HAUSER LAKE & LAKE HELENA	69.6	70.2	73.7	74.6
HOLTER LAKE	80.6	81.5	79.5	81.9
FORT PECK LAKE	12735.6	12655.3	12838.0	18910.0
Basin-wide Total	14354.6	14321.8	14488.5	21131.4
# of reservoirs	6	6	6	6

Watershed Snowpack Analysis March 1, 2014	# of Sites	% Median	Last Year % Median
HEADWATERS MAINSTEM	9	163%	100%
SMITH-JUDITH-MUSSELSHELL	11	147%	101%
SUN-TETON-MARIAS	10	134%	91%
MAINSTEM ab FT PECK RES	31	146%	96%
MILK RIVER BASIN	9	151%	118%
MISSOURI MAINSTEM BASIN	40	146%	98%

Smith-Judith-Musselshell River Basins



The first part of February was cold, somewhat dry and very windy over Central Montana. A steady “river” of storms started hitting this area mid-month with 222 percent of normal snowfall. This helped to increase the overall snowpack conditions throughout all three basins. As of March 1, the Smith River Basin is 149 percent of normal; the Judith River Basin is 145 percent of normal and the Musselshell is 147 percent of normal. This includes data from both SNOTEL sites and manual snow courses. The overall combined snowpack for all three basins is 147 percent of normal and 148 percent of last year. This is a three percent increase from February 1 readings.

February mountain and valley precipitation is also well above average for all three major basins. The Smith River Basin is 213 percent of average; the Judith River Basin is 136 percent of average and the Musselshell is 225 percent of average. The combined for all three river basins is 159 percent of average and 143 percent of last year. The combined year to date precipitation (October through February) is 124 percent of average and 108 percent of last year. This is a juicy basin to say the least!

Reservoir storages in the basins are 107 percent of average and 91 percent of last year.

Streamflow forecasts are 173 percent of average and 327 percent of last year. This is assuming average precipitation April through July.

Smith-Judith-Musselshell Streamflow Forecasts - March 1, 2014

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	14.2	17.6	20	129%	22	26	15.5
	APR-SEP	16.6	21	23	125%	26	30	18.4
Smith R bl Eagle Ck ²	APR-JUL	98	132	154	145%	177	210	106
	APR-SEP	108	147	174	150%	200	240	116
NF Musselshell R nr Delpine	APR-JUL	3.9	5.1	5.9	174%	6.7	7.9	3.4
	APR-SEP	4.8	6.1	7	175%	7.9	9.2	4
SF Musselshell R ab Martinsdale	APR-JUL	30	46	56	160%	66	82	35
	APR-SEP	33	50	61	161%	72	89	38
Musselshell R at Harlowton ²	APR-JUL	48	83	106	186%	130	164	57
	APR-SEP	48	85	110	186%	135	172	59
Musselshell R nr Roundup ²	APR-JUL	37	103	148	221%	194	260	67
	APR-SEP	40	106	151	229%	196	260	66

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

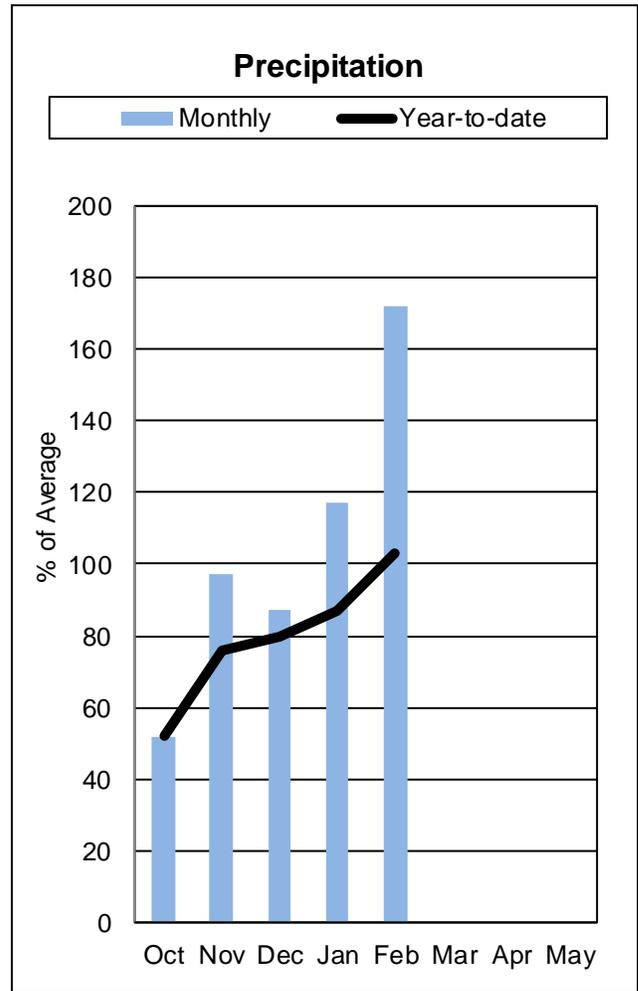
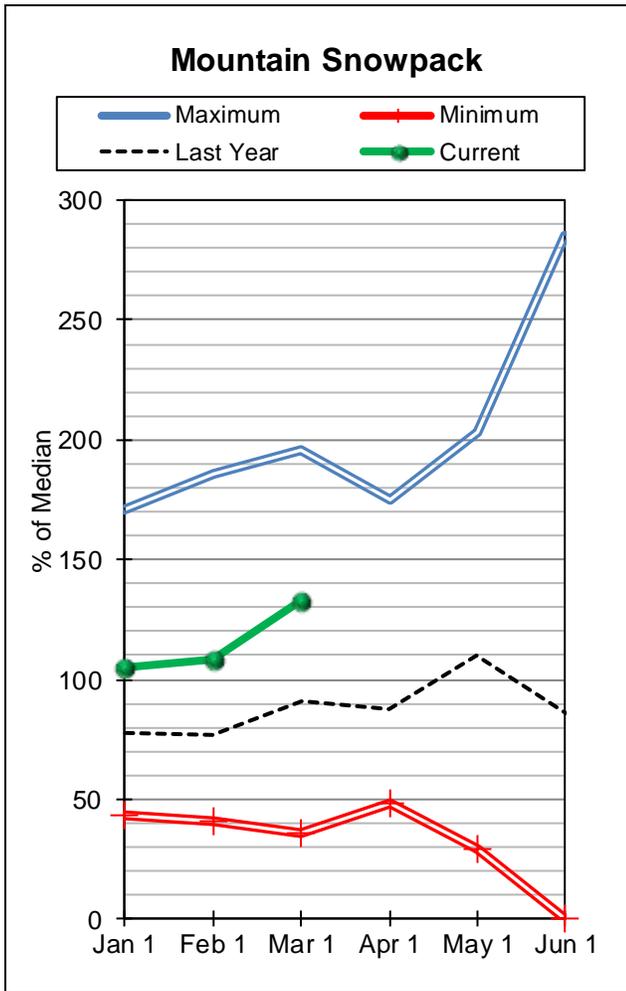
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of February, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
SMITH RIVER RES	6.8	7.1	5.8	10.6
ACKLEY LAKE	3.6	2.9	2.6	7.0
BAIR RES	3.6	4.3	3.2	7.0
MARTINSDALE RES	5.6	6.1	7.8	23.1
DEADMAN'S BASIN RES	47.4	53.0	43.4	72.2
Basin-wide Total	67.0	73.4	62.8	119.9
# of reservoirs	5	5	5	5

Watershed Snowpack Analysis March 1, 2014	# of Sites	% Median	Last Year % Median
SMITH	7	149%	105%
HIGHWOOD	15	105%	103%
JUDITH	5	145%	102%
MUSSELSHELL	3	168%	90%
SMITH-JUDITH-MUSSELSHELL	11	147%	101%

Sun-Teton-Marias River Basins



As with other basins in Montana, this area started off the month of February very cold, somewhat dry and very windy. Towards mid-month moisture laden storms made their way into these basins and brought 316 percent of normal snowfall. Sub-basin snowpack totals are well above average with the Sun River Basin leading the way with 139 percent of normal. The Teton River Basin is 134 percent of normal and the Marias rounds it out with 127 percent of normal. The combined Basins' snowpack is 133 percent of normal and 146 percent of last year.

Mountain and valley precipitation for February was 172 percent of average and 199 percent of last year. This is a 57 percent increase from January. Great moisture this month fell in these basins. Year to date combined basins' precipitation is 103 percent of average and 89 percent of last year.

Reservoir storages range from well below average at 39 percent of average at Gibson Reservoir to 116 percent of average for Willow Creek. The combined storages for all the reservoirs in these basins are 94 percent of average and 96 percent of last year.

Assuming average April through July precipitation, the streamflow forecasts are 111 percent of average and 121 percent of last year.

Sun-Teton-Marias Streamflow Forecasts - March 1, 2014

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	355	420	460	116%	500	565	395
	APR-SEP	395	460	505	115%	550	615	440
Two Medicine R nr Browning ²	APR-JUL	145	171	188	103%	205	230	183
	APR-SEP	154	181	199	103%	215	245	194
Badger Ck nr Browning	APR-JUL	66	81	92	105%	103	118	88
	APR-SEP	78	95	107	104%	119	136	103
Swift Reservoir Inflow ²	APR-JUL	40	52	61	107%	69	81	57
	APR-SEP	50	63	72	107%	81	95	67
Dupuyer Ck nr Valier	APR-JUL	0.7	7.9	12.8	115%	17.7	25	11.1
	APR-SEP	1.23	9.2	14.6	115%	20	28	12.7
Cut Bank Ck nr Browning	APR-JUL	47	61	70	101%	80	94	69
	APR-SEP	50	66	76	101%	86	102	75
Marias R nr Shelby ²	APR-JUL	210	320	390	113%	465	570	345
	APR-SEP	210	325	405	113%	480	595	360
Teton R nr Dutton	APR-JUL	5.4	33	53	126%	72	100	42
	APR-SEP	8.3	39	59	123%	80	111	48

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

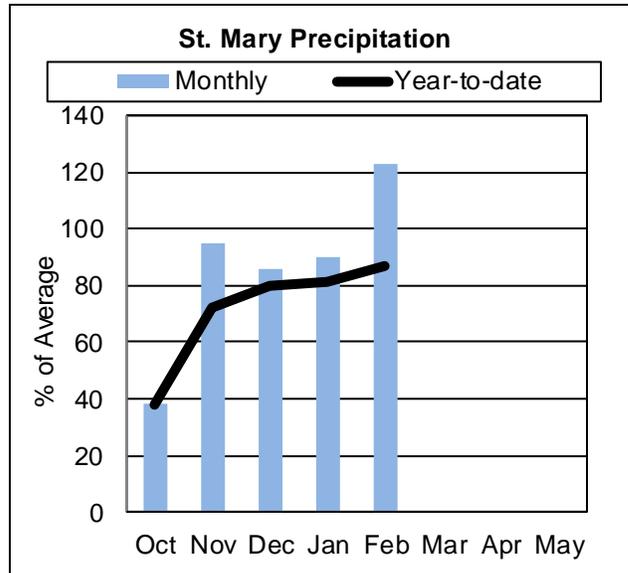
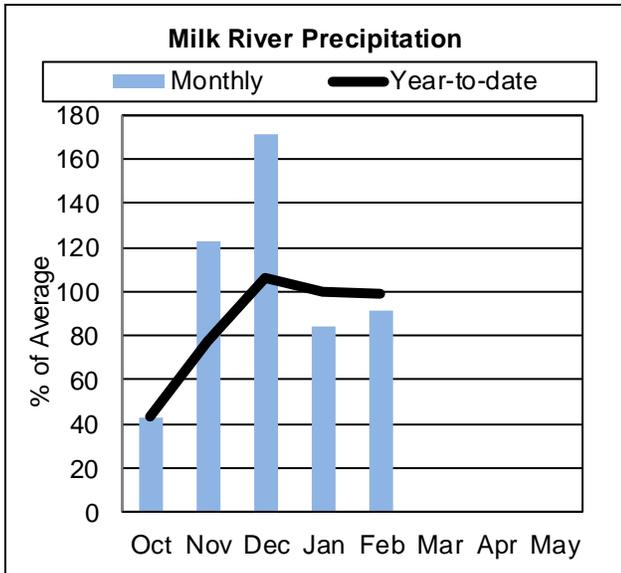
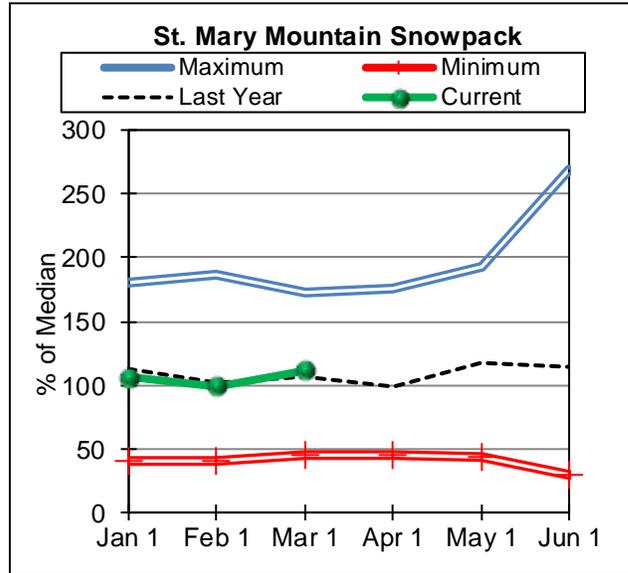
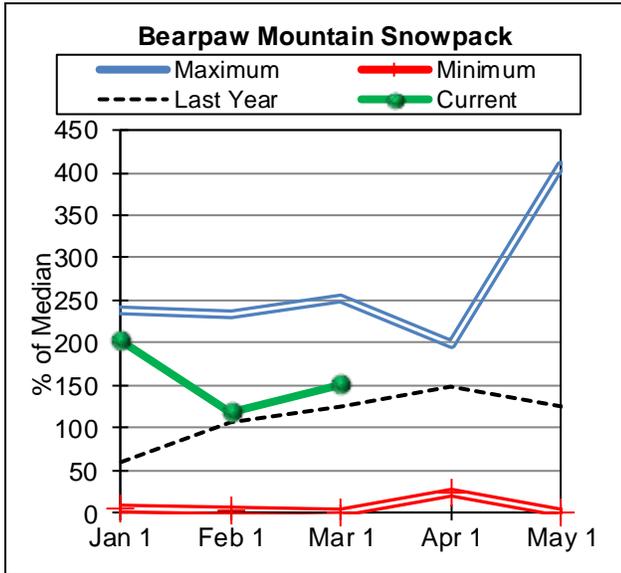
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of February, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
GIBSON RES	16.6	16.8	43.1	99.1
PISHKUN RES	6.1	1.8	17.2	32.0
WILLOW CREEK	27.1	27.6	23.3	32.2
LOWER TWO MEDICINE LAKE	6.3	0.0	8.4	11.9
FOUR HORNS LAKE	11.2	8.8	10.1	19.2
SWIFT RES	14.3	15.3	16.5	30.0
LAKE FRANCES	35.2	40.2	57.5	112.0
LAKE ELWELL (TIBER)	704.1	747.8	693.8	1347.0
Basin-wide Total	820.9	858.2	869.9	1683.4
# of reservoirs	8	8	8	8

Watershed Snowpack Analysis March 1, 2014	# of Sites	% Median	Last Year % Median
SUN	15	105%	103%
TETON	4	134%	80%
MARIAS	4	118%	109%
SUN-TETON-MARIAS	10	134%	91%

St. Mary and Milk River Basins



The storms that were seen in the other basins of Montana towards mid-month also made it into the St. Mary and Milk River Basins as well. The SNOTEL sites (Flattop Mtn. and Many Glacier) within Glacier National Park received 172 percent of normal snowfall for February 10 through March 1. Our lone SNOTEL site (Rocky Boy) within the Bear Paw Mountains in the Milk River Basin picked up a whopping 350 percent of normal for the same period. The overall snowpack for the St. Mary River Basin is 112 percent of average and 108 percent of last year. The Milk River Basin snowpack which includes data from Rocky Boy SNOTEL site, manual snow courses and the courses in the Cypress Hills of Alberta, Canada, is 153 percent of average and 122 percent of last year.

February mountain and valley precipitation for the St. Mary River Basin was 123 percent of average and 131 percent of last year. Year to date precipitation is 87 percent of average and 71 percent of last year. The February precipitation in the Milk River Basin was not quite as good at 91 percent of average and 80 percent of last year. The year to date precipitation is 99 percent of average and 65 percent of last year. The total combined basins' mountain and valley precipitation for February is 112 percent of average and 112 percent of last year. The year to date mountain and valley precipitation is 92 percent of average and 69 percent of last year.

Reservoir storages in the basins are 132 percent of average and 95 percent of last year.

Assuming average precipitation for the April through July period, streamflow forecasts for the St. Mary River Basin are 97 percent of average and 90 percent of last year observed flow. Forecasts for the Milk River Basin are for 114 percent of average again assuming average precipitation for the April through July period.

St. Mary & Milk Basins Streamflow Forecasts - March 1, 2014

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	81	90	97	100%	103	112	97
	APR-SEP	96	106	112	100%	119	129	112
St. Mary R nr Babb ²	APR-JUL	290	330	360	97%	385	425	370
	APR-SEP	345	390	415	98%	445	490	425
St. Mary R at Intl Boundary ²	APR-JUL	320	380	420	97%	460	520	435
	APR-SEP	380	440	485	96%	525	590	505
Milk R at Western Crossing of Intl Bndry, AB	MAR-SEP	15.9	23	34	121%	45	62	28
Milk R at Eastern Crossing of Intl Bndry	MAR-SEP	37	52	70	111%	100	144	63

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

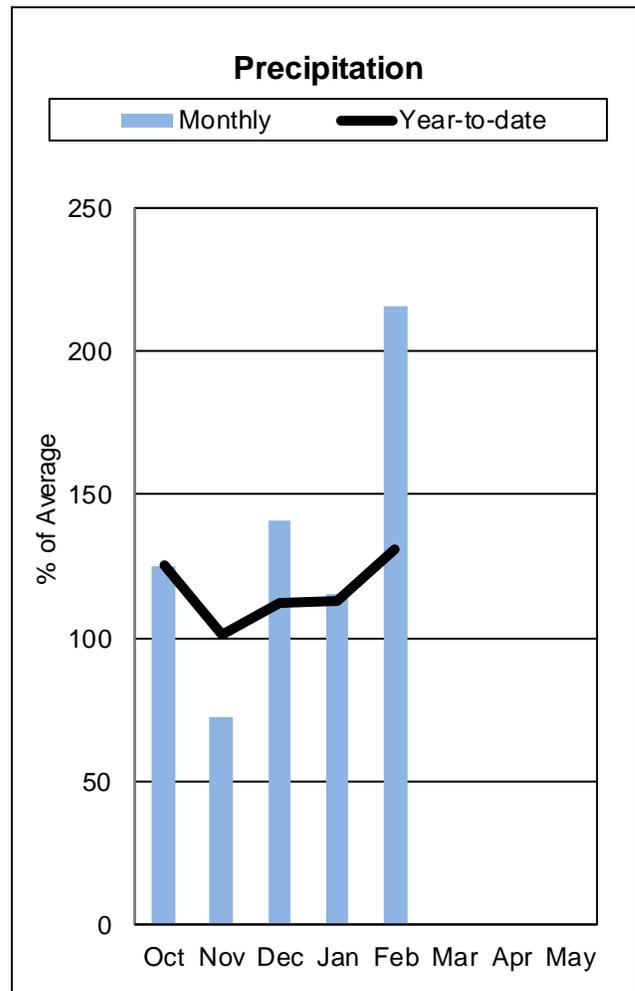
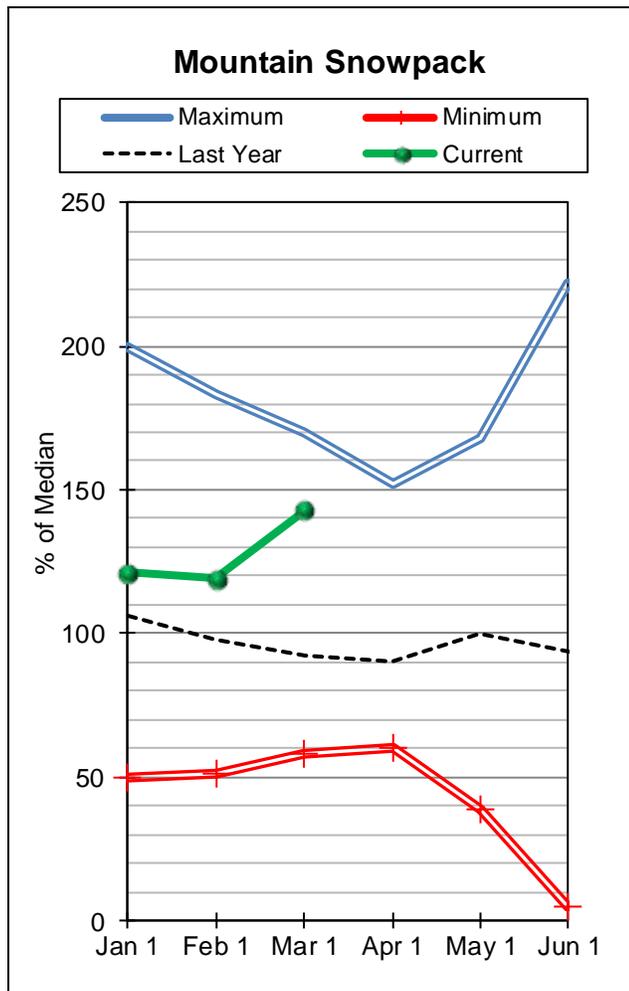
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of February, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
SHERBURNE LAKE RESERVOIR	30.8	54.7	30.7	64.3
FRESNO RES	56.5	47.1	42.6	127.0
NELSON RES	49.2	41.9	30.4	66.8
Basin-wide Total	136.5	143.7	103.7	258.1
# of reservoirs	3	3	3	3

Watershed Snowpack Analysis March 1, 2014	# of Sites	% Median	Last Year % Median
ST. MARY	3	112%	104%
BEARPAW MOUNTAINS	3	142%	125%
CYPRESS HILLS, CANADA	6	158%	113%
MILK RIVER BASIN	9	151%	118%
ST. MARY & MILK BASINS	12	125%	109%

Upper Yellowstone River Basin



Mountain snowfall hasn't relented in the Upper Yellowstone River basin with nearly continuous snowfall in many areas through the month of February. Snowpack totals in the basin have increased from 119 percent of normal on Feb 1st to 143 percent of normal on March 1st. The mountains weren't the only ones in the basin that saw the bulk of the moisture from the storms this month. The city of Billings set a new record for February monthly snowfall breaking the old record in 1978. Snowfall across the basin was 212 percent of the normal February snowfall, with most of the energy in the systems aimed at the Beartooth Range. The Red Lodge - Rock Creek drainage is still the highest ranked for snowpack totals since 1981, and areas south towards Cooke City saw snow almost every day in February. Overall the basin is doing very well this year, and is currently 156 percent of last year on March 1st. The Upper Yellowstone River basin on March 1st ranked 3rd for snowpack totals since 1981, and is 156 percent of last year at this time.

Precipitation across the Upper Yellowstone has been more widespread than many of the other basins in the state. Unlike some of the other basins which were overlooked by moisture during the Fall, there has been excellent precipitation in the mountain and valley locations. Currently the Water Year to date precipitation is 143 percent of average, up an additional 24 percent from 119 percent on Feb 1st.

Streamflow prospects in the basin are well above average for the April-July time period with the basin average at 118 percent. This is an increase of 16 percent from February 1st.

Reservoir storage in the Upper Yellowstone is slightly above average at this time, reporting 103 percent of average on March 1st.

Upper Yellowstone River Basin Streamflow Forecasts - March 1, 2014

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	510	580	625	109%	670	740	575
	APR-SEP	675	765	825	107%	885	975	770
Yellowstone R at Corwin Springs								
	APR-JUL	1520	1710	1830	115%	1960	2140	1590
	APR-SEP	1770	1990	2140	114%	2290	2510	1880
Yellowstone R at Livingston								
	APR-JUL	1700	1930	2090	116%	2240	2480	1800
	APR-SEP	1980	2250	2440	114%	2630	2900	2140
Shields R nr Livingston								
	APR-JUL	106	151	182	141%	215	260	129
	APR-SEP	113	163	198	138%	230	280	143
Boulder R at Big Timber								
	APR-JUL	270	315	345	123%	375	415	280
	APR-SEP	290	340	375	125%	410	460	300
Mystic Lake Inflow ²								
	APR-JUL	55	60	64	108%	68	73	59
	APR-SEP	67	74	79	107%	84	91	74
Stillwater R nr Absarokee ²								
	APR-JUL	395	455	500	112%	540	605	445
	APR-SEP	465	540	590	113%	640	715	520
Clarks Fk Yellowstone R nr Belfry								
	APR-JUL	550	610	650	127%	690	750	510
	APR-SEP	610	675	720	131%	760	830	550
Cooney Reservoir Inflow								
	APR-JUL	27	39	48	126%	57	69	38
	APR-SEP	36	50	59	123%	68	82	48
Yellowstone R at Billings								
	APR-JUL	2940	3500	3880	120%	4260	4820	3230
	APR-SEP	3330	3990	4440	119%	4890	5550	3730

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

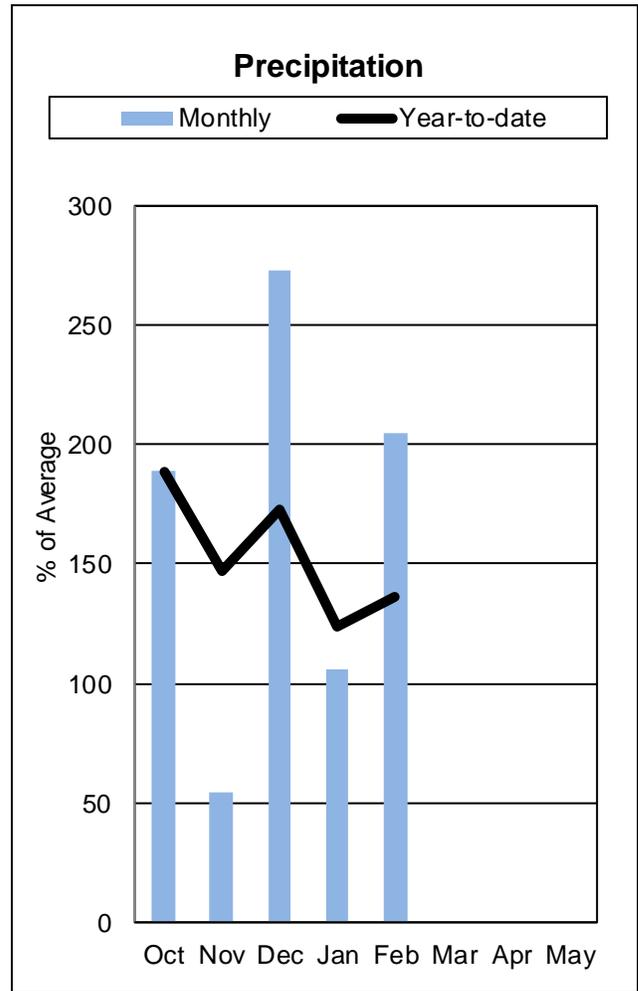
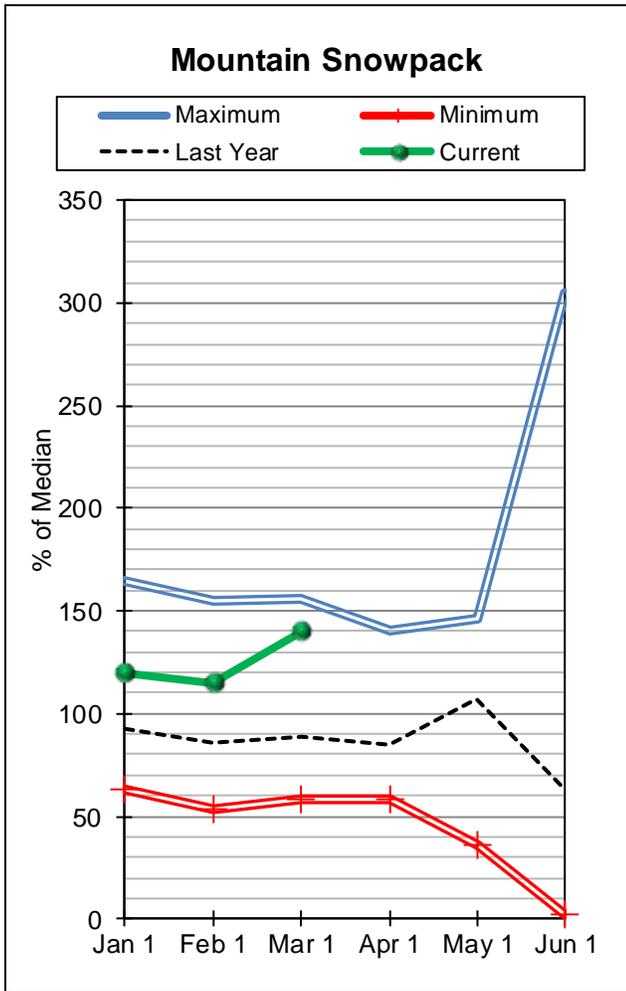
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of February, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
MYSTIC LAKE	3.7	2.3	3.0	21.0
COONEY RES	17.9	18.3	17.9	27.4
Basin-wide Total	21.6	20.6	20.9	48.4
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis March 1, 2014	# of Sites	% Median	Last Year % Median
YELLOWSTONE ab LIVINGSTON	12	127%	93%
SHIELDS	4	149%	88%
BOULDER-STILLWATER	3	147%	103%
RED LODGE-ROCK CREEK	5	192%	78%
CLARK'S FORK	7	148%	94%
UPPER YELLOWSTONE RIVER BASIN	28	144%	92%

Lower Yellowstone River Basin



Another month of excellent snow in most parts of the Lower Yellowstone River basin has increased the snowpack totals to well above average. Basin wide there was a 26 percent increase during the month from 113 percent of normal on February 1st to 139 percent on March 1st. This can be attributed to the 208 percent of the normal February snowfall that fell in the basin overall. Not all basins saw the favorable storm patterns, the southern Wind River Range did not receive the moisture that the northern and eastern basins received during February. Further east storm patterns were more favorable in the Powder River Basin where the highest ranked snowpack since 1981 is in place. The Bighorn Range feeding the Powder and Tongue rivers saw abundant snowfall during the month, and continues to be well above average ending February. The Lower Yellowstone River basin on March 1st ranked 4th for snowpack totals since 1981, and is 157 percent of last year at this time.

Entering February the Lower Yellowstone has the highest Water Year to date precipitation in Montana at 124 percent of average, and has climbed during the month to 133 percent of average on March 1st. The favorable fall precipitation and continued snowfall in mountains and valleys has built the basins totals well above average, and should provide ample moisture for runoff this spring.

Streamflow prospects in the basin are well above average for the April-July time period with the basin average at 134 percent. This is an increase of 26 percent from February 1st.

Reservoir Storage in the Lower Yellowstone Basin is 112 percent of average and 101 percent of last year.

Lower Yellowstone River Basin (Wyoming) Streamflow Forecasts - March 1, 2014

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 ²	APR-JUL	1390	1760	2020	146%	2280	2650	1380
	APR-SEP	1510	1930	2220	152%	2510	2930	1460
Little Bighorn R nr Hardin	APR-JUL	86	114	133	136%	152	180	98
	APR-SEP	97	128	149	134%	170	200	111
Tongue R nr Dayton ²	APR-JUL	72	90	103	120%	116	134	86
	APR-SEP	83	103	117	119%	131	151	98
Big Goose Ck nr Sheridan	APR-JUL	37	49	56	122%	64	76	46
	APR-SEP	45	57	65	120%	73	85	54
Little Goose Ck nr Bighorn	APR-JUL	27	34	39	126%	43	51	31
	APR-SEP	34	42	47	121%	53	60	39
Tongue River Reservoir Inflow ²	APR-JUL	138	205	250	130%	290	360	193
	APR-SEP	158	225	275	128%	320	390	215
Yellowstone R at Miles City ²	APR-JUL	4560	5520	6170	129%	6820	7770	4780
	APR-SEP	5110	6250	7020	129%	7790	8930	5450
Powder R at Moorehead	APR-JUL	166	235	280	158%	325	395	177
	APR-SEP	191	260	310	158%	355	425	196
Powder R nr Locate	APR-JUL	184	265	320	161%	375	455	199
	APR-SEP	210	295	355	161%	415	500	220
Yellowstone R nr Sidney ²	APR-JUL	4590	5690	6430	133%	7170	8270	4830
	APR-SEP	5050	6350	7240	133%	8130	9430	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 February, 2014	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
BIGHORN LAKE	866.4	863.9	797.1	1356.0
TONGUE RIVER RES	55.0	48.4	28.2	79.1
Basin-wide Total	921.4	912.3	825.3	1435.1
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis March 1, 2014	# of Sites	% Median	Last Year % Median
WIND RIVER (Wyoming)	18	137%	84%
SHOSHONE RIVER (Wyoming)	4	144%	93%
BIGHORN RIVER (Wyoming)	18	146%	95%
LITTLE BIGHORN (Wyoming)	3	133%	82%
TONGUE RIVER (Wyoming)	9	133%	88%
POWDER RIVER (Wyoming)	9	154%	99%
LOWER YELLOWSTONE RIVER BASIN (Wyoming)	46	140%	90%

Montana Site Report

MONTANA	Network	Elevation	Depth (in)	SWE (in)	Median (in)	% Median	Last Year SWE (in)	Last Year % Median
ALBRO LAKE	SNOTEL	8300'	77	21.7	13.8	157%	11.9	86%
AMBROSE	SC	6480'			9.2		9.6	104%
ARCH FALLS	SC	7350'	42	9.0	7.8	115%	7.0	90%
ASHLEY DIVIDE	SC	4820'	31	6.7	5.3	126%	2.4	45%
BADGER PASS	SNOTEL	6900'	89	30.8	23.7	130%	26.3	111%
BANFIELD MOUNTAIN	SNOTEL	5600'	59	14.8	14.3	103%	14.1	99%
BAREE CREEK	SC	5500'						
BAREE MIDWAY	SC	4600'	90	25.6	23.6	108%	20.7	88%
BAREE TRAIL	SC	3800'	40	9.0	7.8	115%	6.8	87%
BARKER LAKES	SNOTEL	8250'	67	15.3	10.3	149%	10.3	100%
BASIN CREEK	SNOTEL	7180'	44	10.0	5.5	182%	5.0	91%
BASSOO PEAK	SC	5150'			7.6		7.0	92%
BEAGLE SPRINGS	SNOTEL	8850'	34	7.9	6.3	125%	6.8	108%
BEAR BASIN	SC	8150'	57	15.8	14.7	107%		
BEAR MOUNTAIN	SNOTEL	5400'	117	38.7	48.4	80%	42.3	87%
BEARTOOTH LAKE	SNOTEL	9360'	98	24.0	16.7	144%	12.8	77%
BEAVER CREEK	SNOTEL	7850'	62	16.0	14.0	114%	15.3	109%
BIG SNOWY	SC	7150'	57	17.5	13.8	127%	12.4	90%
BISSON CREEK	SNOTEL	4920'	47	10.9	8.4	130%	5.5	65%
BLACK BEAR	SNOTEL	8170'	101	30.0	29.6	101%	29.8	101%
BLACK MOUNTAIN	SC	7750'	50	10.9	11.0	99%	9.1	83%
BLACK PINE	SNOTEL	7210'	55	13.3	8.2	162%	7.2	88%
BLACKTAIL	SC	5650'	47	12.4	11.0	113%	7.4	67%
BLACKTAIL MTN	SNOTEL	5650'	49	12.3			8.5	
BLOODY DICK	SNOTEL	7600'	55	13.9	9.3	149%	8.7	94%
BOTS SOTS	SC	7750'	41	10.4	5.3	196%	4.4	83%
BOULDER MOUNTAIN	SNOTEL	7950'	84	21.8	15.4	142%	15.8	103%
BOX CANYON	SNOTEL	6670'	47	11.1	7.4	150%	6.3	85%
BOXELDER CREEK	SC	5100'	28	6.3	5.6	113%	5.2	93%
BRACKETT CREEK	SNOTEL	7320'	78	22.4	14.4	156%	14.7	102%
BRISTOW CREEK	SC	3900'						
BRUSH CREEK TIMBER	SC	5000'	57	16.4	6.3	260%	10.0	159%
BULL MOUNTAIN	SC	6600'	28	6.0	4.8	125%	5.4	113%
BURNT MTN	SNOTEL	5880'	38	8.2	4.0	205%	3.7	93%
CABIN CREEK	SC	5200'	30	6.4	4.9	131%	3.7	76%
CALVERT CREEK	SNOTEL	6430'	47	10.7	6.8	157%	5.9	87%
CAMP SENIA	SC	7890'	52	13.7	3.8	361%	3.3	87%
CANYON	SNOTEL	7870'	52	11.3	10.5	108%	8.6	82%
CARROT BASIN	SNOTEL	9000'	81	21.1	20.4	103%	21.3	104%
CARROT BASIN	SC	9000'						
CHESSMAN RESERVOIR	SC	6200'	37	7.7	2.8	275%	4.9	175%
CHICAGO RIDGE	SC	5800'	102	32.6			29.6	
CHICKEN CREEK	SC	4060'	60	17.1	12.8	134%	11.8	92%
CLOVER MEADOW	SNOTEL	8600'	53	12.7	12.4	102%	10.8	87%
COLE CREEK	SNOTEL	7850'	57	15.1	9.9	153%	7.7	78%
COMBINATION	SNOTEL	5600'	35	7.0	4.1	171%	3.7	90%
COPPER BOTTOM	SNOTEL	5200'	40	9.1			3.4	
COPPER CAMP	SNOTEL	6950'	111	37.1			31.2	
COPPER CAMP	SC	6950'						
COPPER MOUNTAIN	SC	7700'	41	9.1	8.0	114%	7.8	98%
COTTONWOOD CREEK	SC	6400'			5.2		5.7	110%
COYOTE HILL	SC	4200'			7.8			
CREVICE MOUNTAIN	SC	8400'	41	11.0	8.6	128%		

Site Name	Network	Elevation	Depth (in)	SWE (in)	Median (in)	% Median	Last Year SWE (in)	Last Year % Median
DAD CREEK LAKE	SC	8800'			9.8			
DAISY PEAK	SNOTEL	7600'	50	11.2	7.2	156%	6.8	94%
DALY CREEK	SNOTEL	5780'	59	13.5	8.4	161%	8.2	98%
DARKHORSE LAKE	SNOTEL	8600'	105	31.9	22.2	144%	23.0	104%
DEADMAN CREEK	SNOTEL	6450'	49	12.0	8.0	150%	8.0	100%
DESERT MOUNTAIN	SC	5600'			10.8		12.0	111%
DISCOVERY BASIN	SC	7050'	44	10.5	7.4	142%	6.8	92%
DIVIDE	SNOTEL	7800'	35	7.0	8.1	86%	8.1	100%
DIX HILL	SC	6400'	49	12.0	8.2	146%	6.6	80%
DUPUYER CREEK	SNOTEL	5750'	40	9.4	7.1	132%	3.5	49%
EAGLE CREEK	SC	7000'	63	17.7			10.5	
EAST BOULDER MINE	SNOTEL	6335'	33	6.0			3.1	
EL DORADO MINE	SC	7800'	47	11.8	12.9	91%	7.2	56%
ELK HORN SPRINGS	SC	7800'	43	9.8	6.8	144%	6.0	88%
ELK PEAK	SNOTEL	7600'	77	23.5			16.9	
ELK PEAK	SC	8000'	60	18.3	10.4	176%	10.1	97%
EMERY CREEK	SNOTEL	4350'	49	15.0	12.5	120%	12.1	97%
EMERY CREEK	SC	4350'						
FATTY CREEK	SC	5500'			17.4		16.3	94%
FISH CREEK	SC	8000'			7.0		10.6	151%
FISHER CREEK	SNOTEL	9100'	122	33.7	25.8	131%	25.8	100%
FLATTOP MTN.	SNOTEL	6300'	115	36.8	33.8	109%	39.1	116%
FLEECER RIDGE	SC	7500'	48	11.1	7.7	144%	7.7	100%
FOREST LAKE	SC	6400'	52	14.2			8.6	
FOUR MILE	SC	6900'	39	9.4	6.0	157%	6.2	103%
FREIGHT CREEK	SC	6000'	52	13.4	10.4	129%	8.6	83%
FROHNER MEADOW	SNOTEL	6480'	54	10.8	5.9	183%	5.8	98%
GARVER CREEK	SNOTEL	4250'	39	8.1	8.0	101%	7.8	98%
GIBBONS PASS	SC	7100'						
GOAT MOUNTAIN	SC	7000'	48	12.8	7.6	168%	7.6	100%
GOVERNMENT SADDLE	SC	5270'	95	26.4			27.8	
GRAVE CREEK	SNOTEL	4300'	57	16.1	13.5	119%	12.0	89%
GRIFFIN CREEK DIVIDE	SC	5150'	45	10.7	8.1	132%	7.3	90%
HAND CREEK	SNOTEL	5035'	50	11.8	9.5	124%	7.0	74%
HAWKINS LAKE	SNOTEL	6450'	71	19.7	19.3	102%	22.2	115%
HAYMAKER	SC	8050'					9.2	
HEBGEN DAM	SC	6550'	33	7.4	9.2	80%	5.0	54%
HELL ROARING DIVIDE	SC	5770'	78	25.9	23.9	108%	20.6	86%
HERRIG JUNCTION	SC	4850'	72	23.1	21.2	109%	15.7	74%
HIGHWOOD DIVIDE	SC	5650'	25	6.3	6.2	102%	4.4	71%
HIGHWOOD STATION	SC	4600'	25	6.0	3.6	167%	3.8	106%
HOLBROOK	SC	4530'	42	10.0	7.6	132%	5.2	68%
HOODOO BASIN	SNOTEL	6050'	129	37.3	32.3	115%	29.9	93%
HUMBOLDT GULCH	SNOTEL	4250'	59	16.2	9.8	165%	9.1	93%
JAKES CANYON	SC	9040'			9.6		9.8	102%
JOHNSON PARK	SC	6450'			4.6			
KISHENEHN	SC	3890'	39	9.9	7.2	138%	6.5	90%
KRAFT CREEK	SNOTEL	4750'	68	19.6			9.3	
LAKE CAMP	SC	7780'	40	8.7	7.8	112%	8.8	113%
LAKE CREEK	SC	6100'			6.6			
LAKEVIEW CANYON	SC	6930'			7.2		5.4	75%
LAKEVIEW RIDGE	SNOTEL	7400'	25	5.2	8.5	61%	8.8	104%
LEMHI RIDGE	SNOTEL	8100'	49	11.8	8.1	146%	7.2	89%
LICK CREEK	SNOTEL	6860'	42	10.0	8.2	122%	7.5	91%
LITTLE PARK	SC	7400'	53	13.8	11.4	121%	12.2	107%

Site Name	Network	Elevation	Depth (in)	SWE (in)	Median (in)	% Median	Last Year SWE (in)	Last Year % Median
LOLO PASS	SNOTEL	5240'	102	29.5	22.9	129%	18.5	81%
LONE MOUNTAIN	SNOTEL	8880'	64	17.2	13.2	130%	14.2	108%
LOOKOUT	SNOTEL	5140'	82	23.7	24.5	97%	19.1	78%
LOWER TWIN	SNOTEL	7900'	75	19.1	13.0	147%	12.5	96%
LUBRECHT FLUME	SNOTEL	4680'	39	8.1	4.7	172%	3.3	70%
LUBRECHT FOREST NO 3	SC	5450'	38	7.9	4.4	180%	2.9	66%
LUBRECHT FOREST NO 4	SC	4650'	23	4.3	2.1	205%	1.5	71%
LUBRECHT FOREST NO 6	SC	4040'	36	7.3	2.7	270%	2.8	104%
LUBRECHT HYDROPLOT	SC	4200'	34	7.3	4.1	178%	2.5	61%
LUPINE CREEK	SC	7380'	28	7.0	6.4	109%	5.9	92%
MADISON PLATEAU	SNOTEL	7750'	68	17.1	17.8	96%	17.3	97%
MANY GLACIER	SNOTEL	4900'	47	12.9	11.5	112%	9.3	81%
MARIAS PASS	SC	5250'	56	15.5	13.1	118%	12.7	97%
MINERAL CREEK	SC	4000'	56	16.6	13.9	119%	13.2	95%
MONUMENT PEAK	SNOTEL	8850'	86	21.6	15.2	142%	17.2	113%
MOSS PEAK	SNOTEL	6780'	111	33.2	28.1	118%	28.4	101%
MOULTON RESERVOIR	SC	6850'			6.0		6.6	110%
MOUNT ALLEN NO 7	SC	5700'						
MOUNT LOCKHART	SNOTEL	6400'	70	20.7	15.2	136%	14.1	93%
MUDD LAKE	SC	7650'			15.1			
MULE CREEK	SNOTEL	8300'	77	17.7	11.2	158%	11.7	104%
N FK ELK CREEK	SNOTEL	6250'	58	13.3	8.9	149%	7.0	79%
NEVADA RIDGE	SNOTEL	7020'	67	15.6	10.9	143%	9.7	89%
NEW WORLD	SC	6900'	51	12.0	10.0	120%	8.4	84%
NEZ PERCE CAMP	SNOTEL	5650'	68	17.7	10.8	164%	10.0	93%
NOISY BASIN	SNOTEL	6040'	105	34.2	31.5	109%	34.0	108%
NORRIS BASIN	SC	7550'	38	8.8	8.0	110%	6.0	75%
NORTH FORK JOCKO	SNOTEL	6330'	121	38.8	33.5	116%	31.1	93%
NORTHEAST ENTRANCE	SNOTEL	7350'	52	12.2	8.2	149%	6.1	74%
ONION PARK	SNOTEL	7410'	53	12.6	10.1	125%	10.0	99%
OPHIR PARK	SC	7150'	59	15.0	11.2	134%	8.4	75%
PARKER PEAK	SNOTEL	9400'	92	24.1	16.0	151%	16.6	104%
PETERSON MEADOWS	SNOTEL	7200'	50	11.3	7.1	159%	7.1	100%
PICKFOOT CREEK	SNOTEL	6650'	59	13.7	8.4	163%	9.4	112%
PIKE CREEK	SNOTEL	5930'	36	7.5			7.5	
PIPESTONE PASS	SC	7200'	29	5.6	3.2	175%	3.6	113%
PLACER BASIN	SNOTEL	8830'	81	19.3	12.8	151%	13.0	102%
POORMAN CREEK	SNOTEL	5100'	99	32.6	30.9	106%	28.4	92%
PORCUPINE	SNOTEL	6500'	44	8.7	5.2	167%	3.7	71%
POTOMAGETON PARK	SC	7150'	46	13.3	11.4	117%	10.0	88%
REVAIS	SC	4800'			1.8			
ROCK CREEK MDWS	SC	3400'	52	14.0			10.8	
ROCKER PEAK	SNOTEL	8000'	72	16.4	10.1	162%	8.8	87%
ROCKY BOY	SNOTEL	4700'	26	6.2	4.0	155%	5.1	128%
ROLAND SUMMIT	SC	5120'	107	34.1	27.0	126%	26.7	99%
S FORK SHIELDS	SNOTEL	8100'	72	17.1	11.8	145%	9.0	76%
SACAJAWEA	SNOTEL	6550'	60	16.4	11.9	138%	10.6	89%
SADDLE MTN.	SNOTEL	7940'	101	29.3	19.0	154%	16.7	88%
SHORT CREEK	SNOTEL	7000'	20	4.2	4.4	95%	5.1	116%
SHOWER FALLS	SNOTEL	8100'	78	19.6	15.6	126%	15.1	97%
SKALKAHO SUMMIT	SNOTEL	7250'	89	23.3	17.5	133%	15.1	86%
SLEEPING WOMAN	SNOTEL	6150'	69	17.3	12.2	142%	9.9	81%
SLIDE ROCK MOUNTAIN	SC	7100'	58	14.5	10.1	144%	11.2	111%
SPOTTED BEAR MOUNTAIN	SC	7000'	50	13.5	10.7	126%	7.8	73%
SPUR PARK	SNOTEL	8100'	82	23.5	15.5	152%	17.4	112%

Site Name	Network	Elevation	Depth (in)	SWE (in)	Median (in)	% Median	Last Year SWE (in)	Last Year % Median
STAHL PEAK	SC	6030'						
STEMPLE PASS	SC	6600'	44	9.2	7.0	131%	6.4	91%
STORM LAKE	SC	7780'	54	11.7	9.5	123%	9.4	99%
STRINGER CREEK	SNOTEL	6550'	48	11.9	8.6	138%	9.3	108%
STRYKER BASIN	SC	6180'	83	29.0	25.0	116%	24.6	98%
STUART MOUNTAIN	SNOTEL	7400'	109	30.0	25.9	116%	24.4	94%
TAYLOR ROAD	SC	4080'	22	5.4	3.0	180%	5.4	180%
TEN MILE LOWER	SC	6600'	46	11.5	5.4	213%	6.8	126%
TEN MILE MIDDLE	SC	6800'	56	13.6	7.5	181%	7.2	96%
TEPEE CREEK	SNOTEL	8000'	40	8.8	10.6	83%	10.3	97%
TIMBERLINE CREEK	SC	8850'	56	14.3	9.2	155%	6.1	66%
TIZER BASIN	SNOTEL	6880'	51	11.4	7.3	156%	7.1	97%
TRINKUS LAKE	SC	6100'			32.4		33.6	104%
TRUMAN CREEK	SC	4060'			4.0		2.9	73%
TWELVEMILE CREEK	SNOTEL	5600'	79	22.2	13.8	161%	8.7	63%
TWENTY-ONE MILE	SC	7150'	43	11.1	12.4	90%	13.4	108%
TWIN LAKES	SNOTEL	6400'	126	43.5	30.2	144%	25.7	85%
UPPER HOLLAND LAKE	SC	6200'			26.0		24.1	93%
WALDRON	SNOTEL	5600'	50	12.1	8.9	136%	7.1	80%
WARM SPRINGS	SNOTEL	7800'	96	22.2	14.8	150%	13.0	88%
WEASEL DIVIDE	SC	5450'	83	24.6	26.2	94%	21.7	83%
WEST YELLOWSTONE	SNOTEL	6700'	44	10.2	9.0	113%	7.1	79%
WHISKEY CREEK	SNOTEL	6800'	54	12.6	12.0	105%	8.8	73%
WHITE ELEPHANT	SNOTEL	7710'	66	17.9	20.4	88%	23.1	113%
WHITE MILL	SNOTEL	8700'	98	25.9	18.3	142%	17.1	93%
WOLVERINE	SNOTEL	7650'	63	15.3	8.5	180%	7.9	93%
WOOD CREEK	SNOTEL	5960'	43	10.6	7.5	141%	5.5	73%
WRONG CREEK	SC	5700'	49	11.6	8.8	132%	8.2	93%
WRONG RIDGE	SC	6800'			12.4			
YOUNTS PEAK	SNOTEL	8350'			11.7		9.8	84%

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Montana
Water Supply Outlook
Report
Natural Resources Conservation Service

